Anticipating the (Un)expected: Evidence from Introducing a Universal Childcare Policy with a Shortage of Spaces

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Abstract

The Quebec Family Policy introduced a large scale subsidy for childcare use and is often portrayed as a model for other jurisdictions. Enacted in September of 1997, access to $5-a-day childcare was granted to children age 4 immediately. Younger children only received access to this subsidy over subsequent years. Utilizing the staggered introduction of the policy, we introduce a triple differencing strategy to provide new evidence of the policy's impact on child developmental outcomes. Our results uncover that following the introduction of the policy, many families of younger children behaved strategically. Before their children were old enough to be eligible for subsidy, these families enter childcare facilities. They do so at a rate much higher than the rest of Canada and with policy relevant differences in take-up by maternal education. These results suggest that the initial execution of the subsidy reduced equality of childcare access. Further, only after accounting for this anticipatory behavior do we continue to find that on average, universal childcare led to declines in developmental outcomes. This analysis highlights the importance of getting implementation details right for a successful evaluation of universal early childhood education program and care policies.

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1 Introduction

Over the past decade, rapid increases in childcare use in developed countries have led to rising demand for governments to finance and provide for childcare. This issue has also emerged as a major policy plank in numerous election campaign programs. To motivate the popular demand for governments to intervene in the market for childcare, proponents often argue that childcare is not only a means to improve children's lifetime prospects, especially the less privileged, but also that such provision makes it easier for parents, in particular mothers, to work. With both the children and parents' welfare improved, government subsidized and/or provided childcare could promote both equity and efficiency in a society, as the arguments often conclude.[1]

After carefully surveying the literature that evaluated existing universal childcare policies, Baker (2011) and Cascio (2015) each conclude that the evidence is mixed concerning these programs' productive efficiency. This mixed evidence may arise due to the difference in the ages at which children are eligible to attend these programs.[2] Turning towards equity goals, there is a clear divide within the literature. While evaluations of small scale experiments of early education and care programs, Perry Preschool perhaps the best known, report large benefits to disadvantaged children, a smaller literature examining (large scale) universal policies find such benefits to be mixed, even negative in some evaluations.[3]

In 1996, the Canadian province of Quebec introduced a generous childcare subsidy gradually targeting all children aged 0-4. Parents were only asked to pay $5-a-day to keep their

[1] In a series of papers primarily targeting the policy community, Heckman (2006; 2008) makes a case that investing in the early years can both promote equity and economic efficiency. This message is often interpreted, or as Johnson and Svara (2011) discuss, is reframed, to expand the policy towards a broad mandate being advocated, as opposed to the arguments within Heckman (2006; 2008) that suggests the goals can be achieved by targeting the disadvantaged.

[2] For example, in North America, Georgia's and Oklahoma's programs respectively allow entry once a child is above 3 and 4, whereas Quebec's policy has provided access to all children below the age of 5 since 2000.

[3] To the best of our knowledge, only two papers have estimated the distributional effects of universal childcare policies, presenting mixed evidence on equity. Kottelenberg and Lehrer (2017) find that the Quebec Family Policy significantly boosted developmental test scores for children from single parent households, particularly for those who are most disadvantaged and located at the lower quantiles of the distribution. However, children from two-parent families between the 10th and 50th quantiles generally receive significantly negative impacts from childcare. Havnes and Mogstad (2015) use a quantile difference-in-differences estimator and find that in Norway there were negligible and occasionally adverse impacts on children from middle and high-income families, likely due to the substitution of lower quality subsidized/free childcare in place of higher quality unsubsidized family or informal care.

children in daycare, with the government picking up the remaining cost. This subsidy became instantly popular in Quebec and generated a lot of pressure for other provinces, states and countries to follow. Baker et al. (2008) (henceforth BGM) conducted the first economic evaluation of the program that focused on developmental outcomes, presenting evidence of significant negative effects on a range of non-cognitive measures for children and families.[4] These results suggest that the actual consequences of this policy differed sharply from the intended ones and in this paper we shed new light on why.

Prior research treated Quebec's policy as a natural experiment and did not consider the substantial indirect effects that occurred from implementing a reform of this magnitude. Some of these effects arise from the immediate popularity of the policy that is exhibited by waitlists at each childcare center. Oversubscription to a treatment has implications for the analysis of natural experiments. Faced with a shortage of spaces, researchers conducting a field experiment often allocate treatment randomly among those who subscribe, and compare a wait list control group to the experimental group to identify the impact of the given treatment. This strategy assumes that these two groups are comparable since participants were randomly assigned to either the wait list control group or the experimental group.[5] In contrast, slots in childcare centers in Quebec were not randomly assigned preventing the use of waitlist controls and the children who attended childcare reflect behavioral decisions made by both parents and childcare centers themselves.

Childcare centers play a role in attendance decisions, in part since the government of

[4]These results were shown in both Kottelenberg and Lehrer (2013) and Haeck et al. (2015) to be robust to the inclusion of additional data in the post-policy period. Further, Kottelenberg and Lehrer (2014) suggest that younger children aged between 0–2 were responsible for the estimated negative effects reported in BGM. The idea that there are differential effects of early childcare and education programs by child age also appears in Loeb et al. (2007). This study found that i) the negative effects on behavior from attending child care are greater the younger the starting age, and ii) the strength of the association between center-based care and performance on reading and math tests is inverse U shaped, peaking for those who start at age 2 or 3. Related, Sammons et al. (2003) report that in England, children who started childcare earlier had somewhat higher levels of anti-social or worried behavior, but did improve cognitive development. Last, Fort et al. (2019) use a regression discontinuity design that exploits admission thresholds in an Italian day care system and find that each additional daycare month prior to age 2 significantly reduces child IQ and several personality traits measured between the ages of 8 to 14.

[5]Recently, de Chaisemartin and Behaghel (2019) prove that the estimator arising from that comparison of these two groups is inconsistent when the number of waitlists goes to infinity and propose a new estimator for this setting. Further, proponents of this research design argue on equity grounds that a wait list control group is preferable to using a no-treatment control group when it is unethical to deny participants access to treatment.and employed a linear difference-in-differences estimator.

Quebec froze the number of for-profit childcare centres allowed to provide subsidized spaces between 1999 to 2003. Thus, the number of spaces in childcare settings within the province did not expand rapidly when the policy was initially implemented. This presents an important distinction from other childcare studies, such as those exploring the staggered introduction of childcare policy across regions in Germany (e.g. Cornelissen et al., 2018), or those exploiting the staggered timing and age-targeting of a child-care policy in Spain (e.g. Nollenberger and Rodríguez-Planas, 2015). Not only did the limited number of slots expand waiting lists at individual childcare centers, but we argue it may have changed the incentives faced by parents demanding childcare services and childcare centers providing available spaces.

The behavioral responses of parents and childcare centers to the implementation of the policy were not previously considered. In prior work that evaluated the Quebec Family policy compared differences in pre- and post- treatment outcomes of two geographic groups. That is, these studies did not consider the consequences of childcare being oversubscribed. As such, policy effects estimated in prior work may also capture systematic differences within provinces across birth cohorts due to how the selection process differentially alters the family characteristics of children that attend childcare at different ages in each year.[6]

To recover policy effects that account for selection to childcare by child age, we examine a series of single policy experiments independently and make parallel trends across child age more plausible by not only using data from different provinces in the control group, but additionally constructing a control group within the province. Our identification strategy exploits the staggered manner by which children of different ages were able to access subsidized childcare in Quebec versus the rest of Canada. This timing provides a very rich source of variation for our analysis in which we employ a triple-difference strategy (based on province,

[6]Further, identification of the average causal parameter with this estimator relies on i) assuming parallel trends for all units and all time periods, and ii) constant treatment effects across groups and time in settings where the treatment is adopted in a staggered manner. An emerging literature including Borusyak and Jaravel (2017), Athey and Imbens (2018), Abraham and Sun (2018), and Callaway and Sant'Anna (2018) discuss developments related to identification and statistical inference with linear difference-in-differences in staggered adoption designs. Motivating our analysis is one of the findings in that literature, that if the treatment is adopted in a staggered manner and causal effects are heterogeneous across groups and time periods, the average causal parameter can be negative even if all the individual treatment effects are positive. Both de Chaisemartin and D'Haultfoeuille (2019) and Goodman-Bacon (2018) show with heterogeneous treatment effects, the standard two way fixed estimator of a linear difference-in-differences model may not recover an average causal effect in settings where subjects can select both in and out of treatment.

time, and child age) in order to identify the causal impact of access to subsidized childcare upon the same set of outcomes as BGM. This analysis additionally provides a window to examine whether some specific equity objectives, as proxied by access to childcare, were met by formally analyzing attendance decisions across subgroups defined on the basis of parental characteristics.

Our analysis uncovers two major findings. The initial introduction of universal childcare policy led to a disproportionate increase in childcare use in Quebec among younger children who did not yet have access to the subsidy. This strategic parental response of claiming a spot in the system, ensures the child would later gain one of the existing subsidized spaces. Further, we present evidence that higher educated mothers were significantly more likely to pay the additional costs for a spot in childcare when their child was young and unsubsidized.[7] This suggests that the implementation did not work to reduce inequality in child opportunity.

Second, we continue to find evidence of statistically significant negative developmental and behavioral consequences from providing access to subsidized childcare. However, once we account for age differences in selection effects as well as their one-way interactions over time and province, the estimated policy effects on developmental outcomes and parenting scales are generally half the magnitude of those reported in studies that use a linear difference-in-differences estimators (e.g. BGM, Haeck et al. (2015) and Kottelenberg and Lehrer (2013)). Specification tests support the inclusion of these one-way age interactions terms and use of a triple-difference estimator.

The idea that family policy announcements directly affect a parent's expectations and information sets leading to anticipatory behaviors is generally ruled out in microeconometric policy evaluations. Yet signing one's children up as early as possible for limited/scarce spots to secure timely participation in the future is a prevalent parental practice and social phenomenon that is observed in many other setting including with charter schools.[8] Further,

[7]This spot that would later become subsidized as the child ages. Our analysis finds that conditional on maternal education, the effects of family income on child care use are small. Kozhaya (2006) reports that over 58% of children in subsidized child-care centers came from families with incomes above $60,000, although they constitute a minority of children aged 0-4 in Quebec presented in 2000.

[8]Further, evidence from the literature on how exhaustion of (un)employment insurance benefits affects employment hazards (e.g. Meyer (1990), Card and Hyslop (2005), Card et al. (2007), among others) as well as Attanasio and Rohwedder (2003) who show that consumption behavior of (forward looking) workers respond to social security announcements is consistent with the type of anticipation effect we find.

we present evidence suggestive that the salience of the reduced childcare costs was higher to more educated mothers who took immediate advantage of the possibility of receiving support to childcare costs, but did not increase employment on the extensive margin.

