

# Prices Paid to Hospitals by Private Health Plans Are High Relative to Medicare and Vary Widely

Findings from an Employer-Led Transparency Initiative

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## Preface

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The majority of people in the United States are enrolled in private health plans, meaning that they obtain their coverage through an employer or union or purchase a plan directly from an insurer. Most individuals with private insurance are enrolled in an employer-sponsored insurance plan; thus employers play a key role in the health care marketplace. The authors of this report use 2015–2017 data covering \$13.0 billion in hospital spending from three sources—self-insured employers, state-based all payer claims databases, and health plans—to describe hospital price levels, variation, and trends from 2015 through 2017 in 25 states. In this study, prices reflect the negotiated allowed amount paid per service, including amounts from both the health plan and the patient, with adjustments for the intensity of services provided. We report negotiated prices relative to Medicare reimbursement rates for the same procedures and facilities.

On average, case mix–adjusted hospital prices were 241 percent of Medicare prices in 2017. Reducing hospital prices to Medicare rates over the 2015–2017 period would have reduced health care spending by approximately \$7.7 billion for the employers included in this study. In 2017, reducing prices from the 75th to the 25th percentile price could reduce spending for those employers by \$1.4 billion per year, which is approximately 40 percent of 2017 hospital spending.

The key intended audiences for this report are: (1) self-insured employers that have participated in the study and that are assessing the reasonableness of the prices they are paying for hospital care, (2) other employers that are struggling with high and rising health care costs and that want to better understand patterns and trends in hospital prices, and (3) policymakers and researchers who are concerned with hospital pricing and price transparency. Employers can use this report to become better-informed purchasers, and this report illustrates for policymakers that it is feasible and worthwhile to use claims data from private health plans to measure and compare hospital prices at a high level of detail.

The findings of this study are reported at a high level in this report; a supplemental Microsoft Excel spreadsheet containing detailed data is available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033). This is the first broad-based study that reports prices paid by private health plans to hospitals identified by name and to groups of hospitals under joint ownership (*hospital systems*) identified by name.

This research was funded by the Robert Wood Johnson Foundation, the National Institute for Health Care Reform, and the Health Foundation of Greater Indianapolis and participating self-insured employers and was carried out within the Payment, Cost, and Coverage Program in RAND Health Care in collaboration with the Employers' Forum of Indiana.

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# Summary

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## Background, Goals, and Approach

Most Americans receive insurance coverage through employer-sponsored private health plans. 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 to their employees. Spending on hospital services accounts for 44 percent of total personal health care spending for the privately insured, and hospital price increases are key drivers of recent growth in spending per capita among the privately insured. Employers, however, generally lack useful information about the prices their health plans are paying to hospitals.

The goals for this report are

1. to provide a detailed hospital price report that is designed to help employers become better-informed purchasers and stronger advocates on behalf of their employees
2. to illustrate—for policymakers, employers who participated in the study, and other employers and employer groups nationwide—that it is feasible and worthwhile to use claims data from private health plans to measure and compare hospital prices at a high level of detail: facility by facility and service line by service line.

Our approach was to gather claims data, including provider identifiers and allowed amounts, for enrollees in employer-sponsored health benefits from 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 (APCDs) from Colorado and New Hampshire
- health plans that chose to participate.

Together, those data sources include roughly 4 million covered lives that received hospital services from 1,598 hospitals in 25 states. The analysis focuses on 2015 through 2017 and includes only facility claims for inpatient and outpatient services provided by Medicare-certified short-stay hospitals. For each private claim, we reprice the service using Medicare's grouping and pricing algorithms, and we report price levels and trends for states and for hospitals and hospital systems (i.e., groups of hospitals under joint ownership) identified by name.

We calculate and report two types of hospital prices:

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

**Box S.1. Claims Data Gathered from 1,598 Hospitals in 25 States**

|               |                |
|---------------|----------------|
| Colorado      | New Hampshire  |
| Florida       | New Mexico     |
| Georgia       | New York       |
| Illinois      | North Carolina |
| Indiana       | Ohio           |
| Kansas        | Pennsylvania   |
| Kentucky      | Tennessee      |
| Louisiana     | Texas          |
| Maine         | Vermont        |
| Massachusetts | Washington     |
| Michigan      | Wisconsin      |
| Missouri      | Wyoming        |
| Montana       |                |

Relative prices have the advantage of incorporating all of Medicare’s adjustments for case mix, wages, and inflation, and they are comparable across service lines (e.g., inpatient versus outpatient).

The key limitation is that the claims data included in the study represent only a small share of the entire population of privately insured patients. Therefore, prices could be calculated and reported for only around one-third of U.S. hospitals and, for many of those hospitals, only their outpatient prices could be reported. The prices reported may not necessarily reflect a hospital’s price for all private health plans. The analysis also includes only facility claims and does not include professional claims from physicians or claims for prescription drugs.

## Key Findings

Relative prices, including all hospitals and states in the analysis, rose from 236 percent of Medicare prices in 2015 to 241 percent of Medicare prices in 2017. Relative prices varied twofold among states. Some states (Michigan, Pennsylvania, New York, and Kentucky) had relative prices in the 150 to 200 percent range of Medicare rates, while other states (Colorado, Montana, Wisconsin, Maine, Wyoming, and Indiana) had relative prices in the 250- to 300-plus percent range of Medicare rates. Relative prices increased rapidly from 2015 to 2017 in Colorado and Indiana while falling in Michigan over the same period. Prices varied nearly threefold among hospital systems, ranging from 150 percent of Medicare rates at the low end to 350 to 400-plus percent at the high end.

Relative prices for hospital outpatient services were 293 percent of Medicare rates on average, far higher than the average relative price for inpatient care (204 percent of Medicare). However, eight states—Michigan, New York, Tennessee, Massachusetts, Louisiana, New

Hampshire, Montana, and Maine—stand out as exceptions to this general finding, with relative prices that are roughly equal for inpatient and outpatient services.

## Implications

Widely varying prices suggest that employers have opportunities to redesign their health benefits to better align hospital prices with the value of care provided. Employers can exert pressure on their health plans and hospitals to shift from discounted charge contracts to contracts based on a multiple of Medicare or other prospective case rates. Discounted-charge contracts are relatively simple and have historically been common, but they allow wide and unwarranted variation in prices, and they leave employers and their plans vulnerable to aggressive inflation of charges by some hospitals. Employers can also use network and benefit design to move patient volume away from high-priced, low-value hospitals and hospital systems.

Employers can encourage expanded price transparency by participating in existing state-based APCDs and promoting development of new APCDs. But transparency by itself is likely insufficient, and employers may need state or federal policy interventions to rebalance negotiating leverage between hospitals and employer health plans. Such interventions could include placing limits on payments for out-of-network hospital care or applying insurance benefit design innovations to target high prices paid to providers and allowing employers to buy into Medicare or another public option that pays providers prices based on Medicare rates.

## Acknowledgments

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## Abbreviations

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|         |   |
|---------|---|
| APC     | Ambulatory Payment Classification           |
| APCD    | all-payer claims database                   |
| APR-DRG | All Patient Refined Diagnosis Related Group |
| CAH     | critical access hospital                    |
| CIVHC   | Center for Improving Value in Health Care   |
| CMS     | Centers for Medicare and Medicaid Services  |
| EFI     | Employers' Forum of Indiana                 |
| GM      | General Motors                              |
| IOCE    | Integrated Outpatient Code Editor           |
| IPPS    | inpatient prospective payment system        |
| MedPAC  | Medicare Payment Advisory Commission        |
| MS-DRG  | Medicare Severity Diagnosis Related Group   |
| OPPS    | outpatient prospective payment system       |
| POS     | Provider of Services                        |
| TPA     | third-party administrator                   |

# 1. Background

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## Employers Responsible for Health Care Costs, Have Limited Access to Useful Information on Hospital Prices

In 2017, 181 million Americans, or 56 percent of the U.S. population, enrolled in employer-based health insurance coverage (Berchick, Hood, and Barnett, 2018). The employer-sponsored insurance market consists of (1) fully insured employers that pay state-regulated insurers a fixed premium per enrollee per month to provide benefits and (2) self-insured employers that are financially responsible for covered benefits but that contract with third-party administrators (TPAs) to administer plans and process claims. U.S. employers play an important role in the U.S. health care system, both in financing health care spending and in working with TPAs and insurers to design the structure of health benefits.

Employers are struggling constantly with high and rising health care costs. While employers are responsible for health care costs, they do not typically 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 and to process claims. Ultimately, employees bear most or all of 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.

Employers and patients differ in the types of price information they need (White et al., 2014). Many insurers and TPAs already provide patient-facing price-transparency tools that allow patients to check out-of-pocket prices ahead of time for selected services (Catalyst for Payment Reform, 2013). Patient-facing price-transparency tools do not meet employers' needs, however, because they do not allow employers to track price trends or to easily assess which hospitals in their market are either lower or higher priced for broad baskets of services.

Employers generally lack useful information about the prices they are paying, and many contracts between large provider systems and insurers actually prohibit sharing detailed pricing information with employers or patients. Employers are typically wary of limiting the network of providers available to their employees, and the lack of transparency further undermines self-insured employers' efforts to limit their insurance networks to lower-priced, high-quality hospitals. This lack of information 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 allow them to demand increased value from the health care system.

