

# Universal Childcare, Fertility, and Parental Time Investments

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## Abstract

This paper studies the effect of the Quebec universal childcare program on fertility and parental time investment per child. Using a difference-in-differences approach, we find that the program increased fertility with the magnitude being larger among couples in which both spouses are at least college educated. The program also reduced mothers' time use on educational childcare per child. We provide evidence that the negative effect on parental time use could be partially driven by selection into parenthood.

**Keywords:** Childcare, universal childcare, fertility, parental time use, selection into parenthood

**JEL codes:** J13, J18

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# 1 Introduction

Access to affordable and quality childcare has gained increased attention among the public and policymakers, partially owing to the increasing number of dual-earner families who need to balance work and childcare over the past a few decades. Since mothers are often the primary caregivers of children, many developed countries invest in childcare support policies with the primary goal of improving maternal labor market outcomes. However, such policies can also have unintended effects on outcomes such as fertility, child development, and parental time use.

This paper studies the effect of universal childcare subsidies on fertility and parental time use on childcare exploiting a unique natural experiment. Specifically, we focus on Quebec’s universal childcare program, which was implemented in 1997 and greatly reduced the out-of-pocket cost of licensed and regulated childcare facilities for children aged from 0 to 4 (initially at a price of \$5 per day and increased to \$8.5 in 2021). As of 2021, this was the largest universal childcare program in North America with the Quebec government’s annual spending on this program being approximately 2.5 billion Canadian dollars (0.7% of the province’s GDP) (Gouvernement du Québec, 2021). Moreover, in 2021, the Government of Canada announced that it will establish a \$10 per day childcare program within the next five years as part of its 30 billion dollar investment to build a Canada-wide early learning and child care system.<sup>1</sup> These large investments in subsidized childcare further call for the importance of understanding the effects of Quebec’s universal childcare program.

There could be multiple mechanisms through which changes in childcare costs affect fertility and parental time use on childcare. First, lower childcare costs imply a decrease in the cost of having children and previous theoretical works have illustrated that this can increase fertility (Becker and Lewis, 1973; Willis, 1973; Ermisch, 1989; Apps and Rees, 2004). Second, the program could affect parental time investments in children not only through direct substitution effects between parental and non-parental childcare, but also through changes in fertility decisions. For example, by affecting families’ fertility decisions, the policy could change the composition of parents (“selection into parenthood”) and therefore alter the observed parental time use on childcare. Another potential mechanism is that by changing the number of children that a family has, the policy could mechanically affect the amount of childcare time spent on each child (“quantity-quality trade-off”).

To implement our empirical analysis, we use 5 waves of data from the Time Use Surveys

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<sup>1</sup><https://www.canada.ca/en/early-learning-child-care-agreement/agreements-provinces-territories.html>

of the Canadian General Social Surveys (CGSS) for 1986, 1992, 1998, 2005, and 2010. This is a cross-sectional dataset that includes information on the number of children by age groups (which is used for our analysis on fertility) as well as general demographic and socioeconomic characteristics of each respondent. Importantly, the Time Use Surveys include a retrospective 24-hour time diary of each respondent that provides detailed information on the respondent’s time spent on various childcare activities. We group the activities into educational childcare (e.g., reading and playing with children) and non-educational childcare (e.g., medical care and traveling to or from care activities), and examine how the program affected mothers’ and fathers’ time use in these two types of childcare activities.

We use a difference-in-differences approach to estimate the effect of the Quebec universal childcare program on fertility and time use on childcare, comparing the outcomes for married or cohabiting couples in Quebec and the rest of the Canada before and after the reform. We focus on married or cohabiting couples because one-parent families are more likely to be affected by other welfare programs in Canada, and therefore one-parent families in the rest of Canada may not be a viable control group for one-parent families in Quebec (Baker et al., 2008). The key identifying assumption is that the pre-reform time trends in the outcomes are common between Quebec and the rest of Canada—we graphically examine this assumption.

We find that the program increased the likelihood of having an infant (0–1 year old) by 4–6 percentage points (a 29–40% increase) and the total number of children aged from 0–18 by around 14–17% for married or cohabiting couples in Quebec relative to the rest of Canada. We also show that the results are not driven by a particular wave of the data. In addition, we find that the program had a stronger positive effect on fertility for “power couples”—couples in which both spouses have at least a bachelor’s degree.

To investigate the effect of the universal childcare program on parental time use on children, we focus on the sample of married or cohabiting parents with at least one child aged from 0–4 in our main specification. We find that the policy decreased parental time investments in educational childcare per child for mothers by 6.5–11.6 minutes per day (a 23–41% decrease), while there is no strong evidence of an effect among fathers. It is noteworthy that in this analysis, we restrict the sample based on the family structure (i.e., whether having a child aged from 0–4), which can be also affected by the program. Therefore, our finding represents the *total* effect of the program on parental time use stemming from two different channels: (i) changes in the composition of parents due to “selection into parenthood” under universal childcare, and (ii) changes in the subsequent time investment behavior of parents either because increased fertility mechanically affects the amount of childcare time

spent on each child or because parents believe that childcare facilities can substitute for parental childcare, or both. Although we are unable to quantitatively distinguish between the two mechanisms, we provide empirical evidence in support of the existence of the selection mechanism.

Our paper contributes to the literature mainly in two ways. First, to the best of our knowledge, we are the first to evaluate the effect of Quebec’s universal childcare program on fertility. Low fertility rates and population aging are problems commonly faced by developed countries, as well as the motivation behind various public policies. While many studies examine the impact of family policies on fertility, the empirical evidence is mixed (Gauthier, 2007; Cohen et al., 2013; Mörk et al., 2013; Bauernschuster et al., 2016; Olivetti and Petrongolo, 2017).<sup>2</sup> This paper provides new empirical evidence on how lowering childcare costs affects fertility decisions in the Canadian context.

Second, we use detailed time diary data to provide novel evidence on the program’s effect on parental time use on different types of childcare activities. These findings are related to a recent work by Molnar (2022) who presents a structural model of parental childcare and child skill development in the context of Quebec’s universal childcare program. Our empirical evidence provides an alternative explanation for the findings in the previous literature on the effect of childcare exposure on child development outcomes. In particular, studies that investigate the effects of Quebec universal childcare program tend to find negative effects on both children and parents (Baker et al., 2008; Kottelenberg and Lehrer, 2013; Brodeur and Connolly, 2013; Kottelenberg and Lehrer, 2017).<sup>3</sup> This is in contrast with many studies finding positive cognitive and non-cognitive effects of childcare programs in Europe (Havnes and Mogstad, 2011; Gathmann and Sass, 2018),<sup>4</sup> as well as programs that target low-income

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<sup>2</sup>Gauthier (2007) provides a detailed review of the literature on the effect of family policies on fertility. Olivetti and Petrongolo (2017) summarize the literature on the effect of family policies on various female outcomes, including fertility. Cohen et al. (2013) investigate the reduction in Israel’s child cash benefits and find that it reduces overall fertility. Mörk et al. (2013) evaluate the effect of reduced childcare costs on fertility in Sweden and find positive effects on first births but no evidence on higher order births. Bauernschuster et al. (2016) study the expansion of public childcare coverage in Germany and find positive effects on fertility.

<sup>3</sup>Baker et al. (2008) and Kottelenberg and Lehrer (2013) find that the program had negative effects on the noncognitive development and health for preschool and young children. Kottelenberg and Lehrer (2017) assess heterogeneity in the effects, and show that disadvantaged single-parent households benefit from the program. In the long term, Baker et al. (2019) show that cohorts who were exposed to the program had worse health, lower life satisfaction, and higher crime rates. For parents, Baker et al. (2008) find that the program led to worse parental health and lower-quality parental relationships. Brodeur and Connolly (2013) present evidence of a decrease in parents’ life satisfaction.

