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How Race and Gender Shape COVID-19 Unemployment Probability

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HOW RACE AND GENDER SHAPE COVID-19 UNEMPLOYMENT PROBABILITY

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Abstract

Using the April 2020 Current Population Survey (CPS) micro dataset, we explore the racialized and gendered effects of the COVID-19 pandemic on the probability of being unemployed. The distribution of job losses from COVID-19 for women and men or for different racial/ethnic categories has been studied in the recent literature. We contribute to this literature by providing the first intersectional analysis of unemployment under COVID-19, where we examine the differences in the likelihood of unemployment across groups of White men, White women, Black men, Black women, Hispanic men and Hispanic women. Controlling for individual characteristics such as education and age, as well as industry and occupation effects, we show that women of all three racial/ethnic categories are more likely to be unemployed compared to men, yet there are substantial differences across these groups based on different unemployment measures. Hispanic women have the highest likelihood of being unemployed, followed by Black women, who are still more likely to be unemployed than White women. We also examine if ability to work from home has benefited any particular group in terms of lowering their likelihood of unemployment during the pandemic. We find that in industries with a high degree of teleworkable jobs, White women, Black men and Hispanic men are no longer more likely to be unemployed relative to White men. However, Black women and Hispanic Women still experience a significantly higher probability of losing their jobs compared to White men even if they are employed in industries with highly teleworkable jobs. As we control for both individual and aggregate factors, our results suggest that these differences are not simply the result of overrepresentation of women of color in certain industries and occupations; rather, unobservable factors such as discrimination could be at work.

The COVID-19 pandemic and the social distancing measures implemented by state governments shut down many businesses, resulted in the laying off of millions of people, and caused the unemployment rate to jump to 14.7% in the U.S. in April 2020 from 4.4% in March 2020 (Bureau of Labor Statistics[1] 2020). The impact of these job losses has been felt asymmetrically by people in different race and gender categories of the labor force. From March to April, the percentage-point change in unemployment was 11.5% for women, 9% for men, 2.9% for Latinx, and 10% for Blacks.[2] As data become available, a growing literature began to examine the determinants and distributional consequences of pandemic-related job losses.

In this paper, we use data from the April 2020 CPS to explore the racialized and gendered effects of the pandemic on the probability of becoming unemployed. The distribution of job losses from COVID-19 has been studied in the recent literature for women and men (Alon et al 2020; Adams-Prassl et. al. 2020), or for different racial/ethnic categories (Montenovo et. al. 2020; Fairlie et. al. 2020, Cowan 2020). While these studies all agree that women's unemployment increased substantially more than men's during the pandemic, the effects on racial/ethnic categories are not as conclusive, with some finding a large impact for Blacks (Cowan 2020), and others suggesting the impact to be larger for Latinx (Montenovo et. al. 2020).

We contribute to this literature by providing the first intersectional analysis of unemployment under COVID-19, in which we examine the differences in the likelihood of unemployment across groups of White men, White women, Black men, Black women, Hispanic men and Hispanic women. Our intersectional analysis reveals a more nuanced picture of the COVID-19 unemployment that has already been labeled as "she-cession" in the popular press (Gupta 2020). Our results confirm that women of all three racial/ethnic categories are more likely to be unemployed compared to men, yet there are substantial differences across these magnitudes under different unemployment measures. Hispanic women have the highest likelihood of unemployment, followed by Black women, who are still more likely to be unemployed than White women. Intersectional analysis also allows us to capture a clearer picture of the racialized impact of COVID-19 unemployment. We find that although Hispanic men have a higher probability of losing their jobs compared to White men, this probability is even higher for Black men. Overall, the results of our nuanced approach clarify the inconclusive arguments in other studies about whether Blacks or Latinx are more profoundly affected by the COVID-19 unemployment.

Much of the difference in the effect of recessions across different groups is explained by being at greater exposure to fluctuations due to the industries and occupations of employment. While the COVID 19 pandemic has officially led to a recession of the U.S. economy, this recession has been different from prior recessions in terms of the industries affected. With essential/non-essential classification of industries, some of the service industries that have traditionally been considered less cyclical came to a complete halt, while some of the typically cyclical manufacturing industries continued to operate. As the feasibility of working from home became a crucial determinant of who gets to keep their job, a number of studies developed measures of the feasibility of working from home (Dingel and Neiman 2020). While it was shown that job loss was larger in occupations that cannot be performed remotely (Montenovo et al. 2020), ours is the first study which expands the analysis to race/ethnicity-gendered categories to

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[1] Hereinafter BLS.
[2] Throughout this paper we will use BLS categories of Whites, African Americans, and Hispanics. African Americans and Blacks, and Hispanics and Latinx will be used interchangeably.

examine whether the ability to work from home has benefited any particular group in terms of lowering the likelihood of unemployment during the pandemic. Controlling for individual characteristics such as education and age, as well as industry and occupation effects, we find that in industries with a high degree of teleworkability, White women, Black men and Hispanic men are no longer more likely to be unemployed relative to White men. However, Black women and Hispanic women still experience a significantly higher probability of losing their jobs compared to White men, even when employed in industries with highly teleworkable jobs.

In the next section, we briefly review the literature on the causes of the unemployment gap between men and women and across different racial/ethnic categories. As COVID-19 related unemployment is the result of a pandemic-induced recession, we limit our attention to the explanations of how business cycles affect the gaps in unemployment across these groups. We show that some of the important insights from the literature, such as the lessening of the gender gap over time, or the relative adverse effect of recessions on men's unemployment, are not necessarily valid for all racial/ethnic groups, which affirms the need for intersectional analysis. In section 3, we review the existing studies of COVID-19-related unemployment and more closely examine industries in which racial/ethnic groups and women are overrepresented. Our industry-level analysis in this section shows a significantly large negative relationship between the share of Latinx employment and the share of teleworkable jobs in an industry. A similar negative relationship exists for the share of Black employment, yet we find no such relationship for the women's share of employment. While offering no causality, these findings suggest a possible disproportional impact for Blacks and Latinx under the pandemic, as they are overrepresented in industries with few teleworkable jobs. Section 4 describes the data set, two different definitions of COVID-19-related unemployment and the characteristics of the unemployed by these definitions. In Section 5, we present our empirical framework and the results from probit regression, wherein we measure the relative likelihood of unemployment across racial/ethnic-gender categories, controlling for aggregate factors such as industry, occupation, region, degree of teleworkability, essential/nonessential classification of industry, as well as individual characteristics such as education and age. In this section we also test for the interaction between racial/ethnic-gender categories and the degree of teleworkability. Section 6 then presents a discussion and concluding remarks.

