Lower Hospital Prices Linked to Higher Private Health Care Spending

The Impact of American Healthcare Market Dynamics on Hospital Pricing and Employer-Sponsored Plans

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Abstract

Healthcare prices in the United States continue to rise despite the continuous warnings from employers that the current pricing structures have stunted business growth and depressed wage increases. To put this into perspective, in 2000 healthcare accounted for 13.4 percent ($10,252.3 billion) of the United States' Gross Domestic Product (GDP) and has rapidly grown to 17.9 percent ($19,485.4 billion) share of the GDP in 2017. Hospital care accounts for the largest amount of dollars spent. With 56.0 percent of the population covered by employer-sponsor health care plans, the continuing rise of healthcare costs has the potential to create intense economic hardship. In May 2019, the RAND Corporation released a hospital price transparency study, shedding light on the wide variance of hospital prices between states. By adding price-influencing factors with the RAND study, the results demonstrate a relationship between lower hospital prices and higher percentage of Medicaid population, higher private health care spending and the presence of Certificate of Need (CON) programs.

Introduction

The process of price contracting by hospitals in the United States has been described as "chaos behind a veil of secrecy."[1] As healthcare costs continue to rise, employers and the employees covered under their employer's self-funded insurance plans are the victims of this veil. Between 2000 and 2017, healthcare spending in the United States has increased 4.5 percent ($9,233.1 billion) of the country's GDP with hospital costs accounting for the largest share at 33.0 percent (2017).[2] Employer-based insurance plans cover 56.0 percent of the country's population, yet employers are ill-equipped to understand and negotiate the prices that third-party administrators (TPAs) and insurance providers often negotiate on their behalf.[3] Employers need access to transparency tools and information that leads to a stronger negotiation process and produces contracts with higher value for the employer.

In May 2019, the RAND Corporation released a study that expanded upon a 2017 study regarding hospital prices, which compared relative prices paid by private health plans within hospitals and hospital systems benchmarked to Medicare.[4] According to the RAND Corporation, relative prices is "meaning the ratio of the actual private allowed amount divided by the Medicare allowed amount for the same services provided by the same hospital."[5] The study analyzed healthcare claims from more than four million covered lives throughout twenty-five states. It concluded that private insurance paid 241.0 percent of what Medicare (relative price) paid on average, with a wide variation in prices among states.[6] Results of the study assessed the effect of several metrics on relative price to determine the critical factors in hospital price dynamics across the country. This analysis builds upon the RAND study and

investigates how insurance industry trends, legislative policies and hospital market competition contributes to the immense pricing variation between states.

Data and Methods

DATA

The data reported in this study were grouped into ten points of analysis against which relative price was compared. These ten points of analysis were separated into three main categories: insurance and coverage costs, Certificate of Need (CON) coverage, and market saturation.

Insurance and coverage cost data were collected from the American Medical Association (AMA) and Kaiser Family Foundation (KFF). The AMA provided information on market share percentages of the first and second largest insurers for a given state as well as insurance market saturation through the use of a Herfindahl-Hirschman Index (HHI).[7] KFF data from 2017 were utilized for several data points in this category: single and family premium means; percentage of a state's population covered by Medicare, Medicaid, and employer insurance; and per enrollee Medicare spending and total private health insurance spending.[8, 9, 10, 11,12] It is important to note that the majority of KFF's health coverage data were based on the Census Bureau's American Community Survey (ACS). The ACS uses a 1.0 percent sample of the US population, which allows for state estimates and longitudinal analyses.

Certificate of Need coverage data was collected from the American Health Planning Association's "Certificate of Need Matrix of Service Coverage" and the National Conference of State Legislatures' "Certificate of Need State Laws Map."[13, 14] Out of the CON measures, we examined whether a CON program was in place among the states examined by the RAND study, and if so, whether a particular state also covered hospitals, and if that state enacted Medicaid expansion.

To calculate market competition between hospitals and hospital systems, data were collected from all hospitals listed in the American Hospital Directory (AHD), except for rehabilitation facilities and government and military installations (e.g. VA hospitals). The AHD is a private company that mostly utilizes Centers for Medicaid and Medicare Services (CMS) data to compile an inventory of American hospital profiles.[15] The AHD was selected among other sources due to its use of CMS data and the detail of its hospital profiles.

