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[Employment recovery in the wake of the COVID-19 pandemic](#)

Employment recovery in the wake of the COVID-19 pandemic

The coronavirus disease 2019 (COVID-19) pandemic's impact on the U.S. labor market is unprecedented. This article reviews economic research on recent pandemic-related job losses in the United States in order to understand the prospects for employment recovery. The research examines telework use, the incidence of job loss, disruptions in labor supply, and progress toward recovery. Massive temporary layoffs drove a spike in unemployment, and subsequent recalls of unemployed workers drove a rapid but partial recovery. The prospects for full recovery are murkier, both because the fraction of the remaining unemployed expecting to be recalled is decreasing and because the pandemic's future course remains uncertain.

This article discusses the factors that have affected U.S. job recovery over the course of the coronavirus disease 2019 (COVID-19) pandemic and the jobs that have disappeared at least temporarily. It draws from the large volume of economic literature written on the COVID-19 pandemic since March 2020.

The magnitude of job loss in March and April 2020 had no precedent since the end of World War II. Early in the crisis, many expressed hope that, with government support, employers and employees could quickly return to prepandemic employment arrangements. However, as the COVID-19 crisis continues, more employer–employee bonds break, amplifying the economic and societal damage.



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Figures 1 and 2 illustrate the pandemic's impact on the labor market.[1] Figure 1 plots cumulative Current Employment Statistics (CES) employment changes in the current crisis, in the Great Recession, and in all other post-World War II recessions. More than twice as many jobs were lost between March and April 2020 as were lost during the entire 2007–09 period, and only a third of those jobs recovered quickly in May and June, largely through recalling laid-off workers. It is not yet clear how quickly employment will fully recover. It took more than 5 years for the labor market to recover after the end of the Great Recession. The 2007 unemployment rate of less than 5 percent was not seen again until 2016, and, according to calculations from Harris Eppsteiner, Jason Furman, and Wilson Powell III, the age-adjusted employment–population ratio did not recover until 2018.[2] The unemployment rate in April and May 2020 was much higher than the rate in the Great Recession.

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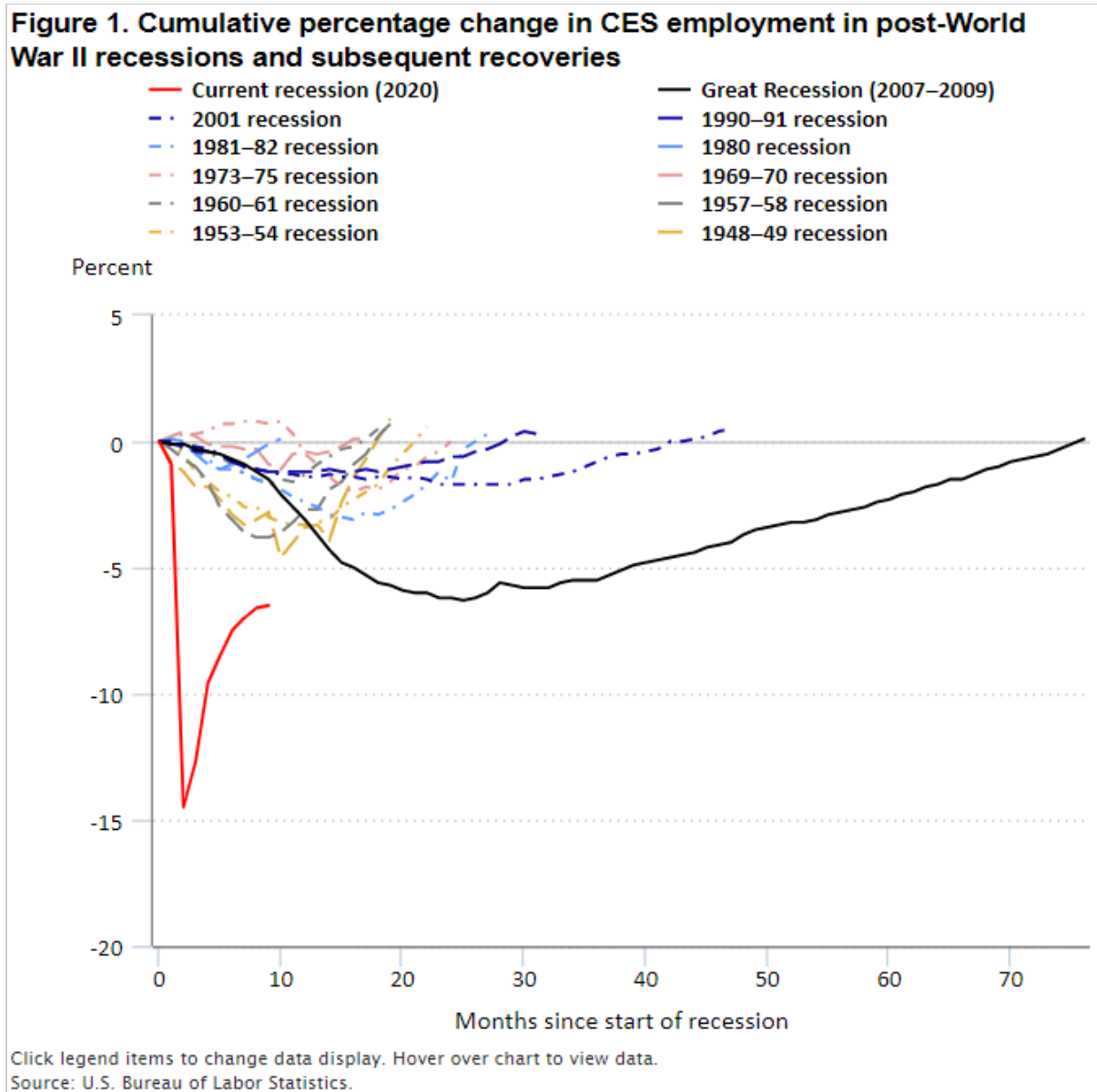
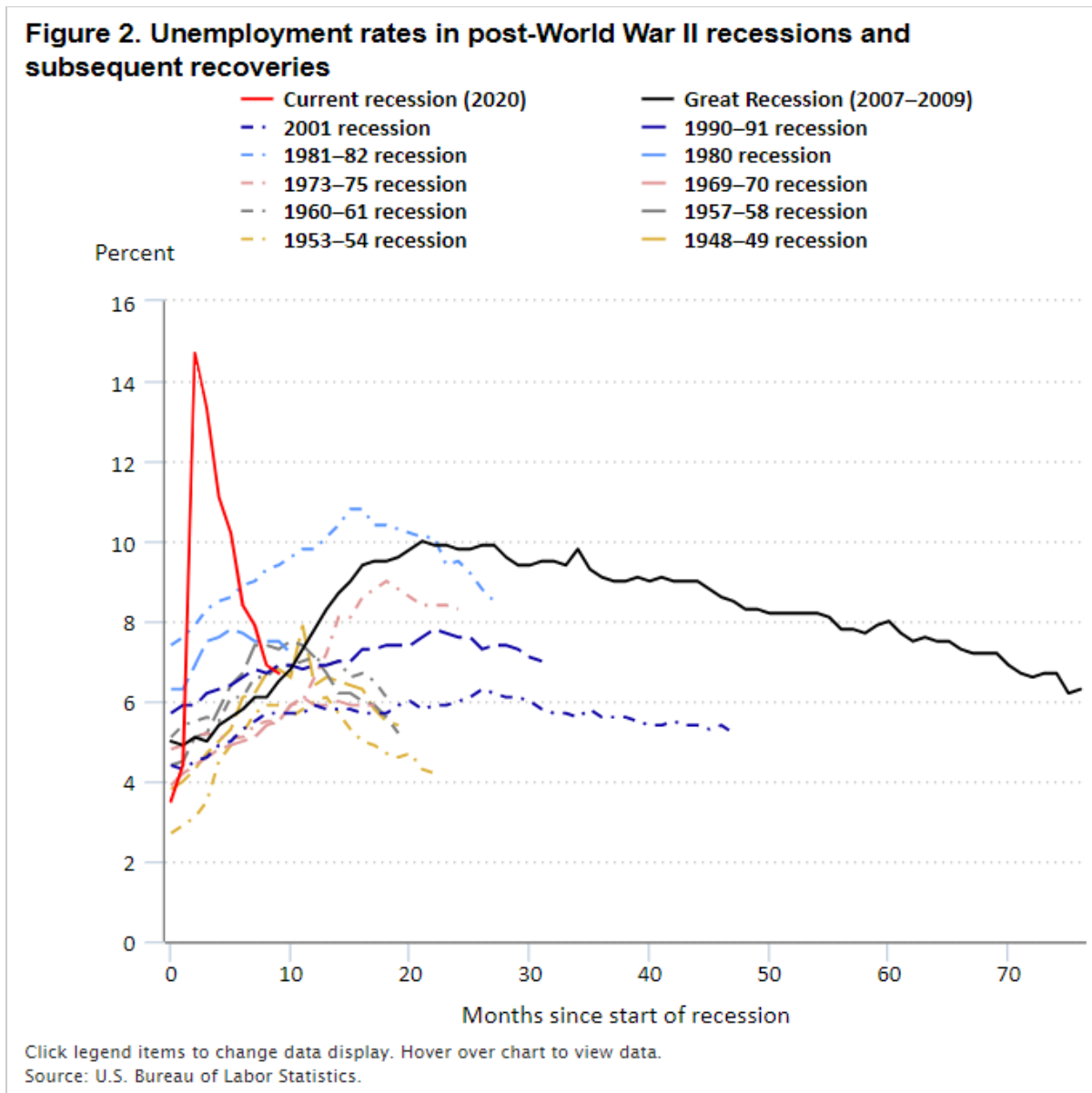


