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Initial Impact of the COVID-19 Pandemic on the Employment and Hours of Self-Employed Coupled and Single Workers by Gender and Parental Status

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ABSTRACT

Initial Impact of the COVID-19 Pandemic on the Employment and Hours of Self-Employed Coupled and Single Workers by Gender and Parental Status*

This study examines the initial impact of COVID-19 shutdowns on the employment and hours of unincorporated self-employed workers using data from the Current Population Survey. Although the shutdowns decreased employment and hours for all groups, differential effects by gender, couple status, and parental status exist. Coupled women were less likely to be working than coupled men, while single women were more likely to be working than single men. However, fathers of school-age children who remained employed were working reduced hours compared to men without children. Remote work mitigated some of the negative effects on employment and hours.

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1.   Introduction

The government shutdowns of businesses and schools in response to the COVID-19 pandemic have led to serious disruptions in work, schooling, and family life around the world. However, the ability of many Americans to work at home has dampened the resulting economic crisis (Barrero, Bloom, and Davis 2020; Bick, Blandin, and Mertens 2020; Brynjolfsson et al. 2020; Montenovo et al. 2020). This paper focuses on the effects on unincorporated self-employed workers, many of whom already had been performing some work at home prior to the shutdowns. According to the 2018 American Time Use Survey (ATUS), which showed time use one to two years prior to the shutdowns, 51 percent of unincorporated self-employed workers in the United States worked at home on their main job on an average day, while only 21 percent of wage and salary workers did so (U.S. Bureau of Labor Statistics 2019).

However, given the simultaneous closing of schools and day-care facilities, the caregiving responsibilities of parents have increased. Because of this, self-employed parents may be affected more by the shutdowns than self-employed nonparents. In addition, due to gender norms within the home (Burda, Hamermesh, and Wiel 2008; Sent and van Staveren 2019; Sevilla and Smith 2020) and gender differences in risk preferences (Charness and Gneezy 2012; Sent and van Staveren 2019), female self-employed parents may be affected even more than male self-employed parents. Because women are more likely than men to enter self-employment to gain flexibility over the timing of their work to better balance work and family demands (Budig 2006; Gimenez-Nadal, Molina, and Ortega 2012), we may also see differential impacts by couple status and parental status. Given that the shutdowns are affecting "essential" and "nonessential" industries differently, the employment status and industry of a spouse may also impact a self-employed worker's employment and hours as families juggle household and child-care responsibilities (Alon et al. 2020). If a mother's partner loses his job, the mother may work

1

extra hours to compensate for the lost income while the father cares for the children (i.e. an added worker effect), or vice versa.

Between February and April 2020, the U.S. official number of unincorporated self-employed workers fell 12.6 percent, not seasonally adjusted (U.S. Bureau of Labor Statistics 2020a and 2020b). This figure includes those reporting being employed but absent, which rose substantially over the pandemic. Fairlie (2020b) finds that the number of actively working unincorporated self-employed workers fell 28 percent. This paper examines the early effects of the shutdowns on the employment and hours of unincorporated self-employed workers using monthly panel data from the Current Population Survey (CPS) for February–May of 2020 for those initially self-employed and at work in February 2020. February 2020 is considered a normal month and March, April, and May of 2020 are months affected by the COVID-19 shutdowns. The school closures for primary and secondary students occurred for the most part after the March CPS reference week. All states had adopted some form of social distancing measures by March 23rd (Adolph et al. 2020). Therefore, the negative effects of the shutdowns should be larger in April than in March. In addition, some states began reopening in May, so the effects for May might be smaller.

To determine how the employment and hours of unincorporated self-employed workers were affected differently across the months, random effects models are estimated, where indicators for month are included as explanatory variables and also interacted with parental status, gender, whether one's industry is deemed "essential," whether one's occupation could plausibly allow remote work, whether a spouse is employed, whether that spouse works in an essential industry, and whether that spouse could perform remote work to determine the differential effects. Because the random effects model does not control for unobserved

2

heterogeneity and thus may suffer from omitted variable bias, difference-in-difference-in-differences (DDD) models which net out these time-invariant omitted variables and show differential effects for demographic groups in response to the exogenous shutdowns are estimated as well. Respondents to the February and April CPS in 2019 comprise the control sample and respondents from the February and April CPS in 2020 comprise the treatment sample.

Although the shutdowns decreased employment and hours for all groups, there were differential effects by gender, couple status, and parental status. Effects are larger for April than for March, as expected, and the loosening of restrictions in May did not yet have much of a moderating effect. Coupled women were less likely to be working than coupled men, while single women were more likely to be working than single men. However, fathers of school-age children who remained employed were working reduced hours compared to men without children. Having a job that could possibly be done remotely or working in an essential industry (or a spouse's job could be done remotely or was in an essential industry) mitigated some of the negative labor market effects of the shutdowns.

2. Related Literature

This paper contributes to several strands of literature, including the burgeoning literature on the labor-market effects of COVID-19 in general (see Brodeur et al., 2020 for a review). More specifically, this paper is related to the literature on the effects of the business cycle on the unincorporated self-employed, the effectsof economic downturns in general, and the unprecedented effects of the simultaneous health shock on households and families.

The unincorporated self-employed have unique characteristics. One is their tendency to remain self-employed for relatively short durations, which is dependent on macroeconomic

3

conditions (Rissman 2006). In addition, compared to the incorporated self-employed, they tend

to engage in work activities that demand relatively low levels of cognitive skills and high levels

of manual coordination (Levine and Rubinstein 2017). Although many of the self-employed

may do some work from their home, a significant portion of unincorporated self-employed work

in construction, including small, home-construction activities whose services were in lower

demand during the COVID-19 pandemic while households were social distancing (Hipple and

Hammond 2016). Because they can control their work hours to a greater extent than wage and

salary workers, self-employed parents may have more flexibility to work reduced hours rather

than stopping work altogether in order to provide more child care.

In coupled households, members of the couple jointly decide how much time to devote to

Prior research on the effects of macroeconomic conditions on the unincorporated self-

employed in the United States finds that their total hours are procyclical (Carrington, McCue,

and Pierce 1996; Pabilonia 2014); however, higher unemployment rates are associated with an

increase in entry rates, often due to a lack of alternatives (Fairlie 2013; Fairlie and Fossen 2019),

even at potentially reduced hours. To date, only Fairlie (2020a; 2020b) has examined effects of

the COVID-19 pandemic on this group of workers. Using the CPS and examining small

business owners (many of whom are classified as unincorporated self-employed workers), Fairlie

(2020a) found that between February and April 2020, the number of working business owners

dropped by 22 percent. In addition, African-American, immigrant, and female business owners

were especially hard hit by the shutdown of nonessential activities. In further work, Fairlie

(2020b) examined the partial rebound in May 2020 as businesses reopened, resulting in a net 15

percent decline between February and May 2020.

In coupled households, members of the couple jointly decide how much time to devote to

market work, household production, and their children, which may depend on relative income,

social norms, productivity differences in time inputs, and bargaining power (Schoonbroodt 2018). As a result of the closure of schools and child-care facilities in response to the COVID-19 pandemic, there was an increased demand for household child care. In a coupled family, this increased responsibility could be shared. In a single-headed household, the burden likely fell completely on the parent unless there was an extra adult in the household such as a grandparent, aunt, or college student (informal care coming from outside the household was also discouraged due to calls for social distancing). Although women spend more time caring for children than do men even among dual-earner couples (Alon et al. 2020), Aguiar, Hurst, and Karabarbounis (2013) found that during the Great Recession, men reallocated time to child care as the unemployment rate increased, while women increased their housework time. More recently, Pabilonia and Vernon (2020) find that, when working remotely, fathers shift some of the reduction in their commute time to primary child care, while there is no change in primary child care time for mothers. Some of that increase in time is during typical working hours. Thus, there is prior evidence from time-use surveys that a reduction in work-related activities leads to men shifting relatively more daily hours toward their children. In addition, in the Great Recession, when male-dominated sectors such as manufacturing and construction were especially hard-hit, there was evidence that women worked more hours on weekends to compensate for lost income (Morrill and Pabilonia 2015).

Concurrent research on the early effects of the pandemic on the labor market finds that women, particularly those with young children, are more affected than men on average (Montenovo et al. 2020; Zamarro, Perez-Arce, and Prados 2020). This is partly due to the fact that service-oriented sectors of the economy where women's employment is concentrated are classified as "nonessential" (Alon et al. 2020). However, it is also due to the increase in child-

care responsibilities as schools and child-care facilities closed, affecting parents' ability to work outside (and sometimes inside) the home. Sevilla and Smith (2020), however, find a drop in the gender child-care gap in the U.K., as furloughed men picked up some of the increase in household-provided child care. Using the CPS and focusing on couples, Heggeness (2020) compares labor market effects in states with early and late school closures. She finds that mothers in early closure states were 53 percent more likely than mothers in late closure states to be employed but absent from work. Of those remaining active at their job, she found that mothers in early closure states had higher average weekly hours than mothers in late closure states, while fathers worked fewer hours. Descriptive analyses based on the Understanding Coronavirus in America Tracking Survey indicate that 33 percent of working mothers in two-parent households provided all of the care for children while schools were closed in early April, while only ten percent of males provided all of the care (University of Southern California Center for Economic and Social Research 2020; Zamarro, Perez-Arce, and Prados 2020). Roughly twenty-five percent of parents shared care.

3.   Data

This paper examines changes in the employment and work hours of unincorporated self-employed workers using data from the CPS basic monthly files for February–May of 2020 for those initially self-employed in February 2020. February 2020 is considered a normal month and March, April, and May of 2020 were affected by the COVID-19 shutdowns. The school closures for primary and secondary students occurred for the most part after the March CPS reference week. The reference week typically includes the 12th of the month and ended in March on the 14th, and the World Health Organization (WHO) did not announce the pandemic until March 11th, although media coverage picked up in early March after several cases were identified in

Washington State and people had already started to change their behavior in response to the news reports. Therefore, the effects are expected to be smaller in March than in April. If the re-openings were effective, the effects might be smaller in May than in April, as well.[1]

The CPS interviews a panel of individuals/households for four months, then does not interview them for eight months, then re-interviews them again for four months. Each month there are eight rotation groups of households. Those households which are in their first or fifth month in the sample plausibly can be followed each month from February to May while those in their second and sixth month in the sample can be followed from February to April, and so forth. Thus, each subsequent month, the sample of continuers falls (approximately 75 percent in the second month of the panel, 50 percent in the third month, and 25 percent in the fourth month). In addition, there is the possibility of household nonresponse in any given month. Overall response rates fell 10 percent in March 2020 compared to February 2020 and were 12 percent lower in April 2020 than in April 2019. Response rates were especially low for those who were in their first or fifth month in the sample in March, but these households are not in the sample frame for this analysis.[2]

The sample for this analysis includes civilian adults aged 18 and older that were unincorporated self-employed workers on their main job and at work in February 2020.[3] The analysis follows them through May 2020 (for the random effects models) and through April 2020 (for the DDD models).[4] The unbalanced panel includes 3,403, 2,302, 1,515, and 776 individuals in the months of February, March, April, and May respectively. For the DDD analyses, we use a

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[1] The May CPS reference week was March 8th through 14th. The April CPS reference week was April 12th through 18th. The May CPS reference week was May 10 through 16th.
[2] See U.S. Bureau of Labor Statistics (2020a and 2020b) for further details on the increase in nonresponse.
[3] We drop a small number of workers who can be matched on CPS identifying variables (HHRID HHRID2 PULINENO) but do not match on age and sex.
[4] May is not included in the DDD models, because there was a different treatment in May as the country began reopening.

balanced panel of individuals who were self-employed and at work in February 2019 or 2020

and subsequently interviewed in April of 2019 or 2020. Comparing the same months across

2019 and 2020 controls for seasonal differences. In 2019, our sample includes 1,532 individuals.

