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Pierre-Loup Beauregard, Marie Connolly, Catherine Haeck, and Tímea Laura Molnár

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Abstract

In this paper, we exploit the geographical pattern of primary school reopenings during the COVID-19 pandemic in Quebec to estimate the impact of school reopenings on parental employment and work hours. We first use a difference-in-differences approach, in which we compare parents of primary-school children in regions where school reopened in May 2020 to similar parents in regions where schools remained closed. We also use a triple-difference model, in which parents of older, secondary-school children are used as an additional control group. We estimate the impact of school reopenings separately for mothers and fathers, and for single parents and parents living in dual-parent households. We find a positive impact of school reopenings on employment and on actual hours worked. The effects tend to be stronger for single parents: single mothers have experienced a 20 percentage point increase in their employment rate following school reopenings. We also split our sample according to whether the job can be done from home, and find stronger impacts for those whose jobs cannot easily be done from home. Our results suggest that reopening schools allows parents, especially single parents, to maintain their employment link and support themselves.
JEL codes: I24, I28, J21, J22
Keywords: school closures, school reopenings, labour market, employment, work hours, pandemic, Canada

*Beauregard: Vancouver School of Economics. Connolly: Université du Québec à Montréal. Haeck (corresponding author): Université du Québec à Montréal, haeck.catherine@uqam.ca. Molnár: Central European University. The authors would like to thank CIRANO for financial support and Statistics Canada for making the data available. All errors remain our own. The views expressed in this paper are those of the authors. Data adapted from Statistics Canada, Labour Force Surveys, 2017-2020. This does not constitute an endorsement by Statistics Canada of this product.

1 Introduction

In response to the COVID-19 pandemic and to limit infections, childcare services, primary schools and secondary schools closed down across Canada in March of 2020. Most schools did not reopen and remained closed through to the end of the school year. Children have been home schooled, with varying levels of support from teachers through online schooling, and varying levels of access to online materials (Frenette et al. 2020). Home schooling and caring for young children at home put pressure on parents' capacity to work, whether it be from home or not. While lockdown measures have affected everyone's ability to work, it can be expected that the employment and hours of work of parents of school-age children have been impacted above and beyond those of childless workers (Alon et al. 2020a).

This impact on parents is further differentiated between mothers and fathers, with consequences for gender equality. Qian and Fuller (2020) find that the gender gap in employment probability widened by 6.5 percentage points between February and May 2020 in Canada for parents whose youngest child is of primary-school age. Adams-Prassl et al. (2020) show that in April 2020, women spent significantly more time home schooling their children than men did in Germany and the United Kingdom–on top of the one-hour differential in time spent on other child care tasks. Hence prolonged school closures may slow down or reverse the gains towards gender equality on the labour market.

Our contribution is to estimate the specific impact of school reopenings on parental employment status and work hours. School closures affect the ability of parents to work and may have an impact on our economy's ability to deliver essential services during a pandemic. Since 30.2% percent of Canadian workers have young children (aged 12 and below),[1] understanding the impact of this specific measure is essential. Recent work has documented the labour market situation of parents during the pandemic, essentially showing a decrease in work hours (Qian and Fuller 2020). We go further by exploiting geographical

[1]Source: Authors' calculations from Statistics Canada's Labour Force Survey, average for the year 2019, January to December

differences in school reopening patterns to identify the causal effect of school on parental work. School closures were applied relatively uniformly across the country in a short period of time, making it hard to get a handle on causal identification of the effect of closures. Instead, we investigate school reopenings–the flipside of the closures–, which only happened in certain parts of Quebec in May 2020. Our work, based on a microempirical approach, echoes the work of Alon et al. (2020b), who investigate the impact of school reopenings on gender inequality in the United States using a quantitative macroeconomic model.

Schools and childcare facilities closed across Canada within five days (between March 16 and March 20). It is therefore not possible to exploit variation across time and space to capture the initial impact of school closures. School closures were also done in combination with a host of other lockdown measures, which triggered important impacts on the labour force across the country (T. Lemieux et al. 2020). However, primary school reopenings were not uniform across the country. In this study, we exploit the geographical differences in primary school reopenings to gain insight into the impact of school closures on parental employment and work hours in a quasi-experimental design, using a difference-in-differences approach. Since the decision to reopen schools also might have been combined with other changes within the geographical unit, we also present results from a triple-difference approach to estimate the impact of school reopenings on parental labour market outcomes. We estimate the impact for mothers and fathers separately, and also document the specific effect on single-parent families.

We find that primary school reopenings have a positive impact on labour force indicators for mothers and fathers. More specifically, our results stemming from the triple-difference approach suggest that school reopenings increased the probability that mothers and fathers are employed and at work in dual-parent households by 7.3 and 10.3 percentage points (p.p.), respectively. For single mothers we also find a large increase of 20.7 p.p., highlighting a clear impact of school reopenings on parents' ability to work. Additionally, the actual number of hours worked increased by 8.3 hours per week for single mothers and by 3.5 hours per week

for fathers in dual-parent households. Finally, we observe that the pandemic had a larger negative impact on mothers' labour force measures relative to fathers', and that mothers' labour activity only recovered partially once schools reopened, whereas fathers recovered almost completely. The pandemic, combined with school closures, has therefore directly contributed to an exacerbation of the gender gap. Reopening schools should be seen as an opportunity to mitigate the negative effects of the pandemic on gender and socioeconomic inequalities.

The outline of the paper is as follows. Section 2 briefly reviews the related literature. Section 3 and 4 present the data and empirical strategy. The results are presented in Section 5. Section 6 concludes.

2 Literature

The literature on school closures and parental labour market outcomes is extremely limited. Jaume and Willén (2018) estimate the impact of teachers' strikes on parental labour force participation. They find strong evidence that temporary school closures in Argentina had negative impacts on maternal labour force participation, which translated into a loss of earnings for mothers. On average, they did not find an impact on fathers, except when fathers were not the main breadwinner. A related paper, though not on school closures *per se*, looks at school schedules and the gender pay gap. Duchini and Van Effenterre (2020) estimate the effect of introducing instruction time on Wednesdays in France, thus going from a four-day week to a five-day week. They find that mothers increased their hours worked and shifted from part-time employment to full-time. Fathers did not respond to the new school schedules, so the combined result is a closing of the gender gap, both in terms of employment and of pay. Most of the literature related to this topic actually comes from childcare research. Studies on the Quebec childcare reform have provided strong evidence that low-fee childcare contributes to the rise in maternal labour force participation both in

the short and long term (see for example Baker et al. 2008; Haeck et al. 2015; Lefebvre and Merrigan 2008). While this literature reveals that mothers' labour force participation is tightly linked to the availability and affordability of childcare, and fathers' labour force participation seldom depends on it, it provides limited evidence on the impact of temporary school closures. From this literature, we expect that temporary school closures would have a stronger impact on mothers relative to fathers.

Recent work by T. Lemieux et al. (2020) documents the impact of the COVID-19 pandemic on the Canadian labour market. The authors find that weekly hours worked decreased by 32 percent between February 2020 and April 2020 among workers aged 20–64 years in Canada. At the same time, employment rates decreased by 15 percent, and this decline was concentrated among workers at the bottom of the earnings distribution (bottom quartile). They also find that the employment decline was similar for men and women. In a study tightly linked to our own, Qian and Fuller (2020) investigate the gender gap in employment status in Canada in the wake of the COVID-19 pandemic. They segment their sample by age of the youngest child and find the strongest effects for parents whose youngest child is between 6 to 12 years old. This is especially true for low-educated parents. Thus, while everyone was impacted by the pandemic to various degrees, we can expect parents of primary-school children to have faced an additional constraint due to school closures (all else being equal).