<sup>4</sup>For instance, Havnes and Mogstad (2011) analyze a large-scale expansion of subsidized childcare in Norway, and find that the program had a strong positive long-run impact on children’s educational attainment and labor market participation. Gathmann and Sass (2018) examine a reform in East Germany that provides

households in the United States (Heckman et al., 2010, 2013; Gibbs et al., 2013; Bitler et al., 2014; Carneiro and Ginja, 2014; Kline and Walters, 2016).<sup>5</sup>

Despite the substantial negative effects of the Quebec program documented in the literature, less is known about why access to universal childcare can potentially lead to adverse child development outcomes. Baker et al. (2008, 2019) present evidence that reporting artifacts, lower childcare quality, and socialization problems of small children are unlikely to be the driving forces. Kottelenberg and Lehrer (2017) show that childcare attendance substantially reduces many parenting practices for two-parent families. Chaparro et al. (2020) develop and estimate a structural model of child care and argue that Quebec’s program may have caused households with better alternative care to take up the subsidized low-quality childcare. Our findings that the program decreased mothers’ time spent on educational childcare activities can rationalize the negative effects of the Quebec program since previous literature has shown that parents’ time spent on active childcare has sizable positive effects on child development outcomes (Del Boca et al., 2014; Fiorini and Keane, 2014).

The rest of the paper is organized as follows. Section 2 describes the background of the Quebec universal childcare program. Section 3 describes the data and empirical strategy. Section 4 presents and discusses the results. Section 5 concludes.

## 2 Background

In 1997, the Canadian province of Quebec launched the largest universal childcare program in North America, which aimed to provide licensed and regulated childcare facilities to all children aged from 0–4 at a price of \$5 per day, regardless of their parents’ employment status or income. The program was phased in over 3 years: Only children aged 4 were eligible in September 1997; children aged 3 were included in September 1997; children aged 2 were included in September 1998; finally, children aged from 0–1 were included in September 1999. The subsidized rate was raised from \$5 per day in 1997 to \$7 per day in 2004, \$7.3 in 2014, and \$8.5 in 2021. The number of regulated childcare spaces at the subsidy rate has increased over time, from 76,715 spaces in 1997 to 132,545 spaces in 2000 and to 217,000 spaces in 2012 (Lefebvre and Merrigan, 2008; Haeck et al., 2015).

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generous subsidies to families who do not send their 2-year-old child to public day care. They find that the policy had a short-run benefit on cognitive and non-cognitive skills for boys, who were more likely to be switched to home care.

<sup>5</sup>Notable examples are the Head Start program (Gibbs et al., 2013; Bitler et al., 2014; Carneiro and Ginja, 2014; Kline and Walters, 2016) and the Perry Preschool Project (Heckman et al., 2010, 2013) in the United States.

The implementation of the Quebec universal childcare program was also accompanied by increased formal qualifications and new wage policies for caregivers (Baker et al., 2019). Our analysis cannot distinguish the effects of these policies that happened simultaneously on the outcomes of interest possibly through changes in the quality of childcare.

## 3 Data and Empirical Strategy

### 3.1 Data

We use data from Statistics Canada’s Canadian General Social Surveys (CGSS). The program collects data from a random sample of Canadians aged 15 or older living in private households in the 10 provinces. The CGSS currently comprises 6 survey themes, including care giving, families, time use, social identity, volunteering, and victimization. Each theme is repeated approximately every 5 years. In this study, we use the Time Use cycles for 1986, 1992, 1998, 2005, and 2010.<sup>6</sup>

The main data files of the Time Use Surveys provide general demographic and socioeconomic information for each respondent, such as age, sex, marital status, education, ethnicity, employment status, and income. Similar information for the spouse or partner is provided if the respondent is married or in a common-law relationship.<sup>7</sup> The data also provide information on the age of the youngest child and the number of children by age or age group.<sup>8</sup>

In addition, the Time Use Surveys include a retrospective 24-hour time diary to collect information on respondents’ time spent on various daily activities, the day of the diary, and the location where the activities occurred. This allows us to create a continuous measure (in minutes) of respondents’ time spent in various childcare activities. For our analysis, we group the activities into educational and non-educational childcare. Specifically, we define educational childcare activities as (i) helping/teaching/reprimanding children, (ii) reading/talking/conversation with children, and (iii) playing with children. All other childcare activities are defined as non-educational childcare and include (i) baby or child care (e.g.,

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<sup>6</sup>We do not use the 2015 wave because the time use activity codes are substantially different from the previous waves.

<sup>7</sup>The 1986 survey does not include information on the spouse/partner’s education.

<sup>8</sup>The 1986 wave provides information on the age of each child (up to 6 children). The 1992 wave provides information on the age of youngest child, the age of each household member (up to 8 household members), and an indicator for whether a household member is a child of the respondent. Therefore, we are able to obtain the number of children by age for the 1986 and 1992 samples. The 1998, 2005, and 2010 waves provide information on the age of the youngest child and the number of children by age groups, including 0–4, 5–12, 13–14, 15–18, and 19–24.

putting children to bed, feeding children, getting children ready for school), (ii) medical or emotional care, (iii) travel to or from personal care activities for children, and (iv) other miscellaneous childcare activities.

### 3.2 Sample Selection and Summary Statistics

Our analysis is based on a sample of opposite-sex, married or cohabiting couples. This is because one-parent families are more likely to be affected by other welfare programs in Canada (Baker et al., 2008). In other words, one-parent families in the rest of Canada are more likely to be exposed to other welfare programs during the period of analysis, and therefore may not provide viable counterfactual outcomes for one-parent families in Quebec.

We also restrict the age of respondents and their spouses such that our sample consists of couples whose fertility decisions are likely to be affected by the policy change. To do so, we calculate the 1st and the 99th percentiles of the age distribution of husbands and wives with an infant (0–1 year old). We drop observations in which either the husband’s or the wife’s age is below the 1st percentile or above the 99th percentile. This results in a sample of married or cohabiting couples in which the husband is aged from 21–49 and the wife is aged from 19–44.

Table 1 presents summary statistics for husbands and wives in our sample by province (Quebec vs. the rest of Canada) and survey year. The ages of the husbands and wives are comparable between Quebec and the rest of Canada, except that in the 2010 wave, the average ages of both husbands and wives in Quebec are around 1 year younger than those in the rest of Canada. The average number of children aged from 0–18 is slightly lower in Quebec in the first two waves but comparable to the rest of Canada in the last three waves. In terms of education, in both Quebec and the rest of Canada, there is a greater share of husbands without high school degrees than wives over time, but also a greater share of husbands who were at least college educated (except in 2010). Overall, married or cohabiting individuals in Quebec were slightly less educated than those in the rest of Canada.

### 3.3 Empirical Strategy

We use a difference-in-differences approach to estimate the effect of the Quebec universal childcare program on families’ fertility and childcare time use outcomes, comparing the outcomes in Quebec and the rest of the Canada before and after the reform. We define the pre-reform period as 1986 and 1992, and the post-reform period as 1998, 2005, and 2010.

