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Parenthood and Labor Market Outcomes: Evidence from Chile^{*}

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Abstract

Throughout the pandemic Chile implemented a series of public health mandates restricting mobility and high social-contact activities with a goal of reducing disease spread. In this paper, we study the impact of one of these policies - central planner variation in school re-openings on labor market outcomes. We examine how access to supervised care for children in school affected mothers' labor supply and show that mothers increased labor force participation anywhere from 2.6 to 21.0 percentage points (ppts) as schools re-opened. As mothers came back to the labor force, however, unplanned disruptions decreased their ability to stay actively engaged in work and increased their take up of leave from work, an artifact of unanticipated sick children and quarantine policies that particularly affected mothers who were secondary earners in the household. Conditional on being in the labor force, having a teenager buffered both mothers and fathers from work disruptions; parents were more likely to be actively working and less likely to be on leave. Our findings support a theory that parental labor supply is sensitivity to disruptions in the care of children but also depends on household composition and each parent's role beyond gender. Policies that encourage consistent formalized systems of care and learning for children will not only benefit children, but also a second-earner's ability to re-enter the labor force and advance at work.

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1. Introduction

Chile was one of the few countries to implement rigid and lengthy lockdown procedures at the municipality level that were centrally determined by federal government ministries. To alleviate household economic stress during lockdown the Chilean government took several measures, including providing liquidity to households in the form of temporary paid leave from work through access to unemployment insurance funds. Policies like this buffered families from economic strain during lockdown and also helped support worker retention for employers and reduced the transaction costs associated with churn and re-matching in the labor market as local economies re-opened. Children and their families experienced variation in timing of their ability to leave their home, go to the grocery store or park, even to walk their dogs around the block.

In this paper, we focus on the variation in returning to in-person school tied to this central government decision making process. As described in detail below, we use local variation to explore the impact of school re-openings on parental labor supply. We ask how mothers fared in terms of economic recovery and return to work compared to fathers and women without children, and how mothers and fathers fared when a teenager was available in the home to provide unanticipated care. We examine four economic outcome variables: labor force participation, active work (which we define as both having a job and actively working), unemployment, and (paid and unpaid) leave from work. While there have been multiple reports by the International Labour Organization (ILO), World Bank, and others examining the gendered impact of COVID-19 on employment, our research delves deep into the situation of prime-age (25-54) custodial mothers of school-age children who were more likely to be working pre-pandemic compared to mothers with young children and most likely to have their employment disrupted not only by pandemic-related health issues but also by care disruptions of healthy school-aged children.

We provide robust evidence for policymakers in determining whether schooling and access to care have a differential impact on mothers' ability to work for pay and help inform future policy responses. This study aims to bring awareness to issues of access to paid work for women with school-age children in high income economies with relatively low female labor force participation (42% in 2022 according to the World Bank) and to understand the magnitude of change in their labor force participation when their children have safe, developmentally appropriate places to be during work hours. It also aims to increase awareness of the sensitivity around leave from work for parents, especially mothers, when care is unstable.

From a lifespan perspective, the latest point is particularly relevant since leave from work and "leaning out" disproportionately increases the gender gap in lifetime earnings between

men and women and women’s capacity to save for retirement. While reports have suggested that temporary paid work leave in Chile was a successful instrument for employment pick up in 2021 (OECD, 2022; Cristi and Madeira, 2022; Banco Central de Chile, 2021), women may not have had the same access or return rate as men. For example, to be eligible for the employment security programs, both employees and companies had to belong to the formal sector and meet a series of requirements, and women are more likely to be working informally.

The focus in Chile has been either on health-related issues or the general economic costs of the pandemic on society. There has been less focus on intra-household trade offs within families regarding resource reallocation needed to deal with the pandemic environment and to what degree those trade offs affected mothers (and to some extent fathers) disproportionately. In countries where public childcare is either insufficient or conditional on formal work opportunities, female labor force attachment is fragile and vulnerable to changes in household composition like the loss or sickness of a family member. Using the panel nature of our data, we attempt to link exogenous changes in childcare through schooling to female labor supply and the heterogeneity in the labor force attachment of women by age group, educational level, and partnership status.

We advance the literature in three ways. First, we provide evidence of the impact of school reopening on mothers’ labor supply in high income economies in the Global South. Second, we find evidence that the impact is not strictly tied to traditional gender normative behavior but also depends on one’s economic role and placement within the family. Finally, we show that substitution effects also impact mothers’ and fathers’ labor supply in that having a teenager in the home to watch younger children causes less disruption to mothers’ and fathers’ ability to work for pay.

2. Literature Review

The pandemic shifted regular routines and daily habits around the globe. Initial studies anticipated the effect of pandemic restrictions on female labor supply and captured the first-hand impact of the pandemic on mothers’ labor supply and time use (Alon et al., 2020; Heggeness, 2020a; Sevilla and Smith, 2020). Subsequent studies centered on pandemic responses and economic behavior in the United States, Canada, and Europe (Albanesi and Kim, 2021; Brinca et al., 2021; Croda and Grossbard, 2021; Farre et al., 2021; Heggeness and Suri, 2021; Hansen et al., 2022; Almuedo-Dorantes et al., 2023). These studies highlighted the gendered nature of caregiving, the relevance of work flexibility, and acknowledged a relationship between the availability of access to in-person school as a childcare mechanism

and its relationship to caregivers' labor supply.

School is not only an environment for education and enrichment, it also serves as supervised care for minor children allowing parents more flexibility to work outside the home for pay or engage in other activities during the hours when their children are in school. A study from Canada found that school reopening following the pandemic increased mothers' labor force participation (Beauregard et al., 2022). Another U.S. study used administrative cell phone data to demonstrate how schools re-openings allowed mothers to return more quickly to the labor force (Hansen et al., 2022). These results have begun providing solid evidence that women's ability to engage in paid work outside the home is disproportionately affected by childcare responsibilities due to unequal care responsibilities within the home and that in-person schooling works as a mechanism for reliable, supervised care of minor children for parents primarily responsible for providing care within the family.

Less is known, however, of the impact of schooling on caregiver labor supply in high-income economies in the Global South. The Global South is driven by a diversity of gendered expectations, some that align with countries in the Global North and some that do not. In addition to a need to expand related studies to diverse economies with differing cultural and gender norms, the studies mentioned have generally limited their analysis to labor force participation. Rarely do they explore other equally important outcomes associated with parental ability to thrive at work, specifically leave time away from work and more complex intra-household bargaining decisions among family members.

While it is true that gender influences care responsibilities, other factors matter as well, such as whether the person is the primary earner within the household or whether there are older siblings in the home to care for children who are not in school. Evidence has shown that shifting power dynamics within the household can change outcomes for women and children (Lundberg et al., 1997; Rangel, 2006; Martinez, 2013; Heggeness, 2020b), but to our knowledge shifts in economic outcomes due to differential power dynamics within the home have not been highlighted within the context of the pandemic. We address this by examining the impact of older siblings in the home on mothers' and fathers' ability to work during pandemic uncertainty.

3. School Closures and Non-Pharmaceutical Interventions Against COVID-19 in Chile

A month after the World Health Organization (WHO) characterized COVID-19 as a pandemic, 173 countries closed schools, affecting 84.3% of the world's enrolled students; in many countries, the total or partial closure of educational centers for in-person instruction continued in 2021 (UNESCO, UNICEF, and World Bank, 2021). The Latin American region

