# Is the Decline of the Middle Class Greatly Exaggerated?


## AUTHOR

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## ABSTRACT

Numerous articles and books are written describing the apparent shrinking, decline, or death of the American middle class.[1] In this chapter, I present several of the key facts and review the veracity of some of the more widely held conceptions. Income inequality in the United States has grown in the last 30 years; the middle deciles have made significantly less progress in pre-tax income than the top decile. However, the income distribution is not becoming bimodal; instead there is a noticeable movement of households from the middle of the distribution to the upper part of the distribution.[2] Households in the middle of the income distribution are experiencing positive growth in income and consumption, though at a slower pace than the growth at the top. In the last 30 years, the likelihood of owning a home, owning two cars, or sending a child to college has risen for households across the income distribution including those in the middle class. Disturbingly, lower GDP growth and increased inequality in the distribution of that growth have combined to reduce the probability that children outearn their parents at similar ages (Chetty et al. 2017). And measures of life expectancy and subjective well-being fell for some groups (Case and Deaton 2017; Blanchflower and Oswald 2019), although life expectancies in aggregate are again rising.


1 See for example Nelson (2019) and OECD (2019).

2 This analysis requires holding the breakpoints for each decile fixed at the beginning period cutoffs and examining the shift in the distribution. All of these long-term facts are pre-Covid recession.


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## 1. Introduction

Many popular press writers and social scientists associate increased inequality and declines in the number of manufacturing and middle-skill jobs with declines in middle-class living standards and even the disappearance of the middle class. Examples include the OECD's new volume *Under Pressure: The Squeezed Middle Class* (OECD 2019) and "The Shrinking American Middle Class" (Parlapiano, Gebeloff, and Carter 2019).

However, upheaval in the labor market and the loss of specific well-paying jobs is potentially a separate question from what is happening to the shape of the *income distribution* and to the consumption and well-being of Americans in the middle three quintiles of the income distribution. A hollowing out of the occupational skill distribution (Autor, Katz, and Kearney 2006) need not imply a hollowing out of the income distribution (Hunt and Nunn 2019).

In some survey data, 90 percent of Americans consider themselves to be middle class (Pew 2015). Thus it's not surprising for journalists to focus on the struggles of the middle class or for politicians to appeal to the middle class (i.e. nearly everyone) with tax cuts, higher education subsidies, and child-care subsidies.

My aim is to focus readers away from trying to count membership in the middle class and toward structural changes in the labor market and the slow growth in average income and consumption. In this chapter I review the facts on (a) growth in income inequality, (b) loss of manufacturing and middle-skill jobs, and (c) growth in income and consumption for households in different parts of the U.S. income distribution with a focus on the middle part of the distribution. I then examine changes in the shape of the income distribution as a whole.

The evidence leads me to conclude that the U.S. income distribution is not becoming bi-modal or hollowed out (Hunt and Nunn 2019). Nor are incomes and consumption for the middle of the distribution declining. Rather middle incomes are still growing, but less quickly than GDP growth due to increased inequality. In this same volume, Looney, Larrimore, and Splinter (2020) demonstrate that changes in federal taxation and spending have benefited the middle class so that *after*-tax and transfer income for the middle class has grown by 57 percent since 1979, versus 39 percent for pre-tax income.

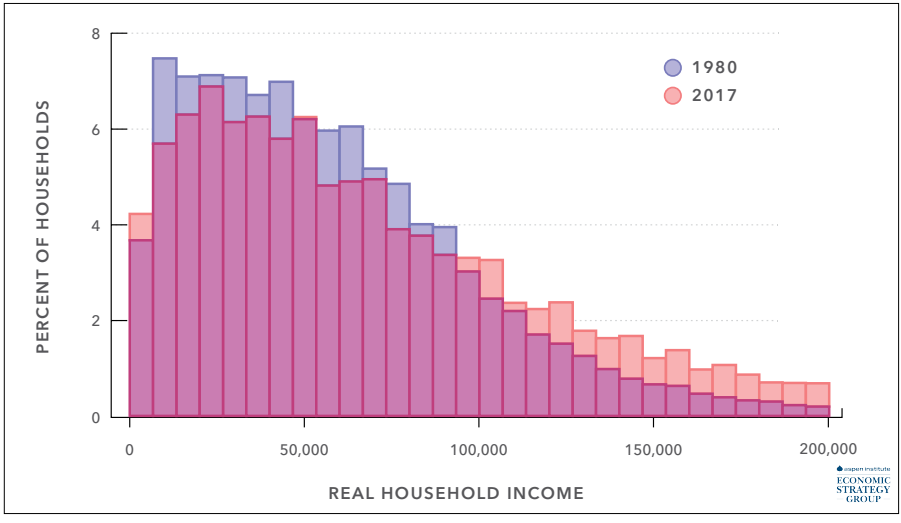
The notion that the middle class is shrinking depends upon the arbitrary goal posts one establishes to define which incomes count as middle class. If one defines middle class as having household income between 75 percent and 200 percent of the median household income, then the fraction of households who are "middle class" fell from 51 percent in 1980 to 43 percent in 2018 (see Table 1). However, this shift comes from more households moving *above* the 200 percent upper cutoff as opposed to falling *below* the lower 75 percent cutoff.

**Table 1: Traditional Measures of the Middle Class**

| YEAR | PERCENT OF HOUSEHOLD INCOMES BELOW 75 PERCENT OF THE MEDIAN | PERCENT OF HOUSEHOLD INCOMES BETWEEN 75 AND 200 PERCENT OF THE MEDIAN | PERCENT OF HOUSEHOLD INCOMES ABOVE 200 PERCENT OF THE MEDIAN |
|---|---|---|---|
| 1980 | 34.58 | 51.40 | 14.02 |
| 1990 | 35.28 | 48.45 | 16.28 |
| 2000 | 35.12 | 46.78 | 18.11 |
| 2010 | 36.48 | 43.94 | 19.58 |
| 2018 | 35.26 | 42.86 | 21.87 |

In a world with rising variation in income, it is expected that fewer households will fall between any two predetermined goal posts. If we instead examine changes in real household income from 1980 to 2017 (measured in 2019 dollars), we see that households are more likely to exit the lower part of the distribution and enter the upper part of the distribution as opposed to the reverse. In other words, significantly more households joined the upper tail of the distribution over this period. This is shown in Figure 1. In 1980, 48.5 percent of U.S. households had income of less than $50,000 (expressed in 2019 dollars). By 2017, this fraction had fallen to 40.7 percent. Trying to define the boundaries of the middle class and determine whether it is growing or shrinking is a somewhat futile exercise that distracts from the deeper social challenges that have been emphasized by many scholars.

**Figure 1. Distribution of Real Incomes, 1970 and 2017**




**Note:** American Community Survey/Census data on household income. Household income is expressed in 2019 dollars. Income is inflated using the Consumer Price Index (CPI).

The real challenges include the rapidly changing nature of work and the skills demanded in the labor market; the unequal distribution of income growth in the United States in which *median* income and consumption are growing less quickly than the economy as a whole; and the deterioration of happiness and mental health indicators (Case and Deaton 2015; Blanchflower and Oswald 2019).

The long-term trends discussed here took place before the COVID-19 induced recession, which has harmed the bottom quintile of wage earners much more than the middle- and upper-parts of the wage distribution (Berman 2020). The COVID-19 pandemic is likely to have long-term, negative impacts, which could reverse some of the long-term growth in consumption and well-being for the middle- and lowest-earning households documented here.

### *1. The Political Economy of Middle-Class Decline*

The most cited author to predict the collapse of the middle class is Karl Marx (1844) who foresaw that as capitalism grew, the income distribution would become bifurcated into workers and capital owners. The next 175 years have been a disappointment for this prediction, but the topic has remained a popular one.

Lester Thurow (1984) is among the first to draw a connection between decreases in the number of manufacturing (or middle-skill) jobs and the decline of the middle class. Thurow makes several points. First, he notes that smokestack industries such as auto and steel provide jobs for high-wage and skilled blue-collar workers. Second, he asserts that high-tech industries such as microelectronics (which replaced smokestack industries) tend to have only high- and low-wage jobs with no middle-wage jobs; this second claim is not well supported.

Third, Thurow observes that within manufacturing, unions were successful in transforming low-wage jobs into middle-wage jobs. And finally, international trade was negatively impacting employment in the auto, steel, and machine tool industries and that this was removing millions of middle-class jobs. These last two points are supported by the data and foreshadowed the empirical work of Autor, Dorn, and Hanson (2013) and many others. It's likely that automation has also had large negative effects on manufacturing employment.[3]

Thurow defined middle-class households as those earning between 75 percent of the median household income and 125 percent. The number of families that fell in this range went from 28.2 percent in 1967 to 23.7 percent in 1982. Interestingly, half of the "exit" was from more families moving above the cutoff and the other half was from additional families falling below the lower cutoff. A natural interpretation of

3 See Acemoglu and Restrepo (2017), Abraham and Kearney (2018) and Griswold (2020).

these facts is that variance in household incomes rose, particularly with the rise of two-earner families. Changing household sizes alone could account for some of the increased variance.

Recently the OECD issued its report titled "Under Pressure: The Squeezed Middle Class," which defines middle class as having a household income between 75 percent and 200 percent of the median household income. Across all OECD countries the fraction that fell within this range went from 64 percent in 1985 to 61 percent in 2015. The OECD concludes that the income distribution is being hollowed out. But again, it's quite possible that the variance of household income is simply rising and that using an arbitrary set of goal posts to label the middle class is not the best approach.

In Table 1, I use U.S. Census and American Community Survey Data from 1980 to 2018 to show that the OECD is correct; fewer households are within a specific band of 75 percent to 200 percent of median income. As mentioned, defining the middle class in this way, the fraction of middle-class households fell from 51.4 percent in 1980 to 42.9 percent in 2018. However, this is not due to bifurcation but rather to the fact that many households have moved above the upper cutoff of two times the median income (measured in 2018 dollars). As Figure 1 shows, the fraction of households above the upper cutoff has risen from 14 percent in 1980 to 21 percent in 2018. The income distribution has shifted to the right in real terms with fewer households in the lower levels of real income.

The OECD report notes that, "the middle class dream is increasingly only a dream for many." It's not clear how to accept or reject this statement. A more straightforward approach might be to ask whether homeownership or college attendance for children in the family has risen or fallen for people in the middle quintiles of the income distribution. I find that since the 1980s, homeownership, square footage of housing consumed, number of automobiles owned, and college attendance have all been rising. The one exception is the modest dip in homeownership that occurred immediately after the financial crisis of 2008.

Politicians frequently target the middle class for additional policies, subsidies, and tax cuts.[4] This is a sensible political strategy since most Americans consider themselves to be middle class. At the extreme end, a 2015 Pew survey found that 90 percent of Americans self-identified as middle class. In responding to questions about cost burdens under Medicare for All, Warren appears to suggest that everyone

4 See, for example, Senator Elizabeth Warren's (D-Massachusetts) plan to rebuild the middle class. https://elizabethwarren.com/plans#rebuild-the-middle-class or President Trump's proposed middle class tax cut https://www.politico.com/news/2020/02/14/trump-middle-class-tax-cut-115262.

excepting billionaires is in the middle class (Lybrand 2019). Other surveys find self-identified middle-class status of around 70 percent (Martin 2018).

Perhaps more importantly, Americans view being a homeowner and being hardworking as key determinants of being in the middle class. Unfortunately, half of Americans also view the middle class as shrinking in size. This belief in a declining middle class could be explained in one of several ways. Survey respondents might prefer the OECD/Thurow method of fixing certain income goal posts to define the middle class, and then observing the population to move outside of those goal posts. Or respondents might take newspaper reports of middle-class decline on faith. Or, like some of the articles cited above, survey respondents may equate rising income inequality and the disappearance of specific high-paying, non-college jobs for men with a shrinking middle class and declining incomes. This final explanation for the survey results strikes me as the most likely, and I now discuss some of the social challenges that are perhaps causing Americans to believe that consumption is declining and that the middle class is shrinking.

