

Improving Employment and Earnings in Twenty-First Century Labor Markets: An Introduction



ERICA L. GROSHEN AND HARRY J. HOLZER

How have U.S. workers fared recently? Broadly speaking, not so well. The employment and earnings outcomes of most Americans in the late twentieth and early twenty-first century have been disappointing. Over the past four decades, average real wage growth has been modest; wage inequality has risen dramatically; and labor-force activity has declined, especially among less-educated workers. Indeed, looking at five-year intervals over this span, only during the mid to late 1990s—when the U.S. economy was enjoying its dot-com boom—has the United States seen significant real earnings growth or increases in labor-force activity, especially among less-educated men.

What accounts for the modest real wage growth, rising wage inequality, and falling labor-force activity that we have experienced? Looking forward, should we expect more of the same? How will new developments, like the automation of workplaces associated with artificial intelligence (AI) and demographic shifts, affect these outcomes? What should sensible public policy look like to enable us to adjust to the coming changes and improve outcomes for most workers?

Given their centrality to most American families' future economic well-being, these questions warrant attention. Thus, the Russell Sage Foundation sponsored a conference titled "Improving Employment and Earnings in Twenty-First Century Labor Markets" on September 21, 2018. The articles presented there appear in this volume. We hope that these descriptions of the labor market's trajectories and policy options will spur conversations, analysis, and action by academics, policymakers, employers, and the public. We believe that course corrections are possible and advisable. Appropriate policies and employer choices could improve outcomes for all, and particularly for those who are disadvantaged and whose employment outcomes have deteriorated in recent years.

In this introduction, we set the stage for the ten topical articles that follow by describing the three key U.S. labor-market trends in recent decades and what we know about their determinants. We also speculate a bit about the likely impacts of coming changes in automation and demographics, and then consider policy choices available to respond to the economic forces in play. After reviewing these

Erica L. Groshen is senior extension faculty at the School of Industrial and Labor Relations, Cornell University. **Harry J. Holzer** is John LaFarge SJ Professor of Public Policy at the McCourt School of Public Policy, Georgetown University.

© 2019 Russell Sage Foundation. Groshen, Erica L., and Harry J. Holzer. 2019. "Improving Employment and Earnings in Twenty-First Century Labor Markets: An Introduction." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 1–19. DOI: 10.7758/RSF.2019.5.5.01. Direct correspondence to: Harry J. Holzer at hjh4@georgetown.edu, 401 Old North, Georgetown University, Washington, D.C. 20057.

Open Access Policy: *RSF: The Russell Sage Foundation Journal of the Social Sciences* is an open access journal. This article is published under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License.

contributions to our understanding of current trajectories and policy options, we outline several key takeaways.

RECENT LABOR-MARKET OUTCOMES AND THEIR DETERMINANTS

First we describe and consider sources of the most apparent broad labor-market outcomes in employment and earnings since the late 1970s: modest real wage growth, rising wage inequality, and declining labor-force activity, especially among less-educated Americans. After that, we speculate on how likely these trends are to continue throughout the twenty-first century.

Modest Real Wage Growth

Since 1979, most U.S. workers' real (that is, inflation-adjusted) wages have stagnated. Figure 1 presents the dismal pattern of mean and median real wages from 1979 to 2016.¹ Indeed, only the second half of the 1990s shows any sustained real wage growth.² The general flatness of wages for the average U.S. worker over nearly four decades is quite astounding and historically unprecedented.

What might account for the recent flatness of wages? In a strict accounting sense, three factors largely account for the pattern:

- low productivity growth,
- a decline in workers' share of U.S. income, and

- rising health-care benefit costs as a share of total compensation.³

Labor-productivity growth has averaged under 2 percent per year since 1973, well below its average in the years after World War II. Indeed, excluding the decade around the dot-com boom, it averages just 1.5 percent, and in the decade after 2007 it was 1.2 percent (Baily and Montalbano 2016).

Given such slow growth in output per worker, it is perhaps not surprising that growth in worker wages has lagged as well—because real wage growth remains quite correlated with, though lower than, productivity growth in this period (Stansbury and Summers 2017). Yet, because compensation growth has been at least somewhat decoupled from productivity growth since the late 1970s, higher productivity growth alone is apparently not enough for raising wages. It may not even be necessary for such growth, though rising real wages would require some redistribution away from profits (or lower benefit costs) absent higher productivity growth.

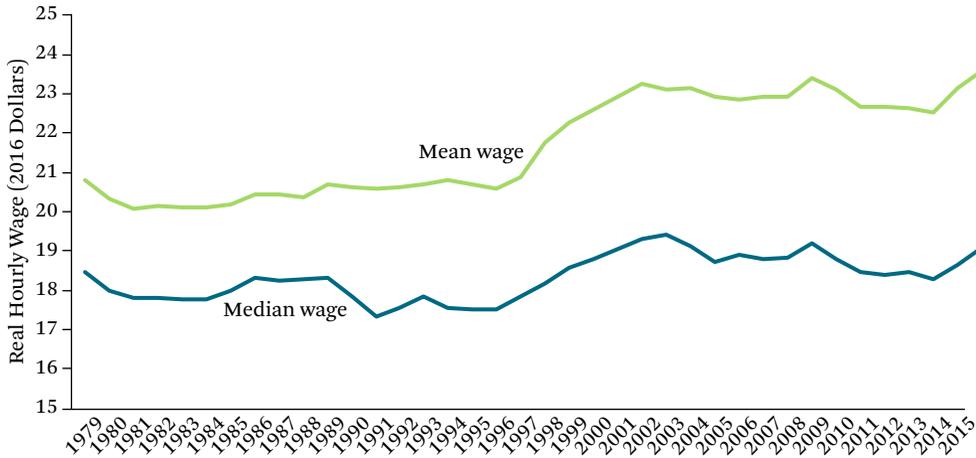
Thus, the recent decline in labor's share of output (from 64 percent in 1973 to 58 percent in 2016) also clearly contributes to low overall wage growth. Likewise, the growth of the share of worker compensation accounted for by health-care costs also reduces wages, though this factor does not appear to have been consistently larger in the decades since 1979 than in those before that year.⁴

1. The figures we use have been generously provided to us by Jay Shambaugh and Ryan Nunn of the Hamilton Project at the Brookings Institution (Shambaugh et al. 2017). Wages are deflated by the CPI-U-RS in figure 1. The CPI-U-RS is not constructed to accurately measure cost-of-living differences over such a long time. Thus, it is more appropriate to compare the pace of real earnings growth over short periods. Note, however, that real wage trends using other price indices, like the chain-weighted GDP deflator for personal consumption expenditures show qualitatively similar though somewhat larger real wage increases over time (Holzer and Hlavac 2014).

2. The stronger real wage growth we observe in the mid to late 1990s occurs due to a temporary confluence of strong productivity growth, tight labor markets, and low inflation that have not been observed at any other time in the past four decades.

3. These three factors would not exactly account for wage trends, at least partly because productivity and earnings are based on price indices that have trended quite differently in the past few decades, with that for productivity rising by much less (and thereby inflating productivity growth relative to that in earnings). They also differ partly because other benefits besides health care affect the extent to which total compensation growth differs from that in wages.

4. Data show that increases in the share of compensation accounted for by health insurance premia rose during

Figure 1. Mean and Median Wages, 1979–2016

Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

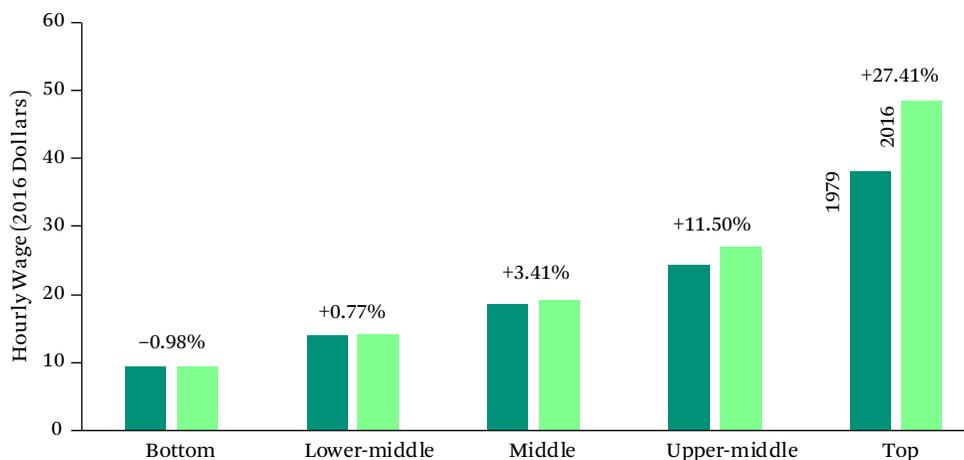
Note: Wages are deflated using the CPI-U-RS. Sample includes workers age twenty-five to fifty-four.

