Health Care Affordability Lab at Yale

Review of Expert and Academic Literature Assessing Hospital Responses to Price Changes

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This memo summarizes the most rigorous research to date on hospital price regulation. We define "hospital price regulation" to mean policies through which states or the federal government set, cap, benchmark, or limit the growth of the prices hospitals are paid by commercial insurers or state employee health plans.[1] We first review recent state efforts, such as Rhode Island's cap on hospital price growth in its fully insured commercial market and Oregon's cap on what its state employee health plan pays hospitals, set as a percentage of Medicare fee-for-service payment rates. Because the research on state efforts to regulate hospital prices is nascent, we also draw on a larger body of research on how hospitals respond when Medicare changes its fee-for-service payment rates to hospitals.

Executive Summary

Hospitals and insurers negotiate the prices paid for care delivered to commercially insured patients. Those prices have grown faster than prices in almost any other sector of the economy since 2000. Evidence shows that growth in hospital prices is raising health spending on the privately insured and, in turn, increasing insurance premiums (Brot et al., forthcoming). In response, twelve states have taken a greater role in overseeing—and in some cases determining—the prices hospitals are paid by commercial insurers or their state employee health plans.

States' approaches to price regulation are split across one important line: whether they cover the broader commercial market or only apply to state employee health plans. Five states regulate

[1] We do not cover global budgets (which regulate a hospital's total revenue rather than its prices), public option plans, Medicare Advantage or Medicaid managed care capitation, demand-side reference pricing, or spending growth benchmarks.

hospital prices in the broader commercial market (Delaware, Indiana, Maryland, Rhode Island, and Vermont).[2] Seven states have chosen to regulate only what their state employee health plans pay hospitals (Montana, New Mexico, Oklahoma, Oregon, South Carolina, Washington, and West Virginia).

The strongest evidence on the effect of price regulation across the broader commercial market comes from Rhode Island, whose insurance commissioner limits how fast hospital prices in fully insured commercial plans can grow—currently to the core Consumer Price Index plus one percentage point. From 2012 to 2022, this price growth cap lowered Rhode Island's hospital prices by an average of 9.1% relative to comparison states. After the cap took effect in 2010, fully insured premiums averaged 6.5% ($449 per member per year) lower relative to comparison states. Hospitals absorbed part of the lost revenue by cutting non-physician staffing per bed by 14.9%, including registered nurse staffing by 13.4%. Because the Employee Retirement Income Security Act of 1974 bars states from regulating self-insured employer plans, the cap applies only to fully insured plans, and premium savings appeared only in that market.

Oregon, which only regulates its state employee health plan, caps payments to hospitals at 200% of Medicare fee-for-service payment rates for in-network care. The plan enrollees, which include both public employees and educators, constitute 15% of the state's commercially insured population. Over the cap's first two years, outpatient hospital prices for enrollees fell 25.4%, and the cap saved the plan $107.5 million (4% of total plan spending), with no measurable decline in hospital finances, staffing, or patient experience.

Changes in Medicare's fee-for-service payment rates also provide a window into how hospitals might respond to price regulation. Unlike the commercial market, traditional fee-for-service Medicare pays hospitals a fixed amount for each admission or service through the Inpatient and Outpatient Prospective Payment Systems. As the largest payer that sets its hospital payment rates, Medicare offers the deepest evidence on how hospitals respond when those rates change. When Medicare payment rates rise, hospitals increase the number of patients they treat. When payment rates fall, hospitals absorb most of the loss by cutting their own operating costs, chiefly by reducing staffing, rather than charging private insurers more. For certain conditions, there is suggestive evidence that quality fell at the hospitals with the largest Medicare payment cuts.

[2] Rhode Island and Delaware regulate their fully insured plans. Maryland and Indiana regulate hospitals directly: Maryland sets the rates every payer pays, and Indiana caps large nonprofit systems' average prices. Vermont's Green Mountain Care Board will set the maximum amounts hospitals may accept from payers other than Medicare and Medicaid.