II. What We Know About Racialized and Gendered Unemployment over the Business Cycle

Among the race and gender disparities in labor market outcomes, differentials in unemployment rates and how they change over time have been studied less than the gender or racial wage gap. In our analysis of whether minority men and women face a higher likelihood of unemployment during the current recession, we derive our framework from the literature on the determinants of differential unemployment rates of Whites, minorities, and of women and men. While we focus on the differential impact of recession on the unemployment of racial/ethnic-gender groups, the cyclical variations in unemployment are inevitably related to the factors, which determine these groups' relative labor market positions over the longer term.[3] This literature helps us identify both individual characteristics and industry (economy) related factors, which determine the likelihood of unemployment due to the pandemic.

In her review of labor market disparities between Blacks and Whites, Bradbury (2000) proposes four explanations for the above-average unemployment experienced by different demographic groups.

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[3] An equally important literature on the long term persistent higher unemployment rates for Blacks and Hispanics is beyond the scope of this paper.

The skill mismatch hypothesis emphasizes the availability of jobs, which require higher skills or educational attainment than those possessed by Blacks on average. Work experience, typically measured by age, also plays a role in this framework. The spatial mismatch hypothesis argues that, with racial segregation in housing, Blacks typically reside in central city locations, which generally have poorer access to available jobs than the residential locations of Whites. A third explanation focuses on the importance of informal information networks in finding a job and recruiting a worker, which might work to the disadvantage of Blacks. A fourth explanation has to do with employer discrimination and stereotyping, which reduces both number and attractiveness of job offers to Blacks. These arguments do not necessarily explain how the unemployment gap between advantaged and the disadvantaged groups would change over the business cycle. However, Bradbury (2000) argues that as the labor market tightens during an expansion, employers might make extra efforts to reduce the barriers created by spatial/skill mismatches and informational networks. In addition, they may also find discrimination costlier. This leads to increased hiring of Blacks and other disadvantaged groups as the economy reaches the peak of a business cycle. This phenomenon is part of the argument made by Richard Freeman (1973) in his classical study of racial patterns of labor market status from 1948-1972. Having found that the level of employment for Blacks was more volatile than for Whites, and that the unemployment rate for Blacks rises more than for Whites when the economy weakens, Freeman (1973) proposed a "last in, first out" pattern of Black employment over the business cycle.

The empirical evidence for the "last in, first out" hypothesis does not seem to be conclusive for all time periods and racial groups. Bradbury (2000) does find evidence that disadvantaged groups experience larger percentage-point declines in unemployment rates than their counterparts in advantaged groups during the expansionary periods within 1972-1990. In testing the hypothesis for the period of 1989-2004, Couch and Fairlie (2010) find considerable evidence that Black men are the first to be fired during downturns, and no evidence to confirm a last-hired claim. Couch et al (2016) test the hypothesis for the period of 1996-2012, and find both Blacks and Hispanics to be fired first. For 1976-2016, Cajner et al (2017) find both Black and Hispanic men and women are affected by recessions relatively more than Whites on average. They show that whereas the Hispanic/White unemployment gap can be largely explained by differences in educational attainment, the larger Black/White unemployment gap cannot be explained by observable characteristics. They conclude that personal and institutional discrimination can explain the unexplained component for the unemployment gap for Blacks.

In addition to the explanations above, industrial and occupational segregation is often cited among the reasons for the disproportionate impact of recession on the unemployment of various demographic groups. Industrial (or occupational) segregation occurs when one demographic group is overrepresented in a particular industry (or occupation) compared to their share in the labor force. As suggested by Bradbury (2000), some sectors are more prone to be affected by business cycles, and if a demographic group is concentrated in these sectors, they will be affected disproportionally by recessions.[4] Hoynes et al (2012) find the impact of the Great Recession has been felt most strongly for men in general, and Black and Hispanic workers due to the variation in cyclicality across different industries.

The role of industrial and occupational segregation has also been an important explanation for over-time changes in the gender gap in unemployment. Before 1980, the higher unemployment rate of

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[4] It is beyond the scope of this paper to investigate the reasons for gendered and/or racial occupational segregation but it should be acknowledged that the occupational segregation and over-crowding of minorities and women into particular industries in and of itself could be a result of discrimination and/or stereotype biases in hiring practices.

women compared to men was generally understood to be the result of women's marginal attachment to the labor force. Despite increasing labor force participation over time, women exited and/or re-entered the labor market at higher rates, which led to higher unemployment rates. This gap virtually disappeared after the 1980s, mostly as a result of the convergence of labor force attachment between men and women (Albanesi and Sahin, 2018). Since 1983, women's unemployment has displayed a less cyclical trend than that of men, resulting in lower unemployment rates for women during recessions. Typically, men-dominated industries such as durable goods manufacturing, construction and blue-collar jobs are more cyclical, leading to disproportionate job losses for men during recessions, whereas more women tend to be employed in less cyclical industries, such as services. Blau and Winkler (2017) state that in addition to the convergence of labor force attachment between men and women, a decrease in the demand for manufacturing workers, and an increase in the demand for workers in services sector, have resulted in a relatively lower unemployment rate for women during recessions. In this sense the Great Recession was not an anomaly according to most researchers, and has been called a "man-cession" due to the large unemployment gap between men and women.[5]

In this paper, we examine the differential impact of the COVID-19 recession on unemployment by focusing on the intersection of race and gender with the expectation that race and gender fuse to create unique experiences for each group of gender and race/ethnicity combinations. Women have different experiences from men and people of color have different experiences from Whites. Yet, to understand the experience of a Latina or Black woman in the labor market requires more than understanding of the experience of women and Latinx or Blacks. A similar suggestion has been made by Grown and Tas (2011) who cautioned against labeling the Great Recession as a "man-cession," hence undermining its adverse influence on women, which can be identified through the examination of multiple labor market indicators and incorporation of race/ethnicity into the analysis. In this study, even though our current methodology is not able to account for the qualitative reasons for the unique experience of minority women, we will explicitly attempt to capture the racialized and gendered outcomes of COVID-19 on unemployment by controlling for variables that exhaust the potential explanations related to labor supply qualifications, and industrial or occupational segregation.

