Where Have All the Workers Gone?
A literature review of COVID-19-related workforce conditions
Amanda Rector, Maine State Economist
Maine Department of Administrative and Financial Services
November 2021

The COVID-19 pandemic has created a rich opportunity for economic research, particularly relating to workforce behaviors. Beginning in the late fall of 2020, a series of studies, working papers, and articles have been released that consider different aspects of employment, unemployment, and labor force participation. Taken together, the new body of literature attempts to answer a question increasingly on the minds of policymakers and businesspeople as the pandemic continues: where are the workers?

This literature review considers and summarizes twenty-two pieces written between November 2020 and October 2021 describing aspects of labor market conditions. These pieces are divided into four topics of discussion: general labor market observations, focusing on overall employment rates, employment-to-population ratios, and labor force participation rates; women, minorities, and specific age groups in the labor force, covering differences in labor force participation rates and employment-to-population ratios by gender, race/ethnicity, age, and educational attainment; parents in the labor force, looking at employment and labor force outcomes for parents specifically; and the effects of unemployment insurance benefits on the labor force, describing the effects of various programs and benefits.

Overall, the literature indicates that while the pandemic had significant and long-lasting impacts on labor force participation, employment, and unemployment for a large swath of the population, there were certain populations that were harder-hit than others. Women (and mothers especially), minorities, younger and older workers, as well as lower-wage workers and workers with lower levels of educational attainment bore the brunt of labor force impacts.

There are several reasons for this, many of which stem from the nature of the crisis itself. A pandemic is fundamentally different from a recession caused by standard economic triggers. In the face of a public health crisis, face-to-face encounters were minimized. This means many workers who were in industries and occupations reliant on face-to-face interactions, particularly those in service industries, and without the capability of switching to remote work, found themselves unable to work. These jobs were more often filled by women, minorities, younger workers, and workers with lower educational attainment, and they typically paid less and offered fewer benefits. Workers with existing health concerns and older workers weighed the risks of employment in a pandemic more heavily. Parents of younger children who were suddenly thrust into remote or hybrid learning situations or unable to access consistent childcare scrambled to find alternative solutions, needing to prioritize childcare over employment. UI benefits were expanded, offering supports to those workers who were traditionally not qualified for UI and replacing more of the lost wages than usual.

Labor markets prior to the pandemic were very tight, due in part to an aging workforce. Despite the increases in unemployment during the pandemic, reductions in the labor force have accelerated, and many of the factors contributing to heightened unemployment persist. This has led to a labor market much tighter than it might seem if only considering the unemployment rate. In recent months, businesses have been faced with increased demand, particularly in the leisure and hospitality sector, while constrained by a lack of available workforce. This literature review emphasizes that there is no single reason for the frustration felt by businesses unable to find workers - instead, there is a constellation of reasons leading to an ongoing shortage of readily available workers.

General labor force observations

Workers across the board were hit hard by the COVID-19 pandemic. Fourteen percent of adults lost their jobs at some point in 2020 (Board of Governors of the Federal Reserve System, April 2021). While the official unemployment rate peaked at 14.4% in April 2020, accounting for those who left the labor force would put peak unemployment at 22.7%. A gap of about 3 percentage points has persisted since June 2020 (Kochhar and Bennett, April 2021). The initial expectations were for a relatively quick recovery, but over time, those expectations changed. While 86% of laid-off workers reported in April 2020 that they expected to return to their old jobs, slightly less than 25% had actually done so by late 2020. In November 2020, 24% of laid-off adults neither had a new job nor were expecting to return to their previous job (Board of Governors of the Federal Reserve System, April 2021). The Real-time Population Survey by the Federal Reserve Bank of Dallas asked individuals who were employed in February 2020 and not employed at the time of the survey whether they would be willing to return to their previous position at the same hours and pay: the "yes" share had declined to just over 50% as of April 2021 (Kaplan et al., May 2021).

Reasons for not working vary. Overall, the employment-to-population ratio (EPOP) has declined 3.2 percentage points in April 2021 since February 2020. 1.7 percentage points are attributable to people not currently actively seeking work. 1.0 percentage points of people report being retired and 0.5 percentage points report being caregivers (Kaplan et al., May 2021). Prime-age adults who were between the ages of 25 and 54 and were not working in October 2020 were split fairly evenly into three reasons for not working: health limitations, childcare/family obligations, or because they could not find work. Prime-age women who were not working disproportionately cited childcare/family obligations at 43% compared to 24% of prime-age men who were not working (Board of Governors of the Federal Reserve System, April 2021).

The shift to remote work disproportionately advantaged workers with higher levels of educational attainment. 43% of employees with a bachelor's degree or higher worked completely remotely in 2020 compared to 19% of employees with some college and just 10% of employees with a high school diploma or less (Board of Governors of the Federal Reserve System, April 2021). That same pattern holds for EPOP: workers with a bachelor's degree or higher remain 2.2% below the February 2020 EPOP, with some college/associate degree 4.8% below and high school diploma or less 9.2% below (Furman and Powell III, June 2021). Workers with lower levels of educational attainment suffered poorer employment outcomes during the pandemic. The gap in employment declines for women was driven by those without a Bachelor's degree comparing the first quarters of 2020 and 2021 (-7.7% for women with children versus -6.6% for women without children) (Furman et al., May and June 2021).

As the economy opened up in spring 2021 following widespread availability of vaccines, the tightness of the labor market became apparent. Job openings in spring 2021 were at an all-time high and the ratio of job openings to unemployed was similar to mid-2017; in May 2021, there were 1.0 job seekers for every opening. The Conference Board labor market differential (jobs easy to find minus jobs hard to find) was near record-highs; and the quits rate was equal to the record high (Furman and Powell III, June 2021).

All the tightness in the labor market put upward pressure on wages. The employment cost index in March 2021 had wage growth just below 2019 levels and the April jobs report had average hourly earnings growth of 0.7% despite employment growth in lower-wage industries (Kaplan et al., May 2021). Wages for production and non-supervisory workers grew 9.1% annualized in April and May 2021, which is faster than any pre-pandemic two-month period since the early 1980s (Furman and Powell III, June 2021). While discouraged workers usually account for a portion of the labor force participation declines in a recession, Department of Labor data indicated only 3% of the pandemic-era labor force participation rate declines (from 63.3% to 61.5%) are due to

discouraged workers (Guilford, April 2021). The fact that so many people left the labor force for other reasons has contributed to the current labor shortage.

There is still a long way to go before the labor market stabilizes. In May 2021, the U.S. economy remained 10 million jobs short of trend; at May's rate of growth, the jobs gap will be closed in August 2023 (Furman and Powell III, June 2021). The pandemic continues to weigh heavily on people's minds, as well: U.S. Census Bureau household pulse survey results from the second half of March 2021 found that 4.2 million adults weren't working because of fears of getting/spreading COVID (Guilford, April 2021).

The process of matching jobs to workers is also delaying the recovery. A ZipRecruiter survey found that 70% of former leisure and hospitality workers said they were looking for work in a different industry and 55% of job applicants want remote work, possibly reflecting a change in desired work. Skills requirements for low-skill jobs are being dropped by employers while requirements for high-skill jobs are ramping up, which may be contributing to a skills mismatch. The existing trend of automation has been accelerated by the pandemic (Hilsenrath and Chaney Cambon, July 2021).

There is a geographic mismatch being created by several factors: locations that have attracted second-home buyers/vacationers/remote workers need more local workers but do not have available workforce housing; people moved from dense urban centers to suburbs/smaller metros; and remote workers have been moving to locations within 150 miles of their employer (Hilsenrath and Chaney Cambon, July 2021). Real estate demand shows a "donut effect" away from major city centers and towards lower density areas on the outskirts of these cities. Rental rates in the Central Business Districts of the 12 largest metros fell almost 20 percentage points relative to the change in the bottom 50% of zip codes by population density while home prices fell 15 percentage points. Results of a model show hybrid-work from home is more in line with actual data, indicating that people have the ability to move further from the city center but not to a different metro entirely. The larger the share of work from home in a hybrid situation, the more movement there is from the city center to the suburb (Ramani and Bloom, May 2021).

These studies highlight some of the larger employment trends since the start of the pandemic and describe some of the contributing factors to the ongoing lack of available workers. It is becoming apparent that the tightness of the labor market, while disguised somewhat by the high levels of unemployment, comes from a combination of reasons including health concerns, geographic and skills mismatches, retirements, caregiving demands, and changes in desired work. Increases in self-employment may also be contributing. Resolving these issues is a complex task and will take considerable time.

Women, minorities, and specific age groups in the labor force

Women have seen both a sharper decline in labor force participation, a phenomenon noted repeatedly by early studies, as well as a sharper recovery more recently. The female prime-age labor force participation rate (LFPR) declined 3.1 percentage points from February to April 2020 and regained only 0.7 percentage points through September 2020, while the male prime-age LFPR declined 2.7 percentage points and regained 1.5 percentage points (Atkinson and Richter, November 2020). In the U.S., the LFPR of women increased from 55.7% in 1987 to 60.3% in April 2020; it fell below 56% in January 2021 – the lowest level since April 1987 (Djankov et al., March 2021). 2.4 million women left the labor force from February 2020 to February 2021; 582,000 were Hispanic and 511,000 were Black, representing 46% of the total losses despite being less than one-third of the female labor force (Kochhar and Bennett, April 2021).

While the unemployment rate for women increased more than for men, the adjusted rate in February 2021 was approximately equal (9.8% versus 9.9% for men), meaning a sharper recovery for women (Kochhar and Bennett, April 2021). The post-pandemic recovery for women is more than 1.0 percentage points ahead of men's as of April 2021, representing approximately 1 million more women returning to work than men (Schweitzer and Dohrman, June 2021).

EPOP remained suppressed for Black and Hispanic workers (5 and 6 percentage points, respectively, lower in December 2020 compared to February 2020), while EPOP for Asian and white workers were 4.5 and 3.5 percentage points lower, respectively. This reflects both higher unemployment rates and lower LFPR among Black and Hispanic workers. The most rapid declines in employment were in leisure and hospitality, where 53% of workers were female in February 2020. The public sector is the largest employer of Black workers, who are more than twice as likely as the average worker to be employed in the healthcare support service industry (Edelberg and Shevlin, February 2021).

In previous recessions, the employment gender gap narrowed by 1.4 percentage points on average, but several factors contributed to an increase during this recession: a higher prevalence of women in the harder-hit industries; increased childcare needs being met more by women than men; and more women working in contract or part-time jobs without benefits, reducing the incentive to stay employed during the pandemic. The gender gap increased from 11.4 percentage points in February 2020 (where the prime-age EPOP was about 86% for men and 75% for women) to 12.0 percentage points in September 2020 before narrowing to 11.8 percentage points in January 2021 (Djankov et al., March 2021).

