



# HEALTH CARE COST DRIVERS AND OPTIONS FOR COST CONTROL

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The growth of health care costs remains a serious concern in the United States. Slowing this growth involves understanding what drives health care costs and how to target those drivers effectively. In this brief, we review the relative importance of different health care cost drivers, including insurance benefits design, price inflation, provider incentives, technological growth, and inefficient system performance. We analyze the impact of these factors on the growth of health care spending in the last decade, which has been concentrated in hospitals and felt most acutely in the private market. We find that unit prices and technology remain the most important cost drivers of this recent growth. In reviewing public and private payer initiatives that target health care costs, we find that some have yielded modest results, but the evidence on most strategies is inconclusive or mixed. Designing and implementing effective interventions to slow cost growth remains a challenge, particularly in the privately insured market, where premiums have risen considerably in the last decade.



## INTRODUCTION

Health care costs in the United States, and their rate of growth, remain a serious concern for payers and policymakers. Sustainable levels of spending depend on slowing the rate of growth. And slowing the rate of growth requires effective policies that target drivers most amenable to change.

In this brief, we summarize the literature on the drivers of health care cost increases. We consider the relative importance of insurance design, unit prices, provider incentives and delivery system performance, and technological growth. We review the evidence to date on how public and private payers can affect these drivers to slow the rate of cost growth.

We then ground this evidence in the national context of how the financing of health care has shifted over the last decade, including a greater role for public payers and the increasing share of spending devoted to hospitals. The data come mainly from the federal National Health Expenditure Accounts (NHEA), which provides a detailed picture of health care costs, and an overview of the flow of money through the health system.

## WHAT DRIVES HEALTH CARE SPENDING GROWTH?

At a basic level, increases in health care spending occur because of some combination of changes in prices, utilization, and the severity of patient case mix (e.g., demographic changes). Within these broad conceptual categories, specific drivers play different roles in increasing health care spending, depending on the period studied and the framework used.

For example, the [Congressional Budget Office](#) (CBO) identified eight historical drivers of rising health care costs from 1940-1990, and estimated their relative contribution (Table 1).<sup>1</sup> All growth that could not be attributed to the observable factors were attributed to technology. Not surprisingly, the report concluded that “the most important factor driving the long-term growth of health care costs has been the emergence, adoption, and widespread diffusion of new medical technologies and services by the U.S. health care system.”

The importance of technology was underscored in [a 2017 study](#) that used a different framework to quantify drivers of cost growth nationally between 1996 and 2013. The study counted technology as a subcategory of service price and intensity and found that more than 50% of all spending growth could be attributed to that category (Figure 1). Changes in utilization and disease prevalence were not significant factors.<sup>2</sup>

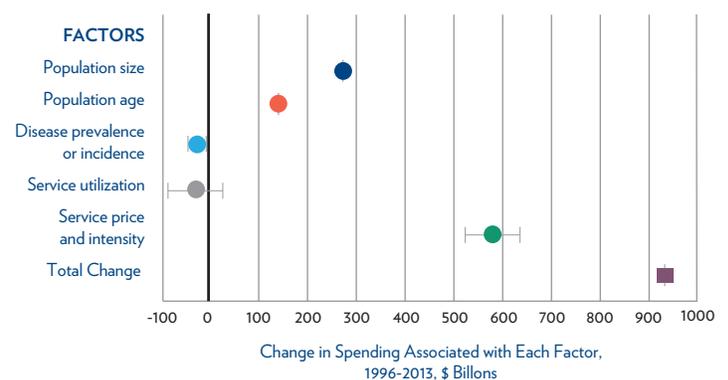
**Table 1.** Estimated contributions of specific factors to health care cost growth (CBO), 1940-1990

DRIVER	ESTIMATED CONTRIBUTION TO SPENDING GROWTH
Aging of the population	2%
Changes in third-party payment	10-13%
Personal income growth*	5-23%
Unit prices	11-22%
Administrative costs	3-13%
Defensive medicine and supplier-induced demand**	0%
Technology-related changes	38-65%

\* Health care is a “normal” economic good, so as income grows people spend more on health care. At the national level, there is a linear correlation between per capita GDP and percent of GDP spent on health care.

\*\* Defensive medicine refers to services with little or no clinical value that clinicians order to avoid lawsuits. Supplier-induced demand refers to physicians increasing service volume to offset lost revenue from fee reductions.

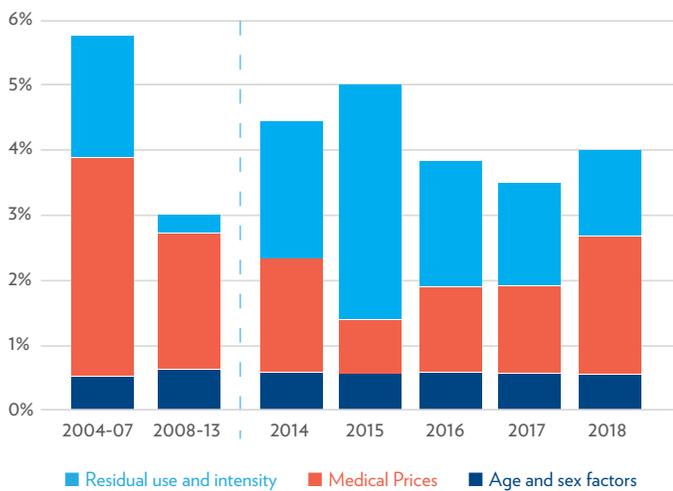
**Figure 1.** Factors associated with health care expenditure growth



Source: Dieleman, J. L., Squires, E., Bui, A. et al. (2017). *JAMA*. doi:10.1001/jama.2017.15927

To estimate the drivers of more recent health care spending, the Centers for Medicare and Medicaid Services (CMS) Office of the Actuary used a model that considers the contribution of price growth, changes in the age and sex composition of the population, and residual use and intensity (i.e., utilization not attributable to the other two factors). According to CMS, demographic factors remain steady from year to year, but the contribution of price growth and residual use/intensity of services varies by year (Figure 2). For example, in 2015 residual use drove most of the 5.0% increase in per capita spending, in the wake of Affordable Care Act (ACA) coverage gains. In contrast, in 2018 about over half of the 4.0% increase in per capita spending was due to price growth.<sup>3</sup>

**Figure 2. Factors associated with health care cost growth (CMS)**



Source: Hartman, M., Martin, A. B., Benson, J., et al. (2019). *Health Affairs*. doi:10.1377/hlthaff.2019.01451

Which of these factors are sensitive to policy changes by public and private payers, and which policies have been successful in curbing cost growth? In the following review, we disaggregate specific drivers and discuss the effectiveness of different approaches that target them.