The questions of why productivity growth has slumped and why the share of productivity improvements going to labor has declined remain open. Several hypotheses help explain one or both developments:

- rising automation in the labor market (Acemoglu and Restrepo 2018; Autor 2018);
- growth of nearly winner-take-all product markets where capital-intensive firms have gained substantial market share relative to those more labor-intensive (Autor et al. 2017);
- relatively weak aggregate demand (relative to potential output) in the U.S. economy since 1980 (Bernstein 2018);
- a slowdown of the rate of growth of education in the workforce (Goldin and Katz 2008);
- declining dynamism of the labor market, as measured by geographic and occupational mobility of labor as well as declining numbers of business startups (Shambaugh, Breitwieser, and Liu 2018); and
- rising labor-market power of employers relative to workers and declining mechanisms for worker voice.⁵

the 1980s but then declined in the next two decades, with the post-1979 average roughly similar to that for the three decades of the 1950s through the 1970s (Burtless and Milusheva 2013).

5. Jay Shambaugh, Audrey Breitwieser, and Patrick Liu (2018) note growing evidence of employer monopsony power in local labor markets, especially in rural and smaller metropolitan areas, though it is not clear that such power is itself growing nationally. But when these areas experience losses in local labor demand, especially through technology or globalization, such market power of employers likely imposes even greater costs on workers who face little alternative demand for their labor and may not be inclined to relocate geographically. Under these circumstances, employer monopsony power could lower labor-market efficiency and productivity as well as raise inequality. There has also been some evidence of rising product market concentration of firms and higher markups above costs that, all else equal, might create opportunities for workers to share in product market rents. Of course, the ongoing implementation of digital technologies, globalization, deunionization, and deregulation limit worker abilities to share them. Finally, Shambaugh, Breitwieser, and Liu also note recent evidence of growing anticompetitive behaviors by employers such as noncompete and nondisclosure agreements in worker contracts, which could affect both worker productivity and inequality.

Figure 2. Real Wage Levels and Growth by Wage Quintile, 1979–2016

Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

Note: Wages are deflated using the CPI-U-RS. Sample includes workers age twenty-five to fifty-four.

Rising Wage Inequality

As overall wage growth slowed, inequality widened. The rise in wage inequality overall and across education groups has been frequently researched and documented. Figures 2 through 4 summarize trends that we know from this work. Figure 2 presents rates of wage growth between 1979 and 2016 across different quintiles of the wage distribution; figures 3 and 4 do so across education and racial-gender groups respectively. The bars show the real median hourly wage (in 2016 dollars) in 1979 and 2016 for each group; above the bars are the percentage change in wages for each group. As an example, the real median wage for the bottom quintile of workers fell by 0.98 percent from 1979 to 2016 and grew by 27.41 percent for the top quintile. And, although benefits such as health insurance have expanded since the passage of the Affordable Care Act in 2010, trends in benefit availability over a longer time suggest that inequality has grown in broader compen-

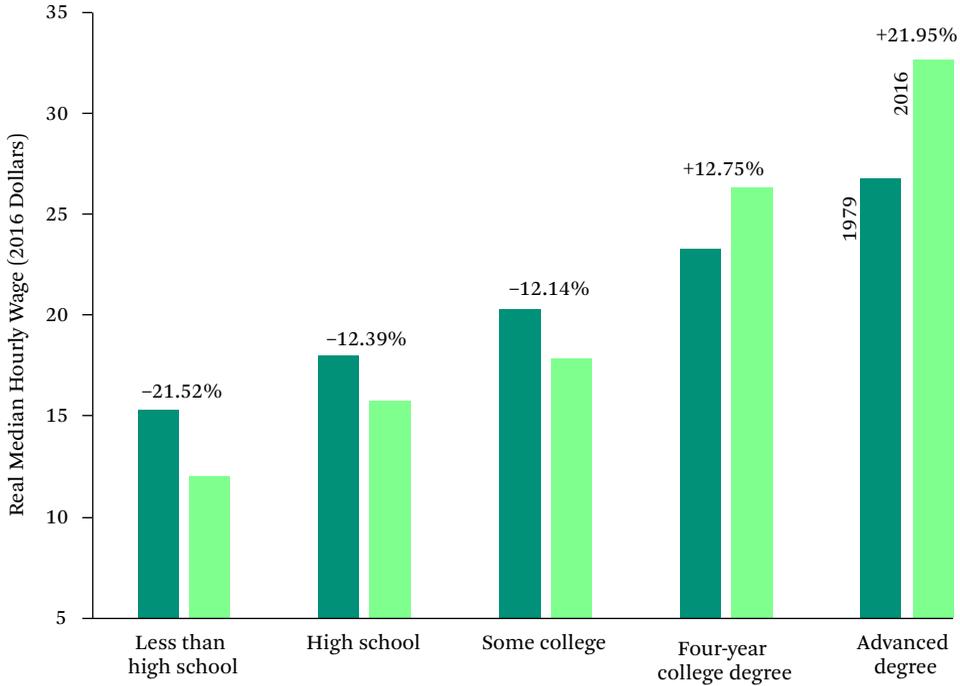
sation measures as well as in earnings alone (Pierce 2001).

The three figures show well-known patterns of rising wage inequality in the labor market over this time. Wage growth has very clearly been highest in the top quintile of the earnings distribution; and other data show it being increasingly higher for the top 10 percent, 1 percent, and 0.1 percent of that distribution (Gould 2019).⁶ Although the third quintile enjoyed more wage growth over the entire four-decade period than the bottom quintile did, other data suggest that much of this occurred during the 1980s (Autor, Katz, and Kearney 2008). Beyond that point, inequality rose mostly between the middle and top earners, rather than between the middle and bottom earners. Real wage growth has also been substantially higher for those with bachelor's or higher education degrees than for those without college, and for women relative to men.⁷ Wage growth among Hispanics lags that of whites and is even lower

6. The changes in inequality at different points of the earnings distribution are often summarized in this literature by the ratios of earnings at the 99th, 90th, 50th, and 10th percentiles—so the 99:50 and 90:50 ratios measure inequality between the top and middle, while the 50:10 measures it between the middle and bottom. These measures trend somewhat differently over the past four decades, with the 99:50 ratio rising the most.

7. On the other hand, David Autor (2014b) clearly indicates that the growth of the college–high school ratio within the bottom 99 percent of the income distribution accounts for four times the relative loss of income for high school graduates as does the rise in income for the top 1 percent.

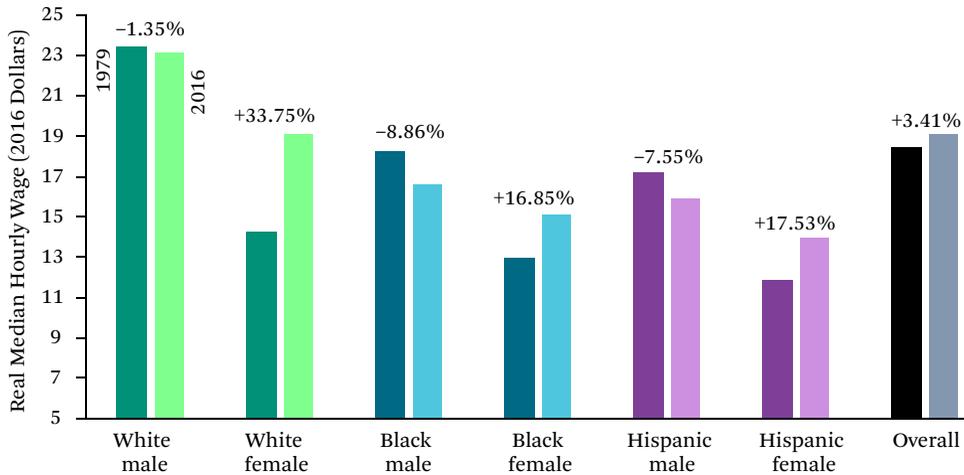
Figure 3. Real Wage Levels and Growth by Educational Attainment



Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

Note: Wages are median hourly earnings and deflated using the CPI-U-RS. Sample includes those age twenty-five to fifty-four.