We suggest this finding is important since anticipation and expectations are basic building blocks of modern economic theories, in which agents often base their consumption and investment decisions on future prices and incomes. Despite the importance of anticipation effects, they are rarely quantified or assumed to be absent. Anticipatory behavior could influence estimates of a policy's effectiveness and our analysis directly considers anticipation effects that may differ by child age due to the timing when they gain policy access. We provide evidence that children and their families incurred costs to developmental outcomes from their response to anticipation about the policy change. Our results mirror Malani and Reif (2015) who also find that ignoring anticipation effects in a difference-in-differences framework would lead to biased treatment effect estimates.

This paper is organized as follows. In the next section, we describe how the Quebec Family Policy was introduced and discuss the nationally representative data we utilize in this study. Section 3 outlines the identification strategy and explains the different policy experiments we undertake that provide new insights into the impacts of Quebec's subsidized childcare policy. Our empirical results are presented and discussed in Section 4. This analysis uncovers evidence that suggests understanding the manner in which the policy was implemented is crucial to understand the equity and efficiency of Quebec's universal childcare policy.[9] A final section summarizes our findings and discusses their implications for policymakers who often do not consider the consequences of implementing education policy in settings where there is a shortage.

[9]The strategic behavior may also be rational since simultaneous to the introduction of subsidized childcare spaces, the Quebec government abolished various universal family allowances and adopted a system of diminishing tax benefits based on family income. Baril et al. (2000) estimate that in aggregate the new system would reduce the financial situation for middle-class families with incomes between $25,000 and $40,000. Thus, a higher take-up rate by those with more income may simply reflect the combined incentives of the suite of policies that came into effect.

2 Institutional background

2.1 The Quebec family policy

The Quebec government formulated an action plan for family policy in order to fight poverty, increase the participation of mothers in the workforce and promote equality of opportunity for children (Ministère de l'Éducation du Québec, 1996). Announced by Premier Lucien Bouchard at the October 1996 summit on the economy and employment in Montreal, the Quebec Family Policy (QFP) called for, among other features, the gradual implementation of subsidized $5-per-day childcare services.[10] The government would assume all costs above and beyond this parental contribution for childcare, and the mean subsidy per space was $3,832 annually. Further, children of parents who received social assistance were able to access these services at zero charge.

Specifically, effective September 1, 1997, children who were 4 years of age on September 30, 1997 were eligible to spaces devoted to $5-per-day childcare. On September 1, 1998, all 3-year-olds, and on September 1 1999, all 2-year-olds. By September 1, 2000, all Quebec children less than 59 months old (not eligible for kindergarten because their 5th birthday is after September 30) became eligible for 5$ childcare. The policy was introduced in a staggered fashion since the government intended to increase the number of childcare spaces gradually (year by year) while lowering the age of admission. Indeed the number of fully subsidized spaces grew from 76,715 in late 1997 to 210,019 in 2009. Despite this rapid growth in supply, it is well known that the program was not able to keep up with the increased demand for 5$ childcare spaces.[11] In aggregate, this policy has seen government subsidies to childcare providers increasing from $288 million in 1997 to $2.3 billion in 2014.

To develop subsidized childcare spaces, the newly created Ministry of Family and Children set out in 1997 to build its network from existing non-profit daycares, regulated home-based daycares and for-profit daycares.[12] Within for-profit daycares, operators were given

[10]The policy also introduced several regulations governing the physical layout of childcare centers as well as educational support and staff training. The daily fee paid by parents was raised to $7 in January 2004.

[11]For example, in 2000, data provided by the Quebec government indicates that there were 399,426 children between the ages of 0-4 in the province and just 113,545 places available that were regulated. In this situation, Quebec families could still turn to private providers of childcare services (non-subsidized and non-regulated spaces) and obtain a refundable tax credit for their childcare expenses.

[12]The non-profit daycares and the daycare agencies that were formerly responsible for home-based services,

the option to convert their legal status and become nonprofit or to sign agreements with the government to offer reduced-contribution childcare spaces. By June 1997, most of the licensed for-profit daycares agreed to provide reduced-fee spaces while retaining their for-profit status. Thus, within many of these for-profit centers only a proportion of the spaces were assigned to provide reduced-fee services. For example, statistics reported by Quebec's Ministry of Family and Children indicate that in 1997 and 1998 there were respectively 4,806 and 5,587 spaces in for-profit daycare centers in which the centers were free to choose their daily fees. The popular press routinely published anecdotes that before 2000, some children entered these childcare centers before they were old enough to qualify for subsidies, since they would be able to hold their spots as they aged. This belief coupled with the demand exceeding supply of subsidized spaces is important to understand a likely mechanism behind the empirical results we uncover.

Faced with excess demand, each childcare center quickly introduced and maintained a waiting list, with the majority imposing a fixed fee while they are waiting.[13] Waitlist rules are in general quite similar across childcare centers, with siblings of children already enrolled at a center receiving priority over other applicants for open spots. Otherwise, spots are assigned on a first come, first served basis and generally spots for infant care (i.e. under 18 months) are handled differently resulting in there being fewer available spots and longer waitlists.[14] Over the period we analyze, the popular press frequently reported that many families were waitlisted at more than one center.[15]

The staggered implementation of the subsidized childcare program discussed above suggests the use of a difference-in-differences-in-differences estimator, since access to childcare

were often reorganized as an early childhood center that was called a Centre de la petite enfance. These centers generally offered regulated spaces only and created a board of directors comprised of parents to oversee their operation.

[13]Across Canada, Macdonald and Friendly (2016) report that 90 percent of childcare centers maintain waiting lists. One-time fees of $50, $100 or even $200 are common across Canada. There has been a recent backlash to the imposition of these fees, yet Macdonald and Friendly (2016) report that in Edmonton and Calgary, more than 40 percent of childcare centers continue to charge wait list fees.

[14]Fewer spots may be a response by the centers to the government imposing a higher staff to children ratio for this age grouping.

[15]Even in 2014, newspaper articles in Montreal reported waitlists that are at least tenfold the number of new places being made available. In the period of policy introduction, there does not exist official data on the number of children on waiting lists at childcare centers. Only in 2013, The Government of Quebec announced and later introduced in 2015 a centralized waiting list system for all subsidized and unsubsidized daycares and childcare centers.

was made available to children in only the Canadian province of Quebec of younger vintages between 1997 and 2000. We now describe the data adopted to operationalize this identification strategy.

2.2 Data description

The National Longitudinal Survey of Children and Youth (NLSCY) conducted eight biennial assessments of a nationally representative sample of Canadian children.[16] The first collection was undertaken in 1994-95 and within each cycle of data collection, not only are the earlier cohorts followed longitudinally but a new cross-sectional sample of approximately 2,000 infants aging primarily between 0 to 1 are added to the survey and subsequently followed. These data provides detailed information on a child's nurturing environment and have been used in prior work evaluating the effectiveness of the QFP on child and family outcomes.[17]

To facilitate comparisons with earlier work, we follow BGM and only retain children from two-parent families. This criterion was chosen since concurrent to the QFP, changes were introduced in the Quebec welfare system targeting single parents.[18] During each cycle, an interviewer from Statistics Canada met with the person in each household who is most knowledgeable about the child. In 89.4% of the cases, this respondent is the mother who completes a personal interview that assessed childcare usage, parental labor supply, parental and family characteristics together with the child's physical, cognitive, behavioral, and social development. A major shortcoming of the NLSCY data is that it does not provide any information on the quality of childcare received, and we have to follow all earlier research in treating this measure as homogenous throughout our analysis.[19] The data indicates whether

[16]Since households residing in institutional facilities, on Aboriginal reserves, and in the two territories (the Northwest Territories and Yukon; in April 1, 1999, Nunavut, the 3rd territory, was officially separated from the Northwest Territories) are not targeted by Statistics Canada in their monthly Labour Force Survey, children from these households are also excluded from the NLSCY by design. In total, slightly over 15,000 children under the age of 12 years were sampled from Canada's ten provinces (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan) in the initial cycle.

[17]Internal studies from Statistics Canada indicate that the quality of data collected in the NLSCY is quite high, as measured by the response rates, the representativeness of the samples, and the rates of completed questions. More details can be found in Kottelenberg and Lehrer (2014).

[18]Moreover, a large number of single parent families in Quebec were receiving heavily subsidized childcare prior to the newly introduced QFP in 1996.

[19]While quality levels vary significantly across childcare providers, both Japel et al. (2005) and Drouin (2004) conclude that the quality of Quebec's childcare network is minimal overall, which would make childcare

the care was provided by the formal or informal sector, as well as some limited information on the location of care received. However, there is no information on fees paid by the family (thus the space was subsidized or not) or whether the childcare center operates as a for-profit or non-profit entity.

An important difference between this paper and all prior work treating the QFP as one natural experiment is that our sampling scheme differs to be consistent with the empirical requirements of the identification strategy. Figure 1 provides a visualization of how each identification strategy considered in the paper uses the staggered implementation of the policy with specific subsamples of the NLSCY data to estimate causal parameters.

To ease comparisons with prior work, figure 1a represents the strategy undertaken in BGM, where the pre-QFP sample consisting of children in cycles 1 and 2 (data collected between December 1994 and April 1997), is compared with the post-QFP sample including children in cycles 4 and 5 (data collected from September 2000 and June 2003). The post-QFP sample corresponds to the timing of when subsidized childcare was finally open to all children in Quebec. Without covariates, the causal parameter is obtained by subtracting the post-pre difference in Quebec from the corresponding difference in the rest of Canada (ROC), a standard difference-in-differences strategy.

Each of the triple-difference identification strategies shown in Figures 1b – 1d compares the experiences of two different child age cohorts in Quebec and the ROC. For example, in the strategy presented in figure 1b, only the first 3 cycles of the NLSCY are used. In cycle 3 (collected between November 1998 and June 1999), only children aged 3 or 4 in Quebec were eligible for subsidized childcare. These children occupy the cell denoted by A. In the absence of covariates, the policy effect from a triple-difference estimator is simply calculated using the means of the outcomes in each cell as $(A-C)-(B-D)-[(E-G)-(F-H)]$. To provide intuition for the estimated policy effect, the first comparison group is composed of the "older cohort" in cycles 1 and 2 (cell C), who never had access to QFP. Comparing the outcomes of older cohorts in cycle 3 to cycles 1 and 2, $(A-C)$, the unique variation in the first difference, yields the effect of providing childcare subsidy for all children 3 year old and above. If there is no anticipation effect or pre-treatment effect, the younger cohort in

a homogeneous good with basic (or some minimum) quality.

cycle 3, children ages 2 and under (cell B), who were too young to qualify for QFP, would be unaffected by the policy just like the younger cohort in cycles 1 and 2 (cell D). Thus accounting for the difference between these two younger cohorts, when comparing the two older cohorts, $(A-C)-(B-D)$, captures non-zero anticipation or pre-treatment effects, which is the second difference. The corresponding comparison between Quebec and ROC would further ensure that any different outcomes between two older cohorts in Quebec, after accounting for any pre-treatment differences, do not pick up any difference that would have happened to either of these cohorts as time passes in the absence of the policy; this is the third difference $[(E-G)-(F-H)]$. Figure 1b, corresponds to an experiment where solely the price of childcare for 3 and 4 years olds in Quebec has changed and both the supply as well as the quality of childcare has not yet changed.

