EFFECT OF PAID FAMILY LEAVE POLICY ON LABOR MARKET OUTCOMES OF MOTHERS

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# **Abstract**

This study reproduces and extends the work of Tanya Byker (2016). Her findings on the positive effect of paid family leave on labor-force participation and employment as well as the negative effect on unemployment are reproduced and extended across a further range of time periods. The evidence presented in this paper supports her hypothesis that paid family leave indeed has the potential to increase the labor-force participation of women in the months surrounding childbirth, especially for women without college degrees. Testing robustness of estimates to weighting yields similar patterns of labor-market outcomes for both weighted and unweighted regressions, suggesting correct model specification.

Extension of Byker’s regressions to mothers of different occupational groups reveals differential effects of paid leave policy. While analysis women in management occupations as well as women in office and administrative support roles yields estimates mirroring those of the full sample, analysis of women in education, training, and library occupations reveals contrary effects of paid family leave policy. These results suggest that occupation is an important factor in determining the effect of paid family leave policy on labor-market outcomes.

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I. Introduction

Paid family leave policies have the potential to increase labor-force attachments and reduce career interruptions, contributing to the closing of the gender earnings gap. Tanya Byker (2016) estimates the impact of the California and New Jersey paid family leave policies on these labor-market outcomes. Using data from the Survey of Income and Program Participation (SIPP), Byker conducts a difference-in-difference analysis comparing labor-force participation and employment of women who gave birth in states that enacted a paid family leave policy (California and New Jersey) to women who gave birth in control states (Florida, New York, and Texas). She finds a statistically significant positive effect of paid family leave policies on labor-force participation and employment of women without college degrees.

In this paper, I reproduce Byker’s analysis, testing the robustness of her findings as well as well as extending tests for significance across a greater range of time periods. Based on her hypothesis that paid family leave policies have greater effect on women with less education due to less prior access to paid family leave, I hypothesize that the policy might have differential effects based on occupational group. To test this hypothesis, I matched data on occupation from the SIPP to the individuals in Byker’s sample. I then divide the sample into occupational groups and conduct the difference-in-difference analysis on white-collar workers, blue-collar workers, and individual occupational groups. To examine more detailed differences between effects of paid family leave on workers of different occupations, I report estimates of regressions run on three distinct occupational groups.

I reproduce Byker’s findings on the positive effect of paid family leave on labor-force participation and employment as well as the negative effect on unemployment of women without college degrees. I add detail on the time frames for which this effect is significant, finding additionally significant effects not reported in her work. I find her estimates are robust to weighting. Finally, I find that while the analysis of women in management occupations as well as women in office and administrative support roles yields estimates mirroring those of the full sample, analysis of women in education, training, and library occupations reveals contrary effects of paid family leave policy.

II. Policy Landscape

Since 1993, eligible US workers have had access to 12 weeks of unpaid leave under the Family and Medical Leave Act (FMLA). However, due to firm size and work history requirements, eligibility is far from universal, and typical use is even smaller. In 2012, the Department of Labor estimated that fewer than 60% of workers nationwide were eligible for FMLA leave and only 16% of those eligible workers actually took FMLA leave (Klerman, Daley, and Pozniak 2012). It is perhaps because of the low usage (or the meager benefits) that previous studies have found no effect of FMLA on mothers’ employment outcomes (Han, Ruhm, and Waldfogel 2009).

Enacted in September 2002, the California Paid Family Leave legislation (CA-PFL) went into effect July 2004. Prior to the enactment of the CA-PFL, California mothers were covered by a Temporary Disability Insurance program (TDI) which typically provides mothers with six weeks of compensated leave to be used during pregnancy or immediately after childbirth. The state’s TDI program uses the same benefit formula as the CA-PFL, providing 55% of base pay up to a cap. California’s TDI program, however, provides benefits only to mothers in the four weeks before birth and for six weeks afterward. Under the CA-PFL, eligible mothers and fathers are both entitled to 6 weeks of paid leave, providing 55% of base pay constrained by a cap on payment ($1,163 per week in 2014 and $1,252 in 2019)[[1]](#footnote-1), with mothers additionally entitled to the benefits of the TDI. The programs are coordinated such that mothers may take leave under the CA-PFL immediately following leave under the TDI.

Officially entitled the Family Temporary Disability Leave law, the New Jersey Paid Family Leave legislation (NJ-PFL) came into effect in July 2009. Like California, New Jersey’s Paid Family Leave program extends existing paid compensation (of 2/3 of weekly pay up to a cap) available to mothers in the 4 weeks before birth and 6 weeks afterward. The NJ-PFL grants 6 weeks of paid leave to eligible mothers and fathers, providing 2/3 of average weekly pay up to a set maximum that has varied over time ($643 in per week in 2014)[[2]](#footnote-2). Eligible workers are those individuals who have worked at least 20 calendar weeks in New Jersey or who have earned at least $7,150 in the 12 months preceding requested leave.

Under both policies, workers may take leave within 12 months of birth, and leave may be taken concurrently or intermittently. Both policies are funded by a payroll tax on state workers.

III. Literature Review

In addition to the work of Tanya Byker upon which this paper is primarily based, a literature of other work has helped to inform and contextualize this analysis. Rossin-Slater, Ruhm, and Waldfogel (2013) estimate the effect of the CA-PFL on leave-taking of mothers following childbirth, as well as their subsequent labor market outcomes. The authors theorize that the policy will increase rates of leave-taking among California mothers, however the predicted effect on employment is ambiguous. If the increase of leave-taking comes primarily from mothers who would otherwise have continued employment, the policy would result in a decrease in work but no change in employment. If the increase of leave-taking comes primarily from mothers who would otherwise have terminated employment, the policy would result in an increase in mothers’ employment in the short-term, with possible positive effects on mothers’ employment in the medium and long-term.

To estimate the impact of the CA-PFL, Rossin-Slater et al. utilize difference-in-differences estimation using yearly data from 1999 to 2010 collected in the March Current Population Survey. The authors find that the CA-PFL doubled use of maternity leave from three weeks on average to six weeks on average. Although they find no statistically significant effect, point estimates suggest that the CA-PFL could indeed increase medium-term employment rates of mothers. Rossin-Slater et al. do however find a statistically significant 10 to 17 percent increase in the usual weekly work hours of employed mothers of one-to-three year-old children. The authors propose that this increase could be a result of increased job continuity and the longer work hours associated with the accumulation of firm-specific human capital. They acknowledge however that the mechanism for the increase in work hours is not clear from their study.

Baum and Ruhm (2014) use the 1997 cohort of the National Longitudinal Survey of Youth to investigate the effect of the CA-PFL on various labor market outcomes. The authors find that the CA-PFL raised leave-taking on average by one week for fathers and three weeks for mothers. According to their analysis, the authors find that the largest effect of the CA-PFL on mothers’ leave-taking occurs 6 to 14 weeks after birth. The finding is intuitive, as the CA-PFL can be combined with California’s preexisting Temporary Disability Insurance program, which provides six weeks of paid leave to mothers following childbirth. Baum and Ruhm also find that the policy both increased the probability that a mother has returned to work in the year after birth and raised mothers’ weekly hours of work in the second year after birth. They do not, however, find a statistically significant effect upon mothers’ wages. Baum and Ruhm, similarly to Rossin-Slater et al., hypothesize that the medium-term increases in employment and work hours reflect increased job continuity among mothers.

Das and Polachek (2015) use data from the March Current Population Survey to explore the impact of the CA-PFL on labor force participation and unemployment outcomes. Using a difference-in-difference framework, the authors find that the CA-PFL increased the labor-force participation of young women in California by about 1.5 percentage points relative to other states. Das and Polachek also investigate unintended negative consequences of the law, and find that the policy resulted in an increase in unemployment of young women of between 0.3 and 1.5 percentage points. They also find an increase in average duration of unemployment for young women by about 4 to 9 percent.

Curtis, Hirsch, and Schroeder (2016) use data from the Quarterly Workforce Indicators to estimate the effect of the CA-PFL on labor market outcomes by examining employment flows and wage offers among new hires. The authors find that although the CA-PFL had little effect on earnings for young women in California, the policy did result in increased labor market churn (defined by the authors as separations, hires, and recalls).

Bartel et al. (2018) use data from the 2000 Census and the 2000 to 2013 waves of the American Community Survey to investigate the effect of the California Paid Family Leave law on fathers’ leave-taking. The authors find that the policy raised leave-taking rates of fathers by 46 percent, although fathers still on average only take 1.5 weeks out of the total 6 weeks of leave for which they are eligible under CA-PFL. In contrast, mothers on average take 9 weeks out of the 12 total weeks for which they are eligible under the combined Temporary Disability Insurance policy and the CA-PFL.

IV. Theory

The California and New Jersey paid family leave policies contain aspects of both a payroll tax and employer mandate. The monetary cost of wage replacement is funded by a payroll tax on workers, while the opportunity cost to the firm of employee time spent on leave fits the model of employer mandate. No matter how the policy is framed, as Jonathan Gruber puts it, “the general distinction between payroll taxes and mandates is a false one” (2010). The labor-market effects depend upon tax/benefit linkages, not the particular legislative frame of the policy. In both a payroll tax and employer mandate, there is a cost borne and a benefit received, with incidence of each determined by the elasticities of labor supply and demand.

According to the simple model, the payroll tax creates a wedge between labor supply and demand, reducing both wages and employment of workers, and creating deadweight loss. The conferral of benefits to workers, monetary or otherwise, increases the total value of employment for workers and accordingly increases labor supply and reduces the wedge imposed by the tax. Except for the special case in which employees value benefits at exactly the value of lost wages, there will remain a residual wedge between supply and demand, resulting in lower employment than equilibrium in the absence of the tax.

In the case of the California and New Jersey paid family leave policies, the simple model is complicated by the fact that although the tax is equally imposed upon all workers, the benefits gained are dependent upon worker characteristics. As found by Slater et al. (2012), and Baum and Ruhm (2014), women take paid family leave for longer periods of time and in greater proportion than men. It is possible that young women value the benefits granted by the CA-PFL and NJ-PFL in excess of the cost they bear, leading to an increased labor supply of young women and higher employment compared to the prior equilibrium.

In addition to the monetary cost of payroll taxation, it is important to consider the opportunity cost of employee leave. Although the costs may not be significant in many cases, firms may be required to hire temporary, less productive, replacement labor. If the employee’s firm-specific skills depreciate during leave, firms may also have to bear the cost. Because young women are most likely to take family leave, firms may discriminate against hiring them in favor of men and older women. The combination of increased labor-force participation of young women and decreased demand for their labor could result in increased unemployment of young women (Das and Polachek 2015).

Paid family leave may have additional effects upon labor-market outcomes of mothers in particular. The benefits of the policy may only be claimed if the individual remains attached to her employer during pregnancy and after childbirth, incentivizing job continuity of mothers. As previous studies have concluded, job continuity is an important factor in the later employment and wages of mothers (Waldfogel 1998). The positive effect of paid family leave policies on job continuity of mothers may therefore lead to positive impacts on labor-force participation, employment, and wages of mothers that are independent of the standard labor-market effects of a payroll tax and benefit.

In view of the various possible shifts in supply and demand it is unclear where the post-policy equilibrium of mothers’ labor-force participation and employment will land. To empirically investigate the effects of California and New Jersey’s paid family leave program on mothers’ labor-market outcomes in various periods of time relative to childbirth, I follow the methodology outlined by Byker (2016).

V. Data

The data in this paper originates from four panels of the Survey of Income and Program Participation, described in Table 1. Each panel covers a national stratified sample of the U.S. civilian non-institutionalized population and uses a 4-month recall period, with respondents divided into rotation groups with each group interviewed during one month of the four-month period. Each four-month period constitutes a wave of the survey. As respondents to the survey are recorded over differing lengths of time, the dataset constitutes an unbalanced panel.