Figure 4. Real Wage Levels and Growth by Race and Gender



Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

Note: Wages are median hourly earnings and deflated using the CPI-U-RS. Sample includes those age twenty-five to fifty-four.

among black men. But, if anything, these calculations understate the degree of earnings loss among men and especially black men, whose labor-force participation and employment rates have also declined a great deal.

A substantial literature tries to explain these increases in labor-market inequality. Even though most analysts agree that both labor-market and institutional factors are important, they continue to debate the relative importance of each (see Autor, Katz, and Kearney 2008; Card and Dinardo 2008; Fortin, Lemieux, and Lloyd 2018). The most important labor-market forces shifting demand away from less-educated workers include automation, in the form of skill-biased technical change (SBTC), which raises the demand for highly educated workers as it replaces the less educated; and globalization, which includes trade as well as immigration. To a great extent, these forces have generated polarization in the labor market, as employment and (to some extent) wages have risen in the highest- and lowest-paying jobs, and non-college-educated workers in the middle deciles of the wage distribution—especially in jobs consisting mostly of easily automatable routine tasks, such as production and clerical work—saw the greatest losses in both outcomes.⁸ Nevertheless, skeptics of the importance of SBTC and polarization note that the

broadly weak employment outcomes after 2000, even among college-educated workers whose real earnings have been flat in this period, may undercut these hypotheses (see, for example, Schmitt, Shierholz, and Mishel 2013). Not surprisingly, SBTC proponents read this evidence quite differently (see, for example, Autor 2014a).⁹

However, trade and technology alone do not determine any particular employment outcome. A range of policies influence how technology and trade affect workers. In particular, the failure of the supply of highly educated labor to more substantially rise in response to higher returns to education has allowed inequality across education groups to persist. This stands in sharp contrast to earlier periods in the United States, when education policies helped raise the supply of skills more vigorously in response to increases in the demand for them (Goldin and Katz 2008; Autor 2014b).¹⁰ Policy responses can also mitigate (or not) the harm caused to workers displaced by automation. In the United States, the large wealth losses (Davis and von Wachter 2011), substantial unemployment spells, and frequent labor-force exits (Farber 2017) sustained by displaced workers attest to a workforce development system that does not adequately protect workers from high, long-lived costs if they lose their jobs.

8. Harry Holzer (2015) points out that employment in middle-wage categories has not declined uniformly; instead, it has declined primarily in production and clerical jobs requiring no postsecondary education, while it has risen in other categories (such as health care) where postsecondary credentials are required. The net decline in middle-wage employment reflects the fact that the decline of employment in the former category is larger than the rise in the latter.

9. The flatness of real wages for college graduates since 2000 might reflect the fact that the growth of the supply of college graduates has finally caught up with weakening growth in demand for them (Beaudry, Green, and Sand 2013), though not by enough to reduce the still very high premium to college degrees to any real extent. Autor also acknowledges that employment after 2000 has mostly grown only in the lowest-wage occupations and shrunk in the others, apparently in contrast to the polarization story that works better in the 1990s. But he notes that job growth resumed in the highest-wage categories after 2007, and mostly attributes the shrinking of employment in this sector in the 2000 to 2007 period to the bursting of the internet bubble in 2000 and after. In addition, he argues that the “China shock” to manufacturing and then the Great Recession also contributed to very low real wage growth for all workers in the decade after 2000. The very high ongoing returns to cognitive skills in the United States (Autor 2014b) are also consistent with the SBTC and polarization hypotheses.

10. Goldin and Katz (2008) show that the rise in demand for high school labor early in the twentieth century led to rapidly rising supplies of such labor within a few decades, and corresponding declines in inequality between those who had and did not have such diplomas. The greater rise in high school attainment in that period at least partly reflects policy responses, such as the movement for universal public high schools.

In addition to market forces and policy mattering for outcomes, the same technology can be implemented by employers in very different ways with very different consequences, certainly for jobs and skills.¹¹ At various times, automation has led to deskilling, upskilling and sometimes both.¹² Automation operates on specific tasks, not entire jobs, which are composed of tasks. Thus, automation will have a partial impact on jobs, increasing interactions between humans and machines. When employers redefine jobs as tasks are automated, creative approaches to managing the human-machine interface are often possible and efficient.¹³

At the same time, institutional factors such as shrinking coverage of workers by collective bargaining and declining minimum wages (relative to median wages) have also contributed to rising wage inequality, perhaps playing a greater role than many economists had previously thought.¹⁴ Other institutional changes, including various forms of labor-market “fissuring” have likely added to such inequality, and threaten to do so even more in the future (Weil 2014). These institutional forces also suggest lower prevalence of employment in high-road firms that pay their workers a wage premium above standard market rates.¹⁵

Rising inequality in earnings and household income has characterized virtually all industrialized economies since the 1970s. This suggests an important role for factors like SBTC and glo-

balization that affect all such economies (Autor 2014b). At the same time, that increases in inequality have generally been greater in the United States than in most other countries implies an important role for institutional and policy effects that are more uniquely American (Autor and Katz 1999; OECD 2011).

Declining Labor-Force Activity

Whether people work also matters. Less equal earnings over time reflect not only trends in wage inequality, but also changes in labor-force activity. Figure 5 documents trends in labor-force activity since 1979, separately for men versus women and for youth (ages sixteen through twenty-four) versus prime-age adults (ages twenty-five through fifty-four). Although participation among prime-age women has risen since 1979, a closer look at annual trends shows that rising participation among adult women in the United States ended around 2000 and declined somewhat after that. Notably, the end of increases in labor-force participation for American women, although it continued to increase in many other industrial countries, suggests that factors such as family-work life imbalance and the rarity of paid family leave in the United States limits the workforce potential of American women in important ways (Black, Schanzenbach, and Breitwieser 2017).

In addition, youths’ and prime-age men’s labor-force activity have trended down consis-

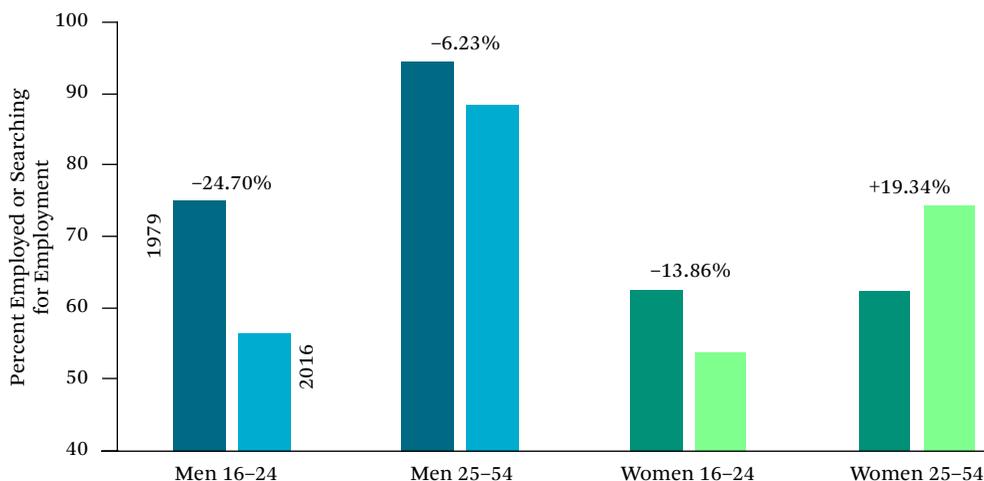
11. Maryellen Kelley and Susan Helper (1999) provide examples of how technology adoption can vary among employers with divergent impacts for the workers involved (for more discussion, see Groshen et al. 2018).

12. For example, Autor, Frank Levy, and Richard Murnane (2002) find that automation in banking in the United States in the 1990s had both effects, leading to polarization in wages among bank employees.

13. Haruo Shimada and John MacDuffie (1998) find that when humans work near machines, their observations can yield improvement ideas that “give wisdom to the machine,” which can help capital equipment appreciate (rather than depreciate) in value.

