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WILL MEDICAL CARE STRANGLE OR SAVE THE FEDERAL BUDGET?

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Abstract

Forecasts of the federal budget depend greatly on trends in medical spending. Since 1970, medical spending has nearly tripled as a share of gross domestic product (GDP). However, spending growth has barely exceeded GDP growth since 2010. This difference in growth rates makes forecasting spending difficult. I present scenarios for future spending derived from considering the sources of spending increase, ranging from rapid increases in new, expensive treatments to a reduction in spending due to cost-reducing technology. Even modest increases in spending relative to GDP are likely to overwhelm the federal government's ability to pay for medical care using current tax instruments. Thus, efforts to promote spending reductions and consideration of new sources of revenue are important for the nation's fiscal future.

Introduction

Medical spending is a large and growing share of the federal budget. Forty-five cents of every dollar received as discretionary federal revenue goes to healthcare.[1] State and local government spending on healthcare is high as well. Thus, the trend in medical spending has profound implications for the fiscal health of governments at all levels.

Historically, medical spending has increased rapidly relative to the economy and thus also relative to federal revenue. From 1960 and 2010, healthcare increased from 5% of gross domestic product (GDP) to 17.2% of GDP. Since 2010, however, growth has barely exceeded GDP growth.

This variability in growth rates makes forecasting medical spending difficult. If the rate of medical spending growth is akin to the long-term average of past rates, medical spending will be a significant fiscal burden. If it is along the lines of more recent trends, the federal budget will be in better shape. And if medical spending growth slows even further, the budget will be in much better shape. What would it mean for medical spending to grow at different rates? This paper considers this question.

I start by describing the growth in medical spending in the past half century. The historical increase in medical spending relative to GDP is well known. The recent slowdown in that growth rate is less well known. I discuss what is known about these trends. I also discuss the importance of healthcare in discretionary federal revenue—federal revenue less those funds committed to social insurance programs outside of healthcare.

The variability in spending growth rates over time is so large that forecasts of the share of discretionary revenue accounted for by healthcare vary enormously, even over the next 15 years. To illustrate the possibilities, I show three scenarios: one where medical spending growth returns to its rate of increase from 1970-2010, a second where the growth rate is the

[1] As defined later, discretionary revenue refers to total federal revenues less taxes dedicated to Old Age, Survivors, and Disability Insurance (OASDI) under Social Security.

same as from 2010-2024, and a third that is halfway in between these two growth rates. These are not the full range of the potential distribution, but they are illustrative.

Assuming high growth rates for medical spending, federal medical spending would account for roughly 61% of discretionary revenue by 2040. In the intermediate scenario, it rises to 52%. In the low-growth scenario, it remains at 45%. Even the intermediate scenario is likely to excessively strain the government's spending capacity. Further, the intermediate- and high-spending growth rates are likely to make health insurance premiums unaffordable for a large share of American families.

A central question is to understand what leads to more- and less-rapid growth of medical spending. I turn to this in the second section of the paper. I differentiate between static and dynamic factors that influence spending. Static factors affect the use of available goods and services or their price. Dynamic factors change the technologies that are available. Spending growth has been dominated by dynamics. New treatments and their associated costs are the major reason that medical spending has increased (Newhouse, 1992). More recently, the medical system has innovated in technologies that reduce spending growth.

I show how static and dynamic factors are key to both high- and low-growth scenarios. The most likely driver of high spending growth would be the continued development of costly "rescue" therapy for several conditions. A prime example would be development of a treatment that slows the progression of Alzheimer's disease but does so at high expense. The treatment itself would be costly, and we would still face a significant spending burden in caring for people with Alzheimer's disease. The low-growth scenario might have several features. One possibility is a "cure": treatment that is cheap and avoids the need for costly rescue therapy. Low growth might also result from replacing costly innovations with ones that are less intensive and thus cheaper. Minimally invasive surgery is an example of such an advance. Finally, low growth might result from organizational innovation: reduction in the costs of healthcare administration, lower profit rates, and restricting use to patients who benefit sufficiently from the care.

In the last part of the paper, I turn to the potential role of artificial intelligence (AI) in medical spending. The likely impact of AI on medical care is not fully known, as is true in all industries. AI could lead to cost increases or decreases. I sketch scenarios of both.

The paper is structured as follows. The first section discusses medical spending historically and presents several projections of future spending. The second section has a conceptual discussion of the factors influencing spending and gives some examples of high- and low-growth scenarios. The third section focuses on AI. The last section concludes with some key remaining questions.

A good deal of the background discussion of spending growth and the reasons for higher and lower growth rates is from joint work with Lev Klarnet (Cutler and Klarnet, 2026). The interested reader is directed to that paper for additional detail.

I. Medical spending in the United States

Data on national medical expenditures (NHE) are compiled and maintained by the Office of the Actuaries (OACT) at the Center for Medicare and Medicaid Services (CMS). The CMS actuaries estimate spending by source (Medicare, Medicaid, and private insurance) and recipient (hospitals, physicians, and other providers). I focus primarily on total spending and also the federal component of spending.

Reliable data on NHE are available from 1960 on. However, the 1960s were a decade of significant coverage expansions, so spending increased partly for that reason. Major coverage expansions were not as big an issue after 1970. As a result, I conduct most of the analysis beginning in 1970.

Figure 1 shows the evolution of medical care as a share of GDP from 1970 on, including some projections to be discussed below. In 1970, medical care was 6.9% of GDP. In 2024, it was 18%. Managing this growth is a central challenge for society.

The extent to which medical spending growth exceeds economic growth has not been constant over time. There was a relatively constant linear growth of the proportion of GDP accounted for by medical care from 1970 through around 2010; on average, medical spending growth exceeded GDP growth by 2.4 percentage points annually.[2] Note that a constant linear growth rate of spending as a share of GDP implies a slowing of the differential rate of increase between the two over time.[3]

A large change in spending growth has occurred since around 2010: The growth of medical spending has exceeded the growth of GDP by only 0.3 percentage points annually. Dating the change to the single year of 2010 is not entirely right. Some spending started to slow earlier and other spending slowed later. Further, 2010 was the height of the Great Recession, so medical spending as a share of GDP was artificially high then. The analysis here is not dependent on any single date of change in spending growth.

Recent data show an uptick in spending growth in 2024, which continued in 2025 (Chernew et al., 2026). Some of this is a result of new technologies—GLP-1 medications and new drugs for cancer that are taken on an ongoing basis are prime examples. AI-related billing innovations have also increased revenue—in situations where the underlying disease is not known with certainty, AI is helping providers bill for more severe disease (Wennberg et al., 2026). The roles of technological change and AI are discussed below.

There is no comparable time period with anything like the sustained slowdown in spending growth since 2010. The closest comparison is the period from roughly 1993 through 2000, when medical spending growth was essentially constant as a share of GDP. This is often termed the "managed care era" (Mechanic, 2001). Pushed by businesses and governments, insurers assembled narrow network plans, and providers offered insurers price concessions to be included in the preferred tiers of such plans. However, this episode

[2] The variance of annual spending differential is high, reflecting the variability of the economic cycle. Averages over longer periods are less variable.
[3] With a constant differential increase, the growth of medical spending relative to GDP would be exponential, not linear.

ended around 2000. With the booming economy of the 1990s, employees sought out plans with wider networks. Employers pushed insurers in that direction. This reduced the ability of insurers to bargain for price reductions. Further, providers that were played off against each other for favorable positions in networks responded by merging, resulting in price increases. A good deal of these price increases occurred from 2000 to 2004. Examining spending growth from 1992 through 2004, there is no evidence that spending was lower in 2004 than would have been expected based on pre-1992 projections.

The drivers of medical spending are discussed in the next section. However, several facts are relevant for understanding the overall trends. First, spending growth does not vary greatly by payer. Periods of more- and less-rapid spending increase tend to be more- and less-rapid for all payers (Cutler and Klarnet, 2026, figure 3). Thus, the medical care marketplace overall is more important to understand than the intricacies of any particular insurance product.

The recent slowdown in spending growth is of particular interest given the goal of constructing future scenarios. One key part of the post-2010 slowdown is the implementation of constraints that reduce the amount of care provided and the price paid for it. Examples include moving more enrollees into high-deductible health plans, where people use less care, and using the negotiating leverage from this to reduce net pharmaceutical prices. An additional role is played by the diffusion of cost-reducing technologies. Examples here include widespread use of minimally invasive surgery (Richards et al., 2015) and a reduction in heart disease hospitalizations (Cutler et al., 2019) owing to better prevention of risk factors such as hypertension and high cholesterol. Finally, there is the "dog that didn't bark"—fewer expensive new innovations than in the past. In the language of health economists, these are both "one-time" (static) changes that lower the level of spending (perhaps over a period of years) but not its long-run growth rate, and changes in the growth of spending (dynamic).

