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**Working Paper**

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GLO Discussion Paper, No. 554

**Provided in Cooperation with:**  
Global Labor Organization (GLO)

Suggested Citation: Cho, Seung Jin; Winters, John V. (2020) : The Distributional Impacts of Early Employment Losses from COVID-19, GLO Discussion Paper, No. 554, Global Labor Organization (GLO), Essen

This Version is available at:  
<http://hdl.handle.net/10419/217492>

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# The Distributional Impacts of Early Employment Losses from COVID-19

Running Head: Employment Losses from COVID-19

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## Abstract

COVID-19 substantially decreased employment, but the effects vary among demographic and socioeconomic groups. We document the employment losses in April 2020 across various groups using the U.S. Current Population Survey. The unemployment rate understates employment losses. We focus on the percentage of the civilian population that is employed and at work. Young persons experienced the largest employment losses. Individuals with less education and lower family income experienced much larger employment losses than their more educated and higher income counterparts. Hispanics and blacks were more adversely affected than whites.

JEL Codes: I1, J1, J2

Keywords: COVID-19, coronavirus, pandemic, employment, job losses

The authors received no funding related to this work and have no conflict of interest to declare.

## **1. Introduction**

COVID-19 is a global health crisis that has disrupted the world economy and caused devastating employment losses due to sickness, quarantines, business closings, and reduced consumer demand. The economic pain is widespread but not equally spread. Many workers have been severely affected by mass layoffs while others have shifted to work from home while still earning their regular salary. These effects vary systematically with individual demographic and socioeconomic characteristics. The United States Bureau of Labor Statistics (BLS) reports that the national unemployment rate rose to 14.7 percent in April 2020, the highest on record since the BLS unemployment measure began in 1948 (BLS 2020). However, the April 2020 unemployment rate was even higher for teenagers (31.9 percent), high school dropouts (20.9 percent), blacks (16.7 percent), and Hispanics (18.9 percent), consistent with higher unemployment rates for disadvantaged groups during prior recessions (Hoynes et al. 2012).

While the unemployment rate is a well-publicized measure, it has well-known shortcomings including its exclusion of discouraged workers and others who would like to work but are not currently working or looking for work (Jones and Riddell 1999; Feng and Hu 2013). The U.S. labor force participation rate decreased to 60.2 percent in April 2020, the lowest rate since January 1973 (BLS 2020). There was also an unprecedented rise in April 2020 of individuals reporting they have a job but were absent from work during the survey week, further complicating interpretation of the unemployment rate. BLS (2020) indicates that “persons absent from work due to coronavirus-related business closures [should] be classified as unemployed on temporary layoff. However, it is apparent that not all such workers were so classified” (p. 5). Despite this apparent measurement error, “according to usual practice, the data from the household survey are accepted as recorded” in official reports and rates (BLS 2020, pp.

5-6). The unemployment rate, thus, understates job losses from COVID-19, and this understatement varies across groups.

This short paper documents the early impacts of COVID-19 on employment losses across various groups. Our preferred measure accounts for labor force withdrawal and increased absence from work. We document substantial job losses in April 2020 due to COVID-19. Historically disadvantaged groups were especially affected.

## **2. Methods**

We use individual-level data from the Current Population Survey (CPS) obtained from IPUMS (Flood et al. 2020). Our full sample includes all civilians age 16 and older in the January – April monthly CPS for 2019 and 2020. Our analysis uses CPS survey weights.

Our primary measure is the percentage of the civilian population that is employed and at work during the survey reference week. Persons are classified as employed at work if they did any work during the week for pay or profit or at least 15 hours of unpaid work for a family business. This includes persons working from home. Our approach is conceptually similar to the employment-population ratio but accounts for the exceptional increase in persons with a job but absent from work during the pandemic.

We first report monthly rates and then year-over-year differences. Year-over-year changes for March and April do not account for the strong economic conditions at the start of 2020 that we would expect to have continued in the absence of COVID-19 disruptions. Similarly, simple comparisons to January or February 2020 could be affected by seasonality. Our preferred approach to estimate the impact of COVID-19 on employment at work rates is to utilize a difference-in-differences (DID) research design. Specifically, we assume that the

January 2020 employment at work rate was unaffected by COVID-19 and that the year-over-year difference for January would also have occurred for subsequent months in the absence of COVID-19. Thus, we define the counterfactual employment at work rate for April 2020 as the April 2019 rate plus the year-over-year difference for January. DID estimates are computed by subtracting the year-over-year difference for January from the year-over-year difference for April. By definition, the DID estimate also equals the actual rate for April 2020 minus the counterfactual rate. We report heteroscedasticity-robust standard errors computed via linear regression.

### **3. Results**

Table 1 reports employment at work rates for each of the eight months for the full sample in Panel A and for various sub-samples in Panels B-F. Among the eight months in Table 1, the employment at work rate for the full sample reached a peak of 59.3 percent in February 2020. The rate fell to 57.3 percent for March 2020 and then plummeted to 47.0 percent for April. The large decrease in employment at work rates was widespread across groups by income, education, age, race/ethnicity, and gender.<sup>1</sup> Every group we examined had severe employment losses.

Table 2 reports year-over-year changes for January, February, March, and April in Columns 1-4 with heteroscedasticity-robust standard errors estimated by linear regression. Notably, 2020 started off strong. The January 2020 employment at work rate for the full sample exceeded that for January 2019 by 0.6 percentage points with the difference statistically significant at the five percent level; various sub-samples also had statistically significant

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<sup>1</sup> Family income is reported for the previous 12 months. We use the longitudinal nature of the CPS to measure family income based on the response during the previous survey month, so that it is not directly affected by contemporaneous employment. The income sub-samples thus exclude individuals in their first month of the survey.

increases during this period including individuals in high and low income households. February had a 0.3 percentage point increase from 2019 to 2020 for the full sample that was not statistically significant. The employment at work rate decreased by 1.4 percentage points from March 2019 to March 2020. Between April 2019 and April 2020, the full sample rate fell by 12.2 percentage points.

Column 5 of Table 2 reports DID estimates for each sample. Column 5 indicates that the April 2020 employment at work rate for the full sample decreased by 12.8 percentage points relative to the DID counterfactual. Panels B and C confirm large decreases across income and education groups, but the decreases are smallest for persons with high income and high education levels. Individuals age 16-24 had the largest decrease in Column 5 across all panels; the employment at work rate for these young people decreased by 18.8 percentage points relative to the counterfactual. Hispanics and blacks had larger employment losses than whites. Small sample sizes prevent precise analysis for Native Americans and other groups, but other disadvantaged minorities were also likely especially negatively affected. Women and men had comparable decreases in employment at work rates.

Column 6 converts the Column 5 DID estimates to percentage changes by dividing each DID estimate by the April 2020 counterfactual employment at work rate for the corresponding sample. Column 6 indicates a 21.5 percent employment decrease for the full sample. The Column 6 percentage decreases are even more unevenly distributed than Column 5 because the hardest hit groups in Column 5 typically had lower employment rates before the pandemic. The Column 6 percentage decrease for ages 16-24 was an astounding 37.5 percent. The Column 6 percentage decrease was 29.1 percent for high school dropouts, 27.2 percent for high school graduates, and 34.6 percent for persons with annual family income below \$40,000. These

already vulnerable groups suffered severe job losses from the pandemic. Our short paper does not attempt to unpack the specific reasons for why disadvantaged groups are disproportionately affected. It is both consistent with historical patterns in previous recessions (Hoynes et al. 2012) and likely influenced by differential physical-proximity requirements and work from home opportunities (Mongey et al. 2020).

Table 3 adds further context by reporting April – January difference-in-differences estimates by sub-sample for the unemployment rate in Column 1, the labor force participation rate in Column 2 and the has job not at work rate in Column 3. Based on BLS definitions, a person was unemployed if they did not have a job but were able to work and looked for work in the previous four weeks; persons on temporary layoff are to be classified as unemployed. A person was in the labor force if they were employed or unemployed. The unemployment rate for each sub-sample is computed as the number of unemployed persons divided by the number of persons in the labor force. The labor force participation rate is the percentage of the civilian population that is in the labor force. The has job not at work rate is the percentage of the civilian population that reports having a job but not being at work during the survey reference week.

