Investing in Mothers?
The Long-Run Impact of a Universal Childcare Program on Maternal Work and Income

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Preliminary Draft

March 2025

Abstract—We estimate the lifecycle impact of Quebec's universal, subsidized childcare program on maternal labor supply, earnings, social program benefits and tax remittances. We find an enduring positive impact on employment long after children have aged out of the preschool years. There is also a long-run impact on earnings which ultimately grows to be twice as large as the participation effect. This arises because of a growth in the intensity of labor force participation and a rise in hourly wages over time, suggesting that initial investments in work have multiplier effects later in women's careers. We show that as a result tax remittances grow over the lifecycle, and social assistance and employment assistance receipts fall. Our estimate of the fiscal balance of these effects reveals that the flow of fiscal benefits may recapture between 70% and 131% percent of the upfront costs of the program.

We thank Leo Ma for excellent research assistance and seminar participants at Carleton, Universidad de Chile, University of Illinois, HEC Montreal, MIT and Queen's for helpful comments. Baker gratefully acknowledges the research support of a Canada Research Chair at the University of Toronto. Much of the analysis for this paper was conducted at the British Columbia Interuniversity Research Data Centre, which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the CRDCN are made possible by the financial or in-kind support of the SSHRC, the CIHR, the CFI, Statistics Canada and participating universities whose support is gratefully acknowledged. The views expressed in this paper do not necessarily represent the CRDCN's or that of its partners.

1. Introduction

Publicly provided universal childcare is available in some countries and remains a goal in many other parts of the world. One of the potential benefits of these programs is their impact on mothers' labor supply. For example, a positive impact on maternal employment might attenuate the economic penalty of first (and subsequent) births on women's economic progress (e.g., Waldfogel 1998, Angelov et al. 2016, Kleven et al. 2019). The constraints of family caring are highlighted by Goldin (2014) as the predominant barrier in the path of women's careers. Access to childcare earlier in their careers could have long-reaching implications.

There is a sizeable literature to date which investigates the short-term impacts of childcare access on mother's labor supply. While some studies find public childcare simply crowds out private arrangements, many find positive impacts on labor force participation (LFP). In these cases, there is much less work on the impact of this initial boost in labor force participation on long-term labor market outcomes. Long run changes in mothers' LFP could in turn have important implications for government budgets through increased tax revenue from higher earnings, and also through changes to life cycle participation in social programs.

In this paper we construct lifecycle estimates of the impact of the introduction of heavily subsidized, universal childcare in the Canadian province of Quebec on maternal labor supply, earnings, tax remittances and social program participation. This is a well-studied program that provided both center- and home-based care to children aged 0-4, starting in 1997. Importantly, this program had both short- and medium-term positive impacts on maternal employment (e.g., Lefebvre and Merrigan 2008, Baker et al. 2008, Lefebvre et al. 2009, Haeck et al. 2015). Drawing on both labor market survey data and income tax records,

which span a period of 24 years since the program was introduced, we provide a comprehensive account of the long run impacts of this program on maternal labor market outcomes and direct estimates of the consequent fiscal effects to be balanced against direct program costs.

We begin by using repeated cross-sectional data from the Canadian *Labor Force Survey* (LFS) to estimate the impact of the introduction, over time, of heavily subsidized childcare in Quebec. Using the rest of Canada as a point of comparison, we find that mothers fully exposed to this program were 5 percentage points more likely to work than those who were not exposed while their children were aged 0-4, which is comparable to estimates in other studies (including our own). But we also extend this finding to show that mothers were also more likely to work as their children aged, and that employment effects were persistent through age 15. That is, our initial findings of a mother's labor supply response when the children were of preschool age remain even after the child is out of childcare and of school age.

We next turn to longitudinal administrative tax data from the *Longitudinal Administrative Databank* (LAD), which allows us to track mothers into later life, construct a full history of any children that they have and create a measure of their lifetime exposure to the Quebec childcare policy. We examine the labor supply and earnings of different cohorts of mothers based on their exposure, controlling for cohort and year effects and exploiting the policy change in Quebec versus the rest of Canada. Since we know lifetime childbearing in these data, we can also use childless women as an additional control to assess the validity of our results.

We find that there is a large and growing impact of subsidized childcare on labor force participation, and even more so for earnings. We find that the effect on extensive margin employment for women who are in their 30s is 5 to 6 percentage points, rising to 7.3 percentage points at age 50; at the same time, the earnings effect grows substantially across these ages to reach a policy impact of 21% of earnings at age 50. The much steeper trajectory for earnings, years after children have aged out of the household, raises the possibility the early investments by mothers when children are young can payoff in later life earnings.

To provide greater insight we return to the LFS, which has data on hours, hourly wages and occupation. Focusing on married women, who have high levels of exposure to the program, we find there is an increasing effect over time on both hours of work and hourly wages that corresponds to the timing of the program's introduction when those women were having children. Overall, the evidence indicates that the program-related increase in average earnings is a result of increases in labor supply on both the extensive and intensive margins, as well as an increase in hourly wages.

Finally, we use our results to evaluate the fiscal consequences of the childcare program using the LAD tax data. We create a simulation model to capture the profile of public spending on childcare, taxes on earnings, and spending on other social insurance programs as mothers' age. We find that the long run fiscal savings are substantial but back loaded, while the expenditures are up-front. As a result, we estimate that the fiscal savings offset 70% to 131% of the costs of the program in present value.

Our paper proceeds as follows. In Part 2, we review the previous literature on childcare and labor supply, as well as previous studies of the Quebec program. In Part 3, we provide the

institutional details of the Quebec Family Plan. Part 4 introduces our data sources, and Part 5 describes how we measure exposure to the Quebec plan in both data sets. Part 6 presents the LFS analysis, and Part 7 the LAD analysis. Part 8 returns to the LFS to understand the mechanisms behind our finding. Part 9 presents the fiscal analysis, and Part 10 concludes.

2. Previous Literature

Our paper contributes to a fledgling literature on the long-run labor supply and earnings effects of childcare policies. As noted above, the majority of past research focuses on short-run outcomes due to data constraints and the recency of many initiatives. There are two recent papers examining the long-run effects of childcare initiatives in Europe. Sander (2024) investigates the impacts of the geographic roll out of daycare in Denmark starting in the 1960s. For mothers exposed to the roll out and without a post-secondary education, an increase in labor market participation of 5 percent is observed 17 years after the first birth. The labor supply effects dissipate after 23 years but there is evidence of earnings effects for mothers with a post-secondary education at 30 years. Huber and Rolvering (2023) examine the impact of geographic expansions of childcare in Germany starting in 2005. They report an increase of primarily part-time employment of just under 5 percentage points up to 10 years after a first birth. Associated increases in earnings are 4 to 5 percent. In additional analyses they report no impacts on the quality of mothers' careers captured by such metrics as employment stability or managerial positions. Also relevant is Erceg (2023) who leverages the 2003 expansion of the U.S Child and Dependent Care Credit (CDCC). She reports that mothers exposed to the

expansion for the first birth are 3.1 to 5.2 percentage points more likely to be employed 5 to 10 years post birth and command 18 percent higher earnings.

There are also related literatures investigating the longer run impacts of the US Earned Income Tax Credit and full day kindergarten. Kuka and Shenhav (2024) analyze the impact of increased incentives to work post birth provided by the 1993 expansion of the EITC. Focusing on single mothers after their first birth, they report that 10 to 19 years post-birth the mothers' labor market experience increased more than one half year due to higher rates of employment immediately post birth. They also find 4.2 percent higher earnings.

Humphries et al. (2024) is a recent study of the effect of universal prekindergarten on parents' labor supply and earnings based on lottery design in New Haven Connecticut.[1] They report that enrollment in preschool leads to increased hours of childcare and a contemporaneous 21.7 percent effect of parents' earnings which persists to at least 6 years after preschool ends. They also report that the tax revenue from these earnings gains largely offset the government's program costs.

Directly relevant, Lefebvre et al. (2009) report estimates of the medium-run impact of the Quebec policy. They examine the labor supply of mothers with at least one child aged 6-11 using *Survey of Labour and Income Dynamics* data from 1996 through 2004. They report estimates by year for annual labor market participation, revealing an initial impact that is quite small (in 2001 and 2002) but grows to over 5 percentage points by 2004. They also report very large impacts on earnings for mothers with less than a high school diploma. One limitation of this analysis is that by 2004 the sample of children aged 6 through 11 in Quebec had limited—

[1] See also Fitzpatrick (2010), Cascio and Schanzenbach (2013) and Cascio (2021).

potentially up to 3 years—exposure to the new childcare system. Therefore, given the data available at the time the authors are unable to analyze the decisions of mothers whose children had full (ages 0-4) exposure to the childcare program.

Finally, we are aware of one previous study (Andresen and Havnes 2019) which attempts to construct a direct fiscal accounting of the impact of universal childcare on family labor supply in Norway. However, that study is mostly confined to labor supply effects that are contemporaneous with childcare use.

Our work in this paper advances this literature by taking a long-run career perspective on both labor supply and incomes using a recent, large policy innovation in a sizable labor market. Of course, the impact on family labor supply and the associated fiscal impacts is only one of two key effects of subsidizing childcare: the other is on child development. There is a large literature on this topic as well, including numerous analyses of the same Quebec childcare program that we study here.[2] Baker (2011), Cascio (2015), Elango et al. (2015) and Blau (2020) provide broad reviews. In general, research indicates that targeted programs, such as Head start, benefit children (e.g., Currie and Thomas 1993, Garces et al. 2002 Carneiro and Ginja 2014) and disadvantaged children benefit more from universal programs (e.g., Felfe and Lalive 2018, Cornelissen et al. 2018). Results for the overall impact of universal programs are mixed. On one hand, Baker et al. (2008, 2019) and Fort et al. (2020) report negative effects on measures of children's wellbeing and development for Canada and Italy. On the other hand, studies of countries in Northern Europe report that expanding childcare leads to null or positive impacts on cognitive outcomes (Havnes and Mogstad 2011, 2015, Drange and Havnes 2019,

[2] See Baker et al. 2008 and 2019, Kottelenberg and Lehrer 2013, 2014, 2017 and 2018, Haeck et al. 2018.

Silliman and Mäkinen 2022) and null effects on non-cognitive outcomes (Gupta and Simonsen 2010). Any impacts on children may also have significant long run fiscal consequences for the government. Assessing those fiscal consequences are beyond the scope of the current paper.

3. The Quebec Family Plan

The Quebec universal childcare program was announced in the spring of 1997 and began operations in the fall of that same year. The program was phased in over time, with $5 a day childcare places made available to children aged 4 in the fall of 1997, aged 3 in the fall of 1998, aged 2 in the fall of 1999 and ages 0 and 1 in the fall of 2000.

We list the rollout dates and ages for the program in Table 1. In the third and fourth column, we show the years of birth corresponding to the oldest and youngest birth cohort eligible in each year. The first birth cohort to have been eligible was those born in 1993, who were eligible in 1997 at age 4. It wasn't until the 2000 birth cohort that children were eligible across the full five years from age 0 to age 4. Moreover, it was 2004 before the first age-five children potentially experienced the full 5 years of subsidized care over their lifetimes. So, while the rollout lasted only 3 calendar years from 1997 to 2000, it took 7 years of birth cohorts (1993 to 2000) to reach full eligibility.

In Table 2, we show the number of years of eligibility experienced by a child of the age indicated in the columns and in the year indicated in the rows. For example, 4 year olds in 2003 would have been eligible for the subsidized care for 4 years over the ages 0 through 4. Starting from age 4 in 1997, eligibility rolls out diagonally, as those original 1997 four-year olds reach older ages.

An important insight from Table 2 is that it took two decades for the program to have its full impact on children of all ages within a household. The 2000 birth cohort was the first eligible for all five years; that cohort reached age 18 in 2018 which is 21 years after the program was first announced. The consequence of this roll out pattern is that any longer-lasting impacts of early-life childcare requires attention on the impact of the program for families with children in their teens and the eligibility patterns of those teens many years before the outcome is observed. We explicitly parameterize this feature of the evolution of the policy in our empirical framework.

