Compete.
U.S. Council on Competitiveness

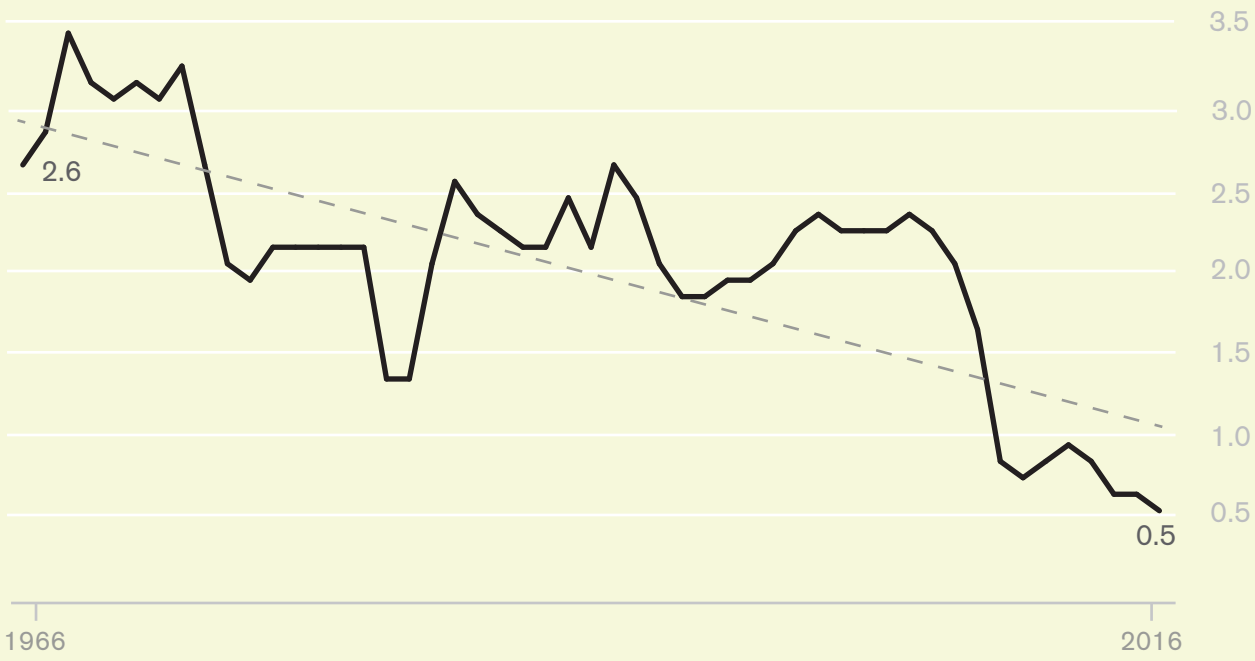
No Recovery

An Analysis of Long-Term U.S. Productivity Decline

Jonathan Rothwell, Gallup Senior Economist

The Growth Slowdown

% Annual growth rate in real GDP per capita over 10-year periods



GALLUP

NR120516

No Recovery: An Analysis of Long-Term U.S. Productivity Decline

JONATHAN ROTHWELL, GALLUP SENIOR ECONOMIST

THIS REPORT HAS BEEN SPECIALLY prepared by Gallup to celebrate the 30th anniversary of the U.S. Council on Competitiveness.

For 30 years, the Council has addressed national competitiveness, examining a range of critical economic issues, including research and development, advanced manufacturing, access to capital, high-skilled workforce training, trade and the key role of government in creating a pro-growth environment in which companies compete and Americans prosper.

The author would like to thank Angus Deaton, Martin Baily, Justin Wolfers, Robert Atkinson, Sangeeta Badal, Sangeeta Agrawal, Ben Ryan, Andrew Dugan, Cary Wolbers, Stephen Rose and Vint Cerf for valuable comments on earlier drafts.

Note on cover figure: The real GDP per capita growth line is based on the author's analysis of data from the Bureau of Economic Analysis. Growth rates are in inflation-adjusted dollars calculated over 10-year intervals and reported in annual terms.

NR120516

From Gallup's Chairman and CEO

DEAR MEMBERS,

The U.S. Council on Competitiveness asked Gallup to conduct, pro bono, a comprehensive study of U.S. growth and productivity for the Council's 30th anniversary.

We enthusiastically said yes.

A Gallup senior economist led the study. Top Gallup experts and esteemed external senior scientists reviewed it to ensure statistical and theoretical accuracy and objectivity.

Conventional wisdom — as reported in many major newspapers and media — tells us the U.S. economy is "recovering." Well-meaning economists, academics and government officials use the term "recovery" when discussing the economy, implying that growth is getting stronger.

The study finds there is no recovery. Since 2007, U.S. GDP per capita growth has been 1%.

The Great Recession may be over, but America is dangerously running on empty.

Think of our country as a company, America Inc., which has more than 100 million full-time employees, with about $18 trillion in sales and $20 trillion of debt. The most serious problem facing it is no growth. In addition, America Inc. has three soaring expenses threatening to bankrupt the company and its shareholder-citizens: healthcare, housing and education.

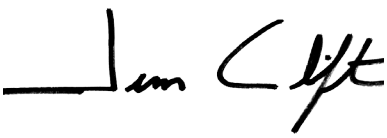
As this report notes, in 1980, these three sectors accounted for 25% of total national spending — today, they account for more than 36%. They also account for most of the total measured inflation over this period. And without inflation in these sectors, real annual productivity — defined as GDP per capita growth — would have been an estimated 3.9% instead of 1.7%.

My own opinion is that America Inc. is too big to "turn around" like one would a company or any organization. There is no quick fix to something this huge and complex. But there is a long-term fix, which is to get GDP increasing to 3% and higher while slowing the increasing costs of healthcare, housing and education.

When real growth returns, productivity will increase, and America Inc.'s empty tanks will refill.

Gallup congratulates the U.S. Council on Competitiveness for its 30 years of contribution to business, industry, education and especially to our country.

Regards,



Jim Clifton
Chairman and CEO
Gallup
Washington, D.C.

From U.S. Council on Competitiveness' President and CEO

ON THE OCCASION OF THE U.S. COUNCIL ON COMPETITIVENESS' 30TH ANNIVERSARY, I am very pleased to release this groundbreaking study in partnership with Gallup Chairman and CEO Jim Clifton, our longtime member and supporter.

Since our founding in 1986, the Council's work has been anchored in the belief that productivity is the linchpin to prosperity and a rising standard of living for all Americans. Starting with the first *Competitiveness Index* in 1988, the Council placed productivity front and center as the global metric measuring a nation's economic health.

The release of this report puts a capstone on more than 30 years of convening America's most senior leaders in industry, labor, academia and the national laboratories to identify the ever-evolving drivers of economic competitiveness and to forge the partnerships and policy agendas necessary to take action and make progress.

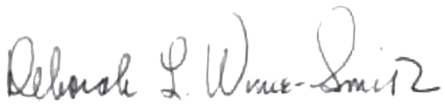
A constant in the Council's work has been to encourage innovation-driven productivity, which is essential for higher growth, better wages and the capacity to solve grand challenges. High productivity unleashes people from old norms and allows them to dream, invest and create the future.

As this report makes clear, however, productivity growth is in a serious multi-decade-long slump that is dangerously close to stalling completely. Three crucial sectors — healthcare, housing and education — account for 36% of national spending and could hold the key to reversing this structural productivity decline and reinvigorating American growth and high-value job creation.

Imagine a young adult in the 1980s compared to today. On average, today's person pays a significantly larger share of his or her income for healthcare, housing and education than their 1980s counterpart. The long-term impact has been to dampen productivity and consumption — not to mention that young person's quality of life, ambitions, career choices and ability to take risks.

In a time when so many Americans feel that the economy is not working for them, this report spotlights the importance of raising the quality-to-cost ratio for fundamental parts of our lives. I urge our public servants, industry leaders and educators to act on its findings.

Sincerely,



Deborah Wince-Smith
President and CEO
U.S. Council on Competitiveness

TABLE OF CONTENTS

36%

Share of total national spending on healthcare, housing and education in 2015, up from 25% in 1980.

Executive Summary

THE UNITED STATES HAS NOW had seven years to recover from the worst of the Great Recession. During that time, job growth has been steady, if unspectacular, and the unemployment rate has fallen from 10% to just under 5%, where it stands as of this writing. Stock prices, meanwhile, continue to reach and surpass new highs. Leading politicians and commentators reassure the public that everything is getting better.

And yet, there is a pervasive sense that the economy is not working, as documented in Gallup survey data and many anecdotal media accounts.

The people are right. The economy is not working well. But the problems did not start with the Great Recession. For decades, the nation's income, measured as GDP, has barely grown overall; on a per capita basis, median household income peaked in 1999; the subjective general health status of Americans has declined, even adjusting for the aging population; disability rates are higher; learning has stagnated; fewer new businesses are being launched; more workers are involuntarily stuck in part-time jobs or out of the labor force entirely; and the income ranks of grown children are no less tied to the income ranks of their parents.

The focus of this report is on the problems confronting the United States, which, despite the aforementioned issues, has exhibited somewhat better performance than many of its peers on GDP growth, though weaker performance on health and education. Therein, however, is the chief problem for this country.

The tech sector and professional services of the United States are world class; they draw skilled workers from every country, akin to professional European football teams. The same could be said of top universities in the United States. But the rest of the economy — especially the U.S. healthcare and education sectors — are not world class, and the country's top universities serve just a tiny fraction of the U.S. adult population. These sectors — as

well as housing — have racked up tremendous expenses for consumers, businesses and taxpayers but provided relatively little value in return, as this report will describe in detail. As a result, the great strengths of the United States are offset by great weaknesses.

Those who have recognized at least some of these challenges often misdiagnose their origin, confusing the timing with an increase in trade, immigration or information technology. In reality, those trends have bolstered the little progress the U.S. has made. Meanwhile, defenders of the status quo only recognize the nation's strengths in technology production and research or recent job growth without acknowledging the very different political and market dysfunctions dominating other sectors.

This report argues that deterioration in large, vital sectors of the economy is far from inevitable, but rather an entirely reversible outcome that can be linked to specific policies, rules and regulations that have arisen and accumulated after decades of weak political leadership — often at the state and local levels — and lobbying by interest groups.

This report proceeds in 10 sections, advancing the following arguments:

1. The problem is severe.

   Since 1980, U.S. GDP per capita growth has been far below its long-run average, and since 2007 it has been almost negligible. From 1929 to 1979, real per capita GDP growth was 2.4% per year. Since then, it has been just 1.7% per year, and the most recent period has been particularly lackluster, both since 2007 (1% per year) and since 2009 (1.4%). These small differences expand into vast gaps in potential living standards. If 1% growth continued for the next 35 years, per capita GDP would increase from $56,000 in 2015 to just $79,000 in 2050. With 1.7% growth, GDP per capita goes up to $101,000 by 2050, and with 2.4% growth it enlarges to $129,000.

2. Conventional theories are unpersuasive and often ignore long-term problems.

   Many explanations have been offered for this growth slowdown, including both a lack of new products (not enough innovation) and too many new products (worker displacement from technology). What's missed in these debates is that growth also comes from price reductions in existing products, which has the same positive effect as new inventions. Economist Robert Gordon, who emphasizes that previous inventions were more

potent than what has come since, has provided compelling analysis of the problem, but he ignores the possibility that political forces have created non-technological barriers to market efficiency and growth.

3. Changes in living standards are fundamentally linked to changes in how the quality of goods and services relate to their cost.
   The most important advances in living standards have come from the introduction and development of products that lower the cost of accomplishing important tasks — like producing goods through mechanical power; seeing and communicating via electricity; traveling via trains, cars and planes; and preventing disease through better sanitation — or raise the quality-to-cost ratio, such as recent advancements in computing power and speed. Therefore, when the quality-to-cost ratio falls, living standards do as well.

4. Deterioration in the quality-to-cost ratio for healthcare, housing and education is dragging down economic growth.
   After spiraling price increases, these sectors accounted for 36% of total national spending in 2015, up from 25% in 1980. These sectors account for most of measured inflation over the period, and without inflation in those sectors, real annual GDP per capita growth would have been an estimated 3.9% instead of 1.7%.

5. The U.S. population's health has stagnated or even declined on several measures since 1980, especially for the working-age population.
   The goal of healthcare services is better health, but the health of the U.S. population, especially the working-age population, has seen only modest gains in recent years and has even declined on important measures. Working-age Americans have experienced very small reductions in mortality since 1980, and non-Hispanic whites saw no reduction from 1999 to 2014. Overall subjective health status has fallen for working-age adults and self-reported disability has increased. These trends explain the fall in working-age labor force participation over the period. Access to care, diet, exercise and illegal drug abuse do not explain health stagnation, but the rising prevalence of prescription opioid use is a factor. The U.S. devotes far more resources to healthcare than any other country and yet achieves worse outcomes than most developed countries, consistent with the notion that U.S. healthcare is especially inefficient and ineffective.

6. Housing costs have swallowed up a larger share of income without a corresponding increase in quality.

   Since 1980, families have devoted a larger and larger share of their income to paying housing costs, thus reducing discretionary spending power. In 1980, the rent-to-income ratio for the median family was 19%; by 2014, it swelled to 28%. The costs of owning have also increased. To justify this price spike, there would have needed to be major enhancements in housing quality or the value of living in certain areas. There is no evidence that this happened. On the contrary, the evidence largely suggests that the quality of housing has at least slowed in growth if not deteriorated, even as prices have increased. People are now living in smaller homes that are older and located farther away from their places of employment. Government statisticians take into account quality when calculating housing inflation, and their data show a price increase of 250% from 1980 to 2015.

7. Educational quality is weak and stagnant at all levels.

   The U.S. education system has failed to instill any measurable gains in the cognitive performance of children and young adults for decades, as U.S. students and adults struggle with poor rates of literacy and numeracy despite high spending growth.

8. A number of indirect consequences result from rising inefficiency in healthcare, education and housing.

   Healthcare has imposed massive costs on businesses that are increasingly expected to provide it as a benefit to their employees — in many cases, now by law. This has increased the risks of starting a business while lowering profit margins. The rising costs of healthcare may partly explain why entrepreneurial activity has declined since 1980, since entrepreneurs are confronted with large up-front healthcare costs for themselves and any potential employees. This rising burden of healthcare costs also explains why employers have cut back on full-time hires, resulting in a growing share of Americans working in low-paying, part-time jobs without healthcare benefits.

   The regulatory and administrative burdens placed on the healthcare and education sectors may also explain why these sectors draw less-talented business owners relative to sectors like manufacturing, retail and computer services. Gallup's proprietary index of entrepreneurial potential is lowest in healthcare and education.

Stagnant educational quality has also manifested itself in a prominent failure to properly recognize and train potential entrepreneurs, meaning that many people of all races who reach high thresholds for entrepreneurial potential are not business owners. The gap is especially wide for blacks and Hispanics, despite the fact that Gallup data show no racial differences in entrepreneurial potential.

An indirect consequence of this is that the United States increasingly relies upon foreign-educated workers to start businesses and meet the requirements of companies for highly skilled and technically competent workers.

Meanwhile, labor force participation among working-age adults — both men and women — has declined since 1980 as a direct result of poor health outcomes, specifically a large increase in the percentage of working-age adults reporting that an illness or disease prevents them from working.

9. In these sectors, regulations have caused damage, which has accumulated over decades.

General explanations:

A number of regulations affect many, if not all, industries and have increased in complexity and cost since 1980. Major regulations passed by the federal government in recent decades have accumulated over time to generate $250 billion in regulatory costs per year, as estimated by the White House's Office of Management and Budget. These costs are hypothetically outweighed by benefits in terms of public health and other factors, but these benefits may not manifest in GDP accounts. State judicial rulings have increased the risk of firing workers by replacing at-will arrangements with implied contracts.

Industry-specific explanations:

Excessive administrative expenses related to billing and claims processing have driven up healthcare costs. These costs are far lower in other countries, suggesting the unusual combination of federal rules and idiosyncratic private sector practices has led to massive inefficiencies. Healthcare costs are also artificially high as a result of state regulations that restrict the practice of non-physicians, forcing them to work under physician supervision, even where their training and expertise do not require it. This inflates the salaries of physicians and has contributed to excess growth in those salaries as demand for healthcare has increased.

As for K–12 educational quality, there is strong evidence to suggest that the teaching profession has become increasingly unattractive and inefficient. It is unattractive relative to other careers for highly skilled and education workers because pay starts very low, remains low and is entirely divorced from performance. It is increasingly inefficient because teachers and their students are burdened by excessive and unnecessary testing requirements that meet regulatory standards without boosting learning. At the same time, productivity has plummeted among school district bureaucracies as the number of non-teaching staff per pupil grows.

At higher levels of education, the chief problem is not — as many have argued — that state governments have scaled back subsidies for tuition. That withdrawal has increased tuition at public colleges by shifting costs from taxpayers to students, but the federal government has offset this increase. The larger problem is an increase in costs, resulting in higher revenue per student for schools and higher costs for students and taxpayers.

Costs have skyrocketed in higher education without improving quality for two reasons. First, schools are not held accountable for poor performance, because federal subsidies — in the form of loans and aid such as Pell Grants — do not discriminate between schools. Second, across all institutions, colleges employ more workers per student than ever before and have shifted the types of workers they employ toward highly paid professionals, which now outnumber instructors.

As for housing, local land-use regulations explain why housing markets are so dysfunctional. Areas with the highest demand — like municipalities in Silicon Valley — allow just a small fraction of their land to be used for housing and an even smaller fraction for medium- or high-density housing. Contrary to economic logic, high prices are correlated with lower housing-supply growth across counties, as housing developers are regulated out of the market. Meanwhile, places with a high share of single-family detached housing — the least intensive form of land-use regulation — saw significantly higher increases in housing costs and significantly lower supply growth in recent decades.

10. Reviving growth will require a new strategy.

The current debates on growth are overly focused on short-term partisan issues, and the proposed solutions have not worked. Worldwide, leaders are confronted with growing and deep-seated dissatisfaction with weak economic performance and stagnant incomes. A new strategy needs to focus on making dysfunctional markets work better for people, rather than special interest groups.

39%

Share of Americans surveyed by Gallup saying that it is a good time to find a “quality job.”

Introduction

COMING OUT OF THE GREAT RECESSION, the unemployment rate has fallen, job growth has been steady and the stock market has soared, but the public remains skeptical about the state of the U.S. macroeconomy. Just 39% of Americans surveyed by Gallup say that it is a good time to find a "quality job," up from the depths of the recession but well below levels in 2007.[1] The majority of Americans (60%) say they are worried about not being able to pay medical costs for an illness, which is up roughly 10 percentage points since Gallup first started asking the question in 2001.[2] Underlying these concerns, GDP growth and real wage growth have been lackluster.

The focus of this report is on the United States, but the low-growth problem extends well beyond it. GDP growth in Europe has been especially weak since the Great Recession, and Japan has been stagnant for decades.[3]

A number of explanations have been offered for this malaise, including monetary policy, fiscal austerity, globalization, rapid technological change or even the lack thereof. None of these are entirely compelling once one considers the larger and more serious challenge ignored during the recent housing and financial bubble preceding the Great Recession: the fact that, in developed countries, growth has been slowing down for decades.

Recently, economists such as Robert Gordon and others have illustrated the problem in stark terms, pointing to fundamental challenges with maintaining steady economic progress into the 21st century, akin to what the developed world experienced from 1920 to 1970. It cannot be assumed that it is possible to replicate the breakthroughs in technology and business practices that transformed human life during the early and later phases of the industrial revolution in the form of new goods and services that provide the same potent effect.

And yet, there is another pathway to rapid growth, a route often ignored by macroeconomists and policymakers. It does not involve shifting a greater share of production to the most advanced industries, where real prices are falling as the quality of products rapidly expands.[4] Rather, it involves making the largest industrial laggards a bit more advanced, a point raised by Martin Baily in a recent work.[5]

As this report will argue, the scope, complexity and cost of rules and regulations imposed by governments but orchestrated by or lobbied on behalf of private interests has damaged three vitally important sectors in the United States, lowering the quality of their products relative to their costs. This deterioration in efficiency has directly and severely lowered economic growth.

The details of this deterioration are alarming. Even as the cost of healthcare, education and housing have skyrocketed since 1980, growth in the quality of these products has stagnated, providing evidence that they are detracting from living standards. Progress in advanced services — such as information technology, computer services, software, professional services and even medical technologies — has been large and impressive, but those gains have been partially offset by weak performance in the larger deteriorating economic sectors of healthcare, housing and education.

At the same time, the deterioration clearly links to specific regulations and inefficiencies created by government and industry practices that are entirely reversible. There is no inherent reason, for example, that the U.S. healthcare system needs to devote hundreds of billions of dollars to administrative expenses related to billing and claims processing, or that higher education now employs more professionals and executives than it does teachers, or that municipalities with the highest demand for housing refuse to allow multi-family housing to be built on under-utilized land. Eliminating these market barriers and the related waste and inefficiency would return the United States to rapid growth even without a spike in invention.

The report proceeds as follows:

The first section describes how growth in per capita GDP has declined and why that matters. The second section discusses various theories that economists and others have offered to explain that trend. The third section lays out the perspective taken here: that increases in the ratio of quality to cost is what drives growth in average incomes (or per capita GDP), and thus living standards decline when costs rise faster than quality. The fourth section describes how healthcare, housing and education have contributed to measured inflation and lower GDP per capita growth since 1980. The fifth, sixth and seventh sections discuss the details of quality stagnation or decline in healthcare, housing and education, respectively. The eighth section lays out some of the major ancillary problems that are at least partially caused by deterioration in the sectors mentioned. These problems include lower entrepreneurial activity, declining labor force participation and a growing reliance on foreign-educated workers to perform highly technical occupations. The ninth section discusses some of the most important legal, regulatory and industry-level rules and practices that have caused deterioration. The 10th and final section makes a case for a new growth strategy.

1%

Real per capita GDP growth
per year from 2007 to 2015.

01. The Scope of the Problem

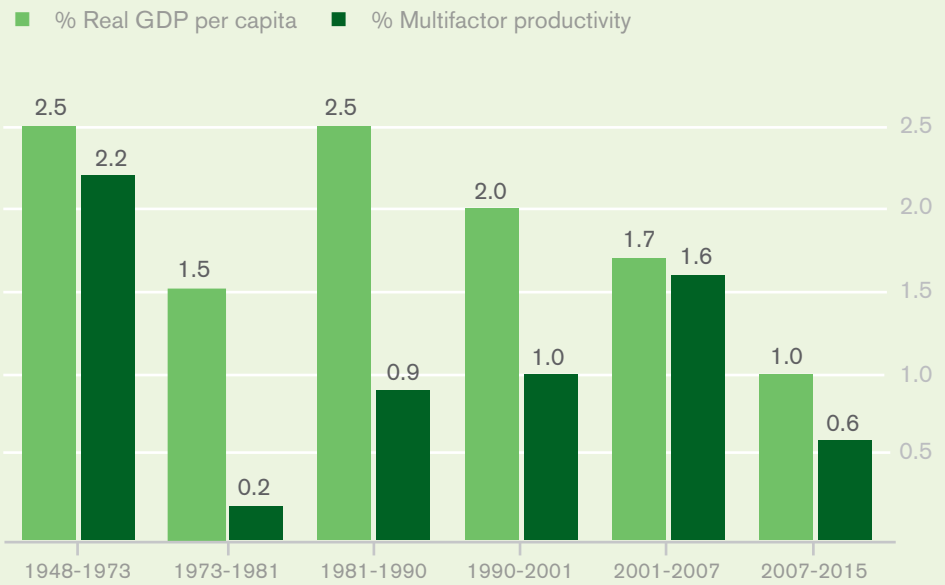
SINCE 1980, U.S. GDP PER CAPITA GROWTH has been far below its long-run average, and since 2007, it has been particularly weak. The rate at which the U.S. economy creates value on a per person basis has ground to a near halt in recent years. From 1929 to 1979, real per capita GDP growth was 2.4% per year. Since then, it has been just 1.7% per year, and the most recent period has been particularly lackluster. From 2007 to 2015, real per capita GDP has been just 1% per year and a meager 1.4% since the nadir of the recession in 2009.

To illustrate the problem from another angle, consider that from 1961 to 1981 real annualized growth in GDP per capita never fell below 1.5% over a 10-year period, and for 16 of the 21 years, 10-year per capita growth exceeded 2% on an annualized basis. Over the next 34 years until 2015, 10-year growth reached 2% only 13 times.

The following graph summarizes these trends using growth rates between business cycle dates established by the National Bureau of Economic Research. The rationale is to compare periods of growth from the peak years of one cycle to the peak year of the next cycle, so start and end dates are not biased by a recession. This is slightly unfair to the current period, which has not yet peaked, but the post-2009 period has also been historically weak.