Figure 2 plots unemployment rates in the current crisis, in the Great Recession, and in all other post-World War II recessions. Each line begins at a peak in economic activity, as identified by the National Bureau of Economic Research and ends when employment surpasses the level recorded at that peak.^[3]

Robert E. Hall and Marianna Kudlyak point out the alarming shape of the slow recovery in unemployment rates after the Great Recession—the straight line starting around month 25 and ending in month 80 (see figure 2). During all previous recessions, the shape of unemployment rate recovery has also been a straight line.^[4] In many macroeconomic models, having so many people out of work at the bottom of recessions should mean that early recoveries are faster than later recoveries when the economy is nearing “full employment.” Hall and Kudlyak suggest that we observe these linear recoveries for two reasons: (1) employers have more trouble choosing which new employees to hire when unemployment is high (a situation the authors call “congestion externality”) and (2) bank lending, to employers wanting to expand their operations, recovers slowly from deep recessions. It is also possible that hiring is slow when unemployment is high because potential employers have gone out of business.

As Erica Groshen argues, the speed of recovery depends on maintaining prerecession links between employers and their employees. Creating new businesses and establishing new employment matches are likely to take more time.[5]



During the Great Recession high rates of unemployment were linked with slow hiring and layoffs. The Job Openings and Labor Turnover Survey of the U.S. Bureau of Labor Statistics shows that hiring declined dramatically during the Great Recession and recovered slowly.[6] Eliza Forsythe et al., find that weekly online job postings collapsed in late March 2020 (from about 850,000 per week to about 550,000 per week) across all geographic areas, industries, and occupations, except essential retail (such as pharmacies and grocery stores) and nursing.[7] Researchers at Opportunity Insights show that these job postings recovered from April through June, but have remained 10 to 20 percent lower than they were in January and February 2020.[8]

Studies of the labor market during the COVID-19 pandemic typically divide the pre-crisis labor force into three categories. The first group includes essential workers who have continued working in the same workplaces throughout the pandemic. These workers are outside the scope of this article. The second group includes workers who continued to do their jobs by working from home. This article addresses such workers only insofar as their number grew during the crisis. The third group includes laid-off workers—some temporarily, a growing number permanently—during the crisis. These workers are the main focus here.

The rest of the article is divided into sections covering the following topics: telework and how it preserved many jobs; pandemic-related job losses; labor supply issues; quick partial recovery from May through the summer of 2020 and prospects for its continuation; the effects of voluntary and mandatory distancing measures; and the prospect of full recovery. A final section concludes.

Telework

This section summarizes how telework preserved some jobs during the pandemic. A substantial proportion of U.S. jobs can be carried out remotely, and remote work is compatible with social distancing. Telework therefore increased greatly.

Based on job descriptions for 1,000 different occupations, Jonathan I. Dingel and Brent Neiman estimate that 37 percent of U.S. jobs can be performed from home, with much variation across cities and industries.^[9] These jobs typically pay more than others; together, they account for 46 percent of all U.S. wages. Abigail Adams-Prassi et al. find that, even within occupations, workers report differences in how much of their work can be done from home.^[10] Patrick Baylis et al. find that in Canada less educated workers were less likely to work remotely during the pandemic, not because of their job characteristics but because their living arrangements were too crowded.^[11]

Matthew Dey et al. find that, as the pandemic took hold, workers who could work from home were much less likely to lose their jobs.^[12] Between February and April 2020, the unemployment rate for workers who could telework increased by 6 percentage points, whereas the rate for workers who could not telework rose by 14 percentage points. The authors report that workers who could telework tended to be more educated, aged 25 or older, married, White, and working full time. Manuela Angelucci et al. find that workers who could not telework had worse respiratory health and suffered 3 times the job loss compared with workers who could telework.^[13]

Using April and May Google Consumer Surveys of 25,000 people, Erik Brynjolfsson et al. find that about one-third of all U.S. workers shifted to remote-only work by April 2020, with little further change between April and May.^[14] Another one-sixth of the workforce was already doing remote-only work.

