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An Updated Look at Excess Spending and Affordability in California's Health Care System

This research was sponsored by the California Health Care Foundation.

Research Report

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RR-A4803-1

About This Report

In this report, we analyzed health care spending trends in California using data from the State Health Expenditure Accounts, the U.S. Bureau of Economic Analysis, the Centers for Medicare and Medicaid Services, and several other sources. We then estimated the share of spending that could be considered excessive or unnecessary. To estimate excess spending, we relied on a seminal study, Shrank, Rogstad, and Parekh (2019), which found that excess spending accounted for approximately 20 to 25 percent of all health care spending in the United States. Because that article did not fully account for well-documented reductions in health care spending growth that occurred after 2009, we made adjustments based on more-recent literature (Cutler and Klarnet, 2026; Glied and Lui, 2026). Overall, we found that between 18.5 and 23.5 percent of spending ($108.3 to $137.5 billion) in California in 2025 was potentially excessive or unnecessary. These numbers represent a slight decline in the share of excessive spending relative to our prior estimates (Eibner et al., 2020), which did not account for the nationwide spending slowdown. Still, our analysis indicates that there is substantial room for improvement.

This study updates the report *Getting to Affordability: Spending Trends and Waste in California's Health Care System*, conducted by RAND researchers and published by the California Health Care Foundation in 2020 (Eibner et al., 2020). This work might be of interest to policymakers in California to inform future policies aimed at curbing health care spending growth.

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This work was conducted in the Financing and Organization Program of RAND Health, a division of RAND that strengthens health care systems and the societal conditions that support health. For more information, visit www.rand.org/health or email Health@rand.org.

Funding

This research was sponsored by the California Health Care Foundation.

Acknowledgments

We thank our reviewers, Kelsey Chalmers, Laurie Martin, and Petra Rasmussen, for providing suggestions and feedback that strengthened this report. We also thank Leslie Canterbury for excellent administrative assistance.

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An Updated Look at Excess Spending and Affordability in California's Health Care System

The share of Californians without health insurance fell substantially after the passage of the Affordable Care Act (ACA), reaching a low of 5.9 percent in 2024, down from 18.6 percent in 2010 (KFF, undated-b). However, health care affordability remains a pressing concern. For the 2025–2026 budget year, California allocated roughly 22 percent of its General Fund to health care spending, potentially crowding out other priorities (Legislative Analyst's Office, 2025; State of California, 2025). High health care spending also puts a strain on employers (who pay for the majority of health care for people under age 65) and consumers (who might face increased cost-sharing, elevated premiums, or lower wages that reflect the high cost of care) (Baicker and Chandra, 2006; Arnold and Whaley, 2020; KFF, 2025). According to the California Health Care Foundation's (CHCF's) 2026 California Health Policy Survey, nearly one-quarter (24 percent) of Californians view health care expenses as a "major financial strain" (Joynt et al., 2026). Both uninsurance and financial hardship could increase as provisions of the One Big Beautiful Bill Act take effect, with approximately 1.9 million Californians projected to lose Medicaid eligibility (Rao et al., 2026).

Reducing health care spending while maintaining access to and quality of care is a persistent challenge. However, seminal studies by Berwick and Hackbarth (2012) and Shrank, Rogstad, and Parekh (2019) found that 20 to 34 percent of health care spending is excessive or potentially unnecessary because of such factors as pricing failures, overtreatment, or administrative inefficiencies. In this analysis, we estimated total health care spending (overall and by payer) in California and assessed how much could be saved if the state reduced excessive spending.[1] To do so, we updated estimates from Shrank, Rogstad, and Parekh (2019) to account for the widely documented post-ACA spending slowdown (Cutler and Klarnet, 2026; Glied and Lui, 2026; Liu et al., 2026; Smith and Newhouse, 2026).

Spending Trends in California

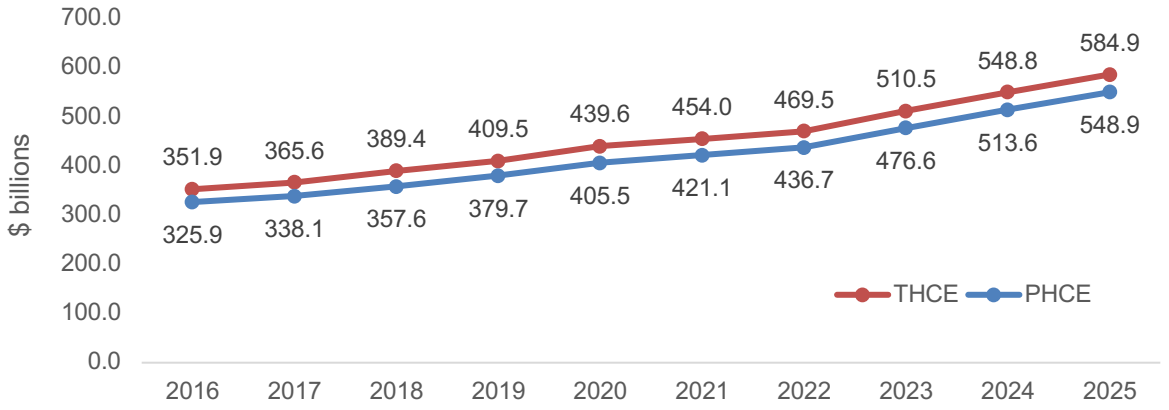
Nominal Growth

We estimated nominal total health care expenditures (THCE) among California residents using data from the State Health Expenditure Accounts (SHEA), the U.S. Bureau of Economic Analysis

[1] This study updates the report *Getting to Affordability: Spending Trends and Waste in California's Health Care System*, conducted by RAND researchers and published by the California Health Care Foundation in 2020 (Eibner et al., 2020).

(BEA), and the National Health Expenditure Accounts (see Appendix A for details on our data sources and methodology). Figure 1 summarizes the results. THCE in the state grew from $352 billion in 2016 to approximately $585 billion in 2025, a 66-percent increase over nine years or roughly 6 percent annually. Nominal personal health care expenditures (PHCE), which do not include net spending related to insurer administration, similarly increased from $326 billion to $549 billion between 2016 and 2025, or about 4 percent each year. Per-capita THCE and PHCE have also increased during this time (see Table B.1 in Appendix B).

Figure 1. Health Care Expenditure Estimates by California Residents ($ billions)



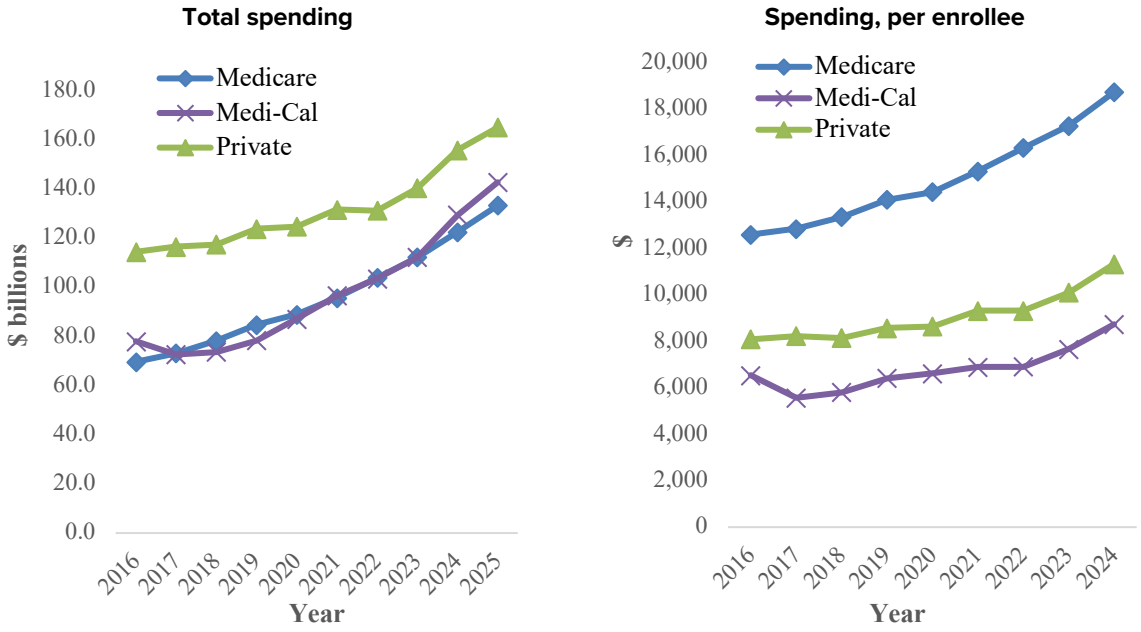
SOURCES: Features 2016–2020 SHEA data (U.S. Centers for Medicare and Medicaid Services [CMS], 2024b), 2016–2024 National Health Expenditure Account data (CMS, 2026b), and 2016–2024 personal consumption expenditure (PCE) data (BEA, undated).
NOTE: THCE include PHCE and net insurance costs, which reflect health insurance premiums net of medical spending.