Other parameters of the Quebec program, and information about the period in which it was introduced, have been extensively documented in previous research (see, for example, Baker, Gruber and Milligan 2008 and 2019). We call on this documentation below for features that are important to our analysis.

4. Data sources

We use two main data sources. The first is a survey of contemporaneous labor market outcomes. The second is a panel administrative dataset with information on income. We describe the details of each data source below and how we make use of them.

For detailed study of mothers' labor market outcomes, we use the LFS, which is a mandatory, monthly survey of about 100,000 Canadians with information on their labor market situation, family background, and demographics. It is the source of official monthly estimates of the unemployment rate. Respondents stay in the LFS for a six consecutive month rotation, with one sixth of the sample (a rotation group) turning over each calendar month. We select the first

observation from the six-month rotation for each individual for our analysis sample. Our data are drawn from the LFS years 1987 through 2023, but as noted below the sample years vary across different analyses.

The LFS allows to observe a mother's children only if they live at home (in the same dwelling). Because children age out of the family dwelling, this prevents us from constructing the full fertility history for women, especially as we observe the women at older ages. In consideration of this limitation, we measure a women's exposure to the Quebec Family Plan in the LFS based on the year of birth and age of her youngest observed child. For the same reason, we limit the analysis to mothers with youngest children ages 0 through 15.[3]

The LFS's strength is its detailed information on labor market activity. We use it to first establish the contemporaneous labor market effect of the Quebec Family Plan, which we can benchmark against previous research on the labor supply effects of this program. Next, we extend previous research by searching for labor supply effects for mothers with children who have aged out of the program; who have reached school age and beyond. Finally, later in the paper we return to the LFS to examine intensive labor market indicators for women at older ages.

Our analysis of mothers' incomes, participation in social programs, and income taxes paid comes from the LAD. The LAD is based on tax return data for a large sample (approximately 20% random sample of the population) of Canadians. Once individuals enter

[3] Because children have left the family dwelling for school, work, or other reasons we cannot tell if a woman with no children reported in the LFS was childless or has a child who is no longer living at home. Starting at age 16, it is increasingly likely that children no longer live at home so we limit our analysis to mothers of children age 15 and under.

the LAD they are followed until death or emigration from Canada.[4] The sample is refreshed each year and currently spans the period 1982 to 2021. The LAD reports detailed measures of income, as well as information used by the tax system to adjust tax liabilities. For each year, a separate file documents the age of each child associated with a parent who is in the LAD. This information comes from children directly claimed as dependents as well as from imputations from other administrative sources (like child benefit payments).[5]

We use the LAD to form an income history for each respondent for all possible ages between 20 and 50. These income histories are adjusted to 2021 dollars using the consumer price index. The availability of a full income history depends on the birth cohort of a respondent. For older cohorts of women, we miss their income at younger ages because of the LAD starts in 1982. For younger cohorts, we miss their income at older ages because they haven't yet reached those ages. For example, for mothers in the 1960 birth cohort we can observe incomes first at age 22 in 1982. For mothers in the 1975 birth cohort, we observe incomes at an oldest age of 46 in 2021.

We also form a family history of children for each respondent. We count any child that has the respondent listed as a parent across all observed ages of the parent from 15 up to age 40.[6] Stopping at age 40 allows us to use birth cohorts up to birth year 1981 in the last year of

[4] Each year an individual will appear if they file a tax return. They are picked up again after any periods of non filing.

[5] The family formation used in the LAD comes from the T1 Family File, which is the main data product that forms the basis for the LAD. The T1 Family File is derived directly from income tax filings.

[6] More precisely, we take any child appearing at least once between child's age 0 and 4 for women aged 15 to 40. This captures children born from 1978 onward. In addition, we supplement the sample of children by capturing any children at ages 5-17 in the first year of our sample, 1982. This captures children born from 1965 onward. Since we capture births at age 15 in 1965, the first mother year of birth cohort for which we have complete child data is the 1950 birth cohort.

our data, 2021. We test the sensitivity of our analysis to this decision by also constructing the family histories using a maximum mother's age of 50 to capture later-life births. The downside of using a higher maximum age is that we lose more birth cohorts from the 1970s; when we use age 50 the last birth cohort we can use is 1971. Since the Quebec Family Plan was introduced in 1997, having birth cohorts from the 1970s is helpful for capturing cohorts most affected by the program. As reference, in 1993 1.3 percent of births were to mothers aged 40 or older, while by 2006 it had risen to 2.9 percent.[7]

The strength of the LAD is that it allows us to create a comprehensive family history, which is not available in the LFS. But the disadvantage is that the LAD does not include some labor supply measures of interest, like hours of work, hourly earnings or occupation. Therefore, we use these two sources to complement each other.

5. Program Eligibility/Exposure

We use three different measures of program eligibility or exposure in our analysis that we outline here. Program eligibility at the child level is not difficult to determine as it depends solely on year, child's age, and residence in the province of Quebec. However, our primary interest is the impact of the program on mothers' labor supply behavior and incomes, and so we want to construct measures of the mothers' exposure to the program.

A contemporaneous measure of mothers' exposure to the program—whether a mother has a child who is currently covered by the policy—is simply that child's measure of exposure. More formally, for a mother or their child, eligibility is determined by province *p* (living in

[7] Statistics Canada: https://doi.org/10.25318/1310041601-eng.

Quebec), year *y* and youngest child age *s* (starting in 1997 for age 4; falling by 2000 to age 0) following the policy schedule in Table 1.

$$Elig_{pys} = \begin{cases} 1 \; if \; mother \; has \; eligible \; child \\ 0 \; otherwise \end{cases} \quad (1)$$

For the LFS analysis this measure of eligibility is constructed for the mother's youngest child, as noted above.

A backwards-looking measure of mothers' exposure is based on the eligibility of all her children at the ages 0-4. For an individual child this measure can vary between 0 (for those who were not ever exposed to the program) and 1 (those who were eligible in all five years between ages 0 and 4). Mothers of children who were partially exposed over some of the age 0-4 period will be assigned a value between 0 and 1, depending on the degree of exposure.

For the LFS analysis we calculate the backward-looking measure by summing up the contemporaneous measure $Elig_{pys}$ over the youngest child's age, *r*, from 0 to 4, for the years *t* that correspond to the child's age *r* and dividing by 5.

$$BackElig_{pys} = \frac{\sum_{r=0}^{4} Elig_{ptr}}{5} \quad (2)$$

For example, to construct the eligibility of someone from *p*=Quebec observed in *y*=2004 with a youngest child currently aged *s*=8, we sum $Elig_{ptr}$ over the years *t*=1996 to 2000 when the child was ages *r*=0 to 4. In application, this measure has a minimum value of 0 for child birth cohorts before 1993, who were too old when the program was introduced for 4-year olds. The maximum value is 1.0, assigned to child birth cohorts from 2000 onward who were age 0 when the program was extended to age 0 in 2000. The values for birth cohorts between 1993 and 1999 are between 0.2 and 0.8.

In the LAD we can construct a history of all a woman's children. To construct a backward-looking measure in these data we make use of our contemporaneous policy measure $Elig_{pys}$ but also must count the number of years a mother has a child of preschool age. At each age of the mother *a* and children with age *s* we assign a binary variable $Preschool_{as}$ based on whether there is at least one child of preschool age, in the range $0 \leq s \leq 4$.

$$Preschool_{as} = \begin{cases} 1 \; if \; mother \; at \; age \; a \; has \; a \; child \; age \; 0 \; to \; 4. \\ 0 \; otherwise \end{cases} \quad (3)$$

The average policy exposure over the mother's life is then the sum of the years the mother has an eligible child from equation (1) divided by the sum of years she has a preschooler from (3). This will depend on the mother's province of residence *p*, birth cohort *b*, and the children's age structure *s* which together determine whether her children are eligible in a particular year. In our implementation, we consider eligibility at mother's ages *a* from 15 to 44 and eligibility in the year *t* that corresponds to mother's age *a* and the children's age structure *s* that corresponds to mother's age *a*.[8]

$$LifeElig_{pbs} = \frac{\sum_{a=15}^{54} Elig_{ptr}}{\sum_{a=15}^{54} Preschool_{ar}} \quad (4)$$

Consider, for example, a woman born in Quebec in 1970 who had children in 1995 and 1999 at ages 25 and 29. From mother ages *a*=25 to 34 the denominator takes the value 1, since she has a preschooler at those ages. The child born in 1995 is eligible when the child is age 3 in 1998, at mother's age *a*=28. The child born in 1999 is first eligible in 2000 at child age 0, at mother's age *a*=30 and continues to be eligible until 2003. Taken together, the mother is

[8] We choose age 44 as the maximum age for the policy measure in order to accommodate births up to mother's age of 40 and eligibility up to child's age of 4. For our robustness check using children born up to age 50, we calculate this measure using the mother's age range of 15 to 54.

eligible for a total of 6 years out of the 9 years she has a preschool-aged child. In this case, the mother's value for $LifeElig_{pbs}$ is 0.667.

6. LFS Analysis

We begin our analysis documenting the contemporaneous labor supply impact of the Quebec Family Plan. As noted above this has been the focus of much previous research, so one goal in our analysis here is to benchmark our current approach against the previous research. However, we also investigate whether any contemporaneous impacts persist as children age out of the program and into their school years. We use the LFS because of its focus on labor supply measures like employment status and hours. Our empirical framework is a quasi-experimental differencing strategy, comparing mothers in Quebec to those in other Canadian provinces over time.

An overview of the contemporaneous impact of the program is provided in Figure 1 where we graph the employment rates separately for Quebec and the rest of Canada (ROC), for women with a youngest child in the age range 0-4. The first vertical line indicates the year in which children in the age group are initially exposed to the childcare program (starting in 1997 for 4-year olds), while the second vertical line denotes the year in which all children age 0-4 will have potentially experienced a full 5 years in the program (2004, since the year 2000 newborns reach age 4 in that year). Before 1997, the employment rates in Quebec for women with a youngest child 0-4 persistently fell slightly short of those in the ROC. After the program was introduced, the ROC/Quebec difference closes over the phase in period and then turns positive, the difference growing to around 6 percentage points in the 2005-2010 period.

We refine this analysis with a two-way fixed effect regression framework (5). We regress measures of labor supply on a policy variable, a full set of province dummies ($Prov_p$), time dummies ($Year_y$), and other control variables. The policy variable is $Elig_{pys}$, described above, that is formed as a binary variable indicating eligibility given the province, year, and age of youngest child. Our vector of control variables includes mother's education groups and age groups. We report robust standard errors.[9]

$$y_{ipy} = \beta_0 + \beta_1 Elig_{pys} + Prov_p + \beta_3 Year_y + \beta_4 X_{ipy} + \varepsilon_{ipy} \qquad (5)$$

Our results from estimating equation (4) are reported in Table 3. The estimates establish three important points. First, the estimated impact of the new childcare policy on contemporaneous employment is 5.2 percentage points for mothers with a youngest child aged 0 through 4, which is 9 percent of the pre-policy mean of 0.57.[10] This estimate can be compared, for example, to the report in Baker et al. (2008) of a contemporaneous impact on maternal employment of 7.7 percentage points.[11] Second, the estimates for employment by single ages of the youngest child vary with no systematic pattern and range over a fairly tight band. Therefore, the employment effect does not build over time and is present right after birth. Third, most of the impact of the program on employment seems to be through fulltime work (column 2). The impact on usual weekly hours worked (column 3) range between 1.1

[9] We will explore the robustness of our results to other standard error estimation, using methods appropriate for our case with few treated clusters (Mackinnon and Webb 2017, 2018, 2019, 2020; Mackinnon Nielsen and Webb 2023; Cameron et al. 2008; Cameron and Miller 2015).