Figure 1. Quarterly Stringency Index, North and South American Countries

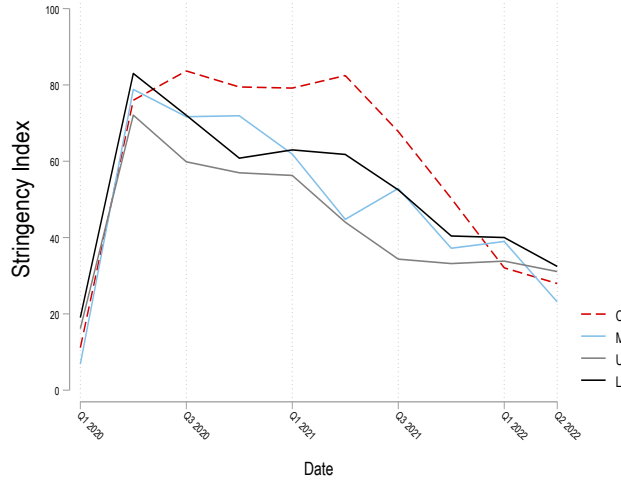
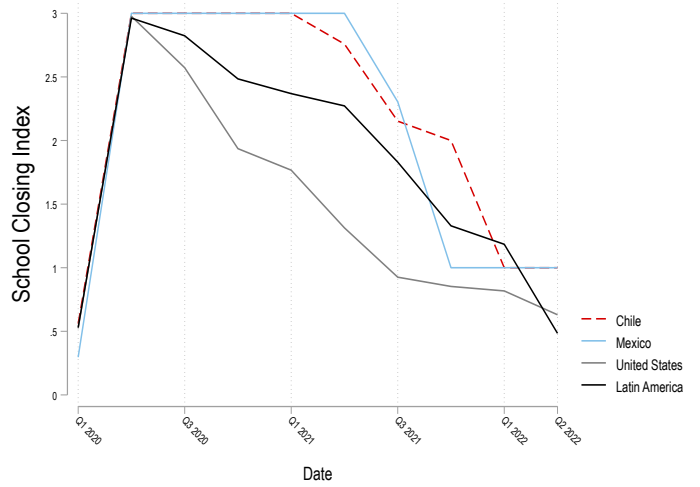


Figure 2. Quarterly School closing Index, North and South American Countries



Source: Oxford COVID-19 Government Response Tracker, University of Oxford (2021); Hale et al. (2021)

was no exception: 160 million students faced school closures. Moreover, families in the most vulnerable situations endured the most prolonged school closures while not being able to pursue online education (ECLAC and OREALC/UNESCO, 2020).

As shown in Figures 1 and 2, while the average stringency level of Latin American region’s non-pharmaceutical interventions (NPI) to contain COVID-19 remained relatively close to that of the average in the United States, its school closure index stayed significantly higher until the beginning of 2022. As can be distinguished in Figure 1, Chile’s set of NPI stands out as one of the strictest and most extended preventive policies implemented in the world (Polimap, 2020; Hale et al., 2021), and its school closure index remained the highest of the region until the second quarter of 2021, along with that of Mexico. Chilean families with school-age children endured school closures for at least ten consecutive months.

The case of Chile represents an interesting social experiment. From March 2020 to June 2022, central planners in the Chilean government determined a weekly lockdown status for each of the country’s 346 counties. These statuses were available on government websites, discussed and displayed on nightly news channels, and enforced by police and other enforcement officials. The exact decision-making process criteria were unobserved by the public; however, the authorities claimed that decisions were based purely on epidemiological factors.

In Chile, the socioeconomic characteristics of the population are unequal and diverse,

Table 1. Chilean municipalities’ days under lockdown by lockdown wave, 2020-2021

	All urban municipalities		Non-wealthy municipalities		Wealthy municipalities	
	First	Second	First	Second	First	Second
Mean	34.08	35.31	34.96	36.12	26.36	35
Max	118	91	118	91	69	69

Note: Wealthy municipalities are defined as those in the top decile of per capita income. These 12 high income municipalities comprise 1,858,618 inhabitants, which is roughly 11% of the country’s total population. Source: Díaz and Henríquez (2021)

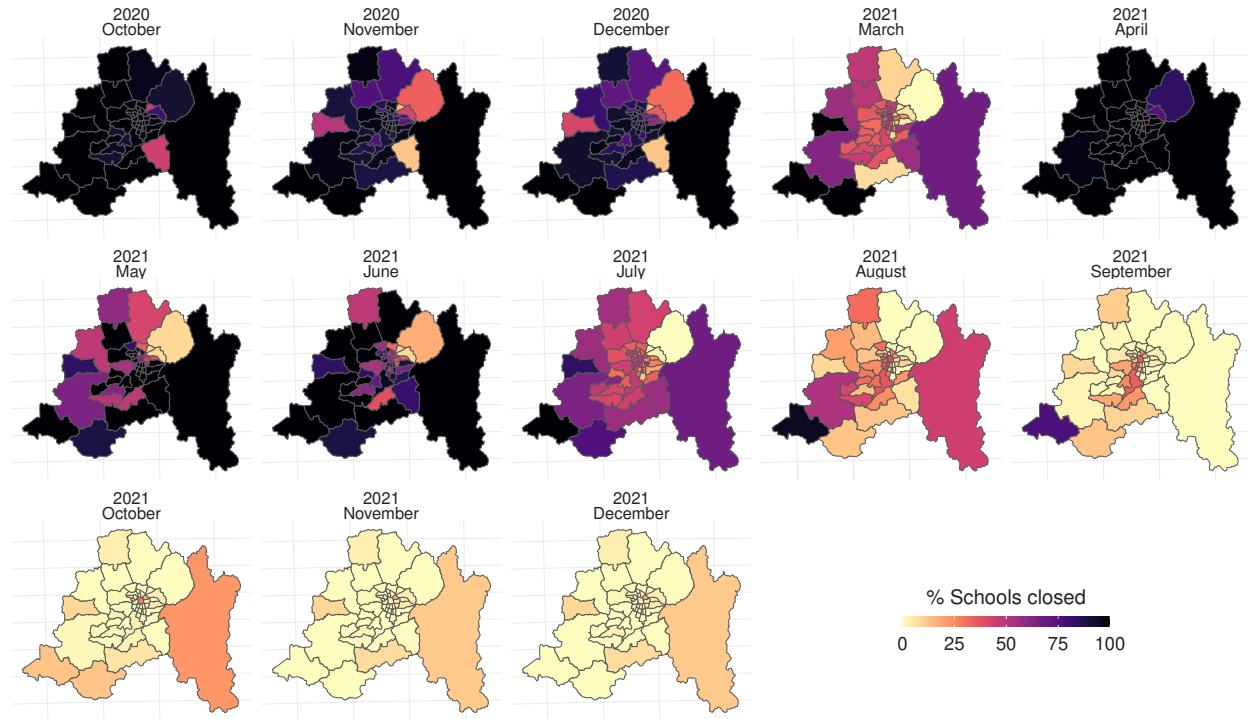
yet segregation prevails in urban centers (Garreton et al., 2020). Segregation has been linked to its local population’s human capital and life expectancy before (Bilal et al., 2019) and during the pandemic (Mena et al., 2021). The centralized decision-making scheme and the concentration of low-income, high-contact occupation workers in certain counties led to significant variability in the length and intensity of multiple lockdown periods across counties, as shown in Table 1. The most prolonged periods under lockdown ranged from 118 consecutive days to only 69.

In July 2020, the Chilean government started implementing a step-by-step plan to phase out of complete lockdown and move towards fully reopening. The plan included five different stages of lockdown stringency. Each municipality’s phase status was determined weekly by a board comprising authorities of the executive branch of the federal government and municipalities. Phases 1 and 2 required all schools to remain closed. Phase 3 also required schools to stay closed, but schools complying with COVID-19 preventive protocols could be granted permission to open by their municipality. In Phase 4, all schools were allowed to open as long as they complied with reopening risk prevention protocols (MINSAL, 2020). Combining school administrative records with lockdown longitudinal data (MINSAL, 2022), we find that (excluding summer breaks) between July 2020 and December 2021, approximately 8.5%, 35.3%, 24%, 80.4%, and 99.8% of a municipality’s schools were open when the municipality was under phases 1, 2, 3, 4, and 5, respectively¹. Although school closures occurred synchronous with municipality lockdown orders, school re-openings presented variation between municipalities under different lockdown phases and between municipalities subject to the same lockdown salience but diverse school capacities, as demonstrated for the metropolitan area of Santiago in Figure 3. The map shows several municipalities in orange or pink shades, indicating that anywhere from 25% to 75% of schools remained closed, particularly between July and October of 2021.

Once municipalities reach Phase 3, the greater the per capita resources available by

¹We consider that a municipality was under a particular opening phase when the municipality was under that phase during two-thirds of the calendar month days.