In figure 1c, we break the B (and D) cell from figure 1b into two components since in cycle 3, parents of children aged 2 may have different unobserved expectations related to childcare (cell B'') relative to parents of children aged 0-1 (cell B'). Thus, we are interested in separately estimating any difference in policy effect if the control group within province consists solely of children who will gain eligibility for subsidized care immediately next period, from those who gain eligibility two years from now. The experiment in figure 1c, compares the effect of gaining access to subsidized childcare in different time horizons when the supply and quality of childcare is constant.

Figure 1d illustrates further comparisons that focus on potential differences in the expectations and beliefs about the childcare environment that the parents may hold. In cycle 4 (data collected between September 2000 and June 2001), the "older cohort" in Quebec, children ages 3-4, received QFP access starting at age 2, whereas the "older cohort" in cycle 3 received access starting age 3. Each of these children can receive their second dosage of subsidized childcare. In this cycle, all children aged 2 and under would be experiencing their first dosage of subsidized care. As before, the prior cohort of children this age did not have any access in cycle 3, but the parents may differ in beliefs based on when their child is eligible for subsidized access in the future. The triple-difference estimates given by either $(A-C)-(B^*-D^*)-[(E-G)-(F^*-H)^*]$ or $(A-C)-(B^{**}-D^{**})-[(E-G)-(F^{**}-H^{**})]$ captures the effect of having an extra (potential) dose of subsidized care. A final triple dif-

ference estimate given by $(B^{**} - D^{**}) - (B^{*} - D^{*}) - [(F^{**} - H^{**}) - (F^{*} - H^{*})]$ examines if there are differences in outcomes to children who now first receive their first dose of subsidize childcare in cycle 4. These differences may arise since prior to cycle 4, there were differences by child age in either earlier parental behavior or childcare supplier responses as to which children can enroll for subsidized care. This second experiment in figure 1d, compares the effect of gaining access to subsidized childcare since birth to starting after age 1, when the supply and quality of childcare changed slightly.

The minimal growth in Quebec's for-profit daycare sector during the first four NLSCY cycles, provides an important advantage of focusing our strategies on using data collected during this period. Appendix figure A1 shows that there were no changes in the number of childcare spaces in Quebec for the experiments considered in figures 1b and 1c. During the remaining period of policy implementation, the number of new spaces grew at a much slower rate relative to the number of children who met the age criteria to gain access to subsidized childcare. To provide a clear picture of the size of this gap in cycle 4, figure A1 shows that the number of subsidized spaces increased by less than 20,000 in each year, whereas data from the Institut de la Statistique du Quebec indicate that there were over 80,000 2-year olds and 3-year olds becoming newly eligible in September 1999 and September 1998 respectively.

The moratorium on the creation of new for-profit daycares was only lifted by the Quebec government in June 2002, after which the number of childcare spaces increased rapidly. This growth on the supply side may present additional challenges when drawing conclusions that compare periods where the policy was fully implemented either using data from cycle 5 (collected between September 2002 and June 2003) and afterwards.

Table 1 presents the mean and standard deviation for select child and family characteristics and outcomes, broken down by geographic region (Quebec and the rest of Canada) and whether the comparable cohort had access to the policy at the time of data collection.[20] Focusing on the family and parental characteristics presented in the first three panels of table 1 we note that most of these characteristics are relatively stable across cohorts. The sole exception is parental immigration status which increased at a faster rate in Quebec. There appears to be very little difference in the number of families residing in large cities across co-

[20]For space considerations, we pool the various subsamples used in each strategy presented in figure 1b-1d. There are no interesting differences in any of the variables across subsamples of the various comparisons.

horts. Not surprisingly, in later cohorts and as the children age, the total number of siblings increase. Prior research including BGM, Lefebvre and Merrigan (2008), and Kottelenberg and Lehrer (2013) has conducted formal tests on these differences, concluding that using the ROC as a comparison group is almost always valid if one conditions for these family variables in the estimation.[21] In our context, since we have a second control group of an earlier cohort within the geographic region, these concerns are reduced. Further, by exploring each experiment separately in our analysis rather than pooling the data across cycles we are not subject to the concern identified in Boruysak and Jaravel (2017), Abraham and Sun (2019) and Callaway and Sant'Anna (2019) that one may not recover an average causal parameter with the standard fixed effects estimator if there is treatment effect heterogeneity.

Figure 2 illustrates trends in both childcare use and maternal employment between Quebec and the ROC over time. In 1999, only children age 3 and above had access to subsidized childcare in Quebec. Thus, ex ante we would anticipate a spike in these two outcomes at those ages in Quebec relative to the ROC. In contrast, the largest spike in childcare use was from children age 2. Moreover, the proportion of Quebec children aged 4 in childcare centers does not appear to increase between 1997 and 1999. We observe large spikes in maternal labor supply on the extensive margin from parents of children age 3, which is expected, but also among parents with younger children.

In general, the percentage of children in childcare centers increased over time in Quebec after the subsidy was introduced and more spaces gradually became available. Trends in childcare use pre-policy in cycles 1-2 are comparable among children ages 1 to 3 across Canada, but the divergence in cycle 3 may indicate some dynamic strategic behaviors by parents that could only be identified if one explored the staggered periods during which the policy was gradually implemented.

Our analysis is restricted to only examine outcomes that are measured in the NLSCY for children at different ages. The final panel of table 1 presents the summary statistics on

[21]For example, the assumption of common support and common trend were examined for children of all ages in Kottelenberg and Lehrer (2013) and by age in Kottelenberg and Lehrer (2014). Consistent with general intuition, tests support that there is not any specific age at which systematic differences emerge in the observed and unobserved characteristics of individuals living in Quebec from those living in other provinces. In this paper, we control for any factors in our estimation that statistical differences identify a significant different rate across region or cohorts to reduce any bias from these potential confounders.

the set of child and parental outcomes that we investigate.[22] The NLSCY contains extensive questions relating to child and parental behaviors as well as scores obtained on the Motor and Social Development (MSD) section of the child's questionnaire. This section comprises a set of 15 questions asked of the primary caregivers about children in the 0 to 3 age group. The questions vary by a child's age and ask of the person most knowledgeable (PMK) about the child, generally the child's mother, about whether or not a child is able to perform a specific task.[23] Notice in table 1 that the MSD scores are comparable between children in Quebec and the ROC prior to the introduction of the policy. The behavioral scores are obtained from responses to a standardized questionnaire collected during a face-to-face interview with the PMK.[24] These scores provides measures of hyperactivity, separation anxiety, physical aggression and opposition for children who are at least 2 years of age. On average, scores on each behavioral outcomes with the exception of the emotional anxiety scale improved over time in the ROC. In contrast, scores on each behavioral outcomes in Quebec either worsened or stayed at the same level pre and post policy.

3 Empirical specification

The staggered implementation of the QFP using the subsamples described in panel b-d of figure 1 suggests the use of a triple-difference estimator. Whether a child could attend subsidized childcare depends on 3 distinct elements: i) the child's province of residence, ii) child age, and iii) time in which the data was collected.[25] Intuitively, we are comparing children in Quebec from earlier cohorts that were either not exposed or partially exposed to

[22]BGM also explore a host of family outcomes and for space considerations we present summary statistics and results of our full triple-differences analyses for these outcomes in appendix tables A1 and A2.

[23]One may worry that by maturity, older children will be able to do more tasks. Thus, standardized scores by age of child in months are calculated. That is, each child is assigned a standard score so that the mean MSD score is 100 and the standard deviation is 15 for all 1 month age groups.

[24]For example, the Hyperactivity/Inattention scale ranges from 0 to 16 based on answers to 8 questions (can't sit still, is easily distracted, can't concentrate or pay attention, can't settle for long, is inattentive, fidgets, or acts impulsive) that are each scored as 0 (not true), 1 (sometimes true) or 2 (often true). The behavioral outcome utilized in the study had Cronbach's alpha coefficients as follows: anxiety = 0.59, hyperactivity = 0.80, aggression = 0.75 and prosocial behaviors = 0.85 in cycle 1 (Statitics Canada, 2003), indicating a high degree of reliability.

[25]This empirical strategy is based on how the policy was implemented and uses a much larger sample relative to a regression discontinuity design that uses the child's birth date to determine eligibility with only data from Quebec.

subsidized childcare, the control groups, to later cohorts who had more exposure to subsidized childcare, the treatment groups. To account for omitted variables such as economic growth and other macro social economic changes in Canada, the third difference compares changes in Quebec children's development across these cohorts to changes in outcomes for children living in the other nine Canadian provinces for the same cohorts. In other words, we are simply taking the difference from the double-difference in Quebec (the treated province) with the same estimate for the ROC. Unlike the standard linear difference-in-differences estimator, a triple-difference estimator does not require the assumption of parallel pre-program trends in outcomes between Quebec and the ROC in both of these differences. The triple difference estimator only requires one of the parallel trend assumptions in these two differences to hold. As such, it can recover estimates that are robust to age differences in unobserved heterogeneity that drives selection into childcare.

Formally, for the identification strategy in Figure 1b, the specification of the triple-difference regression equation is given by

$$\begin{aligned} Y_{iapt} &= \beta_0 + \beta_1 P_p + \beta_2 T_t + \beta_3 A_a + \beta_4 P_p * T_t + \beta_5 A_a * P_p \\ &\quad + \beta_6 A_a * T_t + \beta_7 Policy_{apt} + \beta_8 X_{iapt} + \epsilon_{iapt} \end{aligned} \tag{1}$$

where Y_{iapt} is the outcome for a child i age a in province p at time t, A_a, P_p and T_t are a series of child age, province and time fixed effects, $Policy_{apt}$ is an interaction term equal to one for Quebec following the policy access, and ϵ_{iapt} is a random error term with mean zero. In this equation, β_7 represents the causal estimate of interest. The term X_{iapt} is a matrix that contains other individual-specific exogenous characteristics that may influence Y_{iapt} as well as capture any additional changes that influenced childcare across provinces and time. Following evidence from a growing literature on conducting inference with linear difference-in-differences estimators surveyed in Cameron and Miller (2015), we cluster our standard errors at the province-cycle level.

To estimate the causal effects of the alternative strategies presented in Figures 1c–1d, requires minor changes to equation (1). These variants differ based on the age/cycle indicators used to construct the policy indicator. Across all of the different variants of the estimating

equation, we recover alternative intent to treat estimates that allow us to uncover how the policy impacts change based on the number and timing of dosages of policy access. Note, equation (1) nests the linear difference-in-differences estimator used in earlier studies, where researchers implicitly set $\beta_4 = \beta_5 = \beta_6 = 0$, thereby ruling out significant main or interaction effects by child age.