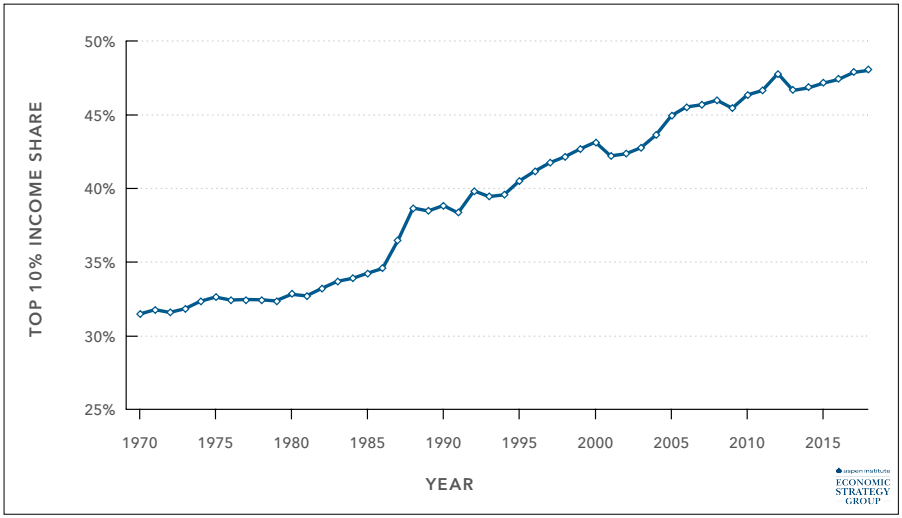
## 2. The Rise of Inequality

Pikkety and Saez (2003) and Saez (2018) document a stunning rise in pre-tax income inequality over the last 30 or 40 years. There are many different ways to make this point, but one simple way to see the magnitude of the increase is to consider the income share of the top decile of income (Saez 2018), which I reproduce in Figure 2. In 1967, the top decile accounted for about 35 percent of all income in the United States. By 2012, this was 51 percent.

The most cited papers on inequality by economists are concerned with income growth at the very top, meaning the top 0.1 percent, top 1 percent, or top 10 percent. Piketty and Saez tell us that the rich are getting much richer. But the astounding growth at the top of the distribution need not be making the middle class worse off in absolute terms.

Significant work has been done re-examining Pikkety and Saez's conclusions and pointing out some caveats. Slemrod (1995) and others have noted that accounting for tax reform that moved incomes from corporate to personal returns explains some of the rise. Adjusting for changes in household size, filing status, and taxes and transfers also makes an important difference (Burkhauser et al. 2012). Auten and Splinter (2018) account for tax unit size, the allocation of underreported income, and retirement income. They find that the top one percent's share of pre-tax income only rose by 4.1 percentage points from 1979 to 2014, versus the 7.6 percentage point rise

**Figure 2. Top Decile Share of Income**




**Note:** Author's calculation of data provided by Saez (2019) and Piketty and Saez (2003). This figure is a subset of Saez 2019 Figure 1. We show the share of income earned by the top 10 percent of earners, excluding capital gains, which are highly volatile and accrue disproportionately to the top 10 percent.

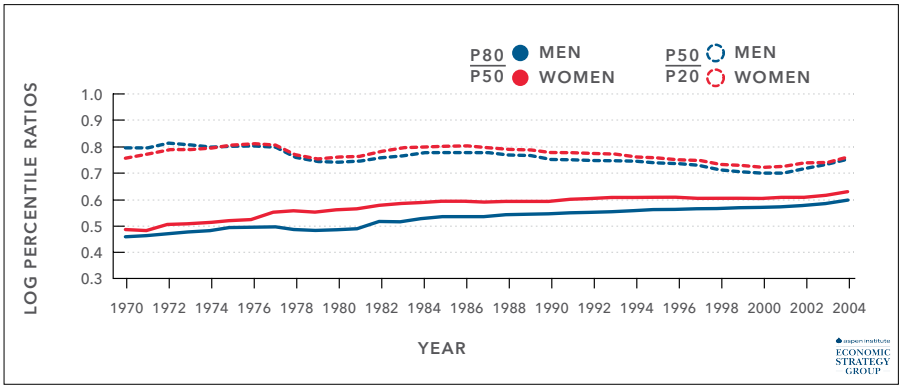
found by Pikkety, Saez, and Zucman (2018). Auten and Splinter (2018) also find that increased effective tax rates on top earners make the rise in the top one percent's share of *after-tax income only 0.7 percentage points* over the same time period.

There are two important points that are not captured by the basic analysis of top income shares. Consistent with Auten and Splinter's (2018) point about after-tax income, inequality of consumption has grown less rapidly than inequality of income. Krueger and Perri (2006) examine the period from 1980 to 2003. During this time the ratio of pre-tax incomes at the 90th percentile to incomes at the 10th percentile rose from 4.2 to 6, meaning the households at the 90th percentile had earnings six times that of households at the 10th percentile by 2003. But the same ratios for *consumption* only rose from 2.9 to 3.4.[5] This suggests that actual inequality of consumption moved by a lot less than inequality of income. How can this be? Krueger and Perri suggest that increased year-to-year volatility of income could be driving some of the rise in income inequality. Or taxes and transfers might enable poor or middle-income households to grow consumption even if their pre-tax income has grown slowly, as described by Looney, Larrimore, and Splinter in this volume.

5 Aguiar and Bils (2015) suggest that Krueger and Perri are too optimistic; when Aguiar and Bils account for measurement error in the consumption data, they find that consumption is also seeing growing inequality.

A more interesting question may concern income growth for households at the 50th percentile of income relative to households at the 80th percentile. Figure 3, reproduced from Kopczuk, Saez, and Song (2010), shows that in 1965, workers at the 80th percentile of income earned 48 percent more than workers at the 50th percentile. By 2004, workers at the 80th earned 62 percent more. While this represents an increase in income inequality, it's substantially less than the dramatic gains at the top of the distribution. During 1965–2004, the gap between the 50th percentile and the 20th percentile actually *decreased* a bit, meaning that workers at the bottom gained relative to workers at the median. In other words, growth in inequality in the upper-middle of the distribution (the 80-50 ratio) and in the lower-middle of the distribution (the 50-20 ratio) is not as severe as the pre-tax income inequality of everyone relative to the very top.

**Figure 3. Ratios of 80th to 50th Percentile of Income and 50th to 20th**




**Note:** Produced using the data provided by Kopczuk, Saez, and Song (2010). This graph is a subset of KSS Figure 2.

## 3. Job Polarization

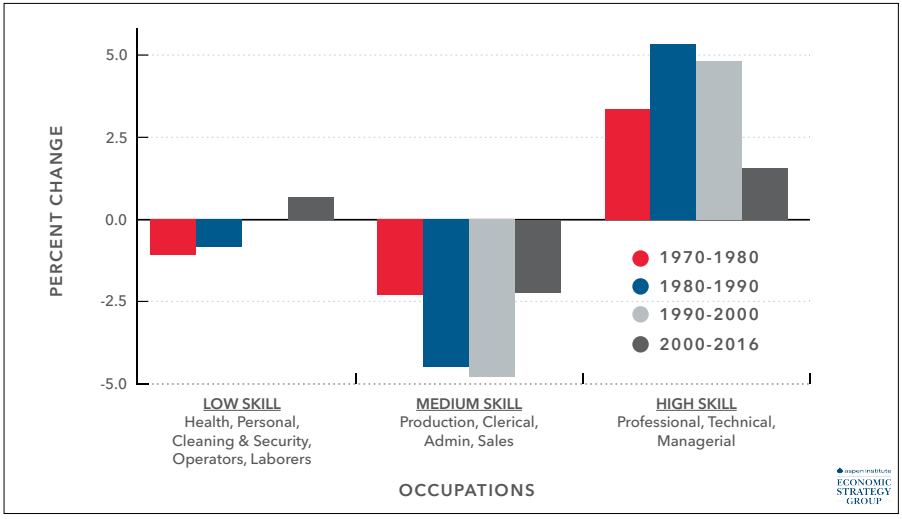
Perhaps more concerning to Americans than inequality statistics are visible losses of the jobs that have traditionally been stable, well-paying sources of employment for non-college-educated workers. Autor, Katz, and Kearney (2006) study *job polarization*. Suppose that technology makes it possible to replace workers at routine cognitive tasks (e.g., a bank clerk or a bookkeeper) and workers at routine manual tasks (production line work). Technology may also be complimentary to the skills of non-routine, high-cognitive jobs, such as managers and computer programmers, and may not substitute for lower-skill, service-sector jobs, such as retail and food service. The result is a loss of middle-skill jobs and growth of high- and low-skill jobs.

Autor, Katz, and Kearney (2006) and many subsequent papers, including Autor (2010), find evidence of job polarization. Autor, Katz, and Kearney (2006) also show large gains in the number of high-skill jobs, losses in middle-skill jobs, and small gains in the share of the lowest-skill jobs.

Autor (2019) groups occupational categories into three skill levels (Figure 4) and shows the change in the employment share of each skill group for each decade from the 1970s through the 2010s. Middle-skill occupations such as production, clerical, admin, and sales workers declined as a share of all employment by about 2.5 to 5 percentage points each decade[6]. Meanwhile, high-skill jobs, such as technicians, professionals, and managers were gaining share at a slightly faster rate, perhaps by 3 to 5.3 percentage points each decade. But interestingly in this latest analysis by Autor, low-skill jobs were *decreasing* as a share of all jobs each decade during the 1970s and 1980s, and only saw modest (1 percentage point) increases in the 2010s.

Thus, when we look at the labor market as a whole (including college and non-college-educated workers), job polarization is not extreme. As Autor notes, Figure 4 is not worrying since we see movement toward high-skill jobs and away from low- and middle-skill jobs. However, when Autor splits the data by non-college- versus

**Figure 4. Job Polarization**




**Note:** This figure is reproduced from Autor (2019), Figure 4.

6 The numbers in Figure 4 are the change in share of total hours worked that falls into each of three skill categories (low, middle, and high). Skill is determined by median wages in the occupation in 1980.

college-educated workers, we see worrying polarization among non-college workers. As Autor describes in this volume, these workers are transitioning from middle-skill to lower-skill occupations. Autor demonstrates that non-college-educated workers saw increases in the share of low-skill jobs by 3.0–3.5 percentage points *each* decade in the 1980s, 1990s, and 2000s.

## 4. Robots, Trade, the China Shock, and the Decline of Manufacturing Jobs

The job polarization literature is closely tied to recent work on trade shocks, automation, and industrial robots. As Abraham and Kearney (2018) demonstrate, it is likely that international trade and automation are chief causes for the elimination of jobs. They find that of the 4.5 percentage point decline in employment to population during 1999 to 2016, a full 1.04 percentage points is attributable to import competition from China while 0.37 percentage points is attributable to industrial robots.