A. A range of scenarios

Forecasting any time series is difficult, let alone one with such fundamental uncertainty as medical spending. I show a few potential scenarios for spending growth. I do not consider these forecasts in the traditional sense of a high likelihood of occurring. Rather I consider them projections that correspond to particular underlying dynamics.

One projection is from the CMS actuaries. These actuaries project spending for 10 years using an analysis based on the historical relationship between medical spending and a variety of demographic and economic factors, including aging and income growth (Centers for Medicare and Medicaid Services, 2025). Because it is based on the long time series, the actuaries' analysis averages growth rates over the high- and more recent lower-growth periods, producing something like an average of the two. The actuaries' projections for 2024-2033 are shown in purple in figure 1. Their projection is that spending will rise from 18% of GDP in 2024 to 20.3% of GDP in 2033.

I present three additional projections to illustrate the range of possibilities. In each scenario, I project out to 2040. Clearly, projections are less certain when made farther in the future. At the same time, the reasonability of a projection is a key metric of its likelihood of occurring. If a projection is sufficiently unreasonable, that suggests it is less likely to occur.

In each scenario, I assume the same trend for GDP growth. That is, spending different amounts on medical care does not affect total output in the economy. This may or may not be true. Spending more on medical care may delay investment in other forms of research and development, or it may generate innovations that benefit the entire economy. Forming a general equilibrium simulation that involves such feedback would be quite complex.

The first alternative projection is the *Benchmark scenario*: What if the dynamics of medical care remain the same in the future as in the past? Making this projection involves deciding how much of the reduction in spending growth after 2010 is a permanent reduction in growth and how much is a one-time saving in spending from lowering utilization or prices—for example, greater cost-sharing in insurance or a greater ability to extract concessions from pharmaceutical companies that will not be repeated.

As noted, both one-time savings and ongoing savings from new technologies are important, with the exact share of each not known. For simplicity, I show a *Benchmark scenario* where the growth rate of spending from 2024 on is the average of the 1970-2024 growth rates. As shown in figure 1, this scenario overlaps nearly perfectly with the OACT forecasts through 2033. Afterward, it continues rising, reaching 22.3% of GDP in 2040.

To consider a scenario with more rapid spending increases, I assume that the growth of medical spending above GDP growth after 2024 returns to the average rate realized between 1970 and 2010. This growth rate is not the highest that can be imagined. It might be the case that AI leads to a rash of new technologies that are successful and lucrative enough to increase spending growth even more. I do not have an estimate of what share of the distribution of possible spending growth outcomes lies above this 1970-2010 average estimate. This scenario is shown as the *High-spending scenario* in figure 1. Medical care in 2040 rises to 26% of GDP.

Finally, I consider a scenario where medical spending growth through 2040 remains at its growth rate from 2010 to 2024. I call this the *Low-spending scenario*, though it is not the lowest spending scenario that could be imagined. One could imagine that medical spending growth might fall relative to the economy for some period of time—though I do not have a numerical probability of such an outcome. Consistent with the recent growth period, medical spending under this scenario reaches 19.0% of GDP in 2040.

A central question about the reasonability of these projections is what they imply for families and the federal government. Would family budgets and the federal budget be able to sustain this level of spending?

B. Family budget impact

Devoting this much social resources to medical care may or may not be feasible for families. A key issue is how the care is financed. If people with high incomes pay more than their actuarial share for medical care and society uses those funds to care for those with low and middle incomes, the system may be feasible. If people are expected to pay on an actuarial basis, a fixed amount equal for all, the system is perhaps not sustainable.

Figure 2 shows more about why this is the case. The figure shows the average real premium (in 2024 dollars) for family health insurance historically and under the three

scenarios. The average premium increased from $5,000 annually in the late 1980s to $26,000 annually in 2024. In the *Benchmark scenario*, it increases to $43,000 in 2040. In the *High-spending scenario*, family health insurance premiums exceed $50,000 annually. In the *Low-spending scenario*, premiums are $37,000 annually.

By comparison, median family income was roughly $106,000 in 2024 (U.S. Census Bureau, 2026). Therefore, current health insurance premiums are about 24% of median family income. Between 2000 and 2024, real median family income grew by only 0.8% annually. If this growth continues, and if health insurance premiums grow at the same rate as medical care spending,[4] health insurance premiums would be 36% of median family income in 2040 under the *Benchmark scenario*. It would be 42% of median family income in the *High-spending growth scenario* and 31% of median family income in the *Low-spending growth scenario*.

The shares for the *Benchmark* and *High-spending scenarios* are so large that a significant share of the privately insured population would likely consider health insurance to be unaffordable. Thus, one could imagine a situation where premiums increase, people drop private coverage, and demand for expansion of public insurance increases. This would increase the burden on the federal government even more than the values shown in Figure 1. We have already seen a significant reduction in the share of working age individuals and their dependents with private health insurance, due in part to increasing health insurance costs (Chernew et al., 2005). Indeed, the share of the non-elderly population with employer-sponsored insurance fell by 11 percentage points between 1999 and 2010 (Rae et al., 2020).

The Affordable Care Act (ACA) was one solution to this trend. The ACA had a reasonable effect on the trend (Duggan et al., 2019); the share of the non-elderly population with employer-sponsored insurance coverage stopped declining and increased modestly from the time it was enacted in 2010 through 2018. Still, the increases shown here would likely overwhelm the impact of the ACA. Overall, it seems difficult to see how the *High-spending growth scenario* in particular can be sustained without significant changes to public insurance programs and their financing.

C. Federal budget impact

The implication of these scenarios for the federal budget deserves particular attention. The federal government pays for medical care in various ways. Medicare and Medicaid are the largest programs. Coverage is also provided through the Department of Veterans Affairs and a variety of other avenues. The NHE tabulations delineate spending by the federal government among other payers. On average, in 2024 about half of medical dollars come from governments, of which the federal government is the major payer (31% of total medical spending).

In addition to its direct spending, the federal government implicitly pays for medical care through the tax exclusion for employer-provided health insurance. Because health

[4] Private insurance spending may grow more or less rapidly than total medical spending; each has occurred in the past.

insurance contributions are not taxed, federal revenues are smaller than they otherwise would be. The value of the lost income and payroll tax revenue (generally termed "tax expenditures") is about 15% of direct federal spending on medical care in 2024 (Joint Committee on Taxation, 2025).

Federal spending on medical care is financed through dedicated and general taxes. Dedicated taxes include the Hospital Insurance component of Medicare. General taxes include personal and corporate income taxes and several other taxes and fees. To judge the scale of medical care in the federal budget, I consider federal spending on medical care as a share of "discretionary revenue." I defined discretionary revenue as total revenue less non-medical care social insurance taxes—that is, Old Age, Survivors, and Disability Insurance contributions (OASDI) under Social Security. Revenues from this source cannot be used for purposes beyond their stated ones, and neither OASI nor DI are likely to have surpluses able to be redirected to other activities. Forecasts of federal revenue under current policy are from the Office of Management and Budget (2025).

Figure 3 shows federal spending on medical care as a function of discretionary revenue historically and in the *OACT*, *Benchmark, High-spending,* and *Low-spending scenarios*. Historically, this share has ranged from 13% in 1987 to 45% in 2024. The figure is choppy, as one would expect given the impact of recessions on federal revenues. The trend is unmistakable, however.

In projecting each of the three scenarios, I assume that federal spending on medical care increases at the same rate as the average of all medical spending. This is not what the actuaries assume for the next decade. Because of aging and other factors, the actuaries forecast that federal medical spending will increase more rapidly than private spending. Thus, the *OACT scenario* is roughly equal to the *High-spending scenario* through 2033. In this scenario, medical care increases to 61% of available tax revenue in 2040. The *Benchmark scenario* involves federal spending on medical care rising to 52% of available revenues. In the *Low-spending scenario*, it remains about 45%.

There is no definition of what is sustainable. Still, it is difficult to imagine how the federal government would adjust to even the *Benchmark scenario*. For there to be no increase in the deficit resulting from such an increase, this involves reducing other spending enormously or raising significant additional revenue. For federal budgeting purposes, the only scenario that seems consistent with the current level of taxes and non-medical spending is the *Low-spending scenario*.

II. A framework for understanding medical spending

The central question in projecting medical spending is what factors might influence medical spending growth to be closer to the *High-* or *Low-spending scenarios*. To understand the drivers of future spending, it is useful to disaggregate the factors that might influence spending. Total spending is the product of price times quantity; thus, changes in either price or quantity trends would directly change spending growth.

Figure 4 shows six factors to consider. Three factors are shown to affect prices and three affect quantity. On the price side, input costs are clearly important—capital (K), labor (L),

energy (E), and other inputs (M). Inputs naturally sort into two groups. Some inputs are industry-agnostic, and healthcare is a price taker; an example is energy. In contrast, some inputs are industry-specific, and the price and quantity of these inputs can change with market conditions. Examples of industry-specific inputs include physicians and nurses. If demand for physicians falls, physician reimbursement could fall as well.

