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Working Paper

Labor market trends and outcomes: What has changed since the Great Recession?

IZA Policy Paper, No. 173

Provided in Cooperation with:
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Suggested Citation: Groshen, Erica L.; Holzer, Harry J. (2021) : Labor market trends and outcomes: What has changed since the Great Recession?, IZA Policy Paper, No. 173, Institute of Labor Economics (IZA), Bonn

This Version is available at:
https://hdl.handle.net/10419/243459

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ABSTRACT

Labor Market Trends and Outcomes: What Has Changed since the Great Recession?*

We describe trends in wages and labor force participation for the "working class" – whom we define as workers with high school or less education – compared to those with college or more. We compare cyclical peaks over the entire period 1979-2019, with particular focus on the Great Recession (2007-2010) and recovery (2010-2019). We also present results by gender and race. We find real wage growth in the latter period for all workers, but not enough to change the long-term trends of growing inequality and stagnant wages for the less-educated; and we also find that labor force participation continued to decline for the less-educated, even during the recovery. Gaps between whites and blacks also grew while Hispanics and Asians made more progress. We consider various explanations of these findings, and show that the early effects of the 2020-21 pandemic recession that hurt less-educated workers and those of color more than anyone else.

JEL Classification: J6

Keywords: wages, participation, working class, Great Recession, recovery

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* We thank Ryan Nunn and Duncan Hobbs for their assistance in tabulating our employment outcomes, and Cait Chamberlain for general assistance.

I. Introduction

It is no longer news that most US workers, especially those without college degrees, saw stagnant wages over the past four decades, that inequality rose dramatically in this period, and that millions of prime-age workers left the labor market (Groshen and Holzer 2019). Equally true, during the last dozen years, the US labor market experienced unusually wide swings in labor market conditions, which also affected workers' outcomes. As we now experience the ongoing COVID-19 recession in 2020-21, this paper assesses how those two powerful influences (the long run trends and the recent business cycles) interacted in the US labor market, with particular focus on continuing disappointing trends for non-college workers.

On the one hand, the Great Recession of 2007-2010 was a cataclysmic event for US workers, generating the worst declines in employment observed in nearly 80 years (since the Great Depression).[1] The recession was not only deep, but recovery from it also occurred quite slowly.[2] On the other hand, the recovery lasted the longest of any on record, ultimately resulting in the lowest US unemployment rates since the late 1960s. Indeed, by February 2020, we had nearly five years of unemployment rates at or below 5 percent, which is also the longest such period since the 1960s. Then, starting in March and especially in April 2020, the labor market deteriorated very rapidly due to the Covid-19 recession; it recovered partially in the late spring and early summer, but the recovery then slowed and eventually flatlined after October.

These labor market oscillations likely generated some lasting outcomes for workers, both negative and positive. The severe and long Great Recession had detrimental effects on workers that may have continued long into the recovery. Economists refer to these long-lasting effects of temporary recessions

[1] The Great Recession began in late 2007 but worsened substantially in 2008-09. The economy began its recovery in mid-2009 but not in the labor market early 2010, since employment changes lags behind those in output.
[2] Unemployment peaked at about 10 percent in early 2010 and remained at or above 8 percent well into 2012.

as “hysteresis,” as some workers are scarred by lengthy spells without work, reducing their attractiveness to employers and/or their skills and labor market contacts. On the other hand, a relatively tight labor market that lasts for many years can support higher wage growth and career opportunities, perhaps with differentially large impacts on less-educated workers.

Economists still debate the extent to which the labor market tightened during the recovery. Various forms of “hidden unemployment” persisted and wage growth was modest throughout most of it. Yet, both the length and depth of the recovery clearly brought many workers back into the labor force who had otherwise left, and enabled many to enjoy several years of positive real wage growth. But, after these years of progress, the pandemic recession of 2020 again imposed great employment losses on less-educated workers and those of color.

In this paper, we examine wage and employment outcomes for prime-age US workers – i.e., ages 25-54 - over the period 1979-2019, with particular emphasis on the later years. Prime-age workers are the most sensible to analyze, since they have mostly completed their schooling but not yet begun to retire. The years 2000-2007 and 2007-2019 constituted two full business cycles, with cyclical peaks in 2000 and 2007, a Great Recession trough in 2010, and another peak in 2019. We therefore present a range of employment outcomes for the years 1979, 2000, 2007, 2010, and 2019 – but with a particular focus on the Great Recession and recovery between 2007 and 2019. We also contrast outcomes for workers with bachelor’s degrees or above with outcomes for workers who finished high school at most (these constitute the “working class” in many analyses, including ours), with outcomes also broken down by gender and race.[3]

[3] Workers with some college but no degree are excluded when comparing outcomes for college and high school graduates.

After presenting these results, we discuss the long-run market and institutional forces behind the most disturbing trends in the labor market. We consider the extent to which the Great Recession and subsequent recovery interacted with these forces, to generate longer-term improvement in some outcomes and further deterioration in others.

With this context in mind, we then turn to the effects of the Covid-19 pandemic and associated recession on worker outcomes, and the extent to which less-educated workers and those of color suffered the worst employment losses through the end of 2020. Though we do not yet know the full extent to which these workers will suffer long-term employment losses, the data we have to date are worrisome. We conclude by summarizing our findings and considering implications for future trends and policy.

I. Trends in Employment and Earnings, 1979-2019

We now consider trends in three major employment outcomes for US workers: employment, overall real wages, and labor force participation. We will consider some outcomes over the entire 40-year period between 1979 and 2019, but with a particular focus on the years since 2007. We also consider outcomes for all workers, but with some particular attention to those with high school or less education – whom we consider to be the US "working class" - and how their outcomes differ from those of college graduates.

The three panels of Figure 1 present the aggregate trends since 1979 in employment-to-population ratios, labor force participation, and median real hourly wages respectively, for the population in ages 25-54. We adjust wages for inflation using the chain-weighted GDP deflator for personal consumption expenditures (PCE).[4] The wage measures exclude other forms of compensation, like employer 401K

[4] Real wages decline a bit more rapidly over time if one deflates nominal wages with the Consumer Price Index for Urban Workers "research series" – CPI-U-RS – since the research series adjusts for some but not all of the

contributions and the value of employer-provided health care; they also exclude other transfer payments from government.

The employment to population ratio (Figure 1a) follows the well-known peaks and troughs in business cycles over the past 40 years, especially during the Great Recession and afterwards. Overall employment rates rose until 2000, but declined a bit during the years afterwards. By 2019, employment had recovered to its pre-recession level in 2007, though not to its earlier peak in 2000. This (and our other aggregate findings below) are consistent with Shambaugh's paper in this volume.

Trends in labor force participation (Figure 1b) and real wages (Figure 1c) are somewhat less cyclical. Participation among prime-age workers rose until 2000 and declined somewhat thereafter; it declined overall during the Great Recession, but had almost recovered to its 2007 level by 2019.

We also note that median real wages rose only about 18 percent over the entire 40-year period, with notable increases occurring only in the late 1990s-early 2000s and 2014-19. Indeed, during the latter 5-year period, median real wages rose about eight percent overall – a welcome development, though not enough to change the overall view of relative wage stagnation over four decades.

These broad aggregate trends in employment, participation, and real wages mask considerable variation by education and gender over time. Figure 2 displays trends in median real wages separately for men and women, and for those with high school or less education (part a) and those with college (BA) degrees (part b). We do the same for labor force participation rates in Figure 3.

We present both sets of outcomes at five points in time: business cycle peaks in 1979, 2000, and 2007, the trough of the Great Recession in 2010, and the most recent cyclical peak in 2019. These comparisons

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overstatement of annual inflation in the traditional CPI. See Moulton et al. (2018) for a comparison of GDP and CPI deflators over time. Wage figures throughout the paper appear in 2019 dollars.

enable us to infer just how much employment outcomes had deteriorated by 2010, and the extent to which they recovered in the subsequent nine-year expansion, particularly for non-college workers.

The panels in Figure 2 illustrate the following outcomes for US workers' median real wages:

- Over the past 40 years, but especially during the years 1979-2000, real wages grew rapidly for those with BAs but were flat or declining for those without, that is the "working class," with better growth among women than men in both cases; and
- During the recovery from the Great Recession, median real wages increased for all workers, with increases of roughly similar magnitudes.

Therefore, as seen in Figure 2, earnings inequality has risen substantially in the past 40 years by education within gender groups but it has declined between them.