Prior to 2020, countries with a higher per capita GDP generally had higher female LFPR. Between the first and third quarters of 2020, the gender gap widened in some countries and shrank in others. In Colombia, women were particularly concentrated in non-teleworkable industries as well as in paid domestic work, which has declined since the onset of the crisis. In the second and third quarters of 2020, 70% of the economies in the sample saw the gender gap increase relative to the first quarter. "Every 10 percentage point higher female service employment share prior to COVID-19 is associated with an additional 0.9 percentage point increase in the gender gap by Q3" (Djankov et al., April 2021, p. 11). Countries with more equal treatment of women under the law may have minimized the need for women to leave the workforce during the pandemic. Countries with a higher share of women employed as temporary workers may have experienced larger expansions of the LFPR gender gap. (Djankov et al., April 2021)

Prior to the pandemic, 25% of women and 8% of men were employed in inflexible/high-contact occupations, meaning those where work times are inflexible and the job requires a high degree of in-person contact. Employment in these jobs dropped steeply during the early stage of the pandemic when stay-at-home orders

were implemented. Men were heavily over-represented in inflexible/low-contact occupations, which made it easier to transition to remote work. Mothers were slightly over-represented in high-contact occupations and minority women were over-represented in the inflexible/low-contact occupations. “Men, especially those without children, were particularly hit in the inflexible/high-contact occupations, while the biggest shock for women with children was observed in the inflexible/low-contact category” (Luengo-Prado, April 2021, p. 8).

The EPOP for teenagers age 16-19 increased to 32.8% in April 2021, exceeding pre-pandemic levels and accounting for around 78% of job gains in April 2021, (Kaplan et al., May 2021) as teenagers were actively recruited to help fill low-skill vacancies in leisure and hospitality sectors in particular. Teenagers age 16-19 saw a decline of 12.0 percentage points in EPOP from April 2019 to April 2020, but as of April 2021 had gained 3.1 percentage points above the April 2019 rates. Age 65+ saw the smallest decline (3.2 percentage points) and have regained 1.9 percentage points, leaving them 1.3 percentage points below. Younger workers tend to have higher concentrations of employment in service sectors, particular leisure and hospitality and retail trade. Unemployment counts for much of the effects on EPOP declines for 20-64 year-olds; for 16-19 and 65+, labor force participation is a greater effect. For teenagers, more have joined the labor force than previously (Schweitzer and Dohrman, June 2021).

29% of adults who retired in the prior year indicated that factors related to the pandemic contributed to their retirement timing. (Board of Governors of the Federal Reserve System, April 2021) At least 1.7 million more older workers than expected retired during the pandemic (March 2020-April 2021). The share of adults who are retired increased 1.7 percentage points for age 65+ and 0.3 percentage points for age 55-64. The retirement rate for non-college adults rose 0.8 percentage points for age 55-64 and 1.1 percentage points for age 65+. The retirement rate for college-educated workers decreased 0.6 percentage points for age 55-64 and 3.2% for age 65+. The LFPR for older workers was down 4.8% compared to pre-pandemic, versus a 1.9% decline for age 35-54 (Davis et al., June 2021). Faria e Castro (October 2021) estimated excess retirements in the range of 3 million between the start of the pandemic and August 2021.

Hispanic workers saw the largest EPOP decline among 16-64 year-olds of 12.7 percentage points; there are notable concentrations of these workers in construction and accommodation and food services. 3.0 percentage points remain unrecovered. Black, Asian, and white workers saw similar levels of decline, with Black workers having an unrecovered loss of 3.2 percentage points. Unemployment is a key factor, with labor force participation less so; Black workers had a nearly -1.0 percentage point effect from labor force participation (Schweitzer and Dohrman, June 2021).

White women saw a 10.9 percentage point decline compared to 9.8 percentage points for white men; other groups saw less disparate effects between men and women. White women have a 1.9 percentage point decline remaining, while white men have a 2.6 percentage point decline remaining, reflecting a stronger recovery for white women than white men. Other groups again saw less disparity in their recoveries. Much of this is related to unemployment, but labor force recovery has been stronger for white women as well. Black men have seen a larger decline in LFPR than Black women; Hispanic and Asian women have seen less recovery than men (Schweitzer and Dohrman, June 2021).

Parents in the labor force

The experiences of parents in the labor force are different from the experiences of non-parents in the labor force, and more so parents of young children. Several recent findings indicate that men with children are recovering strongly while women with children are lagging behind: this is perhaps a case of breadwinners versus caregivers.

Parents were impacted by the sudden closures and shifts to remote/hybrid learning in schools and childcare facilities. Low-income, metro area, or public school children were more likely to be in fully remote learning experiences. 60% of parents who used childcare services experienced disruptions to childcare since the start of the pandemic, and 22% of all parents were either not working (9%) or working less (13%) due to disruptions to childcare or education. 11% of mothers and 6% of fathers said they were not working due to disruptions in school or childcare, equating to nearly two percentage points fewer working adults. Black, Hispanic, and single mothers, along with low-income mothers were more likely to be not working or working less due to childcare/school disruptions (Board of Governors of the Federal Reserve System, April 2021).

Overall, women with children – particularly Black and Hispanic women and those without a bachelor's degree – saw the sharpest LFPR declines through September 2020. The changes in LFPR from February 2020 to September 2020 are nearly identical for males with and without at least one child under the age of 13 at home. However, the LFPR for women with children declined 3.0 percentage points compared to 1.8 percentage points for women without children. The LFPR for women without a bachelor's degree declined more for those with children than without (4.3 percentage points versus 3.1 percentage points). The LFPR for women with a bachelor's degree declined by less and saw little difference between those with and without children, likely reflecting women with bachelor's degrees being able to work from home at higher rates. The LFPR declines for Black women and men with children were more than other races and ethnicities (-6.4 percentage points for Black women with children compared to -2.3 percentage points for Black women without children and -4.0 percentage points for Black men with children compared to -2.4 percentage points for Black men without children) (Atkinson and Richter, November 2020).

The EPOP changes from February to April 2020 were similar for non-parent men and women, but the initial fall in employment for fathers (10%) was smaller than that for mothers (15%) and the recovery for mothers since mid-summer 2020 stalled. In December 2020, fathers were 4% below pre-pandemic levels while mothers were 7% below (Lofton et al., February 2021). This results in a rising gender employment gap for parents. For households with children, the gender gaps were 19 and 19.5 percentage points for employment and LFPR, respectively (Luengo-Prado, April 2021).

The LFPR shows a similar pattern, falling by 5% in April 2020 for mothers, partially recovering over the summer, and then dipping again with the beginning of the school year back to April levels. Survey data shows mothers have shifted towards becoming the sole caregiver, even in dual earner households (Lofton et al., February 2021). After March 2020, parents of young children dropped out of the labor force at higher rates than parents of teens (Bauer et al., March 2021). Women with children experienced greater increases in their pandemic-era labor force exit rates, especially women with children age 0-5, single women, and women with lower average wages. Women with children age 0-5 had the most excess exits (Lim and Zabek, September 2021).

By February 2021, the excess employment gender gap for women without children had disappeared, while the gender gap for women with children remained 2.2 percentage points higher than in February 2020. There is no evidence that women without children are leaving the labor force at higher rates than men without children; there is evidence of a widening gender gap for women with school-age children throughout the pandemic and

for mothers of young children more recently. The LFPR gap for all mothers increased 2.1 percentage points in February 2021 compared to February 2020. The gender gaps widened initially due to both occupational distribution differences and school closings (Luengo-Prado, April 2021). The gender gap in hours worked increased during the first two months of the pandemic: among parents with young children, mothers reduced their time working by 4 to 4.5 times more than fathers (Bauer et al., March 2021).

Bauer et al. (2021) found that more than one in ten mothers of young children left their jobs due to child-care responsibilities at some point in 2020 and that during the pandemic, one-third of non-working working-age women cited child-care concerns as the reason for not working compared to only 12% of non-working working-age men.

"Mothers account for about half of the 5 percentage point decline in women's employment to population ratio, and nearly three quarters of the 2 percentage point decline in women's LFP rate. Fathers account for about one-third of the 4 percentage point decline in men's employment to population ratio and of the 1 percentage point decline in men's LFP rate" (Lofton et al., February 2021, p. 6). Also, "If mothers had experienced a recovery similar to that of non-parent women, their December labor force participation rate would have been approximately 73 percent, two percentage points above the actual rate. That is, approximately 700 thousand additional prime aged women would have been in the workforce in December 2020" (Lofton et al., February 2021, p. 6).

The ability to telework did not substantially change employment outcomes for fathers or mothers; scheduling flexibility seems to have had more of an impact. The occupations that had the highest share of inflexible scheduling also had the largest declines in employment of mothers relative to other women (Lofton et al., February 2021).

The lower the degree of school disruption in fall 2020, the better the improvements in mothers' LFPR relative to that of non-parent women within the same state (Lofton et al., February 2021). In other words, school disruption is likely contributing to a lower labor force participation recovery for mothers. Lim and Zabek (September 2021) found that around half of the excess labor force exits of women could be explained by the presence of children under age 13 in the household.

Another study (Furman et al., May 2021) found that childcare and school closures played only a small part in the overall employment and labor force declines. Between the first quarter of 2020 and the first quarter of 2021, employment rates of parents of young children have declined by 4.5% versus 5.2% for people who are not parents of young children. While mothers with young children have left the labor force at a slightly higher rate than women without young children, fathers have left the labor force at a lower rate than men without young children. However, for mothers of young children, differential declines in LFPR explain at most 6% of the total decline from the first quarter of 2020 to the first quarter of 2021. Patterns of employment losses specific to parents in the 2001 and 2007-09 recessions were very similar, indicating there has not been something very different about how the pandemic and school/daycare closings have differentially affected overall labor market outcomes.

Similarly, Djankov et al. (March 2021) found that policies related to social security benefits and protections for temporary/contract workers were of more importance in limiting the widening of the gender gap in countries than the availability of childcare.

It should be noted that several studies indicated that the impacts on mothers from school/childcare disruptions were larger in specific months, especially those when children would typically return to school. While the results

from Furman et al. (May 2021) focus on the comparison from the first quarter of 2020 to 2021, an expanded paper by the authors in June 2021 finds that in the fourth quarter of 2020, as much as 10% of the decline in LFPR from the fourth quarter of 2019 could be explained by differential effects from parents, with 8% explained by mothers. It is possible that childcare concerns are a larger issue at certain times of the year. Given the range of factors contributing to declines in the LFPR, any that could be identified and solved through policy changes, such as increased access to childcare, would be important to alleviating the current workforce challenges.

The effects of unemployment insurance (UI) benefits on the labor force

As the expiration of the enhanced UI benefits neared, there was increased interest in gauging the effects of these benefits on labor force decisions. Briggs (October 2021) finds that for July and August 2021, when 25 states had ended enhanced UI early, the job-finding rate for unemployed individuals increased (roughly 5 percentage points in July and 10 percentage points in August), but there was no increase in the labor force participation rate. The average unemployment rate in May 2021 among states with a June/July end to enhanced UI was 4.4% while states with a September end saw an average unemployment rate of 6.0%, but the rate had fallen more since January in those states than in the states with an early end (Hilsenrath and Chaney Cambon, July 2021). An analysis of the CARES Act UI provisions (including Pandemic Emergency Unemployment Compensation and state emergency extensions) using reservation benefits indicates that only a small fraction of UI recipients would refuse a job offer at their previous level of pay. As of June 2020, only workers in the lowest-paid occupation (food services, with typical earnings of $460/week) would be indifferent between remaining unemployed and returning to work at previous pay levels (Petrosky-Nadeau and Valletta, June 2021).