Imports from China lead to a major shock to the number of manufacturing workers in the United States. During the period 2000 to 2007, the share of all U.S. spending on Chinese imports jumped from 2 percent to almost 5 percent. By 2018, the United States was importing $558 billion worth of goods and services each year (USTR, n.d.). In a study of commuting zones containing industries that are differentially exposed to trade competition with China, Autor, Dorn, and Hanson (2013), conclude that between 2000 and 2007, the more exposed commuting zones (at the 75th percentile of exposure) experienced lower employment growth by 0.8 percentage points and lower wage growth by 0.8 percentage points relative to commuting zones in the 25th percentile of trade competition exposure. Chinese import penetration has increased significantly in the 12 years from 2007 to 2019. Residents of the more affected commuting zones are also 2 to 3.5 percentage points more likely to receive federal assistance in the form of unemployment insurance (UI), Social Security Disability Insurance (SSDI), Supplemental Security Income (SSI), Temporary Assistance to Needy Families (TANF), or Supplemental Nutritional Assistance (SNAP).

Acemoglu and Restrepo (2017) use data on the presence of industrial robots across commuting zones to estimate the impact of robot penetration on employment and earnings. They document that from 1993 to 2007, robots in the United States rose from 0.4 robots per thousand workers to 1.4 per thousand. Importantly 39 percent of these robots were in auto manufacturing and 19 percent in electronics. Acemoglu and Restrepo use the cross-commuting zone variation in robot introduction to estimate that the introduction of robots reduced the employment-to-population ratio in the average commuting zone by 0.34 percentage points, and reduced wages

by 0.5 percentage points during 1993 to 2007. These are substantial impacts and could suggest that larger impacts are on the way as automation further ramps up.

## 5. Slow or Negative Growth in Wages

Greenstone and Looney (2011) is one of several papers showing that real wages for non-supervisory and production workers declined in the 1980s and only recently surpassed the 1979 level. In Figure 5, I show the graph of real wages for production and non-supervisory workers expressed in 2020 dollars. Here I use the standard Consumer Price Index (CPI) inflator to convert wages to 2020 dollars. Indeed, it is not a pretty picture. Wages fall in real terms through 1995 and then begin to grow, only recently regaining the 1979 peak.

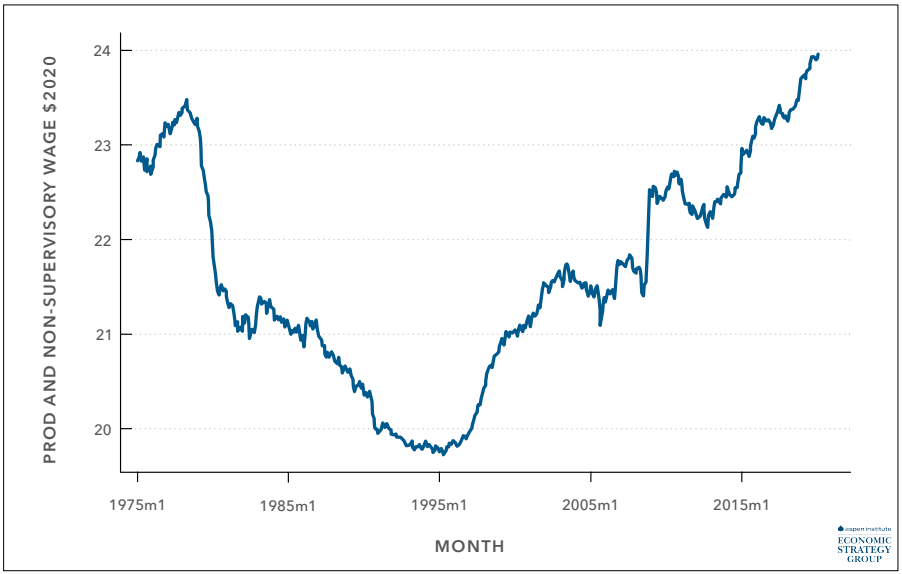
This picture is likely driven in part by the loss of middle-skill jobs and union jobs to automation and trade, as discussed above. The picture looks significantly less bad when we consider that the price adjustment used to convert to 2020 dollars may be overstated. In fact, if one were to graph the series of nominal wages, one would simply see a smooth, upward-sloping line. Much of the time series variation in median real wages is driven (in a mechanical sense) by the inflation series.

Many authors (Meyer and Sullivan 2009; Broda and Weinstein 2010 and the Bureau of Labor Statistics have quantified sources and magnitudes of bias to the CPI. The Boskin Commission noted at least four sources of bias: (1) bias from failing to include new goods; (2) bias from being unable to fully adjust for the quality of goods; (3) outlet bias stemming from the availability of new and cheaper ways to procure goods (e.g., Amazon); and (4) substitution bias, which stems from holding a basket of goods and services fixed, rather than recognizing that consumers adjust their consumption bundles toward less expensive goods.

Broda and Weinstein (2010) use scanner (bar code) level consumption data to examine how consumers respond to changes in price and availability of goods. They estimate that new goods bias and quality bias together caused CPI inflation to be overstated by 0.18 percentage points per year during 1994 to 2003. Failure to account for substitution of goods adds another 0.4 percentage points of upward bias (Broda and Weinstein 2008)[7]. Costa (2001) and Hamilton (2001) each suggest that CPI is biased upward by about 1.6 percent per year from 1972 to 1994. Bils and Klenow (2001) estimate an upward bias of 2.2 percent per year.

7 These authors estimate the total CPI bias to be 1 percentage point per year. This includes 0.31 percentage points of substitution and quality bias in the non-housing service sector.

**Figure 5. Real Wages of Production and Non-Supervisory Workers**




**Note:** Data are BLS wage data for production and non-supervisory workers adjusted using the CPI for Urban consumers. Data are accessed via the St. Louis's Federal Reserve Banks FRED data retrieval tool.

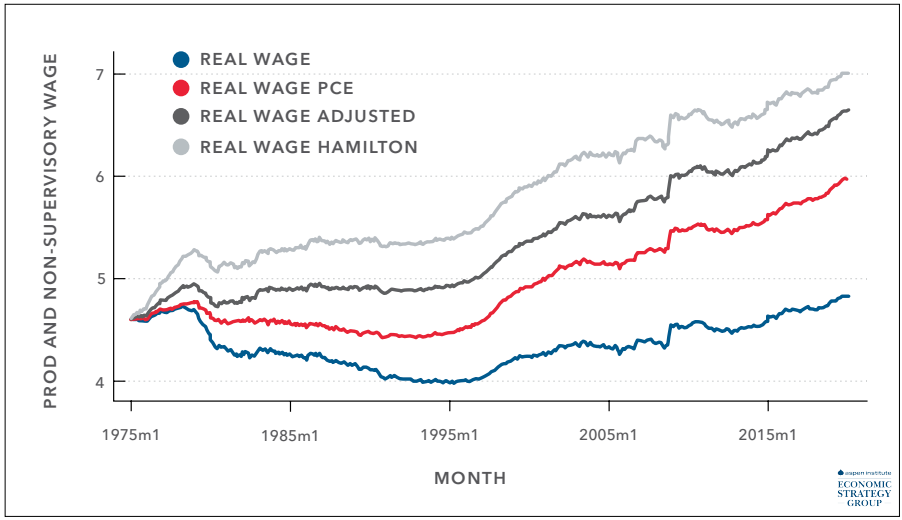
In Sacerdote (2017) I estimated real wages over time using several different methods to adjust the CPI. The results are updated through January 2020 and shown in Figure 6. The base case is the blue line, which uses the standard CPI adjustment. The red line switches the inflation adjustment from CPI to the Bureau of Labor Statistics Personal Consumption Expenditures (PCE) deflator. This is a price index that uses the change in prices for goods weighted by actual consumption in the United States, as opposed to fixing the contents of the basket. Here real wages grow by 29.5 percent from 1975 to 2020. The dark gray line assumes that CPI inflation is always overstated by 20 percent.[8] In that scenario, real wages grow by 44 percent from 1975 to 2020. Finally the light gray line uses the Hamilton/Costa method of adjustment, which relies on changes in food's share of the household budget to back out true changes in real income and hence CPI bias.[9] Using the method employed by Hamilton and Costa, real wages grew by 52 percent from 1975 to 2020.[10]

8 By this I mean I multiply the actual change in the CPI by 0.80.

9 Hamilton (2001) and Costa (2001) use the fact that changes in the non-food share of households budgets can be explained by (a) changes in the price of food and non-food, and (b) real income changes. CPI bias is estimated as the adjustment in CPI to make real income growth align with the rise (fall) in the non-food share of the household budget. If prices remained constant and the non-food share rose by 10 percent, then real incomes must have risen by 0.10/(elasticity of non-food share to income). The CPI adjustment (bias) is the change to CPI needed to make this identity hold.

10 Meyer and Sullivan (2009) find that accounting for CPI bias (and also for federal tax policy) leads to substantial declines in the poverty rate from 1960 to 2005.

**Figure 6. Real Wage as Published and Adjusted**




**Note:** The blue line shows the real wage deflating by the published CPI. The red line deflates using Bureau of Labor Statistics chain weighted PCE index, which allows the consumption bundle to change based on total consumption in the economy. The dark gray line assumes that CPI inflation is consistently overstated by 20 percent. The light gray line uses the Hamilton/Costa method to calculate (and remove) bias in the CPI.

Using this last (and largest) adjustment, I conclude that real wages grew by about 1.5 percent per year during 1996–2005, and 0.8 percent per year during 2006–2020. During the previous decade (1996–2005), real wage growth is substantially less than the growth in real GDP per capita of 2.3 percent.[11] For the most recent decade ending in July 2019, real wage growth has also been below the real annual GDP growth of 1.5 percent. Meyer and Sullivan (2009) conclude that the measured poverty rate in the United States is also substantially lower after accounting for CPI bias.

## 6. Growth in Consumption

If median wages are growing, what about the consumption of middle-income households? I provide some answers using data from the Bureau of Labor Statistics' Consumer Expenditure Survey. Results are shown in Table 2. I use two-person households as a simple way to eliminate variance from changes in household size. I divide the sample into households in the bottom income quintile, quintiles two through four (the middle class), and the top quintile. The top panel of Table 2 shows

11 Author's calculations from Bureau of Economic Analysis data.

consumption in 2018 dollars for quintiles two through four. I also report the implied annual growth rates between 1960 to 1986 and 1986 to 2018. In the lower panel I report the annual growth rates for only the bottom and top quintiles.

In column 1, I use the CPI to convert to 2018 dollars and report for various years (a) total expenditures; (b) spending on the necessities of food apparel health and utilities; (c) housing alone; and (d) food. Using the CPI, total real expenditures for the middle class have grown 0.80 percent per year in the earlier period and 0.55 percent per year in the more recent period. Consumption rose from $35,000 per year in 1960 to $51,800 per year in 2018. The picture looks rosier in column 2, when I inflate spending using the Hamilton/Costa method to adjust CPI.[12] Here consumption for middle-income Americans grows by 3 percent per year during 1960 to 1986 and 2 percent per year from 1987 to 2018.

Turning to individual components of consumption, housing expenditures (column 4) grew by 3 percent per year in the earlier period and 0.11 percent per year in the later period. Food expenditures (column 5) grew significantly less rapidly than total expenditures. The reduced budget share of food is consistent with the idea that American incomes are growing and that the real costs of housing and healthcare have risen.

In the remaining rows of Table 2, I report growth rates in real consumption for the bottom quintile and for the top quintile. The results are somewhat surprising but consistent with Kopczuk, Saez, and Song's 2010 analysis of income growth. Consumption for the lowest quintile has grown faster than for the middle class. Consumption growth for the highest quintile during the most recent 32 years has been 1.33 percent per year (using CPI inflation), which is 2.4 times the analogous rate of growth for the middle class. In 1986, consumption for the top quintile was 1.6 times that of the middle class. By 2018, this ratio expanded to 2.0, according to my calculations.

One concern discussed in this volume by Daniel Silverman is that the consumption of middle-class households may be highly variable since individual income is so volatile and households maintain very small liquidity buffers. He finds that while consumption of middle-class households does respond strongly to temporary shocks, these households also have a wide variety of mechanisms to partially smooth out such shocks, including delaying payment of bills and increasing reliance on government transfers.