[10] It is also possible to specify the analysis of this outcome as an event study. The estimates using this approach are consistent with those form the two way fixed effects model. See Figure A1 in the Appendix.

[11] The employment measure in Baker et al. (2008) is based on a question whether the respondent has worked in the last 12 months and so we might expect a larger estimate.

hours and 2.4 hours extra work, which when compared to the mean of 15.2 hours in 1996 lines up well with the interpretation that most of the hours effect is coming from fulltime work.[12]

We next extend our analysis to mothers with children at older ages. To summarize the impact at older ages we again estimate the two-way fixed effects model, separately for each age 5 through 15, using our backwards looking measure of eligibility, $BackElig_{py}$. We present results only for a binary employment variable because the previous analysis strongly suggested that the impact of the policy is primarily on the extensive margin.

The results are presented in Figure 2, where we graph the coefficient on *BackElig* along with the 95 percent confidence interval for each age-based sample as indicated. The estimates indicate significant and persistent impact of the program out to an age of 15. The point estimates fade somewhat from 0.080 at age 8 to 0.033 by age 14; this may reflect the fact that we are less likely to observe children living at home as ages increase. Nevertheless, the findings suggest the impact of the policy on mother's labor supply strongly persisted at least 10 years after the youngest child's last year in the subsidized care.

The LFS estimates indicate that the Quebec childcare program had a strong impact on mothers' employment when their children were of pre-school age. Moreover, there is a persistent impact on mother's labor supply, long after their children reached school ages. The results show this was not marginal attachment to the workforce but mostly full-time work. This suggests that the program changed these mothers' life cycle employment trajectories, setting the stage for the second part of our analysis based on the LAD data.

[12] The estimate for ages 0-4 is 1.7 hours, which is 11% of the pre-program mean for Quebec. For the employment rate, the impact of 5.2 percentage points is 9.1% of the pre-program mean.

7. LAD Analysis

We next turn to the LAD for analysis of the long-run impact of the Quebec program on earnings and other measures of income. Because the LAD is longitudinal, we can observe the entire history of children living with the mother, even if the children have grown up and moved out of the household. We can also investigate the use of various forms of transfer income to discover if there is tradeoff between social support over the period when children are young and support later in life perhaps due to disruptive impact of births on women's labor market profiles.

Figure 3 traces the value of $LifeElig_{pbs}$, our lifetime measure of program exposure, in the LAD for women in Quebec, averaged by the mother's year of birth cohort.[13] We present two calculations of $LifeElig_{pbs}$. The first, our default, considers children born up to mother's age 40. The second considers children born up to age 50. The first children eligible for the program were born in 1993. Capturing births up to mother's age 40 means that the 1953 birth cohort is the first to potentially include treated mothers. At the other end of the spectrum, since the LAD is available to 2021, the last cohort of mothers we can observe at age 40 was born in 1981. For the age 50 alternative measure, we must stop at mother year of birth cohort 1971. Therefore, while the alternative measure captures any children born at older ages, our default measure allows us to consider mothers born in later birth cohorts.

[13] We assign the policy based on province of residence when the child is aged 0-4. So, anyone who moves into Quebec after the children are school age would be scored as a 'zero' while those who were in Quebec while their child was age 0-4 but then migrated out of Quebec would receive a positive *LifeElig* score. In this way, the mean outside Quebec is very small but not zero (reflecting the fact that some original Quebecers moved out of Quebec), and the mean inside Quebec is less than 1 (reflecting the fact that some current Quebecers did not live in the province when their child was age 0-4).

From near zero in the mid-1950s, the policy measure grows substantially after the 1960 birth cohort. The measure is above 0.50 by 1968, and by 1981 there is nearly full lifetime coverage of 0.979.[14] Note that there is not a substantial difference in the policy measure when we use age 50 instead of age 40 as the maximum mother's age cutoff for capturing births. Also, there is substantial policy variation across the 1970s birth cohorts so we use the age 40 maximum mother's age cutoff as our default in order to capture all of this 1970s birth cohort variation.

We again begin presenting the "raw" earnings variables graphically and then proceed to regression analysis. In Figure 4 we graph total earnings, mapping the averages across birth cohorts who in Quebec experience increasing exposure to the Quebec Family Plan. The means are reported by age group for mothers who had children by age 40. For each age group, we observe an initial positive ROC/Quebec gap which closes over time. The lion's share of the closure occurs between cohorts 1960 and 1970. Referring back to Figure 3, it is across these cohorts that there is the greatest increase in treatment. We can also see the greatest relative growth in earnings for mothers in Quebec is at the oldest ages. This is a result we will formalize in the regression results below.

As a check that the relative earnings growth in Figure 4 is not a result of a Quebec-specific trend, in Figure 5 we present the analogous means for the sample of women who did not have children by age 40. At ages 30-34 and 35-39, the averages for Quebec and the ROC change almost in parallel across birth cohorts, indicating a relatively constant positive

[14] The fact that this "max value" is less than 1.0 indicates that while most children of mothers of the 1981 birth cohort were born post 2000 (full exposure) at least some were born during the transition period 1997-2000.

ROC/Quebec gap. At ages 40-44 average earnings in Quebec are a little more volatile, although the gaps for many of the 1970s cohorts rival the gaps for the 1950s cohorts. Finally at ages 45-49 there is volatility in both the ROC and Quebec means, with the gap generally smaller starting with the 1963 cohort.

We next present estimates from regressions of different income variables on our policy variable. The form of our analysis is to regress the outcome variable for women at age *a* in province *p* and year of birth cohort *b* on our policy variable $LifeElig_{ipb}$, a Quebec dummy, a set of dummies for mother's year of birth, and control variables X_{ipb}which include other province dummies and number of children at mother's age 40.

$$Income_{ipb}^{a} = \beta_0 + \beta_1 LifeElig_{ipb} + \beta_2 QUE_p + \beta_3 MotherYOB_b + \beta_4 X_{ipb} + \varepsilon_{ipb} \quad (6)$$

We focus on age groups 30-34, 35-39, 40-44, 45-49, and age 50. Not all cohorts are observed at each age because of the 1982-2021 time span of the LAD. For example, the 1952 cohort is first observed in 1982 at age 30 and the 1981 cohort is last observed at age 40 in 2021. This model is identified by the differential effect, at a given age, of the exposure of different cohorts to the policy in Quebec, relative to the rest of Canada.

Our regression results are reported in Table 4 and Table 5. The outcome variables are derived from income and tax measures in the LAD, all converted to 2021 Canadian dollars, and standard errors are robust clustered on the mother's year of birth and Quebec residence groups. Across the columns are the different income measures. Down the table is the estimated coefficient on our lifetime eligibility variable for incomes earned at each age group.

The first column in Table 4 has the estimates for total earnings. At ages 30-34, earnings are estimated to increase by $3,589 per year. The average earnings for Quebec women with

children in the 1970 birth cohort at ages 30-34 is $29,060 per year, so this increase is 12.4% of the mean. In the bottom row at age 50, the estimate rises to $12,929, which is 24.6% of the 1970 Quebec mother mean of $52,600. The second and third columns break down total earnings into earnings from employment and earnings from self-employment. The total earnings impact is clearly driven by earnings from employment. The next two columns show the impact of the policy variable on social assistance (SA) income and regular Employment Insurance (EI) benefits. In both cases, the estimates are negative. The point estimates are small, but so are the relevant means—at age 40 the mean social assistance income for a Quebec mother in the 1970 birth cohort was $440, so the estimated drop of $235 is substantial. Finally, in the last column is the estimate of the impact on income taxes. The estimates are consistently around 35% of the increase in total earnings, which aligns with prevailing tax rates in Quebec.

The analysis continues in Table 5 with binary dependent variable measures of different income groups. These extensive margin estimates are important because the LFS analysis earlier suggested that much of the change in labor supply behavior is on the extensive margin. Down the column we show the specific ages at which we form the binary income variables. The first column shows the impact on having employment income greater than $10,000.[15] The estimates range from 9.3 percentage points at age 30 to 7.3 percentage points at age 50. These are somewhat higher than the contemporaneous point estimates found in the LFS using the point-in-time employment measure results in Table 3. The impact of our lifetime eligibility policy variable on having any self-employment income is fairly small, ranging from 1.6 to 3.2

[15] This threshold was chosen to calibrate the mean level of this annual earnings binary measure toward the mean level in the LFS. Because the LAD measures annual earnings, even a short spell at a part time job would push this to a '1' if the threshold were low. We show sensitivity to different thresholds in the Appendix. See figure A2.

percentage points. The point estimates for having social assistance income and EI benefits are larger, ranging up to -0.049 at age 45 for EI benefits. The mean across cohorts for receiving any EI benefits ranges between 20 and 30 percent, so these are modest changes in EI receipt. For social assistance income, though, the mean is in the 5 to 10 percent range so the estimated coefficients reported here are fairly large. In the final column we report the results for an indicator that the family is below the Low Income Measure line. At age 30, the estimated impact is minus 8.9 percentage points, which is large compared to the mean at age 30 which was 17.1 percent for the 1970 birth cohort of Quebec mothers.

Robustness Checks

Given the striking nature of these findings, we subject them to four robustness checks. First, we address the concern that the observed $LifeElig_{ipb}$ may be biased through endogenous fertility decisions.[16] We do so by creating an instrument which is the cell mean of $LifeElig_{ipb}$ by Quebec residence and mother's year of birth. In this specification, we are relying solely on Quebec-rest of Canada differences in the policy variable across birth cohort, which can be seen in Figure 3.

These IV results are reported in Table 6. At ages 30-34 they are attenuated relative to the OLS results in Table 4. For example, total earnings are estimated to increase $1,253 per year by IV compared to $3,589 by OLS. However, at older ages the difference is much smaller: for example, at age 50 $11,269 by IV compared to $12,929 by OLS. The IV and OLS estimates for Social Assistance and EI benefits are generally quite similar, but for self-employment earnings

[16] Lee and Liu (2024) report a complex pattern of fertility effects of the Quebec Family Policy. There are positive effects on first births for younger women and a decrease in higher order births for older women.

and income taxes the IV are again typically smaller than the OLS, with larger differences at younger ages. Overall, the results are broadly consistent using this IV strategy.

A second concern is that the entirety of Canada may not serve as a proper control for counterfactual outcomes for Quebec. There is more economic similarity between Quebec and Ontario than there is with the rest of the nation. To investigate whether this matters, we replicate our results for employment excluding observations from provinces other than Ontario and Quebec. The results using the LAD are reported in Figure A3 of the Appendix. The figure shows that changing the control group in this way has little effect on our inference. The results using the LFS are in progress.

A third concern is that there are differential trends in mothers' labor supply decisions between Quebec and the rest of Canada that are unrelated to the Quebec family policy. To assess this concern, we add cohort time trends interacted with the Quebec dummy to our model. The resulting implications for coefficients by age are shown in Figure A4 of the Appendix. We show various functional forms for trends, and at each age, save 30-34, including them does not materially impact our findings.

Finally, as yet another check on our identification, we assign a placebo policy variable in the sample of women who reach age 40 without children. These values of this placebo policy variable are drawn from the policy variable values recorded in the pool of women with children in the same Quebec by year of birth cells. We then estimate regressions of earnings on the placebo, Quebec and year of birth dummies, along with the other control variables, using this sample. In Figure 6, we present these estimates, and as a point of comparison our original estimates for the sample of women with children by age 40, which are just the coefficients from

the first column of Table 4. The coefficients on the placebo policy variable for women without kids are small in magnitude, and statistically insignificant at the 95 percent confidence level (except for the age 50 coefficient which does reach statistical significance). This placebo test gives us further confidence that our estimates for women with children are not simply picking up Quebec-rest of Canada trends across birth cohorts in earnings.[17]

Further robustness checks are in progress and will be reported in the next draft. They include estimating a full triple-difference specification (QUE/ROC, time, with/without kids) and a synthetic control group specification.