We also know from published summary data that *nominal* wage growth (i.e., without adjusting for inflation) remained somewhat modest after the Great Recession, compared to earlier periods of time; indeed, such increases barely ever rose much above three percent. But inflation has also remained unusually low throughout this time period, despite the recovery from the Great Recession, thereby translating modest nominal wage gains into more significant real wage increases. It is also notable (as seen in Figure 1c) that early wage gains in the period 2014-19 were needed to offset a bit of wage loss in the first few years of recovery (beginning in 2010), before overall real wage growth could be observed.

Still, the length of this expansion allowed such increases to accumulate over time and result in significant wage growth. And, as labor markets have been at least somewhat tight for a lengthy period, the relatively greater sensitivity of disadvantaged workers to the business cycle (Aaronson et al. 2019) has translated into mildly greater wage increases for them. Minimum wage increases at the state and

local levels no doubt added to real wage growth among the lowest-wage workers.[5] Still, the observed wage increases in the recovery do not greatly change the overall pattern of inequality growth across education groups over the last 40 years.

The panels in Figure 3 illustrate the following trends in labor force participation:

- It has declined the most over the past four decades for non-college-educated men, while it rose rapidly for both less-educated and more-educated women from 1979 to 2000;
- It declined somewhat for most workers from 2000 to 2007 and then in the Great Recession; and
- College-educated women's participation fully recovered for by 2019, but not for the working class or for men.[6]

The fact that labor force participation has mostly leveled off for women overall since 2000, leaving their participation rates about 10 percent lower than those of men among people with BAs and about 20 percent for those with high school only, is concerning.

When viewing trends over time by education, it is important to note that the composition of these groups over time have been changing for two major reasons: 1) College enrollment and completion rates have risen substantially over this 40-year period; and 2) Immigrants constitute larger fractions of men with high school or less education than before.

All else equal, these two compositional changes would depress observed real wage growth among less-educated men; the shift towards college enrollment would also tend to reduce labor force participation, though the greater presence of immigrants would raise it (since immigrant men have very high rates of labor force participation). Furthermore, the tendency of less-educated men to withdraw from the labor force tends to truncate the lower end of the wage distribution for men and raise their observed hourly

[5] https://www.ncsl.org/research/labor-and-employment/state-minimum-wage-chart.aspx
[6] Again, focusing on the years just since 2014 would no doubt show greater increases.

wage rate. The net effect of all of these compositional changes on observed wages and participation are therefore unclear, and do not clearly bias results in the downward direction for less-educated men.

Importantly, though participation for women rose consistently in the 1980s and 1990s (and earlier), it has been uneven since then. Despite their recovery from the Great Recession, the trend toward higher participation of American women in the late 20th century remains stalled in the 21st century.

Besides the effects documented above on men and women by education, what have similar trends looked like by race? In Table 1 we present median real wage (part a) and labor force participation trends (part b) by race and gender. We present some data for five racial groups – non-Hispanic whites, blacks, Hispanics, Asians, and Pacific Islander/American Indians. Since not all of these groups were identified in CPS data all the way back to 1979, we present data for those years when they are available. Accordingly, we present data for whites and blacks starting in 1979, for Hispanics and Asians starting in 2000, and for Pacific Islanders/American Indians (only in participation) starting in 2007.[7]

The results of Table 1a indicate the following:

- Real wages have risen strongly since 2000 for Asians (by about a third), Hispanics (by 20-25 percent), and white females (by nearly half since 1979 and about 20 percent since 2000);
- Real wages also rose somewhat more modestly for black females (by about a third since 1979 and about 12 percent since 2000);
- Real wage growth has been quite modest for white males and almost nonexistent for black males over 40 years; and
- All groups experienced some wage growth after 2010, especially Hispanics and Asians.

[7] Separate data for Hispanics and Asians in the CPS only became available during the 1990s; and for American Indians and Pacific Islanders they became available in 2003. In data before that time the latter groups are merged with Asians, but do not materially affect results for Asians. Even today, American Indians and Pacific Islanders constitute just one percent of the US population, while Asians represent over six percent.

And the results of Table 1b on labor force participation indicate:

- Fairly constant participation among Asians, American Native/Pacific Islanders and Hispanics over time, with mostly modest increases for women and decreases among men for the latter two groups;
- Large declines in participation among white and especially black men since 1979;
- Large increases in participation among white and black females before 2000 and fairly flat since then; and
- Modestly Increasing participation (one or two percentage points) for most groups of women but mixed results for males during the recovery from the recession in 2010-19.

Overall, the results by race show impressive gains in wages and/or work activity for Asians, Hispanics and white women, disturbing declines in work for white and black men, and rising gaps between whites and blacks overall. Our results are also broadly consistent with other papers in this volume (specifically by Biu and Hamilton on blacks, Orrenius on Hispanics, and Akee for Pacific Islanders and Native Americans). If anything, the declining labor force activity we observe among black men is under-represented in the civilian labor force data, due to the under-representation of particular sub-groups.[8]

Finally, Figure 4 summarizes the observed trends in real wages and labor force participation for our education-by-gender and race-by-gender groups over the full business cycle generated by the Great Recession and our recovery afterwards, 2007-19 – with part a focusing on education and gender groups while part b focuses on race and gender. The results again show, for the entire cycle, major earnings gains for white women, Hispanics and Asians; modestly improving labor force participation for most

[8] Low-income black men, and especially those previously incarcerated, are undercounted in the Census and other surveys (Pettit 2012). These groups have very low labor force participation rates, so their absence in the data lead participation rates of less-educated men to be understated. Casual or informal work among such men likely offset these trends, but only partially. See also Kahn-Lang (2019).

racial groups of women but not for those with high school or less education; and modest wage gains plus flat or declining participation for white and black men, especially for the less-educated.

In sum, the Great Recession and our recovery from it did not greatly change longer-term patterns of rising inequality between the "working class" and college-educated workers in the US, either in real wages or labor force activity.

II. What Explains These Trends in Labor Market Outcomes?

What accounts for the overall trends in earnings and labor force participation that we have documented, and also for different trends by gender and education, over the past four decades and also during the period 2007-19? We first consider the secular and cyclical trends in earnings, which might partly drive the labor force participation trends that we discuss second.

A. *Earnings Trends: Markets, Institutions, and Business Cycles*

In a purely statistical sense, three factors appear to drive the stagnation of aggregate wages over the past forty years: 1) Declining productivity growth; 2) A decline in labor's share of productivity and income; and 3) A growing share of labor compensation accounted for by nonpecuniary benefits like health care. But explaining why each of these three trends has occurred is somewhat more challenging.

With the exception of the tech boom years (mid-1990s to mid-2000s), US productivity growth has been sluggish (Baily, 2015). And, though there has been some decoupling of worker compensation from productivity during this period, a strong correlation remains (Stansbury and Summers, 2018). Possible culprits for sluggish productivity growth include the aging workforce (Ozimek et al. 2017), too little R&D investment (Gruber and Johnson 2019), declining labor market fluidity (Molloy et al., 2016) and/or "secular stagnation" (Rachel and Summers 2019).

Shifting distributions of productivity and income towards capital might be attributable to rising automation (Acemoglu and Restrepo, 2018), but also could reflect growing power of employers in both product and labor markets. While technology, globalization and deregulation in the 1980s and 1990s were seen as forces enhancing product market competition, rising product market concentrations since then might have offset those effects (Philippon 2019), though the evidence on this point remains a bit mixed (Basu 2019; Autor et al. 2017).

Whether or not the monopsony power of employers has risen also remains unclear, though it seems to have risen in some industries like health care (Prager and Schmitt 2021). Rising employer practices such as noncompete and nondisclosure agreements might also contribute to monopsony in some industries (Krueger and Posner, 2018; Hunt and Nunn, this volume). Finally, the growing share of worker compensation accounted for by health care no doubt reduces pecuniary worker compensation. While the increases in these shares over time are not much higher in recent decades than before (Burtless and Milusheva 2012), they clearly reinforce the other determinants of lower compensation growth described above.

Whatever explains the overall stagnation in worker earnings, rising earnings inequality in virtually every dimension (except gender) has contributed as well to stagnant median earnings.[9] The debates between those emphasizing labor market forces like skill-biased technical change (SBTC), globalization, and declining growth of the college-educated population versus those emphasizing weakening institutions like unions and federal minimum wages are well-known at this point (Groshen and Holzer 2019). Even those emphasizing changes in the demand for and supply of college-educated workers in the market have noted the flattening of the ratio of college to high school wages since 2000, while inequality has

[9] While gender differences are not a main focus of this paper, the decline in the gender earnings gap has largely been driven by rising relative education and earnings for them, as well as declining discrimination and product market shifts from manufacturing to services (Blau and Kahn 2016).

risen within the higher-skilled group and especially between those with only BAs and those with graduate degrees (Autor et al. 2020).