Figure 1 shows the evolution of unemployment rates by combined racial/ethnic gender categories over the last two decades, which includes the last two recessions of the U.S. economy (2001 and 2007-2009) before the current COVID-19 recession. The visual inspection of the figure clearly reveals a more nuanced picture of the unemployment experiences of these groups than suggested in some of the studies reviewed above. For example, the disappearance of the gender gap in unemployment seems only valid for White men vs White women, while the unemployment gap for Black men and Black women displays a different pattern regardless of business cycle phases. With the exception of 2006, Black men's unemployment rate has been persistently higher than Black women's. Conversely, Hispanic women's unemployment has been higher than Hispanic men's for all but the four years of the Great Recession. Figure 1 confirms that men's unemployment increases more than women's unemployment during the Great Recession for each race/ethnicity group, yet in terms of percentile-points, the change is the most dramatic for Blacks. The gap between the unemployment rates for White men and White women reaches 2.1% in 2009, the highest in the last 30 years (from almost zero in 2006). For Black men and women, the same gap is 4.4% in 2009, indicating that the Great "man-cession" was more severely felt by Black men

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[5] Other researchers such as Hartmann et al (2010) suggest looking into the longer-term effects of recessions to understand the full impact of a recession on the unemployment of men and women. Hartman et al (2010) show that on average, women's job losses began nine to eighteen months after the official declaration of the recession, and sometimes after the official recession is over.

than it was for White men. A motivation for our paper is to explore whether similar asymmetries exist for different racial/ethnic categories under the COVID-19 recession (to which the term "she-cession" has been applied).

FIGURE 1: Unemployment Rate of Race/ethnicity-Gender groups
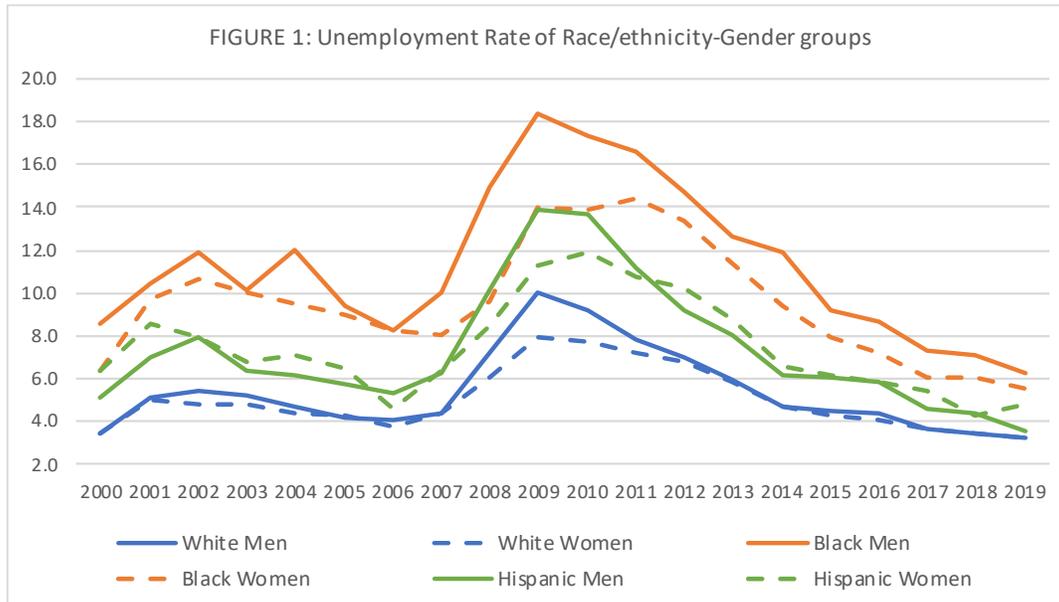
III. Racialized-Gendered Unemployment under the COVID-19 Recession:

Within the rapidly evolving literature focusing on COVID-19 and labor market outcomes, a handful of studies examine the differences in the unemployment experiences of demographic groups. Among these, Alon et al. (2020) find that, unlike a "regular" recession, social-distancing policies have had a larger effect on women's unemployment. Adams-Prassl et al. (2020) present similar findings for both the U.S. and the U.K.: women and workers without a college degree are significantly more likely to have lost their jobs. Using February and April CPS surveys, Cowan (2020) shows that, conditional on being employed in February, women are less likely than men, and all racial minorities are less likely than Whites, to be employed in April. Controlling for occupation and industry, the effect is particularly large for Black workers (3.5% more likely). Fairlie et al (2020), on the other hand, suggest that, compared with the Great Recession, Blacks did not experience a disproportionately large increase in unemployment relative to Whites, while Hispanic workers did. Similarly, Montenovo et al. (2020) find large increases in recent unemployment among women, Hispanics, and younger workers. While our work relates to these papers, we further combine categories of race/ethnicity and gender to examine whether the disproportionate likelihood of unemployment for women found in these works is an equally shared experience for White women and women of color. Similarly, we address the question of whether there are gendered differences within minority groups in terms of the disproportionate unemployment effects reported above.

A cursory examination of the monthly unemployment rate for racial/ethnic-gendered categories in Figure 2 explains why the term "she-cession" has been used in reference to the current recession. After social distancing rules and executive orders began in March 2020, women's unemployment reached much

higher levels than men's for all racial/ethnic categories—though the gap is less visible for Black women simply because of the relatively high pre-pandemic rate of unemployment for Black men. It also seems the gap between unemployment rates for Hispanic women and Hispanic men reached a relatively higher level compared to other racial/ethnic categories.

