Racial Disparities in Unemployment during the COVID-19 Pandemic and Recovery
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Robert W. Fairlie, Kenneth A. Couch, and Huanan Xu*

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Abstract: This paper examines the impacts of the COVID pandemic and recovery on minority unemployment from April 2020 to August 2021. In April 2020, the first month following widespread social distancing restrictions, unemployment rose to 16.6 percent among Blacks, 18.2 percent among Latinx, and 13.7 percent among Asians (compared with 12.8 percent among Whites). Black unemployment rates rose through May 2020 and dropped through the end of 2020 but then stalled in 2021. After the jump in April 2020 Latinx unemployment rates dropped through October 2020 but then encountered a bump in early 2021 before declining again. The trend in Asian unemployment followed the White trend in April 2020 but the recovery was delayed by a few months and Asian rates did not regain parity with White rates by August 2021. Regression estimates tracking the impacts of COVID-19 on the evolution of racial unemployment rate gaps over the pandemic indicate that the impact on the Black-White gap did not rise as much as for other groups, but has stalled more than for other groups through July-August 2021. The impact on the Latinx-White gap generally decreased after the peak in May 2020 and ended close to pre-pandemic levels in July-August 2021. The impact on the Asian-White unemployment rate gap hit its peak later (in June 2020) and was high in July-September 2020 and positive in July-August 2021. Non-linear decomposition estimates indicate that unfavorable occupational distributions and lower levels of education contributed to the Black-White and Latinx-White gaps in unemployment, but generally became less important over time in the pandemic. A slightly "favorable" industry distribution shielded Blacks from experiencing larger losses in the first stage of the pandemic, whereas as an "unfavorable" geographical distribution for Latinx continued to be an important contributory factor and did not return to pre-pandemic contribution levels. Over the course of the pandemic, higher education levels among Asians helped reduce the gap in unemployment rates but this factor became somewhat less important over time as the Asian-White gap started to close. The unfavorable geographical distribution for Asians, however, did not change over time and was a major contributing factor. For all groups, as expected, the contributions from telework and health risk were close to zero by August 2021.

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Keywords: unemployment, inequality, labor, race, minorities, COVID, coronavirus, pandemic, recovery, shelter-in-place, social distancing

* Robert W. Fairlie is a Professor of Economics at the University of California at Santa Cruz, NBER, and Stanford (SIEPR) Visitor. Kenneth A. Couch is a Professor of Economics at the University of Connecticut. Huanan Xu is an Assistant Professor of Economics at Indiana University South Bend. We thank Bill Sundstrom and participants at seminars at the Kauffman Foundation and GMU for comments and suggestions.

1. Introduction

On March 11, 2020 the World Health Organization (WHO) declared the novel coronavirus or COVID-19 a pandemic, setting off a chain of events that had unprecedented effects on the worldwide economy. To slow the spread of the disease governments enforced shelter-in-place and social distancing restrictions that resulted in closed businesses and laid off workers in jobs and industries deemed non-essential. In the United States as early as March 16, 2020 most counties in the San Francisco Bay Area imposed shelter-in-place restrictions. The State of California followed on March 19, and New York State followed the next day. By early April all states imposed social distancing restrictions. The coronavirus also caused a negative shock to consumer demand for products and services as customers became nervous about in-person shopping because of health concerns. Adding to the closing of stores, offices, and factories, many business owners, managers and workers also became nervous about health concerns.

This paper explores the question of whether the effects of the pandemic were felt differently by race and ethnicity. Of special concern, African-Americans and Latinx might be especially vulnerable to negative economic shocks such as layoffs from COVID-19 because of limited savings and wealth, furthering long-term racial inequality (Canilang et al. 2020; U.S. Census Bureau 2020). Indeed, Blacks and Latinx were hit hard especially in the first three months of the pandemic with large increases in unemployment rates (Couch, Fairlie and Xu 2020). In this paper, we extend the analysis of impacts on minority unemployment from the onset of the pandemic in the Spring of 2020 through the summer of 2021. The NBER dates the pandemic recession as February 2020 to April 2020. Thus, we capture more than a year of the economic recovery from the early shutdowns.

We consider two main questions. First, we examine whether COVID-19 disproportionately impacted minority groups relative to Whites. In light of the well documented "first fired" pattern and persistently higher unemployment among Blacks, we might expect to see unemployment rise by twice as much for Blacks as Whites, and Latinx unemployment to lie between the two groups. But, the COVID-19 induced downturn and recovery are different than previous recessions and recoveries, and might result in different new disproportionate impacts by race and ethnicity. Second, we explore how COVID-19 has differentially affected unemployment across job and skill types that may drive racial disparities in unemployment. Did the industries, occupations and skill levels of White workers partially insulate them from job losses due to shelter-in-place restrictions, or were minorities more likely to be employed in essential jobs? Did the ability to work from home or exposure to disease in the workplace play an important role in relative impacts across groups? We estimate non-linear decompositions to identify the factors that placed minorities at more or less of a risk of losing jobs due to COVID-19 and being unemployed in the subsequent recovery.

To test these hypotheses, we analyze Current Population Survey (CPS) microdata from April 2020 through August 2021. April 2020 represents the first month fully capturing immediate impacts of COVID-19 policy mandates and subsequent months show labor market responses to the pandemic and recovery. We compare impacts of COVID-19 on Black, Latinx and Asian unemployment relative to February 2020 as well as longer trends in unemployment.

A major source of inequality, the unemployment rate among Blacks in the United States has been roughly double that of Whites for decades. For example, over the past four decades, the average rate of unemployment was 11.7 percent for Blacks versus 5.4 percent for Whites.

Historical analyses indicate that the 2:1 ratio of Black-to-White unemployment rates first emerged in the 1950s (Fairlie and Sundstrom 1997, 1999). In his classic study of Black unemployment, Freeman (1973) concluded that the relative movement of Black and White unemployment rates over the business cycle supports "the widely asserted last in, first out pattern of Black employment over the cycle." Later analyses focusing on unemployment transitions have also found Blacks to be the first fired as the business cycle weakens, but not necessarily the last hired (Couch and Fairlie 2010). Blacks are also more likely to leave the labor force when exiting employment than Whites. The Great Recession also disproportionately impacted minority unemployment, and recent research shows that Latinx have higher unemployment rates and greater cyclical sensitivity than Whites (Couch, Fairlie and Xu 2018; Hoynes, Miller, and Schaller 2012; Orrenius and Zavodny 2010).[1]

What happened in the beginning of the pandemic? Analyzing data through June 2020, Couch, Fairlie and Xu (2020) find that Black unemployment jumped to 16.6 percent in April, and as disproportionate rehiring occurred among Whites in May and June, there was a widening of the Black-White unemployment gap ranging from 2.5 to 2.75 percentage points. For Latinx, the unemployment rate increased to 18.2 percent in April 2020, which was considerably higher than for Whites and higher than or comparable to Black levels (for the first time). Exploring the potential factors that placed minorities at more or less of a risk of losing jobs during the first few months of the pandemic, Couch, Fairlie and Xu (2020) find that: i) a slightly favorable industry distribution partly protected Black employment from even worse losses, ii) an unfavorable occupational distribution and lower skills partly explain why Latinx experienced the

[1] The average Latinx unemployment rate was 8.6 percent over the past four decades.

largest gaps in unemployment, iii) occupational and educational differences also contributed to why Blacks had higher unemployment rates than Whites, and iv) Blacks and Latinx were less likely to have jobs that allowed for work at home which contributed somewhat to the unemployment rate gaps.

Extending the analysis through August 2021 provides several new findings. First, the economic recovery helped all racial and ethnic groups, with all groups experiencing sharp drops in unemployment through October 2020. The Black unemployment rate dropped through the end of 2020 but then stalled through August 2021 resulting in a stubborn Black-White gap of 4.6 percentage points. Latinx unemployment rates also dropped through October 2020 but then increased again in the Winter of 2021. Over 2021 Latinx unemployment, however, declined reducing the Latinx-White gap to near pre-pandemic levels. For Asians the drop in unemployment rates after the April 2020 shock took a few months longer to recover than for Whites. The recovery in 2021 has been strong for Asians but there remains a small positive unemployment rate gap in July-August 2021 compared with generally a negative gap (i.e. lower Asian unemployment rates than for Whites) in the pre-pandemic period.

We estimate a set of regression specifications to carefully explore how the impacts of COVID-19 on the racial unemployment rate gaps evolved over time after controlling for individual, job and geographical characteristics, and pre-pandemic time trends, seasonality and comparison time periods. The findings show that the impact on the Black-White gap remained large in 2020 Q3, dropped in 2020 Q4, but then stalled through July-August 2021. The impact on the Latinx-White gap generally decreased each quarter after the peak in May 2020 and ended close to zero by July-August 2021. The impact on the Asian-White unemployment rate

gap hit its peak later (in June 2020) and remained high in July-September 2020. The impact on the Asian-White gap dropped since then but remains positive.

The decomposition results indicate that the contributions from racial differences in individual, job and geographical characteristics to the unemployment rate gaps evolved over time as well. In the recovery, Black-White differences in both occupational distributions and education levels steadily became less important in contributing to the racial gap in unemployment rates (almost to pre-pandemic levels). For Latinx, the unfavorable occupational distribution for Latinx became less important over time, but the lower levels of education among the Latinx labor force that placed them at a higher risk of unemployment retained their importance from June 2020 to the July-August 2021 period. Geographical differences also continued to be an important contributing factor and did not return to pre-pandemic contribution levels by July-August 2021. Over the course of the pandemic, higher education levels among Asians helped reduce the gap in unemployment rates but this factor became somewhat less important over time as the Asian-White gap started to close. The unfavorable geographical distribution for Asians, however, did not change over time continuing to contribute roughly a full percentage point to the gap.