Since the number of childcare spaces was still very low in 1998, we also conduct analysis excluding the 1998 data. Nevertheless, we argue that the expected availability of subsidized childcare in the future may play a more important role than the current childcare spaces in affecting parents’ fertility decisions, and therefore, it is reasonable to treat 1998 as a post-reform period.<sup>9</sup>

**Fertility** To study the effect of the policy on families’ fertility decisions, we focus on all married or cohabiting couples and estimate the following equation at the family level:

$$y_{ipt} = \alpha_0 + \alpha_1 Policy_{pt} + \gamma_p + \delta_t + X_{ipt}\lambda + \epsilon_{ipt}, \quad (1)$$

where  $i$  denotes family,  $p$  denotes provinces, and  $t$  denotes year. The dependent variable is (i) an indicator for having an infant aged from 0–1 or (ii) the total number of children aged from 0–18 that a family has;  $Policy_{ipt}$  is indicator for the post-reform periods in Quebec;  $\gamma_p$  is province fixed effects;  $\delta_t$  is year fixed effects;  $X_{ipt}$  is a vector of individual characteristics, including age, age-squared, and education dummies for the husband and wife in family  $i$ . Standard errors are clustered at the province level. The parameter of interest is  $\alpha_1$ , which identifies the intention-to-treat effect, namely the effect on all Quebec families who were exposed to the universal childcare policy.

The key identifying assumption is that the pre-reform time trends in the outcomes of interest are common between Quebec and the rest of Canada. We graphically examine this assumption by showing the means of the fertility outcomes by cycle of the CGSS for Quebec and the rest of Canada in Figure 1. We find little trend for both outcomes in Quebec between 1986 and 1992, which presents evidence for the exogeneity of the policy change. There is a very small downward trend in the number of children aged from 0–18 for the rest of Canada. Overall, there is no clear violation of the common trends assumption.

One potential threat to identification is that during the period of our analysis (1986–2010), the government of Quebec also introduced the Allowance for Newborn Children (ANC) in May 1988, which could potentially confound our results. The ANC paid a cash transfer to all Quebec residents with a child born between May 1, 1988, and September 30, 1997. Nevertheless, the ANC was canceled for children born after September 30, 1997, and its

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<sup>9</sup>Although younger children were not eligible to the program when it was initially implemented due to the staggered implementation, fertility decisions of Quebec families could be still affected in 1998 when the program was just launched because these family could expect the availability of subsidized childcare in the next a few years. Indeed, [Ding et al. \(2021\)](#) find that parents of younger children were likely to pay additional costs to secure a spot in childcare facilities when their child was not eligible yet.



cancellation was publicized in advance (Milligan, 2005). Hence, the fertility outcomes in 1992 and the total number of children in 1998 in Quebec could be affected by both the universal childcare program and the ANC.<sup>10</sup> Fortunately, the results in Figure 1 suggest that the ANC appeared to have no discernible effect on fertility for married or cohabiting couples of Quebec between 1986 and 1992. To mitigate the confounding effect of the ANC on fertility in 1998, we include a robustness check by excluding the 1998 wave of data—the ANC was canceled in 1997, and therefore changes in fertility observed in the 2005 wave and afterward were unlikely to be affected by the ANC.

**Time Use** To assess the effect of the Quebec universal childcare on parents’ time investments in childcare, we estimate Equation (1) at the individual-level, for mothers and fathers separately:

$$y_{ipt} = \alpha_0 + \alpha_1 Policy_{pt} + \gamma_p + \delta_t + X_{ipt}\lambda + \epsilon_{ipt}.$$

Here,  $i$  denotes an individual instead of a family. The dependent variable is daily time spent in (i) educational childcare per child or (ii) non-educational childcare per child. To construct per child measures, we divide the total amount of (educational/non-educational) childcare time by the total number of the respondent’s children.<sup>11</sup> The remaining variables are defined as above. We further control for day of time diary dummies in vector  $X_{ipt}$ . Note that the time use information is only available for the respondents, not their spouses. Therefore, only the respondents are included in the sample.

For the analysis on parents’ time use on childcare, we focus on two-parent households with at least one child aged from 0–4, because the policy only benefits children of this age group. As a robustness check, we also consider the sample of two-parent households with at least one child aged from 0–18. It is noteworthy that using a sample conditional on family structure could introduce confounding factors, because the universal childcare program also affected families’ fertility decisions—“selection into parenthood.” Selection

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<sup>10</sup>Milligan (2005) and Zhao (2021) present evidence that the ANC increased fertility of women in Quebec. However, it is noteworthy that their analyses are based on all women, regardless of their marital status. In contrast, our study focuses on fertility decisions of married couples. Moreover, Zhao (2021) finds that the ANC had a greater effect on low-income women. Therefore, the results found in these studies may not directly apply to our sample of analysis.

<sup>11</sup>The 1986 and 1992 waves measure respondents’ time spent in childcare for their children aged from 0–18 while the 1998, 2005, and 2010 waves report time spent in childcare for children aged from 0–14. Therefore, to measure time use per child, we use the number of a respondent’s children aged from 0–18 (0–14) as the denominator for the earlier two (latter three) waves. We also tried alternative measures in which the number of a respondent’s children aged from 0–18 (0–14) is used as the denominator for all survey waves. These alternative measures made very little difference to our empirical results.

into parenthood may result in either more or less time investment in children. In particular, we find that “power couples” are more likely to have a child under universal childcare. On the one hand, these couples may care more about children’s education and therefore may spend more time on educational childcare activities. This may lead to a finding of more time investment in children. On the other hand, the “power couples” may choose to have a child because they believe that the childcare activities in childcare centers are substitutes of similar activities provided by parents, and therefore they may spend less time on educational childcare activities. This may lead to a finding of less time investment in children. The effect due to selection into parenthood is in addition to the effect of the universal childcare policy on parents’ time use on childcare that would be observed if we held the composition of parents constant.

To examine the common trends assumption, in Figure 2, we show the average number of minutes spent on educational and non-educational childcare by cycle of the CGSS for Quebec and the rest of Canada, for mothers and fathers separately. For time use on educational childcare, presented in Panels (a) and (b), we find similar time trends from 1986–1992 between Quebec and the rest of Canada, in particular in the sample of mothers. Nevertheless, for time use on non-educational childcare, presented in Panels (c) and (d), we find that the common trends assumption may not hold. Therefore, our regression analysis mainly focuses on the effect of the universal childcare policy on educational childcare time use.

One potential threat to identification is that, in January 2006, Quebec launched the Quebec Parental Insurance Plan (QPIP), which reserved some parental leave for fathers. The introduction of “daddy quotas” could affect time investment decisions on childcare for mothers and fathers differently (Patnaik, 2019). Therefore, we also include a specification based on the time period before 2006.

**Robustness Checks** Our baseline specification uses all 5 waves of the data. However, we also conduct analysis by (i) excluding the 1986 wave, because the education of spouse is not available in 1986; (ii) excluding the 1998 wave, because of the lack of supply of subsidized spaces or the potential confounding effect of the ANC; and (iii) excluding the 2010 wave, because the outcomes in 2010 in Quebec could also be affected by the introduction of “daddy quotas.”

## 4 Results

### 4.1 Fertility

Table 2 presents the estimates of the effect of the Quebec universal childcare policy on the likelihood having an infant (aged from 0–1). Recall that the 1986 wave does not provide information on the spouse’s education, so we only control for the education of the respondent to obtain the results in this table. Column 1 presents the estimate using data from all 5 CGSS waves. The estimate suggests that the policy increases the likelihood of having an infant by 5.36 percentage points (around 36% increase). Column 2 presents the estimate excluding data from the 1986 wave and the estimate is similar; further controlling for the spouse’s education does not change the estimate (Table A1 column 1).