The results of an analysis of the $600 enhanced benefit in March-July 2020 show a moderate disincentive to job flows. The $300 enhanced benefit in early 2021 likely had small but noticeable effects on job search and worker availability (Petrosky-Nadeau and Valletta, June 2021).

April through June 2020 exit rates are lower for individuals whose post-CARES UI replacement rate rose the most, but are statistically significant for May only, implying that the disincentive affects only a small fraction of the sample. For early 2021, with the $300 benefit, the effects are reduced further: each month in early 2021, 7 out of 28 unemployed individuals receive offers they would normally accept, but one of the 7 decides not to because of the enhanced UI (Petrosky-Nadeau and Valletta, June 2021).

Prior to the pandemic, around 5% of UI recipients exited to new jobs in any given week. This dropped below 2% in April 2020. The rate increased from 1.6% to 2.4% at the end of the $600 supplement in August 2020 and then decreased to 2.0% at the reinstatement of the $300 supplement in January 2021. In March and April 2021, the job finding rate rose substantially but temporarily for UI recipients with both higher and lower UI replacement rates despite no policy change announcements at this time (Greig et al., July 2021).

When supplements are in effect, workers with higher UI replacement rates have slightly lower job finding rates and job finding changes are larger with policy changes for workers with higher UI replacement rates. There is evidence of a modest job finding disincentive due to supplements: the $600 supplement reduced employment by less than 0.8 percent and the $300 supplement by less than 0.5 percent. UI supplements likely were not holding back employment in any significant way nor contributing to the increases in wages at the bottom of the income distribution (Greig et al., July 2021).

Pandemic Unemployment Assistance (PUA) was intended to provide UI benefits to people not normally eligible. PUA recipients had less direct deposit payroll income in 2019 and the median PUA recipient's total income was 75% of the income for the median traditional UI recipient. PUA recipients were more likely to be younger; the modal PUA recipient is 20 while the modal traditional UI recipient is almost 30. Some PUA recipients may have been students who continued to matriculate remotely without being able to earn money from a campus job. In 2020, wait times were longer, and the first check typically included three weeks of payments. PUA, however, saw six or seven payments in the first check. Delays in UI receipt create economic hardships for recipients (Greig et al., July 2021).

Appendix

1. Atkinson, T. and Richter, A. (November 2020). Pandemic disproportionately affects women, minority labor force participation. *Dallas Fed Economics.* https://www.dallasfed.org/research/economics/2020/1110

Methods: CPS data focused on labor force participation rates through October 2020.

Findings: The LFPR declined from 63.4% in February 2020 to 60.2% in April 2020, rebounding only to 61.7% in October 2020. The prime-age LFPR in October 2020 is 1.8 percentage points lower than February 2020. From March-July 2020, the male and female LFPR moved in sync, but a gap opened up in August and September, with the male LFPR increasing and the female LFPR decreasing. This suggests that disruptions to school/childcare were playing a role in the decline of female LFPR. The prime-age male LFPR in October 2020 was on par with June 2020, but the prime-age female LFPR was still 0.8 percentage points below June 2020 levels. The female prime-age LFPR declined 3.1 percentage points from February-April 2020 and regained only 0.7 percentage points through September 2020. The male prime-age LFPR declined 2.7 percentage points and regained 1.5 percentage points through September 2020. This is the opposite of what happened following the Great Recession, when the female LFPR held up better than the male LFPR.

Changes in the LFPR from February 2020 to September 2020 are nearly identical for males with and without at least one child under the age of 13 at home. However, the LFPR for women with children declined 3.0 percentage points versus 1.8 percentage points for women without children. The LFPR for women without a bachelor's degree declined more for those with children than without (4.3 percentage points versus 3.1 percentage points). The LFPR for women with a bachelor's degree declined by less and saw little difference between women with and without children. This likely reflects a higher share of women with bachelor's degrees being able to work from home. The LFPR declines for Black women and men with children were greater than the declines for other races and ethnicities (-6.4 percentage points for Black women with children versus -2.3 percentage points for Black women without children and -4.0 percentage points for Black men with children versus -2.4 percentage points for Black men without children).

Overall, women with children, particular Black women and those without a bachelor's degree, saw the sharpest LFPR declines through September 2020.

Note: more recent data is available in an Excel file and shows the same patterns continuing through February 2021. The female LFPR with children was down 3.0 percentage points in February 2021 versus February 2020; the female LFPR without children was down 1.3 percentage points. The male LFPR with children was down 0.6 percentage points; without children was down 1.9 percentage points. The LFPR for Black women with children was down 6.2 percentage points versus 1.8 percentage points for Black women without children. The LFPR for Black men with children was up 1.4 percentage points but down 1.8 percentage points for Black men without children. Women without a bachelor's degree with children was down 4.7 percentage points; women without a bachelor's degree without children was down 2.3 percentage points. Men without a bachelor's degree with children was down 1.0 percentage points; men without a bachelor's degree without children was down 2.2 percentage points. These trends seem to show men with children recovering more strongly while women with children are lagging behind.

2. Edelberg, W. and Shevlin, P. (February 2021). The critical role of workforce training in the labor market recovery. *Up Front.* https://www.brookings.edu/blog/up-front/2021/02/04/the-critical-role-of-workforce-training-in-the-labor-market-recovery/

Methods: Current Population Survey (CPS) data

Findings: EPOP remains suppressed for Black and Hispanic workers (5 and 6 percentage points lower in December 2020 versus February 2020); EPOP for Asian workers was 4.5 percentage points lower and for white workers was 3.5 percentage points lower. This reflects both higher unemployment and lower LFPR. More women than men dropped out of the labor force, with a particularly large decline in September 2020 when many schools announced remote learning through the fall and winter. LFPR declines have been sharpest among Black and Hispanic women.

This likely stems in large part from higher concentrations of employment in certain industries. Betsey Stevenson (Hamilton Project, July 2020) notes that, "the most rapid declines in March were in employment in leisure and hospitality, an industry in which 53 percent of workers were female in February." Bradley L. Hardy and Trevon D. Logan (Hamilton Project, August 2020) note that the public sector is largest employer of Black workers, and that "Black Americans are more than twice as likely as the average worker to be employed in the healthcare support service industry."

There may be pandemic-compelled changes in which industries workers choose; broad-based workforce training might help those workers choosing to transition to a new industry. CPS data show nearly every industry had more workers switching sectors from December 2019 to November 2020 than the previous year. For those who changed sectors, more reported a change in employment status as well.

Suggested policy solutions include implementing measures to ensure people feel safe while bolstering household financial resources in the meantime and instituting improvements to the overall job quality.

Workers with lower levels of education were more likely to lose a job and change sectors during the pandemic. An acceleration in automation may change the composition of jobs, with the remaining jobs requiring higher levels of education. Workforce training will be key to managing these transitions.

3. Lofton, O., Petrosky-Nadeau, N., and Seitelman, L. (February 2021). Parents in a pandemic labor market. *Federal Reserve Bank of San Francisco Working Paper* 2021-04. https://doi.org/10.24148/wp2021-04

Methods: CPS data for prime-aged men and women with and without children. American Time Use Survey (ATUS) data on availability and use of telework and flexible scheduling by occupation. Census Household Pulse Survey for schooling disruptions.

Findings: In April 2020, EPOP fell by 12% relative to February 2020 for prime-age men and by 15% for prime-age women; gains since then have been similar, leaving the gap intact. This difference is driven by parents. The EPOP changes were similar for non-parent men and women, but the initial fall in employment for fathers (10%) was smaller than that for mothers (15%) and the recovery for mothers since mid-summer 2020 has stalled. In December 2020, fathers were 4% below pre-pandemic levels while mothers were 7% below. This results in a rising employment gender gap for parents: "the gender participation gap in November is almost entirely explained by the labor market experience of parents even after controlling for demographic characteristics and state fixed effects."

The LFPR shows a similar pattern: mothers' LFPR fell by 5% in April, partially recovered over the summer, and then dipped again with the beginning of the school year back to April levels. Survey data show mothers have shifted towards becoming the sole caregiver, even in dual earner households. Changes in weekly hours worked have not been out of line with previous recessions. At the beginning of the pandemic, men's and women's hours fell by similar amounts. Women's hours worked returned to normal at the end of the year while men's remained 2% below pre-pandemic levels since September. Hours worked fell the least for mothers in the beginning of the pandemic, due to a decline in part-time employment that coincided with school closures.

"Mothers account for about half of the 5 percentage point decline in women's employment to population ratio, and nearly three quarters of the 2 percentage point decline in women's LFP rate. Fathers account for about one-third of the 4 percentage point decline in men's employment to population ratio and of the 1 percentage point decline in men's LFP rate. If mothers had experienced a recovery similar to that of non-parent women, their December labor force participation rate would have been approximately 73 percent, two percentage points above the actual rate. That is, approximately 700 thousand additional prime aged women would have been in the workforce in December 2020."

Individuals with the lowest levels of education have been hardest-hit. The declines in EPOP and LFPR of mothers are twice as large for mothers with a high school diploma or less as for mothers with a college degree. But because college-educated mothers have such high LFPR and EPOP, they contributed about one-third of the changes, even though they experienced the smallest declines. For fathers, EPOP and LFPR declines were larger among those with a high school diploma or less. Non-parent men and women with more than a high school education saw employment declines similar to each other.

For mothers in the lowest income tercile (in households with two or more adults), job losses were five times worse than mothers in the highest income tercile. The LFPR declines were much worse for the lowest tercile as well. For fathers, the decline in employment in the lowest tercile was half that of mothers. Mothers in the bottom tercile contribute the most to declines in mothers' EPOP and LFPR (about two-thirds), which is not the case for fathers.

Occupations are scored according to the flexibility of work scheduling and the ability to telework. Women's employment is more equally distributed across the range of scores. 41% of men's employment is in occupations scoring more than 60 on flexibility and 44% is in occupations scoring less than 40 on teleworkability. For women,

the corresponding shares are 34% and 36%. Half of men's employment is in occupations reporting less than 20% teleworkability versus 37% of women's jobs. 32% of men's employment is in occupations reporting high ability to telework versus 26% of women's jobs. Scheduling flexibility tends to occur in the same occupations for which telework is possible. Education and related occupations are an outlier with a high teleworkability score near 40% but a very low score on scheduling flexibility.

The ability to telework did not substantially change employment outcomes for fathers or mothers; scheduling flexibility seems to have had more of an impact. "Occupations with higher shares of jobs with rigid work schedules experienced the largest declines in employment of mothers relative to women without children at home." In occupations with flexible work schedules, the ratio of mothers' to women's employment did not change significantly.