Hospitals represent just one sector of the health care system, albeit an important one. Spending on hospital services accounts for 44 percent of total personal health care spending for the privately insured (Centers for Medicare and Medicaid Services [CMS], 2019b, Table 4). Hospital price increases have been identified in previous research as a key contributor to recent growth in spending per capita among the privately insured (Health Care Cost Institute, 2018; Cooper et al., 2019a). Hospital prices have also been shown to be a key driver of geographic variation in spending among the privately insured (Newhouse and Garber, 2013; Franzini et al., 2014; White, Reschovsky, and Bond, 2014a; Cooper et al., 2019b). The prices that private health plans pay for hospital care have been characterized as “chaos behind a veil of secrecy” (Reinhardt, 2006), and they vary widely from one hospital market to another and among hospitals within a market (White, Bond, and Reschovsky, 2013; White, Reschovsky, and Bond, 2014b). Hospital prices paid by private health plans have been growing well in excess of price growth in public plans (Selden et al., 2015), and that divergence has been linked to provider consolidation and the exercise of monopoly power by hospitals and groups of hospitals under joint ownership (i.e., hospital systems) (Ginsburg, 2010; Berenson et al., 2012; Gaynor and Town, 2012).

If the variation in hospital prices is not tied to commensurate differences in quality, then prices paid to higher-priced hospitals may represent wasteful spending to employers. However, Whaley (2018) finds that higher-priced providers do not have higher quality for outpatient surgical services. Thus, reducing use of higher-priced hospitals, or taking a more active role in bargaining prices and achieving price reductions, is a potential way for employers to reduce health care spending.

In principle, employers can use health plan network and benefit design to steer their enrollees away from providers with prices that are higher than competing providers. Steering patient volume can directly reduce health care costs by shifting patients to lower-priced providers. It can also increase leverage in price negotiations with providers. However, effective steering requires a detailed awareness of the prices paid to each provider coupled with information about types of services offered and the quality of care provided.

One of the core functions of a private health plan is to develop networks of providers and negotiate contracts with those providers, but employers are limited in their ability to assess plans’ contracting performance. Employers can ask their health plan administrators—or brokers or outside consultants—to calculate and report discount rates, meaning the percentage difference between billed charges and amounts paid. But discount rates, by themselves, are not meaningful because they do not reflect any case-mix adjustment or external benchmarks. In addition, billed charge amounts are determined by providers’ chargemasters, and “hospitals have sole discretion in determining their chargemaster prices and . . . there is a lack of rigorous methodology for constructing those prices” (Bai and Anderson, 2016). The lack of transparency in contracting and negotiated prices undermines the ability of employers to demand value from providers and from health plans.

## Motivation

The immediate goal of this report is to provide a detailed hospital price report for a large set of hospitals across the country. Employers can use this public report to become better-informed purchasers and stronger advocates on behalf of their employees. For example, self-insured employers can ask their TPAs how their negotiated prices compare with the hospital-, system-, and state-level averages reported here, and why the average prices in their state or metropolitan area differ from averages in other areas. Tu and Gourevitch (2014, p. 4) evaluated New Hampshire’s all-payer claims database (APCD)–based price-comparison tool and found significant effects from publicly revealing provider price variation, including “a rebalancing of health plan–provider contracting leverage and a move toward new insurance benefit designs.” Similarly, Brown (2018) found that the New Hampshire price-transparency tool led to reductions in provider prices, and Whaley (2019) found that online price-transparency tools led to modest reductions in provider prices.

The broader goal of this report is to illustrate—for policymakers, other employers, and employer groups nationwide—that it is feasible and worthwhile to use claims data from private health plans to measure and compare hospital prices at a high level of detail: facility by facility and service line by service line. That level of detail allows employers to contemplate and undertake specific changes in their health benefits and provider contracting. Ultimately, employers, health care providers, and health plans are all seeking to improve the value of the health care system, and price data can inform discussions among those stakeholders.

## Scope of the Study

This study compares prices paid by private health plans for hospital inpatient and outpatient services with prices that the Medicare program would have paid for the same services at the same facilities. The study includes claims data from 2015 through 2017. 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 to the privately insured by community hospitals include childbirth, knee replacements, and admissions for treatment of septicemia or psychoses. Examples of common hospital outpatient services include imaging, emergency department visits, and colonoscopies.

The analysis includes only payments to facilities and does not include professional fees. The analysis is further limited to services provided by *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 Health 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 compose community hospitals, which was the population of interest for this study.

In general, services are included in the analysis if they are covered by Medicare and paid either under Medicare's IPPS or Medicare's outpatient prospective payment system (OPPS). Some hospital outpatient services, such as outpatient rehabilitation therapy and mammography, are not paid under Medicare's OPPS, and they are, therefore, excluded from the analysis.

### **Box 1.1. Medicare Is a Program for the Elderly, So How Can It Be Used as a Price Benchmark for Childbirth?**

Medicare is primarily a program for the elderly; in 2017, 85 percent of beneficiaries (49.7 million out of 58.5 million) were age 65 or older (CMS, undated). But nearly 10 million nonelderly Medicare beneficiaries qualify for the program because they have disabilities, and some of those disabled individuals are women of childbearing age. The scope of services covered by Medicare includes childbirth, and, in 2016, the Medicare fee-for-service program paid for more than 14,000 childbirths (CMS, 2018b). For this reason, CMS has developed payment rates for services used by the under-65 population.

In general, Medicare and employer-sponsored health plans cover a similar set of benefits, and they use the same systems of coding for diagnoses and procedures; Medicare case-mix weights and prices are available for hospital inpatient and outpatient services used by enrollees in employer-sponsored plans. If a child or young adult receives a hospital inpatient or outpatient service, in general, that service can be assigned a Medicare price, and that price is appropriately adjusted to reflect the complexity of the patient's condition and the services provided.

## **Original Contribution**

This report extends a previous pilot study that focused on the prices paid for hospital care from mid-2013 to mid-2016 in Indiana (White, 2017) and builds on a large and growing body of research on levels and variation in prices paid to hospitals by private health plans (Ginsburg, 2010; White, 2012; White, Bond, and Reschovsky, 2013; Newhouse and Garber, 2013; Franzini et al., 2014; Maeda et al, 2014; U.S. Government Accountability Office, 2014; Pelech, 2017; Health Care Cost Institute, 2018; Sen et al., forthcoming). Those studies generally analyze and report market- or state-level average hospital prices.

The pilot study and a handful of APCD-based studies have calculated and reported publicly prices for hospitals identified by name (Brannen, 2008; Commonwealth of Massachusetts, Center for Health Information and Analysis, 2017), but those studies were all limited to a single state. Another small set of studies has analyzed relationships between hospital prices and hospital characteristics but without publicly identifying prices paid to hospitals identified by name (White, Reschovsky, and Bond, 2014b; Cooper et al., 2019b).

| <b>Box 1.2. Claims Data Gathered from 1,598 Hospitals in 25 States</b> |                |
|--|----------------|
| Colorado   | New Hampshire  |
| Florida  | New Mexico     |
| Georgia  | New York       |
| Illinois   | North Carolina |
| Indiana  | Ohio           |
| Kansas   | Pennsylvania   |
| Kentucky   | Tennessee      |
| Louisiana  | Texas          |
| Maine  | Vermont        |
| Massachusetts  | Washington     |
| Michigan   | Wisconsin      |
| Missouri   | Wyoming        |
| Montana  |                |

This study is unique in that we have obtained claims data from a large population of privately insured individuals, including hospitals in 25 states, and we have entered into data use agreements that allow us to report prices paid to hospitals and hospital systems identified by name. Data use agreements for many widely used sources of private claims data prohibit the identification of specific providers. This study also differs from most previous studies in that it includes both hospital inpatient and outpatient services (many studies focus just on inpatient prices), and it reports both standardized prices and relative prices (many studies either report prices for specific services in dollars or prices as a percentage of Medicare, but not both).

## 2. Overview of Hospital Markets and Pricing

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### 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 plan are able to 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 than they would at 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.

Both hospitals and private health plans have consolidated in part to increase their respective bargaining leverage. Many hospitals have joined systems, which allows them to jointly negotiate prices. Some hospital systems have instituted "all-or-nothing" clauses, which require all hospitals to be in the system if a single hospital is in the system. These clauses limit the ability of employers to design lower-priced networks. Finally, 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, 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 (Berenson et al., 2012; Trish and Herring, 2015). But idiosyncratic factors appear to play a large role, and the wide variation in prices has led to an increased focus on price transparency initiatives designed to meet the needs of employers.

### How Medicare Calculates Prices Paid for Hospital Services

Medicare, rather than negotiating with providers, sets prices administratively based on legislation enacted by Congress (CMS, 2015). While 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, CAH). For hospital services, Medicare uses different price-setting formulas, depending on the type of hospital and the type of service.

At IPPS hospitals, Medicare prices for inpatient and outpatient services are set using this general formula:

$$\text{Medicare price} = \text{base rate} * \text{case-mix adjustment} * \text{hospital adjustment} + \text{outlier}.$$

The base rate is a national dollar amount specified in regulations—for example, the base rate for all hospital outpatient services in 2016 was \$73.725. 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 the Medicare Severity Diagnosis Related Groups (MS-DRGs), and, in the outpatient setting, Medicare uses Ambulatory Payment Classifications (APCs) (Medicare Payment Advisory Commission, 2018, Chapter 3). Hospital-specific adjustments are applied to all services provided by a given hospital and are designed to account for differences among hospitals in local wages, 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.