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Key Findings

- **Key Finding 1**—The strongest evidence on price regulation that applies across the commercial market comes from Rhode Island. The state's cap on hospital price growth in its fully insured commercial market has been in effect since 2010. The policy has lowered hospital prices by 9.1%, per-enrollee fee-for-service spending by 8.1%, and fully insured premiums by 6.5%, with no observable decline in quality measures through 2016. Hospitals responded to the growth caps primarily by reducing non-physician staffing rather than wages.

- **Key Finding 2**—Oregon's cap on what its state employee health plan pays hospitals has been in effect since 2019. The plan's enrollees constitute 15% of the state's commercially insured population. The cap lowered outpatient hospital prices by 25.4% and plan spending by an estimated 4% with no measurable decline in hospital finances, staffing, service lines, or patient experience. No study has yet measured the policy's effect on clinical quality. The decrease in outpatient prices did induce an increase in outpatient care, which limited the effect of the policy on total spending.

- **Key Finding 3**—When Medicare raises its fee-for-service payment rates, hospitals treat more patients.

- **Key Finding 4**—When Medicare lowers its fee-for-service payment rates, hospitals respond by cutting operating costs, largely by reducing staffing. For certain conditions,

there was suggestive evidence of reductions in clinical quality at hospitals that were exposed to the largest payment cuts.

Key Terms

Charge: the list price for a service set by a hospital, absent any discounts. Hospitals set these amounts themselves and put them on a list commonly known as a "chargemaster." The charges are a starting point for price negotiations.

Price: the negotiated amount that a hospital and insurer agree on through bilateral bargaining. These are often called allowed amounts in claims data.

Price cap: a ceiling on the price a hospital is paid for a service, typically set as a percentage or multiple of the corresponding Medicare fee-for-service payment rate. This approach is sometimes called reference-based pricing. (This is distinct from *demand-side* reference pricing, in which the patient pays the difference between the provider price and the maximum amount an insurer is willing to pay.)

Benchmark: a reference level against which a hospital's prices are measured, commonly a percentage of Medicare or a statewide average price. A benchmark requirement may obligate a hospital system to bring its average prices at or below that level, such as in Indiana.

Price growth cap: a limit on how much the price for a hospital service can grow, typically from year to year. The cap is often tied to an index such as the Consumer Price Index or Medicare's annual payment updates.

Medicare fee-for-service payment rates: the amounts traditional fee-for-service Medicare pays hospitals, set administratively rather than through negotiation. These are fixed, predetermined amounts per inpatient admission (under the Inpatient Prospective Payment System) and per outpatient service (under the Outpatient Prospective Payment System), adjusted for local labor costs and certain hospital characteristics. These rates serve as the benchmark for most state price caps.

Medicare Severity Diagnosis-Related Group (MS-DRG): the classification Medicare uses to set payment for an inpatient stay. Each admission is assigned to a group based on the patient's diagnosis or procedure and severity of illness, and each group carries a set payment amount. Medicare adopted MS-DRGs in 2008, subdividing the earlier DRG categories so that sicker, costlier patients map to higher-paying groups.

Background

Approximately 185 million people receive private health insurance purchased through an employer or via the small group or individual market. In these markets, the prices insurers pay hospitals are set through bilateral negotiations between hospitals and insurers (Nelson et al., 2026; Claxton et al., 2026). For the 34.6 million people in traditional, fee-for-service Medicare, the Centers for Medicare & Medicaid Services (CMS) sets the payment rates for inpatient and outpatient hospital services (CMS, 2026). For the 36.2 million enrolled in Medicare Advantage plans, hospitals and insurers do negotiate prices, but prices are typically close to traditional Medicare's own rates because insurers must pay hospitals the fee-for-service regulated rates if the parties fail to reach an agreement over network participation (CMS, 2026).