8. Mechanisms [SECTION INCOMPLETE – IN PROGRESS]

A puzzle in our results thus far is what changes in labor supply can rationalize the estimated increase in earnings at older ages in the LAD – and in particular the much steeper age profile that we see in earnings than in employment. As noted earlier, the earnings effect was about 12% of earnings at ages 30-34 but rose to 25% of earnings at age 50. The binary extensive margin estimates were smaller at age 50 (7.3 points) than at age 30 (9.3 points). What can explain this steep age-earnings profile?

To explore alternative hypotheses, we return to the LFS which has richer measures of labor supply and mother's characteristics than the LAD. Recall that in the LFS we cannot observe children who are no longer living at home with their mothers. When mothers are

[17] We also investigate the robustness of estimates for earnings in the LAD to our decision to measure of mothers' lifetime fertilities up to age 40. In figure A5 of the appendix are estimates measuring lifetime fertility up to ages 45 and 50. The estimates are modestly attenuated at older ages when we capture births up to the higher ages (and correspondingly omit mother birth cohorts from the 1970s).

younger, this isn't a problem. But, as women age past age 35 it becomes more likely that some children are no longer at home and therefore we cannot tell if that mother was exposed to the program when her (now non-observable) children were younger and living at home.

To circumvent this obstacle, we use the sample of married women. At age 35 roughly 85% of married women in our LFS sample have children in the home, so this sample of married women observed at older ages will be women who had a high level of exposure to the program if they live in Quebec. We attach the Quebec-mother year of birth cell mean lifetime policy variable presented in Figure 3 to each married woman in the LFS and run regressions of the form of equation (6). Since the LFS reports mother's education, we include mother's education in the set of controls here. The sample includes mothers with year of birth between 1950 and 1981, using the LFS from the years 1990 to 2023.

The estimates are reported in Table 7. At ages 35-39 and 40-44, the results are consistent with our earlier results from the LAD in Table 5. There is an extensive margin employment effect that is mostly fulltime work. There is no observed increase in log hours conditional on working. For the two older age groups, ages 45-49 and 50-54, there is a larger increase in full time employment, with a corresponding boost in usual hours.

There are several hypotheses that we are continuing to explore and will be reported in the next draft. One hypothesis for this effect is selection: the women who join the labor force in response to increased childcare availability are those who have inherently steeper age-earnings profiles. Another possibility is that women exposed to the program increased their labor supply on the intensive margin as they age. Still another possibility is that women are at younger ages

selecting into occupations with steeper age-earnings profiles. Women may also be more rapidly moving up the occupational ladder in response to this program.

Using the LFS, which has information on education and occupation, we will continue to assess these potential mechanisms.

9. Fiscal Analysis

As noted above, one important implication of the large, long run rise in maternal earnings that we estimate is that it will result in higher tax collections. We have also documented a negative effect of the policy on public income support programs. In this section, we use our LAD results to quantify these fiscal offsets, relative to the cost of the program.

To do this we construct an estimate of the fiscal cost and benefit for each mother's age and discount it back to age 20. We use the sample of mothers born in the years 1967 through 1978 as this is the heart of the treated mothers we observe in our data. At each age from 15 to 44, take the average number of children aged 0-4 per Quebec mother with children. This is the effective number of kids at each mother age. This measure ranges from 0.046 at age 18 to 0.709 at age 31 (the peak) and back down to 0.032 at age 44. Across all ages, the average total number of years of program eligibility in this sample is 10.5. To assign a cost we use an estimate of $10,000 per treated child per year.[18] Recent data reveals 78 percent of children in Quebec are in care and of those 77 percent are in the subsidized care provided by the Quebec

[18] In 2019-20, the total subsidy to pre-school age children was $2.37 billion. (Gouvernement du Québec 2020). 2019 there was about 235,000 children in subsidized care (Friendly et al. 2020). $10,000/child is therefore a reasonable estimate.

program.[19] This yields an estimate of 60 percent of eligible children incurring a cost, or a cost of $6,000 per eligible child.

For the benefits of the program, we use our estimates for total income taxes, Employment Insurance benefits, and Social Assistance benefits by age of the mother from table 4. We have these estimates for five year age groups ranging from 20 through age 50. To extend the estimates to age 60 we currently simply assume the same values we observe at age 50. In future drafts, we will consider richer models of impacts by age that allow us to refine this assumption.

An outline of the lifecyle of these estimates of costs and benefits are presented in Figure 7. The annual costs are an inverted U shaped reflecting the underlying variation of eligible children aged 0-4 with age and its peak at age 31. The additional tax revenues rise in a step function, reflecting our five year age groups, and then level off at age 50 (again by construction). It is clear in the figure that the fiscal benefits of the program are primarily the increase in tax revenues rather than any savings in EI and SA benefits. It is also clear that the net fiscal benefit of the program will depend significantly on the discount rate used, as the costs are mostly front loaded and benefits back loaded.

An estimate of the net present values of our calculations for different real discount rates are presented in Table 8. In the first two columns are the results using our estimates of the costs and benefits for the full age range 20 through 60. We present the net calculation for the discount rates 1.5%

[19] About 78% of children under age 6 were in any kind of care in Quebec in 2019. https://www150.statcan.gc.ca/n1/daily-quotidien/210407/dq210407b-eng.htm. Of those in care, 77% were in subsidized care (Friendly et al. 2020). So, 0.78*0.77 = 60% of pre-school age children were in subsidized care. Looking at another source, a survey conducted in 2021 finds that 59.7% of Quebec pre-school age children were in subsidized forms of care (Figure 2.12, Gouvernement du Québec 2022). So, we use 60% in our calculations.

and 3%. The net benefit is positive at either discount rate. This is in accord with the internal rate for return for the program based on these estimates which we calculate to be 3.4%. In the next two columns we repeat the analysis, but this time limit the costs and benefits to ages 20 through 50. This omits our interpolation of these elements between ages 50 and 60. Here under either discount rate the net calculation is significantly negative. This reflects the fact that much of the fiscal benefits of the program are realized at mother's aged 45 and higher (see Figure 7).

10. Conclusion

In 1997 the Canadian province of Quebec introduced a heavily subsidized, universal childcare program offering care at $5/day. Past research has investigated the contemporaneous impact of this program on maternal labor supply and its shorter and longer term effects on children's outcomes. In this paper we construct estimates of the program's long term, life cycle impact on maternal labor supply, earnings, social program participation and tax remittances. Based on this catalogue of life cycle estimates, we construct a fiscal accounting comparing marginal public expenditures on the program to the fiscal benefits of the program's effects on the life cycle labor market history of a representative mother. We are not aware of another estimate of this fiscal balance which adopts a full lifecycle perspective.

While our analysis documents a contemporaneous impact of the program on mother's labor supply consistent with evidence from past research, we also uncover an enduring impact of the program long after children have aged out of their pre-school years. Into the children's teenage years we find that mothers' employment and earnings are positively affected. For example, when the youngest child is aged 14 we find an extensive-margin impact on employment of 3.9 percentage points. Significantly, the majority of this increase in

employment is full time employment. Our investigation of earnings uncovers a positive impact of the program that grows over the lifecycle and is largest at the oldest ages (50) that we observe in our data. The increase is primarily for regular employment earnings, rather than self-employment earnings. These earnings effects are matched by increasing tax remittances and consistently lower receipt of social assistance and employment insurance benefits.

Taken together, our findings reinforce the importance of childbearing to the economic lifecycle of women. If, as suggested by Goldin (2014), more flexibility for women through caregiving years is vital for further decreasing gender career trajectories, then our evidence highlights one policy tool that may work toward that goal.

In addition to the impact on women's careers, we also investigate a fiscal accounting of the direct costs and benefits of the program. Our estimate of the fiscal balance reveals that under reasonable assumptions the flow of fiscal benefits could account for 70% to 131% of the up-front costs of the program.

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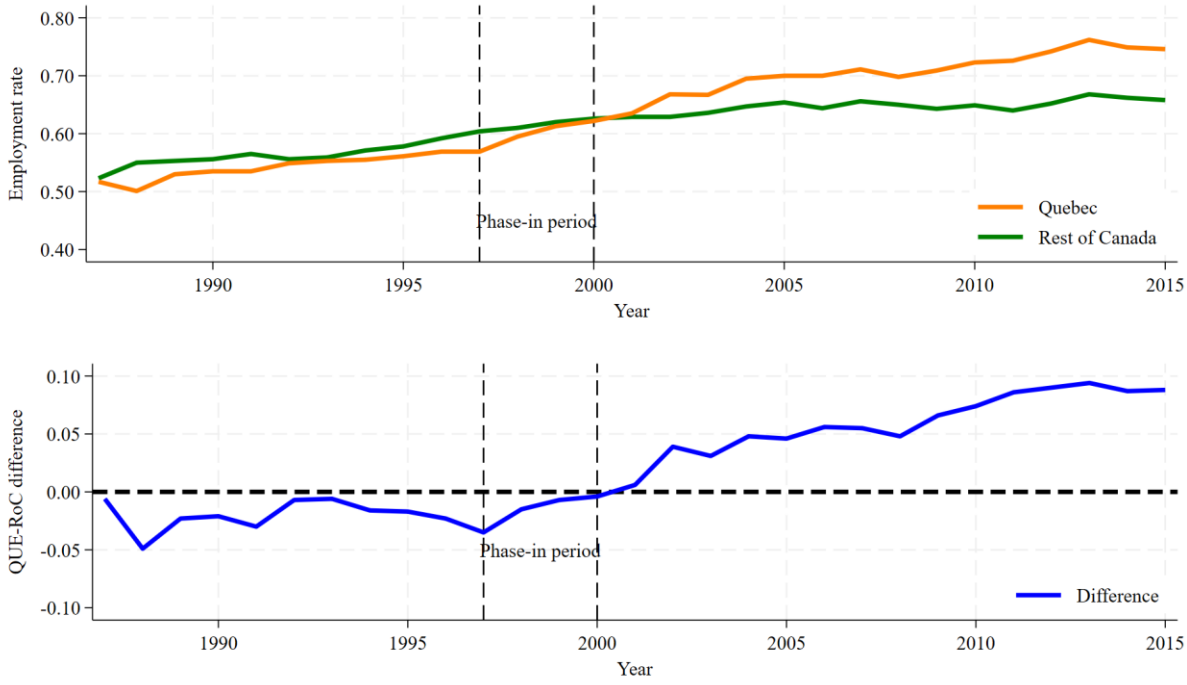
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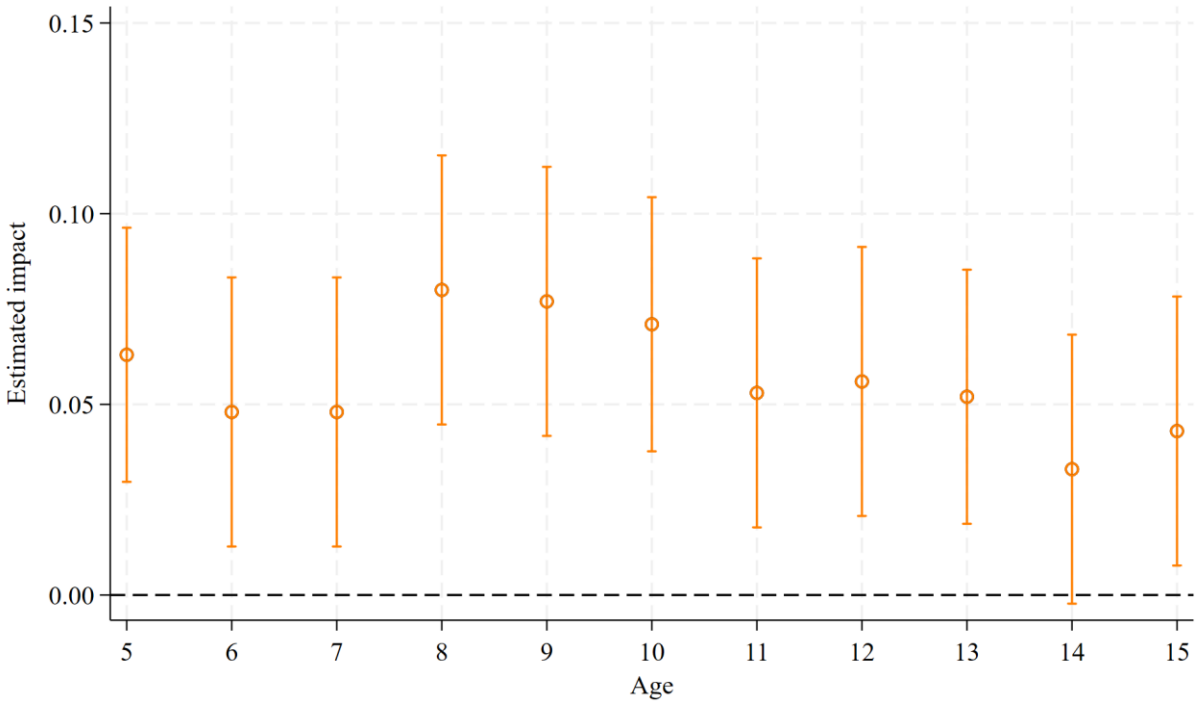
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Figure 1: Employment of mothers with youngest child aged 0-4, Quebec versus the rest of Canada, in the LFS