In 2020, our sample includes 1,515 individuals. Thus, nonresponse does not seem to be a

concern for this analysis. All DDD estimates are weighted using CPS final weights.

An additional concern about the CPS data collected during the pandemic has been a spike

in those reporting employed but absent for "other reasons." Respondents who reported not

working due to efforts to contain the spread of COVID-19 should have been classified as

unemployed on temporary layoff, but many were misclassified as employed but absent (U.S.

Bureau of Labor Statistics 2020b and 2020c). For this reason, this analysis focuses on the

change in employment status for those who were employed and at work, i.e. those with positive

hours.

Additional information included in the analysis concerns the plausibility that an

individual's job (or their spouse's job, if applicable) can be done entirely remotely. This is

referred to in the analysis as a remote job. In addition, information about whether an individual

(or spouse, if applicable) worked in an essential industry is used. The remote-job variable is

based on Dingel and Neiman (2020) who measured the feasibility of a job being done entirely at

home based upon job tasks reported in the Occupational Information Network (O*NET) surveys,

with some additional tweaks to match the change from the 2010 Census codes to the 2018

Census codes in the 2020 CPS.[5] In most cases, the remote job variable takes a value of 0 for not

being able to be done remotely, and 1 for being able to be done entirely remotely. However, in

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[5] Additional research by Bick, Blandin, and Mertens (2020) using the Real-Time Population Survey (a CPS-like
questionnaire) shows that about 72 percent of workers (or 35.2 percent of the workforce) who could work at home
as defined by Dingel and Neiman (2020) actually worked entirely at home in May 2020.

several cases, only part of any occupation in the CPS could be classified as being done remotely and so the value reflects the share employed in the occupation who can work remotely. The essential industry variable is based upon Delaware's nonessential closed business criteria, which is reported at the 4-digit NAICS level (Delaware Division of Public Health, Coronavirus Response 2020). For three detailed CPS industries (Charter Bus Industry, Cable and Other Subscription Programming, and Real Estate), the September 2019 Quarterly Census of Employment and Wages (QCEW) is used to record the nonessential employment share.

4. **Descriptive Statistics: Labor Market Differences by Gender, Couple Status, and Parental Status**

Figure 1 shows the decline in employment by gender for unincorporated self-employed workers who were at work in February 2020. Of these self-employed workers, over 86 percent were still at work in March, with a negligible gender difference. This is not unexpected, as shutdowns had not occurred widely until after the March CPS reference week. However, in April, only 65 percent of the men and 58 percent of the women remained at work. Thus, while both men and women among the self-employed suffered reduced employment in April, the shutdown appears to have had a larger effect on women. In May, given the partial re-openings, about 74 percent of self-employed men and just over 61 percent of women were working. Thus, males appear to be bouncing back to a greater degree than women. This may be due to gender roles, where the male is expected to be the breadwinner in the family (Allred 2018; Betrand, Kamenica, and Pan 2015), and the fact that schools and many child-care facilities had not yet re-opened.

Figure 2 shows the decline in the average weekly hours worked by gender for unincorporated self-employed workers who were at work in February 2020. In February, self-

employed men worked approximately 37 hours per week and women worked approximately 30 hours per week. In March, hours declined to 32 hours per week for men, on average, and to 26 hours per week for women. In April, hours fell even further, to 23 hours per week for men and 16 hours for women. In May, hours started to bounce back for men (back to 28 hours per week) but there was little change for women.

Figure 3 shows how gender and parental status are related to employment for coupled individuals.[6] Couples can trade off housework and child-care tasks with their partner and so have more flexibility than single-headed households, all else equal. Again, we see a decline in employment for everyone from February through April and an increase from April to May. However, the declines are much larger for women, especially those with children. Having children does not appear to make any difference for men's employment.

Figure 4 shows how gender and parental status are related to employment for single individuals. These individuals do not have a spouse or partner to help with household tasks such as caring for children. Single men appear to have larger declines in employment from February through April than coupled men. There is an especially large drop for single fathers with household children in April. However, single fathers experienced a large increase in employment in May, getting them almost to the same employment level as single men without children. Single women also experienced a drop in employment in March and April, with a slightly bigger drop for single mothers than for non-parents in April. However, single women, with or without children, did not experience a rebound in employment in May as coupled individuals or single men did.

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[6] An individual is classified as coupled if they have a spouse or cohabiting partner in the household.

Figure 5 shows how gender and parental status are related to average weekly hours for coupled individuals by month. In February, men without children worked approximately 37 hours, while men with children worked over 40 hours. However, in April, men worked only 25 hours, regardless of parental status. Women worked substantially less than men in all months, and women with children worked fewer hours than women without children. Women with children were the only group not to rebound at all in May.

Figure 6 shows how single workers' average weekly hours were affected, by parental status and gender. Theirs is a similar story to that for coupled workers, but there is a huge drop for single fathers in April. Single fathers in April have an even lower number of work hours, on average, than single mothers. However, single fathers rebound in May, while single mothers do not.

Appendix Table A1 provides greater detail about the descriptive statistics of the sample, including a breakdown by the presence and age of children given the different amounts of supervision and help with online schooling that were necessary during the shutdowns. Among coupled individuals, having a younger child had a greater impact on employment status and average weekly hours than having a school-age child for women. Among single individuals, school-age children had a larger impact on men's employment and average weekly hours than younger children.

5.   **Models Used to Show Initial COVID-19 Impacts**

Two types of models are estimated to examine the initial differential impacts of the COVID-19 pandemic shutdowns (a great natural experiment) on the employment and work hours of the unincorporated self-employed. The first type of models, random effects models, are used to examine how employment and hours change as shutdowns begin to occur in March, are more

widespread in April, and partial re-openings begin in May. Month dummy variables capture the effects of the shutdown and reopening, and they are interacted with parental status, industry type (essential or not), occupation type (remote work possible or not), the spouse's industry and occupation type, and number of extra household adults to determine whether the effects differ by the presence of children, extra adults, work situation of the respondent, and work situation of the respondent's spouse or partner (where applicable). The random effects models are estimated separately for respondents who are coupled and those who are single, and for men and women separately, as couples may be better able to juggle responsibilities than singles, and there are different cultural expectations for men and women.

The second type of models, difference-in-difference-in-differences (DDD) models, considers the entire period of shutdowns (March through April) as a single "treatment" and examines the effect of this treatment on employment and hours. While the random effects models tell the story of the evolution of employment and hours, they may suffer from omitted variable bias due to unobserved heterogeneity. However, given this natural experiment of government shutdowns (unexpected and exogenously determined), we expect the estimates to be causal. Because the DDD models difference out unobserved, time-invariant heterogeneity, they also are expected to provide causal estimates.

5.1   Random Effects Model

We estimate the following random effects model:

$$(1) \quad Y_{it} = \alpha + \gamma W_i + \pi M_t + \delta W_i * M_t + \beta X_i + \mu_i + \varepsilon_{it}.$$

Y_{it} is one of two outcomes examined. The first is employment status, a variable which takes a value of 1 if the respondent was employed and at work during the reference week and 0

otherwise.[7] The second is hours worked last week. W_i is a vector of key regressors measured in February 2020 (to avoid changes potentially caused by the treatment/shutdowns) that include dummies for gender (for those analyses that pool men and women), any household child age <6, any household child age 6–17, respondent's job is a remote job, respondent's job is in an essential industry, respondent's spouse is employed, respondent's spouse is a remote job, and spouse's job is in an essential industry, and a continuous measure of the number of extra adults (besides self and partner) in the household. M_t is a vector of month dummy variables for March, April, and May of 2020. W_i*M_t are the interactions between the key regressors included in W_i and month. The matrix X_i includes additional control variables measured as of February 2020. These include age and age squared and indicators for education (high school degree, some college, bachelor's degree, advanced degree), race (African-American, other race), Hispanic ethnicity, immigrant status, living in an MSA, state of residence, own industry, and spouse's industry. μ_i is the unobserved, person-specific effect, assumed to be uncorrelated with the other included regressors, and ε_{it} is the random noise error term. The coefficients γ, π, δ, and β are to be estimated. The key coefficients are π and δ, as these give the level and interaction effects of the treatment (i.e. shutdowns). The models are estimated via ordinary least squares (OLS) and control for clustering by household-year pair cluster, because in some cases both the respondent and spouse are self-employed. Weights are not used, because the random effects model does not take both weights and clusters.

5.2   Difference-in-Difference-in-Differences Model

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[7] Logit or probit random effects models would be appropriate due to the dichotomous nature of the first dependent variable. However, such models were too much for the data and could not be estimated. Robust standard errors adjust for heteroscedasticity.

In order to identify the causal effects of the shutdowns following the WHO announcement of the COVID-19 pandemic on March 11th, we estimate DDD models where the control group includes those sampled in both February and April 2019 and the treatment group includes those sampled in both February and April 2020. We examine the initial differential effects of the shutdowns on employment and hours in April using the following model:

$$(2)\ Y_{it} = \alpha + \gamma W_i + \pi COVID_t + \delta W_i * COVID_t + \beta X_i + \lambda April_t + \phi Year_i + \varepsilon_{it},$$

where Y_{it} is one of three outcomes: (a) employment status, (b) hours worked last week, or (c) hours worked last week conditional on employment status. W_i is a vector of controls for which we want to test differential effects including gender, any household child age <6, any household child age 6–17, remote job, essential industry, spouse employed, spouse remote job, and spouse essential industry. $COVID_t$ is a dummy variable for April 2020 (when the shutdowns were complete). The vector X_{it} includes the individual, spatial, and job characteristics specified above. An $April_t$ dummy is included to control for seasonal variation. $Year_i$ equals 1 if the individual is in the treatment group (interviewed in 2020) and 0 otherwise, and ε_{it} is the error term. The general effect of COVID-19 is π. The coefficients of interest, the triple-difference estimates, are in the vector δ. We estimate these models with OLS using CPS final weights and clustering by household-year pair cluster.