Since 2000, hospitals' negotiated prices have risen faster than prices in virtually any other sector of the economy (Health Care Affordability Lab at Yale, 2026). In principle, competition between hospitals should discipline hospitals' prices and incentivize quality. But hospital markets have grown increasingly concentrated since 2000. A growing body of evidence shows that when hospitals merge and hospital markets become more concentrated, hospital prices increase (Brand et al., 2023; Brot et al., forthcoming). Where competition is present, however, higher-priced hospitals tend to deliver higher-quality care (Cooper et al., 2022).

As hospital prices have increased, some states have enacted policies to limit price levels and constrain price growth. Some states have pursued approaches that apply across commercial markets. However, because federal law bars states from regulating self-insured plans, most state approaches only apply to fully insured health plans.

Likewise, because most states self-fund their employee health plans, rising hospital prices directly impact their budgets. As a result, rather than focusing across commercial markets, some states have capped the prices that their employee health plans pay hospitals.

This memo reviews state policies that regulate hospitals' prices and examines the available evidence on how those policies have impacted health spending, hospital behavior, and hospital finances. Because few states have regulated hospitals' prices, the memo also explores the larger body of research examining how hospitals respond to increases and decreases in Medicare's regulated fee-for-service payments to hospitals.

State Policies to Regulate Hospital Prices

Twelve states have introduced policies that regulate hospital prices in their commercial markets or their state employee health plans.[3] In general, these policies either cap hospital prices at a percentage of Medicare fee-for-service payment rates, benchmark prices to a statewide average, or limit the rate hospitals can increase their prices over time. Several of the state policies exempt certain rural, critical access, children's, or safety net hospitals.

Table 1 lists these states, grouped by type and ordered by implementation start date.[4] It includes only policies documented in a state statute, regulation, or agency document. The percentages in the table represent the percentages of Medicare fee-for-service payment rates used to cap hospital prices.

Table 1: States with Hospital Price Regulation Policies

State	Policy
All-Payer Rate Setting	
Maryland	In 1974, Maryland's Health Services Cost Review Commission began setting hospital rates for non-governmental purchasers of care. In 1977, the state secured a federal waiver exempting it from national Medicare and Medicaid payment rules. Since then, all payers (Medicare, Medicaid, and commercial insurers) have paid hospitals the same established rates (HSCRC). In 2014, Maryland introduced an annual global budget that caps each hospital's total revenue. In 2019, that evolved into the Total Cost of Care Model, which keeps the global budget and extends accountability for the total cost of care to non-hospital services (HSCRC). In 2026, Maryland began the AHEAD Model, which runs through 2035 (HSCRC).

[3] Oklahoma and South Carolina set what their state employee health plans pay hospitals, using state fee schedules rather than prices negotiated with each hospital (Georgetown CHIR, 2026; Corlette and Davenport, 2025). Oklahoma's fee schedule is Medicare-based: its plan pays for inpatient stays using Medicare's diagnosis-related groups, with a base rate the state sets and updates each year (Georgetown CHIR, 2026; Oklahoma HealthChoice, 2026). South Carolina's plan pays hospitals according to a schedule of reimbursement rates set by the plan (Georgetown CHIR, 2026; South Carolina PEBA, 2026). Because neither state publishes its payment rates as a percentage of Medicare, we describe them here rather than in Table 1.

[4] We include ten states and exclude Oklahoma and South Carolina, per the previous footnote.