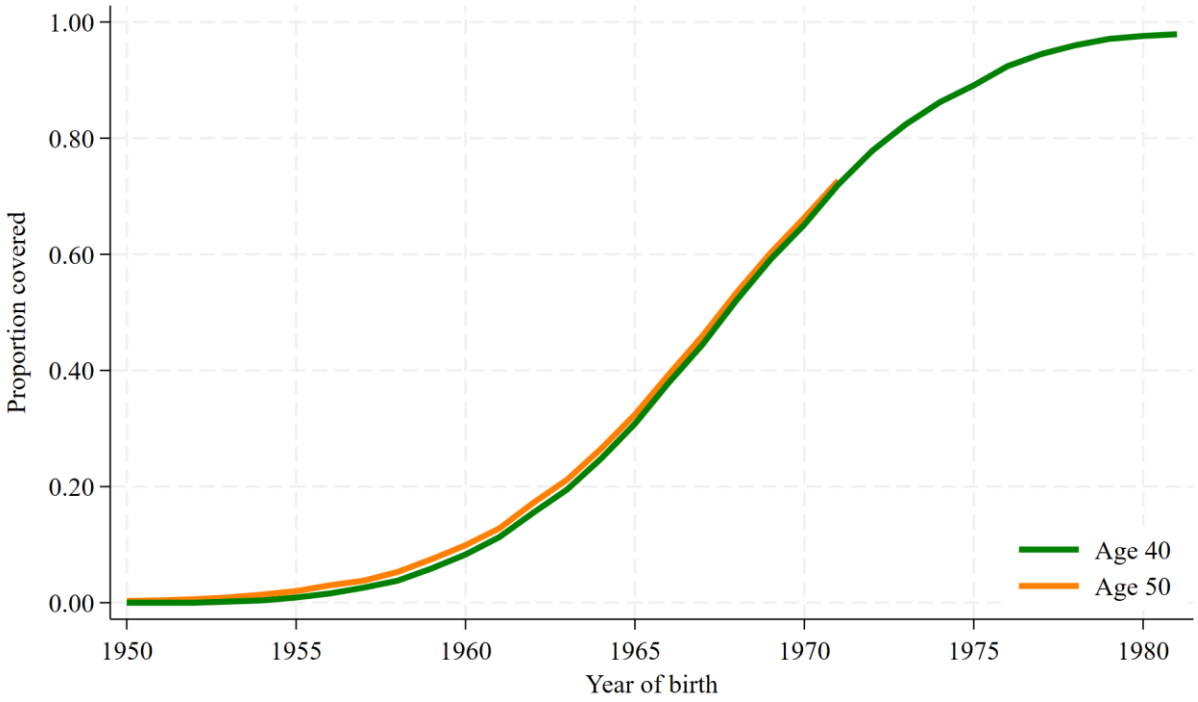
Notes: Unconditional means for the employment rate for each year in the Labour Force Survey. There are separate lines for residents of Quebec and those from other provinces in the top panel. The bottom panel shows the difference between the lines in the top panel.

Figure 2: Estimated impact of Quebec program on mothers with youngest child ages 5-15 in the LFS



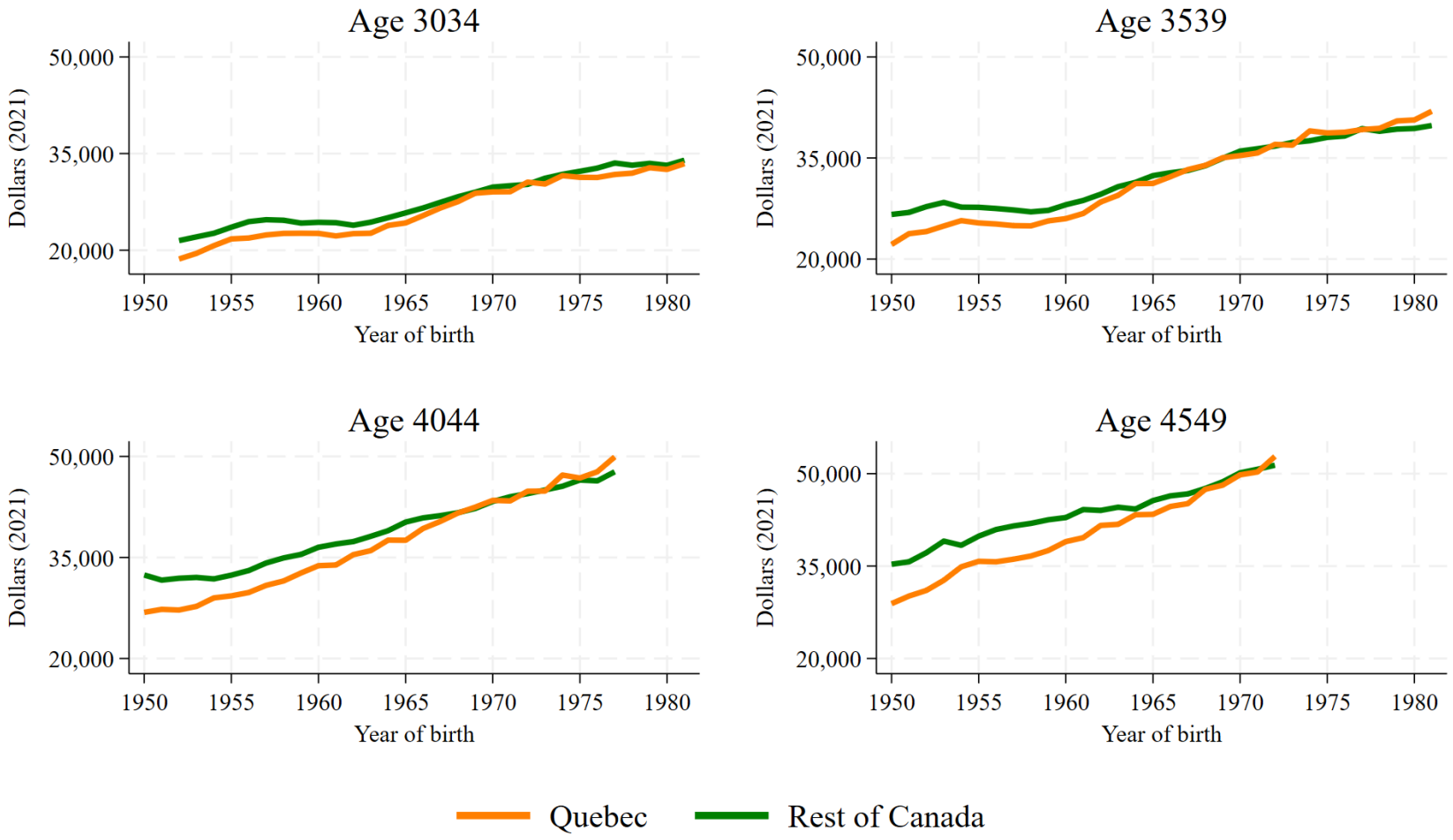
Notes: Results using the Labour Force Survey. We plot the coefficients and 95 percent confidence interval for the variable *Backelig* from regressions using the specification discussed in the text. The sample is defined by the age of the youngest child which is indicated on the horizontal axis; each child age is a separate regression.

Figure 3: Lifetime policy eligibility ($LifeElig_{pbs,}$) by mother's year of birth in the LAD



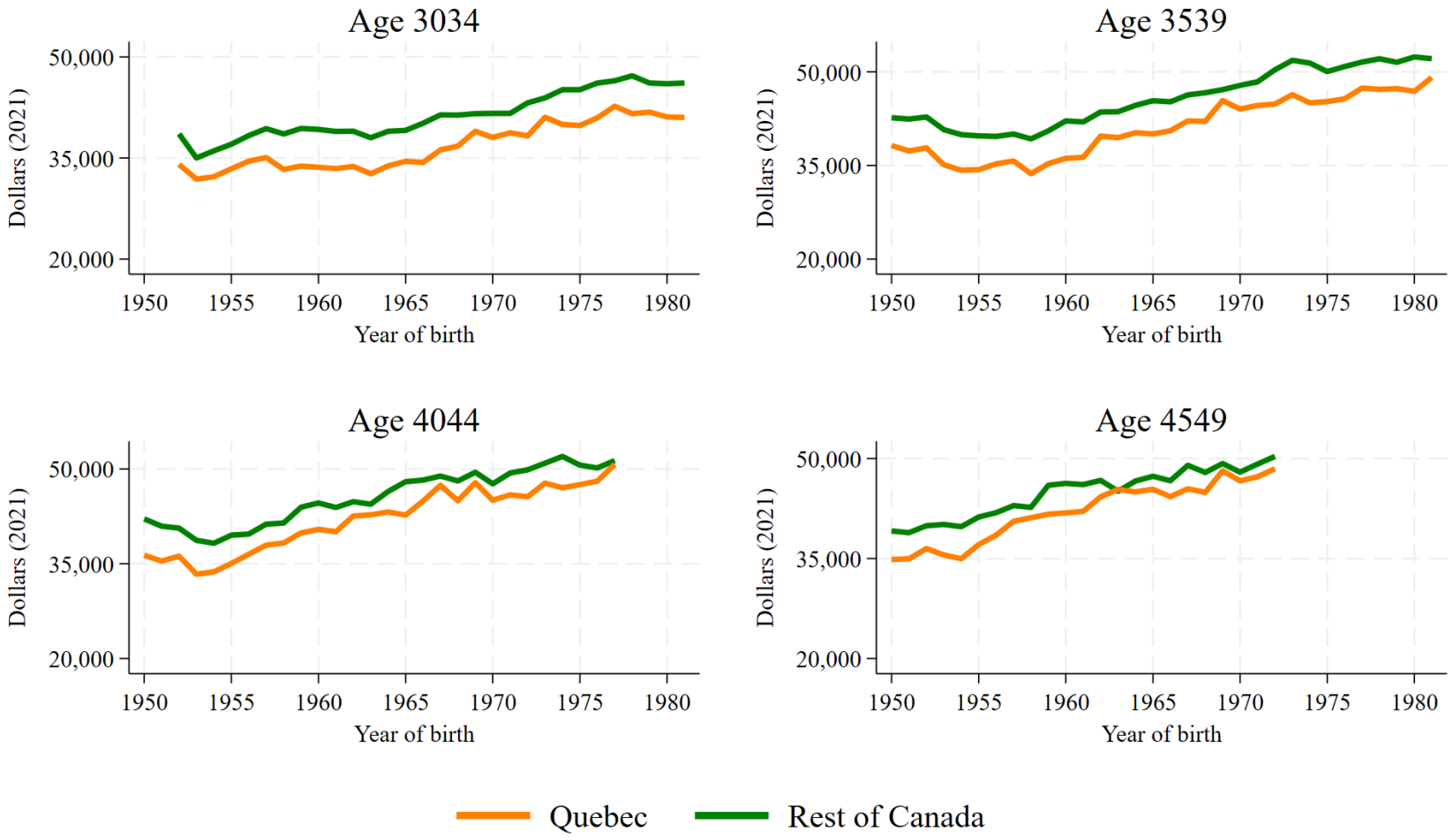
Note: Each line shows the proportion of a mother's period with preschool children she is covered by the Quebec Family Policy. The different lines show the policy measure including children born up to the indicated mother's age.