For the purposes of this study, a hospital system was defined as a group of hospitals with two or more facilities that were not in the same location. The calculation of the HHI was used in conjunction with patient day share metrics. Patient day share percentages were utilized instead of market share percentages since market share data amongst independent hospitals and hospital systems were not widely available and patient share data presented an accurate portrait of hospital utilization.

ANALYTICAL APPROACHES

Once data were collected, correlation matrices, chi-squared tests, and regression testing were performed to determine statistical significance, strength of significance, and association between the average relative prices and presented variables. Correlation coefficients were visualized prior to regression testing to investigate potential relationships. As most of the analytical variables were

considered parametric and continuous in nature, regression analysis was used with relative prices as the dependent variable. Regression tests were arranged between average relative price, inpatient average relative price, and outpatient average relative price against the other independent variables. Results of these tests were placed arranged in three columns by type of relative price.

Linear regression tests were not used in association with CON coverage data. As data in this category were categorical variables, chi-squared tests were completed to establish associations between states' relative prices and CON coverage status. To arrange price into categorical data, covered services denoted by these sources were divided in two; states were labeled as "high" or "low" based upon the average price benchmarks of the average (240.0 percent), inpatient (204.0 percent), and outpatient relative prices (290.0 percent) and were further divided into "yes" or "no" categories by the services they covered.

LIMITATIONS

The study had several limitations. First and foremost, were the limitations of the RAND study. The RAND study analyzed more than four million claims across the 25 examined states. The study noted its "limited population" that mostly consisted of employers and health plan enrollees who chose to participate in the study and claims submitted by APCDs. Among these claims, the RAND Corporation observed that the study consistently lacked flags for in-network against out-of-network providers.[16] Finally, while the use of relative weights against Medicare was effective, Medicare's case-mix adjustment weights sourced themselves from Medicare beneficiaries' relative costs. These relative weights were not entirely appropriate for all enrollees in these employer-sponsored plans.

With this primary limitation in place, one state was categorized as an extreme outlier. The state of Vermont was removed from the analysis due to results from the HHI versus relative price regression test. Vermont had a patient day share HHI of 5509.3. The next lowest HHI was Louisiana with 2489.8, almost half of Vermont. By removing this outlier in regression testing, the study was able to establish a clearer relationship between population bases. It was further noted that states with either smaller area size or population density tended to have highly monopolistic marketplaces, while states with higher population density tended to have more competitive environments.

In addition to these specific metrics, there were limitations of data sources. The variation in data formats and sources made it difficult to accurately test our variables. While linear regression testing was the most accurate statistical analysis available, some of the assumptions of regression testing were ignored to fully test all variables.

Finally, healthcare is a complex marketplace made up of many interdependent variables and conditions. Policymakers should be aware that there are no single or simple levers that will lead to lower prices in a marketplace.

Results

VARIETIES OF INSURANCE COVERAGE

The average relative hospital prices across a sample population of 25 states have significant relationships with eight of the study's independent variables. The percent of a state's population covered by Medicare did not have a statistically relationship with relative prices ($R^2 = 0.0018$, p = 0.839), but the percent of a state's population covered by Medicaid did have a both a statistically significant and negative linear relationship with average relative price (exhibit 1).
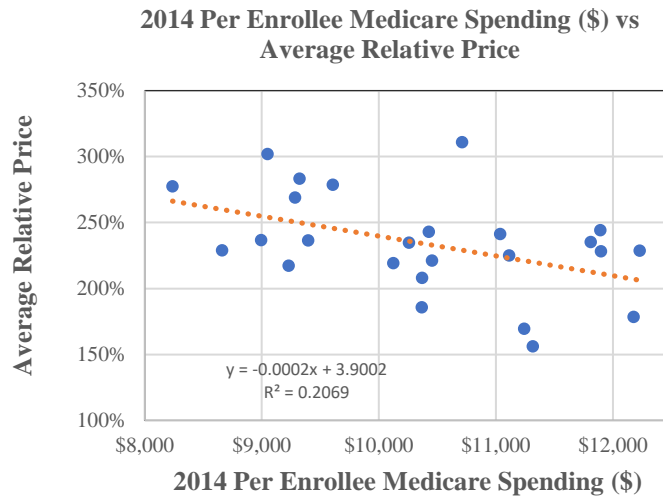
EXHIBIT 1