Broad Commercial Price Caps or Price Growth Caps	
Rhode Island	In 2010, Rhode Island's Office of the Health Insurance Commissioner implemented affordability standards for fully insured commercial plans via regulatory authority, including placing limits on hospital price growth. The cap on hospital price growth was originally tied to Medicare's annual payment updates and is now tied to the core Consumer Price Index plus one percentage point. Average price increases above that limit require OHIC review and approval. Insurers and hospitals still negotiate prices (OHIC).
Delaware	Since 2022, Delaware has limited the annual growth in prices for hospital and other non-professional services that insurers may build into rate filings for fully insured plans (SS 1 for SB 120). The price growth limit is the greater of 2% or the core Consumer Price Index plus one percentage point. In 2026, Delaware extended this limit through rate filings made in 2027 (SS 2 for SB 1). The same 2026 law phases in payment caps for fully insured commercial plans and the state employee health plan. The caps begin at 275% of Medicare for outpatient services and 310% for inpatient and emergency department services, beginning in plan year 2029 for the commercial market and plan year 2030 for the state employee health plan. The caps will decrease to 250% of Medicare for all services, reaching commercial plans in 2033 and the state employee health plan in 2034 (SS 2 for SB 1).
Indiana	In 2025, Indiana passed legislation that requires large nonprofit hospital systems (those with at least $2 billion in annual net patient service revenue derived in Indiana) to set their commercial prices at or below statewide average inpatient and outpatient prices by the end of June 2029 (HB 1004). If a system fails to comply, it forfeits its nonprofit tax status for at least a year, until it comes back into compliance. Because Indiana regulates hospital systems' prices rather than insurance plans, its limits are not restricted to fully insured plans. The systems must also offer employers direct contracts with combined inpatient and outpatient facility prices at or below 260% of Medicare (HB 1004).
Vermont	In 2025, Vermont enacted legislation that directs the Green Mountain Care Board (the state's independent regulatory board) to establish reference-

	based pricing caps on hospital services—the maximum amounts hospitals must accept as payment from payers other than Medicare and Medicaid—beginning no later than hospital fiscal year 2027 (Act 68).
Price Caps for State Employee Health Plans	
Montana	Beginning in 2016, Montana's state employee health plan paid hospitals for inpatient and outpatient services at a percentage of Medicare (Schramm and Aters, 2021; Montana Legislative Audit Division, 2018). The plan initially set payments at 220%–225% of Medicare for inpatient services and 230%–250% for outpatient services at acute care hospitals (Schramm and Aters, 2021).[5] In 2023, the plan moved to a new third-party administrator. Its contract required the administrator to target hospital payments of no more than 195%–200% of Medicare in the first year and 180% of Medicare for all hospital and professional claims combined by the third year, with financial penalties for missing the target. With state approval, the administrator may also use alternative payment arrangements with providers to lower payments (State of Montana, 2022).
Oregon	Beginning in 2019, Oregon's state employee health plan has capped hospital payments at 200% of Medicare for in-network services and 185% for out-of-network services (SB 1067).
New Mexico	In 2025, New Mexico passed legislation authorizing its Health Care Authority to set price caps for hospital services covered under its state employee health plan (SB 376). The Health Care Authority capped hospital payments at 200% of Medicare for in-network hospitals and 175% for out-of-network hospitals. The policy applies to hospitals in counties with populations of 125,000 or more (NM Health Care Authority).
Washington	In 2025, Washington enacted legislation that caps hospital payments for its state employee health plan at 200% of Medicare for in-network hospitals and

[5] No academic research has been published assessing the impact of the price regulations in Montana. An independent analysis by the actuarial firm Optumas estimated that the shift to Medicare-based payment rates saved the plan up to $47.8 million from fiscal year 2017 to 2019—about 17% less than the $283 million the plan would otherwise have paid (Schramm and Aters, 2021). The analysis also found no evidence of hospital closures or of hospitals increasing patient volume to offset the lower rates. In the three years following the change, the plan saved $55.06 to $62.20 per employee per month on inpatient care and $29.07 to $41.84 on outpatient care.

	185% for out-of-network hospitals. This policy will go into effect January 2027 (SB 5083).
Price Floor for State Employee Health Plans	
West Virginia	Beginning 2023, West Virginia's state employee health plan has paid hospitals a statutory minimum of 110% of Medicare (SB 268).

The evidence on these state policies is nascent. Most have been enacted too recently to yield evaluations. The following sections review the academic research that assesses hospital price regulation policies in Rhode Island and Oregon.