6.   Initial Differential Impacts of COVID-19

6.1   Random Effects Model Results

Table 1 shows the results from the random effects model for employment.[8] Looking at the "All" columns, it can be seen that employment was lower for all in March, April, and May

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[8] Summary statistics for the estimated models are included in Appendix Tables A2 and A3. Across months in 2020, demographics are similar, suggesting that the results should not suffer from nonresponse bias due to any differential reduction in nonresponse. Samples in February 2019 and 2020 indicate that our control group and treatment group are fairly similar.

compared to February. In April 2020, the unincorporated self-employed were about 57 percentage points less likely to still be employed and at work than in February. However, the negative effects appear to be smaller in May, as businesses reopened, than in April, except for single women. Again examining the "All" columns, we can see that, compared to coupled men, coupled women were 8 percentage points less likely to be employed in April than in February and 14 percentage points less likely to be employed in May than in February. However, compared to single men, single women were almost 11 percentage points more likely to be employed in April than in February.

Now looking at the other columns that show results by couple status and gender, it is seen that having young children increases the probability that coupled men are employed in May compared to February. Having school-age children increases the probability that they are employed in March compared to February. On the other hand, single men with school-age children are less likely to be employed in April compared to May, though the estimated effect is imprecise. Having a remote job increases April employment for coupled men and for both single men and women, relative to February. Being in an "essential industry" increases the probability of being employed for coupled men in March, for all in April, and for all singles in May, compared to February. It also increases the probability for coupled women in May but the estimated effect is imprecise.

Having an employed spouse reduces the probability that coupled women are employed in March by 10.5 percentage points but in April the reverse occurs, with having an employed spouse increasing the probability that coupled women are employed by 17.5 percentage points. In March, having an employed spouse increases the probability that coupled men are employed

15

by 6.3 percentage points. There are no differential effects of having a spouse with a remote job or in an essential industry on the probability of being employed.

Having an extra adult in the household (not a spouse/partner, but perhaps a young adult child or parent) decreases the probability that coupled women are employed in May compared to February. It also decreases the probability that single men are employed in April and May compared to February. One plausible explanation for the negative effects are that the extra adult may require care that had previously been provided by the market. A related explanation may be that the respondent did not want to return to work to prevent exposure of the extra adult to COVID-19. In addition, the extra adult may have been ill with COVID-19 and thus everyone was quarantined.

Table 2 shows the results from the random effects model for hours worked. Work hours were reduced substantially for all groups in April and May compared to February, with the effects larger in April than May for all groups except coupled women. Coupled men with young children worked more hours in May than in February, compared to men without young children, while coupled men with school-age children worked fewer hours in May than in February. Single men with school-age children worked fewer hours in April than in February compared to single men without children.

Being in a remote job increased the hours of work of single women only in April compared to February. This also appears to be true for May as the coefficient is similar but estimated imprecisely. Being in an essential industry increased work hours in April and May compared to February for all groups. For coupled men, having a spouse in a remote job increased their hours of work in both March and April compared to February. Also for coupled men, having a spouse in an essential industry increased their hours of work in April compared to

16

February. For coupled women, having an extra adult in the household reduced their hours of work in April compared to February. Although estimated imprecisely, this may also have been the case for May compared to February as the coefficient is similar. Again, this may be because the extra adult was at risk for COVID-19. For single men, having an extra adult in the household decreased their work hours in April and May compared to February. For single women, having an extra adult in the household increased their work hours in April compared to February, perhaps because the extra adult helped care for their children.

6.2   Difference-in-Difference-in-Differences Model Results

Table 3 shows the results from the DDD model for employment. The estimated effects of the treatment and its interactions in the DDD model are, for the most part, similar to those on the April interaction terms in the random effects model. Again, the early effects of the shutdowns were negative overall, with larger effects for coupled women than coupled men and smaller effects for single women than single men. As in the random effects model, single fathers of school-age children were significantly less likely to be employed in April 2020 compared to single men without children (a 22-percentage-point difference). The estimated effect is almost twice the size of the estimate from the random effects model. Having a remote job significantly increased the probability of being employed by about 10 percentage points for all groups. Working in an essential industry compared to a non-essential industry also substantially increased the probability of being employed for all groups, almost 24 percentage points for coupled men, almost 32 percentage points for coupled women, almost 28 percentage points for single men, and almost 14 percentage points for single women. Although there is a large positive effect of having an employed spouse for coupled women, the estimate is not statistically

significant. Having an extra adult in the household decreases the probability of being employed by 5.6 percentage points for single men.

Table 4 shows the results from the DDD model for hours worked last week. The effect of the shutdowns in April 2020 is a reduction of 23 hours per week, on average, which is similar to what we found using the random effects model. Single women again fare better than single men (5.4 more hours). Hours for fathers of school-age children are disproportionately negatively affected compared to men without children (5.5 fewer hours for coupled fathers and 13 fewer hours for single fathers, which is much larger than what we found using the random effects model). Figures 7 and 8 show the average predicted hours for coupled and then single men with school-age children.

Table 4 also shows that having a remote job has a statistically significant positive effect on women's hours, with coupled women working 3.8 hours more and single women working 6.2 hours more than those whose job is not remote. Working in an essential industry has a statistically significant positive effect on hours for everyone, with both coupled and single men working 9 hours more, coupled women working 12.2 hours more and single women working 7.2 hours more. Coupled women who have an employed spouse work 6.8 hours more than coupled women whose spouse is not employed. Men whose spouse can possibly work remotely work 2.9 hours more while women whose spouse is in an essential industry work 5.3 hours less. This latter result is consistent with men being the breadwinner and, with the increased child-care responsibilities, women caring for children while their spouse works.

Table 5 presents the results from the DDD model for hours worked by those remaining employed and at work. These estimates show that most of the effects of COVID are coming through the extensive margin (i.e., the reduction in employment). However, we find that single

women who remained working were working 12.4 fewer hours as a result of the shutdowns. Having a remote job or being in an essential job mitigated the negative effects of the shutdowns on the hours of single women. Coupled men with school-age children worked 6 fewer hours as they presumably shifted some of their time to help in the household. Single men with school-age children worked 7.5 fewer hours, but the estimate is imprecise. Figure 9 shows the average predicted hours for coupled men with school-age children. Figure 10 shows the result for single men with school-age children.

Table 5 also shows that coupled women who have an employed spouse work more hours than coupled women whose spouse is not employed. Coupled women work fewer hours, however, if their spouse is in an essential industry. Coupled men work more hours if their spouse has a remote job. Comparing this result with those in Tables 3 and 4 suggests that the effects of having an employed spouse, a spouse in a remote job, and a spouse in an essential industry are all on the intensive margin. Even though having an extra adult in the household had no effect on being employed and at work (Table 3), it did increase the hours single women worked (Table 5). Therefore, this effect is entirely on the intensive margin.

7.   **Conclusion**

The initial impacts of COVID-19 on the employment and hours worked of the unincorporated self-employed indicate differential effects by gender, couple status, and parental status. The negative effects were largest in April 2020, with a small rebound in May 2020 for everyone except coupled women. As a result of the shutdowns, coupled women were less likely to be employed and at work than coupled men, while single women were more likely to be employed and at work than single men. Both single and coupled fathers of school-age children spent fewer hours working than men without children, suggesting that they may have been

19

spending more time on household or child-care responsibilities. Negative effects were mitigated if their job or their spouse's job could possibly be done remotely or if they worked in an essential industry. Having an extra adult in the household helped mitigate the negative effects on hours for single women.

Given the rebound in work for coupled men but not coupled women, this suggests that self-employed women may remain out of the labor force longer as men resume their role as the family breadwinner and women maintain their primary role as caregiver. This may continue as long as summer camps and other activities for school-age children are limited and if schools in the fall engage in online learning. This could have serious long-term negative implications for female labor force participation, the gender wage gap, and household income.

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Figure 1. Unincorporated self-employed who were at work in 2020
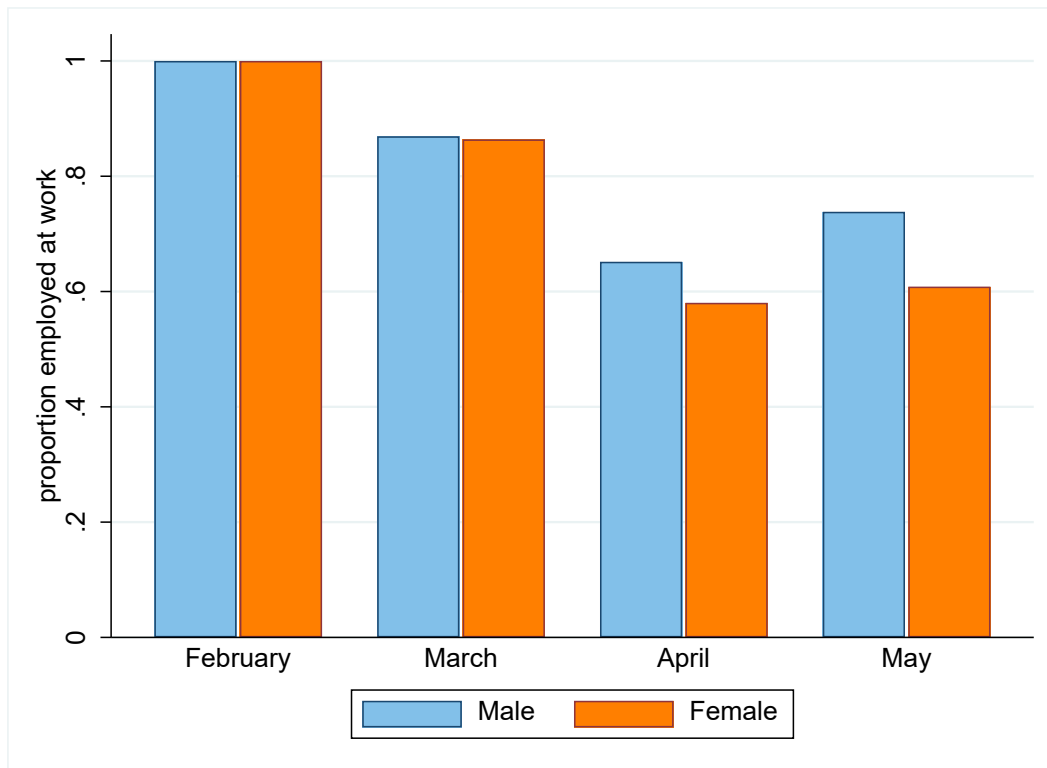
Note: All workers were self-employed and at work in February 2020. For males, N = 2,056, 1,366, 861, 442 for consecutive months. For females, N = 1,347, 936, 654, 334 for consecutive months.