14. Nicole Fortin, Thomas Lemieux, and Neil Lloyd (2018) argue that, with a new way of measuring the spillovers of minimum wage increases and collective bargaining for workers not directly affected by those factors, the extent to which declines in those factors account for rising earnings inequality may be quite large.

15. Both, for instance, John Abowd and Francis Kramarz (1999) and Fredrik Andersson, Holzer, and Julia Lane (2011) offer evidence on firm-level wage effects that measure the payment of earnings premia above or below market levels for workers of a given skill set. Zeynep Ton (2014) presents industry case studies showing strategies used by firms to improve worker productivity and earnings in “good job” settings. “High-road” firms presumably can compete with others on the basis of higher worker productivity and performance, whereas “low-road” firms compete based on cost minimization; evidence remains limited on the extent to which the former can fully compete with the latter, however (Osterman 2017).

Figure 5. Changes in Labor-Force Participation Rates, 1979–2016

Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

tently since the 1980s.¹⁶ Only workers age fifty-five and older have increased their labor-force participation recently. In particular, many college-educated workers (whose health and longevity are clearly improving) apparently want longer working lives.

Figures 6 and 7 present separate changes in labor-force participation among prime-age men by education levels and race. Clearly, less-educated men (and especially black men) account for a disproportionate share of declining activity. If anything, declines for the latter group are understated due to the underrepresentation of low-income or black men in census survey data (U.S. Census Bureau 2012). We might not be too concerned if these declines reflected choices by the most educated workers (except from a fiscal perspective, where the ratio of working to nonworking populations is essential to our ability to fund our retirement pro-

grams). However, its concentration among the young or least educated implies large losses of earnings and wealth for these populations over time, and perhaps permanently.

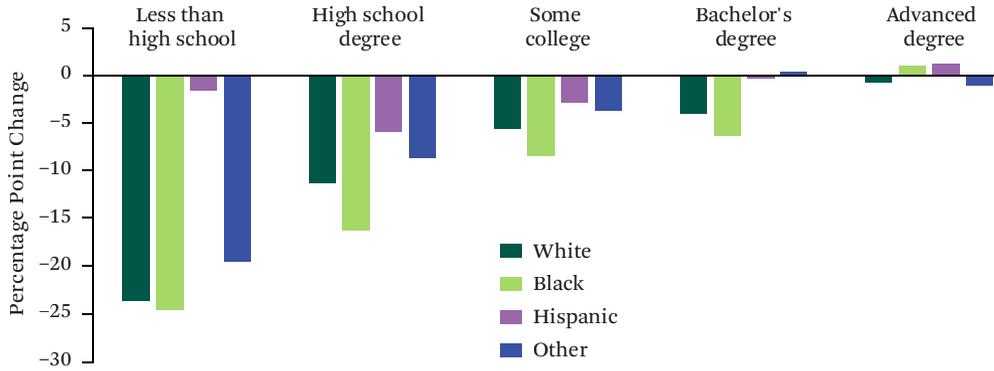
That labor-force activity has declined most among the groups bearing the greatest wage declines suggests that these workers face less demand for their labor over time (Autor and Wasserman 2013; Abraham and Kearney 2018).¹⁷ Exacerbating this impact, the concentration of less-educated men in regions hard hit by manufacturing job losses since 2000 also suggests a role for a persistent lack of job availability in those regions, coupled with a lack of regional relocations by these men (Austin, Glaeser, and Summers 2018).¹⁸ In addition, other factors such as the availability of transfer income, especially from disability insurance, and opioid dependency likely contribute to these declines as well (Krueger 2017; Doar, Holzer, and Orrell

16. At least some of the growing nonparticipation of youth in the labor force reflects higher rates of college enrollment over time (Krueger 2017). But data not presented here also show greater declines in participation among those age twenty-five to thirty-four than thirty-five to fifty-four, suggesting that other factors than enrollment are causing these declines.

17. That is, the decline in participation traces out worker movements along a labor supply function in response to shifting demand.

18. Olivier Blanchard and Lawrence Katz (1992) present evidence of regional mobility of workers in response to labor demand shocks. However, John Bound and Holzer (2000) show that such responsiveness has long been lower among less-educated than highly educated workers.

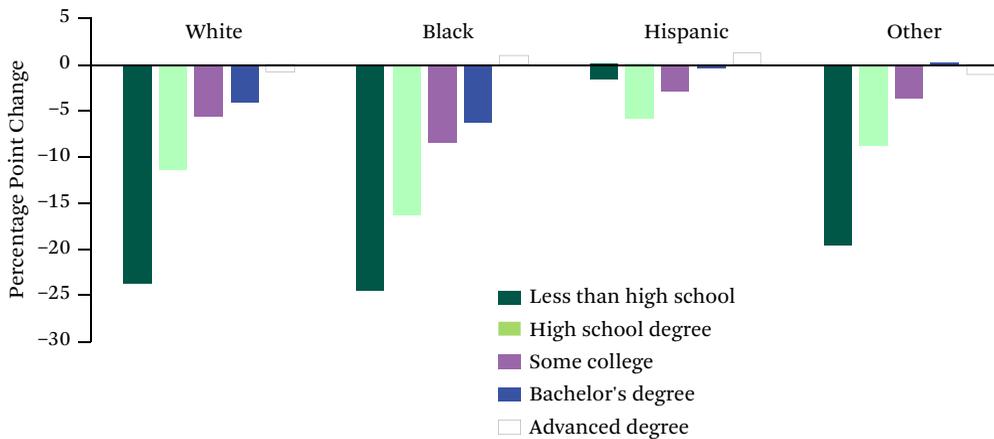
Figure 6. Labor-Force Participation Changes, Prime-Age Men by Education



Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

Note: Sample includes men age twenty-five to fifty-four.

Figure 7. Labor-Force Participation Changes, Prime-Age Men by Race



Source: Authors' calculations based on Current Population Survey data (U.S. Census Bureau 1979–2016).

Note: Sample includes men age twenty-five to fifty-four.

2017). Among black men, these forces have been compounded by low educational achievement and early work experience, as well as high rates of incarceration. These factors result in few job offers and low wages for these men, driving them out of the workforce in even larger numbers (Neal 2008).

Looking Ahead

The preceding discussion suggests that labor market and institutional forces, employer

choices, as well as the extent and effectiveness of policy responses, all contribute to the modest real wage growth, rising inequality, and declining labor-force activity observed in the United States over the past four decades. How will these and other factors evolve over the coming decades and what would constitute appropriate policy responses?

That automation will continue seems scarcely in question, and its labor-market effects may well accelerate as robotics and AI be-

come more prevalent in American workplaces. Frank Levy (2018), among others, argues that such technologies will likely have large impacts on workplaces and employment within the next decade, as motor vehicles, manufacturing production, and customer service centers become more fully automated.

Over a longer time, AI adoption in workplaces will likely have both positive and negative effects on workers. On the one hand, automation should raise worker productivity and potentially average compensation; on the other hand, it could well further depress labor's share of national income, especially in the absence of worker "voice" and policy changes. It will likely cause continuing worker displacement, imposing associated costs on affected workers. Younger or more-educated workers will likely adapt to these changes by getting new forms of education and training, though older or less-educated workers are more likely to simply accept lower-wage jobs or leave the labor force entirely. The disruptions to work will likely affect workers at all levels of education. Yet, the skill bias we have observed in recent decades will likely persist (Nedelkoska and Quintini 2018). This bias tends to disadvantage lower-skilled workers because the most routine forms of work will remain the easiest to automate. Furthermore, more-skilled displaced workers may have an edge in gaining new skills and "bumping" lower-skilled workers out of their opportunities.¹⁹ All else equal, these forces suggest ongoing increases in wage inequality in the future.

However, everything need not remain equal. For example, the abilities of workers to retrain, and perhaps keep their jobs, in the presence of automation will depend on a range of institutional and policy factors, as noted. Private employers' practices and public-sector policies will help determine how easily entering and

continuing workers can obtain the skills they need for these new or reconfigured jobs, and the speed of these transitions.²⁰

Interestingly, the effects of automation in industries like retail trade to date have perhaps increased the quality of jobs but not greatly diminished their quantity (Mandel 2017).²¹ Still, if the scope and speed of displacement as the new technologies are implemented greatly exceed those of the past, it is possible for the adjustment processes that economists emphasize to be overwhelmed, or for the net quality of jobs to be reduced at least temporarily. Indeed, as noted, the high and uncompensated costs borne by U.S. displaced workers suggest that current policy and employer actions are not enough to manage the likely future pace of job destruction without harm to families and communities. All of this will likely have political as well as economic implications, perhaps feeding the rising populism observed over the past few years in the United States and the European Union and fueling resistance to technological change on the shop floor (West 2018).

