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Effects of the COVID-19 Pandemic on the Labor Market Outcomes of Women with Children in Mexico

RESEARCH

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ABSTRACT

This paper estimates the effects of having children at home on the labor market outcomes of women in Mexico during the first year of the COVID-19 pandemic. Our findings suggest that women with children at home experienced some additional negative impacts on their labor supply immediately after school and daycare closures, compared to women without children. However, such impacts began to revert in the third quarter of 2020. One year after the onset of the pandemic, women with children increased their labor supply relatively more than women without them, despite ongoing school closures, suggesting a dominance of a negative income effect. Effects by the age of children are consistent with the reopening of daycare centers in 2020 not schools. We also find suggestive evidence that, for women employed both before and one year into the pandemic, having children at home induces industry changes and slightly decreases their job formality.

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In Mexico, as in other countries, the COVID-19 pandemic severely affected female employment, partly due to the concentration of women in specific sectors and occupations. Also, unlike previous recessions, the pandemic drastically reduced childcare alternatives. In Mexico, schools and daycare centers closed on March 23, 2020. Later that year, at the end of May, daycare centers were added to the list of essential activities and allowed to reopen, whereas schools, from elementary to tertiary education, remained closed until the first half of 2021. This paper estimates the effect of the number of children in the household on the labor market outcomes of women in Mexico. While sector-specific shocks are likely to affect women in general, the stark reduction in childcare alternatives caused by the pandemic could lead to additional negative impacts for women with children.

Several studies confirm that, across countries, women were acutely hit by the pandemic, along with other vulnerable groups (Bustelo et al. 2021, for Latin America; Alon et al. August 2020, for the US). Bustelo et al. (2021) show that, in Latin America, female labor force participation in the second half of 2020 was similar to that in 1990, representing a setback of 30 years. For the US, Alon et al. (August 2020) show that the pandemic recession was different from previous downturns due to larger employment losses and higher unemployment for women than for men, effectively shutting down the added-worker household insurance mechanism.[1]

Furthermore, the evidence for developed countries shows that women who have children have experienced even larger reductions in their labor force participation, employment, and work hours, compared to women who do not have children and men. Such evidence highlights the additional negative impact of the increase in childcare needs caused by school and daycare closures (Alon et al. 2021; Cowan 2020; Heggeness 2020).

For Mexico, Filippo et al. (2021) find that, in the first months of the pandemic, the fall in informal employment was larger for women (38%) than for men (29%). In the second half of 2020, as the Mexican economy started to reopen, the employment recovery was faster and broader for men than for women. They attribute most of this gender differential recovery to sector-specific shocks but show that, even within the services sector, which is predominantly female, female employment in December 2020 was 89 percent of the pre-crisis level, whereas male employment was already 97 percent. They mention school closures as a factor that could impact female labor market outcomes but do not directly estimate the impact of the number of children at home.

Our study is closest to the work of Hoehn-Velasco et al. (2022), who analyze the effects of the pandemic on labor market outcomes and time use by gender in Mexico. They show that women had persistent employment losses up to the second quarter of 2021 and also include some evidence for men and women in households with children age 0–14. Regarding the latter, the main differences between their study and ours are five. First, they do not compare impacts for men and women in households with children to those in households without them in the same regression, and their focus in on time use, particularly time devoted to housework and care activities.[2] We include individuals with and without children in our estimations under the assumption that the latter might capture other gender-specific factors, not related to the number of children in the household, and to provide direct evidence on the added consequences of such presence. We also focus on labor market outcomes and omit any other time uses. Second, they do not estimate the impact of the number of children in the household but conduct their estimations separately for individuals who have at least one child in different age groups. By including the number of children, in total and by ages, we are able to estimate the effect of an additional child in each age group, controlling for the number of children in others. Third, in their main results, they restrict their sample to heads of households and their spouses to gauge the impact of an individual's own children.[3] We do not impose this restriction in our main estimations because, as argued by Aguilar et al. (2019), children usually generate more care responsibilities for mothers and fathers but, to

1 During a regular recession, women, particularly those who are married and have children, tend to increase their labor supply to compensate the reduction in household labor income due to the primary earner's job or wage losses.

2 Hoehn-Velasco et al. (2022) include graphs showing the probability of working and hours of work for adults in households with children but do not discuss them extensively.

3 They include an exercise with all household members in their appendix, so this difference refers to the main results presented in our studies.

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a certain extent, also for other members of their household. Nevertheless, we include a similar exercise, restricting the sample to heads and their partners, in the appendix. Fourth, we provide complementary evidence on women's labor supply responses to the reopening of daycares in June 2020, particularly those with preschool children, which highlights the relevance of childcare alternatives for these decisions. Finally, for women who were employed before and one year after the start of the pandemic, we provide panel data evidence on the effect of the number of children at home on selected job characteristics. In sum, compared to previous work for Mexico, we provide additional evidence focused on the specific impacts of children on women's labor market outcomes during the pandemic in Mexico. Other secondary differences between their study and ours are described in the empirical section.

We use the same data sources as Hoehn-Velasco et al. (2022) and Filippo et al. (2021) to estimate the impact of the number of children ages 0–17 years in the household, in total and by age groups (ages 0–5, 6–12 and 13–17), on the labor outcomes of Mexican women ages 18 to 64, both in the first months of the pandemic and one year after. For comparison, we also provide some results for prime-age men.

Our empirical analysis consists of two parts. First, to estimate the immediate effects of the number of children at home on labor market outcomes during the first pandemic months, we conduct a cross-section, difference-in-differences (DD) analysis using data from the first quarter of 2019 to the third quarter of 2020. Thus, we have data before and after March 2020, that is, before and after official school and daycare closures. For comparison purposes, we report results for both prime-age men and women in this part. As discussed below, given that we find more significant impacts for women than for men, we focus the rest of the analysis only on women. Throughout, as mentioned above, we expect other gender-specific effects of the pandemic on labor market outcomes, such as sector-specific shocks, to be common for all individuals of the same gender.

In the second part, we conduct a panel data analysis using data for the first quarters of 2020 and 2021 to estimate impacts one year after the onset of the pandemic in Mexico, controlling for seasonal and individual-specific effects. In this part, we add estimations for a subsample of women, who were employed both before and after the pandemic, to examine the effects of the number of children at home on selected job characteristics, like the formality of their job, controlling for initial sector of employment.

Overall, we find that women with children at home experienced additional labor market consequences during the pandemic, relative to women without them and men. These added impacts are presumably due to the closing of schools that began in March 2020 and lasted until mid-2021. In the first months of the pandemic, women with children at home reduced their labor supply more than women without them. In April 2020, an additional child aged 0 to 17 years at home further decreased women's labor force participation by 2.3 percentage points (20 percent). However, these negative impacts were short-lived. A few months later, and even one year after, women with children, particularly those with preschool-aged children, got back into the labor force at higher rates than women without them.

For women who were employed both during the first quarters of 2020 and 2021, an additional child age 0–17 years old at home decreases the probability of keeping a formal job by 1.4 percent (significant at 10 percent only). This result suggests that, compared to women with no children, women with children at home were slightly less likely to retain fringe benefits like health care and retirement saving, among others. An additional child aged 0–17 also significantly increases the probability of changing industry by 10 percent. These impacts are mostly due to the number of school-age children (6–17 years old), rather than preschool ones, suggesting their relation to pandemic school closures. For instance, each additional teenager increases the probability of transitioning from a formal to an informal job by 26 percent (significant at 5 percent).

Although our estimates for the number of children at home are reduced-form, we control for two confounders that might correlate with this variable: household composition and initial sector of employment. For the first, we control for the number of household members ages 18–65, and 65 and older by gender in all of our estimations. For the second, we control for pre-pandemic sector of

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employment in Q1 2020 in our panel regressions for the sample of employed women. Given that sector is only observed for employed women, we do not include it in our other estimations for the whole sample of prime-age women.

Overall, as mentioned above, after controlling for household composition and initial sector of employment, we still find that the number of children at home is related to some added impacts on women's labor supply during the pandemic. We provide complementary evidence on two potential mechanisms: the (un)availability of childcare alternatives due to daycare and school closures and the reduction in household income due to the economic consequences of the pandemic. We show that the reopening of daycare centers at the end of May 2020 increased the labor supply of women with preschool children in June and July, particularly for the youngest children (ages 0–3), who are more likely to attend them, which underpins the relevance of child care alternatives for women's labor choices. We find mostly not significant impacts of school-age children on labor outcomes in those same months, in line with the continuation of school closures. We also show that household labor income decreased sharply during the first three months of the pandemic, and more so in household with children ages 0–17, which could induce an increase in women's labor supply in later months.

Our work contributes to the literature on the impacts of the pandemic on women's labor market outcomes, specifically for women who have children. This literature has mostly focused on developed countries. We provide evidence for a developing country with low female labor force participation and scant government support during the pandemic. Even before the pandemic, Mexico had one of the lowest female labor force participation rates in Latin America (Bustelo et al. 2019; Mateo Díaz et al. 2014), partly due to the lack of childcare alternatives (Kaplan and Piras 2019; Mateo Díaz et al. 2014). In this context, the school and daycare closures induced by the pandemic further reduced such alternatives for women with children, which could entail negative consequences for women, families, and children. These consequences could be long-lasting given that, as mentioned, Mexican schools remained closed for about 15 months.