CAHs are paid by Medicare for inpatient and outpatient services using cost-plus reimbursement:

$$\text{Medicare price} = \text{allowable costs} * 101\%.$$

## 3. Data and Concepts

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### Data Sources

#### *Claims Data*

The claims data in our analytic data set were aggregated from the following three types of data sources:

- about 50 self-insured employers that chose to participate in the study and that provided claims data for their enrollees
- state-based APCDs from New Hampshire and Colorado, which include residents of those states who were enrolled in fully insured and self-insured employer-sponsored health plans
- health plans that chose to participate and that provided claims data from their fully insured and self-insured lines of business.

Participating self-insured employers include roughly a dozen Indiana employers that participated in the pilot study and chose to participate in the current study and roughly three dozen employers that either heard about the Indiana study and contacted the Employers' Forum of Indiana (EFI) or were recruited by the EFI. The participating self-insured employers represent around 1.2 million covered lives, coming from a variety of industries ranging from manufacturing to higher education and ranging in the number of covered lives from a few hundred to more than 100,000.

Currently, 16 states operate an APCD with mandatory submission, eight additional states have an APCD with voluntary submission, and four states are in the process of implementing an APCD (APCD Council, 2019b). States vary, however, in their data-release rules and costs to researchers for accessing data (APCD Council, 2019a). New Hampshire and Colorado were the only two states that we identified that (1) operated an APCD with mandatory submission, (2) made their data easily and affordably accessible, and (3) permitted their data to be used to report provider-level prices. Several other states have implemented APCDs or have plans to do so. Future studies should include updated APCD data from additional states.

In 2017, the number of residents under age 65 with employer-sponsored health benefits was 2.7 million in Colorado and 700,000 in New Hampshire (Kaiser Family Foundation, undated). Unfortunately, not all of these 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 (Brown and King, 2016). According to the nonprofit organization that maintains Colorado's APCD (the Center for Improving Value in Health Care [CIVHC]), private health plans in Colorado contributed claims data representing 1.5 million individuals—or around

55 percent of the nonelderly population with employer-sponsored health benefits—in 2017 (CIVHC, 2018). Of the 1.5 million enrollees in private health plans included in Colorado’s APCD, roughly 300,000 were enrolled in a self-insured plan, and 1.2 million were enrolled in a fully insured plan (CIVHC, 2018). New Hampshire’s APCD collects claims data from 26 commercial claims sources (APCD Council, 2019c) and includes 72 percent of the state’s population (North Carolina Institute of Medicine, 2017).

Together, the three claims data sources include roughly 4 million covered lives—1.2 million from self-insured employers, 2 million from APCDs, and 800,000 from health plans. Although a sizeable population, these covered lives represent only about 2 percent of the population of enrollees in employer-sponsored health benefits in the United States.

All data sources provided claim identifiers and line item–level detail on services provided and allowed amounts. (A *claim* represents 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 may consist of many line items, where 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:

1. facility claims only (this excludes claims for professional services and prescription drug claims)
2. facility claims only for hospital inpatient or hospital outpatient services
3. claims only for facilities whose identities in the private claims data could be crosswalked to Medicare provider numbers (MPNs)
4. claims for services provided by Medicare-certified community hospitals (i.e., short-stay hospitals that are paid by Medicare either under the IPPS or the CAH payment system)
5. claims for services covered by Medicare and paid through the IPPS or the OPSS.

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 the price that was paid for by the patient versus the employer. Flags for in-network versus out-of-network providers were generally either unavailable or not reported consistently. Therefore, the analysis included claims regardless of provider network status. For a detailed description of the processing of these claims data, see the “Detailed Methodology” section in the appendix.

### *Hospital Systems*

Hospitals were linked to multihospital systems, meaning groups of two or more short-stay hospitals under joint ownership and that use two approaches. In Indiana, we consulted with individuals with local knowledge of the health care market and identified system membership of each hospital. For hospitals located in other states, we used the 2016 annual survey of the American Hospital Association (American Hospital Association, 2016) to link hospitals to hospital systems.

## Quality

To incorporate quality metrics into the analysis, we used CMS’s overall hospital star ratings from Hospital Compare (one star is the worst rating, five stars is the best) (Yale New Haven Health Services Corporation/Center for Outcomes Research and Evaluation, 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, 2018c, 2019a). The star ratings were merged with the analytic data set using MPNs.

## Weighting

In general, our analytic approach was to use unweighted counts and sums of allowed amounts to calculate prices for hospitals, hospital systems, and states. The one exception to that general approach was applied to claims data from Indiana. In most states, our claims data either came from an APCD or from self-insured employers. However, in Indiana, our data set included claims data from a number of self-insured employers and also from health plans (including their entire private lines of business). We applied a simple weighting scheme to claims for hospitals in Indiana so that the health-plan claims would not be disproportionately overrepresented in our analytic data set relative to the claims from self-insured employers. The weights were assigned so that, in Indiana, the weighted sum of allowed amounts roughly matched private health plans’ market shares.

## 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, including 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. If we were comparing prices of lumber from one lumberyard to another, we would not want simply to compare the price per piece of wood—one lumberyard might sell mainly 12-foot 6-by-6s, another might sell mainly 6-foot 2-by-4s. The concepts of the “board foot” (144 cubic inches of wood) and the cord (128 cubic feet) help standardize comparisons of prices of wood. In health care, relative weights, also known as case-mix weights, are used to make meaningful comparisons of prices and costs across different types of services provided.

## 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, for which 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. Following the lumberyard example, a heart transplant with complications represents 27.1 board feet of lumber, while an uncomplicated childbirth represents 0.6 board feet.

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 Diagnosis Related Groups (APR-DRGs) and Pediatric Modified Diagnosis Related Groups. All of the 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 diagnosis-related groups, 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.

## 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 as a benchmark. The relative price equals the ratio of 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 provides a useful price benchmark for six reasons:

1. 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.
2. Private health plans negotiate prices with providers, and those negotiated prices reflect the negotiating leverage of both the plan and the provider. Medicare prices, in contrast, are not affected by bargaining leverage and are, instead, set with the overarching goal of compensating providers fairly based on their costs of doing business and the services they

provide (Medicare Payment Advisory Commission [MedPAC], 2016a). 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.

3. Medicare hospital prices are adjusted for a number of key sources of legitimate variation in costs (MedPAC, 2016b, 2016c), including
  - a. 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 over time in productivity
  - b. geographic adjustments based on local variation in wages and the cost of doing business
  - c. hospital-specific adjustments for medical education and treating low-income patients and uninsured patients
  - d. case-mix adjustment based on the diagnoses and treatments provided to an individual patient
  - e. additional outlier payments for cases that are exceptionally costly relative to Medicare's standard price.
4. The federal government makes freely and publicly available detailed data on the prices paid (see, for example, CMS, 2016a, 2016b) and minutely detailed descriptions of the formulas that determine those prices (see, for example, Department of Health and Human Services, Centers for Medicare and Medicaid Services, 2015) and the methods used to measure and summarize those prices (CMS, Office of Enterprise Data and Analytics, 2018).
5. The prices paid by private health plans can be affected in various ways by Medicare's price-setting formulas. The most obvious and common examples are physician contracts that specify private prices as a multiple of the Medicare prices (Clemens and Gottlieb, 2017). Other examples include Medicare Advantage contracts in which hospital prices are determined, albeit indirectly, by Medicare fee-for-service prices (Berenson et al., 2015; Trish et al., 2017). Some private health plans also use Medicare prices as the basis for setting payments for out-of-network care (FAIR Health, undated). Also, some states have implemented, or are considering implementing, limits on prices paid for hospital care in their state employee plans as a multiple of Medicare prices (Appleby, 2018; 2019) or caps on payments for out-of-network care based, in part, on multiples of Medicare prices (California Health Benefits Review Program, 2016; Massachusetts Health Policy Commission, 2016; Mattke et al., 2016; Newman and Barrette, 2016; Field, LeBlanc, and Nelson, 2018; Adler et al., 2019).
6. 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; Nguyen, Kronick, and Sheingold, 2013; Selden et al., 2015; Clemens and Gottlieb, 2017; Trish et al., 2017; Pelech, 2017; Sen et al., 2019).

The pilot study (White, 2017) calculated and reported only relative prices. Some hospitals felt that they were disadvantaged by that price measure, because they receive small or no increases in Medicare payment for teaching or uncompensated care. To offer a more complete price comparison, in this study, we calculate and report both relative prices and, in the

spreadsheet of detailed data available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033), we also report standardized prices.

## A Numerical Example

Suppose that Hospital A 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 3.1):

1. We sum the total actual allowed amount in the private health plan claims data for those 50 stays (\$1.5 million).
2. We group each inpatient stay using Medicare’s MS-DRG grouper and assign a relative weight based on MS-DRGs and Medicare’s relative weights.
3. We 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.
4. We calculate the *standardized price* as the total actual allowed amount divided by the number of standardized services (\$20,000).
5. We simulate the amount that Medicare would have paid for those 50 stays, 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. We calculate the *relative price* as the ratio of the total actual allowed amount over the simulated amount calculated in step 2 (2.00).

**Table 3.1. Calculating Relative Prices: A Simplified Example**

|                                       |             | 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 3.1 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).

## Minimum Cell Sizes

To ensure patient confidentiality, in our hospital-level analyses, we do not report allowed amounts, standardized units, prices, or service counts in this report or in the spreadsheet of detailed data available online at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033) for any combination of hospital and service line, or “cell,” with fewer than 11 claims.

We also calculate and report outcomes using more-aggregated definitions of a cell, including state; combination of state and year; hospital system; and combination of state, hospital system, and year. For each of those more-aggregated cells, we do not report prices unless the cell included at least 100 inpatient claims and 100 outpatient claims, and we report only hospital system–level outcomes if the cell includes data from two or more hospitals. When calculating the more-aggregated results, we included hospitals and service lines without applying the 11-or-more restriction.