FIGURE 2: Unemployment Rate for Race/Ethinicity-Gender Groups during the COVID-19 Pandemic
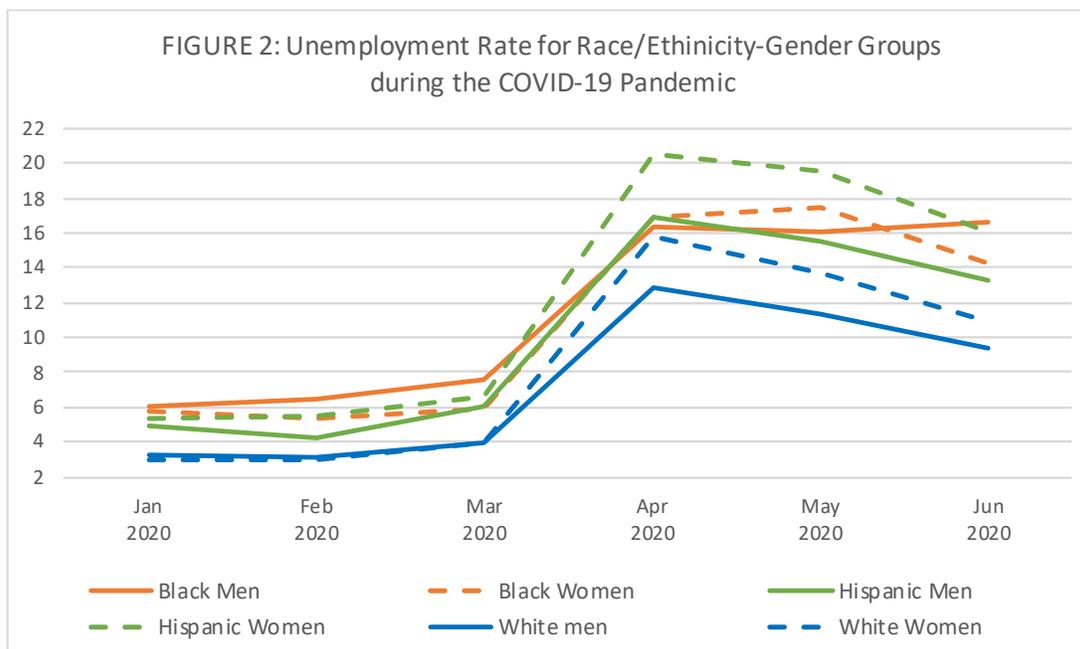
For the COVID-19 recession, the asymmetric impact of recession on various industries and occupations has also been identified as the primary factor determining the gendered and racialized impact of unemployment. With essential/non-essential classification of industries, some service industries that are typically considered less cyclical came to a complete halt while some typically-cyclical manufacturing industries continued to operate. In their study of "essential" industries based on the executive orders from California and Maryland, McNicholas and Poydock (2020) use a CPS database and show that women make up the majority of essential workers in health care (76%) and government and community-based services (73%), whereas people of color make up the majority of essential workers in food and agriculture (50%) and in industrial, commercial, residential facilities and services (53%). Using data from the American Community Survey (2014–2018), Rho et. al. (2020) show that women and people of color are overrepresented in the workforce employed in "front-line" industries (e.g., grocery stores, public transit and health care). Considering the fact that most workers in essential or "front-line" industries have kept their jobs (as confirmed by Montenovo et al. 2020), the higher likelihood of unemployment reported for women and minorities presents a perplexing question. In our empirical analyses of the determinants of COVID-related unemployment, we control for essential/nonessential industry classification based on the state of Delaware's criteria, as done by Fairlie et al. (2020).[6] To control for the disproportionate effects of the COVID-19 recession on different segments of the economy, we also include occupation and industry categories.

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[6] The Delaware's full list can be accessed at the link https://coronavirus.delaware.gov/resources-for-businesses/

Another highly-emphasized determinant of pandemic-related unemployment has been whether workers can work from home. Among the growing number of studies measuring the feasibility of working from home, Adams-Prassl et al. (2020) show that workers who report they can do a high share of tasks from home are substantially less likely to report losing their jobs due to the COVID-19 outbreak in both the U.S. and the U.K. Dingel and Neiman (2020), who use the occupational descriptions from the Occupational Information Network (O*NET) surveys to designate any given occupation as able or unable to be performed at home, estimate that 37% of jobs in the US "can plausibly be performed from home."[7] Based on their occupational classification they also show there is significant variation in the share of teleworkable jobs across industries. As expected, most jobs in finance, corporate management, and professional and scientific services could plausibly be performed at home, whereas very few jobs in agriculture, hotels and restaurants, or retail can be.[8] Using survey data, Brynjolfsson et al. (2020) find the fraction of workers who switched to working from home by May 2020 to be about 35.2%, not far from Dingel and Neiman (2020)'s estimate. Likewise, Bartik et al (2020) find that the Dingel and Neiman classification of work from home capacity is indeed a strong predictor of industry-level variation in remote workability during the pandemic. Dingel and Neiman (2020) classification has been influential both in research and in practice as a way to understand the potential for remote work across industries and demographic groups. Using this measure, Yasenov (2020) shows that lower-wage workers are up to three times less likely to be able to work from home than higher-wage workers. Those with lower levels of education, younger adults, ethnic minorities and immigrants are also concentrated in occupations that are less likely to be performed from home. Whereas the opportunity to telework would reduce the likelihood of unemployment, to the extent that women and minorities are underrepresented in these industries, high teleworkability might not provide any benefit to these groups. Having shown that a lower share of women is employed in highly teleworkable occupations compared to occupations with a low degree of teleworkability, Alon et al. (2020) suggest that "more women potentially face loss of employment" in these less teleworkable jobs.[9] We contribute to this literature by expanding the analysis to race/ethnicity-gender categories to examine if teleworkability has benefited any particular group in terms of lowering the likelihood of unemployment during the pandemic. In doing so, we use Dingel and Neiman (2020) measure of the share of teleworkable jobs in an industry as an industry-specific determinant of unemployment.

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[7] As they note in their paper, this measure neglects many characteristics that would make working from home difficult. Therefore, it is an upper bound on what might be feasible. Dingel and Neiman (2020) develop an alternative measure based on individual introspection of different occupations, which leads to a relatively conservative estimate of teleworkable jobs.

[8] While beyond the scope of paper, it is important to note that teleworkability has many other determinants than the nature of tasks accomplished on the job. Firm level differences in ability to invest and train employees, spatial differences in infrastructure are among these reasons.

[9] It should be noted that even though working from home is considered to be an insurance against losing one's job during this recession, for single parents and dual income earning parents, working from home combined with the school closures imposes a unique disadvantage mostly felt by women. The ongoing childcare crisis due to the closure of daycare centers and schools in March 2020 in the U.S. is likely to continue in 2020-21 school year. For dual earner heterosexual parents, the already existing unequal distribution of time spent on child-care is likely to constraint women's time severely. This effect will also be felt disproportionately by single parents. Please see BLS (2020) for the distribution of average daily time spent on childcare for women and men.