Nominal Growth, by Service Category and Payer

Spending across service categories remained remarkably steady between 2016 and 2025 (see Tables B.2 and B.3 in Appendix B). However, the distribution of spending across payer types shifted, and public payers accounted for a growing share of total spending. Medicare spending increased by 91 percent between 2016 and 2025, growing from $70 billion to $133 billion (Figure 2, left graph). Over the same period, spending on Medi-Cal, California's Medicaid program, increased by 83 percent, from $78 billion to $143 billion. Spending by private insurers grew by about 44 percent from 2016 to 2025, increasing from $114 billion to $165 billion. These spending differences across payers were partly driven by changes in enrollment, such as the Medi-Cal coverage increases that occurred during the coronavirus disease 2019 (COVID-19) pandemic. Changes in per-enrollee spending were more similar across payers, growing by 59 percent on Medicare, 48 percent on Medi-Cal, and 50 percent among private payers between 2016 and 2024 (Figure 2, right graph). The relatively high growth in per-enrollee Medicare spending was driven by growth in Medicare Advantage spending, which increased from $24 billion in 2016 to around $52 billion in 2025, or 8.5 percent annually (Table B.4

in Appendix B). In comparison, spending on original fee-for-service (FFS) Medicare grew from $31 billion in 2016 to around $47 billion in 2025, or a 4.8 percent annual growth rate.

Figure 2. Total Spending and Spending per Enrollee, by Payer Type in California

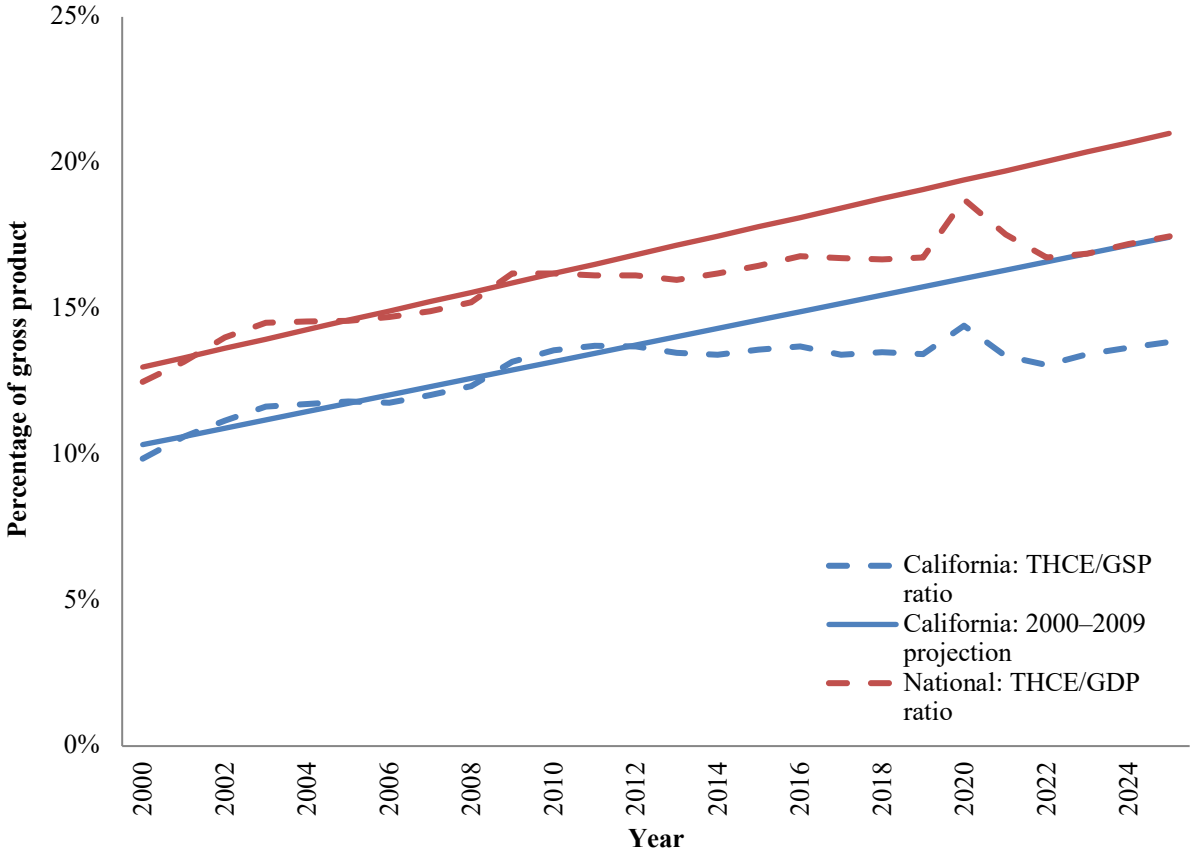


SOURCES: Features 2016–2020 SHEA data (CMS, 2024b), 2016–2024 CMS payment data (CMS, 2024a), 2016–2024 CMS FFS spending data (CMS, 2026c), 2016–2024 Medical Expenditure Panel Survey Insurance Component (MEPS-IC) data (Agency for Healthcare Research and Quality, undated), 2016–2024 National Health Expenditure Account data (CMS, 2026b), 2016–2024 PCE data (BEA, undated), and data from the CHCF Enrollment Almanac (Wilson, 2025).
NOTE: Estimates in this figure do not sum to the totals in Figure 1 because out-of-pocket costs, certain administrative costs, and some other categories of care (such as the ACA marketplaces) are not included in this figure.

Growth Relative to Gross State Product

Although nominal growth in California increased from 2010 to 2025, growth relative to gross state product (GSP) largely stagnated after 2010, consistent with nationwide trends. Figure 3 shows predicted spending relative to GSP based on pre-2010 data (solid lines) and actual spending relative to GSP (dotted lines) for California and the United States. Except for a COVID-19–related increase in 2020, spending relative to GSP in California and gross domestic product (GDP) nationally was relatively flat after 2010. These findings indicate that, during this period, health care cost growth was on par with growth in the rest of the economy. For California, THCE as a share of GSP was 13.6 percent in 2010, similar to the 13.8-percent estimate for 2025. Relative to a straight-line projection from pre-2010 data, we estimate that California saved approximately $153 billion in 2025. California's health care spending relative to GSP was also consistently lower than national health care spending relative to GDP.

Figure 3. Health Care Spending Relative to Gross State Product (California) or U.S. Gross Domestic Product, Realized and Projected Based on Pre-2010 Data



SOURCES: Features 2016–2020 SHEA data (CMS, 2024b), 2016–2024 CMS payment data (CMS, 2024a), 2016–2024 CMS FFS spending data (CMS, 2026c), 2016–2024 MEPS-IC data (Agency for Healthcare Research and Quality, undated), 2000–2024 National Health Expenditure Account data (CMS, 2026b), 2016–2024 BEA-PCE data (BEA, undated), and 2000–2025 BEA GDP data by state (BEA, 2026).

Excess Spending

Foundational Estimates

Berwick and Hackbarth (2012) established a foundation for understanding excess health care spending, identifying six key categories: failures of care delivery, failures of care coordination, overtreatment, administrative complexity, pricing failures, and fraud and abuse. They estimated that about 34 percent of U.S. health care spending, or $910 billion, was unnecessary. Building on this framework, Shrank, Rogstad, and Parekh (2019) synthesized evidence from multiple studies and concluded that excess spending accounted for between $760 billion and $935 billion annually, or about 20 to 25 percent of total national health care spending. Pricing failures and administrative complexity represented the largest components of excess spending, each contributing to about one-third of the total.