In column 3, we exclude the 1998 wave because the number of regulated childcare spaces was very limited in 1998. Moreover, the increase in fertility observed in the 1998 wave could be driven by both the universal childcare program and the ANC. Interestingly, we find that the estimate becomes slightly larger by excluding 1998. In column 4, we exclude the 2010 wave because “daddy quotas” were introduced in Quebec in 2006 and the better parental leave policy may also affect couples’ fertility decisions. We find the estimate becomes slightly smaller. Lastly excluding both the 1998 and 2010 waves does not affect the estimate significantly.

Overall, the results in Table 2 suggest a positive effect of the universal childcare policy on fertility. Moreover, the results are very stable across different samples, so the estimates are not driven data from a particular wave. The results also suggest that the potential confounding effects of other programs implemented in Quebec during the period of analysis do not seem to be a serious concern. Lastly, we exclude the 1986 wave (and other waves) so that we can control for education of both spouses. We find that controlling for the education of the spouse does not affect the results significantly (Table A1).

Table 3 presents the estimates of the effect of the Quebec universal childcare policy on the number of children aged from 0–18 that a family has. Based on data from all 5 CGSS waves, we find that the policy increases the number of children by 16%. Again, the results are very stable across different samples, and the estimates do not change significantly by controlling for the education of the spouse (Table A2).

**Heterogeneity** We also explore heterogeneity in the effect of the universal childcare policy on fertility decisions by whether a couple is a power couple—i.e., whether both spouses have

at least a college degree. Since power couples are more likely to form dual-earner families, having access to affordable and quality childcare may have a greater impact on the fertility decisions of these families.

Table 4 presents the estimates. Note that we have to exclude data from the 1986 wave because we need information on the education of both spouses. We find that power couples are on average 3–4 percentage points less likely to have an infant compared with other couples without universal childcare. The universal childcare policy increases the likelihood of having an infant for both power couples and other couples, but the effect is much greater for power couples. The estimated effect is from 3–5 percentage points (20–44%) for non-power couples and 8 percentage points (66%) for power couples across all different samples.

Table 5 presents the estimates of the effect on the number of children aged from 0–18 by whether a couple is a power couple. The difference in the number of children between the two types of couples before the policy is negligible. The policy increases the number of children by around 0.2 (15%) for other couples and 0.3 (24%) for power couples.

These results are in contrast with Mörk et al. (2013) who find that for Swedish households without children, the reduction in public childcare costs had a positive effect on fertility among low-income couples but an insignificant effect among high-income couples.<sup>12</sup> A potential explanation is that low-income families in Quebec already had access to substantial direct subsidies for childcare prior to the introduction of the universal childcare program in 1997 (Baker et al., 2005). Combined with the fact that countries such as the United States and Canada tend to have higher childcare costs than European countries (Olivetti and Petrongolo, 2017), the decrease in childcare costs due to the universal childcare program could have been larger among higher income families.

## 4.2 Time Use on Childcare

We mainly focus on time use on educational childcare since the results in Figure 2 suggest that the common trends assumption may not hold for the outcome of time use on non-educational childcare. We also present the regression results on non-educational childcare in the Appendix, but these results need to be interpreted with caution.

Table 6 presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare per child by mothers (Panel A) and fathers (Panel B), among families with at least one child aged from 0–4. Recall that the 1986 wave does not

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<sup>12</sup>The authors do find that the reduced childcare prices had a positive effect on fertility among high-income couples with children.

provide information on the spouse’s education, so we only control for the education of the respondent to obtain the results in this table. For mothers, the estimate in column 1 suggests that the policy decreases the daily time use on educational childcare per child by 9 minutes (around 32% decrease). Column 2 presents the estimate excluding data from the 1986 wave and the estimate suggests a 11 minute decrease; further controlling for the spouse’s education does not change the estimate (Table A4 column 1). Columns 3–5 present results excluding data from the 1998 or/and 2010 waves. Overall, the finding is robust to which waves of data we use, suggesting a decrease in daily time use on educational childcare per child by mothers by 6.5–11.6 minutes (23–41%).<sup>13</sup>

Panel B of Table 6 presents the estimate for fathers. The estimates are smaller in magnitude compared with the estimates for mothers and they are statistically insignificant. Moreover, the results are sensitive to which waves of data we use. Overall, we do not find clear evidence of an impact of the policy on time use on educational childcare per child by fathers.

For robustness, Table A6 presents the estimates corresponding to Table 6, restricting the sample to families with at least one child aged from 0–18 (instead of age 0–4). The results suggest that the program decreases mothers’ daily time spent on educational childcare per child by 4.5–5.9 minutes (23–35%), which is comparable to the finding in Table 6.

Table A3 in the Appendix presents the estimates of the effect of Quebec’s universal childcare program on time spent on non-educational childcare per child.<sup>14</sup> We do not find

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<sup>13</sup>This finding is in contrast with the reduced-form evidence shown by Molnar (2022). Using the Canadian Census for 1996, 2001, and 2006, she finds that Quebec’s universal childcare program increased the total amount of time that parents spent with their children. The difference could be driven by two reasons. First, we show that the estimates could be sensitive to the sample of analysis and the common trends assumption may not hold all the time. We show that our result on mothers’ educational childcare time use is robust to different samples of analysis and the common trends assumption is likely to hold for this outcome. The advantage of the CGSS data is that there are multiple years of observation before the policy change. Second, the difference between our finding and that of Molnar (2022) could be owing to different measures of time use. The Canadian Census asks the respondents how many hours last work they spent on looking after own children without pay, with the options of none, <5 hours, 5–14 hours, 15–29 hours, 30–59 hours, and 60< hours. In contrast, the CGSS asks respondents to provide the number of minutes that they spent on different activities for a given day of the diary. Thus, the CGSS provides a continuous measure of time use for more detailed childcare activities. We mainly focus on educational childcare activities, instead of total time use on childcare, because we show in Figure 2 that the common trends assumption may not hold for non-educational childcare time use between Quebec and the rest of Canada.

<sup>14</sup>Tables A3 presents the estimates of the effect of the program on time spent on non-educational childcare per child for mothers and fathers separately, without controlling for the spouse’s education. Table A5 presents the estimates controlling for spouse’s education by excluding the 1986 wave of the data. The results do not suggest consistent evidence on an effect for mothers, but suggest some weak evidence that the program increased the time spent by fathers on non-educational childcare per child. Table A7 presents the estimates corresponding to Table A3, restricting the sample to families with at least one child aged from 0–18 (not

strong and consistent evidence on an effect of the program on non-educational childcare time use. However, it is worth noting that the results should be interpreted with caution since the common trends assumption may not hold.

**Heterogeneity** We further explore heterogeneity in the effect of the universal childcare program on time use by a parent’s educational attainment, specifically whether a parent has at least a college degree. We do so because we find that the policy had a greater fertility effect on power couples, and therefore the effect through the selection channel could be stronger for more educated parents—although the selection could be either positive or negative. In addition, [Baker et al. \(2008\)](#) finds that the program had a greater impact on childcare utilization and maternal labor supply for more educated parents, which suggests that educational attainment is an important dimension of heterogeneity.

Table 7 presents the estimates. We find that without universal childcare, for mothers, there is not a statistically significant difference in daily time use on educational childcare per child between college-educated and non-college-educated mothers. However, for fathers, without universal childcare, college-educated fathers on average spent 6-7 minutes more on educational childcare per child compared with non-college-educated fathers.

In terms of the effect of the universal childcare program on daily time use on educational childcare per child, we find that for mothers, the negative effect was slightly greater for non-college-educated mothers, with a magnitude of 6–14 minutes for non-college-educated mothers and 4–7 minutes for college-educated mothers. This could be due to college-educated mothers having a stronger preference towards investment in children outcomes and therefore, the decrease in time spent on educational childcare is not as large as that among non-college-educated mothers.