Figure 4: Earnings of women with children, by age, Quebec versus the rest of Canada, in the LAD



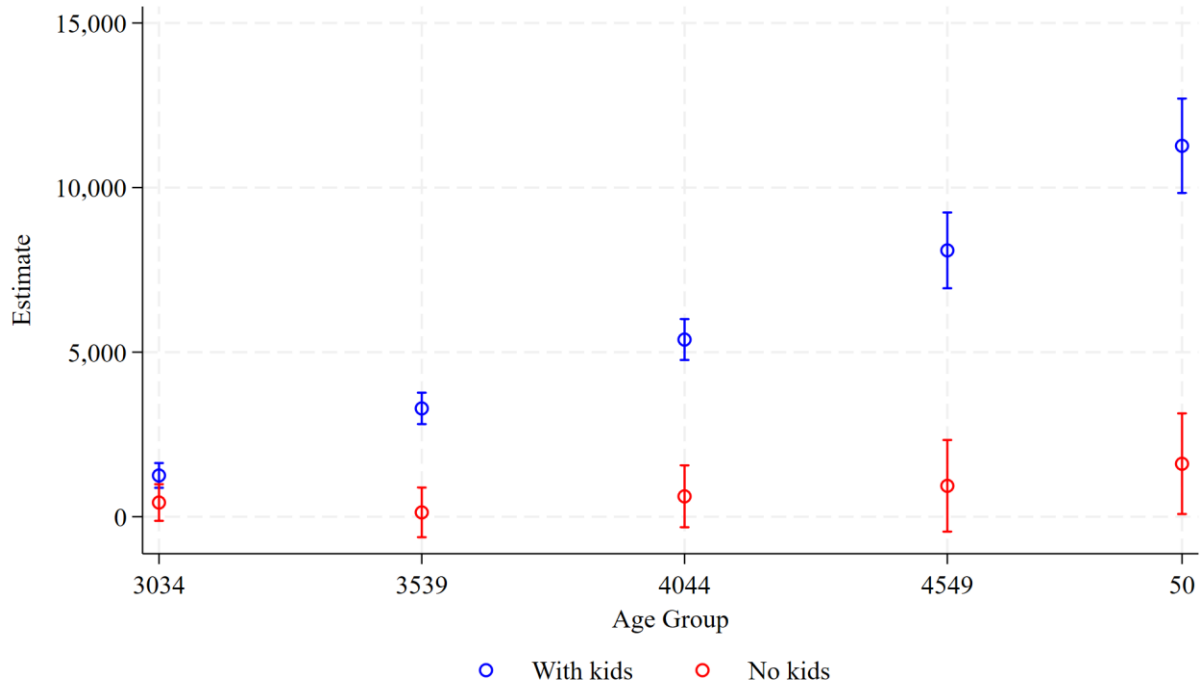
Notes: Data from the Longitudinal Administrative Databank. Each panel shows the average of earnings (in 2021 Canadian dollars), separately for residents of Quebec and the rest of Canada. The four panels capture this measure at different ages of the mother.

Figure 5: Earnings of women without children, by age, Quebec versus the rest of Canada, in the LAD



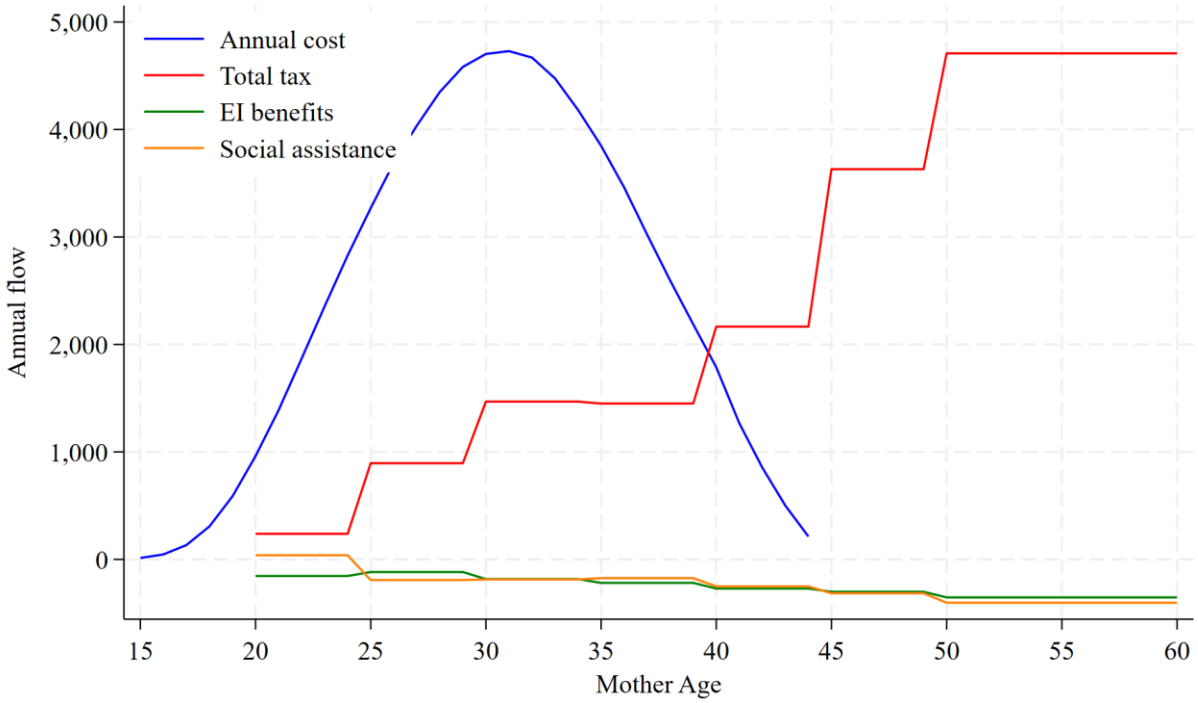
Notes: Data from the Longitudinal Administrative Databank. Each panel shows the average of earnings (in 2021 Canadian dollars), separately for residents of Quebec and the rest of Canada. The four panels capture this measure at different ages of the mother.

Figure 6: Regression estimates for earnings using a placebo policy variable for women with no children.



Notes: Data from the Longitudinal Administrative Databank. Each marker shows the point estimate for the given age range with the bars indicating the extent of the 95 percent confidence interval. The estimates for the sample of women with kids are taken from the first column of table 4. The estimates for women with no kids are based on the placebo policy variable described in the text.

Figure 7: The undiscounted timing of the estimated benefits and costs of the Quebec policy



Notes: Data from the Longitudinal Administrative Databank. Each line shows the undiscounted flow of fiscal costs and benefits at each age for the cohort of women born between 1967 and 1978.

Table 1: Program eligibility by age and year of birth

Date	Ages eligible	Oldest year of birth	Youngest Year of birth
September, 1997	4	1993	1993
September, 1998	3, 4	1994	1995
September, 1999	2, 3, 4	1995	1997
September, 2000	0, 1, 2, 3, 4	1996	2000

Notes: Eligibility ages for children in Quebec.

Table 2: Years of program eligibility by calendar year and child's age

Year	Age																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1997	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2000	1	1	1	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
2001	1	2	2	2	3	2	2	1	1	0	0	0	0	0	0	0	0	0	0
2002	1	2	3	3	3	3	2	2	1	1	0	0	0	0	0	0	0	0	0
2003	1	2	3	4	4	3	3	2	2	1	1	0	0	0	0	0	0	0	0
2004	1	2	3	4	5	4	3	3	2	2	1	1	0	0	0	0	0	0	0
2005	1	2	3	4	5	5	4	4	3	2	2	1	1	0	0	0	0	0	0
2006	1	2	3	4	5	5	5	4	4	3	2	2	1	1	0	0	0	0	0
2007	1	2	3	4	5	5	5	5	4	4	3	2	2	1	1	0	0	0	0
2008	1	2	3	4	5	5	5	5	5	4	4	3	2	2	1	1	0	0	0
2009	1	2	3	4	5	5	5	5	5	5	4	4	3	2	2	1	1	0	0
2010	1	2	3	4	5	5	5	5	5	5	5	4	4	3	2	2	1	1	0
2011	1	2	3	4	5	5	5	5	5	5	5	5	4	4	3	2	2	1	1
2012	1	2	3	4	5	5	5	5	5	5	5	5	5	4	4	3	2	2	1
2013	1	2	3	4	5	5	5	5	5	5	5	5	5	5	4	4	3	2	2
2014	1	2	3	4	5	5	5	5	5	5	5	5	5	5	5	4	4	3	2
2015	1	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	4	4	3
2016	1	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	3
2017	1	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
2018	1	2	3	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Notes: Cell shows number of years of eligibility for a child in the column's age in the row's calendar year.

Table 3: Estimated impact of the Quebec program on contemporaneous employment in the LFS

Mean, Age 0-4	N	Employment Rate	Fulltime Employment Rate	Usual weekly hours worked
Age 0-4	293,310	0.052***	0.045***	1.7***
		(0.006)	(0.006)	(0.2)
Age 0	70,440	0.050***	0.033***	1.5***
		(0.009)	(0.010)	(0.4)
Age 1	68,595	0.061***	0.055***	2.1***
		(0.009)	(0.010)	(0.4)
Age 2	60,810	0.032***	0.040***	1.1**
		(0.010)	(0.013)	(0.4)
Age 3	51,945	0.053***	0.030***	1.3***
		(0.011)	(0.009)	(0.4)
Age 4	47,525	0.060***	0.056***	2.4***
		(0.013)	(0.014)	(0.5)

Notes: Results using the Labour Force Survey. The first row shows means and standard deviations for the indicated variable. The next six rows report the regression coefficient on contemporaneous eligibility for separate regressions for the indicated age group. The standard errors are in parentheses below. Each column shows results with a different dependent variable. Results significant at the 1% level are indicated with three stars; 5% with two stars; 10% with one star.

Table 4: Estimated impact of the Quebec program on income measures in the LAD

	N	Total Earnings	Employment Earnings	Self-Emp Earnings	Social Assistance	Regular EI Benefits	Total Income Taxes
Age 30-34	828,150	3589***	2679***	999***	-174***	-171***	1375***
		(802)	(718)	(112)	(71)	(17)	(323)
Age 35-39	897,410	4741***	3327***	1402***	-163***	-204***	1358***
		(373)	(286)	(156)	(26)	(18)	(223)
Age 40-44	757,030	6818***	5036***	1704***	-235***	-254***	2028***
		(468)	(483)	(211)	(30)	(18)	(188)
Age 45-49	559,060	10122***	7823***	2225***	-295***	-282***	3400***
		(687)	(775)	(213)	(34)	(14)	(240)
Age 50	543,400	12929***	11009***	2008***	-377***	-331***	4410***
		(883)	(902)	(198)	(33)	(36)	(351)

Notes: Data from the LAD. Each row has a different sample of women observed at the indicated age. Each column has results for the indicated income or tax measure. Robust standard errors clustered by mother's year of birth are in parentheses below. Results significant at the 1% level are indicated with three stars; 5% with two stars; 10% with one star.