Using GDP per capita growth, the 25-year period from 1948 to 1973 was stronger than any period since with the exception of 1981 to 1990. However, multifactor productivity estimates, which subtract inputs such as labor and material investments from GDP, show that most of the gains from 1981 to 1990 were due to greater inputs rather than greater economic efficiency. Indeed, per capita hours-worked grew at 0.8% annually over the period.[6] Using multifactor productivity, it is clear that no period since 1973 has approached the 1948 to 1973 period in terms of efficiency growth.

ANNUALIZED GROWTH RATES IN REAL GDP PER CAPITA
BY BUSINESS CYCLE PEAKS



Source: Author analysis of U.S. Bureau of Economic Analysis National Income and Product Accounts (using data available in October 2016) and Bureau of Labor Statistics, Multifactor Productivity historical estimates

These differences may seem small, but the mathematics of growth accounting make them extremely important to living standards. If 1% growth continued for the next 35 years, per capita GDP would increase from $56,000 in 2015 to just $79,000 in 2050. With 1.7% growth, GDP per capita goes up to $101,000 by 2050, and with 2.4% growth it enlarges to $129,000. Thus, solving the growth challenge is of major importance to the United States and many other countries around the world.

Indeed, global GDP is also slumping, and this isn't only a recent development. Since 2007, global GDP per capita has expanded just 0.3% per year. That is far below the annual average from 1980 to 2015 of 1.4% growth, and very far below the annual average from 1960 to 1980 of 4.0% per capita growth. As bad as it is in the United States, other high-income countries are doing considerably worse. The European Union and Japan have actually seen a decline in GDP per capita since 2007.

Still, it would be difficult to blame the recent productivity slowdown entirely on global growth. Global growth was even worse in recent periods — the early 1980s and early 2000s. Moreover, if weak global growth was the primary factor in weak U.S. growth, one would expect to see the contribution of exports — measured as sales to residents living outside the U.S. — to U.S. GDP fall over the period coinciding with reduced global demand. That has not been the case. Exports as a share of GDP increased from 11.5% in 2007 to 12.6% in 2015, even as global GDP growth fell.[7]

REAL GROWTH IN GLOBAL GDP PER CAPITA, ANNUALIZED OVER 5-YEAR PERIODS

Source: World Bank for World GDP in USD, deflated using personal consumption expenditure price index from U.S. Bureau of Economic Analysis

Political forces, not technical or scientific ones, are now the chief restraints on growth.

02. Why Is Growth Down?

THERE IS NO CONSENSUS AMONG ECONOMISTS or other experts as to why growth has slowed. Various experts have proposed a number of ideas, and this report discusses the most prominent ones next in the context of U.S. growth.

A MEASUREMENT ILLUSION

One view is that the apparent slowdown in productivity is actually an illusion, because U.S. and other national statistical offices simply lack the capacity to properly measure the massive quality gains in fields like information and communications technologies. The iPhone, Google, Facebook and Twitter are prominent examples of relatively new goods and services with likely large but hard-to-measure benefits missed by GDP and inflation, because they are radical breaks with previous products, or, in some cases, are provided free of charge to users.

Recently, economists have examined these arguments and concluded that the productivity slowdown is real. First, previous decades have also experienced tremendous problems with accurately measuring the benefits of new goods and services, and there is some evidence that statistical agencies are better at capturing this value now than before.[8] Thus, adjustments to existing data may actually reduce productivity growth further, because gains in prior years would have to be adjusted upward.[9] Second, current estimates for the non-market benefits of free goods and services like Google, Wikipedia and Facebook do not make up for the shortfall in productivity growth.[10] It may turn out that those estimates understate the non-market benefits, but it would be very hard to know.

A SHIFT IN INDUSTRY COMPOSITION

One possible explanation for the slowdown in GDP per capita is that employment growth has shifted from higher-productivity industries (like manufacturing) to lower-productivity industries (like healthcare, retail and other services). A formal way to test this hypothesis is compare average U.S. productivity today to what it would be if previous industry employment shares prevailed.

It turns out that productivity would be no different today if industry employment patterns from 2007 or 1998 were still in place. In other words, employment losses in relatively high-productivity industries like computer and chemical manufacturing have been offset by job gains in high-productivity industries like computer systems design and related services, securities trading and other professional services. Indeed, some of the largest job losses in manufacturing have actually been in very low-productivity industries like apparel and leather manufacturing and textile mills.

Thus, the recent GDP per capita slowdown is unrelated to employment shifts across industries. The economics literature of earlier periods also confirms this conclusion.[11]

DECLINING DEMAND FOR INVESTMENT

Another theory for why productivity growth has slowed is that demand for investment has fallen. Reviving a theory from the 1930s, Larry Summers has argued that the fundamental problem is a lack of investment opportunities.[12] Summers provides few details as to why he thinks investment demand has fallen, but he argues that large-scale government-funded investment is a potential cure. Yet, weak demand for investment may be an effect of a still more fundamental change. Lower real wage growth, for example, would depress opportunities for businesses to form or expand, depressing investment. So, if Summers is right, the question remains: Why has investment demand become so weak? If consumers could afford to buy new goods and services, then businesses would have a strong incentive to invest in providing them.

Macroeconomist Kenneth Rogoff has taken almost the opposite view of Summers, arguing that excessive debt is dragging down growth, resulting from the collapse of the housing bubble.[13] Whereas Summers recommends increased government borrowing to fund investments, Rogoff argues this will exacerbate long-term problems. The trouble with Rogoff's emphasis on the financial recession is that it cannot explain the weak growth from 1980 to 2007.

TECHNOLOGICAL BARRIERS

In providing a comprehensive assessment of long-term living standards, no contemporary scholar has provided more depth than the economist Robert Gordon. In his book, *The Rise and Fall of American Growth*, he shows that living standards are advancing at a slower pace in recent decades and provides a detailed analysis of why.[14] His central argument is that some inventions are more important to economic welfare than others, and that the most important inventions were made during the first and second Industrial Revolutions (e.g., electricity, plumbing, the automobile and the airplane). Thus, growth has slowed down because the quality of inventions — the social and economic value they generate at a given cost — has declined. Gordon argues that "advances since 1970 have tended to be channeled into a narrow sphere of human activity having to do with entertainment, communications, and the collection and processing of information. For the rest of what humans care about — food, clothing, shelter, transportation, health, and working conditions both inside and outside the home — progress slowed down after 1970."

This report follows Gordon's framework in large part, agreeing with his description of the slowdown. Yet, this report sharply diverges with Gordon on the prognosis for future growth and the principal factors holding it back. Gordon largely attributes the failure to enhance goods and services related to "what humans care about most" to fundamental scientific and technical barriers, which would be difficult to overcome even in principal, as well as "headwinds," among which he lists the aging population, slowing progress on education, inequality and government debt.

While Gordon makes a compelling argument that the prosperity gained from 1920 to 1970 was built upon truly revolutionary progress in science, technology and entrepreneurship, there is no scientific reason why progress cannot be achieved incrementally and in terms of other inventive or entrepreneurial breakthroughs. More fundamentally, it may be possible to achieve stronger growth even without the massive leaps in science and technology that characterized the first or second Industrial Revolution.

THE ROLE OF POLITICAL BARRIERS

In contrast with Gordon, this report makes the case that political barriers are a primary reason for wilting growth. Such barriers may be holding back the efficient diffusion and adaptation of already existing ideas or technologies, such as IT in healthcare administration. The good news is that these are relatively easy to understand and overcome conceptually (unlike advances in, say, fuel cells or artificial intelligence) even if practical barriers to reform present enormous challenges.

In emphasizing political barriers to growth, this report draws on the work of the economist Mancur Olson. Following another period of weak economic growth, Olson offered a political explanation in his 1982 book *The Rise and Decline of Nations*.[15] He made two crucial arguments that explain why growth tends to slow down across all stable, developed countries. First, stability facilitates cooperation and collusion among people, allowing for the proliferation of interest groups with clearly defined agendas — such as industry associations. Second, these small groups devise legislative campaigns that, once implemented, result in small per person costs to the general public but large benefits to their members. Thus, opposition to the individual proposals is often weak, even though the accumulation of these rules and regulations has the effect of gradually slowing down economic growth.

Back in the 18th century, Adam Smith described this same dynamic. He argued that businesses restrained competition through regulations, driving up prices. He wrote: "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."[16] Olson showed how these efforts can have a cumulative effect over decades, driving down economic progress.

The macroeconomist Martin Baily has taken a similar view of the productivity slowdown in work closely related to this project.[17] Baily has argued that regulatory inefficiencies and weak competition in education and healthcare have held back productivity gains. An anticompetitive patent system is also a problem, particularly with respect to software.[18] Baily has criticized Gordon for ignoring these barriers and has pointed out that many countries which are not on the technological frontier have seen a growth slowdown (e.g., Southern Europe and even China), and the United States certainly is not on the technological frontier in all industries. Within countries, specific companies on the technological frontier have seen rapid productivity growth, and thus have not exhausted innovative possibilities, as Robert Atkinson has also argued.[19]

Political barriers could also explain the relatively weak performance of Europe compared with the United States in recent decades. Analysts within and outside of Europe have long argued that major reforms to regulatory policies are needed there to achieve greater efficiency. The theory laid out by Olson applies to any developed country. The distinct history of the United States may have led to a relatively strong constellation of laws and regulations with respect to agriculture, manufacturing and technology, but a corrosive body of laws governing other sectors like healthcare and education. Housing, meanwhile, is highly regulated across developed countries, though there is little comparative data available to assess where regulations are more or less severe.[20]

Raising the quality of goods and services relative to their costs is the fundamental source of growth.

03. Understanding GDP Growth

WHAT IS PRODUCTIVITY AND HOW DOES IT RELATE TO GDP? Productivity measures the value of output (like gross domestic product) relative to some set of inputs, such as total hours of labor and the value of materials and equipment used in production. In this sense, it provides a summary measure of the efficiency and efficacy of the economy at generating value. Productivity growth shows the extent to which the economy is becoming more efficient and effective at generating value.

The broadest measure of productivity is GDP per capita. That is, the value of all goods and services produced in an economy divided by the number of people living in it. Of course, not all people work — nor should they. By definition, GDP per capita tends to decrease as the number of non-working people (including children and the elderly) increases. And yet, all people need to consume resources, so GDP per capita is a more precise measure of aggregate well-being than GDP per worker or GDP per hours worked. GDP per worker can actually increase as lower-wage workers drop out of the labor force.

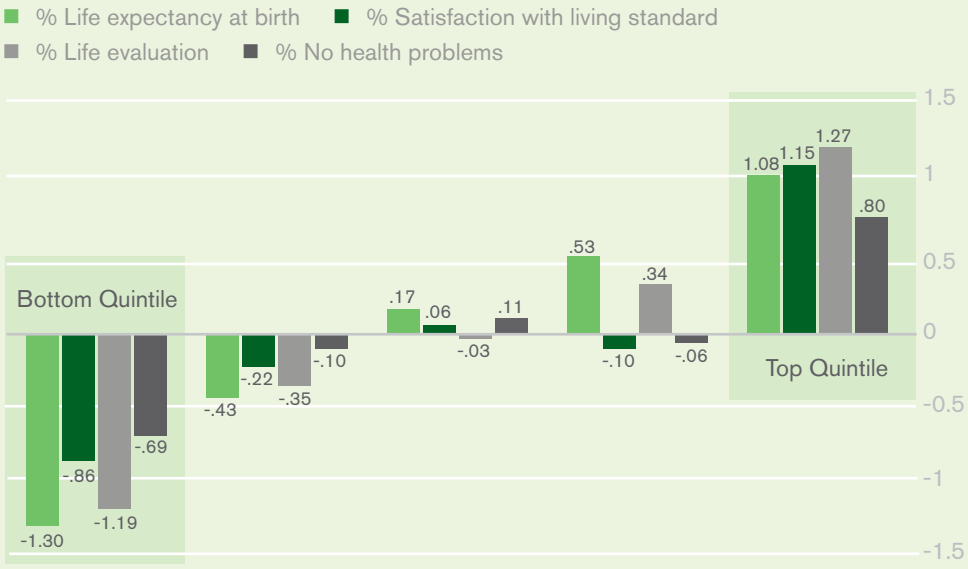
The difference between GDP per worker and GDP per capita is akin to the difference between personal income and household income. The personal income of a child — which is typically at or near zero in modern developed economies — is irrelevant. What affects his or her well-being is household income, which is determined by the household's adults.

GDP IS INCOME

In fact, the relationship between GDP and household income is more than an analogy. GDP can be defined as "gross domestic income," which is the summation of worker compensation and the income of business owners (profits, dividends, etc.).[21] GDP, therefore, is income. And GDP per capita is average income per person. That's why its growth is fundamental to the well-being of residents, even if well-being includes many aspects of life not directly captured by GDP or household income.[22]

At the country level, the level of GDP per capita is very strongly correlated with fundamental measures of health and well-being such as life expectancy, as well as self-reported measures of health and subjective well-being and satisfaction with one's standard of living. Countries in the top quintile of GDP (average GDP per capita of $47,000) score roughly two standard deviations higher than countries in the bottom quintile of GDP per capita (average of $920) on life expectancy at birth, satisfaction with living standards and overall life evaluation. Life expectancy at birth is 18 years longer in the richer countries. The share of respondents reporting satisfaction with their living standards is 82% in the richest countries versus 42% in the poorest countries. People in the richest countries are also far less likely to report health problems that prevent them from doing things that people their age normally do. Even between the richest quintile of countries and the second richest, there is a difference of five years in life expectancy. Higher GDP has afforded not only greater immediate consumption of higher quality goods and services but also decades of investment in things like healthcare, education and infrastructure, which enhance living standards. It may be that health and education cause incomes to go up, or vice versa. Quite likely, health, education and income reinforce each other.[23] In any case, income per capita seems to be measuring important aspects of living standards.

COUNTRY MEASURES OF HEALTH AND WELL-BEING BY QUINTILE OF GDP PER CAPITA ACROSS THE WORLD



Source: Life evaluation, satisfaction with living standard and health problems are from Gallup's World Poll and Gallup Healthways, averaged from 2013 to 2016; GDP per capita (PPI adjusted) and life expectancy are from the World Bank, averaged from 2011 to 2015

The only way to achieve high productivity, or GDP per capita, is through high-productivity growth. Human societies have never achieved sudden bursts of sustainable affluence. Most ancient prosperity, which was still quite low compared with today's living standards, was achieved through extracting resources from other societies or slaves, not through efficient production.[24] Humans were collectively quite poor until the Industrial Revolution ushered in growth that gradually — over centuries — transformed the productive capacity of societies.

ENHANCING THE QUALITY-TO-COST RATIO IS THE SOURCE OF PRODUCTIVITY GROWTH

In standard macroeconomics, growth comes from positive technological change. Technological change is often described as the production of more things (such as industrial machines or cars) at the same or even cheaper costs, measured by the number of hours worked or other inputs.

Yet, technological change is fundamentally an increase in the ratio of product quality to the cost of its production and distribution. If an entrepreneur or inventor implements a cheaper way to produce more goods or services of the same quality, then this results in an increase in the quality-to-cost ratio, and it will raise growth. Likewise, when a product is introduced to the market at high relative quality at similar costs, living standards increase. Smartphones, for example, accomplish many tasks previously performed by other devices, such as personal computers, standalone GPS systems, watches, landline telephone services, video game consoles and televisions. These qualities make the quality-to-cost ratio of a smartphone extremely high, allowing them to raise living standards, even if they lower demand for these other products.

Along these lines, the growth of business revenue only increases GDP per capita if its product enhances the quality-to-product ratio. Otherwise, the business is only taking market share, and the product does not make the world richer, but reshuffles income away from other businesses that had been competing for consumer, business or government spending.

The problem with weak growth, therefore, is one of either weak growth in quality or high growth in costs. The quality-to-cost ratio has been increasing steadily in certain industries like computer equipment and computer services and software, but these advances have been weighed down by deterioration in the quality-to-cost ratio in larger sectors.

Three huge sectors — housing, healthcare and education — are getting more expensive without a corresponding increase in quality, and these are the focus of this report. Just as product enhancement increases productivity growth and living standards, its opposite — deterioration, meaning cost increases that exceed quality improvements — directly lowers living standards. On balance, the economy has expanded in recent decades, but it has done so much less rapidly than it could have as a result of weakness in these sectors.

The contribution of healthcare, housing and education to measured inflation since 1980 is

OVER

50%.

04. The Key Sectors Dragging Down Growth

THREE SECTORS IN PARTICULAR ARE damaging the living standards of Americans because of escalating prices that absorb spending power without providing an appreciable gain in welfare, at least not gains that have been measured by official statistics or through academic research.

Here, the focus is on the key period between 1980 and 2015 when the slowdown in GDP growth per capita began. Over this period, private and public spending on housing, healthcare and education soared, and these sectors absorbed a larger share of GDP, going from an already substantial 25% to an enormous 36%. Of these, healthcare saw the largest jump, increasing from 9% to 18%.

EXPENDITURES ON HOUSING, HEALTHCARE AND EDUCATION SERVICES AS A SHARE OF GDP IN 1980 AND 2015

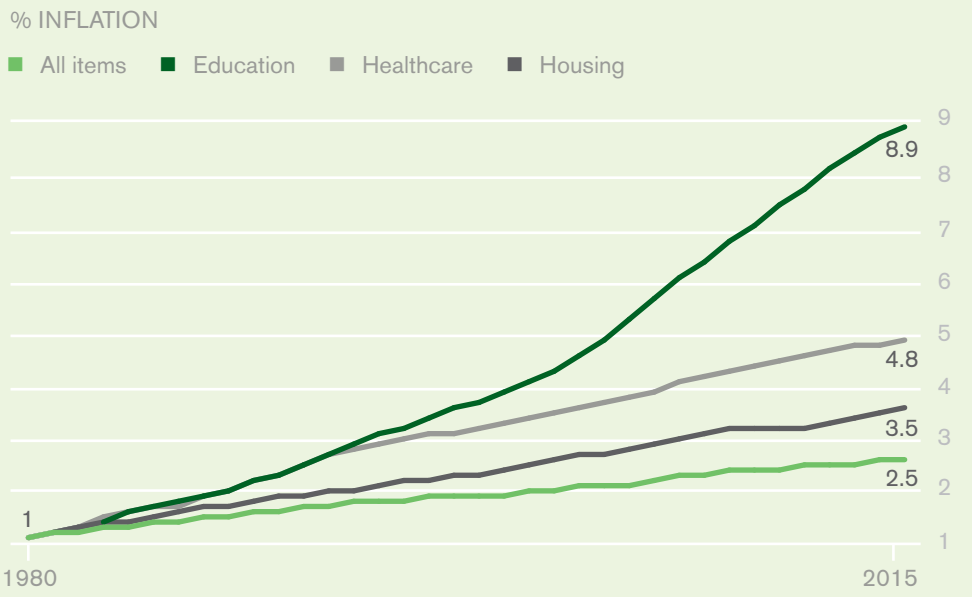
	1980	2015
Housing	10%	11%
Health	9%	18%
Education	6%	7%
Total	25%	36%

Source: Author analysis of U.S. Bureau of Economic Analysis tables: Table 1.1.5 Gross Domestic Product; Table 2.5.5. Personal Consumption Expenditures by Function; and Table 3.16. Government Current Expenditures by Function; Healthcare totals are from the Centers for Medicare and Medicaid Services, National Health Expenditure Accounts

In principle, these trends could indicate or be the result of growing prosperity. If advances lower the costs of things like food and clothing and services, then consumers and the government can spend more on things that enrich life and extend it, such as housing, healthcare and education.[25] Meanwhile, the rising share of these services in GDP could indicate that quality improvements have increased demand for them.[26]

Inflation data show that the spending increases in healthcare, housing and education relate to rising prices and not simply a shift in spending across service categories. The Bureau of Economic Analysis produces price indexes by industry, and these price indexes show rapidly escalating prices.[27] Education is 8.9 times more expensive in 2015 than in 1980. Within education, higher education specifically is 11.1 times more expensive. Healthcare costs 4.8 times more than it did in 1980, medical insurance costs 8.7 times more and housing 3.5 times more. Thus, the shift in spending toward education, healthcare and housing cannot only reflect increased demand. At a per-unit level, prices have also increased, driving up the share of spending on these products. This suggests that something is holding back supply.

EDUCATION, HEALTHCARE AND HOUSING INFLATION COMPARED WITH ALL PRODUCTS FROM 1980 TO 2015



Source: Analysis of data from U.S. Bureau of Economic Analysis, National Income and Product Accounts, Table 2.5.4

For housing, these price increases cannot be linked to corresponding increases in quality because the Bureau of Labor Statistics explicitly adjusts for quality — including the age of the unit and services provided by landlord — in its estimates of housing inflation, which compare changes over time in the same housing unit, mitigating most quality differences except age, which is adjusted for directly.[28]

For education and healthcare, corresponding increase in quality could offset some of the increase in prices. The price index calculations for these sectors assume constant quality. Theoretically, quality may have increased enough to offset these price increases, but there is no compelling evidence that quality has substantially improved in any of these sectors since 1980. The strongest evidence for quality enhancement is for healthcare, but the evidence is strongest for the very young and very old, with other data suggesting deteriorating health outcomes for most working-age adults — the group most relevant for productivity growth — even as their behavior has become healthier in terms of diet and exercise.

The cost of all goods and services increased by 2.5 times from 1980 to 2015, but healthcare, housing and education accounted for much of this increase. Using data from the BEA and fairly simple assumptions, it is straightforward to calculate the contribution of these sectors to overall inflation.[29] If consumers and the government spent the same share of income on these categories in 2015 as they did in 1980, the contribution of these sectors to overall inflation would have been 52%. Using 2015 expenditure patterns, the contribution is 75%. Since price changes and other factors affect expenditure shares, the true contribution is probably closer to 62%, a geometric mean of the 1980 and 2015 weights. In any case, it can be stated with confidence that most measured inflation was caused by these sectors.

CONTRIBUTION TO U.S. INFLATION OF HOUSING, HEALTHCARE AND EDUCATION

	Using 1980 expenditure weights	Using 2015 expenditure weights	Using mean of 1980-2015 weights
Housing	14%	16%	15%
Health	17%	33%	24%
Education	22%	26%	24%
Total	52%	75%	62%

Note: Columns may not add because of rounding

Source: Author analysis of U.S. Bureau of Economic Analysis data from various tables and Centers for Medicare and Medicaid Services

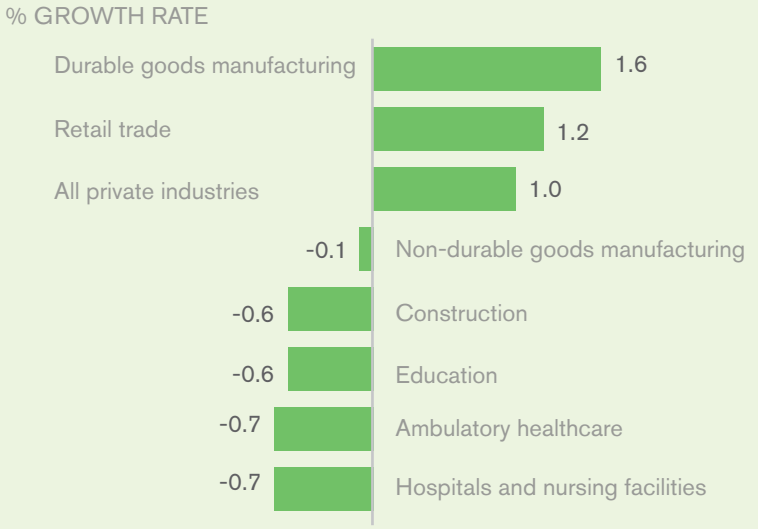
Using their contributions to inflation, one can then derive what GDP per capita would have looked like in 2015 if inflation would have been held in check in these sectors.[30] Instead of 1.7% per capita annual growth from 1980 to 2015, the growth rate would have been between 3.9% and 4.6% in the absence of deterioration in these three sectors. Instead of GDP per capita of $54,000 in 2015, GDP per capita would have been between $119,000 and $150,000.

ALTERNATIVE ESTIMATES FOR GDP PER CAPITA GROWTH IF SECTOR INFLATION HAD BEEN ZERO FROM 1980 TO 2015

	Using 1980 expenditure weights	Using mean of 1980-2015 weights
No housing inflation	2.1%	2.1%
No healthcare inflation	2.2%	2.5%
No education inflation	2.4%	2.5%
No inflation all three sectors	3.9%	4.6%
Actual GDP per capita growth	1.7%	

Another way to see how these sectors have detracted from GDP growth is to distinguish growth in GDP from growth in revenue-generating inputs, such as labor and equipment. Growth in multifactor productivity is essentially growth in real GDP that is not accounted for by growth in inputs; it is considered a measure of efficiency advances. Multifactor productivity increased by 1% each year on average from 1987 to 2014 for the entire U.S. economy, but it declined for construction, education and the two major healthcare industries. In practice, this means individual workers and machines generated less revenue in these sectors in 2014 than they did in 1987, making the economy less efficient.