Medicaid Insured % vs Average Relative Price

$$y = -3.0751x + 2.9707$$
$$R^2 = 0.1637$$
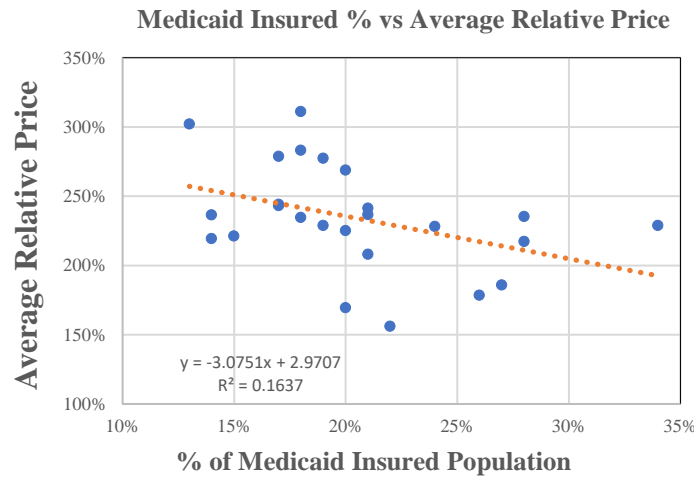
Source: Authors' analysis of data from the 2017 RAND Study, along with CMS data regarding percentage of Medicaid insured population provided by the Kaiser Family Foundation based on U.S. Census Bureau data from 2017 ($R^2 = 0.1637$ p = 0.045).

When examining private health insurance, there were several variables that did not share a statistically significant relationship with average relative price. There was no statistically significant relationship between the market share of the largest insurer and average relative price ($R^2 = 0.0078$, p = 0.675). This relationship also had no statistical significance when the largest insurer's market share was combined with the second largest insurer ($R^2 = 0.00081$, p = 0.89). There was no statistically significant relationship between single ($R^2 = 0.00025$, p = 0.94) and family ($R^2 = 0.00028$, p = 0.94) premiums versus average relative price.

The two variables in the examination of insurance coverage that proved to be statistically significant were the amount spent per Medicare enrollee and the total amount spent on private health insurance in a state. The relationship between per enrollee Medicare spending in a state and average relative price was statistically significant and had a negative linear relationship (exhibit 2). In addition, the relationship between average relative price and the total amount spent on private health insurance in a state was also found to be a significant negative linear relationship (exhibit 3).

EXHIBIT 2

2014 Per Enrollee Medicare Spending ($) vs Average Relative Price

Source: Authors' analysis of data from the 2017 RAND Study, along with 2014 Medicare spending from CMS provided by Kaiser Family Foundation (R2 = 0.21, p = 0.02).

EXHIBIT 3

2014 Total Private Health Insurance Spending ($) vs Inpatient Average Relative Price
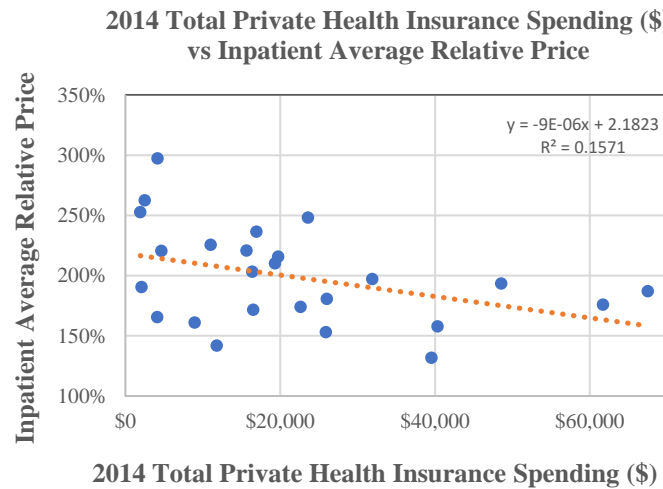
Source: Authors' analysis of data from the 2017 RAND Study, along with 2014 total private health insurance spending from Kaiser Family Foundation (R2 = 0.21, p = 0.02).