4 Results

The six columns of table 2 present estimates of β_7 of equation (1) for different experiments presented in Figures 1b-1d. The top rows of the table explain which cycles of data and child ages are utilized as well as the corresponding figure and cells within that would calculate a nonparametric estimate of β_7. The first column illustrates the strategy in Figure 1b and reveals the counter-intuitive finding that access to subsidized childcare policy led to a statistically significant reduction of 4.2 percentage point in the use of childcare among the children who were eligible for the subsidy. This evidence is consistent with the graphical evidence presented in Figure 2 and suggests that within Quebec the growth in childcare take-up was initially larger among the younger children in the province. That is, if treatment effects were constant, the difference in take-up by child age can explain why the counter intuitive reduction in use among older children arises.

This finding can be explained in part by an anticipation effect. In the presence of excess demand for childcare, how spaces or slots in childcare centers are rationed become important. Particularly, which subset of children gets priority is essential for slot allocation on the demand side. Children who were already in the system were favoured over children outside the system, which prompted parents to enroll their children before they qualified for subsidized slots. On the supply side, unsubsidized slots generate as early as possible more annual revenue (approximately $1800 on average) than subsidized slots, prompting daycare centers to favor on the margin granting the slot to a yet to be subsidized child rather than a qualified child. The combined effect is that there was a rush for parents with younger children (less than 3) who were not in the daycare system to enroll in the childcare centers, to ensure that these children would get a subsidized slot when they grow older.

This strategic slot-grabbing or space-occupying action was so great that it dwarfed the would be direct impact of the policy induced increase in qualified enrollment. While parents of younger children were predominately likely to send their children to subsidized childcare, there is no evidence of a significant increase in maternal labor supply on the extensive margin.[26] The second and third column of table 2 correspond to figure 1c and break down which group of parents in 1997 were driving the strategic slot-grabbing. The effect is clearly driven by parents of two-year olds who will gain access to a subsidized spot in September of the next year. While a similar effect appears present among parents of children aged 0-1, the magnitude is smaller and not statistically significant; perhaps in part since these parents would have to pay at least two years of fees prior to the spot being subsidized.

Similar to Malani and Reif (2015) we find that anticipation effects are large and omitting them econometrically leads to biased estimates of the effects of existing policy. Considering any of the first 3 columns of table 2 might lead one to conclude that gaining access to subsidized childcare is a tremendous policy. Examining column 1, we observe that access to subsidized childcare boosts MSD by slightly less than 25% of a standard deviation.[27] However, these estimated policy effects should not be confused with the direct effect of childcare use. After all, even with the subsidy children in the age-treated group were now significantly less likely to use childcare since the younger cohort, particularly the subset of two-year olds filled the remaining slots. These estimates as well as those presented in appendix table A2 examining the impact of access to the policy on behavioral outcomes such as emotional anxiety and separation anxiety should be interpreted through the lens of the change in care variable as the availability of the policy did not encourage take-up.

Table 3 presents the full set of coefficient estimates from the first specification reported in table 2 for the full sample.[28] Not surprisingly, the effect of Quebec interacted with the time indicators is statistically insignificant given the lack of new spaces. While this interaction is used in prior linear difference-in-differences studies, that effect is capturing the trends

[26] In BGM and Kottelenberg and Lehrer (2013) the estimates of changes in child care use are roughly twice as high as the change in maternal labour supply. In our case, we do not have sufficient statistical power to reject the hypothesis that the point estimate is different from zero.

[27] The interpretation of these findings as arising from the composition of children selected to attend subsidized childcare does additionally rely on assuming any differences in age effects of the policy are captured by the two-way interactions between child age and province as well as child age and calendar year.

[28] In the next subsection, we explore heterogeneity in these effects by parental characteristics.

reported in Figure 2, that older children disproportionately in Quebec have higher take up of childcare and maternal labor supply. The results in table 3 also unsurprisingly show differential child care take-up by maternal education and family size throughout Canada. Interestingly, boys have significantly lower MSD scores than girls and parental education is significantly and positively associated with MSD scores.

In cycle 4 all children in Quebec had access to subsidized care. Comparing outcomes relative to cycle 3 allows us to examine if there are returns to having a second earlier subsidized dose. These comparisons are reported in columns of 4 and 5 of table 2. The results suggest that there was no difference in childcare use across cohorts by child age on the basis of number of potential subsidized doses. Column 6 compares the set of children who are covered in cycle 4 but would otherwise have not been in cycle 3. We observe relatively larger increases in enrollment among those aged 0-1 suggesting that childcare centers significantly prefer to enroll younger children. The effect is particularly pronounced given that in cycle 3, two-year olds had a higher rate of taking up a child care position. In cycle 4, we also observe the first evidence of the policy impacting maternal labor supply with mothers of older children reentering the labor force at significantly higher rates. While the signs and statistical significance of the effects of policy access by child age vary in heterogenous manners across the columns of table 3, in general, the estimated policy effects that control for age differences in selection are smaller in magnitude to what is reported in BGM.

Since the difference in policy effects relative to BGM may arise due to differential pre-program trends, we conduct an F-test comparing equation (1) to a restricted version that imposes the linear DID model of BGM. The results are presented in the bottom row of both table 2 and table 3 which indicates that across all subsamples, we can reject the hypothesis that $\beta_4 = \beta_5 = \beta_6 = 0$. This result supports the use of a triple-difference estimator.[29]

Beyond estimating the potential dosage effects, from a methodological perspective if the staggered introduction changes parent's expectations heterogeneously across child ages within Quebec, it remains a question of what the valid counterfactual is with the linear

[29]The first three columns of appendix table A3 presents the underlying double-difference estimates comparing age cohorts separately for Quebec and the rest of Canada. The results reinforce the interpretation of the findings in table 3 where we find opposite signed estimates on MSD scores and crowd out of child care by children aged 3-4 year olds by 2 year olds in Quebec. Last, the sixth column of appendix table A3 reinforces the crowd out only emerges in Quebec and not the rest of Canada.

DID design presented in appendix table A4 or Kottelenberg and Lehrer (2014) and prior research. After all, the common support condition requires that unobservables which include unobserved parental expectations and beliefs about the environment, to be balanced between groups.[30] In our setting, there appears to be systematic within group variation along the child age distribution in these beliefs that arise due to the childcare environment that varies between Quebec and the ROC in cycles 3 and 4.

4.1 Disentangling the source of strategic childcare attendance

To shed light on a potential mechanism underlying the parental strategic response identified, we next contrast estimates of the policy effect between different subgroups defined on the basis of family structure. Consider a family with two young children, where only the older child can receive the subsidy. Intuitively, the young child may now also attend childcare since the parents face lower total costs of sending both of their children to daycare, and the policy operates as an income effect. Alternatively, a family with only a younger child who is ineligible for the subsidy and would not immediately face a lower bill, a strategic anticipation decision to enroll their child may ensue. After all, the parents are solely responsible for finding and obtaining a childcare space that would be subsidized in the future and these spots are limited.[31] Childcare attendance decisions might also be made in conjunction with a decision by the mother to enter the labor force, which could provide more income and reduce childcare costs. This policy likely creates different incentives for labor supply decisions on the extensive margin by family structure as well.

Defining subgroups of family structure based on both the number of, and age of the children in the household, we estimate a policy effect (β_1) of interest from the following regression

$$Y_{ipt} = \beta_0 + \beta_1 Quebec * Cycle3 + \beta_2 X_{ipt} + \beta_3 P_p + \beta_4 T_t + \epsilon_{ipt} \quad (2)$$

where we consider both maternal labor supply and childcare attendance as outcomes. The

[30] When undertaking a linear DID, this assumption seems reasonable if researchers either assume that the implementation of a policy comes as a complete surprise, or that there is little (or no) scope or incentive for agents to respond to information about the reform in advance of its implementation.

[31] We do not have data on childcare providers but if the outside market fee exceeds the subsidy and $5 parental fee, they may find it more beneficial to admit younger children. At this time, without a centralized matching process, all decisions on who attends are left at the discretion of the provider.

policy effect captures if there is anything different in Quebec during cycle 3 when the policy was first implemented controlling for province and cycle effects.

Table 4 presents estimates of β_1 in equation (2). A result suggestive of an income effect emerges in the first three rows. The increase in childcare attendance is only both statistically and economically significant for families that have two children, of which only the younger child is affected by QFP. Only for individuals in these families was there a marked increase in childcare once the policy was introduced. However, when we break down the estimated effect further by child age, the evidence becomes consistent that the strategic response is primarily an anticipation effect.

First, we reestimate equation (2) only for the subsample of children aged 3-4 in different family structures in cycle 3. The results are presented in the middle panel of table 4, where we observe that only among the subsample of families with a single child is there a statistically significant reduction in childcare attendance. Among children from other households, there is no statistically significant increased take-up or maternal labor supply from the policy. In total, this evidence suggests that when initially implemented, the Quebec subsidy did not increase either outcome for those eligible for the benefits and actually led to significant reductions in childcare use for families with one child aged 3-4, who also may have faced the fewest obstacles to join the labor force.

This result is surprising since the bottom panel of table 4 presents evidence that even though there was not an increase in the number of childcare spaces, those eligible for a subsidy were crowded out by younger children. Specifically, there is a statistically significant increase in childcare attendance in Quebec during cycle 3 for children aged 0-2 from households where this young child has a sibling age 5 or above. Thus, in combination with the statistically insignificant effects of the policy on childcare attendance among the remaining households allows us to cast doubt that the strategic attendance decision operates through an income effect channel. After all, the middle panel did not find a corresponding significant effect among children aged 3-4 with a younger sibling. As a whole, these results suggest that the strategic response is largely an effect consistent with anticipating the dynamic benefits from enrolling earlier.

Not only do parents have a dynamic incentive to enroll their children at early ages, but

as Lefebvre and Merrigan (2008) first pointed out, the childcare facilities available to parents could not respond to the excess demand created by the policy. In the first six years of the program, for profit childcare centers were not permitted to increase the number of available spaces and could only sign an agreement with the government to offer $5.00 per day spaces. Childcare services were offered for a maximum of 261 days per year and since most of the spaces were occupied, full-time, a family was required to pay $1305 per year to maintain its space. These fees were billed monthly and families paid the daily rate even if the child was absent from day care. Since the total government subsidy per space was $3,888 in 1996-97 and $3,832 in 1997-98, the gross amount received per space was approximately $19.90 per day; assuming 261 days. Since the market price for childcare was closer to $25 per day in 1995-96 and 1996-97,[32] providers clearly did not face an immediate financial incentive to sign agreements for spaces.