ANNUALIZED GROWTH RATES IN MULTIFACTOR PRODUCTIVITY BY SELECTED INDUSTRY FROM 1987 TO 2014



Source: U.S. Bureau of Labor Statistics, Multifactor productivity tables

Self-reported health status fell for people ages

25 to 59

between 1990 and 2015.

05. Healthcare

MEASURING PRODUCTIVITY AND EFFICIENCY IN healthcare raises a number of difficulties. Ideally, many factors would be considered, including the type of treatment provided based on the patient's diagnosis or reason for visit and the efficacy of the treatment. The latter is particularly difficult to measure, because eliminating or at least minimizing the patient's symptoms is often the goal of the service, but changes in the severity of symptoms are not often measured and may be affected by patient behavior that is unrelated to the treatment, such as age, genetics, culture and behavioral patterns.

Yet, the extent to which this is a problem should not be exaggerated. It is easy to adjust health outcomes for age, and this analysis does so. Genes explain individual variation but are unlikely to account for much group variation, especially in terms of changes over time.[31] Cultural changes reflected by immigration have tended to make Americans healthier. Both Asians and Hispanics — the fastest growing groups — exhibit healthier behaviors and outcomes than white and black Americans.[32] Moreover, data on exercise, diet, drug and alcohol consumption are well documented by government and private agencies including the Gallup-Healthways Well-Being Index.

There have been a few attempts to measure broad quality changes in healthcare. Economists at the Bureau of Labor Statistics examined growth in the number of treatments performed per worker after adjusting for disease categories. They found very weak growth (0.7% per year) from 1993 to 2010.[33] Other scholars have put together comprehensive measures of how healthcare innovations have affected spending after adjusting costs for the quality of the innovations. These scholars have analyzed a repository of data from 1976 to 2014 on all published evaluations on the efficacy of healthcare treatments to calculate quality-adjusted prices of healthcare innovations, including new pharmaceuticals, diagnostic screenings and procedures, and found that the majority (68%) of new innovations cost more than the previous

treatment, even after adjusting for improvements in health outcomes (measured in quality-adjusted life years).[34] Their results suggest that medical advances have been significant in recent decades but generally have decreased the quality-to-price ratio, at least at the time the advances are introduced. Their data do not include measures of the use of each treatment, so it is still impossible to know how the totality of innovation has precisely affected quality-adjusted prices in healthcare.

The next sections examine trends in measured health outcomes and related behaviors, with a view to gaining insight into whether or not the healthcare sector has generated quality advances equal to its fivefold price increase.

WORKING-AGE AMERICANS HAVE EXPERIENCED VERY SMALL REDUCTIONS IN MORTALITY SINCE 1980, AND NON-HISPANIC WHITES SAW NO REDUCTION FROM 1999 TO 2014

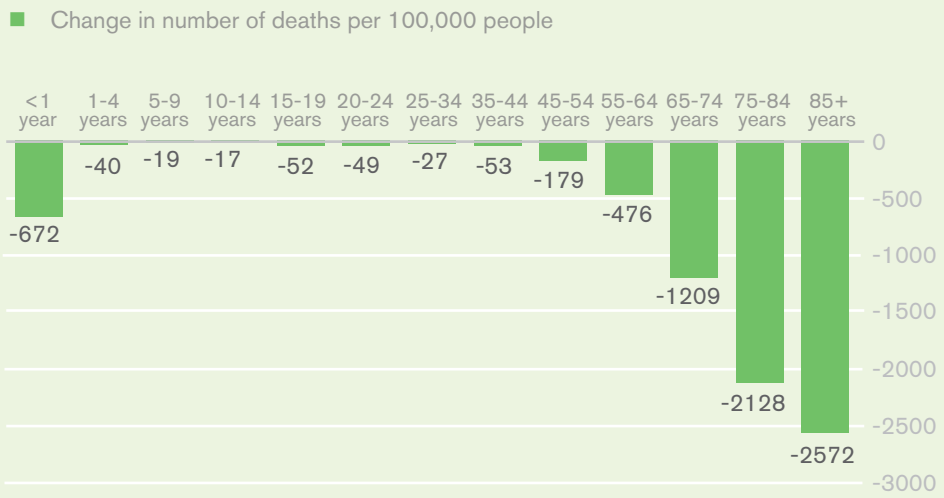
For much of the 20th century, the U.S. and other developed countries experienced rapid gains in life expectancy as death from infectious disease fell and the quality of public health, sanitation and medical treatments improved.[35]

Yet, since 1980, almost all progress in reducing mortality has been concentrated among infants and the very old. Crucially, there have been almost no gains for working-age Americans. Among those aged 15 to 64, tremendous progress continues to be made in lowering the incidence of the biggest killers — heart disease, cancer and even assault (or murder). Yet, the risk of someone in this age group dying from other conditions has worsened over the period, especially for accidental deaths from drug poisoning, suicide, hypertension, liver disease and obesity.[36]

Along these lines, obesity rates have skyrocketed since 1980, shooting up from 15% between 1976 and 1980 to 35% in 2011 to 2012, after adjusting for age.[37] This has huge economic consequences. An estimate from a top health economics journal finds that obesity causes an additional $170 billion in health spending.[38] Likewise, diagnosed cases of diabetes went from 3.5% of the U.S. population in 1980 to 6.6% in 2014, adjusting for age.[39] Meanwhile, the incidence of high blood pressure has not changed since 1999.[40]

Even the good news that infant mortality has fallen needs to be put in context with major caveats. The percentage of children born at low birth weights has increased from 6.8% in 1980 to 8% in 2013.[41] The low-birth-weight increase has occurred for all racial groups and is a problem for the children's future health, putting them at greater risk for intellectual and physical disabilities.[42] Second, and shockingly, maternal mortality rates have increased from 12 per 100,000 births in 1990 to 28 in 2014; both the trend and rate are very high relative to other developed countries.[43]

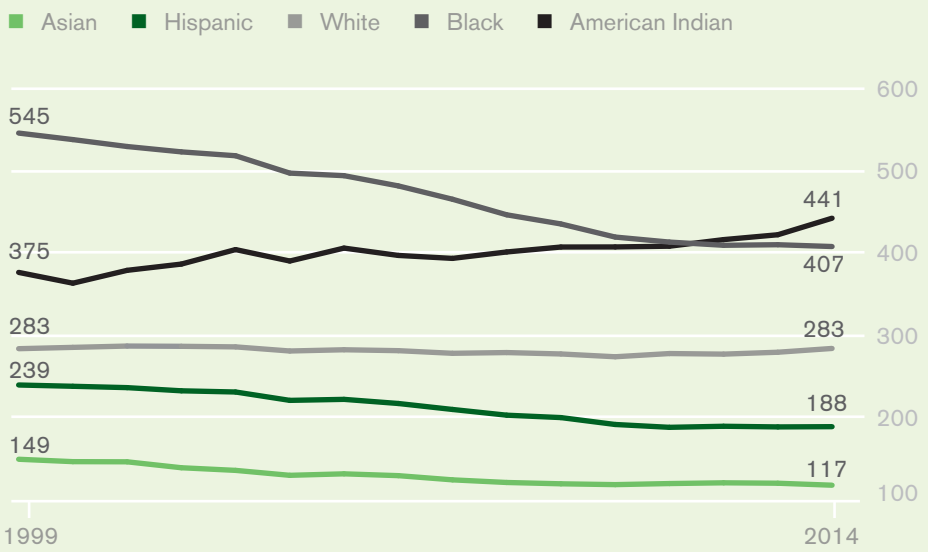
CHANGE IN MORTALITY BY AGE FROM 1980 TO 2014



Source: Analysis of data from CDC Wonder

Returning to working-age adults, the modest progress on mortality is mostly concentrated among blacks, who saw the largest decrease, helping to reduce but by no means eliminate large black-white gaps in mortality. Hispanics and Asians experienced smaller but notable reductions in the risk of death at working ages. Meanwhile, white working-age adults saw no decrease in mortality, and American Indians experienced a substantial increase. This is consistent with recent research by Anne Case and Gallup senior scientist Angus Deaton.[44]

CHANGE IN AGE-ADJUSTED WORKING-AGE MORTALITY RATES BY RACE FROM 1999 TO 2014

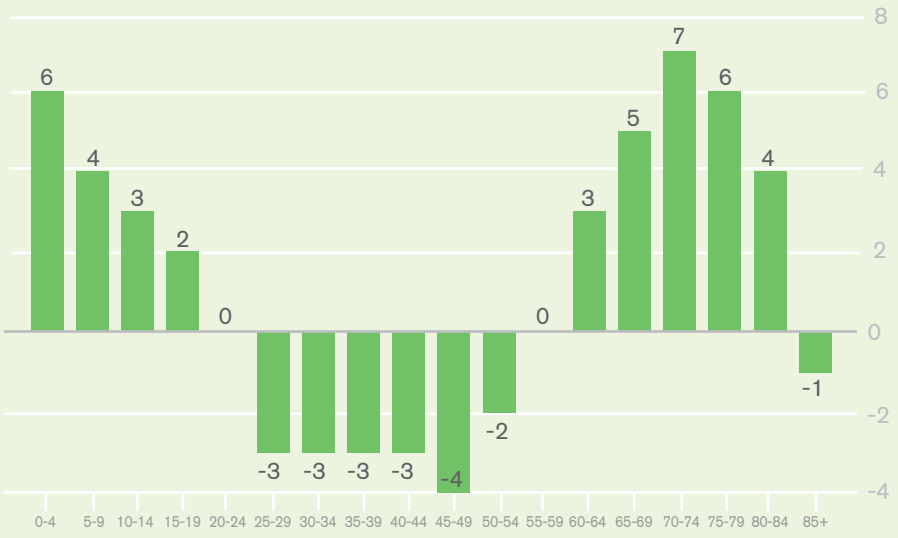


Source: Analysis of data from CDC Wonder for population aged 15 to 64; the mortality rates are age-adjusted by the CDC

SELF-REPORTED HEALTH STATUS HAS FALLEN FOR WORKING-AGE ADULTS

Since 1990, when comparable data are first available, subjective health status has declined for working-age adults in most age groups. Consistent with the modest gains in mortality for this group, people between the ages of 25 and 59 are less likely to report that they are in good or excellent health in 2015 than in 1990, according to data from the National Health Interview Survey for those years. Data from the Current Population Survey, which asks the same question about general health status going back to 1996, confirm the general pattern. In both surveys, the very young and those at the end or past prime working age are more likely to report good or excellent health, suggesting that most, if not all, of the gains in health status in recent decades have gone to the non-working population.

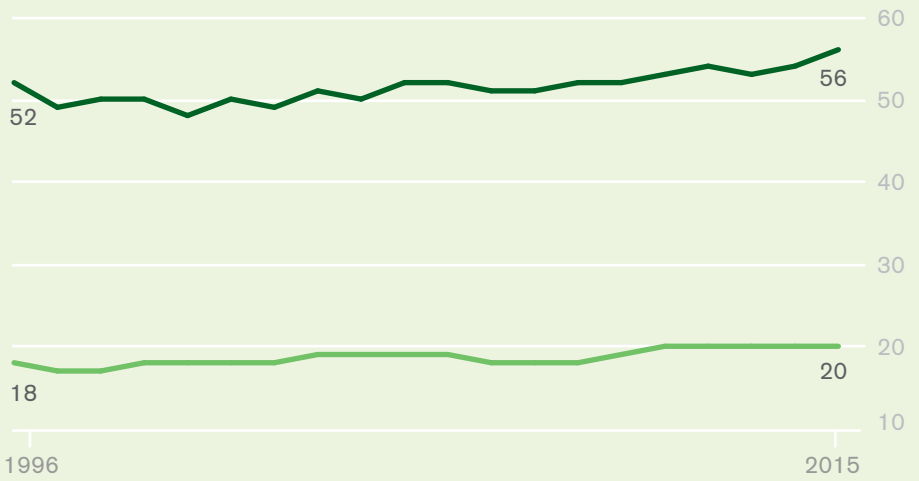
CHANGE FROM 1990 TO 2015 IN MEAN PERCENTAGE OF AMERICANS REPORTING VERY GOOD OR EXCELLENT HEALTH STATUS BY AGE



Source: Analysis of data from the 1990 and 2015 National Health Interview Surveys

Subjective health status is an important predictor of labor force participation, making the decline among working-age Americans particularly problematic for broader economic growth. Adjusting for age, there is about a 30-percentage-point difference between labor force participation rates among those with very good or excellent health, compared with those with poor or fair health. This gap has remained since the Current Population Survey began collecting data in 1996, and the data suggest that a growing share of working-age Americans are out of the labor force because of health reasons.

AGE-ADJUSTED SHARE OF AMERICANS OUT OF THE LABOR FORCE BY SUBJECTIVE HEALTH STATUS FROM 1996 TO 2015

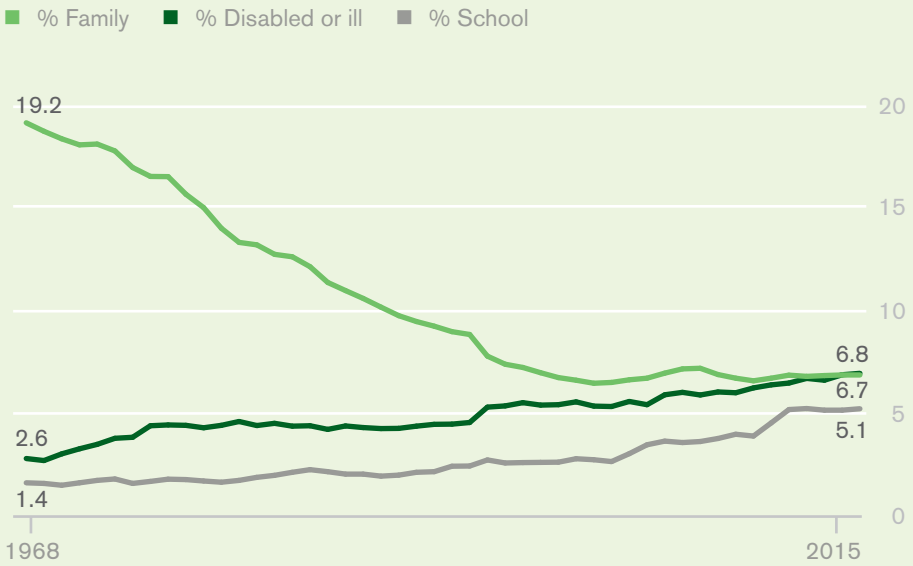


Source: Analysis of data from IPUMS-CPS

DECLINING HEALTH FOR WORKING-AGE AMERICANS HAS LOWERED LABOR FORCE PARTICIPATION

Indeed, there is strong evidence that declining health is the primary reason behind declining labor force participation. Adjusting for age, the share of Americans who are out of the labor force because of an illness or disability increased from 4.4% to 6.8% from 1980 to 2015. Disability or illness is now the single largest reason people give for why they are out of the labor force when asked on the Current Population Survey. In 2015, for the first time since the 1960s when the Current Population Service began collecting data, there were more Americans out of the labor force because of illness or disability than because of family issues, again adjusting for age.

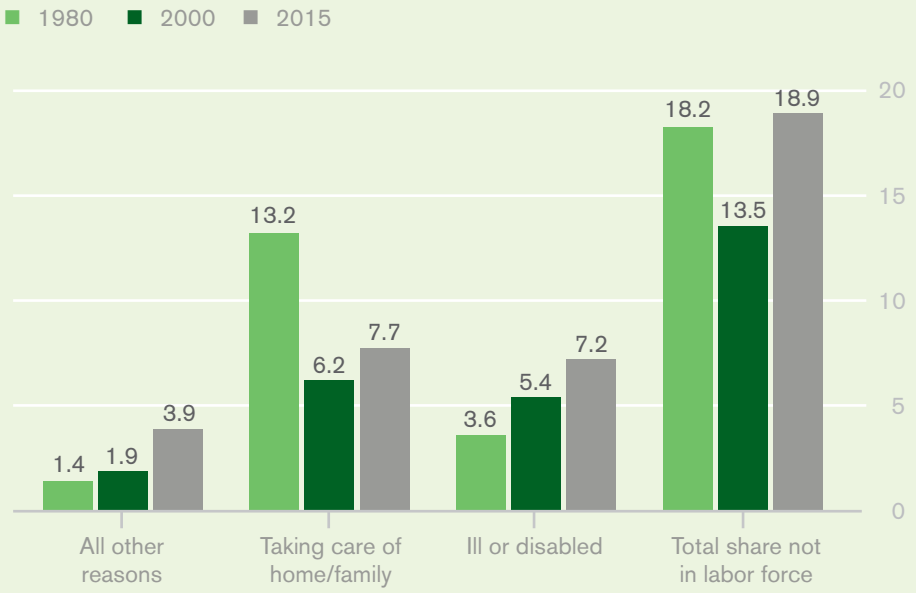
AGE-ADJUSTED SHARE OF U.S. POPULATION OUT OF THE LABOR FORCE BY REASON FROM 1968 TO 2015



Source: Author analysis of IPUMS-CPS; age-adjustment first calculates means for each five-year age cohort by year, using CPS weights; the second step assigns the 2015 age cohort weight (defined as the cohort's share of 2015 population) to the age cohorts from other years; the data reported are, therefore, what the means would look like if the 2015 age cohort distribution was held constant retrospectively

Focusing on middle-age Americans between 40 and 50 years old clearly illustrates this trend. Between 1980 and 2015, there was a small increase in the overall share of prime-age workers (here defined as those aged 40 to 50) who were out of the labor force during the entire previous year (18.2% to 18.9%, respectively), but this masks a massive shift in the reasons people give for why they are not working or seeking work. The share reporting that they were out of the labor force to take care of family fell from 13.2% to 7.7% from 1980 to 2015 as more women continued to enter the labor market. But the share of 40- to 50-year-olds reporting they were out of the labor force because they were ill or disabled increased from 3.6% to 7.2% from 1980 to 2015. Other reasons, including retirement and going to school, barely increased over this period. For both men and women aged 40 to 50, the share of people out of the labor force for health reasons doubled.

PERCENTAGE OF U.S. POPULATION AGED 40 TO 50 NOT IN LABOR FORCE OVERALL AND BY REASON FROM 1980, 2000, AND 2015



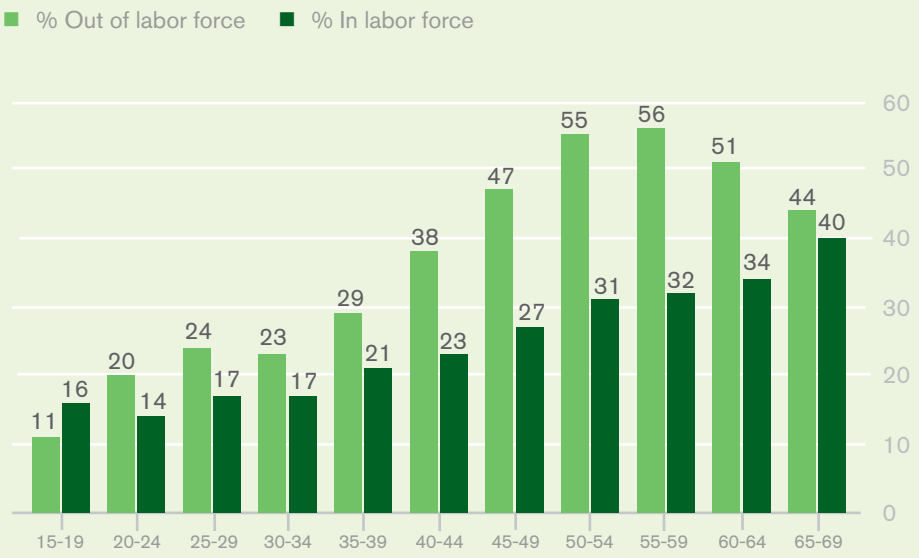
Source: Author analysis of IPUMS-CPS
Note: Reports the reason given for not working at all during the previous calendar year

Over this same period from 1988 to 2015, there was a spike in the percentage of people across all working-age groups reporting that they suffered from a disability that limits work. These data are also from the Current Population Survey and show rising disability affecting every adult age group below 60, with the largest increases in the middle-aged 40- to 54-year-old population.

Note, these changes in reported disability cannot be readily explained by changes in the policies or procedures of the Social Security Administration, which oversees federal benefits to the disabled. The share of the population receiving federal disability benefits increased from 1.8% in 2001 to 2.8% in 2015.[45] The Current Population Survey asks disabled people explicitly if they receive any disability payment from the federal government or other sources. In 1988, 9% of the disabled received payment for disability compared with 11% in 2015. There has been essentially no substantial change in the percentage of disabled receiving payments for the middle-age groups who have become more disabled.

Americans who are out of the labor force are also far more likely to report they are in pain and taking pain medication than those who are working.[46] The majority of people not working and taking pain medication, moreover, have prescriptions for those medicines, according to an analysis by labor economist Alan Krueger.[47] Adjusting for age, 37% of people out of the labor force take pain medication compared with 26% of people who are working. For middle-aged Americans, the gaps are even larger: 55% of Americans aged 50 to 54 and out of the labor force are taking pain medication, compared with 31% who are working. For those who report they are disabled and out of the labor force, 70% are taking medication.

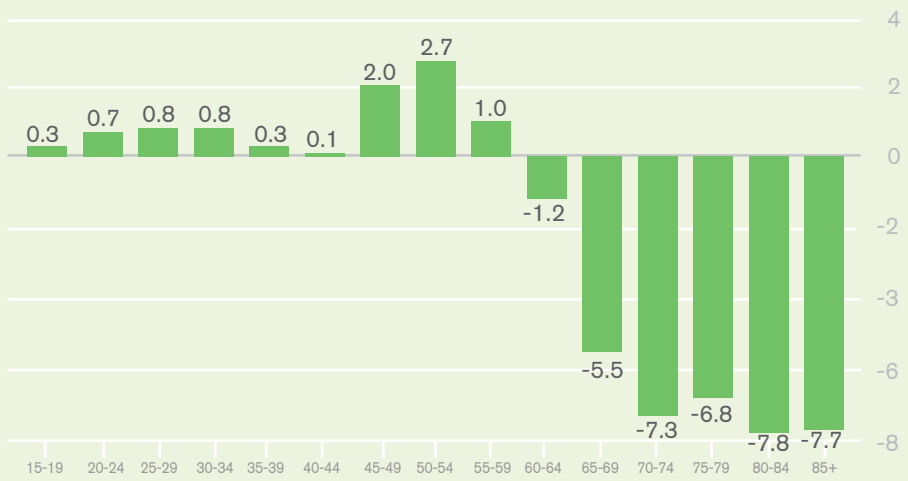
SHARE OF PEOPLE WHO TOOK PAIN MEDICATION ON DAY BEFORE INTERVIEW BY AGE AND LABOR-FORCE STATUS FROM 2010 TO 2013



Source: U.S. Bureau of Labor Statistics, American Time Use Survey, Well-being module, 2010 to 2013; respondents say they took pain medication yesterday

Disability is not only more prevalent than in recent decades but causes more economic harm than in previous decades. The disabled constitute a slightly larger share of workers who are out of the labor force now (23% from 2013 to 2015) than in the recent past (21% from 1988 to 1990). Middle-aged Americans have seen the largest increases in disability rates. Moreover, disability appears to be more severe in limiting work. Among the disabled, 84.5% did not participate in the labor force during the 2013 to 2015 period compared with 78% in the 1988 to 1990 period.

CHANGE IN SHARE OF POPULATION REPORTING A DISABILITY THAT LIMITS OR PREVENTS WORK FROM 1988 TO 2015



Source: IPUMS-CPS

ACCESS TO CARE, ILLEGAL DRUG ABUSE DO NOT EXPLAIN HEALTH STAGNATION, BUT THE RISING PREVALENCE OF PRESCRIPTION OPIOID USE IS A FACTOR

Access to care cannot explain the rather weak progress on health outcomes over recent decades. With each decade since 1980, the intensity of healthcare treatment has tended to increase, meaning people are more likely now than in decades before to meet with a medical professional. The increase in this treatment rate has been particularly notable among older Americans.[48]

It would be inaccurate to broadly attribute the stagnation in American health and disability to drug or alcohol abuse. Though mortality is not immediately affected, the rate of people aged 12 and older who smoke cigarettes has plunged from 33% in 1980 to 17% in 2014.[49] Moreover, use rates for any illicit drugs have fallen sharply since 1979 to 2014, from roughly 14% to 8%. Use rates for marijuana and cocaine, and even heavy drinking rates, have fallen over this period, though for these behaviors and all illicit drug use there has been a notable increase since the 1990s when rates were historically very low.[50] Nevertheless, this increase appears to be more recreational than in the past, as the prevalence of substance abuse disorders has declined at least since 2002, according to government survey data.[51]

One major exception to this trend is that monthly heroin use rates have increased both in recent years and relative to rates in the 1980s and 1990s. Heroin use, however, remains highly uncommon, with just two in 1,000 Americans over age 12 using in the last month and three in 1,000 using over the last year.