Capping Annual Growth in Hospital Prices for Fully Insured Plans

Rhode Island

In 2010, Rhode Island's Office of the Health Insurance Commissioner established affordability standards for fully insured commercial plans, using its existing authority to approve those insurers' premium rates. The rules, which govern contracts insurers sign with hospitals and physicians for their fully insured plans, capped how fast hospital prices could grow. The cap was initially tied to Medicare's fee-for-service hospital payment updates plus one percentage point. In 2015, the cap was adjusted and tied to the core Consumer Price Index plus one percentage point rather than Medicare fee-for-service payment updates. Insurers whose hospital contracts include average price increases above the cap must get the commissioner's approval. The standards also included other provisions, like a minimum primary care spending level. The studies we cite evaluate the whole affordability standards package rather than a price cap alone.

Two studies find that Rhode Island's policy lowered enrollee spending, hospital prices, and premiums. After the standards took effect, quarterly fee-for-service spending per commercially insured enrollee fell 8.1% with no decline in quality, compared with similar adults in other states (Baum et al., 2019). The study found that the savings came from lower prices per visit, not less care. Ryan et al. (2025) found that from 2012 to 2022, the affordability standards lowered hospital prices by an average of 9.1% relative to hospital prices in comparison states. After the standards took effect in 2010, fully insured premiums fell by an average of 6.5% ($449 per member per year) relative to comparison states, with the reduction reaching $1,003 by 2022.

Although Rhode Island's standards only applied to fully insured plans, hospital prices also fell for self-insured plans. Even so, the savings mainly showed up in the form of reduced premiums in the fully insured market. Self-insured plan premiums (measured using large employers' premiums)

actually rose 2.7% relative to comparison states, leaving the policy's effect on overall commercial premiums small (Ryan et al., 2025).

The authors offer two explanations for the increase in premiums in the self-insured market. First, the insurers and third-party administrators that run self-insured plans may face too little competition to pass on lower hospital prices to employers, so the administrators keep much of the savings, often as higher fees, rather than passing them on as lower premiums. To address this, the authors suggest that Congress require fee transparency and ban hidden fees among administrators. Second, many of the state's self-insured employers have workers in several states, so their premiums may be set by that larger out-of-state pool.

Rhode Island's affordability standards also reduced hospital staffing. Mehta et al. (2026) found that hospitals lowered their labor costs relative to comparison hospitals by reducing non-physician staffing.[6] From 2006 to 2022, registered nurse staffing per bed fell 13.4%, while registered nurse wages fell by a smaller, statistically insignificant 3.8%. Across all non-physician labor, staffing per bed fell 14.9%. The authors did not measure quality directly, so the clinical effects of these staffing reductions are uncertain.

Finally, Rhode Island's cap applies to hospital prices but not the professional fees that physicians bill separately. Hospitals could, in theory, recover lost revenue by raising those professional fees for their vertically integrated providers. Murray et al. (2026) tested whether there were changes in the vertical integration of physicians using commercial claims data from 2013 to 2019. They compared trends in vertical integration in Rhode Island with other New England states. Hospital ownership of clinician practices and professional fees both grew more slowly in Rhode Island during this period. However, this study only looked at the period after the Rhode Island price growth cap was implemented, so it cannot assess whether the policy causally impacted rates of vertical integration or physician prices.

Capping State Employee Health Plan Payments at a Percentage of Medicare Fee-for-Service Payment Rates

Oregon

In 2017, Oregon enacted a hospital payment cap for its state employee health plan set at 200% of Medicare fee-for-service payment rates for in-network services and 185% for out-of-network services. The cap took effect in 2019 for educators and 2020 for public employees. Previously, the plan had paid 204% of Medicare for inpatient care and 269% for outpatient services (Murray et al., 2024a). Hospitals paid under the cap cannot balance bill patients for amounts above the new cap,

[6] The authors define "non-physician" to mean any hospital worker except physicians, per the categories in the CMS wage survey.

except for cost-sharing amounts authorized by their health plan. Oregon exempted certain hospitals from the policy, including Medicare-designated critical access hospitals and certain sole community hospitals.

