Has the COVID-19 Recession been Harder on Women? Evidence from Employment and Time Use for Men, Women, and Children in Mexico

Lauren Hoehn-Velasco [*] *Adan Silverio-Murillo* [†]

Jose Roberto Balmori de la Miyar [‡] *Jacob Penglase*[§]

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Abstract

This study examines changes in labor supply, income, and time allocation during the COVID-19 pandemic in Mexico. Using individual-level panel data, we show that the COVID-19 recession had severe negative consequences. Over the first nine months of the pandemic, individual income declined by one-quarter, and employment decreased by 13 percentage points. While men recovered their employment faster than women, both men and women experienced persistent employment losses that continued to the conclusion of our study (December 2020). Within-household, men also increased their household production, while neither gender increased their time spent caring for others (our proxy for childcare). Instead, children reduced their time spent on schoolwork by more than 30 percent.

Keywords: Women; Children; COVID-19; Mexico; Labor Supply; Gender; Recession.
JEL: H12, J12, J13, J16, J18, O12.

[*]*All correspondence to:* Lauren Hoehn-Velasco, Andrew Young School of Policy Studies, Georgia State University. E-mail: lvelasco@gsu.edu

[†]School of Government, Tecnologico de Monterrey. E-mail: adan.sm@tec.mx

[‡]Business and Economics School, Universidad Anahuac. E-mail: jose.balmori@anahuac.mx

[§]San Diego State University: E-mail: jpenglase@sdsu.edu

1 Introduction

The economic consequences of the COVID-19 pandemic have been severe. In addition to death and illness, households have been burdened by shuttered economies that have resulted in a dramatic reduction in economic activity. Unlike previous recessions, the COVID-19 pandemic has been uniquely devastating to women (Alon et al., 2020). Women tend to work in sectors that are more adversely affected by the pandemic, and school closures have disproportionately shifted childcare responsibilities onto mothers (Alon et al., 2020; Heggeness, 2020). However, much of the literature has focused on high-income countries rather than the world at large.[1] Middle and low-income countries face different constraints and more limited opportunities for remote work (Dingel and Neiman, 2020; Peluffo and Viollaz, 2021). Further, programs designed to alleviate the pandemic's economic harm, such as income support, vary greatly across contexts (Hale et al., 2020).

In this paper, we examine the economic consequences of the COVID-19 pandemic in Mexico. The pandemic has been particularly harmful to economic activity in Mexico. GDP is estimated to have declined by 9% in aggregate and formal employment by 5% (IMSS, 2020; Flores, 2020). Despite the severity of the recession, the Mexican government has offered no new public policies to aid affected groups, unlike their counterparts in high-income countries (von Gaudecker et al., 2020) and similar Latin American countries (Hale et al., 2020). Moreover, compared to high-income countries, Mexico has fewer remote work opportunities and weaker public support systems (Peluffo and Viollaz, 2021). For these reasons, we expect the pandemic to operate differently in Mexico than in other contexts.

Using panel data from Mexico's National Employment and Occupation Survey (*Encuesta Nacional de Ocupación y Empleo* or ENOE), we measure changes in employment, income, and time use during the COVID-19 recession. The individual-level panel allows us to observe labor force participation and income before and after the onset of the pandemic for the same individuals. There are several benefits of this data in addition to the panel structure. First, the ENOE records both formal and informal work, which is essential in a setting such as Mexico, where the majority of the jobs are informal (Alvarez and Ruane, 2019).[2] Second, in addition to labor supply, the ENOE provides information on time use within the household, including time spent caring for others and time al-

[1] Other related work in high-income countries includes (Aguiar et al., 2013; Alon et al., 2020; Czymara et al., 2020; Bartik et al., 2020; Cajner et al., 2020; Farré et al., 2020; Heggeness, 2020; Boca et al., 2020; Prados and Zamarro, 2020).

[2] In Mexico, a firm is considered formal based on accounting practices, which can be narrowed down to filing incorporation to Mexico's public registration authority and paying taxes to both federal and local governments. On the labor side, formal employment is defined as contributing to Mexico's social security system, including having access to health insurance and participating in the pension system (Alvarez and Ruane, 2019).

located towards household production. Third, the ENOE includes measures of school enrollment and time allocation for children. Using children's time allocation, we can determine how the school closures affected schoolwork during the pandemic and observe how households responded to the lost in-person schooling.

We use three primary econometric specifications throughout our analysis. First, we use a before and after estimation strategy to follow the same individuals through the COVID-19 recession. Second, because the traditional ENOE transitioned into a telephone survey (the ETOE) during the lockdown period, we compare the traditional face-to-face ENOE, available in the second half of 2020, with the traditional ENOE in 2019 (instead of the ETOE panel). Third, we use the ETOE to follow individuals in an event-study design, where we track individuals over each month of the pandemic (April through December of 2020). In all three specifications and across all individuals, the COVID-19 pandemic reduced employment and income, with little impact on adult household time (except for men).

Using the ETOE, we find that initial employment during the lockdown phase of the pandemic dropped by 20 percentage points (for April), and hours spent working declined by 13 hours per week. Both employment and hours worked started to recover to original levels beginning in June but were still below their baseline levels in December. Men returned to work faster than women, with the informal sector leading in employment gains. Income also declined substantially during the pandemic, with monthly income falling by more than 1,000 pesos, representing more than one-quarter of monthly income.

In the first few months of the pandemic, men reallocated their time towards household production (an increase of 0.3-0.6 hours per week), but not towards time spent with children. Women did not change their time use across household production or time caring for others (including children).[3] These results suggest that women did not take on the burden of household work or childcare during the pandemic in Mexico. These findings differ slightly from the existing literature (Aguiar et al., 2013; Alon et al., 2020; Czymara et al., 2020; Leukhina and Yu, 2020; von Gaudecker et al., 2020; Bartik et al., 2020; Cajner et al., 2020; Farré et al., 2020; Heggeness, 2020; Boca et al., 2020; Prados and Zamarro, 2020). While our results echo the existing literature in finding that men recover faster from their job loss, we do not find that households shifted childcare or household production to women. Instead, men appear to increase their contribution to household production.

To elaborate on these central conclusions, we explore the within-household burden on women. We examine the relative contributions to income, hours worked, and house-

[3] If anything, women decrease their time spent on the household and caring for others, depending on the specification.

hold production across men and women within the same household. In past recessions, women compensated for their husbands' job and income loss by increasing their own labor supply. Given the uniqueness of the COVID-19 pandemic, this insurance mechanism may not apply. Our results demonstrate that the relative contribution of women's income and labor supply is similar before and after the pandemic.[4] For measures of within-household time use, men contribute more to household production than before the pandemic. Still, there is no shift in time spent caring for others (including children). These within-household findings indicate that women did not disproportionately take on household work or caring responsibilities during the pandemic. Instead, the significant change within the household is that men contribute more to household production.

We conclude by considering the effects of the COVID-19 pandemic on children. Our analysis of adult time use demonstrated that neither men nor women shifted their time towards childcare. The lack of change in adults' time caring for others suggests that children may have responded to school closures by spending less time on schoolwork. To test how children's time use changed after the pandemic, we select a sample of individuals who are ages 6 to 16. During the pandemic, children did not change their school enrollment, but they did spend 11 hours less per week on schoolwork. Hours spent on schooling declined by more than 30% from the pre-pandemic mean. Given that parents also did not shift their time towards caring for others, Mexican parents do not appear to compensate for the lost schooling at home. Instead, based on the ENOE survey, children's reported time on school activities declined substantially. However, we are unable to observe how children reallocated their time. As Mexico's public education transitioned to television during the pandemic, children may have shifted their time use from school to education programming (Córdoba and Montes, 2020; Rivers and Gallón, 2020). Unfortunately, our data do not allow us to decompose educational activities into school-time versus television time.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature on the relationship between the COVID-19 recession and labor markets. Section 3 discusses the Mexican context. Section 4 describes the household survey data used throughout the analysis. Section 5 outlines the empirical strategy. Section 6 presents the main results. Section 7 discusses the main results and Section 8 concludes.

2 Related Literature

This study relates to several different strands of research. First, our study contributes to past work describing how recessions affect men and women differently. Second, our

[4] When we include zero earners, women's contribution increases relative to men for both hours worked and income, due to men's wages falling to zero.

paper contributes to recent work on the economic consequences of the COVID-19 pandemic.

The Great Recession was notable for the disproportionate adverse effect it had on male employment (Bargain and Martinoty, 2019). The COVID-19 recession has been different (Alon et al., 2020). Because women work in the service sector, which has been particularly harmed by the economic shutdown and fear of infection, their employment losses have been more severe. Moreover, school closures have resulted in an increased need for childcare. These patterns have been found in several countries, including the United States (Cajner et al., 2020) and Spain (Farré et al., 2020). These patterns are, however, not universal, as Meekes et al. (2020) finds little evidence that the pandemic more adversely affected women (on average) in the Netherlands.

Mothers, in particular, have been harmed by the new pandemic economy. Heggeness (2020) shows that women with children in early-pandemic closure states in the United States experienced a much larger decline in employment relative to other individuals. These results suggest that the childcare burden may be focused on mothers rather than women in general. Similarly, in Germany Czymara et al. (2020) finds that women worried more about childcare than men during the pandemic, indicating that mothers may be faced with a disproportionate brunt of childcare responsibilities. Outside of childcare, Leukhina and Yu (2020) finds that household production increased during the COVID-19 pandemic. However, despite the literature's speculation regarding the disproportionate burden on women with children, Leukhina and Yu (2020) finds similar increases in home production for married men and women. They find hours in household work increased by 1.7 hours per week (and a 6% reduction in hours in market work).

The pandemic recession has not affected all workers equally. Aside from gender, there is heterogeneity in the consequences of the pandemic by wage level. Cajner et al. (2020) finds greater employment declines among lower-wage workers. In particular, Cajner et al. (2020) estimates that 35 percent of all workers in the bottom quintile of the wage distribution lost their employment, at least temporarily. In comparison, only nine percent of high-income workers in the top quintile lost their jobs. One reason to expect women to be disproportionately harmed by this recession is that they are more likely to be employed in low-wage work.

This study adds to the above literature by documenting the individual-level effects of the COVID-19 pandemic on men versus women in a middle-income context. We further document the within-household effects of the pandemic. We compare changes in income, wages, and time use for men relative to women in the same household, before and after the recession began. This exercise adds to our understanding of how childcare, household production, and labor supply is distributed within the same family during a recession. Further, our paper is one of the few papers to consider the time use and

household labor supply effects in a middle-income setting such as Mexico. Related studies in developing and middle-income settings have studies the effects of the pandemic on other outcomes such as consumption and aggregate labor market effects, including studies such as Mohapatra (2020); Silverio-Murillo et al. (2020); Campos-Vazquez et al. (2020).[5]

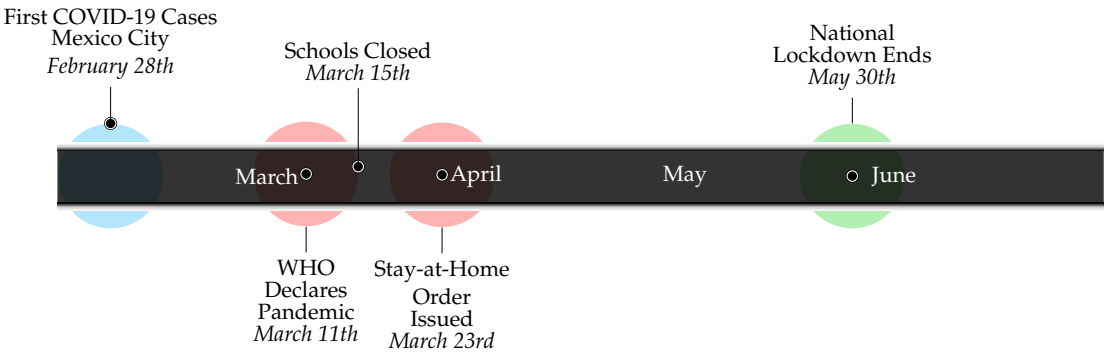
Our study also allows us to better understand why employment declined in response to the pandemic. Individuals may lose their job involuntarily due to decreased labor demand. Alternatively, individuals may wish to exit the labor force due to the health risk of working during a pandemic, or due to greater childcare needs. Finally, employment may decline due to government-mandated lockdowns. While we cannot empirically distinguish between these explanations, our study of time use within the household provides evidence over whether childcare influences employment decline. Our study, therefore, adds to recent work on how COVID-19 has affected economic activity. Important papers in this literature include Aum et al. (2020), who find that at most, half of the job losses are attributable to lockdowns. Chetty et al. (2020) focuses on consumer concerns of infection and finds that that is essential in understanding the economic consequences of COVID-19. However, an added feature in Mexico (versus high-income settings) is whether the opportunity to remote work exists. Peluffo and Viollaz (2021) highlights this aspect as important for inequality of outcomes in the labor market, due to an intrahousehold correlation in opportunity for remote work.

3 The Mexican Context

Timeline and Public Policies During the COVID-19 Pandemic The main events of the COVID-19 pandemic began during March of 2020. In March, schools were closed, mobility dropped, and the national stay-at-home order (or lockdown) was issued. This national lockdown was then subsequently lifted on May 30th of 2020. We outline the specific timeline of the major events in Figure I.

[5]While another related paper, Silverio-Murillo et al. (2020) considers the labor market effects of the pandemic recession in Mexico, they focus on aggregate formal labor market effects. In this present study, we document the time use of households and individuals over the first nine month of the pandemic for both the formal and informal sector. We also focus on the effects of time use for men, women, and children. Campos-Vazquez et al. (2020) also examines the Mexican context but uses website job vacancies. Campos-Vazquez et al. (2020) demonstrates that jobs and wages dropped in April, but then job vacancies returned to pre-pandemic levels in May.