Opioid use, however, is far more prevalent. As of 2011 and 2012, 69 out of every 1,000 adults aged 20 and over report use of a prescription opioid in the last month. This rate is up from 50 out of 1,000 from 1999 to 2002.[52] Indeed, the rate is 81 out of 1,000 among middle-aged adults between the ages of 40 and 59 and is especially high among white non-Hispanics. Likewise, patients with pain symptoms who come to see a physician were much more likely to be prescribed an opioid in 2010 than in 2000 — going from 11% to 20%.[53] Aside from opioid prescriptions, a variety of expensive treatments, including imaging and surgeries, have become common for routine back pain, despite lack of evidence for the efficacy of these interventions relative to physical therapy or chiropractic care.[54]

U.S. DIET AND EXERCISE PATTERNS DO NOT ACCOUNT FOR THE STAGNATION IN HEALTH OUTCOMES

Just as trends in smoking and drug use, other than prescription opioid use, have tended to make Americans healthier in recent decades, diet and exercise have not contributed to the poor performance on health outcomes, at least in any obvious way.

Since 1999, the American diet has become healthier according to nutrition scholars, preventing over 1 million deaths from 1999 to 2012.[55] Over a longer period, since 1970 and 1980, consumption has shifted away from sugars.[56] In 2010, 15.8% of total calorie consumption came from sugars and sweeteners, down from 18.1% in 1970.[57] Over that period, total calories per capita increased, and calories from sugar peaked in 1999 before declining.[58] Likewise, the share of calories from saturated fats has fallen slightly.[59]

On exercise, the Centers for Disease Control and Prevention reports an increase in the percentage of Americans meeting the minimum guidelines for aerobic and muscle-strengthening activity per week.[60] In 1998, just 14.3% met both aerobic and muscle-strengthening criteria, whereas 21.5% did in 2014. At the same time, the share who met neither guideline fell from 56.6% to 46.8%. These exercise improvements occurred across all age groups, including middle-age Americans aged 45 to 54.[61] Likewise, the Bureau of

Labor Statistics has data on how Americans spend their leisure time. These data show that the percentage of Americans who exercise or participate in sports each day slightly increased from 2003 to 2015, despite the population's aging.[62]

In summary, health outcomes are not equivalent to the quality of healthcare. Unhealthy behavioral patterns cannot necessarily be blamed on doctors or weak public health campaigns. At the same time, it would be difficult to argue that the period from 1980 to 2015 generated massive gains in treatment quality and health equivalent to a 380% price increase. That would be difficult to reconcile with the experiences of working-age Americans in terms of modest reductions in mortality and worsening self-reported health and disability. Changes in diet, exercise, illegal drug use, drinking and smoking patterns all suggest large improvements in health should have occurred, and perhaps some of these behavioral patterns will manifest in future mortality data. Still, for healthcare to deteriorate economically, one only has to establish that its rapid inflation was not met by an equally valuable rise in quality. It is hard to find evidence for quality gains at that magnitude.

The U.S. devotes far more resources to healthcare than any other country and yet achieves worse outcomes than many. The trends described above indicate that health outcomes in the United States have been slow to improve or have even declined in some important dimensions. If the United States was otherwise one of the healthiest countries on Earth, these trends would not necessarily be a great cause for concern, but the international evidence suggests that the U.S. has rather poor health outcomes relative to other developed countries and stands out as having exceptionally low healthcare productivity when measuring outcomes against spending.

Data from the OECD show that U.S. healthcare consumes 16.9% of its GDP, compared with 8.8% for the average rich country in the OECD. On a per capita basis, no country came close to the U.S. in spending $9,000 per person on healthcare in 2014.[63] Even with all this spending, however, Americans visit physicians less often (four visits per year) than the OECD average (6.6 visits per year).[64]

Shockingly, these huge investments in healthcare correspond to exceptionally poor international performance on health. The U.S. ranks 36th in the world on life expectancy at birth. Americans live about two years fewer than the average resident of an OECD member country, roughly four years fewer than residents of Japan, Spain, Switzerland and Italy, and three years fewer than Australians and

Canadians.[65] The United States stands out with especially poor rankings on the prevalence of obesity, diabetes and ischemic heart disease.[66]

The U.S. also rates very poorly on the share of infants born at low weight, with rates that are roughly twice as high as Scandinavian countries and higher than 26 out of 32 OECD countries.[67]

Poor U.S. performance on these objective measures corresponds to weak scores on subjective ratings of health. The Gallup World Poll asked respondents from 2005 to 2013, "Are you satisfied or dissatisfied with your personal health?" Adjusting for age to make countries with different age patterns comparable, 84% of Americans report being satisfied with their health status. This compares with 92% in the top-ranked country, Switzerland. The U.S. ranks 21st among 33 OECD countries on this measure. The U.S. ranks slightly better (15th) on a question which asks, "Do you have any health problems that prevent you from doing any of the things people your age normally can do?" Nineteen percent of Americans answered yes between 2005 and 2016, adjusting for age. In Italy, where people live almost four years longer, just 12% said yes.[68]

To be clear, many factors affect health outcomes — measured as morbidity or mortality — other than the direct quality of healthcare services and treatments, including education, diet, exercise, and access to clean air and water. Some of these behaviors will be considered next. At the same time, scholars have found a link between health policies related to the quality of healthcare and health outcomes.[69] Others have tried to separate out the causes of death that are particularly amenable to prevention from timely and effective healthcare. These include deaths from "bacterial infections, treatable cancers, diabetes, cardiovascular and cerebrovascular disease, and complications of common surgical procedures."[70] The United States continues to rank extremely poorly on these measures of preventable deaths and in recent years has seen the lowest decline among a group of rich countries studied.[71]

To summarize the healthcare section, quality has likely increased somewhat, considering advances in pharmaceuticals and medical equipment. But those gains have mostly eluded working-age Americans despite evidence that behavior is now healthier regardless of huge cost increases. Quite likely, therefore, the quality-to-cost ratio for healthcare has fallen, depressing GDP per capita growth.

28%

Share of income spent on rent for a typical family in 2014, up from 19% in 1980.

06. Housing

HOUSING COSTS HAVE SWALLOWED UP a larger share of income without a corresponding increase in quality. Massive inflation in American housing markets has weighed heavily on families since 1980. In 1960, rental costs were just 14% of median family income for renters, and this share increased only slightly to 19% in 1980. Yet, by 2014 rents were swallowing up 28% of family income.[72] From 1980 to 2014, median rental costs per room went from $66 in 1980 dollars (or $150 in 2014 dollars) to $250 in 2014 dollars.

Likewise, the cost of owning a home has increased considerably. Monthly mortgage payments — excluding ancillary home ownership costs — increased from 12% of family income to 16% from 1980 to 2014.

MEDIAN ANNUAL HOUSING COSTS AS A SHARE OF FAMILY INCOME FOR RENTERS AND HOMEOWNERS IN 1980 AND 2014

	Renters	Homeowners	All households
1980	19%	12%	14%
2014	28%	16%	20%

Source: Author analysis of IPUMS-USA, 1980 decennial census 5% sample and 2011-2014 American Community Survey; people living in group quarters are excluded; rents are based on contract rent; homeowner costs are limited to first mortgage payments

Over the same period, there is no evidence that the quality of housing has improved enough to make up for the price increases. Indeed, housing quality has fallen on several important dimensions, which is consistent with data from the Bureau of Economic Analysis showing significant price inflation in housing relative to overall inflation, even adjusting for quality. The BEA Personal Consumption Expenditures Price Index for housing relies on the Consumer Price Index, which explicitly adjusts for quality in housing.

Compared with 1980, Americans today are less likely to own their homes and are living in older housing, farther from work, of smaller size, but with slightly better structural characteristics. Median travel times to work have increased by five minutes, suggesting people are living in less desirable locations.[73] In fact, distance to work in miles has also increased over the period.[74] Meanwhile, the median number of bedrooms has not changed, and the share of households living in housing built within the past 10 years has fallen from 26% in 1980 to roughly 17% in 2014.

Compared with 1985, Americans live in smaller homes with smaller lot sizes, implying less yard space. Some commentators have observed that owner-occupied housing units have increased in size, but this has been offset by a much sharper drop in the unit size for rental units — a drop of 271 square feet. Even new units and owner-occupied homes are on smaller lots than they previously were.

HOUSING QUALITIES IN 1980 AND 2014; 1985 AND 2013

	1980	**2014**
Median travel time to work in minutes	15	20
Median bedrooms	3	3
Share of homes built in last 10 years	27%	17%*
Median age of units in years	21-30	31-40
Home ownership rate	70%	66%
Single family detached units, pct of total	69%	68%
	1985	**2013**
Median size in sq. ft., all occupied units	1,636	1,500
Median size in sq. ft., owner-occupied	1,712	1,800
Median size in sq. ft., rental	1,245	974
Median size in sq. ft., new within four years	1,544	1,960
Median lot size in acres, occupied units	0.36	0.26
Median lot size in acres, owner-occupied	0.37	0.31
Median lot size in acres, rental	0.3	0.18
Median lot size in acres, new within four years	0.42	0.3

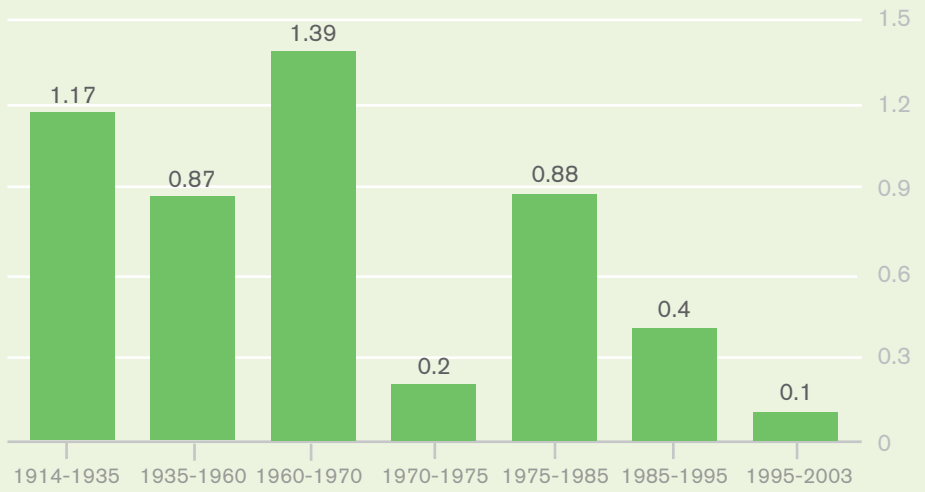
Sources for top panel: Author analysis of IPUMS-USA, 1980 decennial census 5% sample and 2011-2014 American Community Survey; people living in group quarters are excluded; *The 2014 figure for share of homes built in last 10 years overstates the number in 2014 because all homes built since 2000 are included in surveys that took place between 2011 and 2014; The value is only 10% if one uses homes built since 2005; sources for bottom panel: 2013 American Housing Survey and 1985 American Housing Survey

The good news is that housing is slightly more likely to come with adequate plumbing, working electricity and other amenities that have long been widespread but were more likely to be lacking in 1980. The percentage of housing units deemed moderately or severely inadequate in terms of structural issues like heating, electricity or other issues fell from 1985 to 2009 from 8.3% to 5%.[75]

Attempting to quantify those changes in quality requires a more thorough analysis. Economists Robert Gordon and Todd vanGoethem have done such a study.[76] They use similar methods as the Bureau of Labor Statistics to adjust housing prices for quality, by identifying how specific features of a housing unit (plumbing, air conditioning, number of rooms, square footage, age) predict prices. They then calculate annual growth in housing quality by period from 1914 to 2003. It is clear that housing quality growth was strong from 1914 to 1970 but has been especially weak since 1970, with the exception of notable quality growth between 1975 and 1985.[77] Gordon and vanGoethem find that the CPI downplays housing inflation in the first half of the 20th century — thus overstating economic growth — but methodological improvements have since made this bias very small.

ANNUAL GROWTH IN VALUE OF HOUSING QUALITY ESTIMATES FROM ROBERT GORDON AND TODD VANGOETHEM

% QUALITY GROWTH



Source: Estimates from Robert Gordon and Todd vanGoethem

Changes in housing quality are particularly important to GDP accounting because price increases in the rental market count as rental income for owner-occupiers, even if these owners don't rent their home out. GDP accounting methods consider owner-occupiers as providing themselves housing services equal to the value of what they could rent their home for. It is called owner's equivalent rent.[78] As a result, the only way for housing services to change measured real GDP is through quality, which has been growing, according to Gordon and vanGoethem, but much slower than in previous decades.

GDP accounting, however, downplays the indirect economic damage of housing inflation because owners do not benefit fully from the hypothetical income they could receive from renting their homes. Hypothetical income does not help homeowners meet their expenses or boost their spending power. Housing inflation does benefit homeowners by increasing their wealth, which can partially lift spending power through mortgage refinancing or home equity loans, but the consumption gains from this wealth effect are modest — on the order of 10% to 30% of the cost increase.[79] Thus, indirectly, the economy suffers from housing inflation because consumers cannot spend as much as the GDP data implies. The loss in purchasing power for renters is not fully offset by gains in purchasing power for owners.

If the homeownership rate was increasing, the loss to renters from housing inflation would be more fully offset by the gains to homeowners, and the weakening of consumer spending would be less of a concern. Unfortunately, the homeownership rate is at its lowest level since 1967.[80] This means that a larger share of households are directly harmed by the price increase in housing, with no even partially offsetting gains.

In summary, the most direct evidence shows that, despite massive price growth, growth in housing quality has slowed, if not declined, weakening GDP growth from what it would otherwise be. Considering the indirect consequences of rising housing costs, which GDP statistics do not count directly, the real effects are likely to be even worse. Quite likely the housing market has actually detracted from GDP per capita growth because the quality-to-price ratio has fallen.

1971

Year of peak literacy for 17-year-old Americans.

07. Education

THE COST OF EDUCATION — especially higher education — has soared in recent decades, but the best available evidence shows that quality has stagnated or even declined at both the K–12 level and colleges and universities. Moreover, Americans of all ages tend to score lower than their peers in other developed countries on math and literacy, providing further evidence that educational quality is weak.

K–12 EDUCATIONAL OUTCOMES HAVE NOT IMPROVED SINCE THE EARLY 1980S

At the K–12 level, public spending per pupil has increased steadily since 1980. Adjusting for inflation, current expenditure per pupil at public elementary and secondary schools increased 1.7% annually, going from $6,200 per student in 1980 to $10,800 in 2013.[81] Roughly 60% of these costs go to instruction.[82]

To analyze trends in the cognitive performance of children using a consistent measure, this report relies on the National Assessment of Educational Progress (NAEP), which the U.S. Department of Education administers to a random and representative sample of children aged 9, 13 and 17 in both public and private schools. The scores at age 17 are arguably the most important because they reflect the end of formal K–12 education and mark the beginning of entry into the labor force, and those are analyzed here.

The results indicate stagnation in the quality of K–12 education. The latest year available is 2012, and 2012 reading scores for 17-year-old Americans have not improved since the test's first administration in 1971, reflecting four decades of stagnation. Math scores have not improved since 1986.

STANDARDIZED TEST SCORES ON THE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS FOR 17-YEAR-OLD AMERICAN STUDENTS OVER TIME IN READING AND MATH

Source: U.S. Department of Education, National Assessment of Educational Progress, Long-Term Trend Assessments

The racial and ethnic composition of America's schools has shifted over this period to include a larger percentage of Hispanics and Asians relative to whites and blacks, but adjusting for this makes little difference to the larger point. Math scores for whites peaked in 1992 and have not changed since then. Reading scores for whites in 2012 were no higher than in 1975. For blacks, there have been no significant changes in math and literacy since 1986 and 1988, respectively. For Hispanics, peak years were 1990 for math and 1984 for literacy. Racial and ethnic gaps have narrowed somewhat but remain high with little progress in recent decades.

PEAK YEAR OF TEST SCORES FOR 17-YEAR-OLD AMERICAN STUDENTS BY RACIAL AND ETHNIC GROUP

	Math	Literacy
Whites	1992	1975
Blacks	1986	1988
Hispanics	1990	1984
All students	1986	1971

Source: National Assessment of Educational Progress (NAEP) long-term trend assessments; year is the earliest year, which has no statistically significant difference with test scores in 2012, the latest year

If Americans enjoyed a high level of educational quality, it would not necessarily matter if the trend in outcomes was stagnant. Unfortunately, the available evidence shows the level of educational quality is also quite low according to the standards of U.S. education experts and comparisons with students in other countries.

The most recent test score data from the NAEP show that only one in four (or 25%) of American 17-year-olds are proficient at mathematics, only one in five (22%) are proficient in science and 37% are proficient in reading.[83] Testing experts measure proficiency as "competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter."

The Program for International Student Assessment (PISA) measures the cognitive performance among 15-year-olds across countries and is administered by the OECD. The United States ranks a distant 27th out of 34 countries on mathematics, 20th on science and 17th on literacy. Some commentators incorrectly dismiss this poor performance as a function of U.S. diversity, which they say drags down the average. In fact, the average U.S. student enjoys far higher income than his or her counterparts in most developed countries, and per-pupil expenditures are relatively high. More to the point, the share of U.S. students scoring at the top two levels is just 8.8%, below the OECD average of 12.6%.[84] If U.S. math scores included only white students, the United States would still rank 11th behind Germany, Belgium, Poland, Canada, the Netherlands, Japan and other countries.

QUALITY IN HIGHER EDUCATION

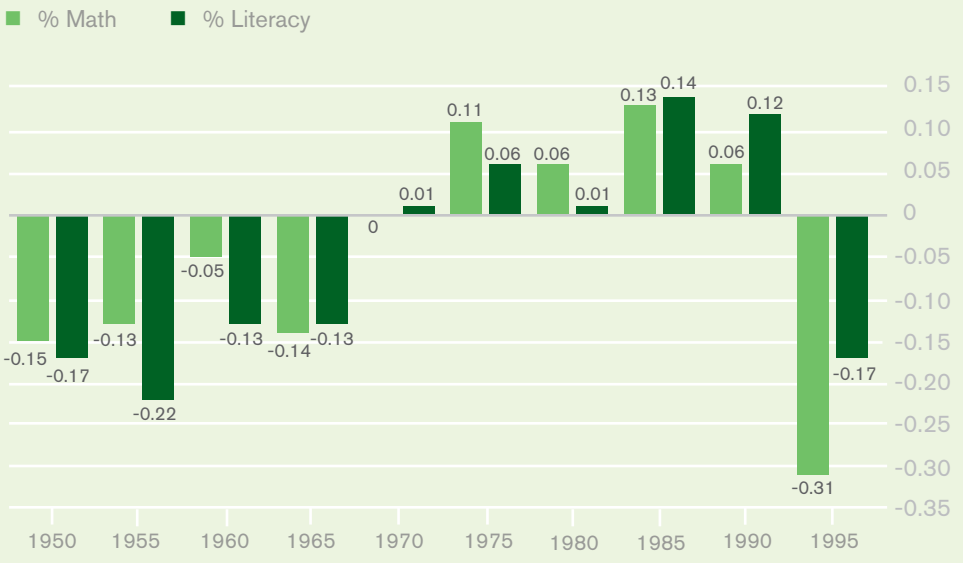
In 2012, the OECD organized a comprehensive cognitive assessment of adults which now includes 33 countries. These data allow for comparisons of learning outcomes for comparable adults across countries, and because the assessment includes people of almost all ages, it allows for comparisons across generations within the same country.

INTERGENERATIONAL STAGNATION

In most developed countries, there have been large cognitive gains between generations. This is consistent with the well-known Flynn effect on IQ scores, named after the psychologist James Flynn, which found that economic development has raised IQ scores across generations. Those aged 24 to 34 score much higher than those aged 55 to 65, indicating the quality of educational opportunities has increased around much of the world. In the U.S., however, these intergenerational gains in both math and numeracy are much smaller than the OECD average, suggesting much less progress.[85]

Moreover, the intergenerational progress in educational quality in the United States appears to have already stagnated. On literacy and math, Americans born around 1975 (aged 35 to 39 in 2012) score significantly higher than previous generations going back to people born around 1950. Yet, there are no significant differences between those born around 1975 and later generations on math and literacy.[86] Neither of the three age groups between 20 and 34 years old in 2012 (those born since 1980) have outperformed those born in 1975.

COGNITIVE PERFORMANCE IN MATH AND LITERACY BY YEAR OF BIRTH (SCORES STANDARDIZED TO MEAN ZERO)



Source: Organisation for Economic Co-operation and Development, Program for the International Assessment of Adult Competencies

As with the NAEP scores for children, adjusting for the racial composition of test takers and whether they were born in the United States makes no difference to the results. For math and literacy scores, the effect is exactly the same after adjusting for race and birth country. Scores rise across age-group cohorts by about one-third of a standard deviation between 1950 and 1975 for those born in the United States, but peak at that point with no significant differences thereafter.

These results implicate the entire education system in America, and they look no better for those who manage to acquire a bachelor's degree or higher. In fact, cognitive scores for both literacy and math peaked even earlier among bachelor's degree holders. Those born around 1970 score higher than previous cohorts, but no later cohort has achieved significantly higher test scores.

These results provide prima-facie evidence that the quality of higher education in America peaked in the late 1980s and early 1990s and has not improved since.

LEVEL OF SKILLS IS LOW

Again, this weak trend over time is not redeemed by a high level of quality. As with the PISA measure of youth test scores, U.S. adults rank very poorly on the PIACC measure of adult skills. The U.S. ranks 27th and 18th in numeracy and literacy, respectively, well behind the OECD average.[87] The U.S. numeracy rank is low even among college graduates (23rd), despite the elevated reputation of U.S. colleges and universities.[88] This reflects poorly on the quality of U.S. higher education.

This lack of skills is costly to the economy. Across all countries, there is a strong correlation between skills — as measured by these assessments — and earnings, even after controlling for education and other factors. Within the United States, workers earn an additional 16% for every standard deviation in math skills, as measured by the PIACC after controlling for age, gender, immigration status and education. Higher scores in literacy are also predictive of higher earnings. Likewise, self-reported health is significantly higher for people with higher scores on the PIACC.

To summarize, the quality-to-cost ratio has fallen for education, leading to reductions in GDP per capita growth. Education quality appears to be roughly the same in 2014 as in 1980 and is certainly no better, despite massive cost increases.

Health insurance as a share of worker compensation increased from 4.5% to

8.1%

from 1980 to 2015.

08. Possible Indirect Consequences of Economic Deterioration

THE DIRECT CONSEQUENCE OF ECONOMIC deterioration in healthcare, housing and education is lower GDP per capita, which follows from the arithmetic of GDP calculations. As the quality of these services has worsened relative to their prices, the purchasing power of Americans has fallen below what it would have otherwise been had quality been enhanced and/or prices fallen.
There are, also, a number of important indirect consequences of relevance to economic productivity and living standards.

Low quality in healthcare treatment or public health initiatives means people are less physically able to work, not to mention less satisfied with their lives. Escalating prices in healthcare, meanwhile, raise the cost of hiring and retaining employees, depressing demand for employment, just as an additional tax on employment would.

Low quality in education means workers are less prepared to add value to a company or organization or contribute to its growth and development. This manifests itself in an increase in hiring difficulty and a greater reliance on foreign-born and foreign-educated workers. The higher cost of education, meanwhile, discourages many from entering or completing a potentially valuable degree program.