It appears that places with lower levels of school disruption in fall 2020 saw moderately better improvements in mothers' LFPR relative to that of non-parent women within the same state since the start of the pandemic.

4. Djankov, S., Koujianou Goldberg, P., Hyland, M., and Zhang, E. (Y.). (March 2021). COVID-19 widens the gender gap in labor force participation. *Realtime Economic Issues Watch.* https://www.piie.com/blogs/realtime-economic-issues-watch/covid-19-widens-gender-gap-labor-force-participation

Methods: BLS data on labor force participation by gender

Findings: In the U.S., the LFPR of women increased from 55.7% in 1987 to 60.3% in April 2020; it fell below 56% in January 2021 – the lowest level since April 1987. In previous recessions, the gender gap narrowed by 1.4 percentage points on average but increased during this recession due to several contributing factors. These factors include a higher prevalence of women in the harder-hit industries; increased childcare needs being met more by women than men; and more women working in contract or part-time jobs without benefits, reducing the incentive to stay employed during the pandemic. The gender gap increased from 11.4 percentage points in February 2020 to 12.0 percentage points in September 2020 before narrowing to 11.8 percentage points in January 2021. Previous research (Hyland, Djankov, and Koujianou Goldberg, December 2020) suggests that re-integrating women into the labor force takes time, emphasizing the need to keep women from leaving the labor force in the first place.

Policy suggestions for keeping women in the labor force include: more help for childcare; more protections for part-time and contract work; and more benefits that provide incentives to stay at work. Specific suggestions include: ensuring that more jobs held by women come with retirement and health benefits; increasing paid parental leave so fathers can equally share in the burden of childcare; and providing start-up capital to women entrepreneurs.

The widening in the U.S. gender gap results from two factors: the occupation channel (a disproportionate impact on industries that employ more women) and the childcare channel (women bear a disproportionate share of the childcare burden brought on by school and daycare closures). Other countries have seen this same widening trend in the gender gap during the pandemic, including Canada, Italy, and Japan (the gender gap widened by 0.6 percentage points in this group of four that includes the U.S.); some countries have seen the LFPR of women be more resilient, including the UK, Australia, Denmark, and the Netherlands (the gender gap shrank by 0.9 percentage points in this group).

Several different studies have begun to examine the impacts in countries across the globe. In the UK, manufacturing (where more men are employed) took a hit, while crisis-affected sectors like tourism and hospitality were offered a temporary reduction in VAT and a one-off grant. A local property tax exemption for eligible childcare centers was offered. Parents with work hours reduced during the pandemic were able to offset childcare costs through tax credits, which benefitted women more (as they hold more part-time jobs). There was an increase in home childcare, more of which was being done by women – a finding shared by researchers studying Australia.

In Spain, women were more likely than men to lose jobs and women also saw large increases in childcare and housework responsibilities. In Germany, employees were the most insulated from the crisis, where a short-time work scheme was already in place, allowing employers keep workers on at fewer hours. Women and the less educated were most likely to lose jobs. In Japan, school closures were associated with a negative impact to the mental health of mothers, but not fathers. Female workers fare worse than male workers largely because there are relatively more women engaged in part-time, temporary, and contract work.

“The main policy lever in affecting the resilience in women’s labor force participation is equality of social security benefits and hiring and firing rules for workers on temporary or fixed-term contracts.” “Women’s

representation among part-time workers, along with the extent of social security benefits in place for such workers, seems to account for primary differences between countries where the gender gap widened and where it shrank." The availability of childcare seems to be less of a factor. Women disproportionately work in "family-friendly" sectors with lower-paying jobs that offer more family amenities. Women seem to lose their jobs for reasons other than childcare.

5. Bauer, L., Buckner, E., Estep, S., Moss, E., and Welch, M. (March 2021). Ten economic facts on how mothers spend their time. *The Hamilton Project, Brookings Institution.* https://www.brookings.edu/wp-content/uploads/2021/03/Maternal_Time_Use_Facts_final-1.pdf

Methods: Combination of federal data sources (CPS, ASEC, ATUS, Household Pulse Survey) and own survey (Survey of Mothers with Young Children) to present ten economic facts about how women spend their time. Young children are considered to be children under 13.

Findings:

1. "Through 2019, labor force participation rates of prime-age women had converged, with the exception of married mothers of young children." The LFPR of single women with young children, married women with teenagers, and women without children converged, with the LFPR of single women with teenagers remaining the highest as it has been over the past 20 years. The LFPR of married mothers of young children had been increasing prior to COVID.

2. "After March 2020, parents of young children dropped out of the labor force at higher rates than parents of teens." Changes in the LFPR are linked to school closures, with the lowest levels coming at the beginning of the pandemic (when schools closed) and in September 2020 when the schools would normally be reopening. "Working mothers in states that imposed early stay-at-home orders and school closures were 68.8 percent more likely to take leave from jobs than were working mothers in states that closed schools later." (Heggeness and Fields, 2020) In October 2020, around 1.2 million parents of school-age children had left the labor force since February, largely due to school closings. (Tedeschi, 2020) Around 2.3 million fewer women were in the labor force in February 2021 compared to a year prior. (National Women's Law Center, 2021)

3. "More than one in ten mothers of young children left their jobs due to child-care responsibilities at some point in 2020." During the pandemic, one-third of non-working working-age women cited child-care concerns as the reason for not working compared to only 12% of non-working working-age men. (Heggeness and Fields, 2020) Three-fourths of mothers versus 54% of fathers with children under age 10 say childcare was one of the top three challenges during the pandemic. (LeanIn and McKinsey & Company 2020) Only 1 in 5 families reported receiving in-person help with childcare. More than 16% of mothers with young children reported that someone in the household had left their job due to child-care responsibilities at some point in 2020; 70% of those were the mothers themselves. Among mothers who were unemployed in October 2020, almost 40% reported they had left their job because of child-care responsibilities since March 2020.

4. "At the start of 2021, Black and Hispanic mothers of young children were more likely to be unemployed than were white mothers of young children." Employment of Hispanic mothers with young children dropped from 59% to 50% from February 2020 to February 2021. Black mothers of young children had unemployment of 6.5% in February 2021, versus 3.4% of white mothers.

5. "Employed mothers of young children spend two hours a day more than fathers on nonmarket labor." For 2014-2019, mothers of young children were spending about 25% less time working than fathers, but more time on unpaid nonmarket labor, including direct childcare.

6. "During the COVID-19 pandemic, fewer working mothers with young children are working full time." The share of working mothers working part-time was much higher in April 2020 than in 2014-2019. While mothers working full-time increased to nearly 3 in 10 in October 2020, this is still below 2014-2019 rates. The gender gap in hours worked increased during the first two months of the pandemic: among parents with young children, mothers reduced their time working by 4 to 4.5 times more than fathers. (Collins et al., 2020)

7. "Seventy percent of mothers who are essential workers or working from home report that it is difficult to balance work and family." More than 10% of survey respondents reported being penalized at work for needing to perform childcare duties. Nearly 50% of parents reported that it was difficult to balance work and family responsibilities; those responding as essential workers and working from home were more likely to say so. Another study (Catalyst, 2020) found that 2 in 5 mothers say they must hide their caregiving struggles at

work. “Workers earning more than $25,000 annually were nearly twice as likely to work outside the normal business hours compared to those making less than that income. Forty percent of all workers were working outside the normal business hours compared to more than half of those working from home.” More than 30% of respondents reported working on weekends. More than 25% reported working fewer hours relative to before the pandemic, with low-income workers nearly twice as likely to be working fewer hours.

8. “The vast majority of mothers with young children are now spending time on educational activities with their children.” More than 90% of mothers reported participating in at least one enrichment activity, such as reading or playing.

9. “Mothers report doing the majority of childcare.” More than 60% of parents with children under the age of 5 reported that their child-care provider had closed or reduced operations in the early months of the pandemic. (Smith and Tracey, 2020; Ali, Herbst, and Makridis, 2021) “More than half of mothers who were essential workers, working from home, or not in the labor force identified as performing all, much more, or somewhat more of the child-care duties within their household.” 68% of married or cohabitating mothers and 85% of single mothers who were working from home reported taking on most of the child-care responsibilities.

10. “Lower mental health among mothers is associated with poor economic outcomes.” A standardized measure of four variables was split into quartiles with a range of -2 to 1, with 0 as the mean; higher positive numbers equate to better mental health. Mothers living with young children in the lowest mental-health quartile had the highest rates of poor economic outcomes (income loss, delayed health care, children did not have enough to eat, behind on rent/mortgage).

6. Guilford, G. (2021, April 11). The other reason the labor force is shrunken: fear of COVID-19. *The Wall Street Journal.* https://www.wsj.com/articles/the-other-reason-the-labor-force-is-shrunken-fear-of-covid-19-11618163017

Methods: U.S. Census Bureau pulse survey data; interviews

Findings: U.S. Census Bureau household pulse survey results from the second half of March 2021 found that 4.2 million adults weren't working because of fears of getting or spreading COVID-19. 8.4 million fewer American adults were currently working one year after the start of the pandemic. Fear of COVID-19 indicates that vaccination rates will play a key role in people returning to work. Around 15.5% of adults reported that they either definitely or probably were not going to get the vaccine. While discouraged workers usually account for a portion of the labor force participation declines in a recession, Department of Labor data indicate that only 3% of pandemic LFPR declines (from 63.3% to 61.5%) are due to discouraged workers. The resulting labor shortage could contribute to inflationary pressures as businesses raise wages to attempt to attract workers. "A Franklin Templeton-Gallup Economics of Recovery study in October concluded that Black women were about twice as concerned as white women about the pandemic getting worse and the possibility of dying from COVID-19." Black and Latinx workers are more likely to be in non-teleworkable jobs.

7. Luengo-Prado, M. J. (April 2021). COVID-19 and the labor market outcomes for prime-aged women. *Current Policy Perspectives.* https://www.bostonfed.org/publications/current-policy-perspectives/2021/covid-19-and-the-labor-market-outcomes-for-prime-aged-women.aspx

Methods: Monthly CPS data, focusing on prime-age respondents (25-54) and utilizing family structure information, for January 2017 through February 2021. Workers are grouped into four occupational categories as defined by Albanesi and Kim (2021) using O*NET data pertaining to remote work and proximity to others. Categories are: (1) flexible/high-contact, (2) flexible/low-contact, (3) inflexible/high-contact, and (4) inflexible/low-contact. Difference-in-difference models similar to Couch et al. (2020) are used to illustrate differences between the experiences of comparable women and men.

Findings: Gender disparities existed pre-pandemic: the prime-age gap in employment was 11 percentage points and in the LFPR was 12 percentage points. EPOP for ages 25-54 in February 2020 was about 86% for men and 75% for women. For fathers and mothers, the gender gaps were 19 and 19.5 percentage points for employment and the LFPR, respectively. Employment and labor force participation remain well below February 2020 levels in February 2021 for both men and women.