Figure I: Timeline of Mexico's Initial Pandemic and National Lockdown



During the lockdown and recovery phase, the Mexican government did not introduce new safety nets during the COVID-19 pandemic. This contrasts with the majority of high-income and Latin American countries (Hale et al., 2020). For instance, Peru and Uruguay (March 16th and 18th, respectively) were quick to pass income support legislation, with Argentina, Bolivia, and Paraguay following (March 23rd, 31st, and 31st, respectively). Then by April, Ecuador, Chile, Honduras, Colombia, and Guatemala (April 1st, 2nd, 3rd, 7th,21st) had also passed income support policies.

Instead, the Mexican government introduced two mitigation policies, neither of which involved any monetary transfer (Lustig et al., 2020). First, individuals could receive an advanced two-month payment from the non-contributory pension system. Second, credits were given to small and medium-sized enterprises in the formal and informal sectors. For the formal sector, these credits were capped at 25,000 MXN (1,100 USD) in total, with a maturity of three years, at a 6.5% annual interest rate. México Evalúa (2020) suggests that the advanced payment is equivalent to 0.2% of the GDP and the credits to 0.1% of the GDP.

Outside of direct support to households and businesses, the Central Bank (Banco de México) also took action to mitigate economic exposure. The Central Bank added bond swaps and loosened rules for minimum deposits among commercial banks. Campos-Vazquez et al. (2020) suggests that the Central Bank's policies provided liquidity to the market equivalent to 3.3% of the GDP. In addition, the Central Bank granted regulatory flexibility to commercial banks, which allowed banks to give payment extensions to their customers on mortgages, credit cards and commercial loans, waving interest rates and fees for four months, beginning in April of 2020. Despite these measures, Mexico's response has been fairly limited in comparison to other nations. This inability to act left households without government support during a turbulent time. As a result, individuals may have been less willing to leave the labor force during the pandemic relative to similar countries.

Unique Features of Mexico's Labor Markets The Mexican labor market differs from the labor markets in other countries in several important ways. First, employment in Mexico is heavily concentrated in the informal sector relative to salaried work in the formal sector (Levy, 2010; Busso et al., 2012). Mexican laws regulating salaried and non-salaried workers are often constraining, and this regulation may push jobs into the informal sector (Alvarez and Ruane, 2019). In the formal sector, workers have protections against layoffs and firings, with firms facing penalties for firing workers (Levy, 2010). While informal work is not directly illegal, workers employed by informal firms are not technically employees (Levy, 2010). Due to the lack of employee status, informal firms do not face the same legislation. For example, informal firms do not have to pay the minimum wage, workers cannot organize into unions, and firms do not contribute to social security (Levy, 2010; Busso et al., 2012). Adjustment costs are therefore lower in the informal sector, and we may expect a greater decline in employment for those workers. Due to the relative size of the informal sector in Mexico relative to high-income countries, we may observe different patterns across contexts. Further, because women have historically had higher participation in informal and unpaid work than men (Ortega-Díaz, 2020), the informal economy is especially important in the context of the gendered recession.

Second, women in Mexico have lower labor force participation than in high-income countries. Historically, women in middle and low-income countries have had lower labor supply (Goldin, 1994), which is at least partially due to cultural norms against women working, especially in Latin America (Arceo-Gomez and Campos-Vazquez, 2010). Today, just under 50 percent of women participate in the labor force in Mexico (Novta and Wong, 2017; Bustelo et al., 2019), with higher labor supply from single, younger, and more educated women (Novta and Wong, 2017; Bustelo et al., 2019; Hoehn-Velasco and Penglase, 2019). Married women have the lowest labor force participation (Psacharopoulos and Tzannatos, 1993), at less than 45% in the ENOE survey over 2007-2019 (Hoehn-Velasco and Penglase, 2019). The low labor supply of married women suggests that women may not face the same trade-offs as in high-income countries when schools and childcare centers closed during the pandemic.

Third, women (and especially low-income women) face barriers to childcare access in Mexico (Ángeles et al., 2011; Calderon, 2014; Mateo Díaz and Rodriguez Chamussy, 2013). Previous work has demonstrated that access to childcare can be alleviated with public programs (Ángeles et al., 2011; Calderon, 2014; Mateo Díaz and Rodriguez Chamussy, 2013). When women gain access to childcare, they increase their labor supply. Thus, if childcare access increases female labor supply, we might expect the opposite effect when childcare centers close during the pandemic. This lack of childcare access should have similar consequences to high-income countries during the pandemic and potentially pressure women out of the workforce.

Finally, another factor that may increase women's employment during the COVID-19 pandemic is the added worker effect. In middle and low-income countries without unemployment insurance, women may be faced with economic pressure to enter the labor force when their husband becomes unemployed (Kohara, 2010; Novta and Wong, 2017). This pressure may push women into the labor force during downturns (relative to men) (Skoufias and Parker, 2006; Novta and Wong, 2017). Previous work has shown that women's labor supply may increase during a recession. Skoufias and Parker (2006) demonstrated that women during Mexico's peso crisis increased their labor supply to compensate for their husbands' job loss.

Composition of the Mexican Economy Due to the importance of the service sector in the COVID-19 recession (Alon et al., 2020), it is important to note the compositional differences between the Mexican economy and that of high-income countries. Mexico's economy is less reliant on the service sector relative to other more developed nations. According to the CIA factbook, Mexico's economy is only 64.5% service sector, while the United States is 80% service sector (Agency, 2017). Industry makes up 31.9% of the economy in Mexico, whereas it makes up 19.1% of the economy in the United States. Agriculture makes up the remaining portion of the economy, 3.6% in Mexico and 0.9% in the United States. The importance of person-to-person contact and women's role in service jobs makes the differences in the composition of the economy between the United States and Mexico relevant for interpreting the findings of this study. Due to the structural differences in the economies, and the lower reliance on the service sector, women's labor supply changes in Mexico may be distinct from high-income countries.

4 Data

ENOE Data Description We use quarterly data from Mexico's National Employment and Occupation Survey (*Encuesta Nacional de Ocupación y Empleo* or ENOE). This data is available from 2005 through the present and follows individuals in a rotating panel. Each wave, one-fifth of households move into and out of the survey. During the COVID-19 pandemic, data collection of the ENOE turned into a telephone survey. For the three months of April, May, and June, the ENOE became the Telephone Survey of Occupation and Employment (Encuesta Telefónica de Ocupación y Empleo (ETOE)). This survey occurred monthly rather than once over the quarter. The same households were also followed during each month of this quarter.

At the start of quarter three (July 2020), the ENOE collected both the ETOE and the traditional ENOE. Thus, for the ETOE, we have the same individuals followed over 2019 through the end of 2020 via a monthly telephone survey (with as many as 14 inter-

views per person). Throughout our main analysis, we primarily rely on the individuals followed via the ETOE. This subset of the ENOE includes individuals who were first followed in the traditional ENOE in face-to-face interviews, but then transitioned to the ETOE during the pandemic and responded a telephone survey for those periods. Our primary sample only includes individuals who were included in both the ETOE and the original ENOE. Thus, we are not comparing the full ENOE to the subsequent ETOE, only those included in the ETOE. For the individuals followed by the ETOE, we have information about their labor market outcomes and time use before and after the start of the pandemic. This sample of ETOE individuals is representative at the national level. A limitation of this ETOE sample, however, is that the ENOE warns of potential bias in the ETOE (depending on the outcome). Observable aspects of the sample bias are illustrated in Table A.2. Individuals in the ETOE are slightly older, more urban, and more likely to be divorced or cohabitating.

To deal with any bias present in the ETOE sample, we present the results with the traditional ENOE. The traditional ENOE is collected for the second half of 2020. Using the traditional ENOE, we compare the labor market outcomes for quarters three and four from the traditional ENOE with quarters three and four of 2019. While this analysis cannot capture the initial phases of the lockdown and pandemic, it provides a helpful check on the main analysis. This check is particularly useful for our conclusions about household time use, which may be sensitive to the individuals included in the data. We discuss this analysis in detail in the main results (see Equation 2).

The ENOE and ETOE track household composition and the characteristics of each member in the household. The survey records each members' education, labor force participation (hours worked and employment), time use on several household activities, monthly income, and key demographic characteristics. The data is an unbalanced panel, as individuals leave the sample early for various reasons, including divorce, death, or loss of follow-up. These reasons for leaving the sample are tracked and recorded. In some cases, this attrition only results in one person from the household exiting the sample, and in other cases, the entire household is lost from the panel.

Summary Statistics Table 1 presents descriptive statistics for our analysis sample over the pre and post-period of the COVID-19 pandemic. The pre-period includes 2019Q2-2020Q1, and the post-period consists of April through December of 2020. We include individuals ages 18 to 64 and observed both pre and post-pandemic for the analysis sample. The final sample comprises roughly 27,000 individuals (approximately 178k observations). While the sample size is relatively small, the ETOE sample is representative at the national level.[6]

[6]Of the 27,514 individuals included in the sample of adults, individuals 18-64 observed before and after the pandemic, 728 or 2.24% percent leave the sample early due to attrition.

Prior to the pandemic, 57.5% of women were employed. Then, following the onset of the pandemic, the share of women working fell to 42.7%. For men, 83.3% were employed before the pandemic and 70.4% after. On the intensive margin of employment, hours spent working declined by 9 hours for women and 11 hours for men. This reduction in hours worked reflects both lower hours for employed workers and extensive margin job loss.

We then categorize employment by sector, with the categories being manufacturing, commerce, service, agriculture, as well as an other category. Similar to Alon et al. (2020)'s findings in the United States, women in service-sector jobs experienced the greatest decline in employment. The the share employed in the service sector fell by nine percentage points for women. Work in the commerce sector was also slightly affected, falling by five percentage points for women. For men, service sector jobs fell by ten percentage points. Employment in manufacturing fell for both men and women, with men experiencing a more considerable, four percentage point decline. Work in agriculture increased, though this is likely due to the seasonality of agricultural work.

We then consider more granular time-use activities, including household production and time spent caring for others (including children). We define time-use categories based on the ENOE definitions, where individuals report both hours and minutes spent in each of these categories.[7] Women slightly increased their time spent on household chores or household maintenance by eight-tenths of an hour per week (20.1 to 20.7), while men increased their weekly time spent on the household by 1.1 hours (6.3 to 7.4). Time spent caring for others (children, the sick, the elderly) also increased slightly for women from 7.6 to 8.2 hours per week. We see no similar change for men. Throughout the analysis, we treat time spent caring for others as a proxy for time spent caring for children.

Finally, we also show individual monthly income in both its level form (measured in pesos) and log form. We use the log of income plus one to capture zero earners, which is especially important, as many individuals fall to zero income during the pandemic. In the level form of income, monthly income for women declined by 800 pesos. For men, monthly income declines by 1,300 pesos. These reductions represent 25-30% of pre-pandemic income.

While our paper's focus is on labor supply and time use for adults, we study the effects on children as well. We examine changes in child time use, school attendance, and employment. Table A.1 shows the descriptive statistics. Children show a large drop in time spent on schoolwork (16 hours). The decline in hours spent on school-related activities corroborates the summary statistics for adults, indicating that parents did not fully

[7] If an individual reports any time use measure, they are included in the time use sample. If individuals report no measure of time use, we replace all their time use values with missing rather than zeros. If an individual reports one measure of time use but not another, we assume the categories that are left blank indicate zero hours on that activity.

compensate for the lost school time with homeschooling activities. Despite the change in school time, there is a lower relative change in reported school attendance. Children also did not significantly change their employment on either the intensive or the extensive margins. Similar to adults, children spent slightly more time on household chores and maintenance.

5 Main Empirical Strategy

We study the effect of the recession on the labor supply, time use, and income of individuals using the ETOE panel. We compare the effect of the pandemic over April through December of 2020 relative to the quarters leading up to the pandemic, 2019Q2-2020Q1. We only include individuals who were directly exposed to the pandemic (and included in the ETOE), where we observe them before and after the COVID-19 pandemic.

More specifically, we estimate the labor supply and time use of individual i during time t as:

$$Y_{it} = \alpha + \beta \text{ COVID-19 Pandemic}_t + \mathbf{X}_{it}'\gamma + \alpha_i + \tau_T + \epsilon_{it} \tag{1}$$

where Y_{it} is the outcome of interest and includes labor supply, income, and time use. COVID-19 Pandemic$_t$ is an indicator that equals one during the post-pandemic time periods. This variable will equal one in the nine months after the start of the pandemic, April through December of 2020. COVID-19 Pandemic$_t$ will be equal to zero for all individuals 2019Q2-2020Q1. X_{it} are individual-level controls. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. α_i are individual-level fixed effects. Individual fixed effects capture any time-invariant characteristics of individuals. τ_T are the quarterly fixed effects. We cluster standard errors at the individual level because we expect individual outcomes to be correlated over time (Bertrand et al., 2004).[8]

In additional specifications in the appendix, we also include individual linear time trends, $\phi_i t$. Individual-level time trends capture effects that change linearly over the sample, such as changes in time spent on children as the children age (see Table C.4). We do not include the linear trends in the baseline specification because the gap between the pre and post-period is large. The results with trends, however, largely reflect the baseline findings.

An important note about the sample is that individuals included in the sample are only those observed only in the ETOE. Thus, we are not comparing the full ENOE to the ETOE. Because of the potentially selected sample in the ETOE, we also perform a

[8]Note that we are unable to include state fixed effects in Equations 1 and 3 as the state does not vary within individual.

robustness check where we compare the ENOE from quarters three and four of 2020 to the same quarters in 2019 (see Equation 2).

6 Results

6.1 The COVID-19 Pandemic Effects on Men and Women

Main Findings We show the severity of the COVID-19 recession for all adults in Table 2. Table 3 shows the results broken into men and women separately. Both tables reflect the results from Equation 1.

We find that at both the intensive and extensive margins, employment declines substantially during the COVID-19 pandemic. The percentage decline in employment is 14.3 and 12.7 for women and men, respectively. The reduction in employment is higher in both relative and absolute terms for women. For hours worked, a different pattern appears. Women experience a 6.6 hour per week decrease in hours worked. Men's weekly hours worked declined by 9.7 hours per week. Here men experience a higher absolute decline, but women experience a slightly higher relative decline.

We next look at the informal and formal sectors separately in Columns (3) to (6). As expected, we see a greater decline in the rate of informal sector work relative to formal sector work (8.6 percentage points in the informal sector compared to 4.7 percentage points in the formal sector). Among those still working, hours worked per week declines by more in the formal sector.