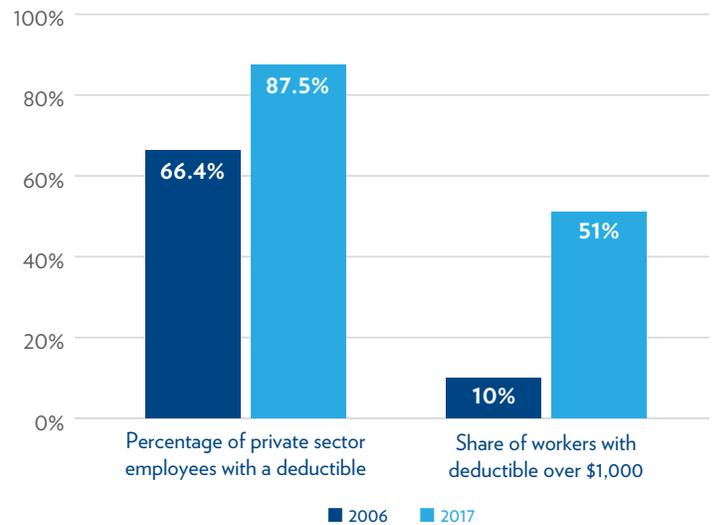
**DRIVERS:**  
**Consumer demand**

People who are insulated from the full cost of their care tend to use more health care services than they otherwise would. From the [RAND health insurance experiment](#) in the 1960s to the more recent [Oregon Health Insurance experiment](#), many studies demonstrate that generous coverage of health care services produces greater use (including some overuse) of health care services by consumers.<sup>4,5</sup>

**Strategies to control consumer-driven overutilization**

Increasingly, private insurers have turned to higher deductibles (Figure 3) as a way to counteract excessive utilization that generous insurance might induce. Deductibles and co-payments are highly effective at reducing utilization. A recent [study](#) found that when employers switched to high-deductible health plans, overall health care spending declined 11.7%-13.8%, and consumers reduce their spending by 42% when under a deductible. However, the study found that consumers cut high value and low value care in equal proportion, indicating that increased cost sharing is an effective but blunt instrument for controlling the growth of health care costs.<sup>6</sup>

**Figure 3. Rates of deductibles in the employer-based market, 2006 and 2017 (AHRQ)**



Additionally, employers can shift to managed care plans, such as Health Maintenance Organization (HMO) arrangements, in which patients must go through a primary care “gatekeeper” to gain access to costly specialist services. In the 1980s, managed care plans rose in popularity in the private market, and in 1993 [over 70%](#) of Americans with health insurance were in a managed plan.<sup>7</sup> The managed care [backlash](#) in the late 1990s is associated with a rapid rise in health care spending.<sup>8</sup>

Does managed care limit cost growth? Several factors complicate assessing the effectiveness of managed care. First, managed care describes a heterogeneous set of plan types. Second, managed care plans tend to attract healthier populations, so they benefit from a selection bias. Despite the healthier population, [literature reviews](#) of managed care in the private market and [within Medicare](#) (i.e.,

Medicare Advantage) suggest that charges in HMO plans are 10-15% lower than non-HMO plans, and a greater penetration of gatekeeper-based plans can slow spending growth overall.<sup>7,9</sup>

Most states have shifted their Medicaid beneficiaries to private, capitated managed care plans over the last decade. From 2007 to 2016, the share of Medicaid enrollees in managed care rose from [64%](#) to [81%](#).<sup>10</sup> [A 2012 analysis](#) from the Robert Wood Johnson Foundation found that savings from transitioning Medicaid beneficiaries to managed care plans are modest at best, with a wide variation.<sup>11</sup>

## DRIVERS: Over-utilization (provider focused) and delivery system performance (inefficiency)

Under-performing and fragmented health care delivery systems may also drive up costs. Under fee-for-service conditions, providers—including physicians and hospitals—have incentives to overuse medical services and lack financial motivation to deliver coordinated, operationally efficient care. Health care waste includes the use of unnecessary services—the use of services beyond evidence-based benchmarks—as well as inefficiently delivered services that result from fragmented or poorly coordinated systems. [A 2019 literature review](#) found that unnecessary utilization, reliance on low-value services, and excess cost due to uncoordinated or inefficiently delivered care account for between \$205 and \$344 billion in annual excess spending. Once adding in pricing failures, fraud, and administrative complexity, the study found that a quarter of all health care spending (\$760 to \$935 billion) could be classified as wasteful.<sup>12</sup>

There are [several hypotheses](#) for why providers may recommend unnecessary or inefficient services, based on providers trying to maintain a level of income or having a tendency to recommend services with mixed evidence.<sup>13</sup> Although the reasons are complex, it is clear that providers can and do induce unnecessary utilization and often fail to deliver well-coordinated care, both of which drive up costs.

As early as 1978, [economists observed](#) that all else equal, increases in surgeons per capita increased use of surgical services.<sup>14</sup> More recently, [studies](#) of geographic variation in health care spending among Medicare beneficiaries demonstrated wide variation in spending that is unexplained by health status, geography, or prices.<sup>15</sup> [A National Academies of Sciences, Engineering, and Medicine report](#) on geographic spending also concluded that provider decision making was the primary cause of excessive spending, without any relationship to quality or access to services.<sup>16</sup>

## Strategies to control provider-induced demand and improve delivery system performance

To change the incentives inherent in fee-for-service payment, the Affordable Care Act (ACA) authorized market-based reforms to shift financial risk for total cost of care to providers, with payments tied to improved quality or reduced net cost. So far, payment reforms such as bundled payments and Accountable Care Organizations (ACOs) have yielded very modest spending reductions for certain procedures and types of patients.

Bundled payments put providers at financial risk for the total cost of care for an episode of care, such as hip or knee replacements. Providers are penalized for going over a benchmark price, and share in the savings for coming under the target. Bundled payments have modestly reduced per-episode costs for many surgical procedures. Evaluations of voluntary and [mandatory](#) programs for hip and knee replacements have found per-episode savings between [1.6%](#) and [3.9%](#).<sup>17-19</sup> However, for medical conditions such as heart attacks or pneumonia, evaluations have shown no per-episode or overall savings for Medicare to date.

Fewer studies have assessed the impact of bundled payments in commercial insurance. However, [a recent study](#) of a multi-payer program in Arkansas found that mandatory bundled payment arrangements for perinatal care yielded a 3.8% relative decrease in per-episode costs.<sup>20</sup>

While bundled payments target specific episodes of care, ACOs are networks of physicians, hospitals, and other providers that are responsible for the total cost of care for a specified population, i.e., population health. The largest program, the [Medicare Shared Savings Program](#) (MSSP) has more than 500 participating ACOs that cover over 11 million lives.<sup>21</sup> ACOs earn shared savings if they come in under a benchmark annual growth rate of roughly 2%. In 2010, the CBO estimated that ACOs would save a net of \$1.7 billion for the federal government between 2013 and 2016, but a recent analysis suggests that after making shared savings payments and considering program cost, the MSSP ACOs have a net cost of [\\$384 million](#) in that time.<sup>22</sup> Other analysts argue that ACO performance builds over time, and generated savings of over [\\$300 million](#) in 2017.<sup>23</sup> Regardless of the debate on estimated impact, it is clear that any benefit for cost growth is small in magnitude.