Figure 3. Evolution of the Percentage of Schools Closed by Municipality, Metropolitan Region of Santiago de Chile, 2020-2021



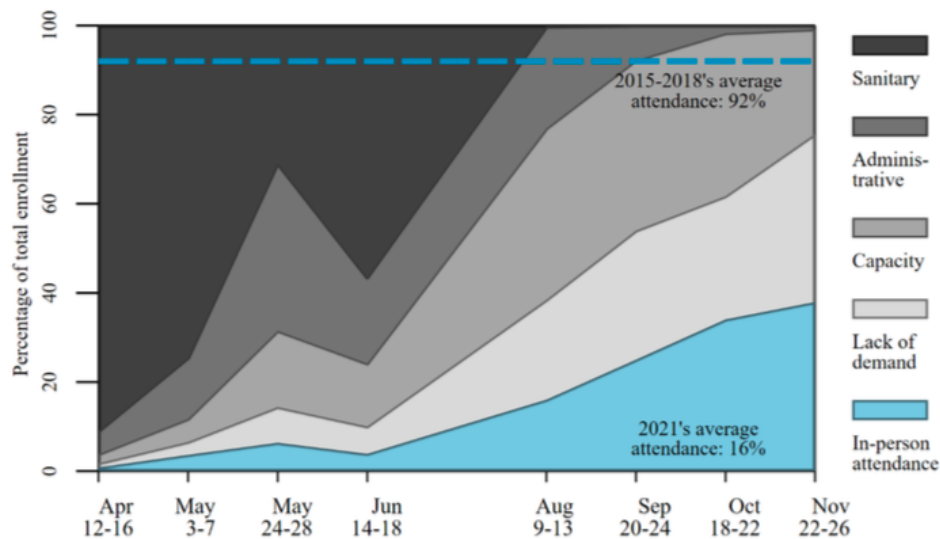
Note: About 40% of the Chilean population resides in the metropolitan region of Santiago (INE,2019). Source: Authors' analysis using schools administrative data from the Ministry of Education and the COVID-19 NPI database from the Ministry of Health (MINSAL, 2022)

schools to comply with sanitary conditions (mostly related to recreational and classroom infrastructure and classroom sizes), the greater the school's likelihood to reopen. According to the *Encuesta Nacional de Monitoreo Educacional en Pandemia*, a national longitudinal schools survey performed during the 2021 academic year, by March 2021, -almost a year after schools closed-, only 20% of the public schools had reopened, while 40% and 60% of the voucher and private schools had reopened². Fully private and voucher schools had a faster pick-up because they were more likely to be located in a municipality with a shorter lockdown status and more likely to organize and comply with sanitary protocols quickly once schools were allowed to open.

²Percentages are estimated considering only schools situated in municipalities in Phase 2 or higher. As a reference, in the Chilean basic educational system during the 2019 school year, voucher schools attended 54% of students and private schools attended 9% of students while publicly funded and publicly administrated schools attended only 34% of students (MINEDUC, 2019).

In addition, once schools reopened, not all students were allowed to return, and those that did could not attend every weekday or as many hours as they used to. By May 28th, the end of the first trimester of the 2021 school year, 30% of schools were located in full lock-downed municipalities, 34% of schools were out of lockdown yet remained closed, 12% of schools were open only to priority student groups/grades, 13% of schools were open for all grades, but student attended only some days of the week, 9% of schools were open for all levels everyday but during shorter hours and 2% of schools were back to regular hours in all levels. By the end of October, those percentages became 0%, 2%, 13%, 43%, 35%, and 6%, respectively (ENMEP, 2021). Therefore, most caretakers of children of school age had already benefited from school reopening but still had to deal with shorter school days or not being able to send their children to school at least one day per week. Consequently, by the end of the 2021 school year, in-person attendance was still below 40% in primary education due to supply restrictions but also lack of demand (Valenzuela et al., 2022), as shown in Figure 4.

Figure 4. Average student attendance, by type of supply restrictions, Chile 2021



Note: “Sanitary”, “Administrative” and “Capacity” represent sanitary restriction (percentage of schools in Phase 1), administrative restriction (percentage of closed schools in Phase 2 or higher), and capacity restriction (the percentage that cannot attend in person due to school’s capacity reductions) respectively. “2015-2018’s attendance” corresponds to the average annual attendance across that period.

Source: Valenzuela et al. (2022)

In sum, exceptionally long school closures occurred simultaneously with municipality lockdown rules. Nevertheless, while correlated with lockdown phase-out, the speed of school re-openings presented variation between municipalities within the same economic lockdown

salience depending on schools' funding, infrastructure characteristics, student body size, and administrative capacities. Moreover, most students and their families did not return to continuous full-time in-person instruction during 2021, particularly those of low socioeconomic status.

4. Characterizing Female Labor Participation in Chile

4.A. Chilean Labor Markets and Female Labor Participation Trends

The Chilean labor market is very dynamic, with relatively high rates of reallocation across international comparisons, short duration of employment and unemployment episodes, and a relatively high incidence of fixed-term jobs (Albagli et al., 2018). Around 30% of workers are employed in the informal sector, far above the standards of developed countries but lower than other developing nations (Banco Central de Chile, 2018). Human capital levels have increased rapidly, although average education still lags behind the developed world. The share of the population with at least complete secondary education went from 36% in 1990 to 60% in 2017. However, educational attainment and quality differences persist, especially for older cohorts, leading to relatively high levels of labor market inequality.

According to the OECD, the Gini index for Chile in 2017 was 49, slightly exceeding the OECD median of 47 (OECD, 2019). Inequality is also driven by the predominance of informal jobs, given that wage dispersion in the informal sector is considerable (Central Bank of Chile, 2018). Similar to other countries, returns to experience are higher for workers with more education. Likewise, they are more substantial during the first years of the worker's life (Aldunate, 2018), highlighting the importance of the first half of the individual's work life and the potential adverse effects of unemployment and non-participation spells throughout those years.

Although female labor participation has increased in Chile in recent years, it remains below international standards and significantly below the participation of men. In 2017, 49% of working-age women participated in the labor market, in contrast to 71% of men. Furthermore, women have a higher probability of remaining inactive: only 12% of inactive women enter the workforce after one quarter, versus 16% of the inactive men (Banco Central de Chile, 2018). Unemployment is also higher for women than men due to their differences in the likelihood of finding a job and staying employed, and unemployed women have a lower probability of finding a job than men (33% vs. 55%). In addition, once employed, women are less likely to remain employed and more likely to transit to inactivity than men (81% vs. 91%, and 16% vs. 5%, respectively). Combined, both factors result in a higher unemployment rate for women.

The second characteristic of female labor participation in Chile is that women earn less than men, even after controlling for characteristics such as education, occupation, and experience. As a result, the average gender wage gap is close to 12% (OECD, 2021). Moreover, the life-cycle growth profile for women is significantly lower and flatter than the one for men across all education groups (Aldunate, 2018). Consequently, while men experience wage growth relative to the trend for up to 25 years of experience, wage growth for women stagnates after 15 years. The difference in the average earnings trend over the life course likely reflects the cost of maternity and the lower adherence to employment over time.

4.B. Pandemic Experience and Limited Recovery

Women's employment and labor force participation in Chile were strongly affected during the COVID-19 pandemic, as was the case regionally and globally. In particular, during the second and third quarters of 2020, when strict containment measures were implemented, the economic contraction that followed led to an unprecedented decline in Chilean women's employment and labor force (UNDP ILO, 2022). For instance, the peak of the first pandemic wave in Chile, April to June 2020, matched the lowest point of female labor participation. During that quarter, 828,456 women exited the labor market relative to the previous year's registries of the number of women participating in the labor market during that same quarter, and by the end of 2020, 47.1% of women reported not having any own earnings, in contrast to 21.5% of men (Encuesta Suplementaria de Ingresos, 2020).

By the last quarter of 2020, as containment measures were relaxed and vaccination coverage increased, local economies reopened, and the Chilean labor market progressively recovered. However, many women who had exited the labor market during the early months of the pandemic decided not to search for a job again or were not available for work even though labor markets began to reactivate sharply in mid-2021. According to the latest national employment survey (ENE) wave corresponding to the November 2021-January 2022 trimester, the average gap in labor participation between women and men remained over -21.3 percentage points (INE, 2022). Nevertheless, the gender gap in participation varied significantly by age groups, with the most outstanding gap corresponding to childbearing age. This suggests that barriers distinct to lack of demand were in place. At its lowest, the gap was -9.3 percentage points (ppt) for individuals between 15 and 29 years old, and it reached the highest value, -26.1 ppt, for individuals between 30 years old and 50 years old. Among the women 15 years old or older who were out of the labor force during the quarter of November 2021 to January 2022 and were not yet retired, 44% declared that they were not looking for a job due to permanent family obligations such as caring for children or elderly parents. On the other hand, it is worth mentioning that in Chile, during the same quarter,

8 out of 10 single-parent household heads were women, and their earnings were, on average, 35% lower relative to single-parent males (INE, 2022).