On the other hand, women with children in Mexico could respond differently than their counterparts in other countries. First, Hoehn-Velasco et al. (2022) show that prime-age adults do not significantly increase their caregiving time during school closures, but children 6–16 years old do. Second, government support for families and businesses amounted to only 0.7 percent of 2020 GDP in Mexico, much lower than the average for Latin America (4.1 percent).[4] While most Latin American countries implemented specific policies to mitigate the negative impact on employment (cash transfers for self-employed and informal workers, or wage subsidies for formal employment), the Mexican government focused on changing or expanding the eligibility criteria of existing programs (Bustelo et al. 2021).[5] Such reduced support would contribute to a more pronounced negative income effect during the pandemic.

DATA AND DESCRIPTIVE STATISTICS

For our analysis, we use three closely related sources of labor statistics from the Mexican Institute of Statistics (*Instituto Nacional de Estadística y Geografía*, INEGI): the National Survey of Occupation and Employment (ENOE), the Telephone Survey of Occupation and Employment (ETOE), and the New ENOE (ENOEN).[6] Since 2005, ENOE has been the main source of information for Mexico's labor market statistics. It provides both monthly and quarterly data on the labor force for the population aged 15 and older. It is a rotating panel in which a given household is surveyed for a maximum of

4 These figures reflect the budgetary fiscal support to people and firms and come from the *Additional Spending and Forgone Revenue in Response to the COVID-19 Pandemic* of the International Monetary Fund (2021, October). Please refer to *Fiscal policies database*. IMF. Retrieved October 14, 2021, from https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19.

5 For example, according to Bustelo et al. (2021), the program aimed at providing financial support to the children of working mothers (*Apoyo para el Bienestar de las Niñas y Niños de Madres Trabajadoras*) expanded its coverage in 46 percent in 2020.

6 The information presented in this paragraph was obtained from INEGI's official webpage: www.inegi.org.mx

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five consecutive quarters. Up to the first quarter of 2020, this survey was always conducted face-to-face in selected dwellings. In addition to social and demographic characteristics, ENOE includes information about labor force participation, reasons for unemployment or inactivity, hours worked, work benefits, firm size, earnings, type of work and sector, or hours spent in other activities, such as caring for children and other family members.

Due to the pandemic lockdown between April and June 2020, INEGI conducted ETOE instead, a telephone-based survey covering a subsample of the traditional ENOE. Both surveys have the same basic questionnaire and variables. However, they are based on different operational strategies, so INEGI warns about their indicators and results not being strictly comparable. Notwithstanding this limitation, we use these two surveys together in our estimations to provide evidence on the immediate effects of the pandemic on labor market outcomes. In mid-July 2020, INEGI resumed ENOE field operations gradually, through a mixture of face-to-face and telephone interviews, leading to the ENOEN.[7]

Our empirical analysis of the effects of the number of children at home on labor market outcomes during the pandemic consists of two parts. First, to provide evidence on the immediate impacts, we conduct a cross-section, difference-in-differences (DD) analysis using data from ENOE (first quarter of 2019 to the same quarter of 2020), ETOE (second quarter of 2020), and ENOEN (third quarter of 2020). The period before the pandemic school closures goes from the first quarter of 2019 to the same quarter of 2020, and the after period covers the second and third quarters of 2020. For comparison, in this first part, we report results for both prime-age men and women. As shown later, given that we find more significant impacts for women than for men, we focus the rest of the analysis only on women. Second, we conduct a panel data analysis using ENOE data for the first quarter of 2020 and ENOEN data for the first quarter of 2021, which has several advantages: (i) it allows us to estimate impacts one year after the onset of the pandemic in Mexico, and the corresponding school closures; (ii) comparing the same quarter of the year both before and after the pandemic, controls for seasonal confounders; (iii) and, as stated by INEGI, the ENOEN data for the first quarter of 2021 is fully comparable with the ENOE data from the same quarter of 2020.

We focus on a sample of urban women ages 18–64, and we control for their age, years of education, a dummy for whether they live with a partner, and the number of household members ages 18–64 and 65 and older by gender.[8] As mentioned, only for the first part of the analysis, we also conduct some estimations for urban men ages 18 to 64.

Our key independent variable is the number of children ages 0 to 17 living in the household. We use this variable instead of the individual's own children because, by design, the ENOE, ETOE, and ENOEN ask women about the number of children they have, but not about their ages or whether they currently live with them. For men, these surveys do not ask about whether they have children and how many. Nevertheless, the three surveys record the age and gender of all the household members, so we use this information to calculate how many underage children live in the same household as prime-age men and women. Consequently, in our main estimations, we focus on the impacts of having children in the household, but not necessarily the effect of men's and women's own children. We prefer this approach to avoid restricting the sample and because having children in the same household generates care responsibilities for mothers and fathers primarily but, to a certain extent, also for other family members who reside with them, as shown by Aguilar et al. (2019). Nevertheless, in the appendix, we include estimations aimed at gauging more closely the impact of an individual's own children and find similar results.[9]

7 According to INEGI, the majority of ENOEN interviews were face-to-face.

8 The number of household members by age and gender captures the potential family support for caring activities that a woman has. Even though these variables might have changed during the pandemic, our results are very similar when excluding them (these results are not shown but are available upon request).

9 To identify an individual's own children, we restricted our sample to the heads of household and their partners, and use the information that is available for all household members on their relationship to the head, as Hoehn-Velasco (2022) do. Thus, we can identify the head's own children, which we then attribute to their partners.

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We also estimate heterogeneous impacts by dividing the number of children in three age subgroups: preschool-age children (0–5 years old), primary-school children (6–12 years old), and teenagers (13–17 years old). Impacts could vary by the age of children due to age-specific care needs and alternatives, and to the different lockdown measures applied for daycare centers, which serve mainly preschool children, versus schools in Mexico. As mentioned, daycares could reopen in Mexico in June 2020, whereas schools remained closed till mid-2021. If the impacts of having children at home on labor market outcomes are concentrated on school-age children (6–17 years old), they could partly be attributed to such prolonged school closures. We also expect other gender-specific effects of the pandemic on labor market outcomes, such as sector-specific shocks, to be common for all individuals of the same gender.

The outcomes of interest for our analysis are dummies for labor force participation, employment, unemployment, underemployment, and whether the person had positive monthly earnings; the weekly hours of work, the log of real monthly earnings, and the log hourly wage.[10] Our data also have information on the respondent's time devoted to housework and care of other members of the household, but we omit these outcomes because we find mostly not significant impacts of the number of children on them, which is consistent with previous work for Mexico (Hoehn-Velasco et al. 2022).

As part of our panel data analysis, we also use a subsample of women employed both in the first quarter of 2020 and the same period of 2021 to examine whether the number of children in their household is related to changes in selected job characteristics between these periods. In this part, our outcomes of interest are dummies for whether a woman changed the type of worker she is (salaried, self-employed, employer, or unpaid), her occupation, or her industry. Both occupation and industry are measured at the first-digit level, the most aggregate one, to capture major changes in these variables induced by the pandemic. We also study formal-informal sector transitions with dummy variables for (i) whether the woman had a formal job in both periods, (ii) whether she changed from a formal job in 2020 to an informal one in 2021, (iii) whether she made the opposite transition, and (iv) whether she had an informal job in both periods. We use the standard definition of job formality for Mexico, which is having access to health benefits through the job, and further restrict our panel sample to salaried workers only when studying these transitions. By law, Mexican employers must provide a bundle of fringe benefits, which includes health care, to their salaried employees by registering them with the appropriate social security institution (IMSS for private-sector workers; ISSSTE for federal government employees).[11] If a salaried worker has access to health benefits in any of these institutions, she must also have access to the other fringes in the package, including retirement saving, housing loans, workers compensation insurance, and child care benefits, to name a few. Therefore, formal salaried workers are covered against certain risks, whereas their informal counterparts are not.

As mentioned in the introduction, our study is closest to the work of Hoehn-Velasco et al. (2022), who provide evidence on the overall effects of the pandemic on labor market outcomes and time use by gender in Mexico. Regarding the specific impacts for adults in households with children, the major differences between their work and ours are: (i) they conduct separate estimations for these households, whereas we include both individuals with and without children in our estimations to gauge the added impacts for the former and to control directly for other gender-specific factors, not related to the presence of children in the household; (ii) they conduct their estimations separately for individuals in households with at least one child in different age groups, whereas we estimate the impact of the number of children in the household (in total and by age groups), which yields marginal effects; (iii) we focus on labor market impacts and omit any other time uses, whereas their focus in on housework and care activities; (iv) in our main results, we do not restrict our sample to heads of households and their spouses, as they do, but include an exercise similar in the appendix; (v) we provide complementary evidence on the impact of the reopening of daycares

10 INEGI defines a person 15 years and older as underemployed if she reports that she needs and is able to work more hours than what she is currently working.

11 Due to imperfect compliance, our formal-informal transition variables capture only the fringe benefits that the worker receives through her job, not necessarily a job change in itself.

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in June 2020 on the labor supply of women with preschool children, by further dividing preschool-age children in two groups, as described below. Finally, as mentioned, for women who were employed before and one year after the start of the pandemic, we provide panel data evidence on the effect of the number of children at home on selected job characteristics.