Within commercial insurance, the effectiveness of ACO contracts has not been well-studied. However, the Massachusetts Alternative Quality Contract (AQC) yields some insight. [The Massachusetts AQC](#) is a population-based payment model in Blue Cross Blue Shield (BCBS) of Massachusetts, that includes both financial risks and rewards for providers. A recent evaluation found that over

eight years, the AQC resulted in 11.7% relative savings on enrollee claims, with no change in quality.<sup>24</sup> Furthermore, in Hawaii, the Hawaii Medical Service Association (HMSA) recently introduced the [Population-based Payments for Primary Care](#) (3PC) program. 3PC is a population-based payment system that replaces fee-for-service primary care payments with risk-adjusted per-member per-month (PMPM) fees and offers primary care providers shared savings based on risk-adjusted member spending. A recent 1-year evaluation found that 3PC was successful in improving quality and changing practice patterns (e.g., intended modest reductions in primary care visits), which may be harbingers of future savings, though there were no differences in total cost of care in the year 1 evaluation.<sup>25</sup>

Vermont is experimenting with an [all-payer ACO](#) model that began in 2017. Although enrollment is voluntary, the state has stated its goals of having 70% of all insured residents and 90% of its Medicare beneficiaries in ACOs by 2022. Per capita spending growth in the ACO is limited to 3.5%, with Medicare spending growth limited to 0.1-0.2% below national Medicare growth.<sup>26</sup> Robust data from Vermont's all-payer ACO model will not be available for several years, as the performance period ends at the end of 2022.

## DRIVERS: Technology

New medical interventions, surgeries, imaging services, drugs, and diagnostic tools expand the scope of health care and often command a higher unit price. When health care services improve or extend life, they may be of social value, [even when they increase spending](#).<sup>27</sup> When new technologies [can alleviate health conditions](#), one-time increases in spending may yield lower long-term spending.<sup>28</sup>

However, policymakers and the public are questioning the cost-effectiveness of many new technologies, both in terms of the prices commanded and the outcomes achieved. For example, the extent to which [new oncology drugs offer meaningful improvements](#) in overall survival and quality of life is hotly debated,<sup>29</sup> as evidence mounts that patients are paying [more per year of life gained](#) than ever before.<sup>30</sup>

### Strategies to control technology-related spending growth

Public and private payers have little sway over which drugs and technologies are brought to market, but they do have specific tools to limit improper use of new technologies. First, payers can refuse to cover new tests, drugs, and treatments. Many countries with single-payer style health care systems utilize Health Technology Assessments (HTAs) to weigh the value of new treatments and inform decisions about whether or not to cover them. For example, the Australian Medicare Services Advisory Committee (MSAC) and UK National Institute for Health and Care Excellence (NICE)

consider clinical and cost effectiveness when issuing guidance regarding which services should be included in Australian Medicare or the British National Health Service.

The US [lacks centralized HTAs](#).<sup>31</sup> Instead, [individual insurers](#) and [public payers](#) make coverage decisions on an [ad hoc basis](#).<sup>32-34</sup> The Patient-Centered Outcomes Research Institute (PCORI), established under the ACA, funds [comparative effectiveness studies](#), but does not make coverage decisions.<sup>35</sup> To date, while there are anecdotes of [insurers or pharmacy benefit managers](#) restricting access to new treatments, the effects of these decisions on cost growth is unknown.<sup>36</sup>

Given the tendency to cover new treatments, one common strategy to control utilization is prior authorization (PA), in which a provider must request approval from a health plan before delivering a service. PA requirements have become increasingly commonplace in the case of very costly new drugs. For example, a [2018 study](#) found that more than 80% of patients across all insurance sectors had a PA requirement for PCSK9 inhibitors, a new treatment for patients with familial hypercholesterolemia or atherosclerotic cardiovascular disease.<sup>37</sup>

PA requirements raise concerns over patient access and physician autonomy, but evidence suggests they may reduce utilization of some low-value services. From 2012 through 2017, CMS initiated four PA demonstration projects and one permanent PA program. The demonstrations were targeted to services deemed to be at high risk for improper use, such as including mobility devices (e.g., power wheelchairs), and non-emergency hyperbaric oxygen therapy. A [GAO](#) analysis of these programs found these projects significantly reduced Medicare expenditures and, if expanded, would yield between \$1.1 and \$1.9 billion in annual savings.<sup>38</sup> Within the private commercial space, a [recent study](#) found that prior authorization of costly drugs or drugs with high abuse potential can reduce the targeted use of the targeted drug by half.<sup>39</sup> However, [American Medical Association surveys](#) show that the vast majority of physicians believe that prior authorization has negative effects on patient clinical outcomes and imposes significant, unreimbursed costs on practices.<sup>40</sup> Reducing the administrative burden and cost of PA programs should be a primary concern.

Recently, commercial insurers have begun to experiment with two methods to manage the use of drugs: formulary tiering and reference pricing. Formulary tiering involves the categorization of drugs as “preferred” or “non-preferred,” based on evidence of efficacy, cost, or a combination of the two. The structure of formulary tiering programs can vary, but in general they reduce or eliminate co-pays for preferred medications and, in some cases, increase co-pays for non-preferred drugs. In theory, tiered formularies direct patients to lower-cost, clinically equivalent therapies.

The literature regarding formulary tiering is varied, and most studies use [medication adherence](#) as the [primary outcome](#) of interest.<sup>41,42</sup> One [large study](#) of a value-based formulary in the pacific northwest suggests that tiering can reduce both drug-related and overall expenditures. In 2010, Premera Blue Cross implemented a formulary benefit design for employees that used cost-effectiveness analysis to determine copayments. An evaluation of the program found that medication expenditures fell 10% compared to a control group, with no effects on overall utilization or non-medication expenditures.<sup>43</sup> Other evaluations of tiered formularies show more mixed results. [A 2014 study](#) of a value-based insurance design (VBID) in Blue Cross Blue Shield of North Carolina found that reducing co-pays for branded medications and eliminating all cost-sharing for generics resulted in improved medication adherence and reductions in nonmedication expenditures, but those savings were swamped by increases in medication expenditures.<sup>44</sup> The evidence suggests that value-based formularies, when structured correctly and paired with [disease management](#) programs, may improve medication adherence, but only have marginal impacts on cost.<sup>45</sup>

In contrast, reference pricing classifies individual drugs based on therapeutic class, and payment rates are pegged to the price of one of the cheapest (or average of) drugs in that class—with consumers making up the difference. While reference pricing is commonly employed abroad, it has only recently gained attention in the US. To date, the evidence of how effective reference pricing is remains weak. [One study](#) of a reference pricing initiative in a large self-insured plan found that limiting payment to the price of the least-costly drug in each therapeutic category (unless a physician exemption was made) resulted in a 7% higher share of prescriptions being filled with the lowest-cost drug relative to a control group, and the average price paid per prescription declined 13.9%, generating savings of \$1.34 million for the employer over 18 months. Importantly, patient copayments did increase as well, by \$0.12 million (30.9% on average).<sup>46</sup>