Three studies by Murray and colleagues trace the policy's effects on price levels, out-of-pocket costs, and hospital finances. Murray et al. (2024a) found the cap reduced outpatient facility prices for the state employee health plan by 25.4% over the policy's first two years, compared with other commercial patients treated at the same hospitals. Across the full period, inpatient prices did not change significantly (an estimated 3.1% reduction), but they fell significantly in the second year by $2,774.20 per admission (9.6% of the plan's average pre-cap price per admission). Together, these reductions saved the plan an estimated $107.5 million, or 4% of total plan spending (Murray et al., 2024a).

Murray et al. (2024b) found the payment cap was associated with a 9.5% reduction in out-of-pocket spending per procedure for enrollees in higher cost-sharing plans. However, the cap was also associated with a 4.8% increase in outpatient procedures per enrollee per year. The authors tested whether the increase reflected care shifting into these hospitals' outpatient departments—for example, through hospitals acquiring physician practices—but found no significant shift. This suggests lower out-of-pocket prices led patients to use more care, rather than change where their care was delivered. These findings did not vary substantially across shoppable or low-value services.

A companion study found no significant change in Oregon hospitals' finances—revenues, patient care expenses, or operating margins—or in their operations, staffing, or service lines, compared with similar hospitals elsewhere from 2014 to 2023 (Murray et al., 2025). Patient experience scores also improved significantly on five of eleven measures; all but one of the remaining six measures showed directional (but statistically insignificant) improvement.

Hospital Responses to Medicare Payment Changes

The largest body of evidence on hospital responses to price changes comes from changes in Medicare's fee-for-service payments. When Medicare was created in 1965, it paid hospitals retrospectively based on the costs they reported. This approach gave hospitals little reason to minimize their costs. In 1983, Medicare implemented the Inpatient Prospective Payment System, which pays hospitals a fixed, predetermined amount for each admission based on the diagnosis-related group (DRG) to which the patient's main diagnosis or procedure is assigned. That base payment is divided into labor and non-labor shares and adjusted for local wage levels. It is then supplemented by add-on payments for teaching hospitals, hospitals serving a disproportionate share of low-income patients, and unusually costly cases. In 2000, Medicare adopted a parallel Outpatient Prospective Payment System for outpatient care.

Since these payment systems began, Medicare has changed these payment rates both across the board (through annual updates to base payment rates) and for specific groups of hospitals or services, enabling researchers to study how hospitals respond to higher and lower payments. Most of the evidence below draws from changes to inpatient payments, with outpatient studies noted where relevant.

When Medicare Raises Its Fee-for-Service Payment Rates, Hospitals Treat More Patients

The most rigorous research finds that when Medicare raises its fee-for-service hospital payment rates, hospitals treat more patients. Gross et al. (2024) studied Medicare's 2008 switch to Medicare Severity Diagnosis-Related Groups (MS-DRGs), which subdivided payment categories so that sicker, costlier patients mapped to higher-paying groups. Using Medicare inpatient records from 2002 to 2013 alongside data on hospital size and staffing, the authors estimate that each additional $1,000 in the average payment per patient raised admissions by 13% and shortened the average stay by 4.4%. Higher payments also raised hospital inputs by an estimated 3%–7%, measured by beds, staff, nurses, and payroll. This suggests that hospitals met the added volume by expanding their own capacity—treating more patients, keeping each for less time, and adding beds and staff. The study did not examine mergers or acquisitions, and it could not determine how much of the added volume was new patients rather than patients shifted from outpatient care or drawn from other hospitals.