On a different issue, both the pace and composition of future immigration remain unclear at the moment as controversies rage over potential changes in our immigration law. The impact of immigration on the earnings of native-born workers remains heavily contested. In addition, workforce demographics will likely change, especially as immigrants replace retiring baby boomers in the labor force. Whether the retirements of baby boomers create widespread labor market shortages, as was once widely forecast (Judy and D'Amico 1997), now seems doubtful (Freeman 2007). But the growth of minority populations and the aging of the U.S. workforce might well further limit the levels of educational attainment of the workforce overall, absent major policy efforts to offset these changes (Frey 2015). Lower educational

19. Autor (2015) describes how the magnitudes of labor cost savings, price, and income elasticities of demand help determine whether new jobs are created in the automating industries or elsewhere.

20. For other discussions of the adjustment process of workers to robotics, see Levy and Murnane (2013); Holzer (2017).

21. Michael Mandel (2017) argues that employment growth in fulfillment centers, where goods are stocked for online shopping, plus that in transportation/logistics for workers who deliver them, pay higher wages and are large enough in quantity to offset most job loss in brick-and-mortar retail trade in the past several years.

attainment, in turn, can limit productivity growth and raise earnings inequality.

The ability of our more diverse workforce to become better educated and adaptable to coming changes in automation will also depend on future trends in federal and state education policy and funding at all levels, from prekindergarten programs through higher education. The effectiveness of the nation's labor exchange and workforce development system, including its American job centers and unemployment insurance, could also help determine the extent to which displaced workers learn about new job opportunities and get the skills necessary to obtain them.²² Policies to encourage employers to provide more on-the-job training, especially to workers at risk of technological displacement, could be important too.

Another set of policy choices in the future will affect how workers share in productivity gains associated with automation. The degree of sharing will certainly depend on employer adoption of practices such as profit-sharing (Blasi, Freeman, and Kruse 2014) and various forms of worker "voice," including collective bargaining or other alternatives (Freeman, Hersch, and Mishel 2004). Legal decisions, such as the recent Supreme Court ruling in *Janus v. AFSCME* (which struck down the ability of public-sector unions to collect dues from nonmembers), will also affect the extent to which unions remain vital forces in the private and public sectors. In addition, new efforts to ensure protections and benefits coverage for workers in a wide variety of settings, including alternative staffing arrangements like contracting, will likely be crucial too (Harris and Krueger 2015; Katz, Poo, and Waxman 2018).

Of course, statutory minimum wages (at the federal, state, and local levels) and overtime laws can affect the distribution of earnings and

employment. Other efforts to make work pay, such as expansions of the Earned Income Tax Credit (EITC) and wage insurance, could improve both earnings and labor-force participation among less-educated or displaced workers as well.

Finally, more targeted policy choices can affect employment outcomes of specific groups of workers, and perhaps their labor-force participation, such as paid leave for women (or caregivers more broadly) and enhanced child-care subsidies. Efforts to help less-educated men could include opioid addiction prevention and treatment, policies limiting incarceration or helping offenders reenter the workforce, or Social Security Disability Insurance (SSDI) reform.²³ Efforts to combat "disconnection" from school and work among youth can also include a range of education and training policies in high schools and community colleges.

In short, the forces of automation and globalization are not likely to subside any time soon, potentially leading to further flat wages, rising inequality, and lower labor-force participation. Mitigating these consequences will require changes in policy and employer choices. Evidence in favor or against at least some of these future policy options appears in the articles that follow.

ARTICLES IN THIS VOLUME

What does the best current research say about these key issues? We asked the conference authors to use past experience to look forward and consider policy options. In line with our review, authors wrote on the following topics:

- labor demand and the supply of skilled workers,
- labor-market institutions and policies,
- alternative staffing, informal work, and financing, and

22. For discussions of potential reforms in the workforce system and unemployment insurance to help workers gain better skills and new jobs, see Van Horn, Edwards, and Greene (2015) and Kugler (2015) respectively.

23. Alan Krueger (2017) argues that large percentages of non-employed prime-age men use painkillers regularly. Holzer, Steven Raphael, and Michael Stoll (2006) argue that incarceration limits subsequent employment of offenders, especially employer demand for labor, while garnishing wages for those in arrears on child support likely reduces their supply. Katharine Abraham and Melissa Kearney (2018) estimate relatively large impacts of previous incarceration on subsequent employment losses of workers. For discussions on how SSDI likely reduces employment among prime-age men and women, see Autor and Duggan (2006) and Liebman (2015).

- improving labor-force attachment and outcomes for three particular demographic groups.

Labor Demand and the Supply of Skilled Workers

We begin with considering the effects of automation and immigration on jobs and the supply of workers with higher education.

In the first article, George Borjas and Richard Freeman (this issue, 2019) estimate the impact of industrial automation and immigration intensity, across industries or states, on the short-term employment and earnings of workers between 2004 and 2016. They find large negative effects of automation on employment—each robot displacing as many as four to five workers—as well as wages; immigrant impacts on workers are also sometimes negative (especially for less-educated workers) but much smaller.

These findings are based only on their analysis of manufacturing industries, where virtually all industrial robots have been used to date, but they will no doubt spread to other sectors and grow in intensity and productivity over time. The results thus suggest the potential for automation to generate considerable employment disruption and worker displacement in future years.

John Bound, Breno Braga, Gaurav Khanna, and Sarah Turner (this issue, 2019) focus on the supply of college-educated workers in the United States, and how the quantities of college graduates might be affected by declining state appropriations to public colleges and universities, which are the backbone of U.S. higher education. They estimate that declining fiscal appropriations at the state level for public universities cause some categories of these universities to reduce institutional expenditures, enroll fewer students, and reduce patenting activity (a sign of declining research productivity), but also raise tuition and private funding to offset lost public dollars. As state budgets in the future will continue to feel pressure from rising Medicaid costs and legislative reluctance to increase revenues, declining fiscal support for public institutions of higher education will likely continue to restrict their ability to produce college graduates and economically valuable research.

Putting together the conclusions of both articles, we see a strong warning against complacency. Without improvements in our public education and workforce development system, the ability of workers to gain more higher education and training in response to rising displacements from automation will likely be sorely tested in the coming decades.

Labor Institutions and Policies

Other factors affecting workplace outcomes include the extent of collective bargaining, other voice mechanisms, high-road employment practices, and statutory minimum wage and overtime regulations.

Thomas Kochan and William Kimball's article in this issue (2019) analyzes the role of collective bargaining over time in generating not only higher compensation for workers, but also worker voice and broader economic benefits in the United States in the form of higher productivity. They find that, since about 1980, positive union impacts on worker wages have fallen, and that the type of important partnerships between labor and management that generate high-performance workplaces has become increasingly rare.

Survey evidence suggests that many more workers want representation or other forms of worker voice than currently have it. Other attempts to spur high-road employment practices, through public financial incentives or technical assistance, can be pursued in non-union settings but are more difficult to generate and sustain. Kochran and Kimball (this issue, 2019) conclude that dramatic changes are needed in labor-management legislation and regulations to generate a new social contract between workers and their employers that could boost performance and productivity in U.S. workplaces.

Charles Brown and Daniel Hamermesh in this issue (2019) review the literature on how wage and hour laws—specifically higher minimum wages and overtime pay regulations—affect the employment and earnings of affected workers. They find that, as the federal government has allowed its statutory minimum wage to decline in recent years (relative to median wages in the private and public sectors), many states and localities have raised their own min-

imum wages, creating much more variation across states than has existed historically. The federal government has also failed to raise the ceiling on earnings that are covered by overtime rules, so the real earnings ceiling (after allowing for inflation) has diminished over time.²⁴

Their review of estimated impacts of minimum wages suggests quite small negative impacts on the employment of young or less-educated workers, although long-term effects (as well as those associated with minimum wages at or near \$15 an hour) might be considerably larger. Overtime laws also seem to reduce hours worked yet raise employment and wages. Accordingly, the failure of the federal government to adjust minimum wages and overtime ceilings results in large differences in minimum wages across states that could reduce employment in certain states, and hours worked per employee rise and weekly earnings decline due to diminishing overtime coverage.