Table 1: Employment share (%E) and the share of teleworkable jobs (%T) in the most segregated industries

Women			African American			Latinx		
	E	T		E	T		E	T
Social Assistance	84	39	Ground Passenger Transport	31	18	Apparel Manufacturing	33	21
Nursing/Residential Care	81	16	Postal Service	27	8	Warehousing and Storage	32	17
Ambulatory Healthcare	79	26	Nursing/Residential Care	26	16	Construction	30	19
Hospitals	75	21	Couriers and Messengers	25	16	Admin/Support Services	30	31
Personal/Laundry Services	73	12	Warehousing and Storage	24	17	Food Manufacturing	30	10
Clothing Stores	70	7	Social Assistance	20	39	Accommodation	29	13
Education	70	83	Air Transportation	20	15	Agriculture	28	8

Before moving on to the empirical analysis of unemployment during the pandemic, Table 1 provides a picture of employment segregation and the degree of teleworking opportunities in the top five industries in which women, Blacks and Latinx are overrepresented. For each group, the second column is the employment share of the group within that industry (E) and the third column is the percentage of teleworkable jobs in that industry, a la Dingel and Neiman (2020).[10] The table shows that almost all industries in which Blacks and Latinx are overrepresented have a lower-than-average share of teleworkable jobs. In case of industry-specific shocks, such as COVID-19-related measures, more layoffs are likely to occur in industries with fewer teleworkable jobs, leading to higher likelihood of unemployment for Blacks and Latinx. This pattern is not as clear for women, since women are overrepresented in education, an industry ranking relatively high on teleworkability. To get a better sense of how these groups' share of employment and teleworkability are aligned across all industries, we run a simple OLS regression of the share of teleworkable jobs on the employment share of women, Blacks and Latinx for 73 industries (Table 2). Unlike Alon et al. (2020), we do not find any significant relationship between women's employment share and the share of teleworkable jobs across industries, while the relationship is significantly negative for Blacks and Latinx. These results confirm that in order to empirically explore the differential unemployment likelihood of people of color during the pandemic, our framework should incorporate not only industry-specific fixed effects, and essential/nonessential distinctions, but also the degree of teleworkability across industries. Moreover, focusing on the separate race and gender categories might obfuscate a negative relationship between the employment of women of color and the degree of teleworkability.

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[10] Based on the BLS Labor Force Statistics in 2019, men made up 47%, Whites 77.8%, African Americans 12.7%, and Latinx 18% of the U.S. labor force. Industries included here are those with highest share of employment for women, Black and Latinx among 73 industry categories (based on NAICS 2 and NAICS 3 classification) that we matched to Dingel and Neiman's measure of the share of teleworkable jobs in an industry. We used the relatively conservative measure of telewokability, which was described in footnote 13. The unweighted average of teleworkability index for all 73 industries in our sample 30%.

Table 2: Teleworkability, Gender and Race

Employment share of teleworkable jobs	
Women employment share	0.181
	(-0.126)
Black employment share	-0.881**
	(-0.415)
Hispanic employment share	-1.603***
	(-0.36)
Constant	**57.560***
	(-8.977)
Number of industries	**73**
Adj. R-sq	**0.277**

Note: Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

IV: Data on COVID-19 Unemployment

We use April 2020 CPS survey data to conduct our analysis of the impact of the COVID-19 pandemic on the probability of being unemployed in the U.S. and how race and gender contribute to this probability. Most of the states which implemented lockdown measures began to do so in March 2020, so April is the first month to fully display the effects of COVID-19 on the labor market. The reference period is April 12-18, 2020. BLS warns users of CPS about a misclassification issue in the unemployment data collected in March and April 2020, which leads to an underestimation of the national unemployment rate.[11] Considering the potential wide range for the actual unemployment rate, we use two different definitions of COVID-19 unemployment: [12]

1) Narrow COVID-19 unemployment: Individuals, identified as "job losers on layoff" (BLS category), whose unemployment duration is up to and including 4 weeks, are included in this category. This is a rather conservative definition of unemployment, which results in 10.5 million unemployed due to COVID-19.

2) Upper-bound COVID-19 unemployed: In addition to the individuals in the narrow category, we include "other job losers" whose unemployment duration is up to and including 4 weeks; those with ending temporary jobs whose unemployment duration is up to and including 4 weeks; and those who were "employed-but-absent" due to "other" reasons in the reference week that BLS identified as misclassified. This measure results in 18.6 million unemployed.

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[11] The BLS instructed surveyors to code those out of work due to the epidemic as recently laid off or unemployed, but surveyors appeared to code at least some of them in the employed-but-absent category. According to the estimates provided by BLS, out of 11.5 million workers classified as employed-but-absent in April 2020, around 7.5 million should have been classified as unemployed. If these people were to be coded as unemployed, the resulting unemployment rate for April would be 19.2%, compared with the official estimate of 14.4% (not seasonally adjusted).

[12] We base our analysis on working age population (15-64). Individuals who report themselves as out of the labor force are excluded from this analysis.

Table 3 presents a racial/ethnic-gender snapshot of the pool of COVID-19 unemployed based on the narrow definition of unemployment. The table shows that 26% percent of the unemployed are White men, and 29% are White women. Compared to the shares of White men and White women in the labor force (44% and 38% respectively), these figures confirm that Whites are underrepresented amongst the unemployed. Similarly, the fact that 55% of the unemployed are women, as compared to women making up 49% of the labor force, signals the overrepresentation of women amongst the unemployed. Age and education levels are among the other noteworthy COVID-19-unemployment characteristics: relatively younger people aged 21-30 make up the largest age group (27%), and, in terms of educational attainment, high school graduates represent the largest share of the unemployed at 55.3%.