For fathers, we do not find consistent evidence of an impact for non-college-educated fathers. For college-educated fathers, the results suggest that the program reduced their time use on educational childcare per child by 1–15 minutes, although the estimate is not statistically significant based on some samples.

### 4.3 Potential Mechanisms

In this section, we briefly discuss some of the potential mechanisms underlying our findings on the negative effect of the Quebec universal childcare program on maternal time use in childcare. Not only can this finding be explained as mothers substituting their time with

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0-4). Nevertheless, we do not find evidence on the effect for fathers based on this sample.

non-parental childcare, but it can be also due to the program’s positive effect on fertility decisions. First, since the program increased the number of children that families choose to have, the larger number of children may mechanically decrease parental time use per child (“quantity-quality trade-off”). Second, the result could be driven by selection because some couples may not have become parents if they were not exposed to the program (“selection into parenthood”). If couples who are less likely to invest time in their children are more likely to adjust their fertility decisions in response to the program, then this negative selection can be a potential explanation behind our findings.

While we cannot empirically decompose the relative strength of each mechanism, we provide evidence that supports the selection mechanism. To do so, we focus on a sample of households with at least a child aged from 5–12, but without children aged from 0–4. We focus on this sample because for Quebec households in the 2005 survey, the birth of any children under age 8 could be affected by the 1997 policy change; for Quebec households in the 2010 survey, the birth of any children under age 13 could be affected by the 1997 policy change. Thus, for Quebec parents in 2005 with at least a child aged from 5–8 and in 2010 with at least a child aged from 5–12 (but without younger children), their time use behavior is not likely to be directly influenced by the universal childcare program, because their children were not eligible for the subsidized childcare. However, their time use behavior could differ from similar parents in the rest of Canada because of selection—the Quebec parents may choose to not have a child or to have fewer children if the universal childcare program was not implemented. Unfortunately, the CGSS data only provide information on the number of children by age *group*. We choose the age group closest to the criteria described above—ages between 5 and 12. Note that we exclude the 1998 survey in this analysis because in 1998, only the birth of Quebec children aged from 0–1 could be influenced by the program.

Table 8 presents the estimates of the effect of the Quebec universal childcare program on time spent on educational childcare per child among families with at least one child aged from 5–12 but no children aged from 0–4, excluding the 1998 wave. The results suggest that the program decreased daily time spent on educational childcare per child by 3–6 minutes (25–48%) for mothers and 3–6 minutes (34–53%) for fathers. Since the children of these families were not eligible for the subsidized childcare, the time use behavior of these parents was unlikely driven by substitution of childcare facilities. Therefore, the finding presents some evidence of negative selection—parents who choose to have a child or more children under subsidized childcare may be the type of parents who tend to spend less time on childcare.

Lastly, we explore heterogeneity in the effect of the selection channel by the educational

attainment of parents. This is because we find that the program’s effect on parents’ time use on childcare differs for college-educated and non-college-educated parents. Table 9 presents the estimates of the effect of the Quebec universal childcare program on time spent on educational childcare per child by whether a parent has at least a college degree among families with at least one child aged from 5–12 but no children aged from 0–4, excluding the 1998 wave. The results in Panel A present evidence for negative selection among non-college-educated mothers. For college-educated mothers, the estimates suggest smaller negative or positive selection, depending on the sample of analysis. The finding may explain why the universal childcare program had a greater impact on college-educated women’s employment (Baker et al., 2008)—i.e., a potentially greater substitution effect for college-educated mothers—but its negative effect on childcare time use was greater for non-college-educated mothers. In other words, the greater negative effect of the program on non-college-educated mothers’ time investments in childcare could be largely driven by negative selection into parenthood. For fathers, the results in Panel B present evidence for negative selection among both non-college-educated and college-educated fathers. The negative effect was greater for non-college-educated fathers, but the difference is not always statistically significant.

## 5 Conclusion

This paper studies the effect of Quebec’s universal childcare program on married or cohabiting couples’ fertility outcomes and their time investments in childcare activities per child. Using a difference-in-differences approach, we find that the program significantly increased fertility. In addition, the effect was stronger for couples in which both spouses were at least college educated. This result is in contrast to the finding in the literature in the context of Europe—i.e., reducing childcare costs had a greater positive effect on fertility for low-income families. The difference could be owing to the fact that Canada tends to have higher childcare costs compared with European countries and low-income families in Quebec likely already had access to substantial subsidies for childcare prior to the introduction of the universal childcare program.

We also find that the program decreased the amount of time that mothers spent on educational childcare activities per child, such as reading and playing with children. The size of the effect was slightly greater for non-college-educated mothers than for college-educated mothers. Several mechanisms could explain such a negative effect on parental time use on childcare. First, the effect could be owing to the substitution of the use of childcare facilities



for parental childcare. Previous literature has documented strong evidence of a shift into non-parental childcare use and an increase in maternal labor supply. Second, an increase in the number of children that families chose to have under universal childcare could mechanically decrease the amount of childcare time spent on each child. Lastly, the effect could be driven by changes in the composition of parents due to “selection into parenthood.” This is important because our time use analysis is based on a sample of couples with children, and the program affected couples’ fertility decisions. We provide empirical evidence in support of potential “negative” selection among non-college-educated mothers, who would spend less time on childcare even if their children were not eligible to the program.

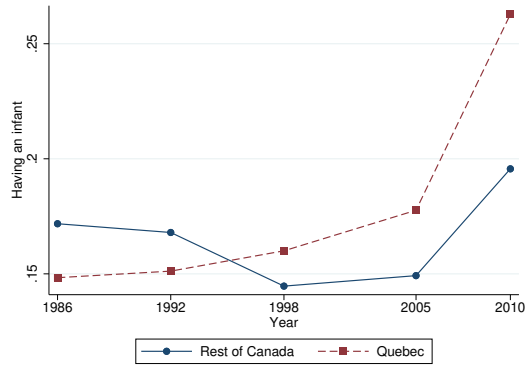
Our findings provide a potential explanation to the negative impacts of the program on various children’s outcomes documented in the literature. Understanding the mechanisms behind the impacts of the Quebec universal childcare program could be crucial to policy-makers given the Government of Canada has planned to invest in a country-wide subsidized childcare system. The literature provides evidence that the Quebec program does not have lower quality compared with international norms. Our results suggest that parents’ time spent with children are likely to play an important role.

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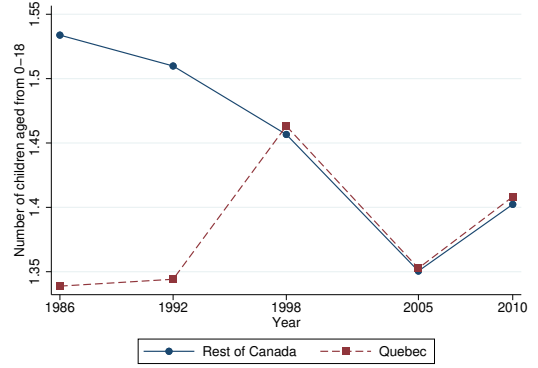
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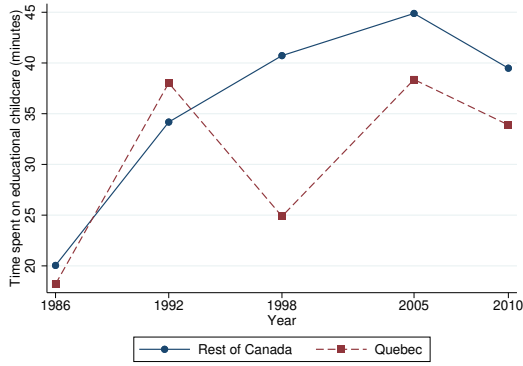
(a) Having an Infant (Aged 0–1)