The very nature of universal childcare means that everyone is eligible and even in the absence of these anticipation effects many commentators and journalists have suggested that wealthier families inevitably occupy spots that could go to families in desperate need of affordable daycare. To formally examine if that was the case in Quebec during policy implementation we formally explore the factors influencing childcare attendance decisions. We estimate the following regression:

$$\begin{aligned} Y_{iapt} &= \beta_0 + \beta_1 X_{iapt} + \beta_2 Quebec * X_{iapt} + \beta_3 Quebec * Cycle3 + \beta_4 Quebec * Cycle3 * X_{iapt} \\ &\quad + \beta_5 Policy + \beta_6 Policy * X_{iapt} + \beta_7 A_a * T_t + \beta_8 A_a * T_t + \beta_9 P_p * T_t + \varepsilon_{iapt} \end{aligned} \tag{3}$$

where childcare attendance is the outcome and X_{iapt} is a set of demographic characteristics including parental characteristics. Our interest is estimates of the vector β_4 that capture whether there are differential decisions by parental characteristics in Quebec for children who were ineligible for the policy. Throughout, we control for common effects of the policy on characteristics (X) and allow for differences by child age and province over time.[33]

[32]Baril et al. (2000) point out that due to tax deductions for childcare expenses available from both federal and provincial governments, the estimated net daily price for childcare was approximately $11/day for a $22/day gross price and even the highest income families faced a net price of approximately $16/day.

[33]We also conducted analyses where we restricted $\beta_7 = \beta_8 = \beta_9 = 0$ and the results were robust and similar in magnitude and are available upon request.

The results are presented in table 5 and the second column additionally controls for lagged household income.[34] The panels of table 5 respectively examine decisions for younger children (aged 0-2) and older children (aged 3-4). The estimate indicate that family income does not have a differential effect. In contrast, we observe that higher levels of parental education are associated with take-up. Maternal education plays a significant role for younger children and the effect generally increases in magnitude when income is accounted for. These results indicate the importance of the education channel. Among children aged 3-4, there is a significant increase in likelihood for children to attend childcare if the father is highly educated. The effect of family income is negatively and statistically significantly related to childcare attendance, but the magnitude is quite small.

As a whole, these results suggest that the parents who were able to effectively mobilize to apply for registered daycares in their neighborhoods and workplaces as the program was being implemented were more educated; but did not have higher income. Thus, the strategic anticipation effects we identify may have large equity implications,[35] given both the inter-generational transmission of education and findings in prior research that the subsidized childcare program witnessed a disproportionately higher take-up by wealthier families.[36]

While the presence of fees and possibility that the quality of childcare provider(s) varies across neighbourhoods that reinforce why gaps in access emerge. Yet, it is also worth speculating that the presence of waitlists may have also reduced the incentives of childcare providers to compete since parents were not always well informed on quality of individual childcare providers. Thus, without a freely functioning childcare market, poor providers

[34]Since the decision to send a child to daycare may be made simultaneous to employment decisions, we use lagged income to avoid additional biases that would arise from using a contemporaneous income measure. By including this variable the sample size is reduced since by design we are forced to drop all observations from the first cycle as well as any families who attrit between cycles.

[35]Duclos (2006) provides additional evidence on why Quebec's child-care policy fails in terms of both vertical and horizontal equity in the income support dimension. He additionally notes that the policy fails in the dimension of freedom to choose by penalizing families that are predominately low-income who would otherwise prefer alternative childcare arrangements.

[36]Further, we should recall that the lowest income families are not even responsible for the daily usage fee. In 2000, Lefebvre (2004) reports more than 58% of the children in subsidized daycare came from families with incomes above $60,000, although they represented only 49% of children aged 0 to 4 in Quebec. Surveys reported in Bibby (2004) find that 80% of Canadian working parents would prefer staying home to raise their children if they could handle it financially. Their first choice is to have one of the parents look after a child, with daycare in a facility coming in fifth. Future research related to the allocative efficiency of the policy.is needed to first uncover the composition of individuals taking up childcare in the first years of availability, paying attention to socio-economic status.

remain in operation and this can potentially explain why center based care had negative impacts, whereas it has positive effects in other contexts.

We also explored if the effects of access to childcare on child outcomes were similar across family types defined on the basis of maternal education, since if not the higher take-up rate could be rationalized by the ex-post returns. Appendix table A4 presents estimates from a linear difference-in-differences analysis that is identical to the specification in BGM and Kottelenberg and Lehrer (2013), for subgroups defined by maternal education. We observe that the magnitude of the intent to treat effect of the policy on MSD scores is negative and larger among the subsample of children whose mothers completed at least an university degree. The sole outcome where these children did not face the least negative consequence is the gain in physical aggression. Thus, the estimates are consistent with there being no ex-post justification for children from families with higher educated mothers benefiting more the policy.

5 Conclusion

This paper exploits the staggered introduction of the QFP to shed new light on the effectiveness of, and equity as proxied by access to, universal subsidized childcare. Our results highlight the challenges of policy implementation in the childcare market, by demonstrating that since government capacity to provide these services was limited, many families placed their younger children who were not subsidized into day-care to hold a space that would be subsequently subsidized. The pattern of this strategic positioning of children by subgroups defined on the basis of maternal education is suggestive of many parents tried to reap the potential benefits of the new system. To this day, we not only continue to see a shortage of spaces in Quebec's childcare centers, and waiting lists abound but survey evidence continues to show that the take-up rate is higher for children from wealthier families.[37] Thus, even within the context of this universal policy, equality of child opportunity appears limited.

[37]Further, Japel and Tremblay (2005) present evidence that one in five centers attended by children from less privileged families was of inadequate quality, whereas fewer than one in 10 for children of better-off families attended inadequate quality providers. Last, we should reemphasize that during the initial implementation, this study presented evidence that the higher take-up is driven not by income but by years of maternal education.

A popular motivation for universal childcare across OECD countries is the notion that it will help middle class and low income families to gain affordable childcare. However, equity concerns from universal childcare policy may not solely arise from a potential shortage in the number of spaces. Consider a setting where the childcare centers offer significantly different levels of quality services. It is reasonable to expect that spots in relatively higher quality daycare centers are and would always be more scarce in such a setting. Further, if price is not allowed to be the invisible hand that allocates spots in the higher quality centers, the excess demand for a quality daycare spot will result in some form of rationing. It is most likely the case that in practice the more well-informed mothers, who may also be more educated, will have an advantage to gain one of these spots. This has implications for equality of opportunity. Due in part to data limitations how children are assigned to centers is an understudied consequence of how universal policies are designed as generally focus is strictly given to payment schemes.[38]

If access to universal childcare were beneficial, the strategic positioning would suggest a widening gap in child and family developmental outcomes across the distribution. However, our results continue to indicate that on average, increased childcare attendance leads to declines in these outcomes and that these declines are more marked if children gained access at earlier ages. Whether these declines are due to childcare centers focusing attention on older children and neglecting younger children who are being viewed as holding a space remains unknown. Further, since our evidence suggests that the effects of the policy are not strictly due to the immediate price change, future work should collect data on parental beliefs and expectations. After all, any changes in beliefs in response to childcare policy could influence how parents invest in their child's development and would be needed to conduct a comprehensive cost-benefit exercise of childcare policy.

Our results may have external validity by highlighting that policies which publicly expand the supply of an educational input at a faster rate than the quality of the input may

[38]That said, recent articles in the Financial Times report similar experiences in the United Kingdom, where funding for 30 hours of care each week for working parents of 3- and 4-year-olds was introduced in 2017 (Strauss, 2019a,b). Facing rising demand, childcare center have since introduced fees that changed the composition of children in care to include from affluent backgrounds. Further, childcare providers have claimed that following the subsidized policy their business can only remain sustainable if they reduce the quality of care. Yet, waitlists persist despite these claims and strategic position also occurs among two year olds in the United Kingdom.

unintentional affect the availability, price, and/or quality of the targeted input across the population. These intended consequences will be influenced by the structure of implementation and are likely not unique to early childhood education or easy to predict. Consider California's recent experience implementing class size reductions in kindergarten through third grade classes statewide.[39] The size and speed of the state-wide policy implementation led to several anticipated and unanticipated consequences arising from the immediate need for large quantities of physical and human capital. While it may have been anticipated that space for the new classes would be obtained by buying or leasing portable classrooms, it was likely unanticipated that many schools would convert libraries, teacher lounges and cafeterias into classrooms. Similarly, it is likely that policymakers anticipated that many of the new teachers added to the teaching force to staff these additional classrooms would be inexperienced, but it was likely unanticipated that the policy would induce transitions of higher quality teachers from poorer to wealthier schools districts within the state.[40] In the context of early childhood education, Kottelenberg and Lehrer (2017, 2018) respectively provide evidence that many household educational investments such as reading to the child significantly declined if the child was newly eligible for subsidized childcare.

Finally, by being the first study to exploit variation from the period of policy implementations, our results provide a new lens to understand the estimated policy effects of Quebec's subsidized childcare. The policy generated incentives for both providers and users of childcare that significantly altered the composition of those attending these centers. These differential selection effects that are captured by child age interactions with time and province account for roughly half of the estimates obtained by simpler linear difference-in-differences estimates. We speculate that as supply expanded, the larger more negative impacts of childcare emerge through new entrants as well as the presence of waitlists stymieing any incentive to improve quality by childcare providers.

Taken together, the results of this study suggest that substantial attention and research

[39]See also Brown (2018) for another example of the unintended effects from the introduction of public pre-K in New York City.

[40]See Jepsen and Rivkin (2009) and Bohrnstedt and Stecher (2002) who each present evidence that the implementation of this policy led to large inequities in how measures of teacher qualifications were distributed across students of different socioeconomic background. Stecher and Bohrnstedt (2000) provide further details on several unanticipated consequences.

is needed to understand issues surrounding large-scale implementation of early education and care policies.[41] While in many localities, funding for early childhood programs accounts for only tiny percentages of government investments in social and educational programming, Quebec's childcare program is quite costly for the government who provided $2.3 billion in subsidies in 2013–14. Further, Quebec's program has also proven to be difficult to reform since it is treated as a sacred cow by the populace. Thus, given the challenges in reforming a program as popular as this, the challenge in this policy arena is to design effective policies that can not only be easily and quickly implemented but also promote equality of child opportunity to childcare quality.[42] Taking a staggered approach to allow childcare supply to slowly catch up with demands appears to have led Quebec's universal expansion of childcare to simultaneously reduce equity and economic efficiency.

[41] Ding and Lehrer (2015) note that policymakers when extrapolating the results from randomized studies should be cautious and not fall victim to a related concern that either the context the experiment induced led to behavioral changes that would remain if a policy was mandated or assume the context did not cause behavioral changes. More closely related to internal validity concerns is Kline and Walters (2016) who provide evidence that a challenge in evaluating a recent Head Start experiment is that roughly one-third of the control group participated in alternate forms of preschool, without altering their exposure to preschool services. They discuss how the presence of substitute preschools affects the interpretation and cost-effectiveness of the Head Start program.