12 Recall that the smaller (debiased) inflation estimates imply that historical real consumption was lower measured in 2018 dollars and hence more of the growth in reported consumption is real growth as opposed to price index growth.

**Table 2: Consumer Expenditure Survey Expenditures Over Time: Two-Person Households In Middle Two Quintiles of Income**

| YEAR | TOTAL EXPENDITURES (CPI INFLATION) | TOTAL EXPENDITURES (HAMILTON INFLATION) | FOOD, CLOTHING, HOUSING,HEALTH, & UTILITIES (CPI INFLATED) | HOUSING (CPI INFLATED) | FOOD (CPI INFLATED) |
|---|---|---|---|---|---|
| 1960 | 35,328 | 22,860 | 18,948 | 7,062 | 8,623 |
| 1972 | 40,335 | 27,350 | 19,614 | 8,696 | 8,709 |
| 1986 | 43,437 | 38,057 | 26,316 | 16,253 | 6,695 |
| 1996 | 45,028 | 42,467 | 26,776 | 16,009 | 7,246 |
| 2006 | 50,132 | 50,138 | 27,562 | 17,100 | 7,021 |
| 2018 | 51,803 | 51,810 | 27,743 | 16,834 | 7,689 |
| Annualized Growth 1960-1986 | 0.80% | 1.98% | 1.27% | 3.26% | -0.97% |
| Annualized Growth 1986-2018 | 0.55% | 0.97% | 0.17% | 0.11% | 0.43% |
| GROWTH FIGURES FOR BOTTOM 20% | | | | | |
| Annualized Growth 1960-1986 | 1.85% | 3.05% | 2.38% | 4.92% | -0.08% |
| Annualized Growth 1986-2018 | 1.75% | 2.17% | 1.02% | 0.85% | 1.47% |
| GROWTH FIGURES FOR TOP 20% | | | | | |
| Annualized Growth 1960-1986 | 0.20% | 1.38% | 1.13% | 3.11% | -1.36% |
| Annualized Growth 1986-2018 | 1.33% | 1.75% | 0.44% | 0.38% | 0.79% |

**Note:** This table shows annual CEX expenditures for two-person households within the middle two quintiles of income. All figures are in 2018 dollars. Column 1 uses CPI inflation. Column 2 uses CPI but adds bias adjustments of Hamilton and Costa. Columns 2-5 use CPI inflation for each relevant category of expenditure. The lower two panels show the growth in consumption for the bottom and top quintiles of income.

A different way to examine consumption for households at various parts of the income distribution is to look at the growth in the number of cars owned by households, or at homeownership, or at the number of bedrooms in one's home. Figure 7 uses Census data to show cars per household for the bottom quintile of household income, the middle class, and the top quintile of household income. All three lines grow slowly and roughly in parallel over time.

In 1980, middle-class households averaged fewer than 1.5 cars per household. This rose to 1.8 cars per household in 2017. These figures do not adjust for the decline in average household size, though the average household size has been roughly two since 1989. Cars per household show similar patterns for the highest and lowest

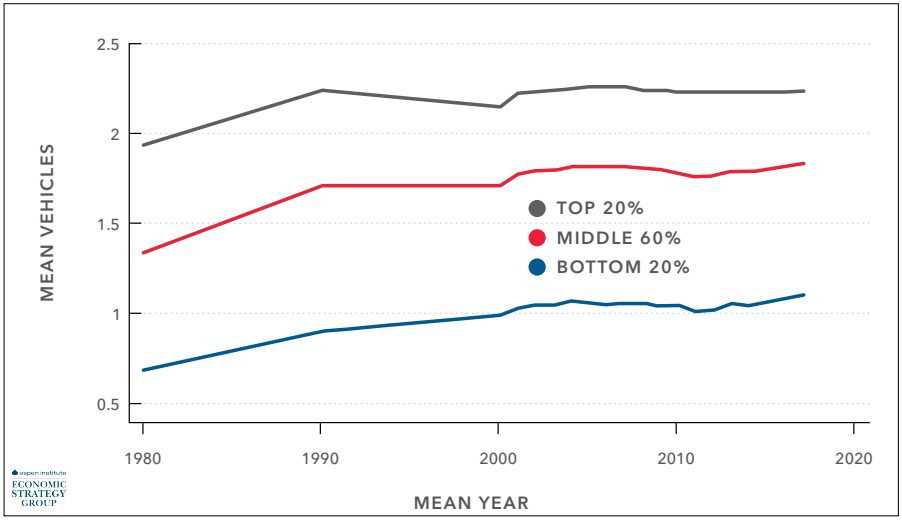
income quintiles. The highest quintile showed modestly slower growth than the other two categories.

The number of bedrooms per household (Figure 8) also shows slow growth. For middle-class households, the number of bedrooms grew from 2.5 in 1980 to 2.8 in 2017. These data include both renters and owners.

One well-defined measure of consumption is whether or not households own their own home. Homeownership for the middle class has only seen modest changes during 1980 to 2018. In 1980, 64 percent of middle-class households owned a home. This percentage rose during the housing bubble, as shown in Figure 9, peaking at around 75 percent during 2007 to 2009. Homeownership then declined modestly to end at 71 percent in 2017.

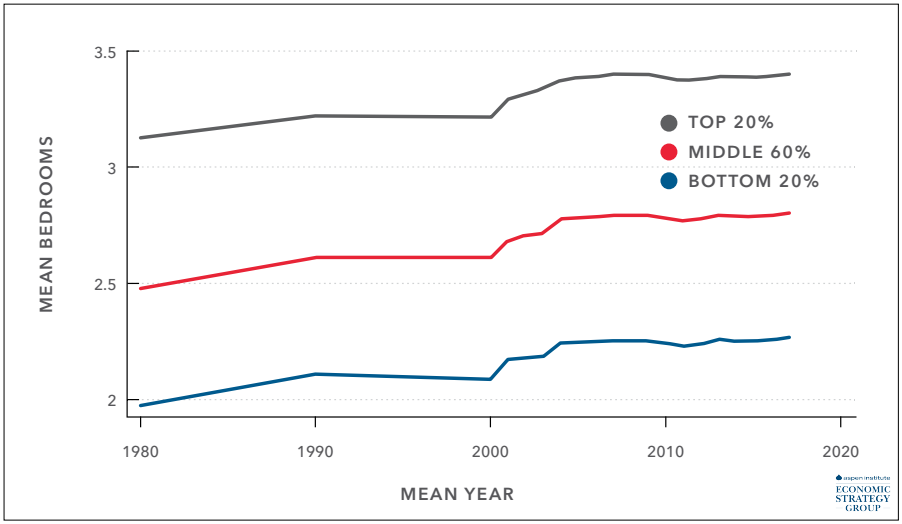
This graph does not support the contention that the dream of homeownership has become newly out of reach. At the same time, there is no evidence of growth in homeownership. Given the transactions costs (and reduced mobility) that come with owning, there are many households for which renting delivers higher utility than owning. It's possible that the United States has reached some long-run "natural rate" of homeownership.

**Figure 7. Mean Vehicles by Household Income**



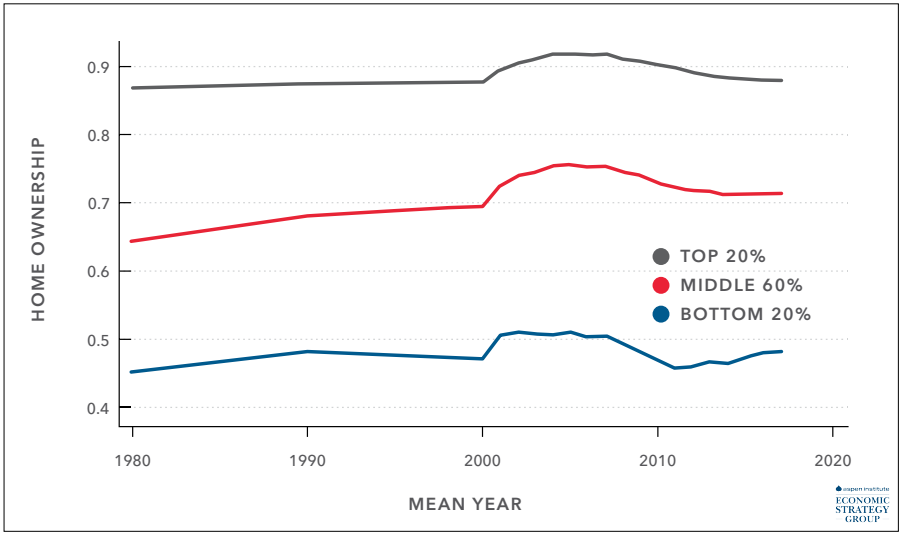

**Note:** Vehicles per household over time, based on Census and ACS data. Top 20 percent of households, ranked by household income, middle 60 percent, bottom 20 percent.

**Figure 8. Mean Bedrooms by Household Income**




**Note:** Bedrooms Per Household: Census and ACS data. Top 20 percent of households ranked by household income, middle 60 percent, bottom 20 percent.

**Figure 9. Mean Home Ownership by Household Income**




**Note:** Home ownership measured in Census and American Community Survey data. Top 20 percent of households ranked by household income, middle 60 percent, bottom 20 percent.

Finally, I ask whether middle-income families are more likely to have their young adult children enrolled in college. Results are shown in Figures 10 and 11. Figure 10 uses the CPS October data and shows the fraction of household members aged 16–24 who completed high school within the same calendar year *and* are currently enrolled in two-year colleges or four-year colleges and universities. I show separate lines for low, middle, and high-income families. Figure 10 makes clear that children from all levels of family income have seen steady growth in the likelihood of college enrollment from 1975¬ to 2017. All three lines grow roughly in parallel, though there is some evidence that low- and middle-income rates of college enrollment are converging slightly toward rates of enrollment for high-income families. Mean enrollment rates for high school completers in middle-income families were 65 percent by 2016. This comes with the important caveat that this analysis only measures college enrollment rates among families in which the child is counted as living at home.

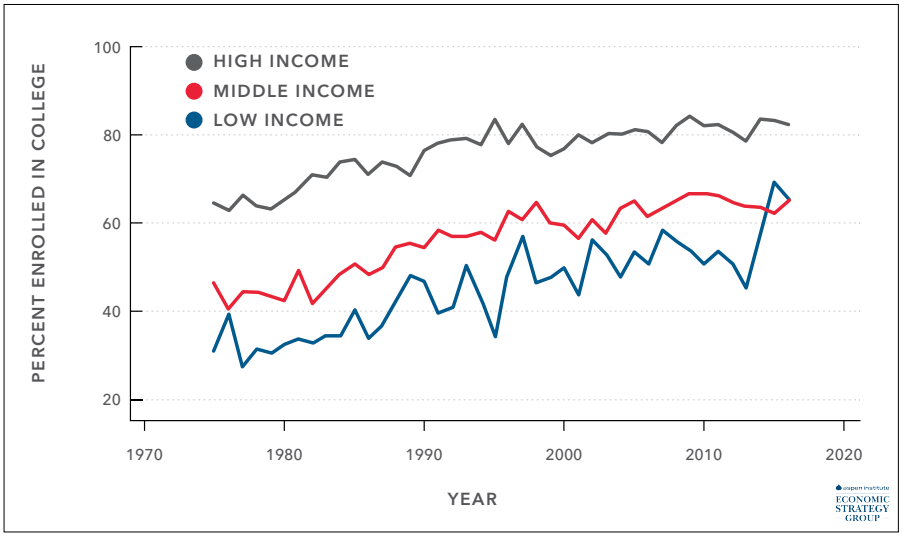
Figure 11 uses the ACS/Census data and conducts a similar analysis. In Figure 11, I limit the sample to families with young adults aged 19 to 22 living with their parents. I then sum up across households within each income category to measure the fraction of the young adults (19–22) who are enrolled in college. As in the CPS data, rates of college enrollment grew sharply for these young adults. And college enrollment rose more quickly among the lowest and middle quintiles than among young adults in the upper quintile of family income. One difference between Figure 10 and 11, is that in the latter, I do not limit the sample to newly minted high school graduates. This explains the lower average enrollment rate in Figure 11.