Table 1: Panel Years of Data

|  |  |  |  |
| --- | --- | --- | --- |
| SIPP Panel | Number of Waves | First Month | Last Month |
| 1996 | 12 | Dec 1996 | Feb 2000 |
| 2001 | 8 | Oct 2000 | Dec 2003 |
| 2004 | 12 | Oct 2003 | Dec 2007 |
| 2008 | 16 | May 2008 | Dec 2013 |

Using data from the four panels, Byker constructed a sample of 2,817 unique persons and 103,624 person-month observations containing all women aged 24 to 45 who gave birth during the time coverage of the SIPP panel and lived within one of the treatment states (California and New Jersey) or control states (Florida, New York, and Texas). By connecting information on the date of birth of children with information identifying their mothers, Byker was able to generate a variable identifying the month of childbirth for each mother. Using her constructed sample and the full SIPP dataset, I appended additional information on employment to each observation. In both Byker’s and my own analysis, individuals that moved states are counted in both state categories.

Table 2: Unique Individual Counts by State and Year[[3]](#footnote-3)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | California | Florida | New Jersey | New York | Texas |  |
| Year |  |  |  |  |  | Total |
| 1995 | 62 | 23 | 19 | 43 | 48 | 195 |
| 1996 | 319 | 105 | 76 | 166 | 211 | 873 |
| 1997 | 318 | 107 | 74 | 162 | 216 | 873 |
| 1998 | 303 | 97 | 68 | 151 | 208 | 823 |
| 1999 | 283 | 87 | 64 | 140 | 185 | 758 |
| 2000 | 282 | 95 | 58 | 145 | 207 | 787 |
| 2001 | 207 | 76 | 48 | 106 | 149 | 583 |
| 2002 | 201 | 77 | 44 | 96 | 144 | 562 |
| 2003 | 341 | 139 | 91 | 162 | 234 | 963 |
| 2004 | 204 | 99 | 59 | 103 | 143 | 604 |
| 2005 | 201 | 96 | 56 | 103 | 146 | 597 |
| 2006 | 197 | 91 | 52 | 98 | 140 | 576 |
| 2007 | 127 | 69 | 27 | 71 | 80 | 372 |
| 2008 | 222 | 86 | 74 | 86 | 150 | 618 |
| 2009 | 225 | 85 | 75 | 91 | 160 | 631 |
| 2010 | 220 | 86 | 73 | 90 | 163 | 630 |
| 2011 | 218 | 83 | 69 | 83 | 161 | 612 |
| 2012 | 148 | 51 | 41 | 52 | 103 | 395 |
| Total | 1002 | 389 | 276 | 485 | 707 | 2817 |

Information on labor-force participation and employment is derived from a categorical SIPP variable encoding the employment status of an individual for a given month. Following Byker’s methodology, I reduced this information into three binary variables describing whether a person is in or out of the labor-force, employed or unemployed, and searching for work or not searching for work[[4]](#footnote-4). Observation counts and categorical proportions of the total sample are reported in Table 3.

Table 3: Employment Status for Reference Month

|  |  |  |
| --- | --- | --- |
| Employment / Labor-force Status | Person-Months | Proportion |
| With a job entire month, worked all weeks (includes individuals on paid leave) | 57,373 | 55.4% |
| With a job entire month, absent from work without pay 1+ weeks, absence not due to layoff | 2,595 | 2.51% |
| With a job entire month, absent from work without pay 1+ weeks, absence due to layoff | 450 | 0.43% |
| With a job at least 1 but not all weeks, no time on layoff and no time looking for work | 1148 | 1.11% |
| With a job at least 1 but not all weeks, remaining weeks on layoff or looking for work | 523 | 0.51% |
| No job all month, on layoff or looking for work all weeks | 3,323 | 3.21% |
| No job all month, at least one but not all weeks on layoff or looking for work | 440 | 0.44% |
| No job all month, no time on layoff and no time looking for work. | 37,756 | 36.4% |
| Missing data | 16 | 0.02% |

The SIPP allows for information on two possible jobs to be recorded for any given month. In the case of an individual holding multiple jobs during a reference month, the job by which the individual earned the most money over the four-month period will be listed as job 1. The job that provided the next most earnings in the four-month period will be listed as job 2. In order to simplify the analysis, only data on job 1 was used in this paper, and each individual was placed into occupation groups according to job 1.

An important aspect of the data is that the SIPP changed the encoding of occupations after the 2001 panel. The 1996 and 2001 panels of the SIPP encode occupations according to the 1990 Census Bureau occupational classification scheme, while the 2004 and 2008 panels utilize the classification scheme from the 2000 Census. This means that pre-2004 panel occupations cannot be directly matched to 2004 and later panel occupations. However, both types of occupation coding systems could still be placed into general occupation groups (specified by the Standard Occupational Classification system). Individuals were placed into occupation groups according to their occupation most recently recorded before birth.[[5]](#footnote-5) I then codified each occupation group as either ‘white collar’ or ‘blue collar’. The results of this processing are reported in Table 4.

Table 4: Occupation Group Summary Statistics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pre-birth Occupation Group | White Collar / Blue Collar | Count | Proportion | Percent College Graduate |
| Management | White Collar | 131 | 7.06% | 51.1% |
| Business and Finance | White Collar | 86 | 4.63% | 64.8% |
| Computer Science and Mathematics | White Collar | 38 | 2.05% | 80.5% |
| Architecture and Engineering | White Collar | 24 | 1.29% | 78.3% |
| Life, Physical, And Social Science | White Collar | 16 | 0.86% | 80.0% |
| Community and Social Service | White Collar | 43 | 2.32% | 81.1% |
| Law | White Collar | 20 | 1.08% | 68.9% |
| Education, Training, and Library | White Collar | 195 | 10.5% | 79.2% |
| Arts, Design, Entertainment, Sports | White Collar | 28 | 1.51% | 81.9% |
| Healthcare Practitioners and Technicians | White Collar | 169 | 9.12% | 61.3% |
| Healthcare Support | White Collar | 81 | 4.37% | 12.7% |
| Sales and Related Occupations | White Collar | 190 | 10.2% | 41.4% |
| Office and Administrative Support | White Collar | 424 | 22.9% | 20.8% |
| Protective Service | Blue Collar | 78 | 0.70% | 28.5% |
| Food Preparation and Serving | Blue Collar | 89 | 4.80% | 6.00% |
| Building/Grounds Cleaning and Maintenance | Blue Collar | 54 | 2.91% | 6.80% |
| Personal Care and Service | Blue Collar | 78 | 4.2% | 14.3% |
| Farming, Fishing, and Forestry | Blue Collar | 25 | 1.35% | 1.63% |
| Construction and Extraction | Blue Collar | 6 | 0.32% | 0.00% |
| Installation, Maintenance, and Repair | Blue Collar | 5 | 0.27% | 12.7% |
| Production | Blue Collar | 80 | 4.31% | 11.2% |
| Transportation and Material Moving | Blue Collar | 20 | 1.08% | 10.5% |
| Unclassified | N/A | 39 | 2.11% | N/A |
|  | Total Unique Individuals | 1854 |  |  |

To investigate whether the segmentation by educational attainment and the segmentation by occupation type capture the same subpopulations, I cross tabulate the two categories and report the results in Table 5 and Table 6. The cross tabulations in the following two tables indicate that while there is overlap, the two segmentations indeed divide the sample differently.

Table 5: Person-Month Frequency Table for Education / Employment Type

|  |  |  |  |
| --- | --- | --- | --- |
|  | White collar | Blue collar | Totals |
| Less than College | 29101 (69.2%) | 12722 (30.8%) | 41823 (100%) |
| College Educated | 25484 (95.1%) | 1208 (4.9%) | 26692 (100%) |
| Totals | 54585 | 13930 | 68515 |

Table 6: Person Frequency Table for Education / Employment Type

|  |  |  |  |
| --- | --- | --- | --- |
|  | White collar | Blue collar | Totals |
| Less than College | 807 (70.4%) | 340 (29.6%) | 1147 (100%) |
| College Educated | 685 (94.9 %) | 37 (5.1%) | 722 (100%) |
| Totals | 1445 | 370 | 1815 |

VI. Methodology

*Yits* : Labor-force outcome for woman *i* living in state *s* in period *t*

αi : Individual fixed effects

*λt* : Year Indicators

*θs* : State Indicators

: Months Since Birth Indicators[[6]](#footnote-6)

Equation 1: Model Specification

The specification above is a variation of generalized difference-in-difference regression used by Byker to estimate the effect of the paid family leave policy on labor-market outcomes of mothers. Specifically, the specification is used to estimate the effect of the paid family leave policy on three labor-market outcomes: probability of participating in the labor-force, probability of being employed, and probability of unemployment / looking for work.[[7]](#footnote-7) The individual fixed effects control for confounding from unobserved characteristics of each individual. The interacted year and state indicators control for time trends in each state that may confound the estimation of the effect of the policy on the outcome of interest. The year X months since birth dummies control for differences in the pattern of the outcome variable across years, while the state X months since birth dummies control for differences in the pattern of the outcome variable across states. Each of the βj coefficients represents the individual effect of the policy on the probability of the labor-market outcome for each month, controlling for the effects on all other months.

Following the specification outlined by Byker (2016). I estimate Equation 1 for each of the five sample groups of interest: full sample, college educated and non-college educated, blue-collar and white-collar, with labor-force participation as the dependent variable. I then repeat the process using the ‘working’ and ‘looking for work’ variables. The point estimates of the interacted ‘months since birth’ indicators and the policy variable are visualized in the various figures of this paper. As the effect of the policy for a given month is unlikely to be significantly different from the effect of the policy for any other given month, I follow Byker’s method of using joint tests for significance. In order to provide more detailed information on the effect of paid family leave policy across various time windows, I analyze 15 distinct windows in addition to Byker’s original reported window. For each of these windows, I report the probability values for joint tests of significance, the sums of the coefficients, and the probability values for tests of significance for the sums of the coefficients. These results are reported in section VII.

In her 2016 study, Byker estimates Equation 1 weighted by person weights provided by the Survey of Income and Program Participation. Although ordinary least squares estimation is unbiased even in the presence of heteroscedasticity, weighted least squares can in some cases improve the efficiency of the estimation. Considering the small sample sizes used in this study, the efficiency of the estimator is an important consideration. However, if point estimates obtained are sensitive to weighting, it could signify misspecification of the model. In order to check the robustness of coefficients, I repeat her estimations without weighting. Figures comparing point estimates for both the weighted and unweighted regressions are reported in section VIII. Tables containing values of point estimates for weighted and unweighted regressions are reported in the Appendix.

Finally, in section IX, I report results of regressions run on three occupational groups: management occupations, office and administrative support occupations, and education, training, and library occupations. I chose to report results from these three occupational groups both because of their relatively large sample sizes compared to other occupational groups and because of the insight of the findings. Like previously in the paper, I report figures of point estimates, probability values of tests for joint significance, and probability values of tests of sums of coefficients.

The difference-in-difference specification used in this study implies a number of assumptions about the data. First and foremost is the assumption of parallel trends. The parallel trends assumption is violated if there exists unobserved time-varying confounding. Essentially, for the estimates to be unbiased, the assumption must hold that the treatment group would have followed a parallel time trend as the control group if the treatment had not taken place. As we cannot observe the counterfactual, we have no empirical method to confirm this assumption.

Another important assumption is the exogeneity of treatment. The estimation is unbiased only if the assignment of treatment is not caused in any way by the outcome variable. In this case, it is likely that the assumption holds, as is unlikely that policy-makers enacted paid leave policies as a result of any particular pattern of mothers’ labor force participation.