Table 3: Cross tabulation of Race and Gender of COVID 19 unemployed

Race/Ethnicity	Men	Women	Total
White	0.26	0.29	0.55
Black	0.07	0.07	0.14
Hispanic	0.12	0.11	0.23
Other	0.04	0.04	0.08
Total	0.49	0.51	1

$F_{(2.96, 9214.62)} = 2.18 \quad p = 0.09$

In terms of occupational distribution, we see that 14% of the unemployed are in food preparation and related occupations, followed by 11.3% in sales and related occupations. A closer look reveals that from among food preparation and related occupations, 24.3% are waiters and waitresses, and 20.7% are cooks. 41.5% of sales and related occupations is retail salespersons, and 20.9% are cashiers. In terms of the industrial distribution of the unemployed, we see that leisure and hospitality comes first at 22%; educational and health services follows at 17.5%; and wholesale and retail trade is a close third at 15.8%. Agriculture, Mining, Public Administration, Information, and Financial Activities are among the sectors with lowest numbers of unemployed (less than 2%).

V. Regression and Results

We use the April 2020 CPS micro data to examine how the intersection of race/ethnicity and gender contribute to the probability of being unemployed due to the COVID-19 pandemic in the U.S. labor market. In our analysis we use both narrow and upper-bound unemployment measures (as previously defined). In addition to race/ethnicity-gender, we include labor supply characteristics such as age and educational attainment as control variables that might affect an individual's probability of becoming unemployed. We use control variables to capture the differential impact of the COVID-19 recession on different sectors and occupations, as well as the different responses of the state governments across different regions. Finally, we include industry-specific essential/non-essential distinctions made by most state governments, and the share of teleworkable jobs in industries among control variables with potential impact on the probability of unemployment.

Our benchmark model takes the following form:

$$Prob(X) = \Phi(\beta'X + u)$$

where $\quad unemp_i = \begin{cases} 1 \text{ if the individual is unemployed due to COVID } 19 \\ \quad 0 \text{ otherwise} \end{cases}$

Φ is the standard normal cumulative distribution, X is the vector of following independent variables:
- Variable showing the race/ethnicity-gender intersection (six categories of White men, White women, Black men, Black women, Hispanic men, Hispanic women)
- Control variables: age, and square of age, educational attainment (four categories of less than high school or high school; associate degree; college degree; advanced degree), variable for the degree of teleworkability in an industry expressed as percentage of jobs that can be worked from home, a dummy variable indicating whether the industry is essential or not, variable for 23 occupations[13], variable for 14 sectors[14], variable for four regions (Northeast, Southwest, Midwest, West).

β' is the parameter estimates, and u is the random error term. The parameters of particular interest are those of the "race/gender" variable as they capture the disproportionate effect estimates of COVID-19 unemployment on various intersectional groups. Table 4 shows the summary statistics for the variables.

Table 4: Summary Statistics

Variable	Mean	St. Deviation	Min	Max	Type
Unemployment$_{narrow}$	0.05	0.22	0	1	Dummy
Unemployment$_{upperbound}$	0.09	0.28	0	1	Dummy
Race/gender	2.63	1.70	1	6	Categorical
Teleworkability	33.7	24.7	1.8	88.04	Continuous
Occupation	11.8	6.9	1	23	Categorical
Sector	7.8	3.07	1	14	Categorical
Education	1.89	1.11	1	4	Categorical
Age	39.7	14.15	15	64	Continuous
Essential	0.74	0.43	0	1	Dummy
Region	2.69	1.01	1	4	Categorical
Sample size	63,474				

Notes: Individuals are weighted using composited final monthly weights provided by the BLS.

[13] The occupational categories are: management occupations, business and financial operations, computer and mathematical science, architecture and engineering occupations, life, physical and social science, community and social service occupations, legal occupations, education, training and library occupations, arts, design entertainment and sports, healthcare practitioner and technicians, healthcare support occupations, protective service occupations, food preparation and serving related occupations, building and grounds cleaning occupations, personal care and service occupations, sales and related occupations, office and administrative support occupations, farming, fishing and forestry occupations, construction and extraction occupations, installation, maintenance and repair occupations, production occupations, transportation and material moving and armed forces.

[14] The categories are agriculture, mining, construction, manufacturing, wholesale and retail trade, transportation and utilities, information, financial activities, professional and business services, educational and health services, leisure and hospitality, other services, public administration, and armed forces.

Table 5 shows the marginal effects from the probit regression results for both narrow and upper bound unemployment measures. [15]

Table 5: Probit Marginal Effects from Benchmark Model

		Model 1	**Model 2**
		$Unemployment_{narrow}$	$Unemployment_{upperbound}$
Race/gender	White Women	0.024***	0.028***
		(0.004)	(0.005)
	Black Men	0.016**	0.034***
(Reference category: White Men)		(0.008)	(0.01)
	Black Women	0.028***	0.044***
		(0.008)	(0.01)
	Hispanic Men	0.010*	0.023***
		(0.005)	(0.007)
	Hispanic Women	0.033***	0.053***
		(0.007)	(0.009)
Education	Associate Degree	-0.003	-0.004
		(0.005)	(0.007)
(Reference category: Less than high school or high school)	College	-0.015***	-0.035***
		(0.004)	(0.006)
	Advanced Degree	-0.04***	-0.071***
		(0.005)	(0.007)
Teleworkability		-0.0005***	-0.0006***
		(0.0001)	(0.0001)
Essential		-0.068***	-0.10***
		(0.005)	(0.006)
Other Control Variables			
Age		Yes	Yes
Age squared		Yes	Yes
Region		Yes	Yes
Occupation		Yes	Yes
Sector		Yes	Yes
Sample Size		34,652	34,968

Notes: The dependent variable for Model 1 is narrow unemployment (0,1) and for Model 2 is upper bound unemployment (0,1). The sample for Model 1 is composed of those who are unemployed by narrow definition and employed workers. The sample for Model 2 is composed of those who are unemployed by upper bound definition and employed workers. Standard errors are in parentheses. All regressions use composited final monthly weights provided by the BLS.

* p<0.1; ** p<0.05; *** p<0.01

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[15] Logit and OLS regression estimations of the benchmark model also give similar results.

Compared with White men, all race/ethnicity-gender groups have a higher probability of being unemployed and the coefficients are statistically significant in both Models 1 and 2. Furthermore, in both specifications, the probability of being unemployed is higher for women in each race/ethnicity category. The largest probability of unemployment in comparison to that of White men is for Hispanic women, followed by Black women (in both models). For Hispanic women, we see that holding these multiple identities increases the probability of unemployment by 5% compared with White men (using the upper-bound unemployment definition). Comparing narrow and upper-bound unemployment results shows that the probabilities from the latter are always higher for each racial/ethnic-gender group. That the smallest discrepancy between the results from narrow and upper-bound unemployment measures is for White women might suggest the misclassification of unemployment is most predominant for people of color.