## 7. Costs of Higher Education

A widespread concern for middle-class families is the rising real cost of undergraduate education. Indeed, costs of attendance have gone up significantly, though not by as much as the public perceives. There is significant confusion between sticker price and average net cost of attendance (Levine, Ma, and Russell 2020). The College Board's *Trends in College Pricing* is a comprehensive source for time series data on sticker and net prices for tuition, fees, and room and board for public and private institutions. Consider the real increase in net tuition and fees at *four-year public institutions*. During the 1999–2000 school year, net tuition and fees averaged only $1,800 in 2019 dollars. This more than doubled to $3800 by 2018–2019 but from a low base price. Net tuition, fees, and room and board (together) rose from $9000 in 1999–2000 to $15,000 in 2018–2019, a 67 percent increase.

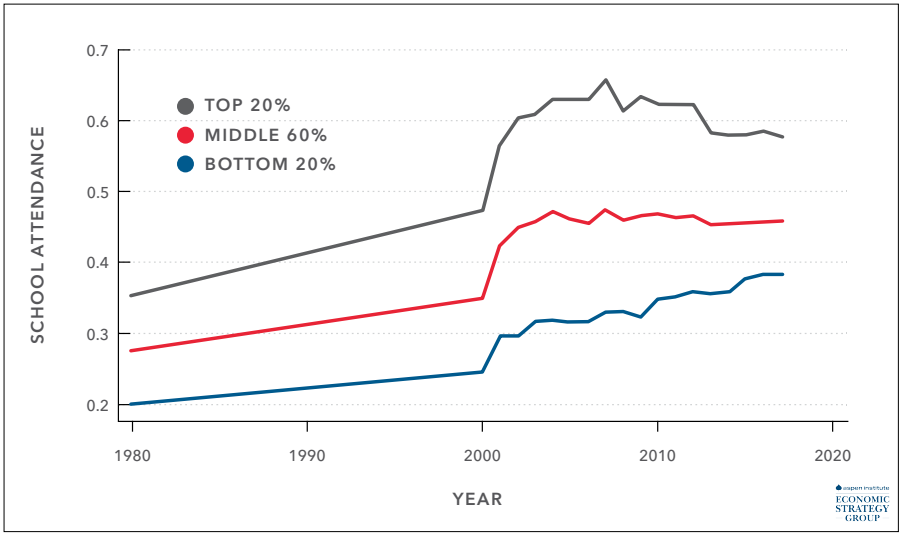
Two-year public institutions remain quite affordable once Federal Aid, including the Pell Grant, is taken into account. In 1999–2000, the average student at a two-year

**Figure 10. Annual College Enrollment of Recent High School Graduates**




**Note:** October Current Population Survey data are used to measure enrollment rate in two- and four-year post-secondary institutions. Sample includes young people ages 16–24 who completed high school within the current calendar year. These means are reported by the National Center for Education Statistics in the 2017 Digest of Educational Statistics.

**Figure 11. Fraction of Young Adults Enrolled in College**




**Source:** Census and ACS data.

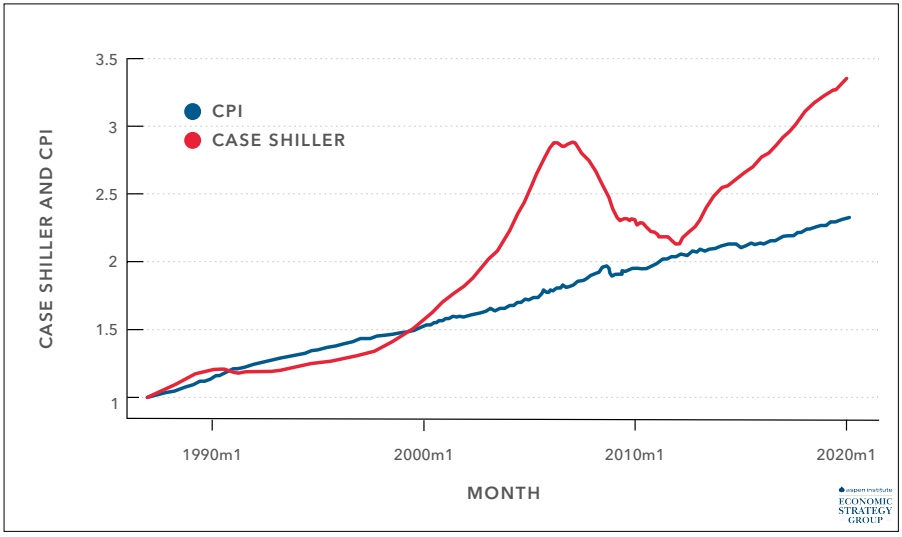
**Note:** We take the sample of households containing parents and their young adult children ages 19–22. We report the fraction of young adults 19–22 who are enrolled in college.

public institution paid net tuition and fees of $0. By 2018–2019, this *fell* to -$460, meaning that, on average, students were receiving refund checks to offset some living expenses.

## 8. Costs of Housing

There is no question that the real cost of housing has risen significantly. In Figure 14, I show the trend lines for the nominal Case Shiller Home Price Index. In short, housing is up by a factor of 4.4, whereas prices are only up by a factor of 2.2. Note that this rapid house price growth occurred after 2000. It occurred largely on the coasts, meaning that the 46 percent of the U.S. population that does not live in the East or West Coast states is much less affected by rising home prices. Of course, that means that for the people who do live on the coasts, the price run up effect is likely twice as severe as the national average. It is worth noting that home price increases are also a newfound source of wealth for middle-class families that do own a home.

**Figure 12. Growth in the Case Shiller Home Price Index and Growth in the CPI, 1987-2020**



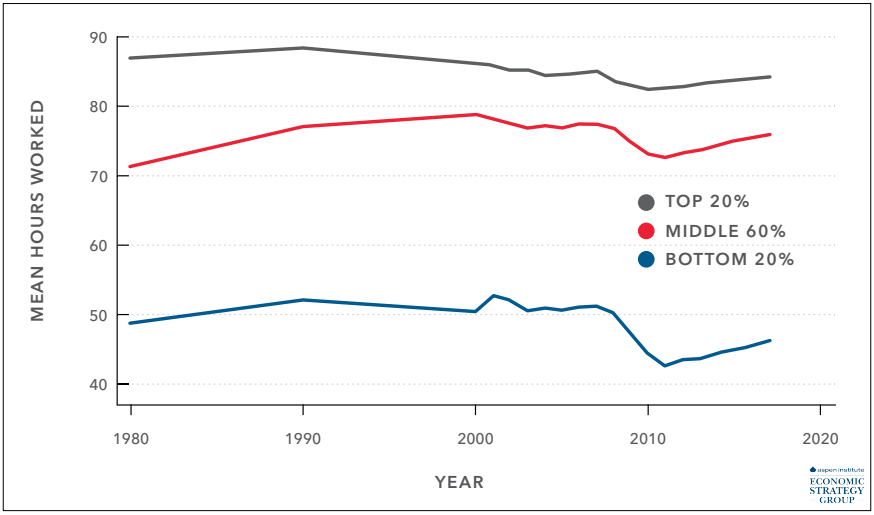

**Source:** S&P Dow Jones Indices LLC

## 9. Growth and Widening in the Income Distribution

As described in Figure 1, I compare the household distributions of income in 1980 and 2017. Both series are inflated to 2019 dollars using the CPI. To make the histograms readable, I limit the displayed portion of the graph to households with incomes between $0 and $200,000. The 1980 distribution is in blue and the 2017 distribution is in red. Areas where the distributions overlap appear as purple. From 1980 to 2017, there has been significant movement of households from incomes of $6,000 to $78,000 toward incomes above $78,000, all expressed in 2019 dollars. As Thurow and the OECD note, the shape of the income distribution is changing with less concentration around the median income. But as Hunt and Nunn show, this shift is due to the presence of more higher-income households, not a bifurcation into high- and low-income groups.

An important question is whether the rise in household income is driven by people in each household working more hours in formal employment. A common concern about the rise in earnings is that it may derive from more households having two full-time earners and from people having to hold multiple jobs to make ends meet. Figures 12 and 13 suggest that at least on average this is not the case. I limit the sample to households that have two working age adults (25–64 years old). These households may contain any number of children or older household members. In

**Figure 13. Mean Hours Worked per Week for Two-Person Households**



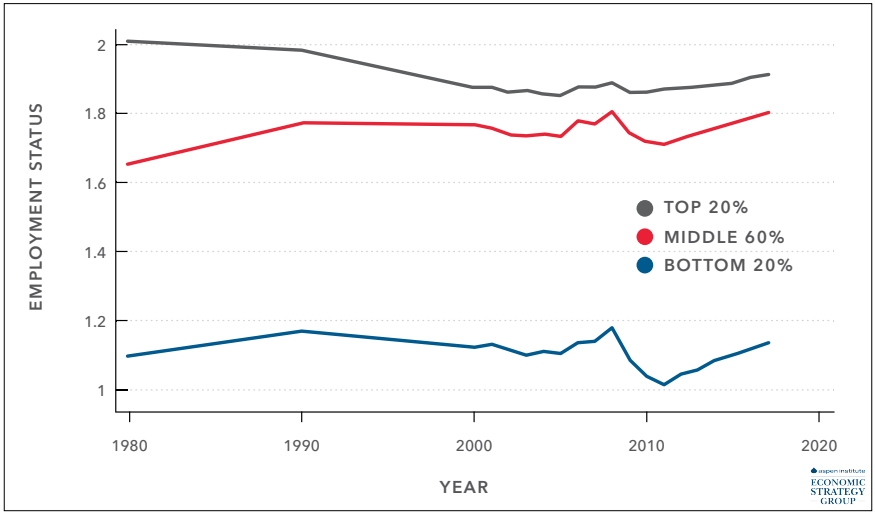

**Source:** Author's calculations from American Community Survey and Census microdata.

Figure 12, I plot the average (across households) of mean weekly hours worked by the household, where I sum across both members of the household. Total hours worked by the average household has fallen slightly since 2000. This is consistent with Alesina, Glaeser, and Sacerdote (2005), who document the long-run time trends in hours worked in the United States and Europe.

Jones and Klenow (2016) show that the United States and France have very different levels of average market income, but likely quite similar levels of utility. The French are working 535 hours per person per year (including all people), versus 877 per person in the United States. And life expectancy at birth in France is three years higher.

If I instead look at the average number of people working (among the two working age adults in my sample), the number working has followed a modestly different pattern than total hours averaged across households. This is shown in Figure 13. The statistic being graphed is the number of people (of a possible 2.0) who are employed. This is then averaged across households. The red line represents the middle three income quintiles. From 1980 to 2000, this number shows a steady rise from 1.65 to 1.77 workers per household. The number dips with the Great Recession and then rises further in the 2019 "hot" (pre-COVID) labor market.