Source: Current Population Survey

Figure 2. Average weekly hours worked by the unincorporated self-employed in 2020
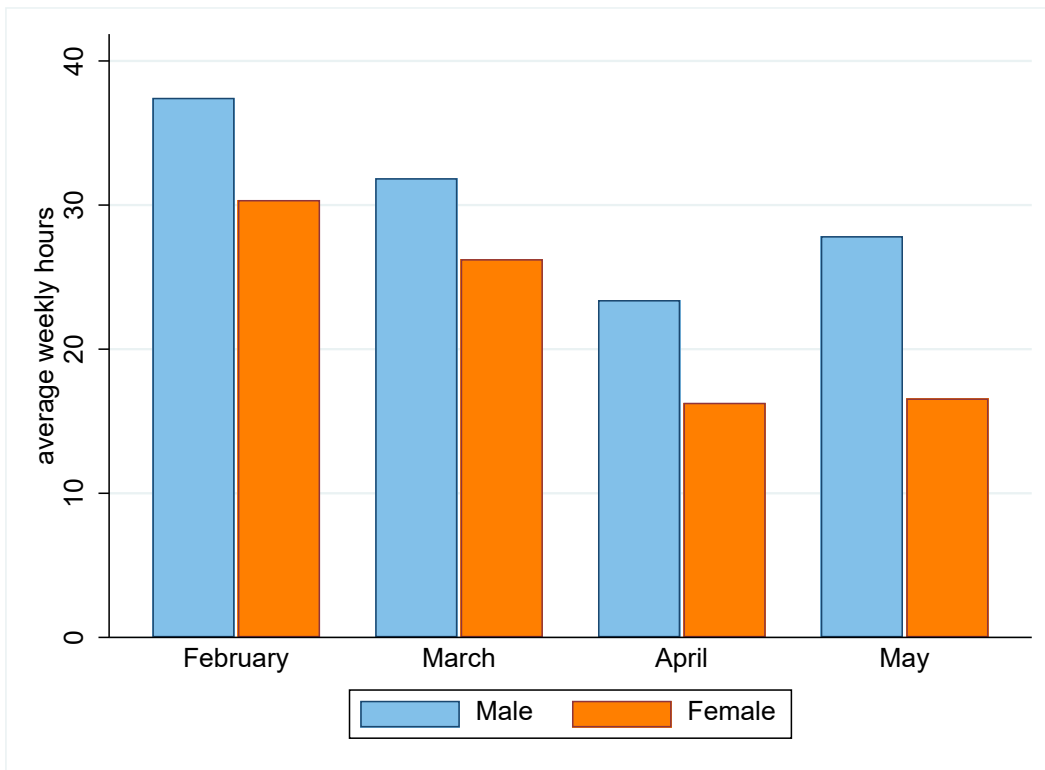
Note: All workers were self-employed and at work in February 2020. For males, N = 2,056, 1,366, 861, 442 for consecutive months. For females, N = 1,347, 936, 654, 334 for consecutive months.

Source: Current Population Survey

Figure 3. Unincorporated self-employed who were at work (coupled individuals, by parental status)
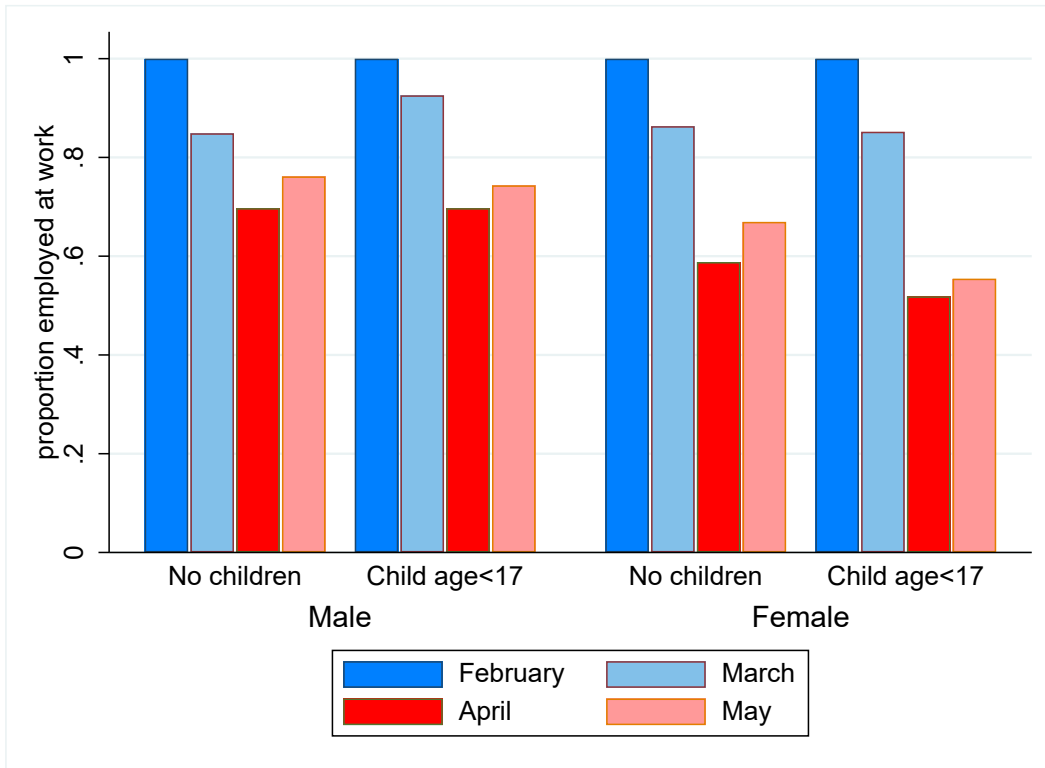
Note: All workers were self-employed and at work in February 2020. For males, N =1,334, 905, 573, and 287. For females, N = 841, 573, 417, and 214.

Source: Current Population Survey

Figure 4. Unincorporated self-employed who were at work (single individuals, by parental status)
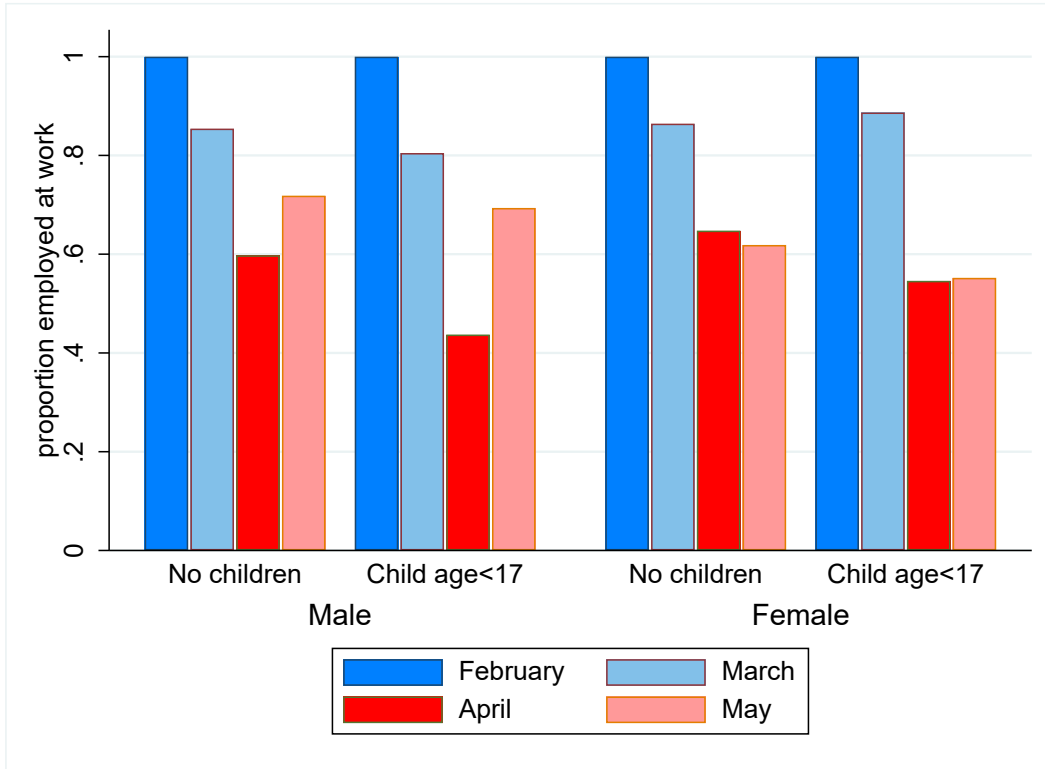
Note: All workers were self-employed and at work in February 2020. For males, N =722, 461, 288, and 155. For females, N = 506, 363, 237, and 120.

Source: Current Population Survey

Figure 5. Average weekly hours worked by coupled individuals, by parental status
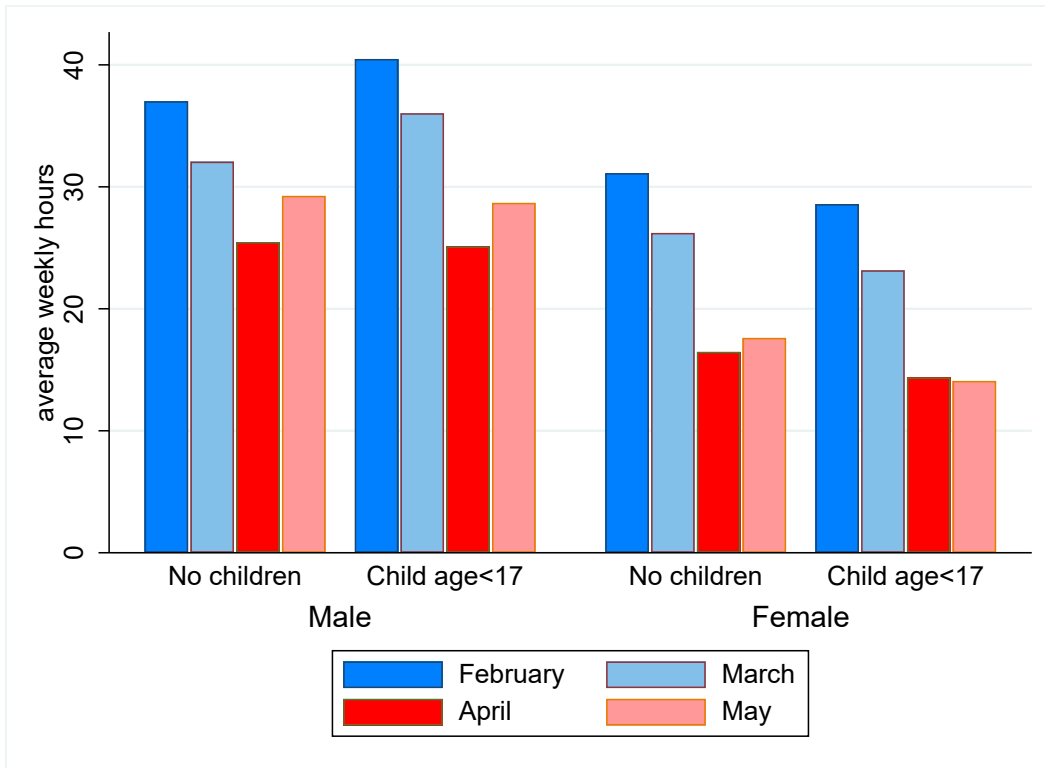
Note: All workers were self-employed and at work in February 2020. For males, N =1,334, 905, 573, and 287. For females, N = 841, 573, 417, and 214.