One specific input to highlight is administrative workers—people who process claims and approve or deny authorization requests. On average, about one-quarter of healthcare spending is in administration, which is greater than the share of healthcare dollars spent on cardiovascular disease or cancer (Cutler, 2021). The skills of healthcare administrative workers are not specific to healthcare (much of what administrative workers in healthcare do is also done by administrative workers in other industries), but their high employment reflects the peculiarities of healthcare reimbursement and authorization. This can change as payment rules change or information technology advances. Given this flexibility, it is worth pointing out administrative costs explicitly.

In addition to factor prices, market prices exceed costs because of markups. Pharmaceuticals and some insurance products are examples of healthcare goods with high markups. Typically, markups result from market power, which exists in many healthcare markets.[5]

Three important factors drive utilization. Health status is an important one. Healthier people need less care than less-healthy people. Given health status, clinical decisions affect what is used. A particularly important distinction for spending projections is between more and less valuable use. Examples of less-valuable care include some imaging services (such as those in the "Choosing Wisely" list of likely overused care),[6] and excessive spending on end-of-life care.[7] Unfortunately, both more- and less-valuable care are common in medical care. Ideally, policies would promote greater use of more-valuable care while discouraging use of less-valuable care. Whether they do that will affect their success or failure in controlling costs and the likely sustainability of such efforts.

A full understanding of spending trends would decompose spending changes into the six categories in figure 4 and would project each into the future. However, doing this at any scale is not possible. Even leaving aside knowing what care is valuable or not, data availability is a central challenge. Medical prices negotiated between private insurers and providers are confidential; they vary from insurer to insurer, and within insurer, from plan to plan. Price data are available for public payers, especially Medicare, but commercial and Medicare prices do not necessarily move in lockstep.

Quantities are difficult to know as well. The most difficult issue is that medical care services are often priced based on how severely ill the patient is, and sickness can be manipulated.

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[5] Markups may be socially valuable or not; some people argue for pharmaceutical price markups to support research and development, while others argue that lower prices need not involve less research and development (Lakdawalla, 2018). The social value of the markups is not important for the projection exercise here. The relevant point is that markups can change as demand changes or policy adjusts.
[6] Choosing Wisely is a national campaign launched by the American Board of Internal Medicine's ABIM Foundation to help patients and doctors talk about unnecessary medical, tests, treatments, and procedures.
[7] About 8.5% of medical spending in the United States is for the 1% of individuals who will die in a year (French et al., 2017).

For example, a patient may have a "severe" disease or "mild" disease. As providers have invested in electronic systems, their ability to code patients at increasing levels of severity has increased (Crespin et al., 2024). Thus, patients appear to be sicker and therefore naturally receive more complex services, even if actual services rendered are the same. The result is higher prices disguised as changes in the quantity of services. All of this complicates the determination of spending changes.

For these reasons, I do not focus on estimating detailed prices and quantities for individual medical services. In considering prices, I consider how general market forces may affect input costs and markups. In thinking about quantities of care, I focus conceptually on spending at the condition level. I consider questions of the form: what is likely to happen to the costs of treating Alzheimer's Disease and Related Dementias (ADRD)?

In a recent paper with Lev Klarnet (Cutler and Klarnet, 2026), we laid out a methodology to consider such questions, differentiating between static and dynamic factors. Static factors are those that influence the price and quantity of services given that they are available. Dynamic factors influence the treatments that are available. I start by summarizing that framework.

A. The statics of treatment decisions

At any point, there are a set of possible treatments for people with a condition. Each treatment has clinical benefits, potential side effects, and a price. Three actors are involved in the decision about whether each treatment is used: physicians, patients, and insurers/payers.

These three actors respond to clinical and non-clinical considerations. Clinical considerations include the health improvement of the patient less any side effects. If the clinical benefit exceeds the side effects, the patient's health would improve with the therapy. At no out-of-pocket cost, the patient would choose to receive the care. In addition, there are a variety of non-clinical considerations that may influence utilization decisions. Often, these are financial concerns. One consideration is patient cost-sharing. Higher cost-sharing induces some patients to forgo care and encourages other patients to search for lower-cost providers. Physician profits and losses associated with providing the care are a second consideration. If the payment that physicians receive for a service is above the marginal cost of providing it, physicians benefit financially from providing the service. The reverse is true if physicians are paid a fixed amount per patient, independent of the care provided. Third, insurers may impose direct restrictions on reimbursement, for example through prior authorization requirements. Final treatment decisions are made in light of clinical and non-clinical considerations.

The non-clinical constraints on care received have changed over time, and they have affected spending levels and growth. Across the board, non-clinical constraints have become much tighter in the past two decades. Patient cost-sharing has increased enormously, as shown in figure 5 (Kaiser Family Foundation, 2025). In 2006, only 4% of patients with private health insurance (almost always employer-based) were enrolled in high-deductible health plans. In 2025, the share was 33%. People in a high-deductible health plan spend less than people with lower cost-sharing. Thus, the move into higher cost-sharing plans has led to lower spending over time.

The reduced utilization of services in high cost-sharing plans is not fully efficient. A variety of studies show that people in such plans cut back on both more- and less-valuable care (Newhouse et al., 1996; Brot-Goldberg et al., 2017). People are also incentivized to shop for cheaper care. The evidence on price shopping is mixed. People switch from more expensive branded drugs to cheaper generics when prices for branded drugs rise relative to generic prices (Goldman et al., 2009). However, some stop taking medications entirely if their branded drug costs more, even if a low-cost generic is available (Huskamp et al., 2003). Outside of the branded versus generic drug choice, evidence on price shopping is far less persuasive. Studies show that very few patients respond to higher cost-sharing by searching for lower-cost medical (that is, non-pharmaceutical) services (Brot-Goldberg et al., 2017).

While patients do not shop widely for lower-cost care, insurers use higher cost-sharing in their negotiations for lower prices. For example, pharmacy benefit managers give preferred formulary placement (that is, lower out-of-pocket costs) to pharmaceutical companies that offer them the lowest prices. Thus, high cost-sharing likely has some effect on prices by increasing the leverage that pharmacy benefit managers have in negotiating prices and rebates, though the magnitude of rebates in particular is not known in great detail.

Physician payments have also changed over time. Historically, physicians were paid on a fee-for-service basis, where each service generates its own reimbursement. Since price generally exceeded marginal cost,[8] physicians made money on additional services provided. The result was a financial incentive to do more. Increasingly, physicians are reimbursed on "global payment" contracts. In such contracts, a target is set for spending for a group of beneficiaries for a period of time (such as a calendar year or 180 days after an acute event). Physician payment is equal to the target, plus a share of any overage and minus a share of spending below the target. Because the compensation for going over the target is not equal to the full amount of spending over the target and the reverse for spending under the target, medical practices lose financially if realized average spending is over the target and gain financially if realized average spending is below the target. Additionally, bonuses are often given for high quality.[9]

Over half of physicians are now in "accountable care" contracts for at least some of their patients (Hardiman, 2025). Such value-based contracts have been shown to lower spending, and to do so without adverse effects on quality. The savings are modest, however, generally about 1% to 6% (Council on Health Care Spending and Value, 2022), almost all of which results from lower utilization. Providers generally do not respond to accountable care contracts by searching for less expensive specialists and hospitals to refer patients to.

Perhaps the largest change in medical care in recent years has been the widespread diffusion of prior authorization requirements. One quarter of outpatient spending in 2017 (Schwartz et al., 2021) and 44% of prescription drug utilization in 2019 (Kyle et al., 2026) were subject to prior authorization or step therapy requirements. For pharmaceuticals, this

[8] As a rough rule, prices were set based on average costs. With relatively high fixed costs, this means that prices exceed marginal cost.
[9] Generally, quality is measured by performance in caring for patients with common chronic diseases such as hypertension and diabetes.

is roughly double the rate from 2011. It has gone up for medical spending, though estimates of the share in earlier years are not available. Prior authorization may be required for determining whether the service is eligible for insurance reimbursement as well as for who is able to perform it (such as, a hospital versus an outpatient imaging facility). Most prior authorization savings result from reduced utilization of services, though prior authorization is also used by insurers to bargain for lower prices, in much the same way that higher cost-sharing is. Prior authorization requirements reduce spending significantly. Brot-Goldberg et al. (2023) estimated that prior authorization on average reduces pharmaceutical spending on restricted drugs by 22%.

Changes in cost-sharing, physician reimbursement, and insurer approval requirements together have had a large impact on total medical spending in the past few decades. Cutler and Klarnet (2026) estimate that 17% of the medical care spending slowdown from 2010 through 2024 is a result of these three types of constraints.