Fathers have been least affected while mothers have been most affected using employment and the LFPR as metrics. Unlike past recessions, the gender gaps in employment and labor force participation have widened by roughly 2 percentage points each. While the gap between men and women with children had widened by 2.7 percentage points by July 2020, the gap between men and women without children widened by 1.3 percentage points. By February 2021, the gender gap increase for women without children had disappeared, while the gender gap for women with children remained 2.2 percentage points higher than in February 2020. Mothers of very young children fared relatively better earlier on in the pandemic, but the employment gap relative to men has converged to levels similar to those of mothers of school-age children.

There is no evidence that women without children are leaving the labor force at higher rates than men without children, however, there is evidence of a widening gender gap for women with school-age children throughout the pandemic and for mothers of young children more recently. The LFPR gap for all mothers increased 2.1 percentage points in February 2021 versus February 2020.

Hours worked declined significantly for all employed individuals in the early days of the pandemic. Men's hours recovered to pre-pandemic levels during the summer before declining again. Women's hours have steadily increased since April 2020. The gender gap in hours worked for parents had narrowed in February 2021 compared to February 2020. This is a similar pattern to the changes in being at work.

Outcomes for employment and labor force participation show a difference around 2 percentage points throughout the pandemic for women with children and women without. For hours worked and being at work, the differences were large during the summer, but later in the pandemic, the presence of children in the household has not played a role in the gender gap in these measures. For hours worked and being at work, the gender gap had returned to pre-pandemic size (but at lower levels); however, the gender gap at the extensive margin remains.

In February 2020, most men and women worked in flexible/low-contact occupations, but women were disproportionately represented in high-contact occupations – and probably more likely to work in businesses subject to mandated closures. Employment in inflexible/high-contact occupations, which employed 25% of women versus 8% of men, dropped steeply during the early stage of the pandemic. Men were heavily over-represented in inflexible/low-contact occupations, while mothers were slightly over-represented in high-contact

occupations and minority women were over-represented in the inflexible/low-contact occupations. “Men, especially those without children, were particularly hit in the inflexible/high-contact occupations, while the biggest shock for women with children was observed in the inflexible/low-contact category.”

“The gender gaps widened initially due to both occupation distribution differences across genders and school closings.” In terms of employment, the gender gap widened significantly in the early part of the pandemic – and more for individuals with children. In the later part of the pandemic, the increased gap has closed for individuals without children. For mothers, the gap decreases by about 20%, but remains 2 percentage points higher than prior to the pandemic. “Occupational differences help account for the widening of the gender gap in employment of childless individuals in the early part of the pandemic, but school closings are more important for explaining the later gap.” School closings even have an impact for childless individuals (likely correlating with other state-level restrictions affecting employment more broadly), although this effect is not differential for men and women without children; the differential effect is significantly larger for women with children. The widening of the gender gap for labor force participation is primarily caused by women with children, likely resulting from school closings. The gap between women without children and mothers increases later in the pandemic, with school closings seeming to be the main reason. An initial larger effect for minority women can be accounted for by the differential occupation distribution between minority and non-minority women.

In summary, “(…) women have lost jobs and left the labor force at higher rates than men during the pandemic. Distributional differences by gender across occupations explain a large part of the initial differential response.” Following summer 2020, labor market outcomes for women without children improved, but the gender gap for mothers is still 2 percentage points larger relative to pre-pandemic in terms of employment and labor force participation.

8. Kochhar, R. and Bennett, J. (April 2021). U.S. labor market inches back from the COVID-19 shock, but recovery is far from complete. *Pew Research Center.* https://www.pewresearch.org/fact-tank/2021/04/14/u-s-labor-market-inches-back-from-the-covid-19-shock-but-recovery-is-far-from-complete/

Methods: Uses monthly CPS data from 2020 and 2021; not seasonally adjusted. Includes an adjustment for unemployment to account for BLS measurement error as well as labor force participation drop. Adjusted unemployment is estimated as sum of monthly unemployed population plus difference between (year-ago LFPR*current working-age population) and (year-ago LFPR*year-ago working-age population).

Findings:
1. In the first year of the recession (February 2020-February 2021), more women than men left the labor force. The LFPR for women in February 2021 was 55.9%, down from 57.9% one year prior versus 67.1% for men down from 69.0%. April 2020 was the low point: the LFPR for women was at 54.4% and for men was at 65.9%. The recovery since then appears to be sharper for women than men. This is very different from the Great Recession when more men left the labor force. The key is the difference in affected sectors: job losses in the pandemic have been concentrated in the service sector, which employs more women; job losses in the Great Recession were concentrated in the goods-producing sectors, which employ more men.

2. Hispanic and Black women represented disproportionately high shares of the labor force declines. 2.4 million women left the labor force from February 2020 to February 2021; 582,000 were Hispanic and 511,000 were Black, representing 46% of the total losses despite being less than one-third of the female labor force. The LFPR declined 3.6 percentage points for Hispanic women and 3.4 percentage points for Black women compared to 1.9 percentage points for Asian women and 1.3 percentage points for white women. Sector employment may be a key factor here as well, with Hispanic women having a greater presence in leisure and hospitality than other women or men. Childcare issues may also factor in, with Hispanic and Black women more likely to be unpartnered parents. Race/ethnicity labor force differences were not seen among men.

3. Those who left the labor force should likely be considered among the unemployed to gain a better understanding of the full job impacts. Adjusting for this would put peak unemployment (in April 2020) at 22.7% versus the official unemployment rate of 14.4% and February 2021 unemployment at 9.9% versus 6.6%. A gap of about 3 percentage points has persisted since June 2020.

4. While the unemployment rate for women increased more than for men, the adjusted rate in February 2021 was approximately equal (9.8% versus 9.9% for men), meaning a sharper recovery for women.

5. Unemployment among Hispanic and Black workers (both men and women) remained higher, around 10% in February 2021 according to the official rates. Peak unemployment for Hispanic and Black workers was higher than for White and Asian workers, although it also was higher in February 2020.

6. Employment for low-wage workers dropped 11.7% from February 2020 to February 2021, compared to a loss of 5.4% for middle-wage workers and no change among high-wage workers. Key factors for this relate to the sectors of greatest impact: services, especially leisure and hospitality, which have higher concentrations of low-wage workers.

9. Djankov, S., Koujianou Goldberg, P., Hyland, M., Zhang, E. (Y.). (April 2021). The evolving gender gap in labor force participation during COVID-19. *Policy Brief.* https://www.piie.com/sites/default/files/documents/pb21-8.pdf

Methods: Evaluates the gender gap in women employed or actively seeking employment vs men using a database across 43 countries and 30 years.

Findings: Prior to 2020, countries with a higher per capita GDP generally had higher female LFPR. The largest LFPR gender gaps were in Mexico and Turkey (33 and 39 percentage points, respectively); the smallest gap was in Lithuania (2.3 percentage points) followed by Sweden, Finland, and Latvia.

Between the first and third quarters of 2020, the gender gap widened in some countries and shrank in others. Colombia and Cyprus had the largest increases (3.4 and 2.3 percentage points, respectively). In Colombia, women were particularly concentrated in non-teleworkable industries as well as in paid domestic work, which has declined since the onset of the crisis. The gender gap widened between the first and second quarters of 2020, staying flat into the third quarter, for Canada, Croatia, and Japan. The gender gap shrank between the first and second quarters of 2020, staying flat into the third quarter, for Luxembourg. The gender gap remained flat between the first and second quarters of 2020 before shrinking in the third quarter for Portugal, Latvia, Malta, and Lithuania, where the LFPR for women began to recover but the LFPR for men did not. In the second and third quarters of 2020, 70% of the economies in the sample saw the gender gap increase relative to the first quarter. 13 countries saw the gender gap expand in both quarters; 12 countries saw the gender gap shrink in both quarters.

The monthly data show similar trends. Chile and Colombia had the largest increases in the gender gap. Monthly data show the female LFPR increasing similar to the male LFPR after September 2020. There is heterogeneity in the countries experiencing increases and decreases in the gender gap, indicating that policies that bring women into the labor force in normal times may not keep them in the labor force in extraordinary circumstances.

Hypotheses for the differences across countries:

- The higher the share of women employed in the service sector, the larger the expansion of the LFPR gender gap may have been. The result is a statistically significant positive correlation. “Every 10 percentage point higher female service employment share prior to COVID-19 is associated with an additional 0.9 percentage point increase in the gender gap by Q3.”
- Countries with stronger family leave policies and more equal treatment of women under the law may have minimized the need for women to leave the workforce during the pandemic. The result is that more equal treatment under the law has a statistically significant correlation with a resilient female labor force; however, family leave policies not statistically significant.
- Countries with a higher share of women employed as temporary workers and/or fewer protections for temporary workers may have experienced larger expansions of the LFPR gender gap. The result is a statistically significant correlation of a lower expansion of the gender gap for countries with a smaller female temporary help share relative to men, but there was no correlation for protections of temporary workers.
- Countries with strong childcare support may have seen more women able to continue working through the pandemic. Data were only available to test pre-COVID policies. The result was no correlation, but measures that were taken to specifically address childcare closures had more impact (e.g. in the UK) than pre-COVID policies.

10. Board of Governors of the Federal Reserve System. (May 2021). *Economic well-being of U.S. households in 2020.* Federal Reserve Board, Division of Consumer and Community Affairs. https://www.federalreserve.gov/publications/files/2020-report-economic-well-being-us-households-202105.pdf

Methods: Survey of Household Economics and Decisionmaking (SHED), conducted November 13-30, 2020. 11,648 respondents.

Findings: Fourteen percent of adults lost their jobs at some point in 2020; slightly less than 25% of those had returned to their previous job as of late 2020, even though 86% of those who lost jobs between February-April 2020 had reported in April 2020 that they expected to return to their old jobs (52% had either returned or expected to return to their previous job at the end of 2020). "In November, 24 percent of laid-off adults were not expecting to return and did not have another job."

Twenty-six percent of prime-age adults were not working in October 2020, up from 21% the year prior. Of adults age 25-54, about 9% each (or one-third of those not working) said their lack of employment was due to health limitations, childcare/family obligations, or because they could not find work. Not being able to find work saw the largest increase (up 4 percentage points) versus 1 percentage point increase each for health limitations and childcare/family obligations. Women who were not working disproportionately cited childcare/family obligations (14% of all prime-age women/43% of prime-age women not working vs 5% of all prime-age men/24% of those not working).

Sixteen percent of adults with less than a college degree were laid off, versus 11% with at least a Bachelor's degree. "Over 20 percent of both Black and Hispanic prime-age adults were laid off in the prior 12 months."

16% of women worked part-time versus 11% of men. 30% of workers with irregular schedules due to the employer's needs reporting either just getting by or finding it difficult to get by versus 18% of workers on a fixed schedule or a schedule they control.

29% of adults who worked for someone else worked completely remotely versus 7% in 2019. 46% of employees with a bachelor's degree or higher worked completely remotely versus 19% of workers with some college and 10% with a HS diploma or less.

Four percentage points fewer adults worked in the gig economy in October 2020 than October 2019, although 27% of people earned some money from gigs. Nearly half of gig workers also had full-time jobs, while 22% had part-time jobs. 3% of all adults earned at least half their income from gigs.