Low quality in housing has manifested itself in long commutes as people are seemingly forced to move farther away from their places of employment to get housing with the desired characteristics at an increasingly unaffordable price. Long commute times are largely wasteful from the perspective of economic productivity and rated as one of the least enjoyable activities that people

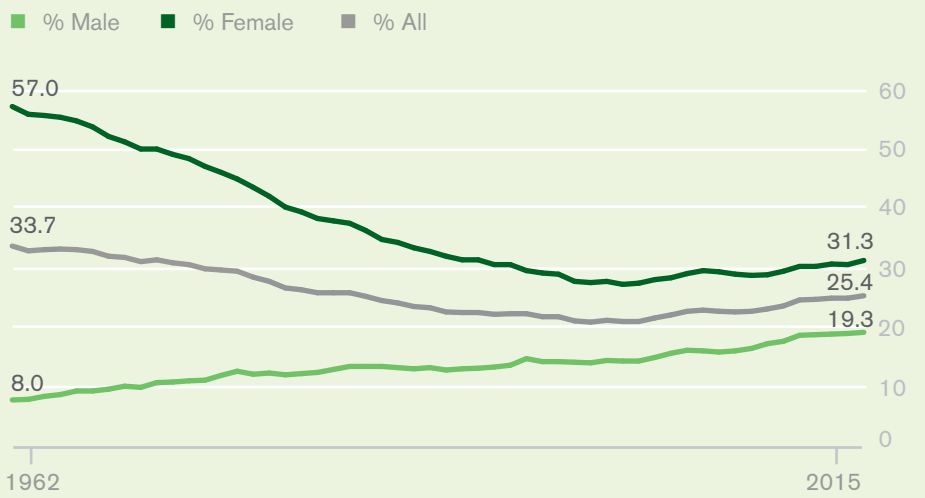
perform.[89] Since zoning laws limit the intensity of land use for commercial as well as residential purposes, higher housing costs may also correspond to higher land costs and business rents, resulting in lower profit margins, a higher rate of failed businesses and harsher barriers to entry for startups.

The preceding section lays out various problems with the macro-economy since 1980, with an emphasis on how economic deterioration in these sectors may have played a role. To be sure, there are likely many complex causes for the trends described next, and economic deterioration may be playing a relatively small role, but the available evidence suggests it is at least an important one.

DECLINING LABOR FORCE PARTICIPATION

From 1962 to its peak in 1998, labor force participation for the working-age population (aged 18 to 64) increased dramatically from 66.3% to 79.0% as social barriers to female labor fell. Over that same period, men gradually started working less, but the gains for women more than offset this. Yet, after 1998, even the positive trend for women reversed itself, and since then, the share of working-age women who were out of the labor force increased from 28% to 31% along with the share of men, which continued to increase from 14% to 19%.

SHARE OF POPULATION AGED 18 TO 64 NOT IN LABOR FORCE OVERALL AND BY GENDER FROM 1962 TO 2015

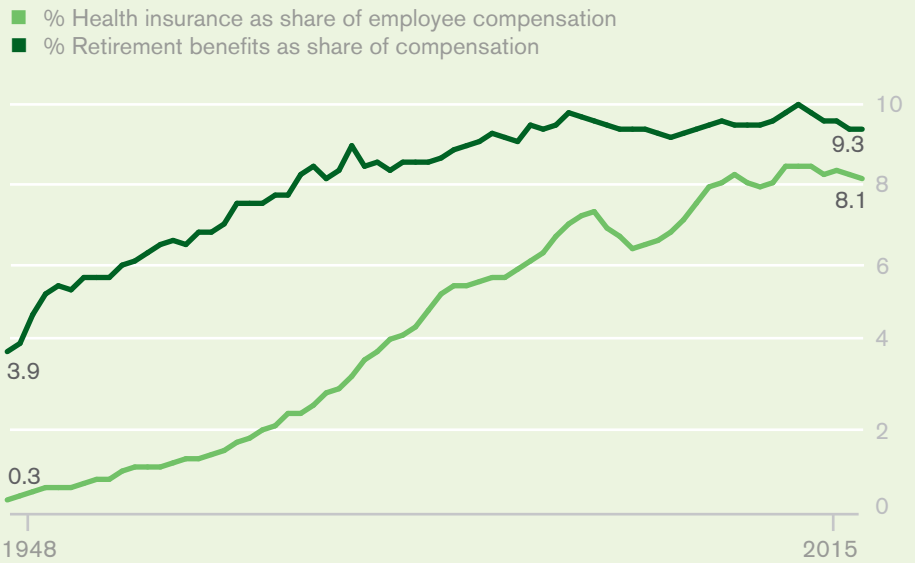


Source: Analysis of IPUMS-CPS

As described previously, one can attribute much of this trend to the declining health status of working-age men and women. In fact, comparing responses to the 1980 Current Population Survey with responses in 2015, the percentage of people who are ill or disabled represents, by far, the single largest categorical increase for why people are not working.[90] But in 1980, the share who were out of the labor force for family reasons was still high and falling. It may be more instructive to see what happens just after peak labor force participation in 2000. Among those out of the labor force during the previous week, from 2000 to 2015, 34% of the increase in nonparticipation among those aged 18 to 64 is explained by health, 29% by more people going to school, 16% from early-retirement, and 5% by people reporting they could not find work. Thus, the dominant reason given for why people are working less is poor health.

To understand how the rising cost of healthcare lowers demand for workers, consider that employers rarely provided healthcare during the years of rapid productivity growth, but starting in the 1970s, healthcare accounted for a growing share of total worker compensation, so that from 1980 to 2015 healthcare went from 4.5% of total compensation to 8.1%.

HEALTH INSURANCE AND RETIREMENT BENEFITS AS SHARE OF COMPENSATION FROM 1948 TO 2015

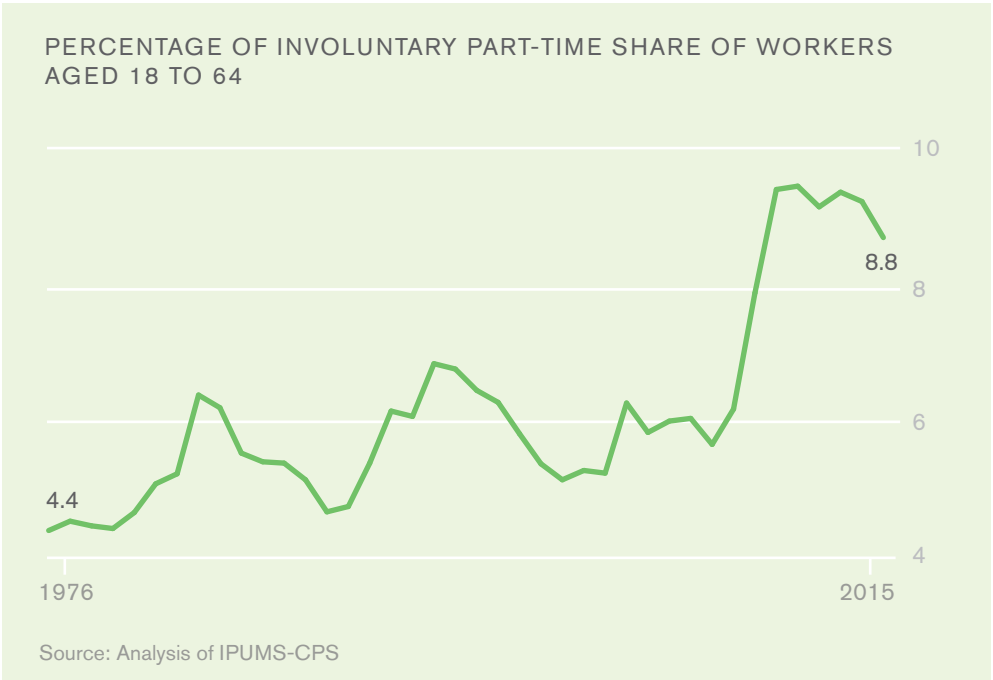


Source: BEA, NIPA Tables 7.8 and Tables 2.1

This actually downplays the importance of healthcare costs to compensation because many workers are not covered by their employers. In 2014, 70% of working-age workers (aged 18 to 64) were covered by their employer, down from 78% in 2001. Thus, the per-worker costs of healthcare for companies that provide insurance is close to $8,000, which is 10.4% of average compensation.[91]

A SPIKE IN INVOLUNTARY PART-TIME WORK

Many companies are devising strategies to minimize or avoid these giant healthcare costs by relying more heavily on part-time workers or contractual workers. The share of workers in temporary, contractual or on-call relationships with employers increased from 10% to 16% from 2005 to 2015.[92] Over this same period, the percentage of workers in part-time jobs who would prefer full-time employment increased from 6% to 8.8%. The spike in involuntary part-time work from 2008 to 2009 and 2010 may be related to the Great Recession, but it has remained high even during the recovery. It may be that the Affordable Care Act, passed in early 2010, is playing a role, since it penalizes employers with at least 50 workers for not providing healthcare coverage for full-time employees, giving employers an incentive to reduce full-time opportunities. Less than half of involuntary part-time workers (44%) are covered by their employers, compared with 78% of full-time workers.

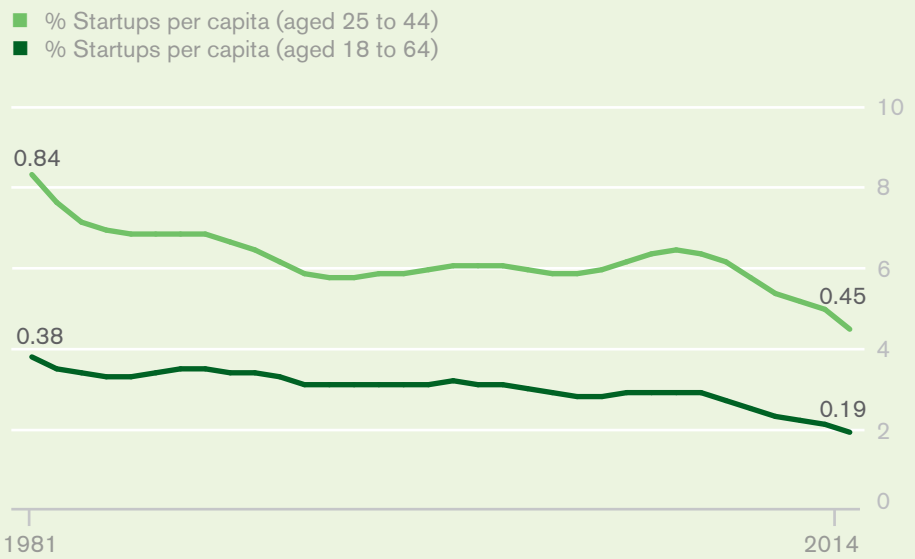


ENTREPRENEURIAL ACTIVITY HAS DECLINED

The escalating cost of healthcare may also have implications for the creation of new firms or startups. There is always an element of risk in creating a new business, but the rising costs of healthcare magnify that risk. In previous decades, an employed worker could quit his or her job and pay for healthcare expenses out-of-pocket if necessary. Now, out-of-pocket expenses for the non-insured are extremely high, so an employed worker who quits to start a business likely gives up a valuable healthcare plan and may have to impose those costs on his or her own fledgling business at a time when revenue is dangerously low. Provisions in the Affordable Care Act were designed to make it easier for the self-employed to purchase health insurance, but even in 2014, 23% of self-employed workers between the ages of 18 and 64 lacked health insurance, compared with 13% of wage and salary workers. For those who are self-employed and have insurance, only about half get it through their businesses.[93]

Whatever the reasons, people are much less likely to either be self-employed or start firms with at least one employee. The number of new firms with at least one worker per capita has fallen by about half since the late 1970s. Although the downward trend has been going on for decades, it accelerated over the Great Recession and has not inched back up.

NEW FIRMS PER CAPITA, FIVE-YEAR MOVING AVERAGE FROM 1981 TO 2014



Source: Analysis of U.S. Census Bureau, Business Dynamics Statistics combined with population data from the Current Population Survey

The share of young adults who are self-employed was just over 4% in 1980 and peaked at near 6% by the early 1990s. Since then, self-employment has declined to less than 4%.

SHARE OF AMERICANS AGED 20 TO 36 WHO WERE SELF-EMPLOYED FROM 1980 TO 2015

Source: IPUMS-CPS
Note: Data collection methods changed starting in 1988, which likely explains the increase from 1987 to 1988

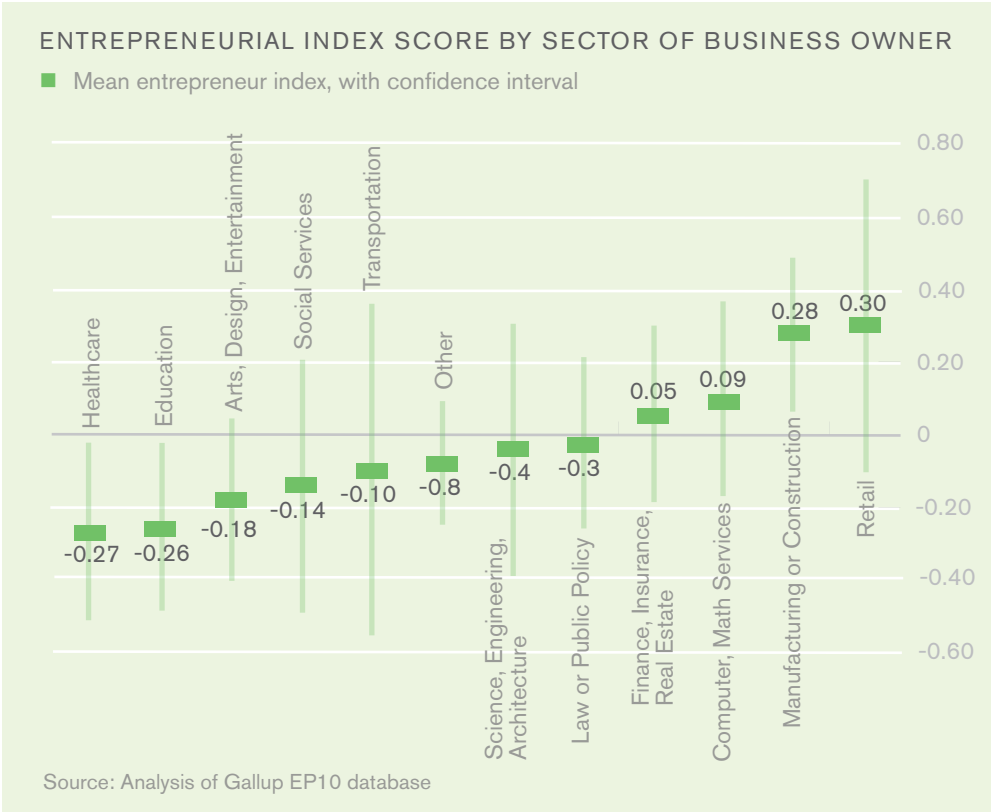
The entrepreneurs most likely to succeed are avoiding education and healthcare.

Whether it is the regulatory barriers described above or other factors, there is some evidence that the entrepreneurs with the greatest potential to enhance the quality of goods and services are avoiding the education and healthcare sectors.

Drawing on 40 years of research on how "talent" — a mix of personality traits, attitudes, motives, cognition and values — predicts career success, Gallup scientists developed an instrument to predict the entrepreneurial potential of people based on their answers to an 111-item questionnaire. From this, Gallup built an index called the Entrepreneurial Profile 10 (EP10) for creating an entrepreneurial or organization "builder" profile along the 10 themes identified as particularly relevant, such as one's degree of confidence, appetite for risk, creativity, determination and other factors. This index is highly predictive of business performance, as measured by whether or not the owner meets revenue and profit goals, the business is growing and other factors.[94]

Among business owners, the entrepreneurial index also significantly predicts the size of the business, measured by the number of employees and the level of revenue. It also predicts higher household income and higher average incomes in one's ZIP code.[95] For example, a standard deviation increase in the entrepreneurial score predicts four additional employees, 19% higher revenue, 12% higher household income and an increase of six percentage points on the probability of meeting revenue goals.

Thus, the most skilled entrepreneurs are needed in healthcare and education, where there is the greatest need to increase the quality-to-price ratio. Unfortunately, Gallup data suggest the opposite. Among the sectors categorized, healthcare and education rate the lowest in terms of mean scores of business owners. Owners of businesses in retail, manufacturing, construction, and computer and mathematical services rate the highest. The sample sizes are small (just over 1,500 randomly sampled Americans) and not weighted to be nationally representative, but the gaps are large enough to rule out chance with 95% confidence when comparing owners in manufacturing and construction with owners in healthcare and education.



In a way, this makes sense. Physicians or dentists are unlikely to receive much business training or be drawn to their profession to bring about innovative services. Yet, whatever their background, entrepreneurs are needed in this sector to make healthcare more efficient. In general, venture capital rarely goes to healthcare services (as opposed to medical device and pharmaceutical manufacturing), but there has been some recent progress in the digital health sector, which aims to better integrate information and software technologies into all aspects of healthcare.[96] However, these early investments have yet to spawn major players with the power to substantially lower prices.

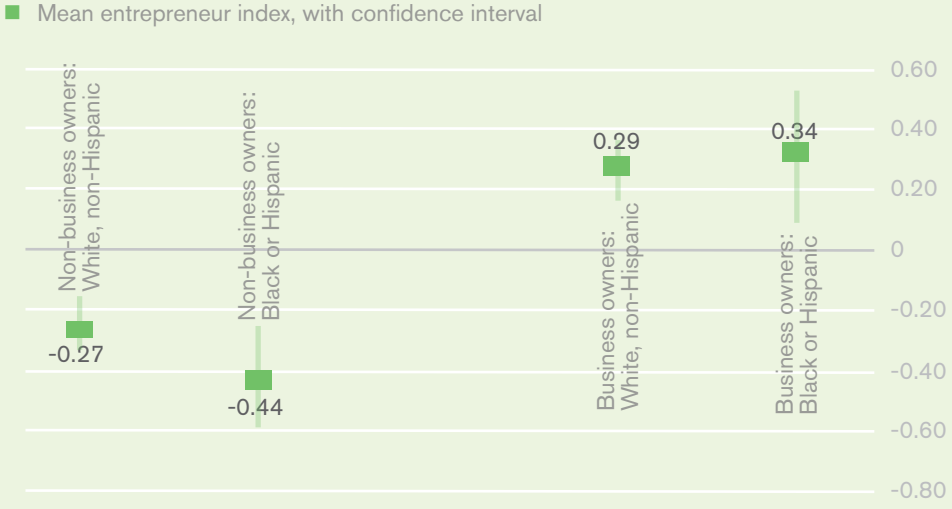
Untapped entrepreneurs are on the sidelines, especially among blacks and Hispanics.

Just as top entrepreneurs seem to be shunning healthcare and education, many Americans with high levels of entrepreneurial potential are not running a business venture. Blacks and Hispanics, for example, made up 29% of the U.S. population in 2014, but only 7.2% of business owners in which the firm has at least one employee.[97] Even among blacks and Hispanics who do own a business, revenue and employment levels tends to be smaller. Given these outcomes, some might assume that blacks and Hispanics have lower average aptitudes for business, but that is contradicted by available evidence.

Gallup data show that there are no statistically significant differences between non-Hispanic whites and blacks and Hispanics when it comes to entrepreneurial potential.

The figure on page 77 shows this is true both among non-entrepreneurs and among current business owners. This study combined blacks and Hispanics because of the relatively small sample sizes, but the sample was randomly drawn from Gallup's panel.

MEAN ENTREPRENEURIAL SCORE AND CONFIDENCE INTERVAL BY RACE AND BUSINESS OWNER STATUS



Source: Analysis of Gallup EP10 database; sample sizes are as follows: 2,010; 203; 1,348; and 138 for the four groups shown above

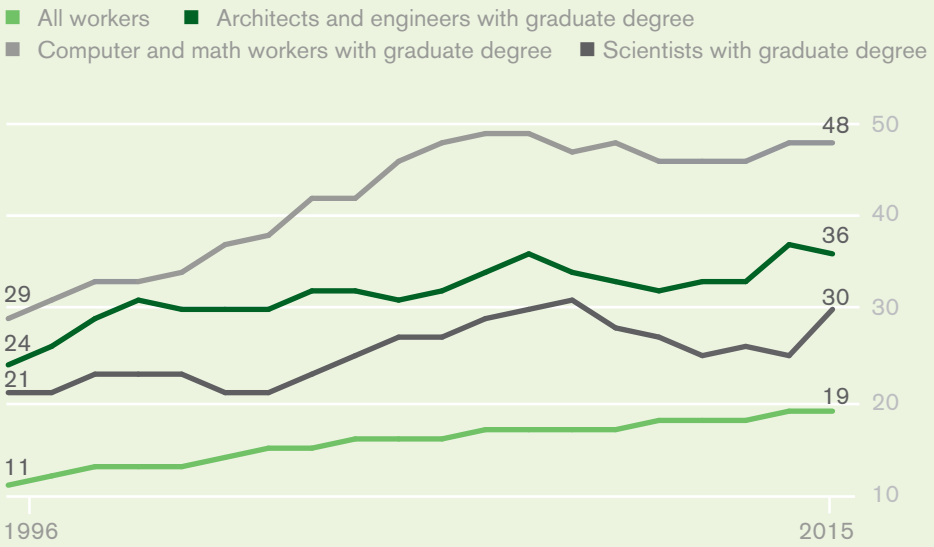
The implication is that the U.S. education system and economy is failing to provide the right encouragement, training, knowledge and incentives to entice high-potential entrepreneurs. Given the low overall rates of business ownership among blacks and Hispanics, these failings have hit those communities especially hard, depriving the country of promising companies.

HIRING DIFFICULTY IS INCREASING, AND SO IS RECRUITMENT OF FOREIGN WORKERS

In addition to healthcare, deterioration in the quality-to-price ratio in education has directly detracted from GDP per capita, but it has also indirectly weakened the productivity and performance of America's workforce. This too may partly explain the weak performance in entrepreneurship, as education empowers workers to see business opportunities and exploit them with knowledge and expertise.

The poor learning outcomes in education manifest themselves in hiring difficulties, delaying and prolonging projects. It has also made America more reliant on foreign-born and foreign-educated workers, who increasingly staff jobs in the most skilled and highest-paying occupations. From 2012–2015, 19% of all U.S. workers aged 25 to 64 were foreign-born, but the percentage was much higher among those holding graduate degrees and working in highly technical occupations. Thirty-six percent of architects and engineers with a graduate degree were foreign-born, while 30% of scientists and social scientists and 48% of computer and math workers were foreign-born. These occupations have been especially difficult for U.S.-based companies to fill, as measured in both surveys and the duration of vacancies.[98]

FOREIGN-BORN SHARE OF WORKFORCE AGED 25 TO 64
BY OCCUPATION AND EDUCATION FROM 1996 TO 2015



Source: Analysis of IPUMS-CPS

Since 1981, the annual costs of federal regulations have increased by an estimated

$250

BILLION.

09. What Is Causing Economic Deterioration?

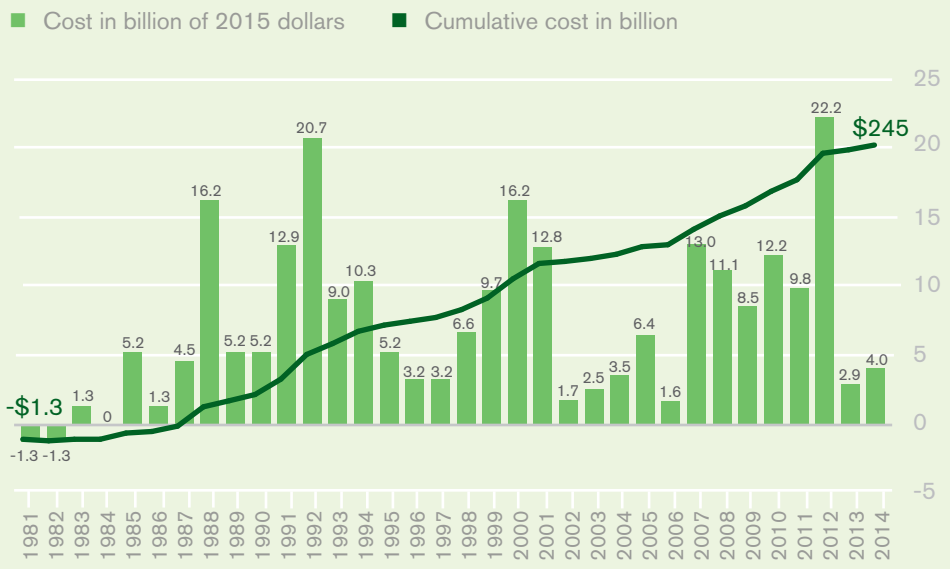
HAVING LAID OUT THE PROBLEM of economic deterioration and its consequences, this section describes some of the potential causes. There are general causes that affect all industries to some degree, and then there are sector- and industry-specific causes for why healthcare, education and housing in particular have deteriorated.

GENERAL FACTORS BEHIND THE PRODUCTIVITY SLOWDOWN

The cost of federal regulations is rising.

Every year, Congress requires the President's Office of Management and Budget to estimate the costs and benefits to major federal regulations passed over the last 10 years. The following graph presents the annual costs of new regulations that have costs or benefits of $100 million or more. The costs of regulations vary greatly by year, with some of the most expensive rules being passed in the early 1990s, 2000s and around 2012. Generally, the Obama administration has not promulgated rules that are dramatically more costly than those introduced during the Bush or Clinton administrations. Yet, these annual costs are for new regulations and exclude the costs of existing regulations. On a cumulative basis, therefore, the annual costs of regulations have increased by an estimated $250 billion since 1981, assuming no change in the costs of regulations passed before 1981.[99] That amounts to roughly 1.4% of GDP.