These articles together show a need to re-examine the relevance and efficacy of current labor-market regulations and employer practices in light of the changing U.S. labor market.

Alternative Staffing, Informal Work, and Fissuring

Another evolving aspect of the labor market concerns the relationship between employers and workers, including the growth of independent contracting, temporary jobs and informal work, and fissuring.

Lawrence Katz and Alan Krueger (this issue, 2019) address a recent puzzle about the extent to which independent contracting has risen over time. On the one hand, evidence they generated in a widely cited article based on the Rand-Princeton Continuous Work Survey, in comparison with earlier estimates, suggested a substantial rise in the use of independent contracting among workers between 2005 and 2015 (Katz and Krueger 2016). On the other hand, the most recent data from the Contingent Worker Survey (CWS) suggested no such increase over time (BLS 2018).

Katz and Krueger (this issue, 2019) analyze a range of hypotheses about why the discrep-

ancy has occurred and conclude that employment as independent contractors has likely risen by just 1 to 2 percentage points in this period, considerably lower than the 5 percentage point increase they had found earlier. This brings their findings closer to those from other sources. Also in line with others, they find discrepancies in measured self-employment activity between CWS and other sources, such as data from the Internal Revenue Service and Amazon MTurk. They conclude that alternative staffing arrangements are growing more slowly than they had previously thought, but that casual and part-time, secondary work is likely more important and deserves further study over time.

Apropos of this conclusion, Katharine Abraham and Susan Houseman (this issue, 2019) examine the characteristics of informal jobs. They analyze self-reported data from the Survey of Household Economics and Decisionmaking (SHED) administered by the Federal Reserve Bank Board of Governors in 2015 and 2016. The data reveal that informal work is a frequent activity, with about 28 percent of workers participating in informal work in any given month. Furthermore, significant fractions of workers report the income generated by such work to be important in their household finances. Yet benefits and legal protections are generally absent in informal work. Workers holding these jobs tend to be in vulnerable situations, including minorities, the less educated, those with lower incomes or experiencing financial stress, those in nonstandard work arrangements, and the unemployed. The authors conclude that the prevalence and nature of informal work requires developing a better understanding of its characteristics in order to design appropriate policies for part-time and nonemployee workers.

Finally, David Weil (this issue, 2019) considers the role of *fissuring*—a term coined in his 2014 book—in today's labor market. Fissuring occurs when employees in the same establishment work for multiple employers, in alternative staffing arrangements (such as independent contracting or temping) but also in more regular arrangements, including franchising.

24. The Obama administration attempted to raise the ceiling in its second term, but the effort was struck down by the courts.

Thus the CWS data will not fully capture its prevalence. Other data sources or redesign of the CWS will be needed to track this trend more fully.

Such fissuring practices disrupt many longstanding employment norms within workplaces, such as the historic tendency for large firms or those in high-wage industries to pay all their workers relatively higher wages, and the tendency of employers to share product market “rents” with their workers. Employers also have fewer incentives to invest in training such workers.

Thus, fissuring tends to raise earnings inequality and weaken benefit and regulatory coverage. This suggests that further fissuring will lead to even more inequality and lack of legal protection for workers in coming decades. Weil therefore encourages both more research and policy experimentation on issues such as with whom responsibility for labor practices should reside, how pay norms might be established in fissured workplaces, and how benefits and legal protections can be provided as well to these workers.

The three articles together also underline the need for data improvements to guide policy and for a reconsideration of how employer-employee relationships are defined in regulations that are intended to protect workers.

Improving Labor-Force Attachment and Outcomes for Three Demographic Groups

The final three articles consider trends and policies to help women, African Americans, and disadvantaged youth remain attached to the workforce and achieve progress.

Elizabeth Doran, Ann Bartel, and Jane Waldfogel (this issue, 2019) analyze data from the American Time Use Survey (ATUS) and the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97) on male and female access to family-friendly practices at work such as paid leave, childcare, and flexible schedules—all of which seem related to higher female labor-force participation across industrialized nations. They find that male employees in the United States have more access to paid leave overall, though female employees have more access to paid parental leave. Neither men nor women at work have much access to childcare, and flexi-

ble scheduling is much more available for highly educated workers than for others.

The authors argue that, to increase female labor-force participation, we should increase the provision of family-friendly policies at work. These, though, should be funded by a payroll tax mechanism rather than a mandate on employers, because the latter can be more burdensome to particular employers. Acknowledging the costs of such policies (in taxes or workplace disruption), they argue that public provision of such policies in several states has been successful and cost-effective.

William Rodgers’s article in this issue (2019) considers recent trends in relative labor-force participation, employment, and earnings between whites and blacks. Relative earnings rose for blacks until around 1980, but employment and labor-force activity declined for black men. Large racial gaps therefore persist in all these measures.

Rodgers attributes these changes to a wide set of causes, potentially including education and achievement gaps, declining unionism and manufacturing employment, and rising incarceration rates. Accordingly, he argues that no single policy effort will reverse these trends. He advocates for a set of policies, including several that are race-neutral but would disproportionately benefit African Americans in the labor market.

Pamela Loprest, Demetra Nightingale, and Shayne Spaulding (this issue, 2019) examine trends in labor-force activity among teens and young adults. Observed declines in such activity overall are mostly attributable to rising school enrollments over time; but substantial rates of low activity and disconnection from both school and work still appear among low-income and minority youth. Causes of these trends include poor schooling and lack of early work experience, opioid dependency, incarceration, and other barriers to well-paid work.

Loprest, Nightingale, and Spaulding therefore argue for education and training policies in secondary school, community colleges, and workplaces to better connect young people with the labor market and improve their work-related skills and experience. Reducing the barriers associated with opioid use and criminal records could be important as well.

All three articles make the similar point that no single policy silver bullets can improve outcomes for these groups. Yet evidence suggests that a set of policies crafted with reference to data and program evaluations offer promise to improve outcomes for workers in vulnerable situations.

CONCLUSION

Our review of U.S. labor-market trends highlights three broad disappointing outcomes in recent decades: modest real wage growth, rising inequality, and declining labor-force activity among key groups—including women recently but especially African American and young or less-educated men over longer periods. These trends reflect labor-market and institutional forces that are likely to persist throughout coming decades. Thus, the outcomes for workers in the twenty-first century will hinge on whether policy and employer decisions translate these forces into opportunities or more limitations for vulnerable workers.

To advance our national conversation about these issues, the authors in this volume addressed forward-looking topics in four broad categories: labor demand and supply factors (such as automation and college attainment), institutional factors (such as collective bargaining or minimum wage and hour rules), alternative staffing arrangements (including informal work and fissured workplaces) and trends facing particular worker groups (such as women, African Americans, and disadvantaged youth).

Major findings from these articles emphasize the relentless nature of the forces at play:

- Labor-market automation may accelerate over time, potentially increasing worker dislocation and inequality.
- Declining state subsidies for public higher education (given ongoing budgetary pressures caused by rising Medicaid costs and legislature refusal to raise revenues) will likely lessen the abilities of workers to obtain new postsecondary credentials in response to changing demands for skill.
- Private collective bargaining has been disappearing with no alternative voice mecha-

nisms taking its place to encourage high-performance workplace practices.

- Federal minimum wage levels and restrictions on overtime hours are not being updated, leading to greater variation across states and localities as well as overall lower wages and employment.
- Alternative staffing arrangements such as online work and independent contracting are growing quite modestly as informal work and fissuring of workplaces become more important—potentially increasing workplace inequality and diminishing benefit coverage and legal protections for workers.
- Female (and often male) employees have limited access to family-friendly policies at work, such as paid leave, childcare, and flexible scheduling that might raise female labor-force activity.
- Low and declining labor-force activity among African Americans and disadvantaged youth reflects many ongoing factors, including education and achievement gaps, little access to early employment and training, and the negative effects of incarceration and opioid dependency.

The authors also point to policies, within the broad set described earlier, that could help translate the forces at play into improved employment outcomes for U.S. workers in the coming years. These include

- workforce development policies that enable workers to better adapt to workplace automation (perhaps including lifelong learning accounts, subsidized on-the-job training, and robust workforce services);
- more financial support for public higher education at the state and federal levels;
- updated federal wage and hour laws;
- stronger federal protections for collective bargaining or alternative mechanisms of worker voice, as well as rewards and technical assistance for employers creating high-road jobs and high-performance workplaces;

- portable benefits and expanded protections for workers in alternative staffing, informal, and fissured work situations;
- family-friendly workplaces and payroll tax-supported programs that cost-effectively provide paid family leave, subsidize child-care, and encourage flexible scheduling; and
- better employment and training options for disadvantaged youth and adults, along with efforts to reduce negative effects of criminal records and opioid dependency.