## DRIVERS: Unit prices

Across all health care services, the US has higher unit prices than comparable countries. Further, within the US, the private sector pays far higher prices than the public sector, a [differential](#) that has increased substantially in the past 15 years.<sup>47</sup> [A recent literature review](#) found that, on average, employer-based plans pay hospitals double the Medicare rate for inpatient services and triple the rate for outpatient services.<sup>48</sup>

Hospital consolidation is driving price growth. [A 2017 study](#) found that from 2010 to 2016 hospital markets became increasingly consolidated, with over 90% of metropolitan statistical areas having highly concentrated hospital markets, compared to 65% for specialist

physicians.<sup>49</sup> There is [strong evidence](#) that mergers increase prices for services,<sup>50</sup> and a [recent analysis](#) of private health insurance claims found that inpatient hospital prices grew 42% from 2007 to 2014, while physician prices for inpatient care grew 18%.<sup>51</sup>

In addition to horizontal integration through mergers, hospitals have also accelerated their purchasing of physician practices—with the proportion of physician practices owned by hospitals [doubling from 2002 through 2008](#) and [continuing over the last decade](#), partially in response to the expansion of value-based payment policies.<sup>52,53</sup> Although vertical integration of physician practices and hospitals offers the promise of greater efficiencies in the delivery of value-based care, evidence suggests that it has led to [price increases](#),<sup>54</sup> rather [than quality improvements](#).<sup>55</sup> Most recently, [a 2018 study](#) found that from 2007 to 2013, prices for services provided by acquired physicians rose by an average of 14.1% after acquisition, and most of the pricing increase was attributable to the increased use of pricing rules that favor hospitals.<sup>53</sup>

### Strategies to control unit prices

Facing consolidated markets in which a single hospital system may be the only provider available, commercial insurers have less leverage to negotiate lower unit prices. Without state interventions, commercial insurers generally control price inflation by increasing leverage in negotiations with providers. Historically, these strategies have included HMOs, tiered networks, and, increasingly, narrow networks, in which providers accept lower reimbursements in exchange for being included in a plan's limited network. Recent work suggests that narrow network plans on the health insurance marketplaces have [16% cheaper](#) premiums, suggesting a pricing discount.<sup>56</sup>

Commercial insurers have also experimented with reference pricing for specific services, in which payers set a maximum payment rate for a service. These initiatives tend to focus on narrow bands of services, such as outpatient procedures (e.g., joint replacements) or tests (e.g., lab services) with the intention of changing consumer choices in the short term and, in the long term, encouraging price competition by suppliers. To date, most publicly available data of the effects of reference pricing come from the California Public Employees Retirement System (CalPERS) and Safeway, which instituted reference pricing systems for many outpatient procedures, diagnostic tests, and laboratory services. [A recent literature review](#) found that rates of patients selecting below-reference price services increased from 8.6% to 18.6% depending on the service, and the average price reduction for most services clustered between 17% and 21%.<sup>57</sup>

In a few states, lawmakers have acted to target unit prices with all-payer rate setting and reference pricing initiatives that limit legally allowed provider charges. Maryland has controlled hospital prices with all-payer rate setting since the 1970s. In 2014, CMS and Maryland transitioned

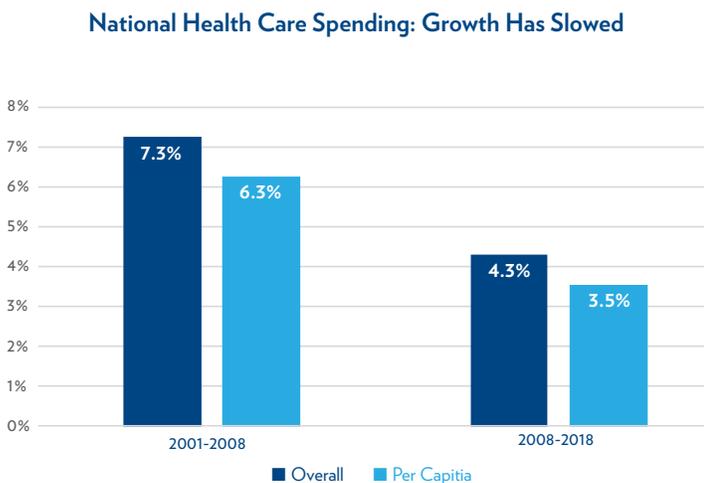
all hospitals to global budgets with specific benchmarks to keep overall health care spending at or below state GDP growth. By the end of 2016, the new model had generated \$586 million in Medicare savings from reduced hospital spending growth, exceeding the 2018 target of \$330 million. Maryland has achieved an annual hospital spending growth of 1.53% per capita, beating the 3.58% target rate. In 2018, the state received approval to expand its global budgets beyond hospitals to include some outpatient care.<sup>58</sup> Similarly, [Montana](#) and [California](#) have instituted reference price systems that limit the prices of certain hospital services to a specific multiple of Medicare rates.<sup>59,60</sup> The evidence of these statewide reference pricing initiatives is unavailable.

In 2010, Rhode Island’s Office of the Health Insurance Commissioner implemented a set of “affordability standards” in an effort to control growth in the commercial insurance market. The standards included price controls that capped annual increases for inpatient and outpatient charges at medical inflation plus 1%. [A recent analysis](#) of commercial claims in Rhode Island from 2007-2016 suggests that per-enrollee spending growth was 4.8% lower in commercial fee-for-service contracts, and 2.7% lower overall, than similar adults in other states.<sup>61</sup>

### DRIVERS IN CONTEXT: How much does the United States spend, and how fast is spending increasing?

The growth of national health care spending has slowed over the past decade, compared to the 2001-2007 period (Figure 4). Per capita spending increased from \$7,890 in 2008 to \$11,172 in 2018. Health care spending as a share of GDP grew moderately between 2008 and 2016 (from 16.3% to 17.9%) but has generally stabilized (Figures 4 and 5). These overall numbers, as well as the analysis to follow, are drawn from the CMS National Health Expenditure Accounts.

**Figure 4.** Average overall and per capita health care expenditure growth, 2001-2008 versus 2008-2018



These aggregate data tell us little about the value of health care spending, in terms of outcomes and alternative uses for these funds. On the one hand, health care spending can grow because of expanding access to care, or because new, effective treatments come to market. On the other hand, spending can grow because prices for the same services increase without delivering better outcomes.