What is new in the recovery period compared to the initial disruption? First, relative unemployment rates among all minority groups moved towards pre-pandemic levels, but Black rates were the most stubborn. Asian unemployment rates were also stubborn and did not rebound as fast as other groups in the early part of the recovery, and Latinx unemployment rates made progress but experienced a unique “hiccup” in early 2021. Second, the lower relative ability for Black and Latinx workers to telework contributed to higher unemployment in

the beginning of the pandemic, but did not contribute to higher unemployment rates later in the recovery. Third, the regional distributions of Latinx and Asians across the country contributed to higher relative unemployment rates throughout the recovery and surprisingly have not returned to pre-pandemic contribution levels.

The findings from our paper and its first version (Couch, Fairlie and Xu 2020) contribute to a rapidly emerging literature on early-stage COVID-19 impacts on the labor market. Kahn, Lange and Wiczer (2020) use data from Burning Glass and initial Unemployment Insurance claims and find that job postings declined by 30 percent and that with the exception of employment in essential industries all states and sectors experienced sharp increases in unemployment. Using payroll data Cajner et al. (2020) find that private sector payrolls shrank by 22 percent from mid-February to mid-April. Those findings are echoed in early papers by Bick and Blandin (2020) and Coibon et al. (2020) who make use of survey data they collected at a high frequency to gain rapid indications of labor market behavior. Montenovo et al. (2020) use CPS data from March and April of 2020 and construct indices of job characteristics expected to be related to job loss such as ability to work remotely and importance of face-to-face contact. They find that these factors as well as occupation distributions help explain differences in emerging unemployment rates across a wide range of groups.

Early analyses have also begun to try and distinguish between the employment effects of closure policies and disease related fears in reducing demand. Goolsbee and Syverson (2020) use information on individual foot traffic to businesses based on cell phone data and find that county-level closures account for about 7 percentage points of the overall decline in foot traffic but COVID-19 cases account for 30 percentage points of the total decline. Bartik et al. (2020)

similarly conclude after examining the relationship between policies, Google searches, and Safegraph data on business visitations that "overall patterns have more to do with broader health and economic concerns affecting product demand and labor supply rather than with shut-down or re-opening orders themselves." In contrast, Gupta et al. (2020) find that state social distancing policies had a large effect on unemployment. Our paper builds on these previous studies on early effects of the pandemic by providing a detailed analysis of unemployment among minorities driven by the spread of the coronavirus in the United States and early effects of COVID-19 on unemployment beginning with April and extending through the next two months of the pandemic using CPS data.[2]

2. Context and Data

COVID-19 Timing

The first diagnosed case of the novel coronavirus (COVID-19) in the United States was reported on January 20, 2020 in the state of Washington (Holshue et al. 2020). By March 17th, all states in the U.S. had reported cases (NPR, March 17, 2020). As the disease spread, social distancing measures were quickly adopted by states beginning with California on March 19th. By March 23rd, all states had adopted some social distancing measures which usually included closures of non-essential businesses (Adolph et al. 2020).

Current Population Survey (CPS)

[2] See Borjas and Cassidy (2020) for an analysis of impacts on immigrants. They find that immigrants, especially undocumented immigrants, were hit harder with job losses from the pandemic.

The data used in the analysis are the Basic Monthly Files from the CPS, the source of the official household-based survey measure of unemployment. These surveys, conducted monthly by the U.S. Bureau of the Census and the U.S. Bureau of Labor Statistics, are representative of the civilian non-institutional population and contain observations for more than 130,000 people.

The survey collects information on a reference week containing the 12th day of the prior month, and the official unemployment rate is released on the third following Friday. The March CPS survey, for example, reflected events through March 14th, the end of the reference week. The unemployment rate in March rose to 4.4 percent reflecting an increase of 1.4 million additional unemployed Americans since February 2020 (BLS April 2020, Table A). However, given timing of its collection the March data did not reflect many of the early responses to the spread of the virus and resulting unemployment.

The April 2020 CPS data also reflect the reference week containing the 12th of the month. In contrast to March 2020, the data collected in this month were obtained after widespread state implementation of social distancing measures due to COVID-19. Thus, in the analysis the impact of the coronavirus on the U.S. labor market the first month to fully capture the impact of the pandemic on the labor market is April 2020.

As COVID-19 spread individual states mandated closure of non-essential businesses. We use Delaware's criteria to determine whether an industry is essential in the CPS data at the 4-digit industry level.[3] The Delaware State list is the most comprehensive we could find and follows the same industry codes as the CPS (North American Industry Classification System,

[3] "List of Delaware Business Categories that are Essential and Non-Essential (March 22, 2020)", https://coronavirus.delaware.gov/resources-for-businesses/.

NAICS). The only modification we made is that we noticed a few industries are classified as non-essential that are operating remotely (e.g. education). Using this measure, we find that 84 percent of the workforce is in essential industries.[4] The classification is likely to be imperfect because definitions and enforcement varied across the country.

Also, the pandemic created an unprecedented shift to working at home. Dingel and Neiman (2020) develop an index of the ability of an occupation to be performed remotely from a set of 15 questions in O*NET (Occupational Information Network). Similarly, we consider the exposure of individuals to disease or infection in their workplace as a possible explanatory factor for gaps in unemployment making use of the index developed by Baker et al. (2020). Their index is also based on an O*NET question, "How often does your current job require you be exposed to diseases or infections?" which is normalized as a Z-score.

3. Disparities in Unemployment

Figure 1 displays unemployment rates by race from January 2001 to August 2021, and Figure 2 zooms in on the time period from January 2019 to August 2021. The unprecedented jumps in unemployment rates from longer trends for all racial groups starting in April 2020 are clear. To focus on the post-pandemic period, Table 1 Panel A reports estimates of unemployment rates by race for April, May and June 2020 and each subsequent quarter through 2021 Q3 (although 2021 Q3 only includes July and August 2021). The unemployment rate was extremely high in April 2020 hitting 14.5 percent, the highest level since the Great Depression and roughly 5

[4] In the analyses we also use a definition of essential that aggregates to the 2-digit level and if at least 50% of detailed industries are essential. Using this measure, 70 percent of workers are in essential industries. Findings are similar using this definition.

percentage points greater than the peak during the Great Recession. Unemployment rates hit even higher levels for Blacks and Latinx. The unemployment rate hit 16.6 percent for African-Americans compared with 12.8 percent for Whites (measured as non-Latinx White throughout). The highest level was for Latinx at 18.2 percent, the highest rate on record for this group. Asians experienced an unemployment rate of 13.7 percent.

As shown in Panel A, the comparison to February 2020, the last month before statewide social distancing measures, is striking. The unemployment rate was at or near long-term lows of 6.4 and 4.7 percent for Blacks and Latinx. Whites had an unemployment rate of 3.1 percent and Asians had a strikingly low rate of 2.6 percent. Over the two-month time period subsequently impacted by the coronavirus, the unemployment rate increased by 9.7 percentage points for Whites and only slightly more (by 10.2 percentage points) for Blacks. The unemployment rate increased by 13.5 percentage points for Latinx from February to April 2020, the largest increase for any group. Asians also experienced a surprisingly large increase in unemployment (11.1 percentage points) across these months.[5]

In the subsequent months of May and June, some recovery occurred in the labor market particularly among Latinx. For Latinx, the reduction in unemployment was 3.8 percentage points (or 21 percent) to 14.4 percent. The experience of Blacks was different, however. By June, unemployment for Blacks remained at 15.1 percent in comparison to 16.6 percent in April. Among Asians, unemployment in June (13.5 percent) was little changed from the level of 13.7 percent in April. Thus, the initial recovery was most pronounced among Latinx. But, even

[5] Comparisons to other pre-pandemic time periods reveal similar results (Couch, Fairlie and Xu 2020).

with these slight improvements in employment the high levels of unemployment are likely to result in substantial earnings losses (U.S. Census 2020).

Returning to Figure 1, the longer-term patterns in unemployment are clear. Black and Latinx unemployment rates follow White unemployment rates rising and falling cyclically, and the gaps become larger in downturns and smaller in growth periods. The gaps between Black and White unemployment historically are larger than for Latinx versus Whites. In April 2020, COVID-19 resulted in an enormous and unprecedented jump in unemployment rates for all groups. The pattern is also anomalous because the unemployment rate for the Latinx group in April (18.2 percent) exceeded that of Blacks (16.6 percent) for the first time.

The comparison of racial differences in unemployment rates (gaps) in April 2020 to previous time periods provides evidence on disproportionate impacts of COVID-19 on minority unemployment rates. The Black-White gap in April 2020 shown in Table 1 Panel A is 3.8 percentage points. This is only slightly larger than the gaps of 3.4 percentage points in February, 3.7 percentage points in January, and 3.5 percentage points from 2017-2019, and lower than the Black-White gap in the Great Recession at 5.8 percentage points (Couch, Fairlie and Xu 2020). In sharp contrast to these patterns, Latinx experienced a much worse impact on unemployment in April 2020 as seen in Table 1 Panel A. The Latinx-White unemployment gap in February was 1.7 percentage points. The gap soared to 5.4 percentage points in April 2020. The COVID-19 Latinx-White gap immediately surpassed its average value in the Great Recession (3.1 percentage points).