In thinking about forecasting, the key question is whether such constraints will continue at their current level or become more or less stringent. This is not known for certain. As noted earlier, the managed-care era was not a long-run success; by a decade after it started, there was no sign that it had affected medical spending. On the other hand, more recent changes have had a longer-term effect. Even 15 to 20 years into the spending slowdown, enrollment in high-deductible health plans has not declined (figure 5; Kaiser Family Foundation, 2025). Similarly, enrollment in accountable care plans among physicians continues to rise (Council on Health Care Spending and Value, 2022). Some insurers have reduced prior authorization requirements in some areas very recently, though the reduction in volume has been modest (about 11% since June 2025; Minemyer, 2026), and in general prior authorization appears to be continuing to spread across insurers (Kyle et al., 2026).

Government policy could reduce the spread of these techniques. There have been calls for governments to regulate more of the tools that insurers are allowed to use (Pestaina, et al., 2024). Not all regulations on insurance policies would be harmful, and some might even reduce spending. For example, harmonizing the evidence base used across insurers for prior authorization could make it far less costly for providers to administer prior authorization programs (Sahni et al., 2021). Similarly, mandatorily reducing high cost-sharing for cheap, preventive medications could reduce overall spending even as it improves quality of life.

B. Dynamics

For several decades, it has been known that static factors cannot explain very much of the medical spending increase. For example, Newhouse (1992) showed that the combination of aging, increased spread of insurance, rising income,[10] and supply-side changes together explain perhaps one-quarter of medical spending increases. The residual is technological change. The reason we spend more on medical care is not because more people have

[10] The effects of insurance coverage and income are identified off of micro income elasticities – spending associated with insurance or income differences across individuals at a point in time, not how much more countries spend as they get richer or become better insured.

attained ages at which disease is common, but because the treatments we have for disease are so much more extensive, and expensive, than they used to be.

The dynamics of medical technology have been far less well-modeled than have the static effects. Cutler and Klarnet (2026) present a model of medical care dynamics that can be used to help with spending projections. Figure 6 shows the dynamics. Panel A of Figure 6 shows the health burden of the disease—the health loss from the condition and the side effects of treatment. Panel B shows total spending on over time.

We start from a situation where the condition is not treatable. For most chronic diseases, this might be the situation around 1950. For example, standard treatment for heart disease in the 1950s was bed rest—first in a hospital and then at home (Cutler, 2004). Bed rest is cheap, though not very effective. As shown in part A of the figure, the burden of the condition is high. Over time, some treatments are developed. The first treatments are often rescue therapies. Physicians develop something that can be done for patients in acute distress, and this prevents death or significant functional deterioration. Open heart surgery for a heart attack is an example. It can prevent death in patients with serious illness, though is not a cure. Open heart surgery expanded greatly in the 1960s and 1970s (Cooley and Frazier, 2000).

As shown in panel A, the impairment associated with the condition falls with the advent of rescue therapy. Often, such treatments have side effects, however. For example, there may be difficulty recovering from surgery or long-term damage to the heart muscle. Thus, the burden of side effects rises. Spending rises as the rescue therapy costs more than no treatment.

The price of the rescue therapy itself may rise or fall over time. Typically, costs of procedures fall, as experience (learning by doing) reduces the time required for the surgery and technological advances reduce the costs of relevant technologies. Prices sometimes follow, depending on how prices are set and how competitive the market is. Drugs or devices that are on patent move off patent over time, and this too may lower prices. Prices may increase if there are incremental improvements in the technology, for example better heart-lung bypass machines.

Knowing something about how to improve health often leads to follow-on innovations. Clinicians and patients are often unhappy that they cannot save more patients and that existing treatments have side effects. Thus, there is further technological advance. In the case of heart disease, stents were developed, which allowed clinically easier and cheaper treatment for patients with severe disease. The use of stents grew in the 1980s, 1990s, and into the 2000s (Huang et al. 2025). In the case of elective joint replacements, technology moved from needing a multiday inpatient stay with significant rehabilitation afterward, to same-day home discharge with a smaller incision and less need for institutional rehabilitation (Cutler and Klarnet, 2026).

Second-round advances almost always come with greater health improvement and fewer side effects, since the reason why they are developed and used is to reduce morbidity and mortality. Because they are often less invasive, second-round therapies typically have lower unit prices. Thus, stenting a patient with heart disease is reimbursed less highly than bypass surgery. Total spending may rise or fall with the second-round therapy, depending

on whether the number of patients treated increases by a greater percentage than the price per patient falls. That depends, in part, on how many patients are deemed suitable for each therapy.

There may be subsequent rounds of advance as well. For some conditions, pharmaceuticals replace surgery. This is true in heart disease, where anti-hypertensive medications, statin drugs, and diabetes medications have lowered the incidence of heart disease, thus reducing the need for open heart surgery and stent implantation. In other cases, surgery becomes so much easier that it moves to less-expensive settings. Joint replacements used to involve a several-day inpatient stay and recovery in a nursing facility. Today, most joint replacements are performed on an outpatient basis, and the patient goes home the same evening.

Over time, the system tends toward a "cure"—a treatment that is simple, fully effective, and has no side effects. If the cure is easy to produce, it will become cheap over time (for example, after patent expiry). Thus, the condition itself may no longer be a source of impairment. If the price of the cure is low enough, spending could be minimal. The classic example of a cure is the polio vaccine; it replaced the iron lung in the fashion that the model specifies. Until a recent decline in vaccination, spending on polio in rich countries was virtually nonexistent. Anti-hypertensive medications and statin drugs are a partial cure for heart disease. It is possible that GLP-1s could be even closer to a cure for some conditions, such as obesity-related heart disease, cancers, and musculoskeletal pain. GLP-1s are expensive today but will become cheaper as they move off patent.[11]

The long arc of medicine largely involves moving from non-treatment to first-round rescue therapy. This happened in heart disease, as noted, along with many other conditions: stroke, cancer, joint pain, premature delivery, and countless others. The result was a wave of increasing costs. We see this in the time series in Figure 1, particularly in the 1970s and 1980s. A number of innovations were developed in those decades, and spending rose rapidly.

Increasingly, however, we are seeing many examples of subsequent-round treatments for which spending falls or at least does not rise as rapidly: falling heart disease admissions due to improved pharmaceutical treatment of risk factors; major procedures becoming simple enough that they are conducted on an outpatient basis; and reduced imaging as first images become more standardized and easier to retrieve. Overall, Cutler and Klarnet (2026) conclude that about 14% of the difference in the growth rate before and after 2010 is due to the diffusion of cost-reducing innovation.

To a great extent, the future of medical spending depends on how the static and dynamic processes play out over time. To be sure, there are likely to be cycles as bunches of new treatments come online in some periods and groups of existing treatments become cheaper in others. The long-term trend is more important than the cycles, however. I illustrate high and low scenario spending growth with reference to these long-term fundamentals.

[11] The production process for GLP-1s is not particularly expensive (Barber et al., 2024), so long-run prices should be low.

C. The high-growth scenario

Two system changes could lead to a return to high medical spending growth. One potential change is a weakening of some of the constraints put in place during the past few decades. For example, cost-sharing in insurance could be reduced, and prior authorization requirements could be relaxed. As noted, market data do not suggest that such a change is imminent, though the government can choose to intervene.

However, even an easing of recently implemented constraints would not bring spending fully back to its pre-slowdown level. For instance, there is no reason to think that the trend toward minimally invasive surgery will decline, or that people will stop taking drugs that reduce heart disease risk. Further, the continued decline in use of hospital care resulting from innovations such as minimally invasive surgery is increasing the bargaining position of insurers relative to hospitals. This is used to lower the prices that insurers pay for care (Ho and Lee, 2019).

The high-growth scenario is most likely typified by an increasing ability of clinicians to treat conditions that are currently untreated, and to do so at high expense. The scenario that is most typical is development of a rescue therapy to slow the spread of Alzheimer's disease or reduce the debilitation from autoimmune disorders. These are not cures; they are effective though perhaps not fully so, are taken on an ongoing basis, and are very expensive. Is it plausible that there will be many more such innovations?

The idea behind the potential for such treatment innovation is not new. More than 90 years ago, Aldous Huxley (1932) wrote about a brave new world where technology could keep people healthy until the very end:

> *What's the matter with him?" whispered Lenina. Her eyes were wide with horror and amazement.*
>
> *"He's old, that's all," Bernard answered as carelessly as he could. He too was startled; but he made an effort to seem unmoved.*
>
> *"Old?" she repeated. "But the Director's old; lots of people are old; they're not like that."*
>
> *"That's because we don't allow them to be like that. We preserve them from diseases. We keep their internal secretions artificially balanced at a youthful equilibrium. We don't permit their magnesium-calcium ratio to fall below what it was at thirty. We give them transfusion of young blood. We keep their metabolism permanently stimulated. So, of course, they don't look like that. Partly," he added, "because most of them die long before they reach this old creature's age. Youth almost unimpaired till sixty, and then, crack! the end."*

In the early 2000s, economists worried that the decoding of the human genome would be a step toward Huxley's dystopia (Goldman et al., 2005). Interestingly, the number of gene-based therapies developed since the human genome was decoded is surprisingly low. The total US market for approved cell and in-vivo gene-based therapies was only $4 billion in 2023, roughly 0.1% of total health spending (IQVIA, 2024).