Table 5: Estimated impact of the Quebec program on binary income measures in the LAD

	N	Binary Employment	Binary Self-Emp	Binary SocAss	Binary EI bens	Binary Poverty
Age 30	856670	0.093***	0.016***	-0.042***	-0.007**	-0.089***
		(0.012)	(0.002)	(0.011)	(0.003)	(0.008)
Age 35	919320	0.088***	0.020***	-0.027***	-0.032***	-0.064***
		(0.006)	(0.002)	(0.004)	(0.005)	(0.005)
Age 40	935910	0.075***	0.019***	-0.029***	-0.044***	-0.027***
		(0.011)	(0.003)	(0.002)	(0.004)	(0.005)
Age 45	736010	0.071***	0.026***	-0.032***	-0.049***	-0.017***
		(0.011)	(0.003)	(0.004)	(0.002)	(0.006)
Age 50	543400	0.073***	0.032***	-0.032***	-0.049***	-0.010
		(0.012)	(0.004)	(0.004)	(0.002)	(0.008)

Notes: Data from the LAD. Each row has a different sample of women observed at the indicated age. Each column has results for the indicated income or tax measure. Robust standard errors clustered by mother's year of birth are in parentheses below. Results significant at the 1% level are indicated with three stars; 5% with two stars; 10% with one star.

Table 6: IV estimates of the impact of the Quebec program on income measures in the LAD

	N	Total Earnings	Employment Earnings	Self-Emp Earnings	Social Assistance	Regular EI Benefits	Total Income Taxes
Age 30-34	828,150	1253***	546***	778***	-141***	-178***	200**
		(192)	(167)	(66)	(35)	(16)	(85)
Age 35-39	897,410	3290***	2266***	925***	-9	-187***	26
		(244)	(288)	(133)	(30)	(11)	(115)
Age 40-44	757,030	5382***	4391***	751***	-198***	-211***	703***
		(317)	(400)	(208)	(21)	(11)	(117)
Age 45-49	559,060	8092***	6943***	830**	-290***	-244***	1905***
		(587)	(613)	(326)	(25)	(16)	(208)
Age 50	543,400	11269***	10899***	312	-382***	-299***	3213***
		(732)	(631)	(214)	(27)	(42)	(405)

Notes: Data from the LAD. Each row has a different sample of women observed at the indicated age. Each column has results for the indicated income or tax measure. Robust standard errors clustered by mother's year of birth are in parentheses below. Results significant at the 1% level are indicated with three stars; 5% with two stars; 10% with one star.

Table 7: Estimated impact of the Quebec program on various measures of the labor supply of married women in the LFS

	N	Employed	Employed Fulltime	Log hours	Log hourly wages	Log weekly earnings
Age 35-39	281,660	0.090***	0.078***	0.005	-0.005	-0.005
		(0.007)	(0.008)	(0.008)	(0.017)	(0.019)
Age 40-44	242,630	0.076***	0.077***	0.009	-0.017	-0.029*
		(0.009)	(0.011)	(0.009)	(0.012)	(0.016)
Age 45-49	169,400	0.090***	0.101***	0.020*	0.027	0.050**
		(0.012)	(0.011)	(0.011)	(0.018)	(0.020)
Age 50-54	128,660	0.096***	0.127***	0.054***	0.088***	0.131***
		(0.016)	(0.023)	(0.019)	(0.018)	(0.027)

Notes: Source is the LFS, 1990 to 2023 married women. Each cell reports the results of a different regression using the indicated age range and dependent variable. The reported coefficient is the lifetime eligibility policy variable. The standard errors are clustered by year of birth and reported in parentheses. Results significant at the 1% level are indicated with three stars; 5% with two stars; 10% with one star.

Table 8: Estimates of the Fiscal Net Present Value of the Quebec Program

Mother's Age	Up to age 60		Up to Age 50	
Real Discount Rate	1.5%	3.0%	1.5%	3.0%
Cost	$62,303	$53,723	$62,303	$53,723
Benefits	$81,618	$56,641	$49,373	$37,434
Net	$19,316	$2,917	- $12,390	- $16,290
% of costs covered	131.0%	105.4%	79.2%	69.7%

Notes: Source is the LAD, 1967 to 1978 birth cohorts of Quebec Mothers. Costs and benefits under different scenarios are presented in each column.

Appendix

1. Event Study Analysis

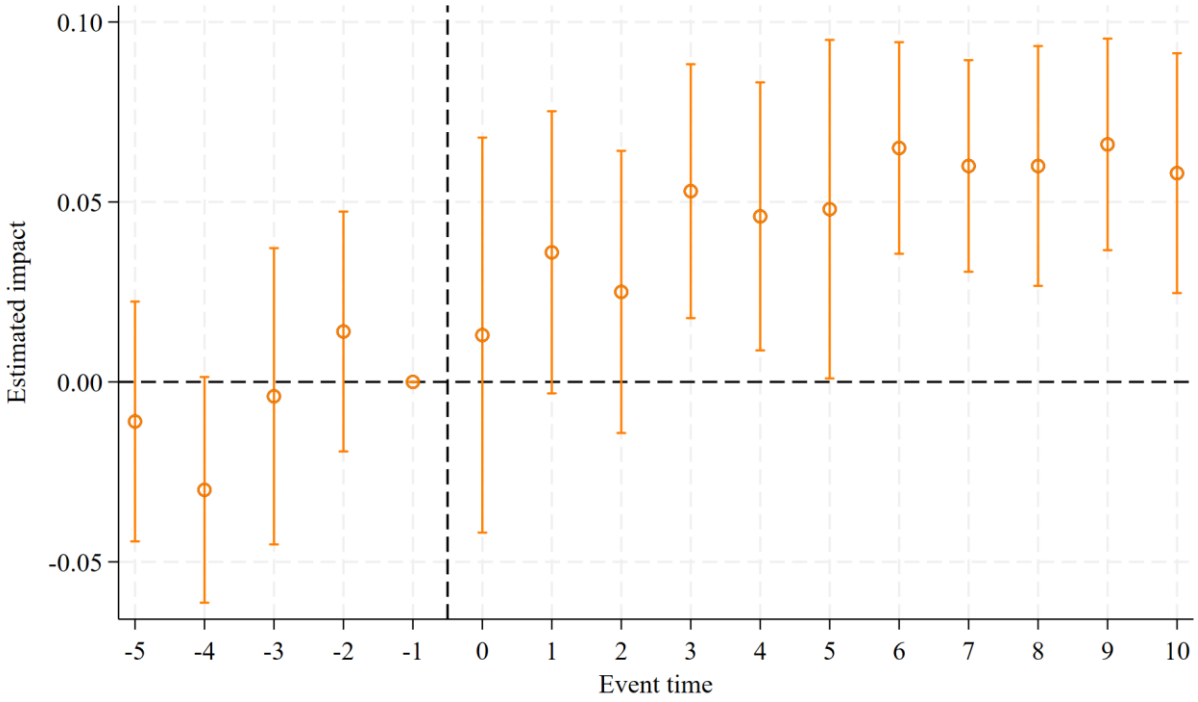
The staggered introduction of the Quebec program allows us to form an event-study estimator of the impact of the program in the style of Goodman-Bacon (2021).

$$EMP_{ipy} = \beta_0 + \beta_1 QUE_p * EventTime_m + \beta_2 QUE_p + \beta_3 Year_y + \beta_4 X_{ipy} + \varepsilon_{ipy} \quad (6)$$

We set event time to be zero in the year that a given age first became eligible for subsidized child care (the year in which $Elig$ is first equal to 1 for that age). So for the example of age group 0-4, for age 4 it is 1997 that is event time 0 and for age 0 it is 2000. The parameter of interest here is the set of β_1 interactions between Quebec and the event time dummies. We omit the time dummy is for period -1, just before the program is introduced for a given age. We include 5 years before introduction of the program and 10 years after. The vector X_{ipy} includes dummies for year, mother's age group, province, and mother's education.

A potential concern with event-study estimation of this type is including 'pre-treated' individuals as part of the comparison group (Borusyak et al. 2022). If people anticipate being eligible in the future, for example, then the estimates will be biased. Later in the paper using our LAD sample and a lifetime eligibility approach we can directly estimate anticipation effects. Our estimation here in the event study includes only those with children and compares the roll-out of the policy as the event-time dimension rather than the path for an individual family. So, our estimation assumes no impact of the roll-out of the program for three-year olds, for example, until they become eligible.

Figure A1: Event Study Regressions for Contemporaneous Employment



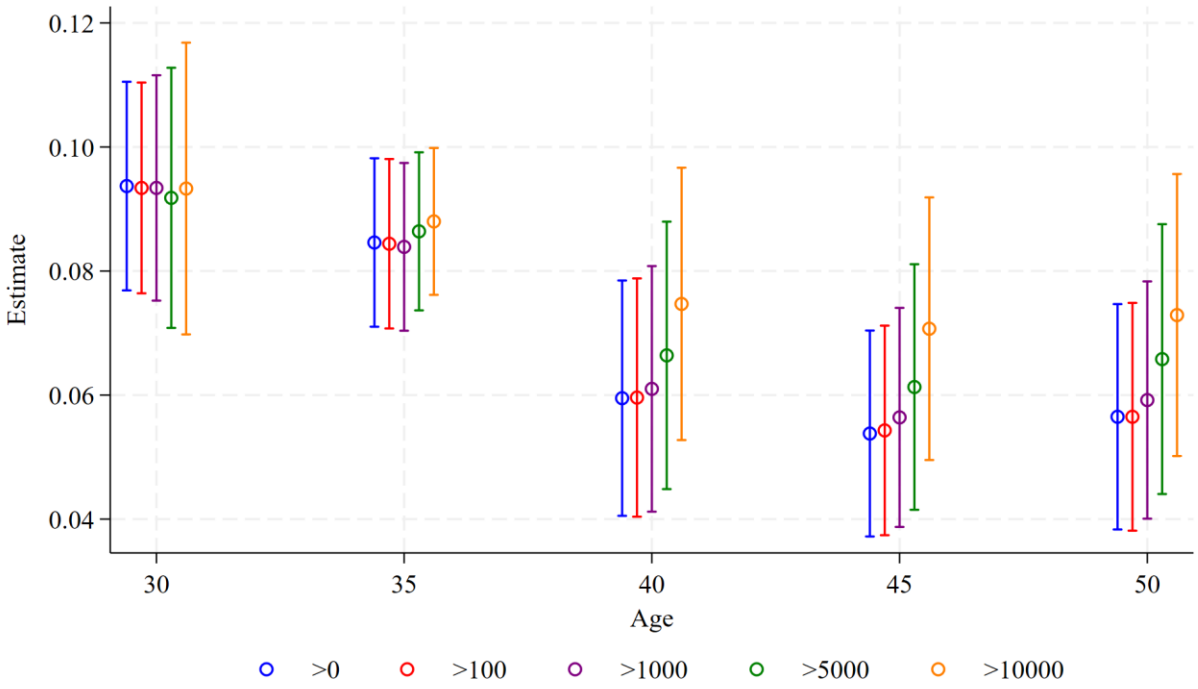
Notes: Each point is a coefficient for the indicated event time period interacted with a dummy for Quebec residence. The dependent variable is a binary employment indicator, and the sample includes women with children age 0-4. The bars around each point indicate the 95 percent confidence interval. Event time -1 is the left-out dummy; other coefficients are interpreted relative to event time -1.

The estimates of this model for the age group 0-4 years are presented in Figure A1. In the pre-period, the confidence intervals all span zero and there are no monotonic trends carrying into the treatment period. The point estimates rise in periods 0-2 and become statistically significant from event period 3 and forward. They are fairly stable around 5-6 percentage points until event time 10, consistent with the raw means reported in Figure 1. This indicates that as the program rolled out, it did take approximately two years before employment rates fully reacted, perhaps because of queuing for available slots.