ANNUAL COST OF NEW FEDERAL REGULATIONS ESTIMATED BY OFFICE OF MANAGEMENT AND BUDGET FROM 1981 TO 2014

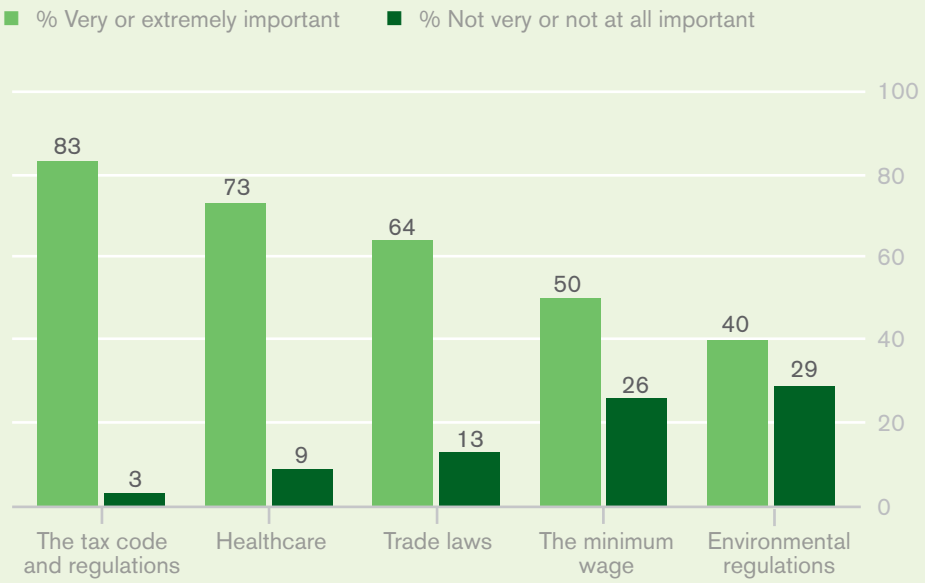


Source: U.S. Office of Management and Budget

OMB does not estimate which industries bear the burden of these regulations, but it is likely that they generally decrease profits and thus have a somewhat dampening effect on entrepreneurship. OMB does estimate benefits for each year, and these benefits are generally much higher than the costs, and each new regulation has to pass a cost-benefit ratio. One problem, however, is that these benefits are unlikely to contribute to economic growth in the same way as the costs detract from it. Many of the benefits come from projections for saving lives, and the benefit of saving one statistical life is often close to $7 million.[100] While that may be a valid measure, saving a statistically average life has little or no effect on GDP per capita on the margin, because a death changes the numerator and the denominator. It has the same effect as the average worker moving abroad. It makes sense to accept slightly lower economic productivity — using conventional measures — in exchange for a safer society, but it would be misleading to suggest that these regulations boost productivity because the benefits exceed the costs. Moreover, as Michael Mandel and Diana Carew have argued, the cost-benefit calculations performed by OMB for regulations take place in isolation of their interaction with existing regulations, but interactions and accumulations can create massive challenges in complexity as firms spend more time on compliance and less time on productive business activity.[101]

Small-business owners are particularly worried about these regulatory costs. In the second quarter of 2016, Gallup conducted the Wells Fargo Small Business Survey, asking small-business owners to rate the relative importance to their businesses of the next U.S. president's actions on a variety of topics. Eighty-three percent of small-business owners reported that the next president's actions on the tax code and regulations were either very or extremely important to their businesses. Just 3% rated this topic as not very important or not at all important. Respondents also commonly rated healthcare, trade laws, the minimum wage and environmental regulations as very or extremely important.

SMALL-BUSINESS OWNERS ON THE IMPORTANCE OF VARIOUS PRESIDENTIAL ACTIONS TO THEIR BUSINESS IN 2016 Q2

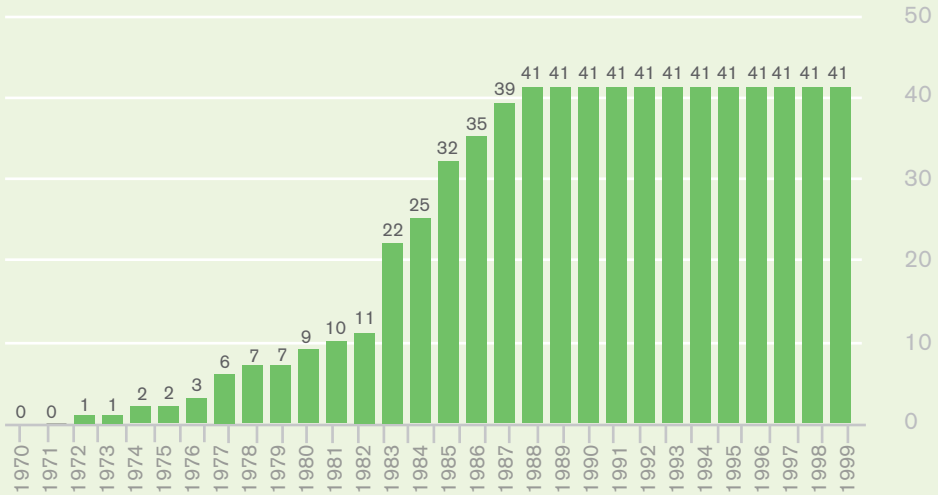


Source: Gallup Wells-Fargo Small Business Survey

STATE LABOR REGULATIONS

Another general factor behind the productivity slowdown is a change in how states have interpreted labor laws. Up until the 1970s and 1980s, the U.S. standard was that employers hired workers at will and could terminate them for any cause. Between 1970 and 1988, 41 state supreme or lower courts had adopted a major exception to the at-will doctrine known as implied-contract. The legal idea here is that almost any employer-employee relationship implies a contract stipulating termination only for cause, even if no such contract was ever signed. The problem is that this increases the risk of hiring, depressing the demand for labor. Economic and legal scholars compared state employment to population ratios just before and just after these court decisions and calculated that these laws reduced the employment-to-population ratio by 0.8 to 1.7 percentage points.[102]

NUMBER OF STATES WITH IMPLIED-CONTRACT DOCTRINE FROM 1970 TO 1999



Source: Author, Donohue and Schwab (2006)

In addition to these general factors, which likely only have small effects, there are industry- or sector-specific factors bearing down on the sectors highlighted as deteriorating: healthcare, housing and education. These policies have very large effects and will be discussed next.

SECTOR-SPECIFIC FACTORS BEHIND THE PRODUCTIVITY SLOWDOWN

Excessive administrative costs drive up healthcare costs.

As noted, U.S. health quality is lower than most advanced countries despite much higher healthcare costs. There is not a strong consensus as to why this is the case, but there is good evidence that administrative complexity — related to the multiplicity of payment schemes and rules — make the American healthcare system especially inefficient.

There is no evidence that American medical schools and college programs, or U.S. doctors, are inferior to those in other countries. Most of the world's top research universities for biology and medical sciences are in the United States, according to rankings based on scientific publications and citations.[103]

Likewise, it does not appear that American cultural or behavioral practices can explain the inefficiency of the healthcare system. For example, one study finds that U.S. residents consume one of the unhealthiest diets in the world, as measured by excessive calories and excessive reliance on fat and protein, but the United States does not rank in the top twenty for overall unhealthy behaviors, once excessive alcohol consumption and tobacco use are included.[104] A thorough review of the literature also suggests that Americans do not stand out as practicing particularly risky lifestyle behaviors.[105] Moreover, even unhealthy behavior might be linked to inadequate or misinformed public health campaigns and dietary guidelines; recent evidence has uncovered that lobbyists for the sugar industry had enormous influence on public health policy in the United States in recent decades, which may explain, in part, excess sugar consumption in the United States.[106] Sugar is also heavily subsidized in the United States.

A more likely explanation for U.S. inefficiency is related to administrative costs.[107] Surveys of physicians show that private practitioners in the United States spend far more time and money preparing and processing billing claims than their counterparts in other countries.[108]

It costs the average U.S. physician $83,000 per year to process claims or otherwise interact with healthcare payers. This compares with roughly $22,000 in Canada, which has a single-payer healthcare system.

In the United States, physicians spend an extra hour per week on administrative tasks, which is costly but hides the true problem, because nurses spend an extra 18 hours on administrative tasks related to billing, and clerical workers spend an additional 27 hours.[109] Other research finds that U.S. administrative costs for healthcare are roughly 4.6 times the OECD average per person.[110]

The excess administrative activities are inherently wasteful in that they provide no benefit for patients and absorb huge chunks of time. Various estimates put the total cost of excess administrative activity in the hundreds of billions of dollars.[111]

State-level occupational restrictions drive up costs for primary healthcare and dental care services.

As the U.S. economy has shifted toward services and away from agriculture and manufacturing, interests groups have formed and lobbied successfully at the state level to regulate professional occupations. In 1950, just 5% of workers required a state license to perform their occupation.[112] Presently, the share is 22%, according to recent survey data from the Bureau of Labor Statistics, and as high as 29% in other estimates.[113] Many of these regulations stipulate in detail the sorts of activities that can and cannot be performed by people with varying levels of approval. In part, these rules serve the public by guaranteeing some level of oversight and competence for important services, but these regulatory boards can easily abuse the power given to them to the detriment of the public.

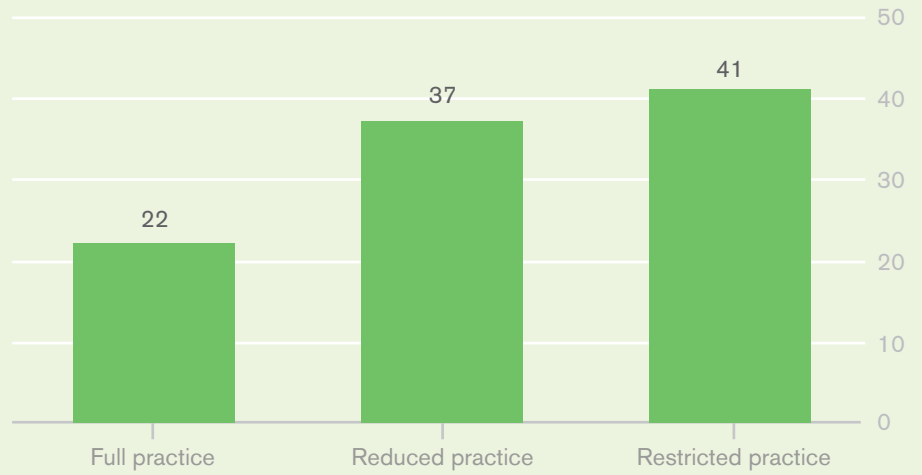
These regulations have profound effects on the cost of healthcare. For example, nurse practitioners' training has essentially prepared them to perform the functions of family and general practice physicians, and yet state law prohibits them from practicing independently from physicians in most cases. Existing evidence is clear that the patients of nurse practitioners have outcomes that are at least as good as patients seen by physicians. Based on this evidence, the National Academy of Sciences issued a forceful recommendation that states reform their restrictions on nurse practitioners to grant them full practice.[114] In spite of the fact that nurse practitioners have the training and track record to show they are just as capable as physicians at providing general and family healthcare services, nurse practitioners are paid far less. The average nurse practitioner salary in 2015 is $101,000, roughly half of the $192,000 earned by family and general practitioners.[115] Physician clinics generated $425 billion in revenue in 2014, so shifting primary healthcare

services to nurse practitioners would save hundreds of billions of dollars in healthcare spending.[116]

The reason more patients don't see nurse practitioners is that many states force them to work under the direct or indirect supervision of physicians. Just 22% of nurse practitioners live in states that allow them to practice independently of physicians. Imagine if Uber or Lyft drivers had to work under the supervision of local taxi companies. They would inevitably be given fewer customers and be forced to share profits. This is essentially what is happening with nurse practitioners. They are far less likely to be self-employed than general practitioners, especially in the states with the most restrictions on their practice. Nurse practitioners living in highly regulated states work fewer hours, and insurance claims charge higher rates with no benefits in health outcomes.[117] The physicians who run the clinics can charge insurance organizations the same or only a slightly reduced fee if a patient sees a nurse practitioner while paying the nurse practitioner half as much, allowing the physician to keep the rest as profit or salary.

These regulations on nurses may explain why physician and specialist salaries are much higher in the United States than in other countries in absolute terms and relative to GDP, while American nurses are paid essentially the same salaries relative to GDP as they are in other countries.[118]

SHARE OF U.S. NURSE PRACTITIONERS IN LABOR FORCE BY TYPE OF STATE REGULATION



Source: IPUMS-USA 2011-2013 American Community Survey and American Association of Nurse Practitioners

A similar dynamic is at play in the relationship between dental hygienists and dentists. Only a tiny fraction of dental hygienists in the United States live in states that allow them to practice independently of dentists, yet when most people visit the dentist's office for a routine visit, they are essentially spending all of their time with the hygienist.[119] Like nurse practitioners, hygienists earn a small fraction of a dentist's salary ($73,000, on average, compared with $172,000).[120] Dentists' offices bring in $109 billion in annual revenue, so shifting pay to hygienists could save tens of billions of dollars.

State laws protect hospital monopolies, driving up costs.

In the early 1970s, the federal government paid hospitals and medical providers based on the services provided and their fixed costs, including the cost of building and maintaining facilities.[121] Because taxpayers were being charged for expensive new hospitals under this model, federal regulators compelled states to adopt laws to restrict the supply of new hospitals and other medical technologies. By the early 1980s, every state except Louisiana had adopted "Certificate of Need" (CON) laws that created state boards to oversee approvals of new hospitals or providers of expensive capital-intensive medical services. As the Federal Trade Commission has noted, the federal government no longer directly reimburses hospitals or providers based on their fixed costs, eliminating the justification for these laws.[122] Federal laws encouraging CONs were repealed in the 1980s, and yet 35 states retain some form of CON laws.[123] The FTC and Department of Justice Antitrust division have argued that CON laws should be repealed because they create a barrier to entry, limiting competition, raising prices and lowering consumer choice.[124]

A massive new study of insurance payments confirms the theoretical predictions of consumer advocates.[125] Hospitals in monopoly settings charge 15% higher costs, even after controlling for the local cost of labor, the share of Medicare patients, the number of medical technologies and other factors. Hospitals in only weakly competitive markets also raise prices by 5% to 6%. Overall, 37% of hospitals are located in at least weakly competitive local markets, driving up the national costs of hospital care by 6%.[126] That represents $55 billion in wasted medical expenses.[127]

Lack of competition among hospitals results in $55 billion in annual waste.

Excessive assessments in K–12 education and low pay unrelated to performance has made the teaching profession inefficient and unattractive.

Teachers, students and parents are becoming increasingly frustrated with the massive effort directed at testing, much of which is to satisfy purely administrative requirements created by various levels of government with limited or no direct value to students. Gallup survey data find that 83% of teachers and 79% of superintendents believe students spend too much time on testing.[128] Testing and test preparation increasingly restrict teacher autonomy, driving away top students from entering the profession and making it increasingly difficult to retain top performers. A survey from the American Federation of Teachers found that only 15% of teachers report being enthusiastic about their profession, even though 89% said they started out their career that way. Many listed standardized testing and pedagogical control as major sources of stress and dissatisfaction.[129]

In one urban school district, students take 47 different assessments per year.[130] Students in grades six to 11 spend 55 hours per year on testing, and their teachers devote an additional 80 hours per year of class time to test preparation, not including 10 hours of administrative tasks related to the test.[131]

Another study examined testing in 66 large, urban school districts and found that the average middle school student is mandated to take at least 10 assessments per year, not counting testing done by his or her teacher for that specific class.[132] In short, this massive amount of testing time — and preparation for it — is wasted from the students' perspective in that it detracts from time spent learning.

In Florida, meanwhile, *The New York Times* reports that "many schools this year will dedicate on average 60 to 80 days out of the 180-day school year to standardized testing. In a few districts, tests were scheduled to be given every day to at least some students."[133]

The rise of testing is driven by the real need to hold poor-performing schools accountable, but it can also be linked to lobbying efforts on behalf of the testing industry to expand the number and purpose of tests.[134] Just four large testing companies spent an estimated $20 million on lobbying state and federal policymakers from 2009 to 2014.

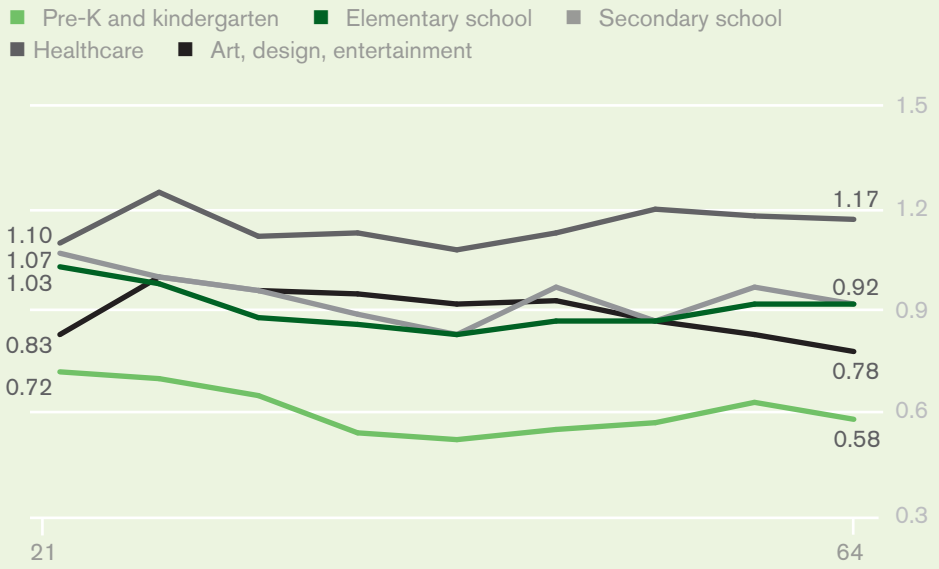
Another possible explanation for declining educational quality is the role of unions in compressing pay and deterring professionals who would otherwise be highly paid. Between 1959 and 1987, 33 states adopted laws requiring states to collectively bargain with their public school teachers.[135] Pay became

linked tightly to seniority rather than performance. Over the same period and through 2000, the relative aptitude — measured by intelligence exams — of high school graduates entering the teaching profession declined.[136] A related study looks at changes from 1963 to 2000 and finds a large increase in the percentage of teachers who attended the least selective schools (16% in 1963 to 36% in 2000) and a fall in the percentage of teachers from the most selective schools (5% to 1%).[137] These changes are substantially correlated at the state level with changes in "pay compression" (a fall in the salaries for high achievers relative to the salaries of low achievers). Pay compression, this study concludes, drove out of teaching many of the women most likely to succeed in other professions and drew into teaching women who benefited from a higher salary than they would otherwise be able to earn.

Relatedly, teachers are paid considerably less than other comparable professionals, and this pay gap is especially high in the United States.[138] Relative teacher pay is particularly low during early and middle phases of the career and rises somewhat for veteran teachers. For women with a bachelor's or master's degree working full time between the ages of 35 to 39, pre-kindergarten and kindergarten teachers are the lowest-paying professional occupation, with median salaries of just $30,000 in 2014. That salary is much lower than women with similar education levels working in administrative jobs, social support occupations, sales, and art and design occupations. The comparable median salary for teachers aged 35 to 39 in elementary and secondary schools is $48,000 and $50,000, respectively. Those pay levels are equivalent to 86 cents and 89 cents for every dollar earned by the median comparable woman in all professional occupations. Salaries for women in this age group and with this education are much higher in healthcare and engineering occupations, where median pay is $63,000 and $80,000, respectively.

As shown in the graph on page 91, teacher pay is low for those aged 30 to 44 but rises closer to the median after age 45. For female teachers 50 and older, teacher pay is higher than pay for those in art, design and entertainment occupations, but it is still well below those in healthcare and other high-paying occupations. For teachers in pre-K or kindergarten, pay remains extremely low throughout their careers. The pay gap is even worse for male elementary or secondary teachers aged 35 to 39, who earn 68 cents for every dollar earned by comparable men in other occupations with the same level of education. The gap never shrinks closer than 81 cents for every dollar, which is the pay gap for male secondary teachers aged 60 to 64.

RATIO OF MEDIAN TEACHER PAY TO MEDIAN PAY FOR ALL FULL-TIME WORKING WOMEN BY AGE AND SELECTED OCCUPATIONS



Source: Analysis of IPUMS-USA

Between the ages of 40 and 44, female elementary and secondary teachers earn 83 cents for every dollar earned by women in comparable occupations, and pre-K and kindergarten teachers earn just 52 cents.

International evidence suggests that making the teaching profession more attractive to top students would substantially boost U.S. test scores.[139] Teachers in high-scoring countries like Finland, Singapore and South Korea are recruited primarily from the top third of their academic cohort, whereas this is true for only a minority of U.S. teachers.[140] One study estimates that if U.S. teachers scored as highly on cognitive exams as teachers in Finland, U.S. students would gain 0.55 standard deviations in math proficiency.[141]

The weak pay and increased scrutiny facing teachers has also coincided with declining productivity of the school system generally. In 1980, there were 18.7 students per teacher in U.S. elementary and secondary schools, and this ratio fell to 16 by 2012.[142] This reduction in classroom size represents falling productivity because test scores did not increase. Over the same period, however, non-teachers in the school system saw an even larger drop in productivity. The number of students for every district-level administrator — who does not interact with students — fell from 519 in 1980 to 365 in 2012. Principals and assistant principals managed 382 students in 1980 but only 294 in 2012. Likely, the rise of complex, multi-jurisdictional accountability regulations — at local, state, and federal levels — has contributed to this fall in bureaucratic productivity.

In summary, the teaching profession has become an increasingly unattractive career choice, and this has likely occurred because salaries start off very low, remain somewhat low and do not rise based on merit. Excessive testing requirements by state and district governments have also undermined the autonomy and efficacy of teachers and likely exacerbated the declining bureaucratic efficiency of school districts. There is no evidence that unions are inherently harmful to students, as the top-performing nations all have teachers' unions, and tests administered at the beginning and end of the year are important in evaluating student and teaching performance and holding schools publicly accountable. The needed reforms do not require radical changes, so much as a willingness to start fresh on testing and pay policies with a shared understanding of basic principles.

Most higher-education subsidies go to schools with the lowest-performing outcomes.

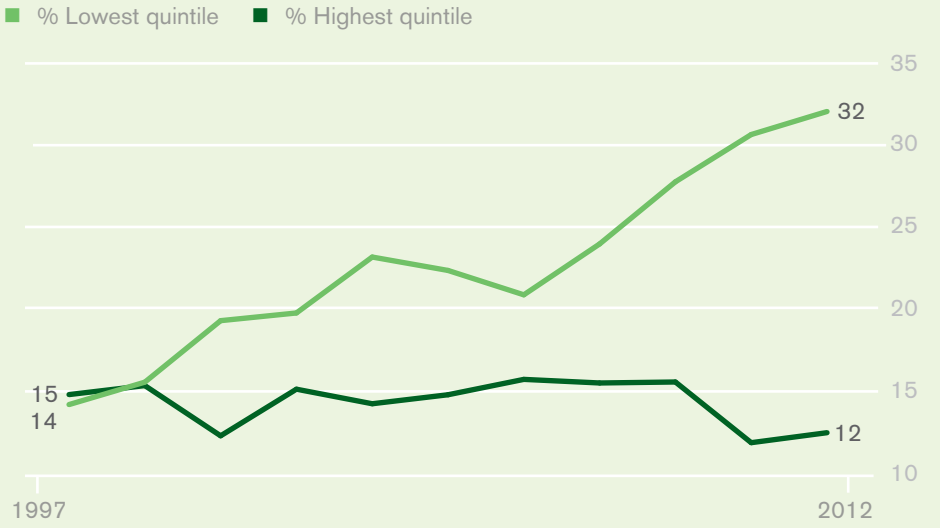
Much of the growth in student borrowing has come from attendance at for-profit and two-year colleges, as well as non-selective four-year schools.[143] Unfortunately, students who attend these institutions tend to graduate less frequently, earn lower salaries after attendance and are more likely to default on their loans. As of 2014, two-thirds of aggregate federal student loan debt aided students at these institutions, leaving only one-third for selective four-year colleges and graduate degree programs.[144] This share has been rising over the last few decades. To the extent that this trend has empowered students from low-income families whose parents have not gone to college, these trends are positive for the country, but many of these students have not been empowered by their educational experience, as evidenced by a variety of outcomes data.