Still, a few new developments in the empirical literature on rising earnings inequality are noteworthy. For one thing, differences between firms account for more of the variance in employee earnings over time than in the past (Barth et al. 2014). At the same time, the rising capital intensity of "superstar" firms (Autor et al. 2017) and institutional developments might also limit the ability of workers to share in firm-level product market success. Another possibility is that information problems prevent employers from tapping into skills developed on the job by experienced non-college workers (Blair et al. 2020).

Beyond declining unionism, David Weil (2019) has called our attention to the growth in "fissured" workplaces – i.e., those in which different occupational groups under the same roof and at the same firm actually work for different employers. Athough we have limited data on this, such fissuring likely prevents many groups of workers from sharing in the product market success of firms that sell the goods and services they produce. It also reduces firms' incentives to invest in educating or training their workers, to whom they now have little long-term commitment. Accordingly, an increase in "fissuring" over time likely contributes to a widening compensation gap between less-educated and more-educated workers (and between labor and capital) over time as well.

And fissuring workplaces are part of a broader story of a likely shift from "high road" to "low road" human resource strategies among many firms for their less-educated workers (Osterman 2017). Firms can sometimes choose to compete via high workers skills and performance (accompanied by better compensation, more worker training, and/or profit-sharing) rather than low labor costs. Evidence suggests that firms are less interested in the former approach in recent years. Since "high road" employers generate a "public good" for workers, their families and communities, an argument can be made that they should receive some public support through technical assistance or subsidies.

Strikingly, the common thread in all these explanations is that they are not likely to subside or reverse in the near future without direct policy action. The business cycle might speed or slow these forces, but it rarely changes the broad trends.

In this context, how did the Great Recession and subsequent recovery affect earnings among less-educated workers? While the employment of non-college graduates appears more cyclically sensitive than that of college grads (Hoynes 2002), the evidence suggests that wages of young college graduates might be somewhat more hurt when they enter the labor market in serious recessions (Altonji et al. 2014), with effects persisting for many years. This might be true at least partly because wage growth among these graduates depends more on work experience which the recession disrupts, as well as the quality of employer-employee matches which recessions impede as well.

But there is also evidence that the new technologies that limit the earnings of the "working class" – thereby generating SBTC – are more frequently implemented during recessions (Jaimovich and Siu 2012), since the disruption costs of implementing them are lowered when business is down. Furthermore, we have clear evidence that firms raise worker education requirements during recessions, since college graduates are relatively more available than at other points in the business cycle; but the evidence also suggests that, as recovery from recessions occurs, at least some of the higher skill requirements remain in place (Hershbein and Kahn 2018).

As we noted earlier, earnings among disadvantaged workers rose a bit more in the last five years than those of more-educated workers (see also Aaronson et al. 2019), but overall earnings growth was not sufficient to offset decades of stagnation. Labor markets were also less tight during the recovery than the unemployment rate suggested (Blanchflower 2019). The flow of workers out of the labor force during the Great Recession, which we describe more fully below, generated a larger pool of potential

workers available to gradually reenter as the labor market tightened, thereby reducing the pressure on employers to raise wages substantially.

Labor Force Participation, Earnings and the Business Cycle

As we note above, labor force participation of women rose consistently during the second half of the 20th century, though it dipped after 2000. It also declined modestly during the Great Recession, as we would expect, but fully rebounded to its 2007 levels by 2019 only among college-educated females.

In contrast, participation by less-educated men declined consistently over the past four decades, and notably during the Great Recession. It also failed to recover during the expansion. These developments reflect both the greater cyclical sensitivity of male employment – as they remain more heavily represented in cyclical industries like construction and manufacturing – and perhaps more hysteresis (or long-term scarring) as well from their earlier employment declines.

What accounts for different participation trends between women and men? The rising education and earnings potential of women compared to men no doubt has generated different "labor supply" responses – rising for women and falling for men, as we would expect if their labor supply "elasticities" (measuring effects of wages on willingness to work) are positive.[10]

At the same time, it seems unlikely that relative wage opportunities, and movements up and down their respective "labor supply" functions, explain all of these differences. For women, decreasing marriage rates and rising single parenthood no doubt contributed to their greater need to work, even at low wages. And changes in income support policies – including welfare reform and the rise of the Earned

[10] Historically, full-time work among prime-age men was widely regarded as socially mandated. But the withdrawal of so many non-college prime-age men from the workforce in recent decades (Eberstadt, 2016; Krueger, 2017), as their earnings deteriorated, clearly indicate increases over time in their labor supply "elasticities," as discretion about whether and how much to work among men has grown more acceptable.

Income Tax Credit in the 1980s and 1990s – raised incentives to work for low-income women. International experience suggests that work among women would likely have continued to rise had the US adopted more "family friendly" policies, such as child care assistance and paid family leave (Black et al., 2017).

Similarly, declining work among less-educated men cannot be fully explained by their stagnant or declining wages (Binder and Bound, 2019). For African-American men, criminal records and perhaps child order arrears reduce labor force participation (Holzer et al., 2006; Eberstadt, 2016).

More broadly, poor health and disability among less-educated men reduce work effort, only partly through dependence on Disability Insurance (Krueger, 2017). Geographic imbalances in labor market strength – exacerbated by declining manufacturing employment after 2000 (Autor et al., 2016) and the reduced geographic mobility of workers (Austin et al., 2018) – further contribute to declining work among blue-collar workers and especially "working class" men in recent years.

Given these forces, it is not surprising that labor force participation among less-educated workesr (particularly for men) remained lower during the recovery from the Great Recession in those geographic areas hit hardest by the downturn (Yagan 2018), as "hysteresis" suggests. The deteriorating skills and networks that occur as a result of lengthy periods of nonwork, plus diminishing employer interest (Krueger et al. 2014) seem to hurt less-educated men the most.

III. What About the Pandemic Recession of 2020-21?

The pandemic-induced recession of 2020 began with notable employment losses in March, followed by extreme job losses in April. Then a recovery began in May – rapid at first, then slower. During the months of November and December, employment rates were completely flat.

In Table 2 we present employment-to-population rates, adjusted for reported absences from work (for reasons other than vacation, illness, weather or labor disputes), in the aggregate and then for subgroups by race, gender and education. We present these rates for selected months, beginning with the pre-recession month of February, through the trough in April, and then for selected months until December 2020.[11]

The results in Table 2 in the aggregate show the rapid decline, rapid partial recovery and then slowing recovery that occurred during the recession of 2020. Indeed, employment fell about 18 percentage points between February and April, and rose about 12 points between April and December in the aggregate.

The table also illustrates the extent to which workers of color and those with high school or less education bore the brunt of the recession. Employment fell most rapidly for Hispanics and also among blacks until April, and by the end of the year employment for each group remained about eight points lower than in February. High school graduates experienced the largest initial declines while those with post-graduate education experienced the least; these patterns of relative employment decline still held as of December.

Indeed, this recession has hit the least-educated harder than earlier ones, and their recoveries have been slower – since the sectors hardest hit have been leisure/hospitality and personal services, where such workers are concentrated. And the fact that highly-educated workers can much more easily tele-commute than those less-educated has exacerbated employment gaps during the recovery.

[11] These rates are drawn from computations using CPS-ORG data in Hershbein and Holzer (2021). Besides the adjustment in the outcome variable, these tabulations are also based on a broader age sample – 18-64 – than we used in earlier figures and Table 1. For additional analysis of COVID-19 labor market impacts through September 2020 by demographic group, see Groshen (2020).

At the time of this writing, we do not yet know what the labor market recovery will look like in 2021 and beyond, or the extent to which long-term unemployment and/or permanent job loss will occur. But, to date, less-educated workers and those of color have also endured the highest rates of permanent job loss (Hershbein and Holzer, 2021).

The pandemic has likely accelerated the long-run shift toward online shopping in retail trade and ordering food in leisure and hospitality, as well as the role of telecommuting (which will hurt the service industries that cater to workers in downtown business districts). If so, less-educated workers and those of color will continue to sustain disproportionately high permanent job losses in 2021 and beyond. In other words, skill-biased technical changes associated with this recession and eventual recovery will likely add to the plight of our lowest-wage workers.

IV. Conclusion

Three disappointing labor market trends over the past forty years are widely known: median real wages have been fairly stagnant, inequality between workers with and without college degrees has dramatically increased, and many less-educated prime-age men left the labor force. At the same time, gender inequality in both earnings and labor force activity declined.