Unbiased difference-in-difference estimation requires the assumption that pre-treatment outcomes are not affected by treatment. That is, we assume that mothers do not anticipate the implementation of a paid leave policy and adjust their labor force participation accordingly. It is quite possible that this assumption is violated in this analysis. Mothers expecting shortly before the implementation of a paid leave policy, who would otherwise have dropped out of the labor-force, may have stayed in the labor-force anticipating eligibility for paid leave once the policy came into effect. However, if the proportion of mothers who were pregnant in the 9 months before the implementation of a paid leave policy is small compared to the total sample, the effect on the DiD coefficients is likely to also be small.

# **VII. Reproduction and Extension Results**

## A. Labor Force Participation

Figure 1 depicts the point estimates of the effect of paid family leave policy on labor-force participation estimated via Equation 1.[[8]](#footnote-8) Table 7 contains probability values for the joint significance of paid family leave policy over 15 distinct windows. Table 8 contains the sums of the months since birth X policy coefficients for each window. These sums represent the expected value of increase or decrease in person-months of labor-force participation. Table 9 contains the probability values for the significance of the coefficient sums. For example, for the window of three months before childbirth to three months after childbirth, paid family leave policy is estimated to increase labor-force participation of mothers without a college degree by .79 person-months. The joint test of significance of coefficients for mothers without a college degree in this window yields a probability value of 0.02, and the test of significance of coefficient sums yields a probability value of 0.17.

Figure 1: Effect of Paid Family Leave Policy on Labor-force Participation



Table 7: LFP P-Values of Joint Tests: Months Since Birth \* Policy Coefficients[[9]](#footnote-9)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.26 | 0.33 | 0.12 | 0.42 | 0.20 |
| -15 to -9 | 0.22 | 0.52 | 0.36 | 0.28 | 0.31 |
| -12 to -6 | 0.36 | 0.55 | 0.55 | 0.12 | 0.36 |
| -9 to -3 | 0.16 | 0.71 | 0.27 | 0.02\*\* | 0.82 |
| -6 to 0 | 0.12 | 0.95 | 0.03\*\* | 0.11 | 0.31 |
| -3 to +3 | 0.04\*\* | 0.75 | 0.02\*\* | 0.17 | 0.16 |
| 0 to + 6 | 0.16 | 0.51 | 0.25 | 0.36 | 0.14 |
| +3 to +9 | 0.55 | 0.56 | 0.68 | 0.59 | 0.36 |
| +6 to +12 | 0.41 | 0.62 | 0.49 | 0.59 | 0.34 |
| +9 to +15 | 0.13 | 0.56 | 0.20 | 0.31 | 0.51 |
| +12 to + 18 | 0.15 | 0.63 | 0.13 | 0.46 | 0.51 |
| +15 to +21 | 0.24 | 0.93 | 0.14 | 0.68 | 0.65 |
| +18 to +24 | 0.29 | 0.72 | 0.24 | 0.63 | 0.35 |
| -17 to 0 | 0.11 | 0.58 | 0.01\*\* | 0.08\* | 0.14 |
| 0 to 24 | 0.05\* | 0.63 | 0.07\* | 0.37 | 0.18 |

Table 8: LFP Sums Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.25 | -0.03 | 0.32 | 0.08 | 1.03 |
| -15 to -9 | 0.23 | -0.19 | 0.30 | 0.10 | 0.90 |
| -12 to -6 | 0.19 | -0.22 | 0.19 | 0.18 | 0.35 |
| -9 to -3 | 0.34 | -0.15 | 0.39 | 0.45 | 0.37 |
| -6 to 0 | 0.58 | -0.12 | 0.75 | 0.65 | 0.70 |
| -3 to +3 | 0.55 | -0.34 | 0.79 | 0.46 | 0.64 |
| 0 to + 6 | 0.43 | -0.43 | 0.62 | 0.29 | 0.45 |
| +3 to +9 | 0.25 | -0.41 | 0.32 | 0.19 | 0.04 |
| +6 to +12 | 0.12 | -0.52 | 0.15 | 0.17 | -0.20 |
| +9 to +15 | 0.12 | -0.65 | 0.17 | 0.19 | -0.48 |
| +12 to + 18 | 0.25 | -0.60 | 0.31 | 0.25 | -0.40 |
| +15 to +21 | 0.27 | -0.62 | 0.37 | 0.29 | -0.03 |
| +18 to +24 | 0.21 | -0.56 | 0.32 | 0.30 | 0.49 |
| -17 to 0 | 0.91 | -0.35 | 1.14 | 0.78 | 1.84 |
| 0 to 24 | 0.90 | -1.88 | 1.26 | 0.90 | 0.38 |

Table 9: LFP P-Values of Joint Tests for Significance of Sums

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.18 | 0.90 | 0.24 | 0.70 | 0.08\* |
| -15 to -9 | 0.39 | 0.54 | 0.44 | 0.76 | 0.22 |
| -12 to -6 | 0.53 | 0.55 | 0.68 | 0.62 | 0.65 |
| -9 to -3 | 0.33 | 0.71 | 0.45 | 0.26 | 0.66 |
| -6 to 0 | 0.13 | 0.79 | 0.18 | 0.12 | 0.44 |
| -3 to +3 | 0.18 | 0.51 | 0.17 | 0.32 | 0.52 |
| 0 to + 6 | 0.32 | 0.47 | 0.30 | 0.57 | 0.67 |
| +3 to +9 | 0.59 | 0.54 | 0.61 | 0.72 | 0.97 |
| +6 to +12 | 0.81 | 0.47 | 0.82 | 0.76 | 0.86 |
| +9 to +15 | 0.82 | 0.41 | 0.80 | 0.75 | 0.69 |
| +12 to + 18 | 0.65 | 0.47 | 0.67 | 0.69 | 0.74 |
| +15 to +21 | 0.64 | 0.48 | 0.63 | 0.66 | 0.98 |
| +18 to +24 | 0.72 | 0.54 | 0.69 | 0.65 | 0.69 |
| -17 to 0 | 0.21 | 0.69 | 0.29 | 0.34 | 0.31 |
| 0 to 24 | 0.61 | 0.47 | 0.60 | 0.65 | 0.92 |

## B. Employment

Figure 2 illustrates the point estimates of the effect of paid family leave policy on employment of mothers. Table 10 contains probability values for the joint tests of significance of paid family leave across the various windows of time. Table 11 reports the values of the sums of coefficients for the effect of paid family leave policy on employment. These sums represent the estimated person-month change in employment due to paid family leave policy across windows. Table 12 contains the probability values of tests for significance of coefficients sums for each window. Interpreting the results for the window of six months before birth to month of birth for women without a college degree, we find that paid family leave policy is estimated to increase employment by 1.16 person-months. The probability value for the joint test of significance for the coefficients of the window is 0.02, and the probability value for the test of significance of sums is 0.04.

Figure 2: Effect of Paid Family Leave Policy on Employment



Table 10: Employment P-Values of Joint Tests: Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.63 | 0.27 | 0.76 | 0.84 | 0.72 |
| -15 to -9 | 0.74 | 0.71 | 0.82 | 0.70 | 0.44 |
| -12 to -6 | 0.79 | 0.69 | 0.49 | 0.62 | 0.77 |
| -9 to -3 | 0.21 | 0.88 | 0.02\*\* | 0.58 | 0.26 |
| -6 to 0 | 0.21 | 0.62 | 0.02\*\* | 0.67 | 0.28 |
| -3 to +3 | 0.35 | 0.52 | 0.08\* | 0.57 | 0.62 |
| 0 to + 6 | 0.83 | 0.58 | 0.32 | 0.85 | 0.43 |
| +3 to +9 | 0.77 | 0.96 | 0.33 | 0.96 | 0.18 |
| +6 to +12 | 0.67 | 0.89 | 0.33 | 0.97 | 0.13 |
| +9 to +15 | 0.25 | 0.67 | 0.50 | 0.36 | 0.14 |
| +12 to +18 | 0.28 | 0.72 | 0.34 | 0.45 | 0.36 |
| +15 to +21 | 0.54 | 0.95 | 0.46 | 0.59 | 0.32 |
| +18 to +24 | 0.52 | 0.93 | 0.26 | 0.73 | 0.13 |
| -17 to 0 | 0.41 | 0.55 | 0.08\* | 0.80 | 0.52 |
| 0 to 24 | 0.80 | 0.93 | 0.41 | 0.95 | 0.19 |

Table 11: Employment Sums of Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.23 | -0.15 | 0.41 | 0.12 | 0.82 |
| -15 to -9 | 0.18 | -0.34 | 0.37 | 0.13 | 0.56 |
| -12 to -6 | 0.13 | -0.53 | 0.37 | 0.16 | 0.20 |
| -9 to -3 | 0.43 | -0.49 | 0.82 | 0.44 | 0.80 |
| -6 to 0 | 0.59 | -0.62 | 1.16 | 0.55 | 1.15 |
| -3 to +3 | 0.64 | -0.61 | 1.19 | 0.59 | 0.99 |
| 0 to + 6 | 0.64 | -0.65 | 1.19 | 0.55 | 1.03 |
| +3 to +9 | 0.57 | -0.63 | 1.07 | 0.40 | 1.32 |
| +6 to +12 | 0.52 | -0.67 | 1.00 | 0.36 | 1.50 |
| +9 to +15 | 0.56 | -0.55 | 0.94 | 0.46 | 1.27 |
| +12 to + 18 | 0.68 | -0.49 | 1.08 | 0.58 | 1.36 |
| +15 to +21 | 0.73 | -0.48 | 1.16 | 0.66 | 1.47 |
| +18 to +24 | 0.64 | -0.34 | 1.01 | 0.58 | 1.41 |
| -17 to 0 | 0.88 | -1.13 | 1.77 | 0.75 | 2.03 |
| 0 to 24 | 2.22 | -1.84 | 3.79 | 1.89 | 4.66 |

Table 12: Employment P-Values of Joint Tests for Significance of Sums

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.27 | 0.62 | 0.15 | 0.66 | 0.18 |
| -15 to -9 | 0.52 | 0.37 | 0.36 | 0.73 | 0.46 |
| -12 to -6 | 0.68 | 0.22 | 0.44 | 0.71 | 0.81 |
| -9 to -3 | 0.25 | 0.31 | 0.12 | 0.31 | 0.35 |
| -6 to 0 | 0.14 | 0.25 | 0.04\*\* | 0.25 | 0.21 |
| -3 to +3 | 0.13 | 0.32 | 0.04\*\* | 0.26 | 0.32 |
| 0 to + 6 | 0.15 | 0.33 | 0.05\* | 0.32 | 0.33 |
| +3 to +9 | 0.24 | 0.41 | 0.09\* | 0.50 | 0.24 |
| +6 to +12 | 0.30 | 0.41 | 0.13 | 0.56 | 0.21 |
| +9 to +15 | 0.28 | 0.51 | 0.17 | 0.47 | 0.30 |
| +12 to + 18 | 0.22 | 0.58 | 0.14 | 0.38 | 0.28 |
| +15 to +21 | 0.21 | 0.62 | 0.13 | 0.34 | 0.27 |
| +18 to +24 | 0.29 | 0.74 | 0.19 | 0.43 | 0.30 |
| -17 to 0 | 0.25 | 0.28 | 0.10 | 0.43 | 0.26 |
| 0 to 24 | 0.22 | 0.53 | 0.11 | 0.39 | 0.25 |

## C. Unemployment

Figure 3 graphs the point estimates of the effect of paid family leave policy on unemployment of mothers (in the labor force and searching for a job). Table 13 contains probability values for the joint significance of the effect paid family leave policy on unemployment for the fifteen time period windows. Table 14 lists the sums of coefficients for each window, representing the estimated effect of paid family leave policy on unemployment in person-months. Table 15 contains the probability values for the tests of significance for the coefficient sums. Exploring the window of three months after birth to six months after birth for blue-collar workers, we find an estimated decrease of 0.30 person-months of unemployment due to paid family leave policy. The joint test of significance for the coefficients in that window yields a probability value of 0.12, while the test of significance for the coefficient sums yields a probability value of 0.62.