In the subsequent months, through June, the gap in unemployment widened considerably between Blacks and Whites (from 3.8 percent in April to 5.9 percent in June)

primarily due to more rapid reductions in White unemployment. The gap between Asians and Whites also widened considerably from 0.9 percent in April to 4.3 percent in June primarily because of little reduction in unemployment among Asians. The gap for Latinx was similar in April (5.4 percent) and June (5.2 percent) because as a group, unemployment for the Latinx fell by about the same amount as for Whites. Thus, the initial impact of COVID-19 fell most heavily on Latinx but their situation improved as businesses reopened along with Whites. Unemployment was little changed for Blacks and Asians so their experiences worsened over time relative to Whites.

The Recovery Period after the First Three Post-Pandemic Months

Table 1 reports estimates of unemployment rates by race for each quarter after June 2020 through the third quarter of 2021 (which only includes July and August). The economic recovery from the initial shock of the pandemic helped all racial/ethnic groups: Unemployment decreased sharply for all groups through October 2020. Black unemployment rates dropped through the end of 2020 but then stalled through August 2021 resulting in a stubborn Black-White gap of 4.6 percentage points. Latinx unemployment rates also dropped through October 2020 but then increased again in winter 2021. Over 2021 Latinx unemployment, however, declined reducing the gap to close to pre-pandemic levels. For Asians, the drop in unemployment rates after the April 2020 shock took a few months longer than for Whites. The recovery in 2021 has been strong for Asians but there remains a small gap in July-August 2021 compared with generally a negative gap in the pre-pandemic period (i.e., Asian unemployment rates are typically lower than White rates).

Turning to racial gaps, the Black-White unemployment rate gap remained the same in 2020 Q3 relative to June 2020, but dropped sharply in 2020 Q4 (down to 4.8 percentage points). As the post-pandemic recovery continued the Black-White gap in unemployment, however, remained essentially unchanged. By 2021 Q3 the gap remained large at 4.6 percentage points and considerably higher than the 3.4 percentage point level in February 2020. Although Black unemployment rates decreased over time they fell at a slower rate than for Whites resulting in a stubborn gap.

The evolution over the second half of 2020 and 2021 is different for the Latinx-White gap in unemployment rates. The Latinx-White gap decreases from June 2020 to 2020 Q3, dropping to 3.9 percent. The gap continues to trend downwards reaching a low of 1.9 percentage points in 2021 Q3. This level of the Latinx-White gap approximates the pre-pandemic level of 1.7 percentage points in February 2020.

Asian unemployment rates were on par or slightly lower than White levels prior to the start of the pandemic. Even with a fairly steady decline from the height of the Asian-White unemployment gap in June 2020 Asian unemployment rates remain higher than White rates through the sample time period. In 2021 Q3 the Asian unemployment rate was 5.1 percent which was 0.6 percentage points higher than the White rate. In February 2020, the Asian unemployment rate was 2.6 percent and the Asian-White gap was -0.5 percentage points.

Alternative Measure of Unemployment

The BLS released warnings about the March and April 2020 counts of unemployment indicating they may possibly be too low. In the reports (BLS April 2020, p. 4) they note that

"workers who indicate that they were not working during the entire reference week due to efforts to contain the spread of the coronavirus should be classified as unemployed on temporary layoff, whether or not they are paid for the time they were off work." But BLS found that many of these workers were classified (*ibid*) as "employed but absent from work." Another concern noted by the BLS was that the number of people not in the labor force (NILF) reporting they want a job nearly doubled in April. This group could also be added to the unemployment numbers to gauge the impact of the coronavirus on nonemployment. For a thorough discussion of these issues see Couch, Fairlie and Xu (2020b).

To address these concerns, we create a second measure of unemployment incorporating these two groups noted by the BLS. This "upper-bound" measure of unemployment adds both the group that reported being employed and paid but absent from work due to other reasons and those NILF who wanted a job.[6]

Table 1 Panel B reports these alternate estimates of unemployment. In February 2020, the official unemployment rate was 3.8 percent and the alternate upper-bound unemployment rate was 7.0 percent. In April 2020, however, the national unemployment rate was 14.5 percent and the upper-bound unemployment rate was 24.4 percent. One view of this alternate measure, which more broadly reflects labor market impacts, is that unemployment at the outset of the COVID-19 pandemic was about at the peak seen in the Great Depression.

For this alternate upper-bound measure we find that Blacks had an unemployment rate of 29.8 percent, 8.5 percentage points higher than the White rate. This Black-White gap is larger than it was in February 2020 (5.1 percent) or in the three years from 2017-2019 (5.2

[6] In results available on request we examine several alternative measures and find similar patterns.

percent) suggesting that Blacks experienced a disproportionate impact from COVID-19 (relative to Whites) of about 3 percentage points compared to recent months. The gap observed in April for Blacks relative to Whites did not narrow in the next two months.

For the Latinx group, the upper-bound unemployment rate is 29.5 percent in April of 2020, 8.1 percentage points higher than for Whites. This large differential contrasts with much smaller gaps in February (1.9 percentage points), or the previous three-year time period (1.9 percentage points). Thus, the gap widened by about 6 percentage points in comparison. Using this alternate measure, the unemployment experience of Latinx improved somewhat relative to Whites through June with a narrowing of the racial gap to 6.2 percentage points. Nonetheless, with a June unemployment rate of 20.8 percent Latinx experienced an unambiguously large disproportionate impact from COVID-19 on unemployment.

Using this upper-bound measure unemployment rates among Asians early in the pandemic were also extremely high. In April 2020, Asian unemployment hit 25.6 percent resulting in a much higher Asian unemployment rate than the White rate. The Asian-White gaps in unemployment remained large throughout the first three months of the pandemic.

Examining the recovery after these first three months, Black unemployment rates remained high even in 2021 Q3 at 15.1 percent. Latinx unemployment came down more, but also remained high at 11.0 percent. Similarly, Asian unemployment ended the sample period at 9.8 percent. Using the alternative measure of unemployment all three groups experienced larger gaps in unemployment rates.

Estimates of Disproportionate COVID-19 Impacts

To more formally test whether Covid had disproportionate impacts on unemployment among minorities, we estimate the following regression for the probability of unemployment:

(3.1) $U_{it} = \alpha + \gamma_1 Black_i + \gamma_2 Latinx_i + \gamma_3 Asian_i + \sum_{m=1}^{9} \pi_m \, COVID_m + \sum_{m=1}^{9} \delta_m^B \, Black * COVID_m + \sum_{m=1}^{9} \delta_m^L \, Latinx * COVID_m + \sum_{m=1}^{9} \delta_m^A \, Asian * COVID_m + \beta' X_{it} + \lambda_t + \theta_t + \varepsilon_{it}$

where U_{it} equals 1 if the individual is unemployed in the survey month and 0 otherwise, $COVID_m$ is a dummy variable for each post COVID month/period, X_{it} includes individual, regional and job characteristics, λ_t are month fixed effects to control for seasonality, θ_t are year fixed effects and/or time trends, and ε_{it} is the error term. The first four months of the pandemic are separately estimated, March, April, May and June 2020, and the five subsequent quarters starting with 2020 Q3 and ending with the modified 2021 Q3 (i.e. July and August 2021). March 2020 is included in the sample, but not reported in the tables because of potentially misleading estimates associated with a partially Covid-impacted month/period.[7]

The parameters of interest are the δ_m^j, which capture the disproportionate effect estimates of COVID-19 on minority unemployment for each follow up month/period, *m*, and each minority group, *j*. The estimates are essentially a hybrid "difference-in-difference" and "event-study" estimate of the impacts of COVID-19.[8] All specifications are estimated with OLS using CPS sample weights and robust standard errors.

[7] We include a full set of interactions for March. The findings are robust to exclusion of the March 2020 data.
[8] For example, a first "difference," is Black vs. White unemployment and the second "difference" is a post-pandemic month or quarter vs. February 2020 unemployment. The regression model also follows an event-study approach in that we do not combine post-months or quarters into one post-period and instead estimate separate ones. Unlike most difference-in-difference and event study applications, however, we are not evaluating the impact of a

Table 2 reports estimates of equation (3.1) that vary the included controls and sample period. Specifications 1 and 2 include observations from February 2020 through August 2021. Specification 1 does not include any individual, job or geographical characteristics controls whereas Specification 2 does. Specification 3 uses data from January 2017 to August 2021 extending the pre-pandemic period and allowing for trend and seasonality controls. Specifications 1-3 make use of the official unemployment definition while Specifications 4-6 use the expanded upper-bound measure and corresponding controls and sample periods. The regressions reported in Specifications 2-3 and 5-6 also control for individual, job and geographic characteristics as available for different samples. The Specifications 3 and 6 include a linear time trend, and estimates are robust to its removal, adding a quadratic, and permutations of month and year fixed-effects (results are available on request).

The results in Specification 2 indicate that COVID-19 resulted in 10.0, 7.8 and 6.0 percentage point increases in unemployment in the months of April, May and June, respectively. Controlling for individual, job and geographical characteristics makes little difference to the estimates (i.e. comparing Specification 2 to Specification 1). For Blacks, COVID did not meaningfully widen the unemployment gap in April compared to February; however, in May and June increases of 2.7 and 2.6 percentage points are estimated. Latinx experienced a large and statistically significant increase in unemployment relative to Whites in April, May and June of 3.8, 5.5, and 3.6 percentage points. Asians exhibit an increased gap in unemployment from COVID over April, May and June of 1.4, 4.2 and 4.8. The results in Specification 3

policy but are estimating whether there are disparate impacts of COVID-19 relative to pre-pandemic levels and trends.

extending the sample back to January 2017 while adding year fixed-effects, a time trend and month of year dummies yield similar results.

Later Recovery Period (July 2020 to August 2021)

Turning to the recovery period from July 2020 forward, we find that the impact of COVID-19 on the Black-White unemployment gap only dropped in 2020 Q3 and did not disappear by the end of August 2021. Looking across specifications, this finding does not change when we control for individual, job and geographical characteristics in Specification 2. It also does not change when we add time trends, seasonality controls, and extend the time period back to January 2017 (Specification 3).

The impact on the Latinx-White unemployment rate gap in the post-initial (three-month) recovery period declined over time to essentially zero by July-August 2021 (Specification 1). The "difference-in-difference" estimate compares Latinx to White unemployment rates in 2021 Q3 to February 2020. The estimates, however, are sensitive to the inclusion of individual, job and geographic controls in Specification 2. The Latinx-White gap estimate is 0.0095 and statistically significant in this specification. Also, extending the time period and adding the additional time variables results in a similarly positive and statistically significant coefficient estimate.

The Asian-White unemployment rate gap dropped by 3.5-3.9 percentage points in 2020 Q3 from pre-pandemic levels. It dropped again in 2020 Q4 and in 2021 Q1, but increased slightly in 2021 Q2 and finally dropped to 0.8 to 1.1 percentage points in 2021 Q3. The

evolution of impacts on the Asian-White unemployment rate gap reflect some of the uneven recovery experienced in the pandemic.

Upper-Bound Regression Estimates

We also estimate models using the upper-bound unemployment measure (Specifications 4-6). We note, however, that we cannot include occupation and industry controls for all observations because they are not collected for more than 90 percent of those out of the labor force. The estimates using the more inclusive measure of unemployment generally reveal similar patterns for the evolution of impacts on minority-White gaps in unemployment rates over time. The main difference is that the impacts on gaps as measured in percentage point terms are larger reflecting higher overall unemployment rates. A few differences, however, are that the impacts on the Black-White unemployment rate gap emerge very clearly in April 2020 using this more inclusive measure. The impacts on the Latinx-White gap are also somewhat clearer at the end of the sample period using this measure. Finally, the Asian-White gap is much larger in the early months using the alternative measure. Interestingly, however, the impacts on the Asian-White gap in unemployment become statistically indistinguishable from zero in a few specifications/quarters towards the end of the sample period suggesting more convergence using this alternative measure of unemployment.

4. Job and Skill-Level Risk Factors for COVID-19 Impacts

To investigate whether various job, skill and geographical characteristics place minorities at differential risk of unemployment in general and during COVID-19, we examine distributions in

these characteristics by race and then perform decompositions that identify which factors are most important. Table 3 presents racial group distributions prior to the pandemic and the national unemployment rate averaged from April to June 2020 (capturing the height of unemployment effects) for several risk factors.

Considering educational categories, the largest unemployment rates in April are among those with less than a high school education (21.6 percent) and high school graduates (16.1 percent). Latinx workers are heavily concentrated in these lower education levels as well as Blacks, but to a lesser extent. Lower education levels placed Blacks and especially Latinx at a greater risk of unemployment during the pandemic.

Being in an essential vs. non-essential industry should affect unemployment. Table 3 shows that although unemployment is concentrated among workers in non-essential industries (27.2 percent) there is little variation in the proportion employed in them across groups. Across major industry groups, the highest unemployment rate occurred in Leisure and Hospitality (33.6 percent) where Latinx have the largest prior concentration of employment (12.4 percent) although Blacks and Asians also have relatively large concentrations. Similarly, rates of unemployment are high in Wholesale and Retail Trade (14.2 percent) and Construction (12.2 percent) and Latinx have the largest proportion employed in those industries. In areas like Public Administration and Educational and Health Services which have relatively low rates of unemployment (3.7 and 10 percent), Blacks and Whites have the largest relative concentrations.

Across occupations, the highest observed unemployment rate is for Service Occupations (23.1 percent). Blacks and Hispanics have the highest proportions (24.3 and 24.1 percent

respectively) employed in Service occupations. Construction and Extraction Occupations also have a high unemployment rate of 15.3 percent since March. Latinx have the largest concentration (11.4 percent) in this occupation. For, the two categories with the lowest rates of unemployment, Management, Business and Financial Occupations (5.4 percent) and Professional and Related Occupations (8.1 percent), 44.9 percent of Whites are employed in these two occupations but only 22.1 percent of Latinx and 30.3 percent of Blacks.

Two additional risk factors are regional distributions and potential work experience (another measure of skills). Racial groups are concentrated in different regions with 57 percent of Blacks living in the South, nearly half of all Asians living in the West, and 40 percent of Latinx living in the West. Unemployment in the South is 2 to 4 percentage points lower than in other regions. In terms of potential work experience (age – year of school leaving), minority groups tend to have lower experience levels which places them at a disadvantage in the labor market.

In the final two rows of Table 3, the share of jobs in an occupational grouping that can be done at home (Dingel and Neiman 2020) and an index of exposure to health risks at work (Baker et al. 2020) are presented. Remote work possibility is associated with lower unemployment and exposure to health risks is associated with higher unemployment. Whites and Asians are concentrated in occupations with much higher proportions of jobs that can be performed remotely than Blacks and especially Latinx. Racial differences in exposure to health risks are not large with Blacks having an index that is 0.12 standard deviations above average.

Decompositions

We use a decomposition technique that allows us to estimate the separate contributions from these differences between groups in education, industry and other characteristics to racial gaps in unemployment rates. Specifically, we decompose inter-group differences in the dependent variable, unemployment, into the portions due to different observable characteristics across groups (the endowment effect) and to different ”prices” of characteristics of groups. The Blinder-Oaxaca decomposition of the White-minority gap in the average value of the dependent variable, Y, can be expressed as:

$$(4.1)\ \overline{Y}^{W} - \overline{Y}^{M} = \left[(\overline{X}^{W} - \overline{X}^{M})\hat{\beta}^{W}\right] + \left[\overline{X}^{M}(\hat{\beta}^{W} - \hat{\beta}^{M})\right]$$

We focus on estimating the first component of the decomposition that captures contributions from differences in observable characteristics or “endowments.” We use a popular alternative non-linear decomposition technique because the dependent variable is binary (Fairlie 1999). See Couch, Fairlie and Xu (2020b) for more details.

Table 4 reports estimates from the non-linear decomposition procedure for each time period. Column 1 reports estimates for factors contributing to the difference in unemployment rates between Blacks and Whites in April 2020. The underlying measures of education, industry, occupation and other variables used in the decompositions are reported in Table 3. In April 2020, when the Black-White unemployment gap was 3.8 percentage points, the decomposition estimates reveal that having lower skills as measured by education contributes (or explains) 0.56 percentage points of the racial unemployment gap. The largest factor contributing to the gap is the occupational distribution which explains 1.55 percentage points of the gap. Regional differences do not contribute to the gap, and potential work experience contributes only a small part.

Interestingly, the industry distribution of Blacks does not contribute to why Blacks have higher rates of unemployment in April 2020, but instead works in the opposite direction. Blacks actually have a "favorable" industry distribution meaning that overall they were more likely to be concentrated in industries that were hit less hard by COVID (e.g. Public Administration and Educational and Health Services). The magnitude of this contribution, however, is not very large working to narrow the gap in unemployment by 0.3 percentage points in April (i.e., if Blacks were in the same industries as Whites their unemployment rate would be even 0.3 percentage points higher).[9] The underrepresentation of Blacks in jobs that could be done at home also placed them at a higher risk of unemployment in the post-period but the contribution of this measure to explaining the overall gap is not very large. Exposure to health risk is also only a small factor and works in the opposite direction.

In May and June of 2020 the contributions of racial disparities in occupational distributions and education levels remain large. The industry contribution become smaller in absolute value and geographical and potential work experience contributions become somewhat larger. Other factors remain unchanged.

Moving to the post-three month period, the contribution estimates fluctuate somewhat over time but a few patterns emerge. First, the unfavorable occupational distribution among Blacks steadily becomes less important in contributing to the Black-White gap in unemployment rates. By the July-August 2021 period the contribution drops to 0.58 percentage points, which is still the largest contribution from all variables but is smaller than the

[9] Estimates are robust to the inclusion or exclusion of the essential business dummy which is defined at the 4-digit industry level (Couch, Fairlie and Xu 2020).

contribution of 1.55 percentage points for April 2020. The pre-pandemic contribution was 0.22 percentage points (Appendix Table 1). The occupations that placed Black workers at risk of losing their jobs in the pandemic became less of a contributing factor to the racial gap in unemployment, which moves towards restoring pre-pandemic patterns.

Second, the contribution from educational differences followed a similar pattern. Lower levels of education among Blacks placed them at a higher risk of unemployment early in the pandemic but the contribution becomes smaller over the rest of 2020 and into 2021. By the end of the sample period racial disparities in education contribute 0.31 percentage points to the unemployment rate gap compared with 0.21 percentage points to the gap in the pre-pandemic period (Appendix Table 1). Third, by the end of the sample period the contributions from telework and health risk to the racial gap in unemployment were close to zero, which is similar to pre-pandemic estimates (Appendix Table 1).

The second panel of Table 4 reports decomposition estimates for the Latinx-White gap in unemployment from April 2020 to July-August 2021. For the Latinx-White decomposition, occupation and education mostly contributed to the increased gaps in unemployment. The less favorable occupational distribution among the Latinx labor force accounts for 2.3 of the 5.4 percentage point gap in April. Lower levels of education contribute an additional percentage point. Differences in potential work experience, telework and health risk provide small contributions to the Latinx-White gap. The geographical spread of the Latinx population contributed to the unemployment rate gap in the initial months of the pandemic.

Moving to the following quarters, the decomposition estimates reveal a few interesting patterns. First, the unfavorable occupational distribution for the Latinx labor force became less

important over time. By the end of the sample period occupational differences accounted for 0.69 percentage points which is much closer to the pre-pandemic contribution of 0.48 percentage points (Appendix Table 1). Second, lower levels of education among the Latinx labor force also placed them at a higher risk of unemployment and this contributory factor retained its importance from June 2020 to the July-August 2021 period. Third, geographical differences continued to be an important contributory factor with contribution levels not returning to pre-pandemic levels (which were much smaller) by July-August 2021. Fourth, telework and health risk contributions essentially disappeared by the end of the sample time period.

Panel 3 of Table 4 reports decomposition estimates for the Asian-White unemployment rate gap that emerged in the pandemic. The main explanatory factor for why Asians had higher post-COVID unemployment rates than Whites is because of an unfavorable state of residence distribution. Relatively high concentrations in the West which had higher unemployment and relatively low concentrations in the South which had lower unemployment underlies this finding. On the other hand, Asians were partly shielded from larger job losses by higher educational levels and a somewhat favorable industry distribution.

Over the course of the pandemic, higher education levels among Asians helped reduce the gap in unemployment rates but this factor became somewhat less important over time as the Asian-White unemployment rate gap started to close. The unfavorable geographical distribution for Asians, however, did not change over time continuing to contribute roughly a full percentage point to the gap. Interestingly, in the pre-pandemic period the “less favorable” geographical contribution for Asians contributed a much smaller amount of 0.15 percentage points to the gap (Appendix Table 1). Overall, most reported factors did not contribute strongly

in either direction to the Asian-White unemployment rate gap and this did not change from the beginning of the pandemic to mid-2021.

5. Conclusions

Stores, factories and many other businesses closed by policy mandate, downward demand shifts, health concerns, and other factors resulting in massive layoffs and an unprecedented increase in unemployment rates beginning in April 2020. The impacts of COVID-19 on unemployment were quite severe and were felt across all groups of the population. Our analysis provides an initial look at the disproportionate negative impacts of COVID-19 using data from April 2020 to August 2021.

African-Americans experienced a sharp initial increase in unemployment in April 2020, but unlike in previous recessions, the 2:1 ratio of Black relative to White unemployment rates did not hold. In fact, in April, the gap in Black and White unemployment did not widen because unemployment increased by about the same amount across the two groups. Extending the analysis through August 2021 we find that Black unemployment rates dropped through 2020 Q4 but then stalled through 2021 Q3 resulting in a stubborn Black-White gap of 4.6 percentage points. We estimate a set of regression specifications to examine how the impacts of COVId-19 on racial unemployment rate gaps evolved over time after controlling for individual, job and geographical characteristics, and pre-pandemic time trends, seasonality and comparison time periods. The findings indicate that impacts on the Black-White gap remained large in 2020 Q3, dropped in 2020 Q4, but then stalled through July-August 2021. We also estimate non-linear decompositions to examine how contributing factors evolved over time. In the recovery, Black-

White differences in both occupational distributions and education levels steadily became less important in contributing to the racial gap in unemployment rates as the recovery progressed.

Latinx were unequivocally hit disproportionately hard by COVID-19. Unemployment rates rose much faster for Latinx than for Blacks or Whites in April 2020. Latinx unemployment rates also dropped through October 2020 but then increased in the beginning of 2021. After this "hiccup" in mid-2021 Latinx unemployment, however, then declined reducing the gap to close to pre-pandemic levels. The impacts on the Latinx-White gap generally decreased after the peak in May 2020 and ended much closer to zero by July-August 2021. For Latinx, their unfavorable occupational distribution became less important over time, but the lower levels of education among the Latinx labor force that also placed them at a higher risk of unemployment retained its importance from June 2020 to July-August 2021. Geographical differences also continued to be an important contributing factor and did not return to pre-pandemic contribution levels by July-August 2021. For both Blacks and Latinx, the contributions of racial differences in the ability to telework and exposure to job-related health risks disappeared by July-August 2021.

For Asians, the drop in unemployment rates after the April 2020 shock took a few months longer to recover than for Whites. The recovery in 2021 has been strong for Asians but there remains a small gap in July-August 2021 compared with generally a negative gap in the pre-pandemic period (i.e., lower Asian unemployment rates than for Whites). The impacts of COVID-19 on the Asian-White unemployment rate gap hit their peak in June 2020 and were large in July-September 2020. The impacts on the Asian-White gap dropped since then but remain positive. Asian unemployment rates were generally lower relative to Whites prior to the

pandemic. Over the course of the pandemic, higher education levels among Asians helped reduce the gap in unemployment rates but this factor became somewhat less important over time as the Asian-White gap started to close. The importance of the unfavorable geographical distribution for Asians, however, did not change over time continuing to contribute roughly a full percentage point to the gap.

These racial patterns in unemployment impacts from Covid are important and will have lasting impacts on a wide range of short- and long-term economic outcomes. Even with improving economic conditions high levels of unemployment early in the pandemic likely resulted in substantial earnings losses. Minorities in general have less financial reserves and the unprecedented partial shutdown of the economy is likely to lead to a wave of late payments on basic bills including housing (Canilang et al. 2020). Prior to the pandemic, the median level of net worth was less than $10,000 among Black families and $25,000 among Latinx families (U.S. Census Bureau 2018). If the economic recovery stalls because of additional spikes in COVID cases future waves of economic disruptions such as mortgage defaults, delinquent payments and bankruptcy filings are likely to follow. Perhaps, most importantly the ramifications of these unemployment spells will worsen longer-term trends in earnings, income and wealth inequality across racial groups.

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Figure 1. Unadjusted Unemployment Rate by Race, January 2001 to August 2021

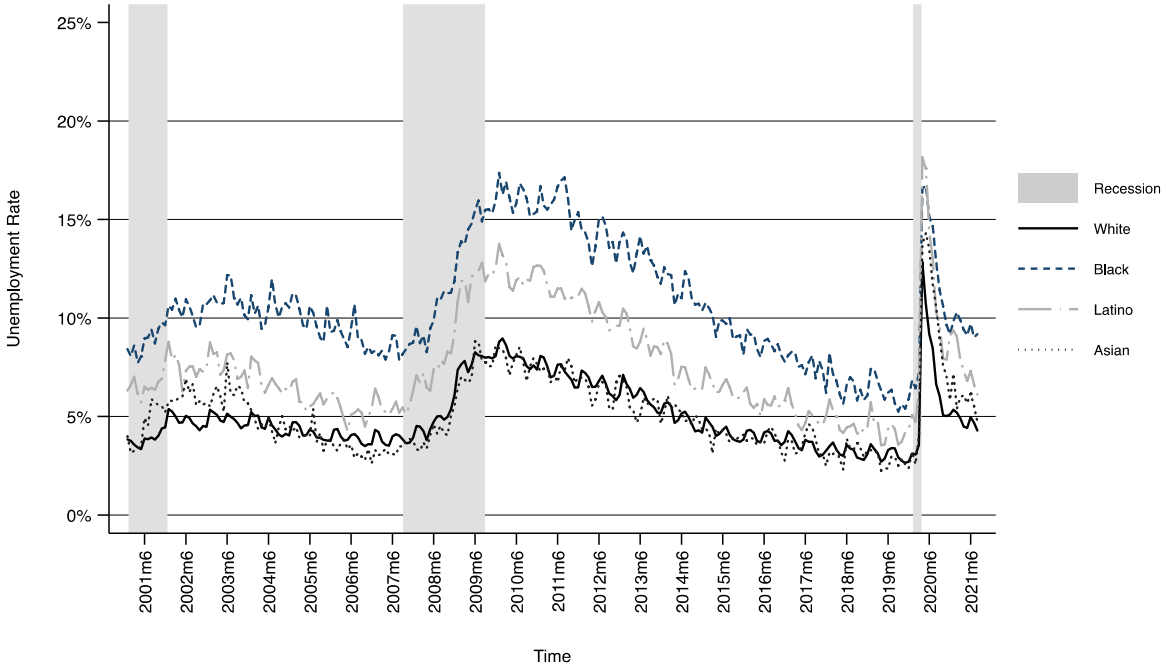

Figure 2. Unadjusted Unemployment Rate by Race, January 2019 to August 2021

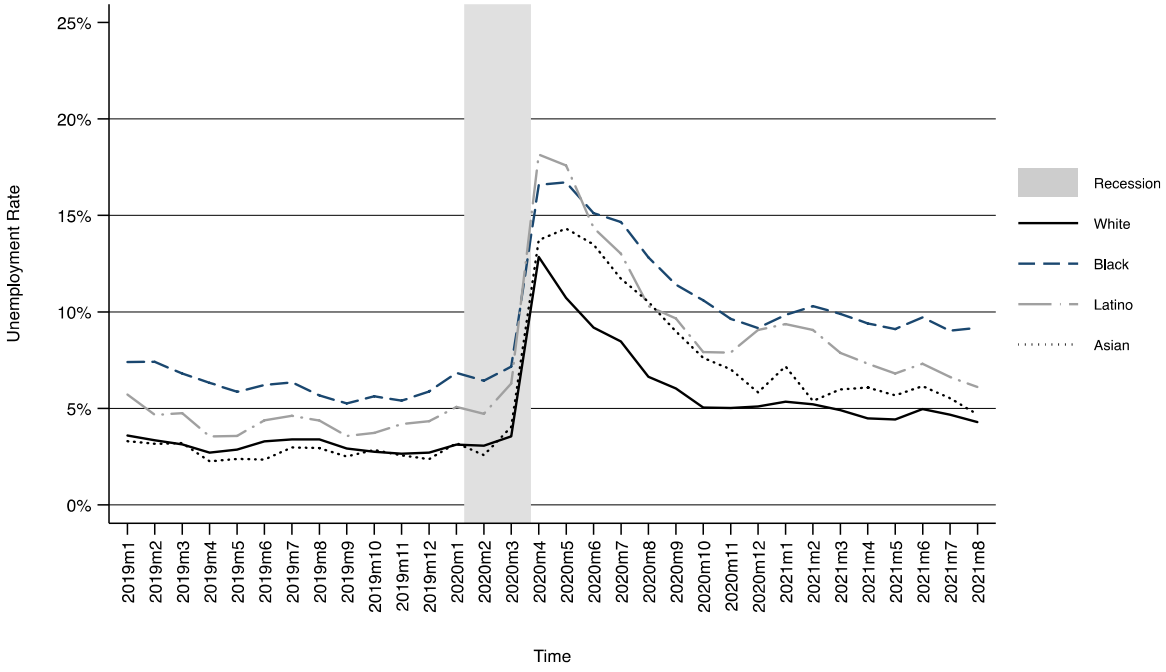

Table 1. Unemployment Rates by Race around Shelter-in-Place Regulations

		Black-White		Latinx-White		Asian-White		
	White	Black	Gap	Latinx	Gap	Asian	Gap	Total
Panel A. Unemployment Rate								
Jul-Aug 2021	4.5%	9.1%	4.6%	6.4%	1.9%	5.1%	0.6%	5.5%
Apr-Jun 2021	4.6%	9.4%	4.8%	7.1%	2.5%	6.0%	1.3%	5.9%
Jan-Mar 2021	5.2%	10.0%	4.9%	8.8%	3.6%	6.2%	1.0%	6.6%
Oct-Dec 2020	5.1%	9.8%	4.8%	8.3%	3.2%	6.8%	1.8%	6.5%
Jul-Sep 2020	7.0%	13.0%	5.9%	11.0%	3.9%	10.4%	3.4%	8.8%
June 2020	9.2%	15.1%	5.9%	14.4%	5.2%	13.5%	4.3%	11.2%
May 2020	10.7%	16.7%	6.0%	17.6%	6.9%	14.3%	3.6%	13.0%
April 2020	12.8%	16.6%	3.8%	18.2%	5.4%	13.7%	0.9%	14.5%
March 2020	3.6%	7.2%	3.6%	6.3%	2.7%	4.0%	0.5%	4.6%
February 2020	3.1%	6.4%	3.4%	4.7%	1.7%	2.6%	-0.5%	3.8%
January 2020	3.1%	6.8%	3.7%	5.1%	2.0%	3.2%	0.1%	4.0%
Jan 2017 - Dec 2019	3.3%	6.8%	3.5%	4.6%	1.4%	3.2%	-0.1%	4.0%
Dec 2007 - June 2009 (GR)	5.6%	11.4%	5.8%	8.7%	3.1%	5.1%	-0.6%	6.8%
Sample sizes								
Jul-Aug 2021	69,786	10,599		13,563		6,868		103,816
Apr-Jun 2021	107,106	15,932		20,706		10,094		158,619
Jan-Mar 2021	107,722	15,651		20,431		9,825		158,381
Oct-Dec 2020	110,806	16,265		20,930		10,093		162,752
Jul-Sep 2020	103,883	14,243		17,845		9,242		149,439
June 2020	31,937	4,116		5,237		2,809		45,334
May 2020	32,976	4,267		5,417		2,935		46,832
April 2020	33,631	4,423		5,696		3,065		48,190
March 2020	35,651	4,929		6,385		3,263		51,677
February 2020	39,983	5,715		7,898		3,717		58,982
January 2020	39,806	5,594		7,652		3,570		58,270
Jan 2017 - Dec 2019	1,510,998	216,965		277,756		131,905		2,201,116
Dec 2007 - June 2009 (GR)	962,486	119,825		139,191		61,269		1,316,170

Table 1. Unemployment Rates by Race around Shelter-in-Place Regulations

		Black-White		Latinx-White		Asian-White		
	White	Black	Gap	Latinx	Gap	Asian	Gap	Total
Panel B. Unemployment Rate Upper-Bound Measure								
Jul-Aug 2021	8.3%	15.1%	6.9%	11.0%	2.7%	9.8%	1.6%	9.9%
Apr-Jun 2021	8.4%	15.7%	7.3%	12.0%	3.5%	11.6%	3.1%	10.4%
Jan-Mar 2021	9.2%	16.3%	7.1%	14.0%	4.8%	11.4%	2.2%	11.3%
Oct-Dec 2020	8.9%	16.5%	7.7%	13.1%	4.2%	11.6%	2.8%	11.0%
Jul-Sep 2020	11.5%	20.4%	8.9%	16.5%	5.0%	15.2%	3.7%	13.9%
June 2020	14.7%	23.2%	8.5%	20.8%	6.2%	20.6%	5.9%	17.4%
May 2020	18.0%	26.6%	8.6%	26.0%	8.0%	25.3%	7.4%	21.2%
April 2020	21.3%	29.8%	8.5%	29.5%	8.1%	25.6%	4.3%	24.4%
February 2020	5.9%	11.0%	5.1%	7.8%	1.9%	5.7%	-0.2%	7.0%
Jan 2017 - Dec 2019	6.3%	11.5%	5.2%	8.2%	1.9%	6.5%	0.2%	7.4%
Dec 2007 - June 2009 (GR)	8.8%	16.5%	7.7%	12.4%	3.7%	8.5%	-0.2%	10.3%
Sample sizes								
Jul-Aug 2021	71,875	11,208		14,184		7,170		107,617
Apr-Jun 2021	110,564	16,968		21,703		10,601		164,918
Jan-Mar 2021	111,254	16,720		21,458		10,287		164,817
Oct-Dec 2020	114,254	17,461		21,918		10,514		169,101
Jul-Sep 2020	107,552	15,279		18,769		9,677		155,786
June 2020	33,241	4,471		5,559		2,967		47,576
May 2020	34,498	4,643		5,777		3,133		49,419
April 2020	35,149	4,847		6,111		3,257		50,868
February 2020	40,977	5,988		8,152		3,830		60,709
Jan 2017 - Dec 2019	1,551,238	227,867		287,932		136,210		2,270,404
Dec 2007 - June 2009 (GR)	989,295	126,771		144,815		63,399		1,359,921

Notes: Calculated by author using CPS microdata. Estimates for the above race groups will not sum to totals because data are not presented for all races. New unemployment in Panel A is defined as newly unemployed with duration less than or equal to 2, 3, or 4 months and removing prior unemployed (duration more than 2, 3, or 4 months) from the sample. The upper-bound unemployment rate in Panel B is a measure of unemployment that adds those employed but absent from work (due to other reasons) and those not in the labor force who wanted a job.

Table 2. Unemployment Probability Regressions

	Unemployed			Unemployed (Upper-Bound Measure)		
	(1)	(2)	(3)	(4)	(5)	(6)
Sample Period	Feb. 2020 – Aug. 2021	Feb. 2020 – Aug. 2021	Jan. 2017 – Aug. 2021	Feb. 2020 – Aug. 2021	Feb. 2020 – Aug. 2021	Jan. 2017 – Aug. 2021
Black	0.0336***	0.0191***	0.0221***	0.0513***	0.0309***	0.0349***
	(0.0039)	(0.0038)	(0.0006)	(0.0049)	(0.0042)	(0.0007)
Latinx	0.0165***	-0.0108***	-0.0050***	0.0195***	-0.0250***	-0.0160***
	(0.0027)	(0.0027)	(0.0005)	(0.0034)	(0.0031)	(0.0006)
Asian	(0.0049)	-0.0074**	-0.0030***	(0.0022)	0.0066*	0.0083***
	(0.0031)	(0.0030)	(0.0005)	(0.0043)	(0.0038)	(0.0007)
COVID_April_2020	0.0977***	0.1003***	0.1062***	0.1544***	0.1485***	0.1538***
	(0.0024)	(0.0023)	(0.0023)	(0.0029)	(0.0026)	(0.0025)
COVID_May_2020	0.0766***	0.0778***	0.0850***	0.1207***	0.1128***	0.1188***
	(0.0022)	(0.0021)	(0.0021)	(0.0028)	(0.0024)	(0.0024)
COVID_June_2020	0.0611***	0.0601***	0.0645***	0.0876***	0.0801***	0.0821***
	(0.0021)	(0.0021)	(0.0020)	(0.0026)	(0.0023)	(0.0023)
COVID_Jul_Sep_2020	0.0398***	0.0400***	0.0451***	0.0563***	0.0525***	0.0561***
	(0.0014)	(0.0013)	(0.0012)	(0.0018)	(0.0016)	(0.0014)
COVID_Oct_Dec_2020	0.0198***	0.0216***	0.0285***	0.0296***	0.0298***	0.0387***
	(0.0012)	(0.0012)	(0.0011)	(0.0016)	(0.0015)	(0.0013)
COVID_Jan_Mar_2021	0.0208***	0.0466***	0.0400***	0.0329***	0.4956***	0.5147***
	(0.0013)	(0.0020)	(0.0031)	(0.0017)	(0.0024)	(0.0037)
COVID_Apr_Jun_2021	0.0155***	0.0398***	0.0402***	0.0253***	0.4860***	0.5116***
	(0.0012)	(0.0020)	(0.0033)	(0.0016)	(0.0024)	(0.0039)
COVID_Jul_Aug_2021	0.0141***	0.0374***	0.0349***	0.0238***	0.4864***	0.5074***
	(0.0013)	(0.0020)	(0.0033)	(0.0018)	(0.0025)	(0.0039)
COVID_April_2020 * Black	0.0037	0.0064	0.0074	0.0335***	0.0254***	0.0269***
	(0.0080)	(0.0077)	(0.0068)	(0.0095)	(0.0081)	(0.0071)
COVID_May_2020 * Black	0.0263***	0.0271***	0.0276***	0.0352***	0.0316***	0.0325***
	(0.0081)	(0.0078)	(0.0069)	(0.0093)	(0.0081)	(0.0071)
COVID_June_2020 * Black	0.0257***	0.0256***	0.0268***	0.0339***	0.0269***	0.0285***
	(0.0079)	(0.0075)	(0.0066)	(0.0091)	(0.0079)	(0.0067)
COVID_Jul_Sep_2020 * Black	0.0257***	0.0262***	0.0273***	0.0374***	0.0327***	0.0346***
	(0.0052)	(0.0050)	(0.0034)	(0.0063)	(0.0054)	(0.0035)
COVID_Oct_Dec_2020 * Black	0.0139***	0.0128***	0.0143***	0.0254***	0.0178***	0.0198***
	(0.0048)	(0.0046)	(0.0028)	(0.0059)	(0.0050)	(0.0029)
COVID_Jan_Mar_2021 * Black	0.0150***	0.0203***	0.0190***	0.0201***	0.0116**	0.0108***
	(0.0049)	(0.0047)	(0.0029)	(0.0059)	(0.0050)	(0.0029)
COVID_Apr_Jun_2021 * Black	0.0143***	0.0182***	0.0169***	0.0217***	0.0107**	0.0095***
	(0.0048)	(0.0046)	(0.0027)	(0.0059)	(0.0050)	(0.0028)
COVID_Jul_Aug_2021 * Black	0.0126**	0.0158***	0.0143***	0.0172***	0.0091*	0.0078**
	(0.0052)	(0.0050)	(0.0033)	(0.0063)	(0.0053)	(0.0034)
COVID_April_2020 * Latinx	0.0366***	0.0376***	0.0407***	0.0618***	0.0578***	0.0588***
	(0.0066)	(0.0064)	(0.0060)	(0.0077)	(0.0070)	(0.0064)
COVID_May_2020 * Latinx	0.0521***	0.0546***	0.0573***	0.0608***	0.0609***	0.0617***
	(0.0067)	(0.0064)	(0.0059)	(0.0076)	(0.0069)	(0.0062)
COVID_June_2020 * Latinx	0.0352***	0.0358***	0.0382***	0.0423***	0.0430***	0.0431***
	(0.0063)	(0.0060)	(0.0055)	(0.0073)	(0.0065)	(0.0058)
COVID_Jul_Sep_2020 * Latinx	0.0229***	0.0226***	0.0253***	0.0307***	0.0296***	0.0298***
	(0.0039)	(0.0037)	(0.0027)	(0.0047)	(0.0042)	(0.0029)
COVID_Oct_Dec_2020 * Latinx	0.0159***	0.0145***	0.0177***	0.0229***	0.0192***	0.0202***
	(0.0035)	(0.0034)	(0.0022)	(0.0043)	(0.0039)	(0.0024)
COVID_Jan_Mar_2021 * Latinx	0.0196***	0.0267***	0.0262***	0.0283***	0.0333***	0.0283***
	(0.0036)	(0.0034)	(0.0023)	(0.0044)	(0.0039)	(0.0024)
COVID_Apr_Jun_2021 * Latinx	0.0087**	0.0166***	0.0162***	0.0160***	0.0251***	0.0206***

	(0.0034)	(0.0033)	(0.0021)	(0.0043)	(0.0037)	(0.0022)
COVID_Jul_Aug_2021 * Latinx	0.0024	0.0095***	0.0086***	0.0078*	0.0144***	0.0090***
	(0.0037)	(0.0035)	(0.0024)	(0.0046)	(0.0040)	(0.0025)
COVID_April_2020 * Asian	0.0138*	0.0144*	0.0121*	0.0448***	0.0398***	0.0412***
	(0.0079)	(0.0076)	(0.0071)	(0.0100)	(0.0087)	(0.0081)
COVID_May_2020 * Asian	0.0409***	0.0416***	0.0389***	0.0761***	0.0704***	0.0715***
	(0.0083)	(0.0078)	(0.0074)	(0.0102)	(0.0087)	(0.0081)
COVID_June_2020 * Asian	0.0480***	0.0481***	0.0459***	0.0616***	0.0551***	0.0565***
	(0.0083)	(0.0078)	(0.0074)	(0.0099)	(0.0084)	(0.0077)
COVID_Jul_Sep_2020 * Asian	0.0387***	0.0370***	0.0352***	0.0391***	0.0337***	0.0355***
	(0.0049)	(0.0047)	(0.0036)	(0.0061)	(0.0053)	(0.0038)
COVID_Oct_Dec_2020 * Asian	0.0227***	0.0205***	0.0185***	0.0300***	0.0210***	0.0225***
	(0.0043)	(0.0041)	(0.0029)	(0.0057)	(0.0049)	(0.0031)
COVID_Jan_Mar_2021 * Asian	0.0151***	0.0106***	0.0097***	0.0242***	0.0013	0.0051*
	(0.0043)	(0.0041)	(0.0028)	(0.0057)	(0.0048)	(0.0030)
COVID_Apr_Jun_2021 * Asian	0.0184***	0.0144***	0.0137***	0.0337***	0.0069	0.0113***
	(0.0042)	(0.0040)	(0.0027)	(0.0057)	(0.0047)	(0.0029)
COVID_Jul_Aug_2021 * Asian	0.0112**	0.0079*	0.0072**	0.0180***	-0.0037	0.0006
	(0.0044)	(0.0042)	(0.0030)	(0.0060)	(0.0050)	(0.0033)
Individual Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	Yes	Yes	No	Yes	Yes
Seasonality (Months) Controls	No	No	Yes	No	No	Yes
Time Trend	No	No	Yes	No	No	Yes
Year Fixed Effects	No	No	Yes	No	No	Yes
Sample Size	984,022	984,022	3,243,408	1,024,051	1,024,051	3,354,495

Notes: The dependent variable in Specifications (1) to (3) is unemployment (0,1). The dependent variable in Specifications (4) to (6) is the upper-bound definition of unemployment which also includes those employed but absent from work (due to other reasons) and those not in the labor force who wanted a job. $COVID_t$ is a dummy variable for period t. Individual controls include gender, family structure, education level, years of potential work experience and its square, essential industry indicator, major industry and occupation. All specifications are estimated using CPS sample weights and robust standard errors. Standard errors in parentheses. *p<0.10, **p<0.05, ***p<0.01