As expected, unemployment probability decreases with higher educational attainment, yet only after a college degree - an Associate Degree does not insulate one from being unemployed compared with high school graduates.[16] Also, as expected, the probability of unemployment is lower for essential industries. Based on the upper-bound definition of unemployment, the likelihood of becoming unemployed seems to drop by 10% in essential industries compared to those classified as nonessential. Finally, the teleworkability variable also has a negative marginal effect as expected: as the percentage of jobs that can be done from home in an industry increases, the probability of being unemployed falls.

Given that being employed in an industry with more teleworkable jobs can lead, on average, to a lower probability of being unemployed, we next explore whether this advantage is enjoyed by all race/ethnicity-gender categories uniformly. To do so, we incorporate an interaction term of race/ethnicity-gender and the degree of teleworkability to Models 1 and 2. Table 6 shows the marginal effects of the race/ethnicity-gender intersection for the highest level of teleworkability in our dataset.

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[16] When we do not control for occupation or industry category, we see that the coefficient of educational attainment category of Associate Degree becomes significant. Hence, we can state that occupational distribution overlaps with educational attainment for lower educational attainment categories, in the sense that those who have a higher unemployment probability are concentrated in occupational categories that employ relatively lower educational attainment than a college degree.

Table 6: Marginal Effects at Maximum Level of Teleworkability

Probit Regression Marginal Effects when Teleworkability=88.1			
		Model 3	**Model 4**
		Narrow Unemployment	**Upper bound Unemployment**
Race/ ethnicity and gender (Reference category: White Men)	**White Women**	0.001 (0.007)	-0.006 (0.01)
	Black Men	0.024 (0.018)	0.039 (0.03)
	Black Women	0.04** (0.019)	0.06*** (0.023)
	Hispanic Men	0.002 (0.015)	0.044* (0.022)
	Hispanic Women	0.05*** (0.017)	0.07*** (0.021)
Control variables		Yes	Yes
Age		Yes	Yes
Age Squared		Yes	Yes
Education		Yes	Yes
Occupation		Yes	Yes
Sector		Yes	Yes
Region		Yes	Yes
Essential		Yes	Yes
Sample Size		34,652	34,968

Notes: The dependent variable for Model 3 narrow unemployment (0,1) and for Model 4 is upper bound unemployment (0,1). The sample for Model 3 is composed of those who are unemployed by narrow definition and employed workers. The sample for Model 4 is composed of those who are unemployed by upper bound definition and employed workers. Standard errors are in parenthesis. All regressions use composited final monthly weights provided by the BLS.
*$p<0.1$; ** $p<0.05$; *** $p<0.01$*

The marginal effects in Table 6 show that even when the share of teleworkable jobs is at a maximum in an industry, the unemployment probability for Black women and Hispanic women is higher than that of White men regardless of unemployment definition. The disproportionate likelihood is quite sizeable based on the upper-bound unemployment measure: Black women are 6% more likely to be unemployed than White men, and Hispanic women are 7% more likely to be unemployed than White men within industries that have the highest degree of teleworkability. Although smaller, a significant disproportionate likelihood of unemployment also exists for Hispanic men, but only based on the upper-bound unemployment measure. Finally, the higher likelihood of unemployment that White women and Black men were previously shown to have experienced relative to White men seems to disappear if they are employed in industries with highly teleworkable jobs. The top five industries with the highest share of teleworkable jobs are in the Information and the Finance and Insurance sectors of the economy. Being employed in these sectors seem to have insulated White women from the disproportionate unemployment effects of the COVID-19 recession.

VI. Concluding Remarks

Our analysis shows that controlling for labor supply characteristics, geographical regions, occupations, sectors of the economy, essential/nonessential classification, and the degree of teleworkability of industries, women and minorities have been disproportionately affected by COVID-19 in terms of job loss. This general finding is in line with the literature, which shows that the current recession's initial effects have been felt disproportionately by women and by minorities in terms of job loss probability. Our focus on intersectionality allows us to go beyond a uniform approach to gender: we also identify the magnitude of unemployment probability associated with holding multiple identities. Specifically, we find the most disadvantaged group to be Hispanic women, who are 5.3% more likely to be unemployed, followed by Black women, who have 4.4 % higher likelihood compared to White men based on an upper-bound unemployment definition. Hispanic men are the group with the smallest disproportionate unemployment probability compared to White men, with a 2.3% higher likelihood. We further find that working in an industry with highly teleworkable jobs does not spare Hispanic women and Black women from disproportionate job losses. Hispanic women working in industries with a high degree of ability to work from home are 7% more likely, and Black women are 6% more likely to become unemployed compared to White men. It appears that the pandemic is making the already built-in racial/ethnic and gendered structural disparities in the labor market more pronounced, especially for women of color. As we control for industry and occupation categories, and other variables that have been found to be important determinants of cyclical unemployment differential with respect to gender and/or race/ethnicity, the remaining differences cannot be explained by industrial and/or occupational segregation of these different groups.

One reason for the higher probability of unemployment for people of color could be the relative difficulty of securing Paycheck Protection Program (PPP) loans by minority owned businesses. These loans are designed to provide an additional incentive for small businesses to keep their employees on payroll during this recession. Although we do not have any access to data that show who received the PPP loans, several surveys conducted by various NGOs point to Black and Latinx small businesses have had difficulty receiving these loans: UnidosUS for example report that only 1 in 10 minority owned business was able to get the funds that they asked for.[17]

Another possible explanation for the additional unemployment probability especially for Hispanic and Black women is discrimination. Discrimination in hiring and firing practices has been identified as an unobservable source of "last-hired, first-fired" pattern notable in the employment trends of Black workers. For example, Couch and Fairlie (2010) suggest that during recessions, beyond layoffs based on observable characteristics, a discriminating employer can lay off equally qualified Blacks and not face economic costs for doing so. In the current recession, this effect might have worked mostly to the disadvantage of Hispanic and Black women. However, discrimination is not typically directly observed in the labor market data. Given the available data and the methodology we use, we are not able to test for the role of discrimination in explaining the higher likelihood of unemployment of Hispanic and Black women. Nevertheless, we give our best effort by incorporating all available individual, occupational, industry-level determinants of unemployment during recessions cited in the literature, as well other variables unique to the COVID-19 recession. As more data become available, combined with more qualitative studies, we might be able to understand the additional hardship experienced by women and by minorities during the COVID-19 pandemic.