The Great Recession affected earnings and labor force trends in a number of ways. The recession itself speeded skill-biased technical changes that raised employer skill demands and relative rewards for those with college degrees. The lengthy recovery afterwards helped raise earnings, even a bit more among low-wage workers than others. Wage gains for Asians and Hispanics have also exceeded those for whites and blacks.

Yet, these recent developments did not broadly disrupt trends in earnings inequality between college and non-college workers, or alter the fact that median real wages for the less-educated have been fairly stagnant (among women) and declining (for men) over most of the past four decades.

Labor force activity has also followed very different patterns by gender and education. Between 1979 and 2000, participation rates rose strongly for women with and without college degrees, while they fell for less-educated men. After 2000, they fell for both less-educated men and women, and modestly declined during the Great Recession. Even during the recovery from the recession, we see few signs of rebounding labor force participation among less-educated workers, and significant increases only among educated women.

In particular, the longer-term negative trends among less-educated men likely reflect "hysteresis" effects. That is, worker may have difficulty recovering from lengthy periods with no work activity – due to depreciating skills, diminishing employer interest and loss of labor market information and contacts with other workers. And, while not as cyclical, the recent lack of labor force growth among women is troubling; it likely indicates a need for better policies to balance work and family life, such as subsidized childcare and paid family leave.

Then, the pandemic-induced recession of 2020 generated large employment losses, especially for less-educated workers and those of color. It is too early yet to infer long-term employment losses from the recession, or any effects on wages, though our evidence to date on the former implies that the recession will exacerbate existing inequalities over time.

What does the future hold? Automation and globalization in the coming decades will no doubt continue to challenge the employment circumstances of workers, both with and without college degrees. Many may suffer displacement and/or declining wages, along with labor market withdrawal.

What policies might help us reverse the disappointing 40-year trends in labor market outcomes for the working-class, as well as the more recent and very unequal effects of the pandemic-induced recession? Since both market forces (including market failures) and institutions have contributed to these outcomes, a wide range of policy response might be needed to combat them.

Such policies could include:

- Strengthening our public higher education (especially community colleges) and workforce systems to improve workers' abilities to adapt to labor market shocks by retraining;
- Strengthening the institutions that support worker compensation for those without college degrees, like collective bargaining (or other forms of worker "voice") and minimum wages;
- Rewards for "high-road" or higher-wage employers who invest in their workers and share their profits with them, perhaps through the tax system (Holzer 2019);
- Additional ways to "make work pay" for lower-wage workers – such as the EITC as well as better paid family leave and subsidized high-quality child care;
- Policies to enhance competition in product and labor markets, and to limit employer restrictions on worker options and information;
- Special efforts to reduce barriers to work among those with health and disabilities and/or criminal records; and
- Improving our labor market data, which is critical for managing policy and helping employers and workers to make the best decisions possible to thrive in a changing economy.

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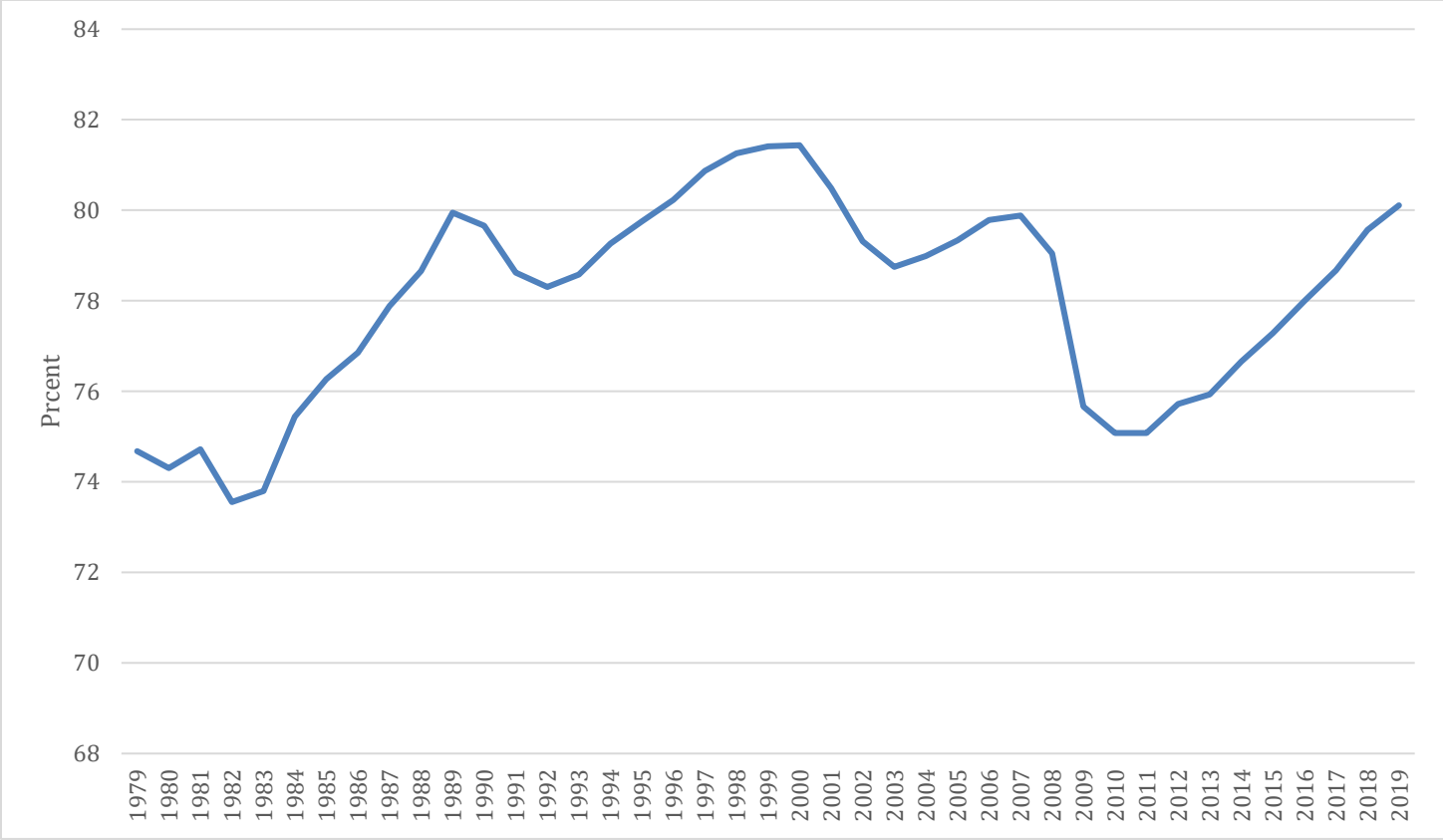
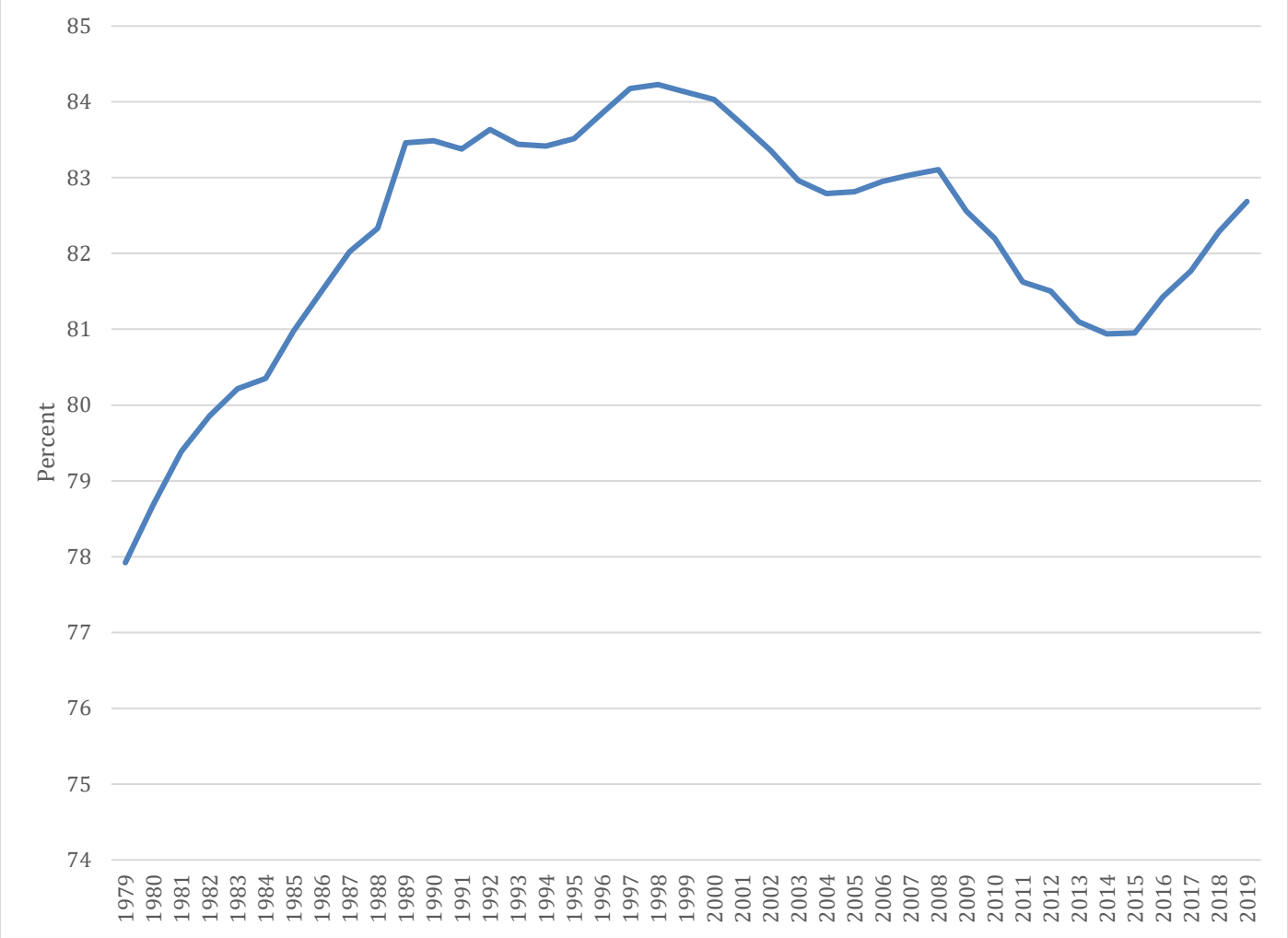
Figure 1a: Annual Employment-Population Ratios for Individuals Ages 25-54, 1979-2019