Other secondary differences between the study by Hoehn-Velasco (2022) and ours are that we focus on an urban sample, whereas they use the national sample; we include ETOE Q2 2020 and they exclude this period; we consider children ages 0 to 17 and they consider those ages 0 to 14.[12]

Tables A1 and A2 in the appendix present the means and standard deviations of all our variables of interest for prime-age women and men, respectively, for the first quarter of 2020, right before the start of the pandemic in Mexico. Within each table, we also present these descriptive statistics by whether there are any children 0–17 years old in the household or not.

The first column in these tables, in which we do not distinguish yet for the presence of children in the household, shows considerable differences in the labor market outcomes of men and women in general. For instance, the labor force participation of women is about 57 percent (Table A1), compared to 85 percent for men (Table A2). For both men and women in the labor force, the unemployment (4 percent) and underemployment (7 percent) rates are quite similar. However, mean weekly hours of work for men (37.5 hours) are about 1.8 times those for women (20.8 hours). Accordingly, men's mean monthly labor income is 2.2 times that of women, and their hourly wage is about 11 percent higher. About 76 percent of both men and women are salaried employees but, among them, 42 percent of men have a formal job, whereas only 27 percent of women do. Among individuals who are out of the labor force, 75 percent of women report being so because they are devoted to housework compared to 12 percent of men. About 24 percent of both men and women either need or want to work, despite being out of the labor force, but, among them, 31 percent of women name the lack of childcare as an additional hurdle for working, whereas only 3 percent of men do. Men and women are similar in their mean age, education (11 years), their likelihood of living with a partner, and the number of children at home in total and of different ages.

Columns 4 and 7 of Table A1 show that, on average, women with children at home are slightly less likely to be in the labor force or employed and more likely to be underemployed compared to women without them. They are also somewhat less likely to be salaried employees and to have a formal job. Both groups of women have the same probability of unemployment, and the gap in weekly hours of work between them seems to be small (–1.2 hours). However, the monthly earnings and hourly wage of women with children at home are about 15 percent lower compared to those without them. Among women who are out of the labor force, those with children at home are 1.3 times more likely to report being so because they are devoted to housework and 1.4 times more likely to respond that they want or need to work, compared to childless women. Among women who report needing and wanting to work, despite being out of the labor force, those with children at home are 4 times more likely to name lack of childcare as an additional impediment for work.

Overall, Table A1 shows that women with children are slightly disadvantaged in the labor market compared to childless women. For men, Table A2 shows the opposite pattern: men with children at home are more likely to participate in the labor market, to be employed, to be a salaried employee, and to have a formal job, compared to men without them. They are, in turn, slightly less likely to be unemployed and underemployed, and they work about six hours more per week, compared to childless men. On average, men with children at home have about 15 percent higher monthly earnings, but their hourly wage is 8.5 percent lower compared to childless men. For men who are out of the labor force, about 12 percent of them report being so due to housework, irrespective of whether they reside with children or not. Men out of the labor force who live with children are about 9 percent more likely to report that they need or want to work than men without children. Among those who do want or need to work, men with children at home are twice as likely to report a lack of childcare as a barrier to work compared to childless men.

12 The primary and minor differences between Hoehn-Velasco et al. (2022) and our study discussed here pertain only to the part of their analysis for households with children.

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In the next section, we present the different parts of the empirical analysis. For ease of exposition, for each part, we include both the empirical specification(s) we use and the results in a single subsection.

EMPIRICAL ANALYSIS AND RESULTS

A) IMPACTS OF THE PANDEMIC ON THE LABOR MARKET OUTCOMES OF PRIME-AGE ADULTS WITH CHILDREN IN 2020

As mentioned in the previous section, for the first part of our analysis, we use a cross-section difference-in-differences (DD) analysis to estimate the immediate impact of the pandemic in Mexico on the labor market outcomes of prime-age women and men with children at home. Besides other mechanisms that affected the labor market outcomes of men and women at the beginning of the pandemic, like sector-specific shocks, the school and daycare closures that started at the end of March 2020 could have additional impacts on such outcomes for individuals who reside with children.

In this part, we use quarterly data from the first quarter of 2019 to the same quarter of 2020, the period before the onset of the pandemic in Mexico and the school closures, and monthly data for the second and third quarters of 2020, after school closures. Specifically, for each of our outcomes of interest, we estimate the following specification, separately for men and women:

$$Y_{it} = \alpha + X_{it}\beta + \sum_{q=1}^{4} \gamma_q Q_{2019,q} \times K_{it} + \sum_{m=4}^{9} \delta_m M_{2020,m} \times K_{it} + \rho_t + \varepsilon_{it} \quad (1)$$

where Y_{it} is one of our labor market outcomes of interest for individual i in period t; X_{it} is a vector of individual controls including age, years of schooling, a dummy for whether the individual is married or cohabitating, the number of household members aged 18 to 64 and 65 and older by gender, and the number of children ages 0 to 17 in the household; $Q_{2019,q}$ is a dummy equal to 1 if period t is quarter q of 2019, $M_{2020,m}$ is a dummy equal to 1 if period t is month m of 2020, and K_{it} is the number of children ages 0 to 17 in the household, also included by itself in vector X_{it}; ρ_t are period fixed effects and ε_{it} is the error term. In this equation, the reference (excluded) period is the first quarter of 2020, just before school closures. So, our key regressors are the interactions of the quarter and month dummies with the number of children ages 0 to 17 at home, particularly after the first quarter of 2020. The interactions for 2019 capture whether individuals with and without children at home experienced differences in their mean labor market outcomes before the start of the pandemic.

In all these cross-section regressions, we use the sampling weights of the surveys. Although we are not directly exploiting the panel structure of the data, we have repeated observations for some individuals, so we cluster standard errors at the individual level.

Figures 1 and 2 show the results of estimating equation (1) for women's labor force participation and weekly work hours. These results, together with those for other labor market outcomes, are also reported in Table A3 in the appendix.

In Panel A of Figures 1 and 2, we find that the 2019 quarter dummies alone are mostly not statistically significant, suggesting no consistent temporal pattern before the first quarter of 2020, the reference period.[13] In contrast, the dummies for April–September 2020 are mostly statistically significant and show a stark reduction in the extensive and intensive margins of labor supply for all women due to the pandemic. In general, the magnitude of these impacts is largest during the first months of confinement, and it decreases gradually during the third quarter of 2020. These patterns are consistent with previous evidence on the overall impact of the pandemic on the labor market outcomes of women in Mexico, regardless of whether they have children or not (Filippo et al. 2021; Hoehn-Velasco et al. 2022).

13 The same conclusion holds for most 2018 quarter dummies and their interactions with the number of children when including data from that year in all estimations. These results are not shown but they are available upon request.

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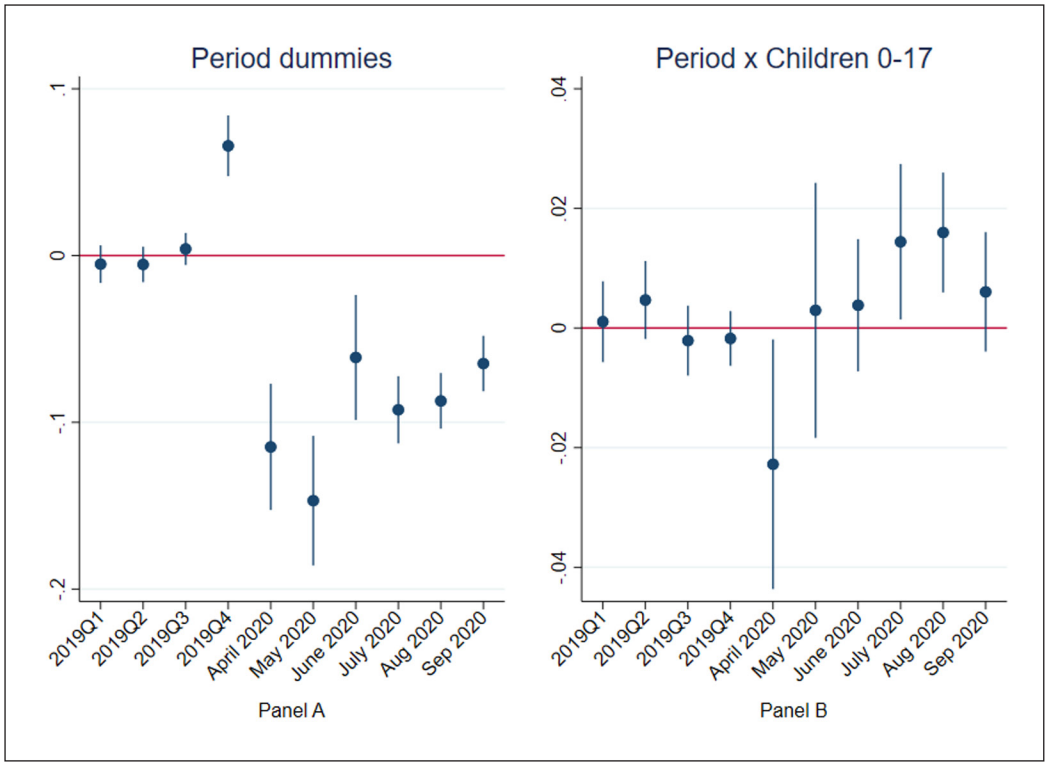

Figure 1 Impacts of the number of children 0–17 at home on the labor force participation of urban women 18–64.