Three-fourths of parents with primary or secondary school-age children indicated that their youngest school-aged child was attending classes fully or partly online (50% fully online, 25% partly online). Around 60% of Black and Hispanic parents of schoolchildren reported that their youngest child's classes were fully remote, compared to 27% of all parents. Low-income, metro area, or public school children were also more likely to be in fully remote learning experiences.

25% of all parents (60% of those who used childcare services) have experienced disruptions to childcare since the start of the pandemic. 22% of all parents were either not working (9%) or working less (13%) due to disruptions to childcare or education. 25% of mothers (18% of fathers) were either not working or working less due to these disruptions. Eleven percent of mothers and six percent of fathers said they were not working due to disruptions in school or childcare. This equates to nearly two percentage points fewer working adults. Black

(36%), Hispanic (30%), single mothers (33%), and low-income mothers (32%) were more likely to be not working or working less due to childcare/school disruptions.

Forty-five percent of retirees indicated that health problems, needing to care for family, or lack of work contributed to the timing of their retirement. Twenty-nine percent of adults who retired in the prior year indicated that factors related to the pandemic contributed to their retirement timing.

The share of adults with children doing “at least okay” financially decreased 4% from 2019 to 2020, compared to a 1% increase in the share of adults without children. Fourteen percent of adults received unemployment insurance benefits in 2020, up from 2% in 2019. Adults with less education were more likely to see income decline, but those with more education were most likely to have reduced monthly spending.

11. Kaplan, R. S., Atkinson, T., Dolmas, J., Giannoni, M. P., Mertens, K. (May 2021). The labor market may be tighter than the level of employment suggests. *Dallas Fed Economics.* https://www.dallasfed.org/research/economics/2021/0527

Methods: Examines several different aspects of labor market data.

Findings: Nonfarm employment data alone may not be sufficient to understand the current labor market and examining other sources indicates that the labor market might be tighter than headline employment would imply. In March 2021, job openings were at an all-time high and the ratio of job openings to unemployed was similar to mid-2017. The Conference Board labor market differential (jobs easy to find minus jobs hard to find) was near record highs. The quits rate was equal to the record high. Wage growth was strong: the employment cost index had wage growth just below 2019 levels and the April jobs report had average hourly earnings growth of 0.7% despite employment growth in lower-wage industries. The Real-time Population Survey by the Federal Reserve Bank of Dallas asked individuals who were employed in February 2020 and not employed now whether they would be willing to return to their previous position at the same hours and pay: the "yes" share had declined to just over 50% as of April 2021.

EPOP has declined 3.2 percentage points since February 2020: 1.7 percentage points are not currently actively seeking work, 1.0 percentage points report being retired, and 0.5 percentage points report being caregivers. EPOP for teenagers 16-19 increased to 32.8% in April 2021, exceeding pre-pandemic levels and accounting for around 78% of job gains in April 2021.

12. Ramani, A. and Bloom, N. (May 2021). The donut effect of COVID-19 on cities. *NBER Working Paper* 28876. http://www.doi.org/10.3386/w28876

Methods: Combines USPS (National Change-of-Address) and Zillow (Observed Rental Index - real estate rents and Home Value Index - prices) data to examine the effects of COVID-19 on migration patterns/real estate markets. LODES data on industry crosswalked to zip codes merged with Dingel and Neiman (2021) WFH classifications. Spatial equilibrium model with two metro areas, each with city center and suburb.

Findings: Real estate demand shows a "donut effect" away from major city centers and towards lower density areas on the outskirts of these cities. "Rental rates in the central business districts (CBDs) of the largest 12 US metros have fallen almost 20 percentage points relative to the change in the bottom 50% of zip codes by population density." Similarly, home prices fell 15 percentage points. The largest CBDs have seen net population and business outflows of around 15% of pre-pandemic levels; the bottom 50% of zip codes have seen a 2% increase. The donut effect seems limited to the largest cities, which may have larger concentrations of work from home (WFH)-eligible employees.

WFH seems to affect demand for housing at both the extensive margin (residents can leave the zip code, lowering the total population) and the intensive margin (demand for housing space increases perhaps due to need for home office space or industry variations).

There are multiple possibilities for the outflow of businesses: restaurants may be following the outflow of people and businesses may have increased flexibility in location due to reduction in commutes for WFH employees.

Between-metro reallocations were more limited. Price growth was stronger within denser metros; change of address migration data showed some movement from denser to sparser metros, but within-metro movement was much larger. The rise of "Zoom Towns" may be overstated or temporary.

The results of a simple spatial equilibrium model show hybrid-WFH is more in line with actual data, indicating that people have the ability to move further from the city center but not to a different metro entirely. The more WFH in a hybrid situation, the more movement from city center to suburb.

13. Furman, J., Kearney, M., and Powell III, W. (May and June 2021). The role of childcare challenges in the U.S. jobs market recovery during the COVID-19 pandemic. *Realtime Economic Issues Watch.*
https://www.piie.com/blogs/realtime-economic-issues-watch/how-much-have-childcare-challenges-slowed-us-jobs-market
and
https://www.piie.com/sites/default/files/documents/wp21-8.pdf

Methods: Analysis of IPUMS CPS data. Young children are any own children under age 13 in the household, including adopted or stepchildren. For the counterfactual analysis, the data is collapsed into cells defined by sex, four age groups, and whether someone has a Bachelor's degree. For each sex-age-education cell, they calculate what employment would have been if those with a child under age 13 had experienced the same percent change in employment as those in the same cell without a young child. The same method is used for LFPR.

Findings: The recovery is slowed due to people not actively seeking work. Possible explanations include: ongoing worry about contracting COVID, increased UI benefits, challenges related to childcare and remote/hybrid schooling. This analysis quantifies the effects of childcare challenges by examining how much of the overall decline in employment can be explained by excess job loss among parents and mothers specifically. The analysis considers counterfactual EPOP and LFPR "that assign to parents with young children the percent change in employment and labor force participation rates experienced by comparable people without young children." The results suggest that differential job losses among parents broadly or mothers specifically account for a negligible share of the overall job losses and possibly could have led to small increases in jobs between the first quarter of 2020 and the first quarter of 2021.

Employment rates of parents of young children have declined by 4.5% versus 5.2% for people who are not parents of young children. While mothers with young children have left the labor force at a slightly higher rate than women without young children, fathers have left the labor force at a lower rate than men without young children. Women with young children account for 12% of the US workforce. "Combining these two facts means that any childcare issues that have pushed mothers out of the workforce account for a negligible share of the overall reduction in employment since the beginning of the pandemic adjusting only for age differences." The results are similar when controlling for age and education.

Employment rates for mothers of young children fell more than for all other women between the first quarters of 2020 and 2021 (5.7% - 3.9 percentage points - versus 5.0% - 2.6 percentage points). For fathers with young children, the employment rate fell by 3.3% (3.0 percentage points) versus 5.3% (3.2 percentage points) for all other men. The gap in employment declines between women with and without young children is driven by women without a Bachelor's degree (-7.7% with children versus -6.6% without children). Declines were -3.6% for women with a Bachelor's degree both with and without children.

The counterfactual analysis asks, "what if the pandemic labor market experience of parents with young children was like that of otherwise similar people without young children?" If women with young children experienced the same 5.0% decline in employment that women without young children did (instead of the actual 5.7% decline), the overall employment rate would have fallen by 0.05 percentage points, less than the actual 3.1 percentage points decline. "(The baseline counterfactual) implies that the effect of any excess impact of the pandemic on parents with young children can explain none of the decline in aggregate employment rates." If the counterfactual is done only for women, the excess effect can explain 2% of the overall change in employment.

Additional demographic counterfactuals (age of children, marital status, income group, race/ethnicity, industry) did not show any different results.

Considering other time periods does not yield different results, with one exception. In the fourth quarter of 2020, as much as 10% of the decline in LFPR from the fourth quarter of 2019 could be explained by differential effects from parents, with 8% explained by mothers.

For mothers of young children, differential declines in LFPR explain at most 6% of the total decline in LFPR. Patterns of employment losses specific to parents in the 2001 and 2007-09 recessions were very similar to the pandemic recession, indicating there has not been something very different about how the pandemic and school/daycare closings have differentially affected labor market outcomes.

14. Petrosky-Nadeau, N. and Valletta, R. G. (June 2021). UI generosity and job acceptance: effects of the 2020 CARES Act. *Federal Reserve Bank of San Francisco* Working Paper 2021-13. https://doi.org/10.24148/wp2021-13

Methods: Analysis of job acceptance decisions where job seekers weigh value of job vs. expected state of labor market and weeks of unemployment insurance (UI) to calculate a reservation level of benefits. Additional analysis using CPS and CPS income supplement. Difference-in-differences model to evaluate whether $600 enhanced benefits affected labor market flows.

Findings: The reservation benefit is calculated using the expected duration of the employment spell for a given job (longer lasting jobs have a greater value, increasing the reservation benefit), how quickly new job offers arrive (fewer new job offers make each individual one costly to reject, increasing the reservation benefit), and the duration of UI benefits remaining (additional weeks lower the reservation benefit).

An analysis of CARES Act UI provisions (including PEUC and state emergency extensions) using reservation benefits indicates only a small fraction of UI recipients would refuse a job offer at their previous level of pay. As of June 2020, only workers in the lowest-paid occupation (food services, with typical earnings of $460/week) would be indifferent between remaining unemployed and returning to work at their previous pay levels. The value of a long-term job outweighs the value of temporary UI.

Results of the analysis of the $600 enhanced benefit in March-July 2020 show a moderate disincentive to job flows. The $300 enhanced benefit "likely had small but noticeable effects on job search and worker availability in early 2021." Results of other studies indicate that states with more generous UI expansions did not experience weaker initial labor market rebounds (Bartik et al. 2020 and Altonji et al. 2020). "[…] the additional income provided to the unemployed through the CARES Act and subsequent legislation likely had little impact on the unemployment rate via labor supply effects in early to mid-2020 and early 2021. Rather, the additional income likely acted as an effective targeted fiscal transfer supporting aggregate demand."

With the $600 enhanced UI ending July 31, 2020, analysis for 12 and 8 weeks of UI remaining corresponds to job offers in May and June 2020. The typical worker earning $1,000/week received $1,100/week under CARES, or 110% of prior earnings. An offer at the previous wage, with an expected employment term of just under 2 years, with 22 weeks of unemployment if the offer was rejected, would be accepted in May 2020 as long as the reservation benefit was below $1,550. The June 2020 offer is even more attractive. Similar results hold for the prime-age workforce (25-54). An analysis based on educational attainment finds only workers with less than a high school diploma would likely reject job offers in May 2020 due to enhanced UI, but they would accept in June 2020.

All but 3 occupations (of 10) have a replacement rate above 100% under the CARES Act; only janitors and food services workers would be indifferent to a job offer at a previous wage. Lowering the arrival of job offers 50% would make these two occupations prefer unemployment to a job offer during the first week of June 2020.