New questions added to the Current Population Survey (CPS) show that, once people who worked entirely from home before the pandemic were excluded, the proportion of other workers who teleworked declined from 35 percent in May to 23 percent in September, then remained stable through November. The responses to the new CPS questions confirm many of the findings reported above. They reveal that, during the pandemic, women were more likely to telework than men; Asians were most likely to telework and Hispanics were least likely; workers under age 25 were the least likely to telework; and the fraction of workers who teleworked increased dramatically with education. The fraction of people teleworking because of the pandemic varied considerably by occupation and industry, and government workers were more likely than private sector workers to telework.^[15]

Using cell phone data, Simon Mongey, Laura Pilossoph, and Alex Weinberg find that people in areas where more workers can telework were more likely to stay at home during the pandemic.[16] This is particularly true of workers who have high-speed internet access. Lesley Chiou and Catherine Tucker show that people's ability to stay at home (and presumably work remotely) is greater if they have high-speed internet access.[17]

Workers who are able and willing to telework may still have experienced pandemic-related disruptions to their employment arrangements. Teleworkers may be laid off because of demand or supply chain shocks or because their employers' continued operation depends on other jobs that cannot be done remotely. The pandemic may also reduce labor supply, for example when schools or daycare centers are closed. In addition, Jose Maria Barrero, Nick Bloom, and Steven J. Davis point out that increased telework can disrupt others' employment by reducing demand for worksite-related goods and services (e.g., transportation, office space, and commercial district restaurants and gyms) while increasing demand for other goods and services (such as home improvement, video streaming, gaming, food delivery, and online grocers).[18]

A switch to telework can affect productivity. Alexander W. Bartik et al. survey firms and found diverse perceptions about the effect on productivity. Businesses with more teleworkers before the pandemic report greater productivity of teleworkers during the pandemic.[19] Larger businesses report lower telework productivity. A substantial number of surveyed businesses believe that much of the shift to telework will become permanent. Other evidence raises questions about telework productivity. Masayuki Morikawa finds that Japanese teleworkers report reduced productivity.[20] Scoppa and Bryson et al. both find that soccer referees make different calls when fans are absent, illustrating that workers' remoteness from those who normally would observe and influence their work on-site can sometimes change consequential decisions they make on the job.[21] Steffen Künn, Christian Seel, and Dainis Zegners find that the performance of elite chess players suffers when their matches are held remotely.[22]

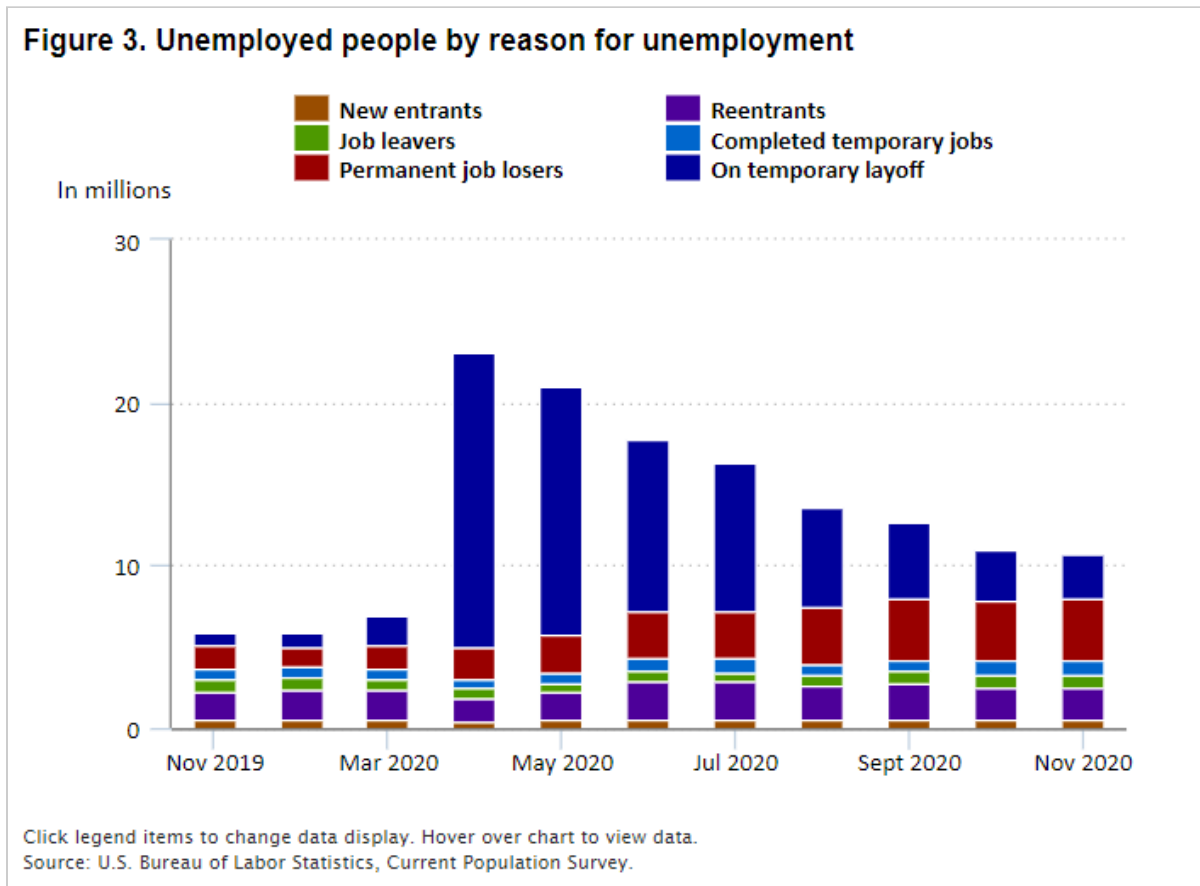
According to May's Survey of Business Uncertainty, the share of days worked from home will potentially triple—rising from 5.5 percent in 2019 to 16.6 percent after the pandemic.[23] Firms anticipate that, after the pandemic, 10 percent of their full-time workforce will be working from home 5 days a week.