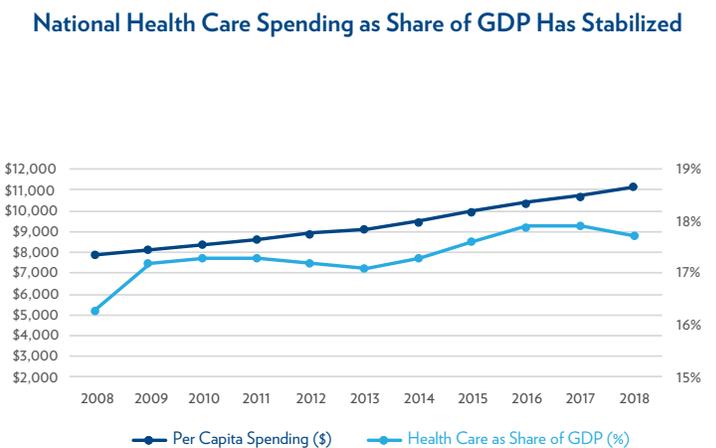
### SHIFTING PAYER LANDSCAPE

Public payers have taken on a larger role in financing health care over the last decade. Private sources accounted for 55.2% of all spending in 2018, down from 58.7% in 2008. At the same time, the share of public spending increased from 41.3% to 44.8%.

Public spending is growing in its share of total spend due to population aging into Medicare and the expansion of Medicaid. From 2008 to 2018, Medicare enrollment grew by 32.2% and Medicaid enrollment grew by 54.2%. In contrast to Medicare and Medicaid, overall private health care spending has risen substantially despite enrollment increasing by only 1.8%, with a net decline in employer-sponsored insurance enrollment from 177.3 million to 175.2 million (Figure 6).

Public payers tend to cover individuals with greater health care needs, such as the elderly and disabled, so per-enrollee spending was much higher in Medicare (\$12,784) and Medicaid (\$8,201) than in employer-sponsored insurance (\$6,103) in 2018. However, since 2008, total per enrollee spending growth was highest in employer-sponsored insurance (46.4%), followed by Medicare (21.5%), and Medicaid (12.5%). Therefore, while public spending has increased as a share of national health care expenditures as a result of rising enrollment, the private market is experiencing greater per-enrollee cost growth.

**Figure 5.** Increases in per capita health spending and health care as share of GDP, 2008-2018



Cost growth in the private market is reflected in substantial premium increases. The Kaiser Family Foundation’s Employer Health Benefits Survey indicates that from 2008-2018, the average family premium for employer-sponsored insurance increased from \$12,680 to \$19,616, and premiums for individual coverage increased from \$4,704 to \$6,896 (46.6%).<sup>62</sup>

### WHERE DOES HEALTH CARE SPENDING GO?

Nationally, most health care spending occurs in three categories. In 2018, spending on hospitals, professional services, and prescription drugs accounted for 32.7%, 26.4%, and 9.2% of national health expenditures, respectively (Figure 7). The next highest category—the net cost of health insurance administration and profit—accounted for 7.1% of total spending. All other categories—residential care, nursing home care, research, and public health activities—are small fractions of national health care spending.

### NATIONAL SPENDING GROWTH BY MAJOR CATEGORY

From 2008 to 2018, hospitals have grown as the major center of health care costs. On a per capita basis, hospital spending increased from \$2,389 to \$3,649 (52.7%), or an average of 4.3% per year—well above average overall spending growth (Figure 8). In contrast, on a per capita basis, professional services grew at an average rate of 3.4% from \$2,137 to \$2,955—just below average overall expenditures. Similarly, drugs and medical goods grew at an average rate of 2.6%, from \$1,076 to \$1,397 (29.8% overall).

Figure 6. Average annual enrollment, per capita spending, and total expenditure growth by payer, 2008-2018

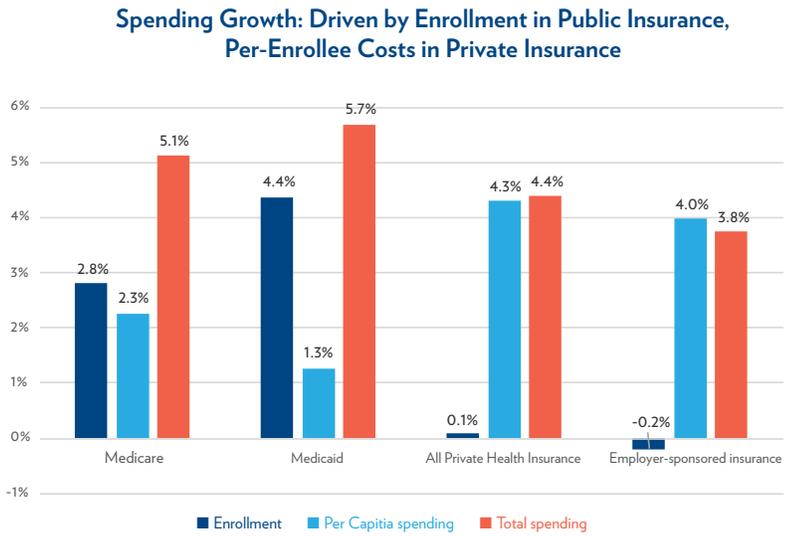


Figure 7. Share of national health expenditures of three major categories, 2008 and 2018

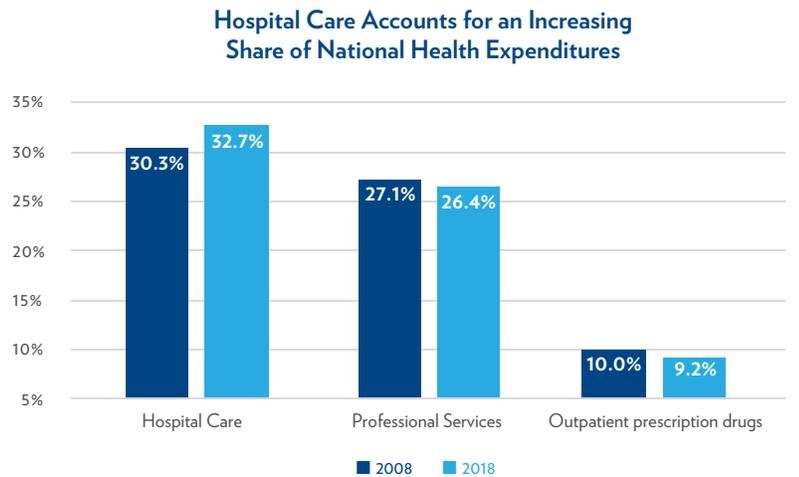
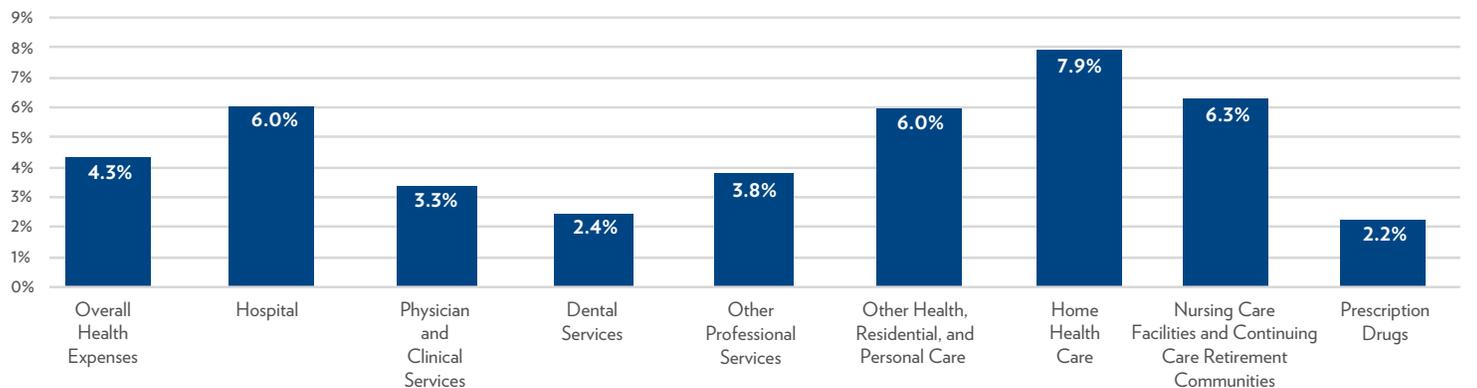