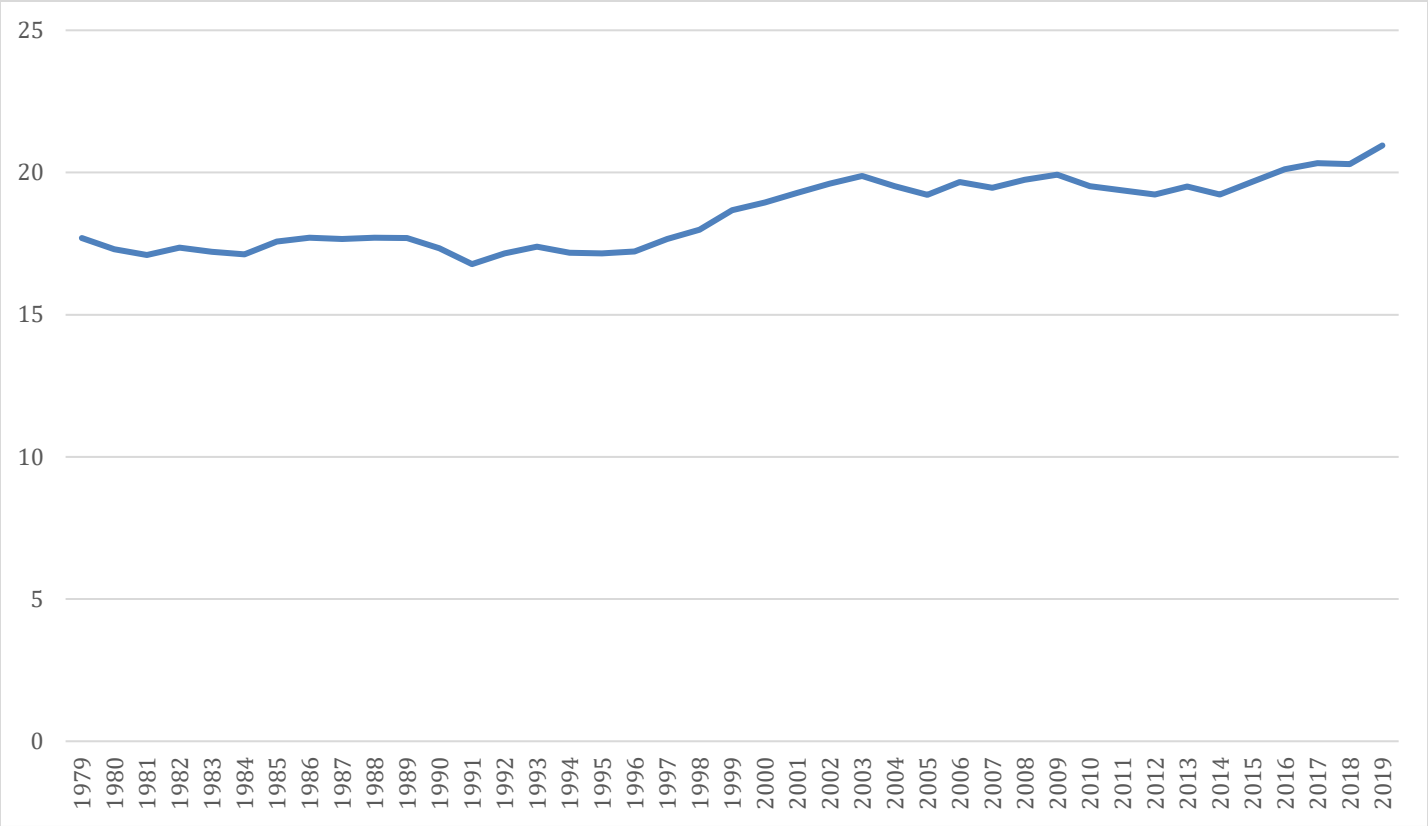
Source: Authors' calculations from the Current Population Survey Basic Monthly files.

Figure 1b: Annual Labor Force Participation Rates for Ages 25-54, 1979-2019



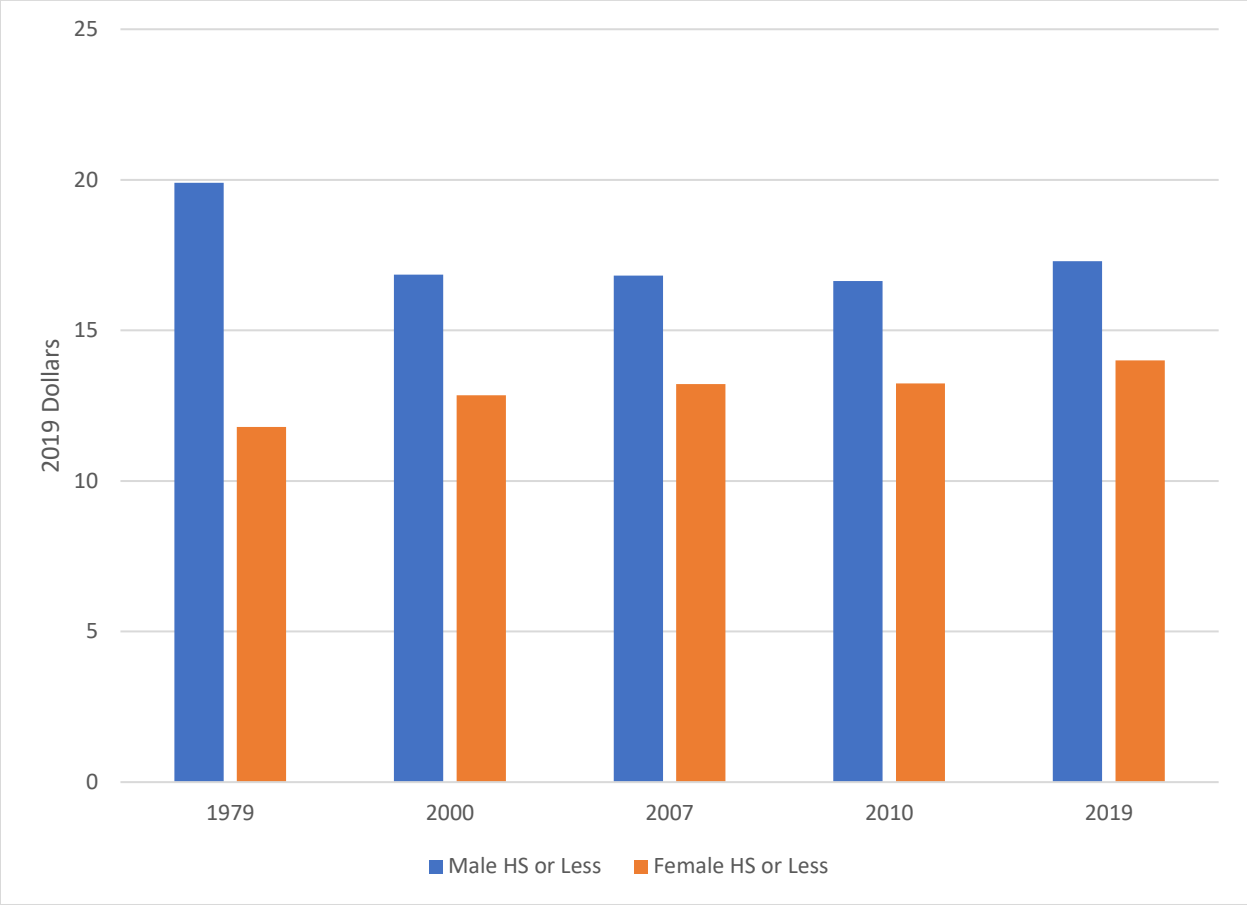
Source: Authors' calculations from the Current Population Survey Basic Monthly files.