2. Robustness to indicator of employment. >0, >100, >100, >5000, >10000

We investigate the sensitivity of our binary employment indicator. As the default in our main analysis, we form the variable for presence of employment earnings to equal one when reported total earnings is greater than $10,000. Below, we show sensitivity to using different thresholds for forming the binary variable: greater than zero, greater than $100, greater than $1000, greater than $5000, and greater than $10,000. We plot in Figure A-2 the coefficients from our basic specification and the associated 95 percent confidence intervals for ages 20-50. The point estimates generally rise with higher cutoff thresholds, with a stepper gradient at older ages.

Figure A2: Estimates for binary employment in the LAD using alternative earnings thresholds

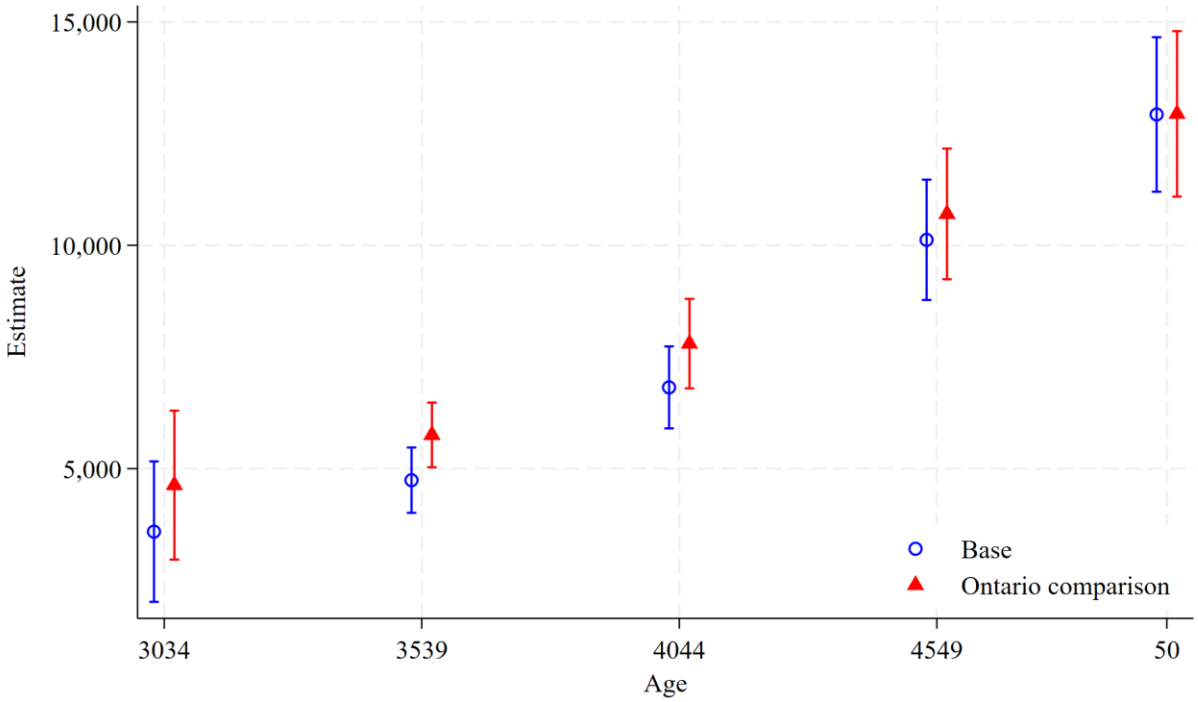


Notes: Data from the Longitudinal Administrative database. We plot the policy coefficient on a binary employment earnings indicator for the indicated ages. The bars around each point indicate the 95 percent confidence interval. The different points show the estimated coefficient when using different earnings thresholds for forming the dependent variable.

3. Robustness to DD using just Ontario

Our main results use residents of all of the rest of Canada as a comparison group for mothers in Quebec. Because the industrial structure and geographic proximity of Ontario is closest to Quebec, we try including only residents of Ontario and Quebec in the analysis. The results are presented in Figure A-3, using the employment earnings variable as our dependent variable. The point estimates for the Ontario comparison group are slightly larger. The overall pattern across the age structure, however, is similar to the base case.

Figure A3: Estimates for earnings in the LAD using Ontario as the comparison group

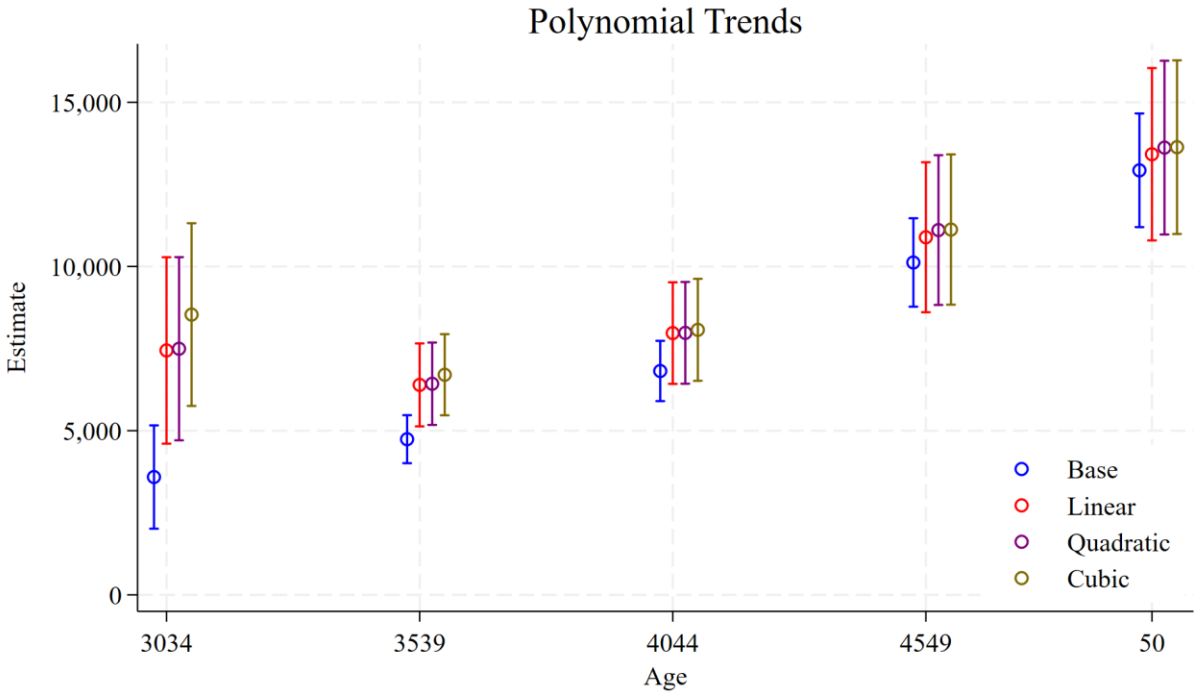


Notes: Data from the Longitudinal Administrative database. We plot the policy coefficient on employment earnings for the indicated ages. The bars around each point indicate the 95 percent confidence interval. The different points show the estimated coefficient for different samples. The Base includes all provinces in the comparison group; the Ontario comparison just includes Ontario in the comparison group.

4. Robustness to polynomial trends

We check on the sensitivity of our results to the inclusion of polynomial trends. This checks to see if the estimates for the impact of our policy variable are just picking up simple trends that vary between Quebec and the rest of Canada. We try augmenting our standard specification by adding a linear Quebec-specific linear trend across years of birth, and then proceed to add a similar quadratic, and cubic trend. The results are presented in Figure A-4. In the 30s, the estimates are slightly higher with the trends included, but by the 40s the differences are not large.

Figure A4: Estimates for earnings in the LAD Including polynomial trends



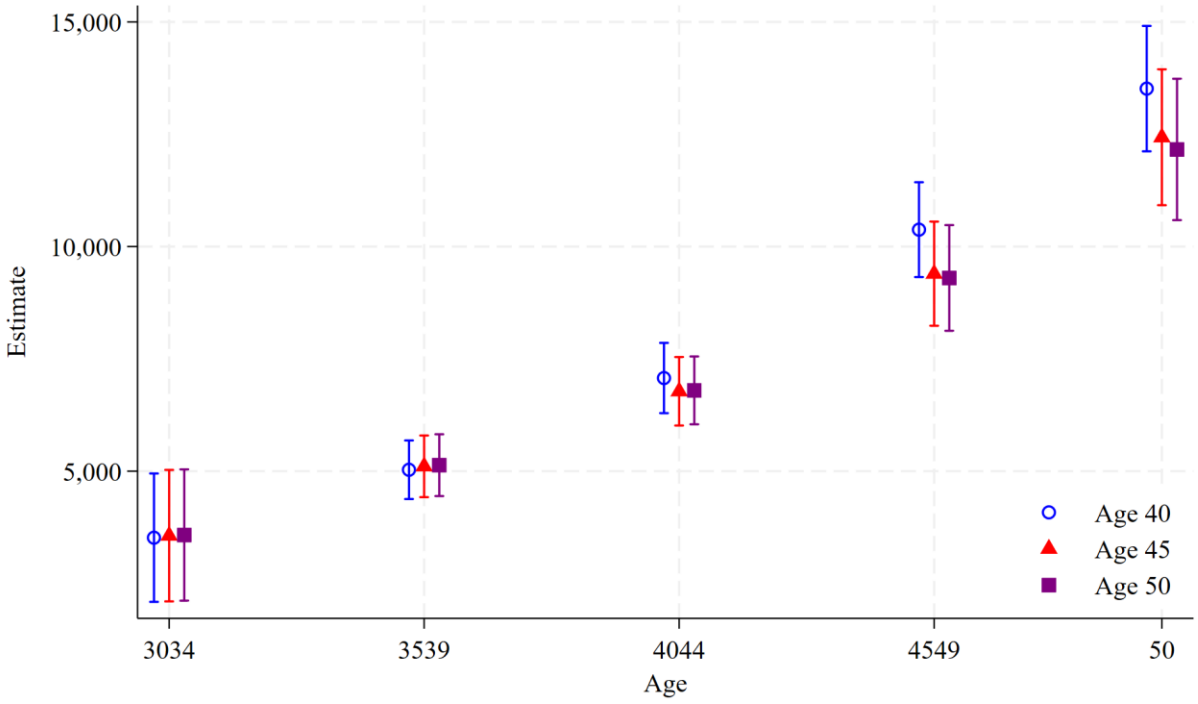
Notes: Data from the Longitudinal Administrative database. We plot the policy coefficient on a binary employment earnings indicator for the indicated ages. The bars around each point indicate the 95 percent confidence interval. The different points show the estimated coefficient when using policy variables that consider births up to the indicated age (40,45,50).

5. Robustness to policy age.

Our approach to lifetime policy measurement observes children born up to age 40 and assesses the policy eligibility over each child's 5 preschool years. Children born after age 40 are missed by this strategy. The advantage of using age 40 is that we can include cohorts up to year of birth 1981 (observed at age 40 in 2021). In contrast, when we use age 50 to capture almost all births the last birth cohort we can use is 1971 (observed at age 50 in 2021). This is important because in Figure 3 it can be seen that cohorts born in the 1970s experience a strong degree of policy variation, and this policy variation is potentially useful for estimation.

We show the sensitivity of different age cutoffs for observing children below in Figure A-5. We use the employment earnings dependent variable with our base set of control variables. The policy variable is calculated for three different age cutoffs: 40, 45, and 50. The estimates for ages in the 30s are very similar. For ages 40 and higher, the measures that capture births up to age 45 and 50 show lower point estimates. Overall, we find that the estimates are not particularly sensitive to this decision.

Figure A5: Estimates for earnings in the LAD varying the maximum age children observed



Notes: Data from the Longitudinal Administrative database. We plot the policy coefficient on employment earnings for the indicated ages. The bars around each point indicate the 95 percent confidence interval. The different points show the estimated coefficient when using policy variables that consider births up to the indicated age (40,45,50).