**Figure 14. Mean Employment Status within Two-Person Households**




**Source:** Author's calculations from American Community Survey and Census microdata.

## 10. Declines in Happiness and Life Expectancy

Blanchflower and Oswald (2004) point out that even when incomes are rising, happiness can be flat or even falling. That could be the case with the U.S. middle class. Blanchflower and Oswald (2019) show that measured levels of happiness in the United States have been declining modestly since 1989. Their self-reported happiness index takes on the levels of very happy (3), pretty happy (2), or not very happy (1). For Americans with exactly a high school diploma, the index fell from about 2.2 in 1989 to 2.1 in 2016. To make this decline easier to interpret, they also report the fraction of high school grads responding with the lowest category (not very happy). This fraction increased from about 12 percentage points in the 1980s to 15 percentage points in 2016. There was also a very slight negative trend for Americans with some college or more. The trend in happiness for high school dropouts is particularly negative, but the authors point out that the composition of the high school dropout category has been changing very rapidly from the 1980s to present time.

Related to this decline in happiness is the rise in mortality among non-Hispanic whites aged 45–54, discussed by Case and Deaton (2017). After many decades of increasing life expectancy, American non-Hispanic whites saw increases in mortality from (very roughly) 380 per 100,000 in 1999 to 410 per 100,000 in 2013. This is equivalent to an additional 7,000 deaths per year relative to if mortality had remained constant at its 1999 level. For an individual person aged 45–54, this is a relatively modest absolute increase in the risk of dying, i.e. a 0.0004 (.04%) risk became a 0.00044 risk. However, it is a large increase in percentage terms, and a reversal of a longstanding positive trend. The typical middle aged, middle-class person still has a very low risk of death, but death is obviously an extreme outcome, and this is a warning sign of falling happiness and utility more broadly. The bad news is concentrated among individuals whose highest level of educational attainment is high school or less.

However, this trend toward lower life expectancy has recently reversed. The latest briefings from the National Center for Health Statistics (which contain data through 2018) show declines in drug-related deaths and increases in life expectancy at birth averaged across all Americans (Xu et al. 2020).

## Conclusion

The middle class continues to outlive the epitaphs that are written for it. Many authors reflect on the shrinking or growing of the number of households in the middle class. However, this exercise may not be that meaningful if it amounts to fixing an income range and then simply asking whether more or fewer people fall

within that range in a subsequent year. In this chapter I show that income in the United States is not becoming bifurcated into the rich and the poor. Instead the important phenomena are those that have been discussed by Piketty and Saez, Auten and Splinter (2018), Kopczuk, Saez, and Song (2010), Chetty et al. (2017) and Chetty et al. (2014). Specifically, there has been significant pre-tax income growth at the top of the distribution. This growth at the high end means that the middle of the distribution has experienced lower pre-tax income growth than mean growth or GDP per capita growth. Looney, Larrimore, and Splinter (2020) show that fiscal policies have partially offset this differential pre-tax growth. Importantly the gap between the 80th and 50th percentiles has only widened modestly since 1980, and the 20th percentile of earnings has actually gained ground relative to the median.

While wage growth and median household income have underperformed the economy from 1980 to 2019, the growth in these two metrics has still been positive. Changes in consumption are potentially more interesting than changes in income; measuring actual units of housing, cars, and higher education consumed eliminates some of the price index problems and tax and transfer measurement questions that plague real income measurement. As noted above, homeownership among households in the middle of the distribution has remained flat. The number of bedrooms in the dwellings of middle-income households has risen by about 10 percent, while the number of cars owned by those households has risen from an average of 1.5 cars to 2.0 cars. And college enrollment has increased significantly for the middle class (and all families) since 1980.

More concerning are the facts that the positive time trend in happiness has leveled off and maybe declining. And longevity did have a recent decline in specific age and race categories, namely non-college-educated whites aged 45–54.

The elimination of many middle-skill jobs during the last 40 years is an important phenomenon that has had a profound impact on individual families and communities. Occupational polarization does not appear to be causing income polarization (Hunt and Nunn 2019) but rather is a force for slower income growth in the lower half of the income distribution. Since 1980, households in the middle of the income distribution have undergone significant change and upheaval in the labor markets. On average, these households have been able to maintain and grow consumption, though possibly their mental health and happiness has declined. The question for the coming decades is whether the trend towards higher income inequality will abate and whether middle-income households will be successful in responding to labor market shifts by changing occupations, moving geographically, and investing even more deeply in human capital.

The COVID-19 recession presents an entirely new and severe challenge that is worse for low- and moderate-income families; ideally the epidemic and accompanying recession will be a short run phenomenon that does not reverse the positive trends discussed in this chapter.

Chetty et al. (2017) finds that a combination of rising inequality and slower growth has significantly reduced the probability that children are better off than their parents. Hopefully with sufficient investment in communities and in human capital, this lack of absolute upward mobility will reverse itself.

## References

Abraham, K.G., and Melissa S. Kearney. 2018. "Explaining the Decline in the U.S. Employment to Population Ratio: A Review of the Evidence." NBER Working Paper No. 24333, National Bureau of Economic Research.

Acemoglu, Daron. 2000. "Technical Change, Inequality, and the Labor Market." Working Paper No. 7800, National Bureau of Economic Research. http://www.nber.org/papers/w7800.

Acemoglu, Daron, and Pascual Restrepo. 2017. "Robots and Jobs: Evidence from US Labor Markets." Working Paper No. 23285, National Bureau of Economic Research. http://www.nber.org/papers/w23285.

Aguiar, Mark, and Mark Bils. 2015. "Has Consumption Inequality Mirrored Income Inequality?" *American Economic Review* 105(9): 2725–56. https://doi.org/10.1257/aer.20120599.

Alderson, Arthur S., Jason Beckfield, and François Nielsen. 2005. "Exactly How Has Income Inequality Changed?: Patterns of Distributional Change in Core Societies." *International Journal of Comparative Sociology*, 46, no. 5–6(Dec): 405–23. https://doi.org/10.1177/0020715205059208.

Alesina, Alberto, Edward L. Glaeser, and Bruce Sacerdote. 2005. "Work and Leisure in the U.S. and Europe: Why So Different?" Working Paper No. 11278, National Bureau of Economic Research. http://www.nber.org/papers/w11278.

Appelbaum, Binyamin. 2012. "Family Net Worth Drops to Level of Early '90s, Fed Says." *The New York Times,* June 11, 2012. NYTimes.com, https://www.nytimes.com/2012/06/12/business/economy/family-net-worth-drops-to-level-of-early-90s-fed-says.html.

Atkinson, Anthony B., and Andrea Brandolini. 2013. "On the Identification of the Middle Class." *Society for the Study of Economic Inequality*, 77–100.

Atkinson, Anthony, Thomas Piketty, and Emmanual Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49(1): 3–71.

Attanasio, Orazio, Erich Battistin, and Hidehiko Ichimura. 2004. "What Really Happened to Consumption Inequality in the US?" Working Paper No. 10338, National Bureau of Economic Research. http://www.nber.org/papers/w10338.

Austin, Benjamin A., Edward L. Glaeser, Lawrence H. Summers. 2018. "Jobs for the Heartland: Place-Based Policies in 21st Century America." Working Paper No. 24548, National Bureau of Economic Research.

Auten, Gerald, and David Splinter. 2017. "Income Inequality in the United States: Using Tax Data to Measure Long-Term Trends." Unpublished manuscript. http://davidsplinter.com/AutenSplinter-Tax_Data_and_Inequality_2017.pdf.

---. 2019. "Top 1 Percent Income Shares: Comparing Estimates Using Tax Data." AEA Papers and Proceedings, American Economic Association, 109: 307–11.

Autor, David H. 2008. "Trends in U.S. Wage Inequality: Revising the Revisionists." *The Review of Economics and Statistics* 90(Feb): 300–23. https://doi.org/10.1162/rest.90.2.300.

---. 2010. "The Polarization of Job Opportunities in the US Labor Market: Implications for Employment and Earnings." *Community Investments* 23(Jan): 11–16.

---. 2014. "Skills, Education, and the Rise of Earnings Inequality among the 'Other 99 Percent.'" *Science* 344, no. 6186(May): 843. https://doi.org/10.1126/science.1251868.

---. 2015. "Why Are There Still So Many Jobs? The History and Future of Workplace Automation." *Journal of Economic Perspectives* 29(3): 3–30. https://doi.org/10.1257/jep.29.3.3.

---. 2019. "Work of the Past, Work of the Future." Working Paper No. 25588, National Bureau of Economic Research. http://www.nber.org/papers/w25588.

---. 2020. "The Faltering Escalator of Urban Opportunity" In *Securing Our Economic Future*, edited by Amy Ganz and Melissa Kearney, Aspen Institute Press.

Autor, David H., and David Dorn. 2009. "The Growth of Low Skill Service Jobs and the Polarization of the U.S. Labor Market." Working Paper No. 15150, National Bureau of Economic Research. http://www.nber.org/papers/w15150.

Autor, David H., David Dorn, and Gordon H. Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103(6): 2121–68. https://doi.org/10.1257/aer.103.6.2121.

---. 2016. "The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade." *Annual Review of Economics* 8(1): 205–40. https:// doi.org/10.1146/annurev-economics-080315-015041.

Autor, David H., and Michael J. Handel. 2013. "Putting Tasks to the Test: Human Capital, Job Tasks, and Wages." *Journal of Labor Economics* 31(2): S59–96. https://doi.org/10.1086/669332.

Autor, David H., Lawrence F. Katz, and Melissa S. Kearney. 2006. "The Polarization of the U.S. Labor Market." *American Economic Review* 96(2): 189–94. https://doi.org/10.1257/000282806777212620.

Autor, David H., Frank Levy, and Richard J. Murnane. 2003. "The Skill Content of Recent Technological Change: An Empirical Exploration." *The Quarterly Journal of Economics* 118(4): 1279–333.

Bakija, Jon, Adam Cole, and Bradley T. Heim. 2012. "Jobs and Income Growth of Top Earners and the Causes of Changing Income Inequality: Evidence from US Tax Return Data."

Battistin, Erich. 2003. *Errors in Survey Reports of Consumption Expenditures.* IFS Working Papers, Institute for Fiscal Studies (IFS).

Berman, Yonatan. 2020. *The Distributional Short-Term Impact of the COVID-19 Crisis on Wages in the United States.* MPRA Working Paper No. 100466, University Library of Munich, Germany. https://ideas.repec.org/p/pra/mprapa/100466.html.

Bils, Mark, and Peter J. Klenow. "Quantifying quality growth." *American Economic Review* 91, no. 4 (2001): 1006-1030.

Bischoff, Kendra, and Sean F. Reardon. 2014. "Residential Segregation by Income, 1970–2009." In *Diversity and Disparities: America Enters a New Century,* edited by John Logan. New York: The Russell Sage Foundation.

Blanchflower, David G. 2020. "Is Happiness U-Shaped Everywhere? Age and Subjective Well-Being in 132 Countries." Working Paper No. 26641, National Bureau of Economic Research.

Blanchflower, David G., and Andrew J. Oswald. "Well-being over time in Britain and the USA." *Journal of public economics* 88, no. 7-8 (2004): 1359–1386.

Blanchflower, David G., and Andrew J. Oswald. 2008. "Is Well-Being U-Shaped over the Life Cycle?" *Social Science & Medicine*, 66, no. 8(Apr): 1733–49. https://doi.org/10.1016/j.socscimed.2008.01.030.

Blanchflower, David G, and Andrew J. Oswald. 2019. "Unhappiness and Pain in Modern America: A Review Essay, and Further Evidence, on Carol Graham's Happiness for All?" *Journal of Economic Literature* 57(2): 385–402.

Boskin, Michael J., Ellen L. Dulberger, Robert J. Gordon, Zvi Griliches, and Dale W. Jorgenson. 1998. "Consumer Prices, the Consumer Price Index, and the Cost of Living." *Journal of Economic Perspectives* 12(1): 3–26. https://doi.org/10.1257/jep.12.1.3.