Speer et al. (2020) estimated excessive health care spending in the United States using slightly different categories than those used by Shrank, Rogstad, and Parekh (2019) but reached the same conclusions—specifically, that from $600 billion to more than $1.9 trillion could be excessive. No subsequent study has provided a comprehensive update to the Shrank, Rogstad, and Parekh (2019) numbers. See Appendix C for a list of the literature we reviewed.

The Effect of the Spending Slowdown

In the years since Shrank, Rogstad, and Parekh (2019) was published, there has been increased attention on the nationwide slowdown in health care spending that occurred following the passage of the ACA and documented in Figure 3 (Cutler and Klarnet, 2026; Glied and Lui, 2026; Liu et al., 2026; Smith and Newhouse, 2026). Because Shrank, Rogstad, and Parekh (2019) took estimates of excess spending from existing literature at a single point in time (typically around 2013), the study does not fully capture the post-ACA slowdown. Recent literature attributes at least some of the slowdown to reductions in excess spending categories. For example, Smith and Newhouse (2026) estimated that the post-ACA slowdown was driven, in part, by a decline in U.S. health care prices relative to prices for other goods and services. Cutler and Klarnet (2026) attributed more than half of the nearly $1 trillion slowdown between 2010 and 2024 to slower price growth and reductions in pharmaceutical spending driven by such factors as the loss of exclusivity and slower growth of brand name drug usage. Similarly, Glied and Lui (2026) found that the decline in spending growth reflected substitution from higher-cost to lower-cost care, slower growth in insurers' administrative spending, and slower growth in prices, among other factors. These explanations focus on spending that Shrank, Rogstad, and Parekh (2019) identified as excessive because of such factors as pricing failures and unnecessary administrative costs.

Table 1 maps the spending reductions estimated by Cutler and Klarnet (2026) to categories in the Shrank, Rogstad, and Parekh (2019) analysis. We focus on Cutler and Klarnet (2026) because their analysis provides a detailed breakdown of the causes of the slowdown. However, other studies show broadly similar results (see Appendix D). Because Cutler and Klarnet (2026) did not separate reductions in administrative complexity from their residual category, we relied on data from Glied and Lui (2026) to estimate that component. Of the $977 billion in national spending that was avoided because of the slowdown, roughly 46.5 percent ($454 billion) align with categories that Shrank, Rogstad, and Parekh (2019) identified as excess. If growth in excessive or unnecessary spending slowed or declined over time, the Shrank, Rogstad, and Parekh (2019) estimates might now overstate the share of spending that is excessive.

Table 1. Cutler and Klarnet (2026) Spending Reduction Categories and Alignment with Shrank, Rogstad, and Parekh (2019) Categories

Reason for Spending Reduction from Cutler and Klarnet (2026)	Total Share of Reduction (%)	Alignment with Shrank, Rogstad, and Parekh (2019)	Share of Reduction That We Attribute to Excessive Spending (%)
Population health improvements	9	No clear alignment	0
Site of care substitution: surgery	10	Possibly aligned but could reflect technological change that allowed different types of care	0
Less rapid growth of imaging	4	Overtreatment	4
Less rapid price growth	22	Pricing failure	22
Pharmaceutical savings (e.g., because of loss of exclusivity, changes in quantity consumed, less rapid price growth)	29	Pricing failure but only for price components and loss of exclusivity (not changes in quantity)	12
Long-term services and supports	3	No clear alignment	0
Cross-cutting components (Accountable Care Organizations, high-deductible plans, prior authorization)	0–17	Possibly aligned but might already be counted in other Cutler and Klarnet categories	0
Residual	8–24	Includes administrative cost reductions, which Glied and Lui (2026) estimate at 8.5 percent of avoided spending	8.5
Total aligned with Shrank, Rogstad, and Parekh (2019)			46.5

SOURCES: Features information from Cutler and Klarnet (2026); Glied and Lui (2026); and Shrank, Rogstad, and Parekh (2019).
NOTE: The sum of the second column does not equal 100 percent because of rounding. The final column reports the total share of the total reduction in spending that we determined was aligned with Shrank, Rogstad, and Parekh (2019). The numbers in the final column are relative to the total $977 billion reduction; they are not a share of the second column. Cutler and Klarnet (2026) argued that the cost-cutting components are at least partially and potentially entirely duplicative with other spending categories, which is why we excluded them. Glied and Lui (2026) estimated that $66.6 billion out of $783.1 billion in savings achieved by 2019 (8.5 percent) were because of reductions in administrative costs.

Implications for California

We estimated excess spending in the state by applying national-level percentages derived from the literature to state spending totals. We constructed upper-bound excess spending estimates by multiplying THCE in California in 2025 by the proportions of total U.S. spending attributed to excess spending in each category, as reported by Shrank, Rogstad, and Parekh (2019). We used the midpoint of each range: 7.40 percent for administrative complexity, 1.80 percent for fraud and abuse, 6.55 percent for pricing failure, 2.45 percent for overtreatment or low-value care, 1.50 percent for failure of care coordination, and 3.70 percent for failure of care delivery. For our upper-bound

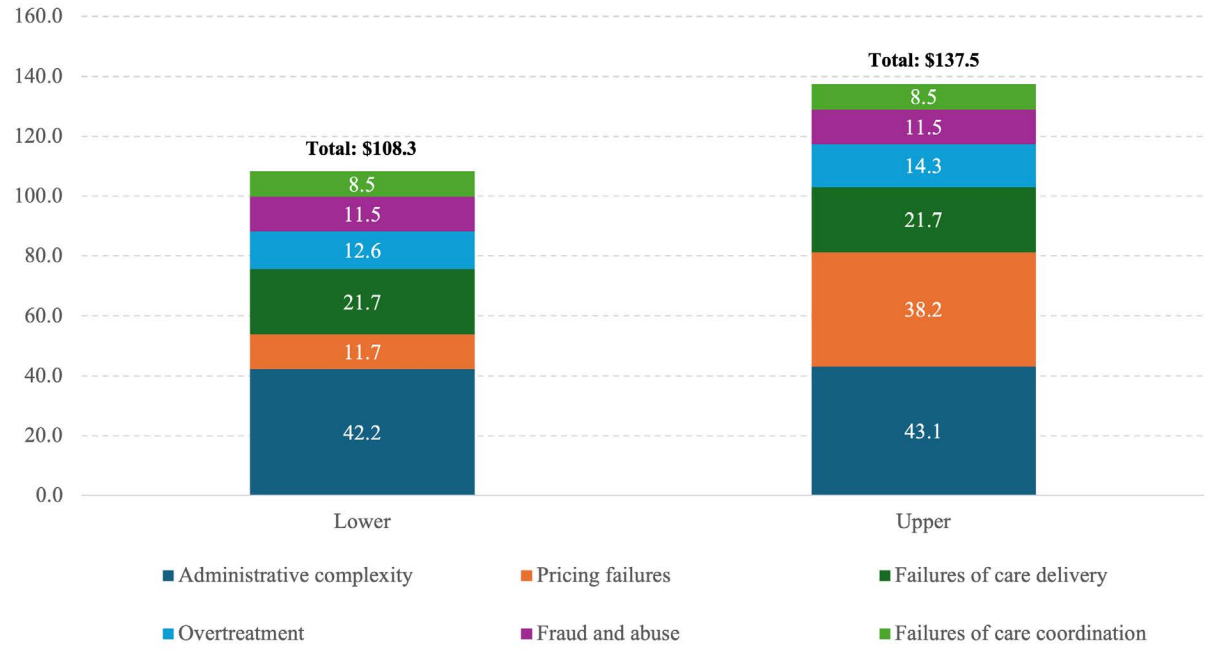
estimate, we assumed that excessive spending slowed at the same pace as other spending. Hence, the share of spending that was excessive remained constant over time.

However, the analysis in Table 1 suggests that excessive spending could have slowed more than other spending categories. For our lower-bound scenario, we assumed that excessive spending categories slowed more than nonexcessive spending categories. Specifically, Table 1 implies that 46.5 percent of the spending slowdown was aligned with overtreatment, pricing failure, and administrative complexity. Because these categories of excess spending constitute only 16.3 percent of total spending in the Shrank, Rogstad, and Parekh (2019) estimate, 30.2 additional percentage points of the slowdown should arguably be allocated to these categories. The slowdown in California was approximately $153 billion, so this implies that $46.2 billion should be subtracted (cumulatively) from the overtreatment, pricing failure, and administrative complexity excessive spending categories.