Multiple studies raise the point that, contrary to some affirmations that the coronavirus pandemic may be the great leveller, current inequalities may in fact increase in the wake of the pandemic (Adams-Prassl et al. 2020; Blundell et al. 2020; Wright et al. 2020). Gender differences are an interesting case. Large shocks, such as the birth of a child, tend to have disproportionate effects on women compared to men, contributing to a substantial part of the gender gap (Connolly et al. 2020; Kleven et al. 2019a,b). Adams-Prassl et al. (2020) document that women were more likely to lose their job following the pandemic than men in the United States and the United Kingdom. Collins et al. (2020) show that the gender

gap in work hours has widened by 20 to 50 percent, part of which they argue is a direct consequence of school closures. Yet the rapid rise in working from home and more flexible work arrangements, as well as fathers' increased involvement in child responsibilities, may, in the longer term, benefit women (Alon et al. 2020b). Finally, recent evidence from the epicenter of the crisis in Canada also show that women were more likely to get infected by SARS-CoV-2 and suffer emotional challenges (V. Lemieux et al. 2020; Springmann et al. 2020).

There is also a small literature on the impact of school interruptions on children's skill development. This literature exploits various identification strategies, using summer interruptions, teachers' strikes, previous pandemics, and age at entry regulations (e.g. Davies and Aurini 2013; Frenette 2008; Jaume and Willén 2019; Meyers and Thomasson 2017). While average learning losses are limited over the summer, it appears that this overall effect masks heterogeneous impacts among children (Cooper et al. 1996). A few studies suggest that children in favourable family environments seem to gain over the summer or during a teachers' strike, or at least not lose, while children in less favourable environments experience a net loss in their academic abilities (Atteberry and McEachain 2020; Belot and Webbink 2010). A recent study on the polio pandemic at the beginning of the 20th century suggests that a few weeks of school interruption at the beginning of the year can have long-term effects on the probability of completing high school (Meyers and Thomasson 2017). Haeck and Lefebvre (2020) show that academic inequalities by socioeconomic status are large and comparable across Canadian provinces, and that these are likely to increase because of school closures during the pandemic. Finally, Jaume and Willén (2019) show that children who suffered school interruptions due to teachers' strikes have lower labour earnings later in life (-3.2% for males and -1.9% for females). This suggests that school closures have long-lasting consequences on children.

The effects of the current pandemic on children's ability and perseverance cannot yet be measured, but while parents may not know the extent to which school interruptions

can affect their children, they are bound to factor this into their decision on how to best allocate their time between work, leisure, and home schooling. The literature suggests that children in high-socioeconomic-status families are less likely to be negatively impacted. This may be because parents allocate more time to their children or have access to external resources to help their children. Bacher-Hicks et al. (2020) indeed find that areas with higher income and better internet access increased their search for both school- and parent-centered online learning resources during the pandemic. We can therefore expect parents of different socioeconomic status to react differently to school closures.

3 Data

We use the Statistics Canada's Labour Force Survey (LFS) from 2017 to 2020. The LFS is a monthly survey that captures the current state of the Canadian labour market, and it is the official source of data to measure monthly unemployment rates in the 58 Employment Insurance Regions (EIR) of Canada. The survey is typically conducted the third week of the month, through personal interviews, telephone interviews, and electronic questionnaires. Participation in the survey is mandatory and regulated under the Statistics Act. The LFS is designed to provide representative measures of labour market conditions across all EIR. The target population for the LFS includes all non-institutionalized individuals aged 15 years and older.

In this study, we use a household-level framework, where one unit of observation equals one household, and we estimate the impact on mothers separately from the impact on fathers. The public-use LFS provides only the age of the youngest child. We therefore rely on confidential microdata to have information on the age of each child present in the household. This allows us to identify families directly impacted by primary school closures. It also allows us to control for the presence and age of other children, thus improving the analysis in Qian and Fuller (2020).

In our main sample, we keep families either with only primary-school children, age 6 to 12, or only with high-school children, age 13 to 17. All other households are excluded, including households with both primary- and high-school children. Households with both types of children may be impacted differently since older siblings can take care of the younger ones. In Section 5, we test the robustness of our results to their inclusion. We also exclude households without children or with children above 17 years of age because adults in these households are less representative of the population of parents of primary-school children. In the population of parents of primary-school children, we keep families with preschool children, since more than 40% of these families have younger children. We test the robustness of our main results to their exclusion towards the end of Section 5. Our main results are extremely similar to the results we obtained when excluding families with preschoolers. Finally, we restrict our attention to parents aged 20 to 55 to avoid including households in which the child is taken care of by a grandparent. All calculations and estimations are weighted using the sampling weights provided by Statistics Canada.

The labour force participation and employment of parents with preschoolers also depends on the availability of childcare spaces. During the pandemic, childcare facilities were mandated to close in all provinces except British Columbia. Some services for essential workers were kept open. The reopening of childcare facilities was gradual and uneven across the country, with relatively low take-up rates: 5% of parents in Ontario and Quebec reported that their children were attending childcare during the pandemic (Statistics Canada 2020). Unfortunately, the only reliable source of information on the supply of childcare spaces is a one-time survey taken the last week of April (Friendly et al. 2020). The information to exploit variations across time and space is therefore not available.

Table 1 presents the descriptive statistics of our main sample, between January and May, 2017 to 2020 inclusively.[2] Most households are dual-parent households. Table 1 shows that

[2]We only use the months of January to May to compare the months of the pandemic (March, April, and May) to the months pre-pandemic (January and February). We specifically avoid the summer months and the fall, though the inclusion of fall months does not alter the results significantly. More on why we do not consider June is included in Section 4.

for households with primary-school children, 5.3% of fathers are single parents, compared to 16.7% of mothers. In families with high-school children, the percentages are 8.0% and 21.5%, respectively. Most parents have at least some postsecondary education. Parents of primary-school children are more educated than parents of high-school children, and they are also younger by about seven years on average, consistent with the children being older. Finally, around 11% live in the treatment areas (in Quebec outside of the Montreal Census Metropolitan Area (CMA)). In the appendix, Tables A.1 and A.2 provide information on the distribution of industries and occupations of parents. Fathers of primary-school children mainly work in the construction and manufacturing sectors (12.9% and 12.7%, respectively) and mothers in the health care and social assistance, and educational services sectors (20.2% and 11.1%). Similar percentages are observed for parents of high-school children.

Table 1 further shows that the vast majority of parents of children aged 6 to 12 or 13 to 17 are employed (around 92 percent for fathers and 81 percent for mothers). We need to note that being employed does not necessarily mean being present at work: one can be employed but absent from work, for reasons such as one's own illness, caring for children or older relatives, maternity leave, or vacation. Therefore we also look at the employment status of parents defined as being employed and at work (either working from home or working at the office). On average between 2017 and 2020 (January to May), about five percent of employed parents were in fact absent from work. During the pandemic, this number spiked to more than 15 percent for mothers and 10 percent for fathers. The distinction between the two types of employment rates (including the workers that are absent from work or not) will be maintained throughout our analysis, and will bring additional insight into the mechanisms that shape parental employment in response to school reopenings. Actual work hours among all parents (those employed and those not employed, thus including zeroes) are around 35 hours for fathers and 25 hours for mothers. Conditional on being employed, fathers work an average of 40 to 41 hours and mothers, 33 to 34 hours per week.

Table 1: Descriptive Statistics

	Children 6-12 in the HH		Children 13-17 in the HH	
Characteristics	**Fathers**	**Mothers**	**Fathers**	**Mothers**
Age	40.689	38.287	47.501	45.845
	(0.0166)	(0.0154)	(0.0177)	(0.0165)
Number of children				
Aged 6-12	1.504	1.482	—	—
	(0.0018)	(0.0016)		
Aged 13-17	—	—	1.313	1.291
			(0.0018)	(0.0016)
Family structure				
Dual parent	0.947	0.833	0.920	0.785
Single parent	0.053	0.167	0.080	0.215
Education				
Some secondary	0.063	0.052	0.076	0.059
Secondary completed	0.154	0.134	0.181	0.164
Some postsecondary	0.393	0.373	0.400	0.407
Postsecondary completed	0.390	0.441	0.342	0.369
Region				
Quebec (except Montreal CMA)	0.111	0.107	0.109	0.101
Montreal CMA	0.116	0.117	0.100	0.105
Rest of Canada	0.773	0.776	0.791	0.793
Labour market				
Employed	0.916	0.807	0.903	0.821
Employed and working	0.871	0.754	0.852	0.763
Actual hours worked	34.965	25.019	34.917	25.919
	(17.388)	(17.389)	(18.445)	(17.806)
Actual hours worked if employed	40.136	33.160	40.963	33.953
	(11.810)	(11.437)	(12.308)	(11.939)
N (weighted)	39,055,429	45,588,773	22,371,798	29,162,482

Source: Authors' calculations using the Labour Force Survey from January to May, 2017 to 2020
Note: The variable *employed* equals one for all individuals employed and at work or employed but absent from work, while the variable *employed and working* equals one only for individuals employed and at work (working from home or working at the office). Standard deviations in parentheses.