Cooper et al. (2024) find a similar volume response in the Section 508 program included in the Medicare Modernization Act of 2003. The program let qualifying hospitals apply to be treated as if they were in a higher-wage area, which raised their Medicare payment rates. Compared with hospitals whose applications were denied, Section 508 recipients saw their Medicare payments rise approximately 7% and their inpatient admissions rise 7.1% by 2010.

When Medicare Cuts Its Fee-for-Service Payment Rates, Hospitals Lower Their Operating Costs

Hospitals respond to changes in Medicare payments largely by changing their operating costs and how they use labor, capital, and technology. Most of this research looks at the short-term effects of specific Medicare policy changes. Acemoglu and Finkelstein (2008) studied the years around the 1983 payment change (1980–1986), which began paying hospitals a fixed amount for labor costs while still paying capital costs as incurred. This change raised the cost of labor relative to capital. Hospitals responded by using less labor and adopting more new medical technology. The authors interpret the accompanying drop in length of stay as hospitals substituting technology for labor.

White and Wu (2014) look across a longer time horizon, studying a series of Medicare payment changes between 1996 and 2009 and using the differences in the changes induced across hospitals

and over time to gauge the cumulative effect. Hospitals responded to cuts in Medicare reimbursements by trimming operating costs rather than by shifting costs to other payers. About three-fifths of those cost reductions came from lower personnel costs, including reduced staffing. Nonprofit hospitals fully offset their lost Medicare revenue by cutting costs, while for-profit hospitals' profits fell approximately dollar-for-dollar with their lost revenue.

Other research finds that hospitals may increase the volume of commercially insured patients they treat in response to Medicare payment cuts. He and Mellor (2012) studied Medicare's transition to the Outpatient Prospective Payment System in 2000. The authors find that hospitals more exposed to payment cuts (those with a larger share of Medicare patients) saw larger increases in privately insured fee-for-service volume. These hospitals also held onto more of their Medicare patients than hospitals less exposed to payment cuts.

Patients at Hospitals with the Largest Medicare Payment Cuts Saw Increased Short-Term Mortality, Slower Long-Term Reductions in Mortality, and Temporary Increases in Readmissions

At the hospitals experiencing the largest Medicare payment cuts, patient outcomes for several common conditions worsened in three ways relative to less-affected hospitals: 1) short-term mortality rose, 2) one-year mortality declined less than at less-affected hospitals, and 3) 30-day readmissions temporarily rose more quickly at exposed hospitals. This evidence comes from Medicare payment cuts in the 1980s and early 1990s and from the Balanced Budget Act of 1997. The research has focused on two outcomes: mortality (measured from death in the hospital to death one year after admission) and 30-day readmissions.

Short-term mortality rose at hospitals that lost Medicare revenue in the 1980s and early 1990s, but mortality beyond one year did not. Cutler (1995) studied Medicare's 1983 shift to prospective payment using data on Medicare patients in New England from 1981 to 1988. At hospitals whose payments fell, Cutler found that more patients died in the hospital or within two months of discharge, though one-year mortality was unchanged. In other words, the deaths happened earlier, but not in greater numbers over the full year. Shen (2003) studied Medicare's later cuts to per-discharge payments, using data on heart attack patients at urban hospitals from 1985 to 1994. Shen found that from 1990 to 1994, a 1% payment cut raised 30-day mortality by 3.21%, but the effect on mortality beyond one year was small and not statistically significant.

The Balanced Budget Act of 1997 (BBA) provides another natural experiment to assess the effects of Medicare hospital payment reductions. The law cut Medicare inpatient spending by an estimated $40 billion from 1998 to 2002, and the cuts fell unevenly across hospitals (Wu and Shen, 2014; Shen and Wu, 2013). At the hospitals experiencing the largest reductions, the cuts reached 9% of Medicare payments per discharge ($623 off an average of $6,800) (Shen and Wu, 2013).

These reductions in the annual update were concentrated in 1998 to 2000 and offset by relief legislation by 2001 (Wu and Shen, 2014). Even so, the relief did not undo the earlier cuts, and the gap in payment levels persisted in the post-BBA period.