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[17] https://www.unidosus.org/about-us/media/press/releases/051820-UnidosUS-Press-Release-COVID-19-Survey-Black-and-Latino-Small-Business

In addition to the PPP loans, a federally legislated fiscal impetus program, CARES Act, passed in March 27, 2020 provided for Economic Impact Payments to American households of up to $1,200 per adult for individuals whose income was less than $99,000. As the unemployment now stands at 11.1 %, it is obvious that this one-shot stimulus payment will not be enough for women and minority workers to maintain their livelihoods. Under CARES act there is also the Pandemic Unemployment Compensation program which added a $600 weekly boost to Unemployment Insurance payments which is going to be terminated at the end of July 31, 2020. Given that minorities and women are disproportionately affected by this recession and that Black, Latinx and low-income households have less access to liquid assets (Ganong et al 2020), it remains a question how these workers will survive when the program expires.[18] In our opinion, continuing this program is vital for the well-being of minority population and women.

References

Bureau of Labor Statistics. 2020. "The employment situation — April 2020." Accessed on on May 17, 2020 from www.bls.gov.

Adams-Prassl, A. and T. Boneva, M. Golin, R. Christopher. 2020. "Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys." *CEPR Discussion Paper* No. DP14665. April 2020. Available at https://ssrn.com/abstract=3594297

Albanesi S. & A. Sahin. 2018. "The Gender Unemployment Gap," *Review of Economic Dynamics*, Elsevier for the Society for Economic Dynamics, vol. 30, pages 47-67, October.

Alon, T., M. Doepke, J. Olmstead-Rumsey, and M. Tertilt. 2020. "The Impact of COVID-19 On Gender Equality." *NBER Working Paper* #26947; April 2020. Available at http://www.nber.org/papers/w26947

Bartik A., Z. Cullen, E. Glaeser, M. Luca, C. Stanton. 2020. "What jobs are being done at home during the covid-19 crisis? Evidence from firm-level surveys," *NBER Working Paper*, #27422, June 2020.Available at https://www.nber.org/papers/w27422

Blau, F. & A. Winkler. 2017. The Economics of Women, Men, and Work. Oxford University Press. 8th edition.

Bradbury K. 2000. "Riding Tides in the Labor Market: To What Degree Do Expansions Benefit the Disadvantaged?" *New England Economic Review*. May-June:3–33

Brynjolfsson E., J. Horton, A. Ozimek, D. Rock, G. Sharma, H. TuYe. 2020. "Covid-19 And Remote Work: An Early Look At US Data." *NBER Working Paper* #27344. June 2020. Available at https://www.nber.org/papers/w27344

Cajner, T. and T. Radler, D. Ratner, and I. Vidangos. 2017. "Racial Gaps in Labor Market Outcomes in the Last Four Decades and over the Business Cycle," *Finance and Economics Discussion Series* 2017-071. Washington: Board of Governors of the Federal Reserve System.

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[18] https://equitablegrowth.org/wp-content/uploads/2020/07/072120-ui-work-disincentives-fs.pdf

https://doi.org/10.17016/FEDS.2017.071.

Couch, K. and R. Fairlie. 2010. "Last Hired, First Fired? Black-White Unemployment and The Business Cycle." *Demography* 47. no. 1. 227-47. Available at www.jstor.org/stable/25651498

Cowan, B. 2020. "Short-Run Effects of Covid-19 On U.S. Worker Transitions." *NBER Working Paper* #27315. June 2020. Available at http://www.nber.org/papers/w27315

Dingel, J. and B. Neiman. 2020. "How many jobs can be done at home?" *NBER Working Paper* #26948. April 2020.Available at https://www.nber.org/papers/w26948

Fairlie, R. and K. Couch and H. Xu. 2020. "The Impacts Of Covid-19 On Minority Unemployment: First Evidence From April 2020 CPS Microdata." *NBER Working Paper* #27246. Available at https://www.nber.org/papers/w27246

Freeman, R. B. 1973. "Changes in the labor market for black Americans, 1948-72." *Brookings Papers on Economic Activity*, 1973(1), 67-120.

Peter Ganong et al. Wealth, Race, and Consumption Smoothing of Typical Income Shocks, SSRN Electronic Journal (2020). DOI: 10.2139/ssrn.3583707.

Grown, C. & E. Tas. 2011. "Gender Equality in U.S. Labor Markets in the "Great Recession" of 2007–10." In: Starr M.A. (eds) Consequences of Economic Downturn. Perspectives from Social Economics. Palgrave Macmillan, New York. https://doi.org/10.1057/9780230118355_9

Gupta, A. 2020. "Why Some Women Call This Recession a 'Shecession.'" *New York Times.* May 9, 2020. Available at: https://www.nytimes.com/2020/05/09/us/unemployment-coronavirus-women.html

Hoynes, H. and D. Miller, J. Schaller. 2012. "Who Suffers During Recessions?" NBER Working Paper #17951. March 2012. Available at https://www.nber.org/papers/w17951

McNicholas, C. & M. Poydock. May 19, 2020. "Who are essential workers?" Economic Policy Institute Working Economics Blog. Available at https://www.epi.org/blog/who-are-essential-workers-a-comprehensive-look-at-their-wages-demographics-and-unionization-rates/

Montenovo, L., X. Jiang, F. Lozano-Rojas, I. Schmutte, K. Simon, B. Weinberg, C. Wing. 2020. "Determinants of Disparities in Covid-19 Job Losses." *NBER Working Paper* #27132. May 2020. Available at https://www.nber.org/papers/w27132

Rho, H. & H. Brown, & S. Fremstad. 2020. "A Basic Demographic Profile of Workers in Frontline Industries." CEPR Publications. Available at https://cepr.net/a-basic-demographic-profile-of-workers-in-frontline-industries/

Yasenov, V., "Who Can Work from Home?" *IZA Discussion Paper* No. 13197. Available at https://ssrn.com/abstract=3590895