Reservation benefits by state with 8 weeks of PUC payments remaining vary from 134% in North Dakota to 247% in Massachusetts. Replacement rates were 111% in North Dakota and 102% in Massachusetts, making a gap of 22 percentage points in North Dakota and 145 percentage points in Massachusetts. The difference in reservation rates and gaps with UI suggests potential impacts of PUC payments on job accept decisions should differ significantly. Bartik et al. (2020) found that the states with the highest UI benefit replacement rates had the strongest initial pick up in the labor market. Those states also had the largest gaps between the reservation rate and replacement rate.

A difference-in-differences regression model shows negative effects of UI benefit generosity on job finding: the April-June 2020 exit rates are lower for individuals whose post-CARES UI replacement rate rose the most, but statistically significant (5%) for May only. Overall, this implies that any disincentive affects only a small fraction of the sample.

For early 2021, with the $300 benefit, effects are reduced further: each month in early 2021, 7 out of 28 unemployed individuals receive offers they would normally accept, but one of the 7 decides not to because of the enhanced UI.

15. Schweitzer, M. E. and Dohrman, E. (June 2021). How the pandemic has reshaped economic inclusion in the United States. *Economic Commentary*. http://www.doi.org/10.26509/frbc-ec-202114

Methods: Demographic analysis of employment-to-population (e-pop) ratios from BLS, focusing on age, race/ethnicity, and gender for April 2019 to April 2020 to April 2021.

Findings:
1. EPOP declines were greatest for younger workers, but teenagers have seen the strongest recovery. Teenagers (16-19) saw a decline of 12.0 percentage points but have since gained 3.1 percentage points above April 2019 rates. 20-24 year-olds saw the largest decline (19.4 percentage points) and have regained 14.9 percentage points, leaving them 4.5 percentage points below April 2019, leaving them the furthest behind. Age 65+ saw the smallest decline (3.2 percentage points) and have regained 1.9 percentage points, leaving them 1.3 percentage points below. Much of the larger impact for younger workers relates to industry sectors: they tend to have higher concentrations of employment in service sectors, particular leisure and hospitality and retail trade. Unemployment counts for much of the effects on EPOP declines for 20-64 year-olds; for 16-19 and 65+, labor force participation is a greater effect. For teenagers, more have joined the labor force than previously. For 65+, retirements may have increased. There are still labor force effects from other age groups, though, indicating that other factors may still be playing a part (child/family care, e.g.). These changes may be more persistent.

2. The analysis of race/ethnicity focused on ages 16-64. Hispanic workers saw the largest decline in EPOP of 12.7 percentage points; there are notable concentrations of these workers in construction and accommodation and food services. 3.0 percentage points remain unrecovered. Black, Asian, and white workers saw similar levels of decline, with Black workers having an unrecovered loss of 3.2 percentage points. Unemployment is a key factor, with labor force participation less so; Black workers had a nearly -1.0 percentage point effect from labor force.

3. EPOP for women fell more than 10 percentage points, more than three times the loss during any past recession. The post-pandemic recovery for women is more than 1.0 percentage points ahead of men's, representing approximately 1 million more women returning to work than men. White women saw a 10.9 percentage point decline compared to 9.8 percentage points for white men; other groups saw less disparate effects between men and women. White women have a 1.9 percentage point decline remaining, while white men have a 2.6 percentage point decline remaining, reflecting a stronger recovery for white women than white men. Other groups again saw less disparity in their recoveries. Much of this is related to unemployment, but labor force participation recovery has been stronger for white women as well. Black men have seen a larger decline in LFPR than Black women; Hispanic and Asian women have seen less recovery than men.

16. Furman, J. and Powell III, W. (June 2021). U.S. labor market heated up in May as jobs grew and wages soared. *Realtime Economic Issues Watch.* https://www.piie.com/blogs/realtime-economic-issues-watch/us-labor-market-heated-may-jobs-grew-and-wages-soared

Methods: Review of May 2021 employment data from BLS.

Findings: The U.S. economy remains 10 million jobs short of trend; at May's rate of growth, the jobs gap will be closed in August 2023. Apart from this, there are many indications of a very tight labor market: job openings at record levels, the quits rate at historic highs, 1.0 job seekers for every opening, and wage growth adjusted for industry at 7.2% annualized. The "realistic" unemployment rate was at 7.3% in May 2021. Workers with a bachelor's degree or higher remain 2.2% below their February 2020 EPOP, with workers with some college or an associate degree 4.8% below and workers with a high school diploma or less 9.2% below. The May 2021 job openings rate was 5.9%, which is the highest on record, compared to a quits rate of 2.4% in March 2021, which is also the highest on record. Wages for production and non-supervisory workers grew 9.1% annualized in April and May, which is faster than any pre-pandemic two-month period since the early 1980s. Time is suggested as the most important solution to the labor market challenges: job matches take time, vaccinations and virus improvements take time, and the expiration of enhanced unemployment benefits will take time. There is no way to tell how many of the missing 10 million jobs will come back. Demand in the economy currently outstrips supply.

17. Davis, O., Fisher, B., Ghilarducci, T., and Radpour, S. (June 2021). The pandemic retirement surge increased retirement inequality. *Status of Older Workers Report Series.* https://www.economicpolicyresearch.org/images/Retirement_Project/status_of_older_workers_reports/Q2_OWAG_2021_V6.pdf

Methods: Uses CPS data for age (focusing on 55+), race, and educational attainment. Compares pandemic period (through April 2021) to what results would be holding pre-pandemic five year average (2015-2019) constant to determine divergence from trend.

Findings: "At least 1.7 million more older workers than expected retired due to the pandemic recession." The share of retired adults increased 1.7 percentage points for ages 65+ and 0.3 percentage points for ages 55-64. The share of retired workers among adults aged 55-64 rose 5% for those without a college education but fell 4% for those with a college education. The retirement rate for non-college adults rose 0.8 percentage points for age 55-64 and 1.1 percentage points for 65+ between 2019 and 2021. The retirement rate for college-educated workers decreased 0.6 percentage points for age 55-64 and 3.2% for age 65+. Non-college older workers had an estimated $9,000 in median household retirement savings in 2019 vs $167,000 for those with a college degree. In April 2020, "workers 55 to 64 without a college degree were 67% more likely to experience unemployment than college-educated older workers." At the same time, college-educated workers age 65+ faced a 34% greater probability of unemployment than those age 55-64.

Black workers without a college degree saw an increase in early (pre-age 65) retirements of 1.5 percentage points from 16.4% to 17.9% between 2019 and 2021 compared to 1.3 percentage points for white workers. The probability of a Black worker without a college degree aged 55-64 being retired increased 9.2% compared to 7.5% for white non-college workers. For Black college-educated workers, retirement rates decreased at all age levels. Black college-educated workers have median household retirement savings of $50,000 compared to $206,000 for white college-educated households.

The EPOP for workers age 55+ was down 7.2% in April 2021 compared to pre-pandemic level. The LFPR for older workers was down 4.8% compared to pre-pandemic, versus a 1.9% decline for ages 35-54.

18. Hilsenrath, J. and Chaney Cambon, S. (2021, July 9). Job openings are at record highs. Why aren't unemployed Americans filling them? *The Wall Street Journal.* https://www.wsj.com/articles/job-openings-are-at-record-highs-why-arent-unemployed-americans-filling-them-11625823021?mod=hp_lead_pos10

Methods: Aggregation of existing data and interviews.

Findings: The process of matching jobs to workers is contributing to lags in the recovery. Possible reasons for the disconnect include: movement of workers away from where jobs are located; changes in preferences (e.g. for remote work); a shift in the economy that has led to a skills mismatch; and extended UI and relief checks allowing workers to be choosy. A ZipRecruiter survey found that 70% of former leisure and hospitality workers say they are looking for work in a different industry and 55% of job applicants want remote work. Unemployment and job openings have both been elevated for several months. Skills requirements for low-skill jobs are being dropped by employers while requirements for high-skill jobs are ramping up. The existing trend of automation has been accelerated by pandemic.

Locations that have attracted second-home buyers/vacationers/remote workers need more local workers but do not have available workforce housing. People moved from dense urban centers to suburbs/smaller metros. Remote workers have been moving to locations within 150 miles of work. All of this is creating geographic mismatch.

The average unemployment rate in May 2021 among states with a June/July end to enhanced UI was 4.4% and states with a September end saw an average unemployment rate of 6.0%, although the rate has fallen more since January in those states than in the states with an early end. The voluntary quits rate was near a record high in May (2.5%). Bonuses are being offered to entice workers.

19. Greig, F., Sullivan, D. M., Ganong, P., Noel, P., and Vavra, J. (July 2021). When unemployment insurance benefits are rolled back: impacts on job finding and the recipients of the Pandemic Unemployment Assistance Program. *JPMorgan Chase & Co. Institute Research Brief.* https://www.jpmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/institute/pdf/when-unemployment-insurance-benefits-are-rolled-back-research-brief.pdf

Methods: Examining workforce shifts around policy changes and JPMorgan Chase Institute data.

Findings: "Evidence as of May 2021 suggests that changes in UI recipients' decision to return to work caused by UI supplements have been small relative to the fluctuations caused by other factors." Two policy changes were examined: the end of the $600 supplement in August 2020 and the reinstatement of the $300 supplement in January 2021. The focus was on jobless workers exiting the program to new employers. The hypothesis is that if supplements had a strong impact on workers' job finding decisions, the job finding rate would see a sustained increase when the $600 supplement expired and a sustained decrease when the $300 supplement was reinstated.

Prior to the pandemic, around 5% of UI recipients exited to new jobs in any given week. This dropped below 2% in April 2020. The rate increased from 1.6% to 2.4% at the end of the $600 supplement in August 2020 and then decreased to 2.0% at the reinstatement of the $300 supplement in January 2021.

There are several arguments against the hypothesis: during the fall of 2020, the job finding rate remained well below pre-pandemic levels, despite no supplements being available, and there was a sharp increase in the job finding rate in March and April 2021 before any federal or state policy changes were announced. While there were other changes happening (more child care/school available, vaccinations, increased job openings), this was also the time period when benefit years were expiring and people must reapply, which is generating an uptick in UI program exits based on evidence from California. These arguments indicate that the UI supplements were not the primary driver of job finding decisions.

The UI recipients were divided into two groups: those with above median income replacement rates with the supplement (i.e. lower wage workers) and those with below median income replacement rates with the supplement (i.e. higher wage workers). The hypothesis is that lower-wage workers should see a larger change in job finding behavior. The job finding rate is normalized for the period where the supplements were not available and job finding rates were similar for both groups. Three notable observations were made. When supplements are in effect, workers with higher UI replacement rates have slightly lower job finding rates; job finding changes are larger with policy changes for workers with higher UI replacement rates; and in March and April 2021, the job finding rate rose substantially but temporarily for both groups of UI recipients. "Importantly, the fluctuations in UI exit rates for both groups in April 2021—when no changes to the supplement had been announced—are much larger than the differential changes between the two groups when supplement policy changes do occur."