Job losses

This section summarizes research findings about how workers who have been furloughed or laid off were reemployed. Reemployment has been especially likely for workers who maintained an attachment to their prior employer. Hours of work have rebounded partially. Mandatory social distancing measures such as stay-at-home and shutdown orders have had a relatively small effect on employment recovery, while the incidence of the virus has had a larger effect. This suggests that even in the absence of mandatory shutdowns, employment may not fully recover until the pandemic subsides.

The U.S. economy lost 22 million jobs from February to April 2020. By August, jobs had rebounded to 11 million (seasonally adjusted) below February's peak. The recovery then slowed, and by November 2020 there were still 10 million fewer jobs than in February.[24] Meanwhile, the number of unemployed people increased from 6 million in February to a peak of 23 million in April, before falling to 14 million in August and 11 million in November. This trajectory reflected two major influences. The first was a spike in the number of unemployed workers on temporary layoff and expecting recall. Their numbers grew from 800,000 in February to 18 million in April, then declined to 6 million in August and 3 million in November. Second, the number of unemployed workers not expecting recall—a status Hall and Kudlyak call "jobless unemployment"—increased later, growing from 5 million in April to 8 million in

September, and remaining there through November. [25] (See figure 3.) Not all workers who expect to be recalled will be.



April's spike in pandemic unemployment was unprecedented. Never before had a majority of unemployed workers reported being on temporary layoff. CPS data on temporary layoffs began in 1967, and the fraction of unemployed workers reporting this status reached its previous high at 28 percent in 1975. In contrast, in April 2020, 79 percent of unemployed workers reported they were on temporary layoff. Jessica Gallant et al. noted that, by August, only a small fraction of temporarily unemployed workers had reported becoming permanently unemployed each month. These authors emphasize the importance of temporary unemployment and predicted that recalls would continue to fuel the economic recovery.[26] The subsequent growth in jobless unemployment may slow that recovery, however.

The largest employment losses by industry were in leisure and hospitality, especially in food services and drinking places; education and health services; professional and business services; retail trade; and arts, entertainment, and recreation. Job losses were greater in industries employing less advantaged groups, creating greater inequality.

An early analysis of establishment data by Matthew Dey and Mark A. Loewenstein finds that 20 percent of U.S. workers worked in the sectors most likely to be disrupted by the pandemic, such as hospitality.[27] Jobs in these industries tended to have lower wages, accounting for 12 percent of aggregate pay, and were concentrated in certain states, especially Nevada and Hawaii. Using household data, Matthew Dey et al. further find that the workers most represented in the exposed sectors tend to include those who are single parents, younger, less

educated, and working part time. Eleven percent of families with children earned all of their income in these sectors.[28] From February to April 2020, employment in more pandemic-exposed sectors dropped 38 percent, compared with 11 percent in less exposed sectors. Younger and less educated workers also suffered larger declines in employment overall and in less exposed sectors. In more exposed industries, employment losses were much greater but affected different demographic groups more evenly.

A substantial share of the pandemic employment decline is attributable to depressed consumer demand.[29] Beginning in March 2020, consumers sharply reduced expenditures on goods and services that require personal contact. Raj Chetty et al. find that most of the reduction in spending occurred for goods and services that require close in-person physical interaction, such as that occurring in restaurants, stores, hotels, or transportation.[30] Expenditures on services that do not require personal interaction, such as lawn services or home swimming pools, were unaffected. These spending declines created unemployment in many service industries, particularly among low-paid workers in high income communities. This article argues that the pandemic's negative economic effects are most severe and likely to be longest lasting for low-paid workers in more affluent locations. These workers depend on high-income consumers' purchases of services, which are unlikely to rebound until such consumers feel safe, perhaps after an effective vaccine is widely administered.

Seung Jin Cho, Jun Yeong Lee, and John V. Winters find that job losses were worse in larger U.S. cities than in smaller communities.[31] This finding highlights dense cities' inherent economic vulnerability to infectious disease pandemics. Between April 2019 and April 2020, the fraction of adults who were employed and at work fell by 15 percentage points in Metropolitan Statistical Areas with populations of 5 million or more, compared with 10 percentage points in nonmetropolitan areas. Some of this difference can be explained by the concentration of more vulnerable industries and jobs in big cities. Cities' higher COVID-19 infection rates this spring were an important driver of job losses. In contrast, by the end of 2020 the pandemic also affected many rural areas strongly.

In a second paper, Cho, Lee, and Winters use CPS data to estimate the number of workers leaving the food service subsector and to examine the reasons for these job losses.[32] One reason is that facilities close; another is that workers exit the labor force when the local area has more infections. Noting that pandemics may recur, the authors identify the potential consequences of or responses to a recurrence, including reduced labor productivity, more automation, safety measures, or higher pay.

Although we think of healthcare as the essential front line against the pandemic, much of the sector contracted because patients and providers skipped nonemergency "elective care." Examining Medicare claims by hospitals in the paths of hurricanes from 1997 to 2012, Tatyana Deryugina, Jonathan Gruber, and Adrienne Sabety suggest that the recovery of demand for medical services after the pandemic may be similar to the recovery of hospital services after a hurricane.[33] Overall, elective services fall by about 7 percent in the month in which a hurricane hits a county, and these services are made up over the following 10–11 months. However, for particularly severe hurricanes (with wind speeds of at least 100 mph), elective services fall by more than 20 percent in the month a hurricane hits the county and are not made up within the year; affected hospitals appear to survive by increasing outpatient revenue. Noting that COVID-19 has had a substantially larger impact on elective medical services than even the largest hurricane, the authors predict that if the pandemic reduces elective hospital visits for as little as 3 months, it would take hospitals more than 40 months to recoup the lost revenue and more than 12 years to make up all the missed visits. The authors' data do not enable them to measure the impact of hurricanes on hospital

employment. However, the closures of rural hospitals and the resulting spillovers to local economies have generated a great deal of news coverage in recent years.[34]

Mongey, Pilossoph, and Weinberg consider which workers are most vulnerable. For instance, salon workers, sales assistants, and dentists would be considered vulnerable because they perform nonessential work that cannot be done with social distance.[35] The authors find that this vulnerability correlates tightly with general economic vulnerability, especially in the tail of the distribution, noting that a substantial portion of workers in the correlated tail are older. These workers are at risk both of unemployment and, if they work, of contracting the virus.

Using CPS data on small business owners, Robert W. Fairlie tracks the decline in small business employment.[36] From February to April 2020, the number of active business owners declined by 3.3 million, or 22 percent—the largest drop on record. Losses were felt across nearly all industries. African-American business owners were hit especially hard, experiencing a 41-percent drop in employment, and Latin-American business owners' employment fell by 32 percent. Industry compositions partly put these groups at a higher risk of losses. Immigrant business owners experienced substantial employment losses of 36 percent.