The DID estimate for the full sample indicates that the unemployment rate increased by 11.6 percentage points relative to the counterfactual. The increase in unemployment rate was largest for the youngest workers; ages 16-24 had a 20.5 percentage point increase compared to their counterfactual. Increased unemployment was also especially large for persons who are low income, less educated, and Hispanic. The increase in the unemployment rate was larger for women than men.

Column 2 of Table 3 indicates that the labor force participation rate for the full sample decreased by 2.8 percentage points relative to the counterfactual. The weak labor market, health

concerns, and other complications from the pandemic pushed many people out of the labor force. The decrease in the labor force participation rate was largest for ages 16-24 (6.7 percent), persons with household income less than \$40,000 (4.6 percent), and blacks (4.4 percent). There are, thus, similar patterns as for the unemployment rate but also some differences.

The rate of workers reporting having a job but not at work during the survey reference week increased by 3.1 percentage points for the full sample DID estimate in Column 3 of Table 3. The increase in reporting having a job but not at work is widespread across groups, and the patterns across groups are generally different from those for the unemployment and labor force participation rates. Specifically, the young, low income, and less educated do not have the largest Column 3 DID magnitudes among their categories.

Workers with a job but not at work likely includes some persons who should be classified as unemployed due to business closures or other layoffs but are instead misclassified. Those with a job but not at work also likely includes some people who were temporarily unable to work due to sickness, quarantine, childcare, transportation, or fear of getting sick. We are unable to clearly differentiate among the various causes. Respondents were asked to indicate the reason for being temporarily absent from work among pre-defined categories. There was an increase in reports of illness and medical problems, as one would expect due to the pandemic. However, 70 percent of respondents chose the “Other” category as the reason for being temporarily absent from work during April 2020. This may represent a combination of factors including health concerns, risk aversion, and difficulty or reluctance to express the exact reason in the survey. Regardless of the specific reason, COVID-19 prevented people from working. The increase in persons reporting having a job but not being at work due to COVID-19 is an important part of the job losses that should not be overlooked.



### **3. Discussion**

COVID-19 has already imposed startling and widespread job losses. The unemployment rate understates job losses because it ignores decreased labor force participation and the increase in individuals reporting being temporarily absent from work. We focus on changes in the percentage of persons employed and at work as our preferred measure. The impacts of job losses are most severe among the young, less educated, lower income, and racial/ethnic minorities. The policy community should be fully aware that already vulnerable groups have suffered the worst job losses. Policy responses should reflect these disproportionate burdens.

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Table 1: Employment at Work Rates by Month and Group for January - April 2019-2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	January	February	March	April	January	February	March	April
	2019	2019	2019	2019	2020	2020	2020	2020
<u>A. Full Sample</u>	58.32	58.99	58.67	59.14	58.96	59.32	57.30	46.95
<u>B. Family Income Group (Annual Income Reported During Previous Month)</u>								
Income < 40K	39.61	40.52	40.40	41.07	40.69	40.29	38.51	27.56
40K - 75K	60.13	59.87	59.80	59.96	59.35	59.91	57.17	44.54
75K - 150K	69.48	70.09	70.07	70.40	68.53	69.14	67.82	57.23
> 150K	71.43	72.85	72.23	72.12	73.06	73.66	71.61	63.78
<u>C. Education Level (Age &gt;= 25)</u>								
No High School Diploma	41.02	40.99	41.36	42.19	41.41	41.49	40.06	30.19
High School Diploma	54.12	54.35	54.11	54.79	54.29	54.46	52.42	40.04
Some College, no Bachelor's	61.25	61.51	60.85	61.51	61.04	61.03	59.32	48.35
Bachelor's Degree or Higher	70.02	70.87	70.28	70.56	70.54	70.61	68.97	61.97
<u>D. Age Group</u>								
Ages 16-24	46.48	48.12	48.49	48.60	47.99	49.76	45.64	31.34
Ages 25-54	77.44	77.76	77.34	78.02	78.42	78.26	76.34	64.14
Ages 55-64	60.97	61.86	61.49	62.20	61.46	62.34	60.98	51.58
Ages 65 and over	18.46	19.15	18.69	18.83	19.09	19.38	18.13	14.17
<u>E. Race/Ethnicity</u>								
Hispanic	61.60	61.92	61.92	62.15	62.69	63.16	59.56	46.28
Black	56.40	56.70	56.16	57.82	56.41	56.71	54.70	43.90
Asian	59.47	60.92	59.92	59.11	59.30	60.60	58.48	46.32
White	57.82	58.46	58.22	58.64	58.41	58.67	57.11	47.85
<u>F. Gender</u>								
Female	53.20	53.90	53.11	53.63	53.94	54.36	52.11	41.63
Male	63.79	64.42	64.60	65.01	64.32	64.63	62.83	52.64