Table 3. Risk Factors for Unemployment from COVID-19

	Risk Factor (Feb.2017 – Feb. 2020)					April 2020 to June 2020
	Black	Latinx	Asian	White	Total	National Unemployment Rate
Essential						
Nonessential industry	16.5%	15.2%	15.9%	15.5%	15.7%	27.2%
Essential industry	83.5%	84.9%	84.1%	84.6%	84.3%	10.4%
Education						
High school dropout	7.9%	23.7%	6.1%	4.9%	8.6%	21.6%
High school grad	31.5%	32.1%	17.0%	24.6%	26.3%	16.1%
Some college	32.5%	25.5%	18.3%	28.4%	27.9%	14.8%
College grad	18.3%	13.3%	32.8%	26.9%	23.8%	9.3%
Graduate school	9.8%	5.3%	25.7%	15.2%	13.4%	5.6%
Region						
Northeast	17.2%	11.8%	19.6%	19.3%	17.7%	14.7%
Midwest	16.2%	9.5%	11.9%	26.9%	21.5%	13.1%
South	57.2%	39.1%	23.7%	34.0%	37.0%	11.2%
West	9.5%	39.6%	44.8%	19.8%	23.8%	14.0%
Experience						
Potential experience (years)	21.4	21.4	21.3	24.0	22.9	
Less than median						14.1%
More than median						11.4%
Major industry						
Agriculture, forestry, fishing, and hunting	0.4%	2.7%	0.4%	1.7%	1.6%	5.0%
Mining	0.2%	0.6%	0..23%	0.5%	0.5%	12.0%
Construction	3.8%	12.9%	2.6%	7.0%	7.2%	12.2%
Manufacturing	8.4%	9.8%	11.0%	10.3%	10.0%	11.2%
Wholesale and retail trade	12.7%	13.2%	11.8%	13.1%	13.0%	14.2%
Transportation and utilities	8.7%	5.8%	4.9%	4.9%	5.5%	12.3%
Information	1.7%	1.3%	2.3%	2.0%	1.8%	12.1%
Financial activities	5.7%	5.0%	7.8%	7.4%	6.7%	5.5%
Professional and business services	10.4%	11.4%	17.2%	12.6%	12.4%	8.9%
Educational and health services	27.1%	16.5%	21.2%	23.1%	22.4%	10.0%
Leisure and hospitality	10.4%	12.4%	10.3%	8.2%	9.5%	33.6%
Other services	4.3%	5.5%	6.1%	4.7%	4.9%	17.9%
Public administration	6.3%	3.2%	3.4%	4.7%	4.6%	3.7%
Major occupation						
Management, business, and financial occupations	11.0%	9.6%	17.4%	19.4%	16.5%	5.4%
Professional and related occupations	19.3%	12.5%	34.2%	25.5%	23.0%	8.1%
Service occupations	24.3%	24.1%	16.6%	14.2%	17.5%	23.1%
Sales and related occupations	9.3%	9.4%	8.7%	10.6%	10.1%	15.5%
Office and administrative support occupations	13.4%	10.9%	8.9%	11.2%	11.3%	11.7%
Farming, fishing, and forestry occupations	0.3%	2.3%	0.3%	0.6%	0.8%	9.5%
Construction and extraction occupations	3.2%	11.4%	1.7%	4.7%	5.4%	15.3%
Installation, maintenance, and repair occupations	2.3%	3.5%	1.7%	3.3%	3.1%	11.2%
Production occupations	6.0%	7.4%	5.4%	4.9%	5.5%	14.9%
Transportation and material moving occupations	10.2%	8.3%	4.7%	5.4%	6.5%	17.0%
Telework						
Share of jobs that can be done at home	32.1%	24.4%	43.5%	41.7%	37.4%	
Less than median						15.9%
More than median						9.7%
Health risk						
Exposed to health risk index (Z-score)	0.12	-0.05	0.01	-0.02	0.00	
Less than median						10.3%
More than median						15.5%

Notes: Calculated by author using CPS microdata based on February 2017 to February 2020. Sample includes all individuals in the labor force ages 16 and over. The last column shows the April to June national unemployment rate which includes all races.

Table 4. Decompositions - Unemployment April 2020 to August 2021

		April 2020	May 2020	June 2020	Jul-Sep 2020	Oct-Dec 2020	Jan-Mar 2021	Apr-Jun 2021	Jul-Aug 2021
		Black - White Gap in Unemployment Rate							
		3.8	6.0	5.9	5.9	4.8	4.9	4.8	4.6
Essential/Major	Contribu	-0.29	-0.13	0.07	0.15	-0.03	-0.49	-0.27	0.21
	Std. Err.	(0.08)	(0.07)	(0.08)	(0.04)	(0.05)	(0.06)	(0.06)	(0.05)
Major occupation	Contribu	1.55	1.39	1.04	0.88	0.87	0.93	0.75	0.58
	Std. Err.	(0.12)	(0.12)	(0.11)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)
Education level	Contribu	0.56	0.65	0.35	0.34	0.20	0.19	0.28	0.31
	Std. Err.	(0.07)	(0.08)	(0.08)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
State	Contribu	-0.04	0.20	0.12	0.19	0.13	0.20	0.14	0.14
	Std. Err.	(0.11)	(0.12)	(0.12)	(0.07)	(0.06)	(0.06)	(0.06)	(0.07)
Potential	Contribu	0.13	0.22	0.20	0.12	0.09	0.20	0.11	0.13
	Std. Err.	(0.04)	(0.04)	(0.05)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Telework	Contribu	0.19	0.12	0.10	-0.01	0.03	0.09	0.09	-0.04
	Std. Err.	(0.06)	(0.06)	(0.07)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Health risk (Z-	Contribu	-0.16	-0.10	-0.11	-0.12	-0.09	-0.06	-0.06	-0.08
	Std. Err.	(0.03)	(0.04)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
		Latinx-White Gap in Unemployment Rate							
		5.4	6.9	5.2	3.9	3.2	3.6	2.5	1.9
Essential/Major	Contribu	0.05	-0.14	0.20	0.31	0.53	0.34	0.23	0.13
	Std. Err.	(0.14)	(0.14)	(0.13)	(0.06)	(0.05)	(0.06)	(0.04)	(0.07)
Major occupation	Contribu	2.29	1.98	1.26	0.99	0.98	1.30	0.75	0.69
	Std. Err.	(0.19)	(0.18)	(0.16)	(0.08)	(0.06)	(0.08)	(0.07)	(0.08)
Education level	Contribu	1.00	1.05	0.47	0.41	0.28	0.45	0.38	0.44
	Std. Err.	(0.17)	(0.16)	(0.14)	(0.07)	(0.06)	(0.07)	(0.06)	(0.06)
State	Contribu	0.10	0.67	0.73	0.85	0.84	0.90	0.77	0.55
	Std. Err.	(0.20)	(0.19)	(0.18)	(0.09)	(0.07)	(0.07)	(0.07)	(0.08)
Potential	Contribu	0.14	0.26	0.21	0.12	0.05	0.10	0.05	0.07
	Std. Err.	(0.03)	(0.04)	(0.04)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Telework	Contribu	0.32	0.17	0.11	-0.01	0.04	0.10	0.09	-0.04
	Std. Err.	(0.10)	(0.09)	(0.08)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
Health risk (Z-	Contribu	0.11	0.06	0.07	0.06	0.01	0.00	0.01	0.03
	Std. Err.	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	0.00	0.00	(0.01)

		Asian-White Gap in Unemployment Rate							
		0.9	3.6	4.3	3.4	1.8	1.0	1.3	0.6
Essential/Major industry	Contribution	-0.37	-0.22	-0.11	0.07	0.11	0.06	0.02	0.05
	Std. Err.	(0.06)	(0.07)	(0.08)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Major occupation	Contribution	0.19	-0.09	-0.05	0.01	-0.01	0.00	-0.08	-0.13
	Std. Err.	(0.07)	(0.07)	(0.07)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Education level	Contribution	-0.72	-0.85	-0.57	-0.50	-0.29	-0.22	-0.35	-0.40
	Std. Err.	(0.10)	(0.11)	(0.11)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)
State	Contribution	0.84	1.24	1.56	1.58	1.18	1.04	1.05	0.91
	Std. Err.	(0.18)	(0.20)	(0.20)	(0.11)	(0.08)	(0.07)	(0.08)	(0.10)
Potential experience	Contribution	-0.01	0.09	0.07	0.08	0.03	0.07	0.04	0.05
	Std. Err.	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Telework	Contribution	-0.04	-0.03	-0.04	0.01	-0.01	-0.01	-0.02	0.02
	Std. Err.	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	0.00	(0.01)	(0.02)
Health risk (Z-score)	Contribution	0.02	-0.01	0.03	0.04	0.01	0.00	0.00	0.02
	Std. Err.	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	0.00	0.00	(0.01)

Notes: All nonlinear decomposition specifications use pooled coefficient estimates from the full sample of all races. Sampling weights are used in all specifications. Standard errors are reported in parentheses below contribution estimates. Sample size is 48,190 for April 2020, 46,832 for May 2020, 45,334 for June 2020, 149,439 for Jul-Sep 2020, 162,752 for Oct-Dec 2020, 158,381 for Jan-Mar 2021, 158,619 for Apr-Jun 2021, and 103,816 for Jul-Aug 2021.

Appendix A.1. Decompositions - Unemployment January-December 2019

		Black - White	Latinx-White	Asian-White
2019 Gap in Unemployment Rate		3.1	1.2	-0.3
Essential/Major industry	Contribution	0.47	0.29	0.27
	Std. Err.	(0.02)	(0.03)	(0.01)
Major occupation	Contribution	0.22	0.48	-0.1
	Std. Err.	(0.02)	(0.03)	(0.01)
Education level	Contribution	0.21	0.41	-0.12
	Std. Err.	(0.02)	(0.02)	(0.01)
State	Contribution	-0.07	0.12	0.15
	Std. Err.	(0.03)	(0.03)	(0.02)
Potential experience	Contribution	0.3	0.11	0.09
	Std. Err.	(0.02)	(0.01)	(0.01)
Telework	Contribution	0.03	0.04	-0.01
	Std. Err.	(0.01)	(0.01)	0.00
Health risk (Z-score)	Contribution	-0.03	0.02	0.01
	Std. Err.	0.00	0.00	0.00
Sample Size		528,154	528,154	528,154

Notes: All nonlinear decomposition specifications use pooled coefficient estimates from the full sample of all races. Sampling weights are used in all specifications. Standard errors are reported in parentheses below contribution estimates.