The Impact of Increased Child Benefits on Married Parents' Labor Supply: Evidence from Federal and Provincial Policy in Canada

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Abstract

This study analyzes the relationship between child benefit payments and married parents' labor supply in Canada. I study the federal reforms in 2015 and 2016 that led to an increase in benefits for most families. Using difference-in-differences and event studies, I find no significant effect on labor force participation, employment, or weekly hours worked for married mothers or fathers. I do find that married fathers are 0.7 percentage points less likely to work over 40 hours per week. This effect is concentrated among married fathers with at least some postsecondary education and those with children ages six through 17. I also use synthetic controls to analyze the 2016 provincial benefit reforms in Alberta, which increased child benefits in only this province. Married mothers in Alberta have much lower labor supply outcomes than other provinces, so I focus my analysis on married fathers. I find no significant impact on labor supply when compared to synthetic control groups composed of married fathers in other provinces. This indicates that these recent policy reforms in Canada have largely avoided the adverse labor market effects that concerned many critics. I hypothesize that benefit increases from pre-2015 federal policy reforms caused workers who were more loosely attached to the workforce to exit or decrease their labor supply, but the remaining workers either have a preference for being in the workplace or a significantly higher reservation wage. Additionally, this study only looks at the four years following the policy changes. There may be more significant impacts on labor supply in the longer term for future parents. Other countries looking to learn from Canada's child benefit programs should take into account not just these most recent benefit reforms but also previous reforms in Canada, which did lead to a significant decrease in parental labor supply.

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1. Introduction

Many countries provide some form of direct financial assistance to parents, often called child benefits. These benefits are offered to serve a variety of social goals, such as reducing child poverty, helping with the heavy cost of child rearing, investing in the development and well-being of the country's future generations, and even encouraging fertility as birth rates fall in the industrialized world. Child benefits can also come in a variety of forms. Some are tax breaks while others are direct government transfers; some are paid universally while others are conditional on work, income, or family structure; some take the form of monetary benefits, while others are in-kind, such as housing and food vouchers. Several nations around the world find themselves grappling with questions about their child benefit programs. While most countries agree that these programs are worthwhile, there is an active debate about how best to structure child benefits in order to make them effective while mitigating any adverse effects. Analyzing the different iterations of child benefit policies around the world can help us understand the advantages and costs of each, further informing future policy debates. This study analyzes one set of recent benefit reforms in Canada to estimate the relationship between child benefits and parents' labor supply.

In Canada, the federal government reformed their child benefits in 2015 and 2016, resulting in the Canada Child Benefit (CCB). The CCB is a large, monthly cash payment given to parents of children under age 18. This reform significantly increased the amount most parents received in benefits, and it was passed with the goal of reducing child poverty in Canada and helping middle-class families bear the costs of raising children. It is an often-cited program among analysts and policymakers in other nations,[1] and it

[1] In the U.S. alone, writers from the Center on Budget and Policy Priorities (https://www.cbpp.org/blog/canadian-style-child-benefit-would-cut-us-child-poverty-by-more-than-half), the Century Foundation (https://tcf.org/content/report/what-a-child-allowance-like-canadas-would-do-for-child-poverty-in-america/?session=1&agreed=1), and the American Compass (https://americancompass.org/essays/canucks-in-the-cradle/) cite the Canadian system as a prominent example for the U.S. to consider.

is one of the most generous child benefit programs in the world, giving out as much as $6,400 per child annually in 2016.[2] In addition, individual provinces in Canada offer additional child benefits to residents on top of what the federal government provides. Alberta introduced a new program for their province in 2016 called the Alberta Child Benefit (ACB). This program pays up to $1,100 per child annually, a notable increase on top of the already large CCB. In addition, the province enhanced their existing Alberta Family Employment Tax Credit (AFETC). The AFETC pays up to $754 per child annually, and the recent reforms increased the income cutoffs, making this income-tested program available to more families. The payment amounts from all of these benefits ultimately vary depending on the number of children, the age of the children, and family income, but they provide a sizable cash supplement to most parents raising children in Canada.

One of the main concerns raised about such programs in Canada and elsewhere is the potential to decrease labor supply among parents receiving these benefits. Many of these programs pay families several thousand dollars per year. If we consider the money from benefits to have a pure income effect, we would expect parents to treat them as a substitute for labor income. This would cause some parents to decrease their labor supply in response. Any resulting decrease in labor supply could have multiple negative consequences. First, this makes programs even costlier to the government because of foregone income taxes. Additionally, if parents are working less, they may decrease their overall income (both in terms of current income and future earning potential), mitigating some of the poverty reduction effects of child benefits. Empirical studies of different child benefit systems can investigate whether these theoretical effects are present in real labor markets.

My paper contributes to this policy discussion by analyzing of the relationship between child benefits and parental labor supply in Canada. I analyze the effects of federal and provincial policies on

[2] All monetary figures in this paper are in Canadian dollars.

the labor force, and I provide three main contributions to the literature. First, I use difference-in-differences and event study methods to estimate the effects of the federal reforms on married parents' labor force participation, employment, and weekly hours worked. In this analysis, I use married parents of each sex with a child between the ages zero to 17 as my treatment groups and married adults who do not have a child under the age of 18 as the control groups. From here on, I will use the term "childless" to refer to adults who do not have a child under age 18 and are thus not eligible for child benefits in Canada. I restrict my analysis to married parents because others have already studied the effects of this policy change on single parents. Although single parents are often considered a group of interest to policy makers, over 88 percent of parents in Canada are in a legal or common-law marriage. This study will help us better understand how child benefit reforms have impacted labor supply among the vast majority of Canadian parents. Additionally, married couples can share the work and childcare burden and make joint labor market decisions, so we cannot assume that married parents and single parents will respond the same way to an increase in benefits. Second, I study the impact of the provincial ACB and AFETC on married fathers' labor supply in Alberta, which has not been analyzed before. My third contribution is to perform this province-level analysis using synthetic controls. Studies of child benefits usually have no obvious control group, and many papers use childless adults as the best available comparison. Here, I improve upon that by using parents in untreated provinces to construct synthetic control groups for Alberta, providing a new way to study the effects of child benefits on labor force participation, employment, and weekly hours. I only focus on married fathers because married mothers in Alberta have significantly lower labor supply than married mothers in other provinces, so this group is not well-suited to synthetic control analysis. Ultimately, I find the federal increases in child benefits had no significant impact on married parent's labor force participation, employment, or hours worked. However, I find married fathers are nearly one percentage point less likely to work over 40 hours per week compared to married men without children. I also find that Alberta's increase in benefits had no effect on labor force participation, employment, weekly hours, or the likelihood of working overtime for married fathers.

The rest of this paper is as follows. In Section 2, I provide background information on Canadian child benefit policies and their recent reforms. In Section 3, I review the literature on child benefits and their impact on labor supply. In Section 4, I describe the data I use. In Section 5, I describe the methods and results of the federal policy study. In Section 6, I provide the methods and results for the province-level study. Finally, in Section 7, I conclude and further discuss policy implications.

2. Policy Background

2.1. Federal Policy Reforms

Until recently, Canada provided child benefit payments at the federal level to parents through a combination of three programs: the Canada Child Tax Benefit (CCTB), the National Child Benefit Supplement (NCB), and the Universal Child Care Benefit (UCCB). The first program, the CCTB, was introduced in 1993. It gave tax-free benefits on a per-child basis to parents of children under age 18. The CCTB payment decreased gradually if the family surpassed a certain income threshold. Both the payment amount and income threshold were indexed to inflation and thus increased each year. By 2015, the final year of the program, the CCTB paid up to $1,471 annually per child. Above the income threshold of $44,701, benefit amounts decreased at a phase-out rate of two percent per additional dollar of income (Milligan 2016). The NCB, which began in 1998, was designed similarly. It provided payments to parents of children under 18 up to a certain income threshold, after which the benefits began to decline. The payment amount and income threshold were also indexed to inflation. In 2015, also the final year of the NCB, the maximum benefit amount for the first child was $2,279 per year. The NCB was meant to be more targeted at low-income families, so it had a lower income threshold and more severe phase-out rate than the CCTB. The income threshold in 2015 was $26,021, above which the payments decreased at a rate of 12.2 percent for the first child (Milligan and Stabile 2007). Finally, the UCCB began in 2006. The benefit was only available to parents of children under the age of six. As the name implies, the program was universal, providing the same $1,200 annually per child to every eligible family. However, these benefits were taxable, so the net benefits were progressively phased out through annual federal taxes (Baker et al. 2021). Depending on their income level, families were allowed to receive benefits from all three of these programs. They were used together from 2006 until July 2015, and they combined to provide a sizable annual benefit to families with children. The benefit amount parents ultimately received varied due to income, tax rates, and the number of children, but a low-income family with one child under the age of six was eligible for a maximum of $4,950 per year in 2015.

One focus of this study is the two recent reforms to Canada's federal child benefits that occurred in 2015 and 2016. First, the Canadian government passed a large expansion of the UCCB that began in July 2015. This reform resulted in two main changes to the UCCB. First, it increased the amount paid to parents of children under age six from an annual $1,200 per child to $1,920 per child. Second, the benefit was expanded to include parents of older children. As a result, parents of kids between the ages six and 17 were eligible for an annual $720 per child. This was a notable increase in scale and scope of the UCCB, but it did not change the other underlying policy characteristics. It was still able to combine with the CCTB and NCB, and the UCCB still remained subject to federal taxes (Baker et al. 2021). Between July 2015 and July 2016, low-income families with one child under the age of six could receive a maximum annual benefit of $5,670 from these three programs.

Just a year later, the new Canada Child Benefit (CCB) was passed and brought further changes. Beginning in July 2016, the CCB consolidated the three previous benefits into one large program. In addition to replacing this former patchwork of benefits, the CCB significantly increased the benefit amount for most Canadian families. This program is tax-free, but unlike the UCCB, it is a means-tested benefit. The CCB is available to parents of children under age 18, but the benefit amount depends on the age of the child. The benefits are administered in monthly payments. Parents are eligible to apply for the CCB as soon as their child is born or when they begin custody of a child. Parents can apply for the CCB at the hospital where the child is born when completing the standard birth registration paperwork. For parents who gain custody of a child later in life, they can apply by submitting a brief form online or through the mail. The take-up rate for the CCB is high, with over 95 percent of Canadian parents receiving benefits since it began.[3]

In 2016, the maximum benefit available to a family with one child was $6,400 per year for a child aged zero to five and $5,400 per year for a child between ages six and 17. This benefit amount began to decrease above a family income of $30,000 and decrease less sharply above an income of $65,000. The phase-out rates above each threshold also depend on the number of children (Kesselman 2019). The CCB was designed to be more targeted than the previous policies, giving substantially larger benefits to low- and middle-income families and decreasing the payments given to the highest-earning families. In 2019, the Canadian government began indexing the benefit amount and income thresholds to inflation, allowing them to increase gradually each year. For July 2021 through June 2022, the maximum payment amount for one child is $6,833 per year for a child age zero to five and $5,765 per year for a child age six to 17. Similarly, the income thresholds for phase-outs have increased to $32,028 and $69,395, respectively.

Figure 1 presents a graph of different pre-tax payout amounts under each of the three child benefit regimes for a family with one child under age six. The figure shows how benefits for a family like this change with income. Figure 1 shows the CCB led to an increase in pre-tax payments for many families, but not all. Families on the higher end of the income distribution are now eligible for less money

[3] This take-up rate comes from the Canadian government's page on the nation's poverty reduction strategy (https://www.canada.ca/en/employment-social-development/programs/results/poverty-reduction.html).

through the CCB than in previous programs. Note, however, that the UCCB payments in Figure 1 are presented before taxes. The payouts from the UCCB were taxed according to the progressive Canadian income tax structure, as shown in Figure A1 in the Appendix. As a result, Figure 1 understates the increase in benefits that middle- and low-income families received from the CCB because a portion of their previous benefits would have been taxed as well. Additionally, some families on the higher end of the income distribution saw little or no decrease in benefits from the CCB after accounting for taxes. Even still, some high-earning families did see a net decrease in benefits from the CCB.

2.2. Provincial Policy Reforms – Child Benefits in Alberta

This study is also concerned with analyzing changes in province-level child benefits. Most provinces now provide their own child benefits in addition to federal programs. Alberta was the latest to add benefits for their residents, introducing the Alberta Child Benefit (ACB) in August 2016. This program is similar to the federal CCB in design. It is a tax-free program given to parents of children under age 18. It is targeted to only be available to families earning under $41,220 per year. The ACB pays $1,100 per year for the first child, and the benefit pays less for subsequent children. In addition to introducing the ACB, the province enhanced their existing Alberta Family Employment Tax Credit (AFETC) in August 2016 as well. The AFETC provides a tax credit to working families, who must earn at least $2,760 in employment income to be eligible. The maximum benefit payment is $754 per year for the first child. The benefit phases out above a certain income threshold, and eventually becomes zero as income increases. The 2016 reforms increased the income threshold at which benefits begin to phase out. The threshold was raised from $36,778 to $41,250, making the full benefit available to more Canadian families. Both Alberta programs have since been replaced by the Alberta Child and Family Benefit (ACFB) in July 2020. The ACFB consolidated these programs into one payment. My analysis uses data between 2012 and 2019, so this policy change falls outside the scope of this study.

3. Literature Review

There have been several studies of the effectiveness and adverse impacts of child benefits in both Canada and other nations. Although still a relatively new program, researchers are beginning to analyze the CCB on a variety of measures. Many studies have shown the CCB to be effective at targeting issues of poverty among Canadian children, which was a primary goal of the program since its inception. Brown and Tarasuk (2019) find that households with children saw a significant decrease in severe food insecurity following the CCB, and this effect was largest for low-income families. Additionally, Baker et al. (2021) find that the CCB led to an increase in total government transfers for parents and a significant reduction in child poverty across Canada.

However, the CCB has faced scrutiny from analysts and commentators across Canada, with many concerns about the size and adverse impacts of such a large program. Kesselman (2019) points out that the CCB is the second-largest cash transfer program in Canada, spending over $24 billion each year. A chief concern among many policy analysts is that the CCB may have a negative impact on parents' labor supply, further amplifying the cost of the program through foregone tax collection and mitigating the effect on poverty reduction that the program might have. Baker et al. (2021) are the first to formally analyze the effect of the CCB on labor supply. They focus specifically on single mothers and measure the impact of the CCB on employment and weekly hours worked among this population. Their study uses single, childless women as the comparison group for their event study analysis. They ultimately find no significant impact on either outcome for single mothers, suggesting that the policy reforms in general did not deter single mothers from working. I borrow much of the research design from Baker et al. (2021) in my analysis of the CCB. One of the main contributions of my thesis is to extend their analysis to study the impact of the CCB on the labor supply of married mothers and fathers. In addition to employment and weekly hours, I will include labor force participation as an outcome of interest in this analysis. If policymakers are concerned about the policy's impact on labor supply, parents choosing to drop out of the workforce (or enter the workforce) is of key concern. These increased benefits may encourage some parents to leave the workforce altogether, having large consequences for total family earnings, federal income tax collection, and the future employment and earning opportunities for parents who exit the labor force.

Other countries have implemented or are considering similar child benefit programs. For example, the Child Tax Credit (CTC) in the U.S. was recently expanded on a temporary basis during the COVID-19 pandemic. The expanded CTC began paying out in July 2021 and created a more generous child benefit program that paid out monthly rather than once per year. Facing similar concerns about parents' labor supply response, researchers have begun studying the impact of making this expansion permanent. A recent analysis by Corinth et al. (2021) simulates the effect of the new CTC on labor force participation if it were to remain permanent. Using established labor supply elasticities, the authors estimate that this policy would result in 1.5 million workers leaving the labor force—a decline of about one percent of the current U.S. labor force. Results from similar policies in other countries show large child benefits often do have negative impacts on labor supply. Brandt et al. (2018) study a 2016 increase in child benefits in Poland. They estimate this policy change decreased labor force participation among mothers by 2 to 3 percentage points. Some studies are less conclusive. Tamm (2009) looks at the impact of a 1996 increase in child benefits in Germany. He finds that while mothers with a partner worked an average of one fewer hour per week, there was no noticeable effect on labor force participation. Tamm also shows that single German mothers saw a similar decrease in hours worked, but their labor force participation increased by 2.9 percentage points. Strong effects (both negative and positive) like the ones seen in Poland and Germany further indicate it is worthwhile to analyze the CCB beyond the findings of Baker et al. (2021), with labor force participation being a relevant outcome.

Studies of a previous child benefit reform in Canada have found significant effects on labor supply. Koebel and Schirle (2016) analyze the 2006 implementation of the original Universal Child Care Benefit (UCCB). At the time, the UCCB also led to a large increase in benefits, although it was only available to parents of children ages zero to five. The authors study its impact on labor supply for mothers of different marital status. Using difference-in-differences, Koebel and Schirle find the UCCB actually had a positive effect on divorced mothers' labor supply and a negative effect on labor supply for married mothers. In particular, they find divorced mothers' labor force participation increased by 2.8 percentage points. Meanwhile, married mothers were 1.4 percentage points less likely to participate in the labor force and worked an average of one fewer hour per week. These point estimates are all statistically significant at the one percent level. The authors find similar effects on employment for these groups of mothers. The authors do not provide evidence as to why these effects occur, but they hypothesize that divorced mothers may choose to use child benefit money on improved childcare, allowing more of them to participate and remain in the workforce. They propose married mothers may instead use the benefit money to substitute part of their wages, choosing to stay at home more often and allow their spouse to work more. These findings further motivate the study of the impact of the latest benefit reforms on married parents.

In addition, Schirle (2015) studies the impact of the 2006 introduction of the UCCB on labor supply for married parents with different levels of educational attainment. Schirle finds the negative effects of the UCCB on labor supply were strongest among parents with low educational attainment—defined as having a high school diploma or less. Her study finds that for less-educated mothers, labor force participation decreased by 3.2 percentage points, employment decreased by 2.3 percentage points, and hours worked dropped by 1.9 hours per week. For their higher-educated counterparts, these labor supply outcomes decreased, but by much smaller magnitudes—0.6 percentage points, 0.9 percentage points, and one hour per week, respectively. This study provides a similar analysis for married fathers, whose labor supply also decreased across all three metrics. The effect was also larger in magnitude for lower-educated fathers compared to higher-educated fathers, but all the effects were still much smaller than the point estimates for mothers. Schirle proposes that the lower-educated parents likely have lower-wage job opportunities and thus a lower reservation wage, making them more likely to be enticed to work less, even with a moderate increase in government transfers. My thesis builds on this work and investigates whether the newest round of child benefit reforms has had heterogenous impacts on labor supply for married parents of different educational backgrounds.

4. Data

For this project, I use data from Statistics Canada's Labour Force Survey (LFS). This publicly available dataset comes from a monthly survey of around 100,000 Canadian adults in each sample. These data provide information on workforce outcomes such as labor force participation, employment, and weekly hours worked, all of which I use as outcomes in this study[4]. The LFS also includes variables for marital status, province, metro area, age, educational attainment, and the age of the individual's youngest child (if they have any). My study will focus on legally married and common-law married Canadian men and women. Individuals in these family types are making labor market decisions alongside a partner with whom they can share income and the childcare load. I restrict my sample to adults aged 25 through 54, consistent with Baker et al. (2021), as these are the most likely adults to have children. I construct a biannual data sample using LFS survey results from April and October of each year between 2012 and 2019. Baker et al. (2021) and many other studies using LFS data use only two months from each year because of the way the survey is conducted. Individuals in the LFS are surveyed for six consecutive

[4] Note: Hours are the individuals' "usual weekly hours worked" as reported in the LFS. When calculating hours, I include all individuals who are not employed or in the labor force as working zero hours per week.

months. Constructing the data sample using two months per year that are six months apart allows me to avoid including responses from the same individuals multiple times. Statistics Canada does have the ability to link individual responses across months, but this is not available in the public-use version of the LFS.

There are a few variables that are not present in the LFS that would be useful for this study. The data do not have any indicator of race or ethnicity. These are often correlated with labor market outcomes, and I will not be able to control for this factor in my analysis. Additionally, while the LFS does show the age of a person's youngest child, it does not indicate how many children the individual has. This is important because benefits through the federal and provincial programs are awarded for each child under 18 in the household, so parents with more children will receive larger overall benefit payments. Without this information, I will not be able to estimate the total amount in benefits that each household receives, and I will not be able to capture the relationship between larger benefit amounts and labor supply. Statistics Canada estimates that the average family with children in Canada has around 1.85 children under 18[5]. Additionally, parents with many children likely face different time constraints and preferences than those with only one or two children. Parents with smaller families therefore may have different labor market opportunities, but I will not be able to control for or compare these family types in this study. Finally, an older version of the LFS provided a variable to link individuals in the same household, but this variable is no longer provided. This is important when considering the behavior of married couples, as labor market decisions are likely to be made collectively between spouses. Without this information, I cannot observe the collective labor supply of a married couple. For example, if a husband decreases the number of hours he works after the child benefit reform, his wife may have increased her hours to compensate, thus leaving their combined hours worked unchanged. In this

[5] This figure is the author's calculation using Statistics Canada's data from 2017-2019 (https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3910004101)

situation, the wife may have instead decreased her hours or left them unchanged, leading to a decrease in total labor supply for the couple. With the data currently available, I can only analyze individuals, so I cannot capture the combined effects on couples' labor supply described here. Even with these limitations, the LFS has many advantages. It provides a large, consistent dataset for my time period of interest, which allows me to perform valuable analysis on the impact of child benefit reforms on parents' labor supply.

For my analysis of the federal policy changes, I will use married parents as the treatment group and married childless adults as the comparison group, as is done in much of the child benefit literature. Summary statistics for the female and male treatment and control groups are shown in Table 1a and Table 1b, respectively. These tables present the full statistics for parents, childless adults, and the difference between the married childless adults and married parents. While there is some variation in sample size between groups, both my treatment and control groups have a large number of observations—between 95,000 and 160,000 individuals. The first few rows of Table 1a and Table 1b present the labor force outcomes of interest. The employment statistics presented in these tables show the share of people in the labor force who are employed. Also note that the weekly hours worked statistics include those who are not employed or not in the labor force as working zero hours. Here, we see married mothers, when compared to their childless counterparts, are less likely to participate in the labor force and work nearly three fewer hours per week on average. However, among married women in the labor force, mothers have a slightly higher employment rate than childless women. Married fathers, on the other hand, have notably higher labor force participation, employment, and average weekly hours than married childless men. The data in Table 1b show that these fathers work above 40 hours per week more often than childless men, which plays a role in their higher average hours. These three labor supply outcomes are plotted for each time period in Figures 2a, 2b, and 2c for the treatment and control group of each sex. The vertical lines on these figures indicate the time of the two federal policy changes. From these initial figures, there are no obvious jumps in outcomes for either treatment or control groups, although employment is clearly the noisiest of the three variables.

For the analysis of the province-level policy change in Alberta, I use only married fathers in the LFS data. Here, the married fathers in Alberta are the treatment group, and I use married fathers in the remaining provinces to construct synthetic control groups. This allows me to draw comparisons between treated parents and untreated parents rather than between parents and non-parents, as done in the federal analysis. I choose to exclude married mothers from this part of the study because married mothers in Alberta have by far the lowest labor force participation and hours worked compared to the donor provinces.

5. Federal Policy

5.1. Federal Policy Methods – Difference-in-Differences and Event Study

I first analyze the impact of the federal policy changes on labor supply outcomes for married mothers and fathers. I estimate the effect of the policy changes using both difference-in-differences and an event study framework. The models I estimate are based on the model used in Baker et al. (2021) to study the effect of the federal reforms on labor supply for single mothers. I focus on three labor supply outcomes: labor force participation, employment, and weekly hours worked. The model used for difference-in-differences analysis is shown in Equation 1 below:

$$Y_{itp} = \beta_1 D_i * Post_t + D_i + \delta_t + \alpha_p + \theta_{tp} + \gamma' X_i + \epsilon_{itp} \quad (1)$$

Here, Y_{itp} is the outcome of interest for individual *i* in time period *t* and province *p*. The estimation uses April and October data from each year between 2012 and 2019, so the time periods are biannual month-year combinations across this time span. In the case of labor force participation and employment, Y_{itp} is binary. For labor force participation (or employment), it is equal to one if the individual is in the labor force (employed) and zero if the individual is not in the labor force (unemployed). Hence, for these two outcomes I will estimate a linear probability model. I study employment only for among those that are participating in the labor force, so the sample size for employment will be smaller than for the other two outcomes. When analyzing hours, Y_{itp} is a continuous variable representing the usual hours worked per week. Individuals who are not working (either unemployed or not in the labor force) are included as having zero weekly hours. D_i is the treatment group indicator, equal to one if individual *i* has a child under age 18 (and is thus eligible to receive child benefits) and zero otherwise. The variable $Post_t$ is a binary variable indicating whether time period *t* is after the first federal policy change. The first policy change of interest (the enhancement of the UCCB) occurred in July 2015. Thus, $Post_t$ is equal to one if the period falls after July 2015 and zero otherwise. The interaction between D_i and $Post_t$ allows me to estimate β_1—the treatment effect of the policy reform on the outcome. I also include several covariates to account for individual characteristics, time periods, and province effects that can impact labor supply. These covariates are found in the model from Baker et al. (2021). Specifically, δ_t and α_p provide time period and province fixed effects, respectively, and θ_{tp} is the set of interaction terms between these two fixed effects. Time periods in this study are April and October of each year from 2012 through 2019. The vector X_i provides individual characteristics. These include the age of the individual (in five-year age groups), the individual's highest educational attainment, and their metropolitan area. Specific categorical descriptions of these individual characteristics can be found in Table 1a. Finally, ϵ_{itp} is the error term for Equation 1.

I also perform an event study by estimating a similar model shown in Equation 2:

$$Y_{itp} = \sum_{t \neq Apr\ 2015} \beta_t D_i \tau_t + D_i + \delta_t + \alpha_p + \theta_{tp} + \gamma' X_i + \epsilon_{itp} \tag{2}$$

Most of the variables are identical to those used in Equation 1 above. Here, τ_t is an indicator variable for each time period, equal to one if in month-year *t* and zero otherwise. Thus, estimating this equation will produce values of β_t for each time period, which represents the estimated treatment effect for time period t. The left-out time period in this model is April 2015 because it is the last period before the initial policy change occurred.

I estimate Equation 1 and Equation 2 for married adults of each sex. For women, I use married mothers as the treatment group and married women without children as the control group. Likewise for men, I consider married fathers to be the treatment group and married childless men the control group. This construction has clear disadvantages. We expect parents to behave differently in the labor market than childless adults, and I am not able to account for these differences here. However, this is a standard approach in much of the child benefit literature—as used in Baker et al. (2021) and Schirle (2015)—and it provides a reasonable comparison between otherwise similar individuals. Since we expect large cash transfers to substitute labor income, the treatment effects are expected to be negative in this study, implying the increase in child benefit payments decreased labor supply for parents as compared to the labor supply of non-parents.

In my analysis, I further divide my sample into subgroups based on the age of their youngest child and their educational attainment to analyze potential sources of treatment effect heterogeneity. Using age of parents' youngest child, I divide parents into three groups: parents whose youngest child is age zero to five, six to 12, and 13 to 17. These are the age groups provided by the LFS data, and they allow me to analyze parents that operate in different settings. Parents who have a child between the ages zero to five receive larger benefit payments than parents with older children. Additionally, most children this age are not yet in compulsory schooling, so parents often need to spend more of their time on child care. For these reasons, one might expect the treatment effect for parents of these young children to be negative and larger in magnitude than for parents of older children. Parents of older children also face different child care needs that impact their labor force decisions. I divide this group of parents into those whose youngest child is age six to 12 and whose youngest child is age 13 to 17. I do this because while both sets of children are old enough to be regularly attending school, children ages 13 to 17 are more likely to be less dependent on their parents' supervision. This group can often be left home by themselves if the parents need to leave the home for work while the children are not in school. For this reason, one may expect it to be easier for parents of older children to consistently participate in work outside the home, potentially leading to a different labor supply response for these parents. I perform regressions using each of these three groups of parents as a separate treatment group against the control group of childless adults.

I also use adults' educational attainment to divide my sample and analyze the treatment effects on people with different education backgrounds. Schirle (2015) demonstrates that this is an important distinction to analyze. In her study of the introduction of the original UCCB, the negative labor supply effects of the increase in child benefits were much larger in magnitude for parents with low educational attainment as compared to parents with higher educational attainment. Consistent with Schirle (2015), I divide individuals into two groups—low and high educational attainment. Low education is defined as having graduated from high school or below, and high education is defined as having at least some postsecondary education. I then compare parents and childless adults within each sex and educational group to estimate whether the changes to federal child benefits had heterogeneous effects across educational attainment.

5.2 Federal Policy Results

The main results from the difference-in-differences analysis are presented in Table 2. Here, we see the estimated treatment effects from Equation 1 for mothers and fathers of all educational attainment, high educational attainment, and low educational attainment, as defined above. Each panel in Table 2 presents the treatment effects for each of the three labor supply outcomes—labor force participation, employment, and usual weekly hours worked. The treatment group's mean value of each outcome is presented in Table 2 below the treatment effect. Notably, almost none of the treatment effect estimates are statistically significant, even at the ten percent level. This indicates that the federal benefit reform had no measurable impact on these outcomes for most parents. The one estimate that is statistically significant is for labor force participation among mothers with at least some postsecondary education. This is significant at the five percent level, and it indicates that on average, higher-educated mothers decreased their labor force participation by 0.6 percentage points compared to higher-educated women without children in response to the benefit reform. Although this result is statistically significant at the five percent level, it is likely not large enough in magnitude to be considered economically significant. Studies like Brandt et al. (2018) on Polish child benefits and Schirle (2015) and Koebel and Schirle (2016) on previous Canadian policies estimate that labor force participation dropped in the range of 1.4 to 3 percentage points, much larger than the effect we find here. One of the largest treatment effects in magnitude is that on labor force participation for low-education mothers. I estimate that this group of mothers decreased labor force participation by 0.9 percentage points on average compared to their childless counterparts. This effect is large and much closer to the headline figures from other studies, and it is particularly concerning given this group has the lowest labor force participation among parents (66.7 percent). However, females with a high school diploma or less have the smallest sample size of any group in Table 2, and the standard error is very large, so this estimate is imprecise and ultimately inconclusive. I also estimate Equation 1 for parents whose youngest child is age zero to five, six to 12, and 13 to 17. Even though these parents receive different benefit amounts and face different kinds of decisions regarding work and childcare, the results also show a null effect and do not show a meaningfully different treatment effect for any group. These results are presented in Table A1 of the Appendix.

One potential explanation for the null result found is that lower-income parents, who saw an increase in benefits with the CCB, reduced their labor supply while higher-income parents, who saw a decrease in benefits, increased their labor supply to compensate. Perhaps these two competing effects occurred in similar magnitudes and cancelled each other out. I think this is unlikely for two reasons. First, if this heterogeneity were present, we would expect it to show up when we divide parents by education level—with high education strongly correlated with higher incomes and vice-versa. However, Table 2 shows that the treatment effect is negligible even when we divide parents into education groups. Second, we should also expect low-income families to be more responsive to a change in government transfers because the change in benefits from these policy reforms is a larger share of their overall income. Thus, we would expect the negative labor supply response to be more pronounced than any positive response from higher-income parents receiving less money from the CCB. Overall, the difference-in-differences results here indicate that the federal policy reforms had little to no impact on labor supply among parents.

I also estimate Equation 2 to analyze the impact of the policy reforms using event studies. This allows us to see individual treatment effects at each month (April and October) from 2012 through 2019 rather than averaging the effects through difference-in-differences. I run this analysis for mothers and fathers for each of the three labor supply outcomes. My event study results on labor force participation for mothers and fathers are shown in Figures 3a and 3b, respectively. Here, April 2015 is the left-out time period. Also, the two vertical lines on these figures indicate the timing of the federal policy changes. For Figure 3a, testing the joint significance of the pre-treatment coefficients gives an F-statistic of 3.55 and a resulting p-value of 0.00. This means that we can confidently reject that the pre-treatment coefficients are jointly zero. The results in Figure 3a thus fail the pre-trends test, but I include the figure here for completeness. Figure 3b shows mostly negative treatment effects for fathers, but only two of these coefficients are statistically significant at the 95-percent level, indicating no sustained effect on labor force participation. Figures 4a and 4b show the event study results for employment among mothers and fathers in the labor force, respectively. Mothers saw an initial positive impact on employment in the second period after the UCCB expansion, but this effect was not sustained throughout the post-treatment periods. In Figure 4b, the pre-treatment and post-treatment coefficients are all negative, and most are significant at the 95-percent level. Employment for those in the labor force was meaningfully higher in April 2015 for married fathers than in most of the other periods, but we do not see a large change in employment after April 2015 relative to before this time period. Finally, the event studies for weekly hours worked are shown in Figures 5a for mothers and Figure 5b for fathers. For mothers, we see no concerning pre-trends and no significant effects after treatment. For fathers, we see more consistently negative treatment effects after treatment. The final three time periods have statistically significant negative coefficients. All three suggest an average decrease of nearly one hour worked per week for married fathers relative to married childless men. This suggests that while it may have taken longer for fathers to respond to the policy change, fathers may be reducing their labor supply by an average of nearly one hour per week compared to childless men. One explanation for this is that fathers might choose to slightly decrease the number of overtime hours worked in response to an increase in child benefits.

To test this theory, I estimate Equation 1 for married fathers using difference-in-differences with Y_{itp} now a binary variable equal to one if the individual reports their weekly hours to be above 40—the standard threshold for overtime in Canada—and zero otherwise. The estimated treatment effect in this version of the linear probability model will indicate the change in likelihood that married fathers usually work overtime after the federal policy reforms. I also divide married men based on educational attainment and the age of their youngest child as before. The results of these regressions are in Table 3, where column 1 shows the treatment effect for all married fathers. This result implies that married fathers are 0.7 percentage points less likely to work overtime than married men without children in response to the increased federal child benefits. The point estimate is statistically significant at the 95-percent level, and it is relatively large in magnitude, as only 26 percent of married fathers work overtime. Columns 2 and 3 of Table 3 present the results for each educational attainment group. We see that the decrease in overtime is more driven by married fathers with at least some postsecondary education. The results indicate this group is 0.8 percentage points less likely to work overtime compared to their non-parent counterparts, and it is statistically significant at the 90-percent level. The effect on fathers with a high school diploma or less is much smaller and not statistically significant. Finally, columns 4 through 6 show the results for married fathers based on the age of their youngest child. The impact of the policy reform again appears to be heterogenous, with married fathers of children under age six seeing no significant decrease in overtime. Married fathers of children ages six to 12 and 13 to 17 saw a decrease of 1.1 percentage points in their likelihood to work above 40 hours per week—the largest decline among the subgroups. The treatment effects for these age groups are statistically significant at the 95- and 90-percent level, respectively. This suggests that the increase in federal child benefits did cause a significant decline in the rate at which married fathers work overtime, with the effect concentrated among married fathers with higher educational attainment and older children.

6. Alberta's Province-Level Policy

6.1. Province-Level Policy Methods – Synthetic Controls

I also utilize province-level variations in child benefits to further study the effect of increased benefit payments on labor supply. In this section, I analyze the 2016 increases in Alberta's provincial child benefits using the synthetic control method outlined by Abadie (2021). This allows me to provide two contributions to the literature. First, I provide formal analysis of Alberta's new Alberta Child Benefit (ACB) program and the expansion of the existing Alberta Family Employment Tax Credit (AFETC), which have not yet been studied for impacts on labor supply. Second, I use synthetic controls to construct comparison group that is more plausible than what I used in my federal analysis and an improvement upon what is used in much of the child benefit literature. In their papers on the 2006 introduction of the UCCB and labor supply, Koebel and Schirle (2016) and Schirle (2015) correctly identify that there is often no obvious control group in studies of child benefits, particularly at the federal level. These two papers use many different control groups to compare against parents receiving the UCCB, such as parents of older children, childless adults, or some combination of the two. Each of these present shortcomings as comparison groups, since their treatment group—parents of children under age six—face unique challenges in the labor market compared to other adults. It would be better to compare parents of same-age children to each other. To pursue a better research design, my paper utilizes the province-level child benefit reform in Alberta and constructs a synthetic control group using parents in other provinces. This allows me to compare parents of same-age children who do and do not receive an increase in child benefit money. This is still not an ideal control group. There will be differences between parents in other provinces that account for labor market decisions—such as job opportunities, childcare options, available transportation, and others—but my assumption is that these differences in this scenario are less impactful in the labor market than the differences between parents and non-parents.

For this analysis, I use the *synth* command in Stata developed by Hainmueller, Abadie, and Diamond. The synthetic control method provides weights for the data from other provinces such that the resulting weighted combination closely approximates the outcome of interest in Alberta before the treatment occurs. Here, the treatment is the introduction of the ACB and expansion of the AFETC, which both occurred in August 2016, providing increased benefits to parents in Alberta with children under age 18. The newly constructed control groups allow me to compare each labor supply outcome of interest in Alberta and "synthetic Alberta" after the treatment, which shows whether Alberta continues to behave similarly to its synthetic counterpart or if it has deviated as a result of the treatment.

To construct the synthetic controls for Alberta, I again use April and October LFS data from 2012 through 2019, and I limit my analysis to legally married and common-law married parents ages 25 through 54 who have at least one child under age 18. I include all Canadian provinces in the data except for British Columbia, because this province also enacted an increase in provincial child benefits in 2015, which falls within the time range of the data for my study. Including British Columbia as a donor would prevent me from comparing parents who did receive an increase in provincial benefits against parents who did not during this time. I choose to study Alberta's benefit reform instead because the child benefits in British Columbia are much smaller, paying at most $55 per month. With Alberta's program being larger, I expect any effect on labor supply to be more pronounced than in British Columbia. Of the remaining eight provinces, many have their own child benefit programs as well, but none were changed during my time period of analysis. Additionally, all provinces are eligible for the federal benefits discussed earlier, but the federal policy changes affect each of these provinces in the same way. This means we can still isolate the impact of Alberta's benefit increase.

I construct separate synthetic controls for the same three outcomes used in Section 5—labor force participation, employment, and weekly hours worked. I again include only individuals who participate in the labor force in my analysis of employment. I also include all individuals who are not in the labor force or not employed as working zero hours per week. Based on finding a significant decrease in the likelihood of working overtime in response to the federal policy changes, I will also include the likelihood of working above 40 hours per week as an outcome of interest. In my initial analysis of the LFS data, I found that married mothers in Alberta had a labor force participation rate and weekly hours well below that of mothers in the donor provinces. These outcomes fall outside the support of the data, making it difficult or impossible to construct a suitable synthetic control. For this reason, I choose to instead focus on married fathers in Alberta in each of the three labor force outcomes. I also do not divide fathers based on education or age of their youngest child here (as was done in the federal analysis). Using just parents in each of these provinces already decreases the sample size of my data substantially, and dividing the sample by education or children's age would reduce sample size even further, leading to a noisier, less representative sample.

It is important to note that Alberta is in many ways a unique province. Although it is centrally located in Canada with only the fourth largest population among provinces, Alberta is very wealthy. It has the largest provincial GDP per capita in Canada, and much of this wealth comes from being Canada's largest oil producer. This relative abundance of wealth and valuable natural resources means Alberta can perhaps more easily afford large government transfer programs like the ACB and AFETC compared to other provinces. When we also consider that married mothers in Alberta are much less likely to work outside the home than married mothers in other provinces, it is likely that there are more single-earner families that depend on high-paying jobs—many being in the lucrative and demanding oil and energy sector. This economic context about Alberta shows that it is fundamentally different from its neighboring provinces in many key factors that relate to parental labor supply. For these reasons, I caution readers from generalizing the results in Alberta to other provinces or settings without first considering Alberta's broader economic circumstances.

I also select predictor variables to match between Alberta and the donor provinces. These are variables I believe will help predict parents' labor force outcomes. This allows me to construct a synthetic control group of married fathers with key characteristics that are similar to those in Alberta. I include parents' age, their education, and the age of their youngest child as predictors in this study. These are included as dummy variables for each of the age groups and educational outcomes as defined in Table 1a. In addition to these individual characteristics, I include the pre-treatment values for the outcome of interest in every period before the treatment occurs. This helps the synthetic control group mimic Alberta's pre-treatment behavior.

After creating a synthetic control for Alberta using the eight donor provinces and the predictors described above, I perform a placebo analysis to help interpret my results. To do this, I repeat the process for each province in the donor pool, creating a synthetic control for each one using the same predictors and treatment period. Since these provinces were not treated, we expect to see very little effect on labor force outcomes after August 2016. I compare the placebo provinces to Alberta, allowing me to see if the post-treatment impact on Alberta is a significant outlier compared to the untreated provinces or if it looks no different than the statistical noise in the placebos. I use the root mean squared prediction error (RMSPE) as a key metric to quantitatively compare a province to its synthetic control throughout this procedure. I calculate RMSPE before treatment and after treatment and use these to describe the fit of the synthetic control and perform inference, as described further below. The equation for pre-treatment RMSPE is shown in Equation 3:

$$RMSPE_{pre} = \left(\frac{1}{T_0} * \sum_{t=1}^{T_0} \left(Y_{1t} - \sum_{j=2}^{J+1} w_j * Y_{jt}\right)^2\right)^{\frac{1}{2}} \qquad (3)$$

Here, the subscript t is the time period, and the pre-treatment period occurs between the first time period in the sample ($t = 1$) and the last pre-treatment period ($t = T_0$). The subscript j indicates the province. Province $j = 1$ is the treated province (or placebo province of interest), and there are J total provinces in the donor pool. The variable Y_{jt} is the labor force outcome of interest in province j and time t. The difference between Y_{1t} and the weighted sum of the Y_{jt} values gives the gap between the treated province and its synthetic control. Finally, w_j is the weight assigned to province j in the synthetic control. Note that w_j may be zero for some provinces, and all weights sum to one. The post-treatment RMSPE is calculated similarly between time periods $t = T_0 + 1$ and $t = T$.

I first calculate pre-treatment RMSPE and post-treatment for Alberta and each placebo. The pre-treatment figure provides a numerical measure of how closely the control fits the treated unit before the policy change. Comparing this to the post-treatment RMSPE shows how much the treated unit's outcome has deviated from the control group after the policy change occurs. I use this relationship with RMSPE to perform inference and assign statistical significance to my estimates. In a treated province, one would expect the post-treatment RMSPE to be meaningfully larger than the pre-treatment RMSPE. Likewise, untreated provinces should have similar RMSPE before and after treatment if they indeed were not affected after the treatment occurred. To measure this difference before and after treatment, I calculate the ratio of post-treatment to pre-treatment RMSPE for Alberta and all the placebos. A ratio near one means the province had very similar deviation from its control group before and after the treatment—indicating a weak or null treatment effect. A strong treatment effect would be characterized by a ratio much greater than one and large relative to the placebo units. In this procedure, I rank the ratios of all provinces (both treated and placebo) from largest to smallest, with the largest ratio indicating the province whose outcome was the most divergent from its control group after treatment compared to before treatment. I use this ranking to compute a p-value for the treatment effect on Alberta with the simple equation from Cunningham (2021):

$$p = \frac{Rank}{J + 1} \tag{4}$$

In Equation 4, $J + 1$ is the total number of provinces involved (including the treated province and the donor pool), and $Rank$ is the rank of the RMSPE ratio from largest to smallest. A higher-ranking RMSPE ratio will have a lower p-value and thus larger statistical significance. This captures the fact that the higher-ranking RMSPE ratios are less likely to occur as a product of statistical noise alone.

While the synthetic control method provides a promising opportunity for new insights in this analysis as mentioned before, it is limited in this setting. Synthetic control is often applied to situations with a large number of donor units (e.g., 50 U.S. states, 38 OECD countries, etc.), providing a diverse set of characteristics and outcomes to utilize when constructing a synthetic unit. In this study, however, I only have nine provinces. This means that I am left with relatively few options to model the behavior of fathers in Alberta, making it less likely that I can produce a close-fitting synthetic control group. Additionally, this means the p-value as a measure of significance is limited. By construction, Equation 4 depends on the number of donor units (and thus placebo analyses) in the study. Since there are only nine total provinces in the analysis, the p-value here can only be as small as 0.11. Because of this, I use both the p-value and the magnitude of the ratio relative to placebo provinces to determine significance. However, it still provides a consistent method to compare Alberta to the untreated provinces and presents some information on the relative significance of the effects in Alberta compared to other provinces during this time.

6.2 Province-Level Policy Results

I first analyze the impact of Alberta's increased child benefits on labor force participation for married fathers. Using the procedure described above, I create a synthetic control group for Alberta and perform placebo analysis on the eight provinces in the donor pool. The placebo synthetic control produced for Newfoundland and Labrador did not fit the true data well, leading to a large pre-treatment RMSPE that was 1.9 times larger than Alberta's. For this reason, I drop Newfoundland and Labrador from the donor pool, as recommended in Cunningham (2021) and re-ran the analysis with the remaining seven donor provinces. This resulted in no substantial outliers in pre-treatment RMSPE. The values of the predictor variables are similar between Alberta and its synthetic control, as shown in Appendix Table A2 and Table A3 for each outcome. Figure 6a shows the labor force participation rate in Alberta and in its synthetic control group[6]. The vertical dashed line indicates the last pre-treatment period. This figure

[6] The donor provinces and weights in the synthetic control for married fathers' labor force participation: Saskatchewan (0.537) and New Brunswick (0.463).

shows that Alberta's labor force participation tracks closely with its synthetic control group both before and after the treatment—an initial indication that the treatment effect here is negligible. Figure 6b presents the same information in a slightly different way, displaying the difference between Alberta and synthetic Alberta as one line, with positive values indicating Alberta's labor force participation is above the synthetic control and negative values indicating Alberta is below. In the presence of a strong treatment effect, one would expect to see Figure 6b show a line near zero in the pre-treatment periods and deviate far from zero after the treatment occurs. Instead, we see that the difference between Alberta and synthetic Alberta is slightly positive both before and after the policy change, with no large jump after the treatment occurs.

One way to get a sense of the magnitude of the effect shown in Figure 6b is to compare Alberta to the placebo provinces from the donor pool. In Figure 7, I present the gap between each province and its synthetic control (just as in Figure 6b) for Alberta and all placebo provinces. Here, the bold line represents Alberta and the other lines each represent a province from the donor pool. Instead of being an obvious outlier among the placebo provinces, the line for Alberta is well within the range of other provinces after August 2016. This figure shows that the magnitude of Alberta's treatment effect is small relative to the statistical noise generated by running the same analysis on placebo groups. Beyond this visual analysis, we can use the RMSPE values to compare Alberta to the placebo provinces and quantify the likelihood of a treatment effect like Alberta's. Table 4 presents the RMSPE results ranked from highest to lowest RMSPE ratio. The ratio of post-treatment RMSPE to pre-treatment RMSPE for Alberta is 1.256, indicating there is slightly more deviation from the control group after treatment compared to before treatment. This ranks second among the eight provinces analyzed here, resulting in a p-value of 0.25—meaning this result is only significant at the 25 percent level. Additionally, looking at the other ratios, Alberta appears to be far from extraordinary, as it lies within 0.21 of three other provinces. This provides evidence that the increase in child benefits in Alberta had a negligible impact on labor force participation among married fathers.

The results for employment, weekly hours, and overtime similarly suggest the child benefit increase in Alberata had no significant effects on these measures of labor supply. In constructing synthetic controls for both of these outcomes, I used all eight untreated provinces in the donor group and did not have to drop one as before. Figure 8a shows the employment rate for married fathers in Alberta and its synthetic control, with the gap between the two graphed in Figure 8b[7]. Again, we see very little deviation from the synthetic control after the treatment. Employment in Alberta tracks the control group a little more closely in the post-treatment period. I compare the line in Figure 8b to the difference between each placebo province and their synthetic control, as shown in Figure 9. Visually, we can see that Alberta's employment rate is closer to its control than most provinces in the placebo analysis. Indeed, Table 5 shows Alberta's RMSPE ratio of 0.588 is the smallest among all provinces, with a p-value of one. This means we can be confident that the policy change had no measurable effect on employment among Alberta fathers who are in the labor force.

In Figure 10a, I present weekly hours worked for married fathers in Alberta against the synthetic control[8]. The difference between these two lines is graphed in Figure 10b, which shows Alberta to be slightly above the control group's hours both before and after treatment. Figure 11 shows that although the gap between Alberta and synthetic Alberta is positive after treatment, it is still small in magnitude relative to the placebo provinces. In Table 6, we see that Alberta's RMSPE ratio of 1.282 ranks fourth,

[7] The donor provinces and weights in the synthetic control for married fathers' employment: Saskatchewan (0.576) and Quebec (0.424).

[8] The donor provinces and weights in the synthetic control for married fathers' weekly hours: Saskatchewan (0.779) and Manitoba (0.221).

resulting in a p-value of 0.444. This is once again well within the range of statistical noise among placebo units, providing further evidence of a negligible effect of child benefits on fathers' hours worked.

Finally, Figure 12a presents the comparison between the likelihood of working overtime for married fathers in Alberta against synthetic Alberta, with the gap between them graphed in Figure 12b[9]. In Figure 13, we again see the gap between Alberta and its synthetic control compared to the placebo province results. Alberta's outcome lies mostly above its synthetic control group both before and after treatment, and we do not see a noticeable difference between Alberta and the placebo units in Figure 13. The RMSPE results are shown in Table 7, with Alberta's prediction error ratio ranking fifth. This ratio falling exactly in the middle of all placebo results indicates no significant treatment effect in Alberta for married fathers' likelihood of working more than 40 hours per week.

7. Conclusion

This study investigates the relationship between increased child benefits and parents' labor supply. Child benefit policies are becoming increasingly popular in the industrialized world, and we still have much to learn about the different policy options for these benefits and their effects on the labor market. I analyze recent federal and provincial increases in Canadian child benefits to estimate their impact on labor force participation, employment, and weekly hours for married parents. Specifically, I use difference-in-differences and event study estimation to analyze the federal government's enhancement of the UCCB and introduction of the CCB. I find no significant treatment effects for married mothers or fathers on any of the three main labor supply outcomes. This result holds even when dividing the

[9] The donor provinces and weights in the synthetic control for married fathers' likelihood of working overtime are Prince Edward Island (0.550), New Brunswick (0.424), Newfoundland and Labrador (0.017), and Nova Scotia (0.009).

sample based on educational attainment or the age of the youngest child. The event study for married father's hours worked does show a consistent decrease of around one hour per week from October 2018 through October 2019, over three years after the UCCB was enhanced. I investigate this by estimating the impact of the benefit reform on the likelihood married fathers work overtime (above 40 hours per week). Using difference-in-differences, I find married fathers are 0.7 percentage points less likely to work overtime after the policy change. This effect is driven by married fathers with higher educational attainment and those whose youngest child is over the age of five. I also study Alberta's increase in provincial child benefits through the ACB and the enhanced AFETC and their impact on married fathers. Using synthetic controls, I find no significant treatment effect on any of the labor supply outcomes I study.

These findings provide significant contributions to the child benefit literature. I provide the first rigorous labor market analysis of the CCB's impact on married parents, who make up the vast majority of parents in Canada. The CCB is an often-cited program in social policy circles, so understanding its adverse effects (or lack thereof) provides important knowledge and nuance to debates around child benefits. I also provide the first study of Alberta's child benefits as they relate to labor supply. Additionally, in my province-level analysis I utilize synthetic controls rather than using childless adults as the best available comparison group. This is rarely done in studies of child benefits since most policies occur at the federal level, and it allows for a more plausible control group.

It is intriguing that the large increases in benefit payments (both at the federal and provincial levels) did not result in any significant labor supply response among married parents. This implies that, in general, married parents did not use the extra benefits as a substitute for employment income. When we look at the longer history of child benefits in Canada, we see that previous reforms did lead to declines in labor supply. As mentioned above, the studies of the 2006 introduction of the UCCB (Schirle 2015, Kobel and Schirle 2016) saw significant drops in labor supply. These studies found substantial decreases in labor force participation, employment, and hours worked among both mothers and fathers. One hypothesis is that this earlier reform induced the parents who were less attached to the workforce to decrease their labor supply, while the more recent reforms did not provide a large enough increase to entice a second wave of parents to do the same. Perhaps the parents remaining in the workforce have a stronger preference for work or a larger reservation wage above the level of the current CCB and provincial payments. Another possibility is that it is too soon after the child benefit reforms to find measurable impacts on labor supply. Many parents and prospective parents may not have had enough time to fully incorporate the increased benefit payments into their future plans about family income and labor supply. This is evident in the effect on married fathers' hours worked in response to the federal policy changes in 2015. As Figure 5b shows, the significant negative impacts on hours do not occur until more than three years after the policy change. Future studies of these policies should examine time periods beyond 2019 to see if the labor supply response has become more pronounced as time goes on. For policymakers and analysts in other countries who are considering child benefit options and looking to Canada for information about labor supply tradeoffs, it is important to bear this context in mind. While this study found no adverse effects on parental labor supply, that does not mean child benefits do not present a tradeoff. Canada has already experienced those tradeoffs in the past, and there may still be a negative impact on parental labor supply in the longer term. If countries are considering changing from a system with little or no child benefits to a program the size of the original UCCB, the literature suggests that there will be a drop in parents' labor supply. However, my results indicate that the decrease in labor supply may not be significantly larger if that country chooses to adopt a large child benefit program like the CCB instead, at least in the short term.

The synthetic control results should also be considered with the context of Alberta as a unique province when it comes to families in the workforce. As stated before, the labor supply of married mothers is substantially lower in Alberta compared to other Canadian provinces. This indicates that more families rely on the father as the lone earner in the household. Because of this, we might expect married fathers in Alberta to have less elastic labor supply given that it is less likely for married mothers to work outside the home and therefore more important for married fathers to dedicate time towards maintaining a strong career. Thus, while there is a null effect in Alberta, this may not be the case for a policy of similar size in a province where the workload outside of the home is more equally shared between spouses.

This study also faces many important limitations. As discussed in Section 4, the Canadian Labour Force Survey provides a large and consistent source of labor market data, but there are key variables missing that hinder my analysis. Most notably, I am able to know how many children an individual has or link spouses who are in the same household. Not knowing the number of children in a family prevents me from estimating the total amount of child benefit money a family is eligible to receive, which would be helpful to know when estimating the income effect of a policy reform. Also, I cannot link spouses in the data, preventing me from measuring their joint labor supply decisions. Since I can only observe individual labor outcomes, I am not able to capture the effect of these policy reforms on parents' aggregate labor supply. Additionally, this paper builds directly off the models developed in Baker et al. (2021) and Schirle (2015) to study the labor supply response to child benefits in Canada. These models include fixed effects for month-year time period, province, and month-year by province. This results in a large number of fixed effects, which could potentially capture a lot of the variation in labor supply outcomes. Future studies should further scrutinize this model, analyzing the policy change with and without combinations of different fixed effects.

I also expect the increases in child benefits to have heterogenous impacts on people in different workplace settings or fields. However, studying labor supply response in these settings would require information and variables that the LFS data do not provide. For example, I would expect workers in jobs with higher turnover or more strenuous tasks to be more likely to decrease their labor supply in response to the policy changes. Indeed, we might expect higher benefit payments to encourage some of these workers to switch to a different industry or career, even if it means taking a slight drop in pay. Conversely, I expect that workers in fields with longer average tenures and more promotion-driven career paths to be less responsive to these policy changes in the labor market. Additionally, it would be helpful to know which workers are paid on an hourly basis. This is particularly important when studying weekly hours worked and the likelihood of working overtime as outcomes. Those who are paid hourly can more easily treat increased benefit payments as a substitute for labor income and could more directly respond to this policy change in the labor market. Theoretically, they could choose to decrease their hours worked to exactly offset the additional income gained from the new child benefit policies. Estimating the impacts on these groups of workers will require more detailed data, but these questions have important implications for more fully understanding the relationship between child benefits and labor supply.

The synthetic control analysis of Alberta's child benefits also presents important shortcomings. While synthetic controls allow me to compare parents against parents in both the treatment and control groups, this method is best suited for situations with a large number of potential donor units. With only eight donor provinces, my study did not have a wide range of options when constructing synthetic comparison groups for Alberta. Indeed, three out of four synthetic controls in this study only use two provinces each. They lean heavily on Saskatchewan as a key donor province, as it receives well over 50 percent of the weight in those three synthetic controls. A larger donor pool would present more variety and allow me to construct a set of synthetic controls that more closely fit the Alberta labor force data. Additionally, my dataset only uses responses from every six months. Using data with a higher frequency could allow for better-fitting controls and more precise analysis. Future studies should look to identify similar province-, state-, or country-level child benefit reforms in settings with a large number of potential donors, allowing researchers to better utilize the strengths of synthetic controls.

Table 1a: Summary Statistics for Married Women

	Mothers of children ages 0-17	Women who do not have a child ages 0-17	Difference between childless women and mothers
Labor Force Participation	.813	.858	.045
Employment (among labor force participants)	.958	.956	-.002
Weekly Hours (including 0-hour workers)			
Average	26.88	29.80	2.92
25th percentile	10.00	21.00	11.00
50th percentile	35.00	36.50	1.50
75th percentile	40.00	40.00	.00
Share Working Overtime (> 40 hours/week)	.075	.095	.020
Youngest Child's Age			
0-5	.45	-	-
6-12	.34	-	-
13-17	.21	-	-
Adult's Age			
25-29	.10	.14	.04
30-34	.20	.11	-.09
35-39	.24	.07	-.17
40-44	.23	.09	-.14
45-49	.16	.21	.05
50-54	.07	.39	.32
Adult's Education			
0 to 8 years	.01	.02	.01
Some high school	.04	.06	.02
High school graduate	.16	.21	.05
Some postsecondary	.04	.05	.00
Postsecondary certificate or diploma	.39	.40	.01
Bachelor's degree	.25	.19	-.06
Above bachelor's degree	.10	.08	-.02
Province			
Newfoundland and Labrador	.03	.04	.01
Prince Edward Island	.03	.03	.00
Nova Scotia	.04	.05	.01
New Brunswick	.05	.05	.00
Quebec	.17	.17	.00
Ontario	.28	.27	-.01
Manitoba	.09	.08	-.01
Saskatchewan	.08	.07	-.01
Alberta	.12	.11	-.01
British Columbia	.11	.12	.01
Metropolitan Area			
Montreal	.04	.04	.00
Toronto	.06	.05	-.01
Vancouver	.04	.04	.00
Other	.86	.88	.02
Survey Month			
April	.50	.50	.00
October	.50	.50	.00
N	159,339	112,311	

Note: Calculated using LFS data from April and October of 2012-2019 for legally married and common-law married women between the ages 25-54. Employment outcome only includes individuals that are in the labor force. Weekly hours worked includes those who are not in the labor force or not employed as working zero hours.

Table 1b: Summary Statistics for Married Men

	Fathers of children ages 0-17	Men who do not have a child ages 0-17	Difference between childless men and fathers
Labor Force Participation	.954	.930	-.024
Employment (among labor force participants)	.960	.949	-.011
Weekly Hours (including 0-hour workers)			
Average	38.97	37.19	-1.78
25th percentile	37.50	37.50	.00
50th percentile	40.00	40.00	.00
75th percentile	42.00	40.00	-2.00
Share Working Overtime (> 40 hours/week)	.260	.238	-.022
Youngest Child's Age			
0-5	.47	-	-
6-12	.33	-	-
13-17	.20	-	-
Adult's Age			
25-29	.06	.14	.08
30-34	.16	.14	-.02
35-39	.23	.09	-.14
40-44	.24	.09	-.15
45-49	.20	.17	-.03
50-54	.12	.37	.25
Adult's Education			
0 to 8 years	.02	.02	.00
Some high school	.07	.09	.02
High school graduate	.18	.21	.03
Some postsecondary	.04	.05	.01
Postsecondary certificate or diploma	.41	.41	.00
Bachelor's degree	.18	.15	-.03
Above bachelor's degree	.10	.07	-.03
Province			
Newfoundland and Labrador	.03	.04	.01
Prince Edward Island	.03	.03	.00
Nova Scotia	.04	.05	.01
New Brunswick	.05	.05	.00
Quebec	.17	.17	.00
Ontario	.28	.27	-.01
Manitoba	.10	.09	-.01
Saskatchewan	.08	.07	-.01
Alberta	.12	.12	.00
British Columbia	.11	.12	.01
Metropolitan Area			
Montreal	.04	.04	.00
Toronto	.06	.05	-.01
Vancouver	.04	.04	.00
Other	.86	.87	.01
Survey Month			
April	.50	.50	.00
October	.50	.50	.00
N	152,829	95,441	

Note: Calculated using LFS data from April and October of 2012-2019 for legally married and common-law married men between the ages 25-54. Employment outcome only includes individuals that are in the labor force. Weekly hours worked includes those who are not in the labor force or not employed as working zero hours.

Table 2: Difference-in-Differences Estimated Treatment Effects of UCCB Expansion and the CCB on Labor Supply for Married Parents

	Mothers			Fathers		
Parents' Education	All	At least some postsecondary	High school grad or less	All	At least some postsecondary	High school grad or less
Outcome: Labor Force Participation						
LFP Treatment Effect	-.005 (.003)	-.006 (.003)**	-.009 (.007)	-.003 (.002)	-.003 (.002)	-.004 (.004)
Parents' Mean LFP	.813	.852	.667	.954	.964	.925
N	271,650	205,951	65,699	248,270	177,300	70,970
Outcome: Employment						
Emp. Treatment Effect	.001 (.002)	.001 (.002)	-.001 (.005)	-.000 (.002)	-.001 (.002)	.000 (.004)
Parents' Mean Emp.	.779	.821	.62	.916	.932	.872
N	225,939	178,951	46,988	234,572	169,670	64,902
Outcome: Weekly Hours Worked						
Hours Treatment Effect	-.092 (.129)	-.091 (.143)	-.311 (.287)	-.209 (.134)	-.209 (.150)	-.163 (.280)
Parents' Mean Hours	26.9	28.4	21.0	39.0	39.2	38.5
N	271,650	205,951	65,699	248,270	177,300	70,970

Note: This table displays the treatment effects of child benefit increases for three labor force outcomes using difference-in-differences estimation. Outcomes for each panel are 1 if individual is in the labor force, 1 if individual is employed, and usual weekly hours worked, respectively. The employment outcome only includes individuals that are in the labor force, so it has a lower N than the other two panels. Weekly hours worked includes those who are not in the labor force or not employed as working zero hours. The sample was constructed using April and October results of the Labour Force Survey for each year between 2012-2019. The treatment groups are married parents of each sex with children age 0-17. The control groups are their married counterparts who do not have a child under 18. The regression includes controls for age, education level, and metro area, as well as province fixed effects, time period fixed effects, and province-by-time-period fixed effects. Robust standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

Table 3: Difference-in-Differences Estimated Treatment Effects of UCCB Expansion and the CCB on the Likelihood for Married Fathers to Work Overtime

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment Effect	-.007 (.004)**	-.008 (.004)*	-.003 (.007)	-.003 (.004)	-.011 (.005)**	-.011 (.006)*
Parent's Educational Attainment	All	At least some postsecondary	High school grad or less	All	All	All
Age of Youngest Child	All	All	All	0-5	6-12	13-17
Parents' Mean Overtime Rate	.260	.242	.308	.253	.262	.273
N	248,270	177,300	70,970	167,629	146,220	125,303

Note: This table displays the treatment effects of child benefit increases for the likelihood of married fathers working overtime using difference-in-differences estimation. The outcome in the regression is equal to one if the individual is in the working overtime—defined as above 40 hours per week—and zero otherwise. This analysis includes individuals who do not work any hours. The sample was constructed using April and October results of the Labour Force Survey for each year between 2012-2019. The treatment groups are married fathers of children ages 0-17 whose educational attainment and youngest child are in the specified categorical group. The control groups are their married counterparts who do not have a child under 18. The regression includes controls for age, education level, and metro area, as well as province fixed effects, time period fixed effects, and province-by-time-period fixed effects. Robust standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

Table 4: Labor Force Participation RMSPEs, Post-treatment to Pre-treatment RMSPE Ratio, and Resulting p-values for Alberta and Placebo Provinces

Province	Pre-treatment RMSPE	Post-treatment RMSPE	Ratio of Post-to-Pre RMSPE	p-value
Saskatchewan	.010	.014	1.34	.125
Alberta	.010	.012	1.26	.25
Prince Edward Island	.016	.019	1.21	.375
Ontario	.013	.014	1.05	.5
Nova Scotia	.014	.014	.97	.625
New Brunswick	.011	.009	.84	.75
Quebec	.009	.006	.72	.875
Manitoba	.008	.005	.64	1

Note: Alberta is highlighted here for emphasis because it is the treated province. RMSPE refers to root mean squared prediction error. This table is sorted in order of descending post-treatment RMSPE to pre-treatment RMSPE ratio. The p-value is calculated by dividing the ordinal rank of the province's ratio by the total number of provinces. This table excludes Newfoundland and Labrador, as it was dropped from the donor pool because it has a large pre-treatment RMSPE relative to Alberta's.

Table 5: Employment RMSPEs, Post-treatment to Pre-treatment RMSPE Ratio, and Resulting p-values for Alberta and Placebo Provinces

Province	Pre-treatment RMSPE	Post-treatment RMSPE	Ratio of Post-to-Pre RMSPE	p-value
Quebec	.014	.036	2.51	.11
Ontario	.009	.018	2.04	.22
Newfoundland and Labrador	.033	.064	1.93	.33
New Brunswick	.017	.032	1.92	.44
Manitoba	.007	.010	1.46	.56
Prince Edward Island	.016	.019	1.19	.67
Nova Scotia	.016	.019	1.19	.78
Saskatchewan	.009	.007	0.73	.89
Alberta	.013	.008	0.59	1

Note: Alberta is highlighted here for emphasis because it is the treated province. RMSPE refers to root mean squared prediction error. This table is sorted in order of descending post-treatment RMSPE to pre-treatment RMSPE ratio. The p-value is calculated by dividing the ordinal rank of the province's ratio by the total number of provinces.

Table 6: Weekly Hours RMSPEs, Post-treatment to Pre-treatment RMSPE Ratio, and Resulting p-values for Alberta and Placebo Provinces

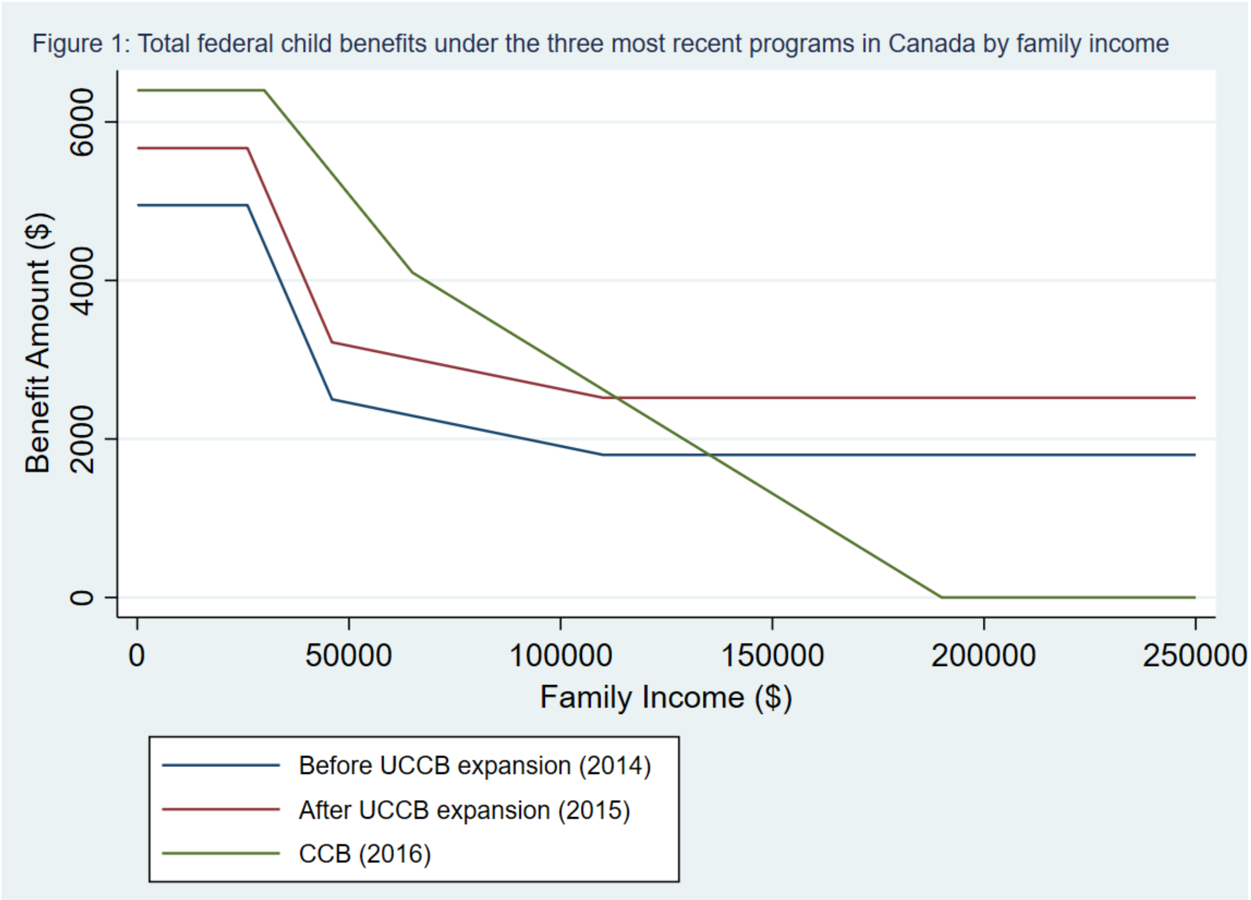
Province	Pre-treatment RMSPE	Post-treatment RMSPE	Ratio of Post-to-Pre RMSPE	p-value
Newfoundland and Labrador	1.32	2.39	1.82	.11
New Brunswick	.72	1.22	1.69	.22
Saskatchewan	1.08	1.43	1.33	.33
Alberta	.93	1.20	1.28	.44
Ontario	.78	.79	1.01	.56
Manitoba	.59	.59	1.01	.67
Prince Edward Island	1.27	1.26	.99	.78
Quebec	1.47	.87	.59	.89
Nova Scotia	1.32	.72	.55	1

Note: Alberta is highlighted here for emphasis because it is the treated province. RMSPE refers to root mean squared prediction error. This table is sorted in order of descending post-treatment RMSPE to pre-treatment RMSPE ratio. The p-value is calculated by dividing the ordinal rank of the province's ratio by the total number of provinces.

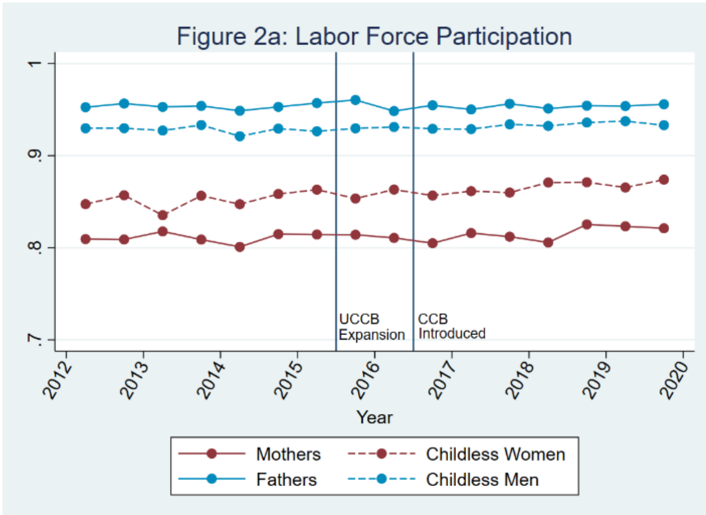
Table 7: Likelihood of Working Overtime RMSPEs, Post-treatment to Pre-treatment RMSPE Ratio, and Resulting p-values for Alberta and Placebo Provinces

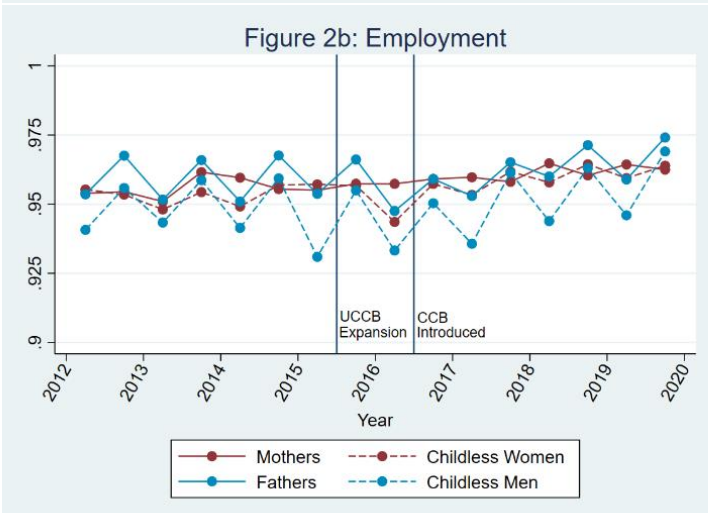
Province	Pre-treatment RMSPE	Post-treatment RMSPE	Ratio of Post-to-Pre RMSPE	p-value
Manitoba	.017	.026	1.57	.11
New Brunswick	.024	.029	1.22	.22
Prince Edward Island	.037	.044	1.9	.33
Saskatchewan	.027	.031	1.14	.44
Alberta	.036	.038	1.08	.56
Quebec	.076	.069	.91	.67
Ontario	.030	.020	.67	.78
Nova Scotia	.024	.014	.60	.89
Newfoundland and Labrador	.047	.027	.57	1

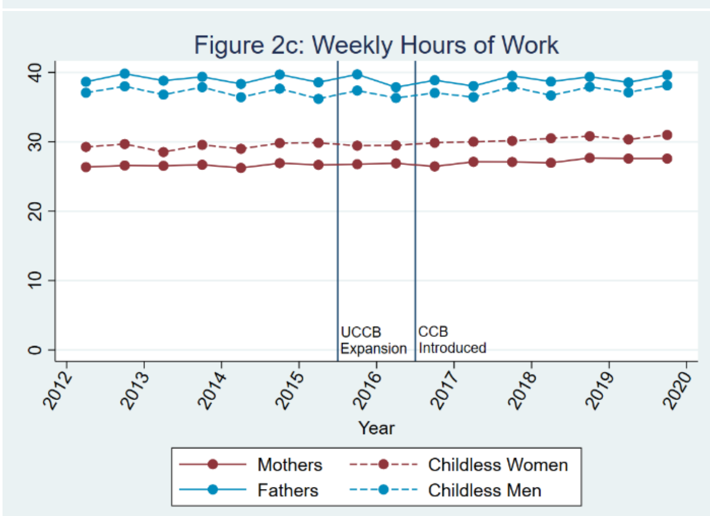
Note: Alberta is highlighted here for emphasis because it is the treated province. RMSPE refers to root mean squared prediction error. This table is sorted in order of descending post-treatment RMSPE to pre-treatment RMSPE ratio. The p-value is calculated by dividing the ordinal rank of the province's ratio by the total number of provinces.



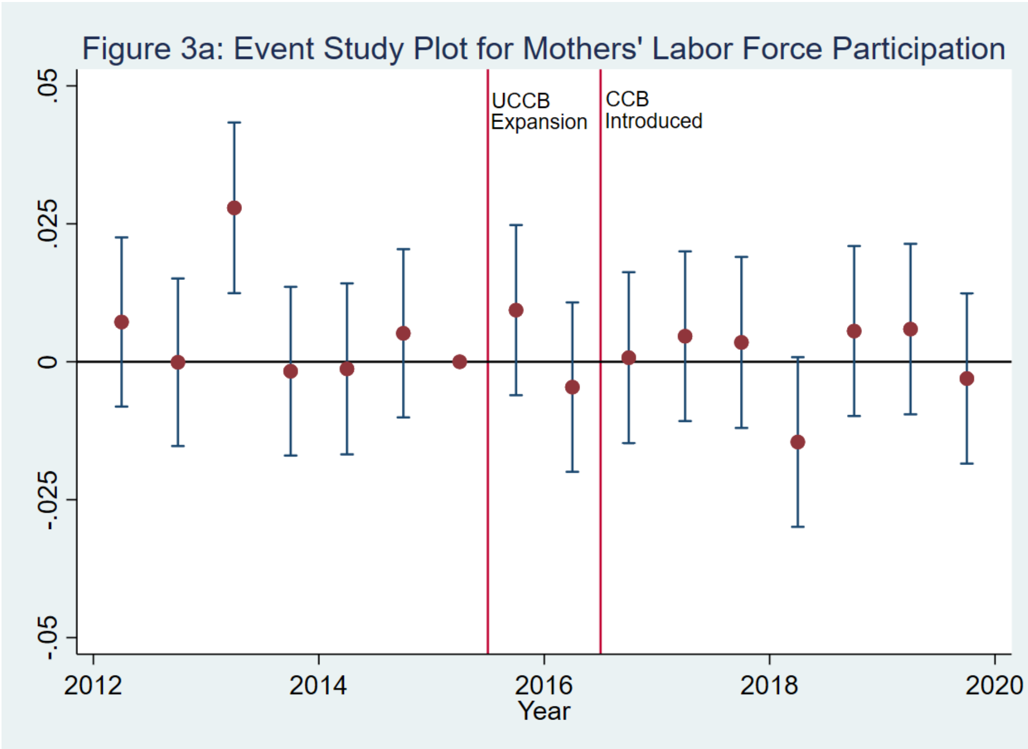
Note: These benefit amounts are calculated for a family with one child between the ages zero and five. The benefits shown here are pre-tax. The CCB is not taxable, while the UCCB is subject to taxes.

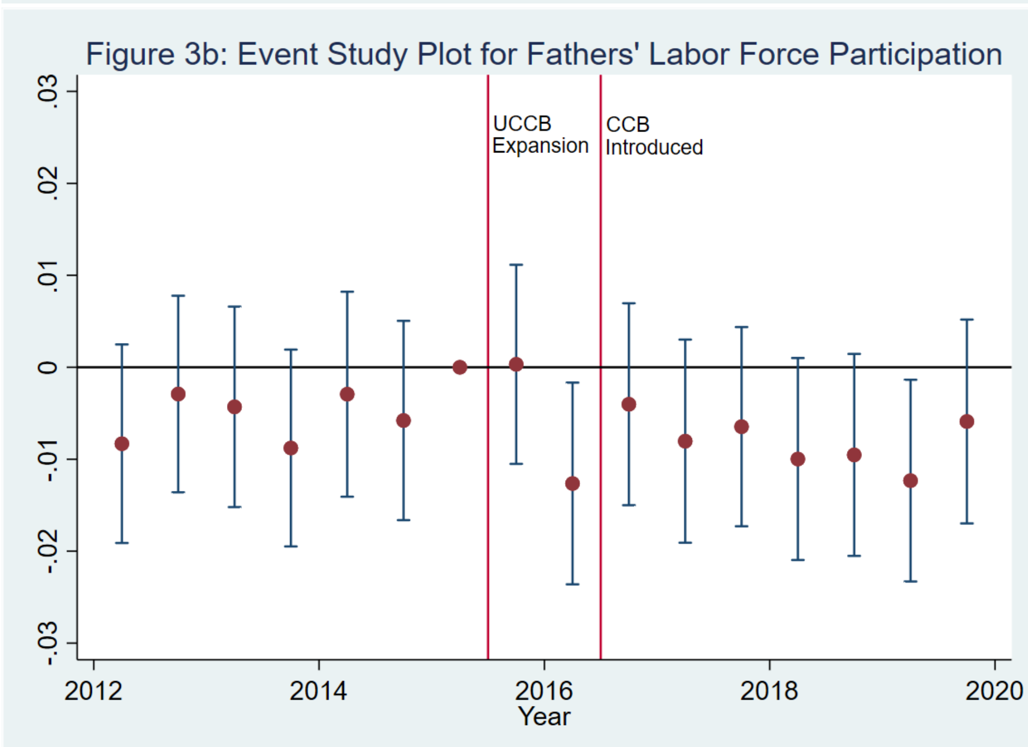




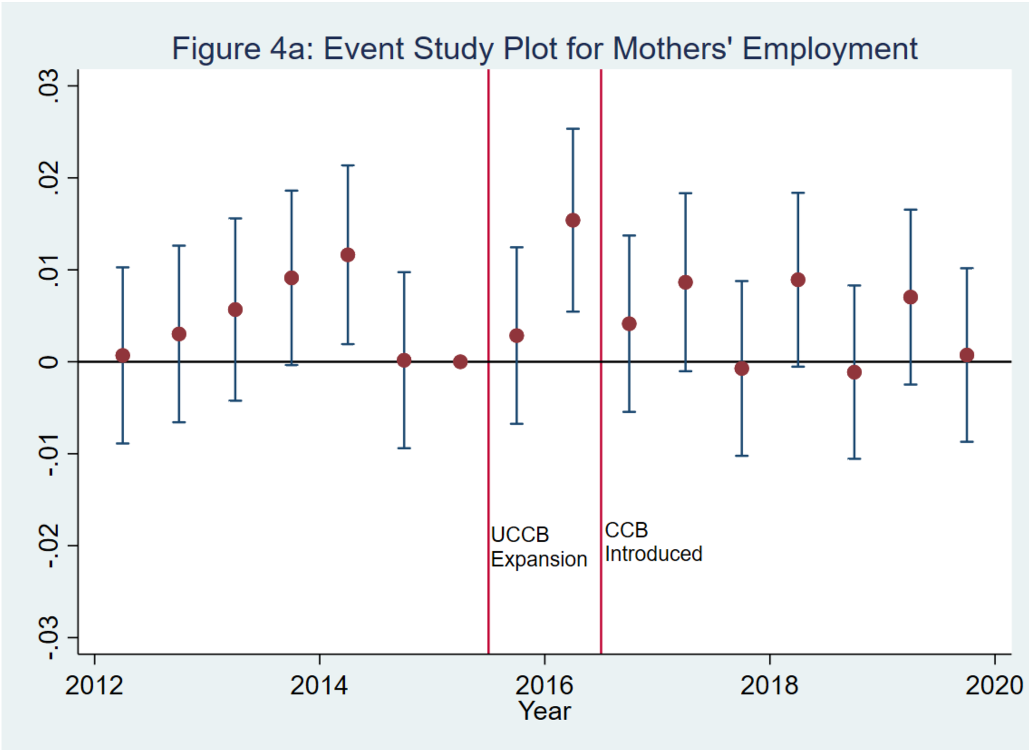


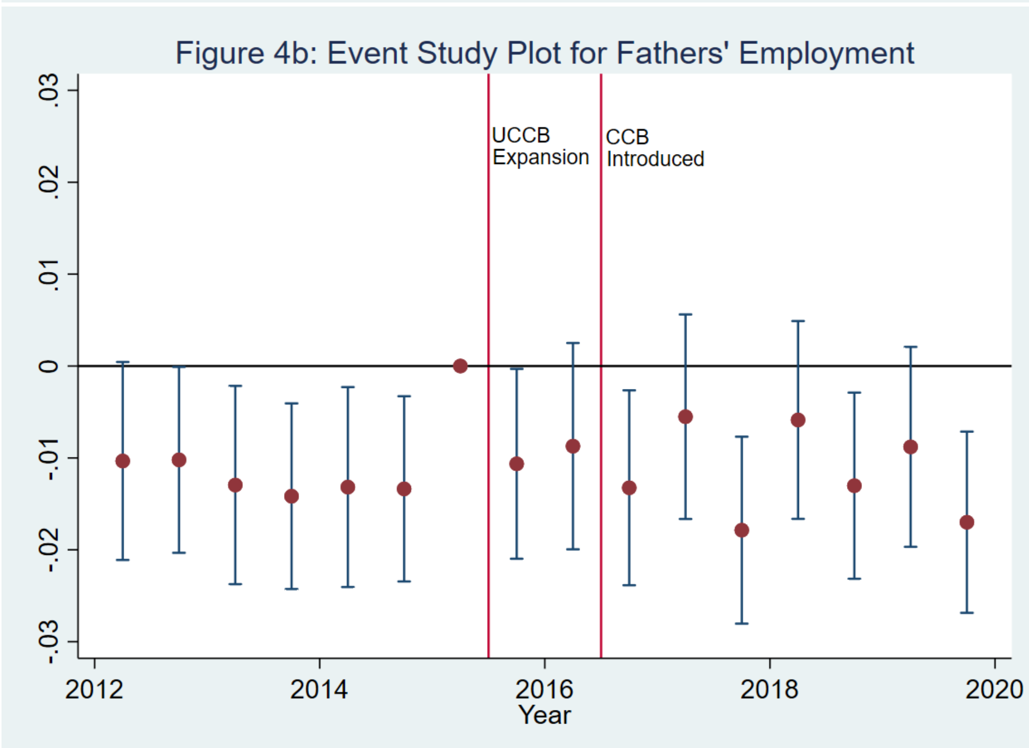
Note: Calculated using April and October LFS data for married adults between ages 25-54. Employment only includes individuals that are in the labor force. Weekly hours worked includes individuals who are not employed or in the labor force as working zero hours.



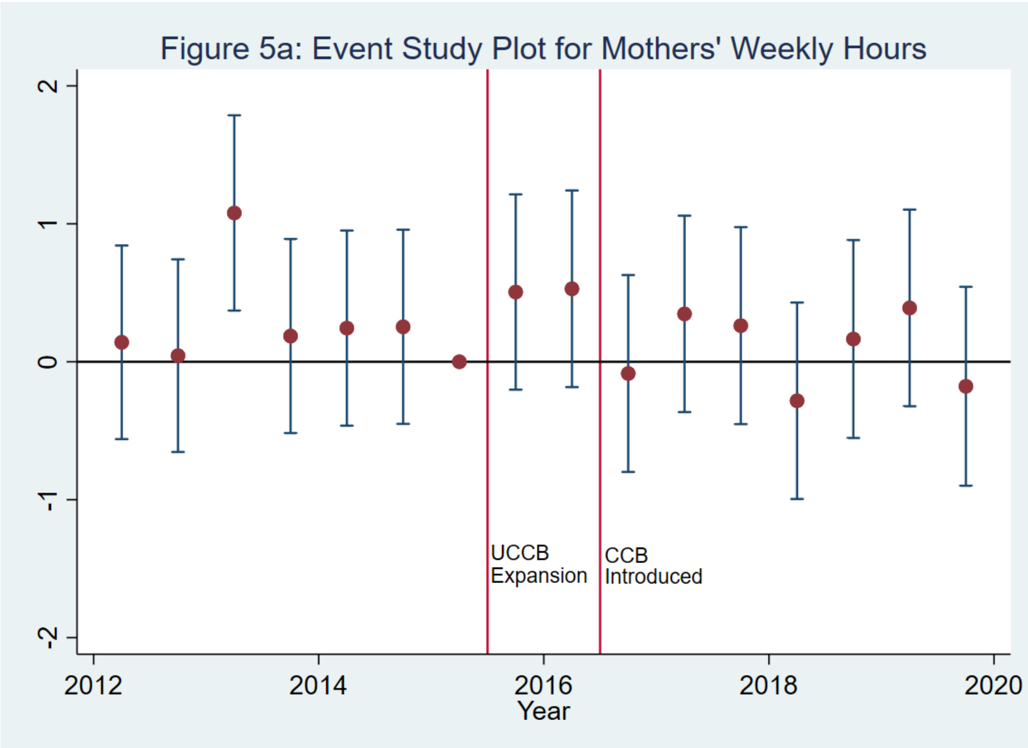


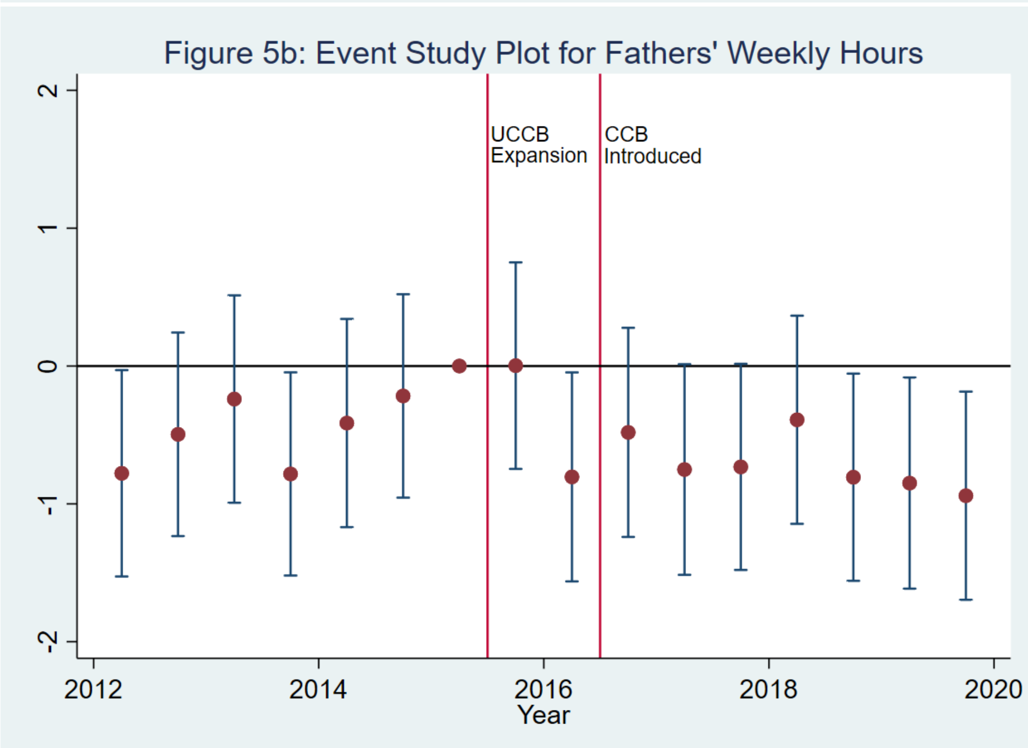
Note: These figures are calculated using LFS data on married women and men ages 25-54. The dots represent point estimates of the event study treatment effect on labor force participation in each period, and the bars surrounding them are 95-percent confidence intervals. April 2015 is the left-out time period because it is the last period before treatment occurs. The vertical lines indicate the timing of the two federal policy reforms. In the test for joint significance among pre-treatment coefficients, Figure 3a yields an F-statistic of 3.55 and a p-value of 0.00, and Figure 3b yields an F-statistic of 0.67 and a p-value of 0.68.



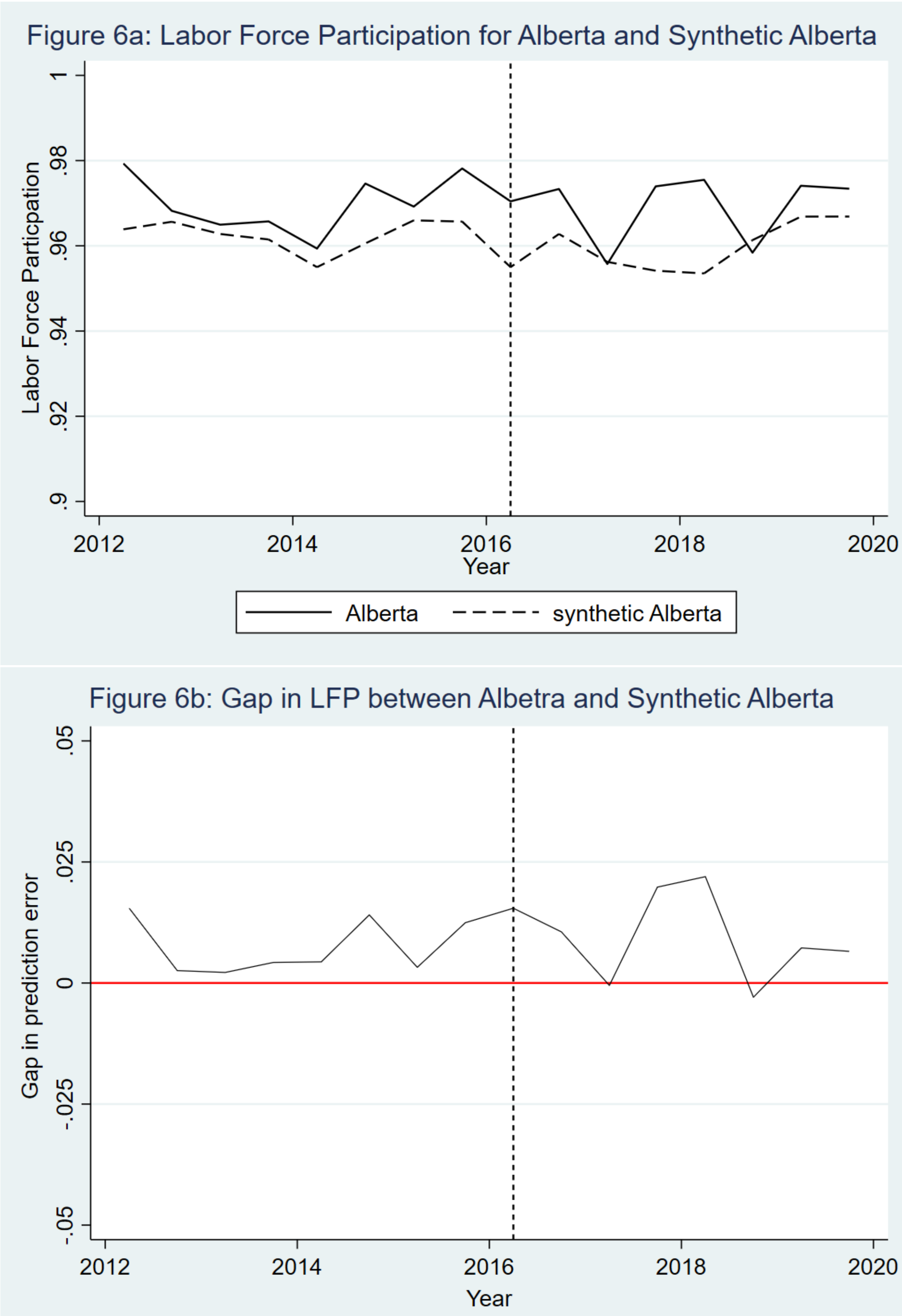


Note: These figures are calculated using LFS data on married women and men ages 25-54. The dots represent point estimates of the event study treatment effect on employment in each period, and the bars surrounding them are 95-percent confidence intervals. April 2015 is the left-out time period because it is the last period before treatment occurs. The vertical lines indicate the timing of the two federal policy reforms. In the test for joint significance among pre-treatment coefficients, Figure 4a yields an F-statistic of 1.80 and a p-value of 0.09, and Figure 4b yields an F-statistic of 1.60 and a p-value of 0.14.

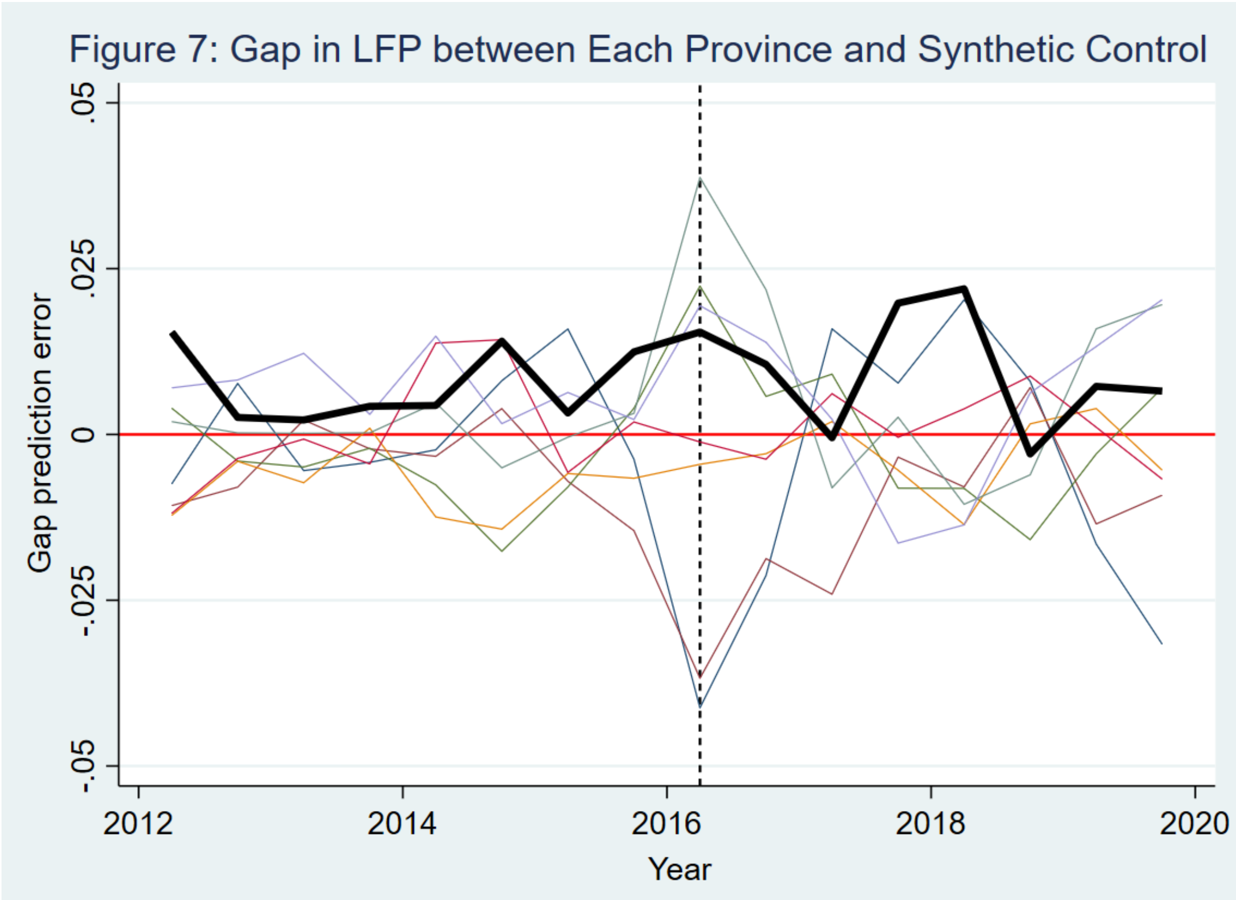




Note: These figures are calculated using LFS data on married women and men ages 25-54. The dots represent point estimates of the event study treatment effect on weekly hours in each period, and the bars surrounding them are 95-percent confidence intervals. April 2015 is the left-out time period because it is the last period before treatment occurs. The vertical lines indicate the timing of the two federal policy reforms. In the test for joint significance among pre-treatment coefficients, Figure 5a yields an F-statistic of 0.62 and a p-value of 0.71, and Figure 5b yields an F-statistic of 1.22 and a p-value of 0.29.



Note: Figure 6a shows labor force participation for married fathers in Alberta and its synthetic control group. Figure 6b shows the difference in labor force participation between Alberta and the synthetic control. The vertical dashed line indicates the last pre-treatment period. The donor provinces (and their weights) are Saskatchewan (0.537) and New Brunswick (0.463).



Note: The lines plotted here show the difference in labor force participation married fathers between each province and its synthetic control group. The bold black line represents Alberta, while the other lines are for placebo provinces. The vertical dashed line indicates the last pre-treatment period.

Figure 8a: Employment for Alberta and Synthetic Alberta

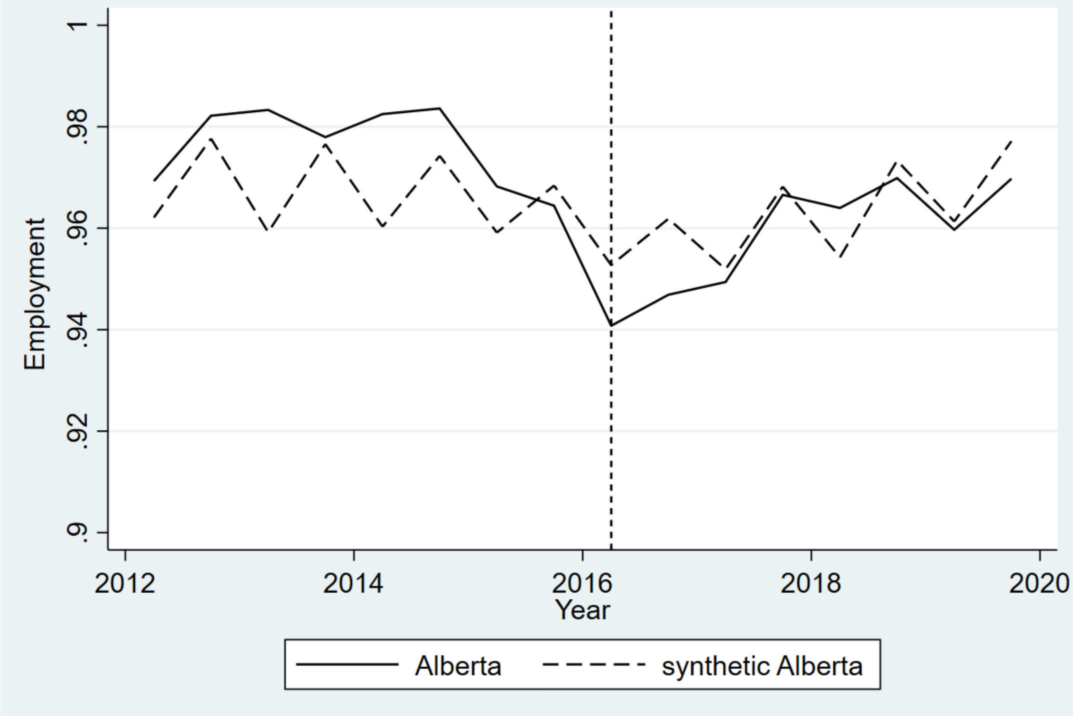
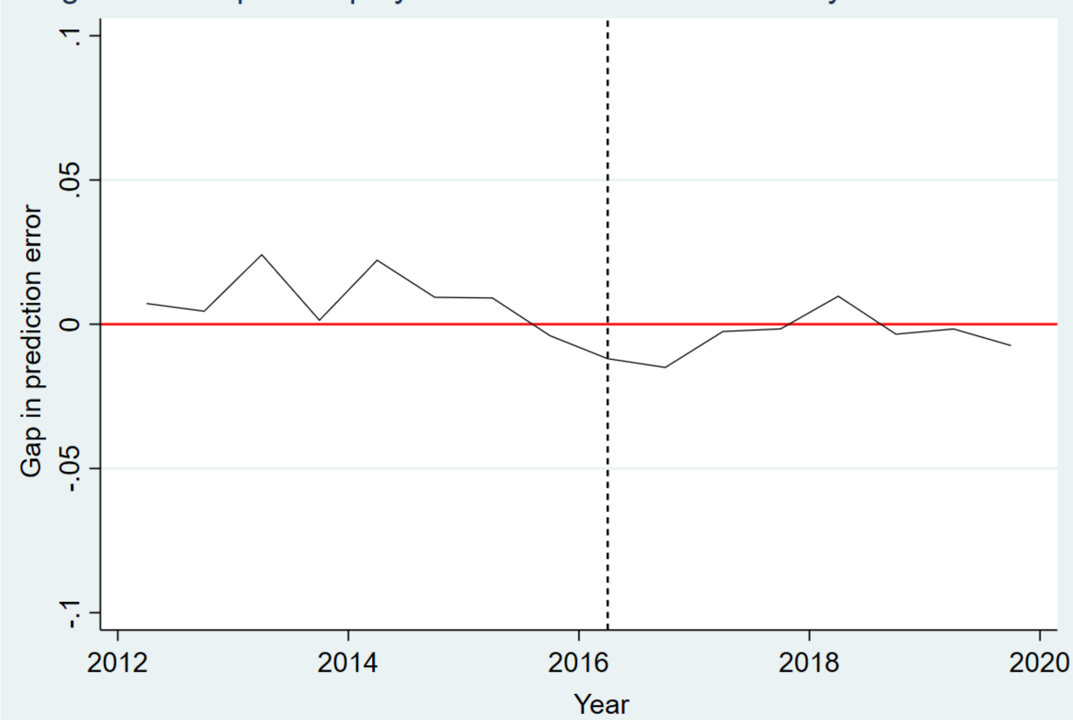
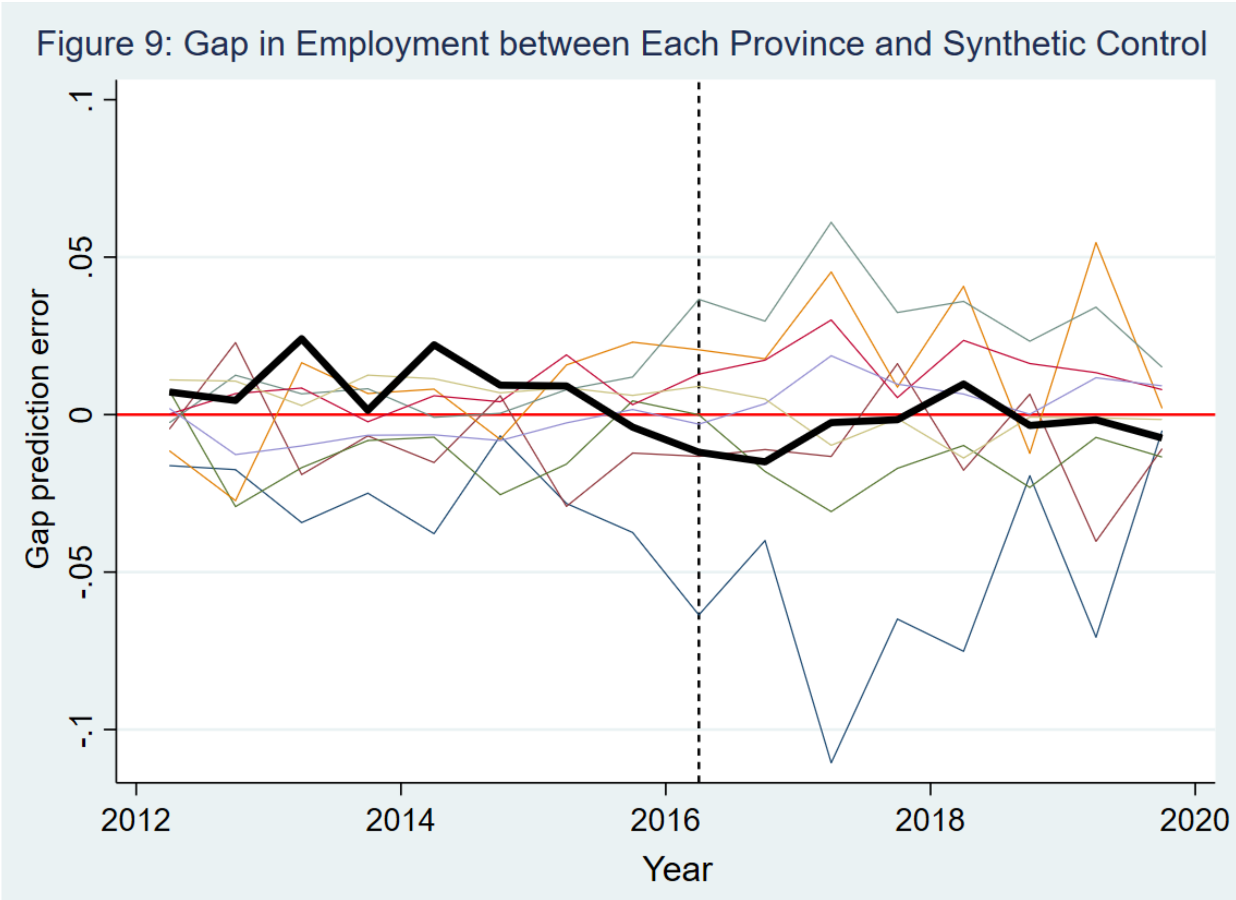


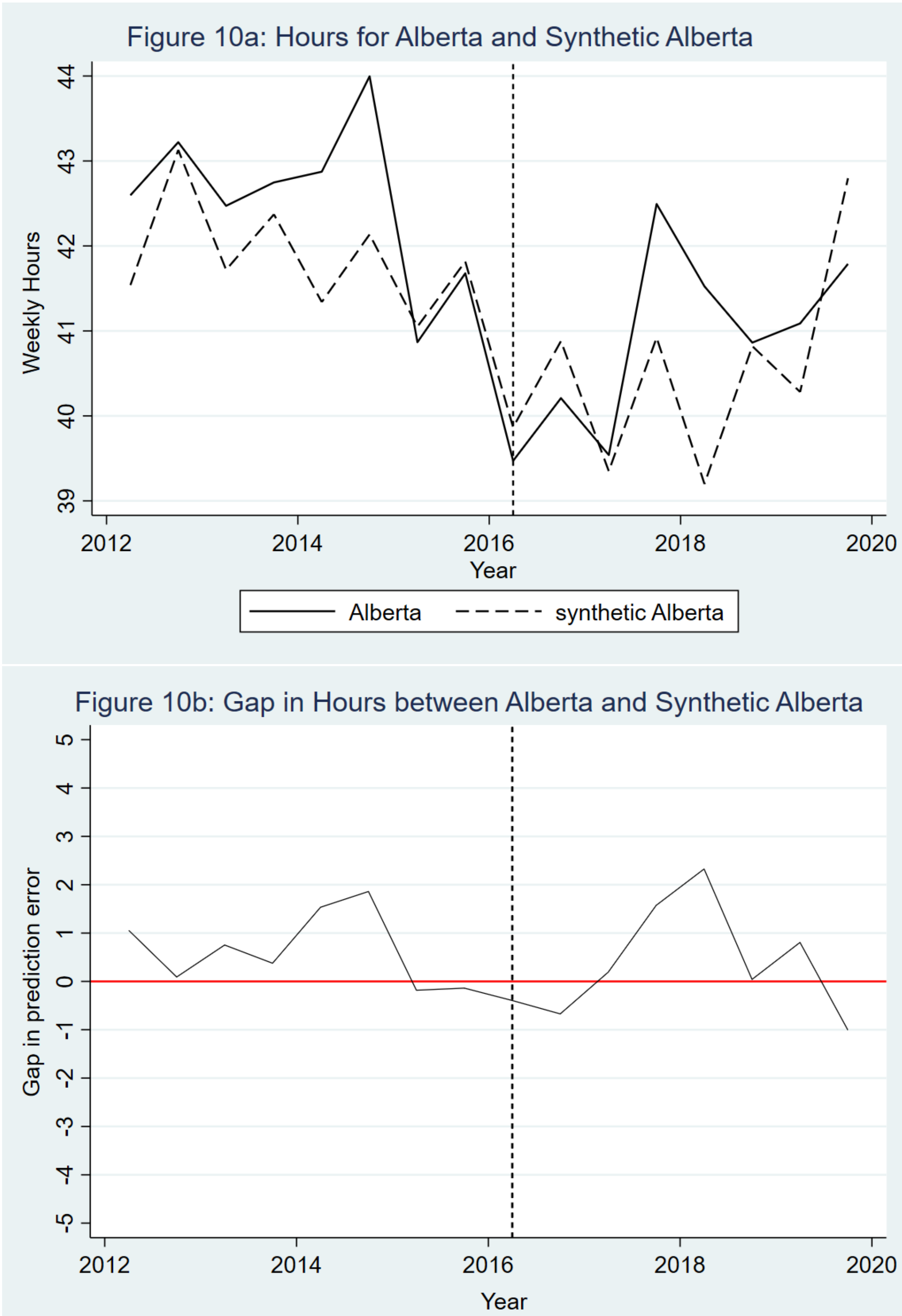
Figure 8b: Gap in Employment between Alberta and Synthetic Alberta



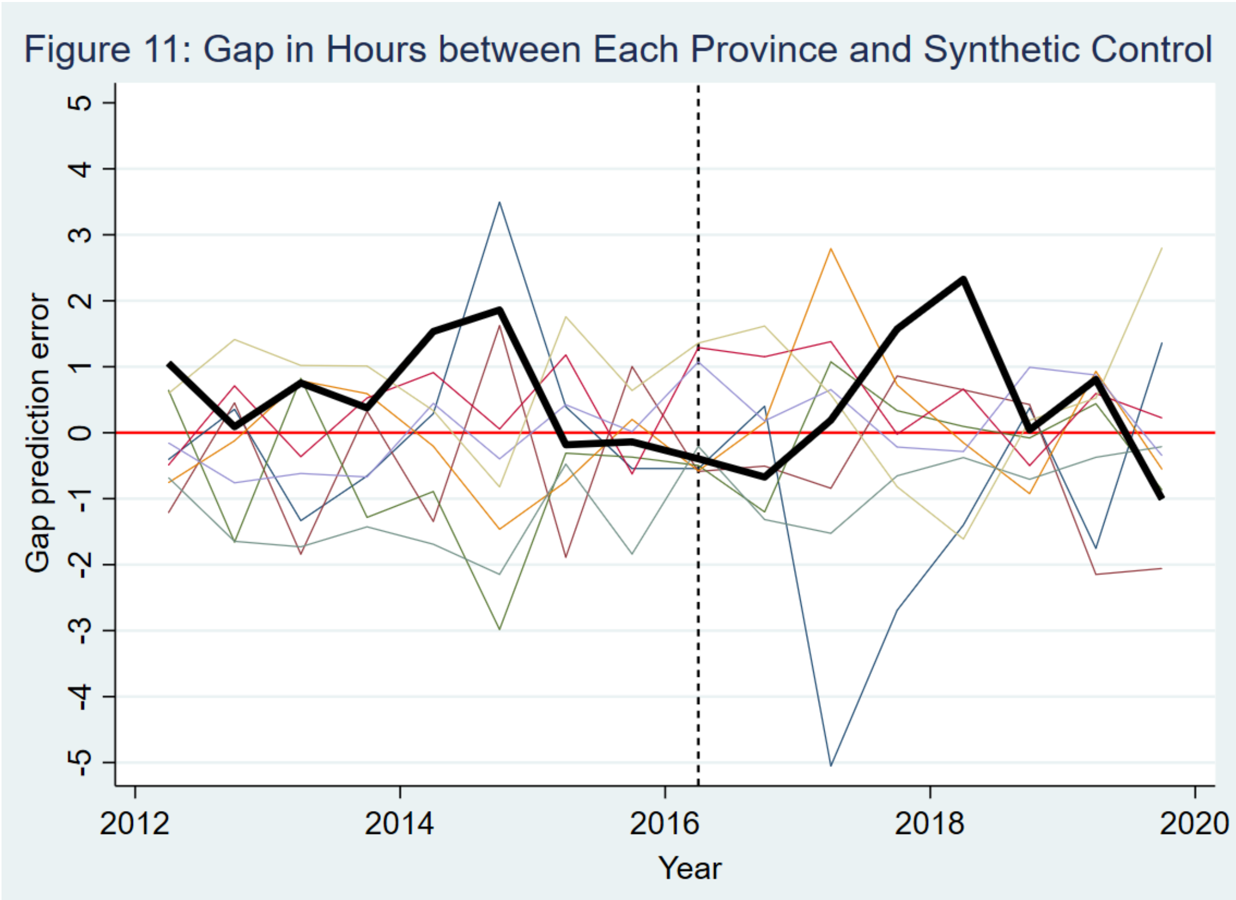
Note: Figure 8a shows employment for married fathers in Alberta and its synthetic control group. Figure 8b shows the difference in employment between Alberta and the synthetic control. The vertical dashed line indicates the last pre-treatment period. The donor provinces (and their weights) are Saskatchewan (0.576) and Quebec (0.424).



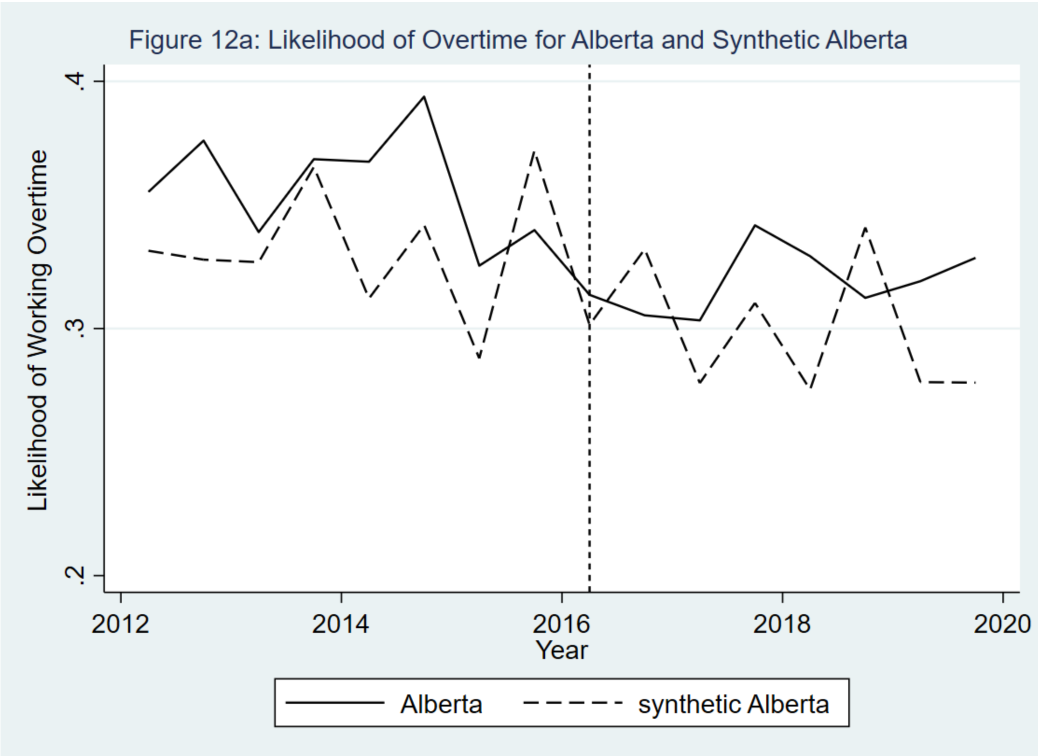
Note: The lines plotted here show the difference in employment married fathers between each province and its synthetic control group. The bold black line represents Alberta, while the other lines are for placebo provinces. The vertical dashed line indicates the last pre-treatment period.

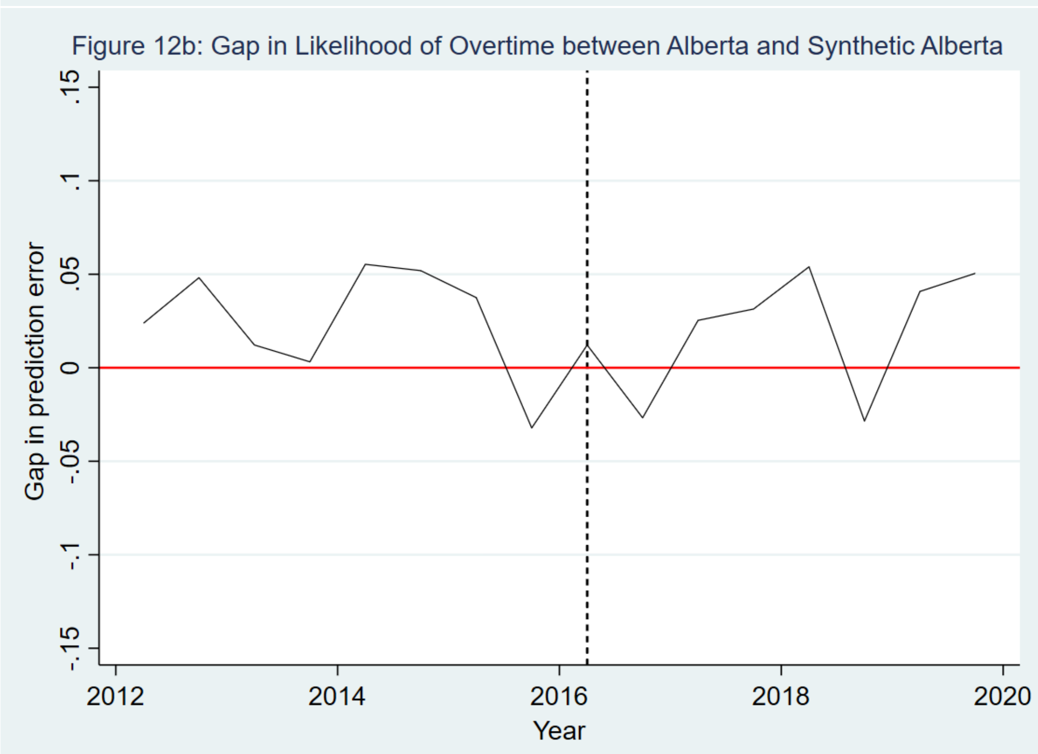


Note: Figure 10a shows weekly hours worked for married fathers in Alberta and its synthetic control group. Figure 10b shows the difference in weekly hours between Alberta and the synthetic control. The vertical dashed line indicates the last pre-treatment period. The donor provinces (and their weights) are Saskatchewan (0.779) and Manitoba (0.221).

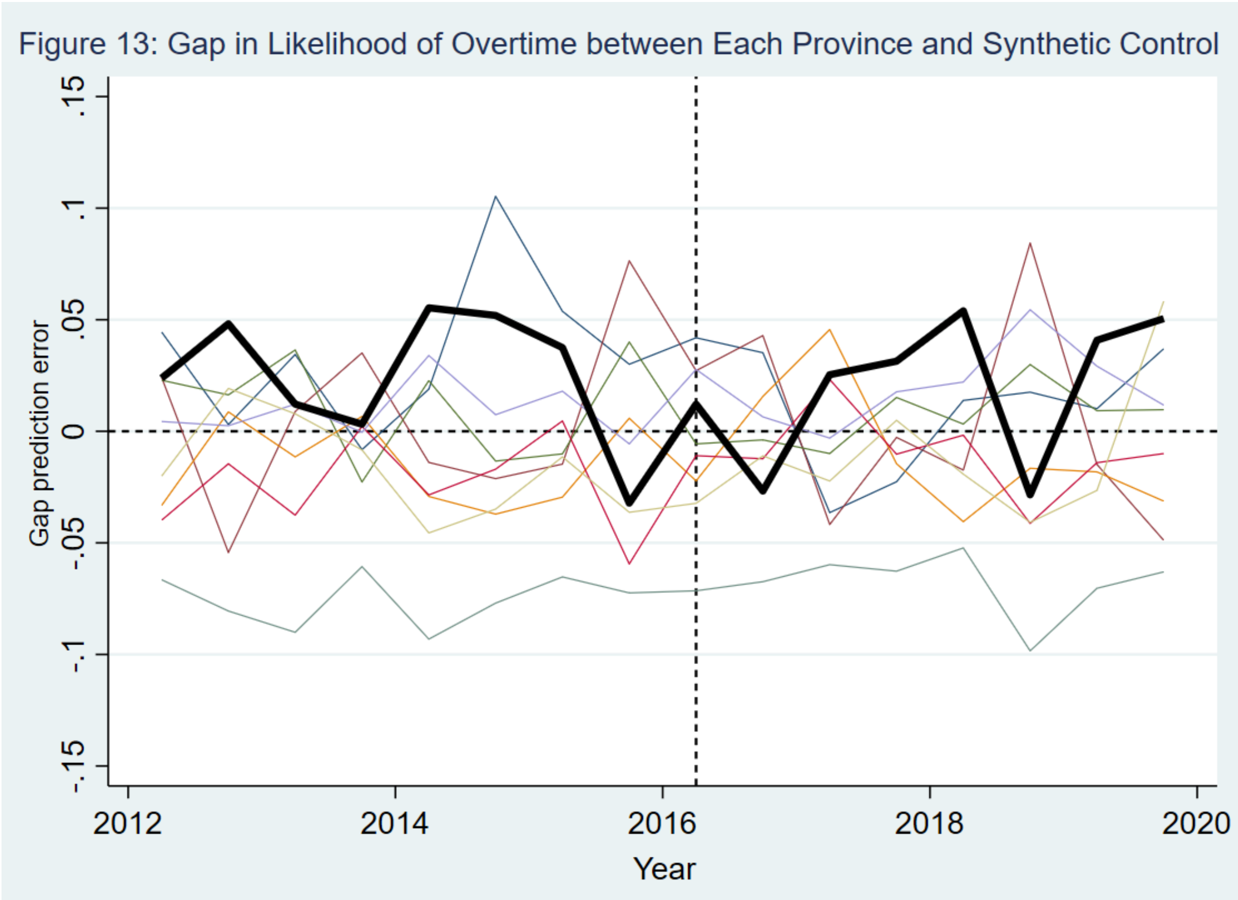


Note: The lines plotted here show the difference in weekly hours worked married fathers between each province and its synthetic control group. The bold black line represents Alberta, while the other lines are for placebo provinces. The vertical dashed line indicates the last pre-treatment period.





Note: Figure 12a shows the likelihood of working overtime (over 40 hours per week) for married fathers in Alberta and its synthetic control group. Figure 12b shows the difference in likelihood of working overtime between Alberta and the synthetic control. The vertical dashed line indicates the last pre-treatment period. The donor provinces (and their weights) are Prince Edward Island (0.550), New Brunswick (0.424), Newfoundland and Labrador (0.017), and Nova Scotia (0.009).



Note: The lines plotted here show the difference in the likelihood of working overtime (above 40 hours per week) for married fathers between each province and its synthetic control group. The bold black line represents Alberta, while the other lines are for placebo provinces. The vertical dashed line indicates the last pre-treatment period.

Appendix

Table A1: Difference-in-Differences Estimated Treatment Effects of UCCB Expansion and the CCB on Labor Force Participation for Married Parents with Youngest Children of Different Ages

Age of Youngest Child	Mothers			Fathers		
	0-5	6-12	13-17	0-5	6-12	13-17
Outcome: Labor Force Participation						
LFP Treatment Effect	.003 (.004)	-.002 (.004)	-.004 (.004)	-.001 (.002)	-.002 (.002)	-.006 (.003)**
Parents' Mean LFP	.757	.849	.873	.952	.956	.952
N	184,076	165,829	146,367	167,629	146,220	125,303
Outcome: Employment						
Emp. Treatment Effect	-.000 (.002)	.002 (.002)	.002 (.003)	.000 (.002)	-.001 (.002)	-.001 (.003)
Parents' Mean Emp.	.956	.958	.963	.959	.961	.961
N	150,760	141,854	126,135	157,559	137,375	117,248
Outcome: Weekly Hours Worked						
Hours Treatment Effect	.063 (.161)	.173 (.171)	.119 (.197)	-.138 (.159)	-.243 (.175)	-.285 (.211)
Parents' Mean Hours	24.6	28.1	29.8	38.7	39.2	39.4
N	184,076	165,829	146,367	167,629	146,220	125,303

Note: This table displays the treatment effects of child benefit increases for three labor force outcomes using difference-in-differences estimation. Outcomes for each panel are 1 if individual is in the labor force, 1 if individual is employed, and usual weekly hours worked, respectively. The employment outcome only includes individuals that are in the labor force, so it has a lower N than the other two panels. Weekly hours worked includes those who are not in the labor force or not employed as working zero hours. The sample was constructed using April and October results of the Labour Force Survey for each year between 2012-2019. The treatment groups are married parents of each sex whose youngest child is in the specified age group. The control groups are their married counterparts who do not have a child under 18. The regression includes controls for age, education level, and metro area, as well as province fixed effects, time period fixed effects, and province-by-time-period fixed effects. Robust standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

Table A2: Predictor Balance between Alberta and Synthetic Alberta for Labor Force Participation and Employment

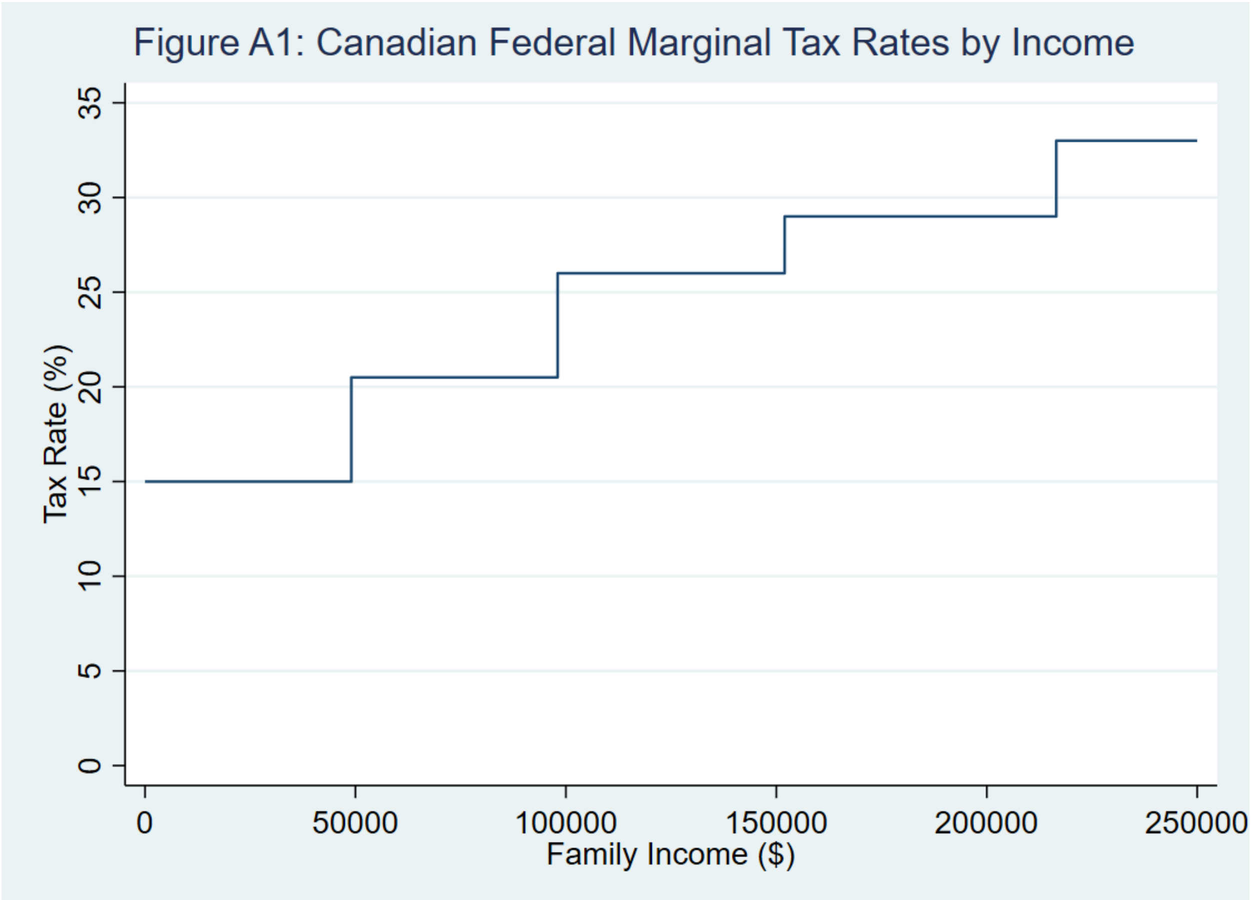
Outcome	Labor Force Participation		Employment	
	Alberta	Synthetic Alberta	Alberta	Synthetic Alberta
Pre-treatment Outcomes				
Apr 2012	.98	.96	.97	.98
Oct 2012	.97	.97	.98	.99
Apr 2013	.97	.96	.98	.97
Oct 2013	.97	.96	.98	.99
Apr 2014	.96	.96	.98	.98
Oct 2014	.98	.96	.98	.98
Apr 2015	.97	.97	.97	.98
Oct 2015	.98	.97	.96	.97
Youngest Child's Age				
0-5	.51	.49	.51	.48
6-12	.30	.32	.30	.32
13-17	.18	.20	.18	.20
Adult's Age				
25-29	.09	.08	.09	.09
30-34	.19	.18	.19	.18
35-39	.23	.24	.23	.24
40-44	.22	.22	.23	.22
45-49	.17	.18	.17	.18
50-54	.10	.11	.10	.10
Adult's Education				
0 to 8 years	.02	.02	.02	.02
Some high school	.09	.08	.08	.07
High school graduate	.20	.19	.20	.25
Some postsecondary	.04	.04	.04	.05
Postsecondary certificate or diploma	.41	.42	.42	.37
Bachelor's degree	.16	.17	.17	.17
Above bachelor's degree	.08	.08	.08	.07

Note: This table displays the average for each variable in Alberta and in the synthetic Alberta constructed for each labor force outcome. Note that some of these variables received zero predictor weight and were not used to improve the match between Alberta and the synthetic control.

Table A3: Predictor Balance between Alberta and Synthetic Alberta for Weekly Hours and the Likelihood of Working Overtime

Outcome	Weekly Hours Worked		Likelihood of Working Overtime	
	Alberta	Synthetic Alberta	Alberta	Synthetic Alberta
Pre-treatment Outcomes				
Apr 2012	42.6	41.5	.355	.331
Oct 2012	43.2	43.1	.376	.328
Apr 2013	42.5	41.7	.339	.327
Oct 2013	42.7	42.4	.369	.365
Apr 2014	42.9	41.3	.367	.312
Oct 2014	44.0	42.1	.394	.342
Apr 2015	40.9	41.1	.325	.288
Oct 2015	41.7	41.8	.340	.372
Youngest Child's Age				
0-5	.51	.48	.51	.42
6-12	.30	.32	.30	.34
13-17	.18	.20	.18	.24
Adult's Age				
25-29	.09	.09	.09	.07
30-34	.19	.18	.19	.15
35-39	.23	.23	.23	.21
40-44	.22	.22	.22	.24
45-49	.17	.18	.17	.21
50-54	.10	.10	.10	.12
Adult's Education				
0 to 8 years	.02	.02	.02	.02
Some high school	.09	.08	.09	.07
High school graduate	.20	.24	.20	.21
Some postsecondary	.04	.05	.04	.05
Postsecondary certificate or diploma	.41	.37	.41	.41
Bachelor's degree	.16	.17	.16	.16
Above bachelor's degree	.08	.07	.08	.07

Note: This table displays the average for each variable in Alberta and in the synthetic Alberta constructed for each labor force outcome. Note that some of these variables received zero predictor weight and were not used to improve the match between Alberta and the synthetic control.



Note: Tax rates are for the 2021 tax year and come from the Government of Canada (https://www.canada.ca/en/financial-consumer-agency/services/financial-toolkit/taxes/taxes-2/5.html).

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