4 Empirical strategy

We exploit school reopenings in some parts of the country and not others to estimate the impact of school reopenings on parental labour market outcomes. High schools and primary

schools were ordered to close across the country at the beginning of the third week of March 2020. High schools remained closed across the country through the end of the school year, but some provinces started reopening primary schools before the end. Quebec was the first to reopen its primary schools starting May 11 outside of the Greater Montreal Area. To our knowledge, schools did not reopen full-time anywhere else in the country. In Montreal and its surroundings, all schools remained closed until the end of the school year. In Manitoba, Prince Edward Island and British Columbia, primary schools reopened on June 1st, but on a part-time basis. As a result, while children in Quebec outside of Montreal went back to school full-time, in other provinces, children either did not go back to school or only went part-time. Specifically, only primary schools in Quebec outside of Montreal were open full-time in Canada in May, while primary schools were partially open in four provinces out of ten in June. High schools remained closed across the country. We focus our analysis on the impact of reopening schools in Quebec in May 2020, and do not consider the month of June. In June, a number of closures and lockdown measures were released across the country, at different times for different industries and regions within each province. Day camps were also reopened, which implies that in the third week of June, parents could have gone back to work knowing that day camps would be open the following week. June was the second month that schools were reopened in Quebec outside of the Greater Montreal Area. However, since there were a large number of events happening contemporaneously with the second month of school reopenings, we exclude the month of June from our analysis.

Clearly, the opening of primary schools was also done in conjunction with some easing of other lockdown measures. However, provinces in which schools and childcare services have remained closed have also eased many of their lockdown measures. In addition, in Quebec, reopenings of different sectors, businesses, and services were mandated by the provincial government and applied across the province (albeit following a slightly different schedule). School reopenings, however, were only implemented outside the Greater Montreal Area, leading to geographical variation in schools being open in Quebec, but no substantial variation

in other parts of the economy.

To estimate the impact of reopening primary schools on labour market outcomes for parents, we rely on a quasi-experimental design and estimate first a difference-in-differences (DD) model, and then a triple-difference (DDD) model. In the DD model, we compare parents of primary-school children in areas where schools reopened with parents of primary-school children in areas in which schools did not reopen. To address any remaining concerns that school reopenings might have been done in conjunction with other easing measures, we also present the results of a DDD model, in which we use parents of high-school children as an additional control group.

More specifically, since primary school reopenings only affect parents of children attending primary school, our treatment group ($S_r = 1$) consists of parents of primary-school children living in region r in which primary schools reopened, and our control group ($S_r = 0$) includes parents located in other regions. We have 93 regions r in total, 83 Census Metropolitan Areas and 10 rural areas outside of the CMAs (one for each province). CMAs are well-defined units of economic activity in which surrounding areas included in the CMAs must have tight economic links with the core city. Out of the total 93 regions, 10 reopened schools in May 2020. To start with, we estimate the following difference-in-differences (DD) model:

$$Y_{irt} = \alpha + \phi_r + \theta_t + \beta^{DD} D_t S_r + \Phi X_{it} + \delta_d + \tau_o + \varepsilon_{irt}, \tag{1}$$

where Y_{irt} is the labour market outcome of individual i in time period t in region r. We consider two measures of employment: the first one indicates if the person is employed and either at work or absent from work, and the second indicates being employed and actually at work. We also look at actual hours supplied on the labour market, conditional on being at work or absent from work. The term D_t equals one in May 2020, and zero otherwise. The term X_{it} is a vector of socioeconomic control variables: parental age dummies (in years),

partner's age dummies (in years) in dual-parent households, partner's industry fixed effects in dual-parent households, and a dummy if the reference week is a four-day week when Y_{irt} is the number of hours worked per week. To account for the family's children composition, we also include dummies indicating the presence of at least one child by age group (in years). Region fixed effects ϕ_r, year-month fixed effects θ_t, industry fixed effects δ_d, and occupation fixed effects τ_o are also included. ε_{irt} is an error term.

We then extend the DD model and add our additional control group. We compare parents of primary-school children ($P_i = 1$) to parents of high-school children ($P_i = 0$). Our triple-difference (DDD) model is as follows:

$$\begin{aligned} Y_{irt} =& \alpha + \phi_r + \theta_t + \omega P_i + \tau_{1,t}\theta_t P_i + \tau_{2,t}\theta_t S_r + \tau_3 P_i S_r \\ &+ \beta^{DDD} D_t P_i S_r + \Phi X_{it} + \delta_d + \tau_o + \varepsilon_{it} \end{aligned} \tag{2}$$

Our DD and DDD estimates account for LFS survey weights and standard errors are clustered at the region level. With 93 clusters we have enough groups to properly account for the possibility of intraclass serial correlation.[3] This problem is highlighted in, for example, Bertrand et al. (2004).

There are households in which some children are in high school and others attend primary school. We exclude these households from our main analysis. This represents around 20% of households with children aged 6 to 17 only. Households in which older children are present may not be impacted as much by primary school closures since older siblings may be able to care for the younger ones. In our robustness checks, we include these households in the treatment group and indeed find that the estimated impact on parental employment is smaller, although not statistically different from our main results.

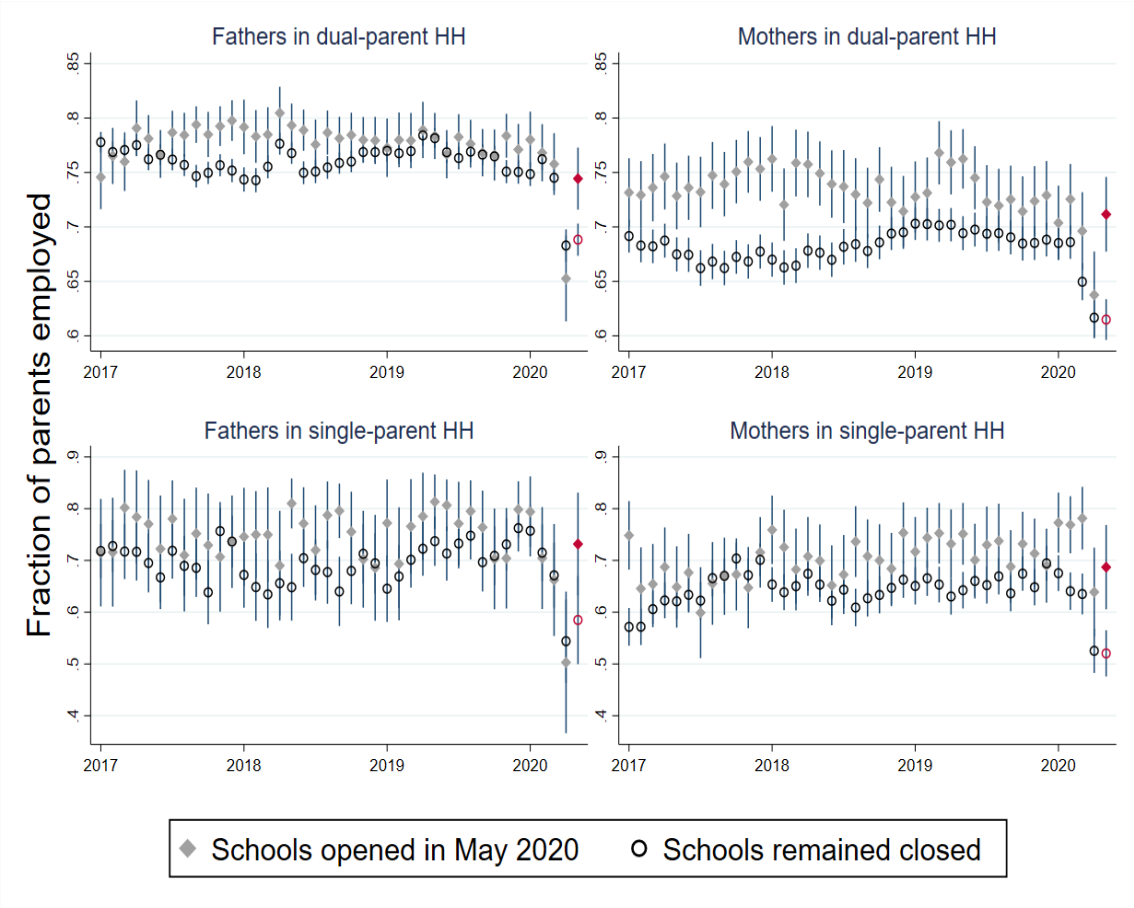
Our empirical strategy relies on two critical assumptions: first, the common trend assumption stating that in the absence of school reopenings, the labour trends of parents living