In fact, the institutions with the highest default rates on student loans are receiving the largest increase in federal lending and now account for one-third of all loans . At the poor-performing schools, many students — 13% in 2012 — have not made even one monthly payment on their loans in two years. There are roughly 200 schools in this group. The default rate at these bottom-quintile institutions is six times higher (in 2012) than the default rate at the top quintile of institutions. The federal lending program is thus subsidizing higher-educational experiences that are leading to very poor labor market outcomes.

From 1997 to 2012, the share of federal loans going to schools with the highest default rates went from 15% to 32%.

Part of the problem is that federal aid programs do not automatically discriminate across schools. Recently, a few schools with very poor track records have been cut off from receiving further federal subsidies, but a more systematic approach would require risk-sharing.[145] That is, schools would have to pay a portion of the defaulted loan amount. To avoid punishing schools that take the most at-risk students, however, the amount a school repays should be reduced by expected default rates using statistical models that consider student characteristics at the time of admission.

ESTIMATED SHARE OF STUDENT LOANS GOING TO TOP- AND BOTTOM-QUINTILE INSTITUTIONS AS RANKED BY TWO-YEAR DEFAULT RATES FROM 1997 TO 2012



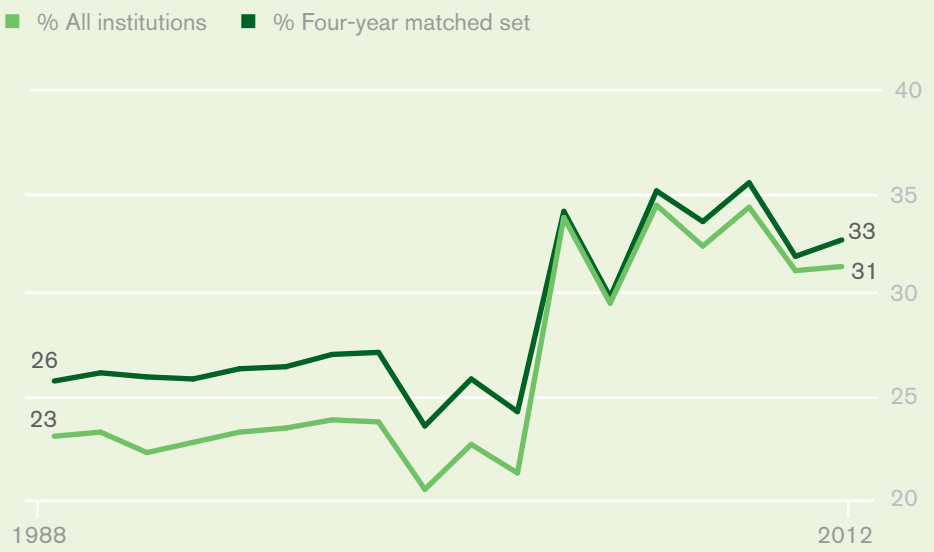
Source: Analysis of Department of Education's College Scorecard database; to estimate total debt by institution, the number of borrowers was multiplied by median debt amount (debt_mdn) since the mean was not reported; schools were ranked by the two-year default rate and grouped into quintiles

Higher education has become bloated with highly paid non-teaching staff.

Two major reasons why college costs have soared are that a larger number of staff now support each student, and the type of staff who supports students has shifted toward higher-paying occupations.

In 1988, there were 4.3 full-time equivalent students for every college employee — full and part time. By 2012, this fell to 3.1. Looking at it another way, it now takes 31 staff to serve every 100 students when it used to take only 23. If these changes reflected a greater investment in faculty, it may have increased student outcomes and proven to be a worthwhile investment. Unfortunately, that is not the case.

STAFF PER FULL-TIME EQUIVALENT STUDENT IN HIGHER EDUCATION FROM 1988 TO 2012

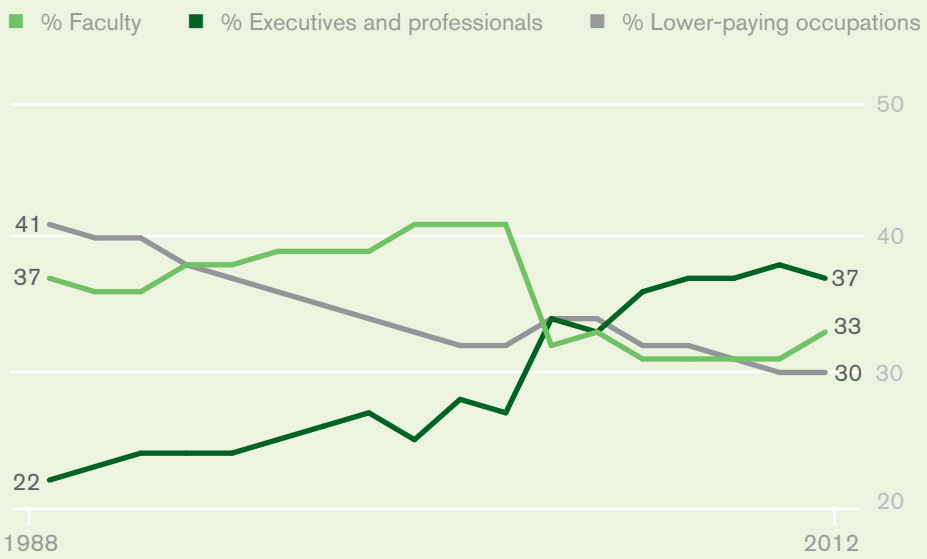


Source: Analysis of IPEDS matched-set data from the Delta Cost Project; all institutions with missing staff or missing full-time equivalent student data were dropped for a given year; "all institutions" includes every school in the IPEDS database with non-missing data; the matched set requires that the school report data on three measures — fall full-time equivalent (FTE) student enrollment, instructional expenditures and student completions — for every year in the panel time period, which is 1987 to 2013

From 1988 to 2012, there has been a massive reallocation of university and college employment away from lower-paying support occupations — including clerical workers and maintenance workers — toward high-paying professional jobs in healthcare, computer and information management, and business and finance. These jobs have gained even relative to teaching staff.[146] The executive and professional share of total employment went from 22% of all workers to 37%. As of 2006, there are now more managers and professionals in higher education than there are instructors.

Thus, when combined with the overall fall in efficiency — as measured by the number of students per employee — this trend has led to spiraling price escalation as each student has to pay for a larger number of highly paid workers than in the past. Ironically, this trend has not coincided with an increase in faculty pay, which has increased very slowly over the period.[147] These data imply that many colleges face weak competitive pressure on price. One reason for that is that many students select their local institutions. Across all public four-year colleges, 81% of students, as of 2013, live in the same state, a number which has changed little since 2000.[148]

SHARE OF WORKERS IN HIGHER EDUCATION BY FUNCTION FROM 1988 TO 2012



Source: Analysis of IPEDS data from the Delta Cost Project; all institutions with missing staff or missing full-time equivalent student data were dropped for a given year; "all institutions" includes every school in the IPEDS database with non-missing data; executives and professionals include executives, managers, as well as computer workers, engineers, library staff, finance and human resource staff, coaches, trainers and healthcare professionals

Lack of public support for higher education does not explain why costs have increased.

An alternative explanation for the rising cost of education is a lack of government investment. State disinvestment has shifted costs to students and away from taxpayers, but federal support for higher education has made up for the state decrease at four-year public colleges.

Many analysts of higher education have noted that tuition makes up a larger share of total revenue at public colleges and universities now than in previous years, as state subsidies have been scaled back.[149] Even if the expense of college had otherwise not changed, this shift in spending would be registered in higher-education inflation metrics, which only count payments from consumers, not taxpayers. But state cutbacks and lack of public support explain very little of the rise in college tuition.

First, total revenue per student, adjusted for inflation, has increased substantially across all sectors of higher education. If public funding cutbacks explained the entire rise in tuition, then there should have been no change in revenue per student. Public four-year colleges saw a 37% increase in revenue per student from 1987 to 2013, amounting to a $9,000 increase in annual revenue per student, or $36,000 over four years. Over this period, net tuition (which subtracts aid that comes from the colleges themselves) increased by 164%, amounting to $5,821 per year.

To understand the public role in these changes, consider that states reduced total grants and appropriations to students by $2,300 per student over the period. That would explain 40% of the increase in tuition, but the federal government increased support to public colleges by almost exactly the same amount, offsetting the drop in state support. The public funding of higher education has shifted away from local and state taxpayers to federal taxpayers, but tuition could have remained at 1987 levels if schools held their costs down to levels of inflation.

A second important piece of evidence needed to understand inflated college costs is that private and for-profit colleges have also raised tuition. If waning state subsidies explained higher-education inflation, then inflation for non-public colleges should have been minimal. It has not been. Average net tuition has increased by 92% and 60% at private for-profit and not-for-profit four-year colleges, respectively.

Finally, the trends for two-year and lower colleges have been similar. Revenue per student is up, along with tuition. Government funding per student at public two-year colleges has actually increased, though not nearly enough to offset the price increase.

GROWTH IN REVENUE AND NET TUITION PER STUDENT FROM 1987 TO 2013, INFLATION ADJUSTED

	Growth in revenue per student	Growth in net tuition per student	Change in share of revenue from government sources	Change in government funding per student
Four-year and higher colleges				
Private for-profit	53%	92%	-11%	-$1,541
Private non-profit	64%	60%	-6%	$270
Public	37%	164%	-15%	$59
Two-year and lower colleges				
Private for-profit	63%	89%	-14%	-$1,625
Private non-profit	6%	62%	-5%	-$868
Public	25%	131%	0%	$1,956

Analysis of IPEDS 1987 to 2013 matched-set data from the Delta Cost Project for panel of institutions with non-missing data each year for full-time equivalent student enrollment, instructional expenditures and student completions; dollars figures are converted to 2013 dollars using Consumer Price Index provided by Delta Cost Project database; variables used are fte_count, nettuition01 and total03_revenue, federal10, state09 and iclevel to determine four- vs. two-year schools; net tuition is defined as tuition revenue less total institutional student aid

Local land-use regulations explain why housing markets are so dysfunctional.

The core problem with the housing market is that it is not allowed to function as a market at all. In a healthy market, an increase in demand for a product leads to a greater supply and prices stay the same. In housing markets, demand increases as new households are formed, which results from natural population growth and immigration. The problem is that new supply is massively restricted, leading to inflation.

The development of new housing units is restricted by a massive layer of local regulations called zoning that block new housing from being built and being built where people most want to live. Zoning forces artificially low housing densities in many desirable locations and often blocks new development of any density. Regulations often outlaw apartment buildings, condos and even single-family attached townhouses from the most expensive neighborhoods. The vast majority of local governments surveyed (84%) report that they require minimum lot sizes that are designed to limit density.[150] A large academic literature shows that more restrictive zoning laws drive up housing costs.[151]

Local zoning boards and planning agencies have almost complete discretion over what gets built where, and they are under intense political pressure from homeowners' associations and other groups to block development in high-priced, low-density areas for cultural and economic reasons. Culturally, homeowners clamor to preserve what they regard as the "character" of their communities, by which they mean things like traffic, the race and social status of their neighbors, and environmental amenities like green space and scenic views. Additionally, homeowners have strong economic interests in restricting the supply of housing in their neighborhood for two reasons: having more people, especially people with young children, requires a higher tax rate on property, and even more fundamentally, greater housing supply in their neighborhood lowers the value of their unit relative to the prevailing scarcity. Thus, even as housing prices increased, U.S. population density actually fell from 2000 to 2010 for metropolitan area residents as newer housing units were pushed further out into the distant suburbs.[152]

There is no comprehensive database of zoning laws, and so it is difficult to measure, but historical documents, surveys of local governments, court records and news accounts all suggest that zoning has become more widespread and restrictive since it was first enacted in the 1920s by local governments, and there is strong evidence that it increases housing prices.[153] It has been ubiquitous among urban and suburban governments for decades, and even if zoning had not increased in severity, its limitations on new development would drive up housing costs in the face of increased demand from population growth and rising incomes.

Take Palo Alto, California, for example, in the heart of Silicon Valley. In 2014, the median home in the city was valued at over $1 million, making it among the most expensive places in the United States, if not the world.[154] Demand for housing is extraordinary in large part because Palo Alto is in the middle of a global hub for innovation and entrepreneurship, greatly increasing demand to live there and increasing the purchasing power of tech executives and employees. But high demand does not require sky-high prices in other markets. Demand for smartphones has soared, for example, but prices have not, because governments do not impose artificial limits on the number of units manufacturers are allowed to make available.[155]

Housing developers could make a fortune by converting underutilized land in Palo Alto into high-density residential buildings, but zoning won't allow it. Only 27% of Palo Alto's land area is even zoned for residential use. The bulk (59%) is protected natural space. Already, this regulation cuts deeply into the potential supply of housing. The problem is much worse, however. Just 3.5% of the city's land is zoned to permit multi-family housing, which would include apartments and condos. Most residential space, 23% of total land, is zoned for detached single-family housing.[156] Overall, the city allows more land to be used for industrial purposes (7.4%) than for multi-family housing. In 2014, the city granted a single building permit for multi-family housing: one building with four units.[157] Partly as a result, a huge percentage — almost half — of the city's total workforce lives outside the city, making Palo Alto one of the places with the largest ratio of non-resident commuters to resident workers in the United States.[158]

Just 3.5% of Palo Alto's land is zoned to permit multi-family housing, which would include apartments and condos.

In absence of statutory data, a rough proxy measure for the stringency of zoning laws is the percentage of housing units that are single-family detached, which is the lowest-density form of development. When confronted with higher demand, this percentage should fall as developers build at higher densities, but because of zoning, demand growth — measured by job or GDP growth in the metropolitan area or commuting zone — predicts an increase in the share of single-family detached units at the county level.

Across all U.S. counties, there is a strong and significant relationship between land use and price growth. Counties with a high percentage of single-family detached housing units in 1990 experienced more rapid housing cost inflation from 1990 to 2014. This relationship remains statistically significant after controlling for employment growth or GDP growth in the larger commuting zone, as well initial population density or region of the country. Areas with a higher share of single-family detached housing in 1990 also saw lower growth in the total number of housing units from 1990 to 2014, even controlling for initial rent. Moreover, comparing counties within the same commuting zone, those with a higher percentage of single-family units experienced more rapid housing cost inflation and lower supply growth.[159]

Targeted bipartisan policy interventions can reverse economic deterioration.

10. Reviving Growth Will Require a New Strategy

FOR DECADES, PARTISAN DEBATES HAVE battled over broad philosophical issues such as openness to trade and the government's role in taxing, subsidizing or mandating various economic outcomes. The major debates over economic policy have mostly focused on the size of the federal government, marginal tax rates and interest rate policies of the Federal Reserve Bank.

These issues are important for economic growth, but changes in the level of taxation and government spending do not account for the long-term slowdown described in this report because the burden on businesses and taxpayers has generally decreased. Likewise, the Federal Reserve Bank's policies, while widely regarded as useful in averting a longer recession, have not solved the more fundamental problems of sluggish economic growth. Both imports and exports have increased as a share of GDP in recent decades. The consensus among economists, however, is that the adverse effects of trade on particular workers and communities are offset by broader and much larger gains to consumers and businesses through lower prices, greater access to goods and services, and more competitive, innovative markets.

As part of a strategy to revitalize growth, leaders need to reconsider ways to make markets work better. It is widely accepted that market competition generally leads to lower prices for consumers and higher-quality products, as the Obama administration's Council of Economic Advisers has recently argued.[160] In many cases, however, unnecessary laws and regulations are obstructing mutually beneficial transactions from happening, such as developing new homes, efficiently collecting revenue for healthcare services, opening a new hospital, receiving affordable healthcare from a nurse practitioner or dental hygienist and using federal student loans to learn new

skills from an effective but unaccredited provider. In other cases, it is the labor market that is broken, as in elementary and secondary education where rules make the pay and practice of teaching unattractive.

The goal of regulatory reform should not be to discard the rules governing economic transactions but to ensure those rules accomplish their goals — such as preventing fraud or pollution and maintaining safety — in the most effective manner without unduly inhibiting entrepreneurship and commerce. For example, rules can be written in such a manner as to streamline or even automate compliance with information that is already gathered during the course of business.

In upcoming articles, Gallup will lay out potential policy solutions based on the analysis in this paper. Several practical bipartisan actions could significantly boost the productivity of the healthcare, education and housing sectors to return the U.S. to a higher economic growth trajectory. Problems in these three sectors present considerable and distinct challenges to achieving higher living standards, but the focus on them is not intended to imply that fixing these sectors will solve all of the nation's economic challenges. A comprehensive discussion of all of the ways to achieve higher economic growth is beyond the scope of this research effort.

What's clear is that current strategies — dialing taxes up or down, injecting stimulus, lowering interest rates and enacting or repealing high-profile regulations — have not brought about long-term economic growth over the past three or four decades. Leaders worldwide are confronting intense dissatisfaction with the low-growth status quo. Reversing the drop in long-term growth requires a new strategy that grapples with the details of decline to understand the causes and propose real remedies.

ENDNOTES

[1] McCarthy, J. (2016, August 10). Americans' Assessments of U.S. Job Market Slightly Worse. Gallup.

[2] McCarthy, J. (2016, April 28). Americans' Financial Worries Edge Up in 2016. Gallup.

[3] Analysis of data from the World Bank.

[4] Andes, S., & Rothwell, J. (2015). Advanced industries drive down prices, making income more valuable. Washington: Brookings Institution; Muro, M., Rothwell, J., Andes, S., Fikri, K., & Kulkarni, S. (2015). America's Advanced Industries: What They Are, Where They Are, and Why They Matter. Washington, D.C.: Brookings Institution.

[5] Baily, M. N., & Montalbano, N. (2016). Why Is U.S. Productivity Growth So Slow? Possible Explanations and Policy Responses. Washington, D.C.: Brookings Institution.

[6] U.S. Bureau of Economic Analysis is the source for hours worked and U.S. population data.

[7] U.S. Bureau of Economic Analysis, National Income and Product Accounts. Table 1.1.10. Percentage Shares of Gross Domestic Product. (Note: The contribution of exports to U.S. GDP peaked in 2014.)

[8] Byrne, D., Fernald, J. G., & Reinsdorf, M. B. (2016). Does the United States have a productivity slowdown or a measurement problem? Washington, D.C.: Brookings Papers on Economic Activity.

[9] Byrne, D., Fernald, J. G., & Reinsdorf, M. B. (2016). Does the United States have a productivity slowdown or a measurement problem? Washington, D.C.: Brookings Papers on Economic Activity; Nakamura, L., Samuels, J., & Soloveichik, R. (2016). Valuing "Free" Media in GDP: An Experimental Approach.

[10] Ibid.

[11] Byrne, D., Fernald, J. G., & Reinsdorf, M. B. (2016). Does the United States have a productivity slowdown or a measurement problem? Washington, D.C.: Brookings Papers on Economic Activity.

[12] Summers, L. H. (2015, May). Demand Side Secular Stagnation. *American Economic Review, 105*(5), 60–65.

[13] Rogoff, K. (2015, April 22). Debt supercycle, not secular stagnation. Retrieved from http://voxeu.org/article/debt-supercycle-not-secular-stagnation

[14] Gordon, R. (2016). *The Rise and Decline of American Growth: The U.S. Standard of Living Since the Civil War*. Princeton University Press.

[15] Olson, M. (1982). *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities.* Yale University Press.

[16] Smith, A. (1904, 1776). *The Wealth of Nations* (5th Ed.). Retrieved from http://www.econlib.org/library/Smith/smWN.html

[17] Baily, M. N., & Montalbano, N. (2016). Why Is U.S. Productivity Growth So Slow? Possible Explanations and Policy Responses. Washington: Brookings Institution.

[18] Lemley, L. (2012). Software Patents and the Return of Functional Claiming. *Stanford Public Law Working Paper No 2117302*.

[19] Atkinson, R.D. (2016). Think Like an Enterprise: Why Nations Need Comprehensive Productivity Strategies. Washington: Information Technology and Innovation Foundation.

[20] Caldera, A., & Johansson, Å. (2013). The price responsiveness of housing supply in OECD countries. *Journal of Housing Economics, 22*(3), 231-249.

[21] The one minor difference between GDP and income is that the value of taxes on production is included in the gross domestic income formula. Those production taxes reflect income that would have gone to households or owners but instead goes to the government. Direct taxes on income are not included because that income is already counted in pretax accounts. Fox, R. D. (2012). 1–10, 13. In *Concepts and Methods of the U.S. National Income and Product Accounts.* Retrieved from http://www.bea.gov/national/pdf/methodology/chapters1-4.pdf

[22] Stiglitz, J., Sen, A., & Fitoussi, J.P. (2009). *Report of the Commission on the Measurement of Economic Performance and Social Progress.* CMEPSP.

[23] For discussion, see Deaton, A. (2013). *The Great Escape: Health, Wealth and the Origins of Inequality.* Princeton University Press.

[24] Boix, C. (2015). *Political Order and Inequality. Their Foundations and their Consequences for Human Welfare.* New York: Cambridge University Press.

[25] Hall, R. E., & Jones, C. I. (2007). The Value of Life and the Rise in Health Spending. *The Quarterly Journal of Economics, 122*(1), 39-72.

[26] Cutler, D. (2014). The Quality Cure: How Focusing on Health Care Quality Can Save Your Life and Lower Spending Too. University of California Press.

[27] The Personal Consumption Expenditure (PCE) price index largely follows the Bureau of Labor Statistics' Consumer Price Index (CPI) and even uses data from the latter, but they differ in a few important respects. The PCE includes healthcare spending done by businesses and government programs on behalf of consumers (i.e., producer prices), whereas the CPI only includes out-of-pocket medical expenses paid for directly by consumers. See McCully, C. P., Moyer, B. C., & Stewart, K. J. (2007). Comparing the Consumer Price Index and the Personal Consumption Expenditures Price Index. *Survey of Current Business*. Bureau of Economic Analysis. For list of data sources in the PCE, see here: https://www.bea.gov/national/xls/pce_deflators_faq_new_stub.xls

[28] For a list of CPI estimates that include quality adjustments, see here: http://www.bls.gov/cpi/cpihqaitem.htm; for discussion of rental inflation methods, see here: McCarthy, J., Peach, R. W., & Ploenzke, M. S. (2015). The Measurement of Rent Inflation. *Staff Report No. 425*. The Federal Reserve Bank of New York. Owners' equivalent rent (which is the value of shelter imputed to homeowners as if they were renting to themselves) is adjusted for inflation and quality using similar methods, described here: Campbell, L. L. (2006). Updating the Housing Age-Bias Regression Model in the Consumer Price Index. CPI Detailed Report. Retrieved from http://www.bls.gov/cpi/cpiagebias.pdf

[29] Start with BEA data on the sector share of GDP for each of the four sector-industries for 1980 and 2015; call this S(1980) or S(2015) for share in 1980 or 2015. Multiply S(1980) by Price(2015)/Price(1980). The product is the sector's contribution to inflation in percentage point terms, using 1980 weights; one can do the same using 2015 weights, or use the geometric mean weight (S(1980) * S(2015))^.5) as the weight, which is similar to the Fisher Index or Marshall-Edgeworth index and is done to adjust for substitution effects. The final step is to divide the percentage point contribution for each sector by total inflation (2.5%) to get the contributions in terms of shares.

[30] This method subtracts out the sector contributions to inflation from total inflation and recalculates real GDP growth from nominal growth using the smaller inflation index. In reality, a major shift in prices would have changed behavior on spending and investment in ways that no one could anticipate, so these should be taken as rough estimates.

[31] Jorde, L., & Wooding, S. Genetic variation, classification, and "race." *Nature Genetics Supplement, 36*(11).

[32] Tienda, M., & Mitchell, F. (Eds.) (2006). *Hispanics and the Future of America*. Washington, D.C.: The National Academies Press

[33] Chansky, B., Garner, C., & Raichoudhary, R. (2013). Measuring Output and Productivity in Private Hospitals. U.S. Bureau of Labor Statistics.

[34] Hult, K. J., Jaffe, S., & Philipson, T. J. (2016). How Does Technological Change Affect Quality-Adjusted Prices in Health Care? Evidence from thousands of innovations. University of Chicago Working Paper.

[35] Cutler, D., Deaton, A., & Lleras-Muney, A. (2006). The Determinants of Mortality. *Journal of Economic Perspectives, 20*(3), 97–120.

[36] Based on author's analysis of age-adjusted mortality change by cause of death from CDC Wonder from 1999 to 2014 for all races and ages.

[37] Fryar, C. D., Carroll, M. D., & Ogden, C. L. (2014). Prevalence of overweight, obesity, and extreme obesity among adults: United States, 1960-1962 through 2011-2012**.** National Center for Health Statistics Health E-Stat. Retrieved from http://www.cdc.gov/nchs/data/hestat/obesity_adult_11_12/obesity_adult_11_12.htm

[38] Cawley, J. & Meyerhoefer, C. (2012). The Medical Care Costs of Obesity: An Instrumental Variables Approach. *Journal of Health Economics, 31*(1), 219–230.