Figure 1c: Annual Median Real Hourly Wages for Ages 25-54, 1979-2019 (2019 dollars)



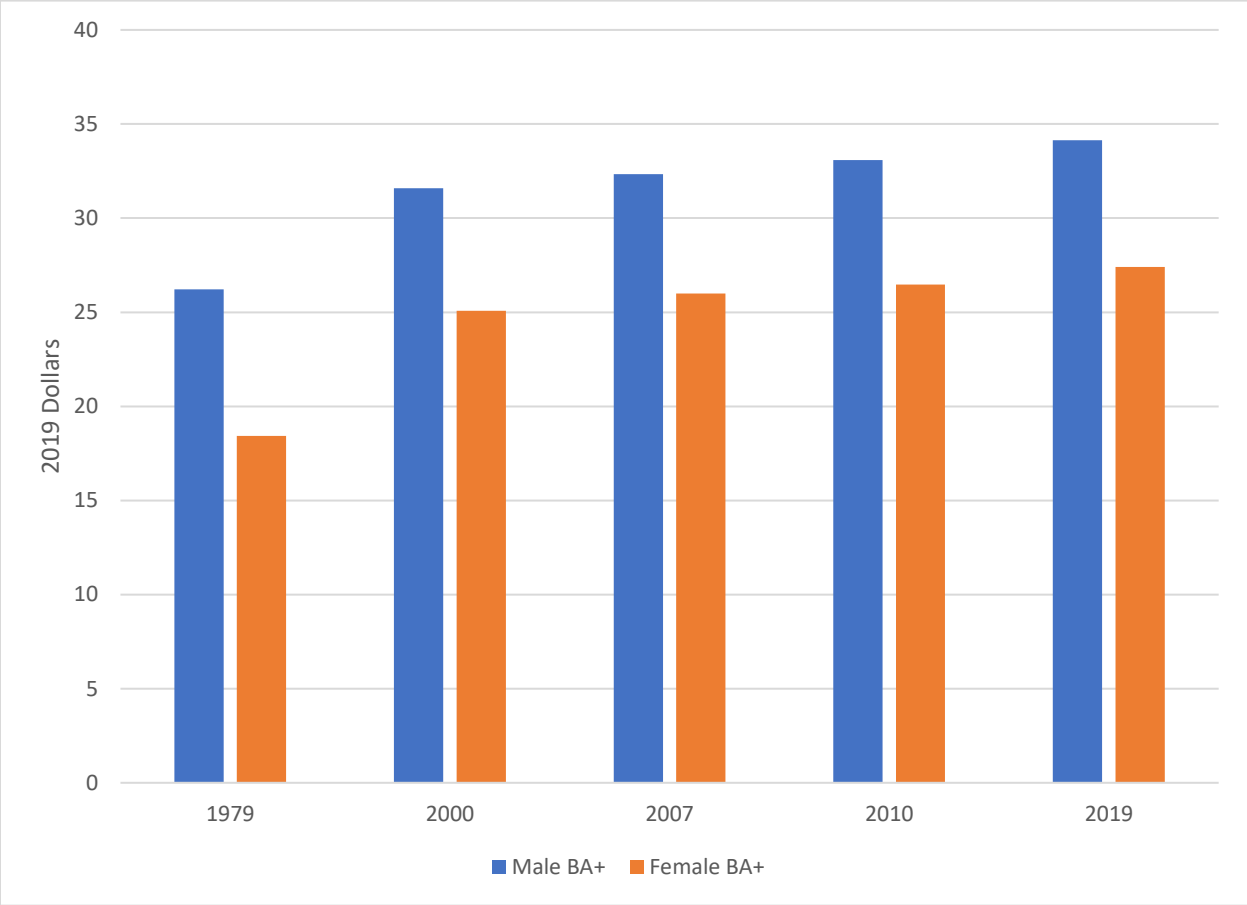
Source: Authors calculations from Current Population Survey Outgoing Rotation Groups. Wages are adjusted for inflation (here and in all data presented below) using the chain-weighted GDP Deflator for Personal Consumption Expenditures.

Figure 2a: Median Real Hourly Wages Among Employed Individuals with a High School Diploma or Less Education, Ages 25-54, by Gender



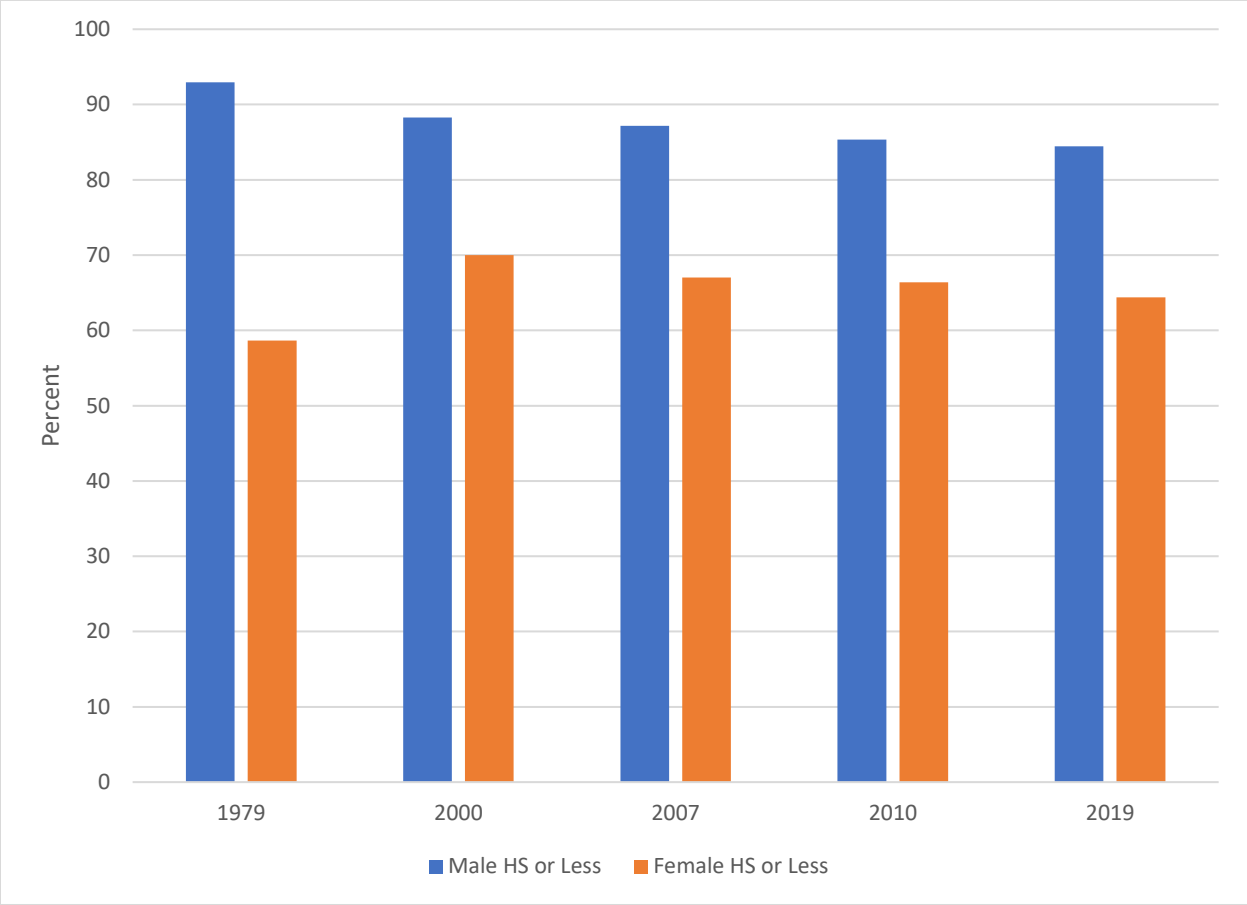
Source: Authors' calculations from Current Population Survey Outgoing Rotation Groups. Wages are adjusted for inflation (here and in all data presented below) using the chain-weighted GDP Deflator for Personal Consumption Expenditures.