Figure 3: Effect of Paid Family Leave Policy on Unemployment



Table 13: Unemployment P-Values of Joint Tests: Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.34 | 0.19 | 0.34 | 0.19 | 0.83 |
| -15 to -9 | 0.57 | 0.29 | 0.69 | 0.40 | 0.51 |
| -12 to -6 | 0.76 | 0.33 | 0.43 | 0.63 | 0.42 |
| -9 to -3 | 0.28 | 0.56 | 0.11 | 0.17 | 0.86 |
| -6 to 0 | 0.07\* | 0.43 | 0.18 | 0.06\* | 0.74 |
| -3 to +3 | 0.11 | 0.34 | 0.21 | 0.24 | 0.65 |
| 0 to + 6 | 0.37 | 0.18 | 0.21 | 0.61 | 0.60 |
| +3 to +9 | 0.06\* | 0.13 | 0.07\* | 0.61 | 0.12 |
| +6 to +12 | 0.07\* | 0.13 | 0.04\*\* | 0.50 | 0.14 |
| +9 to + 15 | 0.07\* | 0.93 | 0.02\*\* | 0.63 | 0.25 |
| +12 to + 18 | 0.22 | 0.61 | 0.11 | 0.83 | 0.26 |
| + 15 to + 21 | 0.81 | 0.45 | 0.28 | 0.94 | 0.15 |
| +18 to +24 | 0.53 | 0.75 | 0.16 | 0.44 | 0.38 |
| -17 to 0 | 0.18 | 0.31 | 0.27 | 0.11 | 0.55 |
| 0 to 24 | 0.08\* | 0.39 | 0.04\*\* | 0.70 | 0.28 |

Table 14: Unemployment Sums of Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.00 | 0.17 | -0.12 | 0.03 | 0.21 |
| -15 to -9 | 0.04 | 0.24 | -0.11 | 0.05 | 0.33 |
| -12 to -6 | 0.03 | 0.32 | -0.19 | 0.09 | 0.14 |
| -9 to -3 | -0.06 | 0.31 | -0.34 | 0.07 | -0.20 |
| -6 to 0 | -0.03 | 0.24 | -0.25 | 0.10 | -0.26 |
| -3 to +3 | 0.00 | 0.20 | -0.19 | 0.09 | -0.18 |
| 0 to + 6 | -0.03 | 0.27 | -0.28 | 0.11 | -0.07 |
| +3 to +9 | -0.10 | 0.35 | -0.44 | 0.14 | -0.30 |
| +6 to +12 | -0.16 | 0.31 | -0.51 | 0.09 | -0.50 |
| +9 to + 15 | -0.22 | 0.12 | -0.51 | -0.03 | -0.61 |
| +12 to + 18 | -0.21 | 0.18 | -0.51 | -0.09 | -0.72 |
| + 15 to + 21 | -0.18 | 0.17 | -0.45 | -0.14 | -0.22 |
| +18 to +24 | -0.10 | 0.18 | -0.34 | -0.05 | 0.45 |
| -17 to 0 | 0.00 | 0.64 | -0.49 | 0.17 | 0.05 |
| 0 to 24 | -0.43 | 0.83 | -1.43 | 0.07 | -0.64 |

Table 15: Unemployment P-Values of Joint Tests for Significance of Sums

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample | College Educated | Less Than College | White Collar | Blue Collar |
| -17 to -12 | 0.98 | 0.27 | 0.51 | 0.87 | 0.53 |
| -15 to -9 | 0.81 | 0.19 | 0.63 | 0.79 | 0.44 |
| -12 to -6 | 0.83 | 0.09\* | 0.39 | 0.66 | 0.77 |
| -9 to -3 | 0.72 | 0.13 | 0.14 | 0.71 | 0.71 |
| -6 to 0 | 0.87 | 0.26 | 0.31 | 0.64 | 0.63 |
| -3 to +3 | 1.00 | 0.37 | 0.47 | 0.68 | 0.75 |
| 0 to + 6 | 0.87 | 0.23 | 0.27 | 0.63 | 0.90 |
| +3 to +9 | 0.61 | 0.13 | 0.11 | 0.56 | 0.62 |
| +6 to +12 | 0.41 | 0.20 | 0.07\* | 0.72 | 0.44 |
| +9 to + 15 | 0.26 | 0.61 | 0.07\* | 0.89 | 0.35 |
| +12 to + 18 | 0.33 | 0.47 | 0.10 | 0.71 | 0.29 |
| + 15 to + 21 | 0.43 | 0.56 | 0.17 | 0.58 | 0.77 |
| +18 to +24 | 0.68 | 0.55 | 0.34 | 0.86 | 0.62 |
| -17 to 0 | 1.00 | 0.16 | 0.35 | 0.72 | 0.96 |
| 0 to 24 | 0.54 | 0.33 | 0.15 | 0.93 | 0.78 |

# **VIII. Robustness Checks**

As described earlier, sensitivity of point estimates to weighting can be evidence of misspecification. To investigate this sensitivity, I estimated each regression with and without weights, and plotted the results of both regressions in the figures below. Figure 4 depicts the point estimates of weighted and unweighted regressions using labor-force participation as the dependent variable. Figure 5 depicts the results of weighted and unweighted regressions using employment as the dependent variable. Finally, Figure 6 shows the results of weighted and unweighted regressions using unemployment as the dependent variable. The specific values obtained from each regression are reported in Table 25, Table 26, and Table 27, located in the Appendix.

As can be seen in the following figures, there does exist some difference between the estimates obtained using weighted and unweighted regressions. However, the unweighted estimates generally follow the same pattern as the unweighted estimates. Although it cannot be scientifically proved from the evidence presented here, the similarity in the patterns and the proximity of estimates obtained from both weighted and unweighted regressions suggest that the specification is indeed correct.

Figure 4: Robustness Check for Labor-force Participation Estimates



Figure 5: Robustness Check for Employment Estimates



Figure 6: Robustness Check for Unemployment Estimates



# **IX. Occupational Group Results**

Testing the hypothesis that paid family leave policies may have differential effects across occupations, I estimate Equation 1 for each occupational group, and report in this paper the results from three such occupational groups: management, office and administrative support, and education, training, and library occupations. Figures of point estimates from selected additional occupational groups are reported in the Appendix.

## A. Management

Figure 7 depicts the point estimates for the effect of paid family leave policy on the labor-force participation, employment, and unemployment of women in management occupations. Table 16 describes the probability values for joint tests of significance across windows. Table 17 contains the sums of coefficients for each window, signifying the estimated effect of the policy on labor-market outcomes, given in person-months. Table 18 contains the probability values for the tests of significance of the coefficient sums. For example, in the window of 9 months post-birth to 15 months post-birth, paid family leave policy is estimated to increase the employment of mothers in management occupations by 2.86 person-months. The p-value for the joint test of significance of this effect is 0.07, while the p-value for the test for significance of the coefficient sums is 0.09.

Figure 7: Effect of Paid Family Leave Policy for Management Occupations



Table 16: Management P-Values of Joint Tests: Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.32 | 0.13 | 0.55 |
| -15 to -9 | 0.63 | 0.29 | 0.59 |
| -12 to -6 | 0.72 | 0.86 | 0.73 |
| -9 to -3 | 0.52 | 0.53 | 0.80 |
| -6 to 0 | 0.73 | 0.40 | 0.90 |
| -3 to +3 | 0.82 | 0.36 | 0.65 |
| 0 to + 6 | 0.67 | 0.58 | 0.40 |
| +3 to +9 | 0.40 | 0.72 | 0.43 |
| +6 to +12 | 0.19 | 0.44 | 0.48 |
| +9 to + 15 | 0.09\* | 0.07\* | 0.69 |
| +12 to + 18 | 0.21 | 0.26 | 0.52 |
| + 15 to + 21 | 0.33 | 0.42 | 0.71 |
| +18 to +24 | 0.35 | 0.43 | 0.81 |
| -17 to 0 | 0.55 | 0.25 | 0.87 |
| 0 to +24 | 0.12 | 0.33 | 0.58 |

Table 17: Management Sums of Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | -0.19 | 1.24 | -0.61 |
| -15 to -9 | -0.21 | 1.14 | -0.37 |
| -12 to -6 | 0.20 | 1.05 | 0.03 |
| -9 to -3 | 0.63 | 1.29 | -0.13 |
| -6 to 0 | 0.88 | 1.63 | -0.07 |
| -3 to +3 | 1.07 | 2.35 | -0.11 |
| 0 to + 6 | 1.21 | 2.24 | -0.04 |
| +3 to +9 | 1.36 | 2.21 | 0.05 |
| +6 to +12 | 1.21 | 2.14 | -0.19 |
| +9 to + 15 | 1.58 | 2.86 | -0.43 |
| +12 to + 18 | 1.69 | 2.98 | -0.55 |
| + 15 to + 21 | 1.33 | 2.77 | -0.53 |
| +18 to +24 | 1.33 | 3.02 | -0.83 |
| -17 to 0 | 0.90 | 3.74 | -0.68 |
| 0 to +24 | 5.04 | 9.40 | -1.23 |

Table 18: Management P-Values of Joint Tests for Significance of Sums

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.82 | 0.14 | 0.48 |
| -15 to -9 | 0.85 | 0.31 | 0.69 |
| -12 to -6 | 0.84 | 0.39 | 0.97 |
| -9 to -3 | 0.56 | 0.36 | 0.87 |
| -6 to 0 | 0.44 | 0.28 | 0.92 |
| -3 to +3 | 0.33 | 0.12 | 0.87 |
| 0 to + 6 | 0.29 | 0.14 | 0.96 |
| +3 to +9 | 0.28 | 0.17 | 0.95 |
| +6 to +12 | 0.37 | 0.21 | 0.83 |
| +9 to + 15 | 0.24 | 0.09\* | 0.65 |
| +12 to + 18 | 0.24 | 0.08\* | 0.61 |
| + 15 to + 21 | 0.36 | 0.11 | 0.62 |
| +18 to +24 | 0.35 | 0.10 | 0.40 |
| -17 to 0 | 0.71 | 0.21 | 0.73 |
| 0 to +24 | 0.26 | 0.10 | 0.69 |

## B. Office and Administrative Support

Plots of point estimates for the effect of paid family leave policy on labor-market outcomes of mothers in office and administrative support occupations are depicted in Figure 8. Probability values yielded from joint tests of significance of coefficients in each window are reported in Table 19. Table 20 contains the sums of coefficients across each window, representing the effect of paid family leave policy on the labor-market outcome in person-months. Probability values yielded from tests for significance of the coefficient sums are reported in Table 21. The estimated effect of paid leave policy on the labor force participation of women in office and administrative support occupations 18 to 24 months after birth is an increase of 2.61 person-months. The p-value of the joint test of significance for coefficients in this window is 0.02. The p-value of the test of significance for the sums of the coefficients in this window is 0.05.