Small businesses were also affected by labor supply issues. Charlene Marie Kalenkoski and Sabrina Wulff Pabilonia show that family structure and gender affected whether self-employed (unincorporated) workers ceased work or cut back hours.[37] These factors may influence when and whether these workers resume pre-COVID-19 levels of work. Kalenkoski and Pabilonia note that, although about one-half of self-employed workers work from home, these workers might still be affected by school and daycare disruptions. The authors find that coupled women were less likely to work than coupled men, while single women were more likely to work than single men. However, fathers of school-age children who remained employed were working fewer hours than men without children.

Labor supply

Past recessions have disrupted employment almost entirely from the demand side. The COVID-19 pandemic is unusual because it also disrupts labor supply. Health concerns, family demands, and government policies all play roles in who can work and when.

School and childcare closures

Closures of in-person schools and childcare facilities have the greatest impact on the labor supply of parents. Childcare demands are likely to impair parents' ability to return to their previous levels of participation and hours. Even if the economy at large expands vigorously, parents may be slow to fully return to paid work, and this may erode their employment prospects when or if they finally do return.

The potential impacts of school and childcare closures are relevant for many American workers. Jonathan Dingel, Christina Patterson, and Joseph S. Vavra report that 32 percent of American workers have someone in their household who is younger than age 14, and 21 percent do not have a nonemployed adult in the household who might potentially serve as a caregiver.[38] According to Education Week, nearly every state ordered or recommended the closure of schools in spring 2020, and many schools have remained at least partially closed for fall 2020.[39] Childcare centers have reopened in most areas. However, many centers have low profit margins, especially if they serve low-income families, and may therefore have difficulty surviving even short-term closure.

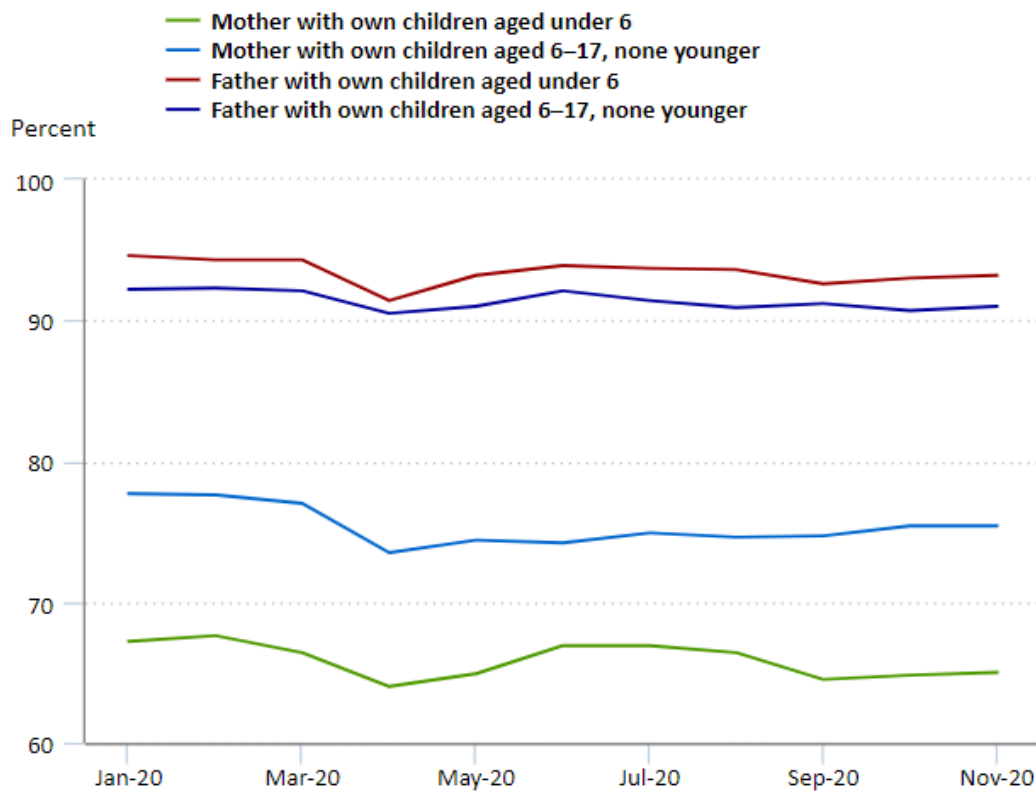
Rasheed Malik et al. argue that this prospect may exacerbate existing inequality in access to childcare.^[40] Simon Workman and Steven Jessen-Howard calculate the productivity impact for childcare providers of compliance with state-level COVID-19 safety precautions, such as reducing class sizes and eliminating the use of “floating” staff. They estimate that the cost of providing care to 4-year-old children has increased by as much as 59 percent in center-based care.^[41]

The implications of such findings are particularly serious for mothers. The interaction of high rates of layoffs in occupations that employ women and extended in-person school and childcare closures may have long-run impacts on maternal labor supply, especially in a situation in which grandparent care has become more dangerous. Just as some older manufacturing workers lost jobs in the Great Recession and eventually stopped looking for work and considered themselves “retired,” many mothers who lost jobs this spring and whose children returned to school in the fall may have ceased to look for work, and now consider themselves “homemakers.” This may have lasting and increasing impacts on their labor market experience and earnings. Titan M. Alon models how these long-term impacts will affect parental labor supply, taking into account that, in the long run, changes in telework and workplace flexibilities may help parents combine labor market participation with childcare responsibilities.^[42]

Several studies address the impact of the pandemic on the productivity and labor supply of parents. Examining data from the Census Household Pulse Survey and the CPS, Joseph Briggs and David Choi estimate that, each week in May, June, and July 2020, about 7 million workers did not work because they had to provide care for children who were not in school or childcare.^[43] Caitlyn Collins et al. use the CPS to examine dual-earner, opposite-sex married couples with children ages 1 to 17, with both parents still employed in April.^[44] Mothers of children ages 1 to 12 reduced their paid work hours by about 2 hours per week, while fathers of these children did not reduce their paid work hours. Kalenkoski and Pabilonia find that fewer self-employed parents were working in April than self-employed nonparents, and among those at work, parents worked fewer hours than nonparents.^[45] Kyle R. Myers et al. surveyed authors of scientific papers in April and found that their average work hours had declined from 61 to 54 hours per week. Scientists with children age 5 or younger reduced their work hours the most. Those with children aged 6 to 11 had smaller but still significant effects.^[46]

Estimates from the CPS show that the labor force participation of mothers fell more than that of fathers. From February to April 2020, the labor force participation rate of mothers whose youngest child was ages 6 to 18 fell by 4.1 percentage points, and that of mothers whose youngest child was younger than age 6 fell by 3.6 percentage points. In comparison, the participation rate of fathers whose youngest child was ages 6 to 18 fell 1.8 percentage points, and that of fathers whose youngest child was younger than age 6 declined by 2.9 percentage points. From April to September 2020, the participation rate recovered 1.2 percentage points for mothers whose youngest child was 6 to 18 (29 percent) and only 0.5 percentage point for mothers whose youngest child was younger than age 6 (14 percent). In contrast, over the same periods, among fathers whose youngest child was 6 to 18, the participation rate recovered 0.7 percentage point (39 percent), and for fathers with a child younger than age 6, the participation rate recovered 1.2 percentage points (41 percent).