Figure 8. Average annual change in per capita spending, by category, for commercial insurers, 2008-2018

### Growth of Hospital Spending from 2008 to 2018 Particularly Steep for Commercial Insurers



The growth of hospital spending has been particularly acute for private insurers. From 2008 to 2018, per capita private health insurance spending in hospitals grew by 78.4%, an average rate of 6.0% per year (from \$1,345 to \$2,340). As a result, hospital spending grew its share of total private health insurance spending, from 33.1% to 38.7%.

In contrast, per capita spending on physician and clinical services increased by an average rate of 3.3% per year, (36.5% total), from \$1,139 to \$1,555. Similarly, on a per capita basis, spending on prescription drugs grew by 2.2% per year, from \$546 to \$670 per person. As a result, both professional services and prescription drugs fell as a share of private health insurance expenditures.

While other classes of spending are small components of commercial health spending, it is important to note that several smaller categories have experienced rapid growth over the last decade. In particular, per capita private health insurance spending on nursing care/retirement facilities and home health care grew at average annual rates of 6.3% and 7.9%, respectively, although they remain a very low share of total private spending (less than 2%).

## CONCLUSION

This review of the drivers of health care costs—and the strategies put in place to slow them—demonstrates the relative contribution of unit prices, utilization, and technology on rising health care spending. While the overall growth of health care costs has slowed in recent years, much of the success has been attributable to Medicare and Medicaid initiatives to control price. Commercial insurers, without the leverage of the state or federal government, still face the challenge of unrelenting growth in per-enrollee spending, particularly in the hospital sector.

Historically, commercial insurers have sought to control health care costs with initiatives directed at consumers. These include increasing deductibles and designing benefits to induce cost-conscious shopping behavior among consumers. While there is evidence that some of these consumer-directed initiatives reduce expenditures, they are blunt instruments that tend to cut low- and high-value care in equal proportion.

More importantly, focusing on consumer behavior may begin to yield diminishing returns. Over the last decade, when it comes to spending in the private sector, sustained price hikes and provider practice patterns appear to be the most important drivers of health care spending. In particular, as hospitals continue to consolidate through horizontal integration and the purchase of ancillary outpatient clinics, prices paid for both inpatient and outpatient hospital services have grown substantially faster than for physician services.

So far, efforts that focus on supplier-based overprovision of services, such as Accountable Care Organizations and bundled payments, have yielded modest savings. Some states and regulators have had more success with global budgeting and rate setting for hospital services. For commercial insurers specifically, however, no single strategy emerges as the best way to change provider behavior or control price growth. Rather, cost control in the private sector relies on iteration and experimentation, and must contend with the larger market forces that exert upward pressure on per-unit prices, especially in the hospital sector.