Figure 8: Effect of Paid Family Leave Policy for Office and Administrative Support Roles



Table 19: Office P-Values of Joint Tests: Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.06\* | 0.09\* | 0.88 |
| -15 to -9 | 0.18 | 0.60 | 0.80 |
| -12 to -6 | 0.34 | 0.61 | 0.55 |
| -9 to -3 | 0.41 | 0.70 | 0.42 |
| -6 to 0 | 0.34 | 0.17 | 0.53 |
| -3 to +3 | 0.32 | 0.23 | 0.62 |
| 0 to + 6 | 0.24 | 0.59 | 0.55 |
| +3 to +9 | 0.51 | 0.68 | 0.76 |
| +6 to +12 | 0.35 | 0.83 | 0.60 |
| +9 to + 15 | 0.19 | 0.82 | 0.68 |
| +12 to + 18 | 0.35 | 0.79 | 0.73 |
| + 15 to + 21 | 0.04\*\* | 0.48 | 0.57 |
| +18 to +24 | 0.02\*\* | 0.32 | 0.25 |
| -17 to 0 | 0.11 | 0.09\* | 0.77 |
| 0 to +24 | 0.09\* | 0.93 | 0.62 |

Table 20: Office Sums of Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.36 | 0.23 | 0.15 |
| -15 to -9 | 1.03 | 0.92 | 0.10 |
| -12 to -6 | 1.52 | 1.36 | 0.01 |
| -9 to -3 | 1.82 | 1.76 | 0.11 |
| -6 to 0 | 1.85 | 1.83 | 0.36 |
| -3 to +3 | 1.52 | 1.89 | 0.44 |
| 0 to + 6 | 1.50 | 2.06 | 0.49 |
| +3 to +9 | 1.57 | 1.81 | 0.61 |
| +6 to +12 | 1.49 | 1.67 | 0.49 |
| +9 to + 15 | 1.35 | 1.62 | 0.25 |
| +12 to + 18 | 1.57 | 1.84 | 0.15 |
| + 15 to + 21 | 2.02 | 2.35 | 0.13 |
| +18 to +24 | 2.61 | 2.79 | 0.38 |
| -17 to 0 | 3.15 | 2.95 | 0.48 |
| 0 to +24 | 6.40 | 7.58 | 1.36 |

Table 21: Office P-Values of Joint Tests for Significance of Sums

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.45 | 0.70 | 0.64 |
| -15 to -9 | 0.18 | 0.30 | 0.80 |
| -12 to -6 | 0.12 | 0.21 | 0.97 |
| -9 to -3 | 0.08\* | 0.12 | 0.76 |
| -6 to 0 | 0.07\* | 0.11 | 0.36 |
| -3 to +3 | 0.13 | 0.10 | 0.27 |
| 0 to + 6 | 0.15 | 0.08\* | 0.22 |
| +3 to +9 | 0.14 | 0.14 | 0.18 |
| +6 to +12 | 0.18 | 0.19 | 0.31 |
| +9 to + 15 | 0.26 | 0.22 | 0.60 |
| +12 to + 18 | 0.22 | 0.18 | 0.75 |
| + 15 to + 21 | 0.13 | 0.10 | 0.79 |
| +18 to +24 | 0.05\* | 0.05\* | 0.45 |
| -17 to 0 | 0.13 | 0.22 | 0.59 |
| 0 to +24 | 0.12 | 0.09\* | 0.38 |

## C. Education, Training, and Library

Figure 9 depicts point estimates of the effect in a given month of paid leave policy on labor-market outcomes of women in education, training and library occupations. Table 22 contains probability values for joint tests of significance for coefficients in each window. Table 23 details the values for sums of coefficients in each window. Table 24 contains probability values for the tests for significance of the sums of coefficients. In the window of 6 to 12 months after birth, paid family leave is estimated to decrease the labor-force participation of women in education, training, and library occupations by 2.39 person-months. The p-value for the joint test of coefficients is 0.06, and the p-value for the test of the coefficient sums is 0.09.

Figure 9: Effect of Paid Family Leave Policy for Education, Training, and Library Occupations

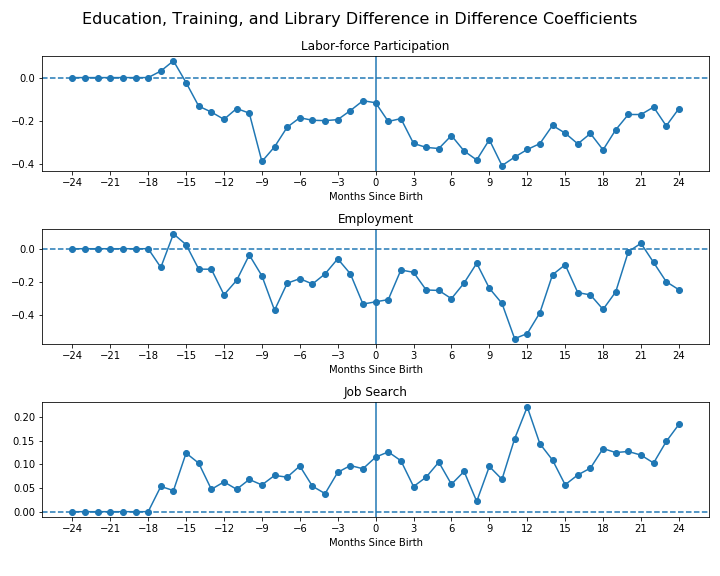


Table 22: Education P-Values of Joint Tests: Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.32 | 0.35 | 0.38 |
| -15 to -9 | 0.09\* | 0.31 | 0.59 |
| -12 to -6 | 0.06\* | 0.10 | 0.49 |
| -9 to -3 | 0.22 | 0.18 | 0.52 |
| -6 to 0 | 0.78 | 0.35 | 0.53 |
| -3 to +3 | 0.22 | 0.54 | 0.64 |
| 0 to + 6 | 0.30 | 0.63 | 0.40 |
| +3 to +9 | 0.20 | 0.36 | 0.56 |
| +6 to +12 | 0.06\* | 0.14 | 0.38 |
| +9 to + 15 | 0.17 | 0.05\* | 0.24 |
| +12 to + 18 | 0.41 | 0.09\* | 0.23 |
| + 15 to + 21 | 0.38 | 0.32 | 0.42 |
| +18 to +24 | 0.34 | 0.20 | 0.62 |
| -17 to 0 | 0.21 | 0.16 | 0.82 |
| 0 to +24 | 0.18 | 0.03 | 0.86 |

Table 23: Education Sums of Months Since Birth \* Policy Coefficients

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | -0.40 | -0.52 | 0.43 |
| -15 to -9 | -1.21 | -0.89 | 0.51 |
| -12 to -6 | -1.63 | -1.42 | 0.48 |
| -9 to -3 | -1.72 | -1.34 | 0.48 |
| -6 to 0 | -1.16 | -1.41 | 0.57 |
| -3 to +3 | -1.27 | -1.44 | 0.67 |
| 0 to + 6 | -1.74 | -1.69 | 0.64 |
| +3 to +9 | -2.24 | -1.47 | 0.49 |
| +6 to +12 | -2.39 | -2.21 | 0.70 |
| +9 to + 15 | -2.19 | -2.25 | 0.85 |
| +12 to + 18 | -2.02 | -2.05 | 0.83 |
| + 15 to + 21 | -1.75 | -1.25 | 0.73 |
| +18 to +24 | -1.43 | -1.14 | 0.94 |
| -17 to 0 | -2.81 | -2.90 | 1.33 |
| 0 to +24 | -6.64 | -5.92 | 2.70 |

Table 24: Education P-Values of Joint Tests for Significance of Sums

|  |  |  |  |
| --- | --- | --- | --- |
| Months Since Birth | Labor-force Participation | Working | Looking |
| -17 to -12 | 0.48 | 0.50 | 0.21 |
| -15 to -9 | 0.15 | 0.41 | 0.25 |
| -12 to -6 | 0.07\* | 0.22 | 0.36 |
| -9 to -3 | 0.07\* | 0.25 | 0.42 |
| -6 to 0 | 0.25 | 0.26 | 0.37 |
| -3 to +3 | 0.26 | 0.28 | 0.30 |
| 0 to + 6 | 0.17 | 0.23 | 0.32 |
| +3 to +9 | 0.10 | 0.34 | 0.44 |
| +6 to +12 | 0.09\* | 0.19 | 0.32 |
| +9 to + 15 | 0.11 | 0.18 | 0.24 |
| +12 to + 18 | 0.14 | 0.21 | 0.25 |
| + 15 to + 21 | 0.21 | 0.45 | 0.30 |
| +18 to +24 | 0.27 | 0.48 | 0.20 |
| -17 to 0 | 0.18 | 0.28 | 0.32 |
| 0 to +24 | 0.14 | 0.27 | 0.27 |

X. Discussion

The reproduction of Byker’s work confirms the majority of her findings. As Byker concludes in her study, there are indeed positive (estimated increase of 0.55 person-months) and significant effects of paid family leave policy on the labor-force participation of mothers in the period of three months before birth to three months after birth (p-value of test for joint significance is 0.04). The results support Byker’s conclusion that this effect is primarily driven by women without college degrees: the estimated effect is an increase of 0.79 person-months of labor-force participation, with a p-value of 0.02 for the joint test of significance. Byker additionally reports a positive effect of paid family leave on employment and a negative effect on unemployment of mothers without college degrees in the window of six months after birth to twelve months after birth. For the negative effect on unemployment, the joint test for significance of coefficients yields a p-value of 0.04, and the test of sums of coefficients yields a p-value of 0.07, confirming significance at the 10% level. Although neither the joint test nor the test of sums for the positive effect on employment of women without college degrees in this window yield significance at the 10% level (p-values of 0.33 and 0.13 respectively), there are significant positive effects in preceding windows.

An interesting finding in the extension of Byker’s work is the longevity of the effect of paid family leave on employment of mothers without college degrees. The sums of coefficients are positive and significant at the 10% level over 4 sequential windows, ranging from six months before birth to nine months after birth. These findings suggest that not only is paid family leave most beneficial in terms of employment for mothers without college degrees as concluded by Byker (2016), the effect endures over a greater range of time than the window (six months after birth to twelve months after birth) originally investigated by Byker.

With respect to the sensitivity of the specification to weighting, the evidence appears to support the robustness of results. There are indeed differences in the estimated magnitudes of the point estimates, but the directions are preserved, and the overall pattern of results for unweighted regressions matches that of the weighted regressions.

The investigation of the effect of paid family leave on the labor-market outcomes of mothers in management occupations yield results that mirror those of the full sample. The estimated effect on labor-force participation is positive for each window following twelve months before birth. The estimated effect on employment is positive in each window. The estimate effect of paid family leave policy on unemployment is negative in the vast majority of time periods. However, there is less significance in the results of the analysis on women in management roles than found in the analysis of the full sample. Considering the sample size of only 131 individuals in management occupations, this is to be expected.

Interestingly, the analysis of the effect of paid family leave on mothers in office and administrative support occupations yields positive estimated effects on all three labor-market outcomes across all time windows. This differs from the negative estimated effect of paid family leave policy found in the analysis of the full sample. However, neither joint tests for significance nor tests of coefficient sums yield significance at the 10% level in any time period. Therefore, we are unable to conclude the positive estimated effect of paid family leave on unemployment for women in this occupation group is not simply the result of random chance.

The results of the analysis conducted on women in education, training, and library roles counters the findings of the full sample. Across all time periods, the estimated effect of paid family leave on labor-force participation and employment is negative, while the estimated effect of paid family leave on unemployment is positive. Joint tests for significance of the effect on labor-force participation yield p-values of less than 0.10 in a number of time periods including the window of six to twelve months after birth. Similarly, joint tests for significance of the effect of paid leave on employment yield p-values of less than 0.10 in the windows of 9 to 15 months after birth and 12 to 18 months after birth. Tests for the positive effect on employment do not yield significance at the 10% level in any time period however (neither joint tests of coefficients nor tests of coefficient sums). These results suggest that although there exists a general trend of positive effect of paid family leave on labor-force participation and employment for most women, the effect does indeed depend on occupation of the mother.