Figure 4. Labor force participation rate, by sex and age of youngest child, 2020



Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Family members in poor health

Labor force participation may also be reduced during the pandemic—particularly for women—if they have family members in poor health. Although nursing homes remain open, group care has become more dangerous. M. Keith Chen, Judith A. Chevalier, and Elisa F. Long find that links among nursing homes by staff working in more than one home were strong predictors of COVID-19 spread in the United States.^[47] Changes in procedures to reduce disease transmission risk make nursing home care potentially more expensive and more isolating, at times preventing family members from providing additional care to institutionalized loved ones. Professional home-based, visiting caregivers might also pose or face their own health risks. Such developments might prompt more families to provide care at home to people who would, in ordinary times, receive care in group facilities or from visiting workers. As of 2017–2018, 13 percent of full-time workers provided some eldercare, spending an average of 3 hours per weekday on this activity.^[48] Any pandemic-related increases in provision of such care could affect the labor supply of these family members, just as the work involved in full-time care for children affects the labor supply of parents.

Unemployment insurance benefits

Another factor potentially affecting labor supply was the additional \$600 per week in special pandemic unemployment insurance (UI) benefits provided from April to July 2020. However, most economists think that the effect of such high UI compensation was very different this year than it would be in ordinary times. For most workers, the long-run benefits of retaining a job with an existing employer are probably more valuable than receiving UI benefits. Reasons for this include the uncertainty over the continuation of the special pandemic unemployment benefits, the importance of employer-provided health insurance, the huge number of layoffs, and the cost to workers of extended periods of unemployment. In mid-July, the Initiative on Global Markets (IGM) at the University of Chicago's Booth School of Business surveyed their panel of 40 distinguished economic experts on this matter, and none of the experts on the panel disagreed with the statement that, "Employment growth is currently constrained more by firms' lack of interest in hiring than people's willingness to work at prevailing wages."[\[49\]](#)

Peter Ganong, Pascal J. Noel, and Joseph S. Vavra show that most workers, especially those in low-wage occupations in low-wage states, could receive higher incomes from the enhanced UI benefits (available from April through July) than they earned from work.[\[50\]](#) They estimate that the median replacement rate was 134 percent. Two-thirds of workers eligible for UI during this period may have received benefits which exceeded lost earnings, and one-fifth may have received benefits at least double lost earnings. There was sizable variation in the effects of the Coronavirus Aid, Relief, and Economic Security (CARES) Act across occupations and states, with important distributional consequences.

Notwithstanding these high replacement rates of wages, there are economic models showing how, in the long run, workers may benefit more from returning to work at lower wages than from receiving the temporarily higher unemployment benefits provided by the CARES Act. Corina Boar and Simon Mongey model the likelihood of finding a new job during a recession, and the likelihood that a job offer will still exist if a worker turns down a recall offer. They estimate that only workers paid less than \$12 per hour, with a 95-percent probability that their job would still be available in 4 months, would choose UI benefits over a job recall.[\[51\]](#) Using occupation-level data on job separation and new job finding rates calculated from the CPS, Nicolas Petrosky-Nadeau estimates a similar model and finds that temporarily high UI benefits would outweigh the long-term value of steady employment only for workers in the lowest paid occupations.[\[52\]](#)

Several authors offer empirical evidence that these unusually high benefits did not slow employment recovery. Arin Dube provides such evidence by using the Census Household Pulse Survey, while Ernie Tedeschi provides similar evidence by using the CPS. Both find that workers with greater UI replacement rates were no less likely to return to work.[\[53\]](#) Using data from online job application portal Glassdoor, Ioana Elena Marinescu, Daphné Skandalis, and Daniel Zhao examine this issue in more detail. They show that job applications in the United States declined in March before the passage of the CARES Act, but that this decline was less steep than the decline in job vacancies, causing the number of applications per job vacancy to increase sharply overall.[\[54\]](#) The authors estimate the relationship between the number of job applications per vacancy for each occupation in each state and the UI replacement rates for that occupation and state calculated by Ganong, Noel, and Vavra. They find that the job applications per vacancy for people in the top quartile of increases in UI generosity were 11 percent lower than those for people in the bottom quartile, which is evidence that the generosity of UI benefits is reducing job search. However, even for state-occupation combinations in this top quartile of UI benefit generosity, the number of

job applications per vacancy was still much higher in the spring than in January and February, suggesting that, on average, the generosity of UI was not leading to recruitment difficulties for employers.^[55]

Kurt Mitman and Stanislav Rabinovich develop a job-search model in which the optimal policy would increase or decrease UI benefits relative to the fall and rise of search efficiency rather than the unemployment rate.^[56] They find that it is optimal first to raise unemployment benefits and then to begin lowering them as the economy starts to reopen—despite unemployment remaining high. In their June paper, Mitman and Rabinovich concluded that the UI supplemental payment implemented under the CARES Act was close to the optimal policy. Under the assumption of a strong and uninterrupted economic recovery continuing at the rates observed in May and June, extending this UI supplement for another 6 months would hamper the recovery and reduce welfare. On the other hand, compared with the CARES Act alone, a UI extension combined with a reemployment bonus would further increase welfare, with only minimal effects on unemployment. None of the experts on the mid-July IGM panel disagreed with the statement, “A well-designed unemployment insurance system would tie federal contributions to states on the basis of each state’s economic and public health conditions.”^[57]

Partial recovery

After falling sharply in March and April 2020, U.S. employment began to recover quickly from May through August. Then, the recovery slowed. What does this partial recovery look like?

Using high-frequency data from payroll processor ADP, Tomaz Cajner et al. study patterns of job loss and partial recovery in spring 2020.^[58] The main advantages of using the ADP data are weekly frequency, separate observations of paid and “active” employment, and the ability to identify whether employment gains come from recalls or new hires. The authors found millions of workers who were not being paid but were still active in their employers’ payroll systems this spring. The employment decline and partial recovery were most dramatic for businesses employing 50 or fewer workers and for sectors requiring interpersonal interactions. About one-third of the April–May employment rebound came from business reopenings, and these businesses were primarily bringing back their previous employees. Nearly all returning firms and about 90 percent of firms that never closed but laid off workers early in the pandemic still had lower employment at the end of May than they did in February. However, more than 10 percent of surviving businesses have increased employment, some of them quite substantially.