[3]Cameron and Miller (2015) mention that more than 50 clusters appear enough when using state-year panel data.

in Quebec outside the Greater Montreal Area and the rest of Canada would have evolved in parallel; second, no selection based on province-specific transitory shocks, implying that individuals could not self-select into or out of the treatment group. Clearly, in the context of the pandemic, where borders between provinces were closed, we can safely assume that the second condition was met in the DD model. Moreover, even within Quebec parents were unlikely to be instantly able to switch locations and schools. The DDD model also adds parents of older children as a control group. Again, households could not self-select into being a parent of younger or older children with such short notice.

To provide evidence of the common trend assumption, we present the trends for our main outcome variable, the employment status of parents. We look at the trends among fathers and mothers separately. Since we have two control groups, we end up with four different combinations in which we have to validate the common trend. Figure 1 presents a visual representation of the common trend in the treatment and control group in the DD model. We observe that for three years prior to the pandemic, the evolution of the fraction of parents employed was similar in regions in which school reopened in May 2020 and in regions where they did not reopen.

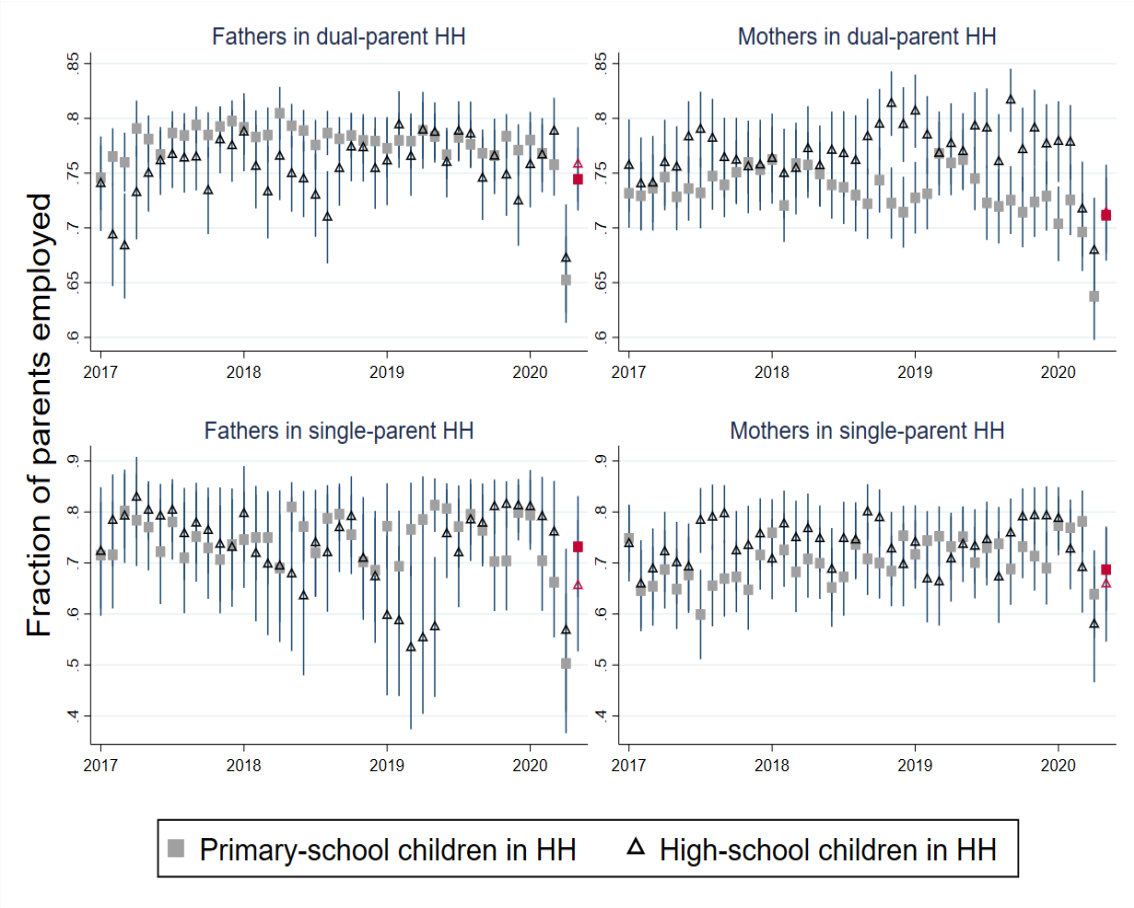
Figure 1: Evolution of employment status over time in the treatment and control groups by family structure



Source: Authors' calculations using the Labour Force Survey
Note: Y axis shows the monthly fraction of parents employed (at work or absent from work). Vertical bars denote 95% confidence intervals. Red dots indicate observations in May 2020.

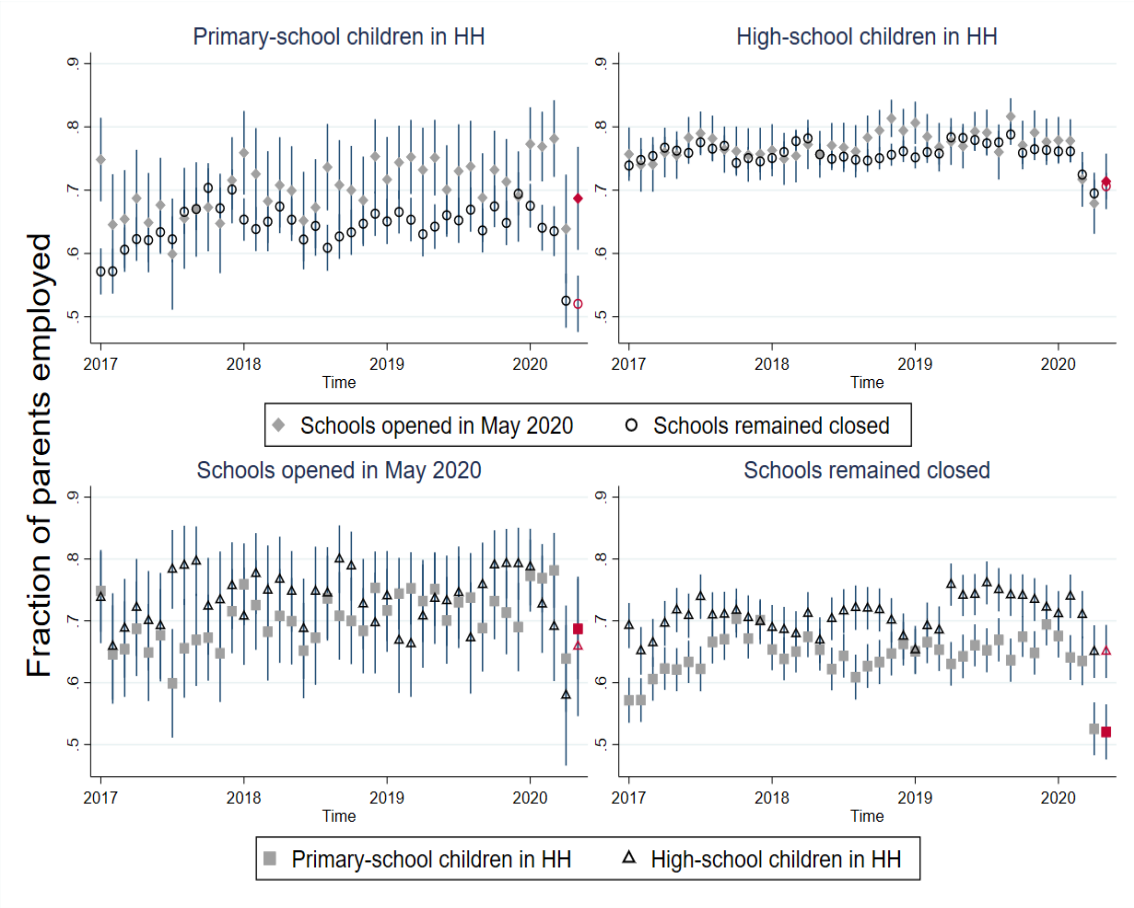
For the DDD model, Figure 2 presents a visual representation of the common trend between households with primary-school children and households with high-school children. We observe that for three years prior to the pandemic, the employment status of parents of primary-school children and that of parents of high-school children evolved in a similar way. Here all regions are pooled together, and schools remained closed across most of the country. It is therefore not possible to see the differential impact between regions in which schools reopened and other regions. Figure 3 allows this level of detail.