Broda, Christian, and David E. Weinstein. 2010. "Product Creation and Destruction: Evidence and Price Implications." *American Economic Review* 100(3): 691–723. https://doi.org/10.1257/aer.100.3.691.

Buchinsky, Moshe. 1994. "Changes in the US Wage Structure 1963-1987: Application of Quantile Regression." *Econometrica* 62, no. 2(Mar): 405–405.

Burkhauser, Richard V., Shuaizhang Feng, Stephen P. Jenkins, and Jeff Larrimore. 2012. "Recent Trends in Top Income Shares in the United States: Reconciling Estimates from March CPS and IRS Tax Return Data." *The Review of Economics and Statistics* 94, no. 2(May): 371–88. https://doi.org/10.1162/REST_a_00200.

Card, David, and John E. DiNardo. 2002. "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles." *Journal of Labor Economics* 20(4): 733–83.

Case, Anne, and Angus Deaton. 2015. "Rising Morbidity and Mortality in Midlife among White Non-Hispanic Americans in the 21st Century." P*roceedings of the National Academy of Sciences* 112 (49): 15078–83. https://doi.org/10.1073/pnas.1518393112.

Champlin, Dell P., and Janet T. Knoedler. 2008. "American Prosperity and the 'Race to the Bottom:' Why Won't the Media Ask the Right Questions?" *Journal of Economic Issues* 42(1): 133–51.

Chetty, Raj, John N. Friedman, Nathaniel Hilger, Emmanuel Saez, Diane Whitemore Schanzenbach, and Danny Yagan. 2011. "How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project STAR." *The Quarterly Journal of Economics* 126(4): 1593–660.

Chetty, Raj, David Grusky, Maximilian Hell, Nathaniel Hendren, Robert Manduca, and Jimmy Narang. 2017. "The Fading American Dream: Trends in Absolute Income Mobility since 1940." *Science* 356 (6336): 398–406. https://doi.org/10.1126/science.aal4617.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. 2014. "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *The Quarterly Journal of Economics* 129(4): 1553–623. https://doi.org/10.1093/qje/qju022.

Cohen, Patricia. 2015. "Middle Class, but Feeling Economically Insecure." *New York Times,* April 10, 2015. NYTimes.com, https://www.nytimes.com/2015/04/11/business/economy/middle-class-but-feeling-economically-insecure.html.

Committee, National Bureau of Economic Research Price Statistics Review, and United States Bureau of the Budget Office of Statistical Standards. 1961. *The Price Statistics of the Federal Government: Review, Appraisal, and Recommendations; a Report to the Office of Statistical Standards, Bureau of the Budget, Together with Twelve Staff Papers*. https://books.google.ca/books?id=FykeAAAAIAAJ.

Cortes, Guido Matias, et al. "Disappearing Routine Jobs: Who, How, and Why?" *The Swiss National Bank/Study Center Gerzensee Special Issue: "Modern Macroeconomics: Study Center Gerzensee Conference in Honor of Robert G. King,"* *Journal of Monetary Economics* 91(Nov): 69–87. https://doi.org/10.1016/j.jmoneco.2017.09.006.

Costa, Dora L. 1999. "American Living Standards: Evidence from Recreational Expenditures." Working Paper No. w7478, National Bureau of Economic Research.

---. 2000. "American Living Standards, 1888-1994: Evidence From Consumer Expenditures." Working Paper No. w7650, National Bureau of Economic Research. http://www.nber.org/papers/w7650.

---. 2001. "Estimating Real Income in the United States from 1888 to 1994: Correcting CPI Bias Using Engel Curves." *Journal of Political Economy* 109(6):1288–310.

Davis, Joe C., and John H. Huston. 1992. "The Shrinking Middle-Income Class: A Multivariate Analysis." *Eastern Economic Journal* 18(3): 277–85. JSTOR.

DiNardo, John, Nicole M. Fortin, and Thomas Lemieux. 1995. "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach." Working Paper No. 5093, National Bureau of Economic Research. http://www.nber.org/papers/w5093.

Duhigg, Charles, and Keith Bradsher. 2012. "How the US Lost out on IPhone Work." *New York Times,* January 21, 2012.

"Economists Are Rethinking the Numbers on Inequality, Economists Are Rethinking the Numbers on Inequality." *The Economist*, Nov. 2019. https://www.economist.com/briefing/2019/11/28/economists-are-rethinking-the-numbers-on-inequality.

Filho, Irineu de Carvalho, and Marcos Chamon. 2012. "The Myth of Post-Reform Income Stagnation: Evidence from Brazil and Mexico." *Journal of Development Economics* 97, no. 2(Mar): 368–86,. https://doi.org/10.1016/j.jdeveco.2011.06.009.

Folbre, Nancy. 2010. "The Sagging of the Middle Class." *Economix Blog*, June 14, 2010, https://economix.blogs.nytimes.com/2010/06/14/the-sagging-of-the-middle-class/.

Foster, James E., and Michael C. Wolfson. 2010. "Polarization and the Decline of the Middle Class: Canada and the US." *The Journal of Economic Inequality* 8(2): 247–73.

Gale, William G. 2019. "Fiscal Policy with High Debt and Low-Interest Rates." *Aspen Institute Economic Strategy Group.*

Gigliarano, Chiara, and Karl Mosler. 2009. "Measuring Middle-Class Decline in One and Many Attributes." *Universita' Politecnica Delle Marche (I), Dipartimento Di Economia, Working Papers*, Jan. 2009.

Goodnough, Abby, Josh Katz, and Margo Sanger-Katz. 2019. "Drug Overdose Deaths Drop in U.S. for First Time Since 1990." *New York Times,* 17 July 17, 2019. NYTimes.com, https://www.nytimes.com/interactive/2019/07/17/upshot/drug-overdose-deaths-fall.html.

Goos, Maarten, Alan Manning, and Salomons. 2014. "Explaining Job Polarization: Routine-Biased Technological Change and Offshoring." *American Economic Review* 104(8): 2509–26. https://doi.org/10.1257/aer.104.8.2509.

Gottschalk, Peter, and Timothy M. Smeeding. 1997. "Cross-National Comparisons of Earnings and Income Inequality." *Journal of Economic Literature* 35(2): 633–87. JSTOR.

Graham, Carol. 2017. *Happiness for All?: Unequal Hopes and Lives in Pursuit of the American Dream*. Princeton University Press.

Greenlees, John Shearer, and Charles C. Mason. 1997. *Overview of the 1998 Revision of the Consumer Price Index*. US Department of Labor. Bureau of Labor Statistics.

Greenstone, Michael, Adam Looney, Jeremy Patashnik, and Muxin Yu. 2013."Thirteen Economic Facts about Social Mobility and the Role of Education." *The Hamilton Project, Brookings Institution, Washington DC. Available at http://Www.Hamiltonproject.Org/Papers/Thirteen_economic_ Facts_social_mobility_education.*

Greenstone, Michael, and Adam Looney. 2011. "Have Earnings Actually Declined?" *Brookings Institution* March 4, 2011.

Greg J. Duncan, Timothy M Smeeding, and Willard Rodgers. 1991. *Whither the Middle Class'? A Dynamic View.* Levy Economics Institute. https://ideas.repec.org/p/lev/wrkpap/wp_56.html.

Griswold, Daniel T. 2020. "Fail or Flourish: American Workers, Globalization, and Automation." *Mercatus Research Paper Forthcoming*.

Gupta, Sumedha, Laura Montenovo, Thuy D. Nguyen, Felipe Lozano Rojas, Ian M. Schmutte, Kosali I. Simon, Bruce A. Weinberg, and Coady Wing 2020. "Effects of Social Distancing Policy on Labor Market Outcomes." Working Paper No. 27280, National Bureau of Economic Research. https://doi.org/10.3386/w27280.

Hamilton, Bruce W. 1998. The True Cost of Living: 1974-1991. Economics Working Paper Archive 395, Johns Hopkins University, Department of Economics.

Hamilton, Bruce W. "Using Engel's Law to estimate CPI bias." *American Economic Review* 91, no. 3 (2001): 619-630.

Harris, Abram L. 1939. "Pure Capitalism and the Disappearance of the Middle Class." *Journal of Political Economy* 47(3): 328–328. https://doi.org/10.1086/255388.

Hausman, Jerry. 2003. "Sources of Bias and Solutions to Bias in the Consumer Price Index." *Journal of Economic Perspectives* 17(1): 23–44.

Holzer, Harry. 2015. "Job Market Polarization and US Worker Skills: A Tale of Two Middles." *Economic Studies, Brookings Institution.*

Horrigan, Michael W., and Steven E. Haugen. 1988. "The Declining Middle-Class Thesis: A Sensitivity Analysis." *Monthly Labor Review* 111(5): 3–13.

Hunt, Jennifer, and Ryan Nunn. 2019. "Is Employment Polarization Informative About Wage Inequality and Is Employment Really Polarizing?" Working Paper No.26064, National Bureau of Economic Research. http://www.nber.org/papers/w26064.

Janny Scott. 2001. "In 90's Economy, Middle Class Stayed Put, Analysis Suggests - The New York Times." *New York Times*, August 31, 2001. https://www.nytimes.com/2001/08/31/nyregion/in-90-s-economy-middle-class-stayed-put-analysis-suggests.html.

Jones, Charles I., and Peter J. Klenow. 2016. "Beyond GDP? Welfare across Countries and Time." *American Economic Review* 106(9): 2426–57. https://doi.org/10.1257/aer.20110236.

Katz, Lawrence F., and David H. Autor. 1999. "Changes in the Wage Structure and Earnings Inequality." In *Handbook of Labor Economics*, Vol. 3A, edited by O. Ashenfelter and D. Card, 1463–555.

Katz, Lawrence F., and Kevin M. Murphy. 1992. "Changes in Relative Wages, 1963–1987: Supply and Demand Factors." *The Quarterly Journal of Economics* 107(1): 35–78.

Kearney, Melissa S., and Magne Mogstad. 2019. "Universal Basic Income (UBI) as a Policy Response to Current Challenges." *Aspen Institute Economic Strategy Group*, 1–19.

Kena, Grace, William Hussar, Joel McFarland, Cristobal de Brey, Lauren Musu-Gillette, Xiaolei Wang, Xiaolei, Jijun Zhang, et al. 2016. "The Condition of Education 2016. NCES 2016-144." *National Center for Education Statistics,* ERIC.

Klenow, Peter J. 2003. "Measuring Consumption Growth: The Impact of New and Better Products." *Federal Reserve Bank of Minneapolis Quarterly Review* 27(1): 10–23.

Kopczuk, Wojciech, Emmanuel Saez, and Jae Song. 2010. "Earnings Inequality and Mobility in the United States: Evidence from Social Security Data since 1937." *The Quarterly Journal of Economics* 125(1): 91–128.

Kosters, Marvin H., and Murray N. Ross. 1988. "A Shrinking Middle Class?" *Public Interest,* no. 90: 3.

Krueger, Alan. 1999. "Measuring Labor's Share." Working Paper No.7006, National Bureau of Economic Research. http://www.nber.org/papers/w7006.

Krueger, Alan B. 2017. "Where Have All the Workers Gone? An Inquiry into the Decline of the US Labor Force Participation Rate." *Brookings Papers on Economic Activity*, no. 2: 1.

Krueger, Dirk, and Fabrizio Perri. 2006. "Does Income Inequality Lead to Consumption Inequality? Evidence and Theory." *The Review of Economic Studies* 73, no. 1(Jan): 163–93. https://doi.org/10.1111/j.1467-937X.2006.00373.x.