Some information on where investors are assuming treatment innovations could arise is gained by analyzing venture capital funding. In 2018, $17.5 billion was invested globally by venture capital in biopharmaceuticals. The distribution of this funding by disease is shown in Figure 7. Cancer is the clear leader, accounting for 38% of the total. Nothing else comes close, though other conditions with large investments include neurology (which includes Alzheimer's disease) and immunology (which includes inflammatory bowel disease and autoimmune disorders), along with 'platforms' that focus on a technology rather than a particular disease (for example, messenger RNA technology). Since 2018, investment has also increased in obesity medications (Recasens-Alvarez et al., 2025).

New oncology medications could be a substitute for existing medications or an addition to them. The impact will depend on the specifics of the medication.

The poster child for potential high-cost innovation is Alzheimer's disease. An estimated 7 million Americans have Alzheimer's disease, including one in three older than 85 (2025 Alzheimer's Disease Facts and Figures). The market for an Alzheimer's disease prevention drug is not just limited to those with Alzheimer's disease, however. As many as 12 million people aged 65 and older have mild cognitive impairment (Manly et al., 2022), for which treatment to slow the progression of deterioration might be appropriate. If the treatment had few side effects, many more of the roughly 60 million people aged 65 and older might be eligible candidates.

The initial cost of Alzheimer's disease medications is likely to be high. One recently approved drug to delay the progression of Alzheimer's disease, Leqembi, costs more than $25,000 per year (National Council on Aging, 2024). Thus, the annual cost of an Alzheimer's disease medication could be tens of billions of dollars annually. If the market for a drug priced at this rate were 5 million people annually, spending on such a medication would be about 2.5% of NHE. There may be savings later, for example from reduced use of institutionalized and formal and informal home healthcare, which will depend greatly on how effective the medication turns out to be (Tysinger et al., 2025).

The Alzheimer's drug example highlights a few key features that will influence whether the *high-spending scenario* occurs. The first issue is who uses the medication. Economists judge technologies by their cost-effectiveness: what benefits do they bring relative to their costs? A key consideration for new Alzheimer's disease medications is whether their use is limited to those in whom they are cost effective, or whether they are used more widely. Unlike private insurers and insurers in other countries, the federal government in the United States is not allowed to use costs as a criterion in deciding on medical care decisions. Thus, cost-effectiveness is not guaranteed if the government is making the use decision.

A second issue is how the drug is financed. If the drug is optional for Medicare prescription drug plans to cover, the decision by plans to cover it may be quite costly, because plans that cover it will be disproportionately selected by people who know they are at risk. Thus, spending will rise a great deal. Since individuals in need of medication for Alzheimer's disease often use more of other medications as well, risk-adjustment methods may not fully compensate these plans for the higher risk, and plans may lose money covering Alzheimer's drugs. As a result, many may decide not to cover them. In another scenario, if plans choose to cover Alzheimer's disease medications but do so with very high out-of-

pocket cost-sharing requirements, a substantial share of people may not be able to afford the medication.

Likely, the only way that use would be high is for the federal government to spread the cost of the medications over all eligible seniors, or perhaps the entire population. However, this too causes some concern. If the federal government winds up paying for a large new treatment without new sources of revenue, the result could be significantly higher federal deficits or reductions in other sources of funds.

As with all economic decisions, there is no free lunch. If it is costly to treat an expensive condition, society will have to find a financing system for it. That system can be more or less equitable and more or less encouraging of use. What this discussion reinforces is that the impact of technological change on spending is as much as function of economics as of the underlying biology.

D. The low-growth scenario

The most difficult scenario to specify is the *Low-spending growth* one: what might happen that would make medical spending the same or significantly lower as a share of the economy many years from now? There are several factors that could lead to such an outcome.

The first scenario is a continued advance of cost-reducing technologies. Treating people outside of institutions is a prime example of this. Institutional care—in a hospital, nursing home, long-term rehabilitation facility, or other institution—is expensive. For example, the daily cost of a hospital stay covered by Medicare is about $3,000 (MedPAC, 2026), and the annual cost of a nursing facility is more than $100,000 annually (American Council on Aging, 2026). In contrast, treating people on an outpatient basis is much cheaper. For example, home healthcare is perhaps one-third the cost of nursing home care on an annual basis (Bedlin and Phillips, 2022). Thus, technologies that lead to less use of institutionalized care would save a lot of money, even if they involve significant amounts of home healthcare.

Changes in the medical system in the past 15 years have dramatically increased the share of people that can be treated as outpatients rather than inpatients. Even still, we have not reached the end of the possibilities to do this. For example, one recent study (Sahni et al., 2024) surveyed physicians about the share of medical care that is currently provided on an inpatient basis that could be provided on outpatient basis, using today's technology and without harming patient health. It estimated that 30% of today's inpatient care could move to outpatient care without harm to patients, which would lead to roughly a 4% reduction in total spending.

There may be other technological changes that allow even more care to move outside of an institution. One such innovation would be advances in monitoring technology that allow people who are frail but stable to be treated at home. For safety reasons, many frail individuals receive institutional care. With technologies to monitor health status, food intake, and household functioning, it may be possible for more people to live independently. This could meaningfully reduce inpatient hospital and nursing facility stays.

A second scenario that would be associated with low spending growth is that we may be able to prevent more diseases than we can now. The United States has advanced significantly in preventing cardiovascular disease. Major medications to help with control include antihypertensives, statin drugs, and drugs to control diabetes. Even with such drugs, however, utilization of these medications is far below potential. For example, only about one-quarter of people with high blood pressure have their blood pressure successfully controlled (Fryar et al., 2024). Similarly, low rates of control are found for people with high cholesterol and diabetes (Zhou et al., 2019; Inoue et al., 2025; Lawton and Cutler, 2026).

There are several reasons why control is so low. High cost-sharing discourages some people from going to the doctor and buying medications. Some people forget to take medications. And some people are mistrustful of physicians or pharmaceutical companies. Health system changes can help overcome these barriers. For example, cost-sharing can be reduced for people with financial difficulties. Similarly, reminder systems can help patients who forget to take medications. And technology combined with interactions with trusted peers can help people overcome their mistrust of the medical system.

Technology is moving in a way that may add to our ability to prevent disease. The two biggest non-medical risk factors for disease are smoking and obesity. Smoking has declined rapidly in the United States in the past several decades, from roughly 40% of the population in the mid-1960s to about 10% currently (American Lung Association, 2026). In contrast, obesity has increased, rising from 14% of the US adult population in the early 1970s to about 40% currently. In the past few years, there has been a significant change in our ability to treat obesity, with the widespread diffusion of GLP-1 drugs. If these drugs are as effective as current evidence suggests, and if people use them as directed, they could materially reduce the population's risk profile.

Starting in 2024, there has been a resurgence of medical care spending growth, driven in significant part by rapid spread of GLP-1 medications (Chernew et al., 2026). An initial increase in spending with the advent of new preventive medications is to be expected. We can hope that the situation with GLP-1 drugs is similar to that with other cardiovascular prevention medications—that these drugs, even as they are expensive, lead to savings down the road. Of course, over time, the drugs themselves will cost less, as they go off patent and become subject to generic competition.

A third area for potential cost savings is administrative costs. About 25% of medical spending goes for administration, accounting for roughly $1 trillion annually (Sahni et al., 2021). This includes industry-agnostic functions such as general administration, human resources, and finance; and costs associated with payer-provider interactions, including billing, prior authorization, and credentialing. Healthcare appears to spend more on industry-agnostic functions than other big industries (Sahni et al., 2021). This may be because, while healthcare as a whole is a big business, most healthcare establishments are only of moderate size. Thus, use of low-cost technologies and processes for handling general administrative functions is limited.[12] Big healthcare organizations in general have

[12] An example is the use of web sites. Most healthcare organizations do not have web sites that are extensive enough to reduce phone call volume. Thus, people are engaged in tasks that are handled electronically at other firms.

lower administrative costs than smaller firms, though these savings are not necessarily passed along to consumers in the form of lower prices.

Policy is starting to act on these administrative costs. Most attention has been paid to payer-provider interactions, given that these are more amenable to policy interventions. A prime example is prior authorization. When a physician requests approval to seek a discretionary image for a patient, for example, the insurer requests clinical documentation on the necessity of the image, which is available in the electronic medical record but it not generally shared. Parts of the electronic record is printed out and forwarded along to insurers. Sometimes, additional documentation is required, which the provider's staff sends. People handle all of the back and forth.

Standardization could be particularly helpful in this process. If all insurers could agree on what data elements were required before approving a prior authorization request, the provider's electronic medical record system could forward the relevant information to the payer. No people would be needed to gather and transmit information. Approval or rejection could happen automatically.