Figure 2: Evolution of employment status over time in HH with primary-school children and HH with high-school children by family structure



Source: Authors' calculations using the Labour Force Survey
Note: Y axis shows the monthly fraction of mothers employed (at work or absent from work). Vertical bars denote 95% confidence intervals. Red dots indicate observations in May 2020.

Figure 3: Evolution of employment status over time for single mothers by age of child and school reopening



Source: Authors' calculations using the Labour Force Survey
Note: Y axis shows the monthly fraction of parents employed (at work or absent from work). Vertical bars denote 95% confidence intervals. Red dots indicate observations in May 2020.

Figures 1 to 3 thus suggest that the common trend assumption is reasonable in our case. We are therefore confident that our DD and DDD methods would effectively identify the impact of school reopenings on parental labour market outcomes. Note that the labour market outcomes that we consider reflect combined effects on both labour supply and labour demand. However, we have no real reason to think that labour demand varied differently for parents of primary-school children and of high-school children, so we tend to see our DDD findings as representative of labour supply responses.

5 Results

In this section, we first present the results from the DD model and then continue with the DDD model. Table 2 presents the results for our three outcomes variables: (1) whether the parent is employed and working (dummy variable, Panel A), (2) whether the parent is employed and at work or is employed but absent from work (dummy variable, Panel B), and (3) the number of actual hours worked conditional on being employed (Panel C). Note that the actual number of hours worked can be equal to zero if the parent is employed, but absent from work. Columns 1 through 4 present separate regressions for households with primary-school children while columns 5 through 8 are for households with high-school children. There are four columns for each group: mothers in dual-parent households (columns 1 and 5), mothers in single-parent households (2 and 6), fathers in dual-parent households (3 and 7), and fathers in single-parent households (4 and 8). Note that there are few single fathers, so the results are not as reliable and precisely estimated, especially once we start looking into different subgroups within that category later on. We only present the coefficient of interest (β^{DD}) and the year-month dummies during the pandemic, but in all specifications we include all control variables specified in Equation 1 including all year-month dummies. In dual-parent families, we additionally control for the occupation and age of the partner using an indicator variable for each occupation and age. In cases where the outcome variable is the number of hours worked, we also control for the number of holidays in the reference week.

From Table 2, we observe that primary school reopenings have a positive impact on the employment of mothers and fathers: parents are more likely to be employed and at work once schools reopen. Mothers and fathers in dual-parent household increased their employment (at work) rate by 9.4 and 10.5 percentage points (p.p.), relative to an average employment rate of 80.6 percent and 88.1 percent in May 2017 to 2019, respectively, in Quebec outside of Montreal. For single-parent households, we find that mothers increased their employment (at work) rate by 10.2 p.p., and fathers by 20.2 p.p. The estimated β^{DD} is almost equal to

the estimated coefficient on the March, April and May year-month dummies for fathers in dual-parent households. This suggests that fathers in such households were able to recover almost entirely following school reopenings. However, mothers only partially recover since their estimated β^{DD} is generally less than half of the estimated coefficient on the pandemic year-month dummies. Note that our results are likely to be lower bounds, in the sense that even where schools reopened in May 2020, attendance was not mandatory: parents were allowed to elect to keep their children at home. As a result, only a fraction of eligible children did in fact return to school.

If we simply look at the employment status of parents (whether they are actually present at work or not), the effect is also positive but more modest: 6.5 p.p. for mothers and 5.6 p.p. for fathers in dual-parent household, and 7.4 p.p. and 16.4 p.p. for mothers and fathers in single-parent households, respectively. This difference between the two types of employment rates (at work only, and at work or absent from work) highlights a clear and large impact of school reopenings on parents' ability to work: the larger coefficient for actually working suggests that employed parents switch from being absent to actually working in response to schools being open.

Looking at actual hours of work, we observe positive and statistically significant estimates of β^{DD} for both mothers and fathers of primary-school children regardless of the family type. However, the magnitudes of the estimated coefficients are larger for single parents, as well as for fathers. This is consistent with women in dual-parent households having a lower labour market attachment on average. Again, while the estimated β^{DD} coefficient for fathers is generally similar to the estimated coefficient on the pandemic year-month dummies, it is smaller for mothers. This suggests that while fathers recovered almost completely, mothers did not completely recover from the pandemic within the first month of school reopenings.

If we focus our attention on the pandemic year-month dummies (March to May 2020), we observe that their estimated coefficients are larger in magnitude for mothers relative to fathers in dual-parent households, for all three outcomes. Relative to February 2020, mothers

in dual-parent households saw their employment rate (employed and at work) reduced by 20 to 26 p.p., compared to a reduction of 12 to 17 p.p. for fathers. Mothers were also less likely to be employed (at work or absent from work) during the pandemic relative to fathers (-7 to -12 p.p. relative to -3 to -9 p.p.). For actual hours worked, the pattern is similar but not always significantly different. Finally, in single-parent households, both mothers and fathers suffered important losses in their employment (at work) rate (-17 to -28 p.p.).

Parents of high-school children (without younger children in the household) should not be impacted by primary school reopenings, but such reopenings may come with other releases of lockdown measures. Looking at the β^{DD} in columns 5 through 8 of Table 2, we find that four of the 12 coefficients are significant, two of which have the opposite sign. This suggests that some of the labour market outcomes for some parents in treated areas changed in May 2020 for reasons other than school reopenings. We also notice that the pandemic year-month dummies are smaller in magnitude for parents of high-school students relative to comparable parents of primary-school children. This is not entirely surprising, since high-school students may be able to take care of themselves to a certain extent. Nonetheless, to ensure that our results are robust, we now proceed to our DDD model, that adds controls for trends within the treatment areas for parents of high-school children.