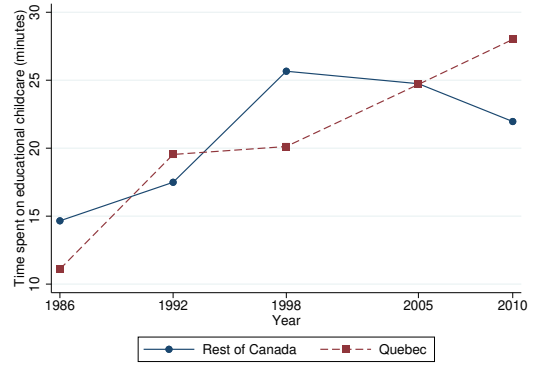
(b) Number of Children Aged 0–18

**Figure 1:** Time Trends in Fertility Outcomes

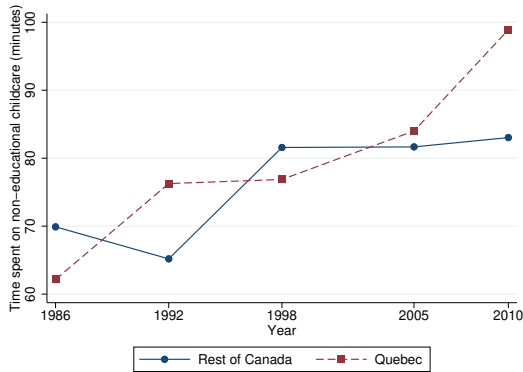
Note: The sample comprises married or cohabiting couples in the CGSS. Panel (a) presents the means of an indicator for having an infant (aged 0–1) across time in Quebec and the rest of Canada. Panel (b) presents the means of the number of children aged 0–18 across time in Quebec and the rest of Canada.



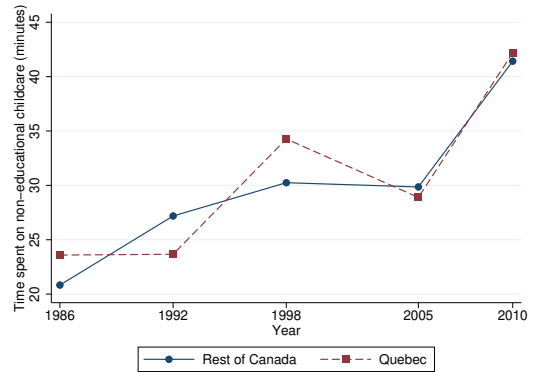
(a) Educational Childcare (Mothers)



(b) Educational Childcare (Fathers)



(c) Non-Educational Childcare (Mothers)



(d) Non-Educational Childcare (Fathers)

**Figure 2:** Time Trends in Time Use on Childcare Per Child (Daily Minutes)

Note: The sample comprises married or cohabiting couples with at one child aged 0–4 in the CGSS, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). Panels (a) and (b) present the means of time use on educational childcare across time in Quebec and the rest of Canada, for mothers and fathers respectively. Panel (c) and (d) present the means of time use on non-educational childcare across time in Quebec and the rest of Canada, for mothers and fathers respectively.

**Table 1:** Summary Statistics

	1986	1992	1998	2005	2010
<i>Panel A: Rest of Canada</i>					
Age of husband	35.14 (6.75)	35.67 (6.63)	36.52 (6.51)	36.56 (6.53)	36.88 (6.34)
Age of wife	32.54 (6.15)	33.21 (6.18)	34.13 (6.05)	34.30 (6.18)	34.53 (5.75)
Number of children (Aged 0–18)	1.53 (1.13)	1.51 (1.19)	1.46 (1.17)	1.35 (1.17)	1.40 (1.13)
Share of power couples	N/A	0.105 (0.307)	0.145 (0.353)	0.209 (0.407)	0.262 (0.440)
Share of husbands without HS degree	0.253 (0.435)	0.186 (0.390)	0.154 (0.361)	0.098 (0.297)	0.070 (0.255)
Share of husbands with HS degree	0.579 (0.494)	0.607 (0.488)	0.592 (0.491)	0.595 (0.491)	0.580 (0.494)
Share of husbands with college or higher	0.167 (0.373)	0.206 (0.405)	0.253 (0.435)	0.307 (0.461)	0.350 (0.477)
Share of wives without HS degree	0.214 (0.410)	0.130 (0.337)	0.106 (0.308)	0.065 (0.247)	0.045 (0.208)
Share of wives with HS degree	0.662 (0.473)	0.704 (0.457)	0.667 (0.472)	0.605 (0.489)	0.549 (0.498)
Share of wives with college or higher	0.124 (0.330)	0.166 (0.372)	0.227 (0.419)	0.330 (0.470)	0.405 (0.491)
Observations	3,854	2,616	2,444	3,688	2,604
<i>Panel B: Quebec</i>					
Age of husband	34.53 (6.75)	35.54 (6.65)	36.33 (6.57)	36.16 (6.70)	35.88 (6.69)
Age of wife	32.22 (6.50)	33.23 (6.32)	34.03 (6.37)	33.72 (6.38)	33.15 (6.15)
Number of children (aged 0–18)	1.34 (1.11)	1.34 (1.09)	1.46 (1.09)	1.35 (1.10)	1.41 (1.07)
Share of power couples	N/A	0.091 (0.287)	0.133 (0.340)	0.175 (0.380)	0.241 (0.428)
Share of husbands without HS degree	0.286 (0.452)	0.243 (0.429)	0.175 (0.380)	0.123 (0.329)	0.087 (0.281)

Share of husbands with HS degree	0.552 (0.498)	0.539 (0.499)	0.581 (0.494)	0.612 (0.488)	0.593 (0.492)
Share of husbands with college or higher	0.162 (0.369)	0.219 (0.414)	0.244 (0.430)	0.264 (0.441)	0.320 (0.467)
Share of wives without HS degree	0.270 (0.444)	0.195 (0.397)	0.138 (0.345)	0.095 (0.294)	0.054 (0.227)
Share of wives with HS degree	0.641 (0.480)	0.670 (0.471)	0.658 (0.475)	0.607 (0.489)	0.552 (0.498)
Share of wives with college or higher	0.089 (0.285)	0.134 (0.341)	0.204 (0.404)	0.298 (0.458)	0.394 (0.489)
Observations	1,953	642	591	826	465

Note: The table presents summary statistics for married or cohabiting couples in the CGSS by year. Panel A is for all Canadian provinces excluding Quebec and Panel B is for Quebec. The 1986 wave does not provide information on the educational attainment of the spouse. Therefore, the summary statistics for variables on husbands' and wives' educational attainment are based on the respondents only. The summary statistics for all other variables are based on both the respondents and their spouses. Standard deviations are in parentheses.