## 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 Colorado and New Hampshire who are enrolled in an employer-sponsored plan that submits data to their APCDs, and enrollees in health plans who chose to participate. The claims data included in the study represent only a small share 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.

For some states, such as Michigan, our claims data come exclusively from self-insured plans, while for other states, such as Colorado, our claims data come from a mix of fully insured and self-insured plans. Researchers using the Massachusetts APDC found that self-insured plans on average paid hospitals prices that were 2 to 4 percent higher than fully insured plans (Craig, Ericson, and Starc, 2018), 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). It is possible, therefore, that our rankings and comparisons among states are affected by the mix of fully insured and self-insured claims data.

Because claims data were available only for a limited population, prices could not be calculated or reported for hospitals located outside the areas represented in our claims data. To ensure patient confidentiality, we suppressed reporting any 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 may fail to meet the 11-plus claims threshold and may have their prices suppressed. Also, because hospitals tend to provide many more outpatient services than inpatient ones, many hospitals meet the 11-plus claims threshold for their outpatient services but not their inpatient services. For those 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.

For a large number of hospitals, fewer than 11 claims were available for inpatient services, and, for those hospitals, only their outpatient prices are reported. Employers that are considering tiered benefits or changes to their provider networks should not rely on prices calculated based only on a relatively small number of claims. The RAND Corporation and the EFI are, as of May 2019, recruiting employers for an updated study to be released in 2020, and one of the main goals of that update is to expand employer participation and the volume of claims data and diversity of sources. Expanding the study this way will allow prices to be reported for more hospitals, with claims data that are more broadly representative for each hospital that is included.

Under the terms of our data use agreements, prices could not be compared among health plans or between self-insured plans and fully insured plans. The study design also excluded Medicaid plans, nongroup plans, and Affordable Care Act Exchange plans, which potentially would be of interest. The prices that we include in this report are based only on the claims data available to us and do not represent the overall average price paid to each hospital by all private health plans. Based on analyses of the Massachusetts APCD, health plans vary in the prices they pay to the same hospital (Commonwealth of Massachusetts, Center for Health Information and Analysis, Division of Health Care Finance and Policy, 2012; Craig, Ericson, and Starc, 2018), and so employers should expect that the prices they are paying to each hospital and hospital system differ from the average prices we report.

Our claims data sources lacked consistent flags for in-network versus out-of-network providers, and our analysis was not limited to in-network providers. Therefore, the prices that we report represent 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 do not include MPNs. It is possible that there are inaccuracies in the crosswalk from provider identifiers in the claims data to MPNs, as well as in the assignment of hospitals to systems. The provider identifiers in some cases 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 crosswalks and ensuring their accuracy, some discrepancies may remain.

Our analysis included only facility claims and did not include professional claims. For many hospital services, such as a hospital emergency department visit, the facility typically submits one claim for the facility component of the service, and the physician submits a separate claim for the professional component (Wynn, Hussey, and Ruder, 2011). The prices in this report reflect only the facility component of those services. A more comprehensive price measure would include both the facility and professional components. Also, it is possible that some private health plans bundle the payment for the professional component with the payment for the facility claim—in that case, facility prices relative to Medicare would be overstated because they do not include the professional component in the simulated Medicare price.

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 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). The simulation of Medicare inpatient prices used Medicare's inpatient PC Pricer grouping software, which is widely used and, presumably, has been thoroughly tested by CMS, although some errors may remain. The simulation of Medicare outpatient prices used Medicare's outpatient PC Pricer grouping software, which also may have errors. Although Medicare PC Pricer software is available for inpatient pricing, it cannot be operated in batch mode, and Medicare PC Pricer software is not available for outpatient services. Therefore, we assigned Medicare prices using our own pricing algorithm. That pricing algorithm reflected, to the extent possible, the details of Medicare's payment formula, although it may exclude some minor adjustments.

Overall, Medicare prices provide a very 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. Also, Medicare's uncompensated care adjustments for inpatient hospital stays can result in extremely high Medicare prices for a handful of 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 the appendix, 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 non-claims-based payments to providers, such as risk-sharing payments and pay-for-performance bonuses (APCD Council et al., 2014). Allowed amounts reported in claims data may also systematically exceed the amounts actually paid to the provider if the TPA applies a “spread” 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.

## 4. Findings

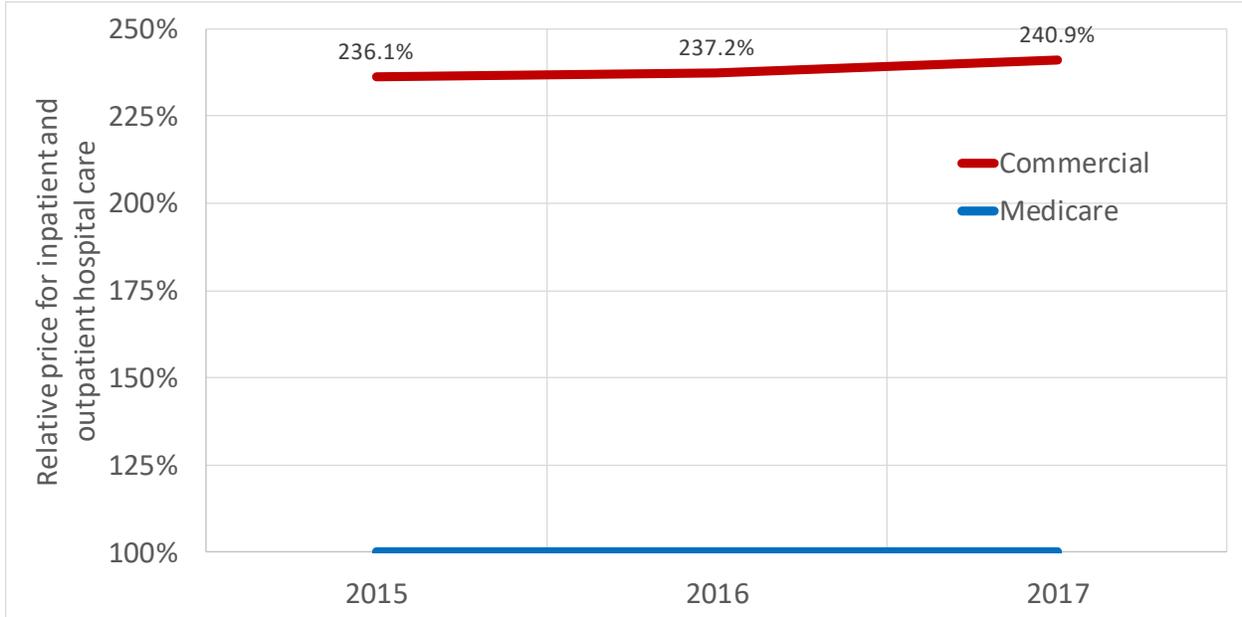
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From 2015 through 2017, the claims data included in the analysis represented \$13.0 billion in allowed amounts, comprising \$6.3 billion in payments for hospital inpatient services and \$6.6 billion in payments for hospital outpatient services (the amounts do not sum to 13.0 due to rounding). The analysis included approximately 330,000 claims for inpatient hospital stays, and 14.2 million outpatient line items. The simulated Medicare payments for the same services provided by the same facilities totaled \$5.3 billion—\$3.1 billion for inpatient hospital stays and \$2.2 billion for hospital outpatient services. Put another way, if the private health plans participating in the study had paid hospitals using Medicare’s payment formulas, the total allowed amount over the 2015–2017 period would have been reduced by \$7.7 billion, a decline of nearly 60 percent. The analysis includes 1,598 hospitals in 25 states; these are listed in Table 1 of the spreadsheet of detailed data available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033), with their names, MPNs, system affiliations (if any), allowed amounts, Hospital Compare star ratings, and standardized and relative prices.

### All-State Levels and Trends in Relative Prices

A previous study that used national data found that relative prices for inpatient care have risen steadily since 2000 (Selden et al., 2015). One important question for employers is whether the relative prices for hospital care have continued to rise in recent years. To address this question, we measured relative prices (including inpatient and outpatient care) by calendar year, including all hospitals in the analytic data set. As shown in Figure 4.1, from 2015 to 2017, we find that the overall relative price increased from 236.1 percent to 240.6 percent, an annual rate of increase of 1.0 percent. It is important to note that increases in relative prices represent price inflation in excess of the inflation adjustments and price increases applied by Medicare. The 1.0-percent rate of growth in Figure 4.1 is slower than the roughly 4 percent annual rate of increase in relative prices reported by Selden et al. (2015).

**Figure 4.1. All-State Trends in Relative Prices**



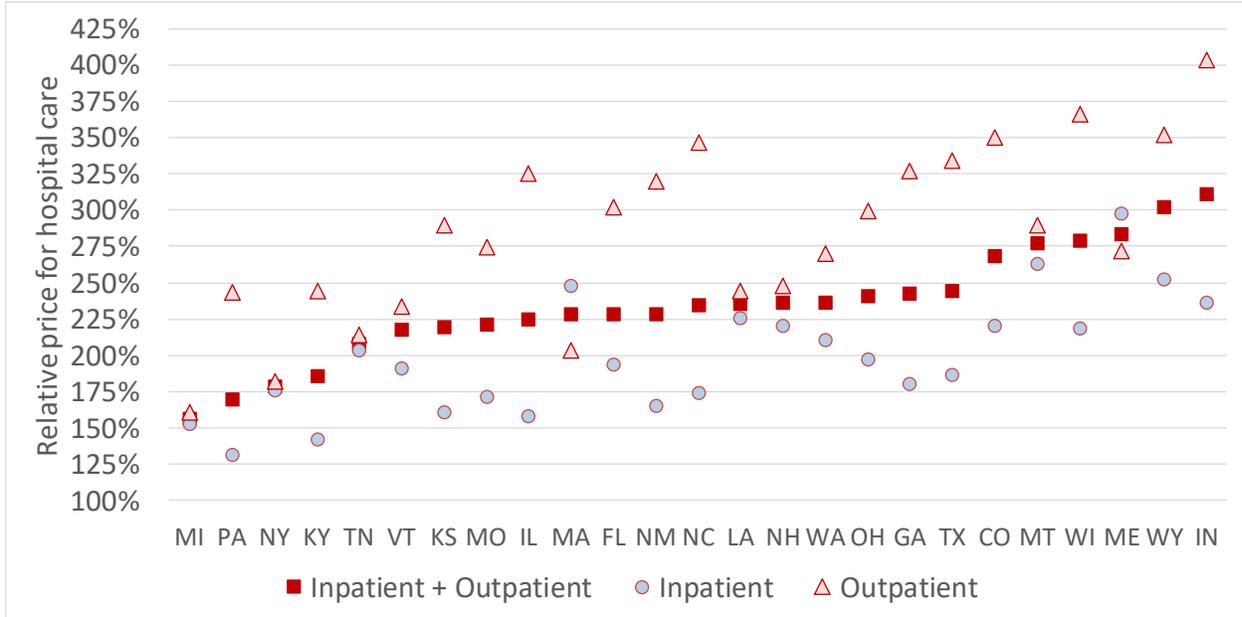
NOTE: Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare’s price-setting formulas.

## Relative Prices, Overall and by State

The overall average relative prices in 2017 for inpatient care was 204 percent, for outpatient care was 293 percent, and for inpatient and outpatient care combined was 241 percent. To give some context for this finding, a recent study used national data on payments for inpatient hospital care and found that the overall average relative price was 175 percent in 2012 (Selden et al., 2015).

The states included in the study vary twofold in their relative prices in 2017, as shown in Figure 4.2, ranging from roughly 150 to 200 percent of Medicare prices in Michigan, Pennsylvania, New York, and Kentucky, to more than 250 percent of Medicare prices in Colorado, Montana, Wisconsin, Maine, Wyoming, and Indiana. The state-level relative prices plotted in Figure 4.2 are reported in Table 2 of the spreadsheet of detailed data available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033), along with total private and Medicare-allowed amounts and standardized prices.

**Figure 4.2. Relative Prices, by State, 2017**



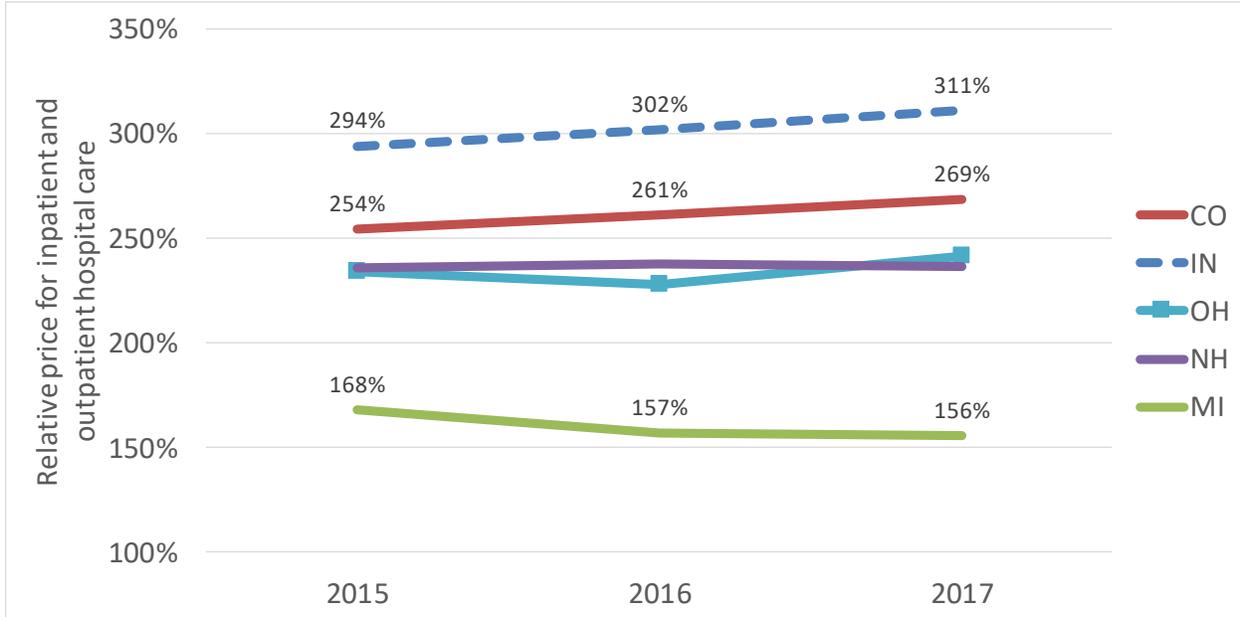
NOTE: Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare’s price-setting formulas.

In most states, relative prices for hospital outpatient services (the triangles in Figure 4.2) far exceed relative prices for hospital inpatient services (the circles in Figure 4.2). However, eight states—Michigan, New York, Tennessee, Massachusetts, Louisiana, New Hampshire, Montana, and Maine—stand out as exceptions to this general finding, with relative prices that are roughly equal for inpatient and outpatient services. The reasons for the convergence in inpatient and outpatient relative prices in these states warrants further attention from employers and policymakers.

### State-Level Trends in Relative Prices

Figure 4.3 illustrates the state-level trends in relative prices from 2015 to 2017 for the five states with the largest volume of claims data included in the analysis: Colorado, New Hampshire, Ohio, Michigan, and Indiana.

**Figure 4.3. Trends in Relative Prices for Selected States, 2015–2017**



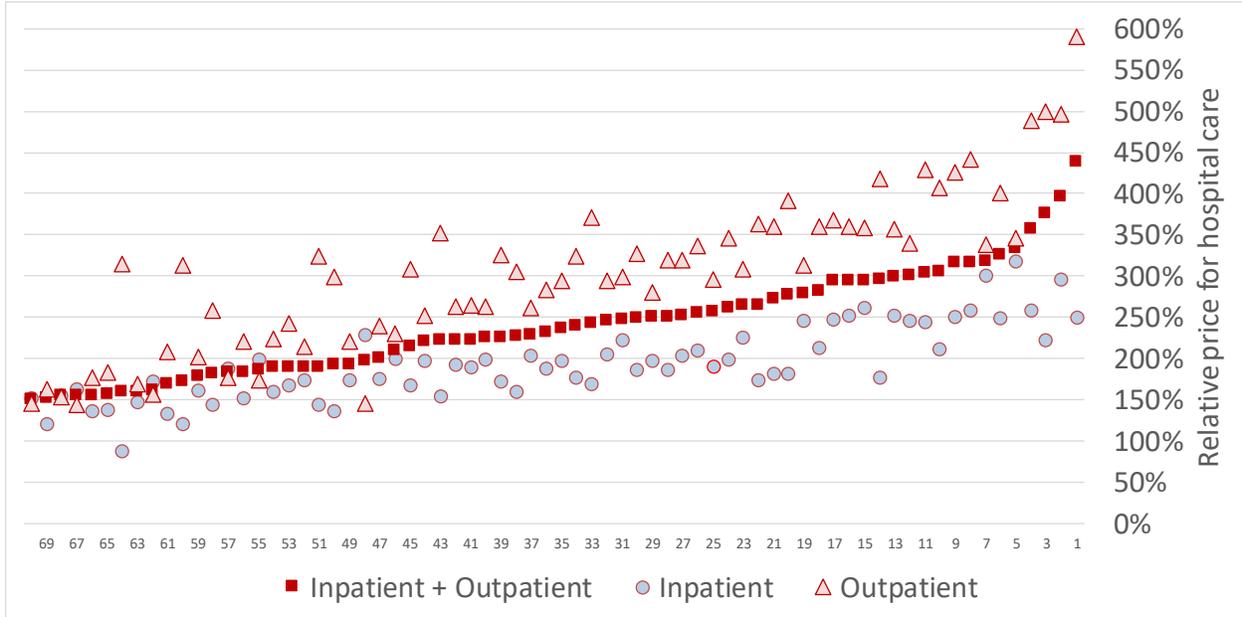
NOTE: Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare’s price-setting formulas.

When examining all states together (as shown in Figure 4.1), relative prices increased gradually over the 2015–2017 period, but this all-state trend masks important differences at the state level. Two of the highest-priced states—Indiana and Colorado—experienced rapid increases in relative prices with annual growth rates near 3 percent, whereas one of the lowest-priced states—Michigan—experienced a decline in relative prices. In general, the degree of dispersion in relative prices among states appears to be increasing over the study period.

### Wide Variation in Relative Prices Among Hospital Systems

The relative prices of hospital care vary widely among hospital systems, from around 150 percent of Medicare at the low end to four times Medicare at the high end (see Figure 4.4). Each of the 70 hospital systems illustrated in Figure 4.4 is listed by name, with their allowed amounts and prices, in Table 3 of the spreadsheet of detailed data available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033).

**Figure 4.4. Relative Prices of Hospital Systems in 25 States, 2015–2017**

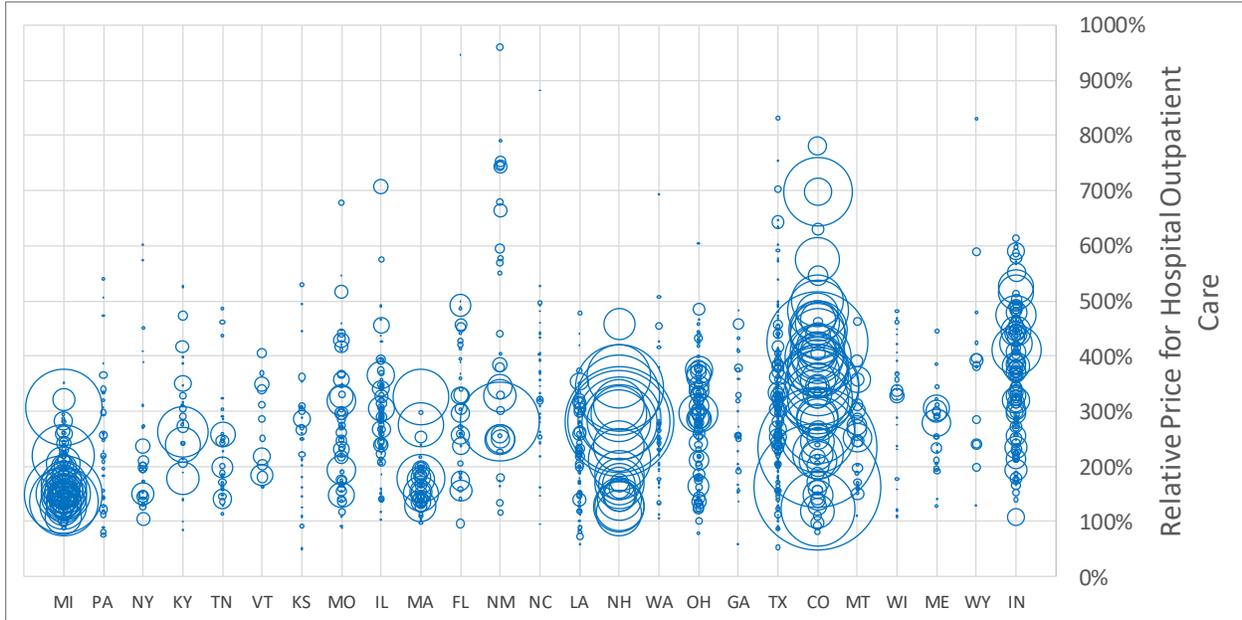


NOTE: Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare’s price-setting formulas.

## Hospital Prices Vary Widely, Particularly for Outpatient Services

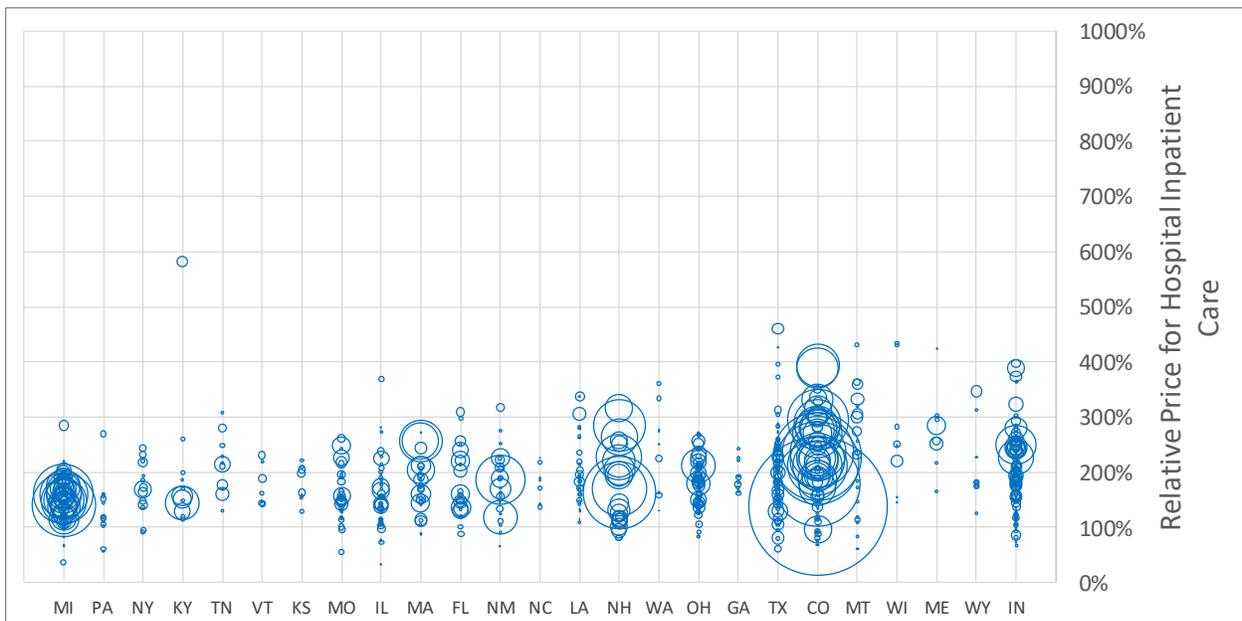
To illustrate the distribution of hospital prices in more detail, Figure 4.5 presents each hospital’s relative prices for outpatient care, and Figure 4.6 presents each hospital’s relative prices for inpatient care. In those figures, hospitals are organized on the horizontal axis by state, ranked from the lowest-priced to the highest-priced. The size of each hospital’s bubble is proportional to the hospital’s simulated Medicare payments in our claims database, which reflects both the number of services and the intensity of those services.

**Figure 4.5. Hospital-Level Relative Prices for *Outpatient* Care, 2015–2017**



NOTES: Each bubble represents a hospital, and bubble size represents the volume of outpatient services provided by each hospital. Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospital—using Medicare’s price-setting formulas. Bubble size is proportional to simulated Medicare payments for each hospital for outpatient services, which reflects both the number of services and the intensity of those services. Hospitals are grouped on the horizontal axis based on their state, with states ranked left to right in ascending order of overall average relative price.

**Figure 4.6. Hospital-Level Relative Prices for *Inpatient* Care, 2015–2017**



NOTES: Each bubble represents a hospital, and bubble size represents the volume of inpatient services provided by

each hospital. Relative prices equal the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospital—using Medicare’s price-setting formulas. Bubble size is proportional to simulated Medicare payments for each hospital for inpatient stays, which reflects both the number of stays and the intensity of those stays. Hospitals are grouped on the horizontal axis based on their state, with states ranked left to right in ascending order of overall average relative price.

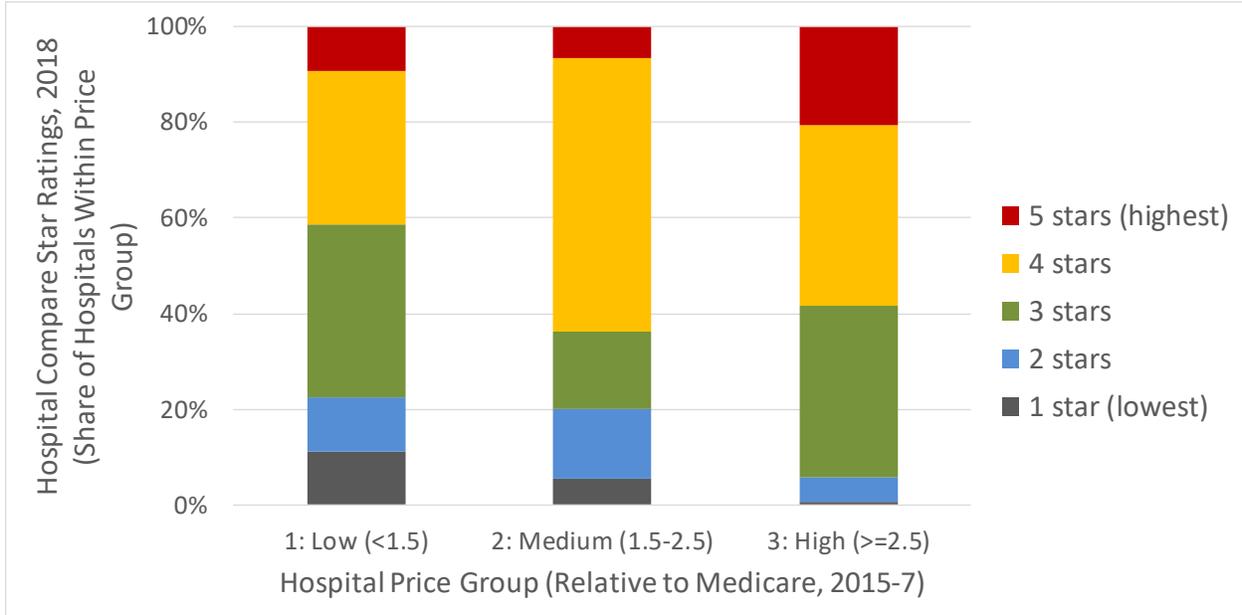
## Relative Prices by Type of Service

Tables 4 and 5 in the spreadsheet of detailed data available at [www.rand.org/t/RR3033](http://www.rand.org/t/RR3033) provide detailed data on relative prices for selected types of services, overall (including all hospitals) and hospital by hospital. Relative prices for outpatient services tend to be higher for emergency department services and imaging (see Table 4 of the spreadsheet). For inpatient services, overall relative prices tend to be higher for orthopedics and circulatory conditions and lower for childbirth and substance abuse and mental health conditions (see Table 5 of the spreadsheet).