5. Data and Treatment Definition

5.A. Labor Outcomes

Employment outcomes are constructed using the National Employment Survey (ENE), nationally representative of those aged 15 plus. Similar to the U.S. Current Population Survey, the ENE classifies and characterizes the working-age population identifying whether an individual was working, looking for work, on leave, or out of the labor force, and includes detailed household composition variables such as relationship with the householder, age, sex, and educational level. In particular, the household questionnaire identifies family ties between household members, including children’s parents or guardians. The ENE also provides information regarding job characteristics such as type of occupation, whether the work is as an employee or self-employed, a formal or informal job, full-time or part-time, and whether the individual is underemployed.³ Additionally, it provides detailed information regarding why household members were either working fewer hours than usual or not working.

The total sample from the panel starting April-June 2020 includes approximately 54,000 households and is distributed into three sub-samples. Each dwelling in these sub-samples is interviewed several times at different months; thus, a household is observed six times, spaced quarterly, over eighteen months (for a detailed description of the panel scheme, see the appendix table). Each sub-sample is divided into six rotations. Within each moving quarter, a fixed proportion of the dwellings sampled (1/18) is rotated to incorporate a new set of dwellings. Finally, the ENE rotational panel sub-sample can be linked to two rounds of a supplementary income survey⁴ conducted during the October-December quarter, allowing us to identify potential changes in per equivalent adult income within a household. Because we focus our analysis on pandemic induced changes that influenced labor market outcomes, we use the rotational panel whose different waves surveyed households before, during, and after the pandemic.

³In 2017, questions were incorporated to measure labor informality. INE incorporated new modifications in 2020, including updates to the sampling frame and expansion factors based on the 2017 Census population projections to improve the measurement of new work forms and the labor flexibility currently experienced by dependent and independent workers.

⁴Encuesta Suplementaria de Ingreso

6. Empirical Strategy

6.A. Sample Definition

Our main goal is to determine whether school re-openings had a differential impact on mothers' ability to work for pay when external environments and social planners were changing the landscape and rules around providing in-person care and schooling for children on a weekly basis. In particular, we focus on the period during the 2020-2021 crisis provoked by the COVID-19 pandemic and the non pharmaceutical social interventions imposed by the Chilean government to prevent contagion. Our interest group is Chilean women between 25 and 54 years old, prime-age for working, and living with their own school-age children between 5 and 17 years old. We compare their trends in work force participation and related outcomes with those of women in the same age group but without children in their custody and fathers living with their own school-age children.

Table 2 shows that these women with and without children have similar characteristics. The mothers in our sample are on average 43 years old. Over 80% of them live with at least one other adult and in an urban setting. Over one-quarter have a college degree or higher. Pre-pandemic 71% of mothers were in the labor force compared to 60% post pandemic. This compares to 68% and 56% respectively for women without children. Mothers worked two more hours per week during pandemic months compared to pre-pandemic. This is most likely because the mothers who peeled out of the labor force were mothers working part time with less attachment to the labor force. Fathers in our sample were, on average, 40 years old. Three-quarters of them lived with at least one other adult in the home. They had similar educational attainment rates to mothers and higher labor force participation rates compared to mothers. However, fathers had lower labor force participation rates compared to men without school-age children.

6.B. Treatment Definition: School Reopened Status by Municipality

In the survey data, we do not directly observe whether the particular school attended by the children of the adults interviewed in the employment survey is open. We therefore we construct a variable indicating the weekly percentage of schools opened at the municipality of residence of the sampled households to estimate the effect of schools reopening on mothers of school-age children's labor participation. We assume that the children in the surveyed household attend schools in the same municipality where they reside. This is a relatively reasonable assumption since three-in-four (around 76.3%) of students attend school in the same district where they live (MINEDUC, 2018). Figure 5 shows the fraction of students residing in the same district where their school is located by district.

Table 2. Sample Socioeconomic characteristics by gender, parental status and period of observation

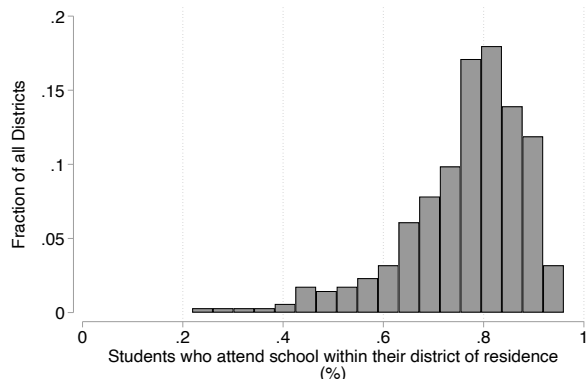
Panel A. Prime Age Females									
<i>Parental Status:</i>	without school-age children				with school-age children				
	2019-March2020 Pre-Pandemic		April-Dec 2020 Pandemic		2019-March2020 Pre-Pandemic		April-Dec 2020 Pandemic		
	Ind	Mean	Ind	Mean	Ind	Mean	Ind	Mean	
Age	14.891	42,8	9.025	42,7	26.339	39,0	14.478	39,1	
Living with at least One Other Adult	14.891	0,828	9.025	0,842	26.339	0,870	14.478	0,861	
Urban	14.891	0,818	9.025	0,804	26.339	0,802	14.478	0,781	
<i>Education Level</i>									
Less than High School	14.857	0,189	8.941	0,181	26.302	0,152	14.422	0,148	
High School Diploma or Equivalent	14.857	0,398	8.941	0,397	26.302	0,479	14.422	0,485	
Associates Degree	14.857	0,145	8.941	0,150	26.302	0,159	14.422	0,161	
Bachelor Degree or Higher	14.857	0,267	8.941	0,272	26.302	0,210	14.422	0,206	
<i>Labor Market Outcomes</i>									
In Labor Force	14.891	0,713	9.025	0,602	26.339	0,677	14.478	0,558	
Employed	14.891	0,615	9.025	0,451	26.339	0,570	14.478	0,413	
Unemployed	11.236	0,078	5.781	0,118	19.141	0,080	8.887	0,098	
Hours Worked Last Week	10.429	40,5	5.105	42,6	17.769	39,1	8.023	40,8	

Panel B. Prime Age Males									
<i>Parental Status</i>	Without school-age children				With school-age children				
	2019-March2020 Pre-Pandemic		April-Dec 2020 Pandemic		2019-March2020 Pre-Pandemic		April-Dec 2020 Pandemic		
	Ind	Mean	Ind	Mean	Ind	Mean	Ind	Mean	
Age	17.721	40,1	10.304	39,9	18.597	39,8	10.128	39,9	
Living with at least One Other Adult	17.721	0,738	10.304	0,750	18.597	0,982	10.128	0,978	
Urban	17.721	0,801	10.304	0,779	18.597	0,787	10.128	0,762	
<i>Education Level</i>									
Less than High School	17.684	0,196	10.178	0,184	18.559	0,169	10.077	0,174	
High School Diploma or Equivalent	17.684	0,419	10.178	0,426	18.559	0,496	10.077	0,482	
Associates Degree	17.684	0,124	10.178	0,124	18.559	0,124	10.077	0,135	
Bachelor Degree or Higher	17.684	0,261	10.178	0,267	18.559	0,211	10.077	0,209	
<i>Labor Market Outcomes</i>									
In Labor Force	17.720	0,877	10.304	0,769	18.597	0,939	10.128	0,873	
Employed	17.721	0,770	10.304	0,609	18.597	0,847	10.128	0,715	
Unemployed	15.964	0,078	8.343	0,134	17.741	0,052	9.122	0,103	
Hours Worked Last Week	14.988	44,3	7.333	44,8	17.095	46,4	8.313	47,0	

Note: Our sample includes individuals between 25 and 55 years old, excluding parents who only have children under the age of five. Source: Authors' analysis using the Chilean National Employment Survey (ENE), during the 2019 and 2020 waves, excluding summer school break months

For the purposes of our analysis, we develop a dichotomous treatment variable of school openings by defining a municipality's schools as open whenever 75% or more of the schools in

Figure 5. Percentage of students residing in the same district where their school is located, with respect to all the students of the district, Chile 2019



Source: Authors' calculations using primary school students' administrative records from the Chilean Ministry of Education (MINEDUC)

the municipality are open. According to our definition, in the municipalities of the households included in the ENE sample during the 2020-2021 period, schools were closed on average for 8.2 months, and they reopened either once or twice depending on the municipality (average of times school closed was around 1.6).⁵

6.C. Identification Strategy

Parallel Trends. To estimate the impact of school openings on mothers' labor outcomes we use standard difference-in-difference (DD) estimation methods. To be able to interpret the DD estimator as evidence of a causal effect due to school re-opening on mothers' labor outcomes, we first offer evidence of preexisting parallel trends between our treated group, mothers with school age children, and similar women without own children in their home. Results are shown on panels 6A, 6B, 6C and 6D of Figure 6.