Source: Current Population Survey

Figure 6. Average weekly hours worked by single individuals, by parental status
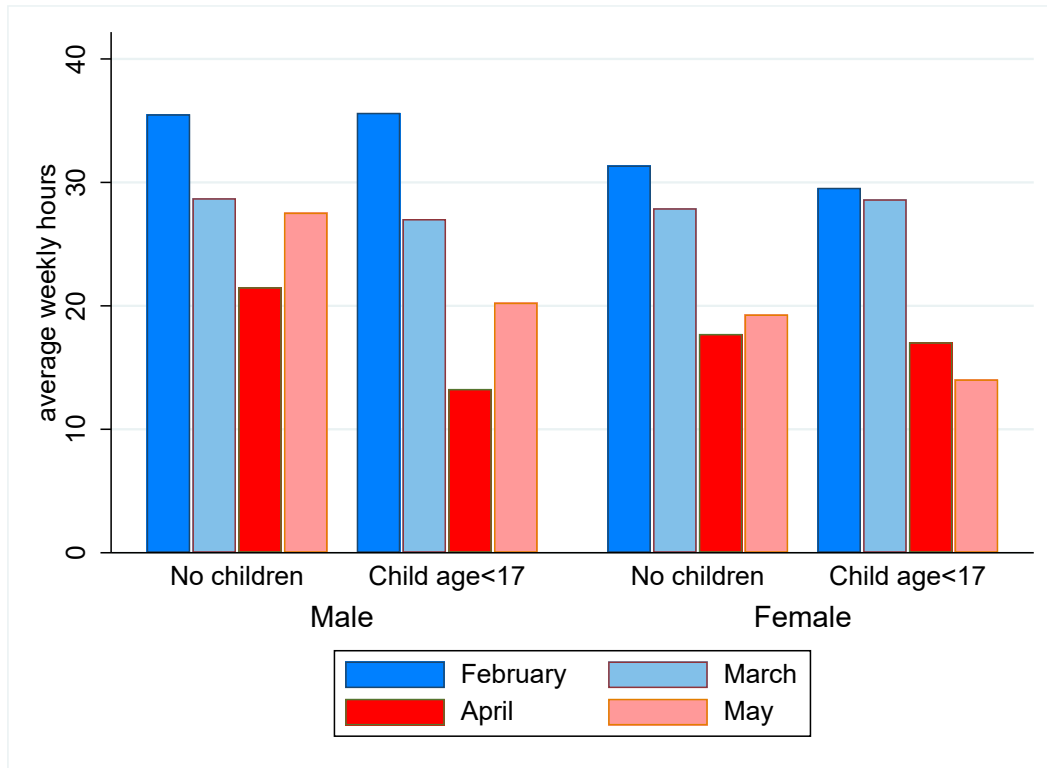
Note: All workers were self-employed and at work in February 2020. For males, N =722, 461, 288, and 155. For females, N = 506, 363, 237, and 120.

Source: Current Population Survey

Figure 7. Average predicted weekly hours by COVID-19 and school-aged children for coupled men
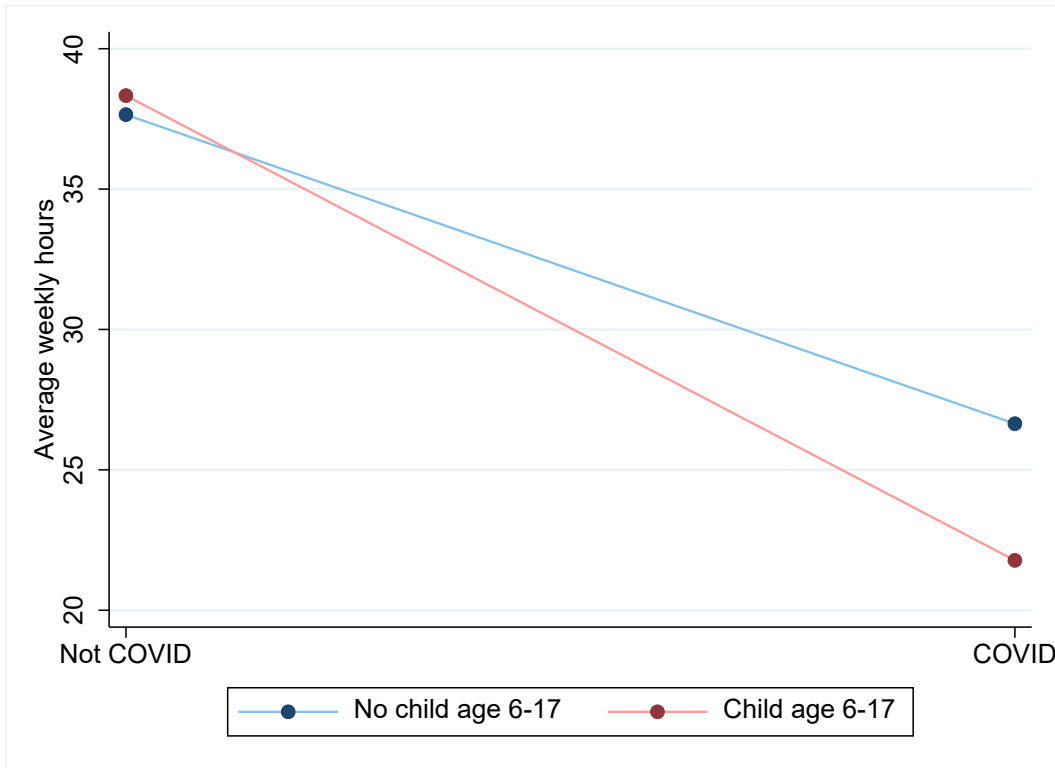
Note: All workers were self-employed and at work in February.

Source: Current Population Survey

Figure 8. Average predicted weekly hours by COVID-19 and school-aged children for single men
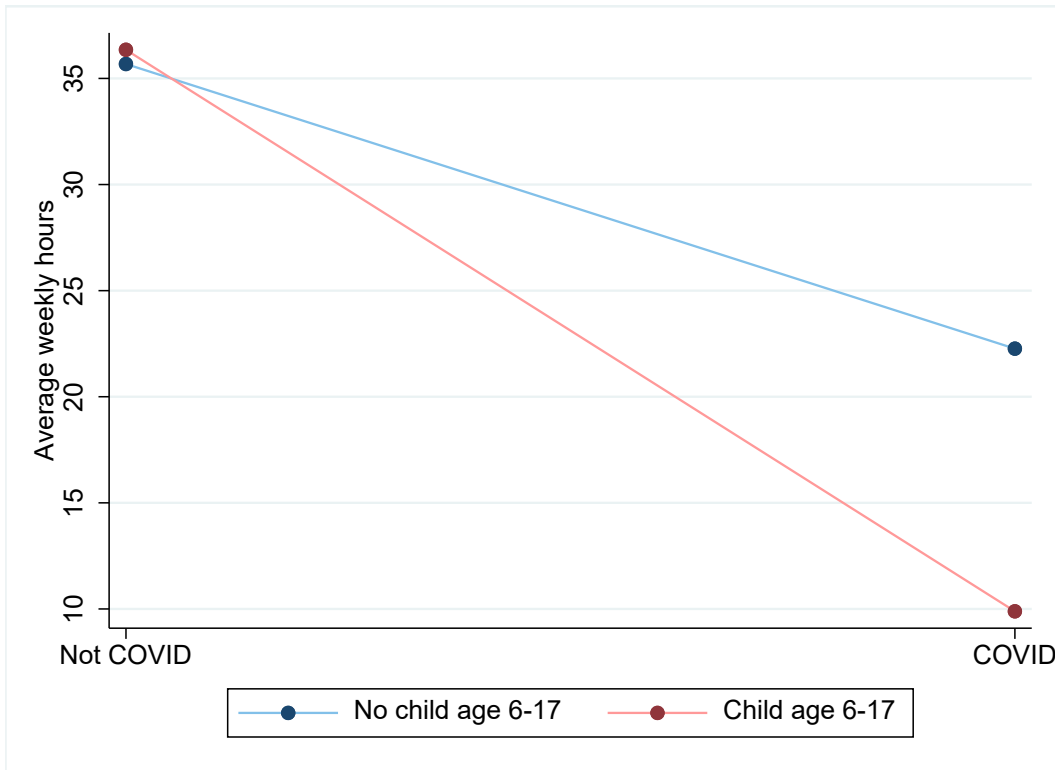
Note: All workers were self-employed and at work in February.

Source: Current Population Survey

Figure 9. Average predicted weekly hours by COVID-19 and school-aged children for employed coupled men
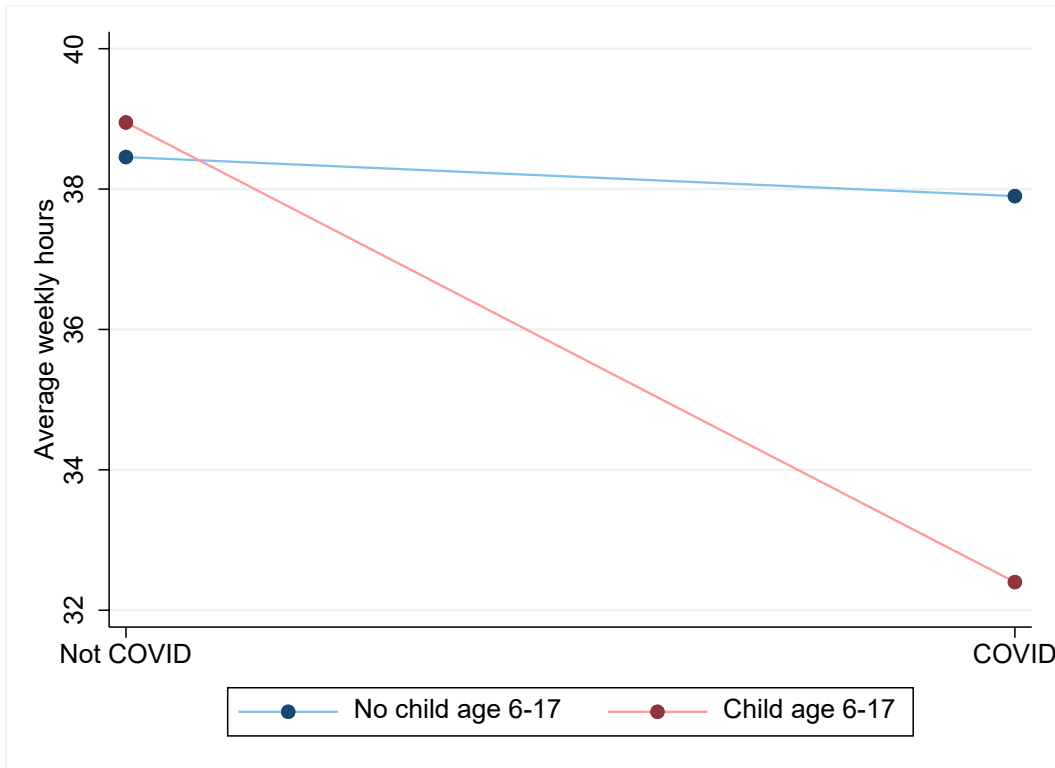
Note: All workers were self-employed and at work.