In addition, we note a major recommendation that implicitly underlies this volume. Policy must support a comprehensive ability to monitor and analyze labor-market developments via gold standard official statistics, administrative data, and program evaluations. Such support includes adequate funding of statistical agencies, expanded safe access to administrative data, and sponsorship of policy experiments and evaluations. Regardless of how conditions and policies evolve, our ability to monitor key trends and evaluate policy experiments will greatly affect whether we can generate effective labor-market policies and desired outcomes for U.S. workers. For the best chance of success, decisions should be based on solid evidence, at many levels of aggregation, to inform policymakers, program administrators, workers, and employers, and allow further research into causes and consequences.

We hope that as this volume sheds light on critical labor-market forces now affecting the lives of many millions of Americans (especially among non-college-educated workers whose fortunes have badly lagged in recent years), it will stimulate discussion, careful analysis, and policy actions to address the challenges in store for us all during the twenty-first century.

REFERENCES

- Abowd, John, and Francis Kramarz. 1999. "The Analysis of Labor Markets Using Matched Employer-Employee Data." In *The Handbook of Labor Economics*, vol. 3C, edited by Orley Ashenfelter and David Card. Amsterdam: North Holland.
- Abraham, Katharine G., and Susan N. Houseman. 2019. "Making Ends Meet: The Role of Informal Work in Supplementing Americans' Income." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 110–31. DOI: 10.7758/RSF.2019.5.5.06.
- Abraham, Katharine G., and Melissa Kearney. 2018. "Explaining the Decline in the U.S. Employment-to-Population Ratio: A Review of the Evidence." *NBER* working paper no. 24333. Cambridge, Mass.: National Bureau of Economic Research.
- Acemoglu, Daron, and Pascual Restrepo. 2018. "AI, Automation and Work." *NBER* working paper no. 24196. Cambridge, Mass.: National Bureau of Economic Research.
- Andersson, Fredrik, Harry J. Holzer, and Julia Lane. 2011. *Where Are All the Good Jobs Going?* New York: Russell Sage Foundation.
- Austin, Benjamin, Edward Glaeser, and Lawrence Summers. 2018. "Saving the Heartland: Place-Based Policies in 21st Century America." Policy Brief. Washington, D.C.: Brookings Institution.
- Autor, David. 2014a. "Polanyi's Paradox and the Shape of Employment Growth." *NBER* working paper no. 20485. Cambridge, Mass.: National Bureau of Economic Research.
- . 2014b. "Skills, Education and the Rise of Earnings Inequality Among the 99 Percent." *Science* 344(6186): 843–51.
- . 2015. "Why Are There Still So Many Jobs?" *Journal of Economic Perspectives* 29(3): 3–30.
- . 2018. "Is Automation Labor-Displacing? Productivity, Employment and Labor's Share." Policy Brief. Washington, D.C.: Brookings Institution.
- Autor, David, David Dorn, Lawrence Katz, Christina Patterson, and John Van Reenen. 2017. "The Fall of the Labor Share and the Rise of Superstar Firms." *NBER* working paper no. 23396. Cambridge, Mass.: National Bureau of Economic Research.
- Autor, David, and Mark Duggan. 2006. "The Growth of the Social Security Disability Rolls: A Fiscal Crisis Unfolding." *NBER* working paper no. 12436. Cambridge, Mass.: National Bureau of Economic Research.
- Autor, David, and Lawrence F. Katz. 1999. "Changes in the Wage Structure and Earnings Inequality." In *The Handbook of Labor Economics*, vol. 3A, edited by Orley Ashenfelter and David Card. Amsterdam: North Holland.
- Autor, David, Lawrence F. Katz, and Melissa Kearney. 2008. "Trends in US Wage Inequality: Revising

- the Revisionists." *Review of Economics and Statistics* 90(2): 300–323.
- Autor, David, Frank Levy, and Richard Murnane. 2002. "Upstairs, Downstairs: Computers and Skills on Two Floors of a Large Bank." *Industrial and Labor Relations Review* 55(3): 432–47.
- Autor, David, and Melanie Wasserman. 2013. *Wayward Sons: The Emerging Gender Gap in Labor Markets and Education*. Washington, D.C.: The Third Way.
- Baily, Martin, and Nicholas Montalbano. 2016. "Why Is US Productivity Growth So Slow? Possible Explanations and Policy Responses." Policy Brief. Washington, D.C.: Brookings Institution.
- Beaudry, Paul, David Green, and Benjamin Sand. 2013. "The Great Reversal in the Demand for Skills and Cognitive Tasks." NBER working paper no. 18901. Cambridge, Mass.: National Bureau of Economic Research.
- Bernstein, Jared. 2018. "The Importance of Strong Labor Demand." Hamilton Project. Washington, D.C.: Brookings Institution.
- Black, Sandra, Diane Whitmore Schanzenbach, and Audrey Breitwieser. 2017. "The Recent Decline in Women's Labor Force Participation." Hamilton Project. Washington, D.C.: Brookings Institution.
- Blanchard, Olivier, and Lawrence F. Katz. 1992. "Regional Evolutions." *Brookings Papers on Economic Activity* 1992, no. 1. Washington, D.C.: Brookings Institution.
- Blasi, Joseph, Richard Freeman, and Douglas Kruse. 2014. *The Citizen's Share*. New Haven, Conn.: Yale University Press.
- Borjas, George J., and Richard B. Freeman. 2019. "From Immigrants to Robots: The Changing Locus of Substitutes for Workers." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 22–42. DOI: 10.7758/RSF.2019.5.5.02.
- Bound, John, Breno Braga, Gaurav Khanna, and Sarah Turner. 2019. "Public Universities: The Supply Side of Building a Skilled Workforce." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 43–66. DOI: 10.7758/RSF.2019.5.5.03.
- Bound, John, and Harry J. Holzer. 2000. "Demand Shifts, Population Adjustments and Labor Market Outcomes in the 1980s." *Journal of Labor Economics* 18(1): 20–54.
- Brown, Charles C., and Daniel S. Hamermesh. 2019. "Wages and Hours Laws: What Do We Know? What Can Be Done?" *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 68–87. DOI: 10.7758/RSF.2019.5.5.04.
- Burtless, Gary, and Sveta Milusheva. 2013. "Effects of Employer-Sponsored Health Insurance Costs on Social Security Taxable Wages." *Social Security Bulletin* 73(1): 83–108.
- Card, David, and Jonathan Dinardo. 2006. "The Impact of Technological Change on Low-Wage Labor Markets: A Review." In *Working and Poor: How Economic and Policy Changes Are Affecting Low-Wage Workers*, edited by Rebecca Blank, Sheldon Danziger, and Robert F. Schoeni. New York: Russell Sage Foundation.
- Davis, Steven, and Till von Wachter. 2011. "Recessions and the Costs of Job Loss." *Brookings Papers on Economic Activity* 2011, no. 2. Washington, D.C.: Brookings Institution. Accessed July 1, 2019. <https://www.brookings.edu/bpea-articles/recessions-and-the-costs-of-job-loss/>.
- Doar, Robert, Harry J. Holzer, and Brent Orrell. 2017. *Getting Men Back to Work: Solutions from the Left and Right*. Washington, D.C.: American Enterprise Institute.
- Doran, Elizabeth L., Ann P. Bartel, and Jane Waldfogel. 2019. "Gender in the Labor Market: The Role of Equal Opportunity and Family-Friendly Policies." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 168–97. DOI: 10.7758/RSF.2019.5.5.09.
- Farber, Henry. 2017. "Employment, Hours, and Earnings Consequences of Job Loss: U.S. Evidence from the Displaced Workers Survey." *Journal of Labor Economics* 35(S1): S235–S272.
- Fortin, Nicole, Thomas Lemieux, and Neil Lloyd. 2018. "Labor Market Institutions and the Distribution of Wages: The Role of Spillover Effects." Working Paper. Vancouver: University of British Columbia.
- Freeman, Richard. 2007. "Is a Great Labor Shortage Coming? Replacement Demand in the Global Economy." In *Reshaping the American Workforce in a Changing Economy*, edited by Harry J. Holzer and Demetra Smith Nightingale. Washington, D.C.: Urban Institute Press.
- Freeman, Richard, Joni Hersch, and Lawrence Mishel, eds. 2004. *Emerging Labor Market Institutions for the 21st Century*. Chicago: University of Chicago Press.
- Frey, William. 2015. *Diversity Explosion*. Washington, D.C.: Brookings Institution.
- Goldin, Claudia, and Lawrence F. Katz. 2008. *The*