Basic Difference-in-Differences (DD) Specification. Our estimation specification is the following:

$$y_{ijt} = \beta_1 \text{childschool}_{it} + \beta_2 \text{openschool}_{jt} + \beta_3 (\text{childschool}_{it} \cdot \text{openschool}_{jt}) + \gamma_{\text{month}} + \rho_{\text{municipality}} + \mu_i + \varepsilon_{ijt} \quad (1)$$

⁵Different thresholds of treatment were considered, but we chose the most conservative one, 75%. If we were to consider only using municipalities where 100% of schools were open, a municipality would be classified as closed even when most were open, and there would hardly be any variation across municipalities during the period studied due to the early exceptions given to some private schools.

Figure 6. Trends in Labor Outcomes Differences between mothers of school-age children and women without school-age children, 2019-2021

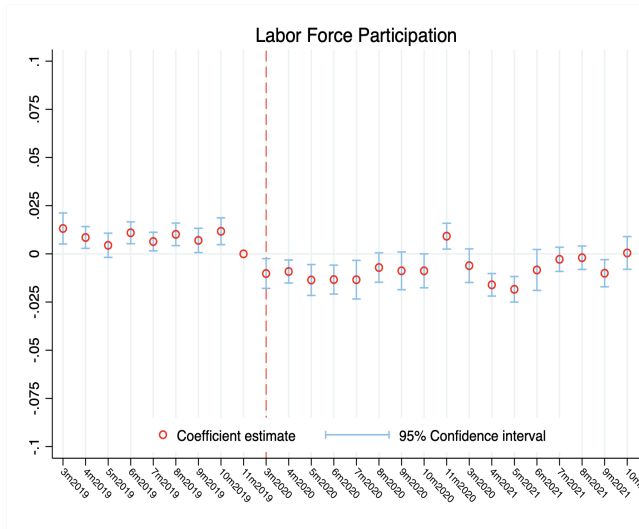


Fig.6A Differences in the probability of participating in the labor force

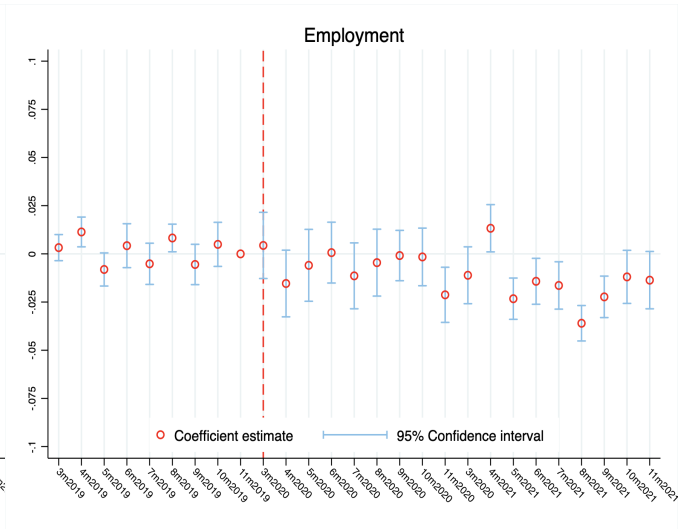


Fig.6C Differences in the probability of being employed, conditional on being in the labor force

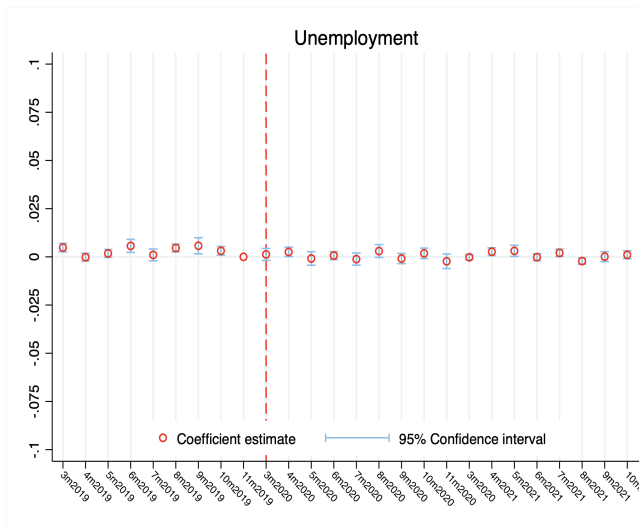


Fig.6B Differences in the probability of being unemployed, conditional on being in the labor force

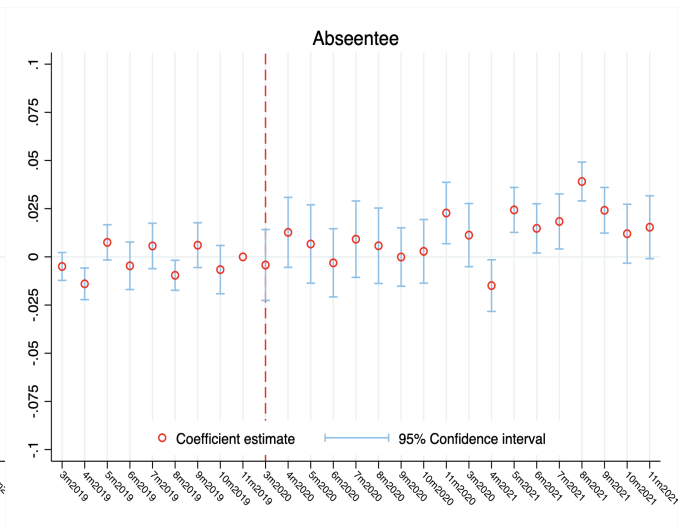


Fig.6D Differences in the probability of leave from work, conditional on being employed

Where y_{ijt} is a labor market outcome variable equal to one if the individual i residing in the municipality j meets the condition for that outcome during time period t , and $openschool_{jt}$ is a dichotomous variable equal to 1 indicating 75% or more of schools in the municipality j are open in period t . We estimate this model to observe the impact of schools openings on mother’s labor market outcomes, which is observed through β_3 . As mentioned, the labor market outcomes of interest are: labor force participation, active work status, unemployment, and leave from work. We estimate this equation for prime-age women living with their own school-age children and living without children. We exclude individuals who only have children under the age of 5. We include monthly controls to account for seasonal trends, municipal controls to account for geographical variation, and individual-level fixed effects (μ_i) to control for any unobserved characteristic at the individual-level. Finally, standard errors are clustered at the municipality and period level.

Difference-in-Differences (DD) with Controls. Next, we estimate the same equation but include controls for the presence of least one other adult in the household, age group⁶, educational attainment, type of employment (self-employed, employer, employee, or unpaid family work), industry, and the municipality of residence’s urbanity status to estimate the following difference-in-difference equation where β_3 continues to be our outcome of interest showing the impact of school re-openings on mother’s labor market outcomes:

$$\begin{aligned}
y_{ijt} = & \beta_1 chilschool_{it} + \beta_2 openschool_{jt} + \beta_3(chilschool_{it} \cdot openschool_{jt}) \\
& + \beta_4 otheradult_{it} + \beta_5 age_{it} + \beta_6 educ_{it} + \beta_7 emptytype_{it} + \beta_8 industry_{it} + \beta_9 rural_j \\
& + \gamma_{month} + \rho_{municipality} + \mu_i + \varepsilon_{ijt} \quad (2)
\end{aligned}$$

Triple-Difference (DDD) Specification. Finally, we estimate a triple difference (DDD) estimator (Wooldridge, 2007) by comparing the difference in the rate of change of economic outcomes for mothers of school age children relative to women without children compared to that of fathers with school age children relative to men without children. We interpret our estimator as the effect of school re-opening on the rate of change of mothers of school-age children with respect to their peers with similar education and age without children compared to custodial fathers relative to similar men without children. In this case, the coefficient of interest is β_4 .

$$\begin{aligned}
y_{ijt} = & \beta_1 chilschool_{it} + \beta_2 openschool_{jt} + \beta_3(chilschool_{it} \cdot openschool_{jt}) \\
& + \beta_4(chilschool_{it} \cdot openschool_{jt} \cdot female_i) + \beta_5 otheradult_{it} + \beta_6 age_{it} + \beta_7 educ_{it} \\
& + \beta_8 emptytype_{it} + \beta_9 industry_{it} + \beta_{10} rural_j + \gamma_{month} + \rho_{municipality} + \mu_i + \varepsilon_{ijt} \quad (3)
\end{aligned}$$

⁶The age groups are 25-34, 35-44, 45-54 and 55 years or higher.

