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Impact of Paid Family Leave of California on Delayed Childbearing and on Infant Health Outcomes

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This paper investigates the impact of the Paid Family Leave (PFL) Act of California on the timing of first births for mothers, as well as infant health outcomes. Using a Difference in Difference (DID) methodology and Vital Statistics data from National Center for Health Statistics (NCHS), I find that PFL of California reduces birth delay by encouraging women over 35 years old to have their first child 2 years earlier. This policy improves infant health outcomes for new mothers at delayed childbearing by reducing incidence of low birth weight (<2500 g) by 1%, premature (< 37 weeks of gestation) by 1.5%, and cesarean-born infants by 3.1%. However, this policy has no significant impact on infant health for new mothers under age 35 years who are already in normal childbearing age. Finally, I investigate the impact of the PFL of California on labor market outcomes for new mothers. Results show that this policy has encouraged a return to work with a 5% increase in the likelihood of employment after childbirth for older women. The results are robust to a wide range of controls and robustness checks.

JEL Classification: I18, H75, I12, J13

Keywords: Paid Family Leave Act of California, Family Planning, Infant Health, Labor Market.

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I. Introduction

The occurrence of delayed childbearing is an increasing phenomenon. During the period between 1970 and 2012, first births for women 35 years and older have increased for all races from 1.7 percent to more than 10 percent (NCHS, 2014). Medical literature has well established that higher maternal age at first birth is associated with an increased risk of poor pregnancy outcomes. First births to women aged 35 and over have been associated with an increased likelihood of infertility, miscarriage, spontaneous abortion, stillbirth, medical risks, operative delivery, low birth weight, and pregnancy complications (Johonson and Tough, 2012; NCHS, 2014; Cnattingius et al., 1993; Guendelman et al., 2014). Changes in first birth trends toward older women also result in lower total fertility and family size, which have an important impact on the U.S. population structure in terms of size, composition, and future growth (Mathews and Hamilton, 2009).[1]

Delayed childbearing has been increasing since the end of World War II following a tremendous increase in female labor force participation, improved educational and professional opportunities for women, and a decline in the wage gap concurrent with improved access to the effective contraceptive methods (Happel, Hill and Low, 1984; Kenya, 2009).[2] Although higher female labor force participation has a significant impact on the U.S. economy, it makes it harder for families to sustain a balance between work and family obligations (Fass, 2009). The U.S. is one of the four nations with the absence or limited work benefits in terms of paid family leave for pregnant women or mothers with newborn children. In 2004, California introduced a universal Paid Family Leave (PFL) policy which provides up to six weeks of paid maternity leave with 55 percent wage replacement to bond with a newborn child.[3]

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[1] Delayed childbearing traditionally has been defined as pregnancy for women over the age of 35. Average age of mothers at first births has increased by 3.6 years in the U.S. between 1970 and 2006 which provides evidence of delayed childbearing. At the same time, the first birth rate for women below the age of 30 has declined (NCHS, 2014).

[2] Labor force participation of women has increased from 33.9 percent in 1950 to more than 57 percent in 2014 (Bureau of Labor Statistics).

[3] The only simple to satisfy eligibility criteria for PFL of California is payrolls in excess of 100 $ in a calendar quarter (State of California Employment Development Department). Having no or limited job and income security

This paper investigates the impact of the PFL of California on the timing of first births. Using a Difference in Difference (DID) design, this study examines whether PFL of California has been successful in reducing maternal age at first birth by encouraging women to have their first child earlier. Results show that PFL policy causes a reduction in birth delay. Specifically, it reduces 2 years in the timing of first birth for women over 35 years old and consequently this policy changes the age composition of new mothers toward younger ones. The negative causal impact of this policy on maternal age suggests an investigation into the impact of the PFL on infant health outcomes for women at delayed childbearing age. This paper presents evidence that this policy improves infant health outcomes by reducing incidence of low birth weight (<2500 g), premature (< 37 weeks of gestation), and cesarean-born infants. I also investigate the heterogeneity impact of the PFL policy by years of education, race, and marital status of new mothers. The literature shows that women, especially with higher age at first births, reveal more absenteeism from work and reduction in hours worked (Herr, 2008; Buckles 2008; Cristia 2008; Waldfogel, 1997; Waldfogel, 1998; Budig and England, 2001; Loughren and Zissimopolus, 2008; Anderson et al., 2002). This paper also investigates the impact of the PFL of California on labor market outcomes including employment, weeks of work, and hours of work per week for women over 35 years old. Results show that this policy has encouraged a return to work by increasing the likelihood of employment after childbirth by 5 percent. Results are robust to a wide range of controls and robustness checks.

The rest of the paper is organized as follows: Section II discusses maternity leave in the U.S. and reviews the literature; Section III presents the methodology; Section IV discusses the data and descriptive analysis; Section V presents the main results, heterogeneity, and sensitivity analysis; and Section VI concludes.

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at the time of childbirth is one of the main challenges that women have faced in the labor force and has left them with very few options. Either postponing the childbearing decision, leaving work, or returning immediately to the job after childbirth, which is accompanied with limited bonding between mother and newborn child and absence or limited breastfeeding. Among existing options, delayed childbearing has been more encouraged (Fass, 2009).

II. Maternity Leave in the U.S. and Related Literature

II.A Maternity Leave in the U.S.

In 1993, the U.S. federal government introduced the Family and Medical Leave Act (FMLA), which provides 12 weeks unpaid but job protected leave from work.[4] The main down side of FMLA is its restricted eligibility criteria, which made it far from universal accessibility. FMLA only covers certain private and local, state, and federal government employees who have worked for the same employer for at least 12 months prior to the start of the FMLA leave (with at least 1250 hours). Also, the employee has to work for an employer with at least 50 employees within 75 miles of the home.[5] The other down side of the FMLA is unpaid leave, which resulted in the absence of income security for families and is one of the main reasons for not taking family leave (Unites States Department of Labor; State of California Employment Development Department; Fass, 2009).

California is the first state to enact Paid Family Leave (PFL) on July 2004. PFL in California provides up to six weeks of partially paid family leave with 55 percent wage replacement of one's weekly earnings up to a maximum benefit ($987 per week in 2011) to bond with a newborn child or to take care of a sick family member. Employees who are covered by the State Disability Insurance (SDI) are also covered by the PFL. Nearly all California workers are covered by the SDI program.[6] Eligibility requirements for PFL are simple to satisfy. It does not require a minimum number of hours worked or limitation of firm size at

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[4] The purpose of the FMLA is providing time off work for certain workers in case of major life crisis and events such as taking care of seriously ill immediate family members including oneself or time off work for mothers to bond with a new born child. In terms of the eligibility, FMLA only covers 50 percent of the workers. But, take up rate is much lower between 20 to a maximum of 50 percent especially for women.

[5] Unites States Department of Labor.

[6]California, Rhode Island, New Jersey, New York and Hawaii are the only states providing temporary disability insurance (TDI) for their workforce during the 1940s but it did not apply to pregnant women until the 1970s, with the passage of the pregnancy discrimination act. Usually, TDI related to pregnancy provides a specific percentage of wage replacement up to a maximum weekly dollar cap for a typical period of six weeks after the delivery of the baby. California's PFL program is an extended version of the state's TDI program (which is called SDI in California). California state disability insurance provides short run disability income replacement and is comprised of two separate wage replacement benefits including disability insurance and paid family leave. PFL does not provide job protection, although job retention rights can be covered using pre-existing laws including FMLA or the California Family Rights Act (CFRA).

which the employee is working. PFL eligibility requires an individual to be employed or actively looking for work at the time his or her family leave begins. The law requires coverage for employees working for employers with payrolls in excess of $100 in a calendar quarter. Both full-time and part-time workers can be eligible for PFL (State of California Employment Development Department).

II.B Related Literature

Berkowitz et al. (1990) show that women aged 35 and older are at a higher risk of low birth weight and are significantly more likely to have both cesarean sections and infants who were admitted to the newborn intensive care unit. Also, older women have higher rates of complications during pregnancy and delivery (Johnson and Tough, 2012; Heffner et al., 2003; Baghurst et al., 2014). Johnson et al. (2012) find that the medical risks of childbearing including multiple births, preterm delivery, stillbirths, and caesarean section increase with maternal age. The latter has been supported in the Heffner, et al. (2003) study, that women with first births over 35 years old are at a higher risk of cesarean delivery.

Maternity leave policy is suggested as one possible family-friendly solution to address the challenges faced by working mothers and their newborn children. Previous literature has investigated the impact of maternity leave on both labor market outcomes and infant health outcomes. Ruhm (2000) notes that paid leave reduces infant fatalities and low birth weight in European countries. Also, he suggests that parental leave may be a cost effective method by bettering child health. Baker and Milligan (2005) show that maternity leave in Canada decreases the proportion of women quitting their jobs, increases leave taking, and increases the proportion returning to their pre-birth employers. Although, they find no impact of maternity leave on infant health including low birth weight or infant mortality. In another study, Baker and Milligan (2008) support that maternity leave mandates in Canada have been associated with a high likelihood of leave taking and a positive impact on critical breastfeeding duration. The latter also has been highlighted in the study of Huang and Yang (2014) that PFL of California has been accompanied by a higher percentage in both exclusive and inclusive breastfeeding. Rossin (2011), using vital statistics data, finds that the 1993 Family and Medical Leave Act (FMLA) in the United States improves infant health outcomes in terms of birth weight and a decrease in likelihood of a premature birth.

In terms of impact of maternity leave on mothers' labor market outcomes, Waldfogel (1999) shows that FMLA increases leave usage. However, it has no significant negative effects on women's employment or wages. Baum (2003) shows that FMLA has a small and statistically insignificant effect on employment and wages as FMLA maternity leave is short and unpaid. However, Lawrence et al. (2003) show that those in jobs that provided leave coverage under FMLA are more likely to take leave, but return more quickly after the exhaustion of leave. Espinola-Arredondo and Mondel (2010) find a significantly positive effect of FMLA on female employment and a significantly positive effect on the change in female employment for some of the states that expanded the benefits and eligibility criteria of FMLA.

Baum and Ruhm (2013), using the March Current Population Survey (CPS) data from 1999 to 2010 and a Difference in Difference (DID) approach, show that California PFL raised leave-taking by around 2.4 weeks for the average mother. The rights to paid leave are also associated with higher work and employment probabilities for mothers nine to twelve months after birth, possibly by improving labor force attachment. They also find positive effects of California's program on hours and weeks of work during their child's second year of life and possibly also on wages. Rossin-Slater et al. (2013) using CPS data and a DID methodology also show that the California program doubled the overall use of maternity leave and increased the usual weekly work hours of employed mothers of 1 to 3 years old children. Dustmann and Schönberg (2008), show that maternity leave expansions in Germany increase return to work after childbirth. In another study, Schonberg and Ludsteck (2014) show that maternity leave expansions in Germany reduce mothers' post birth employment rates in the short run. However, the long run effects of the expansions on mothers' post birth labor market outcomes are small.

The literature has emphasized the importance of maternity leave on infant health outcomes and labor market outcomes for women. However, the impact of this policy on birth delay has not been investigated yet. Delayed childbearing traditionally has been defined as pregnancy to women aged over 35 years and is the focus of this study. This paper contributes to the literature by examining the impact of the PFL policy on the timing of first births and age composition of women at first births. In particular, I examine whether PFL of California was successful in reducing birth delay by decreasing maternal age at first birth. This paper also looks into the impact of this policy on infant health especially for women over 35 years who are at higher risk of poor pregnancy outcomes. This is important because births to older women have a high social cost in terms of infant and mother health outcomes (Johnson and Tough, 2012; Heffner et al., 2003; Baghurst et al., 2014; Berkowitz et al., 1990). A further contribution is to examine the impact of this policy on employment, weeks of work, and hours of work per week for this targeted group after first childbirth.[7]

III. Methodology

I use a Difference in Difference (DID) methodology to investigate the impact of the PFL of California on different outcome variables including age of mother at first birth, infant health outcomes, and labor market outcomes of women after first childbirth. The main estimation for the impact of the PFL of California on the age of mother at first birth is:

$$Y_{ist} = \beta_0 + \beta_1 CA_{ist} + \beta_2 post2004_{it} + \beta_3 CA_{ist} \times post2004_{it} + \beta_4 X_{ist} + \delta_t + \mu_s + \varepsilon_{ist} \qquad (1)$$

Y_{ist} represents the outcome variable which is the age of mother i at state s and year t at first birth. CA_{ist} is the dummy variable which takes a value of one if mother lives in California and zero otherwise. $post2004_{it}$ is an indicator variable representing the enactment of the PFL at time t. It takes a value of one for the years post 2004 when the FPL got effective and takes value of zero for the years prior to 2004. $CA_{ist} \times post2004_{it}$ is the interaction term identifying the treatment group for whether state s enacted

[7] Literature shows that women, especially with higher age at first births, reveal more absenteeism from work and reduction in hours worked (Herr, 2008).

the PFL in year 2004. The treatment group is mothers in California after the year 2004. Accordingly, β_3 is the coefficient of interest, which captures the impact of this policy on the women's decision regarding timing of their first births. Negative values of β_3 indicate that PFL of California encourages women to have their first child earlier and positive values of this coefficient show this policy encourages women to delay first birth timing.

My sample is limited to the new mothers between the ages of 20 to 45 years old having their first live birth.[8] X_{ist} is a vector of individual characteristics of women including: race, education, marital status, 5 years interval age groups, mother's birth year and household income.[9] I control for the mother's birth year using dummy variables for each 10 years' interval to control for women's cohort differences.[10] δ_t is the year fixed effect and represents common shocks to all women in a particular year. μ_s is the state fixed effect which controls differences in the women's decision for the timing of first birth due to the state specific effects. Standard errors are clustered at the state level. The estimation strategy for other outcome variables for infant health outcomes of new mothers including gestation in weeks, premature (< 37 weeks of gestation), birth weight (g), low birth weight (<2500 g), and C-section method of delivery are similar to the estimation strategy of the timing of first births in equation (1). In the estimation of infant health outcomes, I also control for other risk factors of pregnancy such as plurality (multiple births vs. single birth), place of birth (in hospital vs. not in hospital), number of prenatal visits (=1 if mother had minimum of 4 prenatal visits), and sex of infant (=1 if infant is male). The estimation strategy for labor market

[8] PFL eligibility requires an individual to be employed or actively looking for work at the time his or her family leave begins. I check the robustness of my results to this condition by using IPUMS-USA data set. IPUMS-USA contains information on whether the mother has worked last year. I restrict my sample to women 20 to 45 years old with an eldest child less than one year old who have worked any usual hours last year (during their pregnancy). Result are similar. I restrict my sample to women with the eldest child less than one year old for three reasons. First, it enables me to check whether an individual has worked any usual hours last year which is during pregnancy in order to be potentially eligible of receiving PFL. Second, limiting the sample to mothers experiencing their first birth reduces potential heterogeneity effects among mothers. Third, for these women the childbearing decision is more strategic as this is the first birth for the mother.

[9] I control for the age of mother using dummy variables for each five years intervals including 20 to 25, 26 to 30, 31 to 35, 36 to 40, and 41 to 45.

[10] The youngest mother in my sample was born in 1993 and the eldest mother was born in 1955. Birth year intervals are: 1955 to 1965, 1966 to 1975, 1975 to 1985, and 1986 to 1993.

outcomes of new mothers after first births including employment, weeks, and hours of work per week is similar to the estimation strategy of the timing of first births in equation (1).[11]

I also estimate the heterogeneity of the impact of the PFL of California by individual characteristics including race (white, black, and Hispanic), age groups (over 35 years old and under 35 years old), educational attainment (college graduate, some college, high school, and less than high school), and marital status (married, and unmarried). β_4 is the additional difference in the timing of first births by binary individual characteristics at time t.

$$Y_{ist} = \beta_0 + \beta_1 CA_{ist} + \beta_2 post2004_{it} + \beta_3 CA_{ist} \times post2004_{it} + \beta_4 CA_{ist} \times post2004_{it} \times popcharacter_i + \beta_5 X_{ist} + \delta_t + \mu_s + \varepsilon_{it} \quad (2)$$

Studying maternal age is more crucial for women with delayed first births to ages over 35 years. Pregnant women aged over 35 years are at a higher risk of infants with low birth weight (<2500 g), premature births (<37 gestations weeks), and complications of pregnancy and delivery (Cnattingius et al., 2004; Heffner, et al. 2003; Gertru S. Berkowitz, et al., 1990). In this regard, this study mainly investigates whether PFL of California has any causal impact on the timing of first births and consequently infant health outcomes for women at delayed childbearing (over 35 years old).

IV. Data and Descriptive Statistics

IV.A Data

I use two data sets in this study: National Vital Statistics data from National Center for Health Statistics (NCHS) and Integrated Public Use Microdata Series (IPUMS – USA) from 2000 to 2010.

[11] The NCHS data set does not provide labor market outcomes of mothers. In order to investigate the impact of the PFL of California on labor market outcomes including employment, weeks, and hours of work per week I use Integrated Public Use Microdata Series (IPUMS – USA). This data set provides all the control variables in the main estimation (equation 1) including: race, education, marital status, 5 years interval age groups, mother's birth year as well as household income.

Vital Statistics from NCHS provides birth data of all the births registered in the 50 U.S. states. I used this data set to investigate the impact of the PFL of California on the timing of first births for new mothers and infant health outcomes including incidence of premature (< 37 weeks of gestation), low birth weight (<2500 g), and cesarean-born infants as well as gestation in weeks and birth weight. This data set enables to control for the age, years of education, race, marital status, and other risk factors of the pregnancy including plurality, place of the birth, prenatal visits, and sex of the infant.

IPUMS – USA provides a large sample size of mothers with individual characteristics such as age, years of education, race, and marital status. This data set also provides two variables regarding the age of the eldest and youngest child of the mothers. My sample is limited to the mothers with an eldest child less than one year old who have worked any usual hours in previous year (during pregnancy). I also use this data set to investigate the robustness of the results to an alternate data set. This data set provides information regarding the labor market outcomes of the mothers such as employment, weeks, and hours of work per week which enables the study of the impact of the PFL of California on the labor market outcomes of mothers after their first birth.

IV.B Descriptive Statistics

Table 1 presents summary statistics for selected variables in the National Vital Statistics Data, for the whole sample and split according to the age of mother at first births in two groups of less than 35 and over 35 years old. In the whole sample there are 11,574,452 mothers with first live births at average age of 26.9 years. 11% of first born infants of all mothers aged 20 to 45 years old during 2000 to 2010 are considered premature (<37 gestations weeks), 8% low birth weight (<2500 g), and 30% delivered using the C-section method of delivery.

There are 816,316 mothers over 35 years old with first live births in the sample. These mothers have poorer infant health outcomes with 15% premature, 12% low birth weight, and 48% born using the C-section method of delivery, compared to mothers less than 35 years old (10% premature, 8% low birth weight, and 29% born using C-section method of delivery). Worse infant health outcomes for women over 35 years old highlights the importance of investigating any policy impacting the timing of first birth decision for women. Mothers over 35 are more likely to be married and have more years of education.

IV.C Graphical Evidence

Figure 1 presents the birth rates for women at different age groups during 1990 to 2013, which provides a useful measure for interpreting childbearing patterns. It represents an increasing birth trend for older women, especially for age groups of 35 to 39 and 40 to 44, and a decreasing birth trend for younger women at age groups of 20 to 24 and 25 to 29, as well as a sharp decrease for women less than 20 years old.

Figures 2 presents a summary of the main findings using comparison of California and a synthetic control group. Figure 2 shows that implementation of the PFL policy changes the composition of the women with first births by increasing the fraction of births for women aged 30 to 34 and decreasing proportion of births for women aged 40 to 44. There are no change for the age groups of 20 to 29 and 35 to 39. Absence of changes for the age group of 35 to 39 can be justified through a counterbalance of decrease for the age groups of 40 to 45 and 35 to 39. Figure 2 illustrates that PFL policy reduces birth delay by changing the age composition of women with first births toward younger ones.

V. Results

V.A Main Results

Table 2 presents coefficients from the estimation of the main equation (1) for the age of mother at first birth using different specifications. Column (1) presents result without controls and column (2) with controls. Results are robust to the inclusion of the individual control variables, which is a sign of an unbiased estimate.[12] Column (3) presents the result after excluding the states with Temporary Disability

[12] Results are also robust to the smaller time frame of 2000 to 2008.

Insurance (TDI) from the sample. Finally, column (4) shows the estimated coefficient using synthetic control states.[13] Results are similar across these four columns and show that PFL of California decreases the age at first birth equivalent to .06 years (≅ 1 month).[14]

Table 3 presents results when the dependent variable measures age at first births for women at either delayed (over 35 years old) or normal (between 20 to 35 years old) childbearing age. Interestingly, the impact of the PFL of California on the timing of first births for women less than 35 years old is small and not significant (.01 year equivalent to .12 months). However, women with first births delayed to ages over 35 years respond significantly to this policy by reducing the timing of their first births by two years. This result shows that maternity leave policies are effective in reducing birth delay.

Table A1 shows the results for the proportion of women with first live births at different 5 years interval age groups when aggregating data at the county level. It shows that implementation of the PFL policy causes reduction of 5 and 12 percent in the proportion of first time mothers for 35-39 and 40-44 age groups respectively, whereas the fraction of new mothers for 30-34 age group increased by 7 percent. It provides evidence of a hastening in the timing of first births through the change in the age composition of women with first births toward younger ones. There is no statistically significant impact on the fraction of women less than 30 years old.

Table 4 presents results when the dependent variable measures infant health outcomes including incidence of premature (<37 weeks of gestation), low birth weight (<2500 g), extremely low birth weight (<1500g), and cesarean-born infants as well as gestation in weeks and birth weight. Results show that the PFL policy only improves infant health outcomes of women over 35 years old by reducing 1.5 percent in

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[13] There are 4 TDI states, including Rhode Island, New Jersey, New York and Hawaii. Synthetic control states are all states except Alaska, Idaho, Indiana, Louisiana, Mississippi, Oklahoma, South Dakota, Utah, West Virginia, and Wyoming.

[14] A key assumption in the DID analysis is that the underlying trends of the treatment and control groups being considered are similar. I include state and year fixed effects and state-specific time trends in the DID specifications to partially address this issue. I also address this issue by using the synthetic control method and a series of robustness checks.

the likelihood of premature born infant, 1 and .5 percent in the incidence of low birth weight, and extremely low birth weight respectively, and 3 percent in infants born using the C-section method of delivery. Also, this policy was successful in causing a 1 percent increase in birth weight.[15]

Table 5 presents results for the labor market outcomes, including employment, weeks and hours of work per week for college graduated mothers over 35 years following their first childbirth.[16] I focus on this group of women, because the related literature presents that one salient change after childbirth for college educated women is an increase in the likelihood of absenteeism and exit from labor force which induce general and firm-specific skills depreciation and consequently wage reduction (Buckles, 2008; Cristia, 2008; Waldfogel, 1997; Waldfogel, 1998; Budig and England, 2001; Loughren and Zissimopolus, 2008; Anderson et al. 2002). Not only does PFL of California decrease birth delay for college graduated women over 35 years old (presented in Table 6), but it also improves labor market attachment by increasing the likelihood of employment after childbirth. Conditional on working, Table 5 shows that PFL reduces the weeks of work after childbirth until one year. Part of this decrease is because of an increase in leave taking, which has been well documented in the related literature (e.g. Berger and Waldfogel, 2003; Baum and Ruhm, 2013; Rossin et al, 2013; Espinola-Arredondo and Mondel, 2010). College educated women over 35 years old who are more likely to exit from the labor force, under PFL policy prefer to stay in the labor market but work fewer weeks (10%) until one year after childbirth. This result is important, because it shows that the California maternity leave policy reduces the speed of human capital depreciation of these mothers after childbirth by increasing their attachment to the labor force. However, Table 5 shows that there is no impact on the labor market outcomes in a longer time period of two years after childbirth.

[15] One possible reason for these improvements is effectiveness of PFL of California in reducing age at first births. Cnattingius et al. (1992) show that women over 35 years reveal significantly higher odds ratios of fetal deaths, low birth weight, and premature births. In another study, Cnattingius et al. (1993) find that rates of adverse pregnancy outcomes are substantially higher in first than second births. Guendelman et al. (2014) also find that maternity leave in late pregnancy shows promise for reducing cesarean deliveries in working women.

[16] The limitation of this part of the study is the inability to see if women with eldest child of two years old had worked any usual hours during pregnancy. In table A.3, I show that results for age of mother at first birth for different specifications are robust to removing this condition.

V.B Heterogeneity and Robustness

Table 6 shows the heterogeneity of the impact of the PFL policy of California on the timing of first births for all women (aged 20 to 45 years) and women over 35 by years of education, race, and marital status. Panel A of Table 6 shows a slight higher impact of the PFL policy in reducing age at first birth for college educated, black, and married women aged 20 to 45 years. Panel B of Table 6 indicates that college educated women over the age of 35 show a higher response to PFL policy by reducing 2.5 years in timing of their first births compared to women with some college (1.3 years) and high school or less than high school (1.1 years). This suggests that the decrease in birth delay under the PFL policy of California is highly driven by the change in the timing of first births for college educated women. Wilde et al. (2010) and Anderson et al. (2002) show that high-skilled women experience the largest motherhood penalties with a sharper wage diverge which tends to persist over time for exiting the labor force to care for their children. In comparison, low-skilled workers are less vulnerable to such earnings erosion, since they have less human capital and will escape a motherhood wage penalty.[17] These differential costs of childbearing account for the far greater tendency of high-skilled women to delay or avoid childbearing altogether (Buckles, 2008). However, results show that providing maternity leave such as the generous PFL of California encourages college educated women to hasten their decision to have their first child. Table 6 also shows that white women compared to black and Hispanic women, and married women in comparison to unmarried women show higher responses to this policy by reducing respectively 1.9 and 2.1 years in timing of their first births. Other heterogeneities regarding infant health outcomes of women over 35 years old including incidence of premature (<37 weeks of gestation), low birth weight (<2500 g and <1500 g), and cesarean-born infants as well as gestation and birth weight by education, race, and marital status of mothers are shown in Table A.2.

[17] Miller (2008) and Herr (2007) note that motherhood delay leads to a substantial increase in earning, wages and work hours per year delay. Supporting a human capital story, the advantage is largest for the college-educated women and those in professional and managerial occupations.

Table A.2 shows that PFL increases gestation in weeks and birth weight of black infants more that white and Hispanic infants. This is important because there is a big gap between rates of premature births among mothers from different racial groups. The National Center for Health Statistics (2014) reports that non-Hispanic black infants are about 50 percent more likely to be born premature than non-Hispanic white, and Hispanic infants. Risk of low birth weight among non-Hispanic black infants is also more than twice that of non-Hispanic white and Hispanic infants (NCHS, 2005). The higher impact of this policy on black infants helps to reduce the existing racial gap in gestation and birth weight of infants.[18]

Table A.3 shows the robustness of the results to using different samples and datasets. Using the Integrated Public Use Microdata Series (IPUMS – USA) data set, I check the robustness of the impact of the PFL of California on the timing of first births. PFL eligibility criteria requires women to have worked any usual hours during previous year (during pregnancy) to be qualified for receiving PFL benefits. The first row of Table A.3 shows the results for mothers with eldest child less than one year old who have worked any usual hours during the previous year. The second row of Table A.3 shows the results without limiting the sample to mothers with working any usual hours during previous year. Results from both samples are the same and verify the main estimates.

Table A.4 presents the results using IPUMS-USA data set and sample of mothers with youngest child less than one year old who have worked any usual hours during previous year. This sample includes mothers with eldest child less than one year old and also mothers with more than one child but with youngest child less than one year old. In order to avoid high potential heterogeneity among larger families, I limit this sample to mothers with at most three children. I also include a control variable for number of children.[19] Table A.4 also verifies the robustness of the main results.

[18] Higher educated women and white women also show higher response to PFL by reducing delivery using C-section method.

[19] Results are robust not limiting the sample by number of children.

Table A.5 presents robustness tests for differential time trends in the DID analysis. I checked for the placebo interactions between indicators of years 2001, 2002, 2006, and 2007 and an indicator for treatment state into the DID model. If there are any differential time trends between treatment and control states, then we may see spurious effects in the years prior or after the PFL enactment of California. Table A.5, presents the results for this specification check for women over 35 years old as this is the sample for which I find the strongest impact. Results suggest that for most of the cases there is no spurious effect prior or after the enactment of PFL, which strengthens the validity of the findings for age of mother at first births and other outcome variables including; infant health outcomes and employment. Table A.6 presents the robustness check using synthetic control states as the control group. Results shows, once again, that PFL of California has a significant causal effect on women over 35 years old by reducing the timing of first births, improving infant health outcomes, and finally increasing likelihood of attachment to the labor force.

VI. Conclusion

This paper investigates the impact of the Paid Family Leave (PFL) of California on the timing of first births and infant health outcomes. During the period of 1970 and 2012, the first births for women 35 years and older have increased for all races from 1.7 percent to more than 10 percent (NCHS, 2014). This paper provides evidence that PFL policy causes a reduction in the birth delay. This reduction happens through the change in the age composition of women with first births toward younger ones. Specifically, women over 35 years old respond significantly to the PFL policy by reducing 2 years in the timing of their first births. The occurrence of delayed childbearing is an increasing phenomenon and has been associated with an increased risk of poor pregnancy outcomes (Cnattingius et al., 1992; Cnattingius et al., 1993). Using a Difference in Difference (DID) methodology and Vital Statistics data from National Center for Health Statistics (NCHS), this paper also shows that PFL improves infant health outcomes of women at delayed childbearing by reducing incidence of low birth weight (<2500 g), premature (<37 weeks of gestation), and cesarean-born infants by 1.5%, 1.1%, and 3.1% respectively. The literature shows that women, especially with higher age at first birth, reveal more absenteeism from work and reduction in hours worked (Herr, 2008). I investigate the impact of this policy on labor market outcomes of new mothers. Results show that this policy has encouraged a return to work with a 5% increase in the likelihood of employment after childbirth for women over 35 years old. This result is important, because it shows that PFL policy reduces the speed of human capital depreciation of these women by increasing their attachment to the labor force after childbirth. The results are robust to a wide range of controls and robustness checks.

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Table 1: Summary Statistics

	All			Less than 35 years old			Over 35 years old		
Outcome variables	n	mean	sd	n	mean	sd	n	mean	sd
Age of mother at first birth	11,574,452	26.89431	5.208593	10,758,136	26.04318	4.312077	816,316	38.11127	2.061458
Premature (<37 weeks of gestation)	11,574,452	0.110192	0.313129	10,758,136	0.107005	0.30912	816,316	0.152189	0.359204
Gestation in weeks	11,574,452	38.79537	2.572117	10,758,136	38.82785	2.551269	816,316	38.36685	2.79777
LBW (<2500 g)	11,574,452	0.081655	0.273839	10,758,136	0.078845	0.269497	816,316	0.118687	0.32342
LBW (<1500 g)	11,574,452	0.015864	0.124949	10,758,136	0.0152	0.122348	816,316	0.024613	0.154943
BW (gr)	11,574,452	3261.968	596.7469	10,758,136	3266.735	591.0173	816,316	3199.131	664.5053
C-section	11,574,452	0.304788	0.460318	10,758,136	0.291601	0.4545	816,316	0.479537	0.499582
Control variables									
Mom has college	11,574,452	0.299022	0.45783	10,758,136	0.285352	0.451582	816,316	0.479181	0.499567
Mom has some college	11,574,452	0.188817	0.391364	10,758,136	0.192662	0.39439	816,316	0.138152	0.34506
Mom has high school or less	11,574,452	0.277197	0.447614	10,758,136	0.287219	0.452465	816,316	0.145115	0.352217
Mom is white	11,574,452	0.627884	0.483369	10,758,136	0.623347	0.484547	816,316	0.68768	0.46344
Mon is black	11,574,452	0.111112	0.314271	10,758,136	0.113056	0.316661	816,316	0.085489	0.279608
Mon is Hispanic	11,574,452	0.18	0.384187	10,758,136	0.184808	0.388142	816,316	0.116623	0.32097
Mom is married	11,574,452	0.663025	0.472676	10,758,136	0.650455	0.476826	816,316	0.82868	0.376788
Mom is Unmarried	11,574,452	0.336975	0.472676	10,758,136	0.349545	0.476826	816,316	0.17132	0.376788
Mom is 20-25 yrs old	11,574,452	0.358956	0.479694	10,758,136	0.386193	0.486876	-	-	-
Mom is 26-30 yrs old	11,574,452	0.303946	0.459959	10,758,136	0.327009	0.46912	-	-	-
Mom is 31-35 yrs old	11,574,452	0.172163	0.377522	10,758,136	0.185227	0.388481	-	-	-
Mom is 36-40 yrs old	11,574,452	0.060748	0.238868	-	-	-	816,316	0.861344	0.345587
Mom is 41-45 yrs old	11,574,452	0.009779	0.098404	-	-	-	816,316	0.138656	0.345587
Mom had less than 4 Prenatal visit	11,574,452	0.061866	0.240912	10,758,136	0.062845	0.242684	816,316	0.048958	0.21578
Mom not give Birth at hospital	11,574,452	0.007207	0.084589	10,758,136	0.007249	0.084831	816,316	0.006658	0.081324
Multiple Births	11,574,452	0.021136	0.143836	10,758,136	0.018906	0.136194	816,316	0.050516	0.219007
Infant is male	11,574,452	0.512661	0.49984	10,758,136	0.512682	0.499839	816,316	0.512383	0.499847

Note: Table 1 shows summary statistics for mothers with first live births aged 20 to 45 years, less than 35, and over 35 years old. Year 2004 and SDI states are dropped.
Sources: National Center for Health Statistics (NCHS) and Integrated Public Use Microdata Series (IPUMS – USA).

Table 2: DID Estimates for Age of Mother at First Birth

	(1)	(2)	(3)	(4)
CA*Post 2004	-0.0501**	-0.0655***	-0.0637***	-0.0644**
	(0.0202)	(0.0208)	(0.0225)	(0.0240)
Pre-Treatment Mean	27.5589	27.5589	27.5589	27.5589
Individual Controls	n	y	y	y
No TDI states	n	n	y	y
Synthetic Control	n	n	n	y
Time and State FE	y	y	y	y
State time trends	y	y	y	y

Note: Outcome variable is age of mother at first birth. Year 2004 is dropped from the sample as the PFL of California was enacted in July 2004. Column one, shows estimate without including individual characteristics. There are 12602784 number of observations. In column two, I include individual control (race, years of education, marital status, age groups, and mother's birth year) variables. In column three, I have dropped states with Temporary Disability Insurance (TDI) including; Rhode Island, New Jersey, New York and Hawaii with 11574452 number of observations. Finally, column 4 presents result using synthetic control states. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: National Center for Health Statistics (NCHS).

Table 3: DID Estimates for Age of Mother at First Birth
(Women <35 and >35 years old)

	(1)	(2)	(3)
	All	<35 years old	>35 years old
CA*Post 2004	-0.0637***	-0.0143	-2.0319***
	(0.0225)	(0.0132)	(0.2227)
Pre-Treatment Mean	27.5589	26.4495	38.2108

Note: Outcome variable is age of mother at first birth. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with the first live births. Column 1 shows estimate for all women, column 2 for women less than 35 years old and column 3 for women over 35 years old. Number of observations is 11574452 mothers with first live births. All estimates include individual control variables. All regressions include time and state fix effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: National Center for Health Statistics (NCHS).

Table 4: DID Estimates for Infant Health Outcomes

	(1)	(2)	(3)
	All	<35 years old	>35 years old
Premature	-0.0013	0.0003	-0.0155***
	(0.0013)	(0.0013)	(0.0017)
Pre-Treatment Mean	0.0877	0.0845	0.1183
Gestation in weeks	0.0001	0.0000	0.0005***
	(0.0001)	(0.0001)	(0.0001)
Pre-Treatment Mean	39.0511	39.0876	38.7030
LBW (<2500 g)	-0.0020*	-0.0009	-0.0114***
	(0.0011)	(0.0011)	(0.0013)
Pre-Treatment Mean	0.0677	0.0643	0.0999
LBW (<1500 g)	-0.0005	-0.0000	-0.0047***
	(0.0003)	(0.0003)	(0.0005)
Pre-Treatment Mean	0.0124	0.01179	0.0192
BW	0.0048	0.0037	0.0145***
	(0.0029)	(0.0029)	(0.0028)
Pre-Treatment Mean	3303.778	3309.048	3253.171
C-section	0.0008	0.0044*	-0.0314***
	(0.0023)	(0.0024)	(0.0032)
Pre-Treatment Mean	0.2787	0.2616	0.4420

Note: Outcome variables are premature (<37 weeks of gestation), gestation in weeks, low birth weight (<2500 g), extreme low birth weight (<1500 g), birth weight (gr), and C-section method of delivery for all mothers aged 20 to 45, mothers over 35 years old, and mothers less than 35 years old. Number of observations is 11574452 mothers with first live births. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with the first live birth. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: National Center for Health Statistics (NCHS).

Table 5: DID Estimates for Labor Market Outcomes for Women Over 35 with College Degree

	(1)	(2)	(3)
	Employed	Weeks worked	Hours worked
A. Mothers with babies of 1 month to 5 years old			
CA*Post 2004	0.0559***	0.0424	0.00401
	(0.00423)	(0.0271)	(0.00758)
Pre-Treatment Mean	0.7090	43.2181	35.2017
B. Mothers with babies of less than 1 year old			
CA*Post 2004	0.0259**	-0.0994***	0.0135
	(0.0107)	(0.0268)	(0.00989)
Pre-Treatment Mean	0.74251	42.7983	37.0967
C. Mothers with babies of 1 year old			
CA*Post 2004	0.0962***	0.0473	-0.00837
	(0.00750)	(0.0346)	(0.0129)
Pre-Treatment Mean	0.7518	43.3098	35.0925
D. Mothers with babies of 2 years old			
CA*Post 2004	0.0151	-0.0194	-0.0135
	(0.00980	(0.0280)	(0.0144)
Pre-Treatment Mean	0.7039	43.3699	35.9242

Note: Outcome variables are employment, logarithm of hours and weeks worked conditional on employment for mothers over 35 years old who have college degree. Year 2004 and TDI states are dropped. Panel A presents labor market outcomes of mothers with eldest child one month to 5 years old who have been eligible for PFL. Panels B, C, and D show the dynamic of labor market outcomes for mothers with babies less than one year old, one year old, and two years old who have been eligible for receiving PFL. All regressions include individual control variables, time and state fixed effects and State time trends. Number of employed women in panels A, B, C, and D are 719913, 100539, 116240, and 124975 respectively. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: Integrated Public Use Microdata Series (IPUMS – USA).

Table 6: DID Estimates for Heterogeneity of all Women and Women Over 35 Years Old

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Education			Race			Marital Status	
	College	Some College	High School & less	White	Black	Hispanic	Married	Unmarried
Panel A								
CA*Post 2004 (all)	-.1594***	-0.0511***	-0.0708***	-0.0624**	-0.1243***	-0.0561*	-0.1132***	0.0469
	(0.0375)	(0.0161)	(0.0197)	(0.0240)	(0.0287)	(0.0311)	(0.0217)	(0.0285)
Pre-Treatment Mean	30.9347	26.8310	25.0468	29.1126	26.0681	25.3566	28.7249	24.6904
Panel B								
CA*Post 2004	-2.5082***	-1.2995***	-1.1481***	-1.8949***	-1.4533***	-1.4895***	-2.1359***	-1.0612***
(+35 years old)	(0.1360)	(0.0763)	(0.0858)	(0.0919)	(0.0903)	(0.0808)	(0.1719)	(0.0858)
Pre-Treatment Mean	38.2192	38.2218	38.1565	38.2838	38.3229	38.0770	38.1648	38.4626

Note: Outcome variable is age of mother at first birth for all women aged 20 to 45 years old. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with first live births. Number of observations is 11,574,452 mothers with first live births. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: Sources: National Center for Health Statistics (NCHS).

Appendix:

Table A1: DID Estimates for Proportion of Women at Different Age Ranges

	(1)	(2)	(3)	(4)	(5)
	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44
CA*Post 2004	-0.00392	-0.00562	0.0695***	-0.0548***	-0.123***
	(0.00639)	(0.0122)	(0.0140)	(0.0172)	(0.0260)
Pre-Treatment Mean	0.4504	0.2673	0.1816	0.0828	0.0172

Note: Outcome variable is proportion of women at 5 years interval age groups at county level. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with first live births. There are 20854 counties in the sample. All estimates include control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: Sources: National Center for Health Statistics (NCHS).

Table A2: DID Estimates for Heterogeneity of Infant Health Outcomes for Women Over 35 Years Old

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All	Education>12	Education<=12	white	black	Hispanic	married	unmarried
Premature	-0.0155***	-0.0116***	-0.0117***	-0.0144***	-0.0146***	-0.0103***	-0.0107***	-0.0222***
	(0.0017)	(0.0015)	(0.0024)	(0.0022)	(0.0036)	(0.0018)	(0.0017)	(0.0025)
Pre-Treatment Mean	0.1183	0.1162	0.1293	0.1130	0.1714	0.1309	0.11618	0.13038
Gestation in weeks	0.0005***	0.0004***	0.0003***	0.0003***	0.0020***	0.0003***	0.00046***	0.00044***
	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.00008)	(0.00012)
Pre-Treatment Mean	38.7030	38.7319	38.5871	38.8237	38.0516	38.5506	38.7265	38.5715
LBW (<2500 g)	-0.0114***	-.0071***	-.0101***	-.0107***	-.0109***	-.0031**	-.0062	-.0200
	(0.0013)	(0.0010)	(0.0018)	(0.0013)	(0.0027)	(0.0012)	(0.00117)	(0.0019)
Pre-Treatment Mean	0.0999	0.0972	0.1090	0.0912	0.1691	0.1037	0.0972	0.1150
LBW (<1500 g)	-0.0047***	-0.0046***	-0.0011***	-0.0057***	-0.0026**	0.0004	-0.0043***	-0.00302***
	(0.0005)	(0.0004)	(0.00075)	(0.0005)	(0.0011)	(0.0005)	(0.00045)	(0.0008)
Pre-Treatment Mean	0.0192	0.0182	0.0219	0.0168	0.0503	0.0229	0.01804	0.0258
BW (g)	0.0145***	.0022	.0169***	.0075**	.0341***	.0044	.00438*	.03812***
	(0.0028)	(0.0017)	(0.0036)	(0.0036)	(0.0053)	(0.0027)	(0.0026)	(0.0044)
Pre-Treatment Mean	3253.171	3261.982	3219.233	3299.514	3044.799	3245.45	3259.828	3216.772
C-section	-0.0314***	-.0321***	-.0173***	-.0487***	-.0019	-.0064	-.0290***	-.02658***
	(0.0032)	(0.0025)	(0.0029)	(0.0028)	(0.0035)	(0.0049)	(0.00269)	(0.0025)
Pre-Treatment Mean	0.4420	0.4342	0.4773	0.4221	0.5210	0.4901	0.4391	0.4579

Note: Outcome variables are infant health outcomes for mothers over 35 years old with different socioeconomic characteristics. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with first live births. There are 11,574,452 mothers with first live births in the sample. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$. Sources: Integrated Public Use Microdata Series (IPUMS – USA) and U.S. Census Bureau.

Table A3: DID Estimates for Robustness check with IPUMS-USA Sample of Eldest Child Less than One Year Old

	(1)	(2)	(3)	(4)	(5)	(6)
	All	<35 yrs	>35 yrs	>35 yrs & College	>35 yrs & Some College	>35 yrs & High School & less
CA*Post 2004	-0.3806***	-0.1461***	-1.5852***	-1.8845***	-0.7842***	-0.6541***
(w working cond.)	(0.0374)	(0.0376)	(0.1223)	(0.1032)	(0.0698)	(0.0985)
Pre-Treatment Mean	29.7597	28.4995	38.4955	38.4701	38.6412	38.3703
CA*Post 2004	-0.3819***	-0.1618***	-1.5581***	-1.9899***	-0.8278***	-0.3818***
(w/o working cond.)	(0.0349)	(0.0355)	(0.1299)	(0.1090)	(0.0632)	(0.0907)
Pre-Treatment Mean	29.4579	28.0608	38.5524	38.4777	38.7616	38.6108

Note: Outcome variable is age of mother at first birth. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with the eldest child less than one year old. First row shows the estimates for mothers with first live births who have worked any usual hours during previous year or during their pregnancy. There are 75,321 mothers with first live births in this sample. Second row shows estimates without limiting sample to mothers who have worked any usual hours and includes 92,566 mothers with first live birth. Column one, two and three show estimates for all mother, mothers over 35, and mothers less than 35 years old. Column four, five, and six show results for new mothers over 35 years old with college degree, some college and high school or less respectively. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: Integrated Public Use Microdata Series (IPUMS – USA).

Table A4: DID Estimates for Robustness Check with USA-CPS Sample of Youngest Child

	(1)	(2)	(3)	(4)	(5)	(6)
	All	<35 yrs	>35 yrs	>35 yrs & College	>35 yrs & Some College	>35 yrs & High School & less
CA*Post 2004	-0.1950***	0.0094	-1.0718***	-1.4188***	-0.6194***	-0.2208***
	(0.0285)	(0.0295)	(0.1013)	(0.0894)	(0.0545)	(0.0685)
Pre-Treatment Mean	30.7758	29.0823	38.5822	38.4909	38.6260	38.8023

Note: Outcome variable is age of mother at first birth. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with the youngest child less than one year old who have worked any usual hours during previous year or during their pregnancy. This sample includes 165,222 observations. I investigate the impact of the PFL of California on age of mother at first birth. Column one shows estimate for all women aged 20 to 45 years old. Column two and three show results for women over 35 and less than 35 years old. Column four, five, and six present results for mothers over 35 years old with college degree, some college and high school or less respectively. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: Integrated Public Use Microdata Series (IPUMS – USA).

Table A5: DID Estimates for Falsification Test for Women Over 35 Years Old

	(1)	(2)	(3)	(4)	(5)
	Age of mom at first birth	premature	LBW (<2500 g)	C-section	Employment
2001	-0.0069	-.0038*	0.0003	0.0026	0.0396
	(0.0088)	(0.0022)	(0.0024)	(0.0037)	(0.1811)
2002	-0.0169**	-0.0031	-0.0013	-0.0035	-0.0198
	(0.0082)	(0.0020)	(0.0014)	(0.0037)	(0.0904)
2006	0.0122	.0027	0.0008	-0.0086	-0.0533
	(0.0102)	(0.0016)	(0.0018)	(0.0142)	(0.0491)
2007	0.0126	-0.0023	-0.0024*	-0.0086	-0.0295
	(0.0152)	(0.0022)	(0.0013)	(0.0142)	(0.0360)

Note: Outcome variable is age of mother at first birth, premature (<37 weeks of gestation), low birth weight (<2500 g), C-section method of delivery, and employment for mothers over 35 years old. Year 2004 and TDI states are dropped. Also, sample is limited to mothers with first live births. I test for placebo year of enactment of PFL for different years. This table shows falsification test when I limit time frame to either pre 2004 or post 2004 for investigating placebo interactions of 2001, 2002, and 2006, and 2007 respectively. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Sources: National Center for Health Statistics (NCHS).

Table A6: DID Estimates using Synthetic Control Method

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Age of mom at first birth	premature	Gestation in weeks	LBW (<2500 g)	LBW (<1500 g)	BW	C-section	Employment
All	-0.0644**	-0.0009	0.0001**	-0.0017	-0.0003	0.0032	0.0008	0.0107
	(0.0240)	(0.0011)	(0.0001)	(0.0019)	(0.0003)	(0.0042)	(0.0023)	(0.0172)
Less 35	0.1571***	0.0002	0.0000	-0.0007	0.0001	0.0019	0.0044*	0.0247
	(0.0375)	(0.0011)	(0.0001)	(0.0019)	(0.0003)	(0.0042)	(0.0024)	(0.0233)
Over 35	-1.9915***	-0.0084***	0.0004***	-0.0107***	-0.0040***	0.0145**	-0.0314***	0.0467**
	(0.2371)	(0.0019)	(0.0001)	(0.0015)	(0.0005)	(0.0049)	(0.0032)	(0.0194)

Note: Outcome variable is age of mother at first birth, premature (<37 weeks of gestation), gestation in weeks, low birth weight (<2500 gr and <1500gr), Birth weight, C-section method of delivery, and employment for mothers over 35 years old. TDI states are dropped. Also, sample is limited to mothers with first live births. This table shows the results for main outcome variables using synthetic control method. All estimates include individual control variables. All regressions include time and state fixed effects and State time trends. Standard errors are clustered at the state level and are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.
Sources: National Center for Health Statistics (NCHS), and Integrated Public Use Microdata Series (IPUMS – USA).

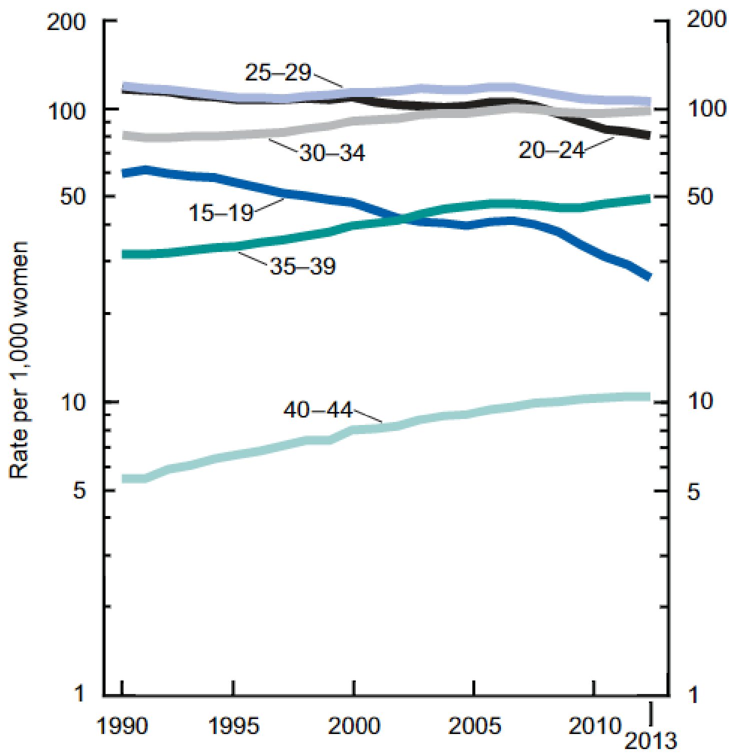

Figure 1: Birth rates by selected age groups of mothers (Rates are plotted on a logarithmic scale.)
Source: CDC/NCHS, National Vital Statistics System

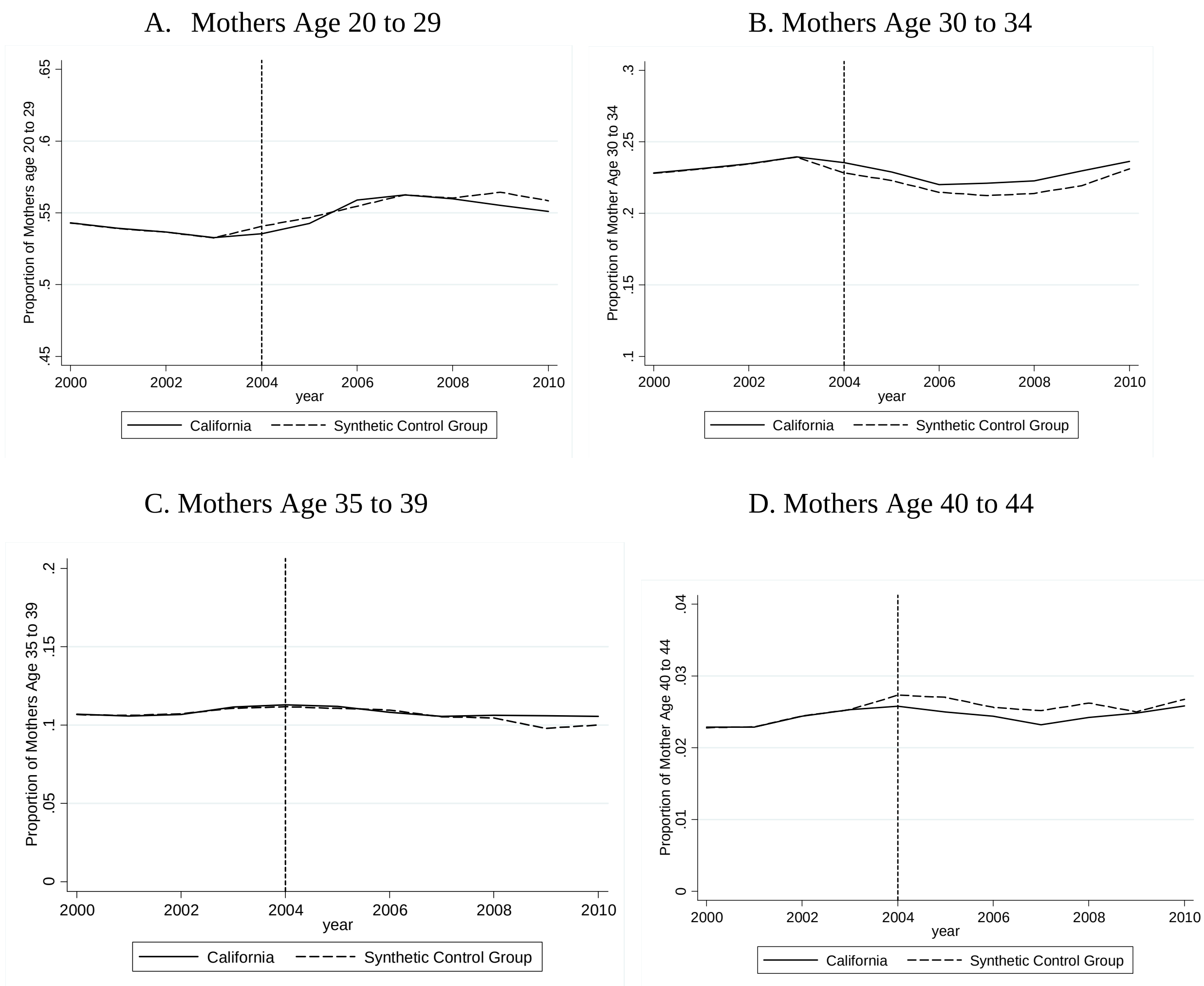

Figure 2: Trends of California vs. Synthetic California in Proportion of Mothers at Different Age Groups Including age 20 to 29 (A-top left), age 30 to 34 (B-top right), age 35 to 39 (C-bottom left), age 40 to 44 (D-bottom right)