Moving to time use, we observe no change in hours caring for others or household production. However, once we divide the sample by gender, we find that men increased their household production time by 0.6 hours per week. Surprisingly, we observe no similar increase for women, who instead women appear to (weakly) decrease hours spent caring for children. These findings diverge slightly from results in the United States, where Leukhina and Yu (2020) finds comparable increases in home production for married men and women. However, the effect on hours spent on household work for men is comparable to (though slightly less than) Leukhina and Yu (2020), where time spent on household production increased by 1.7 hours for U.S. households.

Income also falls substantially at the onset of the pandemic. The final two columns of Table 2 and Table 3 present monthly income in pesos and the log of monthly income plus one (to include zeros). In the full sample, individuals experience a reduction of 1,062 pesos of monthly income during the pandemic, which is a 27% decline in income from pre-pandemic levels. In Table 3, women's monthly income falls by 757 pesos per month, while for men, income drops by 1,426 pesos per month. These losses constitute a 29%

reduction for both women and men.

Robustness of the Main Findings To test whether the results are robust over different specifications, we show alternatives forms of Equation 1 in Table 3 throughout Appendix Section C. These specifications include the results without controls (Table C.1), without quarter fixed effects (Table C.2), without individuals fixed effects (Table C.3), with time trends (Table C.4), and in households with kids (Tables C.5 and C.6). The majority of the results maintain the theme of the baseline findings, with the magnitudes changing slightly between tables. The only exception to this general claim is the specification with linear trends where the decline in formal employment is no longer significant. We suspect that the linear trends absorb much of the decline in formal employment. The main results align more closely with the estimates in Silverio-Murillo et al. (2020), where formal employment falls quickly (by 5%) and then fails to recover by October.

Findings for the Traditional ENOE Due to the limitations mentioned with the ETOE in the data section, particularly the small and selected sample, we also show the results over the traditional ENOE for quarters three and four for 2020 and 2019. In this sample, the traditional face-to-face interviews were completed for individuals, and we expect this sample to be more representative of Mexico as a whole. Still, two limitations exist for this alternative specification. First, the main results for this sample do not include the worst months of the pandemic during the initial lockdown phase. Thus, we do not expect these results to reflect our main tables fully, as they will only capture the post-lockdown and recovery phase of the pandemic. Second, we do not have the same individuals over time, so we substitute the individual fixed effects for state fixed effects.

The alternative specification for the traditional ENOE over quarters three and four of 2020 and 2019 appears as:

$$Y_{ist} = \alpha + \beta \text{ COVID Pandemic}_t + \mathbf{X}_{it}'\gamma + \alpha_s + \tau_T + \epsilon_{ist} \tag{2}$$

where Y_{sit} is the outcome of interest and includes labor supply, income, and time use for individual i in state s during quarter t. COVID Pandemic$_t$ is an indicator that takes the value of one for the post-pandemic time periods, quarters three and four of 2020. COVID Pandemic$_t$ is equal to zero for quarters three and four of 2019. X_{it} are individual-level controls. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. α_s are state-level fixed effects. τ_T are the quarterly fixed effects. We do not include year fixed effects because they are absorbed by the COVID-19 indicator. For this specification, we cluster standard errors at the state level.

Table 4 shows the results for men and women. Interestingly, the results suggest a much lower impact of the pandemic across both men and women. Men's employment is only 4.9% lower in 2020 than in 2019 (for quarters three and four). Women's employment is 6.5% below 2019. Hours worked is also below 2019, falling by 3-4 hours for both men and women.

For formal employment, the declines in employment are slightly different across men and women. Formal employment declines by 4.0% for men, which is larger than the decline women experience. However, it appears that men may shift into informal work to compensate, as men's informal employment is similar in 2020 than in 2019. For women, informal employment is 4.1% lower than in 2019, and formal employment is 2.5% lower. A few factors can explain the differences in the estimates do exist between the traditional ENOE and the ETOE. First, Mexico is in a recovery phase in the second half of 2020, captured by the traditional ENOE. The ENOE cannot capture the most severe impact of the recession during the lockdown phase. Second, there are methodological differences between approaches. Table 4 includes different individuals and uses state-level fixed effects while Table 3 tracks the same individuals over time and includes individual fixed effects.

For hours spent on the house and caring for others, the results are similar to the baseline results. Men increase their time in household production, but women do not. Neither men nor women increase their time caring for others (including children). These findings suggest that the burden of household work appears to be absorbed mostly by men. There is no similar shift towards time spent with children (or caring in general) for men or women.

Overall, Table 4 provides alternative estimates to the ETOE, suggesting some nuances for the main impact of the COVID-19 recession in Mexico. Both series of results suggest that the Mexican economy had begun to recover after the lockdown, with the informal sector leading the recovery. Table 4, however, suggests that the Mexican economy had come closer to recovering for men by the end of 2020. Women still lag behind in employment and income by the end of 2020.

Event-Study Findings To illustrate the time-varying effects over the course of the pandemic, we present the results using an event-study design, where the event is the onset of the pandemic in Mexico. We test whether the individuals in our sample experienced changes in their labor supply, income, or time use in each time period following the COVID-19 pandemic. Tracking changes in labor supply and time use in each wave allows us to observe how an individual's labor supply and time allocation changes in each period before and after the pandemic. Observing the pre-period allows us to note

any pre-trends in the data. More formally, our event-study specification appears as:

$$Y_{it} = \alpha + \sum_{Q=-4}^{8} \beta_Q \, \text{COVID}_Q + \mathbf{X}_{it}'\gamma + \alpha_i + \epsilon_{it} \tag{3}$$

for the outcome Y, including time use and income, for individual i during time t. Here the main effect of the recession is captured by the event-study indicator variable, COVID_Q. Q represents the period relative to the recession and covers four quarters before and the three survey waves after the recession, where the post-period is in months. We exclude the quarter before the recession, $Q = -1$, as the baseline period. The excluded period is 2020Q1. We also include individual fixed effects as α_i. Note that a major difference between Equation 1 and Equation 3 is that there is no variation in the timing of the pandemic and lockdown. Thus, we are unable to include time fixed effects in Equation 3, as the time units do not vary within individual and event-study indicators. We can include quarter fixed effects in Equation 1, as there is more than one quarter observed per individual and before and after the onset of the pandemic.

Figures II and III shows the event-study results from Equation 3. The gray shaded area represents the lockdown quarter, the period excluded in Equation 2 (the traditional ENOE), but included in Equation 1 (the ETOE sample). Figure II presents the labor supply effects of the COVID-19 pandemic. The reduction in initial employment levels appears similar for men (in green) and women (in purple). Both men's and women's employment starts to rebound by the third month of the pandemic, which continues to month eight, where the recovery stalls. Men's employment does recover faster than women's employment during months five through eight.

We see that formal employment initially declines slightly more for men than women and that this difference has increased throughout the pandemic. Informal employment decreases similarly for men and women, but men began to recover their informal employment faster than women. For hours worked and income in Figure III, both decline by more in absolute terms for men.

In the bottom two panels of Figure III, men compensate for their employment losses by spending more time on household-related activities at the start of the pandemic. This spike in household production is apparent during the lockdown phase of the pandemic but then starts to decline by month three as men return to work. There is no clear reallocation towards time spent caring for children for men or women.

Overall, the findings suggest that women are no more burdened in the household than men during the pandemic. Both men and women experienced considerable reductions in employment, hours worked, and income, but men recover faster. These findings, particularly regarding time use, slightly contrast with the existing literature in the United

States and other contexts, where recent work has found women to have disproportionately been harmed by the pandemic (Alon et al., 2020; Cajner et al., 2020; Farré et al., 2020). However, our findings suggesting that men recover faster than women align with this literature.

6.2 Intra-household Changes in Time Use and Income

Labor supply decisions are not made independently of one's partner. Therefore, we examine relative changes in labor supply and time use across couples in response to the pandemic. We select a subsample of heterosexual couples consisting of one man and one woman. We calculate the woman's relative contribution to household production, income, and labor supply among these couples. All measures are bounded between zero and one by construction, with higher values indicating the woman contributing relatively more. For households with no income, we assign a share of one-half to the woman. We do the same when both members of the couple have zero values for any of our other outcomes of interest.

We present the results in Table 5. For each outcome variable, we first report the results where we drop any household where both members have zero values for the outcome of interest. These results are presented in odd-numbered columns. We then replace zeros with contributions of one half in even-numbered columns, which are our preferred estimates. Looking first at employment and income measures, we find evidence that women's relative contribution increased due to the pandemic. We interpret this result as evidence that women are either compensating for their partner's reduced employment or that women are not as harmed by the pandemic as their partners. However, the fact that there is no effect in the results without zero earners suggests that this increase is all due to either (1) an increase in women participating in the labor market who were not earning income before the pandemic or (2) due to the loss of the partner's income.

We next examine time use measures in Columns (5) to (8) of Table 5. While there is a slight shift in household work, where women spend less relative time on the household, there is no relative change in time spent on caring for others. These findings again suggest that the Mexican households did not shift the general caring burden to women during the pandemic. Instead, men appear to increase their time spent on household production. However, a limitation of this approach is that we cannot separate caring for children from general caring for other individuals (sick and elderly).

6.3 Effects on Children

We conclude our main results by considering the effects of the pandemic recession on children. We are particularly interested in testing whether children reduced their time spent on schoolwork as well as their school enrollment post-pandemic. Given that parents did not increase their time spent with their children, we expect that children reduced their time on schoolwork. In our analyses, we include all children who are 6 to 16 who are observed before and after the pandemic. We select children in this age range, as upper secondary school (targeting 15 years of school) is mandatory in Mexico (UnoiNews, 2012).

In Panel A of Table 6, our results demonstrate that children did not change their enrollment, but they did substantially reduce their time on schoolwork. In Column (1), the probability of being enrolled in school is unchanged across the pre- and post-pandemic periods. Children who were in school before the pandemic continued to report school attendance during the pandemic. While we cannot observe whether these children continued their schoolwork, we can see how they spent their time. In Column (2), children reduced their school activities by 11 hours less per week in response to the pandemic. The reduction is more than 33% of the pre-pandemic mean. When we look at children separately by gender in Panels B and C, we see slightly larger reductions for boys relative to girls. Overall, the results are consistent our parental time use results and suggest that the parents did not fully compensate for the school closures with homeschooling activities.[9]

One crucial feature of Mexico's public education policy is essential to contextualize the results. Rather than having remote online schooling, Mexico televised learning activities. In Mexico, the vast majority of children have access to television, but do not have internet access (Córdoba and Montes, 2020; Rivers and Gallón, 2020). Thus, the time use measures are limited (at best) for examining how children were spending their time during the pandemic. Children may have entirely shifted their time to educational television, which may not be captured by our measure of schoolwork. Nonetheless, our analysis is useful in understanding whether parents reallocated their time towards their children in response to the pandemic.

[9]Note that we also include the state-level results in Table D.2. In the traditional ENOE sample, we find that time on school declines by 9 hours, a similar 30% drop in school time.

7 Discussion: Why has the COVID-19 Recession Differed Across Countries?

Our labor supply results suggest that men and women experienced similar initial reductions in employment. Men then recovered faster than women in subsequent months, with most employment gains being in the informal sector. Further, men contribute more to the household during the pandemic. These patterns vary slightly from related settings, and we see several possible explanations for the differences.

First, we examine whether the main results differ over households with children. We subset the primary sample to only in households with children under age 15 in Table C.5 and Figure IV. The findings are similar to the baseline results, suggesting that women with children under 15 do not reallocate their time towards children or the household. We also confirm that this finding is not due to co-resident extended family members contributing more to childcare. In Table C.5, we subset the same households to nuclear families consisting of a household head, their spouses, and their children. The findings over nuclear families still suggest that women fail to increase their time spent caring for others or household tasks. While we expected differential effects by the presence of children, mothers spend similar time on household production before and after the pandemic, differing from related contexts (Heggeness, 2020; Alon et al., 2020).

We attribute this difference in the caring burden to the low labor supply of women in Mexico (OECD, 2020). Women face social stigma to working, resulting in lower pre-pandemic employment rates (Arceo-Gomez and Campos-Vazquez, 2010) and higher time spent in household production. There is, therefore, less ability for women's time use to change during the pandemic relative to the United States and other high-income countries. These women, instead, appear to be focused in the household and absorb the school closures with little change in time use. Extending from this primary explanation, past research has shown that women face barriers to childcare in Mexico (Ángeles et al., 2011; Calderon, 2014; Mateo Díaz and Rodriguez Chamussy, 2013), which suggests that the majority of households may have already been caring for children at home.

A second potential factor explaining the differences observed in this study is the importance of informal work in Mexico. Mexican women are more likely to be participating in informal and unpaid work (Ortega-Díaz, 2020) and are therefore affected differently than women in high-income countries where formal work plays a more prominent role. Informal laborers benefit from few employment protections; there is no minimum wage, access to unions is nonexistent, and are there few protections over firings (Levy, 2010; Busso et al., 2012). Our analysis highlights the importance of informal work for the recovery in Mexico. We demonstrate that while informal work fell more rapidly than formal employment in the early stages of the recession, it has rebounded faster than formal

work in recent months. However, the higher gains in informal work appear for men rather than women.

A third explanation for the differences between settings is the added worker effect. This mechanism would help explain the increase in men's household production and the small decreases observed in women's time spent caring for others. In previous recessions, women in Mexico entered into the labor force to compensate for their husband's job loss (Skoufias and Parker, 2006; Novta and Wong, 2017).[10] We test this hypothesis by separating women who were working before the recession from those who were not working. These results are shown in Figure A.1. The plotted points suggest that some women who were not working before the recession begin working afterward, implying that the added-worker effect may be at play. It also appears that most of the job gains occur to these women, rather than women who were previously previous reclaiming their past jobs. For the time use measures, time spent caring for others is similarly flat for both groups of women. Though the plotted points indicate a slight increase in household production for working women (similar to men).