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## REFERENCES

1. Orszag, P. R. (2008). *Growth in Health Care Costs*. Washington DC. Retrieved from <https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/reports/01-31-healthtestimony.pdf>
2. Dieleman, J. L., Squires, E., Bui, A. L., Campbell, M., Chapin, A., Hamavid, H., ... Murray, C. J. L. (2017). Factors Associated With Increases in US Health Care Spending, 1996-2013. *JAMA*, *318*(17), 1668-1678. doi:10.1001/jama.2017.15927
3. Hartman, M., Martin, A. B., Benson, J., & Catlin, A. (2019). National Health Care Spending In 2018: Growth Driven By Accelerations In Medicare And Private Insurance Spending. *Health Aff (Millwood)*, *39*(1), 8-17. doi:10.1377/hlthaff.2019.01451
4. Brook, R. H., Keeler, E.B., Lohr, K. N., Newhouse, J. P., Ware J. E., Rogers, W. H., ... Reboussin, D. (2006). *The Health Insurance Experiment: A Classic RAND Study Speaks to the Current Health Care Reform Debate*. Retrieved from [https://www.rand.org/pubs/research\\_briefs/RB9174.html](https://www.rand.org/pubs/research_briefs/RB9174.html)
5. Baicker, K., Taubman, S. L., Allen, H. L., Bernstein, M., Gruber, J. H., Newhouse, J. P., ... Finkelstein, A. N. (2013). The Oregon Experiment — Effects of Medicaid on Clinical Outcomes. *New England Journal of Medicine*, *368*(18), 1713-1722. doi:10.1056/NEJMsa1212321
6. Brot-Goldberg, Z. C., Chandra, A., Handel, B. R., & Kolstad, J. T. (2017). What does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. *The Quarterly Journal of Economics*, *132*(3), 1261-1318. doi:10.1093/qje/qjx013
7. Glied, S. (2000). Chapter 13 – Managed Care. In A. J. Culyer & J. P. Newhouse (Eds.), *Handbook of Health Economics* (Vol. 1, pp. 707-753): Elsevier.
8. Chen, A., & Goldman, D. (2016). Health Care Spending: Historical Trends and New Directions. *Annual Review of Economics*, *8*(1), 291-319. doi:10.1146/annurev-economics-080315-015317
9. Chernew, M., Decicca, P., & Town, R. (2008). Managed care and medical expenditures of Medicare beneficiaries. *J Health Econ*, *27*(6), 1451-1461. doi:10.1016/j.jhealeco.2008.07.014
10. *Medicaid Managed Care: Trends and Snapshots, 2000 – 2013*. Retrieved from <https://www.medicaid.gov/medicaid-chip-program-information/by-topics/data-and-systems/medicaid-managed-care/downloads/2013-medicaid-managed-care-trends-and-snapshots-2000-2013.pdf>
11. Spiraer, M. (2012). *Medicaid managed care: Costs, access, and quality of care*. Retrieved from <https://www.rwjf.org/en/library/research/2012/09/medicaid-managed-care.html>
12. Shrank, W. H., Rogstad, T. L., & Parekh, N. (2019). Waste in the US Health Care System: Estimated Costs and Potential for Savings. *JAMA*, *322*(15), 1501-1509. doi:10.1001/jama.2019.13978
13. Berwick, D. M. (2019). Elusive Waste: The Fermi Paradox in US Health Care. *JAMA*, *322*(15), 1458-1459. doi:10.1001/jama.2019.14610
14. Fuchs, V. R. (1978). The Supply of Surgeons and the Demand for Operations. *The Journal of Human Resources*, *13*, 35-56. doi:10.2307/145247
15. Newhouse, J. P., & Garber, A. M. (2013). Geographic Variation in Medicare Services. *New England Journal of Medicine*, *368*(16), 1465-1468. doi:10.1056/NEJMp1302981
16. Variation in Health Care Spending: Target Decision Making, Not Geography. (2013). In J. P. Newhouse, A. M. Garber, R. P. Graham, M. A. McCoy, M. Mancher, & A. Kibria (Eds.). Washington (DC).
17. Barnett, M. L., Wilcock, A., McWilliams, J. M., Epstein, A. M., Joynt Maddox, K. E., Orav, E. J., ... Mehrotra, A. (2019). Two-Year Evaluation of Mandatory Bundled Payments for Joint Replacement. *New England Journal of Medicine*, *380*(3), 252-262. doi:10.1056/NEJMsa1809010
18. Navathe, A. S., Emanuel, E. J., Venkataramani, A. S., Huang, Q., Gupta, A., Dinh, C. T., ... Liao, J. M. (2020). Spending And Quality After Three Years Of Medicare's Voluntary Bundled Payment For Joint Replacement Surgery. *Health Aff (Millwood)*, *39*(1), 58-66. doi:10.1377/hlthaff.2019.00466
19. Dummit, L. A., Kahvecioglu, D., Marruf, G., Rajkumar, R., Marshall, J., Tan, E., ... Conway, P. H. (2016). Association Between Hospital Participation in a Medicare Bundled Payment Initiative and Payments and Quality Outcomes for Lower Extremity Joint Replacement Episodes. *JAMA*, *316*(12), 1267-1278. doi:10.1001/jama.2016.12717
20. Carroll, C., Chernew, M., Fendrick, A. M., Thompson, J., & Rose, S. (2018). Effects of episode-based payment on health care spending and utilization: Evidence from perinatal care in Arkansas. *J Health Econ*, *61*, 47-62. doi:10.1016/j.jhealeco.2018.06.010
21. *Shared Savings Program Fast Facts – As of January 1, 2020*. (2020). Retrieved from <https://www.cms.gov/files/document/2020-shared-savings-program-fast-facts.pdf>
22. Seidman, J., Feore, J., Rosacker, N. (2018). Medicare ACOs Have Increased Federal Spending Contrary to Projections That They Would Produce Net Savings [Press release]. Retrieved from <https://avalere.com/press-releases/medicare-accountable-care-organizations-have-increased-federal-spending-contrary-to-projections-that-they-would-produce-net-savings>
23. Mechanic, R., Gaus, C. (2018). Medicare Shared Savings Program Produces Substantial Savings: New Policies Should Promote ACO Growth. Retrieved from <https://www.healthaffairs.org/doi/10.1377/hblog20180906.711463/full/>
24. Song, Z., Ji, Y., Safran, D. G., & Chernew, M. E. (2019). Health Care Spending, Utilization, and Quality 8 Years into Global Payment. *N Engl J Med*, *381*(3), 252-263. doi:10.1056/NEJMsa1813621
25. Navathe, A. S., Emanuel, E. J., Bond, A., Linn, K., Caldarella, K., Troxel, A., ... Volpp, K. G. (2019). Association Between the Implementation of a Population-Based Primary Care Payment System and Achievement on Quality Measures in Hawaii. *JAMA*, *322*(1), 57-68. doi:10.1001/jama.2019.8113
26. *Vermont All-Payer ACO Model*. (2016). Retrieved from <https://innovation.cms.gov/initiatives/vermont-all-payer-aco-model/>
27. Cutler, D. M., & McClellan, M. (2001). Is technological change in medicine worth it? *Health Aff (Millwood)*, *20*(5), 11-29. doi:10.1377/hlthaff.20.5.11
28. Skinner, J. S., Staiger, D. O., & Fisher, E. S. (2006). Is technological change in medicine always worth it? The case of acute myocardial infarction. *Health Aff (Millwood)*, *25*(2), w34-47. doi:10.1377/hlthaff.25.w34
29. Mailankody, S., & Prasad, V. (2015). Five Years of Cancer Drug Approvals: Innovation, Efficacy, and Costs. *JAMA Oncol*, *1*(4), 539-540. doi:10.1001/jamaoncol.2015.0373
30. Howard, D. H., Bach, P. B., Berndt, E. R., & Conti, R. M. (2015). Pricing in the Market for Anticancer Drugs. *Journal of Economic Perspectives*, *29*(1), 139-162. doi:10.1257/jep.29.1.139
31. Timmins, N. (2016). How To Think About Health Technology Assessment: A Response To Goldman And Coauthors. Retrieved from <https://www.healthaffairs.org/doi/10.1377/hblog20160915.056524/full/>
32. Cisneros, R., Arthurs, S., & Hiatt, J. C. (2016). Medical Technology Assessment at Kaiser Permanente: History and Description of Approach (USA). In L. Sampietro-Colom & J. Martin (Eds.), *Hospital-Based Health Technology Assessment: The Next Frontier for Health Technology Assessment* (pp. 227-238). Cham: Springer International Publishing.