Here, again as in equations (1) and (2), $openschool_{jt}$ is a dichotomous variable equal to 1 indicating 75% or more of schools in the municipality j are open in period t .

7. Results

7.A. Prime-Age Custodial Mothers Compared to Women Living Without Dependent Children

The first step in our analysis is a difference-in-difference (DD) estimation comparing mothers of school age children to women living without dependent children. As schools in local communities began to open their doors and children began physically returning to the classroom, parents and other adults responsible for supervising school-age children during the school day were then freed up from that activity. Because prime-age (ages 25-55) women without dependent children in their households were most likely not responsible for childcare, we do not expect their labor supply to be constrained by school closings. However, we do expect that mothers' ability to work was disproportionately constrained due to increased childcare needs within their families. Other labor market issues regarding layoffs and shifts to remote work would have an impact on working women regardless of child status. To the extent that mothers shift into different kinds of jobs than other women and that variation changes overtime, we include controls for employment status and industry, as well as age, education, urban status, and having another working age adult in the household. All regressions include fixed effects for geography and time, and standard errors are clustered around geography and time.

Table 3 shows the coefficients for our DD estimation of women's labor supply and provides estimates of the difference in prime-age (25-54) mothers' labor supply when schools physically re-opened their doors relative to prime-age women without dependent children. School openings increased mothers labor force participation by 9.1 percentage points (ppts) relative to women with no dependent children. School re-openings allowed more mothers to enter into the labor force, which increases household income and the overall economic well-being of the family.

However, as columns 2 and 3 from Table 3 show, the story is more complex than just whether mothers re-entered the labor force. Mothers did enter the labor force as schools opened, but they still faced challenges. Conditional on being in the labor force, school openings increased mother's unemployment (by 0.4 ppts) and decreased their ability to actively work by 8.1 ppts relative to women with no dependent children. Conditional on having a job, their absenteeism from work (or leave take up) increased by 10.6 ppts. Initially, mothers may have believed that school re-openings freed up their time for paid labor outside the home and, as such, they returned to the labor force. But, the inconsistent variability of

quarantine rules, guidance and shifting rules for staying at home when unexpectedly exposed to a COVID-positive individual, all made it uniquely difficult for mothers who returned to the labor force to continue working in an equal manner to their counterparts without children.

7.B. Prime-Age Custodial Mothers Compared to Fathers

Comparing prime-age custodial mothers to prime-age women without dependent children allows us to understand differences within gender related to the increased demand of childcare responsibilities. However, it says very little about across gender variation given within gender differences. To understand how school openings impacted parents more generally, we run triple-difference (DDD) models to estimate the impact on mothers compared to women without children (within gender differences) relative to fathers (across gender differences) compared to men without children. Those results are discussed below.

Women generally spend more time in unpaid domestic tasks within the home relative to men. This was true before the pandemic and studies have shown that, while men increased their time spent in unpaid domestic work during the pandemic, women's time spent in these activities increased more (Sevilla and Smith, 2020; Bauer et al., 2021). Given that women's domestic workload increased disproportionately to men during the pandemic, we expect school re-openings to have a larger impact on mothers' labor supply than fathers. The coefficients corresponding to the first DDD estimates (Mothers/Fathers Relative to Counterparts with No Dependent Children (Table 3, Row 4), show that even though both mothers and fathers were impacted by a lack of childcare for their children when schools closed, school re-openings increased mothers' labor force participation by 2.6 ppts relative to custodial fathers. This makes sense under an assumption that mothers' labor supply was generally more affected by school closures than fathers' labor supply. Conditional on being in the labor force, custodial mothers' active work status increased by 11.2 ppts and being absent from work decreased 8.0 ppts relative to fathers.

While mothers' ability to actively work decreased relative to single women when schools re-opened, relative to fathers, mothers experienced an increase in their relative ability to engage with their job and a decreased tendency to take leave compared to when schools were closed. These results could be driven by mothers taking on the predominant childcare responsibilities when schools were closed and fathers taking up more leave to handle child sickness upon school re-openings. It could also be driven by the simple fact that the difference of leave take-up for fathers was bigger relative to their counterparts upon school re-openings compared to before the pandemic and that this difference was larger for men than women. In this case, it is not that mothers have an increased ability to work upon school re-openings compared to fathers but rather that the disruption to fathers upon school re-openings was

greater relative to before school openings - possibly implying that mothers were taking on a disproportionately large brunt of domestic work related to childcare before schools re-opened.

Breadwinners. We next examine the subgroup of breadwinners by comparing breadwinner mothers to breadwinner fathers relative to breadwinners with no dependent children using triple-differences estimation (results are shown in Table 3, Row 7). Here we define breadwinners as the person generating the highest salary or wages within the household. We are interested in understanding how much of the impact on women's labor supply is driven purely by gender versus being identified as a primary care domestic provider within the home. We expect to see a smaller impact of school re-openings on breadwinner mothers since their labor supply is most likely less sensitive to childcare needs and more sensitive to providing economic resources for the household's survival. As we expected, we find no significant differences in labor force participation or leave take up between breadwinner mothers and fathers. We find small effects in unemployment and, surprisingly, active work status. Conditional on being in the labor market, custodial breadwinner mothers increased unemployment by 2.8 ppts and active work status by 6.1 ppts (weakly significant) as schools re-opened.

Given that breadwinner mothers have earnings that are the primary source of income for their families, we are not surprised that their labor force participation is less sensitive to school openings and closings. These mothers most likely had another adult in the household or family member nearby to watch their children while they worked. Alternatively, they may have brought their child to work with them or left children home alone and unattended. The fact that breadwinner mothers disproportionately took up unemployment upon school re-openings shows us that however tied to the labor market these mothers are, they are still disproportionately relied on to care for children. Since they are breadwinners, they are more likely to take up unemployment spells than longer term unpaid leave. Overall, however, the pressure on breadwinner mothers to financially provide for their families seems to have more generally buffered them from being disproportionately sensitive to a lack of care for their children when schools were closed.

Table 3. Double and Triple Differences in Differences Estimations Results for Mothers of School Aged Children (SAC) Labor Outcomes relative to Women without Children, Fathers of School Aged Children and their counterparts, by Breadwinner Status, and by the Existence of an Older Child in the House

	Labor Force Participation	Unemployed	Actively Working	Absent On Leave
	<i>Individuals Aged 25 to 54</i>	<i>In Labor Force, Aged 25 to 54</i>	<i>In Labor Force, Aged 25 to 54</i>	<i>Has a Job, Aged 25 to 54</i>
<i>Universe:</i>				
DD Mothers/Women with No Dependent Children <i>subsample prime-age women</i>	0.091*** (0.016) 38,923	0.004** (0.002) 23,184	-0.081*** (0.019) 23,184	0.106*** (0.022) 20,628
N				
DDD Mothers/Fathers Relative to Counterparts with no Dependent Children	0.026* (0.013) 71,342	0.002 (0.003) 50,329	0.112*** (0.030) 50,329	-0.080** (0.031) 44,674
N				
DDD Breadwinner Mothers/Fathers <i>subsample breadwinners</i>	0.020 (0.029) 31,026	0.028*** (0.006) 27,042	0.061* (0.033) 27,042	-0.058 (0.032) 25,238
N				
DDD Mothers/Women Non-Breadwinner <i>subsample prime-age women</i>	0.084** (0.027) 38,923	-0.016*** (0.005) 23,184	-0.208*** (0.039) 23,184	0.238*** (0.046) 20,628
N				
DDD Mothers with older child/Mothers with no older child relative to Fathers, <i>subsample parents of school-aged children</i>	0.016 (0.010) 41,855	-0.005* (0.002) 29,237	0.138** (0.050) 29,237	-0.446*** (0.050) 26,264
N				
RANGES:	2.6-9.1	-1.6-2.8	-20.8-13.8	-44.6-23.8

7.C. Non-Breadwinner Mothers

Since breadwinner mothers' economic outcomes are less sensitive to school closures, we next focus on producing estimates of the effect of school re-openings on non-breadwinner mothers to understand the effect of school closures on mothers who were secondary income providers within their households (results are shown in Table 3, Row 10). We do not assume their income is discretionary and acknowledge that their income may also be critical for household survival, but since these mothers' earnings are lower than another adult in the home, their economic outcomes may be affected more strongly by the tug-of-war associated with working while parenting.