In Pennsylvania, 30-day mortality for patients admitted with common medical conditions did not rise more at hospitals with the largest BBA payment cuts through 2001. Seshamani et al. (2006) studied Pennsylvania hospitals, where by 2001 the BBA had cut their net revenue by 2% at the least affected hospitals and 4.8% at the most affected hospitals. Among patients admitted for heart attack, stroke, gastrointestinal hemorrhage, or hip fracture, they did not find a larger rise in 30-day mortality at the most affected hospitals. Relative to hospitals that experienced smaller revenue cuts, the hospitals with the greatest revenue cuts also did not cut nursing staff, shorten stays, or treat a smaller share of uninsured patients.

Over the longer run, one-year mortality declined less at the hospitals with the largest BBA payment cuts (Shen and Wu, 2013; Wu and Shen, 2014). One study examined five leading Medicare conditions: heart attack, heart failure, stroke, pneumonia, and hip fracture (Shen and Wu, 2013). From 2001 to 2005, one-year mortality declined less at the hospitals experiencing the largest cuts than at hospitals with the smallest cuts for every condition except hip fracture. The difference ranged from 0.8 to 1.4 percentage points, depending on the condition, against average one-year mortality rates of 31% to 35% (2.3% to 4.5% in relative terms). A second study that focused on heart attack patients found that from 2001 to 2005, one-year mortality at hospitals with the largest Medicare payment cuts was 1.6 percentage points higher than it would have been had it followed the trend at the least-affected hospitals, against an average one-year mortality rate of 29.5% (a 5.3% relative increase; Wu and Shen, 2014). By the authors' estimates, a 10% cut in Medicare payments raised mortality rates by 2%—an effect that was similar whether measured one week or one year after admission. The authors suggest these extra deaths may partly reflect lower staffing and operating costs.

Readmissions also rose faster at the hospitals with the largest BBA cuts for five years before the effect attenuated. Shen and Wu (2016) studied 30-day hospital readmission trends for heart attack, heart failure, stroke, pneumonia, and hip fracture. From 2001 to 2005, hospitals experiencing the largest cuts in Medicare payments saw readmission rates rise faster for patients with heart attack, heart failure and pneumonia. For heart attack, 30-day readmissions rose 2.1 percentage points more than at the hospitals experiencing the smallest cuts (a 6.3% relative increase). For heart failure and pneumonia, they rose 1.3 to 1.5 percentage points more. The differences were not significant for stroke or hip fracture. The gap in readmission rates between hospitals with the largest and smallest cuts started to narrow in 2006 and closed by 2011.

Conclusion

This memo draws on two bodies of evidence: early evaluations of state policies to regulate hospital prices and decades of research on how hospitals responded to changes in Medicare fee-for-service payment rates.

The evidence on state policies to regulate prices comes from two policies that differ in scope: Rhode Island's hospital price growth cap, which applies to the entire fully insured commercial market; and Oregon's hospital payment cap that applies only to the state employee health plan (15% of the state's commercially insured population). In Rhode Island, the growth cap lowered hospital prices by an average of 9.1% and fully insured premiums by an average of 6.5%, relative to comparison states. Hospitals absorbed part of the lost revenue by reducing staffing, but there is no evidence to assess how these staffing reductions impacted hospitals' clinical quality. In Oregon, the state employee health plan's cap lowered outpatient prices by 25.4% and saved the plan 4% of total plan spending, with no measurable decline in hospital finances, staffing, or patient experience.

Evidence from the Medicare program shows that when Medicare raises its fee-for-service payment rates, hospitals respond by treating more patients. When Medicare lowers its fee-for-service payment rates, hospitals respond by cutting operating costs through reduced staffing. For certain conditions, patients at the hospitals with the largest payment cuts saw short-term mortality rise, less rapid improvements in one-year mortality, and 30-day readmissions rise faster for five years before returning to the level at other hospitals.

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