33. Health Technology Assessment. Retrieved from <https://www.hca.wa.gov/about-hca/health-technology-assessment>
34. Meyer, H. (2009). *Insurers Apply Different Methods In Making Coverage Decisions*. Retrieved from <https://khn.org/news/compare-sidebar/>
35. Fisher, K., McKinney Jr., Ross (2020). *More medical research = better patient care*. Retrieved from Washington D.C.: <https://www.aamc.org/news-insights/more-medical-research-better-patient-care>
36. Cunningham, C. (2018). Column: Why are so many more medications not covered by insurance? *Chicago Tribune*. Retrieved from <https://www.chicagotribune.com/suburbs/ct-ahp-column-help-squad-tl-0329-story.html>
37. Doshi, J. A., Puckett, J. T., Parmacek, M. S., & Rader, D. J. (2018). Prior Authorization Requirements for Proprotein Convertase Subtilisin/Kexin Type 9 Inhibitors Across US Private and Public Payers. *Circ Cardiovasc Qual Outcomes*, 11(1), e003939. doi:10.1161/circoutcomes.117.003939
38. Clowers, A. N., & King, K. M. (2018). *Report to the Committee on Finance, U.S. Senate: CMS Should Take Actions to Continue Prior Authorization Efforts to Reduce Spending*. Retrieved from <https://www.gao.gov/assets/700/691381.pdf>
39. Dillender, M. (2018). What happens when the insurer can say no? Assessing prior authorization as a tool to prevent high-risk prescriptions and to lower costs. *Journal of Public Economics*, 165, 170-200. doi:10.1016/j.jpubeco.2018.07.006
40. 2017 AMA Prior Authorization Physician Survey. [Press release]. Retrieved from <https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/arc/prior-auth-2017.pdf>
41. Maciejewski, M. L., Farley, J. F., Parker, J., & Wansink, D., (2010). Copayment Reductions Generate Greater Medication Adherence In Targeted Patients. *Health Aff (Millwood)*, 29(11), 2002-2008. doi:10.1377/hlthaff.2010.0571
42. Chernew, M. E., Shah, M. R., Wegh, A., Rosenberg, S. N., Juster, I. A., Rosen, A. B., ... Fendrick, A. M. (2008). Impact Of Decreasing Copayments On Medication Adherence Within A Disease Management Environment. *Health Aff (Millwood)*, 27(1), 103-112. doi:10.1377/hlthaff.27.1.103
43. Yeung, K., Basu, A., Hansen, R. N., Watkins, J. B., & Sullivan, S. D. (2017). Impact of a Value-based Formulary on Medication Utilization, Health Services Utilization, and Expenditures. *Med Care*, 55(2), 191-198. doi:10.1097/mlr.0000000000000630
44. Maciejewski, M.L., Wansink, D., Lindquist, J. H., Parker, J. C., & Farley, J. F. (2014). Value-Based Insurance Design Program In North Carolina Increased Medication Adherence But Was Not Cost Neutral. *Health Aff (Millwood)*, 33(2), 300-308. doi:10.1377/hlthaff.2013.0260
45. Chernew, M. E., Juster, I. A., Shah, M., Wegh, A., Rosenberg, S., Rosen, A.B., ... Fendrick, A. M. (2010). Evidence That Value-Based Insurance Can Be Effective. *Health Aff (Millwood)*, 29(3), 530-536. doi:10.1377/hlthaff.2009.0119
46. Robinson, J. C., Whaley, C. M., & Brown, T. T. (2017). Association of Reference Pricing with Drug Selection and Spending. *N Engl J Med*, 377(7), 658-665. doi:10.1056/NEJMsa1700087
47. Anderson, G. F., Hussey, P., & Petrosyan, V. (2019). It's Still The Prices, Stupid: Why The US Spends So Much On Health Care, And A Tribute To Uwe Reinhardt. *Health Aff (Millwood)*, 38(1), 87-95. doi:10.1377/hlthaff.2018.05144
48. Koller, C. F., & Khullar, D. (2019). The Commercial Differential for Hospital Prices: Responses From States and Employers. *JAMA*, 322(8), 723-724. doi:10.1001/jama.2019.9275
49. Fulton, B. D. (2017). Health Care Market Concentration Trends In The United States: Evidence And Policy Responses. *Health Aff (Millwood)*, 36(9), 1530-1538. doi:10.1377/hlthaff.2017.0556
50. Antwi, Y. A., Gaynor, M., Vogt, W. B. (2009). A Bargain at Twice the Price? California Hospital Prices in the New Millennium. *Forum for Health Economics & Policy*. doi:10.3386/w15134
51. Cooper, Z., Craig, S., Gaynor, M., Harish, N. J., Krumholz, H. J., & Reenen, J. (2019). Hospital Prices Grew Substantially Faster Than Physician Prices For Hospital-Based Care In 2007-14. *Health Aff (Millwood)*, 38(2), 184-189. doi:10.1377/hlthaff.2018.05424
52. Kocher, R., & Sahni, N. R. (2011). Hospitals' Race to Employ Physicians — The Logic behind a Money-Losing Proposition. *New England Journal of Medicine*, 364(19), 1790-1793. doi:10.1056/NEJMp1101959
53. Capps, C., Dranove, D., & Ody, C. (2018). The effect of hospital acquisitions of physician practices on prices and spending. *Journal of Health Economics*, 59, 139-152. doi:10.1016/j.jhealeco.2018.04.001
54. Baker, L. C., Bundorf, M. K., Kessler, D. P. (2014). Vertical Integration: Hospital Ownership Of Physician Practices Is Associated With Higher Prices And Spending. *Health Aff (Millwood)*, 33(5), 756-763. doi:10.1377/hlthaff.2013.1279
55. Scott, K. W., Orav, E. J., Cutler, D. M., & Jha, A. K. (2017). Changes in Hospital-Physician Affiliations in U.S. Hospitals and Their Effect on Quality of Care. *Ann Intern Med*, 166(1), 1-8. doi:10.7326/M16-0125
56. Dafny, L. S., Hendel, I., Marone, V., & Ody, C. (2017). Narrow Networks On The Health Insurance Marketplaces: Prevalence, Pricing, And The Cost Of Network Breadth. *Health Aff (Millwood)*, 36(9), 1606-1614. doi:10.1377/hlthaff.2016.1669
57. Robinson, J. C., Brown, T. T., & Whaley, C. (2017). Reference Pricing Changes The 'Choice Architecture' Of Health Care For Consumers. *Health Aff (Millwood)*, 36(3), 524-530. doi:10.1377/hlthaff.2016.1256
58. Huelskoetter, T. (2018). *Evaluating State Innovations to Reduce Health Care Costs*. Retrieved from <https://www.americanprogress.org/issues/healthcare/reports/2018/04/06/448912/evaluating-state-innovations-reduce-health-care-costs/>
59. Livingston, S. (2019). Montana's experiment in reference-based pricing has saved \$13.6M so far. *Modern Healthcare*. Retrieved from <https://www.modernhealthcare.com/insurance/montanas-experiment-reference-based-pricing-has-saved-136m-so-far>
60. Frakt, A. (2016). How Common Procedures Became 20 Percent Cheaper for Many Californians. Retrieved from <https://www.nytimes.com/2016/08/09/upshot/how-common-procedures-got-20-percent-cheaper-for-many-californians.html>
61. Baum, A., Song, S., Landon, B. E., Phillips, R. S. Bitton, A., & Basu, S. (2019). Health Care Spending Slowed After Rhode Island Applied Affordability Standards To Commercial Insurers. *Health Aff (Millwood)*, 38(2), 237-245. doi:10.1377/hlthaff.2018.05164
62. Claxton, G., Rae, M., Long, M., Damico, A., & Whitmore, H. (2018). Health Benefits In 2018: Modest Growth In Premiums, Higher Worker Contributions At Firms With More Low-Wage Workers. *Health Aff (Millwood)*, 37(11), 1892-1900. doi:10.1377/hlthaff.2018.1001