Shrank, Rogstad, and Parekh (2019) captured a portion of the savings in these excessive spending categories because the estimates were calculated after the slowdown started. However, because they were based on point-in-time estimates from earlier years, reductions from the slowdown had not yet been fully realized. Using, by category, the median publication year of the studies cited in Shrank, Rogstad, and Parekh (2019), we found that 36.7 percent of the $46.2 billion in savings were captured, while 63.3 percent ($29.2 billion) remained to be realized. For our lower-bound scenario, we allocated the $29.2 billion in savings to overtreatment (5.9 percent), pricing failures (91.1 percent), and administrative complexity (3.0 percent). We assumed that the adjustments accrued linearly over time and that the proportion of excess spending in other Shrank, Rogstad, and Parekh (2019) categories remained constant. Appendix A provides additional details on these adjustments.

With these assumptions, we estimated that excess spending in California ranged from $108.3 billion to $137.5 billion, representing between 18.5 percent and 23.5 percent of California's THCE in 2025. Figure 4 shows our results. In both the lower- and upper-bound scenarios, administrative complexity represents the largest source of excess spending, at around $43 billion. Pricing failures are the second-largest driver of excessive spending in the upper-bound scenario, accounting for $38.2 billion. However, in the lower-bound scenario, pricing failures account for only $11.7 billion in spending. This reflects the fact that Cutler and Klarnet (2026) attributed a large share of the post-ACA spending slowdown to less rapid price growth. As described in Appendix D, all the studies of the post-ACA slowdown that we identified noted less rapid price growth as an important contributor.

Figure 4. Estimates of Excessive Spending in California in 2025 ($ billions)



NOTE: Numbers do not sum to totals because of rounding.

Limitations

Our study has several important limitations. First, our lower-bound scenario is heavily reliant on our mapping between the Shrank, Rogstad, and Parekh (2019) categories of excessive spending and the categories described by Cutler and Klarnet (2026). Broadly, many of the observed sources of savings, such as slower price growth and the substitution of lower-cost for higher-cost care modalities, appear aligned with excess spending categories described by Shrank, Rogstad, and Parekh (2019). However, in some cases, other explanations could be possible. For example, we assumed that the less rapid growth of imaging meant that fewer people received unnecessary tests. However, we cannot rule out the possibility that the use of necessary tests has declined. Although Cutler and Klarnet (2026) noted that "[as] best we can determine, much of the spending slowdown was not associated with worse outcomes," they call for additional research to determine whether the slowdown had adverse consequences.

Additionally, we relied on published literature conducted across a variety of periods to derive our estimates. Differences in research design choices across studies, such as inflation rates or denominators used for measuring health care costs, might add errors when the studies are combined. We did not independently validate the findings from the studies that we relied on. Furthermore, most of the studies were not California-specific, and we made the strong assumption that excessive spending patterns for the state were similar to those of the nation.

It is also possible that new categories of excessive spending have emerged over time or that other categories not accounted for in the spending slowdown (such as failures of care coordination) became worse. Because our literature review did not provide clear evidence either way, we assumed that

spending on these other categories of excessive spending remained constant as a proportion of total spending over time.

Finally, excessive spending categories are inherently hard to identify because there can be legitimate debate about what aspects of spending are excessive. For example, in classifying savings that stem from drugs going off patent as reductions in excessive spending, we are implying that paying higher prices for brand name drugs is excessive. This characterization might be accurate if we take the perspective that the United States overpays for brand name drugs and that the marginal cost of producing a pill is close to zero. However, the characterization might be inaccurate if high brand name drug prices accurately capture the research and development investments that manufacturers make to bring these drugs to the market.

Summary

Although health care spending in California remains high, the growth of health care costs relative to GSP slowed nationwide after 2009. Recent analyses suggest that reductions in excess spending contributed to this slowdown, including shifts from higher-cost to lower-cost care settings (reducing overtreatment and low-value care) and slower growth in prices and administrative expenses (reducing pricing failures and administrative complexity). The slowdown implies that the widely cited Shrank, Rogstad, and Parekh (2019) estimate—that roughly 23.5 percent of U.S. health care spending is excessive—could be lower if recalculated with more-recent data. After accounting for the slowdown, we estimated that 18.5 percent of health care spending in California remains unnecessary.

Appendix A

Analytic Methods

This appendix provides explanations of our data sources and step-by-step details about our methods.

Constructing Spending Trends in California: 2016–2025

We estimated THCE (net administrative cost and PHCE), PHCE by service category, and expenditures by payer type between 2016 and 2025. Our estimates for California residents relied on 2016–2020 estimates from the SHEA for PHCE and payer-specific estimates. Table A.1 lists the data sources we used to construct our estimates. As of this writing, CMS has not released updated SHEA data for California after 2020.

Table A.1. Data Sources

Data Source	Purpose
SHEA	Provided baseline estimates (2016–2020) for PHCE, spending by service category, and payer-specific estimates.
BEA-PCE	Provided California-specific growth rates to inflate PHCE and service category estimates for 2022–2024. Used the net-health-insurance ratio to estimate the gap between THCE and PHCE and estimate THCE.
Agency for Healthcare Research and Quality MEPS-IC	Provided state-specific estimates of private insurance premiums. Used to project SHEA private payer estimates.
CHCF California Health Insurers Enrollment Almanac	Provided enrollment estimates to calculate per-enrollee costs for private health insurance.
CMS-64 reports	Provided trends in total net expenditures to project Medicaid spending.
CMS Medicaid Budget and Expenditure System enrollment	Provided trends in Medicaid enrollment in California.
CMS FFS data summary workbooks	Provided Part A and Part B reimbursements and enrollment to calculate FFS Medicare spending in California.
CMS enrollment by contract	Used to compute enrollment in Medicare Advantage and Part D in California.
KFF state health facts data (derived from CMS)	Used to obtain average gross drug costs per Part D enrollee to estimate baseline Part D spending.
CMS plan payment data	Used to compute plan payments in Medicare Advantage and Part D. Part D payment trend used to project KFF Part D spending.

Then, we proceeded in four steps:

1. Estimate PHCE in California.
2. Estimate PHCE in California by service category.
3. Estimate THCE in California by service category.
4. Estimate payer-type expenditures in California.

We present estimates in nominal dollars (i.e., not adjusted for inflation), both to align with published sources and to follow the Congressional Budget Office's convention in presenting budgetary forecasts (Congressional Budget Office, 2024). Payer-specific estimates published by SHEA should be interpreted separately because the underlying data differ in the inclusion of insurer administrative costs and out-of-pocket costs. Finally, the vast majority of sources we used do not include estimates for 2025. We constructed 2025 estimates by inflating 2024 estimates using annual growth rates in the prior three years.

Step 1. Estimate PHCE in California: 2016–2025

PHCE estimates for California residents between 2016 and 2020 were taken from the SHEA (CMS, 2024b). To obtain estimates for 2022, we inflated 2019 estimates by the 2019–2022 aggregate growth rate in spending from total health, pharmaceutical and other medical products, and therapeutic appliances and equipment obtained from the BEA-PCE data for California between 2016 and 2024 (BEA, undated). Because the mapping between BEA-PCE and SHEA data is not exact, Table A.2 shows how we crosswalked SHEA service categories with BEA-PCE spending categories.

Table A.2. BEA-PCE Categories Used to Inflate the SHEA Estimates

SHEA Service Category	BEA-PCE Categories for Growth Rates
PHCE	Total health, pharmaceutical and other medical products, and therapeutic appliances and equipment
Hospital	Hospitals
Physicians and clinics	Physician services
Other professionals	Outpatient services (physician services, dental services, paramedical services)
Dental	Dental services
Home health	Hospital and nursing home services
Nursing	Nursing homes
Drugs and nondurables	Pharmaceutical and other medical products
Durables	Therapeutic appliances and equipment
Other health	Total health

NOTE: *Total health* in BEA-PCE data includes *hospital*, *physicians and clinics*, *other professionals*, *dental*, *home health*, and *nursing*.