Notes: OLS estimates using a sample of urban women ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

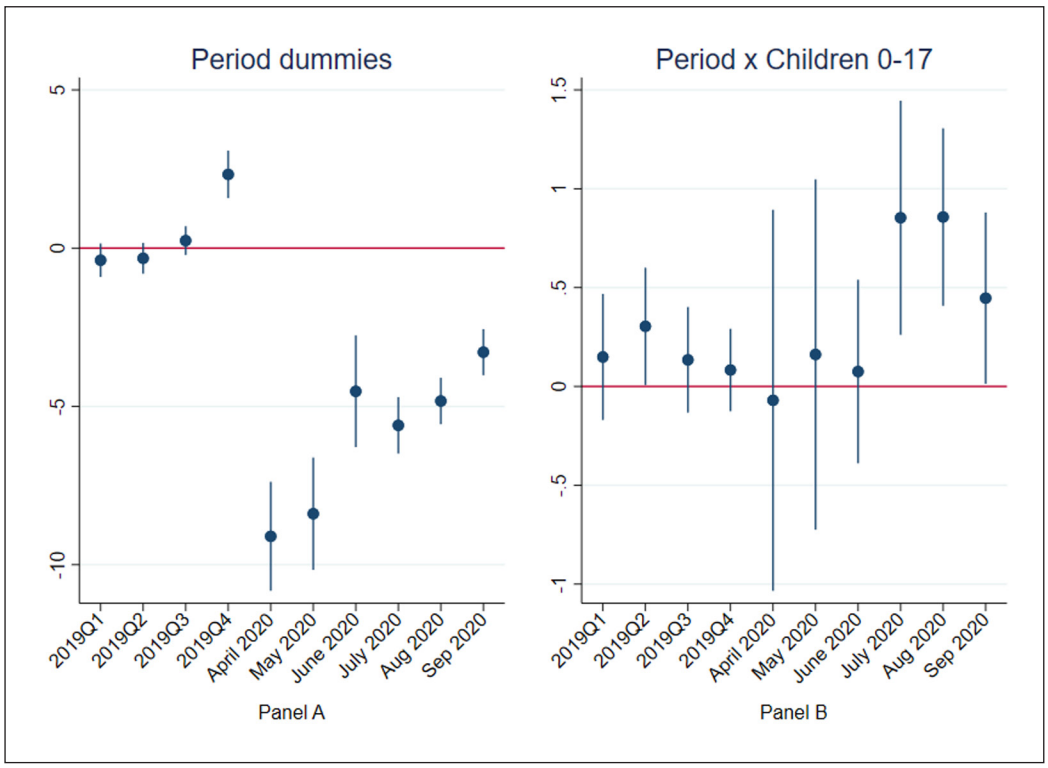

Figure 2 Impacts of the number of children 0–17 at home on the weekly work hours of urban women 18–64.

Notes: OLS estimates using a sample of urban women ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

In Panel B of Figure 1, the interactions of the time dummies with the number of children ages 0 to 17 in the household indicate that women with children at home experienced some added impacts compared to those without them. For instance, the interaction for April 2020 shows that an additional child aged 0 to 17 years old at home further decreased the labor force participation of women by 2.3 percentage points (20 percent). In Panel B of Figure 2, the relevant interactions are not statistically significant for work hours during April–June 2020, suggesting that the additional negative effect on labor supply is concentrated on the extensive margin.

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Nevertheless, the estimated interactions for May and June 2020, which are not significant, suggest that the additional negative impacts on the labor force participation of women with children were short-lived. Moreover, the relevant interactions for July and August show positive effects of the number of children at home on women's labor force participation and work hours. For instance, on average, the labor force participation of women without children in July 2020 was 9.2 percentage points lower than in Q1 2020, whereas that of a woman with one child was 7.8 percentage points lower. Comparing Panel B with Panel A of both figures implies that women with children at home still experienced a reduction in these labor supply measures in those months, but it was smaller compared to women with no children. These findings suggest that, despite school closures, women with children at home had to reenter the labor market at higher rates, and increase their weekly work hours more than those without them, in the second half of 2020, probably due to the dominance of the income effect.

To provide complementary evidence about this mechanism, Table A6 in the appendix shows the impact of having children at home on the log of household labor income. This regression is at the household level, and we control for the number of members in different age groups by gender, and the mean years of education of adults. Household labor income decreased between 12 and 42 percent in the first three months of the pandemic, with an added negative impact of 2.1–2.6 percentage points for each child aged 0–17 years old in the household.[14] If leisure is a normal good, this income reduction could induce an increase in women's labor supply. On the other hand, school closures and having children at home increases the value of women's time devoted to non-market activities, which could reduce labor supply. If the total effect were the sum of these two forces, then the relatively higher labor supply of women with children, compared to those without them, after the first pandemic months, would suggest that the income effect is dominating.

Table A3 in the appendix shows that other labor market outcomes also deteriorated more for women with children at home, than for those without them, in the early pandemic months. For instance, the relevant interaction for April 2020 shows that an additional child age 0 to 17 years old at home further decreased the employment of women by 2.2 percentage points (20 percent) and the probability of having any positive monthly earnings by 2.8 percentage points (35 percent). We find no other significant interactions for May and June of 2020, except for decreases of 0.8 percentage points per additional child 0–17 years old at home on the probability of being underemployed in June (column 4) and of 4.8 percent per child in the log real hourly wage in May, both significant at 10 percent only.

Figures 3 and 4 present the corresponding results for men ages 18 to 64. In Panel A of both figures, the month dummies for April 2020 onwards show a deterioration of the labor market for all men. After the closure of activities, their labor force participation and weekly hours of work decreased. Impacts on other labor market outcomes are in Table A4 in the appendix.[15]

Did men with children at home experience differential effects, compared to those without them? They did, but to a lesser extent than women. In Panel B of Figure 3, none of the key interactions of the number of children ages 0–17 with the month dummies of April–September 2020 are statistically significant. The interaction for Q4 2019 is negative and significant, suggesting a decrease of 1 percentage point in the men's labor force participation with each child ages 0–17 in the household in that quarter. Nevertheless, given that the interactions for Q2 and Q3 2020 are, as mentioned, close to zero and not significant, this pre-COVID estimate is unlikely related to school closures. In Panel B of Figure 4, the number of children age 0–17 at home further reduced men's weekly work time by 1.5 and 0.60 hours in May and June, respectively.

14 Table A6 also shows a negative effect of 34 percent, and an additional effect of 1.8 percentage points per each child age 0–17, in the last quarter of 2020. This anticipated effect could arise if the economic effects of the initial pandemic outbreak in China started affecting selected sectors in Mexico.

15 We do not report the F-statistic for the global significance of the regression in our tables but it rejects the null at either 1 or percent in all cases.

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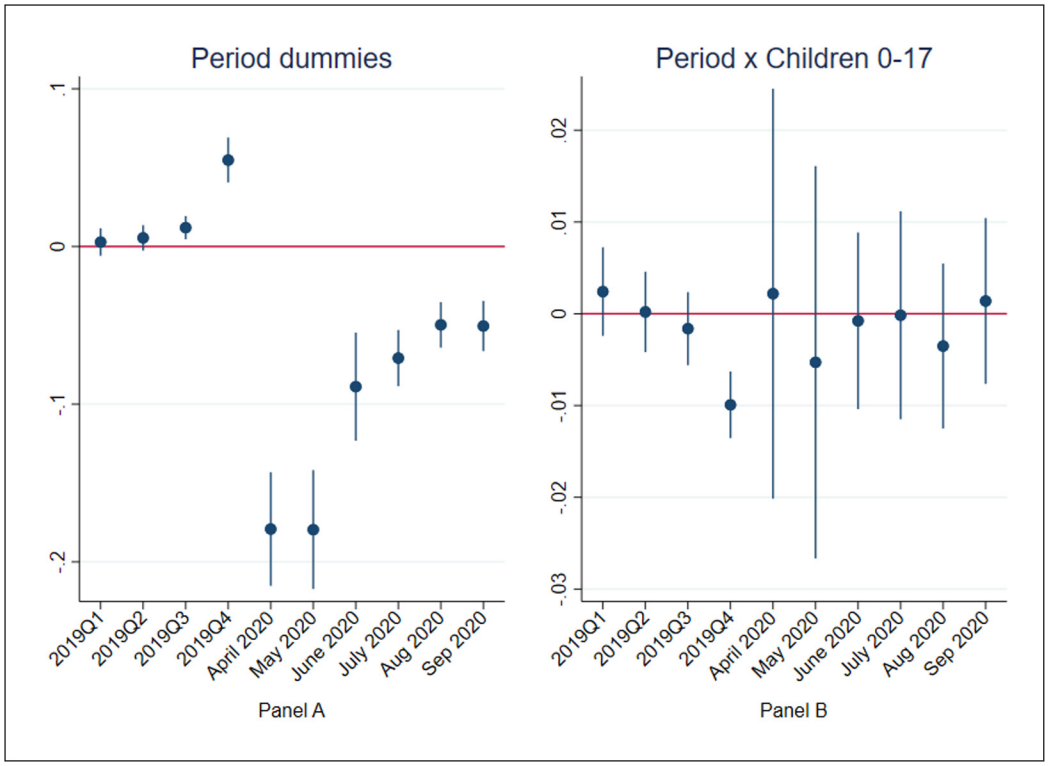

Figure 3 Impacts of the number of children 0–17 at home on the labor force participation of urban men 18–64.