[42] Related to equity goals, Baril et al. (2000) estimated the policy only improved the financial situation of roughly 28% of Quebec families. Families with incomes between $25,000 and $40,000 were made worse off financially after the policy was introduced. Related, calculations in Laferrière (2005) demonstrate that families with relatively high incomes (over $60,000) received the largest benefits from the policy given their higher take-up. Since childcare costs at $7 are not eligible for provincial tax credits, at the federal level low income families can pay more taxes, receive less federal family allowances and less GST credit.

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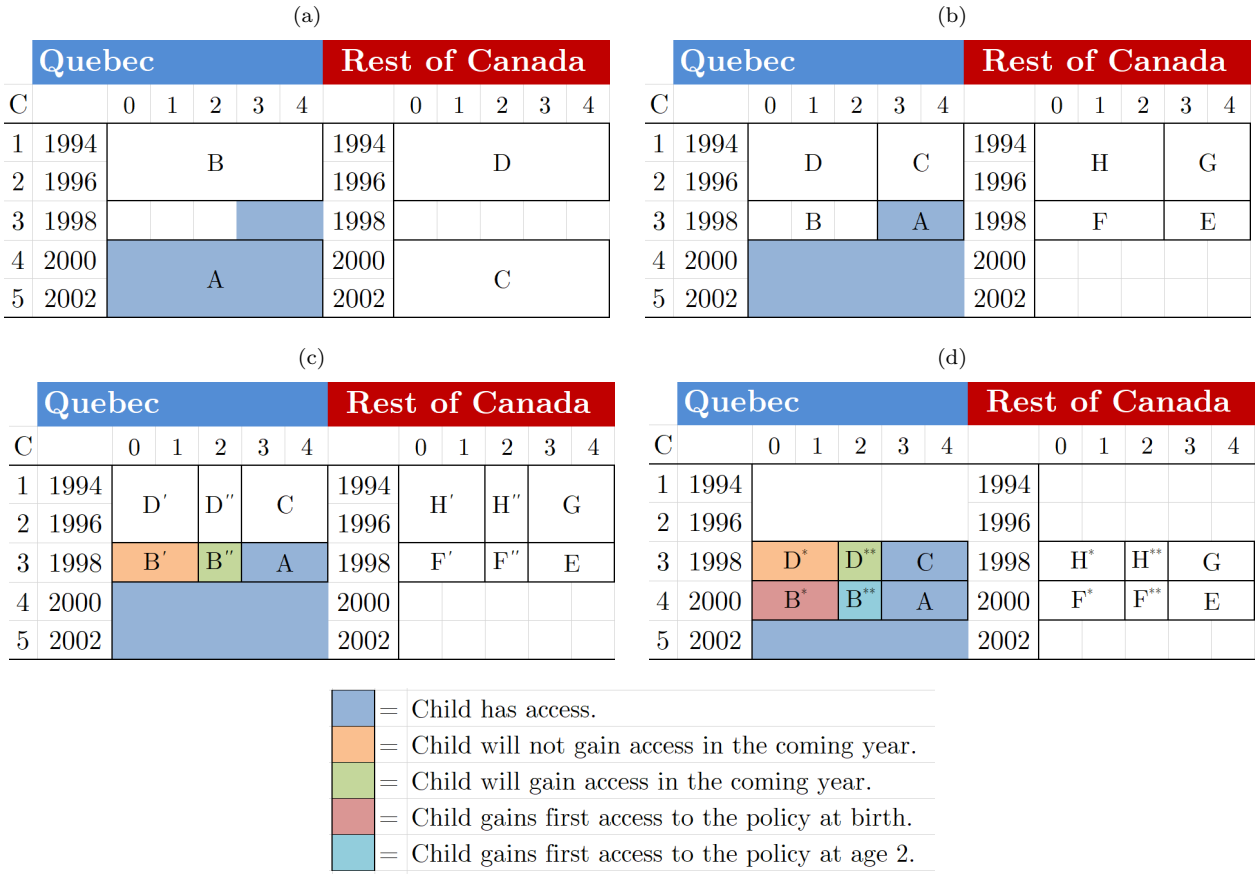
Table 1: Summary Statistics of Family and Child Characteristics

	Rest of Canada		Quebec	
	Pre-Policy	Post-Policy	Pre-Policy	Post-Policy
Child and Family Characteristics				
Child is Male	0.509	0.514	0.509	0.515
	(0.500)	(0.500)	(0.500)	(0.500)
Number of Younger and Same Aged Siblings	0.238	0.264	0.249	0.232
	(0.466)	(0.483)	(0.480)	(0.455)
Number of Older Siblings	0.882	0.835	0.786	0.774
	(1.013)	(0.949)	(0.918)	(0.918)
Lives in a Rural Area	0.148	0.106	0.149	0.147
	(0.355)	(0.308)	(0.356)	(0.354)
Lives in a Big City	0.434	0.443	0.582	0.561
	(0.496)	(0.497)	(0.493)	(0.496)
Mother's Characteristics				
Age	31.72	32.54	30.86	31.28
	(5.075)	(5.389)	(4.846)	(5.301)
Born Outside Canada	0.213	0.255	0.091	0.136
	(0.410)	(0.436)	(0.287)	(0.343)
Did Not Complete High School	0.099	0.083	0.127	0.120
	(0.298)	(0.276)	(0.333)	(0.325)
Completed University Degree	0.215	0.300	0.212	0.302
	(0.411)	(0.458)	(0.409)	(0.459)
Father's Characteristics				
Age	34.10	35.12	33.41	34.02
	(5.711)	(6.059)	(5.362)	(5.902)
Born Outside Canada	0.210	0.256	0.098	0.157
	(0.408)	(0.437)	(0.297)	(0.364)
Did Not Complete High School	0.133	0.108	0.165	0.160
	(0.339)	(0.310)	(0.371)	(0.367)
Completed University Degree	0.220	0.277	0.195	0.266
	(0.414)	(0.447)	(0.396)	(0.442)
Outcome Variables				
Child Care Use	0.467	0.496	0.471	0.649
	(0.499)	(0.500)	(0.499)	(0.477)
Mother Works	0.626	0.653	0.565	0.667
	(0.484)	(0.476)	(0.496)	(0.471)
Motor and Social Development	100.5	100.3	99.28	97.71
	(15.13)	(14.75)	(15.08)	(14.99)

— Note: Each row corresponds to a variable of interest and contains the mean and standard deviation (in parentheses) specific to the geographic region, time period and family type as denoted in the column header. Keeping in line with the identification strategy used, the pre-policy refers to 1994-1997 for children age 3 – 4 and 1994-1999 for children age 0 – 2. The NLSCY survey weights, designed to accurately reflect the make up of the Canadian population, are applied in these and all calculations throughout the chapter. The sample size is 45996, with the sole exception of the motor and social development score which excludes 4 years olds and has only 36134 observations.

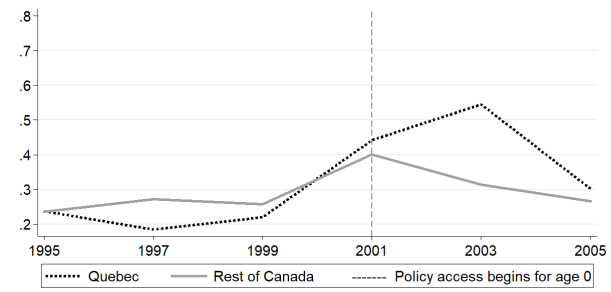
Figure 1: Data and Identification Strategy Representation



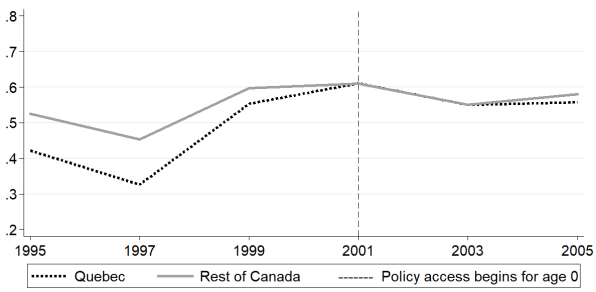
Note: Each diagram represents the data in the NLSCY. Columns represent the children of a given age and rows represents a given cycle of data collection. The representation is split by Quebec and the rest of Canada. Note access to the policy for each age group is determined at the time of data collection. The data used in each strategy is outlined in each figure.

Figure 2: Trends in Child Care Use and Maternal Work

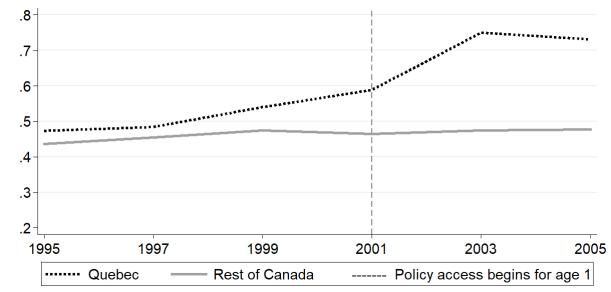
(a) Age 0: Proportion of Children in Care



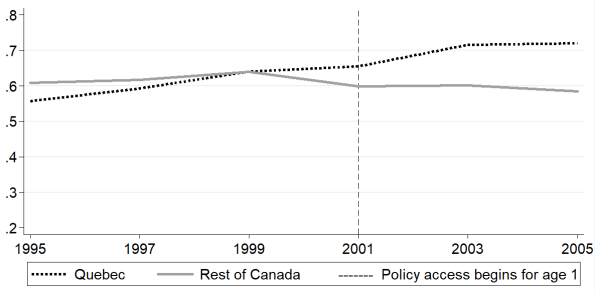
(b) Age 0: Proportion of Mothers Working



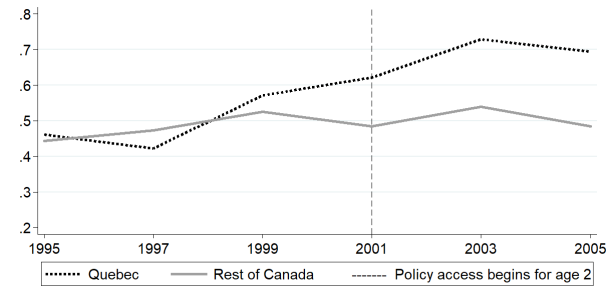
(c) Age 1: Proportion of Children in Care



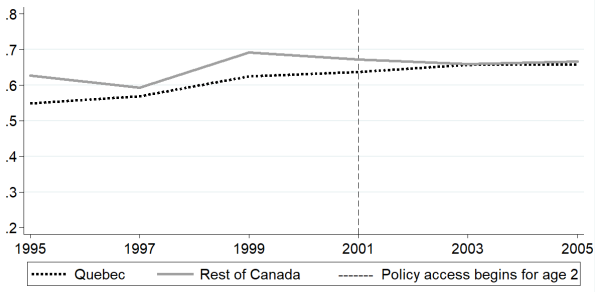
(d) Age 1: Proportion of Mothers Working