Cajner et al. further find that employment declines were largest in states with more cases of COVID-19. Continued employment losses were strongly concentrated among low-wage workers. Employment declines were larger for women than for men, in a way that cannot be explained by employer characteristics. Average wages increased because low-wage workers lost jobs, while wages actually fell for more than 11 percent of continuing workers (compare this percentage with 6 percent of continuing workers who received wage cuts during the Great Recession).

Matthew Dey et al. examine the partial rebound in employment from April to May 2020.^[59] Growth was strongest in the industries that had been most severely affected, but May employment was still far lower than it was in February, especially in more highly exposed sectors. From February to May, employment fell by 33 percent in more exposed sectors and by 8 percent in less exposed sectors. The partial rebound included women, Hispanics, and younger workers—demographic groups that are overrepresented in more exposed sectors. However, there was little rebound in the employment of less educated workers without a high school diploma, and the employment

level of workers without a high school diploma in the more exposed sectors actually fell by 3.5 percent. Blacks' employment rebounded less than Whites'.

Alexander W. Bartik et al. examined microdata from Homebase, a provider of scheduling and time clock software to small businesses, particularly in the food and drink and retail trade sectors.^[60] The authors found that rapidly growing firms were less likely to close, and if they closed, they were more likely to reopen. Unlike previous recessions, the 2020 pandemic downturn was driven by layoffs in service businesses, such as restaurants and retailers. Many workers initially expected their layoffs to be temporary. Older workers, Black and Asian workers, and unmarried mothers were more likely to lose their jobs in April and less likely to return to work in May, even after controlling for education. Hours worked reached their lowest levels during the second week of April. In April, about one-half of Homebase firms closed for at least a week, and, by mid-June, those firms' hours were still 60 percent below their normal levels. Two-thirds of the missing hours were attributable to firms that had remained closed, while the remaining hours were attributable to reopened firms that had reduced workers' hours. The authors documented weakening ties between firms and their workers. In April and early May, firms mostly recalled workers—new hires represented only 6 percent of those added to the workforce. But by mid-June, new hires accounted for 18 percent.

Fairlie finds that, across nearly all industries, self-employed U.S. business owners partially recovered from the pandemic shock after April. However, by June 2020, the number of active business owners was still 8 percent below its February level, and the hours worked by these business owners was also still lower than in February. The most affected groups, including Black and immigrant business owners, recovered less than others. In June, the number of Black business owners was still 19 percent lower than in February, while the number of immigrant business owners was 18 percent lower than in February.^[61]

Effects of voluntary and mandatory distancing

Many researchers seek empirically to isolate the effects of stay-at-home orders and forced shutdowns on consumption and employment from the effects of voluntary distancing that are due to fear of the virus. Using several different data sources, they find evidence that the decline in economic activity was driven more by the presence of the virus than by official stay-at-home orders.

Chetty et al. find that consumer spending decreased and time at home increased before shelter-in-place orders were established, and these changes were most pronounced in high-density areas with higher rates of COVID-19 infection.^[62] Michael Dalton similarly finds that employment declines between February and April 2020 were closely related to the spread of the virus, even after controlling for shutdown orders at the state and metropolitan area levels.^[63]

Austan Goolsbee and Chad Syverson use cell phone records to examine spending reductions in metropolitan areas in which part of the population was under shelter-in-place orders while the rest was not.^[64] They find that, with the onset of the COVID-19 pandemic, consumer visits to businesses declined by 60 percent, but only 7 percent of the observed 60-percent decline was due to stay-at-home orders. Alexander D. Arnon, John A. Ricco, and Kent A. Smetters similarly attribute just 15 percent of the pandemic job losses to school and non-essential business closings and stay-at-home orders.^[65] Edward L. Glaeser et al., however, find that lifting lockdowns boosted restaurant activity more than their imposition reduced it.^[66]

Employment also fell in South Korea, which had no formal government lockdowns. Sangmin Aum, Sang Yoon (Tim) Shin, and Yongseok Lee find that employment spontaneously declined, even in the absence of government restrictions.^[67] A 0.1 percent increase in infection rates caused a 2- to 3-percent decline in local employment, a relationship similar to that between local infection rates and local job loss observed in the United States. The authors conclude that citizens' response to the virus is important and that the end of formal lockdowns has limited impact on employment.

Long-run (full) recovery

Long-run labor market recovery will be affected by several factors. One is that many existing employers may go out of business—particularly small firms, which have less access to capital. A second is that recessions do lasting harm to labor demand. A third is that, in recent years, much of the economy has evolved to use less labor per unit of output. A fourth consideration reflects changes in where and how work is done.

Destruction of small firms

Small businesses employ a large share of the workforce and play an important role in hiring disadvantaged workers. It is unclear how many of the businesses that closed will reopen. Using data from credit card processor Womply, the Opportunity Insights team suggests that 34 percent of preexisting small businesses were closed in mid-April. Of those, slightly more than half reopened by the beginning of June, but very few have reopened since then.^[68] Lukas Althoff et. al. found that the increase in pandemic-related telework reduced demand for local consumer services, such as restaurants and coffee shops especially in big cities, in areas where many of the people who have transitioned to telework were formerly sited. If some of the transition to telework becomes permanent, it will mean permanently reduced demand for local consumer services in business districts.^[69]

Economists have used data from Yelp! and Google Maps to measure how many small businesses have permanently closed. One study estimates that 19 percent of small businesses in Oakland, CA, had permanently closed by the end of April.^[70] However, these data cannot show how many small businesses may be able to reopen if a vaccine becomes available and demand for their products or services recovers. Furthermore, Leland Crane, Ryan Decker, Aaron Flaaen, et. al. point out that many business exits are in industries, such as restaurants, in which business closure is very common, even in ordinary times.^[71]

Examining employment patterns with confidential CES microdata, Michael Dalton, Elizabeth Weber Handwerker, and Mark A. Loewenstein find that, from February to April 2020, employment in small businesses shrank faster than employment in larger businesses, but that since then, the very smallest businesses have had the fastest recovery in employment levels. From April to July, this pattern held more broadly, with businesses that began 2020 with fewer than 100 employees recovering employment more quickly than businesses that began 2020 with more than 100 employees. However, from July to September, the largest businesses began to recover employment more quickly than others. By September, the employment recovery of businesses with 500 or more employees was second only to that of businesses with fewer than 10 employees.^[72] In an update to this paper, these same authors find that, by October 2020, employers that began 2020 with less than 500 workers experienced more job losses due to employer closures than job losses within employers that remained open.^[73]

Slow recovery from recessions generally

Employment has recovered rapidly so far from the pandemic job losses. However, Hall and Kudlyak showed that full employment recoveries proceed only gradually.^[74] For example, the recovery from the Great Recession was slow, linear, and gently sloped.