The added-worker effect findings suggest that some women entered the labor force during the economic crises to compensate for their husbands' job losses. This evidence aligns with previous work by Skoufias and Parker (2006) and Novta and Wong (2017). Given the weakness of the unemployment system in Mexico relative to the United States, our overall results are not surprising. The lack of income support given to Mexican families in response to the pandemic pushed women into the labor market. The same dynamic is likely less present in the United States, where (at least initially) households may have benefited from generous unemployment insurance. Nonetheless, the size of the added-worker effect may have been muted due to fear of infection. Investigating long-term responses to the pandemic will shed more light on this mechanism.

A final reason our findings may differ from other contexts is the smaller service sector in Mexico relative to the United States. Mexico's economy is only 64.5% service sector, compared to 80% in the United States (Agency, 2017). We examine the importance of sector-specific work in how men's and women's employment responded to COVID-19 in Table 7. In Panel A, we see that women experienced employment losses primarily in communications and the service sector, with only minor job losses in construction and manufacturing. Overall, these results align with the related literature (Alon et al., 2020) and suggest that the pandemic's impact on the service sector is important for both men and women, with women more affected than men.

Overall, the above explanations highlight the uniqueness of the Mexican context and illustrate why our results are somewhat distinct from findings in other contexts. In particular, Mexico experienced similar losses in the service sector to related settings, with more

[10] This effect has been demonstrated in other contexts as well, e.g., in Kohara (2010).

considerable reductions for women's employment in this sector. However, the added worker effect and the existing caring burden on women explain why our results differ in household production. Women who were not working before the pandemic appear to increase their labor supply. At the same time, households with children show no change in female contribution to caring or household production, suggesting that women already bore the majority of household production responsibilities. These findings indicate that households and labor markets' characteristics may produce slightly different observed effects of the pandemic recession across settings.

8 Conclusion

This study shows that the COVID-19 pandemic severely impacted Mexican households. In the first nine months of the pandemic, employment fell by 13 percentage points, and monthly income fell by more than 25%. After the initial downturn, men recovered their employment faster than women, with the majority of employment gains in the informal sector, implying the growth of precarious labor conditions. The results suggest that men also contributed more to household production in response to the pandemic, but we find no similar increases for women (for household production or time spent caring for others). Intra-household dynamics for couples demonstrate similar conclusions. Within-household men increase their time spent on household production, but relative time spent caring for others is constant.

Our findings consistently show that women (even mothers) fail to increase their household production and time spent caring for others during the pandemic. These results for household production depart slightly from existing work documenting the consequences of the COVID-19 pandemic (Aguiar et al., 2013; Alon et al., 2020; Czymara et al., 2020; Leukhina and Yu, 2020; von Gaudecker et al., 2020; Bartik et al., 2020). These related studies have focused primarily on high-income settings, which may not be generalizable to other settings.

To better contextualize the household response to the pandemic, we also measure changes in children's time use during the pandemic. While children did not change their school enrollment, they did reduce their time spent on schoolwork by 30% from the pre-pandemic mean. These findings corroborate parental time use, and suggest that parents fail to compensate for the lost instructional time. These findings indicate that the pandemic's true burden may then be on children, and future research should consider the detrimental effects of lost school time. Ideally, public policies would direct support towards remediating the adverse effects on children. These child-focused challenges are unique to the pandemic recession relative to previous economic downtowns.

9 Tables

Table 1: Descriptive Statistics, Adults 18-64

	Women Pre		Women Post		Men Pre		Men Post	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Employment								
1(Working)	0.577	0.494	0.427	0.495	0.832	0.373	0.704	0.457
1(Manufacturing/ Construction	0.082	0.274	0.069	0.253	0.238	0.426	0.191	0.393
Sector								
1(Commerce)	0.133	0.340	0.092	0.289	0.133	0.340	0.114	0.317
1(Service)	0.345	0.475	0.252	0.434	0.383	0.486	0.284	0.451
1(Agriculture)	0.011	0.106	0.012	0.107	0.064	0.245	0.104	0.305
1(Other)	0.005	0.069	0.002	0.047	0.015	0.120	0.011	0.102
1(Formal)	0.282	0.450	0.226	0.418	0.456	0.498	0.363	0.481
1(Informal)	0.295	0.456	0.201	0.401	0.376	0.484	0.340	0.474
Time Use								
Hours Worked	21.283	22.649	12.980	19.974	37.876	23.471	26.446	24.653
Hours on House	20.124	12.549	20.770	11.536	6.301	5.955	7.464	6.810
Hours Caring for Others	7.621	13.073	8.214	14.359	2.453	6.264	2.358	6.512
Income								
Log(Monthly Income +1)	3.457	4.202	2.461	3.860	5.055	4.403	4.101	4.351
Monthly Income	2,645.570	4,973.122	1,846.257	4,411.755	4,902.140	6,684.847	3,521.304	5,842.991
N	34,430		58,432		31,549		54,106	

NOTES: The main sample includes individuals who are 18 to 64.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table 2: COVID-19 Pandemic Recession Employment and Income Effects, Adults 18-64

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.133***	-7.846***	-0.047***	-7.025***	-0.086***	-5.247***	-0.112	-0.295*	-1062.099***	-1.123***
	(0.007)	(0.345)	(0.006)	(0.503)	(0.006)	(0.540)	(0.165)	(0.160)	(65.053)	(0.060)
N	178,016	178,016	178,016	64,473	178,016	41,847	155,702	155,702	178,016	178,016
Adj R-sq	0.672	0.647	0.774	0.562	0.599	0.641	0.616	0.591	0.540	0.555
Pre Mean Dep	0.699	29.227	0.365	44.976	0.334	38.347	14.252	5.426	3,725.917	4.222
Post Mean Dep	0.558	19.381	0.291	35.942	0.267	33.390	15.132	5.733	2,642.405	3.241
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels. For results with individual trends see Table C.4.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table 3: COVID-19 Pandemic Recession Employment and Income Effects for Men and Women, 18-64

Panel A: Women

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.143***	-6.617***	-0.029***	-7.761***	-0.113***	-5.573***	-0.401	-0.524*	-757.104***	-1.069***
	(0.011)	(0.471)	(0.008)	(1.338)	(0.009)	(0.785)	(0.260)	(0.291)	(79.827)	(0.083)
N	92,503	92,503	92,503	26,350	92,503	18,035	88,922	88,922	92,503	92,503
Adj R-sq	0.678	0.644	0.804	0.585	0.553	0.665	0.474	0.590	0.553	0.572
Pre Mean Dep	0.577	21.283	0.282	41.606	0.295	32.439	20.124	7.621	2,645.570	3.457
Post Mean Dep	0.427	12.980	0.226	32.218	0.201	28.426	20.770	8.214	1,846.257	2.461
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.127***	-9.772***	-0.058***	-7.248***	-0.069***	-6.078***	0.683***	-0.169	-1426.198***	-1.234***
	(0.010)	(0.570)	(0.009)	(0.595)	(0.010)	(0.860)	(0.190)	(0.132)	(112.130)	(0.094)
N	85,265	85,265	85,265	38,038	85,265	23,740	66,532	66,532	85,265	85,265
Adj R-sq	0.606	0.598	0.742	0.534	0.621	0.610	0.368	0.438	0.514	0.509
Pre Mean Dep	0.832	37.876	0.456	47.240	0.376	43.391	6.301	2.453	4,902.140	5.055
Post Mean Dep	0.704	26.446	0.363	38.495	0.340	36.627	7.464	2.358	3,521.304	4.101
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels. For results with individual trends see Table C.4.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table 4: COVID-19 Pandemic Recession Employment and Income at the State Level for Men and Women, 18-64

Panel A: Women

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.065***	-2.981***	-0.024***	-2.172***	-0.041***	-0.668*	-0.093	-0.343**	-208.198***	-0.373***
	(0.006)	(0.332)	(0.004)	(0.336)	(0.004)	(0.387)	(0.183)	(0.163)	(41.955)	(0.049)
N	458,229	458,229	458,229	117,572	458,229	116,532	441,466	441,466	458,229	458,229
Adj R-sq	0.052	0.040	0.061	0.037	0.024	0.023	0.117	0.069	0.048	0.055
Pre Mean Dep	0.505	18.829	0.224	42.085	0.281	33.496	21.069	7.484	1,914.703	2.837
Post Mean Dep	0.452	16.195	0.212	39.547	0.240	32.551	20.995	7.476	1,864.541	2.595
Quarter FE and Year FE	X	X	X	X	X	X	X	X	X	X
State FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.049***	-3.788***	-0.040***	-2.236***	-0.009	-1.562***	0.337***	-0.127*	-358.085***	-0.388***
	(0.008)	(0.585)	(0.005)	(0.340)	(0.007)	(0.424)	(0.123)	(0.073)	(101.628)	(0.098)
N	414,284	414,284	414,284	177,289	414,284	158,637	301,608	301,608	414,284	414,284
Adj R-sq	0.105	0.078	0.090	0.020	0.060	0.025	0.054	0.045	0.080	0.107
Pre Mean Dep	0.836	38.012	0.394	47.686	0.442	43.536	5.947	2.206	4,155.542	4.897
Post Mean Dep	0.787	34.076	0.367	45.259	0.419	41.598	6.600	2.268	3,990.341	4.612
Quarter FE and Year FE	X	X	X	X	X	X	X	X	X	X
State FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and state-level fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the state level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the traditional face-to-face National Occupation and Employment Survey (ENOE) 2019Q3, 2019Q4, 2020Q3, and 2020Q4.

Table 5: Intra-Household Inequality: Share Contributed by the Woman

	Share Hours Worked		Share Income		Share Hours House		Share Hours Caring	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1(Post x COVID-19 Pandemic)	-0.015	0.024**	-0.010	0.042***	-0.020**	-0.017*	0.013	0.002
	(0.012)	(0.012)	(0.014)	(0.012)	(0.009)	(0.009)	(0.023)	(0.009)
N	36,635	43,578	30,930	43,578	42,809	43,578	17,330	43,578
Adj R-sq	0.672	0.571	0.654	0.498	0.418	0.409	0.414	0.412
Pre Mean Dep	0.257	0.274	0.270	0.329	0.835	0.830	0.807	0.638
Post Mean Dep	0.237	0.297	0.243	0.342	0.809	0.805	0.809	0.630
Quarter FE	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X
Including Zeros		X		X		X		X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Controls for this specification include indicators for husband's age. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table 6: Post-COVID-19 Recession on School-time, Children 6-16

Panel A: All

	1(In School)	Hours School	1(Work -ing)	Hours Worked
	(1)	(2)	(3)	(4)
1(Post x COVID-19 Pandemic)	-0.004	-11.254***	-0.016	-0.484
	(0.005)	(1.026)	(0.013)	(0.455)
N	44,093	16,581	44,093	44,093
Adj R-sq	0.845	0.509	0.525	0.537
Pre Mean Dep	0.962	34.708	0.041	1.062
Post Mean Dep	0.963	18.829	0.038	1.070
Quarter FE	X	X	X	X
Individual FE	X	X	X	X
Controls	X	X	X	X

Panel B: Girls

	1(In School)	Hours School	1(Work -ing)	Hours Worked
	(1)	(2)	(3)	(4)
1(Post x COVID-19 Pandemic)	-0.004	-11.261***	0.002	0.097
	(0.008)	(1.370)	(0.010)	(0.282)
N	21,228	7,934	21,228	21,228
Adj R-sq	0.886	0.557	0.535	0.466
Pre Mean Dep	0.967	34.437	0.025	0.554
Post Mean Dep	0.946	18.819	0.019	0.596
Quarter FE	X	X	X	X
Individual FE	X	X	X	X
Controls	X	X	X	X

Panel C: Boys

	1(In School)	Hours School	1(Work -ing)	Hours Worked
	(1)	(2)	(3)	(4)
1(Post x COVID-19 Pandemic)	-0.005	-12.638***	-0.030	-0.981
	(0.007)	(1.465)	(0.023)	(0.861)
N	22,853	8,636	22,853	22,853
Adj R-sq	0.767	0.463	0.527	0.581
Pre Mean Dep	0.958	34.946	0.055	1.525
Post Mean Dep	0.977	18.836	0.056	1.487
Quarter FE	X	X	X	X
Individual FE	X	X	X	X
Controls	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The sample of children includes individuals who are 6 to 16. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table 7: Post-Recession Labor Supply by Sector of the Economy, Adults 18-64

Panel A: Women

	Constr-uction	Commu-nication	Service	Agric -ulture	Other
	(1)	(2)	(3)	(4)	(5)
1(Post x COVID-19 Pandemic)	-0.010*	-0.036***	-0.090***	-0.004***	-0.003***
	(0.006)	(0.006)	(0.008)	(0.001)	(0.001)
N	92,503	92,503	92,503	92,503	92,503
Adj R-sq	0.718	0.660	0.728	0.576	0.488
Pre Mean Dep	0.082	0.133	0.345	0.011	0.005
Post Mean Dep	0.069	0.092	0.252	0.012	0.002
Quarter FE	X	X	X	X	X
Individual FE	X	X	X	X	X
Controls	X	X	X	X	X

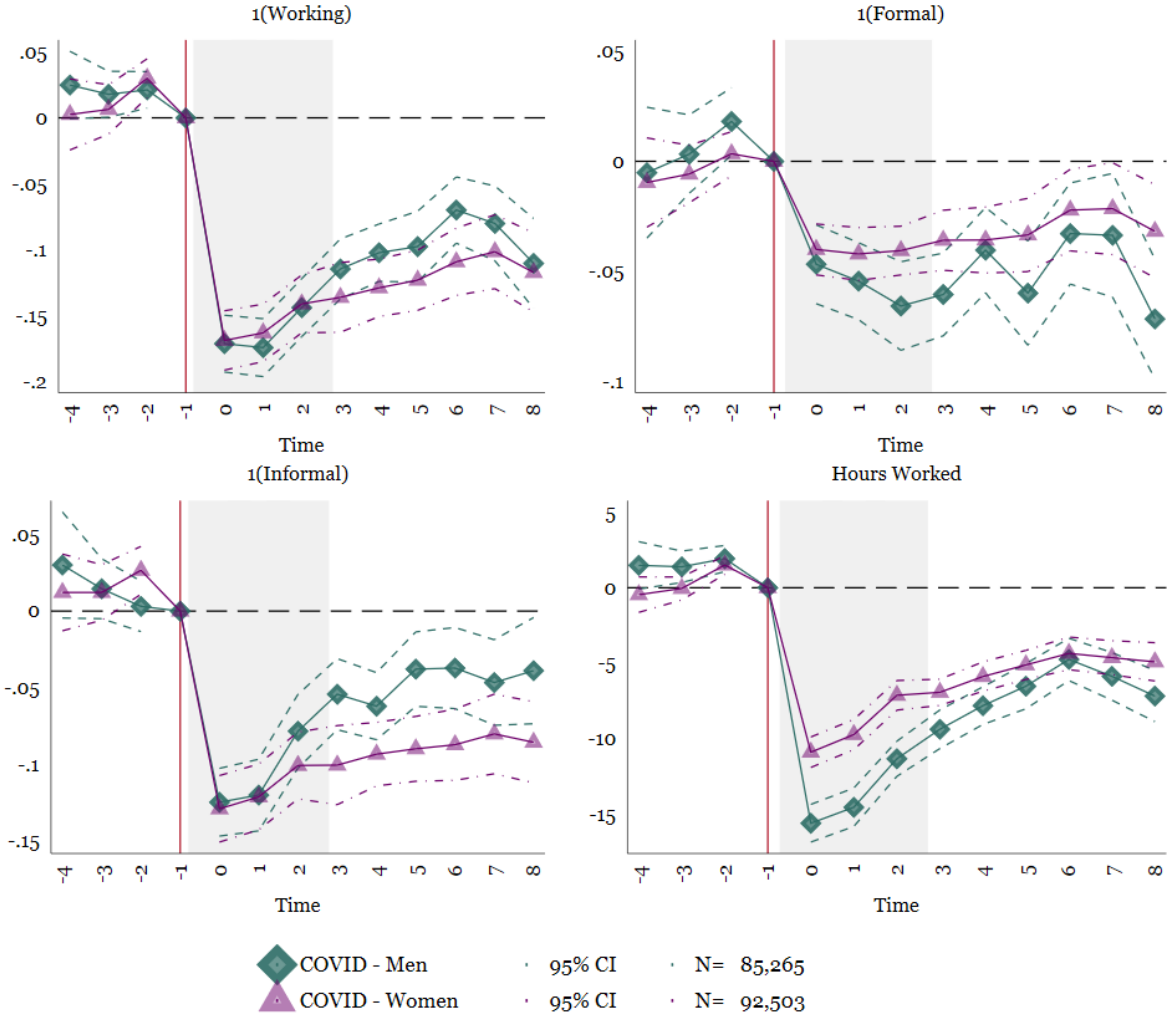
Panel B: Men

	Constr-uction	Commu-nication	Service	Agric -ulture	Other
	(1)	(2)	(3)	(4)	(5)
1(Post x COVID-19 Pandemic)	-0.035***	-0.019***	-0.068***	-0.002	-0.003**
	(0.008)	(0.006)	(0.008)	(0.004)	(0.001)
N	85,265	85,265	85,265	85,265	85,265
Adj R-sq	0.685	0.703	0.722	0.841	0.492
Pre Mean Dep	0.238	0.133	0.383	0.064	0.015
Post Mean Dep	0.191	0.114	0.284	0.104	0.011
Quarter FE	X	X	X	X	X
Individual FE	X	X	X	X	X
Controls	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

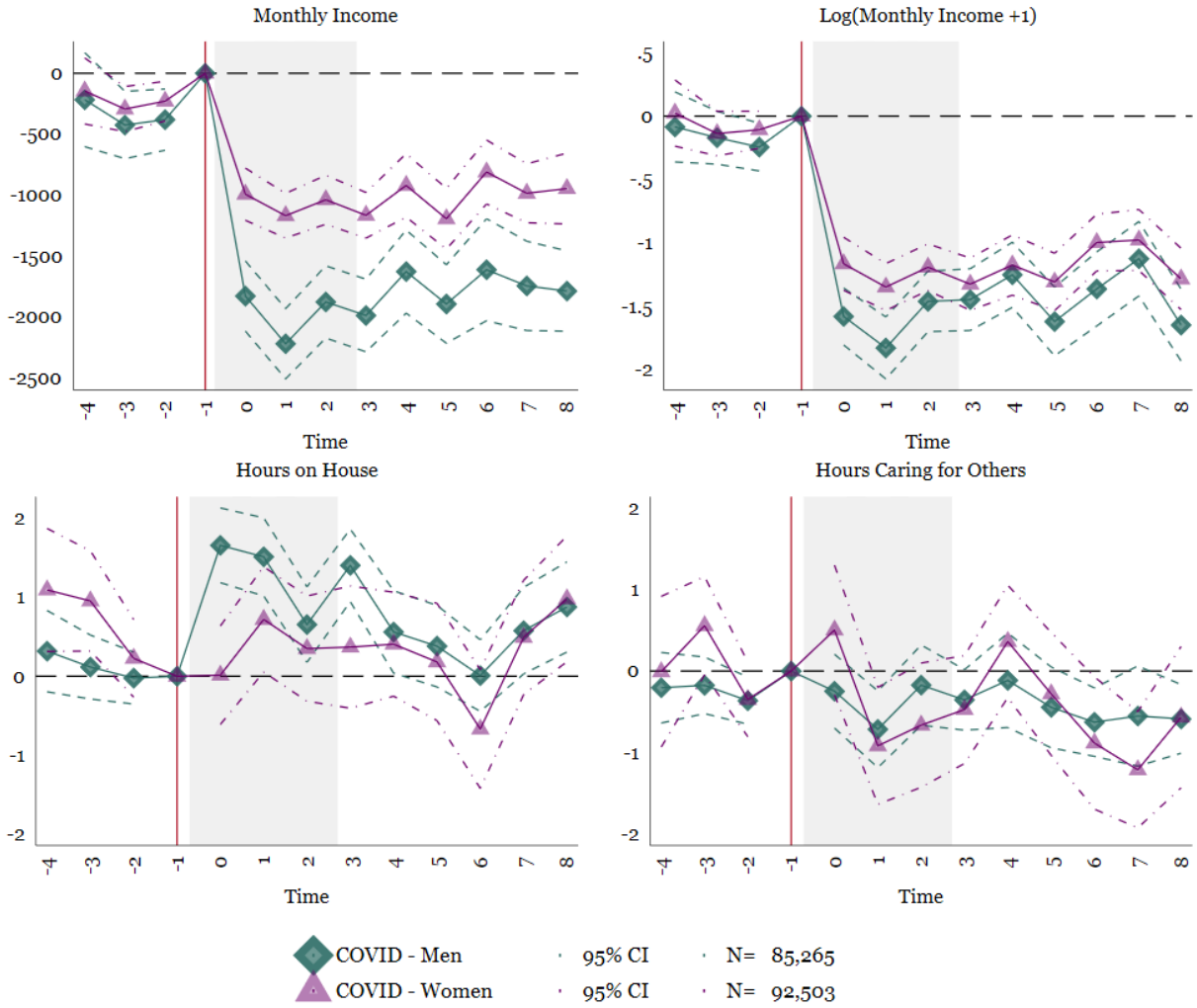
10 Figures

Figure II: Event Study: Labor Supply for Men and Women, 18-64



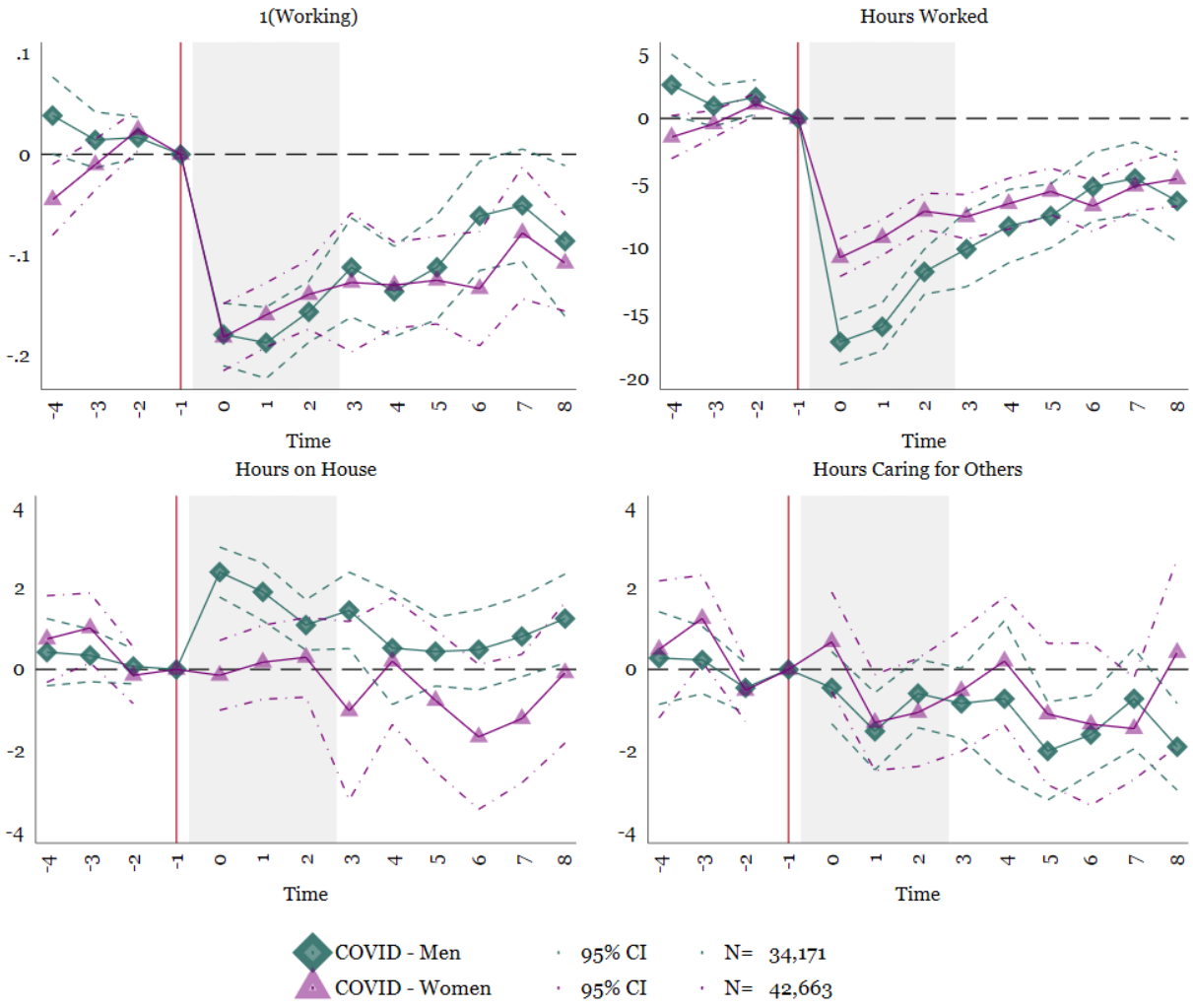
NOTES: The plotted points show the quarters leading up and following each recession, with the excluded period as 2020Q1. The post-periods indicate months while the pre-periods are in quarters. The shaded areas shows the lockdown duration of the sample (March 23rd-May 30th). Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure III: Event Study: Time Use and Income Men and Women, 18-64



NOTES: The plotted points show the quarters leading up and following each recession, with the excluded period as 2020Q1. The post-periods indicate months while the pre-periods are in quarters. The shaded areas shows the lockdown duration of the sample (March 23rd-May 30th). Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure IV: Event Study: Households with Children, Adults 18-64



NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

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A Additional Tables and Figures

Table A.1: Descriptive Statistics, Children 6-16

	Girls Pre		Girls Post		Boys Pre		Boys Post	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
1(In School)	0.967	0.179	0.946	0.226	0.958	0.200	0.977	0.150
Hours on Schoolwork	34.437	13.978	18.819	13.576	34.946	13.177	18.836	11.804
1(Working)	0.025	0.156	0.019	0.135	0.055	0.229	0.056	0.230
Hours Worked	0.554	4.382	0.596	5.246	1.525	7.563	1.487	7.433
Hours on House	7.040	5.838	7.934	6.450	4.712	4.332	5.280	4.448
N	9,470		11,923		10,107		12,923	

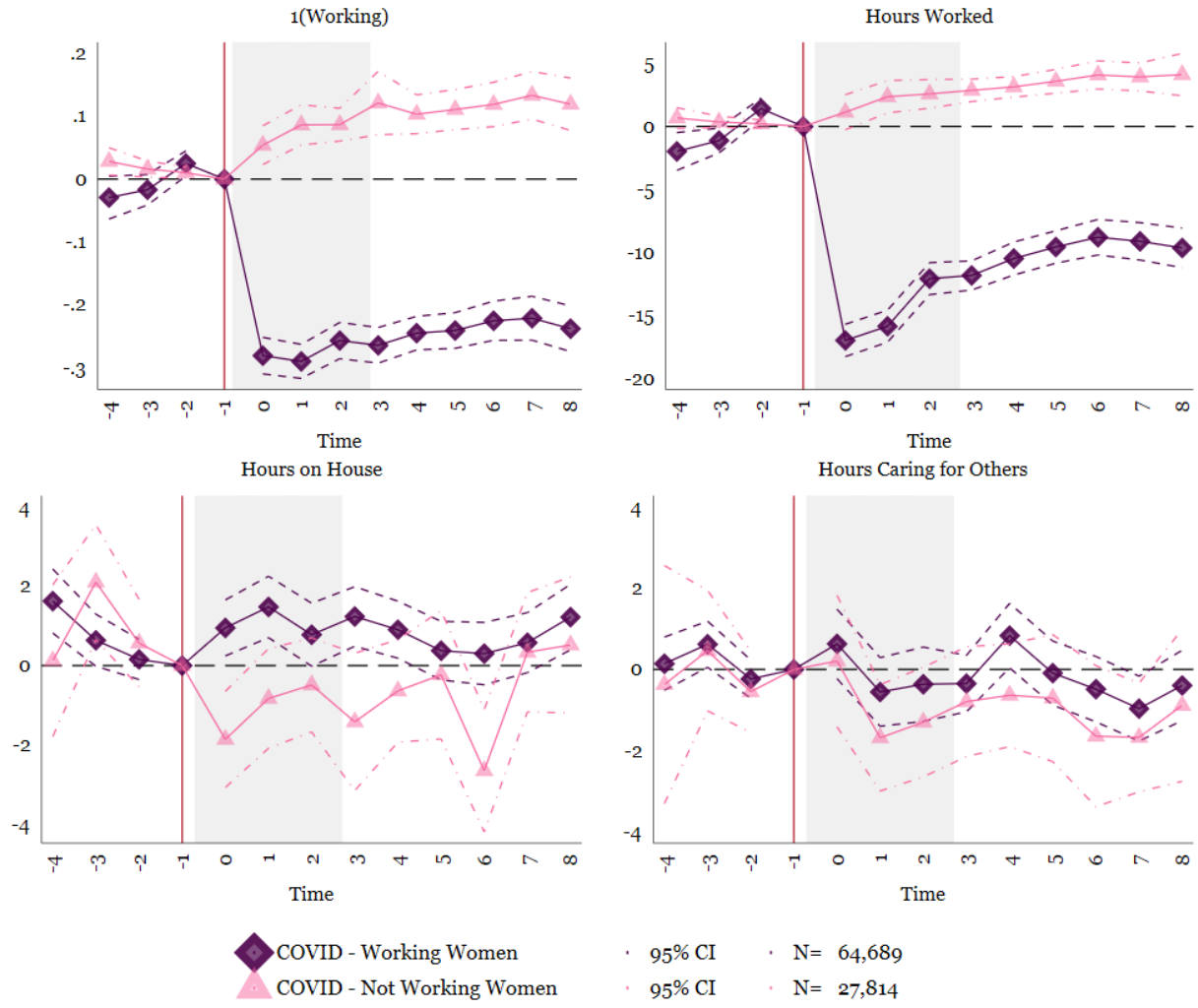
NOTES: The sample of children includes individuals who are 6 to 16.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table A.2: Descriptive Statistics Traditional ENOE

	ENOE 2020Q1		ETOE 2020 April	
	Mean	St. Dev.	Mean	St. Dev.
Characteristics				
Age	32.937	21.530	33.329	21.710
Married	0.297	0.457	0.259	0.438
Single	0.290	0.454	0.282	0.450
Divorced or Separated	0.042	0.202	0.068	0.252
Cohabitating	0.124	0.329	0.143	0.351
Female	0.507	0.500	0.505	0.500
Urban	0.455	0.498	0.495	0.500
Employment				
1(Working)	0.431	0.495	0.337	0.473
1(Manufacturing/ Construction	0.104	0.306	0.075	0.263
Sector				
1(Commerce)	0.084	0.278	0.056	0.230
1(Service)	0.185	0.389	0.158	0.365
1(Agriculture)	0.052	0.222	0.043	0.202
1(Other)	0.006	0.075	0.005	0.071
1(Formal)	0.188	0.391	0.175	0.380
1(Informal)	0.243	0.429	0.162	0.368
Time Use				
Hours Worked	17.615	23.517	9.897	19.316
Hours on House	13.619	11.928	14.155	11.422
Hours Caring for Others	4.401	10.068	5.371	12.403
Income				
Log(Monthly Income +1)	2.572	3.940	2.100	3.693
Monthly Income	2,047.532	4,725.600	1,692.052	4,554.607
N	417,778		29,672	

SOURCE: National Occupation and Employment Survey 2020.

Figure A.1: Event Study: Time Use for Previously Employed v. Not Employed Women



NOTES: The plotted points show the quarters leading up and following each recession, with the excluded period as 2020Q1. The post-periods indicate months while the pre-periods are in quarters. The shaded areas shows the lockdown duration of the sample (March 23rd-May 30th). Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

B Heterogeneous Effects

We document heterogeneous effects by income, marital status, and urban status. To begin, we show the impact by income level. We split the sample by income quartiles in Figure B.1. The results show that the bottom 25% of the income distribution experienced the largest employment reductions. These findings align with Cajner et al. (2020), in the United States, where the low-wage workers were the most affected group. Interestingly, we find that high-income individuals did not shift their time towards childcare, while those below the median income level did.

Next, we consider the effect by marital status. We find similar patterns for married and unmarried individuals in Figure B.3. Married men experienced a larger decline in hours worked, but increased their time in household production relative to unmarried men. Unmarried women had greater reductions in employment compared to married women. Surprisingly, we find married women reduced their time spent caring for others, while we observe the opposite effect for unmarried women.

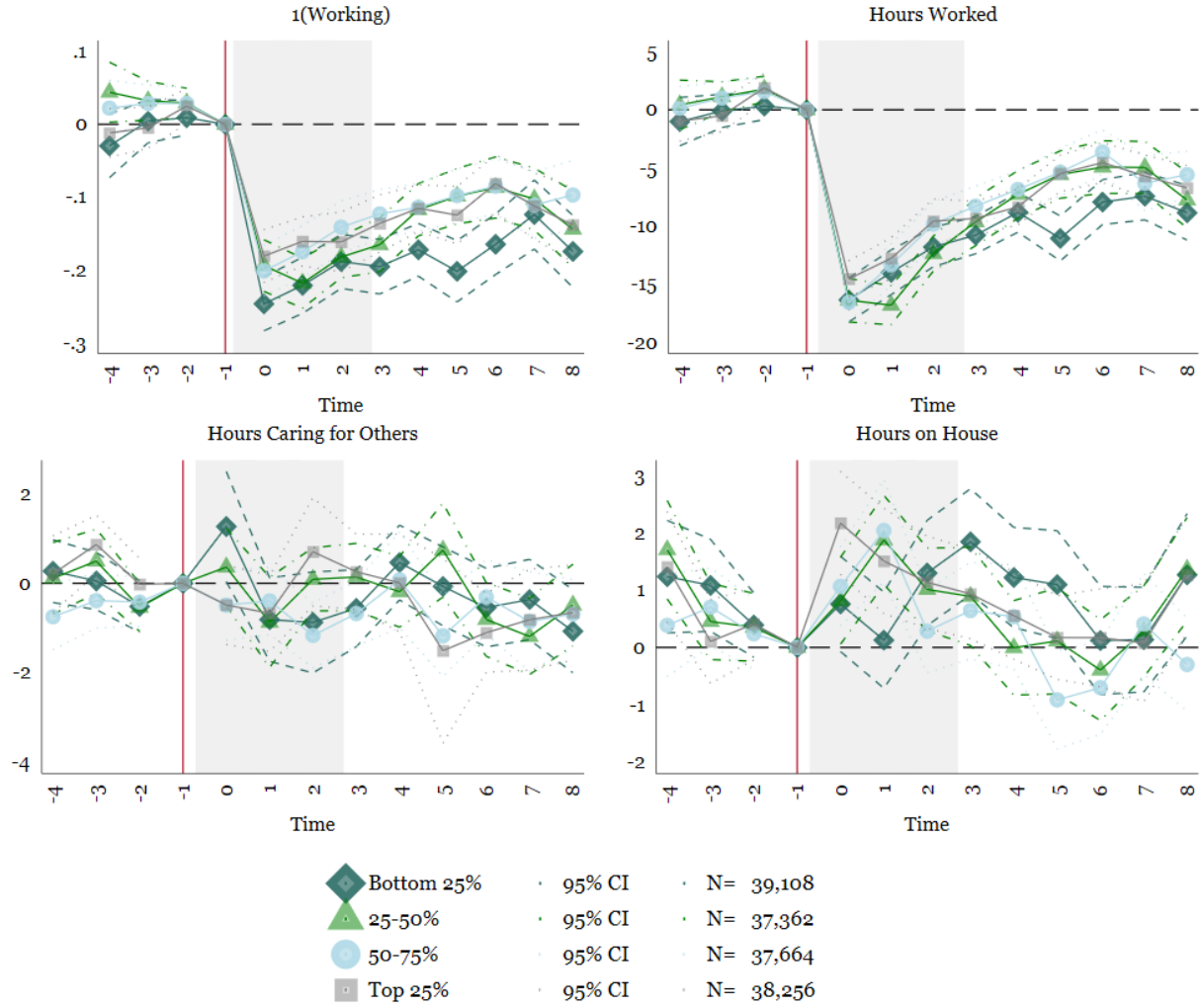
We next examine differences by gender across urban and rural areas in Figure B.4. For the urban/rural divide, the results are similar, except for two points. First, urban men lose more employment on the extensive and intensive margin than rural men. Second, rural women increase their time spent caring for others by more than urban women.

Then, we document the heterogeneity over the state-level COVID-19 infection rate in the early pandemic. We classify states as high-prevalence if their state-level infection rate is over 160 by June 30th.[11] The results are presented in Figure B.5. We find that employment losses are greater, and the recovery slower in states with a high infection rate.

We conclude by dividing states by their Human Development Index (HDI). We expect states with a higher HDI to be better equipped to respond to the pandemic. The results are presented in Figure B.6. The results are similar across the sample, except that women in low HDI states did not reallocate time towards household production, while women in high HDI states spent more time on household production. For the remainder of the results, the employment losses are similar between the sample.

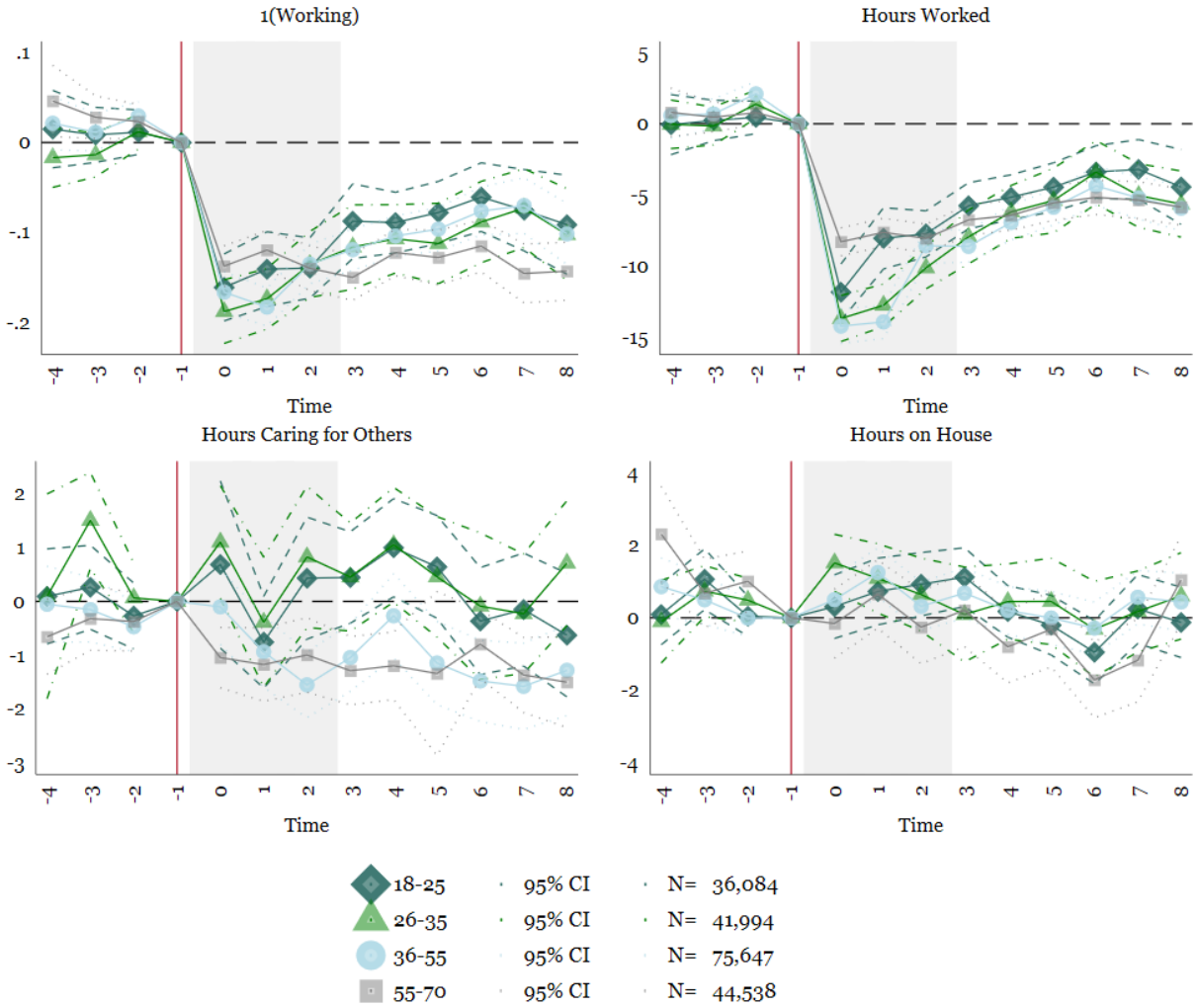
[11] The prevalence rate is an imperfect measure, which may cause bias in reporting.

Figure B.1: Event Study: By Income Group



NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level. SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure B.2: Event Study: By Age Group



NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level. SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

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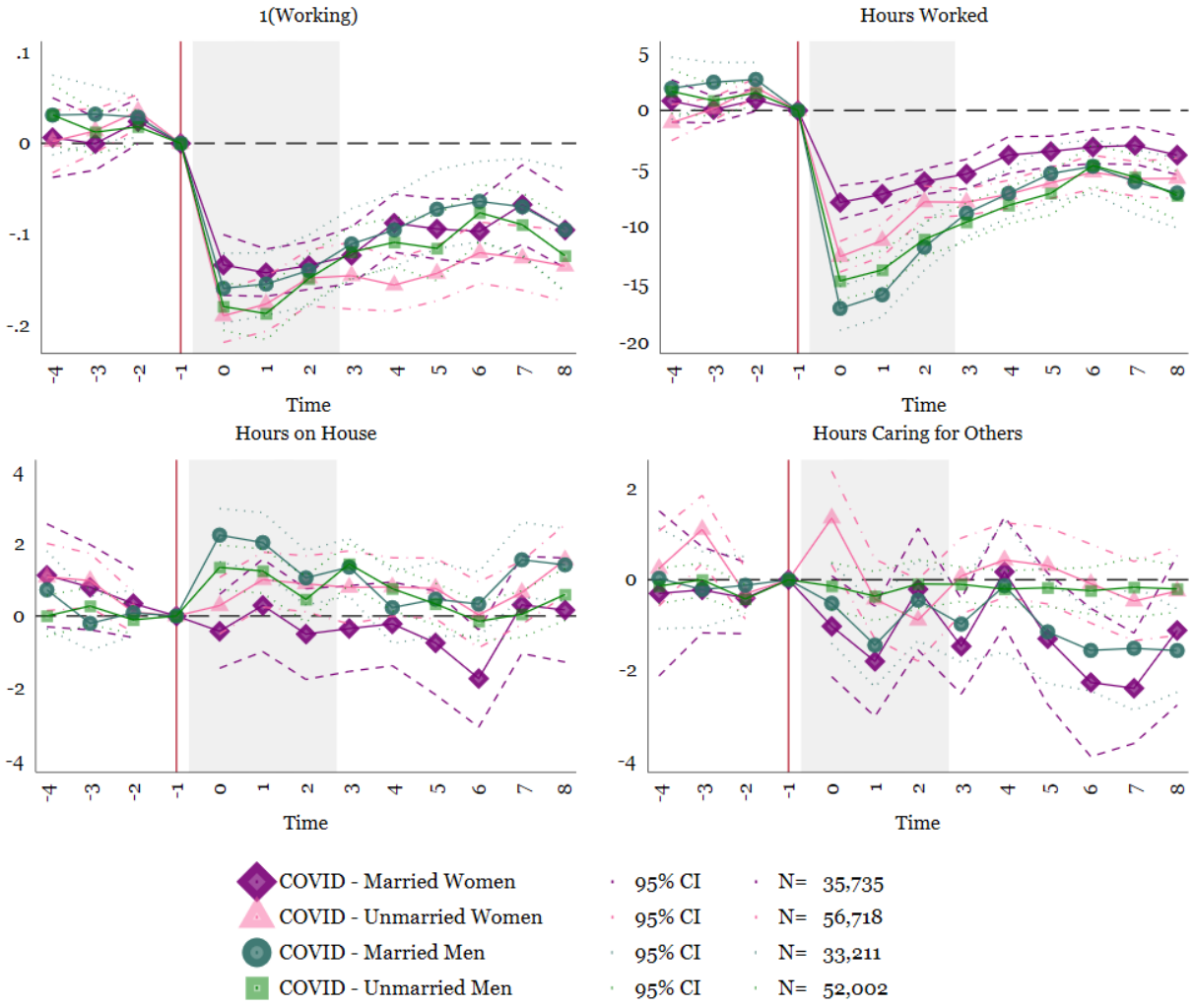
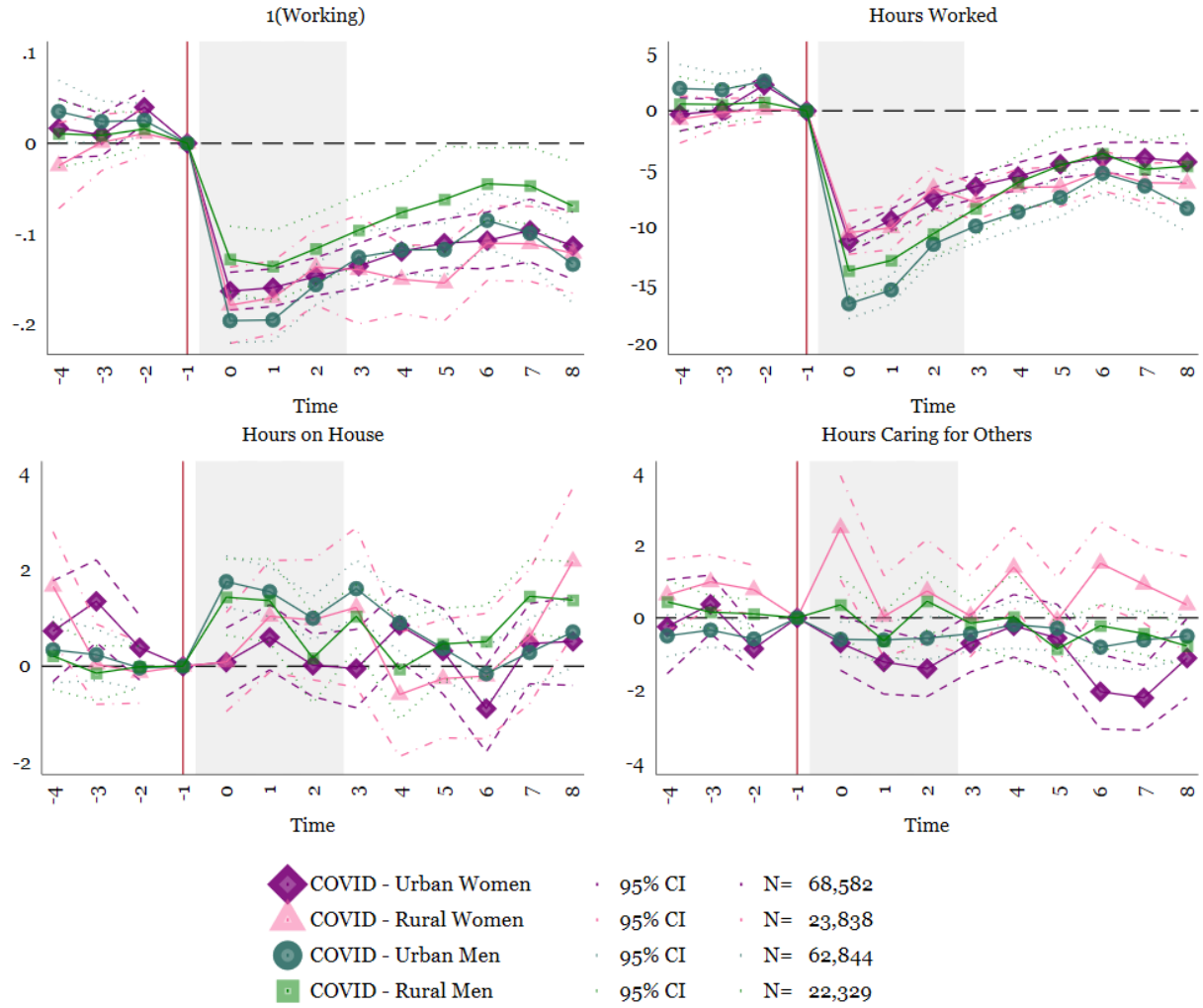
Figure B.3: Event Study: By Marital Status



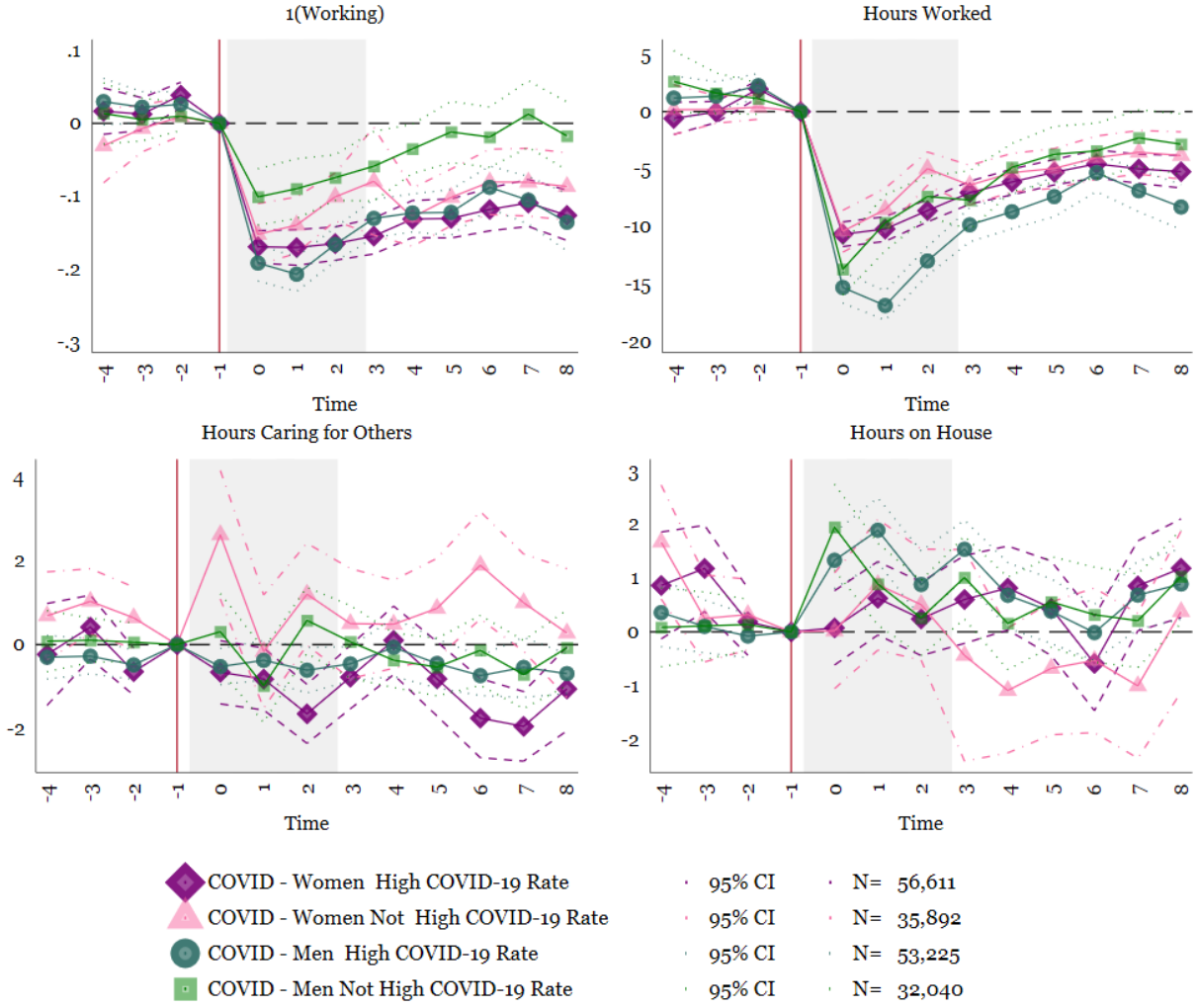
NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level. SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure B.4: Event Study: By Urban Status



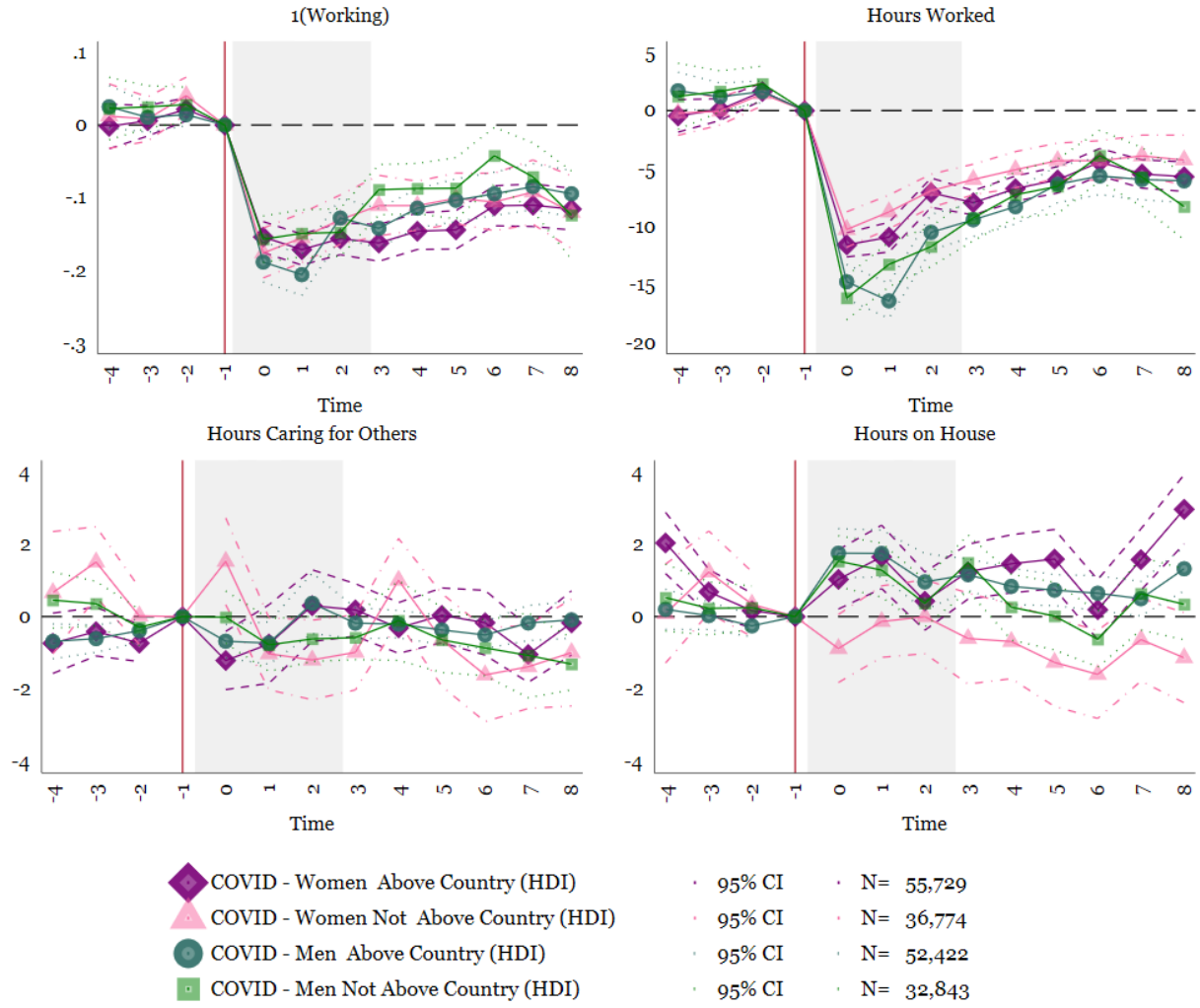
NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure B.5: Event Study: By High COVID Rate



NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Figure B.6: Event Study: By High HDI



NOTES: OLS coefficients reported. Baseline fixed effects include individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the individual level.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

C Alternative Specifications for Table 3

Table C.1: Post-Recession Labor Supply, Time Use, and Income – No Controls

Panel A: Women

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.144***	-6.598***	-0.035***	-5.617***	-0.109***	-5.249***	-0.275	-0.849***	-786.592***	-1.079***
	(0.008)	(0.329)	(0.005)	(0.549)	(0.007)	(0.589)	(0.194)	(0.225)	(70.355)	(0.068)
N	92,503	92,503	92,503	26,350	92,503	18,035	88,922	88,868	92,503	92,503
Adj R-sq	0.68	0.64	0.80	0.58	0.55	0.66	0.47	0.59	0.55	0.57
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.114***	-8.635***	-0.057***	-5.852***	-0.058***	-4.744***	0.569***	-0.422***	-1352.529***	-1.131***
	(0.007)	(0.420)	(0.007)	(0.473)	(0.008)	(0.613)	(0.132)	(0.114)	(91.431)	(0.071)
N	85,265	85,265	85,265	38,040	85,265	23,740	66,532	64,378	85,265	85,265
Adj R-sq	0.61	0.60	0.74	0.53	0.62	0.60	0.37	0.44	0.51	0.51
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table C.2: Post-Recession Labor Supply, Time Use, and Income – No Quarter FE

Panel A: Women

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.161***	-8.907***	-0.038***	-12.283***	-0.123***	-7.873***	-0.016	-0.325*	-921.134***	-1.168***
	(0.007)	(0.342)	(0.005)	(0.872)	(0.006)	(0.605)	(0.172)	(0.192)	(59.797)	(0.057)
N	92,503	92,503	92,503	26,350	92,503	18,035	88,922	88,868	92,503	92,503
Adj R-sq	0.68	0.64	0.80	0.57	0.55	0.66	0.47	0.59	0.55	0.57
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.160***	-13.245***	-0.060***	-11.175***	-0.100***	-8.925***	1.132***	-0.208*	-1716.900***	-1.455***
	(0.007)	(0.406)	(0.006)	(0.516)	(0.007)	(0.561)	(0.130)	(0.107)	(77.530)	(0.062)
N	85,265	85,265	85,265	38,038	85,265	23,740	66,532	64,378	85,265	85,265
Adj R-sq	0.60	0.59	0.74	0.52	0.62	0.61	0.37	0.45	0.51	0.51
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table C.3: Post-Recession Labor Supply, Time Use, and Income – No Individual FE

Panel A: Women

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.161***	-7.148***	-0.066***	-4.700***	-0.095***	-2.355***	0.128	0.244	-975.764***	-1.242***
	(0.010)	(0.454)	(0.010)	(0.576)	(0.009)	(0.743)	(0.222)	(0.296)	(78.169)	(0.078)
N	92,862	92,862	92,862	27,744	92,862	20,429	89,435	89,381	92,862	92,862
Adj R-sq	0.07	0.06	0.05	0.08	0.01	0.03	0.07	0.07	0.05	0.06
Quarter FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.127***	-9.116***	-0.091***	-5.255***	-0.036***	-3.785***	0.398***	-0.147	-1535.822***	-1.266***
	(0.009)	(0.499)	(0.010)	(0.489)	(0.010)	(0.691)	(0.139)	(0.123)	(99.914)	(0.084)
N	85,655	85,655	85,655	39,774	85,655	25,893	67,735	65,708	85,655	85,655
Adj R-sq	0.10	0.07	0.04	0.05	0.02	0.04	0.03	0.04	0.04	0.05
Quarter FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Time trends for individuals are also included. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.

SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table C.4: Post-Recession Labor Supply, Time Use, and Income – Individual Trends

Panel A: Women

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.194***	-14.983***	-0.016	-26.136***	-0.178***	-13.459***	-2.045**	0.564	-634.229**	-0.737**
	(0.035)	(1.408)	(0.017)	(3.322)	(0.035)	(3.187)	(0.960)	(1.043)	(319.022)	(0.302)
N	92,503	92,503	92,503	26,350	92,503	18,035	88,922	88,868	92,503	92,503
Adj R-sq	0.72	0.69	0.83	0.63	0.59	0.69	0.49	0.63	0.57	0.61
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X
Individual Trends	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.182***	-18.175***	-0.013	-22.251***	-0.169***	-14.141***	2.488***	-0.635	-1431.039***	-1.209***
	(0.038)	(1.790)	(0.026)	(2.523)	(0.040)	(3.187)	(0.785)	(0.703)	(463.863)	(0.383)
N	85,265	85,265	85,265	38,038	85,265	23,740	66,532	64,378	85,265	85,265
Adj R-sq	0.65	0.65	0.77	0.60	0.65	0.64	0.39	0.47	0.54	0.54
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X
Individual Trends	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Time trends for individuals are also included. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table C.5: Post-Recession Labor Supply, Time Use, and Income for Households with Children – Only the Household Heads or Spouses

Panel A: Women

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.141***	-7.112***	-0.039***	-6.078***	-0.102***	-7.832***	-0.465	-1.085	-585.937***	-0.828***
	(0.018)	(0.832)	(0.012)	(2.078)	(0.019)	(1.863)	(0.612)	(0.784)	(134.242)	(0.182)
N	30,215	30,215	30,215	8,786	30,215	6,200	29,431	29,408	30,215	30,215
Adj R-sq	0.657	0.646	0.811	0.549	0.528	0.698	0.369	0.504	0.546	0.576
Pre Mean Dep	0.570	19.753	0.255	40.697	0.314	29.777	23.927	14.164	2,792.223	3.746
Post Mean Dep	0.417	12.672	0.202	32.514	0.215	28.397	24.735	14.076	1,746.873	2.568
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Working)	Hours Worked	1(Formal)	Formal Hours	1(Informal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.106***	-11.798***	-0.048**	-9.387***	-0.058**	-7.088***	1.360***	-1.747***	-2119.354***	-1.399***
	(0.025)	(1.293)	(0.023)	(1.586)	(0.025)	(1.656)	(0.462)	(0.662)	(290.758)	(0.243)
N	24,784	24,784	24,784	13,578	24,784	7,691	19,182	18,378	24,784	24,784
Adj R-sq	0.459	0.542	0.756	0.547	0.635	0.583	0.472	0.394	0.463	0.457
Pre Mean Dep	0.955	45.368	0.540	48.437	0.415	46.263	5.449	5.912	6,473.643	6.356
Post Mean Dep	0.830	31.241	0.426	37.976	0.404	37.295	7.391	5.272	4,309.874	5.078
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.

SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

Table C.6: Post-Recession Labor Supply, Time Use, and Income for Households with Children – Nuclear Families

Panel A: Women

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.126***	-6.028***	-0.043***	-4.068**	-0.083***	-7.611***	-0.534	-1.865*	-496.699***	-0.754***
	(0.024)	(1.031)	(0.015)	(1.726)	(0.025)	(1.711)	(0.712)	(0.960)	(167.643)	(0.229)
N	25,274	25,274	25,274	7,341	25,274	5,051	24,649	24,634	25,274	25,274
Adj R-sq	0.656	0.640	0.799	0.541	0.528	0.709	0.359	0.502	0.551	0.575
Pre Mean Dep	0.562	19.171	0.253	40.186	0.309	29.171	24.151	14.529	2,812.914	3.751
Post Mean Dep	0.409	12.229	0.196	32.049	0.213	27.860	24.906	14.588	1,781.592	2.576
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

Panel B: Men

	1(Work-ing)	Hours Worked	1(For-mal)	Formal Hours	1(Infor-mal)	Informal Hours	Hours House	Hours Caring	Income	Log of Income+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1(Post x COVID-19 Pandemic)	-0.096***	-11.674***	-0.039	-9.438***	-0.057**	-7.231***	1.555***	-1.705**	-2031.459***	-1.254***
	(0.026)	(1.433)	(0.026)	(1.696)	(0.027)	(1.876)	(0.510)	(0.759)	(323.743)	(0.253)
N	21,190	21,190	21,190	11,734	21,190	6,511	16,578	15,907	21,190	21,190
Adj R-sq	0.477	0.535	0.766	0.542	0.645	0.566	0.421	0.398	0.459	0.460
Pre Mean Dep	0.958	45.347	0.541	48.001	0.416	46.505	5.489	6.031	6,507.860	6.366
Post Mean Dep	0.829	31.282	0.427	38.158	0.402	37.298	7.330	5.485	4,333.472	5.055
Quarter FE	X	X	X	X	X	X	X	X	X	X
Individual FE	X	X	X	X	X	X	X	X	X	X
Controls	X	X	X	X	X	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and individual fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. The main sample includes individuals who are 18 to 64. Robust standard errors are clustered at the individual level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.

SOURCE: Individual-level data from the National Occupation and Employment Survey (ENOE) 2019-2020Q1. The ENOE transitioned to the ETOE telephone survey in April-December 2020.

D Traditional ENOE Specifications

Table D.1: Descriptive Statistics Traditional ENOE, Adults 18-64

	Women Pre		Women Post		Men Pre		Men Post	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Employment								
1(Working)	0.505	0.500	0.452	0.498	0.836	0.371	0.787	0.410
1(Manufacturing/ Construction	0.084	0.278	0.078	0.268	0.254	0.435	0.238	0.426
Sector								
1(Commerce)	0.127	0.333	0.118	0.322	0.126	0.331	0.124	0.329
1(Service)	0.271	0.444	0.236	0.425	0.307	0.461	0.284	0.451
1(Agriculture)	0.018	0.134	0.017	0.131	0.135	0.342	0.128	0.334
1(Other)	0.004	0.063	0.003	0.055	0.014	0.117	0.013	0.115
1(Formal)	0.224	0.417	0.212	0.409	0.394	0.489	0.367	0.482
1(Informal)	0.281	0.449	0.240	0.427	0.442	0.497	0.419	0.493
Time Use								
Hours Worked	18.829	22.485	16.195	21.765	38.012	22.885	34.076	23.861
Hours on House	21.069	11.896	20.995	12.117	5.947	5.488	6.600	6.187
Hours Caring for Others	7.484	12.622	7.476	13.201	2.206	5.769	2.268	6.211
Income								
Log(Monthly Income +1)	2.837	3.981	2.595	3.908	4.897	4.329	4.612	4.364
Monthly Income	1,914.703	3,979.466	1,864.541	4,227.108	4,155.542	6,034.051	3,990.341	6,068.739
N	256,691		201,538		232,009		182,276	

NOTES: The main sample includes individuals who are 18 to 64.
SOURCE: Individual-level data from the traditional face-to-face National Occupation and Employment Survey (ENOE) 2019Q3, 2019Q4, 2020Q3, and 2020Q4.

Table D.2: Post-COVID-19 Recession on School-time, Children 6-16

	1(In School)	Hours School	1(Work -ing)	Hours Worked
	(1)	(2)	(3)	(4)
1(Post x COVID-19 Pandemic)	-0.001	-8.944***	-0.003	0.026
	(0.005)	(0.491)	(0.006)	(0.192)
N	204,847	89,856	204,847	204,847
Adj R-sq	0.093	0.165	0.089	0.076
Pre Mean Dep	0.943	31.782	0.055	1.577
Post Mean Dep	0.897	23.702	0.110	3.291
Quarter FE and Year FE	X	X	X	X
State FE	X	X	X	X
Controls	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and state-level fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the state level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the traditional face-to-face National Occupation and Employment Survey (ENOE) 2019Q3, 2019Q4, 2020Q3, and 2020Q4.

Table D.3: Post-Recession Labor Supply by Sector of the Economy, Adults 18-64

Panel A: Women

	Constr-uction	Commu-nication	Service	Agric -ulture	Other
	(1)	(2)	(3)	(4)	(5)
1(Post x COVID-19 Pandemic)	-0.005***	-0.012***	-0.048***	-0.000	-0.001***
	(0.002)	(0.002)	(0.005)	(0.002)	(0.000)
N	458,229	458,229	458,229	458,229	458,229
Adj R-sq	0.022	0.004	0.036	0.017	0.003
Pre Mean Dep	0.084	0.127	0.271	0.018	0.004
Post Mean Dep	0.078	0.118	0.236	0.017	0.003
Quarter FE and Year FE	X	X	X	X	X
State FE	X	X	X	X	X
Controls	X	X	X	X	X

Panel B: Men

	Constr-uction	Commu-nication	Service	Agric -ulture	Other
	(1)	(2)	(3)	(4)	(5)
1(Post x COVID-19 Pandemic)	-0.011***	-0.002	-0.036***	-0.000	-0.000
	(0.004)	(0.003)	(0.006)	(0.005)	(0.001)
N	414,284	414,284	414,284	414,284	414,284
Adj R-sq	0.034	0.006	0.039	0.099	0.009
Pre Mean Dep	0.254	0.126	0.307	0.135	0.014
Post Mean Dep	0.238	0.124	0.284	0.128	0.013
Quarter FE and Year FE	X	X	X	X	X
State FE	X	X	X	X	X
Controls	X	X	X	X	X

NOTES: OLS coefficients reported. The coefficient indicates the post-recession period for the COVID-19 pandemic recession. Baseline fixed effects include quarter fixed effects and state-level fixed effects. Controls include indicators for the number of individuals in the household, the individual's age, and age-squared. Robust standard errors are clustered at the state level and are reported in parentheses. ***, **, * represent statistical significance at 1, 5 and 10 percent levels.
SOURCE: Individual-level data from the traditional face-to-face National Occupation and Employment Survey (ENOE) 2019Q3, 2019Q4, 2020Q3, and 2020Q4.