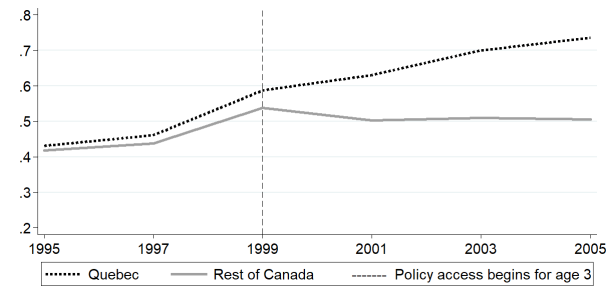
(e) Age 2: Proportion of Children in Care



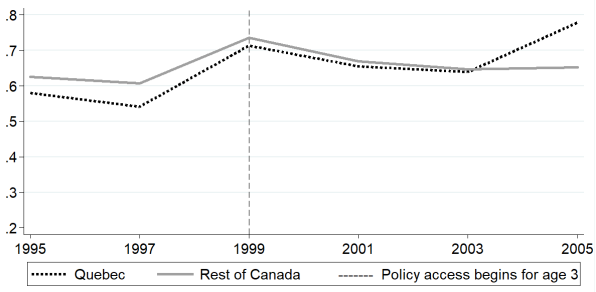
(f) Age 2: Proportion of Mothers Working



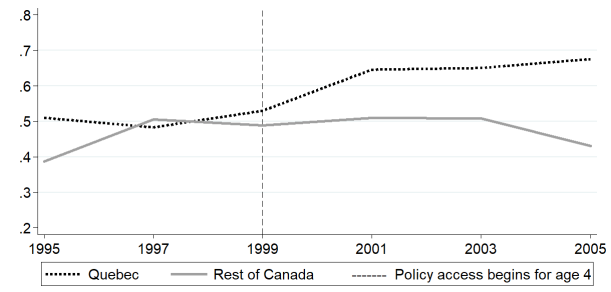
(g) Age 3: Proportion of Children in Care



(h) Age 3: Proportion of Mothers Working



(i) Age 4: Proportion of Children in Care



(j) Age 4: Proportion of Mothers Working

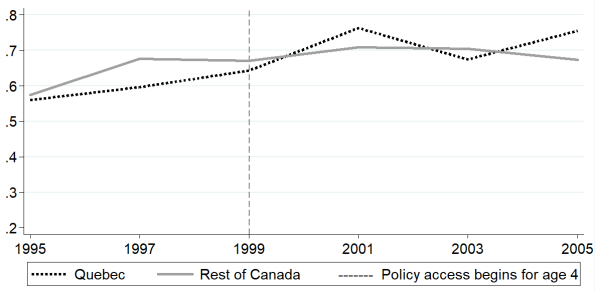


Table 2: Triple Difference Estimation during the Implementation Periods

	(1)	(2)	(3)	(4)	(5)	(6)
Years of Interest	1994-97 1998-99	1994-97 1998-99	1994-97 1998-99	1998-99 2000-01	1998-99 2000-01	1998-99 2000-01
Age Groups of Interest	Ages 0-2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Age 2
Corresponding Figure	1b	1c	1c	1d	1d	1d
Corresponding Cells (Quebec Only)	(A-C)-(B-D)	(A-C)-(B'-D')	(A-C)-(B"-D")	(A-C)-(B*-D*)	(A-C)-(B**-D**)	(B**-D**)-(B*-D*)
Child Care Use	-0.042* (0.092)	-0.028 (0.273)	-0.064** (0.016)	0.011 (0.801)	0.098** (0.018)	-0.112*** (0.000)
Mother Work	-0.014 (0.584)	-0.044* (0.053)	0.044 (0.110)	0.043** (0.014)	0.098*** (0.000)	-0.068*** (0.000)
MSD Score	3.995*** (0.000)	3.451*** (0.000)	4.892*** (0.000)	-2.465*** (0.000)	-0.177 (0.650)	-2.358*** (0.000)
F-test $\beta_4 = \beta_5 = \beta_6 = 0$	6.031***	5.777***	4.765***	31.61***	7.004***	55.34***

— Note: For the outcome variable in each row we present the estimates of β_7 Equation (1) for the three data specifications illustrated in Figures 1b – 1d. We report p-values from testing $\beta_7 = 0$ in parentheses. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

Table 3: Triple Difference Estimates from Cycles 1–3, Select Covariates

	Child Care Use	Mother Works	MSD Score
Policy access	-0.042*	-0.014	3.995***
	(0.092)	(0.584)	(0.000)
Has one younger sibling	-0.180***	-0.170***	-1.193**
	(0.000)	(0.000)	(0.026)
Has more than one younger sibling	-0.331***	-0.345***	0.613
	(0.000)	(0.000)	(0.604)
Has one older or same aged sibling	-0.079***	-0.071***	-1.806***
	(0.000)	(0.000)	(0.000)
Has more than one older or same aged sibling	-0.189***	-0.138***	-2.232***
	(0.000)	(0.000)	(0.000)
Child is male	0.004	0.012	-4.852***
	(0.646)	(0.149)	(0.000)
Mother has high school education	0.070***	0.123***	1.483*
	(0.000)	(0.000)	(0.073)
Mother has some post-secondary	0.169***	0.202***	2.087***
	(0.000)	(0.000)	(0.002)
Mother has a university degree	0.268***	0.306***	2.032**
	(0.000)	(0.000)	(0.015)
Mother is an immigrant	-0.016	-0.071***	-1.422**
	(0.352)	(0.000)	(0.019)
Father has high school education	0.019	0.057***	1.224**
	(0.239)	(0.000)	(0.024)
Father has some post-secondary	0.019	0.048***	1.903***
	(0.124)	(0.000)	(0.000)
Father has a university degree	-0.013	-0.025*	2.573***
	(0.480)	(0.094)	(0.000)
Father is an immigrant	-0.066***	-0.071***	-1.448**
	(0.000)	(0.000)	(0.023)
Quebec	-0.037	-0.118***	-2.830***
	(0.231)	(0.000)	(0.000)
1996–97	0.003	-0.036*	1.112
	(0.930)	(0.080)	(0.302)
1998–99	0.004	0.122***	0.529
	(0.893)	(0.000)	(0.476)
Quebec, 1996–97	-0.035	-0.052**	0.754
	(0.379)	(0.019)	(0.479)
Quebec, 1998–99	0.010	-0.034	-1.745**
	(0.756)	(0.173)	(0.016)
Child age 1	0.143***	-0.086***	1.787***
	(0.000)	(0.000)	(0.002)
Child age 2	0.167***	-0.009	0.423
	(0.000)	(0.788)	(0.583)
Child age 3	0.186***	-0.033	0.076
	(0.001)	(0.246)	(0.949)
Child age 4	0.160***	-0.047**	—
	(0.001)	(0.023)	
Quebec, Child age 1	0.120***	0.227***	-0.938*
	(0.000)	(0.000)	(0.059)
Quebec, Child age 2	0.073***	0.130***	0.672
	(0.003)	(0.000)	(0.405)
Quebec, Child age 3	0.091*	0.224***	0.435
	(0.097)	(0.000)	(0.713)
Quebec, Child age 4	0.146***	0.203***	—
	(0.003)	(0.000)	
F-test $\beta_4 = \beta_5 = \beta_6 = 0$	6.031***	9.440***	5.745***
N	27697	27697	22316

— Note: For the outcome variable in each column we present select covariates the triple difference estimates represented in Figure 1b using Equation (1). We report p-values in parentheses. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

Table 4: Family Structure, Policy Availability, and Changes in Maternal Work and Child Care Usage

	Child Care Use	Mother Works	Sample
Full sample	0.020	0.022	27697
	(0.373)	(0.309)	
Has no siblings	-0.043	-0.024	7619
	(0.298)	(0.533)	
Has one sibling	0.075**	0.045	12748
	(0.024)	(0.152)	
Has more than one sibling	0.014	0.051	7330
	(0.736)	(0.252)	
Children Age 3-4 – Eligible for the Subsidy in Cycle 3			
Has no siblings	-0.227**	-0.127	1352
	(0.012)	(0.132)	
Has one sibling	0.047	0.052	4880
	(0.358)	(0.271)	
Has one older or same aged sibling	0.043	0.039	2472
	(0.546)	(0.520)	
Has one younger sibling	0.027	0.008	2408
	(0.716)	(0.913)	
Has more than one sibling	0.038	0.054	2946
	(0.548)	(0.425)	
Children Age 0-2 – Not Eligible for the Subsidy in Cycle 3			
Has no siblings	0.020	0.016	6267
	(0.640)	(0.698)	
Has one sibling	0.100**	0.041	7868
	(0.018)	(0.329)	
Has one older or same aged sibling	0.103**	0.042	6711
	(0.021)	(0.330)	
Has one younger sibling	0.017	0.030	1157
	(0.857)	(0.807)	
Has more than one sibling	-0.017	0.037	4384
	(0.759)	(0.529)	

— Note: In this table we examine changes in child care usage and maternal work by reporting β_1 from Equation (2). Each row reports this coefficient for the corresponding family structure described in the first column of the table. P-values are reported in parenthesis below each estimate. We report sample sizes from the estimates on the outcome variable Child Care Use. There are only small differences in the sample size for the two outcome variables. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

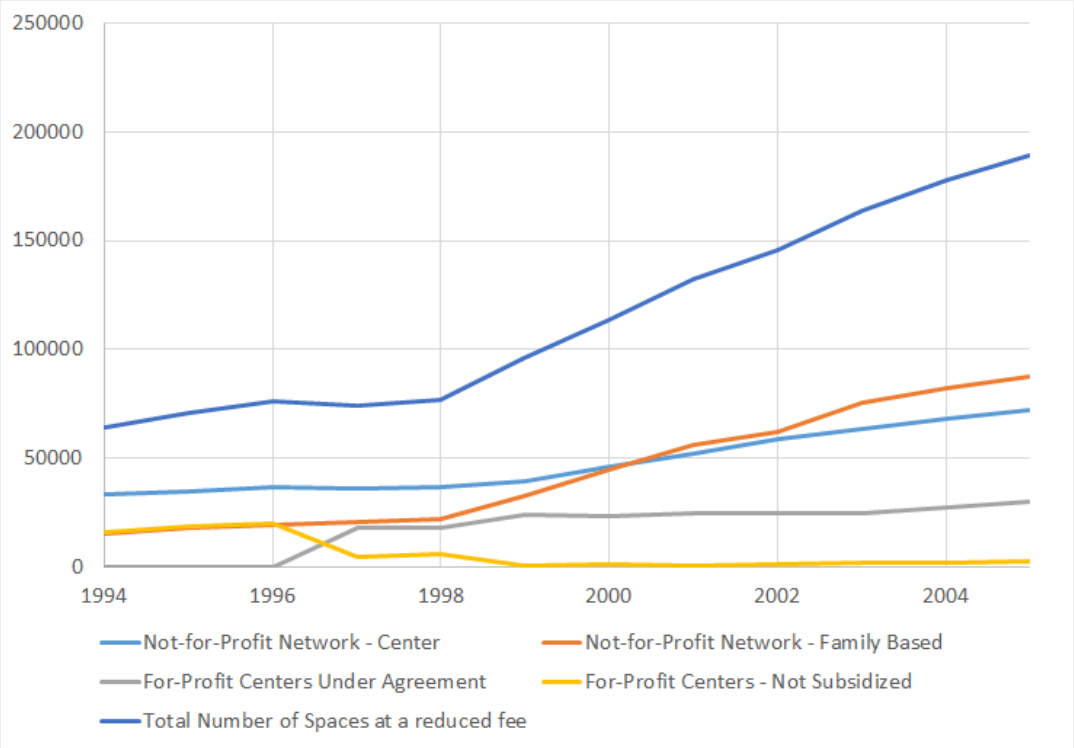
Table 5: Select Demographic Changes in Child Care User Base in Quebec, 1998-99