There is evidence of a modest job finding disincentive due to supplements: $600 supplement reduced employment by less than 0.8 percent and $300 supplement by less than 0.5 percent. UI supplements likely were not holding back employment in any significant way nor contributing to the increases in wages at the bottom of the income distribution.

"PUA is more likely to cover workers at the margins of the labor market: PUA recipients have lower income and are slightly younger than regular UI recipients." Pandemic Unemployment Assistance (PUA) expanded

availability to those not already covered by traditional UI, including self-employed and those with a limited work history. PUA recipients had less direct deposit payroll income in 2019 and the median PUA recipient's total income was 75% of the income for the median traditional UI recipient. PUA recipients were more likely to be younger; the modal PUA recipient is 20 while the modal traditional UI recipient is almost 30. Some PUA recipients may have been students who continued to matriculate remotely without being able to earn money from a campus job.

"PUA appears to insure workers against lost income to a similar extent as traditional UI, but workers receive PUA funds much later after applying for them." In 2019, wait times for UI benefits were relatively short and the first check typically had only two weeks of payments. In 2020, wait times were longer, and the first check typically included three weeks of payments. PUA, however, saw six or seven payments in the first check. Delays in UI receipt create economic hardships for recipients; the delays for PUA recipients were so long that some may have returned to work before receiving payment.

In 2019, UI recipients experienced around a 30% drop in income just before the first UI payment. In 2020, there was again a 30% drop in income, but not as sudden, as some recipients may have lost employment 2, 3, or 4 weeks prior to receipt of the first check. PUA recipients saw a 20% drop, but it is gradual, indicating that workers experienced income loss over a longer period of time prior to receipt of the first check.

20. Lim, K. and Zabek, M. (September 2021). Women's Labor Force Exits during COVID-19: Differences by Motherhood, Race, and Ethnicity. *Finance and Economics Discussion Series* 2021-067. https://doi.org/10.17016/FEDS.2021.067

Methods: Monthly Current Population Survey data accessed through IPUMS; sample includes women age 25 to 54 (prime-working-age). Counterfactual rates of entry and exit were calculated for April 2020 through January 2021 using April to January 2015 to 2020. Linear probability models used to estimate the likelihood that a previously-employed woman will have exited the labor force between September 2020 and February 2021.

Findings: Employment losses in the early months of the pandemic translated into larger declines in labor force participation for prime-aged Black women and Latinas (more than 4 percentage points) relative to white women (around 2 percentage points). Women in households with children younger than 13 saw larger and more sustained declines in LFPR (3 percentage points lower in June 2021 vs January 2020 for women with children 6-12 and 2 percentage points lower for women with children 0-5).

Declines in LFPR for women were driven by previously employed women exiting the labor force, particularly Black women and Latinas. Actual labor force declines for Black women and Latinas were larger relative to the counterfactual rates; "the share of the decline attributed to increased exits is 88 percent for Black women, 50 percent for Latinas, and 70 percent for White women."

In 2020, 8% of previously-employed women left the labor force; 5% left the labor force due to caregiving responsibilities. Latinas had both the highest overall proportion of exits due to caregiving and caregiving exits making up a high proportion of all exits.

Around 3% of previously employed women who exited the labor force expressed interest in working, with higher percentages for Black women and Latinas. Women with children under age 13 had a 3.2 percentage point increase in the share who had exited the labor force but were interested in working, compared to a 1.0 percentage point increase for women without children under age 13.

Latinas, and Black women to a lesser extent, had covariates predicting more severe labor force and employment impacts from COVID-19: employment in hard-hit, un-telework-able occupations and industries; higher shares with less than a high school diploma (15% of Latinas versus 5% of Black women and 2% of White women); lower average weekly wages; and higher likelihood of living with children.

Women with less than a high school diploma were 8 percentage points more likely to exit the labor force than women with some college; women with an advanced degree were 1.4 percentage points less likely to exit the labor force. Women with one standard deviation lower pre-pandemic wages had a 1 percentage point increase in the likelihood of leaving the labor force. After controlling for education and wages, occupation and industry measures explained little of the different in labor force exits.

Single women earning the mean wage pre-pandemic with children age 0-5 were 3 percentage points more likely to exit the labor force than women without children under age 13. The additional effect of pre-pandemic wages that were one standard deviation lower was an increased rate of exit of nearly 3 percentage points (2 percentage points for women with children age 6-12). Married women with children age 0-5 were 4 percentage points more likely to exit than single women. Women who left the labor force during the pandemic were more likely to express interest in working if they had children under age 13, particularly women with low pre-pandemic wages.

Women with children experienced greater increases in their pandemic-era exit rates, especially women with children age 0-5, single women, and women with lower average wages. Women with children age 0-5 had the most excess exits ("5 percentage points higher excess exits among single women earning average wages relative to similar single women with no children in the household" and "3 percentage points higher excess exits among married women earning average wages"). For women with children age 6-12, those with lower average wages saw more excess exits ("a woman with earnings one standard deviation below the mean pre-pandemic wage living with a school-aged child had a statistically significant 2.1 percentage point larger increase in labor force exits relative to a woman with the same aged children with average earnings").

While one hypothesis from early in the pandemic was that women with small children and working husbands would be more likely to leave the labor force in response to the gap in earnings between men and women. However, results from this study do not bear this out. For women with children age 0-5 or age 6-12, married women had smaller increases in exit rates than single women.

"[…] the increase in labor force exits among prime-working-age women would be 0.8 percentage points smaller if women living with children experienced the same increases in exits as those without children under 13 in the home." This would cut the 1.6 percentage point increase in excess exits roughly in half.

Covariates can explain around two-thirds of increased exits for Latinas and a little less than half for Black women. Latinas had a 2.5 percentage point greater increase in exits than White women and Black women had a 1.7 percentage point greater increase. A little more than one-fourth of the additional exits for Latinas relative to White women can be explained by differences in household structure and previous wages.

21. Briggs, J. (October 2021). Will worker shortages be short-lived? *US Economics Analyst.* https://www.gspublishing.com/content/research/en/reports/2021/10/04/be005ed1-1b6b-42f7-af9b-fb209077ca35.html

Methods: U.S. Bureau of Labor Statistics and U.S. Department of State data combined with analysis by Goldman Sachs Global Investment Research.

Findings: Labor shortages are contributing to upward pressure on wages, with the Goldman Sachs composition-adjusted wage tracker rising to 3.7% growth year-over-year in the third quarter of 2021 and the low-wage tracker at 6.0%. The worker shortage is being caused by a variety of factors reducing the supply at the same time demand for labor is at a record high.

Enhanced unemployment benefits were likely a significant contributor to workforce shortages. An examination of individual employment data from July and August 2021, when 25 states had opted out of enhanced UI programs early, showed an increase in the job-finding rate for unemployed individuals (roughly 5 percentage points in July and 10 percentage points in August), but no increase in the labor force participation rate. As a result, the expiration of enhanced UI in early September for the remaining states (5.3 million recipients) will increase employment by 1.3 million through the end of the year.

The number of excess retirees, as estimated by taking the difference between actual retirees and the number expected using the 2019 age-specific retirement rates, increased to 1.5 million as of August 2021, reducing the LFPR by 0.6 percentage points. Combined with the expected retirements due to population aging, retirements have reduced the labor pool by 2.5 million.

The decrease in temporary worker visas during the pandemic has likely reduced the size of the labor pool by 400,000 workers, with reductions in immigration visas reducing the labor pool by 300,000 workers. The loss from immigration is likely to persist while the loss from temporary visas will recover.

Self-employment increased by 800,000 during the pandemic. While this should, in theory, reduce the need for employed labor, projections of labor demand may be slow to adjust. Self-employment has increased the most in construction, which has seen some of the sharpest labor shortages. While some reversal is expected, self-employment will likely remain elevated into the future.

Combining these factors with the 1.7 million other workers who have exited the labor force during the pandemic gives a shortfall of roughly 8 million prospective workers in August 2021 (*note: article refers to August 2020 in error)* with 5.6 million persisting after the expiration of enhanced UI benefits in September 2021. Excluding shortfalls due to the aging population reduces the excess shortfall to 4.7 million. Assuming that declines in immigration and self-employment are fully offset by reduced labor demand, the remaining excess shortfall is 3.2 million.

Labor shortages are widespread globally, indicating that other common factors besides generous federal fiscal policy are contributing to the shortages. Wealth increases are one possible factor, reflecting gains from the stock market, pent-up savings, and house price appreciation. Older workers are particularly sensitive to wealth increases, which may account for some of the excess retirements. Health concerns are another possible factor, with 3 million respondents to the U.S. Census Bureau Household Pulse Survey citing concerns of getting/spreading COVID as the reason for not working. Childcare constraints have also played a role and are expected to diminish as children return to in-person schooling full-time. Apart from retirees, most workers who left the labor force during the pandemic expect to search for work within the next year.

Combining historical data on labor force prospects of re-entrants with the estimated unwinding of the immigration and self-employment drags results in an estimate of worker shortages easing sharply in September 2021, but with 1 million shortfall remaining at the end of calendar year 2022.

Shortages may also be reflecting a labor mismatch between the jobs being sought and the jobs available in the area. Most workers who found jobs during the pandemic did so in the same industry in which they were previously employed, with fewer cross-industry shifts taking place. Geographic shifts may be playing a larger role, especially if people relocated away from city centers where more job openings are. Relative labor demand, measured as the ratio of job vacancies to unemployed workers searching for jobs, has increased in rural states but decreased in urban ones. While mismatch by industry has returned to pre-pandemic levels, mismatch by state remains elevated.

Competition for workers will remain elevated in the near-term, indicating that a 3.5% unemployment rate represents a tighter labor market than previously and wage growth will remain strong.

22. Faria e Castro, M. (October 2021). The COVID Retirement Boom. *Economic Synopses*, No. 25. https://doi.org/10.20955/es.2021.25

Methods: Examination of BLS Current Population Survey data focusing on an estimate of "COVID-19 retirements."

Findings: The LFPR dropped from 63.2% in the fourth quarter of 2019 to 60.8% in the second quarter of 2020, recovering only to 61.6% in the second quarter of 2021; approximately 5.25 million people left the labor force between the fourth quarter of 2019 and the second quarter of 2021. Labor force departures occurred for many reasons: cyclical (LFPR tends to drop when unemployment is high); needing to provide child/dependent care; or retirement.

The percentage of retirees in the U.S. held steady around 15.5% until 2008, when Baby Boomers began to turn 62 and the Great Recession hit. Prior to the pandemic, the share of retirees was at 18.3% in February 2020. In August 2021, the share had risen to 19.3%. Comparing the predicted percentage of Baby Boomer retirements with the actual percentage of all retirements gives a 0.92% differential representing excess COVID-19 retirements. "[…] as of August 2021, there were slightly over 3 million excess retirements due to COVID-19 […]."

Excess retirees tended to be older people, who were at higher risk from COVID-related health concerns. Unlike in the previous recession, while there was a sharp downturn in economic activity, asset values increased, which may have made retirement financially possible for more people. It is also possible that some recent retirees may return to the labor force in the future.