We chose to inflate 2019 rather than 2020 estimates because of spending related to COVID-19. Similarly, we obtained estimates for 2023 and 2024 by inflating the estimates for 2022 by annual growth rates obtained from the BEA-PCE data for the same categories. We obtained an estimate for 2025 by inflating the estimate for 2024 by the average annual growth rate (across 2021–2022, 2022–2023, and 2022–2024) from the BEA-PCE data in total health, pharmaceutical and other medical products, and therapeutic appliances and equipment. Finally, because annual growth rates between 2020 and 2021 and between 2021 and 2022 were highly influenced by how government pandemic spending was incorporated into individual datasets, we constructed 2021 estimates as the average of 2020 and 2022 estimates.

Step 2. Estimate PHCE in California by Service Category

We constructed estimates of PHCE by service category, including hospital care, physician and clinical services, other professional services, dental services, home health care, nursing care facilities, drugs and nondurable medical products, durable medical products, and other health (health, residential, and personal care). These sectors are directly taken from SHEA resident-based estimates between 2016 and 2020. To construct estimates for 2021 to 2025, we took a similar approach to the construction of total PHCE; we used 2019–2022 growth rates implied by BEA-PCE data to obtain estimates for 2022. See Table A.1 for the mapping of BEA-PCE categories to service categories in the SHEA data. We then inflated the estimate for 2022 by annual growth rates to obtain 2023 and 2024 estimates. We obtained an estimate for 2025 by inflating the estimate for 2024 by the average annual growth rate (across 2021–2022, 2022–2023, and 2022–2024) implied by the BEA-PCE data. Because annual growth rates between both 2020 and 2021 and 2021 and 2022 were highly influenced by how government pandemic spending was incorporated into individual datasets, we constructed 2021 estimates as the average of 2020 and 2022 estimates. Finally, we proportionally adjusted each service-sector estimate to match the total PHCE estimate obtained from Step 1.

Step 3. Estimate THCE in California by Service Category

SHEA data do not contain estimates for THCE by state, which would include administrative costs and insurer profits. We derived the gap between THCE and PHCE by multiplying estimates of total PHCE with the ratio of net health insurance to the sum of total health, pharmaceutical and other products, and therapeutic appliances and equipment from the BEA-PCE data between 2016 and 2024. *Net health insurance* is defined as total premiums less normal losses, such as the costs of medical care. Because the 2025 BEA-PCE data are not yet available, we projected the 2025 gap by using the average annual growth rates in this ratio between 2021 and 2022, 2022 and 2023, and 2023 and 2024. We then calculated THCE annually by summing the estimated gap for the year and PHCE from Step 1.

Step 4. Estimate Health Care Expenditures in California by Payer Type

We constructed payer-type estimates of spending for private health insurance, Medicare, and Medicaid from a variety of data sources. Except for FFS Medicare and Medicare Part D, all other

estimates include insurer profits because the underlying data represent either the premiums paid by the patient and/or employer or payments paid by CMS to the insurer in the case of Medicare Advantage. Because we used gross drug costs to compute Medicare Part D spending, out-of-pocket costs are implicitly included. Table A.3 shows the components included in the payer estimates.

Table A.3. Components Included in Payer Spending Estimates

Spending Component	Private	Medicaid	FFS Medicare Parts A and B	Medicare Advantage	Medicare Part D
Net health insurance (premiums, provider payments)	Yes	Yes	No	Yes	No
Provider payments	Yes	Yes	Yes	Yes	Yes
Out-of-pocket costs	No	No	No	No	Yes

For private health insurance, SHEA use multiple surveys, such as the MEPS-IC, Medical Expenditure Panel Survey Household Component (MEPS-HC), and data from the Office of Personnel Management, the North American Industry Classification System, and Medigap to develop per-policy spending estimates by state; therefore, *spending is that of residents*. SHEA define these payer estimates to include benefits and the net cost of health insurance, including administrative costs and plan profits. To calculate per-enrollee costs, we divided total spending by enrollment estimates from the CHCF's Enrollment Almanac (Wilson, 2025).

For Medicaid, we projected THCE from SHEA estimates using the trend in total net expenditures from CMS-64 reports, published for each fiscal year (FY), which extends from October through September. For FY 2016 through FY 2023, we adjusted CMS-64 estimates to align with the calendar year. For example, the estimate for Medicaid expenditures for 2016 would be the blended rate of 75 percent of the FY 2016 estimate and 25 percent of the FY 2017 estimate. Because data for FY 2025 have not yet been released, we assumed that FY 2024 data were representative of the 2024 calendar year.

For Medicare, we estimated spending for 2016 to 2024 using data published by CMS. Because 2025 data were not yet available, we calculated 2025 estimates by inflating 2024 estimates by the average growth rate between 2021 and 2022, 2022 and 2023, and 2023 and 2024. We used these data rather than inflating SHEA estimates because our constructed estimates are very close to the SHEA numbers and allow more-granular analysis.

We calculated FFS Medicare spending using annual published CMS workbooks (CMS, 2026c). After stacking the annual files, we filtered the dataset to the state of California. We determined the final annual spending by aggregating the total Part A and Part B reimbursements by year.

For Medicare Advantage, we constructed estimates by merging three CMS data sources captured each December: (1) plan-level enrollment files, (2) contract-information files, and (3) Part C financial workbooks containing risk scores, Part A and Part B payments, and rebates (CMS, 2024a; CMS, 2026a). We calculated per-member per-month (PMPM) spending for each plan as the product of the average Part C risk score and the average Plan A and Plan B payment, plus the average rebate. Because the data reflect a single monthly snapshot, we multiplied each plan's total by its enrollment and then by 12 to approximate full-year spending. We aggregated results by year to obtain total annual spending.

We estimated Part D spending between 2016 and 2021 as the average gross Part D drug cost per enrollee (KFF, undated-a) multiplied by total Part D enrollment. The data for later years were not produced. For 2022 to 2024, we inflated 2021 estimates using the growth rate in Part D plan payments for California plans. Trends in Part D plan payments reflect increases in drug costs, but the levels are less informative about total spending; a substantial portion of drug costs are out of pocket. To calculate the total Part D plan payments (CMS, 2024a; CMS, 2026a), we first derived a plan-level PMPM rate by multiplying the direct subsidy by the plan's specific risk score and adding the reinsurance and low-income cost-sharing components. We then adjusted this base rate for retrospective government settlements by adding a contract-level reconciliation factor. After merging these standardized financial metrics with California-specific enrollment data, the final annual expenditure was determined by multiplying the adjusted PMPM rate by the enrollment count and a factor of 12.

Accounting for the Spending Slowdown Between 2010 and 2024

To account for the slowdown in health care spending between 2010 and 2024, we adjusted excess spending estimates from Shrank, Rogstad, and Parekh (2019) using estimates of the total decline in excess spending from Cutler and Klarnet (2026) and Glied and Lui (2026). Of the $977 billion slowdown, we mapped 46.5 percent to excess spending categories defined by Shrank, Rogstad, and Parekh (2019) (see Table 1).

We then applied the following steps:

- For each of the excess spending categories in Shrank, Rogstad, and Parekh (2019), we calculated the difference between the percentage of the $977 billion slowdown aligned to the excess spending category (column 4 of Table 1) times the total slowdown in California ($153 billion) and the percentage of spending attributable to the excess spending category from Shrank, Rogstad, and Parekh (2019) times the total slowdown in California ($153 billion). Note the following:
  - For Shrank, Rogstad, and Parekh (2019) categories without clear alignment to Cutler and Klarnet (2026) categories, we assumed this difference was zero. In other words, the proportion of the total slowdown attributable to each of these categories was unchanged from Shrank, Rogstad, and Parekh's (2019) estimates.
  - Some of the Cutler and Klarnet (2026) categories—specifically, population health improvements and long-term services and supports—did not align with the Shrank, Rogstad, and Parekh (2019) categories. The slowdown attributed to these categories would be considered reductions to nonexcess spending, and therefore, no additional adjustment to excess spending is needed.
  - Cutler and Klarnet (2026) described crosscutting spending reductions, which included savings related to Accountable Care Organizations, increased consumer cost-sharing, and prior authorization. Some of these categories might have been aligned with excessive spending reported in Shrank, Rogstad, and Parekh (2019); for example, use of prior authorization could have limited overtreatment. However, Cutler and Klarnet (2026) noted that these categories might have overlapped with other categories in the analysis, such as

slower growth in imaging. Given this potential overlap, we did not adjust our estimate to account for savings from the crosscutting categories of spending.