A difficulty in interpreting the effect of paid family leave on employment outcomes is due to the nature of the specification. While a binary encoding is intuitive for labor-force participation, using a binary encoding of ‘working’ and ‘looking for work’ does not allow for a nuanced interpretation of effects. A change in the probability of working or looking for work reflects both changes in labor-force participation and changes in employment. Under the specification used for example, it is unclear whether the increase in probability of working for women without a college degree is due to women remaining employed when they would have otherwise dropped out of the labor-force, or women remaining employed when they would have otherwise become unemployed. If I were to redo this study from the beginning, I would use a multinomial logistic regression model to identify the relative changes of probability of each labor-market outcome compared to each other possible outcome.

# **XI. Conclusion**

This study reproduces and confirms the work of Tanya Byker (2016). Her findings on the positive effect of paid family leave on labor-force participation and employment as well as the negative effect on unemployment are reproduced and extended across a further range of time periods. The evidence presented in this paper supports her hypothesis that paid family leave indeed has the potential to increase the labor-force participation of women in the months surrounding childbirth, especially for women without college degrees. However, like Byker’s study, the methodology used here does not reveal the specific mechanism causing this increase in labor-force attachment. Testing robustness of estimates to weighting yields similar patterns of labor-market outcomes for both weighted and unweighted regressions, suggesting correct model specification.

Extension of Byker’s regressions to mothers of different occupational groups reveals differential effects of paid leave policy. While analysis women in management occupations as well as women in office and administrative support roles yields estimates mirroring those of the full sample, analysis of women in education, training, and library occupations reveals contrary effects of paid family leave policy. These results suggest that occupation is an important factor in determining the effect of paid family leave policy on labor-market outcomes. However, considering the small sample sizes available for each occupational group, I hesitate to draw strong conclusions from these results. Further study using a larger sample is advised to accurately estimate the effect of paid family leave policy on labor-market outcomes for any given occupational group.

As paid family leave policies proliferate across states, further studies may make use of larger sample sizes and longer time frames to more robustly estimate the effects studied in this paper. Furthermore, data containing ties of women to employers over time may allow tests of the hypothesis that paid family leave policy encourages greater attachment to employers in place of career interruptions surrounding childbirth. Longer-term longitudinal data may also provide insight into the long-term effects of paid family leave on the career outcomes of mothers. However, given the data currently available, I believe that this study provides significant evidence in support of Byker’s work.

# **References**

Bartel, A., Baum, C., Rossin-Slater, M., Ruhm, C., & Waldfogel, J. (2014). California’s Paid Family Leave Law: Lessons from the First Decade. Federal Publications. Retrieved from https://digitalcommons.ilr.cornell.edu/key\_workplace/1594

Bartel, A. P., Rossin‐Slater, M., Ruhm, C. J., Stearns, J., & Waldfogel, J. (2018). Paid Family Leave, Fathers’ Leave-Taking, and Leave-Sharing in Dual-Earner Households. Journal of Policy Analysis and Management, 37(1), 10–37. https://doi.org/10.1002/pam.22030

Baum, C. L., & Ruhm, C. J. (2014). The Effects of Paid Family Leave in California on Labor Market Outcomes. Journal of Policy Analysis and Management, 35(2), 333–356. https://doi.org/10.1002/pam.21894

Byker, T. S. (2016). Paid Parental Leave Laws in the United States: Does Short-Duration Leave Affect Women’s Labor-Force Attachment? American Economic Review, 106(5), 242–246. https://doi.org/10.1257/aer.p20161118

—— (2016). The Opt-Out Continuation: Education, Work, and Motherhood from 1984 to 2012. RSF: The Russell Sage Foundation Journal of the Social Sciences, 2(4), 34–70. https://doi.org/10.7758/RSF.2016.2.4.02

Curtis, E. M., Hirsch, B. T., & Schroeder, M. C. (2016). Evaluating Workplace Mandates with Flows Versus Stocks: An Application to California Paid Family Leave. Southern Economic Journal, 83(2), 501–526. https://doi.org/10.1002/soej.12150

Das, T., & Polachek, S. W. (2015). Unanticipated Effects of California’s Paid Family Leave Program. Contemporary Economic Policy, 33(4), 619–635. https://doi.org/10.1111/coep.12102

Gruber, Jonathan. (2000). "Payroll Taxation, Employer Mandates, and the Labor Market." In Employee Benefits and Labor Markets in Canada and the United States, William T. Alpert, and Stephen A. Woodbury, eds. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, pp. 183–228. https://doi.org/10.17848/9780880995511.ch4

Han, W.-J., Ruhm, C., & Waldfogel, J. (2009). Parental leave policies and parents’ employment and leave-taking. Journal of Policy Analysis and Management, 28(1), 29–54. https://doi.org/10.1002/pam.20398

Klerman, J. A., Daley, K., & Pozniak, A. (2012). Family and Medical Leave in 2012: Technical Report (contract #GS10FOO86K). Cambridge, MA: Abt Associates. Retrieved from U.S. Department of Labor website: http://www.dol.gov/asp/evaluation/fmla/FMLATechnicalReport.pdf

Rossin‐Slater, M., Ruhm, C. J., & Waldfogel, J. (2013). The Effects of California’s Paid Family Leave Program on Mothers’ Leave-Taking and Subsequent Labor Market Outcomes. Journal of Policy Analysis and Management, 32(2), 224–245. https://doi.org/10.1002/pam.21676

Waldfogel, J. (1998). Understanding the “Family Gap” in Pay for Women with Children. Journal of Economic Perspectives, 12(1), 137–156. https://doi.org/10.1257/jep.12.1.137

# **Appendix**

Table 25: LFP Months Since Birth \* Policy Coefficients

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample Weighted | Full Sample Unweighted | College Educated Weighted | College Educated Unweighted | Less than College Weighted | Less than Collage Unweighted | White Collar Weighed | White Collar Unweighted | Blue Collar Weighted | Blue Collar Unweighted |
| -17 | 0.03 | 0.00 | 0.06 | 0.02 | 0.00 | -0.01 | -0.01 | -0.02 | 0.02 | 0.01 |
| -16 | 0.05 | 0.04 | -0.01 | -0.03 | 0.08 | 0.06 | 0.00 | 0.00 | 0.23 | 0.21 |
| -15 | 0.05 | 0.03 | -0.01 | -0.03 | 0.06 | 0.06 | 0.01 | 0.00 | 0.24 | 0.22 |
| -14 | 0.05 | 0.06 | -0.02 | -0.03 | 0.08 | 0.10 | 0.03 | 0.03 | 0.19 | 0.25 |
| -13 | 0.02 | 0.02 | -0.04 | -0.07 | 0.03 | 0.06 | 0.00 | -0.01 | 0.17 | 0.20 |
| -12 | 0.05 | 0.04 | -0.01 | -0.03 | 0.07 | 0.06 | 0.04 | 0.02 | 0.18 | 0.21 |
| -11 | 0.02 | 0.01 | -0.02 | -0.04 | 0.02 | 0.02 | 0.02 | 0.00 | 0.07 | 0.11 |
| -10 | 0.02 | 0.02 | -0.03 | -0.05 | 0.02 | 0.03 | 0.00 | -0.01 | 0.05 | 0.09 |
| -9 | 0.01 | -0.01 | -0.05 | -0.10 | 0.02 | 0.01 | -0.02 | -0.04 | 0.00 | 0.05 |
| -8 | 0.00 | -0.01 | -0.07 | -0.09 | 0.00 | 0.01 | 0.00 | -0.03 | 0.02 | 0.06 |
| -7 | 0.03 | 0.02 | -0.03 | -0.06 | 0.02 | 0.03 | 0.05 | 0.03 | -0.01 | -0.01 |
| -6 | 0.06 | 0.05 | 0.00 | -0.04 | 0.05 | 0.07 | 0.09 | 0.07 | 0.05 | 0.11 |
| -5 | 0.08 | 0.06 | 0.01 | -0.05 | 0.09 | 0.10 | 0.12 | 0.09 | 0.06 | 0.11 |
| -4 | 0.07 | 0.06 | -0.01 | -0.06 | 0.09 | 0.11 | 0.09 | 0.07 | 0.13 | 0.15 |
| -3 | 0.10 | 0.09 | 0.00 | -0.06 | 0.12 | 0.14 | 0.12 | 0.09 | 0.13 | 0.18 |
| -2 | 0.09 | 0.08 | -0.04 | -0.08 | 0.13 | 0.13 | 0.08 | 0.08 | 0.09 | 0.15 |
| -1 | 0.07 | 0.07 | -0.03 | -0.07 | 0.10 | 0.12 | 0.06 | 0.06 | 0.05 | 0.13 |
| 0 | 0.11 | 0.09 | -0.05 | -0.08 | 0.16 | 0.16 | 0.09 | 0.09 | 0.18 | 0.25 |
| 1 | 0.09 | 0.07 | -0.06 | -0.10 | 0.13 | 0.14 | 0.06 | 0.06 | 0.15 | 0.21 |
| 2 | 0.06 | 0.05 | -0.06 | -0.08 | 0.08 | 0.10 | 0.04 | 0.05 | 0.06 | 0.13 |
| 3 | 0.03 | 0.02 | -0.10 | -0.12 | 0.06 | 0.07 | 0.01 | 0.02 | -0.02 | 0.04 |
| 4 | 0.05 | 0.04 | -0.06 | -0.09 | 0.08 | 0.09 | 0.02 | 0.04 | -0.01 | 0.07 |
| 5 | 0.05 | 0.04 | -0.05 | -0.07 | 0.06 | 0.07 | 0.01 | 0.04 | 0.09 | 0.18 |
| 6 | 0.04 | 0.04 | -0.04 | -0.06 | 0.05 | 0.07 | 0.05 | 0.08 | 0.00 | 0.13 |
| 7 | 0.05 | 0.05 | -0.03 | -0.06 | 0.06 | 0.08 | 0.04 | 0.08 | -0.01 | 0.10 |
| 8 | 0.01 | 0.02 | -0.06 | -0.08 | 0.00 | 0.04 | 0.01 | 0.05 | 0.05 | 0.14 |
| 9 | 0.02 | 0.03 | -0.06 | -0.08 | 0.02 | 0.06 | 0.04 | 0.07 | -0.06 | 0.09 |
| 10 | 0.00 | 0.02 | -0.11 | -0.10 | 0.02 | 0.06 | 0.01 | 0.04 | 0.02 | 0.14 |
| 11 | -0.02 | 0.00 | -0.10 | -0.10 | -0.01 | 0.01 | 0.00 | 0.03 | -0.07 | 0.04 |
| 12 | 0.01 | 0.01 | -0.11 | -0.11 | 0.02 | 0.03 | 0.02 | 0.04 | -0.13 | 0.01 |
| 13 | 0.03 | 0.02 | -0.08 | -0.09 | 0.03 | 0.05 | 0.03 | 0.05 | -0.07 | 0.11 |
| 14 | 0.02 | 0.02 | -0.11 | -0.12 | 0.02 | 0.05 | 0.02 | 0.07 | -0.11 | 0.06 |
| 15 | 0.06 | 0.05 | -0.08 | -0.10 | 0.08 | 0.09 | 0.07 | 0.11 | -0.06 | 0.11 |
| 16 | 0.03 | 0.04 | -0.09 | -0.09 | 0.04 | 0.07 | 0.04 | 0.10 | -0.10 | 0.09 |
| 17 | 0.04 | 0.04 | -0.07 | -0.07 | 0.04 | 0.05 | 0.04 | 0.08 | -0.03 | 0.14 |
| 18 | 0.06 | 0.06 | -0.07 | -0.08 | 0.08 | 0.11 | 0.03 | 0.09 | 0.09 | 0.25 |
| 18 | 0.02 | 0.02 | -0.09 | -0.12 | 0.03 | 0.06 | 0.04 | 0.08 | -0.02 | 0.11 |
| 19 | 0.04 | 0.03 | -0.11 | -0.13 | 0.06 | 0.07 | 0.06 | 0.10 | 0.04 | 0.10 |
| 20 | 0.01 | 0.01 | -0.12 | -0.15 | 0.04 | 0.06 | 0.02 | 0.08 | 0.05 | 0.10 |
| 21 | 0.04 | 0.02 | -0.08 | -0.10 | 0.07 | 0.06 | 0.06 | 0.11 | 0.12 | 0.15 |
| 22 | 0.03 | 0.02 | -0.05 | -0.06 | 0.04 | 0.05 | 0.06 | 0.10 | 0.18 | 0.29 |
| 23 | 0.01 | 0.01 | -0.05 | -0.07 | 0.00 | 0.02 | 0.04 | 0.10 | 0.04 | 0.19 |
| 24 | 0.03 | 0.00 | 0.06 | 0.02 | 0.00 | -0.01 | -0.01 | -0.02 | 0.02 | 0.01 |