Table 2: Difference-in-differences model

	HH with primary-school children				HH with high-school children			
	Mothers		Fathers		Mothers		Fathers	
	Dual	Single	Dual	Single	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Employed (at work)								
β^{DD}	0.094***	0.102**	0.105***	0.202**	0.025	-0.115**	0.003	0.162
s.e.	(0.023)	(0.051)	(0.024)	(0.079)	(0.026)	(0.052)	(0.016)	(0.107)
March 2020	-0.258***	-0.225***	-0.116***	-0.177***	-0.195***	-0.220***	-0.118***	-0.006
s.e.	(0.015)	(0.034)	(0.013)	(0.033)	(0.015)	(0.031)	(0.025)	(0.039)
April 2020	-0.256***	-0.270***	-0.164***	-0.282***	-0.192***	-0.306***	-0.173***	-0.213***
s.e.	(0.010)	(0.030)	(0.017)	(0.038)	(0.014)	(0.027)	(0.019)	(0.059)
May 2020	-0.204***	-0.260***	-0.128***	-0.180***	-0.157***	-0.193***	-0.105***	-0.154***
s.e.	(0.018)	(0.025)	(0.011)	(0.056)	(0.018)	(0.029)	(0.012)	(0.0458)
N	52,642	11,715	51,705	3,589	33,721	9,888	31,025	3,067
R2	0.186	0.180	0.074	0.245	0.077	0.123	0.084	0.198
Panel B: Employed (at work or absent from work)								
β^{DD}	0.065***	0.074*	0.056*	0.164***	0.034**	0.012	0.041**	0.057
s.e.	(0.012)	(0.041)	(0.029)	(0.060)	(0.015)	(0.020)	(0.017)	(0.068)
March 2020	-0.077***	-0.036	-0.030***	-0.072**	-0.042***	-0.052***	-0.025***	0.008
s.e.	(0.009)	(0.029)	(0.005)	(0.031)	(0.009)	(0.018)	(0.008)	(0.023)
April 2020	-0.121***	-0.151***	-0.094***	-0.215***	-0.095***	-0.119***	-0.078***	-0.128***
s.e.	(0.006)	(0.033)	(0.010)	(0.051)	(0.008)	(0.018)	(0.011)	(0.034)
May 2020	-0.113***	-0.161***	-0.074***	-0.134**	-0.083***	-0.104***	-0.055***	-0.109***
s.e.	(0.013)	(0.022)	(0.007)	(0.054)	(0.014)	(0.021)	(0.011)	(0.034)
N	52,642	11,715	51,705	3,589	33,721	9,888	31,025	3,067
R2	0.075	0.131	0.078	0.233	0.075	0.117	0.083	0.219
Panel C: Actual main hours (conditional on being employed, at work or absent from work)								
β^{DD}	1.543*	4.795**	4.372***	8.278**	0.629	-3.582*	0.822	5.266
s.e.	(0.823)	(2.028)	(1.127)	(3.508)	(0.892)	(2.057)	(0.970)	(3.871)
March 2020	-9.122***	-6.555***	-5.368***	-10.11***	-7.237***	-7.350***	-5.951***	-0.104
s.e.	(0.591)	(1.191)	(0.651)	(1.622)	(0.890)	(1.062)	(1.076)	(1.914)
April 2020	-8.809***	-8.164***	-7.739***	-14.91***	-7.580***	-11.20***	-9.074***	-10.10***
s.e.	(0.506)	(1.088)	(0.676)	(1.877)	(0.635)	(1.177)	(1.044)	(2.528)
May 2020	-6.200***	-7.544***	-5.444***	-10.70***	-5.532***	-6.609***	-5.801***	-6.494**
s.e.	(0.624)	(1.035)	(0.503)	(2.433)	(0.717)	(1.841)	(1.139)	(2.606)
N	52,642	11,715	51,705	3,589	33,721	9,888	31,025	3,067
R2	0.170	0.187	0.088	0.232	0.105	0.130	0.094	0.195

Source: Authors' calculations using the Labour Force Survey
Note: The reference month for the year-month dummies is February 2020. Regressions also include region, year-month (January 2017 to May 2020), industry, and occupation fixed effects, as well as individual-level socioeconomic control variables. The socioeconomic control variables are parental age dummies (in years), partner's age dummies (in years) in dual-parent households, partner's industry fixed effects in dual-parent households, and a dummy if the reference week is a four-day week when Y_{irt} is the number of hours worked per week. To account for the family's children composition, we also include dummies indicating the presence of at least one child by age group (in years). Standard errors clustered at the region level in parentheses. ***: p-value< 0.01; **: p-value< 0.05; *: p-value< 0.1

Table 3 presents our DDD results. Again, we only present the coefficient of interest β^{DDD},

but include all controls specified in the model (see Equation 2). In dual-parent households, we find that the employment (at work) probability of both mothers and fathers increased following school reopenings, by 7.3 p.p. and 10.3 p.p. In single-parent households, mothers' employment (at work) rates increased by 20.7 p.p., while fathers' rates did not increase significantly. Our second outcome variable, the employment status (irrespective of whether the worker was present at work or not) reveals that parents' employment status did not change considerably due to school reopenings; only for mothers in dual-parent households did the employment rate increase, by 4.0 p.p. That being said, we only have one month of observations post school reopenings (May of 2020). It is highly possible that parents did not have the time to reapply for jobs if they were permanently laid off. Even if they did apply, hiring processes generally take more than just a few weeks. Unfortunately, because many lockdown measures were released at different timings in different areas of Quebec in June, we cannot use data from June to assess the impact of school reopenings beyond the month of May.

Table 3: Triple-difference model

	Mothers		Fathers	
	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)
Panel A: Employed (at work)				
β^{DDD}	0.073**	0.207**	0.103***	0.058
s.e.	(0.033)	(0.086)	(0.021)	(0.093)
N	86,363	21,603	82,730	6,656
R2	0.147	0.142	0.072	0.178
Panel B: Employed (at work or absent from work)				
β^{DDD}	0.040**	0.050	0.021	0.085
s.e.	(0.016)	(0.054)	(0.026)	(0.104)
N	86,363	21,603	82,730	6,656
R2	0.066	0.104	0.071	0.184
Panel C: Actual main hours (conditional on being at work or absent from work)				
β^{DDD}	1.222	8.313**	3.459***	3.213
s.e.	(1.038)	(3.356)	(0.858)	(3.535)
N	86,363	21,603	82,730	6,656
R2	0.146	0.146	0.084	0.171

Source: Authors' calculations using the Labour Force Survey
Note: Regressions also include region, year-month, industry, and occupation fixed effects, as well as individual-level socioeconomic control variables. Standard errors clustered at the region level in parentheses. ***: p-value< 0.01; **: p-value< 0.05; *: p-value< 0.1

In Table 4, we test the robustness of our main results (for the employed (at work) outcome) to the inclusion of households with both primary-school and high-school children (columns 3 and 4). Also, to avoid confounding effects of changes in the labour supply of parents due to changes in the supply of childcare spaces during the pandemic, we also validate that our main results continue to hold if we exclude households with preschoolers (columns 5 and 6). Columns 1 and 2 just reproduce results presented in Tables 2 and 3.

Table 4: Robustness checks

	Benchmark		Including HH with children in both primary school and high school in the treatment group		Excluding HH with preschoolers	
Panel A: Mothers	Dual	Single	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)	(5)	(6)
DD model : HH with primary-school children						
β^{DD}	0.094***	0.102**	0.069***	0.127***	0.103**	0.010**
s.e.	(0.023)	(0.051)	(0.016)	(0.041)	(0.041)	(0.0446)
N	52,642	11,715	75,509	16,661	30,682	8,856
R2	0.186	0.180	0.164	0.173	0.106	0.143
DDD model						
β^{DDD}	0.073**	0.207**	0.046*	0.223***	0.086*	0.194**
s.e.	(0.033)	(0.086)	(0.025)	(0.076)	(0.051)	(0.079)
N	86,363	21,603	109,230	26,549	64,403	18,744
R2	0.147	0.142	0.138	0.142	0.081	0.113
Panel B: Fathers	Dual	Single	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)	(5)	(6)
DD model : HH with primary-school children						
β^{DD}	0.105***	0.202**	0.061***	0.186***	0.074***	0.174*
s.e.	(0.024)	(0.080)	(0.010)	(0.058)	(0.024)	(0.0913)
N	51,705	3,589	73,977	4,864	29,851	2,986
R2	0.074	0.245	0.071	0.211	0.079	0.275
DDD model						
β^{DDD}	0.103***	0.058	0.059***	0.027	0.072***	0.033
s.e.	(0.021)	(0.093)	(0.016)	(0.086)	(0.021)	(0.103)
N	82,730	6,656	105,002	7,931	60,876	6,053
R2	0.072	0.178	0.070	0.164	0.073	0.185

Source: Authors' calculations using the Labour Force Survey
Note: Dependent variable is being employed (at work). Benchmark refers to results presented in Panels A of Tables 2 and 3. Regressions also include region, year-month, industry, and occupation fixed effects, as well as individual-level socioeconomic control variables. Standard errors clustered at the region level in parentheses. ***: p-value< 0.01; **: p-value< 0.05; *: p-value< 0.1

During the pandemic, older siblings may have been able to take care of their younger siblings part-time, which could have reduced the negative impact of school closures on the employment of parents. In Table 2, we saw that the year-month fixed effects between March 2020 and May 2020 were indeed negative relative to February 2020, but generally smaller for parents of high-school children compared to parents of primary-school children. However, we find that our main results continue to hold once we include families with both primary-school and high-school children along with other parents of primary-school children. The β^{DDD} is slightly lower in dual-parent households, but not statistically different from our benchmark

estimates. The effect on single-parent households is also similar, and even slightly higher for mothers. Single parents do not have a second adult they can rely on to care for their children and may be reluctant to allow their teen children to care for the younger ones full-time.