[39] Crude and Age-Adjusted Incidence of Diagnosed Diabetes per 1,000 Population Aged 18-79 Years, United States, 1980-2014. Retrieved from http://www.cdc.gov/diabetes/statistics/incidence/fig2.htm

[40] Yoon, S. S., Ostchega, Y., & Louis, T. (2010). Recent Trends in the Prevalence of High Blood Pressure and its Treatment and Control, 1999–2008. *NCHS Data Brief,* (48).

[41] Child Trends DataBank. Low and Very Low Birthweight Infants. Retrieved from http://www.childtrends.org/?indicators=low-and-very-low-birthweight-infants

[42] Currie, J. (2009). Healthy, Wealthy, and Wise: Socioeconomic Status, Poor Health in Childhood, and Human Capital Development. *Journal of Economic Literature, 47*(1), 87-122; Figlio, D., Guryan, J., Karbownik, K., & Roth, J. (2014). The Effects of Poor Neonatal Health on Children's Cognitive Development. *American Economic Review, 104*(12), 3921-3955

[43] Agrawal, P. (2015). Maternal mortality and morbidity in the United States of America. *Bulletin of the World Health Organization, 93*(3); The World Bank and the United Nations Population Division. (2014). Trends in maternal mortality: 1990 to 2013. Geneva: World Health Organization.

[44] Case, A., & Deaton, A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Science, 112*(49), 15078-15083.

[45] Social Security Administration. Retrieved from https://www.ssa.gov/oact/STATS/dibStat.html

[46] Krueger, A. B. (2016). Where Have All the Workers Gone? Working Paper.

[47] Ibid.

[48] Analysis of 1980 and 2015 National Health Interview Survey microdata. For almost all age groups, the share of people who received healthcare from a medical professional in the previous two weeks has increased by between two to 10 percentage points.

[49] U.S. Centers for Disease Control and Prevention. Trends in Current Cigarette Smoking Among High School Students and Adults, United States, 1965–2014. Retrieved from http://www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/index.htm

[50] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health. Retrieved from http://www.samhsa.gov/data. For 1979 data, see: Office of Applied Studies, National Household Survey on Drug Abuse Advance Report # 18. Retrieved from http://media.samhsa.gov/data/nhsda/AR18TTOC.HTM

[51] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health. Retrieved from http://www.samhsa.gov/ data. For 1979 data, see: Office of Applied Studies, National Household Survey on Drug Abuse Advance Report # 18. Retrieved from http://media.samhsa.gov/data/nhsda/AR18TTOC.HTM

[52] Frenk, S. M., Porter, K. S., & Paulozzi, L.J. (2015) Prescription opioid analgesic use among adults: United States, 1999–2012. *NCHS data brief, 189*. Hyattsville, MD: National Center for Health Statistics.

[53] Daubresse, M., et al. (2013) AMBULATORY DIAGNOSIS AND TREATMENT OF NON-MALIGNANT PAIN IN THE UNITED STATES, 2000–2010. *Medical care, 51*(10).

[54] Deyo, R.A., et al. (2009). Overtreating Chronic Back Pain: Time to Back Off? *J Am Board Fam Med, 22*(1), 62-68; Nahin, R., et al. (2016). Evidence-Based Evaluation of Complementary Health Approaches for Pain Management in the United States. *Mayo Clin Proc, 91*(9), 1292-1306.

[55] Wang, D. D., Leung, C. W., Li, Y., et al. (2014). Trends in Dietary Quality Among Adults in the United States, 1999 Through 2010. *JAMA Intern Med, 174*(10), 1587-1595; Wang, D. D., Li, Y., Chiuve, S. E., Hu, F. B., & Willett, W. C. (2015). Improvements In U.S. Diet Helped Reduce Disease Burden And Lower Premature Deaths, 1999–2012; Overall Diet Remains Poor. *Health Affairs [Internet], 34*(11), 1916-1922.

[56] U.S. Department of Agriculture, Economic Research Service. Calories. Retrieved from http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system.aspx

[57] U.S. Department of Agriculture, Economic Research Service. Nutrient Availability. Retrieved from http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system.aspx

[58] U.S. Department of Agriculture, Economic Research Service. Sugars and sweeteners added. Retrieved from http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system.aspx

[59] U.S. Department of Agriculture, Economic Research Service. Nutrients. Retrieved from http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system.aspx

[60] U.S. Department of Health and Human Services, Centers for Disease Control, National Center for Health Statistics. (2015). Health, United States, 2015. Washington, D.C. Retrieved from http://www.cdc.gov/nchs/data/hus/hus15.pdf#065. Federal guidelines recommend at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity a week and muscle-strengthening activities at least twice a week.

[61] Ibid.

[62] Bureau of Labor Statistics, American Time Use Survey. Tables A1 for 2003 and 2015. Retrieved from http://www.bls.gov/tus/tables.htm. 18.5% and 18.3% of Americans exercised each day in 2003 on weekdays and weekends, respectively; the comparable figures in 2015 were 21.5% and 19.8%.

[63] OECD. (2016). Health spending (indicator). doi: 10.1787/8643de7e-en

[64] OECD Health Statistics. (2015). Retrieved from http://dx.doi.org/10.1787/health-data-en.

[65] OECD Health Statistics. (2015). Retrieved from http://dx.doi.org/10.1787/health-data-en.

[66] Hathaway, I., & Rothwell, J. (2015, September 10). A cure for health care inefficiency? The value and geography of venture capital in the digital health sector. Brookings Institution.

[67] Average low birth weight share of live births for 2014 and 2013, using data from OECD Health Statistics 2016, via OECD.Stat.

[68] The OECD reports that Americans' subjective health status (how they respond when asked "what is the general status of your health?") is the third highest in the world, behind only New Zealand and Canada. But as the OECD admits, the responses in these countries are biased because respondents were presented with different choices. Gallup's World Poll overcomes this methodological challenge by asking the same question to people around the world. This analysis calculates the responses to health questions in five-year age bands by country, using survey sample weights; then these age-band-level responses by country are re-weighed to the international average age distribution, which gives larger weight to younger groups than the U.S. age distribution would otherwise.

[69] Other evidence directly links the quality of healthcare services to both subjective health status and mortality, as healthcare service reforms in Massachusetts were found to have improved health. Sommers, B., Long, S. K., & Baicker, K. (2014). Changes in Mortality After Massachusetts Health Care Reform. *Ann Intern Med, 160*(9), 585.

[70] Nolte, E., & McKee, C. M. (2008). Measuring The Health Of Nations: Updating An Earlier Analysis. *Health Affairs, 27*(1), 58-71

[71] Nolte, E., & McKee, C. M. (2008). Measuring The Health Of Nations: Updating An Earlier Analysis. *Health Affairs, 27*(1), 58-71

[72] 1960 housing cost and family income data are from IPUMS-USA.

[73] Mean travel times have also increased. 1980 mean travel time taken from Census Bureau, http://www.census.gov/hhes/commuting/files/1990/ustime.txt; 2014 mean travel time from American Fact Finder 2014 American Community Survey.

[74] From 1980 to 2005, distance to work increased by three miles (eight to 11 miles). Eggers, F. J., & Thackeray, A. (2007). 32 Years of Housing Data. U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

[75] Eggers, F. J., & Moumen, F. (2013). American Housing Survey: A Measure of Poor Housing Quality. Department of Housing and Urban Development, Washington, D.C.

[76] Gordon, R. J., & vanGoethem, T. (2005, November). A Century of Housing Shelter Prices: Is There a Downward Bias in the CPI? *NBER Working Paper No. 11776.*

[77] Gordon and vanGoethem estimate the bias as 0.33 percentage points per year. To affect growth, it would need to be multiplied by the weight of housing in the PCE price index, which is about 10%.

[78] Mayerhauser, N., & Reinsdorf, M. (2007). Housing Services in the National Economic Accounts. U.S. Bureau of Economic Analysis.

[79] Berger, D., Guerrieri, V., Lorenzoni, G., & Vavra, J. (2015). House Prices and Consumer Spending. *University of Chicago Booth School Working Paper.* Retrieved from http://faculty.chicagobooth.edu/veronica.guerrieri/research/housing%2006-09-2015.pdf

[80] Kusisto, L. (2015, July 28). U.S. Homeownership Rate Hits 48-Year Low. *The Wall Street Journal.*

[81] Data from Department of Education, https://nces.ed.gov/programs/digest/d15/tables/dt15_236.15.asp?current=yes and https://nces.ed.gov/programs/digest/d09/tables/dt09_182.asp; figures are adjusted for inflation using PCE price index.

[82] Public Education Finances 2014. Retrieved from https://www2.census.gov/govs/school/14f33pub.pdf

[83] National Assessment of Educational Progress. Retrieved from http://www.nationsreportcard.gov/

[84] OECD Key Findings for United States. Retrieved from https://www.oecd.org/pisa/keyfindings/PISA-2012-results-U.S..pdf

[85] OECD. (2016). Skills Matter: Further Results from the Survey of Adult Skill. Paris, France.

[86] The youngest age group (those aged 16 to 19) do significantly worse, but they have also had fewer opportunities for advanced education.

[87] OECD. (2016). Skills Matter: Further Results from the Survey of Adult Skill. Paris, France.

[88] OECD. (2016). Skills Matter: Further Results from the Survey of Adult Skill. Paris, France.

[89] Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *The Journal of Economic Perspectives, 20*, 3-2.

[90] Since these are survey responses, the trend should not be confused with changes in receipts of disability benefits, which is affected by eligibility rules and procedures, as well as labor demand. At the same time, it is possible that people receiving disability benefits are more likely to report in a survey that they are disabled, even if that is not the case. Liebman, J. B. (2015). Understanding the Increase in Disability Insurance Benefit Receipt in the United States. *Journal of Economic Perspectives, 29*(2), 123–150.

[91] From 1996 to 2013, employer-based healthcare insurance coverage data are from the Current Population Survey, via IPUMS-CPS, and use the variable "hinsemp." For 2014, the data are from IPUMS-USA and use the same variable. See Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 4.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2015; Health insurance cost and compensation data are from the Bureau of Economic Analysis, National Income and Product Accounts.

[92] Katz, L., & Krueger, A. (2016). The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015. Princeton University Working Paper.

[93] Data from 2014 ACS, via IPUMS-USA.

[94] Badal, S. B., & Streur, J. H. (2014). Entrepreneurial Profile 10: Methodology Report. Gallup.

[95] These findings are based on regressions which control for race, gender, age and education in a sample of roughly 1,000 business owners.

[96] For VC data see: PwC/NVCA MoneyTree™ Report, Data: Thomson Reuters. For digital health trend, see: Hathaway, I., & Rothwell, J. A cure for health care inefficiency? The value and geography of venture capital.

[97] Census Bureau, Annual Survey of Entrepreneurs. (2014).

[98] Rothwell, J. (2014). Still Searching: Job Vacancies and STEM Skills. Washington, D.C.: Brookings Institution.

[99] From 2005 to 2014, these estimates are taken from the 2015 OMB report, retrieved from https://www.whitehouse.gov/sites/default/files/omb/inforeg/2015_cb/draft_2015_cost_benefit_report.pdf; For 2004, the estimate is taken from the 2014 OMB report; for 2001 to 2003, estimates are from the 2011 OMB report; and for all previous years (1981 to 2000), estimates are from the 2009 OMB report. 2001 USD figures are converted to 2015 USD using the BEA Personal Consumption Expenditures price index. OMB reports are available here: https://www.whitehouse.gov/omb/inforeg_regpol_reports_congress

[100] Office of Management and Budget. 2015 Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act.

[101] Mandel, M. & Carew, D. G. (2013). Regulatory Improvement Commission: A Politically-Viable Approach to U.S. Regulatory Reform. Progressive Policy Institute.

[102] Autor, D. H., Donohue III, J. J., & Schwab, S. J. (2006, May). The Costs of Wrongful Discharge Laws. *The Review of Economics and Statistics, 88*(2), 211-231.

[103] CWTS Leiden Ranking 2016. Retrieved from http://www.leidenranking.com/ranking/2016/list

[104] Ferretti, F. (2015). Unhealthy Behaviours: An International Comparison. *PLoS ONE, 10*(10).

[105] National Research Council. (2013). Institute of Medicine (U.S.). Woolf, S. H., & Aron, L. (Eds.). Washington, D.C.: National Academies Press.

[106] Kearns, C. E., Schmidt, L. A., & Glantz, S. A. (2016). Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents. *JAMA Internal Medicine.*

[107] Lu, J. F., & Hsiao, W. C. (2003). Does Universal Health Insurance Make Health Care Unaffordable? Lessons From Taiwan. *Health Affairs, 22*(3), 77-88.

[108] Morra, D., Nicholson, S., Levinson, W., Gans, D., Hammonds, T., & Casalino, L. (2011). U.S. physician practices versus Canadians: spending nearly four times as much money interacting with payers. *Health Affairs, 30*(8), 1443-50; Minnot, J. (2010). What Are the Costs to Physicians of Administrative Complexity in Their Interactions with Payers? *Changes in Healthcare Financing and Organization, 13*(2).

[109] Morra, D., Nicholson, S., Levinson, W., Gans, D., Hammonds, T., & Casalino, L. (2011). U.S. physician practices versus Canadians: spending nearly four times as much money interacting with payers. *Health Affairs, 30*(8), 1443-50.

[110] Peterson, C., & Burton, R. (2007). U.S. Health Care Spending: Comparison with Other OECD Countries. Washington, D.C.: Congressional Research Service.

[111] Jiwani, A., Himmelstein, D., Woolhandler, S., & Kahn, J. G. (2014). Billing and insurance-related administrative costs in United States' health care: synthesis of micro-costing evidence. *BMC Health Services Research*, *14*, 556; Wikler, E., Basch, P., & Cutler, D. (2012). 3 Strategies for Reducing Health Care Administrative Costs. Washington, D.C.: Center for American Progress.

[112] Kleiner, M. M. (2015). Reforming Occupational Licensing Policies. Washington. D.C.: Brookings Institution.

[113] http://www.bls.gov/cps/certifications-and-licenses.htm; Kleiner, M. M., & Krueger, A. (2013). Analyzing the Extent and Influence of Occupational Licensing on the Labor Market. *Journal of Labor Economics, 31*(2), S173–S202.

[114] Institute of Medicine. (2011). The Future of Nursing: Leading Change, Advancing Health. Washington, D.C.: The National Academies Press.

[115] U.S. Bureau of Labor Statistics, 2015 Occupational Employment Statistics.

[116] U.S. Census Bureau, Services Survey. Retrieved from https://www.census.gov/services/index.html

[117] Kleiner, M. M., Marier, A., Park, K. W., & Wing, C. (2014). Relaxing Occupational Licensing Requirements: Analyzing Wages and Prices for a Medical Service. *NBER Working Paper 19906*.

[118] Peterson, C., & Burton, R. (2007). U.S. Health Care Spending: Comparison with Other OECD Countries. Washington, D.C.: Congressional Research Service.

[119] Kleiner, M. M., & Park, K. W. (2010). Battles Among Licensed Occupations: Analyzing Government Regulations on Labor Market Outcomes for Dentists and Hygienists. *NBER Working Paper 16560*.

[120] U.S. Bureau of Labor Statistics, 2015 Occupational Employment Statistics.

[121] National Conference of State Legislatures. CON Certificate of Need State Laws. Retrieved from http://www.ncsl.org/research/health/con-certificate-of-need-state-laws.aspx

[122] (2008, September 15). Joint Statement of the Antitrust Division of the U.S. Department of Justice and the Federal Trade Commission Before the Illinois Task Force on Health Planning Reform.

[123] National Conference of State Legislatures. CON Certificate of Need State Laws. Retrieved from http://www.ncsl.org/research/health/con-certificate-of-need-state-laws.aspx

[124] (2008, September 15). Joint Statement of the Antitrust Division of the U.S. Department of Justice and the Federal Trade Commission Before the Illinois Task Force on Health Planning Reform.

[125] Cooper, Z., Craig, S. V., Gaynor, M., & Reenen, J. V. (2015). The Price Ain't Right? Hospital Prices and Health Spending on the Privately Insured. N*ational Bureau of Economic Research Working Paper 21815*.

[126] Cooper, Z., Craig, S. V., Gaynor, M., & Reenen, J. V. (2015). The Price Ain't Right? Hospital Prices and Health Spending on the Privately Insured. N*ational Bureau of Economic Research Working Paper 21815*.

[127] This calculation multiplies annual hospital revenue ($953 billion) by .94 and subtracts this from actual revenue. Revenue is taken from the Census Bureau's Survey of Services.

[128] Gallup and Northwest Evaluation Association. (2016). Making Assessment Work for All Students: Multiple Measures Matters. Gallup.

[129] American Federation of Teachers. (2015). Quality of Worklife Survey. Retrieved October 2016, from http://www.aft.org/sites/default/files/worklifesurveyresults2015.pdf

[130] Nelson, H. (2013). Testing More, Teaching Less: What America's Obsession with Student Testing Costs in Money and Lost Instructional Time. American Federation of Teachers.

[131] Nelson, H. (2013). Testing More, Teaching Less: What America's Obsession with Student Testing Costs in Money and Lost Instructional Time. American Federation of Teachers.

[132] Hart, R., et al. (2015). Student Testing in America's Great City Schools: An Inventory and Preliminary Analysis. Council of the Great City Schools.

[133] Alvarez, L. (2014, November 9). States Listen as Parents Give Rampant Testing an F. *The New York Times.*

[134] Persson, J. (2015). Pearson, ETS, Houghton Mifflin, and McGraw-Hill Lobby Big and Profit Bigger from School Tests A CMD Reporters' Guide. Center for Media and Democracy.

[135] Lovenheim, M. The Effect of Teachers Unions on Education Production: Evidence from Union Election Certifications in Three Midwestern States. *Journal of Labor Economics, 27*(4), 525-587; Lovenheim, M., & Willen, A. (2015). A Bad Bargain: How Teacher Collective Bargaining Affects Students' Employment and Earnings Later in Life. *Education Next, Winter 2015, 16*(1).

[136] Corcoran, S. P., Evans, W. N., & Schwab, R. M. (2004). Changing Labor-Market Opportunities for Women and the Quality of Teachers, 1957–2000. *American Economic Association Papers and Proceedings, 92*(2).

[137] Hoxby, C. M., & Leigh, A. (2004). Pulled Away or Pushed Out? Explaining the Decline of Teacher Aptitude in the United States. *American Economic Review, 94*(2).

[138] Startz, D. (2016). Teacher pay around the world. Washington, D.C.: Brookings Institution.

[139] Hanushek, E., Piopiunik, M., & Wiederhold, S. (2014). The Value of Smarter Teachers: International Evidence on Teacher Cognitive Skills and Student Performance. *NBER Working Paper No. 20727.*

[140] Hanushek, E., Piopiunik, M., & Wiederhold, S. (2014). The Value of Smarter Teachers: International Evidence on Teacher Cognitive Skills and Student Performance. *NBER Working Paper No. 20727.*

[141] Hanushek, E., Piopiunik, M., & Wiederhold, S. (2014). The Value of Smarter Teachers: International Evidence on Teacher Cognitive Skills and Student Performance. *NBER Working Paper No. 20727.*

[142] U.S. Department of Education, Digest of Education Statistics. Table 208.20. Public and private elementary and secondary teachers, enrollment, pupil/teacher ratios, and new teacher hires: Selected years, fall 1955 through fall 2024. Retrieved from https://nces.ed.gov/programs/digest/d14/tables/dt14_213.10.asp

[143] Looney, A., & Yannelis, C. (2015). A crisis in student loans? How changes in the characteristics of borrowers and in the institutions they attended contributed to rising loan defaults. Brookings Papers on Economics Activity.

[144] Looney, A., & Yannelis, C. (2015). A crisis in student loans? How changes in the characteristics of borrowers and in the institutions they attended contributed to rising loan defaults. Brookings Papers on Economics Activity.

[145] Kelly, A. P. (2015). Exploring Institutional Risk-sharing. American Enterprise Institute.

[146] Desrochers, D. M., & Kirshstein, R. (2014). Labor Intensive or Labor Expensive? Changing Staffing and Compensation Patterns in Higher Education. Delta Cost Project.

[147] Desrochers, D. M., & Kirshstein, R. (2014). Labor Intensive or Labor Expensive? Changing Staffing and Compensation Patterns in Higher Education. Delta Cost Project.

[148] Source: Author analysis of IPEDS data from Delta Cost Project matched set (from 1987-2013) sample of level 1 (four-year institutions). Variables analyzed include fall_cohort_pct_instate and fall_cohort_num.

[149] Webber, D. (2016, September 13). Fancy Dorms Aren't The Main Reason Tuition Is Skyrocketing. Five Thirty Eight.

[150] Gyourko, J., Saiz, A., & Summers, A. (2008). A New Measure of the Local Regulatory Environment for Housing Markets: The Wharton Residential Land Use Regulatory Index. *Urban Studies, 45*(3), 693–729.

[151] Fischel, W. (2015). Zoning Rules: The Economics of Land Use Regulation. Lincoln Land Institute; Fischel, W. (1990). Do Growth Controls Matter? *Working Paper* 87-9. Cambridge: Lincoln Institute of Land Policy; Glaeser, E. L., Gyourko, J., & Saks, R. (2005). Why Have Housing Prices Gone Up? *American Economic Review, 95*(2), 329-333; Glaeser, E., & Gyourko, J. (2003). The Impact of Zoning on Housing Affordability. *Economic Policy Review,* (2), 21–39; Rothwell, J. T. (2009, June 4). The Effects of Density Regulation on Metropolitan Housing Markets. Retrieved from http://ssrn.com/abstract=1154146

[152] For population density changes from 2000 to 2010, see http://www.census.gov/population/metro/data/pop_pro.html

[153] Fischel, W. (2015). Zoning Rules: The Economics of Land Use Regulation. Lincoln Land Institute; Ganong, P., Shoag, D. (n.d.). Why Has Regional Income Convergence in the U.S. Declined? Revise and Resubmit at Journal of Urban Economics. Working Paper; Rothwell, J. (2009, June 19). The Origins of Zoning: Rural Settlements vs. Urbanization. Retrieved from: http://ssrn.com/abstract=1422737

[154] Median home value for 2014 is from the American Community Survey. Other than Palo Alto, only two other census places in the United States, Santa Monica and Newport Beach, both in California, have median home values above one million.

[155] The Bureau of Labor Statistics calculates that prices for "telephone hardware, calculators, and other consumer information items" fell to 24 cents for every dollar from 1997 to 2015.

[156] (2014, August 29). City of Palo Alto, Comprehensive Plan Update LAND USE Draft Existing Conditions Report.

[157] (2014). Census Bureau, Building Permits Survey. Retrieved from https://www.census.gov/construction/bps/

[158] McKenzie, B., Koerber, W., Fields, A., Benetsky, M., & Rapino, M. (n.d.). Commuter-Adjusted Population Estimates: ACS 2006-10. Journey to Work and Migration Statistics Branch, U.S. Census Bureau. Retrieved from http://www.census.gov/hhes/commuting/files/ACS/Commuter%20Adjusted%20Population%20Paper.pdf

[159] This analysis uses data from the 1990 Decennial Census and 2011-2014 American Community Survey. County employment and GDP growth were measured by the Quarterly Census of Employment and Wages. Housing costs were measured using median gross rent. Regression results are available upon request.

[160] Council of Economic Advisers. Benefits of Competition and Indicators of Market Power. (2016, April). Retrieved November 17, 2016, from https://www.whitehouse.gov/sites/default/files/page/files/20160414_cea_competition_issue_brief.pdf

ABOUT THE U.S. COUNCIL ON COMPETITIVENESS

The U.S. Council on Competitiveness is a nonpartisan leadership group of CEOs, university presidents, labor leaders, and national laboratory directors working to ensure U.S. prosperity.

ABOUT GALLUP

Gallup delivers analytics and advice to help leaders and organizations solve their most pressing problems. Combining more than 80 years of experience with its global reach, Gallup knows more about the attitudes and behaviors of employees, customers, students and citizens than any other organization in the world.

Gallup works with leaders and organizations to achieve breakthroughs in customer engagement, employee engagement, organizational culture and identity, leadership development, talent-based assessments, entrepreneurship and well-being. Our 2,000 professionals include noted scientists, renowned subject-matter experts and bestselling authors who work in a range of industries, including banking, finance, healthcare, consumer goods, automotive, real estate, hospitality, education, government and business-to-business (B2B).

For more information about Gallup solutions for optimizing business performance, please visit **www.gallup.com/contact**.

GALLUP®

World Headquarters

The Gallup Building
901 F Street, NW
Washington, D.C. 20004

t +1.877.242.5587
f +1.202.715.3045

www.gallup.com