Source: Current Population Survey

Figure 10. Average predicted weekly hours by COVID-19 and school-aged children for employed single men
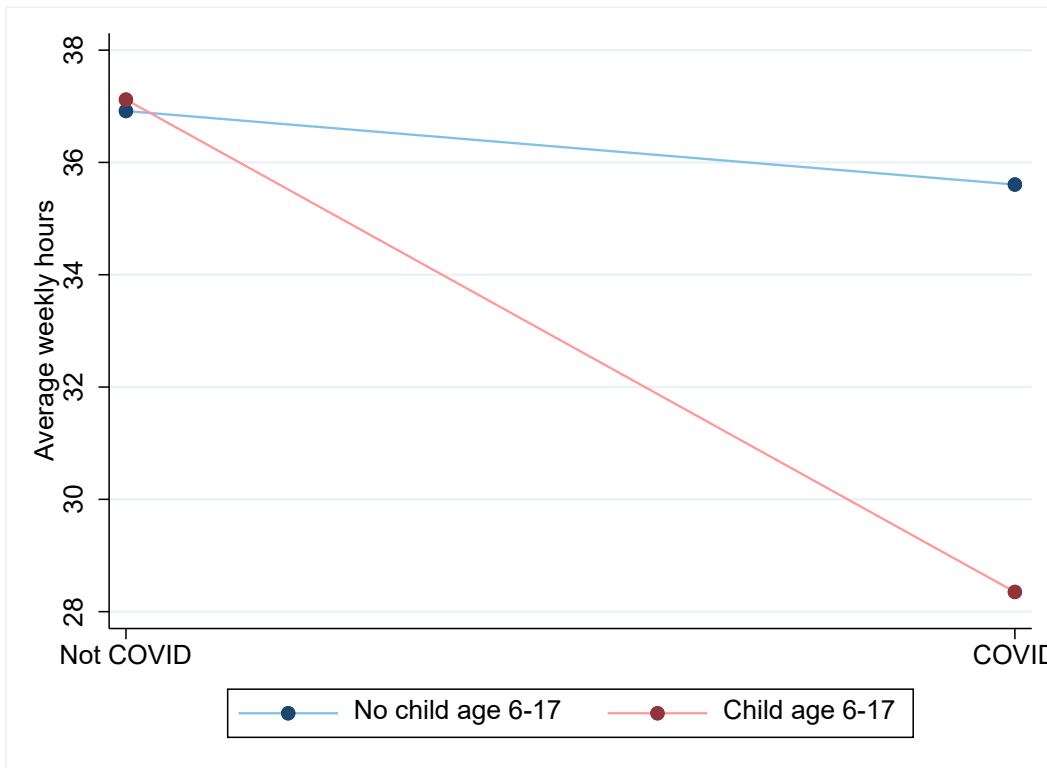
Note: All workers were self-employed and at work.

Source: Current Population Survey

Table 1. Differential Effects of COVID on Employment Status (Random Effects Model)

|	Couples			Singles		
	All	Men	Women	All	Men	Women
Female	-0.001			-0.004		
	(0.006)			(0.009)		
Child age<6	-0.009	-0.025***	0.004	-0.017	-0.005	-0.027
	(0.009)	(0.010)	(0.019)	(0.012)	(0.017)	(0.025)
Child age 6-17	-0.007	-0.011	0.008	-0.006	-0.017	0.012
	(0.007)	(0.008)	(0.012)	(0.009)	(0.013)	(0.017)
Remote job	-0.006	0.003	-0.029**	-0.025**	-0.009	-0.055***
	(0.008)	(0.011)	(0.014)	(0.011)	(0.015)	(0.019)
Essential industry	-0.024**	-0.021	-0.039**	-0.009	0.033	-0.044**
	(0.011)	(0.017)	(0.018)	(0.014)	(0.025)	(0.020)
Extra adults	0.005	0.007*	0.008	0.007*	0.003	0.012*
	(0.003)	(0.004)	(0.007)	(0.004)	(0.005)	(0.007)
March	-0.158***	-0.259***	-0.088**	-0.155***	-0.112***	-0.167***
	(0.030)	(0.042)	(0.036)	(0.031)	(0.043)	(0.039)
April	-0.570***	-0.574***	-0.635***	-0.572***	-0.545***	-0.516***
	(0.048)	(0.067)	(0.070)	(0.053)	(0.068)	(0.062)
May	-0.395***	-0.388***	-0.507***	-0.483***	-0.408***	-0.566***
	(0.066)	(0.091)	(0.096)	(0.067)	(0.083)	(0.080)
March X Female	-0.027			0.028		
	(0.020)			(0.026)		
April X Female	-0.082***			0.107**		
	(0.031)			(0.044)		
May X Female	-0.135***			0.016		
	(0.043)			(0.056)		
March X Child age<6	-0.017	0.011	-0.050	0.022	0.008	0.018
	(0.025)	(0.027)	(0.047)	(0.049)	(0.077)	(0.057)
April X Child age<6	-0.044	-0.025	-0.066	0.098	0.168	0.005
	(0.040)	(0.051)	(0.062)	(0.067)	(0.103)	(0.098)
May X Child age<6	0.037	0.119**	-0.064	0.078	0.115	-0.003
	(0.050)	(0.057)	(0.080)	(0.086)	(0.130)	(0.119)
March X Child age 6-17	0.057***	0.068***	0.036	-0.008	-0.002	-0.004
	(0.018)	(0.019)	(0.032)	(0.034)	(0.054)	(0.044)
April X Child age 6-17	0.003	0.028	-0.028	-0.094*	-0.120	-0.065
	(0.032)	(0.039)	(0.051)	(0.056)	(0.085)	(0.073)
May X Child age 6-17	-0.006	-0.005	-0.012	0.055	0.018	0.086
	(0.043)	(0.052)	(0.069)	(0.073)	(0.119)	(0.090)
March X Remote job	-0.018	0.005	-0.032	0.014	-0.006	0.046
	(0.020)	(0.024)	(0.034)	(0.028)	(0.040)	(0.039)
April X Remote job	0.063**	0.085**	0.048	0.106**	0.103*	0.134**
	(0.032)	(0.041)	(0.051)	(0.045)	(0.060)	(0.065)
May X Remote job	0.004	-0.041	0.055	0.078	-0.004	0.182**
	(0.045)	(0.058)	(0.069)	(0.057)	(0.076)	(0.082)
March X Essential industry	0.025	0.095***	-0.030	-0.001	-0.036	0.022
	(0.024)	(0.035)	(0.031)	(0.027)	(0.042)	(0.038)
April X Essential industry	0.240***	0.217***	0.261***	0.236***	0.261***	0.194***
	(0.037)	(0.056)	(0.048)	(0.045)	(0.067)	(0.063)
May X Essential industry	0.093*	0.068	0.100	0.278***	0.242***	0.315***
	(0.049)	(0.073)	(0.064)	(0.060)	(0.085)	(0.080)

Table 1 Continued. Differential Effects of COVID on Employment Status (Random Effects Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
March X Spouse - Employed	0.007	0.063*	-0.105*			
	(0.030)	(0.033)	(0.058)			
April X Spouse - Employed	0.116**	0.097	0.175*			
	(0.052)	(0.061)	(0.093)			
May X Spouse - Employed	0.061	0.056	0.117			
	(0.069)	(0.080)	(0.130)			
March X Spouse - Remote job	0.004	0.005	-0.007			
	(0.022)	(0.025)	(0.037)			
April X Spouse - Remote job	0.047	0.043	0.041			
	(0.036)	(0.045)	(0.055)			
May X Spouse - Remote job	0.046	0.054	0.007			
	(0.049)	(0.058)	(0.077)			
March X Spouse - Essential industry	0.004	-0.032	0.081			
	(0.025)	(0.025)	(0.050)			
April X Spouse - Essential industry	-0.022	0.015	-0.086			
	(0.040)	(0.047)	(0.069)			
May X Spouse - Essential industry	0.074	0.087	0.020			
	(0.052)	(0.058)	(0.101)			
March X Extra adults	0.011	0.019	-0.006	-0.012	-0.024	0.009
	(0.012)	(0.015)	(0.022)	(0.012)	(0.017)	(0.014)
April X Extra adults	-0.008	-0.001	-0.029	-0.037*	-0.088***	0.040
	(0.022)	(0.026)	(0.039)	(0.021)	(0.025)	(0.027)
May X Extra adults	-0.036	-0.009	-0.100*	-0.076***	-0.091**	-0.035
	(0.032)	(0.036)	(0.061)	(0.027)	(0.039)	(0.039)
Observations	5,144	3,099	2,045	2,852	1,626	1,226
Between R^2	0.24	0.23	0.32	0.27	0.30	0.35

Notes: Standard errors in parentheses are clustered by household-year. Control variables also include education, race, Hispanic ethnicity, immigrant status, own major industry, spouse major industry, MSA status, and state fixed effects.