Krugman, Paul. 2005. "For Richer." In *Critical Social Issues in American Education: Democracy and Meaning in a Globalizing World*, edited by H. S. Shapiro and D. E. Purpel, 7–23.

Lazonick, William. 2015. "Labor in the Twenty-First Century: The Top 0.1% and the Disappearing Middle-Class." *Institute for New Economic Thinking Working Paper Series,* no. 4.

Levine, Phillip B., Jennifer Ma, and Lauren C. Russell. 2020. "Do College Applicants Respond to Changes in Sticker Prices Even When They Don't Matter?" Working Paper No. 26910, National Bureau of Economic Research. https://doi.org/10.3386/w26910.

Levy, Frank. 1987. "The Middle Class: Is It Really Vanishing?" *The Brookings Review* 5(3): 17–21. https://doi.org/10.2307/20079981. JSTOR.

Levy, Frank, and Richard J. Murnane. 1992. "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations." *Journal of Economic Literature* 30(3): 1333–81. JSTOR.

Looney, Adam, Jeff Larrimore, and David Splinter. 2020. "Middle-Class Redistribution: Tax and Transfer Policy for Most Americans." In *Securing Our Economic Future,* edited by Amy Ganz and Melissa Kearney, Aspen Institute Press.

Lybrand, Holmes. 2019. "Fact-checking Warren's claim that her health-care plan won't raise taxes on the middle class." CNN, November 7, 2019. https://www.cnn.com/2019/11/07/politics/elizabeth-warren-tax-medicare-for-all-middle-class-fact-check/index.html.

Ma, Jennifer, Sandy Baum, and Matea Pender, and CJ Labassi. 2019. *Trends in College Pricing 2019*. New York: College Board.

Markandya, A. 1984. "The Welfare Measurement of Changes in Economic Mobility." *Economica* 51(204): 457–71. https://doi.org/10.2307/2554230. JSTOR.

Martin, Emmie. 2018. "Nearly 70% of Americans consider themselves middle-class—here's how many actually are." CNBC, September 26, 2018. https://www.cnbc.com/2018/09/26/how-many-americans-qualify-as-middle-class.html.

Martinez, Leonardo, and Stephen Slivinski. 2008. "What Income Inequality Measures Can (and Cannot) Tell Us." *Richmond Fed Economic Brief*, no. 08-02. Nov.

McMahon, Patrick J., and John H. Tschetter. 1986. "The Declining Middle Class: A Further Analysis." *Monthly Labor Review* 109(9): 22–27.

Meyer, Bruce D., and James X. Sullivan. 2009. "Five Decades of Consumption and Income Poverty." Working Paper No. 14827, National Bureau of Economic Research. http://www.nber.org/papers/w14827.

---. 2013. "Winning the War: Poverty from the Great Society to the Great Recession." Working Paper No. 18718, National Bureau of Economic Research. http://www.nber.org/papers/w18718.

Morris, Martina, Annette D. Bernhardt, and Mark S. Handcock. 1994."Economic Inequality: New Methods for New Trends." *American Sociological Review* 59(2): 205–19.https://doi.org/10.2307/2096227. JSTOR.

Moshe Buchinsky, and Jennifer Hunt. 1999. "Wage Mobility In The United States." *The Review of Economics and Statistics* 81(3): 351–68.

Mouw, Ted, and Arne L. Kalleberg. 2010. "Occupations and the Structure of Wage Inequality in the United States, 1980s to 2000s." *American Sociological Review* 75, no. 3(June): 402–31. doi:https://doi.org/10.1177/0003122410363564.

Muller, Jerry Z. 2019. "The Neosocialist Delusion." *Foreign Affairs*, Dec. https://www.foreignaffairs.com/articles/2019-12-10/neosocialist-delusion.

Murphy, Sherry L., Jiaquan Xu, Kenneth D. Kochanek, and Elizabeth Arias. 2018. "Mortality in the United States, 2017." NCHS Data Brief No. 328. Hyattsville, MD: National Center for Health Statistics.

Nir Jaimovich, and Henry E. Siu. 2012. "Job Polarization and Jobless Recoveries." Working Paper No. 18334, National Bureau of Economic Research. https://ideas.repec.org/p/nbr/nberwo/18334.html.

Nordhaus, William D. 1996. "Do Real-Output and Real-Wage Measures Capture Reality? The History of Lighting Suggests Not." In *The Economics of New Goods,* edited by Timothy F. Bresnahan and Robert J. Gordon, National Bureau of Economic Research. http://www.nber.org/papers/c6064.

OECD. 2019. Under Pressure: The Squeezed Middle Class. OECD Publishing, Paris. https://doi.org/10.1787/689afed1-en.

Parlapiano, Alicia, Robert Gebeloff, and Shan Carter. 2015. "The Shrinking American Middle Class." *New York Times,* January 26, 2015. NYTimes.com, https://www.nytimes.com/interactive/2015/01/25/upshot/shrinking-middle-class.html.

Pew Research Center. 2015. "Most Say Government Policies Since Recession Have Done Little to Help Middle Class, Poor." Pew Research Center, Washington, D.C. https://www.pewresearch.org/politics/2015/03/04/most-say-government-policies-since-recession-have-done-little-to-help-middle-class-poor/.

Piketty, Thomas, and Arthur Goldhammer. 2014. *Capital in the Twenty-First Century.* Harvard University Press. www.jstor.org/stable/j.ctt6wpqbc. JSTOR.

Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *The Quarterly Journal of Economics* 118(1): 1–41.

---. 2006. "The Evolution of Top Incomes: A Historical and International Perspective." American *Economic Review* 96(2): 200–05.

---. 2014. "Inequality in the Long Run." *Science* 344(6186): 838–43.

Pressman, Steven. 2007. "The Decline of the Middle Class: An International Perspective." *Journal of Economic Issues* 41(1): 181–200.

Quigley, John M., and Steven Raphael. 2004. "Is Housing Unaffordable? Why Isn't It More Affordable?" *Journal of Economic Perspectives* 18(1): 191–214. https://doi.org/10.1257/089533004773563494.

Quoctrung Bui. 2016. "How the Middle Class May Have Gotten a Raise." *New York Times,* August 30, 2016. https://www.nytimes.com/2016/08/30/upshot/how-the-middle-class-may-have-gotten-a-raise.html.

Reich, Robert B. 2011. "Opinion | Jobs Will Follow a Strengthening of the Middle Class." *New York Times*, September 3, 2011. NYTimes.com, https://www.nytimes.com/2011/09/04/opinion/sunday/jobs-will-follow-a-strengthening-of-the-middle-class.html.

Reynolds, Alan. 2007. "Has US Income Inequality Really Increased?" *Cato Institute Policy Analysis Series*, no. 586.

Rosenthal, Neal H. 1985. "The Shrinking Middle Class: Myth or Reality?" *Monthly Labor Review* 108(3): 3–10.

Sacerdote, Bruce. 2017. "Fifty Years Of Growth In American Consumption, Income, And Wages." Working Paper No. w23292, National Bureau of Economic Research. http://www.nber.org/papers/w23292.

Sachs, Jeffrey D., Howard J. Shatz, Alan Deardorff, and Robert E. Hall. 1994. "Trade and Jobs in U.S. Manufacturing." *Brookings Papers on Economic Activity*, no. 1(1994): 1–84. https://doi.org/10.2307/2534630. JSTOR.

Saez, Emmanuel. 2018. "Striking It Richer: The Evolution of Top Incomes in the United States." In *Inequality in the 21st Century*, edited by David Grusky and Jasmine Hill, 39–42. Routledge.

Saez, Emmanuel, and Gabriel Zucman. 2016. "Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data." *The Quarterly Journal of Economics* 131(2): 519–78.

Sarah Flood, Miriam King, Renae Rodgers, Steven Ruggles and J. Robert Warren. 2020. Integrated Public Use Microdata Series, Current Population Survey: Version 7.0 [dataset]. Minneapolis, MN: IPUMS. https://doi.org/10.18128/D030.V7.0

Searcey, Dionne, and Robert Gebeloff. 2015. "Middle Class Shrinks Further as More Fall Out Instead of Climbing Up." *New York Times*, January 25, 2015. NYTimes.com, https://www.nytimes.com/2015/01/26/business/economy/middle-class-shrinks-further-as-more-fall-out-instead-of-climbing-up.html.

Shapiro, Matthew D., and David W. Wilcox. 1996. "Mismeasurement in the Consumer Price Index: An Evaluation." Working Paper No. 5590, National Bureau of Economic Research. http://www.nber.org/papers/w5590.

Silverman, Dan. 2020. "Walking the Tightrope: Variable Income and Limited Liquidity Among the US Middle Class." In *Securing Our Economic Future*, edited by Amy Ganz and Melissa Kearney, Aspen Institute Press.

Slemrod, Joel. 1995. "High-Income Families and the Tax Changes of the 1980s: The Anatomy of Behavioral Response." Working Paper No. 5218, National Bureau of Economic Research. Published as "High-Income Families and the Tax Changes of the 1980s: The Anatomy of Behavioral Response." In *Empirical Foundations of Household Taxation*, edited by Martin Feldstein and James M. Poterba. University of Chicago Press (1996). https://doi.org/10.3386/w5218.

Spitz-Oener, Alexandra. 2006. "Technical Change, Job Tasks, and Rising Educational Demands: Looking Outside the Wage Structure." *Journal of Labor Economics* 24(2): 235–70. doi:https://doi.org/10.1086/499972.

Snyder, Thomas D., Cristobal de Brey, and Sally A. Dillow.. 2019. *Digest of Education Statistics 2017* (NCES 2018-070). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Tavernise, Sabrina, and Abby Goodnough. 2020. "American Life Expectancy Rises for First Time in Four Years." *New York Times*, January 30, 2020. NYTimes.com, https://www.nytimes.com/2020/01/30/us/us-life-expectancy.html.

Thomas Philippon. 2019. "Causes, Consequences, and Policy Response to Market Concentration." *Aspen Institute Economic Strategy Group,* July.

Thorson, Greg. 2014. "The Rise of Inequality, the Decline of the Middle Class, and Educational Outcomes." Paper presented at the International Conference of the Associate for Public

Policy Analysis and Management (APPAM), September 29–30, 2014 in Segovia, Spain.

Thurow, Lester C. 1984. “Business Forum; the Disappearance of the Middle Class.” *New York Times*, February 5, 1984. NYTimes.com, https://www.nytimes.com/1984/02/05/business/business-forum-the-disappearance-of-the-middle-class.html.

---. 1987. “A Surge in Inequality.” *Scientific American* 256(5): 30–37. JSTOR.

U.S. Bureau of Labor Statistics. *Women in the Labor Force: A Databook*. Report No. 1049.

United States Trade Representative (USTR). n.d. "The People's Republic of China." Accessed on July 29, 2020. https://ustr.gov/countries-regions/china-mongolia-taiwan/peoples-republic-china.

Van Reenen, John. 2019. “Can Innovation Policy Restore Inclusive Prosperity in America?” The *Aspen Institute Economic Strategy Group*, July.

Vaughan-Whitehead, Daniel. 2016. *Europe’s Disappearing Middle Class?: Evidence from the World of Work*. Edward Elgar Publishing.

Weinstein, David E., and Douglas J. Besharov. 2008. *Prices, Poverty, and Inequality: Why Americans Are Better off than You Think*. Aei Press.

Wolfson, Michael C. 1994. “When Inequalities Diverge.” *The American Economic Review* 84(2): 353–58.

Xu, Jiaquan, Sherry L. Murphy, Kenneth D. Kochanek, and Elizabeth Arias. 2020. "Mortality in the United States." NCHS Data Brief No. 355. Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/databriefs/db355-h.pdf