For standardization to occur, some degree of government involvement is almost certainly required. Different payers will find it hard to agree on criteria for prior authorization on their own, and even if they do so once, they would have to agree on a process for change as well.

To think about the magnitude of what is possible in reducing administrative costs, note that administrative costs in most other rich countries are 5% to 10% of medical spending, compared to roughly 25% in the United States (Cutler, 2020). The lower end is achieved in single-payer systems; the higher end is more typical in multi-payer countries. It is unrealistic to think that the United States will match the administrative cost of single-payer countries, but it may not be so far-fetched to think that the cost could approach those of other multi-payer countries. Thus, it is possible that medical spending could fall by 10% to 15% if administrative efficiency were improved to match that in countries with similar health systems.

Combining the continued development of cost-reducing technology, a greater ability to prevent disease, and a potential reduction in administrative expense, there is the potential for significant savings in U.S. medical spending. These savings would play out over time, leading to a slower growth rate for some period. Thus, the share of GDP devoted to healthcare could fall, at least for some time. Along with that would come a reduction in the federal burden associated with paying for medical care.

III. AI and medical spending

The biggest unknown on the medical care horizon is AI. AI will surely have enormous impacts on medical care, though at this point we do not know how it will affect spending. Conceptually, AI could have several impacts on medical care. The first is greater consumer engagement. Because of AI, everyone with a computer or smartphone has access to at least some individual-specific diagnostic data and therapeutic recommendations. AI can

effectively be a primary care physician of variable quality, and somewhat of a specialist to boot.

While AI is unique in its technological capacity, it is not unique conceptually. One can think of greater patient engagement as an increase in the supply of care. The impact of an increase in physician supply on spending depends on several factors, including the elasticity of demand for care, whether AI is a substitute or complement for in-person visits, whether AI programs lead patients to use more appropriate or inappropriate follow-up care, and whether AI increases adherence to physician recommendations. A beneficial scenario would be where AI interactions encourage people to adhere to cheap but effective recommendations such as to take chronic disease medications and change one's diet. In this case, future spending could be lowered at minimal to no cost. A harmful scenario would be if AI encouraged unnecessary CT scans that patients do not need but payers are powerless to prevent.

On the provider side, AI can be a key part of administrative simplification. Even if payer-provider transactions have to occur, they need not be handled by humans. That said, AI could increase spending by taking advantage of billing quirks such as the dependence of reimbursement on past diagnosis. By trolling through medical records more efficiently, AI could customize the diagnosis for each patient so that billing is maximized. Electronic medical records are starting to perform some of this function.[13]

Clinical integration is the Holy Grail of AI. AI is better at cognitive tasks than manual ones, so many use cases for AI jump are on the cognitive end. AI programs do well on licensing exams (El Natour et al., 2026), can read images about as well as radiologists, can synthesize lab values into a wholistic view of the patient, and can sort through a list of differential diagnoses (Wachter, 2026). After forming a treatment plan, AI can then consider who is at greatest risk for an adverse health event and take actions to avoid such outcomes, for example authorizing home visits for patients at high risk of a fall.

Beyond the technical capabilities of AI programs, several economic and social factors are likely to influence how AI is used. Both patients and physicians need to trust AI systems before they will use them. A 'black box' may work for movie recommendations but is unlikely to work for which drug a patient should take. Similarly, acceptance of AI may depend on factors such as whether AI developers are liable or not for any mistakes, whether AI programs can write prescriptions or just make recommendations, and whether AI is integrated into physician practice software.

A final area where AI can be valuable is in influencing the type and pace of technological change in medicine. Here, the potential impact of AI is vast. On the one hand, AI might lead to the development of many new forms of therapy. For example, many pharmaceutical companies are optimistic that AI can help them design molecules that are more effective than existing therapies, with fewer side effects. If scientists develop an effective drug to

[13] AI may simplify other administrative processes without saving money. Physicians spend a good deal of time documenting information about patients. Often, this is at the end of the work day. AI-based medical scribes are increasingly being used to listen to physician-patient interactions and write up the notes for the physician. There is no change in reimbursement, but a reduction in the time required for practice. There may lead to less physician burnout, which may increase long-run supply of physicians.

slow the spread of dementia, it is possible that AI will play a significant role in that development process. Such an innovation could lead to more rapid spending growth.

However, just as AI can speed up first-in-class treatments, it can also speed up competitor molecules and second-line treatments. Using AI, a drug that one company has developed can be made more effective by a second company at much lower expense. Further, second-line therapies may come sooner in comparison to first-line therapies than they have in the past. This could lead to greater competition among molecules and more rapid price decline after entry.

With so many different potential impacts, the overall impact of AI on medical spending is unknown. Understanding how AI affects different parts of the medical system is important.

IV. Conclusion

The outlook for health spending is particularly uncertain. Medical spending growth in the next few decades could rise rapidly or fall markedly, depending on what types of innovations are developed and how they are deployed. Even the range of reasonable bounds for spending growth is hard to determine.

Amidst this uncertainty, two points are worth keeping in mind. First, medical spending is something that is at least partly under our control, influenced by reimbursement policy, regulatory decisions, and patient and provider trust. The outlook for medical spending is not some geophysical process that we can understand but cannot change. We can influence what is done in medical care, how much is paid for it, and who pays the bill.

Second, even though there are potential good scenarios on the horizon, we need to think about and plan for the worst case. If spending growth rises rapidly, what will we do? It would be wise to design systems now that can be implemented if needed. The longer we wait, the more difficult the necessary changes will be.

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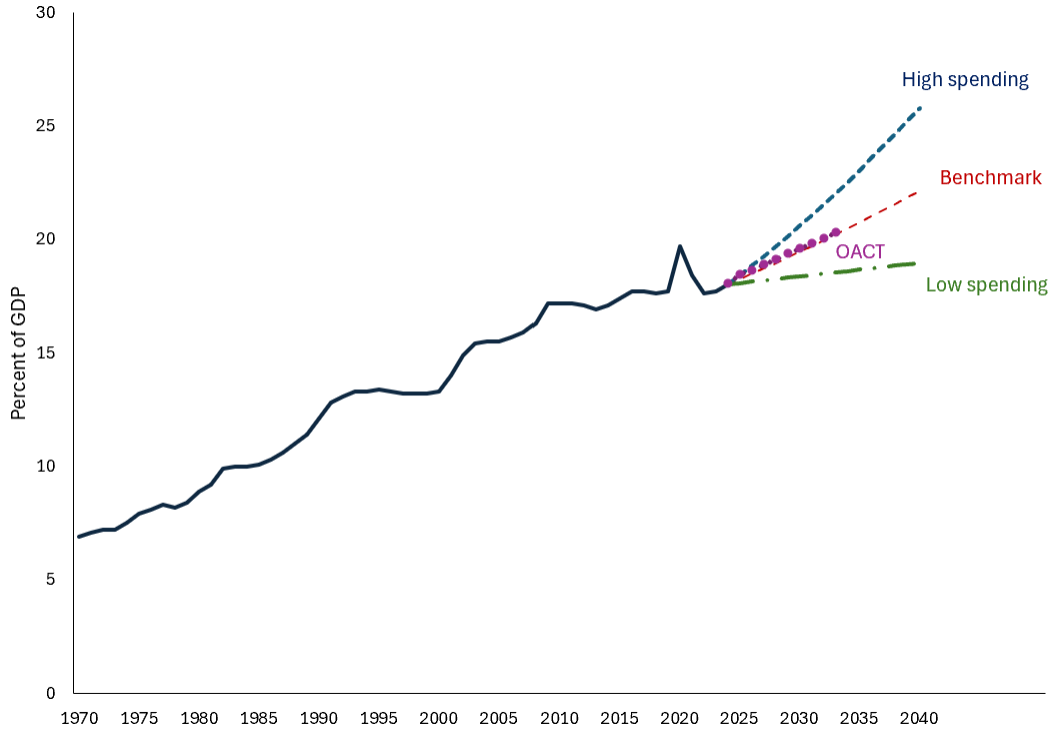
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FIGURE 1