- Race Between Education and Technology*. Cambridge, Mass.: Harvard University Press.
- Gould, Elise. 2019. "Decades of Rising Inequality in the U.S." Testimony before U.S. House of Representatives, Ways and Means Committee. March 27. Economic Policy Institute. Accessed July 1, 2019. <https://www.epi.org/publication/decades-of-rising-economic-inequality-in-the-u-s-testimony-before-the-u-s-house-of-representatives-ways-and-means-committee>.
- Groshen, Erica L., Susan Helper, John Paul MacDuffie, and Charles Carson. 2018. *Preparing U.S. Workers and Employers for an Autonomous Vehicle Future*. Washington, D.C.: Securing America's Future Energy.
- Harris, Seth, and Alan Krueger. 2015. "A Proposal for Modernizing Labor Laws for the 21st Century: The 'Independent Worker.'" *Hamilton Project* discussion paper no. 2015-10. Washington, D.C.: Brookings Institution.
- Holzer, Harry J. 2015. "Job Market Polarization and Worker Skills: A Tale of Two Middles." Policy Brief. Washington, D.C.: Brookings Institution.
- . 2017. "Will Robots Make Job Training (and Workers) Obsolete? Workforce Development in an Automating Labor Market." Policy Brief. Washington, D.C.: Brookings Institution.
- Holzer, Harry J., and Marek Hlavac. 2014. "A Very Uneven Road: U.S. Labor Markets in the Past 30 Years." In *Diversity and Disparities*, edited by John Logan. New York: Russell Sage Foundation.
- Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2006. "Perceived Criminality, Criminal Background Checks, and the Racial Hiring Practices of Employers." *Journal of Law and Economics* 49(2): 451–80.
- Judy, Richard, and Carol D'Amico. 1997. *Workforce 2020: Work and Workers in the 21st Century*. Indianapolis, Ind.: Hudson Institute.
- Katz, Lawrence F., and Alan B. Krueger. 2016. "The Rise and Nature of Alternative Work Arrangements in the United States, 1995–2015." *NBER* working paper no. 22667. Cambridge, Mass.: National Bureau of Economic Research.
- . 2019. "Understanding Trends in Alternative Work Arrangements in the United States." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 132–46. DOI: 10.7758/RSF.2019.5.5.07.
- Katz, Lawrence F., Ai-jen Poo, and Elaine Waxman. 2018. "Imagining a Future of Work That Fosters Mobility for All." Washington, D.C.: U.S. Partnership on Mobility from Poverty.
- Kelley, Maryellen, and Susan Helper. 1999. "Firm Size and Capabilities, Regional Agglomeration, and the Adoption of New Technology." *Economics of Innovation and New Technology* 8(1–2): 79–103. Accessed July 1, 2019. <https://pdfs.semanticscholar.org/3d40/ebf41076da32747f48d4fbbcd078ffc04b60.pdf>.
- Kochan, Thomas A., and William T. Kimball. 2019. "Unions, Worker Voice, and Management Practices: Implications for a High-Productivity, High-Wage Economy." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 88–108. DOI: 10.7758/RSF.2019.5.5.05.
- Krueger, Alan. 2017. "Where Have All the Workers Gone?" *Brookings Papers on Economic Activity* 2017, no. 1. Washington, D.C.: Brookings Institution.
- Kugler, Adriana. 2015. "Strengthening Reemployment in the Unemployment Insurance System." *Hamilton Project* discussion paper no. 2015-02. Washington, D.C.: Brookings Institution.
- Levy, Frank. 2018. "Computers and Populism: Artificial Intelligence, Jobs and Politics." *Oxford Review of Economic Policy* 34(3): 393–417.
- Levy, Frank, and Richard Murnane. 2013. *Dancing with Robots*. Washington, D.C.: The Third Way.
- Liebman, Jeffrey. 2015. "Understanding the Increase in Disability Insurance Benefit Receipt in the United States." *Journal of Economic Perspectives* 29(2): 123–50.
- Loprest, Pamela, Shayne Spaulding, and Demetra Smith Nightingale. 2019. "Disconnected Young Adults: Increasing Engagement and Opportunity." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 221–43. DOI: 10.7758/RSF.2019.5.5.11.
- Mandel, Michael. 2017. *How Ecommerce Reduces Inequality and Creates Jobs*. Washington D.C.: Progressive Policy Institute.
- Neal, Derek. 2008. "Black-White Labor Market Inequality in the United States." In *The New Palgrave Dictionary of Economics*, edited by Steven Durlauf and Lawrence Blume. New York: Stockton Press.
- Nedelkoska, Ljubica, and Glenda Quintini. 2018. "Automation, Skills Use and Training." *OECD Social, Employment and Migration* working paper no. 202. Paris: Organization for Economic Cooperation and Development.

- Organization for Economic Cooperation and Development (OECD). 2011. *An Overview of Growing Income Inequalities in OECD Countries: Main Findings*. Paris: Organization for Economic Cooperation and Development.
- Osterman, Paul. 2017. "In Search of the High Road: Meaning and Evidence." *Industrial and Labor Relations Review* 71(1): 1–32.
- Pierce, Brooks. 2001. "Compensation Inequality." *Quarterly Journal of Economics* 116(4): 1493–525.
- Rodgers, William M., III. 2019. "Race in the Labor Market: The Role of Equal Employment Opportunity and Other Policies." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 198–220. DOI: 10.7758/RSF.2019.5.5.10.
- Schmitt, John, Heidi Shierholz, and Lawrence Mishel. 2013. *Don't Blame the Robots: Assessing the Job Polarization Explanation of Growing Wage Inequality*. Washington, D.C.: Economic Policy Institute.
- Shambaugh, Jay, Audrey Breitwieser, and Patrick Liu. 2018. "The State of Competition and Dynamism: Facts about Concentration, Startups and Related Policies." Hamilton Project. Washington, D.C.: Brookings Institution.
- Shambaugh, Jay, Ryan Nunn, Patrick Liu, and Greg Nantz. 2017. "13 Facts About Wage Growth." Hamilton Project. Washington, D.C.: Brookings Institution.
- Shimada, Haruo, and John Paul MacDuffie. 1998. "Industrial Relations and 'Humanware': Japanese Investments in Automobile Manufacturing in the United States." In *The Japanese Enterprise*, edited by Schon Beechler. London: Routledge.
- Stansbury, Anna, and Lawrence Summers. 2017. "Productivity and Pay: Is the Link Broken?" *NBER* working paper no. 24165. Cambridge, Mass.: National Bureau of Economic Research.
- Ton, Zeynep. 2014. *The Good Jobs Strategy*. Cambridge, Mass.: MIT Press.
- U.S. Bureau of Labor Statistics (BLS). 2018. "Contingent and Alternative Work Arrangements." Economic News Release, June 7. Washington: U.S. Department of Labor. Accessed July 1, 2019. <https://www.bls.gov/news.release/conemp.nr0.htm>.
- U.S. Census Bureau. 1979–2016. *Current Population Survey*. Washington: Government Printing Office.
- . 2012. "Census Bureau Releases Estimates of Undercount and Overcount in the 2010 Census." Press Release, May 22. Washington: U.S. Department of Commerce. Accessed July 1, 2019. https://www.census.gov/newsroom/releases/archives/2010_census/cb12-95.html.
- Van Horn, Carl, Tammy Edwards, and Todd Greene, eds. 2015. *Transforming the Workforce Development System for the 21st Century*. Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research.
- Weil, David. 2014. *The Fissured Workplace*. Cambridge, Mass.: Harvard University Press.
- . 2019. "Understanding the Present and Future of Work in the Fissured Workplace Context." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(5): 147–65. DOI: 10.7758/RSF.2019.5.5.08.
- West, Darrell. 2018. *The Future of Work: Robots, AI, and Automation*. Washington, D.C.: Brookings Institution.