- We computed the median data year for publications assigned to each excess spending category documented in Shrank, Rogstad, and Parekh (2019). In other words, if Shrank, Rogstad, and Parekh (2019) used three studies to create the estimate for an excessive spending category, and those studies, in turn, use data from 2010, 2013, and 2016, we assigned 2013 as the median data year.
- We assumed that the total savings were equal to the number of years between 2024 and the median data year multiplied by the annual reduction mentioned previously. We assumed that savings realized between 2010 and the median data year of Shrank, Rogstad, and Parekh (2019) were already incorporated in their estimates.

Table A.4 shows exactly how we applied the results from Cutler and Klarnet (2026) and Glied and Lui (2026) to compute excessive spending in each category that we adjusted.

Table A.4. Applying Cutler and Klarnet (2026) and Glied and Lui (2026) Estimates to Shrank, Rogstad, and Parekh (2019) Estimates of Excess Health Care Spending in California in 2025

	Spending Category		
Variable	**Overtreatment**	**Administrative Complexity**	**Pricing Failure**
[A] Excess spending in California in 2025 using Shrank, Rogstad, and Parekh (2019) proportions	$14.3 billion	$43.1 billion	$38.2 billion
[B] Median publication year of papers evaluated by Shrank, Rogstad, and Parekh (2019)	2013	2016.5	2014.5
[C] Cutler and Klarnet (2026) and Glied and Lui (2026) allocation that is aligned with Shrank, Rogstad, and Parekh (2019) (column 4 of Table 1)	4%	8.5%	34%
[D] Shrank, Rogstad, and Parekh (2019) allocation	2.4%	7.4%	6.55%
[E] Total change in excess spending from slowdown in California from 2010 to 2024 (([D] − [C]) × $153 billion)	−$2.4 billion	−$1.7 billion	−$41.9 billion
[F] Total change per year ([E] ÷ 15)	−$0.16 billion	−$0.12 billion	−$2.8 billion
[G] Number of years to apply adjustment (2024 − [B])	11	7.5	9.5
Excess spending (lower bound) in California in 2025 ([A] + [D] × [G])	$12.6 billion	$42.2 billion	$11.7 billion

NOTE: Estimates of excess spending for categories not listed (failures of care delivery, failures of care coordination, and fraud and abuse) were unchanged from the upper-bound estimates. The upper-bound estimates of excess spending were $21.7 billion, $8.5 billion, and $11.5 billion for failures of care delivery, failures of care coordination, and fraud and abuse, respectively.

Appendix B

Supplemental Tables

In this appendix, we provide additional data about total health care spending in Tables B.1 through B.6.

Table B.1. Total Health Care Spending ($) per Capita, by Service Category (2016–2025)

Service Category	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Hospital	3,097	3,188	3,419	3,642	3,822	4,002	4,148	4,476	4,726	5,004
Physician and clinics	2,237	2,322	2,436	2,555	2,704	2,843	2,957	3,246	3,508	3,770
Other professionals	227	244	267	298	313	337	358	396	436	476
Dental	391	412	443	471	452	498	540	569	611	656
Home health	319	342	375	412	478	475	467	508	539	564
Nursing	372	370	387	415	467	464	456	523	581	629
Drugs and nondurables	1,001	999	1,027	1,075	1,116	1,226	1,325	1,454	1,575	1,716
Durables	103	106	112	120	118	140	161	169	180	196
Other health	577	613	603	640	787	771	748	821	890	937
PHCE	8,325	8,594	9,069	9,628	10,257	10,755	11,161	12,163	13,047	13,946
Net health insurance	663	700	806	754	863	841	838	866	893	914
THCE	8,988	9,295	9,875	10,382	11,121	11,595	12,000	13,028	13,940	14,862

NOTE: Numbers in the PHCE row show the sum of all the rows above. Numbers in the THCE row show the sum of the PHCE and net health insurance values. The values might not sum exactly because of rounding.

Table B.2. Total Health Care Spending ($ billions), by Service Category (2016–2025)

Service Category	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Hospital	121.3	125.4	134.8	143.6	151.1	156.7	162.3	175.4	186.0	196.9
Physician and clinics	87.6	91.3	96.1	100.8	106.9	111.3	115.7	127.2	138.1	148.4
Other professionals	8.9	9.6	10.5	11.8	12.4	13.2	14.0	15.5	17.2	18.7
Dental	15.3	16.2	17.5	18.6	17.8	19.5	21.1	22.3	24.1	25.8
Home health	12.5	13.4	14.8	16.2	18.9	18.6	18.3	19.9	21.2	22.2
Nursing	14.6	14.6	15.3	16.4	18.5	18.2	17.9	20.5	22.9	24.8
Drugs and nondurables	39.2	39.3	40.5	42.4	44.1	48.0	51.9	57.0	62.0	67.5
Durables	4.0	4.2	4.4	4.7	4.6	5.5	6.3	6.6	7.1	7.7
Other health	22.6	24.1	23.8	25.2	31.1	30.2	29.3	32.2	35.0	36.9
PHCE	325.9	338.1	357.6	379.7	405.5	421.1	436.7	476.6	513.6	548.9
Net health insurance	26.0	27.5	31.8	29.7	34.1	32.9	32.8	33.9	35.2	36.0
THCE	351.9	365.6	389.4	409.5	439.6	454.0	469.5	510.5	548.8	584.9

NOTE: Numbers in the PHCE row show the sum of all the rows above. Numbers in the THCE row show the sum of the PHCE and net health insurance values. The values might not sum exactly because of rounding.

Table B.3. Proportion of Total Health Care Spending, by Service Category (2016–2025)

Service Category	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Hospital	0.34	0.34	0.35	0.35	0.34	0.35	0.35	0.34	0.34	0.34
Physician and clinics	0.25	0.25	0.25	0.25	0.24	0.25	0.25	0.25	0.25	0.25
Other professionals	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Dental	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Home health	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Nursing	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Drugs and nondurables	0.11	0.11	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.12
Durables	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Other health	0.06	0.07	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06
PHCE	0.93	0.92	0.92	0.93	0.92	0.93	0.93	0.93	0.94	0.94
Net health insurance	0.07	0.08	0.08	0.07	0.08	0.07	0.07	0.07	0.06	0.06
THCE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

NOTE: Numbers in the PHCE row show the sum of all the rows above. Numbers in the THCE row show the sum of the PHCE and net health insurance values. The values might not sum exactly because of rounding.

Table B.4. Total Health Care Spending ($ billions), by Payer Type (2016–2025)

Payer Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Private	114.3	116.4	117.3	123.7	124.6	131.6	131.1	140.2	155.7	164.9
Medicare	69.6	73.0	78.1	84.7	88.9	95.5	103.8	112.1	122.3	133.2
FFS Medicare	30.5	31.8	33.1	34.8	33.9	37.4	38.9	39.9	44.6	47.3
Medicare Advantage	24.2	25.7	28.2	31.7	35.3	36.9	41.9	47.7	47.6	51.9
Part D	14.9	15.6	16.9	18.2	19.7	21.3	23.0	24.5	30.2	34.0
Medi-Cal	78.0	72.6	73.6	78.3	87.1	96.5	103.3	112.1	129.3	142.6
Other	20.3	30.5	42.2	38.1	50.2	34.9	27.4	33.9	19.0	11.0
THCE	351.9	365.6	389.4	409.5	439.6	454.0	469.5	510.5	548.8	584.9

NOTE: *Other*, as a category, is defined as the difference between THCE and the sum of payer-specific spending estimates. This category would include out-of-pocket payments for private insurance, FFS Medicare, Medicare Advantage, and Medi-Cal. It would also include administrative costs for FFS Medicare and Medicare Part D. Numbers in the THCE row show the sum of the other rows. The values might not sum exactly because of rounding.