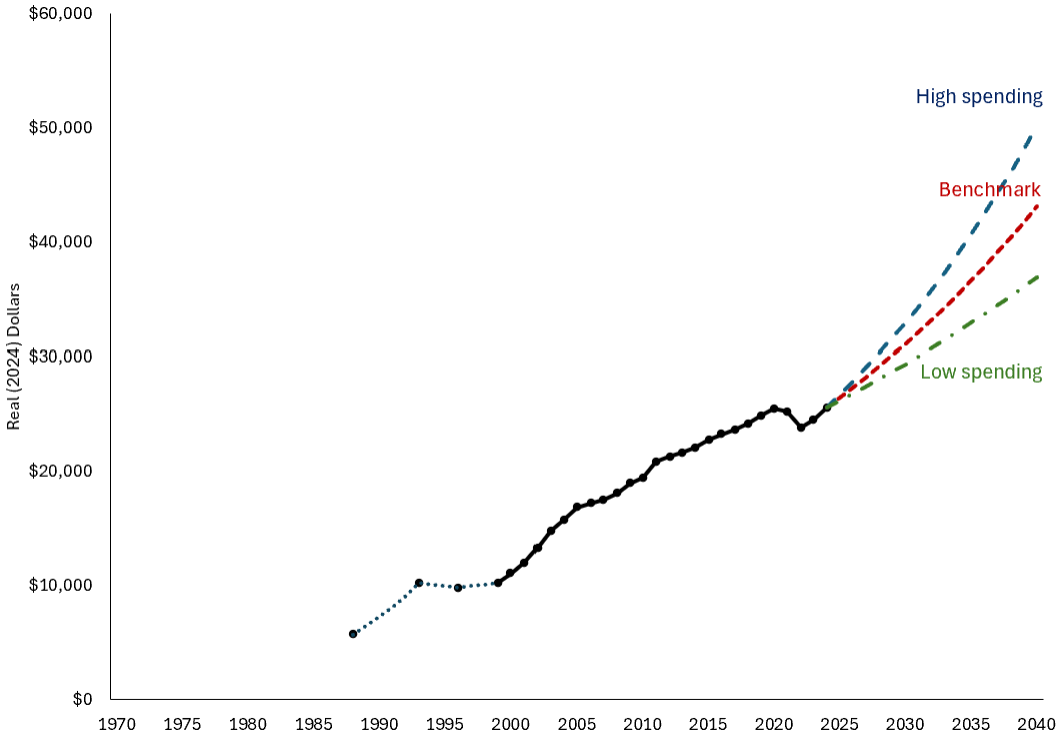
Three scenarios for medical spending as a share of GDP



Note: Historical data are from the CMS Actuaries. The Actuarial projection is also from CMS. The benchmark, low-spending, and high-spending scenarios are author's calculations.

FIGURE 2

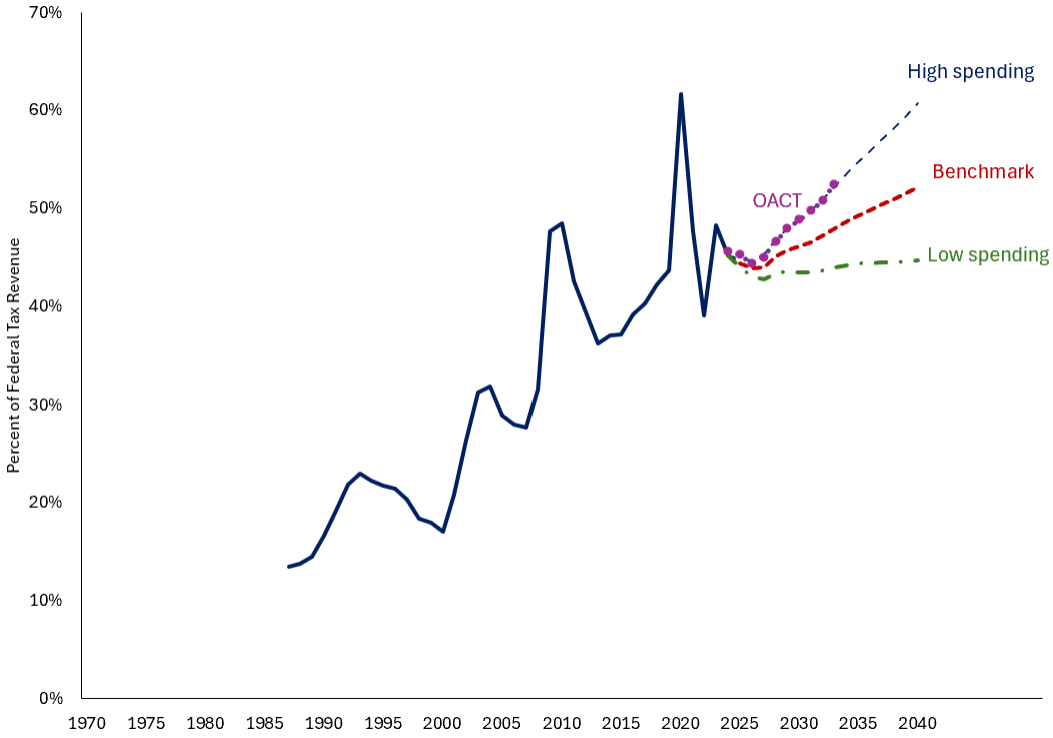
Three scenarios for real family health insurance premiums



Note: Premium data are from KPMG (1988, 1993, 1996), the Kaiser Family Foundation – Health Research and Education Trust (1999-2017) and the Kaiser Family Foundation (2018-). The benchmark, low-spending, and high-spending scenarios are author's calculations.

FIGURE 3

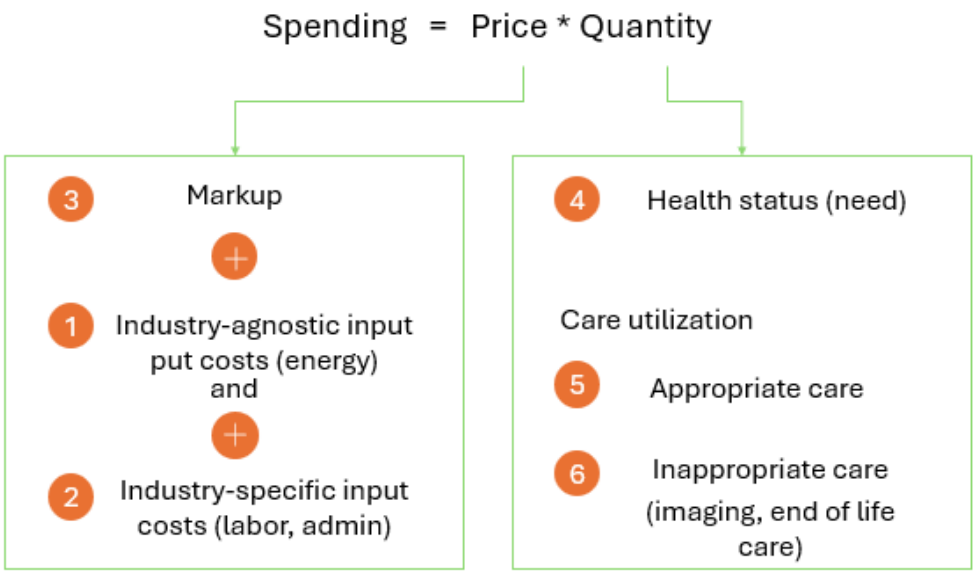
Three scenarios for federal medical spending as a share of federal revenue



Note: Federal spending on medical care is from the CMS Actuaries. Federal revenue is from the Office of Management and Budget. The OACT forecast assumes federal spending increases as forecast by the Actuaries and federal revenues as forecast by OMB. The benchmark, low-spending, and high-spending scenarios are author's calculations.

FIGURE 4

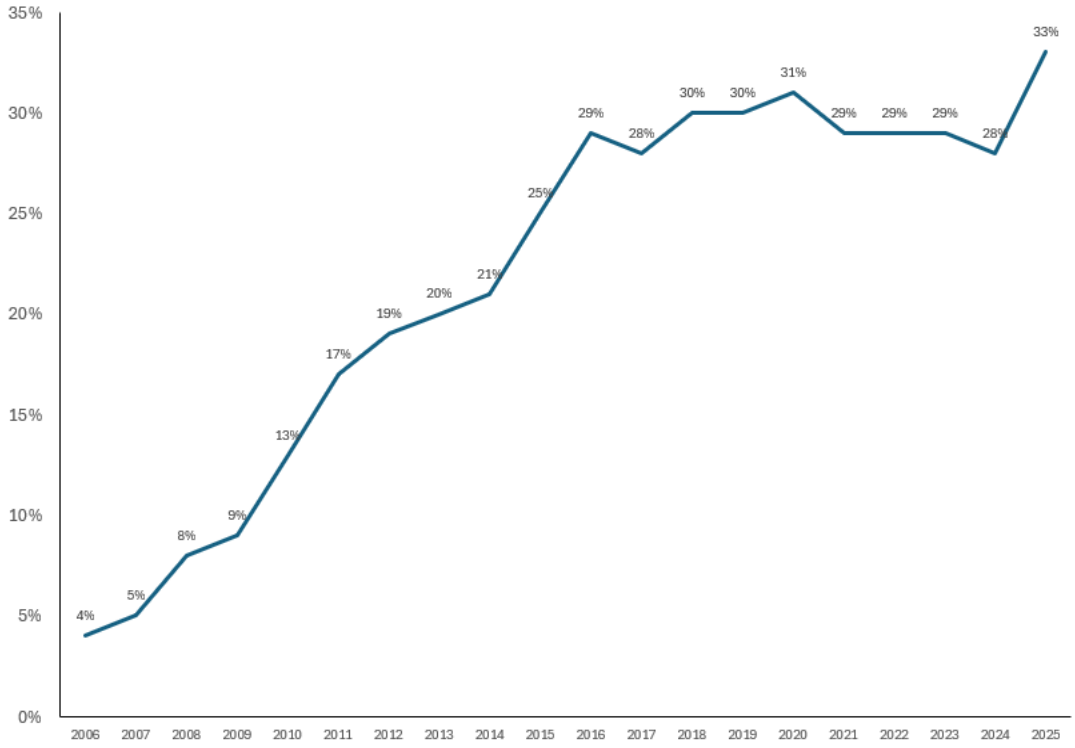
Six areas of medical spending to consider



Note: The figure shows factors driving health spending. Some factors influence the price of care and others influence the quantity of care.