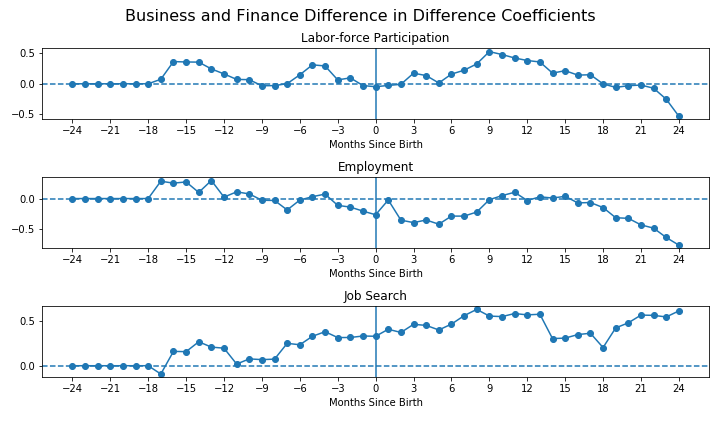
Table 26: Employment Months Since Birth \* Policy Coefficients

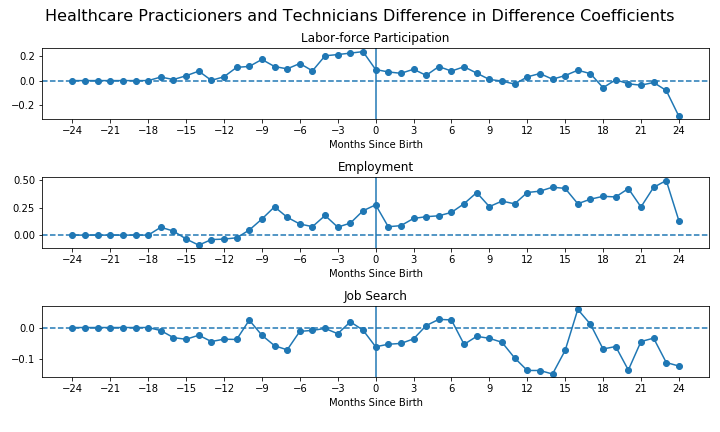
|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample Weighted | Full Sample Unweighted | College Educated Weighted | College Educated Unweighted | Less than College Weighted | Less than Collage Unweighted | White Collar Weighed | White Collar Unweighted | Blue Collar Weighted | Blue Collar Unweighted |
| -17 | 0.05 | 0.01 | 0.05 | -0.01 | 0.04 | 0.03 | 0.03 | -0.01 | 0.13 | 0.09 |
| -16 | 0.03 | 0.02 | -0.06 | -0.12 | 0.08 | 0.09 | 0.00 | -0.02 | 0.16 | 0.17 |
| -15 | 0.06 | 0.05 | 0.00 | -0.06 | 0.10 | 0.11 | 0.03 | 0.00 | 0.17 | 0.22 |
| -14 | 0.04 | 0.03 | -0.05 | -0.08 | 0.07 | 0.08 | 0.00 | -0.01 | 0.23 | 0.22 |
| -13 | 0.05 | 0.05 | -0.01 | -0.04 | 0.06 | 0.09 | 0.05 | 0.02 | 0.07 | 0.12 |
| -12 | 0.01 | 0.00 | -0.08 | -0.10 | 0.05 | 0.05 | 0.01 | -0.02 | 0.06 | 0.06 |
| -11 | -0.01 | -0.01 | -0.10 | -0.12 | 0.03 | 0.05 | -0.02 | -0.04 | 0.06 | 0.11 |
| -10 | 0.01 | 0.00 | -0.05 | -0.09 | 0.02 | 0.05 | 0.03 | 0.00 | -0.05 | -0.02 |
| -9 | 0.02 | 0.01 | -0.05 | -0.09 | 0.03 | 0.04 | 0.03 | -0.01 | 0.02 | 0.05 |
| -8 | 0.02 | 0.00 | -0.08 | -0.12 | 0.04 | 0.04 | 0.02 | -0.02 | 0.03 | 0.03 |
| -7 | 0.02 | 0.00 | -0.08 | -0.12 | 0.06 | 0.05 | 0.02 | -0.01 | -0.01 | -0.03 |
| -6 | 0.06 | 0.05 | -0.09 | -0.12 | 0.12 | 0.13 | 0.07 | 0.03 | 0.09 | 0.12 |
| -5 | 0.10 | 0.07 | -0.09 | -0.14 | 0.19 | 0.18 | 0.09 | 0.04 | 0.23 | 0.27 |
| -4 | 0.11 | 0.08 | -0.05 | -0.09 | 0.19 | 0.17 | 0.11 | 0.06 | 0.24 | 0.26 |
| -3 | 0.11 | 0.10 | -0.05 | -0.08 | 0.18 | 0.20 | 0.10 | 0.09 | 0.19 | 0.27 |
| -2 | 0.08 | 0.07 | -0.08 | -0.10 | 0.15 | 0.16 | 0.05 | 0.04 | 0.14 | 0.21 |
| -1 | 0.05 | 0.04 | -0.13 | -0.16 | 0.13 | 0.15 | 0.04 | 0.01 | 0.07 | 0.15 |
| 0 | 0.09 | 0.07 | -0.14 | -0.16 | 0.20 | 0.19 | 0.08 | 0.07 | 0.19 | 0.20 |
| 1 | 0.10 | 0.08 | -0.11 | -0.14 | 0.20 | 0.19 | 0.11 | 0.08 | 0.13 | 0.14 |
| 2 | 0.11 | 0.07 | -0.02 | -0.07 | 0.15 | 0.14 | 0.11 | 0.08 | 0.14 | 0.14 |
| 3 | 0.10 | 0.08 | -0.08 | -0.10 | 0.17 | 0.16 | 0.09 | 0.07 | 0.11 | 0.14 |
| 4 | 0.08 | 0.07 | -0.08 | -0.11 | 0.15 | 0.15 | 0.06 | 0.04 | 0.08 | 0.17 |
| 5 | 0.07 | 0.06 | -0.11 | -0.12 | 0.15 | 0.15 | 0.05 | 0.03 | 0.14 | 0.22 |
| 6 | 0.08 | 0.08 | -0.11 | -0.14 | 0.16 | 0.18 | 0.05 | 0.03 | 0.24 | 0.31 |
| 7 | 0.08 | 0.06 | -0.09 | -0.11 | 0.15 | 0.15 | 0.05 | 0.04 | 0.17 | 0.26 |
| 8 | 0.07 | 0.07 | -0.08 | -0.11 | 0.13 | 0.15 | 0.05 | 0.05 | 0.25 | 0.31 |
| 9 | 0.09 | 0.08 | -0.08 | -0.11 | 0.16 | 0.18 | 0.05 | 0.04 | 0.33 | 0.38 |
| 10 | 0.09 | 0.10 | -0.08 | -0.08 | 0.15 | 0.18 | 0.07 | 0.05 | 0.27 | 0.43 |
| 11 | 0.07 | 0.07 | -0.11 | -0.12 | 0.14 | 0.16 | 0.06 | 0.04 | 0.17 | 0.29 |
| 12 | 0.05 | 0.05 | -0.12 | -0.13 | 0.11 | 0.13 | 0.04 | 0.02 | 0.08 | 0.20 |
| 13 | 0.05 | 0.05 | -0.10 | -0.13 | 0.10 | 0.13 | 0.03 | 0.02 | 0.09 | 0.23 |
| 14 | 0.10 | 0.09 | -0.03 | -0.09 | 0.13 | 0.15 | 0.10 | 0.08 | 0.18 | 0.26 |
| 15 | 0.12 | 0.10 | -0.02 | -0.07 | 0.16 | 0.18 | 0.12 | 0.12 | 0.15 | 0.22 |
| 16 | 0.12 | 0.12 | -0.06 | -0.10 | 0.19 | 0.21 | 0.11 | 0.11 | 0.24 | 0.38 |
| 17 | 0.11 | 0.11 | -0.08 | -0.10 | 0.18 | 0.21 | 0.09 | 0.09 | 0.29 | 0.46 |
| 18 | 0.13 | 0.11 | -0.08 | -0.12 | 0.21 | 0.22 | 0.09 | 0.07 | 0.32 | 0.46 |
| 18 | 0.10 | 0.08 | -0.08 | -0.12 | 0.17 | 0.18 | 0.07 | 0.06 | 0.23 | 0.39 |
| 19 | 0.09 | 0.08 | -0.06 | -0.12 | 0.13 | 0.17 | 0.11 | 0.10 | 0.08 | 0.24 |
| 20 | 0.06 | 0.07 | -0.09 | -0.14 | 0.12 | 0.16 | 0.07 | 0.09 | 0.15 | 0.27 |
| 21 | 0.08 | 0.06 | -0.04 | -0.08 | 0.13 | 0.14 | 0.06 | 0.06 | 0.22 | 0.35 |
| 22 | 0.10 | 0.07 | 0.00 | -0.08 | 0.15 | 0.16 | 0.09 | 0.06 | 0.29 | 0.42 |
| 23 | 0.08 | 0.06 | 0.01 | -0.06 | 0.10 | 0.11 | 0.08 | 0.05 | 0.11 | 0.22 |
| 24 | 0.05 | 0.01 | 0.05 | -0.01 | 0.04 | 0.03 | 0.03 | -0.01 | 0.13 | 0.09 |

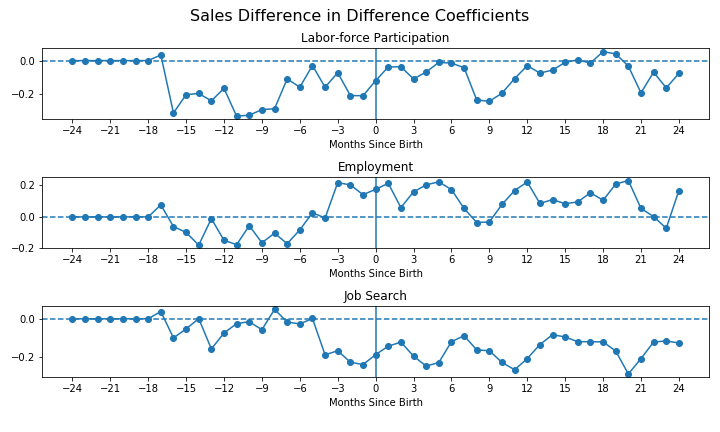
Table 27: Unemployment Months Since Birth \* Policy Coefficients