## Prices and Quality

To examine the association between hospital prices and quality, we assigned each hospital to one of three groups based on their 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). Within each of those three groups of hospitals, we measured the share of hospitals receiving each of the five-star ratings (one through five). To account for differences in hospital size, these hospital shares within each price group were weighted by each hospital’s simulated Medicare payments, which reflect the quantity and intensity of services.

**Figure 4.7. Share of Hospitals Receiving One Through Five Stars from CMS, by Price Group**



The relationship between star ratings and prices, as shown in Figure 4.7, can be viewed from at least two different perspectives. One perspective is that high-priced hospitals, at least based on this particular measure of quality, tend to have better quality than low-priced hospitals—among high-priced hospitals, 21 percent received five stars and only 1 percent received one star, whereas among low-priced hospitals, only 9 percent received five stars, while 11 percent received one star. At the same time, high-value hospitals—meaning those offering low prices and high quality, at least based on this particular measure of quality—do appear to exist. More than 40 percent of lower-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.

## 5. Discussion

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This study compares the differences in prices between private health plans and Medicare for 1,598 U.S. hospitals. We find that, in general, prices paid by private health plans are much higher than Medicare, and there is wide variation. When analysts discuss the large gaps between private prices and Medicare prices, two starkly divergent interpretations emerge:

- One interpretation (the *cost shifting* story) is that Medicare severely underpays hospitals. Because of those underpayments, hospitals are compelled to charge high prices to their privately insured patients merely to stay afloat (Dobson, DaVanzo, and Sen, 2006).
- The other interpretation (the *leverage* story) is that hospitals, especially “must-have” hospitals, have used their negotiating leverage to extract unreasonable price concessions from health plans. Those increasing prices, in turn, allow hospitals’ costs to increase, which makes Medicare prices look woefully inadequate by comparison (Stensland, Gaumer, and Miller, 2010). Supporting this view, recent evidence suggests that Medicare price cuts do not lead to higher private prices but instead appear to actually lower private prices (White, 2013).

From a self-insured employer’s perspective, the competing cost-shifting and leverage stories are abstract. The more concrete question is whether it is reasonable and necessary for some employers to be paying prices three times as high as Medicare, especially when apparently similar hospitals may have prices that are closer to Medicare’s reimbursement rates. In the case of specific high-priced hospitals, there may be justifications for the unusually high prices, such as offering specialized services or a well-deserved reputation for higher-quality care. But if two hospitals have similar quality, then spending at the higher-priced hospital represents money that could be used for other types of employee benefits, such as wages, retirement plans, or educational benefits. From the provider’s perspective, high prices paid by private health plans allow a facility to achieve healthy operating margins and cash flow, while adding clinical staff and administrative personnel. Robust revenues from private health plans can also help underwrite upgrades to existing facilities and service lines, entry into new service lines and geographic markets, and vertical integration with physician organizations and other provider types. Lower private prices would require hospital managers to find ways to increase revenues or reduce costs to maintain current margins.

### Strategies That Employers Can Use to Address High Hospital Prices

The prices that employers in this study are paying for hospital care are highly variable across states, hospitals, and hospital systems, and on average, these prices are high and rising over time relative to Medicare prices. Together, these findings suggest that employers have opportunities to

redesign their health plans to bring hospital prices into better alignment with prices with the quality and value of the care provided.

The low levels and downward trends in relative prices in Michigan indicate that employers and health plans can, under the right conditions, maintain moderate hospital prices. The Blue Cross Blue Shield plan of Michigan (BCBS MI) dominates the private health plan market in that state, due at least in part to “strong historical support from the UAW [United Automobile Workers] and . . . large discounts” (Christianson et al., 2010, p. 7). As a result, “providers have no choice but to be part of BCBS MI’s plan networks if they want paying patients” (Corlette, Hoadley, and Hoppe, 2018, p. 4). Despite BCBS MI’s dominance and discounts, General Motors (GM) has not been content to delegate contract negotiations and has signed a direct contract with the Henry Ford Health System (Butcher, 2019). GM’s direct contracting was described by one hospital executive as “a development that ‘shook the Blues to the core’” (Corlette, Hoadley, and Hoppe, 2018, p. 5), adding further downward pressure on negotiated hospital prices in that state.

The wide variation in hospital prices represents an important opportunity for employers to save money. To illustrate the magnitude of price variation, we calculated relative prices at the 25th and 75th percentiles in each state. For employers included in this study, the difference between paying prices at the 75th percentile hospital versus the 25th percentile hospital represents \$1.4 billion in allowed amounts in 2017, or 40 percent of what they and their employees spent on hospital care in that year.

If employers are just beginning to analyze and address hospital pricing, they have few, if any, options over the very near term to reduce the high hospital prices that have been negotiated on their behalf. Employers’ contracts with health plans have been set in place, and those health plans have entered into multiyear contracts with their in-network hospitals. Further, other studies have identified that provider consolidation is a key cause of high provider prices (Scheffler, Arnold, and Whaley, 2018). Employers have little ability to influence regulatory oversight of provider consolidation. Instead, employers can use several strategies to attempt to reduce high hospital prices and to move their employees and dependents from high-priced to lower-priced hospitals that provide equal or better value.

Over the medium term—two to five years—self-insured employers can use price data to gradually rein in high-priced hospitals. The results in this report show that hospital outpatient services account for a slight majority of plan spending on hospital care, and the prices for outpatient services are high relative to Medicare and highly variable. Therefore, hospital outpatient services deserve special attention in any efforts over the medium term to rein in prices.

There are two general approaches that employers can take over the medium term to seek lower prices:

1. *Change the terms of the contracts* between the health plan and hospitals. Self-insured employers can demand that their current TPA amend and update their provider contracts (Hooper, Lundy, and Bookman, 2018), they can put their TPA contract out to bid with a

requirement that bidders' provider contracts meet certain criteria (Appleby, 2018), or they can directly contract with a hospital or health system (Butcher, 2019).

- One common way to contract with hospitals is to use *discounted charges*, in which allowed amounts are set as a percentage of billed charges. Discounted-charge contracts are relatively simple and have historically been common in the hospital industry (Weber et al., 2018; Cooper et al., 2019b), especially for outpatient services (Small, 2002). But discounted-charge contracts have severe downsides—they leave employers and their plans vulnerable to aggressive inflation of charges by some hospitals (Bai and Anderson, 2015), lack any mechanism for measuring the quantities and intensity of services provided, make it difficult for health plans and employers to track price increases over time and compare prices across hospitals, and incentivize “runaway list-price inflation” to the detriment of the most vulnerable patients (Tompkins, Altman, and Eilat, 2006).
- From an employer’s perspective, one way to contract with hospitals could be to specify allowed amounts based on a case-mix-adjustment system with a hospital-specific negotiated base rate. Specifying contracts as a multiple of Medicare would be a straightforward and transparent way to achieve this type of price setting and would surmount the problems with discounted-charge contracts without requiring any proprietary case-mix adjusters. Other case-mix adjusters are also available, such as 3M’s APR-DRGs for inpatient services and Enhanced Ambulatory Patient Grouping for outpatient services, but those adjusters are proprietary and would require licensing fees.

“Multiple-of-Medicare” or “Medicare-plus” contracting relies on the ability of Medicare to set relative prices between procedures. Compared with other benefit design changes, it is easy to implement because the employer has to designate only the percentage of Medicare payments that it will accept. The contract with the hospital does not have to specify prices for each service, rather the percentage of Medicare that will be applied to all services. In both Montana and Oregon, the health plan for state employees transitioned to a multiple-of-Medicare contracting arrangement (Appleby, 2018, 2019; Bartlett, 2018; OregonLaws.org, 2017), which has been referred to as “Reference-Based Contracting—Medicare (RBC-M).” The North Carolina state employee plan is considering a similar move (Mathews, 2018), although that proposal has encountered stiff resistance in the state legislature (Livingston, 2019).

The challenge with RBC-M is getting hospitals to agree to these terms. As this study highlights, many current hospitals receive prices that are many multiples of Medicare prices. Many hospitals may not agree to a Medicare-plus contract that is not within the current multiples of Medicare prices and may instead elect to be out of network.

2. *Move patient volume* away from high-priced, low-value hospitals and hospital systems. The results in this report can help identify those high-priced hospitals and systems and set the stage for employers to steer their enrollees toward lower-priced providers. Providing employees with usable price transparency information is one way of encouraging the use of lower-priced providers. However, previous research suggests that price information

alone is not sufficient to reduce the use of high-priced providers (Whaley et al., 2014; Desai et al., 2017; Whaley, Brown, and Robinson, 2019).

To effectively increase the use of lower-priced providers, employers need to change the underlying incentives for their employees and dependents. The most common benefit design change, high-deductible plans, has not been effective in encouraging patients to price shop (Sood et al., 2013; Sinaiko, Mehrotra, and Sood, 2016; Brot-Goldberg et al., 2017).

However, more-targeted benefit designs have been successful in moving patient volume. Steerage can be accomplished through the relatively blunt approach of offering employees a new choice of a narrow network at a lower premium contribution or by applying differential cost sharing based on hospital tiers (Ginsburg and Pawlson, 2014; Gruber and McKnight, 2016). One form of differential cost sharing is reference pricing, in which patients who receive services from high-priced hospitals may be liable for allowed amounts above a preestablished limit (Robinson, Brown, and Whaley, 2017). Employers and plans can also use a credible threat to move patient volume to support renegotiations of contract terms. Some evidence indicates that providers do lower prices in response to these benefit design innovations (Robinson and Brown, 2013; Whaley and Brown, 2018).