Notes: OLS estimates using a sample of urban men ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

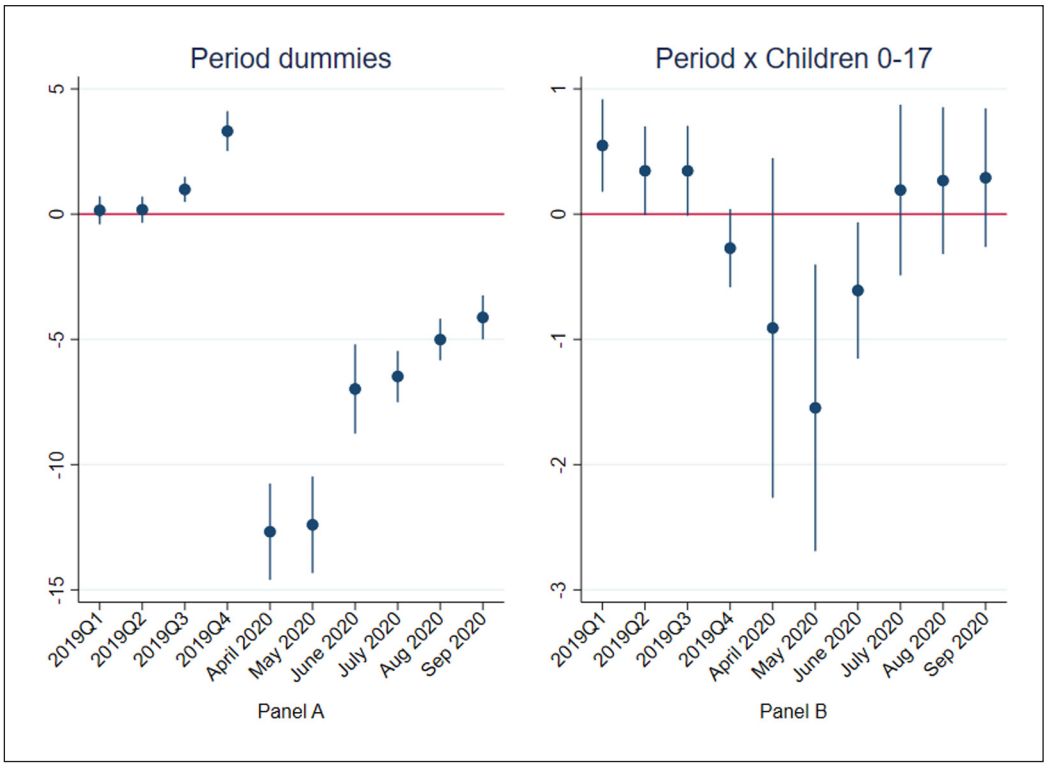

Figure 4 Impacts of the number of children 0–17 at home on the weekly work hours of urban men 18–64.

Notes: OLS estimates using a sample of urban men ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

In summary, Figures 1 to 4 show that prime-age women and men with children 0–17 years old at home experienced additional detrimental labor market impacts in the first months of confinement, compared to their counterparts without them. For women, those detrimental impacts are mostly concentrated on the extensive margin of labor supply (labor force participation). In contrast, for men, impacts are significant only on the intensive margin (work hours).

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Thus, in general, impacts are more pronounced for women. At the extensive margin, an additional child age 0–17 in the household further reduces the labor force participation of prime-age women by 2.3 percentage points, relative to a labor force participation of 57 percent in Q1 2020, whereas it has no significant impact on that of men, who have a labor force participation of 85 percent in that initial period. Thus, the impact both in absolute and relative terms is larger for women at the extensive margin. For weekly hours of work, we find no significant effects of the number of children at home for women and a decrease of 0.6–1.5 hours per child age 0–17 for men. Although these impacts for men are statistically significant, they represent about 2–4 percent of the mean weekly hours of work of men in Q1 2020 (37.5 hours per week), so they are relatively small. Finally, in Q3 2020, the number of children at home have positive and significant impacts only for women and not for men. In sum, the presence of children generates added impacts (either negative or positive) mostly for women and not for men. For this reason and brevity, we focus the rest of the analysis on women only.

Figures 5 and 6 break down the effect of having children at home on women's labor market outcomes by the age of children. As mentioned before, we consider three age groups: (i) preschool-age children (ages 0–5), (ii) primary-school-age children (ages 6–12), and (iii) teenagers (ages 13–17). In these figures, we only report our key interactions of the time dummies with the number of children at home in each of these age groups.[16] The first result is that the additional decrease in labor force participation and hours of work per child in April 2020 is mostly due to the number of children ages 13–17. In Panel C of both figures, each teenager decreases the labor force participation of women by 5.2 percentage points (significant at 10 percent only), and the hours of work by 2.4 hours per week (significant at 1 percent). Overall, after April 2020, interactions with children in this age group are not statistically significant. Panel B of Figures 5 and 6 shows some similar negative impacts in April and May 2020 for each primary-school-aged child at home (6–12 years old). However, only the negative impact of 1.3 hours of work is marginally significant.

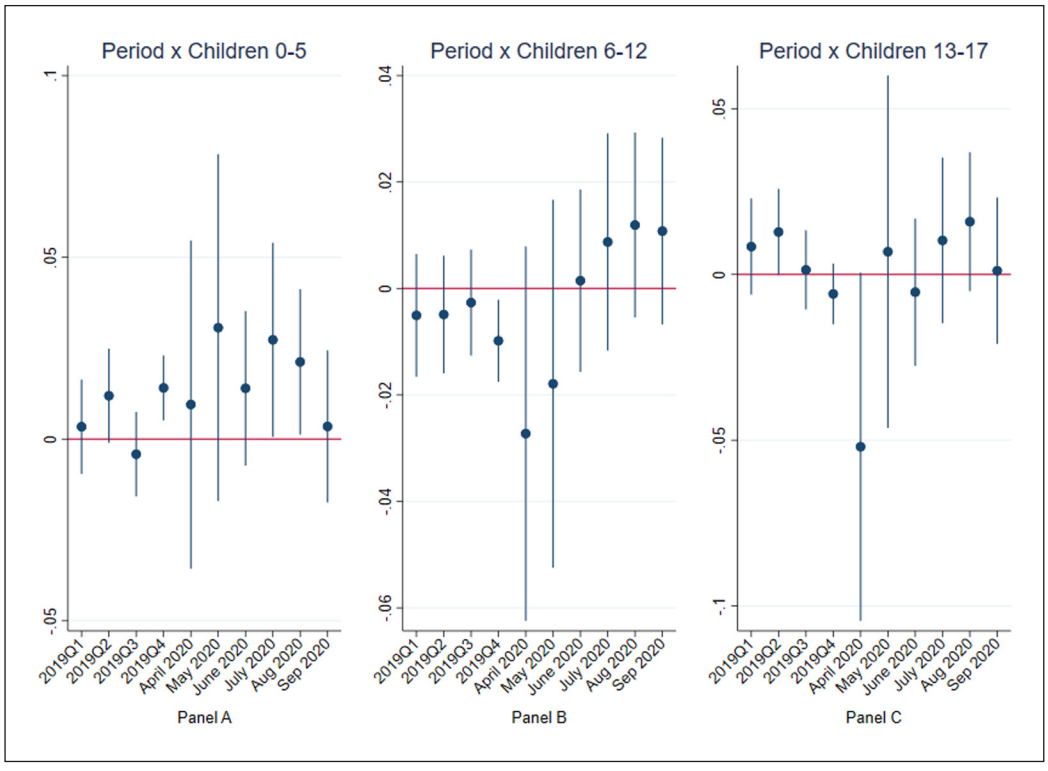

Figure 5 Impacts of the number of children 0–17 at home on the labor force participation of urban women 18–64, by the age of children.

Notes: OLS estimates using a sample of urban women ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures.

Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

16 The impacts of the time dummies alone are the same as in Figure 1 and Figure 2. Estimated coefficients on other labor market outcomes are reported in Table A5 in the appendix.