Table B.5. Total Health Care Spending ($), per Beneficiary (2016–2025)

Payer Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Medicare	12,598	12,845	13,362	14,099	14,428	15,328	16,335	17,282	18,735	20,033
Medi-Cal	6,541	5,569	5,810	6,407	6,616	6,899	6,910	7,660	8,738	9,670
Private	8,087	8,231	8,149	8,579	8,648	9,316	9,322	10,108	11,334	12,113

NOTE: The per-beneficiary spending for Medicare is the sum of per-beneficiary spending for FFS Medicare Part A and FFS Medicare Part B, Medicare Advantage plan payments, and Part D drug costs divided by the sum of Part A and Medicare Advantage enrollees.

Table B.6. Total Health Care Spending ($), per Beneficiary for Medicare and Medi-Cal (2016–2025)

Payer Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
FFS Medicare	10,171	10,299	10,387	10,766	10,627	11,321	12,001	12,209	13,164	13,847
Medicare Advantage	10,581	10,745	11,178	11,910	12,511	12,434	13,478	14,331	14,178	14,824
Part D	3,280	3,309	3,482	3,639	3,826	4,042	4,195	4,343	5,127	5,561
Medi-Cal	6,541	5,569	5,810	6,407	6,616	6,899	6,910	7,660	8,738	9,670

NOTE: The per-beneficiary spending for FFS Medicare is the sum of per-beneficiary spending for FFS Medicare Part A and FFS Medicare Part B divided by the total number of Part A enrollees.

Appendix C

Literature Review Methods

To understand how the literature on excessive health care spending evolved following the Shrank, Rogstad, and Parekh (2019) study, we conducted a targeted literature search using Google Scholar and PubMed and a general internet search to identify relevant gray literature. Our core search terms included combinations of the following terms: health care, excess, unnecessary, waste, cost, and spending. We performed additional focused searches within the six domains of excess health care spending: care delivery, care coordination, overtreatment or low-value care, pricing failure, fraud and abuse, and administrative complexity. We also identified articles through reference mining and using search engine features that identify similar publications and articles citing selected sources.

We reviewed titles, abstracts, and summaries to assess relevance. Publications were included if they were written in English, published in 2019 (the year of the Shrank, Rogstad, and Parekh publication) or later, focused on U.S. health care populations, and provided measurable estimates of excess costs or spending. From each included source, the following data were extracted: title, author(s), publication year, study population and time frame, addressed domain(s) of excess spending, estimates of excess spending by domain and in aggregate, and notable context and considerations. We leveraged an internal artificial intelligence (AI) literature review application to assist with data abstraction from our identified studies, and we reviewed all abstracted data for accuracy. Table C.1 includes the list of the literature we reviewed.

Table C.1. Reviewed Literature

Title	Author(s)	Year	Type of Publication	Topic	Notes
"Low-Value Care at the Actionable Level of Individual Health Systems"	Ganguli et al.	2021	Research article	Overtreatment or low-value care	Analyzes low-value care using Medicare claims and finds substantial overuse of some low-value services, such as antibiotics for respiratory illness. Paper provides utilization rates but not estimates of excess spending.
"Waste in Health Care Spending: A Scoping Review"	Olivares-Tirado and Zanga	2024	Research article	General health care spending	An international review of literature for which the United States–focused discussion expands on findings from Shrank, Rogstad, and Parekh (2019), Berwick and Hackbarth (2012), and Speer et al. (2020).

Title	Author(s)	Year	Type of Publication	Topic	Notes
"Improving the Efficiency in Spending for Health: A Systematic Review of Evidence"	Brikci et al.	2024	Research article, systematic review	General health care spending	An international review of literature that initiates a World Health Organization estimate that 20 to 40 percent of health care spending worldwide is excessive; concludes that it might be challenging to make reductions because of complexities.
"Elevated End-of-Life Spending: A New Measure of Potentially Wasteful Health Care Spending at the End of Life"	Zhang et al.	2023	Research article	Overtreatment or low-value care	Analyzes a subcomponent of overtreatment or low-value care and finds that end-of-life spending was in excess of about $4,700 by hospital referral region.
"Factors Associated with Overuse of Health Care Within US Health Systems: A Cross-Sectional Analysis of Medicare Beneficiaries from 2016 to 2018"	Segal et al.	2022	Research article	Overtreatment or low-value care	Explores features of health systems associated with low-value care delivery and finds investor ownership and fewer primary care physicians are associated with overuse; compares health systems by occurrences of overuse and does not provide cost estimates.
"Reducing Administrative Waste in the US Health Care System"	Kocher	2021	Opinion or viewpoint article	Administrative complexity	Discusses challenges and policy opportunities to address administrative waste. Notes that the "Patients over Paperwork Initiative" was a success and cites savings estimates in dollars and hours through 2021.
"Trends in Low-Value Health Service Use and Spending in the US Medicare Fee-for-Service Program, 2014–2018"	Mafi et al.	2021	Research article	Overtreatment or low-value care	Assesses 32 claims-based measures and finds a decrease in use and spending of low-value services between 2014 and 2018 among Medicare FFS beneficiaries.
"Administrative Simplification and the Potential for Saving a Quarter-Trillion Dollars in Health Care"	Sahni, Carrus, and Cutler	2021	Opinion or viewpoint article	Administrative complexity	Summarizes a McKinsey report evaluating unnecessary administrative spending and estimating $265 billion in savings with a set of interventions.

Title	Author(s)	Year	Type of Publication	Topic	Notes
"Administrative Expenses in the US Health Care System: Why So High?"	Chernew and Mintz	2021	Opinion or viewpoint article	Administrative complexity	Discusses how efforts to reduce administrative costs must balance potential savings with trade-offs and consider the role of market mechanisms versus government intervention. Concludes that sustainable reductions will likely involve greater standardization and simplification of processes.
"When Less Is More: The Role of Overdiagnosis and Overtreatment in Patient Safety"	Kamzan and Ng	2021	Literature review, case study analysis	Overtreatment or low-value care	Discusses characterizations and types of overuse and solutions to prevent overuse but does not estimate savings.
"Waste in the Medicare Program: A National Cross-Sectional Analysis of 2017 Low-Value Service Use and Spending"	Reid et al.	2020	Research article	Overtreatment or low-value care	Estimates spending on low-value care in Medicare FFS claims.
"Building a Better Health Care System Post-Covid-19: Steps for Reducing Low-Value and Wasteful Care"	Sorenson et al.	2020	Commentary	General health care spending	Discusses strategies for reducing low-value care post–COVID-19 but does not provide measurable estimates.
"Excess Medical Care Spending: The Categories, Magnitude, and Opportunity Costs of Wasteful Spending in the United States"	Speer et al.	2020	Research article, analytic essay	General health care spending	Reclassifies categories of excess spending in Berwick and Hackbarth (2012) and finds an aggregate estimate of $600 billion to more than $1.9 trillion in excess.
"Eliminating Wasteful Health Care Spending–Is the United States Simply Spinning Its Wheels?"	Figueroa, Wadhera, and Jha	2020	Research article, literature review	General health care spending	In response to Shrank, Rogstad, and Parekh (2019), emphasizes that high prices and administrative complexity need to be addressed.
"Waste in the US Health Care System"	Bauchner and Fontanarosa	2019	Commentary	General health care spending	Editorial commentary on Shrank, Rogstad, and Parekh (2019) and other similar papers,

Title	Author(s)	Year	Type of Publication	Topic	Notes
					arguing for the importance of reducing waste.
"Toward Evidence-Based Policy Making to Reduce Wasteful Health Care Spending"	Joynt Maddox and McClellan	2019	Research article, policy review	General health care spending	Editorial written in response to Shrank, Rogstad, and Parekh (2019), proposing solutions to address five of the six domains.
"Potentially Preventable Spending Among High-Cost Medicare Patients: Implications for Healthcare Delivery"	Khullar, Zhang, and Kaushal	2020	Research article	Failure of care delivery	Finds potentially preventable spending of $11,502 among high-cost patients enrolled in Medicare FFS program and Medicaid in New York.
"Making a Dent in the Trillion-Dollar Problem: Toward Zero Defects"	Pronovost et al.	2021	Research article, case study	Administrative complexity	Describes a framework for eliminating *defects* (i.e., low-value care); provides cost estimates for defects and potential savings.
"Identifying Patients with Persistent Preventable Utilization Offers an Opportunity to Reduce Unnecessary Spending"	Zhang et al.	2020	Research article	Failure of care delivery	Compares patients with persistent preventable utilization with high-cost patients (median health care costs $56,552 vs. $33,383).
"Wasteful Spending in Health Care: A US and UK International Comparison"	Holdsworth	2019	Research article	General health care spending	Comparative analysis between the United States and the United Kingdom. Cites estimates from Berwick and Hackbarth (2012) and notes a difference of at least $280 billion between the United States and the United Kingdom.
"Non-Clinical Prevention Opportunities and Waste in the U.S. Healthcare System"	McCullough et al.	2019	Literature review, policy analysis	General health care spending	Includes a description of nonclinical waste prevention opportunities; estimates one-third ($765 billion) of U.S. spending as waste.
"Effect of Patient Care Coordination on Hospital	Breckenridge et al.	2019	Research article	Failure of care coordination	Limited to safety net hospitals in Texas, this paper shows per-