Notes: Employment at work excludes persons who report having a job but were not at work during the survey week. The full sample includes individuals age 16 and over. Panel B income groups are based on family income for the previous 12 months reported in the previous survey. White, black, and Asian groups exclude Hispanics.

Table 2: 2019-2020 Change in Employment at Work Rates by Month and Group

	(1)	(2)	(3)	(4)	(5)	(6)
	Jan. 2020 - Jan. 2019	Feb. 2020 - Feb. 2019	Mar. 2020 - Mar. 2019	Apr. 2020 - Apr. 2019	Apr. - Jan. Diff-in-Diff	Apr. - Jan. DID % Change
<u>A. Full Sample</u>	0.634* (0.255)	0.338 (0.254)	-1.369** (0.267)	-12.185** (0.271)	-12.819** (0.372)	-21.45%
<u>B. Family Income Group (Annual Income Reported During Previous Month)</u>						
Income < 40K	1.085* (0.539)	-0.224 (0.557)	-1.899** (0.572)	-13.513** (0.569)	-14.598** (0.784)	-34.63%
40K - 75K	-0.776 (0.570)	0.039 (0.592)	-2.631** (0.607)	-15.421** (0.625)	-14.645** (0.846)	-24.74%
75K - 150K	-0.953 (0.519)	-0.950 (0.533)	-2.252** (0.547)	-13.167** (0.573)	-12.215** (0.773)	-17.59%
> 150K	1.631* (0.694)	0.804 (0.710)	-0.622 (0.734)	-8.337** (0.773)	-9.968** (1.039)	-13.52%
<u>C. Education Level (Age &gt;= 25)</u>						
No High School Diploma	0.390 (0.900)	0.498 (0.911)	-1.302 (0.954)	-11.996** (0.939)	-12.387** (1.301)	-29.09%
High School Diploma	0.166 (0.521)	0.103 (0.519)	-1.689** (0.543)	-14.758** (0.547)	-14.924** (0.755)	-27.15%
Some College, no Bachelor's	-0.203 (0.524)	-0.480 (0.525)	-1.524** (0.550)	-13.156** (0.561)	-12.953** (0.768)	-21.13%
Bachelor's Degree or Higher	0.516 (0.417)	-0.257 (0.414)	-1.307** (0.435)	-8.592** (0.452)	-9.108** (0.615)	-12.81%
<u>D. Age Group</u>						
Ages 16-24	1.506** (0.723)	1.637** (0.722)	-2.854** (0.758)	-17.258** (0.737)	-18.765** (1.032)	-37.45%
Ages 25-54	0.976** (0.315)	0.501** (0.316)	-1.003** (0.337)	-13.873** (0.366)	-14.849** (0.483)	-18.80%
Ages 55-64	0.489** (0.602)	0.481** (0.597)	-0.511** (0.623)	-10.618** (0.638)	-11.107** (0.877)	-17.72%
Ages 65 and over	0.630** (0.420)	0.233** (0.425)	-0.561** (0.430)	-4.656** (0.409)	-5.285** (0.587)	-27.17%
<u>E. Race/Ethnicity</u>						
Hispanic	1.083 (0.653)	1.245 (0.651)	-2.364** (0.697)	-15.865** (0.715)	-16.948** (0.969)	-26.80%
Black	0.012 (0.827)	0.011 (0.829)	-1.459 (0.868)	-13.917** (0.878)	-13.929** (1.206)	-24.09%
Asian	-0.173 (1.067)	-0.318 (1.051)	-1.446 (1.105)	-12.798** (1.121)	-12.625** (1.548)	-21.42%
White	0.588 (0.307)	0.209 (0.307)	-1.114** (0.319)	-10.792** (0.324)	-11.380** (0.446)	-19.21%
<u>F. Gender</u>						
Female	0.737* (0.359)	0.459 (0.358)	-0.999** (0.373)	-12.007** (0.374)	-12.744** (0.518)	-23.44%
Male	0.524 (0.357)	0.207 (0.357)	-1.765** (0.375)	-12.376** (0.387)	-12.899** (0.527)	-19.68%