Parents' ability to work when schools are closed likely depends on whether their job allows them to work from home or not. Whether the occupation can be performed from home or not is directly identified in the LFS in April, May and June in 2020. Specifically, respondents were asked in a series of pandemic-related questions whether they usually work from home and whether they worked from home last week. From this last question, we calculated the weighted share of workers typically working from home for each occupation at the 4-digit level, and flagged occupations as "work from home possible - LFS classification" if the given occupation's weighted share is above the median share. We also imported the Dingel and Neiman (2020) classification of occupations that allow work from home. Specifically, we imported the approximately 1,000 O*NET SOC codes and the corresponding indicator variable of working from home.[4], and calculated the weighted share of workers in occupations working from home for each occupation at the 4-digit-level. We flagged occupations as "work from home possible - Dingel and Neiman classification" if the given occupation's weighted share is above the median share. The correlation coefficient between the two measures, at the 4-digit occupation-level, is 0.5793.

Table 5 presents these results for the DD model. Columns 1 through 4 present the DD model for households with primary-school children, columns 5 through 8 present the DD estimates for parents of high-school children. In columns 1 to 4, we clearly see that the impact of school reopenings is strongest among households in which parents' occupations cannot be easily performed from home (panel C and D). The DDD model, presented in Table 6, also points towards a similar conclusion. Mothers and fathers in dual-parent households holding a job that cannot be performed from home experienced increases in their employment rates

[4]The data are available from https://bfi.uchicago.edu/working-paper/how-many-jobs-can-be-done-at-home/ The Standard Occupational Classification (SOC) codes, used in Dingel and Neiman (2020) and in the United States in general, are mapped to the Canadian National Occupational Classification (NOC) codes following a crosswalk developed by Marc Frenette at Statistics Canada.

due to school reopenings of 10.9 p.p. and 13.0 p.p., respectively. The effect on single mothers is not statistically significant, but the coefficient is large at 16.0 p.p. using the Dingel and Neiman classification, and 15.5 p.p. using the LFS measure. The number of observations in single-parent households is smaller to start with, and even more so when we sub-divide by occupation type. As a result, the standard errors are very large. It is therefore difficult to infer what the impact really is on these households.

Table 5: Difference-in-differences model on being employed (at work) by ability to work from home

	HH with primary-school children				HH with high-school children			
	Mothers		Fathers		Mothers		Fathers	
	Dual	Single	Dual	Single	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Work from home possible - LFS classification								
β^{DD}	0.041**	0.090	0.011	0.015	0.011	-0.238*	0.040	-0.033
s.e.	(0.019)	(0.068)	(0.028)	(0.084)	(0.037)	(0.128)	(0.030)	(0.115)
N	21,914	3,985	15,323	973	13,688	3,397	8,876	732
R2	0.171	0.203	0.089	0.384	0.082	0.167	0.122	0.478
Panel B: Work from home possible - Dingel and Neiman classification								
β^{DD}	0.062***	0.062	0.054**	0.177*	0.035	-0.232**	-0.024	-0.045
s.e.	(0.018)	(0.059)	(0.025)	(0.102)	(0.044)	(0.116)	(0.039)	(0.074)
N	26,921	5,218	17,655	1,109	17,277	4,419	10,531	963
R2	0.182	0.211	0.081	0.359	0.085	0.129	0.107	0.382
Panel C: Work from home NOT possible - LFS classification								
β^{DD}	0.140***	0.122**	0.148***	0.246**	0.060***	-0.063	-0.010	0.262**
s.e.	(0.038)	(0.057)	(0.028)	(0.101)	(0.017)	(0.082)	(0.028)	(0.121)
N	30,683	7,726	36,308	2,608	20,012	6,481	22,079	2,334
R2	0.222	0.221	0.084	0.284	0.108	0.163	0.097	0.235
Panel D: Work from home NOT possible - Dingel and Neiman classification								
β^{DD}	0.124***	0.118	0.140***	0.221**	0.018	-0.061	0.013	0.272*
s.e.	(0.034)	(0.096)	(0.032)	(0.101)	(0.036)	(0.125)	(0.030)	(0.137)
N	24,119	6,284	33,563	2,443	15,641	5,338	20,237	2,087
R2	0.215	0.221	0.089	0.288	0.115	0.176	0.100	0.232

Source: Authors' calculations using the Labour Force Survey
Note: Dependent variable is being employed (at work). LFS classification refers to a binary measure computed using the May LFS supplementary COVID variables (see text for details). Dingel and Neiman classification refers to the measure based on O*NET computed in Dingel and Neiman (2020). Regressions also include region, year-month, industry, and occupation fixed effects, as well as individual-level socioeconomic control variables. Standard errors clustered at the region level in parentheses. ***: p-value< 0.01; **: p-value< 0.05; *: p-value< 0.1

Table 6: Triple-difference model on being employed (at work) by ability to work from home

	Mothers		Fathers	
	Dual	Single	Dual	Single
	(1)	(2)	(3)	(4)
Panel A: Work from home possible - LFS classification				
β^{DDD}	0.046	0.280*	-0.036	0.022
s.e.	(0.031)	(0.141)	(0.036)	(0.129)
N	35,602	7,382	24,199	1,705
R2	0.135	0.151	0.079	0.305
Panel B: Work from home possible - Dingel and Neiman				
β^{DDD}	0.033	0.268	0.073**	0.125
s.e.	(0.048)	(0.176)	(0.036)	(0.115)
N	44,198	9,637	28,186	2,072
R2	0.143	0.154	0.073	0.245
Panel C: Work from home NOT possible - LFS classification				
β^{DDD}	0.090**	0.155	0.162***	0.014
s.e.	(0.042)	(0.119)	(0.036)	(0.105)
N	50,695	14,207	58,387	4,942
R2	0.174	0.178	0.081	0.209
Panel D: Work from home NOT possible - Dingel and Neiman				
β^{DDD}	0.109***	0.160	0.130***	0.031
s.e.	(0.024)	(0.196)	(0.044)	(0.115)
N	39,760	11,622	53,800	4,530
R2	0.169	0.177	0.086	0.215

Source: Authors' calculations using the Labour Force Survey
Note: Dependent variable is being employed (at work). LFS classification refers to a binary measure computed using the May LFS supplementary COVID variables (see text for details). Dingel and Neiman classification refers to the measure based on O*NET computed in Dingel and Neiman (2020). Regressions also include region, year-month, industry, and occupation fixed effects, as well as individual-level socioeconomic control variables. Standard errors clustered at the region level in parentheses. ***: p-value< 0.01; **: p-value< 0.05; *: p-value< 0.1

In sum, we find that school reopenings helped parents return to work. Many parents stopped being employed and at work during the pandemic, some remained employed but absent from work, while others became unemployed. School reopenings helped parents regain their employment status and/or return to work for those who were absent. Fathers in dual-parent households almost entirely recovered their losses once schools reopened, while mothers only recovered them partially.

6 Conclusion

Our goal was to understand the role of school reopenings on labour market outcomes for parents, and indirectly to understand the impact of school closures on parental work. Using a difference-in-differences model and a triple-difference model, we find that school reopenings clearly contributed to parents' return to work. Our results show that more parents were employed and working once schools reopened, and their hours of work conditional on being employed also increased. In this sense, school reopenings helped employed parents return to work. We also find that single mothers benefited most from school reopenings. School reopenings therefore contributed to reducing the gender gap exacerbated by the pandemic, and mitigate the widening socioeconomic inequalities. The share of single mothers being employed and at work increased by 20.7 p.p., while it increased by 7.3 and 10.3 p.p., respectively, for mothers and fathers in dual-parent households. We found limited evidence using the DDD model that school reopenings helped change the employment status of parents: only mothers in dual-parent households saw their employment rate (irrespective of whether the person was at work or absent from work) increase significantly by 4 p.p. With only one month of data post reopenings, this result should however be interpreted with caution. While returning to work for parents who were absent from work is fairly simple and can be achieved within the first month of school reopenings, finding a new job for parents who lost their jobs and did not know when schools would reliably reopen is more challenging and may take more time.