Title	Author(s)	Year	Type of Publication	Topic	Notes
Encounters and Related Costs"					patient savings from care coordination.
"Health Care Administrative Costs in the United States and Canada, 2017"	Himmelstein, Campbell, and Woolhandler	2020	Research article	Administrative complexity	Estimates the amount of administrative spending, overall and by category, in the United States and Canada.
"It's Still the Prices, Stupid: Why the US Spends So Much on Health Care, and a Tribute to Uwe Reinhardt"	Anderson, Hussey, and Petrosyan	2019	Research article	General health care spending	Compares spending in the United States and OECD countries and concludes that prices drive the majority of the difference.
"Anatomy of a Slowdown: Decomposing the Moderation in Health Spending Growth, 2009–19"	Glied and Lui	2026	Research article	Health care spending trends	Analyzes reasons for post-2009 spending slowdown.
"National Health Care Spending Increased 7.2 Percent in 2024 as Utilization Remained Elevated"	Hartman et al.	2026	Research article	Health care spending trends	Estimates health care spending as a share of GDP through 2024.
"Medicare Spending Growth: Why Has It Slowed in Recent Decades?"	Liu et al.	2026	Research article	Health care spending trends	Examines the Medicare spending slowdown, attributing it to low payment-rate increases, changing demographics, cost-reducing medical technology, and shifts toward value-based care.
California's Health Care Paradox: Too Much Health Care Spending May Lead to Poor Community Health	Brownlee, Saini, and Garber	2019	Report	California health care spending	Finds that for every dollar California spent on health care, $0.68 in 2018 (compared with $1.22 in 2017) was spent on public health, the environment, and social services.
High U.S. Health Care Spending: Where Is It All Going?	Turner, Miller, and Lowry	2023	Issue brief	Health care spending trends	Estimates excess U.S. health care spending in percentages compared with other OECD countries.
Administrative Simplification: How to Save a Quarter-	Sahni et al.	2021	Executive briefing	Administrative complexity	Finds that of the $290 billion spent on administrative costs,

Title	Author(s)	Year	Type of Publication	Topic	Notes
Trillion Dollars in US Healthcare					$265 billion could have been saved.
Diagnosing Physician Error: A Machine Learning Approach to Low-Value Health Care	Mullainathan and Obermeyer	2019 (revised in 2023)	Working paper	Overtreatment or low-value care	Applies machine learning to characterize low-value care, with a focus on testing.
"How Has U.S. Spending on Health Care Changed over Time?"	Rakshit et al.	2026	Chart collection	Health care spending trends	Notes that growth in health care spending slowed in recent decades but still outpaced GDP until the 2020s and that utilization rose more rapidly from 2021 to 2024 compared with prepandemic years.
"What to Expect in US Health Care in 2026 and Beyond"	Patel and Singhal	2026	Online article	Health care spending trends	Projects that U.S. health care will undergo major structural changes because of financial and workforce changes, care expanding beyond hospitals, and AI technologies.

NOTE: OECD = Organisation for Economic Co-operation and Development.

Appendix D

Studies on the U.S. Health Care Spending Slowdown

The slowdown in U.S. health care spending that began around 2010 has been examined in multiple research studies using different methodologies and data sources, with a notable degree of agreement in their findings. Cutler and Klarnet (2026) provided the most comprehensive breakdown of the slowdown, attributing its causes across the categories listed in Table D.1.

Table D.1. Factors Contributing to the Health Care Spending Slowdown, by Study

Factors	Cutler and Klarnet (2026)	Buntin et al. (2022)	Glied and Lui (2026)	Smith and Newhouse (2026)	Liu et al. (2026)
Acute care					
Population health improvements	●	○	○	○	●
Cardiovascular hospitalization reductions	●	○	○	○	●
Other urgent or emergency hospital reductions	●	○	○	–	●
Declining birth rate	●	–	–	–	–
Site-of-care substitution: surgery	●	○	●	–	●
Less rapid growth of imaging	●	–	○	–	○
Less rapid price growth	●	●	●	●	●
Pharmaceuticals	●	–	●	○	●
Long-term services and supports	●	–	●	–	○
Cross-cutting components					
Prior authorization	●	–	○	–	○
High-deductible plans	●	–	○	○	○
Accountable Care Organizations	●	○	○	○	●

NOTE: ● = explicitly identified as a contributing factor; ○ = partially addressed (implicit in the paper's findings but not attributed as a key driver); – = not addressed or not applicable. Buntin et al. (2022) and Liu et al. (2026) focused on Medicare spending, while other studies covered national health care spending, and Buntin et al. (2022) focused on Medicare Parts A and B and, therefore, does not cover Part D pharmaceutical spending or long-term services and supports.

The factors identified by Cutler and Klarnet (2026) are substantially corroborated across four additional peer-reviewed studies: Buntin et al. (2022), Glied and Lui (2026), Smith and Newhouse (2026), and Liu et al. (2026). We leveraged an internal AI application to assist with identifying health care spending factors from the comparison studies; all the findings were manually verified. We identified less rapid price growth as a contributor across all five papers, although each described different mechanisms, such as slower Medicare payment rate increases, reduced private hospital and physician price growth, moderated medical price inflation, and ACA-driven payment adjustments. Pharmaceutical spending moderation was supported by at least two other studies; spending was found to be substantially below 2009 projections across payers, driven in large part by an increase in generic prescribing. Site-of-care substitution in acute care was also confirmed by two other studies, while population health improvements were at least partially addressed by all four comparison studies. Reduced spending on long-term services and supports was confirmed by Glied and Lui (2026), which identified the decline in home health as a major unanticipated contributor. Among the crosscutting components, spending reductions attributable to Accountable Care Organizations were at least partially addressed by all studies, and Liu et al. (2026) estimated from $4 billion to $8 billion in net Medicare savings from the Medicare Shared Savings Program alone. Cutler and Klarnet (2026) uniquely identified the declining birth rate as a contributor, noting reductions in both U.S. fertility rates and pregnancy-related hospital admissions. Prior authorization and high-deductible plans are similarly quantified by Cutler and Klarnet (2026), although these factors are only partially supported by the other studies.

Cutler and Klarnet (2026) is the most analytically comprehensive of the five studies. Although the comparison studies are narrower in scope, each contributes distinct evidence and arrives at broadly consistent conclusions. Overall, the literature establishes that the slowdown in health care spending growth is not a measurement artifact or a result of any single cause but rather reflects a combination of changes in care delivery, negotiated prices, and how patients and providers respond to financial incentives, as documented across studies spanning different years, payers, and analyses. Many of these contributing factors align with categories that Shrank, Rogstad, and Parekh (2019) identified as excessive or unnecessary.

Abbreviations

ACA	Affordable Care Act
AI	artificial intelligence
BEA	U.S. Bureau of Economic Analysis
CHCF	California Health Care Foundation
CMS	U.S. Centers for Medicare and Medicaid Services
COVID-19	coronavirus disease 2019
FFS	fee-for-service
FY	fiscal year
GDP	gross domestic product
GSP	gross state product
MEPS-HC	Medical Expenditure Panel Survey Household Component
MEPS-IC	Medical Expenditure Panel Survey Insurance Component
OECD	Organisation for Economic Co-operation and Development
PCE	personal consumption expenditures
PHCE	personal health care expenditures
PMPM	per-member per-month
SHEA	State Health Expenditure Accounts
THCE	total health care expenditures

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