Notes: Standard errors in parentheses are robust to heteroscedasticity. The Apr. - Jan. DID % change in Column (6) is computed by dividing the DID estimate in Column (5) by the estimated counterfactual employment at work rate for April 2020; this counterfactual is defined as the April 2019 rate plus the year-over-year difference for January.

\*Significantly different from zero at 5% level; \*\* Significant at 1% level.

Table 3: April - January Difference-in-Differences for Additional Measures

	(1) Unemployment Rate	(2) Labor Force Participation Rate	(3) Has Job Not at Work Rate
<u>A. Full Sample</u>	11.595** (0.251)	-2.835** (0.363)	3.096** (0.119)
<u>B. Family Income Group (Annual Income Reported During Previous Month)</u>			
Income < 40K	17.253** (0.838)	-4.597** (0.811)	3.196** (0.243)
40K - 75K	12.595** (0.574)	-3.846** (0.827)	3.537** (0.279)
75K - 150K	9.672** (0.431)	-2.777** (0.733)	2.740** (0.263)
> 150K	7.447** (0.506)	-2.109* (0.976)	2.356** (0.371)
<u>C. Education Level (Age &gt;= 25)</u>			
No High School Diploma	15.856** (1.274)	-2.527 (1.334)	3.109** (0.406)
High School Diploma	13.749** (0.561)	-3.588** (0.748)	3.948** (0.247)
Some College, no Bachelor's	12.518** (0.495)	-1.279 (0.742)	3.829** (0.261)
Bachelor's Degree or Higher	6.771** (0.307)	-2.166** (0.580)	2.117** (0.211)
<u>D. Age Group</u>			
Ages 16-24	20.450** (1.028)	-6.708** (1.052)	2.729** (0.304)
Ages 25-54	10.163** (0.297)	-3.089** (0.427)	3.741** (0.189)
Ages 55-64	10.437** (0.503)	-0.899 (0.851)	3.480** (0.306)
Ages 65 and over	13.826** (0.850)	-1.062 (0.621)	1.545** (0.179)
<u>E. Race/Ethnicity</u>			
Hispanic	15.583** (0.701)	-3.084** (0.933)	4.121** (0.319)
Black	10.635** (0.958)	-4.384** (1.172)	3.622** (0.383)
Asian	12.025** (0.919)	-1.021 (1.519)	4.325** (0.537)
White	10.614** (0.275)	-2.583** (0.437)	2.533** (0.140)
<u>F. Gender</u>			
Female	13.032** (0.366)	-2.816** (0.515)	2.885** (0.165)
Male	10.323** (0.346)	-2.855** (0.502)	3.320** (0.173)

Notes: Standard errors in parentheses are robust to heteroscedasticity. The April - January difference-in-differences estimate for each outcome and sub-sample is computed as the 2019-2020 year-over-year change for April minus the year-over-year change for January.

\*Significantly different from zero at 5% level; \*\* Significant at 1% level.