For this analysis, we restrict ourselves to only women. We estimate a triple-difference for non-breadwinner mothers compared to breadwinner mothers and relative to their respective counterparts without dependent children. We find that their economic outcomes are, in fact, sensitive to school re-openings. Non-breadwinner mothers' labor force participation increased by 8.4 ppts. Conditional on being in the labor force, unemployment decreased by 1.6 ppts with school re-openings. Perhaps most surprising is that their ability to actively work decreased by 20.8 ppts and their leave take up increased by 23.8 ppts relative to breadwinner mothers. Non-breadwinner mothers may have been particularly sensitive to sick children and household-level quarantines due to COVID-19 exposure. While school re-openings brought more of them back into the labor force, their ability to engage in economic activity outside of their home was disproportionately impacted by unanticipated shocks like sick children, classroom closures due to classmates infections, and COVID-19 own exposure quarantines.

7.D. The Role of Teenagers when Care is Unpredictable

Finally, we ask whether having a teenager in the home had any effect on a parents' ability to work. Studies have shown that older siblings, particularly older sisters, provide care for younger siblings allowing mothers to stay more strongly attached to the labor market (Connelly et al., 1996; Lee and Pacini-Ketchabaw, 2011). In addition, if there are no young siblings in the home, teenagers (ages 13-17) generally require less supervision.

We start with a focus on mothers who have a teenager (any gender) in the household defined as an individual living with an own child between 13 and 17 years old. We run triple-difference models comparing mothers of teenagers relative to mothers of children age 5-12 compared to similar fathers (Table 3, Row 13). We find that having a teenager in the home does not differentially influence the decision to enter the labor market for these mothers. While having a teenager in the home had no general effect on mothers' labor force participation, it does increase mothers' probability of actively working by 13.8 ppts and

modestly reduced their unemployment by 0.5 ppts (weakly significant). The biggest impact of the presence of a teenage child was found on the leave take up of custodial mothers, which is 44.6 ppts lower than mothers with small children compared to similar fathers.

Teenagers, Young Siblings, and Mothers. Not only do teenagers require less supervision themselves, but many can also provide informal childcare for parents in tight situations, particularly temporary ones. For example, teenagers can care for younger siblings when classrooms in schools unexpectedly shut down due to the spread of illness or if a younger sibling is required to quarantine for some days due to COVID-19 exposure. To examine the impact of having a teenage child in the home when younger siblings are also present on mothers' ability to work outside the home, we generate subsamples of parents who have both teenagers and younger children in the home. Table 4 shows our results.

We start by running a DDD of mothers with both teenagers and younger children relative to mothers with just younger children in the home compared to their childless counterparts (Table 4, Row 1). Here we find relatively large effects. Mothers with teenagers were 21.0 ppts more likely to join the labor force with school re-openings relative to mothers with only small children. In addition, conditional on being in the labor force, they were 59.5 ppts more likely to be actively working and a whopping 95.6 ppts less likely to be on leave, showing relevant substitution effects of teenage children as care providers when care became unstable and unpredictable during the initial weeks of schools re-openings.

Next, we run a simple DD of mothers with both teenagers and younger children relative to mothers with only young children as a check on our DDD estimates above (Table 4, Row 4). A simple DD using panel data comparing mothers against mothers with the only difference that one group has a child between the ages of 13 and 17 and the other does not still provides a robust analysis. Interestingly, this analysis has similar results. Mothers with teenagers were 17.3 ppts more likely to join the labor force when schools re-opened, 67.4 ppts more likely to stay actively engaged at work, and 99.7 ppts less likely to take leave. While these results are large, they speak to the physical constraints of going to work when children are, without much notice, sent home from school or required to stay home for a few days. Having another person at home capable enough to provide care can be the difference between showing up and not showing up for work.

Table 4. Double and Triple Differences in Differences Estimations Results on the Impact of Counting with an Older Sibling on Mothers and Fathers of Young School Aged Children's (YSAC) Labor Outcomes relative to Counterparts without Children, or with YSAC but with no older sibling

	Labor Force Participation	Unemployed	Actively Working	Absent On Leave
	<i>Individuals Aged 25 to 54</i>	<i>In Labor Force, Aged 25 to 54</i>	<i>In Labor Force, Aged 25 to 54</i>	<i>Has a Job, Aged 25 to 54</i>
	<i>Universe:</i>			
DDD Mothers w.older sibling/Mothers with only young children relative to Women with No Dependent Children	0.210*** (0.026)	-0.002 (0.003)	0.595*** (0.037)	-0.956*** (0.039)
N <i>subsample prime age females</i>	38,923	23,184	23,184	20,628
DD Mothers w.older sibling/Mothers with only young children	0.173*** (0.027)	0.000 (0.003)	0.674*** (0.037)	-0.997*** (0.036)
N <i>subsample mothers of school-age children under13</i>	15,907	8,979	8,979	8,011
DDD Fathers w.older sibling/Fathers with only young children relative to Men with No Dependent Children	-0.067*** (0.018)	-0.008 (0.004)	0.510*** (0.073)	-0.507*** (0.073)
N <i>subsample prime-age males</i>	32,417	27,144	27,144	24,043
DD Fathers w.older sibling/Fathers with only young children	0.044** (0.030)	-0.005 (0.004)	0.493*** (0.128)	-0.492*** (0.139)
N <i>subsample fathers of school-age children under13</i>	10,567	9,423	9,423	8,536
RANGES:	-6.7-21.0	0	49.3-67.4	-99.7- -49.2

Teenagers, Young Siblings, and Fathers. One might also be curious about the effect of having a teenager in a home with small children on fathers employment outcomes. Table 4, Row 7 shows these results. Fathers were less likely to enter the labor force (6.7 ppts) relative to fathers with small children only and compared to men without children - perhaps driven by larger changes in childless men's labor force participation than anything else (as previously discussed). Conditional on being in the labor force, fathers were more likely to be actively working (51.0 ppts) and less likely to be on leave (50.7 ppts).

If we restrict our analysis to just fathers, Table 4, Row 10 shows our DD results that fathers with teenage children in the home are 4.4 ppts more likely to be in the labor force than fathers who only have young children in the home. Conditional on being in the labor force, they are 49.3 ppts more likely to be actively working. Conditional on having a job, they are 49.2 ppts less likely to be on leave. Interesting enough in this analysis is the fact that teenagers in the home as informal care providers not only buffer mothers' engagement with the workplace but also, to a lesser extent, fathers'.

In sum, an older sibling's presence helped deal with the short-term childcare constraints when schools opened, but the pandemic was not entirely over. School attendance remained unstable, for example, if initially attendance was limited to some days of the week, or children came home sick or had to quarantine due to COVID-19 exposure. Unfortunately, we did not have enough power to report the differentiated effect of having a teenage daughter relative to having a teenage son. Nevertheless, we find that once schools re-opened, having an older child in the home, regardless of whether the child was male or female, helped mitigate the negative impact on mothers' economic outcomes of children not being able to attend continuously to school by allowing them to end their leave status and stay actively engaged in paid labor. In addition, significant evidence of teenagers' presence' protective effect was also found on fathers' labor outcomes, although relatively minor. Our results emphasize to what extent the role of other family members in providing informal care matters for mothers and their ability to work outside the home.

8. Conclusion

We have examined how sensitive parental labor supply and related outcomes were to central planner decisions to re-open schools in Chile. Across all models, we find that mothers' labor force participation increased anywhere from 2.6 to 21.0 percentage points (ppts) when schools re-opened. We also found that breadwinner mothers did not experience any differential increase in labor force participation compared to breadwinner fathers, and the same was true if older teenage siblings were in the home to care for younger children. Conditional

on being in the labor force, custodial mothers increased active work status when schools re-opened relative to fathers even when we restrict to breadwinner parents - demonstrating that mothers were more likely to provide care coverage during closures.

Households with a teenager had a large effect on increasing the active work status and reducing leave take up of both parents relative to not having a teenager at home. These teens were able to care for younger siblings as school re-opening drove unstable care coverage. Non-breadwinner mothers compared to breadwinner fathers, as well as all mothers relative to women without dependents, experienced decreases in active work status when schools re-opened, professedly because they were left handling unanticipated childcare needs associated with public health crises.