FIGURE 5

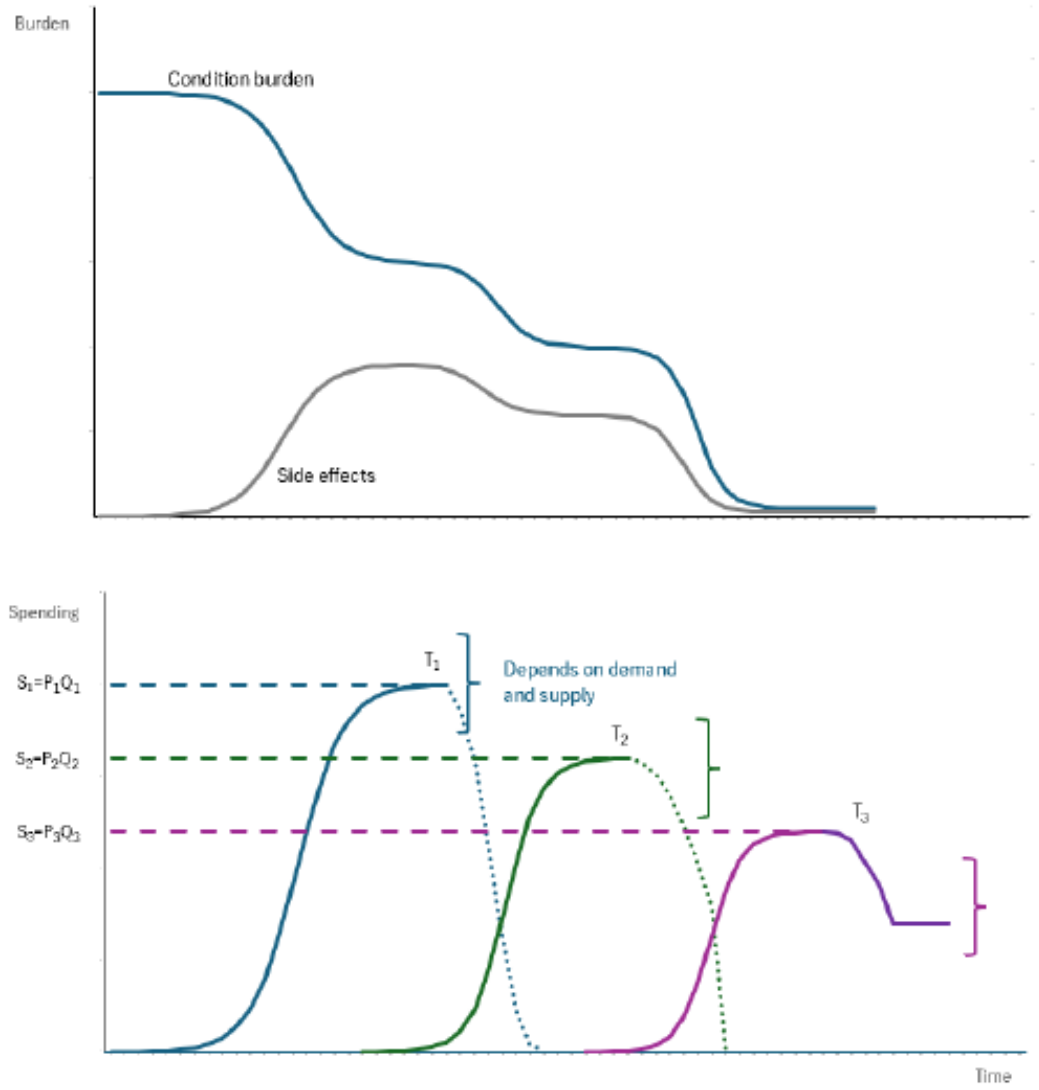
Share of covered workers in a high deductible health plan, 2006–2025



Note: Data are from KPMG (1988, 1993, 1996), the Kaiser Family Foundation – Health Research and Education Trust (1999-2017) and the Kaiser Family Foundation (2018-).

FIGURE 6

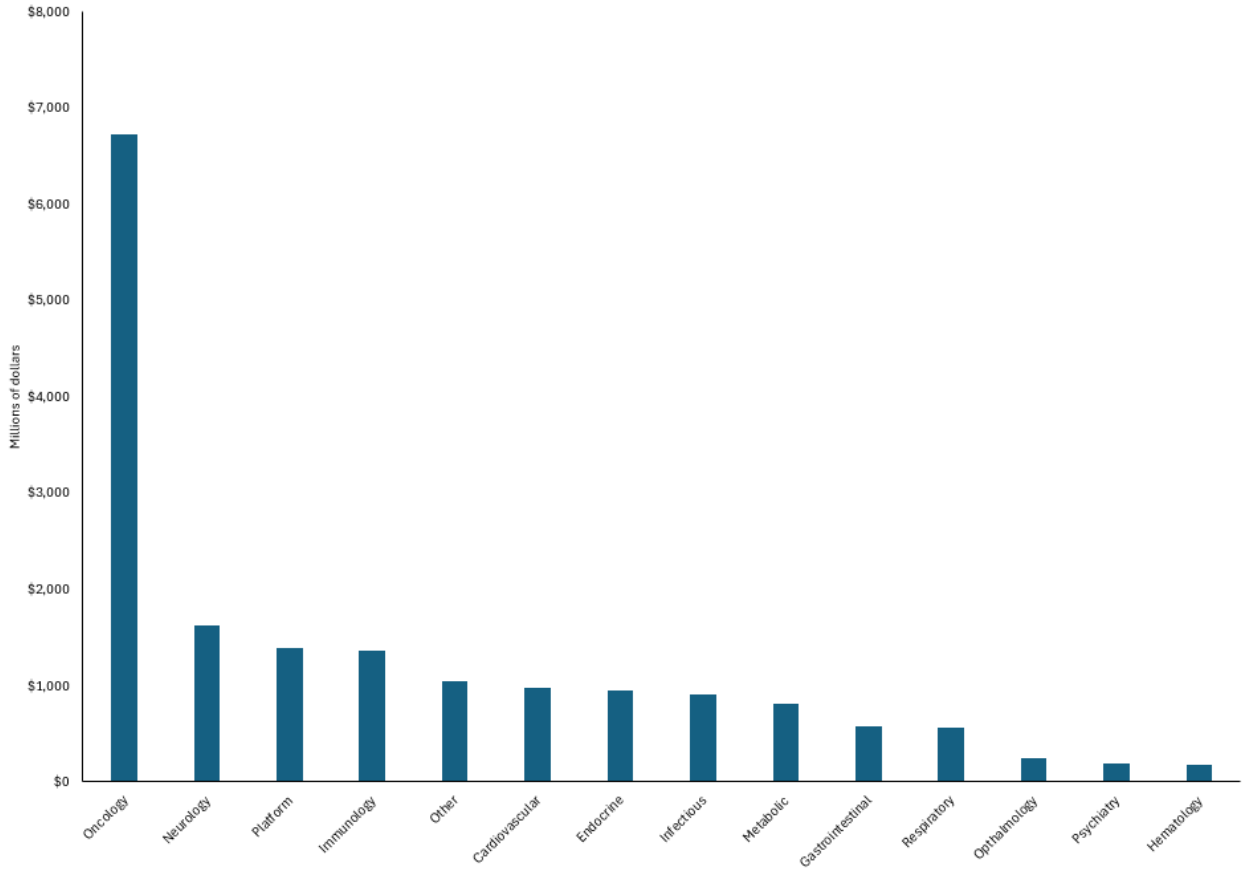
The dynamics of medical technology



Notes: The figure shows the evolution of medical technology. The upper panel shows the evolution of burden of the condition and side effects of treatment. The lower panel shows different technologies: a first therapy with high spending and side effects, a second treatment that is better and cheaper, and a cure. Each diffuses over time, after which spending may fall. Source authors illustration.

FIGURE 7

Global biopharma investment by disease, 2018



Source: Thomas and Wessel (2019).

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