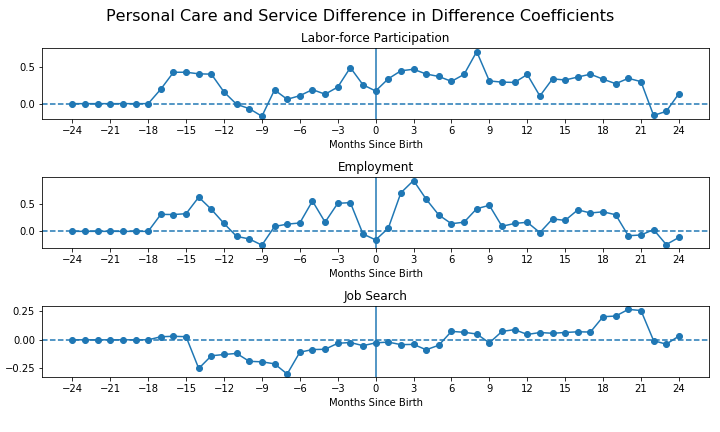
|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Months Since Birth | Full Sample Weighted | Full Sample Unweighted | College Educated Weighted | College Educated Unweighted | Less than College Weighted | Less than Collage Unweighted | White Collar Weighed | White Collar Unweighted | Blue Collar Weighted | Blue Collar Unweighted |
| -17 | -0.01 | 0.00 | 0.00 | 0.02 | -0.02 | -0.02 | -0.01 | 0.01 | 0.00 | -0.01 |
| -16 | 0.02 | 0.03 | 0.04 | 0.06 | 0.00 | 0.00 | 0.01 | 0.04 | 0.04 | 0.04 |
| -15 | -0.01 | 0.00 | 0.06 | 0.08 | -0.05 | -0.04 | -0.01 | 0.02 | 0.03 | 0.02 |
| -14 | 0.01 | 0.02 | 0.05 | 0.06 | 0.00 | 0.00 | 0.04 | 0.06 | 0.01 | 0.02 |
| -13 | -0.01 | 0.00 | 0.00 | 0.01 | -0.02 | -0.01 | -0.01 | 0.00 | 0.10 | 0.12 |
| -12 | 0.00 | 0.00 | 0.03 | 0.03 | -0.03 | -0.03 | 0.01 | 0.01 | 0.03 | 0.06 |
| -11 | 0.02 | 0.02 | 0.04 | 0.04 | 0.00 | 0.00 | 0.02 | 0.02 | 0.08 | 0.10 |
| -10 | 0.02 | 0.02 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.01 | 0.10 | 0.11 |
| -9 | 0.01 | 0.00 | 0.03 | 0.01 | -0.01 | -0.01 | 0.00 | 0.00 | -0.02 | 0.01 |
| -8 | -0.01 | -0.01 | 0.06 | 0.04 | -0.06 | -0.04 | 0.00 | 0.00 | -0.04 | -0.01 |
| -7 | -0.01 | 0.00 | 0.07 | 0.06 | -0.06 | -0.04 | 0.02 | 0.02 | -0.03 | 0.00 |
| -6 | 0.00 | 0.01 | 0.06 | 0.05 | -0.04 | -0.03 | 0.03 | 0.04 | 0.01 | 0.03 |
| -5 | -0.01 | 0.00 | 0.05 | 0.05 | -0.05 | -0.04 | 0.02 | 0.03 | -0.02 | -0.04 |
| -4 | -0.03 | -0.01 | 0.02 | 0.03 | -0.08 | -0.04 | -0.01 | 0.01 | -0.05 | -0.05 |
| -3 | -0.01 | 0.00 | 0.03 | 0.03 | -0.04 | -0.02 | 0.02 | 0.03 | -0.05 | -0.04 |
| -2 | 0.01 | 0.01 | 0.03 | 0.03 | -0.01 | -0.01 | 0.02 | 0.03 | -0.06 | -0.05 |
| -1 | 0.00 | 0.00 | 0.01 | 0.02 | -0.02 | -0.02 | 0.00 | 0.02 | -0.07 | -0.07 |
| 0 | 0.02 | 0.01 | 0.04 | 0.04 | 0.00 | -0.01 | 0.02 | 0.04 | -0.02 | -0.01 |
| 1 | 0.01 | 0.01 | 0.05 | 0.05 | -0.03 | -0.02 | 0.02 | 0.04 | -0.02 | 0.00 |
| 2 | 0.00 | 0.01 | 0.02 | 0.03 | -0.03 | -0.02 | 0.01 | 0.04 | 0.04 | 0.02 |
| 3 | -0.02 | -0.01 | 0.01 | 0.02 | -0.06 | -0.04 | 0.00 | 0.02 | -0.01 | -0.01 |
| 4 | 0.00 | 0.01 | 0.03 | 0.04 | -0.03 | -0.02 | 0.01 | 0.04 | 0.04 | 0.01 |
| 5 | -0.02 | -0.01 | 0.05 | 0.06 | -0.06 | -0.05 | 0.01 | 0.04 | -0.03 | -0.05 |
| 6 | -0.01 | 0.00 | 0.07 | 0.08 | -0.07 | -0.06 | 0.03 | 0.06 | -0.08 | -0.07 |
| 7 | 0.01 | 0.01 | 0.09 | 0.08 | -0.05 | -0.04 | 0.05 | 0.06 | -0.01 | -0.01 |
| 8 | -0.01 | -0.01 | 0.07 | 0.06 | -0.07 | -0.06 | 0.03 | 0.04 | -0.08 | -0.06 |
| 9 | -0.04 | -0.03 | 0.03 | 0.03 | -0.10 | -0.08 | 0.01 | 0.05 | -0.13 | -0.10 |
| 10 | -0.03 | -0.02 | 0.02 | 0.01 | -0.07 | -0.06 | 0.00 | 0.02 | -0.04 | -0.05 |
| 11 | -0.05 | -0.04 | 0.02 | 0.02 | -0.10 | -0.09 | -0.02 | 0.00 | -0.07 | -0.10 |
| 12 | -0.03 | -0.03 | 0.01 | 0.01 | -0.06 | -0.07 | -0.01 | 0.01 | -0.09 | -0.08 |
| 13 | -0.01 | -0.02 | 0.03 | 0.02 | -0.04 | -0.05 | 0.00 | 0.01 | -0.02 | 0.01 |
| 14 | -0.04 | -0.05 | 0.01 | 0.00 | -0.08 | -0.08 | -0.01 | 0.01 | -0.17 | -0.12 |
| 15 | -0.03 | -0.03 | 0.00 | 0.00 | -0.05 | -0.05 | -0.01 | 0.01 | -0.10 | -0.05 |
| 16 | -0.03 | -0.02 | 0.05 | 0.04 | -0.08 | -0.07 | -0.01 | 0.01 | -0.14 | -0.08 |
| 17 | -0.05 | -0.03 | 0.05 | 0.05 | -0.11 | -0.09 | -0.01 | 0.01 | -0.18 | -0.15 |
| 18 | -0.04 | -0.02 | 0.03 | 0.04 | -0.09 | -0.07 | -0.04 | -0.01 | -0.04 | -0.04 |
| 18 | -0.04 | -0.04 | 0.03 | 0.02 | -0.09 | -0.08 | -0.03 | -0.01 | -0.04 | -0.10 |
| 19 | -0.01 | -0.02 | 0.00 | 0.00 | -0.02 | -0.05 | -0.02 | -0.01 | 0.15 | 0.03 |
| 20 | 0.00 | -0.02 | 0.01 | 0.01 | -0.02 | -0.05 | -0.02 | 0.00 | 0.12 | -0.01 |
| 21 | 0.00 | -0.01 | 0.02 | 0.02 | -0.02 | -0.03 | 0.02 | 0.04 | 0.13 | 0.00 |
| 22 | 0.00 | 0.00 | 0.04 | 0.05 | -0.03 | -0.04 | 0.03 | 0.05 | 0.05 | 0.03 |
| 23 | -0.02 | 0.00 | 0.04 | 0.07 | -0.07 | -0.06 | 0.02 | 0.07 | 0.08 | 0.08 |
| 24 | -0.01 | 0.00 | 0.00 | 0.02 | -0.02 | -0.02 | -0.01 | 0.01 | 0.00 | -0.01 |

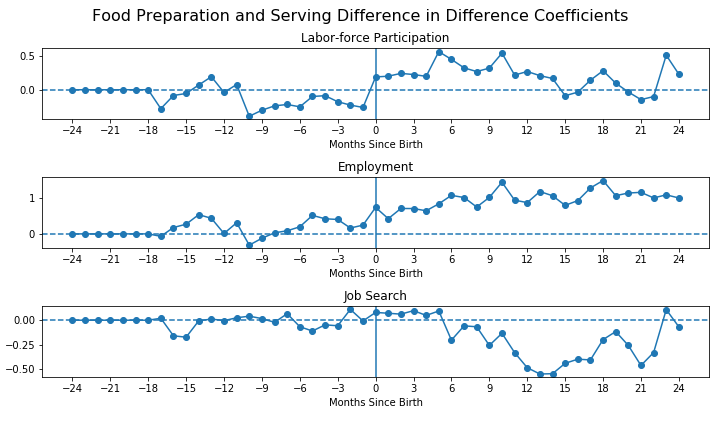
Figures for selected other Occupation Groups

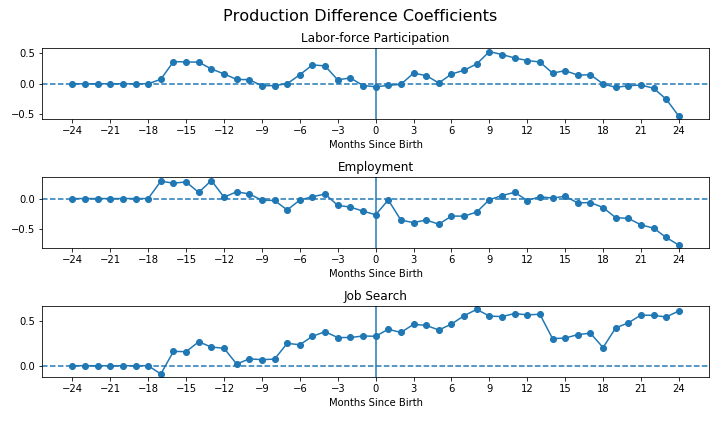












1. In terms of 2019 dollars [↑](#footnote-ref-1)
2. In terms of 2019 dollars [↑](#footnote-ref-2)
3. Highlighted values indicate the presence of a paid family leave policy. [↑](#footnote-ref-3)
4. If an individual is away on paid leave, she is encoded by the SIPP as employed and working all weeks. [↑](#footnote-ref-4)
5. As some individuals were classified as unemployed or out of the labor-force immediately prior to birth or had missing data on occupation, the month relative to birth used to extract this information differs from individual to individual. [↑](#footnote-ref-5)
6. Months -24 to -18 are omitted to serve as a reference period [↑](#footnote-ref-6)
7. It is important to note that a positive effect on employment does not imply a negative effect on unemployment, as increased probability of labor-force participation may lead to both increased probability of employment and increased probability of unemployment. [↑](#footnote-ref-7)
8. Each graph of point estimates presented in this paper sets the coefficients of months -24 to -18 to zero, as these months are omitted from the regression to serve as a reference period. [↑](#footnote-ref-8)
9. In each table of probability values, significance at the 10% level is signified by \*, while significance at the 5% level is signified by \*\*. [↑](#footnote-ref-9)