Finally, we observe that the pandemic itself had a larger impact on mothers relative to fathers in dual-parent households, as evidenced by the estimated coefficients on the year-month dummies during the pandemic, contributing to an exacerbation of the gender gap. The effect on fathers and mothers in single-parent households was comparable but stronger relative to parents in dual-parent households. Since there are more female single parents than male single parents, this also contributed to exacerbating the gender gap. T. Lemieux et al. (2020) did not find a similar difference in employment decline between men and women

when studying workers aged 20–64 years in Canada. This suggests that something specific to parents of young children has affected men and women differently. Given our results on school reopenings, we conjecture that school closures are the leading cause of the rising gender gaps among parents during the pandemic. This is consistent with related work by Duchini and Van Effenterre (2020) on school schedules in France, in a period before the pandemic. Since mothers fell further behind in terms of employment during the pandemic, the similar estimated effects we find translate into a full recovery for fathers, but only a partial recovery for mothers. School reopenings helped both mothers and fathers, but helped single mothers most. Given our sample size, we were not able to further break down our sample, but lower-income families, and especially lower-income mothers, have likely suffered more than others during the pandemic. School reopenings clearly helped parents return to work, but especially single mothers.

School reopenings should not be based solely on the impact they have on parents' ability to work and to secure their family's financial situation. When thinking about whether or not to reopen schools, we need to factor in the well-being of parents and children, and also the well-being of adults in the school system. As mentioned above, the literature suggests that school closures are likely to have important consequences on the perseverance and academic achievements of students. Many have also argued that school closures likely impacted the physical and mental well-being of vulnerable children (Nemer et al. 2020).

School reopenings are likely to increase the risk of virus transmission. However, studies across many countries now show that pre-pubescent children are less likely to get SARS-CoV-2, they rarely suffer complications from the illness, generally have mild to no symptoms, and they may be less likely to transmit the virus relative to adults, although evidence on the latter is still limited (Merckx et al. 2020; Nemer et al. 2020). Of course, transmission between children is not the sole factor to consider. Reopening schools may increase the transmission between adults even if children do not effectively transmit the virus, simply because adults will start to interact more with other adults through the course of their day,

at work or in public transport. While these risks need to be accounted for, they are not singularly different from the risks faced by many other workers who have long been back at work. Social distancing measures, wearing a mask, washing hands, and other public health measures can help reduce the risks of transmission.

Over the last few months, it has become clear that reopening schools will not be without risk, but keeping schools closed is not risk-free either. Schooling is essential to parents' labour force participation and to children's well-being and development. Preventing children from attending school when other economic activities have reopened is not justified given the current scientific evidence on the epidemiology of the virus among children. Going to school should be considered an essential service for children and their parents. Making sure that schools are reopened and offering some stability will help parents, and especially mothers, regain the losses they have incurred during the pandemic.

A Appendix

Table A.1: Distribution of industry

	Children 06-12 in the HH		Children 13-17 in the HH	
Industry	**Fathers**	**Mothers**	**Fathers**	**Mothers**
Agriculture, forestry, fishing and hunting	0.020	0.007	0.024	0.011
Mining, quarrying, and oil and gas extraction	0.030	0.006	0.027	0.004
Utilities	0.013	0.003	0.013	0.004
Construction	0.129	0.017	0.125	0.018
Manufacturing	0.127	0.041	0.140	0.054
Wholesale trade	0.046	0.021	0.054	0.024
Retail Trade	0.067	0.072	0.065	0.081
Transportation and Warehousing	0.075	0.021	0.082	0.025
Information and cultural industries	0.023	0.012	0.018	0.011
Finance and insurance	0.044	0.047	0.042	0.049
Real estate and rental and leasing	0.016	0.015	0.018	0.016
Professional, scientific and technical services	0.095	0.060	0.085	0.058
Administrative and support, waste management and remediation services	0.034	0.028	0.034	0.036
Educational services	0.048	0.111	0.046	0.110
Health care and social assistance	0.046	0.202	0.043	0.210
Arts, entertainment and recreation	0.012	0.013	0.011	0.013
Accommodation and food services	0.029	0.040	0.023	0.040
Other services (except public administration)	0.032	0.034	0.036	0.039
Public administration	0.063	0.053	0.058	0.050

Source: Authors' calculations using the Labour Force Survey

Table A.2: Distribution of parental occupations

	Children 06-12 in the HH		Children 13-17 in the HH	
Occupation	**Fathers**	**Mothers**	**Fathers**	**Mothers**
Senior management occupations	0.005	0.002	0.007	0.002
Specialized middle management occupations	0.045	0.036	0.048	0.043
Middle management occupations in retail and wholesale trade and customer services	0.036	0.023	0.042	0.028
Middle management occupations in trades, transportation, production and utilities	0.050	0.009	0.058	0.012
Professional occupations in business and finance	0.043	0.056	0.038	0.045
Administrative and financial supervisors and administrative occupations	0.026	0.082	0.024	0.090
Finance, insurance and related business administrative occupations	0.005	0.022	0.006	0.026
Office support occupations	0.006	0.060	0.006	0.067
Distribution, tracking and scheduling co-ordination occupations	0.017	0.012	0.019	0.013
Professional occupations in natural and applied sciences	0.094	0.030	0.071	0.021
Technical occupations related to natural and applied sciences	0.057	0.018	0.056	0.015
Professional occupations in nursing	0.005	0.040	0.004	0.040
Professional occupations in health (except nursing)	0.016	0.028	0.014	0.021
Technical occupations in health	0.009	0.039	0.009	0.034
Assisting occupations in support of health services	0.005	0.036	0.004	0.038
Professional occupations in education services	0.033	0.087	0.029	0.069
Professional occupations in law and social, community and government services	0.022	0.045	0.022	0.035
Paraprofessional occupations in legal, social, community and education services	0.007	0.060	0.005	0.055
Occupations in front-line public protection services	0.018	0.004	0.014	0.003
Care providers and educational, legal and public protection support occupations	0.005	0.027	0.004	0.032
Professional occupations in art and culture	0.007	0.011	0.005	0.012
Technical occupations in art, culture, recreation and sport	0.012	0.018	0.010	0.011
Retail sales supervisors and specialized sales occupations	0.034	0.036	0.036	0.040
Service supervisors and specialized service occupations	0.025	0.032	0.020	0.034
Sales representatives and salespersons - wholesale and retail trade	0.030	0.028	0.035	0.032
Service representatives and other customer and personal services occupations	0.017	0.047	0.016	0.045
Sales support occupations	0.007	0.024	0.006	0.025
Service support and other service occupations, n.e.c.	0.021	0.037	0.027	0.048
Industrial, electrical and construction trades	0.100	0.005	0.097	0.004
Maintenance and equipment operation trades	0.064	0.003	0.069	0.004
Other installers, repairers and servicers and material handlers	0.018	0.004	0.019	0.005
Transport and heavy equipment operation and related maintenance occupations	0.062	0.006	0.071	0.008
Trades helpers, construction labourers and related occupations	0.012	0.001	0.011	0.001
Supervisors and technical occupations in natural resources, agriculture and related production	0.018	0.002	0.020	0.003
Workers in natural resources, agriculture and related production	0.007	0.003	0.006	0.005
Harvesting, landscaping and natural resources labourers	0.005	0.002	0.005	0.001
Processing, manufacturing and utilities supervisors and central control operators	0.019	0.004	0.024	0.005
Processing and manufacturing machine operators and related production workers	0.021	0.009	0.022	0.014
Assemblers in manufacturing	0.013	0.004	0.016	0.006
Labourers in processing, manufacturing and utilities	0.007	0.007	0.007	0.008

Source: Authors' calculations using the Labour Force Survey

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