Source: Current Population Survey, February – May 2020

Table 2. Differential Effects of COVID on Hours (Random Effects Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
Female	-10.347***			-3.015***		
	(0.836)			(1.124)		
Child age<6	-2.992***	-1.982	-5.655***	0.609	4.394	-2.033
	(1.044)	(1.214)	(1.847)	(1.934)	(2.854)	(2.772)
Child age 6-17	-0.579	0.414	-1.263	-0.777	-1.034	-0.334
	(0.818)	(1.014)	(1.307)	(1.147)	(1.612)	(1.869)
Remote job	0.802	1.670	-0.383	2.406*	1.624	2.776
	(0.890)	(1.198)	(1.372)	(1.245)	(1.528)	(2.023)
Essential industry	-1.382	1.575	-3.807**	-0.013	2.823	-2.862
	(1.088)	(1.579)	(1.527)	(1.375)	(2.040)	(2.005)
Extra adults	1.511***	1.573***	1.877**	0.036	-0.757	1.240
	(0.509)	(0.573)	(0.907)	(0.469)	(0.573)	(0.852)
March	-5.961***	-6.453***	-5.651***	-5.537***	-4.766**	-2.316
	(1.213)	(1.759)	(1.534)	(1.466)	(1.910)	(1.829)
April	-22.540***	-21.960***	-22.038***	-20.473***	-18.436***	-19.680***
	(1.867)	(2.855)	(2.555)	(2.116)	(2.548)	(2.558)
May	-15.874***	-13.544***	-22.545***	-14.156***	-13.420***	-15.676***
	(2.544)	(3.641)	(3.292)	(2.967)	(4.080)	(3.106)
March X Female	-0.201			3.804***		
	(0.848)			(1.225)		
April X Female	0.723			4.564***		
	(1.199)			(1.713)		
May X Female	-4.045***			0.429		
	(1.508)			(2.411)		
March X Child age<6	-0.108	1.747	-2.972	-2.191	-0.437	-3.303
	(1.149)	(1.436)	(1.818)	(2.276)	(3.211)	(3.210)
April X Child age<6	-1.316	-0.799	-1.613	3.547	4.521	1.433
	(1.624)	(2.258)	(2.169)	(2.805)	(3.824)	(4.448)
May X Child age<6	2.745	5.394*	-0.352	4.318	4.859	2.832
	(1.999)	(2.820)	(2.485)	(3.049)	(4.269)	(4.821)
March X Child age 6-17	0.054	0.298	-0.677	-0.019	0.299	0.010
	(0.977)	(1.211)	(1.411)	(1.493)	(2.315)	(1.983)
April X Child age 6-17	-1.636	-2.561	-0.381	-4.725**	-6.432*	-2.499
	(1.395)	(1.796)	(1.890)	(2.241)	(3.504)	(2.869)
May X Child age 6-17	-3.547**	-5.905***	-1.002	-3.987	-4.945	-2.960
	(1.770)	(2.228)	(2.465)	(2.863)	(5.075)	(4.128)
March X Remote job	-0.830	-0.881	-0.250	-0.939	0.085	-1.363
	(0.902)	(1.198)	(1.364)	(1.268)	(1.750)	(1.823)
April X Remote job	1.262	1.298	1.567	2.413	0.601	5.451**
	(1.251)	(1.768)	(1.892)	(1.816)	(2.554)	(2.589)
May X Remote job	-0.652	-3.432	2.459	1.624	-1.178	5.401
	(1.670)	(2.350)	(2.533)	(2.412)	(3.364)	(3.407)
March X Essential industry	1.544	1.318	1.567	-0.568	-1.806	0.369
	(0.985)	(1.521)	(1.254)	(1.275)	(1.818)	(1.842)
April X Essential industry	10.541***	9.634***	11.270***	8.431***	9.127***	8.007***
	(1.430)	(2.358)	(1.726)	(1.784)	(2.636)	(2.524)
May X Essential industry	6.745***	5.838**	6.936***	6.745***	7.645**	6.148*
	(1.854)	(2.878)	(2.411)	(2.505)	(3.843)	(3.422)

Table 2 Continued. Differential Effects of COVID on Hours (Random Effects Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
March X Spouse - Employed	0.919	1.462	-0.165			
	(1.418)	(1.670)	(2.608)			
April X Spouse - Employed	0.126	-0.016	0.100			
	(2.065)	(2.623)	(3.486)			
May X Spouse - Employed	1.813	0.150	5.896			
	(2.688)	(3.276)	(4.403)			
March X Spouse - Remote job	1.343	2.438*	-0.734			
	(1.039)	(1.342)	(1.581)			
April X Spouse - Remote job	3.621**	4.223*	2.629			
	(1.500)	(2.160)	(2.043)			
May X Spouse - Remote job	2.344	3.126	0.716			
	(1.885)	(2.561)	(2.941)			
March X Spouse - Essential industry	-0.382	-1.692	2.151			
	(1.208)	(1.348)	(2.171)			
April X Spouse - Essential industry	3.736**	3.554*	4.175			
	(1.690)	(2.152)	(2.565)			
May X Spouse - Essential industry	3.339	3.590	1.586			
	(2.107)	(2.483)	(3.282)			
March X Extra adults	-0.056	0.262	-0.642	-0.335	-0.689	0.361
	(0.614)	(0.724)	(1.039)	(0.510)	(0.656)	(0.767)
April X Extra adults	-1.510	-0.565	-3.200*	-0.700	-2.653**	2.137*
	(0.975)	(1.091)	(1.649)	(0.919)	(1.095)	(1.263)
May X Extra adults	-0.580	0.561	-3.042	-2.024**	-2.254*	-1.648
	(1.474)	(1.531)	(2.735)	(0.980)	(1.308)	(1.802)
Observations	5,144	3,099	2,045	2,852	1,626	1,226
Between R^2	0.23	0.21	0.20	0.16	0.24	0.22

Notes: Standard errors in parentheses are clustered by household-year. Control variables also include education, race, Hispanic ethnicity, immigrant status, own major industry, spouse major industry, MSA status, and state fixed effects.
Source: Current Population Survey, February – May 2020
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Differential Effects of COVID on Employment Status (Difference-in-Difference-in-Differences Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
Female	-0.026***			-0.049***		
	(0.010)			(0.014)		
Child age<6	0.002	-0.013	0.013	0.019	0.027	-0.023
	(0.012)	(0.014)	(0.023)	(0.026)	(0.027)	(0.048)
Child age 6-17	0.011	-0.004	0.029*	-0.006	-0.008	0.002
	(0.009)	(0.010)	(0.018)	(0.016)	(0.019)	(0.028)
Remote job	-0.011	-0.007	-0.020	-0.020	0.024	-0.038
	(0.011)	(0.013)	(0.019)	(0.016)	(0.020)	(0.026)
Essential industry	-0.027*	0.003	-0.054**	0.001	-0.005	0.026
	(0.014)	(0.020)	(0.021)	(0.019)	(0.025)	(0.029)
Extra adults	-0.008	-0.003	-0.014	0.001	0.002	-0.002
	(0.006)	(0.006)	(0.013)	(0.005)	(0.006)	(0.011)
COVID	-0.532***	-0.540***	-0.561***	-0.484***	-0.503***	-0.346***
	(0.057)	(0.079)	(0.082)	(0.067)	(0.082)	(0.080)
COVID X Female	-0.064*			0.136**		
	(0.037)			(0.055)		
COVID X Child age<6	-0.078	-0.054	-0.118	0.049	0.095	0.035
	(0.047)	(0.060)	(0.073)	(0.087)	(0.125)	(0.130)
COVID X Child age 6-17	-0.029	-0.008	-0.053	-0.138**	-0.219**	-0.071
	(0.038)	(0.047)	(0.059)	(0.068)	(0.099)	(0.093)
COVID X Remote job	0.097***	0.118**	0.076	0.094*	0.079	0.112
	(0.037)	(0.047)	(0.059)	(0.054)	(0.071)	(0.081)
COVID X Essential industry	0.284***	0.239***	0.323***	0.215***	0.275***	0.139*
	(0.042)	(0.065)	(0.055)	(0.056)	(0.079)	(0.079)
Spouse - Employed	-0.020	-0.017	0.006			
	(0.024)	(0.026)	(0.045)			
Spouse - Remote job	0.008	0.006	-0.003			
	(0.011)	(0.013)	(0.020)			
Spouse - Essential industry	0.000	-0.011	0.004			
	(0.013)	(0.014)	(0.028)			
COVID X Spouse - Employed	0.083	0.058	0.144			
	(0.059)	(0.070)	(0.106)			
COVID X Spouse - Remote job	0.034	0.025	0.053			
	(0.042)	(0.053)	(0.065)			
COVID X Spouse - Essential industry	0.010	0.067	-0.069			
	(0.047)	(0.057)	(0.079)			
COVID X Extra Adults	0.014	0.013	0.008	-0.023	-0.056**	0.033
	(0.027)	(0.032)	(0.045)	(0.025)	(0.027)	(0.035)
Observations	3,902	2,249	1,653	2,192	1,256	936
R^2	0.302	0.266	0.359	0.325	0.403	0.318

Notes: CPS final weights used. Standard errors in parentheses are clustered by household-year. Control variables also include education, race, Hispanic ethnicity, immigrant status, own major industry, spouse major industry, MSA status, state, month and year fixed effects.
Source: Current Population Survey, February and April 2019-2020
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4. Differential Effects of COVID on Hours (Difference-in-Difference-in-Differences Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
Female	-9.634***			-5.320***		
	(0.967)			(1.264)		
Child age<6	-2.322**	-3.674**	-1.051	0.249	1.847	-1.863
	(1.166)	(1.527)	(1.924)	(1.801)	(2.229)	(3.079)
Child age 6-17	0.281	0.678	1.167	0.097	0.671	-2.400
	(0.935)	(1.152)	(1.483)	(1.410)	(1.709)	(2.263)
Remote job	-0.421	1.247	-2.599	-0.450	3.507**	-3.215
	(1.059)	(1.398)	(1.583)	(1.412)	(1.694)	(2.169)
Essential industry	-3.724***	0.856	-6.778***	0.395	1.434	-1.158
	(1.271)	(1.908)	(1.819)	(1.647)	(2.236)	(2.497)
Extra adults	0.868	1.739***	-0.328	-0.514	-0.880	0.696
	(0.619)	(0.669)	(1.044)	(0.433)	(0.565)	(0.943)
COVID	-23.190***	-22.005***	-22.618***	-22.784***	-19.590***	-21.368***
	(2.358)	(3.645)	(3.020)	(2.790)	(3.433)	(2.902)
COVID X Female	0.386			5.385**		
	(1.555)			(2.292)		
COVID X Child age<6	-1.005	0.048	-2.288	4.731	2.794	6.281
	(2.092)	(2.950)	(2.643)	(3.441)	(4.547)	(4.928)
COVID X Child age 6-17	-4.019**	-5.545**	-1.709	-6.873**	-13.049***	-2.071
	(1.649)	(2.225)	(2.270)	(2.673)	(3.867)	(3.435)
COVID X Remote job	2.818*	1.724	3.834*	3.796	1.410	6.246**
	(1.601)	(2.253)	(2.277)	(2.309)	(3.103)	(3.173)
COVID X Essential industry	10.735***	9.055***	12.174***	8.470***	9.039***	7.133**
	(1.782)	(2.975)	(2.159)	(2.316)	(3.488)	(3.091)
Spouse - Employed	-0.615	-1.335	6.793*			
	(1.992)	(2.492)	(3.556)			
Spouse - Remote job	2.540**	2.858*	1.344			
	(1.096)	(1.468)	(1.723)			
Spouse - Essential industry	-0.479	0.661	-5.307**			
	(1.361)	(1.557)	(2.539)			
COVID X Spouse - Employed	0.623	0.690	-0.909			
	(2.625)	(3.287)	(4.435)			
COVID X Spouse - Remote job	0.946	1.624	0.715			
	(1.862)	(2.601)	(2.569)			
COVID X Spouse - Essential industry	2.913	3.915	2.448			
	(2.159)	(2.773)	(3.397)			
COVID X Extra Adults	-0.301	0.170	-1.165	-0.029	-1.607	2.436*
	(1.279)	(1.585)	(1.862)	(1.088)	(1.171)	(1.472)
Observations	3,902	2,249	1,653	2,192	1,256	936
R^2	0.230	0.224	0.254	0.245	0.338	0.259