In terms of leave take up, our results highlight the sensitivity of mothers ability to succeed and advance at work given the disproportionate burden of domestic chores and childcare at home. We show that as schools re-opened, non-breadwinner mothers, and mothers compared to women without dependent children more generally, were more likely to take leave from work, putting them at a disproportional disadvantage for promotions and advancement at work. They continued to experience the burden of the pandemic even as childcare options became available to them within the community via school re-openings. Some of this impact was mitigated for mothers with a teenage child at home.

These results on leave are not well reported in the literature but critical to our understand of women's labor supply. In order to reduce gender inequality in the workforce and improve women's economic well-being, we need to be aware of the various ways in which family roles and responsibilities hinder women's ability to thrive equally at work. So, while school re-openings may have had a positive impact on women's labor supply and entrance into the labor market more generally, the unreliability of whether their children would be able to attend school each day led women temporarily out of their jobs and into leave status. That implies they were less likely to be available to take on the next big leadership opportunity or be physically in the office for their boss to see them and be reminded of their work on a regular basis. This has detrimental ripple effects down the line as these lost opportunities make them less likely to get a promotion or advance in their career and increase their earnings. Future research should investigate additional nuances within the dynamics of work-life balance that hold women back from gender equality in the labor market.

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References

- Albagli, E., Canales, M., Tapia, M., and Wlasiuk, J. (2018). Understanding the Job Ladder: The Role of Tenure and Job Transitions.
- Albanesi, S. and Kim, J. (2021). Effects of the covid-19 recession on the u.s. labor market: Occupation, family, and gender. *Journal of Economic Perspectives*, 35(3).
- Aldunate, R. (2018). Retorno a la Experiencia Laboral en Chile.
- Almuedo-Dorantes, C., Marcèn, M., Morales, M., and Sevilla, A. (2023). Schooling and parental labor supply: Evidence from covid-19 school closures in the united states. 76:56–85.
- Alon, T., Doepke, M., Olmstead-Rumsey, J., and Tertilt, M. (2020). The Impact of COVID-19 on Gender Equality. Technical report, National Bureau of Economic Research, Cambridge, MA.
- Banco Central de Chile (2018). *Mercado Laboral: Hechos Estilizados e Implicancias Macroeconómicas*. Banco Central De Chile, Division de Asuntos Institucionales, Santiago, Chile, 1 edition.
- Banco Central de Chile (2021). Informe de Política Monetaria Junio 2021. Technical report, Banco Central de Chile, Santiago, Chile.
- Bauer, L., Estep, S., and Yee, W. (2021). Time waited for no mom in 2020. Technical report, The Hamilton Project, Brookings Institute.
- Beauregard, P., Connolly, M., Haeck, C., and Molnár, T. L. (2022). Primary school reopenings and parental work. *Canadian Journal of Economics/Revue canadienne d'économique*, 55(S1):248–281.
- Bilal, U., Alazraqui, M., Caiaffa, W. T., Lopez-Olmedo, N., Martinez-Folgar, K., Miranda, J. J., Rodriguez, D. A., Vives, A., and Diez-Roux, A. V. (2019). Inequalities in life expectancy in six large Latin American cities from the SALURBAL study: an ecological analysis. *The Lancet Planetary Health*, 3(12):e503–e510.
- Brinca, P., Duarte, J., and Faria-e Castro, M. (2021). Measuring labor supply and demand shocks during covid-19. *European Economic Review*, 139:103901.
- Connelly, R., DeGraff, D. S., and Levison, D. (1996). Women's employment and child care in brazil. *Economic Development and Cultural Change*, 44(3):619–656.
- Cristi, J. and Madeira, C. (2022). The effects of the job retention program during the households.
- Croda, E. and Grossbard, S. (2021). Women pay the price of covid-19 more than men. *Review of Economics of the Household*, 19(1):1–9.

- Díaz, F. and Henríquez, P. A. (2021). Social sentiment segregation: Evidence from Twitter and Google Trends in Chile during the COVID-19 dynamic quarantine strategy. *PLOS ONE*, 16(7):e0254638.
- Farre, L., Fawaz, Y., Gonzalez, L., and Graves, J. (2021). Gender inequality in paid and unpaid work during covid-19 times. *The Review of Income and Wealth*, 68(2):12563.
- Garretton, M., Basauri, A., and Valenzuela, L. (2020). Exploring the correlation between city size and residential segregation: comparing Chilean cities with spatially unbiased indexes. *Environment and Urbanization*, 32(2):569–588.
- Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., and Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature Human Behaviour*, 5(4):529–538.
- Hansen, B., Sabia, J. j., and Schaller, J. (2022). Schools, job flexibility, and married women’s labor supply. Technical Report 29660, NBER Working Paper.
- Heggeness, M. and Suri, P. (2021). Telework, childcare, and mothers’ labor supply. Technical report, Federal Reserve Bank of Minneapolis.
- Heggeness, M. L. (2020a). Estimating the immediate impact of the covid-19 shock on parental attachment to the labor market and the double bind of mothers. *Review of Economics of the Household*, 18(4):1053–1078.
- Heggeness, M. L. (2020b). Improving child welfare in middle income countries: Unintended consequences of a pro-homemaker divorce law and wait time to divorce. *Journal of Development Economics*, 143.
- Lee, J.-A. and Pacini-Ketchabaw, V. (2011). Immigrant girls and caregivers and younger siblings: A transnational feminist analysis. *Gender and Education*, 23(2):105–119.
- Lundberg, S. J., Pollak, R. A., and Wales, T. J. (1997). Do husbands and wives pool their resources? evidence from the united kingdom child benefit. *The Journal of Human Resources*, 32(3):463–480.
- Martinez, C. A. (2013). Intrahousehold allocation and bargaining power: Evidence from chile. *Economic Development and Cultural Change*, 61(3):577–605.
- Mena, G. E., Martinez, P. P., Mahmud, A. S., Marquet, P. A., Buckee, C. O., and Santillana, M. (2021). Socioeconomic status determines COVID-19 incidence and related mortality in Santiago, Chile. *Science*, 372(6545):1–8.
- MINEDUC (2019). Resumen estadístico de la educación 2019. Technical report, Ministerio de Educacion de Chile.
- MINSAL (2020). Plan Paso a Paso. Technical report, Gobierno de Chile, Santiago, Chile.

OECD (2022). *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*. OECD Employment Outlook. OECD, Paris, France.

Polimap (2020). <https://polimap.org/chile/>.

Rangel, M. A. (2006). Alimony rights and intrahousehold allocation of resources: Evidence from brazil. *The Economic Journal*, 116(513):627–658.

Sevilla, A. and Smith, S. (2020). Baby steps: The gender division of childcare during the covid-19 pandemic. *Oxford Review of Economic Policy*, 36:S169–S186.

Valenzuela, J. P., Undurraga, E. A., Kuzmanic, D., Canales, A., Claro, S., and Cortes, F. (2022). Socio-economic inequalities in opportunities and participation in in-person learning during the COVID-19 pandemic.

APPENDIX

Table 5. Encuesta Nacional de Empleo (ENE) Sample Rotation Design

		Year t												Year t+1											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Rotation scheme	6	R6	R6	R6																					
	5	R5	R5	R5	R6	R6	R6																		
	4	R4	R4	R4	R5	R5	R5	R6	R6	R6															
	3	R3	R3	R3	R4	R4	R4	R5	R5	R5	R6	R6	R6												
	2	R2	R2	R2	R3	R3	R3	R4	R4	R4	R5	R5	R5	R6	R6	R6									
	1	R1	R1	R1	R2	R2	R2	R3	R3	R3	R4	R4	R4	R5	R5	R5	R6	R6	R6						
6				R1	R1	R1	R2	R2	R2	R3	R3	R3	R4	R4	R4	R5	R5	R5	R6	R6	R6				
5							R1	R1	R1	R2	R2	R2	R3	R3	R3	R4	R4	R4	R5	R5	R5	R6	R6	R6	
4										R1	R1	R1	R2	R2	R2	R3	R3	R3	R4	R4	R4	R5	R5	R5	
3													R1	R1	R1	R2	R2	R2	R3	R3	R3	R4	R4	R4	
2																R1	R1	R1	R2	R2	R2	R3	R3	R3	
1																			R1	R1	R1	R2	R2	R2	
6																						R1	R1	R1	

Note: The colors indicate the rotation panel to which each household belongs. The colors indicate the rotation panel to which each household belongs. The numbers in each box indicate the number of periods that the households associated with each of rotation panels have been part of the survey.

Source: INE, 2020