	Coefficient	Coefficient with Lagged Income
Quebec Families with Children Ages 0–2 Those Not Eligible for the Subsidy in Cycle 3		
Mother has high school education	0.101*	0.061
	(0.068)	(0.214)
Mother has some post-secondary	0.084**	0.107***
	(0.029)	(0.002)
Mother has a university degree	0.103*	0.093***
	(0.091)	(0.004)
Mother is an immigrant	-0.081	0.279**
	(0.568)	(0.038)
Father has high school education	-0.094*	-0.218***
	(0.093)	(0.000)
Father has some post-secondary	-0.126*	-0.399***
	(0.052)	(0.000)
Father has a university degree	-0.084*	-0.350***
	(0.083)	(0.000)
Father is an immigrant	0.054	-0.046
	(0.592)	(0.670)
Lagged Income (In $10,000)	—	0.019
		(0.108)
Quebec Families with Children Ages 3-4 Those Eligible for the Subsidy in Cycle 3		
Mother has high school education	-0.005	0.119***
	(0.919)	(0.000)
Mother has some post-secondary	0.006	0.039**
	(0.800)	(0.033)
Mother has a university degree	-0.042	0.061
	(0.506)	(0.109)
Mother is an immigrant	0.279*	-0.010
	(0.051)	(0.899)
Father has high school education	0.097	0.207**
	(0.417)	(0.041)
Father has some post-secondary	0.169**	0.320***
	(0.011)	(0.000)
Father has a university degree	0.204*	0.338***
	(0.062)	(0.006)
Father is an immigrant	-0.152*	0.085
	(0.076)	(0.110)
Lagged Income (In $10,000)	—	-0.001**
		(0.043)
Observations	27,697	8,474

— Note: In this table we examine changes in child care users in Quebec in the first years the Quebec Family Policy was first made available. We report results from Equation (3). In the first panel of the table we present selected coefficients from the vector β_4 and in the second panel we present selected coefficients from the vector β_6. Standard errors are reported in parenthesis below each estimate. The standard errors are corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

Appendix Material

Figure A1: Number of Child Care Spaces in Quebec



Note: The numbers for these figures are taken from Lefebvre, Merrigan and Verstraete (2009) and sourced from the Department of Family in Quebec.

Table A1: Summary Statistics of Family and Child Characteristics

		Rest of Canada		Quebec	
	Obs.	Pre-Policy	Post-Policy	Pre-Policy	Post-Policy
Child in Excellent Health	45933	0.635	0.675	0.636	0.617
		(0.481)	(0.468)	(0.481)	(0.486)
Hyperactivity-Inattention	23516	4.300	4.176	4.092	4.351
		(2.819)	(2.670)	(2.972)	(2.881)
Physical Aggression	26540	1.273	1.248	0.995	1.199
		(1.291)	(1.305)	(1.250)	(1.366)
Emotional Anxiety	26501	1.548	1.750	1.555	2.017
		(1.743)	(1.793)	(1.680)	(1.870)
Separation Anxiety	19000	2.732	2.608	2.632	2.744
		(2.018)	(2.006)	(2.023)	(2.001)

— Note: Each row corresponds to a variable of interest and contains the mean and standard deviation (in parentheses) specific to the geographic region, time period and family type as denoted in the column header. Keeping in line with the identification strategy used, the pre-policy refers to 1994-1997 for children age 3 – 4 and 1994-1999 for children age 0 – 2. The NLSCY survey weights, designed to accurately reflect the make up of the Canadian population, are applied in these and all calculations throughout the chapter.

Table A2: Triple Difference Estimation during the Implementation Periods

	(1)	(2)	(3)	(4)	(5)	(6)
Years of Interest	1994-97 1998-99	1994-97 1998-99	1994-97 1998-99	1998-99 2000-01	1998-99 2000-01	1998-99 2000-01
Age Groups of Interest	Ages 0-2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Age 2
Corresponding Figure	1b	1c	1c	1d	1d	1d
Corresponding Cells (Quebec Only)	(A-C)-(B-D)	(A-C)-(B'-D')	(A-C)-(B"-D")	(A-C)-(B*-D*)	(A-C)-(B**-D**)	(B**-D**)-(B*-D*)
Child in Excellent Health	0.009	0.025	-0.021	0.070***	0.019	0.042**
	(0.662)	(0.203)	(0.374)	(0.000)	(0.541)	(0.048)
Hyperactivity-Inattention	-0.147	—	-0.147	—	0.119	—
	(0.193)		(0.193)		(0.480)	
Physical Aggression	-0.043	—	-0.043	—	0.233***	—
	(0.548)		(0.548)		(0.007)	
Emotional Anxiety	0.196**	—	0.196**	—	0.272***	—
	(0.015)		(0.015)		(0.000)	
Separation Anxiety	0.255***	—	0.255***	—	0.480***	—
	(0.000)		(0.000)		(0.000)	

— Note: For the outcome variable in each row we present the estimates of β_7 Equation (1) for the three data specifications illustrated in Figures 1b – 1d. We report p-values from testing $\beta_7 = 0$ in parentheses. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively. The estimates of columns 1 and 3 in the bottom of panel of results are identical as the analysis is conduct on the same sample.

Table A3: Single Difference by Treatment and Comparison Groups

	(1)	(2)	(3)	(4)	(5)	(6)
Years of Interest	1994-97 1998-99	1994-97 1998-99	1994-97 1998-99	1998-99 2000-01	1998-99 2000-01	1998-99 2000-01
Age Groups of Interest	Ages 0-2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Ages 3-4	Age 2 Ages 3-4	Ages 0-1 Age 2
Quebec						
Corresponding Figure	1b	1c	1c	1d	1d	1d
Corresponding Cells	(A-C)-(B-D)	(A-C)-(B'-D')	(A-C)-(B"-D")	(A-C)-(B*-D*)	(A-C)-(B**-D**)	(B**-D**)-(B*-D*)
Child Care Use	-0.007	0.029	-0.066*	0.113	0.105*	-0.004
	(0.856)	(0.440)	(0.086)	(0.132)	(0.072)	(0.933)
Mother Work	-0.007	-0.024	0.029	0.060***	0.107***	-0.064**
	(0.851)	(0.595)	(0.428)	(0.003)	(0.007)	(0.018)
MSD Score	2.339***	1.706**	3.597***	-4.658***	0.262	-4.768***
	(0.006)	(0.036)	(0.004)	(0.000)	(0.701)	(0.000)
Rest of Canada						
Corresponding Figure	1b	1c	1c	1d	1d	1d
Corresponding Cells	(E-G)-(F-H)	(E-G)-(F'-H')	(E-G)-(F"-H")	(E-G)-(F*-H*)	(E-G)-(F**-H**)	(F**-H**)-(F*-H*)
Child Care Use	0.036	0.055**	-0.004	0.119***	0.009	0.110***
	(0.144)	(0.022)	(0.903)	(0.001)	(0.780)	(0.001)
Mother Work	0.007	0.017	-0.011	0.025	0.012	0.012
	(0.737)	(0.492)	(0.619)	(0.400)	(0.656)	(0.545)
MSD Score	-1.839**	-1.983**	-1.400*	-2.954***	-0.604	-2.359***
	(0.013)	(0.024)	(0.059)	(0.001)	(0.373)	(0.001)

— Note: We estimate $Y_{iapt} = \beta_0 + \beta_1 T_t + \beta_2 A_a + \beta_3\ I(T_t = 3) * I(A_a = 3, 4) + \beta_4 X_{iapt} + \beta_5 P_p + \epsilon_{iapt}$ separately for Quebec and the rest of Canada and report the estimates of β_3. This equation equates to running a single differences-in-differences specifications on the corresponding cells that have been illustrated in Figures 1b – 1d. We report p-values from testing $\beta_3 = 0$ in parentheses. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

Table A4: Difference-in-Differences Estimation

			Mother's Education			
	BGM	KL 2013	Did Not Complete High School	High School	Some Post-Secondary	University Degree
Take Up Variables						
Child Care Use	0.146	0.196	0.121	0.27	0.222	0.133
	(0.033)***	(0.019)***	(0.059)**	(0.033)***	(0.019)***	(0.030)***
Mother Works	0.077	0.11	-0.008	0.166	0.11	0.099
	(0.006)***	(0.013)***	(0.029)	(0.049)***	(0.023)***	(0.025)***
Child Development and Health						
MSD Score	-1.645	-1.688	-2.543	-1.21	-1.089	-2.87
	(0.461)***	(0.471)***	(0.982)**	(0.578)**	(0.510)**	(0.859)***
Child in Excellent Health	-0.055	-0.049	-0.035	-0.056	-0.068	-0.005
	(0.016)***	(0.019)**	(0.031)	(0.025)**	(0.027)**	(0.032)
Child Behavioral Measures						
Hyperactivity-Inattention	0.000	0.322	-0.299	0.547	0.495	0.26
	(0.088)	(0.117)***	(0.352)	(0.209)**	(0.172)***	(0.265)
Physical Aggression	0.38	0.601	0.927	0.664	0.657	0.434
	(0.085)***	(0.101)***	(0.229)***	(0.321)**	(0.185)***	(0.123)***
Emotional Anxiety	0.12	0.205	0.219	0.053	0.366	-0.021
	(0.056)**	(0.059)***	(0.22)	(0.139)	(0.076)***	(0.113)
Separation Anxiety	0.098	0.164	0.034	0.44	0.112	0.298
	(0.085)	(0.087)*	(0.295)	(0.193)**	(0.081)	(0.160)*

— Note: For the outcome variable in each row we present the estimates of the standard difference-in-differences model from BGM and Kottelenberg and Lehrer (2013), and the break down of the latter sample by mother's education. We report standard errors in parentheses. The standard errors underlying the hypothesis tests are also corrected at the province-year level. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.