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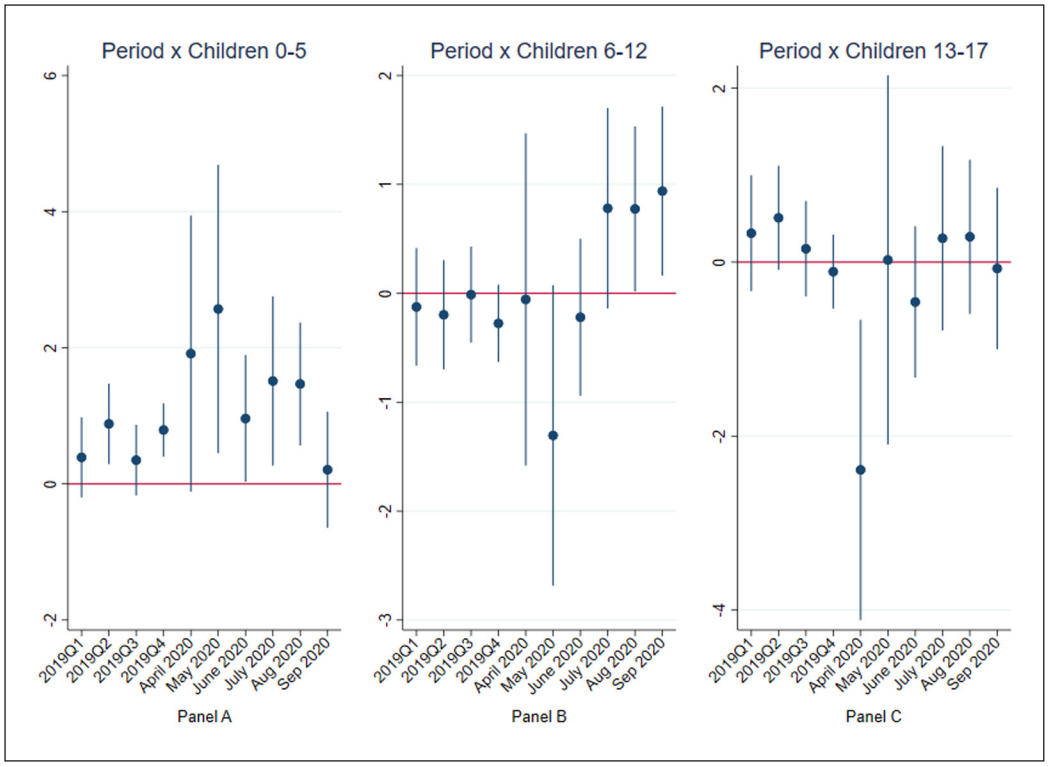

Figure 6 Impacts of the number of children 0–17 at home on the weekly work hours of urban women 18–64, by the age of children.

Notes: OLS estimates using a sample of urban women ages 18 to 64 from ENOE (Q1 2019–Q1 2020, quarterly data), ETOE (Q2 2020, monthly data) and ENOEN (Q3 2020, monthly data). The reference (excluded) period is Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level and the vertical lines are 95% confidence intervals.

Although teenagers are physically more independent than younger children, they face a higher likelihood of undertaking risky choices and behaviors with long-lasting negative consequences, such as alcohol and drug use or unprotected sex. As a result, they might require more parental (or adult) supervision and involvement. Telzer, Ichien, and Qu (2015) provide evidence that maternal presence leads adolescents to take fewer risky decisions.[17]

Finally, Panel A in Figures 5 and 6 shows that the number of preschool children at home (0–5 years old) seems to have no added negative impacts on the labor force participation of women in first three months of the pandemic in Mexico, and positive and significant effects (2.1–2.7 percentage points) in the third quarter of 2020. Children in this age group are also associated with increases in the weekly hours of work of women throughout the period after school closures.

As mentioned before, to gauge the impact of a woman's own children, we include an additional exercise with those of the household head, which we also attribute to their partner, in the appendix. In Table A7, the results of this exercise show differentiated impacts by the age of children that are mostly similar to our main results above, or stronger: (i) no negative impacts for the number of children age 0–5 on women's labor force participation on the first months of the pandemic; positive effects on June and July 2020; (ii) stronger negative effects (4.2–4.9 pp) of children ages 6 to 12 in April and May 2020 and milder positive effects on Q3 2020. In this exercise, we find no significant impacts of the number of teenagers (13–17) in the household, which differs from our main results. For men, we find mostly no negative impacts on labor force participation, as before, and some positive effects of the number of children ages 0–5 (on labor force participation, employment and work hours) in May and June 2020. These additional results, combined with our main ones, suggest that the impacts of children are stronger for mothers and fathers, but they also affect other adult members of their household, as argued by Aguilar et al. (2019).

In sum, the negative effects of children on women's labor supply in the early months on the pandemic seem to be mostly due to school-age children (ages 6–17), whereas the positive impacts in later months are mostly related to preschool-age children (ages 0–5). The (un)availability of schools and daycares could explain these patterns by the age of children, beyond the general

17 This study observes a relatively small sample (24–30 participants) completing an incentivized, risk-taking task, either alone or in their mother's presence.

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economic shutdown and the gender-specific sectorial impacts caused by the pandemic. First, the labor force participation of women who have preschool children at home (54 percent) is slightly lower than that of women with school-age children (57–59 percent).[18] This is probably because of the age-specific care needs of children and the social norms regarding care, but also because low-cost quality childcare is relatively scarce in Mexico.[19] For example, Mateo Díaz et al. (2014) argue that only 4–10 percent of age-related children use early childhood development services. In addition, while the net enrolment rate in primary education is over 97 percent, the net enrolment rate in preschool is barely 66 percent at the national level, even though preschool is supposed to be mandatory.[20] Consequently, the initial decrease in the labor force participation of women after school and daycare closures is more significant for those who have school-age children. Second, the Mexican government added daycare centers to the list of essential activities at the end of May 2020, which allowed them to reopen in June, whereas schools remained closed for all of 2020.[21] This policy change could explain the increase in the labor force participation for women with preschool children in the third quarter of 2020, which is larger compared to women with older children.[22]

To provide additional evidence on the effect of the reopening of daycare centers, we further divided preschool children in two groups: 0–3 and 4–5 years old. Some public daycare centers accept children up to 3 years old, although rules vary between public daycare systems and also among private daycares.[23] Table A8 in the appendix, shows that, in line with our explanation regarding the opening of daycare centers, the interactions of the number of children aged 0–3 with the dummies for June and July 2020 are positive and statistically significant. They imply an increase of 2.2–3.8 percentage points in labor force participation per additional child of that age. The effects on hours worked are also positive, but their significance varies. Perhaps the change in the work hours of women who reentered the labor force after the reopening was not large enough to increase the mean. In that same table, the interactions for children aged 4–5 are not significant in June and July, but the interaction for August 2020 is positive and significant for labor force participation (5.4 percentage points) and work hours (2.5 hours), suggesting that some of these children might also have started going to daycare after the reopening. According to data from the 2017 Mexican Survey of Employment and Social Security (ENESS, a supplement to the ENOE), among children who go to daycare, between 78 and 84 percent go to a public daycare if they are 0–3 years old. This figure decreases to about 55–73 percent for children ages 4 to 6 but it certainly does not fall to zero. Children in this older age group could also switch to a private daycare, because the government's decree enabled both private and public daycares to open.

Finally, as mentioned in the data section, we estimated similar cross-section specifications for the time prime-age men and women devoted to housework and care of other household members. We find mostly not significant impacts of the number of children at home on the time devoted to these activities after the start of the pandemic, which is consistent with previous evidence for Mexico (Hoehn-Velasco et al. 2022). Thus, for brevity, we omit these results altogether, even from the appendix.

18 In our data, the labor force participation of women whose oldest child is 0 to 5 years old in the first quarter of 2020 is 54 percent, whereas the corresponding figures for women whose oldest child is either 6 to 12 or 13 to 17 years old are 57 and 59 percent, respectively.

19 OECD (2017).

20 Data from SNIEG for 2020: https://www.snieg.mx/cni/escenario.aspx?idOrden=1.1&ind=4&gen=263&d=n

21 The official reclassification of essential activities is at: https://www.dof.gob.mx/nota_detalle.php?codigo=5594138&fecha=29/05/2020#gsc.tab=0

22 The school calendar in Mexico runs from the end of August to the beginning of July and it is the same at the national level. However, in 2020, due to the pandemic, the government decided to end the school year early (on June 5, 2020). Although the summer break is always in July and August, and families might be used to schools being closed during those months, the pandemic still reduced the childcare options for older children. Furthermore, if the summer of 2020 had been like a regular summer, we would expect to see increases in the labor supply of women with children across all age groups in July and August. This is not the case.

23 IMSS daycares only admits children up to three years old, but other public daycare systems have different rules (e.g. Mexico City DIF, up to six years old; Jalisco DIF, up to six years old; ISSSTE, up to seven years old).

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B) IMPACTS ON WOMEN'S LABOR MARKET OUTCOMES ONE YEAR AFTER SCHOOL CLOSURES

We complement the cross-section evidence of the previous subsection with a panel data analysis. An advantage of those cross-section estimations is that we include most of the observations in the ENOE, ETOE, and ENOEN data.[24] For our panel data analysis, we keep only individuals that we observe both in the first quarter of 2020, before the onset of the pandemic and the school closures in Mexico, and in the same quarter of 2021. As mentioned before, following the same person after one year of the pandemic allows us to account for individual unobservable characteristics that affect labor market outcomes and remain constant over time. However, a potential disadvantage of exploiting the panel dimension of the data in this way is that we keep only a subset of observations: those who remain in the panel for five quarters, the maximum period they are supposed to by survey design. Of the 87,121 urban, prime-age women observed in the first quarter of 2020, about 15 percent are also observed one year later (13,302 observations).

To examine whether our main sample and the panel sample resemble each other, in Table A10 in the appendix, we include the descriptive statistics for both for Q1 2020, before the pandemic in Mexico. Remarkably, both samples are comparable in their labor market and sociodemographic variables, with most of the mean differences between them ranging from 0.6 to 2.5 percent.[25]

In this part of the analysis, our starting point is the following specification:

$$Y_{it} = \alpha + X_{it}\beta + \gamma D2021_{it} + \delta\left(D2021_{it} \times K_{it}\right) + c_i + \varepsilon_{it} \tag{2}$$

where we have only two periods and t is equal to the first quarter of either 2020 or 2021; X_{it} are the same covariates as in equation (1); D2021_{it} is a dummy variable equal to 1 for the first quarter of 2021, one year after the pandemic and school closures, and equal to zero for the same quarter of 2020; c_i is an individual-specific unobservable effect that influences labor market outcomes and might be correlated with X_{it}, and ε_{it} is an error term that varies both across individuals and over time. As mentioned above, having a panel of women allows us to eliminate c_i with a transformation and, as a result, account for unobserved determinants of labor market outcomes that might be correlated with the number of children at home, provided such determinants are constant through time. Specifically, for the same outcomes of the previous subsection, we apply the first-differences (FD) transformation to equation (2) and estimate the following specification:

$$\Delta Y_{i20} = \Delta X_{i2021}\beta + \gamma\,\Delta D2021_{i2021} + \delta\,\Delta(D2021 \times K)_{i2021} + \Delta\varepsilon_{it} \tag{2'}$$

where $\Delta W_{i2021} = (W_{i2021} - W_{i2020})$. Note that, after the FD transformation, $\Delta\text{D2021}_{i2021}$ becomes the constant term in equation (2') and that even if K_{it} had not much variation over time for the same individual, δ is still identified and measures the impact of the number of children at home one year after the pandemic, relative to the first quarter of 2020.[26] We do not use sampling weights in our FD estimations, and we cluster the standard errors at the individual level.

Table 1 shows the results of estimating equation (2') for women in our panel sample. These results are qualitatively similar to those shown in the previous cross-section tables for the third quarter of 2020. For brevity, we present only the estimates for the Q1 2021 dummy, the number of children ages 0 to 17 in the household, either total or by age, and their interaction(s). In Panel A, the dummy for Q1 2021 alone shows that women 18 to 64 years old without children at home are

24 As a robustness exercise, we estimated a panel, first-difference equation using the first quarter of 2020 as the initial period and each of the months in the period April–September 2020 as a final period. We obtain results qualitatively similar to our cross-section estimations (see Table A9 in the appendix).

25 A few variables show larger discrepancies. For instance, the panel sample is 13 percent more likely to be unemployed and 22.8 percent more likely to be underemployed in Q1 2020 than the whole sample. Among those who were employed in that period the panel sample had 5.9 and 5.2 percent higher monthly earnings and hourly wage, respectively, compared to the whole sample.

26 In our panel sample, about 85 percent of individuals report no change in the number of children residing with them between the two periods. Nevertheless, even if K_{it} were constant over time, δ would still be identified. For a detailed discussion on a similar, but more general specification, see Wooldridge (2010, page 301).

7.2 and 6.6 percentage points less likely to be in the labor force and employed one year into the pandemic, respectively. They are also 7.1 percent less likely to have any earnings, and their hours of work are lower by 3.9 hours per week. Women with children at home experience similar, but smaller negative impacts, as shown by the positive interaction of the Q1 2021 dummy and the number of children ages 0–17 in columns 1, 2, 5, and 6. For instance, having one child 0–17 years old at home would decrease labor force participation by 6.2 percentage points (–0.072 + 0.10 = –0.062). We find no significant estimates for the Q1 2021 dummy alone or our key interaction for the probabilities of being unemployed and underemployed, nor on the log earnings and log hourly wage (columns 3, 4, 7, and 8).

In Panel B, we find that the positive effects of the number of children 0–17 years old at home in columns 1, 2, 5, and 6 of Panel A are mostly due to the number of preschool children (ages 0–5) and teenagers (ages 13–17), but not to the number of primary-age children (ages 6–12). The only exception is the positive effect on hours of work: an additional child ages 6–12 increases the woman's work hours per week by 0.80 hours, as do children aged 0–5 and 13–17 (by 1.1 and 0.61 hours, respectively). Besides, an additional teenager seems to decrease 1.8 percentage points the probability of being underemployed, but this effect is significant at 10 percent only.

In sum, one year after school closures, women with children at home decrease their labor force participation, employment, and work hours by less than women without children. As shown in our cross-section analysis in the previous section, women with children were hit harder at the

Table 1 Effects of the number of children ages 0–17 at home on the labor market outcomes of urban women ages 18 to 64 (FD estimates).

Notes: OLS first-difference estimates using a panel sample of urban women ages 18 to 64 from ENOE (Q1 2020) and ENOEN (Q1 2021). The reference (excluded) period is Q1 2020, before school and daycare closures. All estimations include the woman's age, years of schooling, a dummy for whether she lives with a partner, and the number of women and men ages 18–64 and 65 or over that live in the household. Standard errors are clustered at the individual level.

*** p < 0.01, ** p < 0.05, * p < 0.1.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	IN THE LABOR FORCE	EMPLOYED	UNEM-PLOYED	UNDEREM-PLOYED	WEEKLY HOURS OF WORK	HAD POSIT-IVE MONTHLY EARNINGS	LOG REAL MONTHLY EARNINGS	LOG REAL HOURLY WAGE
Panel A: Children ages 0–17 at home								
Q1 2021	–0.072***	–0.066**	0.004	0.018	–3.859***	–0.071**	–0.005	0.081
	(0.026)	(0.026)	(0.015)	(0.035)	(1.118)	(0.029)	(0.080)	(0.086)
Number of children 0–17 in the hh	0.007	0.010	0.001	0.007	0.215	0.003	–0.012	–0.003
	(0.008)	(0.008)	(0.004)	(0.011)	(0.365)	(0.009)	(0.029)	(0.031)
Q1 2021 × Number of children 0–17 in the hh	0.010***	0.011***	–0.004	–0.004	0.868***	0.014***	0.008	–0.012
	(0.004)	(0.004)	(0.003)	(0.005)	(0.164)	(0.004)	(0.009)	(0.011)
R-squared	0.010	0.011	0.003	0.015	0.010	0.010	0.006	0.003
Panel B: Children ages 0–17 at home by age								
Q1 2021	–0.072***	–0.065**	0.004	0.017	–3.857***	–0.070**	–0.005	0.082
	(0.026)	(0.026)	(0.015)	(0.035)	(1.118)	(0.029)	(0.080)	(0.086)
Number of children 0–5 in the hh	–0.007	–0.002	0.005	–0.001	–0.533	–0.005	–0.028	0.015
	(0.013)	(0.012)	(0.008)	(0.017)	(0.575)	(0.013)	(0.047)	(0.053)
Number of children 6–12 in the hh	0.022*	0.020*	0.004	0.009	0.470	0.020	–0.005	0.025
	(0.012)	(0.012)	(0.008)	(0.015)	(0.548)	(0.013)	(0.030)	(0.031)
Number of children 13–17 in the hh	0.006	0.013	–0.005	0.010	0.568	–0.000	–0.007	–0.049
	(0.012)	(0.012)	(0.008)	(0.015)	(0.540)	(0.013)	(0.033)	(0.038)
Q1 2021 × Number of children 0–5 in the hh	0.018**	0.015**	–0.002	–0.007	1.128***	0.016*	0.019	0.010
	(0.008)	(0.008)	(0.006)	(0.010)	(0.349)	(0.008)	(0.020)	(0.022)
Q1 2021 × Number of children 6–12 in the hh	–0.000	0.006	–0.006	0.007	0.795***	0.006	0.000	–0.030
	(0.006)	(0.006)	(0.004)	(0.008)	(0.285)	(0.007)	(0.016)	(0.019)
Q1 2021 × Number of children 13–17 in the hh	0.016**	0.015*	–0.000	–0.018*	0.606*	0.025***	0.007	0.009
	(0.007)	(0.008)	(0.006)	(0.009)	(0.339)	(0.009)	(0.018)	(0.021)
R-squared	0.011	0.011	0.003	0.016	0.011	0.010	0.006	0.005
Observations	13,302	13,302	6,123	6,123	12,539	10,483	3,361	3,008

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beginning of the pandemic. Still, their labor supply began to recover by the third quarter of 2020 to a greater extent than that of childless women.[27] As discussed before, these findings suggest that, as months went by, the negative income effect induced women with children at home to increase their labor supply by more, compared to women without them, despite school closures. In the case of preschool children, the reclassification of daycare centers as essential services at the end of May 2020 could have also helped this labor supply recovery.

We also estimated a cross-section version of equation (2) on a subsample of women who were out of the labor force either in the first quarter of 2020 or 2021 to explore the impacts of the number of children at home on their motives for being in that state and their reported impediments for work. The results, shown in Table A12 in the appendix, suggest that women out of the labor force are more likely to be so involuntarily in the first quarter of 2021, compared to the same quarter of 2020. However, for them, other motives seem to be more important than not having childcare alternatives one year into the pandemic, regardless of whether they have children at home or not.

Next, we restrict our panel sample further to examine the impacts of having children at home on the changes in selected job characteristics for women who were employed both in the first quarters of 2020 and 2021. For this, we estimate linear probability models (LPM) of the following form:

$$D_{i,2021} = \propto + X_{i,2020}\beta + \gamma K_{i,2020} + u_{i,2021} \tag{3}$$

where the dependent variable is, alternatively, a dummy equal to one if, between the first quarters of 2020 and 2021, the woman changed her type of work (salaried, self-employed, employer, or unpaid worker), her industry or occupation. For women who were salaried workers in both periods only, we also consider four dummy variables for formal-informal transitions between those periods: (i) remaining in a formal job, (ii) changing from a formal job to an informal job, (iii) changing from an informal job to a formal job, and (iv) remaining in an informal job. The control variables in $X_{i,2020}$ are age, education, a dummy for being married or cohabitating, the number of household members aged 18 to 64 and 65 and older by gender, and a set of one-digit sector dummies; $K_{i,2020}$ is the number of children ages 0–17 at home. All these independent variables are measured in the initial period (Q1 2020), before school closures, to avoid endogeneity. By adding dummies for initial sector of employment, we control for preexisting differences in the sectors where women with and without children work. Our classification comprises eleven sectors: agriculture, mining and energy, manufacturing, construction, retail, hospitality services and restaurants, transportation and logistics, professional and financial services, social services, government, and other services. Since sector of employment is only observed if the individual works, we did not add sector dummies in our cross-section estimations for the whole sample in the previous section.

Table 2 shows the results of estimating equation (3). In column 1 in Panel A, the number of children ages 0–17 at home in the initial period has no impact on the probability that a woman changed the type of worker she is between the first quarters of 2020 and 2021. In column 2, we find that the probability of remaining in a formal job decreases by 1 percentage point for each child aged 0–17 in the household in the initial quarter. This marginal effect is about 1.4 percent of the mean probability of remaining formal for the estimation sample (70 percent). Conversely, the probabilities of transitioning from a formal to an informal job and of remaining in an informal job increase by 0.4 percentage points per additional child, but these effects are not significant. These results suggest that women who have children at home are slightly less likely to retain fringe benefits like health care and retirement saving, among others, compared to childless women. In columns 5 and 6, we find that each child ages 0–17 has no significant impact on the probability that a woman changes her occupation but has a positive impact of 1.4 percentage points on the probability that she changes her industry (10 percent, compared to the mean of 13.5 percent).

27 In Table A11 in the appendix, we show qualitatively similar results of estimating equation (2') for men. In particular, the number of children ages 0–17 at home induced men to decrease their labor force participation and employment and work hours by less than childless men.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	CHANGED TYPE OF WORKER	REMAINED FORMAL	FORMAL TO INFORMAL	INFORMAL TO FORMAL	REMAINED INFORMAL	CHANGED OCCUPATION	CHANGED INDUSTRY
Panel A: Children ages 0–17 at home in Q1 2020							
Number of children 0–17	0.001	−0.010*	0.004	0.001	0.004	−0.003	0.014***
	(0.004)	(0.006)	(0.004)	(0.003)	(0.004)	(0.005)	(0.004)
Constant	0.137	0.511***	−0.012	0.238*	0.264*	0.634***	0.395***
	(0.107)	(0.163)	(0.027)	(0.131)	(0.138)	(0.136)	(0.135)
R-squared	0.046	0.284	0.008	0.020	0.341	0.051	0.051
Panel B: Children ages 0–17 at home in Q1 2020 by age							
Number of children 0–5	0.005	−0.007	0.000	0.011	−0.004	−0.002	0.011
	(0.008)	(0.011)	(0.007)	(0.007)	(0.009)	(0.011)	(0.008)
Number of children 6–12	−0.002	−0.007	−0.001	−0.003	0.011	−0.010	0.016**
	(0.006)	(0.009)	(0.006)	(0.005)	(0.007)	(0.008)	(0.007)
Number of children 13–17	0.001	−0.016	0.014**	0.000	0.002	0.005	0.013
	(0.007)	(0.010)	(0.007)	(0.005)	(0.008)	(0.010)	(0.008)
Constant	0.137	0.508***	−0.009	0.236*	0.265*	0.639***	0.394***
	(0.108)	(0.163)	(0.026)	(0.130)	(0.137)	(0.135)	(0.135)
R-squared	0.047	0.284	0.009	0.020	0.342	0.052	0.051
Observations	5,774	4,296	4,296	4,296	4,296	5,769	5,752

Table 2 Effects of the number of children ages 0–17 at home on the job characteristics of urban, employed women ages 18 to 64.

Notes: OLS estimates using a panel sample of urban, employed women ages 18 to 64 from ENOE (Q1 2020) and ENOEN (Q1 2021). To be included in the sample, a woman has to be employed in both quarters. In all columns, the dependent variable is a dummy for whether a change in a given job characteristic occurred (or not) between Q1 2020 and Q1 2021. All estimations include the woman's age, years of schooling, a dummy for whether she lives with a partner, sector dummies for those who worked in the extractive industry, in the processing industry, in construction, in trade, in accommodation services or restaurants, in transportation or communication, in professional or financial services, in social services, in other services, or in the government, and the number of women and men ages 18–64, and 65 or over that live in the household as reported in Q1 2020, before school and daycare closures. Standard errors are clustered at the individual level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Could these added impacts of children on job characteristics be related to pandemic school closures? In Panel B, we show suggestive evidence of this by distinguishing those impacts by the age of children. There, the impacts of the number of preschool children at home on formality transitions are all close to zero and not statistically significant. In contrast, those for the number of school-age children (6–12 and 13–17) are larger, although only a few are significant. For instance, each child age 13–17 decreases the probability of remaining in a formal job by 1.6 percentage points and increases that of changing from a formal to an informal job by 1.4 percentage points, although only the latter is significant at 5 percent. Each primary-school child (age 6–12) increases the probability of remaining in an informal job by 1.1 percentage points (not significant) and the probability of changing industry by 1.6 percentage points (significant at 5 percent). These patterns are consistent with the fact that, in Mexico, schools remained closed for all of 2020 and the first half of 2021. In column 4, in both panels, we find no significant impacts on the number of children ages 0–17 at home, either in total or by age, on the probabilities of transitioning from an informal to a formal job.

CONCLUSION

This paper presents evidence on the effects of the COVID-19 pandemic on the labor market outcomes of women with children in Mexico. Our findings show that women with children at home experienced differential impacts on their labor market outcomes, compared to women without children, throughout the pandemic. First, women with children reduced their labor force participation by 20 percent more per child than women without children in April 2020, immediately after the closing of schools and daycare centers in Mexico. Second, these additional negative impacts began to revert in the third quarter of 2020, when women with children increased their labor supply compared to women with no children, despite ongoing school closures. This pattern aligns with the reopening of daycare centers in June 2020 and possibly a dominance of the negative income effect. Third, for women employed before and during the pandemic, each child at home slightly reduced the likelihood of keeping a formal job, potentially decreasing women's fringe benefits and, in turn, their protection against certain risks.

Because women with children had to work or return to work at higher rates than women without children, even in the face of minimal childcare alternatives, our results highlight the need to study further the consequences of this phenomenon, both for women and their children. On one hand, Hoehn-Velasco et al. (2022) show that the only group that consistently increased caregiving time during the pandemic closures were children ages 6 to 16. On the other hand, school closures probably forced many parents, and women in particular, to work alongside their children. To the best of our knowledge, employment surveys in Mexico and other countries do not gather information on whether individuals routinely bring their children to their workplace or work alongside them due to the lack of childcare alternatives, a practice that may entail severe mental health consequences for parents and primary caregivers, particularly women, and physical and development risks for children.

To counteract the negative impacts of the pandemic, both for women and children, governments in Mexico and other countries must invest in high-quality early childhood development infrastructure and services and schools. Such an investment is a win-win policy for women, children, and society in general. First, access to childcare and schools promotes female labor force participation, which is necessary for economic growth. Second, Mexico is among the countries with the longest school closures (more than 40 weeks) and the most severe learning loss during the pandemic (UNICEF 2022).

Additionally, statistical agencies should collect more and deeper information on job characteristics related to work-life balance and work and mental health. Having data on whether individuals have work flexibility conditions, home-office schemes, maternity/paternity leave, and other family-related support through their jobs would allow researchers to generate evidence on the impacts of these benefits or the lack of them on the quality of life and labor market attachment of individuals who have children, particularly women. Furthermore, it could also help design and implement labor and social protection policies that improve these outcomes for women, and therefore society.

More broadly, labor policies need a more explicit gender perspective that recognizes that family care responsibilities disproportionally affect women's labor market opportunities and decisions, and even further during a pandemic. This perspective includes addressing the current needs and inequalities and favoring changes towards a more equitable division of non-market responsibilities between women and men.

DATA ACCESSIBILITY STATEMENT

The data used in this study is publicly available at: https://www.inegi.org.mx/programas/enoe/15ymas/. For information regarding the computer programs used for this study, please contact Laura Juarez at laura.juarez@colmex.mx.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Supplementary file.** Online Appendix. DOI: https://doi.org/10.31389/eco.438.s1

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COMPETING INTERESTS

The authors have no competing interests to declare.

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