CERTIFICATE OF NEED COVERAGE

In the CON coverage category, the presence of CON programs had an association with average relative price (exhibit 4).

EXHIBIT 4

Chi-squared test result between presence of CON regulation of hospitals (y/n) and average relative price (high/low). The association between presence of CON program and relative price was significant (p = 0.04).

Category	# of States WITH CON	# of States WITHOUT CON
Higher Relative Price (*above 240%*)	3	6
Lower Relative Price (*below 240%*)	12	4

Source: American Health Planning Association (AHPA) and National Conference of State Legislators (NCSL)

Chi-squared tests also revealed associations between lower inpatient average relative prices and presence of CON hospital coverage (p = 0.02). There were also associations between lower outpatient relative price and presence of CON program (p = 0.032).

MARKET COMPETITION

In the initial evaluation, HHI did not have a significant relationship with average relative price. However, after removing Vermont as an outlier, the relationship between average relative price and HHI was a significant positive linear relationship (R^2=0.29, p=0.06). This finding was also confirmed in the positive linear relationship between inpatient average price and HHI (p=0.001).

These findings were also affirmed by an examination of the largest hospitals and hospital systems in the sample population. When the largest hospital or hospital system in a state had its patient days divided by the total number shared in that state, the relationship between patient day ownership percentage and inpatient average relative price was a significant positive linear relationship (R^2 = 0.195, p = 0.027).

Discussion

The data analysis produced a series of interesting results. First, hospital pricing appears to have a weak relationship to the need of hospitals to cost-shift to private payers. Hospital prices did tend to be higher in states with a higher percentage of uninsured. However, Medicare enrollment in a state did not impact private insurance reimbursement and Medicaid enrollment had an inverse relationship to price. If a state had a lower percentage of its population using Medicaid, then the average relative price tends to be higher. Conversely, state policies allowing more people to be covered by the Medicaid system tend to have a lower relative price.

Second, hospital market share plays a key role in pricing. As HHI increases, or as the hospital market grows more monopolistic, average relative price increases. If a state's largest hospital system owns a higher percentage of patient days, then the average inpatient relative price tends to be higher as well, suggesting that hospitals, not insurance carriers, may have a greater influence on determining pricing and be the key to contract negotiations with employers.

Third, regulation of hospital capacity had a relationship to lower hospital prices. States with CON hospital policies in place tend to have lower average relative pricing. Of the 15 states with CON hospital

policies from the RAND study, 12 are in the lower half of the average relative price. The authors attribute the lower prices to a lower per-unit cost as the patient population is spread amongst fewer facilities.

Lastly, total healthcare spending was higher in states with lower prices. The data showed a statistically significant relationship in which states that had lower hospital prices also had higher total healthcare spending. With hospital spending representing 33 percent of the total healthcare spend, lower hospital prices should have an impact on total spending, but this is not the case and the authors assume utilization practices played a key role.[17] The inverse relationship between prices and spending was consistent in both Medicare spending and private insurance spending, suggesting the utilization issue is not payer specific. Further investigation on utilization and total spending must be done to validate this assumption. The data analysis also looked at the relationship between hospital pricing and private insurance premiums and found no relationship between those variables.

The continual increase of hospital mergers across the country strengthens a health system's market share, creating higher hospital prices and leading to increased costs for employers and patients. States with less Medicare spending may also face higher relative prices. From the findings, it is probable to propose that states with higher relative pricing need to implement stronger Medicaid programs and policies, such as CON, to lower healthcare costs. To maximize efforts in subduing rising pricing trends, state officials and hospital systems need to work with healthcare purchasers to discover solutions that benefit private healthcare plans so businesses and the economy can grow and remain strong.

Acknowledgements

Notes

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