Figure 2b: Median Real Hourly Wages Among Employed Individuals with a Bachelor's Degree or More Education Ages 25-54, by Gender



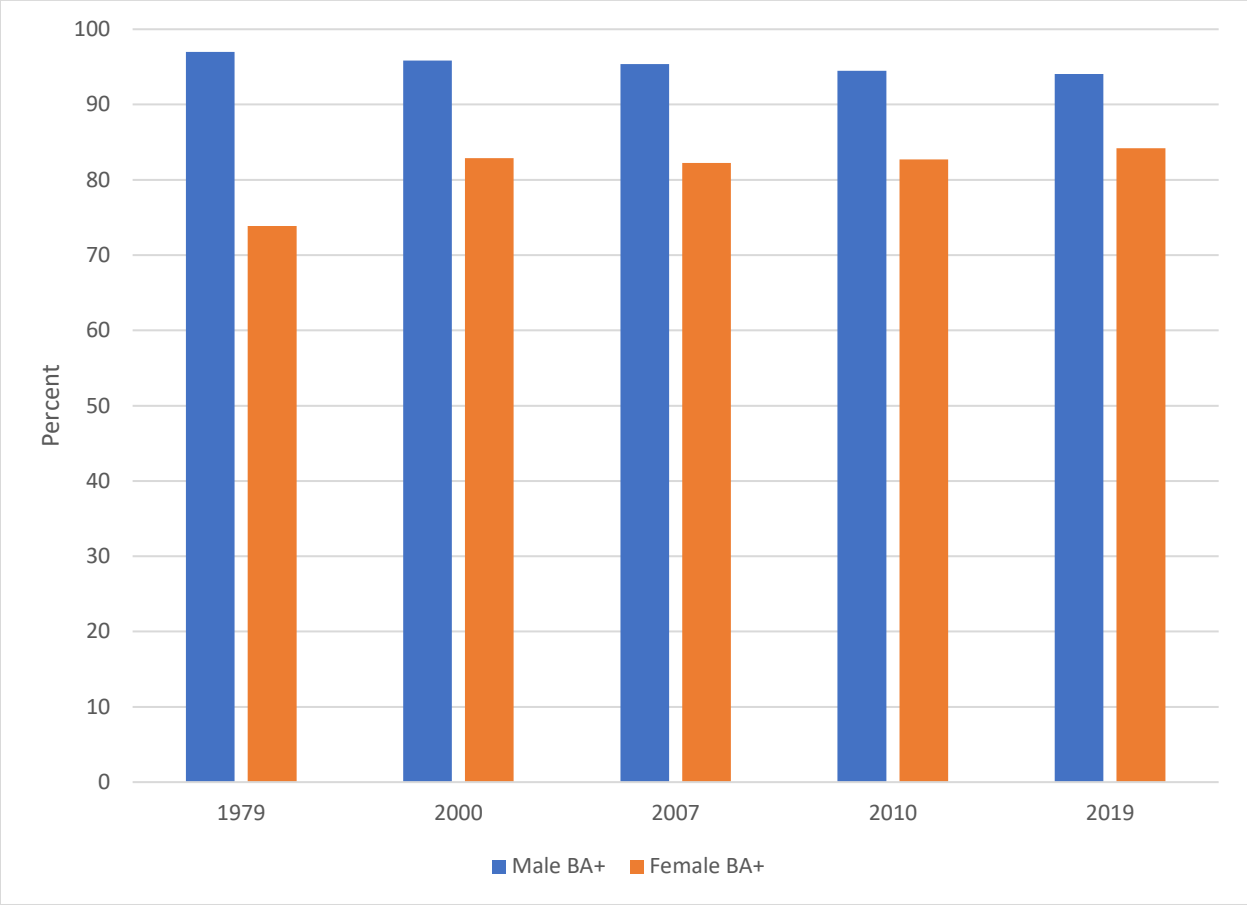
Source: Authors' calculations from Current Population Survey Outgoing Rotation Groups. Wages are adjusted for inflation (here and in all data presented below) using the chain-weighted GDP Deflator for Personal Consumption Expenditures.

Figure 3a: Labor Force Participation Among Individuals with a High School Diploma or Less Education, Ages 25-54, by Gender



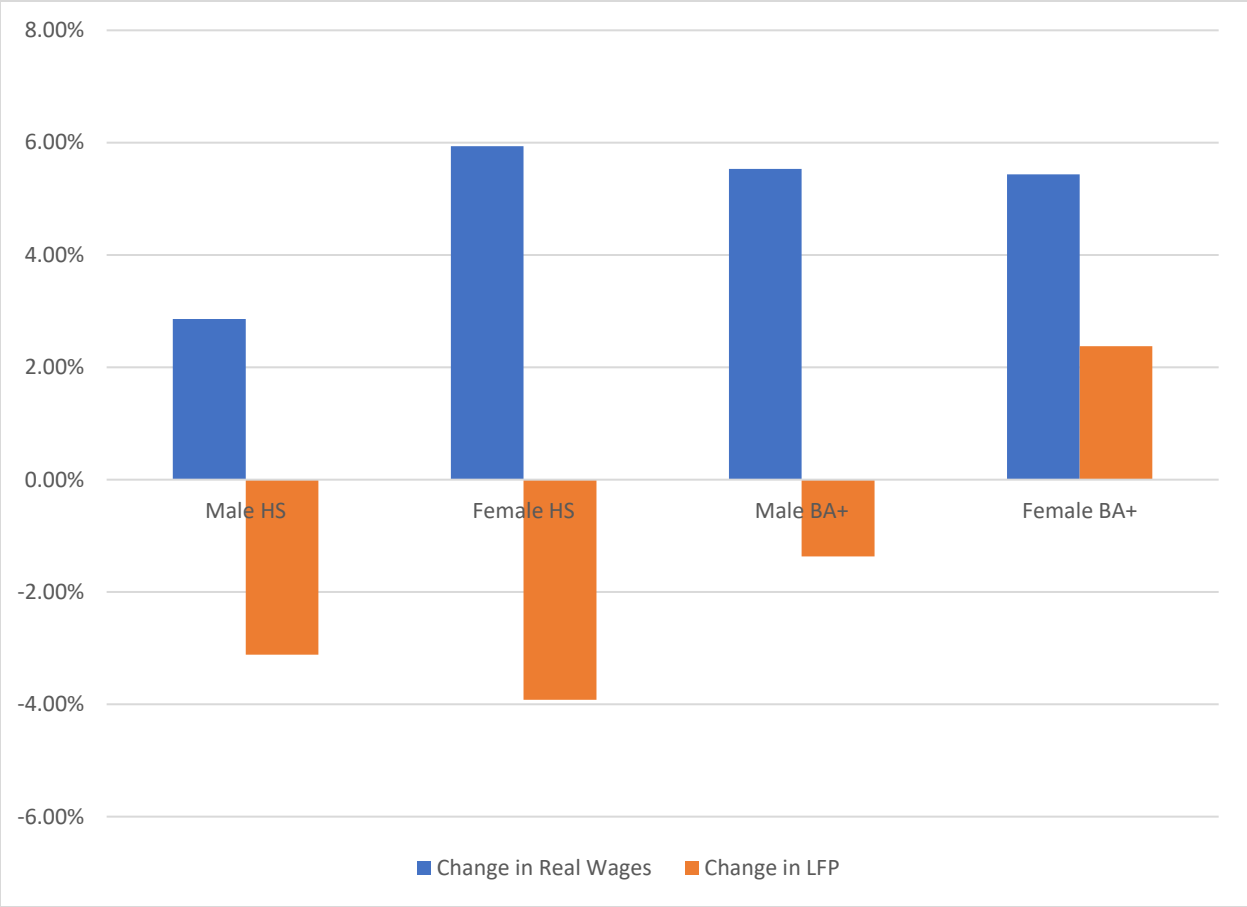
Source: Authors' tabulations from the Current Population Survey.