Notes: CPS final weights used. Standard errors in parentheses are clustered by household-year. Control variables also include education, race, Hispanic ethnicity, immigrant status, own major industry, spouse major industry, MSA status, state, month and year fixed effects.
Source: Current Population Survey, February and April 2019–2020
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5. Differential Effects of COVID on Hours of those Remaining Employed (Difference-in-Difference-in-Differences Model)

	Couples			Singles		
	All	Men	Women	All	Men	Women
Female	-9.150***			-3.754***		
	(0.962)			(1.221)		
Child age<6	-2.454**	-3.492**	-0.927	0.014	1.728	-1.287
	(1.119)	(1.419)	(1.902)	(1.657)	(2.066)	(2.940)
Child age 6-17	-0.265	0.492	0.537	-0.006	0.203	-2.787
	(0.892)	(1.079)	(1.446)	(1.321)	(1.584)	(2.107)
Remote job	-0.231	1.463	-2.553*	0.027	3.012*	-3.009
	(1.023)	(1.324)	(1.538)	(1.300)	(1.562)	(2.042)
Essential industry	-3.191**	0.852	-5.781***	0.221	1.286	-2.763
	(1.250)	(1.905)	(1.777)	(1.533)	(2.091)	(2.362)
Extra adults	1.153**	1.953***	-0.001	-0.579	-0.948*	0.867
	(0.583)	(0.629)	(0.988)	(0.415)	(0.511)	(0.922)
COVID	-3.210	-3.560	-4.830	-5.956**	-1.641	-12.355***
	(2.515)	(3.614)	(3.999)	(2.854)	(3.406)	(3.477)
COVID X Female	-0.523			-0.606		
	(1.546)			(2.247)		
COVID X Child age<6	2.197	2.831	-0.080	3.423	-0.258	6.003
	(2.084)	(2.662)	(3.033)	(3.867)	(4.643)	(4.390)
COVID X Child age 6-17	-3.541**	-5.992***	0.303	-3.455	-7.457	-3.023
	(1.587)	(1.997)	(2.475)	(3.233)	(5.193)	(3.798)
COVID X Remote job	0.016	-2.616	2.449	2.847	0.400	6.648**
	(1.553)	(1.990)	(2.507)	(2.241)	(2.705)	(3.148)
COVID X Essential industry	1.582	2.542	1.167	3.622	2.050	7.067**
	(2.042)	(3.224)	(2.570)	(2.378)	(3.706)	(2.986)
Spouse - Employed	-0.165	-0.957	7.547**			
	(1.904)	(2.345)	(3.582)			
Spouse - Remote job	2.351**	2.622*	1.608			
	(1.054)	(1.395)	(1.663)			
Spouse - Essential industry	-0.395	1.084	-5.848**			
	(1.312)	(1.472)	(2.535)			
COVID X Spouse - Employed	-1.549	-1.159	-2.347			
	(2.679)	(3.148)	(4.901)			
COVID X Spouse - Remote job	0.399	2.026	-0.467			
	(1.811)	(2.383)	(2.572)			
COVID X Spouse - Essential industry	3.312	2.532	4.066			
	(2.066)	(2.548)	(3.081)			
COVID X Extra Adults	-0.504	0.260	-1.128	1.270	-1.436	2.931**
	(1.212)	(1.376)	(1.974)	(1.089)	(1.435)	(1.465)
Observations	3,478	2,057	1,421	1,921	1,103	818
R^2	0.151	0.159	0.186	0.152	0.230	0.223

Notes: CPS final weights used. Standard errors in parentheses are clustered by household-year. Control variables also include education, race, Hispanic ethnicity, immigrant status, own major industry, spouse major industry, MSA status, state, month and year fixed effects.
Source: Current Population Survey, February and April 2019-2020
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A1. Mean Employment and Hours in 2020 by Couple and Parental Status

Sample	February	March	April	May
Panel A. Employed at Work				
Couples				
Males	1.00	0.88	0.70	0.75
No children	1.00	0.85	0.70	0.76
Child age<6	1.00	0.91	0.66	0.81
Child age 6–17	1.00	0.92	0.69	0.73
Females	1.00	0.86	0.56	0.61
No children	1.00	0.86	0.59	0.67
Child age<6	1.00	0.76	0.48	0.57
Child age 6–17	1.00	0.87	0.54	0.59
Singles				
Males	1.00	0.84	0.56	0.71
No children	1.00	0.85	0.60	0.72
Child age<6	1.00	0.85	0.61	0.94
Child age 6–17	1.00	0.79	0.37	0.67
Females	1.00	0.87	0.62	0.60
No children	1.00	0.86	0.65	0.62
Child age<6	1.00	0.89	0.60	0.55
Child age 6–17	1.00	0.90	0.57	0.64
Panel B. Average Weekly Hours				
Couples				
Males	38.55	33.84	25.30	29.00
No children	37.02	32.07	25.48	29.26
Child age<6	39.18	35.57	24.54	31.41
Child age 6–17	40.52	35.94	24.10	27.84
Females	30.04	24.90	15.52	15.93
No children	31.13	26.22	16.48	17.62
Child age<6	25.79	18.01	11.89	13.12
Child age 6–17	29.45	24.64	15.34	15.40
Singles				
Males	35.54	28.39	19.77	25.87
No children	35.52	28.72	21.51	27.55
Child age<6	37.82	30.62	18.81	27.75
Child age 6–17	36.00	26.72	11.15	19.17
Females	30.85	28.14	17.54	17.69
No children	31.38	27.91	17.73	19.30
Child age<6	25.57	24.81	20.49	15.30
Child age 6–17	30.60	29.66	17.21	15.67
Observations	3,403	2,302	1,515	776

Note: CPS final weights used. Sample restricted to those who were unincorporated self-employed and at work in February.

Source: Current Population Surveys

Table A2. Means for Random Effects Sample (2020)

Variable	February	March	April	May
Employed at work	1.00	0.87	0.62	0.68
Hours on main job	34.65	29.60	20.32	22.96
Female	0.39	0.40	0.43	0.44
Age	49.44	49.36	49.33	48.91
High school degree	0.27	0.27	0.25	0.27
Some college	0.28	0.28	0.29	0.29
Bachelor's degree	0.23	0.24	0.24	0.24
Advanced degree	0.12	0.12	0.13	0.13
Black	0.08	0.08	0.07	0.07
Other race	0.07	0.07	0.08	0.07
Hispanic	0.18	0.18	0.18	0.20
Any child age<6	0.14	0.14	0.15	0.16
Any child age 6–17	0.30	0.31	0.31	0.32
Married	0.62	0.62	0.64	0.63
Number of extra HH adults	0.59	0.60	0.57	0.59
Immigrant	0.22	0.22	0.22	0.21
Remote Job	0.38	0.39	0.40	0.42
Essential Industry	0.68	0.68	0.67	0.66
Own Industry				
Agriculture and mining	0.07	0.07	0.07	0.06
Construction	0.18	0.17	0.16	0.16
Manufacturing	0.03	0.03	0.03	0.03
Trade, transportation, and utilities	0.14	0.14	0.14	0.13
Information	0.02	0.02	0.02	0.02
Financial activities	0.08	0.08	0.08	0.10
Professional and business services	0.20	0.20	0.20	0.20
Educational and health services	0.11	0.11	0.12	0.12
Leisure and hospitality	0.07	0.07	0.08	0.08
Other services/Public administration	0.11	0.11	0.10	0.08
Spouse – Employed	0.47	0.46	0.48	0.48
Spouse - Remote job	0.22	0.22	0.24	0.25
Spouse - Essential industry	0.34	0.34	0.36	0.35
Spouse Industry				
Agriculture and mining	0.03	0.03	0.03	0.04
Construction	0.04	0.03	0.03	0.04
Manufacturing	0.04	0.04	0.04	0.04
Trade, transportation, and utilities	0.08	0.08	0.09	0.08
Information	0.01	0.01	0.02	0.01
Financial activities	0.04	0.04	0.04	0.05
Professional and business services	0.06	0.07	0.08	0.08
Educational and health services	0.10	0.10	0.09	0.08
Leisure and hospitality	0.03	0.02	0.02	0.03
Other services/Public administration	0.05	0.05	0.05	0.05
Observations	3,403	2,302	1,515	776

Note: CPS final weights used. Sample restricted to those who were unincorporated self-employed and at work in February.

Source: Current Population Surveys

Table A3. Means for Difference-in-Difference-in-Differences Sample

Variable	Feb 2019	April 2019	Feb 2020	April 2020
Employed at work	1.00	0.89	1.00	0.62
Hours on main job	34.73	32.99	34.36	20.32
COVID	0	0	0	1
Female	0.42	0.41	0.44	0.43
Age	49.37	49.38	49.70	49.33
High school degree	0.26	0.26	0.25	0.25
Some college	0.28	0.28	0.29	0.29
Bachelor's degree	0.23	0.23	0.24	0.24
Advanced degree	0.12	0.12	0.13	0.13
Black	0.07	0.07	0.07	0.07
Other race	0.08	0.08	0.07	0.08
Hispanic	0.18	0.18	0.16	0.18
Any child age<6	0.15	0.16	0.15	0.15
Any child age 6–17	0.33	0.33	0.31	0.31
Married	0.61	0.61	0.64	0.64
Number of extra HH adults	0.60	0.60	0.56	0.57
Immigrant	0.23	0.22	0.21	0.22
Remote Job	0.40	0.40	0.40	0.40
Essential Industry	0.70	0.70	0.67	0.67
Own Industry				
Agriculture and mining	0.09	0.09	0.07	0.07
Construction	0.16	0.16	0.16	0.16
Manufacturing	0.03	0.03	0.03	0.03
Trade, transportation, and utilities	0.12	0.13	0.14	0.14
Information	0.01	0.01	0.02	0.02
Financial activities	0.07	0.07	0.08	0.08
Professional and business services	0.21	0.21	0.19	0.20
Educational and health services	0.12	0.11	0.12	0.12
Leisure and hospitality	0.06	0.06	0.08	0.08
Other services/Public administration	0.13	0.12	0.10	0.10
Spouse – Employed	0.47	0.47	0.48	0.48
Spouse - Remote job	0.23	0.23	0.24	0.24
Spouse - Essential industry	0.35	0.35	0.36	0.36
Spouse Industry				
Agriculture and mining	0.04	0.04	0.03	0.03
Construction	0.03	0.03	0.03	0.03
Manufacturing	0.03	0.03	0.04	0.04
Trade, transportation, and utilities	0.07	0.07	0.09	0.09
Information	0.01	0.01	0.02	0.02
Financial activities	0.04	0.04	0.04	0.04
Professional and business services	0.06	0.06	0.08	0.08
Educational and health services	0.11	0.11	0.09	0.09
Leisure and hospitality	0.02	0.02	0.02	0.02
Other services/Public administration	0.06	0.06	0.05	0.05
Observations	1,532	1,532	1,515	1,515

Note: CPS final weights used. Some differences are due to different weights. Restricted to respondents who could be matched between February and April and who were working in February.

Source: Current Population Surveys, 2019–2020