In a second paper, Hall and Kudlyak document that the pandemic created both recall unemployment, which is temporary, and jobless unemployment, where the job permanently disappears. Until August 2020, the rapid decline in overall unemployment largely reflected recalls from unemployment. Job recalls became less frequent after August 2020. If people have to find new jobs, employment growth is likely to slow, to the extent that the pandemic slows new matches or triggers new job losses.^[75]

Robert Martin, Teyanna Munyan, and Beth Anne Wilson find that output growth did not return to its prerecession trajectory after any of the 117 recessions experienced by Organisation for Economic Co-operation and Development (OECD) countries from 1960 to 2013.^[76] The output gap was larger for severe recessions. In one subsample, the authors found that “deep and long recessions lead to a sustained loss from prerecession trend of about 10 percent after 8 years.”^[77] After severe recessions, labor productivity returned to its long-term trend, but the growth of employment and hours worked did not. Labor force participation and total hours worked accounted for the entire change. Danny Yagan provides cross-section evidence that the employment–population ratio does not fully recover from unusually strong output shocks.^[78] Martin, Munyan, and Wilson remark that “much of the growth disappointment discussed during recoveries arises from unsubstantiated expectations of rapid growth following the recession.”^[79] Jonathan Heathcote, Fabrizio Perri, and Giovanni L. Violante show that, since 1967, hours and earnings for men without college education in the United States have fallen sharply during recessions and failed to recover fully in subsequent expansions.^[80]

Mercan, Schoefer, and Sedlacek have a model which helps explain why recoveries from severe recessions are slow.^[81] They suggest that in those cases, employers are flooded by job applicants returning from unemployment, new or young entrants, and displaced workers. Many of these applicants are forced to look for relatively unskilled jobs. Since most of these less-skilled workers cannot easily substitute for more experienced workers, they have relatively low productivity and must accept low-wage jobs. Their model helps explain both the slow recovery of overall employment and the “scarring” effect of lower long term earnings which typically occurs after deep recessions.

The overall shift of production from goods to services has slowed U.S. recoveries from recessions, as Olney and Pacitti have shown, and Martin Beraja and Christian Wolf find that the pattern of depressed consumption of services in this particular recession may further weaken the recovery.^[82] The authors argue that demand for durable goods is low during recessions, and pent-up demand for these goods helps drive recoveries in general. However, much of the consumption of services, such as restaurant meals and haircuts during the pandemic recession, may be forgone rather than simply postponed.^[83]

The rise of superstar firms

As discussed above, there is growing evidence that large employers lost fewer jobs than small employers during this recession. Previous research has shown that many industries are increasingly dominated by large, highly productive “superstar” firms which have high profits and market power. As De Loecker et al. and Autor et al. show,

as these superstar firms expand, the share of national income going to profits increases and the share paid to labor declines.[84] Papers by Ufuk Akcigit and Sina T. Ates, and by James E. Bessen argue that technology, especially information technology, is driving this trend.[85] David Autor and Elisabeth Reynolds suggest the pandemic disproportionately advantaged these highly profitable dominant firms, at the expense of small and mid-size firms that typically allocate more of their income to wages and salaries. This shift will tend to slow employment or wage recovery.[86]

Remote work, entrepreneurship, and automation

Barrero, Bloom, and Davis analyze the pandemic-driven reallocation of consumer spending.[87] They find that spending on airlines, hotels, rental cars, taxis, ride sharing, and movie theaters in the last week of March 2020 had fallen 75–95 percent relative to 2019. In contrast, spending on home improvement, video streaming, gaming, food delivery, and online grocers increased greatly. The authors expect that many of the responses to the pandemic will have lasting effects, including increased and technologically improved telework and more online commerce. This implies lasting reductions in demand for worksite-related goods and services, such as commercial district restaurants and gyms. Several authors point out that, after slowing down from March through May, Employer Identification Number applications compiled in the U.S. Census Bureau's New Business Formation Statistics (even for businesses likely to be employers) increased above normal levels during the summer.[88]

As long as the pandemic persists, people will work in ways that involve less interpersonal contact, which could accelerate automation. Video meetings are now common, and smartphones are used more than ever.[89] Investments into new technology may have increased during the pandemic and associated recession, because fixed cost investments in technology may be worth undertaking when normal business is shut down and because automation reduces health risks to workers. Mauro Caselli, Andrea Francasso, and Silvio Traverso show that industries employing more robots per worker in production experienced less COVID-19 contagion among workers.[90] The temporary shock in incentives to automate could have long-run effects.

However, Ahmed S. Rahman finds that automation shifts employment toward in-person jobs, and consequently increases worker vulnerability to the pandemic. Automation increases demand for high-contact service jobs that are not suitable for telework and present higher risk of illness, demand interruptions, and forced shutdowns.[91] Alex W. Chernoff and Casey Warman use O*Net and American Community Survey data to identify the occupations most at risk from both automation and COVID-19 transmission and to examine how these occupations vary by geography and across demographic groups. The authors find that the occupations most at risk, such as customer service representatives, medical assistants, and pharmacy technicians, are in the service sector and are not geographically concentrated.[92]

Conclusion

This article reviews recent economic research on pandemic-related U.S. job loss to understand prospects for employment recovery. At the beginning of this recession, unlike earlier recessions, a large majority of unemployed workers expected to be recalled to their jobs, and many were. Such recalls powered a rapid but partial recovery from May through the summer. However, the recovery has now slowed, and many temporary layoffs have become permanent. As the pandemic has continued, employment bonds between employers and their furloughed workers

have weakened. The process of matching unemployed workers to new employers is much slower than recalling them to their old jobs. These factors suggest future employment recovery might be slow.

As of December 2020, there is promising news about vaccines. As vaccines become widely available, consumer demand may rebound in many hard-hit industries, such as restaurants, trade, and transportation. However, the research that we have summarized above concludes that if there are lasting impacts of the pandemic, such as a permanent increase in telework, there will not be a full rebound of consumer demand for affected consumer services, such as restaurants located in business districts.

Many businesses closed and many workers left the labor force or were unemployed for long periods in 2020. There is an enormous body of research—outside the scope of this paper—showing that these forms of economic damage heal slowly.

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NOTES

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