Figure 3b: Labor Force Participation Among Individuals with a Bachelor's Degree or More Education, Ages 25-54, by Gender



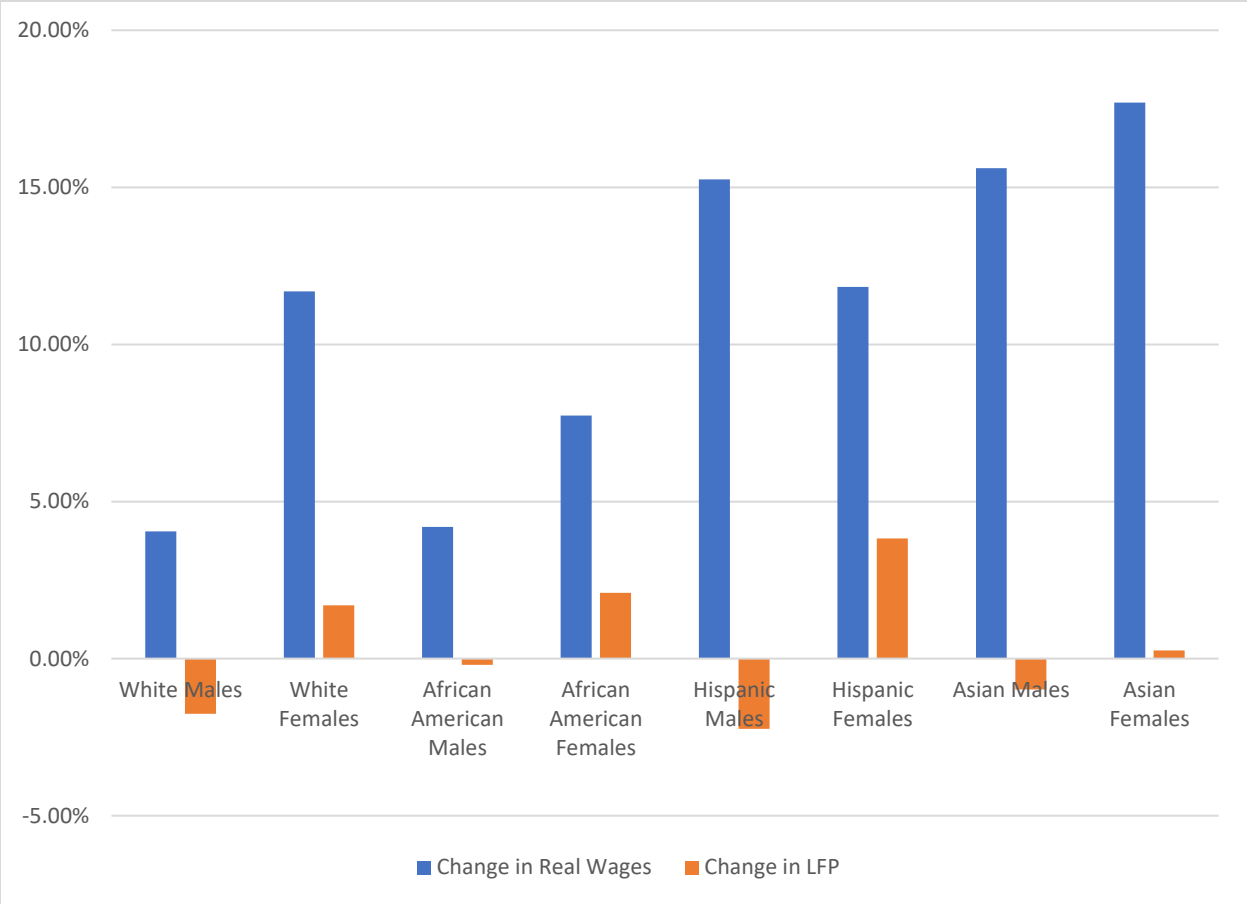
Source: Authors' calculations from the Current Population Survey Basic Monthly files.

Figure 4a: Percent Changes in LFP and Real Median Hourly Wages, by Gender and Education, 2007-



Source: Authors' calculations from the Current Population Survey Basic Monthly files.

Figure 4b: Percent Changes in Labor Force Participation (LFP) and Median Real Wages by Race and Gender, for Ages 25-54, 2007-2019



Sources: LFP--Authors' calculations from the Current Population Survey Basic Monthly files. Median Real Wages--Authors' calculations from Current Population Survey Outgoing Rotation Groups. Wages are adjusted for inflation (here and in all data presented below) using the chain-weighted GDP Deflator for Personal Consumption Expenditures.

Table 1a: Real Median Hourly Wages for Employed Individuals, Ages 25-54, by Race and Ethnicity (2019 Dollars)

	1979	2000	2007	2010	2019
Non-Hispanic White	18.43	20.36	21.62	21.81	23.08
Males	22.12	23.62	24.03	24.10	25.00
Females	13.59	17.55	18.80	19.31	21.00
African American	14.75	15.66	16.22	16.64	17.31
Males	17.69	16.85	17.28	17.22	18.00
Females	12.50	15.09	15.62	16.07	16.83
Hispanic or Latino		14.04	14.88	14.92	17.00
Males		14.74	15.62	15.78	18.00
Females		12.64	13.82	13.77	15.45
Asian		21.06	23.10	22.96	28.00
Males		23.63	25.99	25.16	30.05
Females		18.25	20.42	20.66	24.04

Notes: This table shows labor force participation rates for 5 different racial and ethnic groups. Data are annual averages from the CPS ORG extracts provided by the Center for Economic Policy Research. Prior to 2003, Asian and Pacific Islander were not separate racial categories. If a respondent recorded multiple races they were assigned to the smallest individual group. (This only applies to a very small number of individuals in 2013 and beyond).

Table 1b: Labor Force Participation Rates, Ages 25-54 by Race and Ethnicity, 1979-2019

	1979	2000	2007	2010	2019
Non-Hispanic White	78.5	85.6	84.5	83.6	84.4
Males	95.3	92.9	91.7	90.1	90.1
Females	62.4	78.5	77.4	77.3	78.7
African American	77.0	81.5	80.0	79.0	80.8
Males	89.0	84.6	83.4	82.1	83.2
Females	67.4	78.9	77.2	76.3	78.8
Hispanic or Latino		80.4	80.7	80.4	80.4
Males		92.4	92.6	91.3	90.5
Females		67.8	67.3	68.1	69.9
Asian		81.0	80.7	80.2	80.3
Males		91.8	91.0	89.2	90.1
Females		71.4	71.4	71.9	71.5
American Native or Pacific Islander			77.7	75.9	76.9
Males			83.4	80.0	82.5
Females			69.7	72.4	72.0

Source: Authors' calculations from the Current Population Survey Basic Monthly files.
Notes: Prior to 2003, Asian and Pacific Islander were not separate racial categories. If a respondent recorded multiple races they were assigned to the smallest individual group. (This only applies to a very small number of individuals in 2013 and beyond).

Table 2: Adjusted Employment-Population Ratios by Race, Gender and Education during 2020

	Feb.	April	June	Oct.	Dec.
All Individuals	73.9%	55.8%	63.1%	68.1%	68.1%
Non-Hispanic White	75.6%	59.2%	66.7%	71.0%	71.0%
African American	69.8%	51.5%	57.1%	62.6%	62.3%
Hispanic or Latino	72.6%	49.9%	58.2%	65.0%	64.2%
Men	79.1%	61.0%	67.9%	73.2%	72.6%
Women	68.9%	50.8%	58.5%	63.2%	63.7%
Less than high school	55.1%	36.3%	43.3%	50.1%	49.6%
High school/some college	68.7%	47.4%	56.2%	62.4%	61.9%
Associate's degree	78.1%	59.7%	67.8%	72.0%	71.3%
Bachelor’s degree	82.3%	67.0%	71.7%	76.5%	77.1%
Graduate degree	86.5%	75.0%	80.6%	83.4%	83.8%

Source: Authors’ calculations from the Current Population Survey Basic Monthly files.
Notes: This table is drawn from Hershbein and Holzer (2021). Workers in ages 16 to 64 are included. Those who were missing from work in the reference week for reasons other than illness, weather, vacation or labor disputes are counted as not employed.