One way that self-insured employers can both improve contracting and steer patient volume is through direct contracting with a hospital or health system, such as GM's arrangement with the Henry Ford Health System. While many hospitals may not agree to move to a "Medicare-plus" contract that is not close to the currently observed multiples of Medicare prices, some hospitals may agree to contracts with lower multiples of Medicare prices in exchange for steerage and the potential for higher patient volume from an employer. This type of direct contracting is most relevant for self-insured employers with geographic concentrations of enrollees.

These medium-term approaches rely on employers and health plans having some degree of negotiating leverage with hospitals. This leverage may be lacking in negotiations with geographically dominant "must-have" systems. In addition, using leverage can come at a cost. Employees may chafe at restrictions on their preferred providers or hospitals, and directors of human resources are typically reluctant to disrupt their employees' relationships with their health care providers. These restrictions may be inappropriate or impossible for patients needing emergency care or highly specialized services, such as organ transplantation or burn intensive-care units. Appropriately designed steering models should actively engage patients and provide exemption policies. Employers can increase employees' acceptance of steering strategies by communicating clearly both the rationale and the mechanism, as well as reinforcing the fact that savings on health benefits can benefit workers by leading to higher wages (Lechner, Gourevitch, and Ginsburg, 2013). Nonetheless, flexing negotiating leverage requires that self-insured employers engage with the trade-off between wide access to providers and lower prices.

Over the longer term, employers can develop and support state and federal policy interventions that would change the balance of negotiating leverage in their favor without necessarily restricting networks. Employers can support efforts to promote competition in health care markets by opposing consolidation among existing providers and promoting entry of new, lower-priced providers. Another state or federal policy intervention would be to establish limits on total payments for out-of-network care (Murray, 2013). These limits restrict how much providers can be reimbursed for care that is received outside the health plan’s network, and such limits can, if designed appropriately, reduce in-network negotiated rates (Duffy et al., 2019). If there are no out-of-network limits, or if plans are required to pay full billed charges for out-of-network care, then some providers may elect to go entirely out of network rather than face reductions in negotiated rates for remaining in network. For such limits to be effective, they should apply to total payments, including from the plan and the patient. If providers can “balance bill” and charge patients for any amounts not paid for by the employer or health plan, the effect can be to inadvertently strengthen hospitals’ negotiating leverage and drive up prices. Total payments for out-of-network care are limited in private Medicare Advantage plans, and those limits have been shown to subtly, but dramatically, reshape negotiations between plans and hospitals and drive down negotiated prices (Berenson et al., 2015; Trish et al., 2017).

Another longer-term approach is to advocate the creation and maintenance of state-based APCDs. Some states, such as Massachusetts and New Hampshire, have established APCDs that can be used to generate price reports. These reports include large volumes of private claims rather than just a subset of claims from engaged employers. By itself, increased price transparency will not bring down prices, but it can enable employers and other purchasers to change their health benefit designs in a way that reduces costs (Tu and Gourevitch, 2014). Compulsory state-based APCDs have encountered opposition from health plans and providers, and the U.S. Supreme Court’s 2016 decision in the *Gobeille v. Liberty Mutual Insurance Company* case undermines states’ abilities to compel self-insured plans to provide claims data. Self-insured employers can support APCDs by requiring that their TPAs submit their claims data.

The excise tax on high-cost employer-sponsored health coverage (the “Cadillac tax”) is deeply unpopular with employers, who generally view it as adding insult to the injury of high benefit costs. But the Cadillac tax offers an opportunity for employers to demand price concessions from providers in their health plans and to convey to employees the urgent necessity to reduce health benefit costs. The Cadillac tax, as currently formulated in federal law, sets an effective ceiling on the cost of employer health benefits, and employers could legitimately demand that their provider contracts be renegotiated to remain under that ceiling. The Cadillac tax could also be reformulated by Congress so that, instead of being triggered by benefit costs per enrollee, it could be triggered based on prices paid to providers. For example, the Cadillac tax could apply to any portion of claims paid at prices exceeding 300 percent of Medicare—that type of limit would avoid unduly disadvantaging older and sicker workforces and would set an

effective ceiling on the negotiated prices that employers and health plans could accept. The Cadillac tax was initially scheduled to go into effect in 2018, but its implementation has been delayed to 2022. Further delaying the Cadillac tax by just one year would cost the federal government about \$14 billion (Joint Committee on Taxation, 2018). Rather than simply pushing for costly delays, employers could propose that the tax be retargeted and repurposed to increase their plans' leverage in price negotiations with providers.

Employers may also consider supporting proposals for a Medicare buy-in that would allow them to buy coverage for their employees that pays providers at Medicare prices. Senators Michael Bennet and Tim Kaine in 2017 released a federal Medicare buy-in proposal, "Medicare X" (Kliff, 2017), which the American Hospital Association (AHA) has estimated would reduce payments to hospitals by \$800 billion over a ten-year period (Koenig et al., 2019). Although the AHA focuses on the negative financial effects of Medicare X on hospitals, savings of that magnitude would noticeably reduce premiums and out-of-pocket payments by patients. Legislators in Colorado have introduced legislation that would establish a state-based public option that would also pay providers Medicare prices (Staver, 2019).

This report attempts to provide employers with some degree of transparency in the prices they are paying for hospital care. The results reveal wide variation in prices—from state to state, across inpatient and outpatient service lines, from hospital system to system, and from hospital to hospital. Employers may choose to use these results to hold health plans and hospital leaders accountable for the prices they have agreed to and to explain seemingly wide and unwarranted variation. Employers have options for reining in high hospital prices, although they take time and some involve unpleasantness and disruption for employees. Getting at the deeper forces driving hospital prices—the "veil of secrecy," provider consolidation, uncapped liabilities for out-of-network care, and federal tax policy that undermines cost controls—may require that employers engage with state and federal policymakers. This report cannot by itself bring down hospital prices, but it can foster a more open process that focuses on fairness, sustainability, and collaboration.

# Appendix

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## Detailed Methodology

### *Obtaining and Preprocessing the Claims Data*

RAND first entered into a memorandum of understanding with the EFI that described the goals of the project and the roles played by each organization. RAND then entered into data use agreements (DUAs) with TPAs, the organizations that maintain New Hampshire's and Colorado's APCDs, and health plans. The DUAs describe the data-security protocols and restrict the data to be used only for this project. The data-security protocols and analytic plan were approved by RAND's Human Subjects Protection Committee.

Each participating employer instructed its health plan administrator to transmit paid claims data to RAND, based on these criteria:

1. only enrollees in a plan sponsored by one of the participating employers
2. facility claims only (no claims for professional services and no pharmacy claims)
3. services provided from 2015 through 2017 (and, in some cases, a longer period)
4. only claims from private health plans (this excludes enrollees in Medicare Advantage plans and Medicaid managed-care organizations)
5. the employer-sponsored plan includes medical coverage (this excludes enrollees in dental-only plans or vision-only plans)
6. the employer-sponsored plan is the enrollee's 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 indirectly to 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.

## *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 subsetting 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 hospitals or CAHs and subunits within community hospitals. 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 2017 Medicare Provider of Services (POS) file, which includes MPNs and information about provider name, location, and type (CMS, 2017). We selected all providers in the POS that were hospitals (provider category code equals 01), that were located in one of the states represented by our data contributors, and that were either an IPPS hospital (provider category subtype code equals 01) or a CAH (provider category subtype code equals 11).

The private claims data do not include MPNs, so we assigned them. (MPNs, which are also known as CMS Certification Numbers, differ from National Provider Identifiers. MPNs are six-character alphanumeric codes that uniquely identify each facility, and that are incorporated throughout Medicare's payment algorithms and claims data processing.) Using all hospital inpatient and outpatient claims, we created a frequency table containing every combination of provider name, city and street address, tax identification number, and place of service (i.e., the middle two digits of the type-of-bill code). We then sorted our frequency table by provider name and sorted our list of community hospitals from the Medicare POS by name. Then, we manually assigned MPNs based on clear matches on 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.

### Simulating Medicare Payment Amounts for Inpatient Services

The private claims data were 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 in batch mode (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 (v30.0 for discharges from October 2012 through September 2013, v31.0 for discharges from October 2013 through September 2014, and so on). The grouper software is compatible with both International Classification of Diseases (ICD)-9 and ICD-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 a 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 Medicare Prescription Drug, Improvement, and Modernization Act (MMA) of 2003
- 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 (2019). Private discharges were estimated as total discharges minus the sum of Medicare discharges and Medicaid/Children's Health Insurance Program discharges. Conceptually, the correction factor follows the spirit of the Medicare price benchmark (i.e., what private plans would pay if they followed Medicare's price setting) and Medicare's uncompensated care adjustment (the amount that the price for each inpatient stay would 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, and so the per-discharge adjustment would be correspondingly smaller.

The Medicare payment amounts *did not* include adjustments for new technology add-ons, short-stay “inlier” adjustments for transfers, or the low-volume adjustment.

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 adding 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, Medicare Learning Network, 2017). 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 (2019), 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 the Integrated Outpatient Code Editor (IOCE) software in batch mode (3M Health Information Systems, 2017). The IOCE determines, for each line item, whether the service is eligible for payment under the Medicare OPSS and, if so, the appropriate APC. Under Medicare’s OPSS, line items may fall into one of three 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, Medicare Learning Network, 2019)
- ineligible for payment under the Medicare OPSS.

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 OPSS (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 sole community hospitals (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—that 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.

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