**Table 2:** Effect of Universal Childcare on the Likelihood of Having an Infant (Aged 0–1)

Variable	Having an Infant (Aged 0–1)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
Policy	0.0536*** (0.0064)	0.0497*** (0.0046)	0.0606*** (0.0075)	0.0432*** (0.0056)	0.0466*** (0.0069)
Observations	19,321	13,573	16,424	16,309	13,412
R-Squared	0.078	0.077	0.077	0.076	0.075
Mean	0.1497	0.1512	0.1497	0.1497	0.1497

Note: The sample comprises married or cohabiting couples in the CGSS data. The last row presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on the likelihood of having an infant (aged from 0–1), based on Equation 1. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 3:** Effect of Universal Childcare on the Number of Children Aged 0–18

Variable	Number of Children (Aged 0–18)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
Policy	0.218*** (0.0175)	0.229*** (0.0243)	0.226*** (0.0168)	0.199*** (0.0248)	0.193*** (0.0210)
Observations	19,322	13,574	16,425	16,310	13,413
R-Squared	0.153	0.142	0.154	0.161	0.165
Mean	1.341	1.344	1.341	1.341	1.341

Note: The sample comprises married or cohabiting couples in the CGSS data. The last row presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of effect of the Quebec universal childcare policy on the number of children aged from 0–18 that a family has, based on Equation 1. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 4:** Effect of Universal Childcare on the Likelihood of Having an Infant:  
By Type of Couples

Variable	Having an Infant (Aged 0–1)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
Policy	0.0422*** (0.0038)	0.0537*** (0.0052)	0.0305*** (0.0039)
Power Couple	-0.0427*** (0.0081)	-0.0272*** (0.0091)	-0.0349*** (0.0051)
Policy × Power Couple	0.0378*** (0.0073)	0.0264* (0.0122)	0.0486*** (0.0089)
Observations	13,282	10,479	10,341
R-Squared	0.078	0.075	0.075
Mean (Non-Power Couple)	0.1547	0.1547	0.1547
Mean (Power Couple)	0.1209	0.1209	0.1209

Note: The sample comprises married or cohabiting couples in the CGSS data. The last two rows present the mean of the dependent variable for Quebec before the policy change for non-power and power couples separately—a power couple is a couple in which both spouses are at least college educated. The table presents the estimates of the effect of the Quebec universal childcare policy on the likelihood of having an infant (aged from 0–1) by whether a couple is a power couple. All columns exclude data from the 1986 wave since the wave does not provide information on the education of the respondent’s spouse. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged, aged-squared, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \* $p < 0.1$ .

**Table 5:** Effect of Universal Childcare on the Number of Children Aged 0–18:  
By Type of Couples

Variable	Number of Children (Aged 0–18)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
Policy	0.206*** (0.0231)	0.221*** (0.0264)	0.196*** (0.0218)
Power Couple	0.0165 (0.0848)	0.0395 (0.0738)	0.0268 (0.0912)
Policy × Power Couple	0.113* (0.0507)	0.0801* (0.0368)	0.0916** (0.0395)
Observations	13,283	10,480	10,342
R-Squared	0.147	0.146	0.152
Mean (Non-Power Couple)	1.353	1.353	1.353
Mean (Power Couple)	1.250	1.250	1.250

Note: The sample comprises married or cohabiting couples in the CGSS data. The last row presents the mean of the dependent variable for Quebec before the policy change for non-power and power couples separately—a power couple is a couple in which both spouses are at least college educated. The table presents the estimates of the effect of the Quebec universal childcare policy on the number of children aged from 0–18 that a family has, by whether a couple is a power couple. All columns exclude data from the 1986 wave since the wave does not provide information on the education of the respondent’s spouse. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged, aged-squared, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \* $p < 0.1$ .

**Table 6:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child  
(Families with a Child Aged 0–4)

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
<i>Panel A: Mothers</i>					
Policy	-9.225*** (1.321)	-11.600*** (2.844)	-6.469*** (2.139)	-11.580*** (2.556)	-7.841*** (2.340)
Observations	3,275	2,572	2,775	2,606	2,106
R-Squared	0.039	0.025	0.045	0.046	0.054
Mean	28.143	38.027	28.143	28.143	28.143
<i>Panel B: Fathers</i>					
Policy	0.501 (1.235)	-2.492 (1.534)	3.027 (1.659)	-2.324 (1.540)	0.637 (2.926)
Observations	3,006	2,370	2,507	2,394	1,895
R-Squared	0.034	0.029	0.039	0.042	0.049
Mean	15.029	19.539	15.029	15.029	15.029

Note: The sample comprises married or cohabiting couples with at least one child aged 0-4 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes per day). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 7:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child  
(Families with a Child Aged 0–4): By Educational Attainment of Parents

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
<i>Panel A: Mothers</i>					
Policy	-10.380*** (1.388)	-12.530*** (3.410)	-5.874** (2.276)	-14.140*** (1.871)	-8.720*** (2.579)
College	1.475 (2.446)	0.986 (2.887)	1.567 (1.271)	1.691 (3.565)	1.573 (1.088)
Policy × College	5.109** (1.959)	5.668** (2.307)	-0.362 (2.521)	10.140*** (2.817)	3.770** (1.198)
Observations	3,275	2,572	2,775	2,606	2,106
R-Squared	0.037	0.021	0.043	0.045	0.052
Mean (Non-College)	28.707		28.707	28.707	28.707
Mean (College)	22.753		22.753	22.753	22.753
<i>Panel B: Fathers</i>					
Policy	2.081 (1.987)	-0.635 (2.486)	5.779** (2.498)	0.486 (1.744)	6.867* (3.094)
College	6.080** (2.188)	6.261** (2.548)	7.044** (2.365)	5.664*** (1.206)	6.804*** (1.042)
Policy × College	-3.971 (2.617)	-4.102 (3.143)	-7.127** (2.900)	-8.848*** (1.331)	-22.000*** (1.056)
Observations	3,006	2,370	2,507	2,394	1,895
R-Squared	0.034	0.028	0.040	0.043	0.053
Mean (Non-College)	13.907		13.907	13.907	13.907
Mean (College)	19.325		19.325	19.325	19.325

Note: The sample comprises married or cohabiting couples with at least one child aged from 0–4 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes per day). The last two rows in each panel presents the mean of the dependent variable for Quebec before the policy change for non-college-educated and college-educated parents, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, by whether a parent has at least a college degree. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 8:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child  
(Families with a Child Aged 5–12 but No Children Aged 0–4)

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)		
	Excl. 1998 (1)	Excl. 1998 & 1986 (2)	Excl. 1998 & 2010 (3)
<i>Panel A: Mothers</i>			
Policy	-6.129*** (0.426)	-3.182*** (0.705)	-4.501*** (0.879)
Observations	2,706	2,082	2,043
R-Squared	0.029	0.025	0.031
Mean	12.820	12.733	12.820
<i>Panel B: Fathers</i>			
Policy	-2.666*** (0.685)	-5.838*** (1.292)	-4.777*** (0.566)
Observations	2,213	1,699	1,707
R-Squared	0.023	0.025	0.028
Mean	7.937	11.018	7.937

Note: The sample comprises married or cohabiting couples with at least one child aged 5–12 but no children aged 0–4 in the CGSS data, excluding the 1998 wave and individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes per day). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \* $p < 0.1$ .

**Table 9:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child  
(Families with a Child Aged 5–12 but No Children Aged 0–4):  
By Educational Attainment of Parents

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)		
	Excl. 1998 (1)	Excl. 1998 & 1986 (2)	Excl. 1998 & 2010 (3)
<i>Panel A: Mothers</i>			
Policy	-6.790*** (0.681)	-3.708*** (0.555)	-6.965*** (1.1580)
College	0.473 (1.824)	0.457 (2.037)	0.310 (1.721)
Policy × College	2.484 (1.775)	2.512 (1.968)	10.770*** (1.732)
Observations	2,706	2,082	2,043
R-Squared	0.028	0.025	0.031
Mean (Non-College)	12.316		12.316
Mean (College)	8.372		8.372
<i>Panel B: Fathers</i>			
Policy	-3.137*** (0.933)	-6.344*** (1.618)	-5.823*** (0.575)
College	0.257 (1.458)	-0.697 (1.724)	0.353 (0.891)
Policy × College	1.310 (1.384)	2.169 (1.561)	3.526*** (0.889)
Observations	2,213	1,699	1,707
R-Squared	0.023	0.025	0.028
Mean (Non-College)	8.003		8.003
Mean (College)	6.625		6.625

Note: The sample comprises married or cohabiting couples with at least one child aged 5–12 but no children aged 0–4 in the CGSS data, excluding the 1998 wave and individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes per day). The last two rows in each panel presents the mean of the dependent variable for Quebec before the policy change for non-college-educated and college-educated parents, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, by whether a parent has at least a college degree. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .



# Appendix

**Table A1:** Effect of Universal Childcare on the Likelihood of Having an Infant: Alternative Samples

Variable	Having an Infant (Aged 0–1)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
Policy	0.0489*** (0.0043)	0.0591*** (0.0052)	0.0378*** (0.0040)
Observations	13,282	10,479	10,341
R-Squared	0.077	0.075	0.074
Mean	0.1512	0.1512	0.1512

Note: The sample comprises married or cohabiting couples in the CGSS data. The last row presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents estimates of the effect of the Quebec universal childcare policy on the likelihood of having an infant (aged from 0–1), based on Equation 1. All columns exclude data from the 1986 wave since the wave does not provide information on the education of the respondent’s spouse. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged, aged-squared, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \* $p < 0.1$ .

**Table A2:** Effect of Universal Childcare on the Number of Children Aged 0–18:  
Alternative Samples

Variable	Number of Children (Aged 0–18)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
Policy	0.227*** (0.0269)	0.238*** (0.0318)	0.210*** (0.0223)
Observations	13,283	10,480	10,342
R-Squared	0.147	0.145	0.152
Mean	1.344	1.344	1.344

Note: The sample comprises married or cohabiting couples in the CGSS data. The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on the number of children aged from 0–18 that a family has, based on Equation 1. All columns exclude data from the 1986 wave since the wave does not provide information on the education of the respondent’s spouse. All columns control for province fixed effects, year fixed effects, and individual characteristics, including aged, aged-squared, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \* $p < 0.1$ .

**Table A3:** Effect of Universal Childcare on Time Use on Non-Educational Childcare Per Child (Families with a Child Aged 0–4)

Variable	Daily Time Use on Non-Educational Childcare Per Child (Minutes)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
<i>Panel A: Mothers</i>					
Policy	1.121 (2.681)	-6.306* (3.364)	4.430 (3.757)	-3.029 (3.236)	-0.397 (4.322)
Observations	3,253	2,553	2,754	2,591	2,092
R-Squared	0.063	0.062	0.058	0.065	0.055
Mean	69.229	76.270	69.229	69.229	69.229
<i>Panel B: Fathers</i>					
Policy	1.677 (0.967)	4.506*** (1.916)	0.728 (1.300)	2.366** (1.036)	0.277 (1.752)
Observations	3,005	2,369	2,506	2,394	1,895
R-Squared	0.034	0.036	0.035	0.029	0.024
Mean	23.626	23.667	23.626	23.626	23.626

Note: The sample comprises married or cohabiting couples with at least on child aged 0–4 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on non-educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A4:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child (Families with a Child Aged 0–4): Alternative Samples

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
<i>Panel A: Mothers</i>			
Policy	-11.560*** (2.794)	-9.073* (4.495)	-13.680*** (1.572)
Observations	2,521	2,037	1,869
R-Squared	0.025	0.028	0.030
Mean	38.027	38.027	38.027
<i>Panel B: Fathers</i>			
Policy	-2.625 (1.580)	-0.597 (2.241)	-5.458** (1.805)
Observations	2,318	1,840	1,720
R-Squared	0.034	0.043	0.039
Mean	19.539	19.539	19.539

Note: The sample comprises married or cohabiting couples with at least one child aged 0–4 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A5:** Effect of Universal Childcare on Time Use on Non-Educational Childcare Per Child (Families with a Child Aged 0–4): Alternative Samples

Variable	Daily Time Use on Non-Educational Childcare Per Child (Minutes)		
	Excl. 1986 (1)	Excl. 1986 & 1998 (2)	Excl. 1986 & 2010 (3)
<i>Panel A: Mothers</i>			
Policy	-7.133* (3.589)	-3.293 (4.717)	-11.650*** (3.429)
Observations	2,502	2,019	1,857
R-Squared	0.064	0.057	0.070
Mean	76.270	76.270	76.270
<i>Panel B: Fathers</i>			
Policy	4.975** (1.815)	4.241* (1.930)	4.963** (1.612)
Observations	2,317	1,839	1,720
R-Squared	0.040	0.043	0.044
Mean	23.667	23.667	23.667

Note: The sample comprises married or cohabiting couples with at least one child aged 0–4 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on non-educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for both husbands and wives. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A6:** Effect of Universal Childcare on Time Use on Educational Childcare Per Child  
(Families with a Child Aged 0–18)

Variable	Daily Time Use on Educational Childcare Per Child (Minutes)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
<i>Panel A: Mothers</i>					
Policy	-5.763*** (0.877)	-4.492** (1.436)	-5.869*** (1.154)	-5.424*** (0.915)	-5.322*** (1.257)
Observations	7,445	5,857	6,268	5,993	4,816
R-Squared	0.057	0.053	0.060	0.061	0.063
Mean	16.763	19.465	16.763	16.763	16.763
<i>Panel B: Fathers</i>					
Policy	-1.429 (0.992)	-3.950*** (1.155)	0.066 (1.315)	-3.613*** (1.109)	-2.841 (1.837)
Observations	6,530	5,144	5,445	5,283	4,198
R-Squared	0.049	0.043	0.048	0.055	0.054
Mean	9.032	11.544	9.032	9.032	9.032

Note: The sample comprises married or cohabiting couples with at least one child aged 0–18 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A7:** Effect of Universal Childcare on Time Use on Non-Educational Childcare Per Child (Families with a Child Aged 0–18)

Variable	Daily Time Use on Non-Educational Childcare Per Child (Minutes)				
	All Waves (1)	Excl. 1986 (2)	Excl. 1998 (3)	Excl. 2010 (4)	Excl. 1998 & 2010 (5)
<i>Panel A: Mothers</i>					
Policy	1.136 (0.924)	-1.811 (1.035)	2.225 (1.534)	-0.665 (1.502)	-0.470 (1.170)
Observations	7,420	5,835	6,244	5,975	4,799
R-Squared	0.176	0.168	0.175	0.180	0.178
Mean	32.710	35.775	32.710	32.710	32.710
<i>Panel B: Fathers</i>					
Policy	-0.466 (0.652)	0.526 (1.267)	-0.501 (0.799)	0.010 (0.753)	0.115 (1.030)
Observations	6,529	5,143	5,444	5,283	4,198
R-Squared	0.074	0.067	0.074	0.072	0.067
Mean	12.347	12.578	12.347	12.347	12.347

Note: The sample comprises married or cohabiting couples with at least on child aged 0–18 in the CGSS data, excluding individuals whose time spent on childcare per child is above the 99th percentile (i.e., 465 minutes). The last row in each panel presents the mean of the dependent variable for Quebec before the policy change, depending on the waves of data included in the sample. The table presents the estimates of the effect of the Quebec universal childcare policy on time spent on non-educational childcare *per* child, based on Equation 1. Panel A presents the estimates for mothers and Panel B presents the estimates for fathers. All columns control for province fixed effects, year fixed effects, day of time diary fixed effects, and individual characteristics, including aged and aged-squared for both husbands and wives, and education dummies for the respondents. Standard errors are in parentheses and clustered at the province level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .