Maternal Labor Dynamics: Participation, Earnings, and Employer Changes

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Abstract

This paper describes the labor dynamics of U.S. women after they have had their first and subsequent children. We build on the child penalty literature by showing the heterogeneity of the size and pattern of labor force participation and earnings losses by demographic characteristics of mothers and the characteristics of their employers. The analysis uses longitudinal administrative earnings data from the Longitudinal Employer-Household Dynamics database combined with the Survey of Income and Program Participation survey data to identify women, their fertility timing, and employment. We find that women experience a large and persistent decrease in earnings and labor force participation after having their first child. The penalty grows over time, driven by the birth of subsequent children. Non-white mothers, unmarried mothers, and mothers with more education are more likely to return to work following the birth of their first child. Conditional on returning to the labor force, women who change employers earn more after the birth of their first child than women who return to their pre-birth employers. The probability of returning to the pre-birth employer and industry is heterogeneous over both the demographics of mothers and the characteristics of their employers.

1 Introduction

This paper describes the pattern of women's earnings and labor force participation in the quarters immediately before and after the birth of their first and subsequent

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children. Previous work has shown that many women take time away from paid work while their children are young and return when the children are able to attend school (Killewald & Zhuo 2019). We show these labor force dynamics at a more detailed level, by exploring quarterly job to non-employment flows in the years around the birth of their first and last children. This level of detail is made possible by linking administrative data on earnings and employer characteristics with survey data containing demographic information on mothers. The ability to identify flows between employers and industries in the U.S. is also unique to the data used in this paper.

The literature examining the gender earnings gap is vast. Our main contribution to this literature is the addition of analysis using new data sources on mothers in the U.S. These data allow us to explore earnings dynamics over time within person, rather than using cross-sectional data or small samples of survey-based panels. We have a large number of observations, so we can deeply explore the heterogeneity in earnings dynamics across age at birth, race, income, and job characteristics. We focus on the timing around the birth of the first child, since previous work using administrative data has found that the first birth is associated with substantial declines in labor force participation and earnings for women in the U.S. (Neumeier et al. 2018, Chung et al. 2017), Sweden (Angelov et al. 2016), Norway (Andresen & Nix 2019, Bütikofer et al. 2018), and Denmark (Kleven, Landais & Søgaard 2019, Lundborg et al. 2017), though we also explore the effects of subsequent births. We analyze differences between demographic groups because previous literature has found larger effects on participation for white mothers compared to nonwhite mothers (Florian 2018) and on wages for high-skill women relative to low-skill women (Wilde et al. 2010).

Recent papers have analyzed the dynamics of participation for U.S. mothers. Using data for the NLSY 1979 cohort, Killewald & Zhuo (2019) find that 36% of women generally work full-time, after one month of maternity leave, while 21% remain out of the labor force for much of the eighteen years after the first birth. The remainder work part-time or take a shorter period of time out of the labor force. Lu et al. (2017) use similar methods to study short-term behavior of later cohorts in the SIPP, finding that a majority of women who work before childbirth continue with full-time employment, but others drop out of the labor force or transition to part-time employment in the first year. Our paper builds on this work by examining transitions between employers, not just transitions between employment and nonemployment.

Like us, Albrecht et al. (2018) and Bronson & Thoursie (2017) use employer-employee matched data to explore employer-based heterogeneity and transitions after childbirth, using data from Sweden. Bronson & Thoursie (2017) show that those women that remain with the same employer after childbirth experience disadvantage relative to similar men, missing out on several promotions during the maternity leave

period. Albrecht et al. (2018) show that men are more likely to switch employers and are more likely to benefit from that switch after they have had a child than women. However, we are the first to look in detail at U.S. mothers with this type of data. Sweden has both universal maternity leave and affordable childcare, amenities mothers in the United States do not have. In addition, since Kleven, Landais, Posch, Steinhauer & Zweimüller (2019) and Kuziemko et al. (2018) find larger effects on labor participation and earnings for the U.S. compared to the Nordic countries, we expect that transitions between employers may also differ. Thus, we believe both the contrast to the findings in the Swedish data and the description of the dynamics for U.S. women will be relevant and important for the literature.

We link Survey of Income and Program Participation (SIPP) respondents to administrative earnings data from the Longitudinal Employer-Household Dynamics (LEHD) database to create a panel of earnings for a sample of women with children. These data provide months and years of birth for the first and last child of each woman in our sample, as well as information on marital history, education, and demographics. We link women from the SIPP sample to the 2011 snapshot of the Longitudinal Employer-Household Dynamics (LEHD) Job History File. These data provide quarterly earnings as reported by employers to state unemployment insurance agencies between 1990 and 2012[1]. Non-employment can be inferred from gaps in reported earnings. We also link characteristics of employers, such as firm and establishment size and industry, to mothers using the LEHD Employer Characteristics File.

Since this paper is largely descriptive, we present our evidence with simple statistics, frequencies and means across samples. We also show a number of event study specifications, regressions that control for fixed characteristics of the sample of mothers and show the dynamics in earnings that remain once we include those controls. We decompose the differences we see between mothers of different races, pre-birth incomes, education, and marital status to see what characteristics most drive the differences between women of different types, given that all of these characteristics are strongly correlated with each other within the population.

We use three measures of women's labor market experience: labor force participation, earnings, and earnings conditional on participation. We find that women experience a large and persistent decrease in earnings and labor force participation after having their first child, and the penalty grows over time. Compared to the fourth quarter before the birth, earnings drop by $1,990 in the quarter after birth; by the 24th quarter after the birth, earnings remain $605 below pre-birth levels. Given average pre-birth quarterly earnings of $10,260, these effects represent an initial drop of

[1]The year range varies by state, see Vilhuber (2018).

19% and sustained decrease of 6%.[2] But both the size of the initial earnings change and the pattern after childbirth vary by the characteristics of the mothers. White women decrease their participation by more than black and Hispanic women, and married women also are more likely to be non-employed after childbirth. Human capital has an ambiguous effect, as more educated women experience smaller decreases in participation, but conditional on education, those with higher pre-birth earnings exhibit larger declines in participation.

Conditional on labor force participation, the effects of childbirth on earnings are less stark. Women still experience a decrease in earnings, possibly due to short unpaid or partially paid leaves that we cannot observe. A reduction in hours may also play a role, though we do not observe hours in the LEHD. However, mothers' earnings return to pre-birth levels by the fifth quarter after the birth and continue to rise.

We expand the analysis beyond basic labor market experience measures to study transitions between employers and industries after childbirth. 71% of women who work before their first birth continue to work for the same employer after the birth; however, 64% of those who change employers within a year of the birth change industries as well. We also explore how characteristics of mothers and their employers are associated with whether a woman changes employers or industries after the birth, and how the time path of earnings evolves depending on whether a woman stays with an employer, switches to a new employer soon after the birth, or leaves the labor force for at least four quarters.

The paper is structured as follows: We start by sketching out a theoretical framework in Section 2, outlining the decisions women must make after childbirth regarding whether and how much to work. We then explain the event-study specification we use to estimate the patterns of labor force participation and earnings around the time of childbirth in Section 3, and provide a detailed description of the data used in Section 4. We then discuss results, starting with the labor force participation patterns of women post-childbirth in Section 5.1, followed by a discussion of earnings in Section 5.2, and finally summarize the patterns we see on employer and industry transitions in Section 5.3. Section 6 concludes with some discussion of implications and future work.

[2]The base is peak pre-birth earnings, but the effects are measured relative to the fourth quarter before the birth, which may not be the peak for all women. Therefore, these figures may understate the true changes in percentage terms.

2 Theoretical Framework

2.1 Model Primitives

This section presents a conceptual framework for thinking about how a mother's labor force participation and earnings are determined. We consider the mother's decision problem, though we recognize that labor supply choices of partners are interdependent and may be made jointly by the household. Since the model only serves to organize ideas, we simplify it by taking the spouse's labor supply as given. The mother chooses her labor supply, then the household jointly chooses consumption.

Each quarter, a mother chooses $\boldsymbol{e}$ from a set of possible employment opportunities, $\{\boldsymbol{e^0}, ..., \boldsymbol{e^N}\}$. Each employment opportunity is a bundle of earnings (e_{earn}), hours (e_{hours}), and match quality (e_{match}). In a job with higher match quality, a woman is relatively more productive, both relative to other opportunities available to her and compared to other potential workers(Jovanovic 1979). Beyond the monetary benefits that likely come with a better match, a mother may prefer to work if her career gives her a sense of fulfillment or purpose. A woman may experience greater satisfaction from a position that is a better fit for her skills and interests; the e_{match} component includes these aspects of an employment opportunity. Though we do not go too much into the details of job search in this conceptual framework, it is natural to assume that the match quality of a woman's current job is known, while other job opportunities have uncertain match quality. Her choice set always includes $\boldsymbol{e^0}$, staying at home with zero market earnings. She also has the option of earning income by working, where the number N and quality of job opportunities is determined as described below. A woman may be able to choose positive earnings with zero hours in a given quarter if she has access to paid parental leave.

The household also chooses consumption c_t, subject to the budget constraint, $c_t = a_t + e_{earn,t} + e_{hh,t} + g_t - a_{t+1}$. There is a borrowing constraint $a_{t+1} - a_t \geq -B$, where B is an exogenous limit that may be binding. Her stock of accumulated household resources from prior periods is a_t, and she will carry a_{t+1} into the next period. $e_{hh,t}$ denotes her spouse's earnings and other sources of household income other than the mother's possible market earnings, and g_t includes government transfers net of taxes. g_t is not exogenous, because participation in programs such as SNAP, TANF, and EITC will depend on her choice of $\boldsymbol{e}$. We abstract from the consumption choice, but we assume that mothers take into account how their choice of $\boldsymbol{e}$ affects the optimal choice of c_t.

In each quarter t, she chooses $\boldsymbol{e}$ to maximize $\sum_{t=0}^{T} \delta^{\tau} u\left(c_t, z_t, v_t\right)$, where $\delta \in (0, 1)$ is the discount factor. The problem must be dynamic because a mother's choice in

period t affects the set of employment opportunities that will be available to her in future periods; we describe this mechanism in more detail below. In addition, dissaving or borrowing to finance a spell of nonemployment affects the budget constraint in future periods. As described above, c_t is consumption in period t. z_t captures utility related to the mother's identity and adherence to social norms. Women's preferences for market work versus childcare differ. Some women may prefer allocating less of their time to market work and more to childcare and other non-market labor after childbirth. Others may prefer the opposite. These preferences may be influenced by social norms. The magnitude and sign of this norm term depends on the mother's sense of her identity, the views of her spouse and other family members, and broader societal norms.

v_t denotes the child's utility in period t. Child utility depends on parental inputs and nonparental inputs. Though a child's utility also depends on his consumption, we include this in the household consumption term c_t. Parental inputs depend on both the quantity and quality of time that parents spend with children. Quality may depend on the parents' characteristics, such as age and education. For example, a college-educated mother may provide a more nurturing or stimulating environment to a child. Time use data shows that women in the U.S. with at least a college degree spend more time caring for their children than those with less education, both unconditionally and in a sample of working mothers. The gap is even larger when considering recreational child care (e.g., playing games) and, for women who do not work, educational child care (e.g., reading to children) (Guryan et al. 2008).

Nonparental inputs depend on the availability and cost of different forms of child-care, which may include informal care, formal care in an individual or small group setting, or center-based care. Each child-care setting may include high and low quality/price options. Given the range of environments that parents and different types of nonparental caregivers can offer, choosing market work may increase child utility for some families and decrease it for others. Prior literature has found that maternal employment during early childhood has no significant effect on later life outcomes, while maternal employment during a child's teenage years increases the child's average earnings at adulthood (Stinson & Gottschalk 2016).

Having described her preferences, we return to the determinants of the mother's choice set. The number of job opportunities that a mother has and the earnings associated with those jobs depend on her general human capital, firm- or industry-specific human capital, time available for work, and effort at work. Women with more education will have more general human capital. Time out of the labor force may lead to skill depreciation; therefore, choosing nonemployment in one quarter can lead to job opportunities with lower earnings in the future. In addition, choosing nonemployment means giving up the match at the pre-birth job and searching for a new job with

uncertain match quality. Specific human capital increases with tenure. It may also increase with expected tenure, if employers provide more training to employees who are expected to stay with the firm longer. Depreciation of specific human capital occurs with time out of the labor force, but it also happens if a mother changes industries or even jobs within an industry. Match quality will be more uncertain and possibly lower on average if a woman searches in a different industry, assuming the woman initially chose her pre-birth industry based on high match quality.

A mother's earnings will also be affected by whether her time available for work meets the requirements of the job. Goldin (2014) argues that some workers, such as lawyers, receive high returns to long hours and to being available at particular times. Mothers may be unable or unwilling to combine such a work schedule with parenting responsibilities. In that case, a woman may change jobs or, particularly if she has difficulty finding another job that matches both her skills and desired number of hours, leave the labor force entirely upon having children. In contrast, a woman who works in an occupation that allows more flexibility in hours, such as a pharmacist, will not experience as large of an earnings penalty upon having children, if any at all. While Goldin (2014) focuses on college-educated women, less-educated women may also work in inflexible jobs. For example, shift work in nonstandard hours and jobs that require workers to be "on-call" may not be feasible for mothers who must make arrangements for child care (Cubas et al. 2018).

2.2 Model Predictions

We focus on predictions that can be tested using our data. First, consider possible heterogeneity based on pre-birth earnings. A woman with high earnings before the birth may also have a high-wage employment opportunity after the birth. In this case, she may be more likely to remain in the labor force, because she can increase consumption and nonparental inputs to child utility more per hour of work than a woman with a lower wage. High earnings may also indicate a particularly good match, implying a high opportunity cost of having to search in the future if she chooses nonemployment today. A good match may also lead to an employer response that further increases the likelihood that a woman remains with that employer; employers may be willing to offer paid parental leave or family-friendly amenities such as flexible hours in order to retain good matches. On the other hand, the standard income effect in the labor-leisure tradeoff implies that a high-wage woman may instead choose to work fewer hours and "purchase" parental inputs to child utility by spending more time with the child. This choice may not be possible, if an employment opportunity with a high wage and fewer hours is not in her choice set. In addition, a woman with high pre-birth earnings may also have more accumulated savings. These savings would allow her

to maintain her consumption with lower earnings, or may allow her to purchase high-quality childcare. Finally, high-earning women's identities may be more connected to their careers, leading them to be more likely to continue in these careers after childbirth. Taking all of this together, the effect of pre-birth earnings on labor force participation and earnings after childbirth is ambiguous.

Though we may expect much of the effect of maternal education to operate through wages, education may have independent effects as well. If women with more education are more likely to have spouses with higher education and earnings, then their higher unearned income has the same ambiguous effect of higher savings; additional earnings have a smaller effect on consumption utility, but higher quality childcare may be available. Mothers with more education may instead choose nonemployment because they can increase child utility through parental inputs more than one with less education. In the other direction, it is possible that women with higher education would have a stronger preference for, and thus derive more utility from market work. Beyond the effects of education on their own careers, educated women may be more likely to have higher-earning peers, directly through their college social network or more indirectly by forming new friendships with others with a similar educational background. If high-earning women are more likely to remain in the labor force, peer effects may lead women with high education to behave like high-earners, regardless of their own level of earnings.

Turning to more basic demographics, spousal income has an ambiguous effect, as discussed above; married women have higher consumption under nonemployment but also have resources to purchase higher-quality childcare. Married women may also be subject to a different set of social norms regarding a mother's role than single women, and they may face pressure from a spouse, parents, in-laws, and/or friends to take on a more traditional role in the home after the birth of a child. Though norms have changed significantly since the 1970s, according to data from the 2012 General Social Survey (NORC 2012), 35% of Americans believe that a woman with a preschool child should not work, 47% believe that she should work part-time, and only 18% believe that she should work full-time. Though unmarried women may also feel pressure to conform to this norm, there exists an opposing norm of self-sufficiency for single mothers, echoed in the 1996 welfare reform (PRWORA) that encouraged work.

Conditional on pre-birth earnings and other demographics, older mothers may have different choice sets than younger mothers. Older women may have longer tenure at their employers, making a nonemployment spell that reduces their specific human capital more costly. On the other hand, older women may have an advantage over younger mothers in their ability to provide enriching care for the child, making leaving the labor force more attractive. Younger women may have less to lose from leaving a

particular job, but because they have less experience, they may also be more concerned that leaving a job in one period may reduce their opportunities in future periods. A younger woman may also have more to gain in terms of lifetime earnings by maintaining employment and wage growth, rather than transitioning to a less demanding job early in her career.

Controlling for differences in pre-birth earnings, education, age at first birth, and marital status, there is little scope for the model to explain differences in labor force participation by race and Hispanic origin. However, it is possible that social norms or peer behavior may vary by race and affect mothers' decisions in the labor market.

Ultimately, a mother's choice about whether to remain employed, and if so, at what job, after childbirth is extremely complex, with several mechanisms operating in opposing directions. Empirical work is necessary for understanding how women make these decisions.

3 Empirical Framework

This paper is a descriptive analysis using an event-study framework. We treat the first birth as an "event" and recenter the earnings and labor force time series around that date. Although event-study regressions can be used for causal analysis in settings where the event is plausibly exogenous, the choice of whether and when to have a child cannot be considered an exogenous event. Thus, we view these results as solely descriptive.

We run the following specification:

$$Y_{it} = \sum_{d=-8}^{24} \pi_d (t - birthquarter_i = d) + \gamma_i + \delta_t + \varepsilon_{it}$$

where Y_{it} is an outcome variable. γ_h is a person fixed effect, which controls for constant attributes of the individual. The specification includes calendar quarter fixed effects δ_t, which control for time-varying conditions, such as the general state of the economy. Standard errors are clustered at the person level.

We do this analysis for several different outcome variables. The first one is an indicator for whether or not individual i had any earnings in period t. We use this as a measure of quarterly labor force participation. We then estimate earnings, both with the full sample, and conditional on non-zero earnings in a given quarter.

The classic way to frame an event-study is as a regression discontinuity (RD), with the "event" as the discontinuity. The identification comes not only from the timing of the event, but the use of the other people who have the same event, but with different timing as controls. However, using childbirth as an event violates an important

identification restriction of the RD - the lack of manipulation of the timing. The timing of children is a choice variable, and can be endogenous to earnings trajectories.

In a typical event-study, we would use the method, in part, to check for pre-trends. But when the event is childbirth, we expect pre-birth trends. Even when we set the base timing to prior to the pregnancy, we might expect pre-birth trends because women are making long-term plans for their eventual fertility. And those trends are interesting from a descriptive standpoint. By using the event study to abstract from individual differences, and by centering all of the observations on the birth timing, we use the event-study to understand the underlying pre- and post-birth trends. But the existence of those pre-birth trends invalidates any causal interpretation we might be tempted to bring to the analysis.

4 Data and Descriptive Statistics

We use data from the Survey of Income and Program Participation (SIPP) to identify mothers and the dates of birth of their children, along with various demographic variables, such as race, age, education, and marital status. We include mothers from the 2001 to 2014 SIPP panels. They are assigned Protected Identification Keys (PIKs), probabilistically assigned Census identifiers that allow for linkage across surveys and administrative records[3]. We link this to the Longitudinal Employer-Household Dynamics (LEHD) database, which provides a panel of earnings for each of our SIPP mothers, as well as characteristics of their employers. The LEHD data come from state UI offices, which report data from employers on their employees. This is combined with Quarterly Census of Employment and Wages (QCEW) data on the characteristics of those employers to create several employer-employee linked files. We use the LEHD Employment History File and LEHD Employer Characteristics File for this analysis. Since states enter the LEHD data at different times, the time covered varies by state, but most states are available from 2000-2012. The LEHD research data is provided in discrete snapshots, and we are using the 2011 snapshot of data for this project, which ends in the first quarter of 2012.

Our primary sample are mothers surveyed in the 2001-2014 SIPP panels who are observed in the LEHD (thus in formal employment) before their first birth. Of the 85,000 mothers[4] in these SIPP panels, 71,500 could be assigned PIKs. As described below, we weight results to account for differential likelihood of PIK assignment based on observables. Of these, 63,500 could be linked to the LEHD. Removing those who were not observed in the LEHD before the first birth reduces the sample size to 15,500.

[3]See Wagner and Lane (2014).

[4]All sample sizes are rounded in accordance with disclosure avoidance policy.

We also only include births that occurred at least four quarters before the first quarter of 2012, to ensure that we can observe the mother in the LEHD for at least four quarters after the birth, dropping the sample size to 14,500. Finally, because we want to condition on pre-birth employment outcomes, we limit to those who can be observed in the LEHD at least four quarters before the first birth, leaving us with sample of approximately 13,000 mothers. Once we observe a woman with positive earnings in the LEHD, we infer that if she does not have any earnings in a future quarter, she was out of the labor force. It is possible that labor force participation is measured with error. A woman would not appear in the LEHD in a given quarter if she transitioned to self-employment or moved to a state that did not provide data for that quarter for the 2011 LEHD snapshot. For this reason, we do not include women in the sample until they have been observed in the LEHD for the first time. We are more confident inferring that a woman is actually not in the labor force if she was previously observed working in the LEHD than if she had not yet been observed, particularly since different states began providing data in different years. Because women who do not work before having their first child would necessarily be excluded from the sample, this analysis should be interpreted as descriptive of the behavior of working women (excluding the self-employed) who have children, rather than the entire population of women.

Since restricting the sample to women who had been observed in paid employment before the birth does not fully address concerns about self-employment and moving, we use other evidence to show that measurement error from these sources would have small effects relative to the magnitude of the changes we observe. Jeon & Ostrovsky (2019) study Canadian new mothers and find that only 4.3% of those who had been employees in 2006 (before the first birth) had transitioned to self-employment by 2011. While some mothers in the U.S. may also move to self-employment, the share is likely too small to explain fully the labor force participation changes we see here.

To address the concern that women may have moved out of states covered by the LEHD, we approximate the fraction of the population that moved from covered states to uncovered states. Since states enter the data at different times but generally provide data through the present, this fraction is expected to be largest in the early years of the data.[5] We estimate state-to-state mobility using the 2000 Decennial Census, based on the question about place of residence five years prior (U.S. Census Bureau 2000). Public-use tabulations give the number of people in each state in 2000 by their state of residence in 1995. Of those who lived in states that provided data to the LEHD program in 1995, only 0.54% lived in states that did not provide data in 2000. Though this is a rough calculation[6], measurement error due to moves to uncovered states is

[5]Vilhuber & McKinney (2014) includes a list of the states and the quarters for which they provide data.

[6]The calculation does not estimate the probability that a woman in our sample moves out of LEHD coverage for several reasons. First, mobility rates may vary by gender, parental status, and employment

likely to be small. Therefore, we conclude that moving to non-covered employment can explain only a small fraction of the decrease in labor force participation that we observe.

There are other issues to keep in mind when interpreting our results due to the nature of the administrative records underlying the LEHD. If a woman leaves the labor force and returns within the same quarter, we do not identify her as having a spell of non-participation. Paid maternity leave, when that leave is paid by the employer, rather than by one of the several states that have paid leave programs, is also likely to appear as paid employment in the data.

Our primary outcome variables are labor force participation and earnings, both unconditional and conditional on labor force participation. For our event study specifications and figures, we show the coefficients from 8 quarters (2 years) before birth to 24 quarters after birth. Earnings are measured in 2012Q1 dollars, using a quarterly price index created by constructing three-month averages of the monthly CPI-All Urban Consumers series produced by the Bureau of Labor Statistics.

In addition to first birth, we do several analyses of the effects of last birth. For some women this is equivalent to the first birth. Since most women have their children within 6 years of each other[7], we create a "completed fertility" sample, where the last birth reported in the SIPP took place at least 6 years before the survey. Since we show outcomes through the 24th quarter after the birth, while we cannot be positive that the "last" birth is actually the last child, we do know that the mother did not have additional children during the quarters examined.

Finally, we explore employer transitions after childbirth. This requires a sample of women who are observed to be working in at least one of the 4 quarters leading up to childbirth, so we can compare her employer before and after childbirth.

All of our results are weighted with inverse probability weights, following Meyer & Wu (2018) and Meyer et al. (2018). The weights adjust for the fact that some types of people are more likely to be assigned a PIK and therefore included in our analysis. To calculate the weights, we use logit regressions for each panel to predict the likelihood that a SIPP mother is assigned a PIK. We use the following regressors: indicators for whether a woman was married (now divorced, separated, or widowed) or never had been married; for being a high school graduate but no four-year college degree or having a four-year college degree or higher; for being Hispanic, black non-Hispanic, or white non-Hispanic; for paid employment; for living in a urban area; whether she

status; the calculation is for the entire population, while we are interested in employed mothers or soon-to-be-mothers. Second, the five-year mobility measure would not include those who move to an uncovered state, then return within 5 years. Third, since people who moved out of the U.S. would not be surveyed in 2000, the calculation is based only on people who lived in the U.S. in both 1995 and 2000.

[7]Among second and subsequent births in 2017, only 20.5% of births took place 72 months or more after the previous birth in the U.S.(Martin et al. 2018).

Table 1: Employment in 4 Quarters Pre- and Post-Birth

	Proportion	Std. Err.
Only worked pre-birth	0.1164	0.0038
Only worked post-birth	0.0407	0.0033
Worked pre-birth and post-birth	0.7599	0.0053
Did not work	0.0829	0.0032
Sample size:	13000	

reports being disabled; whether she reports being a U.S. citizen or noncitizen; and for whether she received any transfer income, as well as continuous variables for age and its square and family income. We multiply the inverse of each person's predicted probability of being assigned a PIK by her person weight in the SIPP to obtain our inverse probability weights.

Table 1 shows the proportions of women with different patterns of participation before and after their first birth. Noting that these are all women that matched to the employment data, so have been in the formal labor market at some point, we see that most of our sample, 76%, worked both in the four quarters before birth and the four quarters after birth. 11.6% worked just in the four quarters before birth, but not after, for a total of 88% working pre-birth. As a comparison, 66%-69% of women worked during their pregnancy using the full SIPP fertility module sample, for births since the mid-1980s (Laughlin 2011); our sample clearly has higher labor force attachment than the full population of soon-to-be mothers. 4% of our sample did not work in the four quarters before their first child's birth, but worked after. The remaining 8% did not work at all in the jobs covered by LEHD in the year before or after their first birth.

Table 2 gives summary statistics for the basic demographics for our first birth sample and our last birth sample, estimated using inverse probability weights. The main event study analysis will use the first birth sample. When studying the last birth instead, we restrict the sample to women whose last reported birth occurred at least six years prior to the survey. The samples are very similar in terms of racial composition, with 67-68% non-Hispanic white, 13-15% Hispanic, 11-12% non-Hispanic black, and 7% another race. As expected, women whose most recent birth was longer ago are older on average; the average age at first birth in years is 26.6 in the main sample and 29.2 in the last birth sample. Marital status and education are measured at the time of the last birth for the last birth sample. For this reason, women in the last birth sample are more likely to be married at the time of the birth (67.3% vs 62.5%) and less likely to have never been married (27.5% vs 34.4%). There are small differences in educational attainment and pre-birth earnings as well. Women in the main sample

earned $10,260 in 2012Q1 dollars in their highest-earning pre-birth quarter, while those in the last birth sample earned $9,355. The last birth sample contains fewer college graduates (28.1% vs 30.7%), more high school graduates (62.6% vs 56.6%), and fewer women with less than a high school degree (9.3% vs 12.7%). The result for those with less than a high school degree is likely due to the difference in average age, since women who gave birth before graduating high school would be included in the "less than high school" category. For example, a woman who had her first child in high school and her last child at age 23 after receiving a high school degree would be in the "less than high school category" in the first birth sample but move to the high school graduate category in the last birth sample. The difference in earnings and college graduation may reflect increases in women's educational attainment and earnings across cohorts, since the last birth sample comprises a slightly earlier cohort. These differences reinforce that it is not only the absence of additional children that distinguishes the last birth sample; these women are also at a different stage in the life course and from a slightly earlier cohort.

As a comparison, the first column shows summary statistics for a larger sample of mothers in the SIPP, including those that could not be linked to the LEHD. To ensure they are from the same cohorts as those who could be linked to the LEHD, these women had their first birth between 1991 and the first quarter of 2011. Compared to this sample, our first birth sample is more white and less Hispanic, more than a year older, more likely to be married at the time of the first birth, and better educated. It is important to keep in mind that this analysis is representative of women with some labor market experience prior to the first birth.

5 Results and Discussion

5.1 Labor Force Participation

Figure 1 shows the pattern of labor force participation around the birth of the first child for women in our sample of SIPP mothers. The coefficients estimate differences relative to the fourth quarter before the child was born. Participation decreases sharply, with a rate in the quarter of birth that is 18 percentage points lower than the rate before the birth. We also find evidence of a pre-trend, as women begin to exit the labor force during pregnancy. By the quarter before the birth, women are already 12 percentage points less likely to be employed than they were pre-pregnancy. Participation recovers slightly, as women are 2 percentage points more likely to work in the fourth quarter after the birth than they are in the first post-birth quarter. However, there is a clear downward trend in participation after that point. Six years after the birth, women are

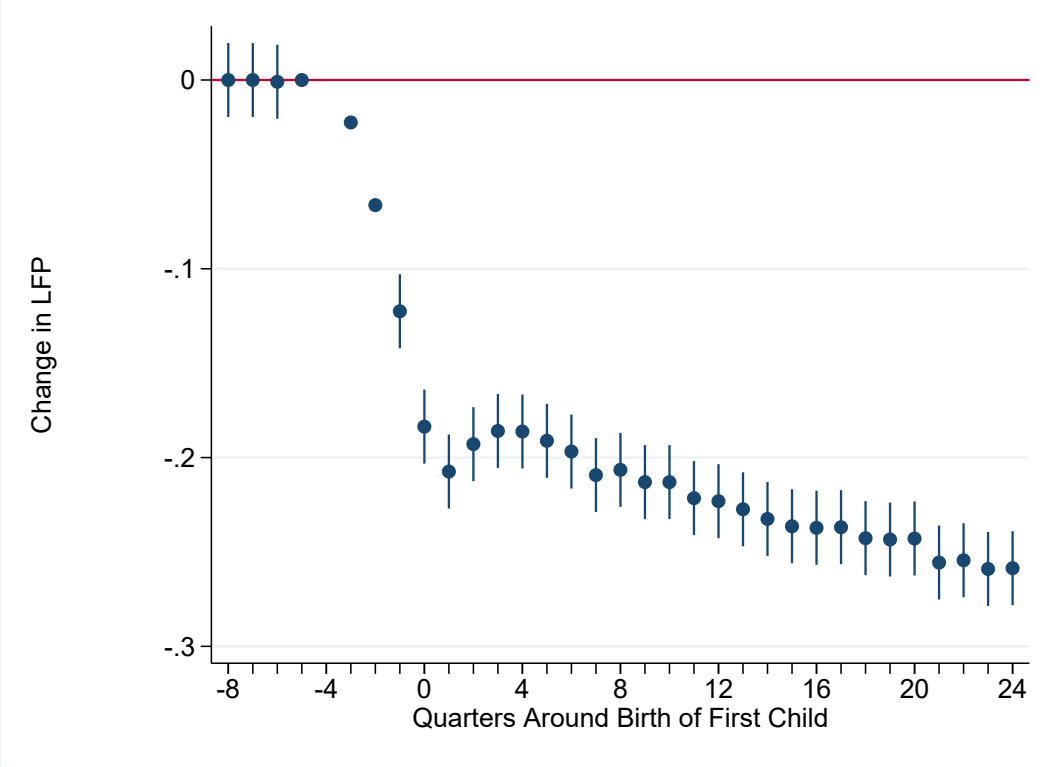
Table 2: Summary Statistics for First Birth and Last Birth Samples

	SIPP Mothers	First Birth	Last Birth
White Non-Hispanic	0.563	0.670	0.681
	(0.0039)	(0.0058)	(0.0130)
Hispanic	0.239	0.147	0.134
	(0.0037)	(0.0048)	(0.0104)
Black Non-Hispanic	0.126	0.111	0.118
	(0.0024)	(0.0037)	(0.0087)
Other race	0.0726	0.0724	0.0666
	(0.0019)	(0.0030)	(0.0061)
Age at first birth	25.2	26.6	29.2
	(0.0456)	(0.0714)	(0.202)
Never Married	0.401	0.344	0.275
	(0.0037)	(0.0058)	(0.0142)
Married	0.568	0.625	0.673
	(0.0038)	(0.0058)	(0.0142)
Divorced/Widowed	0.0308	0.0310	0.0512
	(0.0012)	(0.0020)	(0.0052)
College Graduate	0.226	0.307	0.281
	(0.0030)	(0.0054)	(0.0115)
High School Graduate	0.519	0.566	0.626
	(0.0038)	(0.0059)	(0.0130)
Less than high school	0.255	0.127	0.0931
	(0.0035)	(0.0041)	(0.0086)
Pre-birth Earnings		10260	9355
		(139.9)	(245.7)
Sample size:	31000/23000	13000/9100	3900/2000

Notes: This table describes the samples used in the event study analyses that follow. The main analysis sample includes about 13,000 mothers, while the sample of women whose last birth can be observed includes about 3,900 women. However, since educational attainment and marital status at the time of the first birth cannot be obtained for the 2014 SIPP panel due to the redesigned survey, estimates for these variables exclude this panel. Marital status and education are measured at the time of the last birth for the last birth sample. The first column shows summary statistics for a larger sample of mothers in the SIPP, including those that could not be linked to the LEHD. These women had their first birth between 1991 and the first quarter of 2011. All estimates use inverse probability weights that account for the likelihood that a person is assigned a PIK.

26 percentage points less likely to be in the labor force than they were one year before the birth. The additional decline may be due in part to additional births. We explore this idea in Section 5.1.2, where we examine last births rather than first births.

Figure 1: Labor Force Participation Event Study



Notes: Dependent variable is an indicator variable for non-zero earnings in a quarter. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the first birth and child was born 2011 or earlier. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

5.1.1 Demographic Differences

Table 3 shows the differences in the labor force participation trends over demographic variables, showing results for four different periods, relative to pre-birth participation and earnings. The periods shown are quarter of birth, 1 year after birth, 4 years after birth, and 6 years after birth. The models include four race categories: Hispanic, black non-Hispanic, white non-Hispanic (excluded category) and all other races. We use the marital history module in the SIPP to reconstruct each woman's marital status at the time of the first birth. We pool together all women whose first marriage had resulted in separation or termination in the "Divorced/Widowed" category. Other women are either married or never married (excluded category) at the time of the first birth. Similarly, we use the SIPP questions about dates of degree receipt to create

Table 3: Relationships between Changes in Labor Force Participation and Demographics

VARIABLES	Birth Qtr	1 Year	4 Years	6 Years
Hispanic	-0.02497	0.05587*	0.06048**	0.08262***
	0.0204	0.02184	0.02257	0.02288
Black Non-Hispanic	-0.05496**	0.05999**	0.09805***	0.07974**
	0.02031	0.02144	0.02259	0.02431
Other Race	-0.02359	0.003057	0.05164*	0.04451
	0.02227	0.02368	0.02599	0.02904
Age First Birth	0.01992*	-0.01357	-0.01655	-0.001706
	0.008891	0.01028	0.01106	0.01096
Age First Birth Sq.	-0.000261	0.000225	0.000302	0.000634
	0.000144	0.000167	0.000181	0.000182
Married	-0.04063*	-0.07604***	-0.08251***	-0.09360***
	0.01585	0.01698	0.01828	0.01916
Divorced/Widowed	-0.04243	-0.04527	0.008138	0.04366
	0.03733	0.03458	0.0395	0.03884
College	0.08522**	0.08388**	0.1194***	0.08438*
	0.02795	0.03125	0.03277	0.03339
High School	0.01737	0.0239	0.05626*	0.01952
	0.0241	0.02617	0.02722	0.02735
IHS Previous Earnings	0.02844***	-0.02270**	-0.07586***	-0.09324***
	0.007404	0.008307	0.009121	0.009521
Constant	-0.9608***	-0.1687	0.4796**	0.5922***
	0.1542	0.1732	0.1793	0.1673
Observations	9100	9100	8800	8000
R-squared	0.038	0.028	0.047	0.052

Notes: The dependent variable in the first column is the difference in labor force participation between the quarter of birth and the fourth quarter before the birth. The other columns change the later period to the 4th, 16th, and 24th quarters after the birth. Models are estimated using OLS, with inverse probability weights. Sample excludes the 2014 SIPP panel because marital status and educational attainment cannot be measured at the time of the birth. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

variables for educational attainment at the time of the first birth. We categorize women as having a four-year college degree or more, a high school degree but no four-year college degree, or no high school degree (excluded category). Because the marital and educational history questions were removed when the SIPP was redesigned for 2014, we include only women from the 2001-2008 SIPP panels in this analysis.[8] Pre-birth earnings measure pre-birth human capital. We use the quarterly earnings from the LEHD from the pre-birth quarter with the highest earnings, aggregated across all jobs. We apply the inverse hyperbolic sine transformation to pre-birth earnings to allow for easier interpretation of the coefficient.

Compared to white women, non-Hispanic black women face larger declines in participation in the quarter of birth. Hispanic and black women are increasingly more likely to work than white women as time passes. Differencing out participation rates in the year before birth and controlling for other demographic characteristics, the participation gap between Hispanic and white mothers increases from 5.6 percentage points one year after birth to 8.3 percentage points six years after the birth. Similarly, the gap between black and white mothers increases from 6.0 percentage points one year after the birth to 9.8 percentage points four years after the birth, then falls to 8.0 percentage points six years after the birth.

Married mothers decrease their participation by more than women who had never been married at the time of the birth, by 4.1 percentage points in the quarter of birth and increasing to 9.4 percentage points six years after the birth. There are no significant differences between women who had never been married and women who were married in the past but not at the time of the birth.

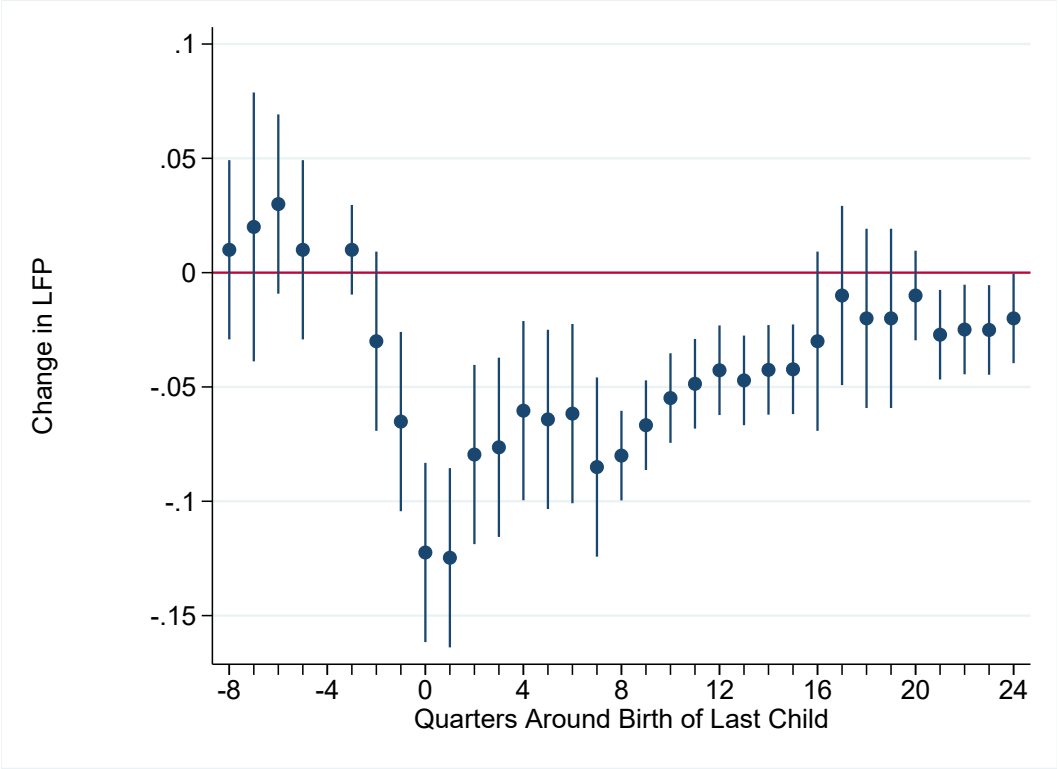
Human capital variables show conflicting results. Mothers with a four-year college degree or more show a smaller decrease (or larger increase) in participation compared to those without a high school degree, by 8-12 percentage points. High school graduates behave similarly to those without a degree, except that high school graduates are 5.6 percentage points more likely to work in the 16th quarter (4 years) after birth. In contrast, mothers with higher previous earnings exhibit larger decreases in earnings, with an effect that grows over time. Part of this may be mechanical due to selection into employment; if women with higher earnings potential are more likely to be working before the birth, then there is more room to observe a drop in participation than among low-skilled women with initially lower participation rates.

[8]The Social Security Administration Supplement on Retirement, Pensions, and Related Content fielded in 2014 does include marital history for 2014 SIPP respondents. However, these data were not yet available at the time that research for this project was conducted.

5.1.2 Last Child

This section describes analysis analogous to the analysis described in the previous section, but for a woman's last birth rather than first birth. The idea behind these analyses is twofold. The first is that there might be additional labor market effects from second and subsequent children. In addition, the timing of the last child might be more important on the labor force participation margin, especially for those that drop out of the labor force or reduce their labor market hours in order to spend more time on home production/childcare. There are some drawbacks in looking at last child, mainly that to be confident that the last child reported in the SIPP is truly the last child the woman has, we only use women whose last child is at least 6 years old by the time she answered the SIPP fertility module questions. This means we have a smaller and possibly selected sample (i.e. older women are more likely to have older children, so less likely to be from more recent cohorts). In cases where a woman only has one child, her first child is her last child for these analyses.

Figure 2: Labor Force Participation Event Study - Last Child



Notes: Dependent variable is an indicator variable for non-zero earnings in a quarter. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the birth and whose last child was at least 6 years old at time of survey. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

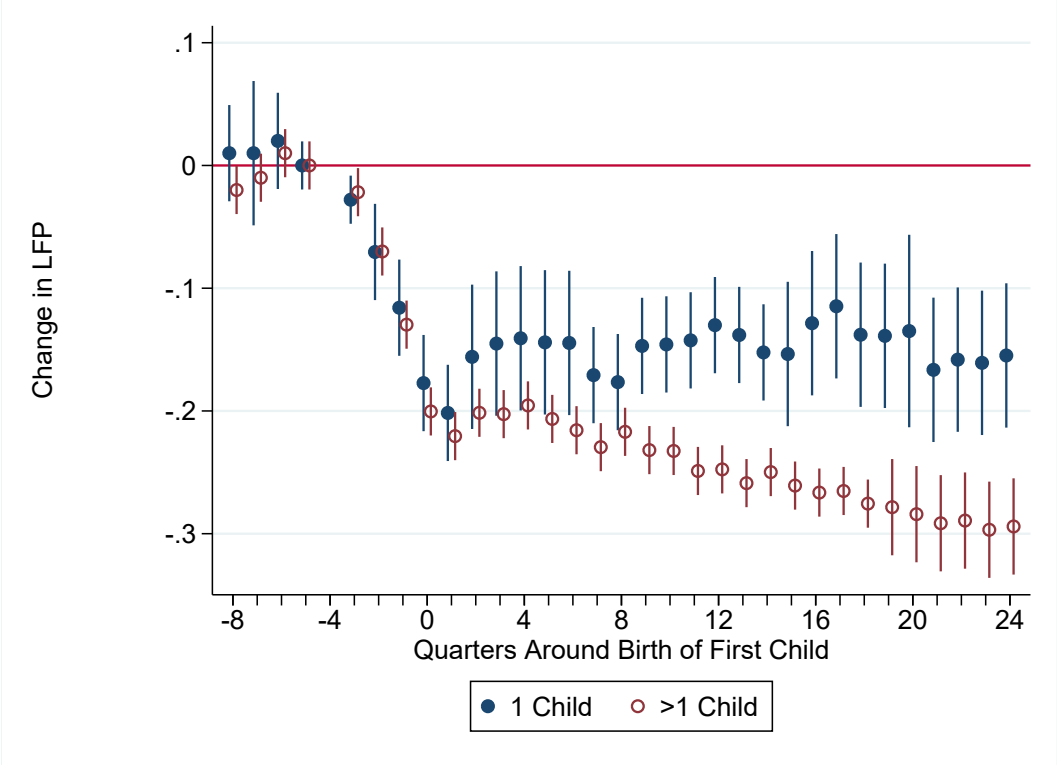
Figure 2 shows the labor force participation dynamics around the quarter of birth of the last child. The labor force participation rate falls at the quarter of birth, though by less than for the first birth; participation is 12.2 percentage points lower in the quarter of birth compared to the fourth quarter before the last birth. Participation then flattens, unlike the pattern of labor force participation after the first birth seen in Figure 1, which continues to decline even after the quarter of birth, possibly due to the additional shocks of births of subsequent children. The standard errors are larger for the last birth sample, since women with children under 6 were excluded from the sample. However, we can rule out large sustained declines in employment. Six years after the last birth, decreases larger than four percentage points are outside the 95% confidence interval. In fact, participation increases over time, coming close to levels prior to the last birth by the end of the 6-year window.

5.1.3 Number of Children

An alternative way to examine whether the growing decline in participation and earnings is driven by subsequent children is to compare the effect of the first birth for women who had only one child to that for women who went on to have additional children. Figure 3 plots the event study coefficients for an analysis with labor force participation as the dependent variable separately for these two samples. The one child sample is a subset of the sample used for the last birth analysis, because we want to be sure that the woman did not have a second child within the window being examined. The sample of women with more than one child is a subsample of the main sample. To be comparable with the one child sample in terms of how long women can be observed after childbirth, we require that women in this sample had their first child at least 72 months prior to the survey.

We observe very similar patterns in the two years before the first birth. Both groups begin to show a decrease in participation beginning in the third quarter before birth, with a decrease of 20.2 percentage points for the one child group and 22.1 percentage points for those with more than one child by the first quarter after the first birth. However, by two years after the birth, these groups look quite different. Participation recovers a bit for those with one child, then levels off, with an average decrease of 14 percentage points relative to the fourth quarter before birth between the 9th and 24th quarters after birth. Participation for women who had subsequent children, however, continues to decline. By the 24th quarter after the birth of the first child, these women have experienced a drop in participation of 29 percentage points. This comparison shows that the continued decline we observe with the full sample is driven by women who had additional children, while those with one child experience a large drop at the time of childbirth with no additional decreases in participation. However, even those

Figure 3: Labor Force Participation Event Study - Number of Children



Notes: Dependent variable is an indicator variable for non-zero earnings in a quarter. One child sample includes only those whose child was at least 6 when surveyed. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

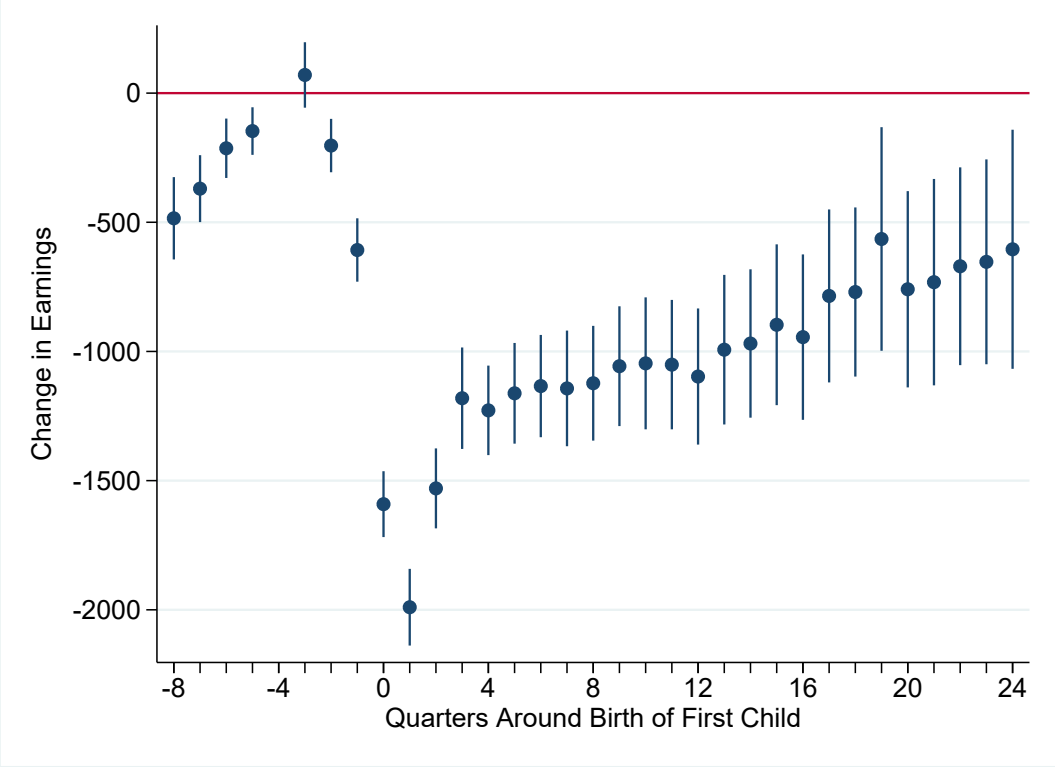
who had only one child remain far below their pre-childbirth participation levels 6 years after the birth of their child.

5.2 Earnings

In Section 5.1 we show that the labor force participation of women falls after they give birth to their first child and continues to decline with subsequent children, though the extent varies by demographic group. In this section we'll show the effect of childbirth on earnings.

Figure 4 shows the pattern of earnings around the birth of the first child, including the zero earners. The pattern for earnings mirrors that of labor force participation in the quarters immediately surrounding the first birth. Quarterly earnings peak one year before the first birth, fall by $1,990 in the first quarter after birth, then rebound to $1,181 below pre-birth levels by the third quarter after birth. After that point, earnings increase steadily but slowly rather than displaying a continual decline, and they remain $604.50 below pre-birth levels at the 24th quarter after the first birth.

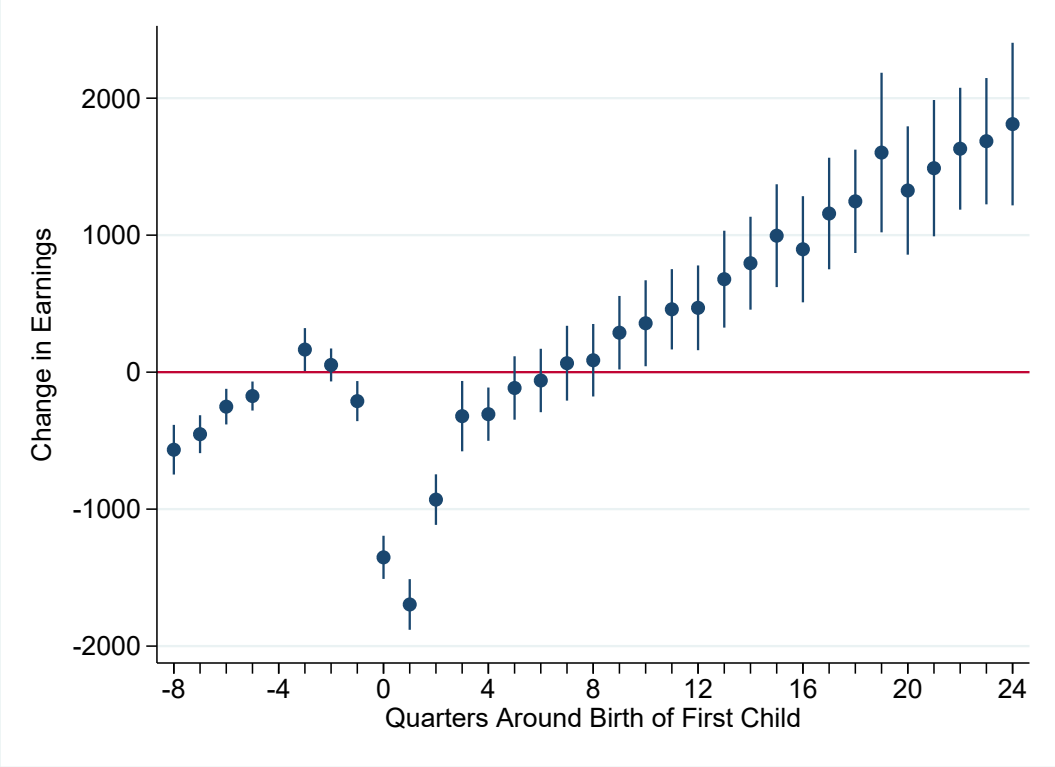
Figure 4: Earnings Event Study



Notes: Dependent variable is earnings. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the first birth and child was born 2011 or earlier. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

Figure 5 shows that participation drives much of this change in earnings. For this figure, in each quarter, we only include those with positive earnings. We observe a similar pattern as with unconditional earnings in the year before and after the birth, though here earnings do not decline significantly until the quarter before the birth. Earnings hit a trough in the quarter after birth, with earnings that are $1,861 lower than their peak in the third quarter before birth. Though we cannot observe changes within quarters, it is possible that some of the drop around the time of the birth is due to women working for only part of a quarter, rather than experiencing a decrease in weekly hours or wages. Beginning with the third quarter after birth, earnings return to close to their pre-birth levels, becoming statistically indistinguishable by the fifth quarter after birth. Earnings continue to rise, by an average of $101 per quarter through 24 quarters. Though we do not have a long time trend of pre-birth earnings, between the 8th and 3rd quarters before the birth, earnings rose at an average rate of $146 per quarter. This is suggestive evidence that the growth rate of earnings may have decreased after childbirth. However, due to the short horizon for the pre-trend and the noise in the estimates, particularly at the end of the window, we cannot make a strong claim about possible changes in earnings growth.

Figure 5: Conditional Earnings Event Study



Notes: Dependent variable is earnings. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the first birth and child was born 2011 or earlier. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth. Sample limited to those with non-zero earnings.

Table 4: Relationships between Changes in Earnings and Demographics

VARIABLES	Birth Qtr	1 Year	4 Years	6 Years
Hispanic	-123.9	352.3	710.5**	1,145***
	164.2	191.2	222.5	304.7
Black Non-Hispanic	-145.7	873.3***	1,463***	1,347***
	151.5	209.5	279.3	376.5
Other Race	191.1	340.2	764*	1,024*
	345.9	300.4	357.8	426.1
Age First Birth	-355.3***	-286.9**	-570.6***	-447.9**
	86.52	109.1	162.6	158.3
Age First Birth Sq.	5.444***	3.797	7.809**	5.639*
	1.549	1.959	2.902	2.78
Married	-573***	-823.2***	-907.8***	-1,008***
	154.7	165.1	192.6	233.7
Divorced/Widowed	-345.3	-14.25	389.6	600.9
	271.7	304.6	372.2	424.9
College	348.6	558.8*	1,589***	1,592***
	223.6	273.6	331.5	416.1
High School	-148.7	360.2*	669.2***	779.4***
	118.5	142.2	180.1	219.7
Prebirth Earnings	-0.04063	-0.06492*	-0.08778**	-0.1081**
	0.02419	0.02568	0.02819	0.03415
Constant	4,094**	2427	7,170**	5,895*
	1286	1571	2267	2293
Observations	9100	9100	8800	8000
R-squared	0.036	0.058	0.067	0.051

Notes: The dependent variable in the first column is the difference in earnings between the quarter of birth and the fourth quarter before the birth. The other columns change the later period to the 4th, 16th, and 24th quarters after the birth. Models are estimated using OLS, with inverse probability weights. Sample excludes the 2014 SIPP panel because marital status and educational attainment cannot be measured at the time of the birth.*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 5: Relationships between Changes in Earnings and Demographics - Employed Women

VARIABLES	Birth Qtr	1 Year	1 Year	4 Years	4 Years	6 Years	6 Years
Hispanic	205.8	375.6	375.7	465.5	477.4	683.6	692.8
	213.6	210.1	210	260.3	260.2	378	378.1
Black Non-Hispanic	-215.5	547.5*	536*	725.3*	670.6*	608.7	583.9
	229.3	265.4	264.8	331.4	330.2	456.9	455.4
Other Race	368.4	335.2	335.8	738.5	699.9	1,262*	1,238*
	525.4	381	381.2	423.5	425.4	542.8	545.8
Age First Birth	-435.8***	-172.1	-157.8	-530.3*	-475.8*	-416.1*	-389.1
	113.9	141.4	139.3	221.6	218.9	204.7	199.8
Age First Birth Sq.	6.891***	2.508	2.318	7.473	6.775	5.438	5.147
	2.015	2.583	2.548	3.999	3.957	3.629	3.575
Married	-563.6*	-597.9**	-586.4**	-348.1	-301.8	-387	-357.3
	227	210.5	211	232.3	233.4	290.3	292.6
Divorced/Widowed	-794.7*	-443.4	-445.6	30.07	-15.49	-126.4	-118
	400.7	385.3	385.6	426.3	424.6	463.5	459.8
College	229.6	981.1**	997.1**	2,866***	2,909***	3,254***	3,292***
	297.2	330.4	332.2	402	404	507.6	516
High School	-269.4	152.9	164.4	503.3*	522.7*	831.9**	841.9**
	185.1	170.4	171.3	231	231.1	284.6	284
Prebirth Earnings	-0.02024	-0.04206	-0.0418	-0.04397	-0.04244	-0.03884	-0.03804
	0.02784	0.02969	0.02978	0.03008	0.03019	0.03354	0.03361
Prebirth Employer			-163.7		-890**		-730.8
			238.7		289.3		465
Constant	6,314***	2697	2546	8,408**	7,753**	6,059*	5,701*
	1652	1915	1900	2917	2903	2900	2858
Observations	5800	5800	5800	5500	5500	5000	5000
R-squared	0.032	0.036	0.036	0.04	0.042	0.025	0.025

Notes: The dependent variable in the first column is the difference in earnings between the quarter of birth and the fourth quarter before the birth, for the population of employed mothers. The other columns change the later period to the 4th, 16th, and 24th quarters after the birth. Models are estimated using OLS, with inverse probability weights. Sample excludes the 2014 SIPP panel because marital status and educational attainment cannot be measured at the time of the birth.*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

5.2.1 Demographic Differences

Table 4 shows results of regressions that use the difference in earnings between a particular quarter and the 4th quarter before the first birth, and Table 5 shows similar results restricting to those with positive earnings in the quarter of interest. Results are generally consistent with those for labor force participation. By the sixth year after the birth, the change in earnings for black mothers is $1,347 larger than that for white mothers; since earnings declined on average, this means that black mothers experienced smaller decreases (or possibly increases) in earnings relative to the large decreases felt by white women. The gap between Hispanic and white mothers is significant but not quite as large, at $1,145 at 24 months after birth. Both groups increasingly diverge from white women over time, though there is not a significant change between the 16th and 24th quarters in the relative effect on black women compared to white women.

The results for earnings conditional on employment show that these differences in earnings between white and Hispanic women are driven by differences in extensive margin participation. Conditioning on participation, there is no significant difference in the change in earnings. A gap still remains for black women compared to white women, though it is smaller than the unconditional gap and no longer significant at six years after the birth. This gap could be due to a change in wages that is larger for white women or to a change in hours, if white women are more likely to switch to part-time schedules.

Relative to younger mothers, older mothers experience a larger immediate drop in earnings conditional on employment, no difference one year out, and a larger decrease in medium-term earnings that becomes smaller over time. This regression controls for pre-birth earnings; it is not simply the case that older women's earnings decrease more because they start at a higher initial level.

Married mothers have larger decreases in earnings, though much of this is driven by participation. Although married women earn $1,008 less 6 years after the birth than women who were not married at the time of the birth, there is no significant difference between married and unmarried women conditional on participation. However, there is a difference in earnings conditional on participation in the short term. Married women earn $564 less in the quarter of birth. Married women may be more likely to take unpaid leave or longer leaves, thus earning less in a quarter by working fewer weeks of that quarter. Married working mothers also earn $598 less relative to never married working mothers in the 4th quarter after the birth. Given typical available leave in the U.S. expires long before this, married women must be reducing hours more than unmarried women or facing a steeper drop in wages. Among women who were not married at the time of the birth, women who were previously married behave no differently than those who had never been married.

Beginning a year after the birth, education has a large effect on the motherhood earnings penalty. Relative to those without a high school degree, college women earn $559 more compared to their pre-birth earnings in the 4th quarter after birth, $1,589 more in the 16th quarter, and $1592 more in the 24th quarter. The effects on earnings conditional on participation are substantially greater, reaching $3,254 by the 24th quarter after birth. The changes across the event window are consistent with prior research that has found a higher return to experience for more educated women relative to less educated women (Munasinghe et al. 2008). Since pre-birth earnings are also included in the model, a story that is consistent with the substantial difference between college and high school graduates is that the high school graduates with earnings comparable to college graduates had especially good matches with their pre-birth employers. If their pre-birth job was not compatible with motherhood, the loss of that match would lead to a steep drop in earnings. On the other hand, college women may have an easier time finding a good job after an interruption due to childbirth.

Although women with and without high school degrees generally did not differ in terms of participation, high school graduates also experience a smaller drop in earnings relative to those without a high school degree. One year after the birth, high school graduates earn $360 more relative to their pre-birth earnings than the least educated, though there is no effect conditional on participation. In the medium run, high school graduates continue to experience growth in earnings relative to those without a high school degree, though the effect on unconditional earnings is similar to that on earnings conditional on participation. This suggests that the effect is coming largely through participation, in contrast to the results that used participation as the dependent variable. Therefore, selection into participation likely plays a role. Suppose that high school graduates and those without a high school degree are equally likely to work after the birth of a child, but high school graduates are more positively selected into employment on earnings than the least educated. This story would be consistent with these results.

Turning to the other measure of human capital, those with higher pre-birth earnings experience a larger drop in earnings after the birth, though this is only true for unconditional earnings. Conditional on participation, there is no difference in the effect of motherhood on earnings for those with higher compared to lower pre-birth earnings, controlling for educational attainment.

Columns 3, 5, and 7 of Table 5 also include a variable that is equal to one if the woman's employer in the quarter in which the dependent variable was measured was also her employer in the quarter of the first birth. Effects of remaining with the same employer conditional on being employed are not precisely estimated. There is a significant effect in the 16th quarter after the birth, with women earning $890

less per quarter compared to their pre-birth earnings if they stayed with the same employer, conditional on other covariates including education and pre-birth earnings. This relationship is explored in more detail in Section 5.3.

5.2.2 Last Child

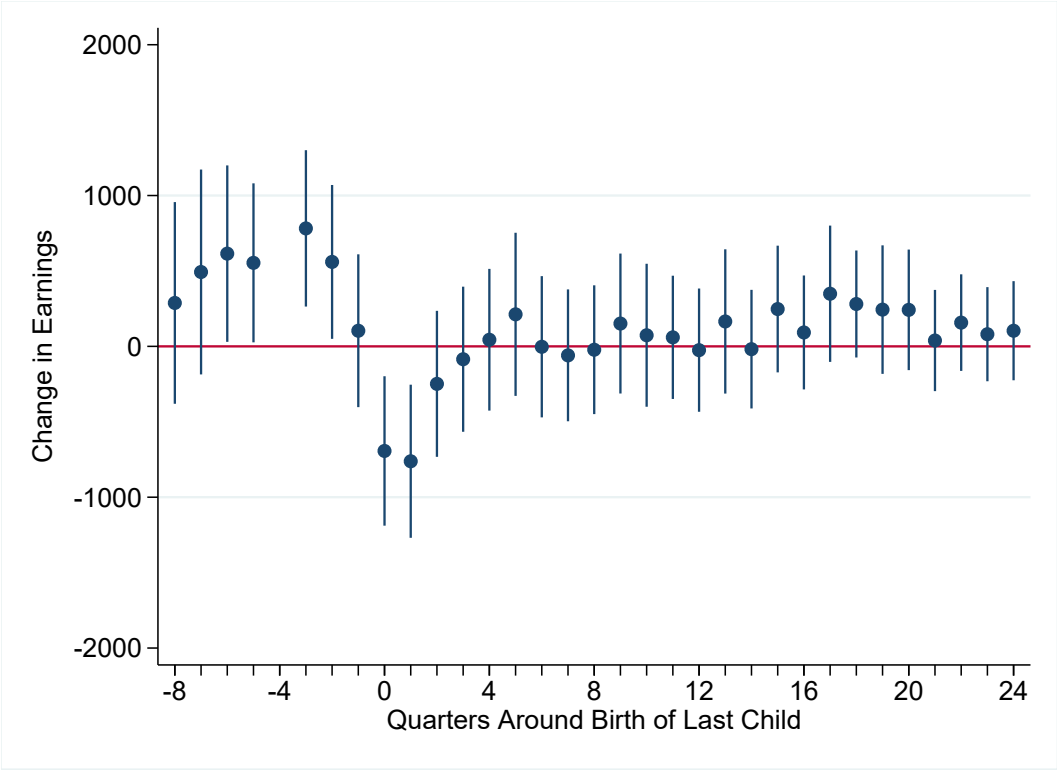
Turning again to analysis of the last born child rather than the first, there is very little effect on earnings, as shown in Figure 6. This is in contrast to a decrease in labor force participation that lasts through the 4th year after the birth. Earnings fall by $693 in the quarter of birth and remain $762 lower in the first quarter after birth. However, there is no significant effect of the birth of the last child on earnings after that. Comparing Figures 6 and 7, the pattern for earnings conditional on participation is extremely similar, both qualitatively and quantitatively. An explanation that is consistent with an effect on participation but not on earnings is that women with low earnings were the ones leaving the labor force upon the birth of this child. They affect the labor force participation rate, but they have little effect on average earnings.

One potentially troubling trend for earnings is that while there is not a large decrease associated with the birth of the last child, there is also no growth in earnings. One might expect that mothers would experience some earnings growth over a period of six years, but we find no change in earnings over this period, even conditional on labor force participation.

To reconcile this pattern of zero earnings growth after the birth of the last child with a pattern of increasing earnings (following a large drop in levels) after the first child, we again compare women who had one child to those who had more than one child. Figure 8 shows that women who do not go on to have another child in the window are back to their pre-birth earnings levels two years after the child's birth. Estimates are noisy but are suggestive of slow but steady earnings growth after the birth. In contrast, women who have additional children continue to have low earnings. Six years out, they still earn $1,128 less per quarter than they did before the first birth. If this trend continues, then it may be that the lack of earnings growth after the birth of the last child is driven by women who had more than one child and remained out of the labor force. However, dividing the already small sample of women whose last observed birth occurred at least six years before the survey into those who had one versus more than one child would not leave us with sufficient power to draw useful conclusions.

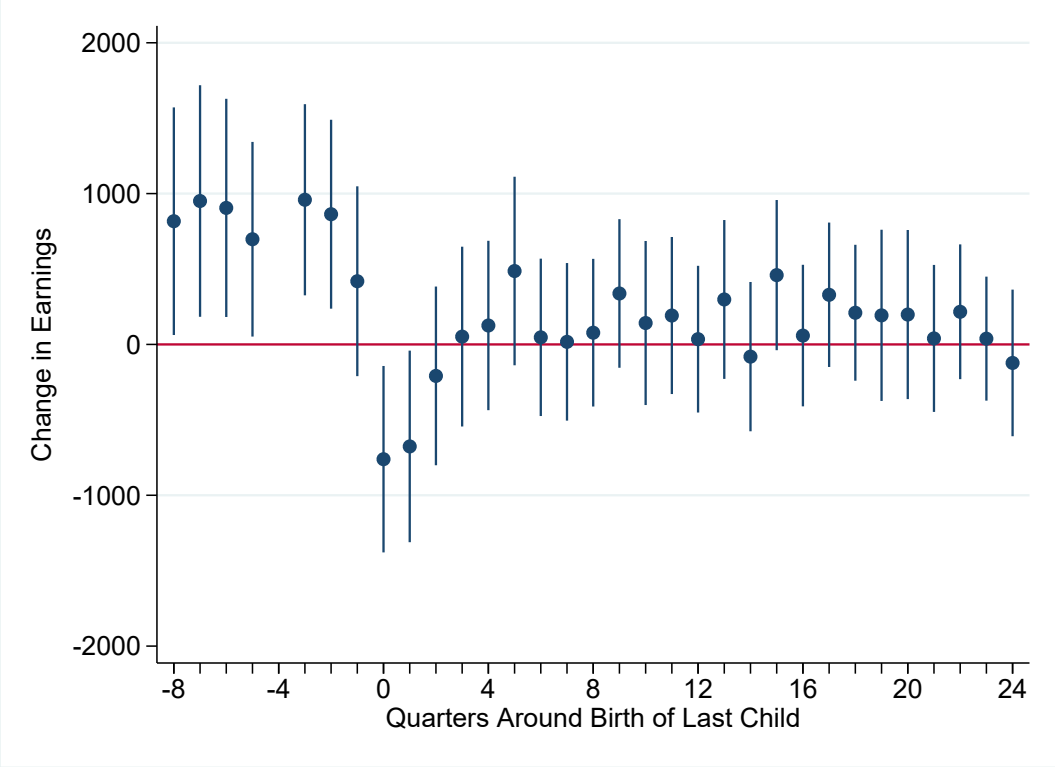
Figure 9 illustrates the pattern of earnings conditional on participation for women with one child compared to women with more than one child. The point estimates tend to be slightly lower for women with more than one child, but there are no significant differences. Lower earnings for women who go on to have an additional child are therefore driven entirely by nonparticipation. If they remain in the labor force, women

Figure 6: Earnings Event Study - Last Child



Notes: Dependent variable is earnings. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the birth and child whose last child was at least 6 years old at time of survey. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of last birth. Coefficients show changes relative to 4 quarters before birth.

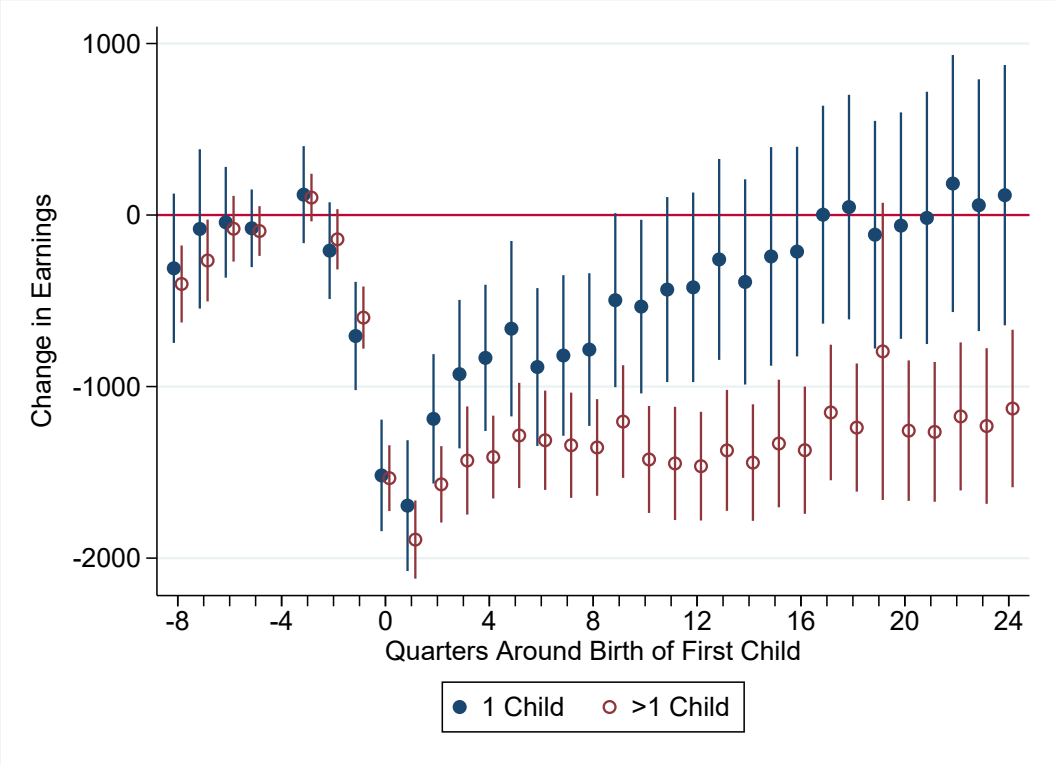
Figure 7: Conditional Earnings Event Study - Last Child



Notes: Dependent variable is earnings. Sample defined as mothers in the 2001-2014 SIPP panels who were observed in LEHD at least 4 quarters before the birth and child whose last child was at least 6 years old at time of survey. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of last birth. Coefficients show changes relative to 4 quarters before birth. Sample limited to those with non-zero earnings.

who have another child within the window have the same earnings growth after the birth of the first child as women who do not have additional children.

Figure 8: Earnings Event Study - Number of Children



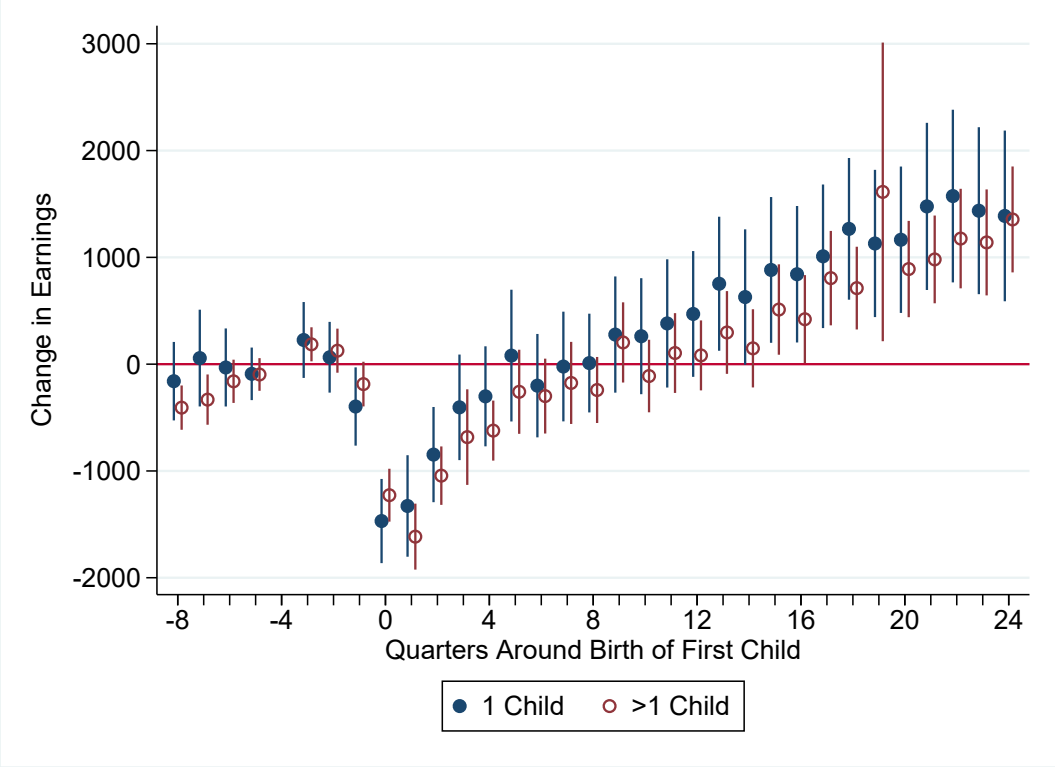
Notes: Dependent variable is earnings. One child sample includes only those whose child was at least 6 when surveyed. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

5.3 Employer & Industry Switching

Table 6 shows the proportion of women who transition between employers and industries, conditional on labor force participation prior to the first birth. We consider pre-birth employers to be employers in any of the four quarters before the first birth, and post-birth employers to be employers in any of the four quarters after birth. Industries are defined using two-digit 2007 North American Industry Classification System (NAICS) codes. To create industry codes that do not change over the window around the birth, we record an employer's industry in the quarter before the birth.[9] It shows that 71% of women continue working for the same employer after birth that they worked for before birth. Conditional on working both before and after childbirth, the

[9]If industry is missing in this quarter, we search back in time (up to 8 quarters before the birth), then forward in time through the 8th quarter after the birth until the first non-missing industry value is found.

Figure 9: Conditional Earnings Event Study - Number of Children



Notes: Dependent variable is earnings. One child sample includes only those whose child was at least 6 when surveyed. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth. Sample limited to those with non-zero earnings.

Table 6: Summary Statistics: Transitions between Employers and Industries

Outcome	Sample	Proportion	Std. Err.	N
Worked for the same employer	Worked before birth	0.712	0.0057	11500
	Worked before and after birth	0.821	0.0052	9800
Worked in the same industry	Worked before birth	0.764	0.0054	11000
	Worked before and after birth	0.886	0.0043	9500
Comparison with 4th quarter before birth as placebo				
Worked for the same employer	Worked before placebo	0.788	0.0058	10500
	Worked before and after placebo	0.848	0.0049	9800
Worked in the same industry	Worked before placebo	0.834	0.0056	10000
	Worked before and after placebo	0.900	0.0043	9500

percentage is even higher at 82%. The percentage that stay within the same industry is a little higher (76%, 89% conditional on working after) than those staying with the same employer, but as a percentage of those that switch employers, the percent that also switch industries is relatively high at 64%. Note that these are shifts across 2-digit industries, which are fairly broad categories such as "Educational Services" and "Finance and Insurance."

The bottom panel of Table 6 shows analogous rates calculated for a different quarter, the fourth quarter before the birth. The purpose is to illustrate how much switching would be expected in any given quarter, to show that we are not simply observing a typical amount of switching that we attribute to childbirth because that is how the window is defined. Since selection into the main sample required that a person could be observed in the LEHD at least 8 quarters before the first birth, using the fourth quarter before birth ensures that we can observe a 4-quarter window on either side of the placebo quarter without putting additional restrictions on the sample. For example, using an earlier quarter would imply that younger mothers would be less likely to appear in this analysis because they may not have entered the labor force yet. While the fourth quarter before birth is imperfect–we saw that labor force participation begins to drop in the third quarter before birth–using it as a placebo allows us to calculate a rough estimate of how often women change employers and industries before they have children. Since these women may have already begun making changes, differences between transition rates at the time of birth and these placebo transition rates should be considered lower bounds on the actual differences. Still, these show that women were 7.6 percentage points more likely to leave their previous employer at the time of the birth than in the period before the birth. Conditional on remaining in the labor force, women were also more likely to switch employers at childbirth, though the difference was only 2.7 percentage points. Considering those who remain in the labor force, 66% of those who switch employers also switch industries. If anything, new mothers who change employers are more likely to remain in the same industry than not-yet-mothers, but the difference is small.

Next, we turn to whether some types of women, or women in some types of jobs, are more likely to stay after childbirth. We run a series of regressions at the job (person-employer) level, where the sample consists of jobs held in the four quarters prior to the first birth. Tables 7 and 8 display the results from linear probability models in which the dependent variable is equal to one if employer j also employed woman i in at least one of the four quarters after the first birth. We look at the four-quarter window to include women who return to their employers after taking leave during pregnancy or after the birth. Table 7 includes women who leave the labor force for at least four quarters, while Table 8 restricts the sample to jobs held by women who are employed

in at least one of the four quarters after the birth.

Within each set of three regressions, we follow the same pattern of adding control variables. The first model includes the same set of demographic and human capital variables that were used in the earlier analysis of demographic differences in labor force participation and earnings. The second column adds a set of employer variables. The number of employees and average earnings are measured at the establishment and (for multi-unit firms) firm level. We also include a dummy variable that is equal to one if the firm has at least 50 employees, to allow for a separate effect for firms that are covered by the Family and Medical Leave Act (FMLA). The third column adds a set of industry controls, using 2-digit 2007 NAICS codes.

Black mothers are 4.0-6.2 percentage points less likely to return to the same employer than white mothers, with marginally smaller differences conditional on returning to the labor force. Older mothers are also more likely to stick with their employer, even more so when considering the set of women who remain in the labor force. Compared to never married women, married mothers are 2.7-3.5 percentage points more likely to keep their employer, though the effect loses significance with industry controls added. The effect grows to 3.1-4.9 percentage points when we drop women who leave the labor force. While our data do not allow us to distinguish between women who choose to leave the labor force from those who are pushed out, a plausible explanation is that, compared to single women, married women without access to sufficient maternity leave are more likely to leave the labor force entirely rather than return to a different employer. However, women who were previously married are less likely to keep their employer than never married mothers by 6.7-7.4 percentage points, though there is a smaller effect that is no longer statistically significant conditional on staying in the labor force.

Mothers whose pre-birth earnings were 1% higher were approximately 9-12 percentage points more likely to stay with their employers; however, conditional on participation and controlling for employer characteristics, they are actually 3-4 percentage points less likely to stay. Possibly, lower-earning women are on the margin between leaving the labor force or remaining with their current employer, while higher-earning women are more likely to consider moving to a more family-friendly job. Controlling for other characteristics including pre-birth earnings, there is no clear pattern of differences by educational attainment.

Turning to employer characteristics, we find that women who work at larger, higher-paying establishments are more likely to stay, and higher-paying establishments are even more likely to retain women from among the set who remain in the labor force. Women who work at larger firms are also more likely to stay, controlling for the size of the establishment at which they work, though firm-level average wages have no

Table 7: Probability of Staying with an Employer

VARIABLES	(1)	(2)	(3)
Hispanic	0.004079	-0.01019	-0.005764
	0.01452	0.01463	0.01438
Black Non-Hispanic	-0.04014**	-0.06219***	-0.05429***
	0.01401	0.0144	0.01395
Other Race	-0.008128	-0.01799	-0.008985
	0.01803	0.01823	0.01818
Age First Birth	0.03094***	0.02545***	0.02248**
	0.0069	0.007117	0.007044
Age First Birth Sq.	-0.00041***	-0.00035**	-0.00030*
	0.000113	0.000118	0.000117
Married	0.03546**	0.02739*	0.01915
	0.01154	0.01164	0.01136
Divorced/Widowed	-0.07395**	-0.07272**	-0.06745**
	0.02502	0.02489	0.02387
College	0.04643*	0.02279	-0.01758
	0.02007	0.02068	0.02072
High School	0.004169	-0.006596	-0.01488
	0.01512	0.01541	0.01498
IHS Previous Earnings	0.1286***	0.09249***	0.09374***
	0.007527	0.008001	0.007905
Estab Employment		0.000927***	0.000546*
		0.000211	0.000212
Estab Employment Sq.		-0.0000006**	-0.0000003
		0.0000002	0.0000002
IHS Estab Avg Wages		0.08824***	0.06143***
		0.008467	0.009315
Multi-Unit		-0.2634	-0.02052
		0.1462	0.1487
Multi-Unit*Firm Employment		0.000203*	0.00029**
		0.000086	0.0000903
Multi-Unit*Firm Employment Sq.		-0.00000007	-0.0000001*
		0.0000004	0.00000005
Multi-Unit*IHS Firm Avg Wages		0.02763	0.002381
		0.01532	0.01557
FMLA Firm		-0.004112	0.000332
		0.01271	0.01301
Constant	-1.355***	-1.755***	-1.613***
	0.1047	0.1199	0.1294
Industry FE	No	No	Yes
Observations	13500	12500	12500
R-squared	0.128	0.142	0.162
Number of PIKs	8000	7500	7500

Notes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ Includes quarter of birth fixed effects. Dependent variable is an indicator for the job being with the same employer as a pre-birth job. Models estimated using OLS.

Table 8: Probability of Staying with an Employer (Conditional on Being Employed After the Birth)

VARIABLES	(1)	(2)	(3)
Hispanic	0.001146	-0.01137	-0.005626
	0.01704	0.01721	0.01656
Black Non-Hispanic	-0.03279	-0.05746**	-0.04869**
	0.01707	0.01778	0.01705
Other Race	0.009244	-0.000723	0.009462
	0.01869	0.01883	0.0188
Age First Birth	0.05754***	0.05401***	0.04958***
	0.007512	0.007963	0.007927
Age First Birth Sq.	-0.0007986***	-0.000754***	-0.0006843***
	0.000123	0.000132	0.000131
Married	0.04971***	0.03954**	0.03100*
	0.01324	0.01358	0.01332
Divorced/Widowed	-0.04382	-0.0538	-0.04696
	0.03386	0.03601	0.03372
College	-0.0147	-0.04535	-0.07673**
	0.02473	0.02582	0.02562
High School	-0.03569	-0.05149*	-0.06093**
	0.02086	0.02196	0.02101
IHS Previous Earnings	0.01791	-0.03942***	-0.03413***
	0.009186	0.01046	0.01028
Estab Employment		0.000821***	0.0005442**
		0.000196	0.000201
Estab Employment Sq.		-0.0000005**	-0.0000003
		0.0000002	0.0000002
IHS Estab Avg Wages		0.1240***	0.09740***
		0.009787	0.0108
Multi-Unit		-0.2166	0.02459
		0.1567	0.1623
Multi-Unit*Firm Employment		0.000169	0.00023*
		0.000087	0.0000909
Multi-Unit*Firm Employment Sq.		-0.00000003	-0.00000006
		0.00000005	0.00000005
Multi-Unit*IHS Firm Avg Wages		0.02335	-0.001847
		0.01596	0.01655
FMLA Firm		-0.007187	-0.002298
		0.01546	0.01587
Constant	-0.5933***	-1.150***	-1.054***
	0.133	0.1465	0.1557
Industry FE	No	No	Yes
Observations	9600	8900	8900
R-squared	0.065	0.097	0.116
Number of PIKs	5700	5200	5200

Notes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ Includes quarter of birth fixed effects. Dependent variable is an indicator for the job being with the same employer as a pre-birth job. Models estimated using OLS.

additional effect. There is also no discontinuity at the FMLA coverage threshold of fifty employees.

Tables 9 and 10 are similar to the employer transitions analysis, but show results for industry transitions. The dependent variable is equal to one if employer j has the same 2-digit NAICS industry code as an employer of woman j in one of the four quarters after the first birth. Results are generally similar to those for changes in employers, and adding the additional controls for employer characteristics does not have a substantial effect on the coefficients for the mothers' characteristics. Black mothers are 2.4-3.6 percentage points less likely than white mothers to stay in the same industry, slightly more so among those who stay in the labor force. As was the case for employer transitions, there is no difference between Hispanic and white mothers in the likelihood of changing industries after childbirth. Older mothers are more likely to stay in the same industry, though only conditional on staying in the labor force. However, this may not reflect a differential likelihood of leaving an employer or industry due to childbirth, but rather a reflection of the fact that younger workers are generally more likely to change jobs than older workers (U.S. Census Bureau 2018). In contrast to the results on employer switches, married mothers are no more likely than never married mothers to stay in the same industry. However, previously married mothers are 11 percentage points more likely to leave the industry, though the difference drops to 8 percentage points in the sample of women who remain in the labor force.

Women with a college or high school degree are less likely to stay in the same industry after childbirth than those with no degree; the effect increases as employer controls are added and among those who stay in the labor force. Those with higher pre-birth earnings are no more likely to stay in the industry, conditional on staying in the labor force. Employer characteristics such as establishment size and wages have similar but smaller effects as those found for employer transitions; this is mechanical, as those who stay with the same employer will necessarily stay in the same industry, since the industry is measured at one point in time.

Figure 10 plots the estimated industry fixed effects from column 3 in Tables 7 and 9. Administrative and Support and Waste Management and Remediation Services is the reference industry. Those who worked in Public Administration (28.6pp), Education (28.5pp), or Finance and Insurance (25.9pp) are most likely to remain with their employers, while women in Administrative and Support and Waste Management and Remediation Services are least likely to stay. Even though there is a mechanical relationship between staying with an employer and staying in an industry, women are more likely to stay in particular industries even though they are not especially likely to stay with the same employer. Women who work in Health Care and Social Assistance (22.9pp), Agriculture, Forestry, Fishing and Hunting (22.5pp), and Education (20.1pp)

Table 9: Probability of Staying in an Industry

VARIABLES	(1)	(2)	(3)
Hispanic	-0.009796	-0.01912	-0.01101
	0.01716	0.01752	0.01718
Black Non-Hispanic	-0.02357	-0.03596*	-0.03390*
	0.0162	0.01663	0.01609
Other Race	-0.04027*	-0.0523**	-0.04162*
	0.01925	0.01958	0.01989
Age First Birth	0.005783	0.003556	0.002367
	0.007654	0.007824	0.007798
Age First Birth Sq.	-0.000025	-0.000004	0.000016
	0.000123	0.000127	0.000126
Married	-0.01443	-0.01925	-0.02768*
	0.01342	0.01366	0.0133
Divorced/Widowed	-0.1081***	-0.1101***	-0.1093***
	0.02932	0.02986	0.02926
College	-0.004733	-0.02059	-0.04895*
	0.02376	0.02419	0.024
High School	-0.03810*	-0.04274*	-0.04199*
	0.01935	0.01974	0.01926
IHS Previous Earnings	0.1278***	0.1071***	0.1092***
	0.008677	0.009299	0.009269
Estab Employment		0.0006552**	0.000248
		0.000203	0.000208
Estab Employment Sq		-0.0000004	-0.00000009
		0.0000002	0.0000002
IHS Estab Avg Wages		0.04513***	0.04259***
		0.009041	0.00981
Multi-Unit		-0.3699**	-0.2431
		0.1327	0.1368
Multi-Unit*Firm Employment		0.000073	0.0002782**
		0.000088	0.000094
Multi-Unit*Firm Employment Sq.		-0.00000004	-0.0000001*
		0.00000005	0.00000005
Multi-Unit*IHS Firm Avg Wages		0.03927**	0.02655
		0.01367	0.01409
FMLA Firm		0.01417	0.0134
		0.01331	0.01324
Constant	-0.7452***	-0.9323***	-0.9849***
	0.1215	0.1375	0.1415
Industry FE	No	No	Yes
Observations	13000	12500	12500
R-squared	0.085	0.091	0.124
Number of PIKs	8000	7500	7500

Notes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ Includes quarter of birth fixed effects. Dependent variable is an indicator for the job being in the same industry as a pre-birth job. Models estimated using OLS.

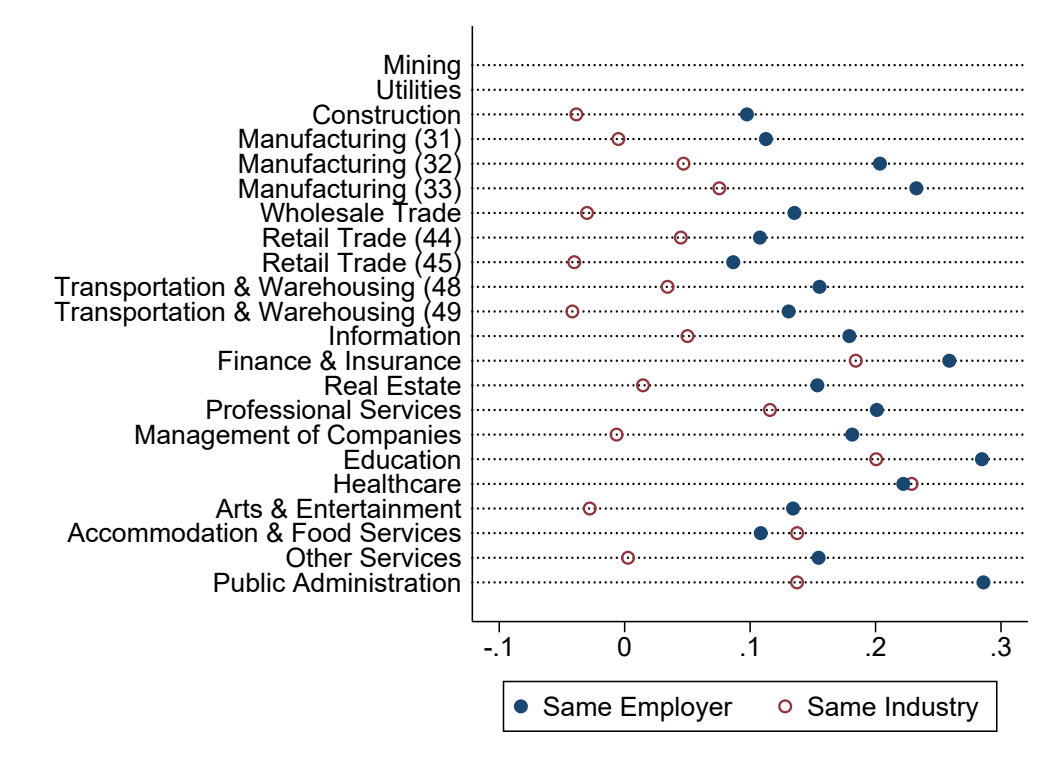
Table 10: Probability of Staying in an Industry (Conditional on Being Employed After the Birth)

VARIABLES	(1)	(2)	(3)
Hispanic	-0.01455	-0.02186	-0.01442
	0.01772	0.01831	0.01774
Black Non-Hispanic	-0.03032	-0.04432*	-0.04133*
	0.01817	0.01888	0.0179
Other Race	-0.005309	-0.01834	-0.002462
	0.0181	0.01858	0.01851
Age First Birth	0.02881***	0.02694***	0.02362**
	0.007531	0.007756	0.007661
Age First Birth Sq.	-0.0003398**	-0.0003193**	-0.0002648*
	0.000118	0.000122	0.000121
Married	0.02039	0.01338	0.002582
	0.01421	0.01475	0.01431
Divorced/Widowed	-0.0731	-0.08223*	-0.07967*
	0.0379	0.03907	0.03678
College	-0.04375	-0.05948*	-0.08580**
	0.02716	0.02806	0.02726
High School	-0.06017*	-0.06546**	-0.07190**
	0.02421	0.02514	0.02401
IHS Previous Earnings	0.01658	-0.01993	-0.0138
	0.009114	0.01021	0.009953
Estab Employment		0.00005647***	0.000228
		0.000168	0.000176
Estab Employment Sq		-0.0000004*	-0.0000001
		0.0000002	0.0000002
IHS Estab Avg Wages		0.07808***	0.06846***
		0.009619	0.0106
Multi-Unit		-0.2003	-0.0412
		0.1409	0.1464
Multi-Unit*Firm Employment		0.00005	0.000213*
		0.000082	0.000087
Multi-Unit*Firm Employment Sq.		-0.000000007	-0.00000007
		0.00000005	0.00000005
Multi-Unit*IHS Firm Avg Wages		0.02266	0.006441
		0.01428	0.01487
FMLA Firm		0.002795	0.003078
		0.01429	0.01414
Constant	0.05892	-0.2916*	-0.3290*
	0.1289	0.1436	0.1487
Industry FE	No	No	Yes
Observations	9100	8900	8900
R-squared	0.045	0.063	0.101
Number of PIKs	5700	5200	5200

Notes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ Includes quarter of birth fixed effects. Dependent variable is an indicator for the job being in the same industry as a pre-birth job. Models estimated using OLS.

are most likely to continue in the same industry.

Figure 10: Effects of Pre-Birth Industry on Probability of Staying with Employer and Industry

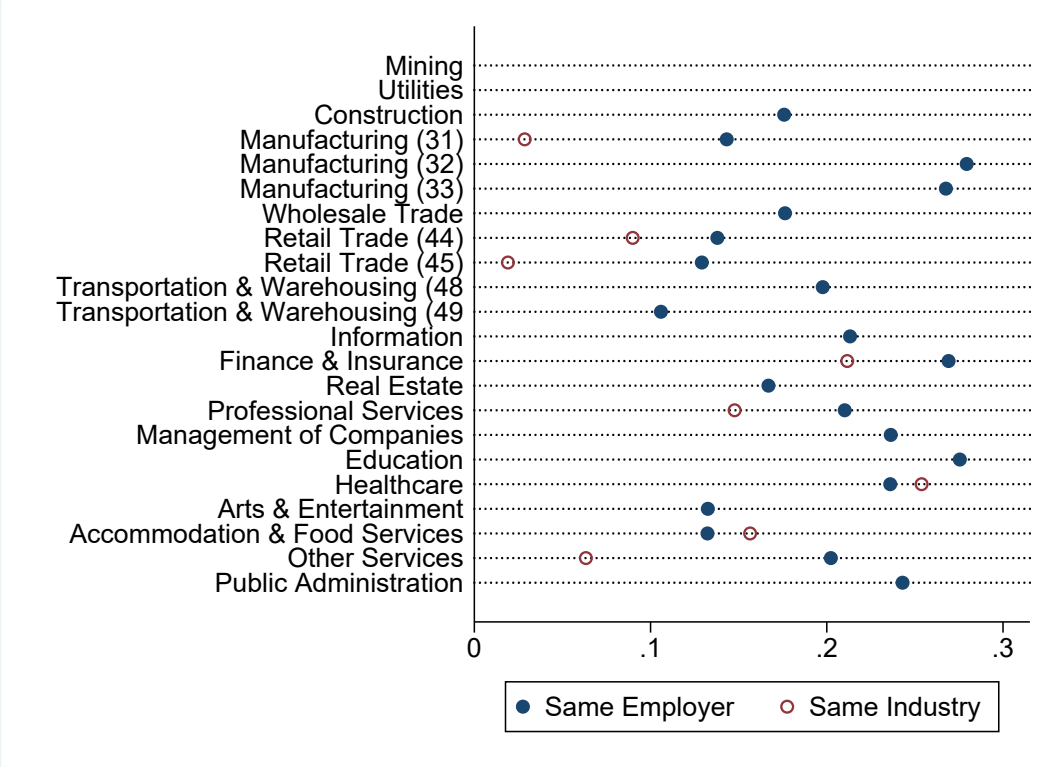


Notes: This figure plots the estimated industry fixed effects from column 3 in Tables 7 and 9, which estimated the probability of staying with the same employer/industry after childbirth. The reference industry is "Administrative and Support and Waste Management and Remediation Services." Some of the industry cells were too thin for their estimates to be released according to Census Bureau disclosure avoidance policies; their coefficients are suppressed from this figure.

Figure 11 shows analogous results for the sample of women who are employed in at least one of the four quarters after the first birth. Among this group, women who work in manufacturing are more likely to remain with their employer; since this is true only when conditioning on participation, women in this industry tend to leave the labor force entirely or stay with their employer, rather than switching employers. Other results mirror those for transitions between employers.

Finally, we consider the evolution of labor force participation and earnings for three groups of mothers: employer stayers, employer switchers, and labor force leavers. Employer stayers are defined as women who worked for a pre-birth employer (meaning an employer in at least one of the four quarters before the first birth) in at least one of the four quarters after the birth. Employer switchers are women who did not work for the same employer after the birth but are observed working in at least one of the four

Figure 11: Effects of Pre-Birth Industry on Probability of Staying with Employer and Industry (Conditional on Being Employed After the Birth)



Notes: This figure plots the estimated industry fixed effects from column 3 in Tables 8 and 10, which estimated the probability of staying with the same employer/industry after childbirth. The sample is restricted to those who were employed in the year after the birth. The reference industry is "Administrative and Support and Waste Management and Remediation Services." Some of the industry cells were too thin for their estimates to be released according to Census Bureau disclosure avoidance policies; their coefficients are suppressed from this figure.

quarters after the first birth. Labor force leavers are women who worked in at least one of the four quarters before the first birth but were not present in the LEHD in any of the four quarters after the first birth. We conduct the same event study analysis that we did for the main sample separately for each of these groups. Employer stayers comprise about 8100 women, another 1700 are employer switchers, and 1500 women are in the labor force leavers group.

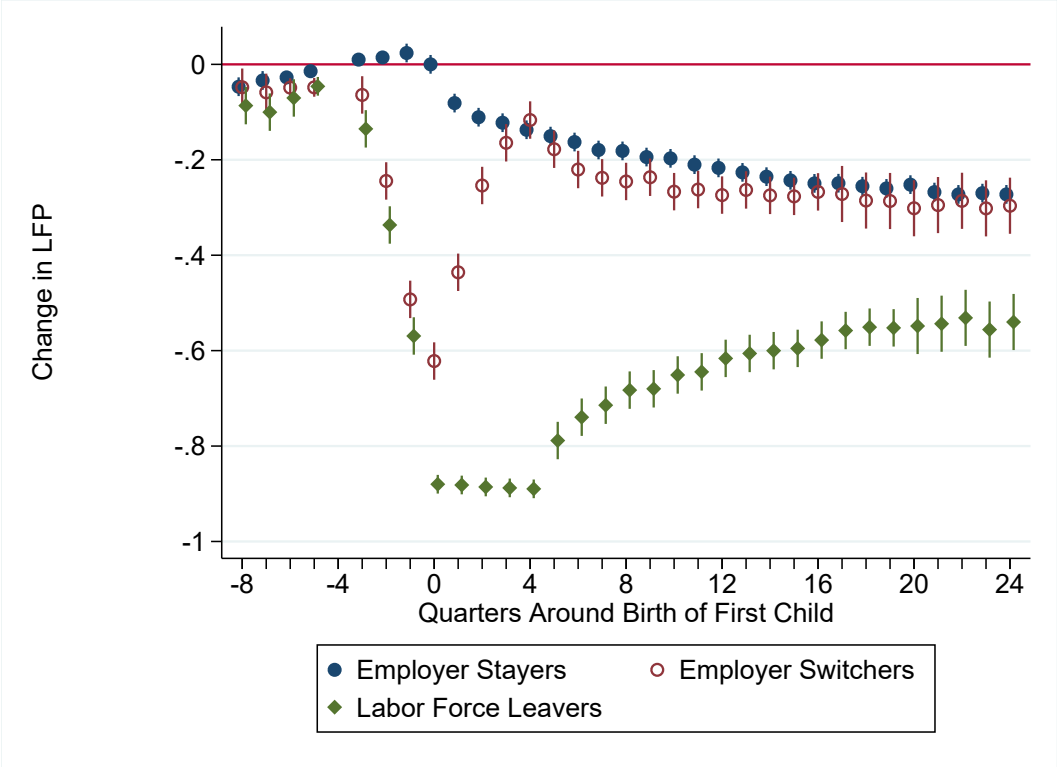
In Figure 12, we plot the event study coefficients for the analysis for labor force participation. The differences are striking. First, we observe the pre-birth drop in participation for both employer switchers and labor force leavers; it is not the case that this effect is entirely due to women leaving the labor force during pregnancy. Employer switchers experience a decrease in participation of 49.3 percentage points in the quarter before the birth relative to four quarters before the birth and drop further to 62.2 percentage points below that baseline in the quarter of birth. In contrast, employer stayers show a much smaller decrease in employment, being 8 percentage points less likely to be in the labor force in the quarter after birth compared to baseline. This figure likely does not include short leaves, since they may not be observed due to the quarterly frequency of the data. In addition, paid leave should be reported as wages by employers on the forms used to construct the LEHD data and would be interpreted as employment in this analysis.

However, somewhat by construction, employer switchers rebound and are indistinguishable from employer stayers by the end of the first year after birth, though their participation levels are slightly lower in the 6th-8th quarters after the birth. Participation rates of both groups trend downward slightly, reaching 27.3 and 29.6 percentage point decreases by the 24th quarter after birth for employer stayers and employer switchers, respectively.

Women who do not work in the year after the birth slowly return over time, though their participation levels do not reach those of women who returned within a year. At 24 quarters post-birth, labor force leavers still participate at a rate that is 54.0 percentage points lower than baseline. These data cannot distinguish between women who planned to remain out of the labor force and those who may have liked to return but were unable to find a suitable job.

Figures 13 and 14 plot event study coefficients for analysis of unconditional earnings and earnings conditional on employment, separately for these three groups. Four main findings emerge. First, after the first year after birth, unconditional earnings are higher for employer switchers than employer stayers. In the 4th quarter after the birth, employer switchers earn $441 less than their pre-birth levels, while employer stayers earn $1,269 less than their baseline. By the 16th quarter after the birth, employer switchers earn $29 below their pre-birth baseline (not a statistically significant difference), but

Figure 12: Labor Force Participation Event Study - Employer Transitions



Notes: Dependent variable is an indicator variable for non-zero earnings in a quarter. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

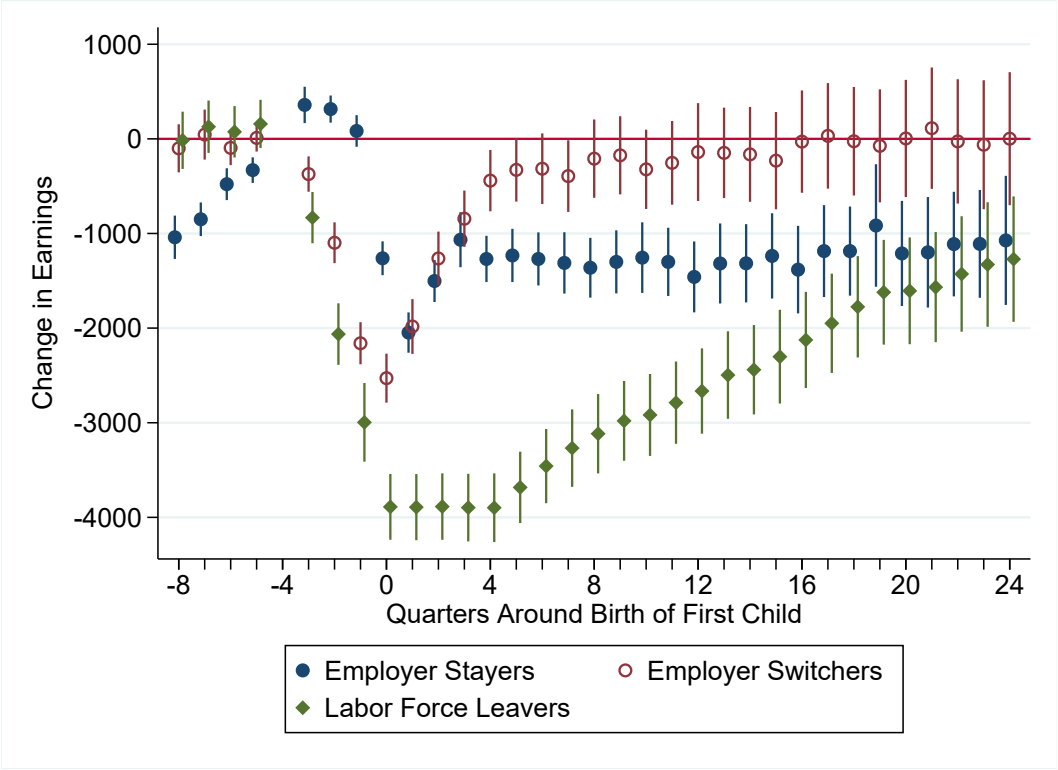
employer stayers remain $1,382 lower than before the birth. Differences between these groups are no longer statistically significant once the sample gets smaller at the end of the event window, but the evidence suggests that the gap remains 6 years after the birth. However, it is important to note that these groups are defined based on switching behavior in the first year after the birth. Mothers in the employer stayers group may well have changed employers after that period. In the short term, the only difference in conditional earnings between employer stayers and switchers occurs in the first quarter after birth, when switchers earned $741 more, relative to their pre-birth earnings. Since this is only true in the first quarter after birth, this may be because some women who stayed with their employers took unpaid maternity leave during that quarter, while this could not be true for those who just started a new job.

Second, pre-trends in both unconditional and conditional earnings exhibit a different pattern for employer stayers than for employer switchers or labor force leavers. For employer stayers, conditional earnings increase in the pre-birth period, by $1,040 between the eighth quarter before birth and their peak in the third quarter before the birth. In contrast, earnings were stagnant for the other two groups. While we cannot observe why women choose to leave employers or drop out entirely, it does seem clear that women who chose to remain with their employers after childbirth were experiencing an upward trajectory in earnings prior to pregnancy, and others were not. Given that earnings for switchers surpassed stayers' earnings by the fourth quarter after the birth, it is possible that lack of opportunity in their pre-birth jobs prompted these women to search for new jobs after childbirth, a decision that improved their careers over the next several years after the birth.

Third, the unconditional earnings of labor force leavers increase steadily over time, consistent with their increase in labor force participation. By the 4th year after the birth, the gap in earnings of labor force leavers has closed relative to employer stayers.

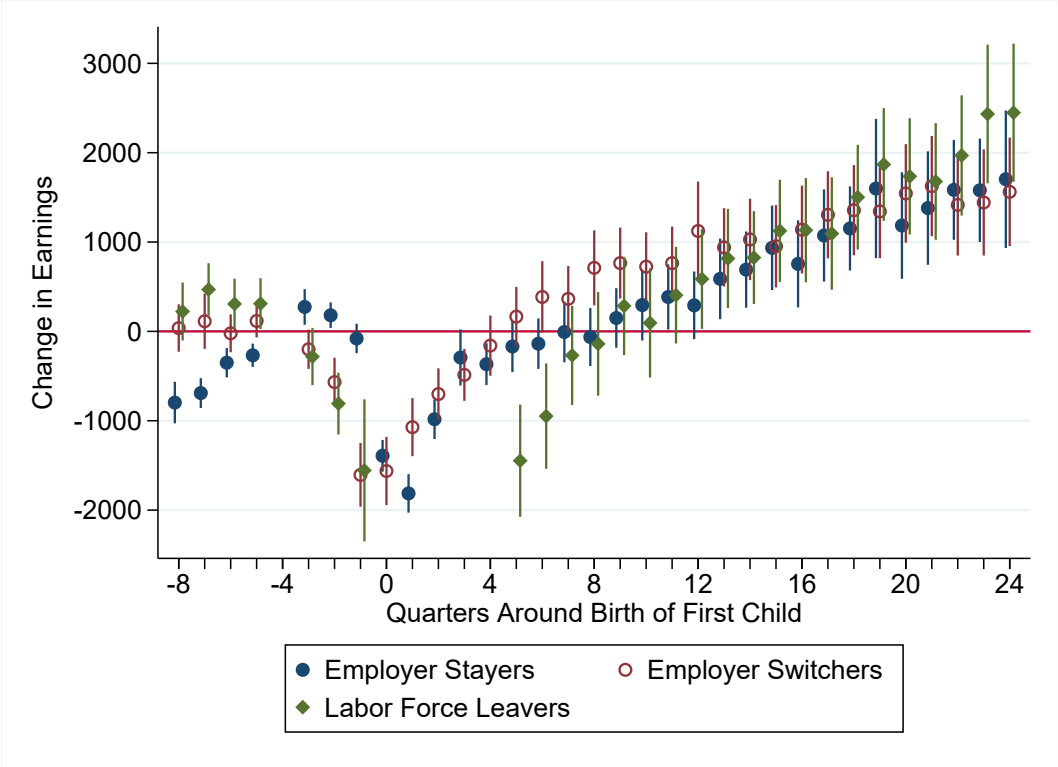
Finally, earnings conditional on employment are very similar across all three groups. Labor force leavers experience lower earnings when they first return in the 5th and 6th quarters after the birth. Especially in the 5th quarter, part of the explanation could be that women return mid-quarter, and we observe earnings that do not reflect the fact that they did not work all weeks of the quarter. Another possibility is that women who are returning to the workforce after at least a year away are returning to part-time work or lower-wage jobs while they continue to search for better-paying jobs. However, there is no difference between labor force leavers and those who returned within a year of the birth beginning with the 7th quarter after the birth.

Figure 13: Earnings Event Study - Employer Transitions



Notes: Dependent variable is earnings. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth.

Figure 14: Conditional Earnings Event Study - Employer Transitions



Notes: Dependent variable is earnings. Graph shows coefficient values on a regression of variables indicating the distance in quarters from the date of birth. Coefficients show changes relative to 4 quarters before birth. Sample limited to those with non-zero earnings.

6 Conclusion

Using the LEHD administrative earnings records linked to the 2001-2014 SIPP panels, this paper shows that women's labor force participation and earnings drop substantially with the birth of the first child and do not recover within the 24-month window we examine. Effects are larger for women who are white, married, and have higher earnings prior to the birth. The decrease in earnings is driven by participation, as earnings conditional on employment recover to pre-birth levels by the fifth quarter after birth, and mothers experience continued growth in real earnings. This paper also studies transitions between employers after childbirth, finding that 71% of women continue working for the same employer after the birth of a child; conditional on continuing to work, this percentage rises to 82%. However, of those who change employers, a substantial fraction also switch to a different industry, though this is also true of women who change employers before the birth. Interestingly, beyond two years after the birth, earnings conditional on employment for women who left the labor force for at least four quarters follow a very similar pattern as those for women with more continuous participation. Future work might investigate further how the re-entry decision affects longer-term outcomes, but a year out of the labor force does not appear to affect earnings over the next several years. Future research should also investigate the nature of selection into employment, particularly for those who took time out after the birth.

Further, this paper demonstrates how linking the LEHD to demographic surveys greatly increases the utility of this rich source of administrative data. That our findings are generally in agreement with other work studying mothers in the U.S. is encouraging and consistent with the assumption that absence from the LEHD in a given quarter is a reasonable proxy for non-employment, at least for people who had previously been observed in covered employment. We view this research as a foundation for future work that could use this data to go beyond exploring descriptive patterns, to analyzing causal relationships.

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7 Appendix: Tables

Table 11: LFP Event-Study Regression Coefficients

VARIABLES	First Child	Last Child	1 Child	2+ Children
Birth Qtr -8	0	0.01	0.01	-0.02
	0.01	0.02	0.02	0.01
Birth Qtr -7	0	0.02	0.01	-0.01
	0.01	0.03	0.03	0.01
Birth Qtr -6	-0.00092	0.03	0.02	0.01
	0.01	0.02	0.02	0.01
Birth Qtr -5	0	0.01	0	0
	0	0.02	0.01	0.01
Birth Qtr -4				
Birth Qtr -3	-0.02247***	0.01	-0.02790*	-0.02177**
	0	0.01	0.01	0.01
Birth Qtr -2	-0.06626***	-0.03	-0.07050***	-0.07008***
	0	0.02	0.02	0.01
Birth Qtr -1	-0.1225***	-0.06514***	-0.1159***	-0.1297***
	0.01	0.02	0.02	0.01
Birth Qtr	-0.1836***	-0.1224***	-0.1773***	-0.2004***
	0.01	0.02	0.02	0.01
Birth Qtr +1	-0.2074***	-0.1247***	-0.2016***	-0.2205***
	0.01	0.02	0.02	0.01
Birth Qtr +2	-0.1929***	-0.07956***	-0.1559***	-0.2015***
	0.01	0.02	0.03	0.01
Birth Qtr +3	-0.1859***	-0.07640***	-0.1451***	-0.2026***
	0.01	0.02	0.03	0.01
Birth Qtr +4	-0.1862***	-0.06037**	-0.1408***	-0.1955***
	0.01	0.02	0.03	0.01
Birth Qtr +5	-0.1911***	-0.06419**	-0.1441***	-0.2065***
	0.01	0.02	0.03	0.01
Birth Qtr +6	-0.1968***	-0.06166**	-0.1446***	-0.2157***
	0.01	0.02	0.03	0.01
Birth Qtr +7	-0.2093***	-0.08503***	-0.1708***	-0.2295***
	0.01	0.02	0.02	0.01
Birth Qtr +8	-0.2065***	-0.08003***	-0.1765***	-0.2170***
	0.01	0.01	0.02	0.01
Observations	401000	126000	52500	168000
R-squared	0.03	0.01	0.03	0.04
Number of PIKs	13000	3900	1600	5200

Table 11: LFP Event-Study Regression Coefficients (Continued)

VARIABLES	First Child	Last Child	1 Child	2+ Children
Birth Qtr +9	-0.2130***	-0.06672***	-0.1470***	-0.2319***
	0.01	0.01	0.02	0.01
Birth Qtr +10	-0.2130***	-0.05486***	-0.1458***	-0.2326***
	0.01	0.01	0.02	0.01
Birth Qtr +11	-0.2215***	-0.04862***	-0.1425***	-0.2489***
	0.01	0.01	0.02	0.01
Birth Qtr +12	-0.2231***	-0.04269**	-0.1301***	-0.2476***
	0.01	0.01	0.02	0.01
Birth Qtr +13	-0.2274***	-0.04713***	-0.1381***	-0.2588***
	0.01	0.01	0.02	0.01
Birth Qtr +14	-0.2325***	-0.04252**	-0.1523***	-0.2498***
	0.01	0.01	0.02	0.01
Birth Qtr +15	-0.2364***	-0.04227**	-0.1536***	-0.2608***
	0.01	0.01	0.03	0.01
Birth Qtr +16	-0.2372***	-0.03	-0.1285***	-0.2665***
	0.01	0.02	0.03	0.01
Birth Qtr +17	-0.2369***	-0.01	-0.1147***	-0.2652***
	0.01	0.02	0.03	0.01
Birth Qtr +18	-0.2427***	-0.02	-0.1379***	-0.2755***
	0.01	0.02	0.03	0.01
Birth Qtr +19	-0.2434***	-0.02	-0.1388***	-0.2784***
	0.01	0.02	0.03	0.02
Birth Qtr +20	-0.2429***	-0.01	-0.1349***	-0.2841***
	0.01	0.01	0.04	0.02
Birth Qtr +21	-0.2556***	-0.02715*	-0.1665***	-0.2915***
	0.01	0.01	0.03	0.02
Birth Qtr +22	-0.2544***	-0.02487*	-0.1582***	-0.2893***
	0.01	0.01	0.03	0.02
Birth Qtr +23	-0.2590***	-0.02507*	-0.1608***	-0.2968***
	0.01	0.01	0.03	0.02
Birth Qtr +24	-0.2586***	-0.02	-0.1548***	-0.2941***
	0.01	0.01	0.03	0.02
Constant	0.9094***	0.9677***	0.9083***	0.9371***
	0.02	0.07	0.05	0.03
Observations	401000	126000	52500	168000
R-squared	0.03	0.01	0.03	0.04
Number of PIKs	13000	3900	1600	5200

Notes: Event study specification where the dependent variable is labor force participation (equal to non-zero earnings), with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Sample in column 1 defined as mothers in the 2001–2014 SIPP panels who were observed in LEHD at least 4 quarters before the first birth and child was born 2001 or earlier. Subsequent columns include only those whose youngest child was greater than 5 years of age (completed fertility sample), around the timing of birth of last child, and first child in families with 1 or more than 1 child. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 12: Earnings Event-Study Regression Coefficients

VARIABLES	First Child	Last Child	First Child, Employed	Last Child, Employed
Birth Qtr -8	-484.5***	288	-566.3***	816.9*
	81.27	341.1	92.47	384.9
Birth Qtr -7	-369.8***	493.1	-452.9***	950.9*
	66.05	346.5	70.58	391.6
Birth Qtr -6	-213.5***	614.9*	-251.8***	905.2*
	58.63	298.4	66.37	369
Birth Qtr -5	-147.0**	553.9*	-174.5**	697.5*
	46.97	268.9	54.04	329.2
Birth Qtr -4				
Birth Qtr -3	70.23	782.3**	164.9*	959.2**
	64.64	264.4	79.89	323.3
Birth Qtr -2	-203.0***	560*	52.43	863.3**
	52.72	260.2	61.34	319.5
Birth Qtr -1	-607.3***	103.7	-211.5**	419
	62.59	258.5	74.61	321
Birth Qtr	-1,591***	-693.3**	-1,352***	-760.9*
	65.03	252.7	80.34	315.3
Birth Qtr +1	-1,990***	-761.6**	-1,696***	-676.2*
	75.74	259	94.29	324
Birth Qtr +2	-1,530***	-248.4	-930.6***	-208.6
	78.95	246.9	94.12	302.2
Birth Qtr +3	-1,181***	-85.22	-321.3*	51.93
	100.2	245.4	131	304.1
Birth Qtr +4	-1,228***	44.02	-306.9**	125.6
	88.38	239.7	99.17	286.5
Birth Qtr +5	-1,162***	212.5	-115.7	486.7
	99.4	275.9	118.1	318.9
Birth Qtr +6	-1,134***	-2.568	-61.02	47.04
	101	238.9	118.1	266.2
Birth Qtr +7	-1,143***	-59.53	65.21	17.34
	114.2	223	139.3	266.5
Birth Qtr +8	-1,123***	-22.21	86.81	77.88
	113.3	217.8	135	249.7
Observations	401000	126000	265000	82000
R-squared	0.008	0.012	0.019	0.024
Number of PIKs	13000	3900	12500	3700

Table 12: Earnings Event-Study Regression Coefficients (Continued)

	First Child	Last Child	First Child, Employed	Last Child, Employed
Birth Qtr +9	-1,057***	151.4	287.9*	337.9
	118.3	236.7	136.9	251.3
Birth Qtr +10	-1,046***	73.73	356.9*	142
	130.3	241.8	160.1	277.4
Birth Qtr +11	-1,051***	59.94	458.8**	191.7
	127.8	208.4	149.5	265.6
Birth Qtr +12	-1,097***	-25.02	469.5**	34.88
	134.4	208.4	157.8	248.1
Birth Qtr +13	-993.2***	165.3	678.7***	298.2
	147.7	244	180.4	268.7
Birth Qtr +14	-969.2***	-18.44	795.2***	-80.85
	146.5	200.6	173	252.5
Birth Qtr +15	-896.7***	247.6	996.1***	459.6
	158.8	214.3	191.5	254
Birth Qtr +16	-944.5***	92.36	897.0***	58.68
	163.3	192.7	197.7	239.4
Birth Qtr +17	-785.1***	349	1,158***	329.2
	170.8	230.5	207.7	244.2
Birth Qtr +18	-769.9***	281	1,247***	210.1
	167	181	192.5	229.9
Birth Qtr +19	-564.7*	243.8	1,603***	192.9
	220.8	217.4	297.2	289.6
Birth Qtr +20	-759.3***	242.2	1,326***	198.2
	193.8	203.9	239	286
Birth Qtr +21	-731.8***	38.88	1,489***	39.93
	203.8	171.2	253.8	248.6
Birth Qtr +22	-670.2***	157.5	1,631***	216.5
	195.3	163.3	227	227.9
Birth Qtr +23	-653.1**	80.76	1,686***	38.3
	202.3	159.2	235.2	209.7
Birth Qtr +24	-604.5*	103.8	1,811***	-122.6
	236.1	167.6	302.8	248
Constant	7,081***	4,937***	8,585***	4,915***
	328.9	897.3	351.1	765.4
Observations	401000	126000	265000	82000
R-squared	0.008	0.012	0.019	0.024
Number of PIKs	13000	3900	12500	3700

Notes: Event study specification where the dependent variable is earnings, with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Sample in column 1 defined as mothers in the 2001–2014 SIPP panels who were observed in LEHD at least 4 quarters before the first birth and child was born 2001 or earlier. Subsequent columns include those whose youngest child was greater than 5 years of age. And including only those with positive earnings amongst those two groups. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 13: Earnings Event-Study Regression Coefficients, Number of Kids

VARIABLES	1 Child	2+ Children	1 Child, Employed	2+ Children, Employed
Birth Qtr -8	-310.4	-401.9***	-159.5	-407.1***
	222	114.5	187.5	105.8
Birth Qtr -7	-80.84	-265.1*	56.95	-332.1**
	236.9	121.7	231.2	120.1
Birth Qtr -6	-42.26	-79.8	-31.03	-160.6
	164.7	97.67	186.4	103.3
Birth Qtr -5	-77.27	-93.28	-90.62	-96.73
	115.5	73.97	125.5	78.02
Birth Qtr -4				
Birth Qtr -3	118.9	102	226.4	185.8*
	144.3	70.78	181.3	81.31
Birth Qtr -2	-207.5	-141.4	64.65	126.2
	143.8	89.61	169	105.3
Birth Qtr -1	-705.1***	-597.8***	-396.6*	-186.8
	160.9	92.41	187	106.7
Birth Qtr	-1,518***	-1,534***	-1,469***	-1,227***
	165.9	97.85	201.1	126.3
Birth Qtr +1	-1,694***	-1,892***	-1,328***	-1,615***
	194.5	116.3	242.5	157.6
Birth Qtr +2	-1,188***	-1,570***	-846.8***	-1,044***
	192.4	113.6	227.4	139.6
Birth Qtr +3	-927.5***	-1,431***	-404.4	-683.2**
	220.8	160.8	252.2	228.3
Birth Qtr +4	-832.6***	-1,411***	-301.2	-622.3***
	217.5	123.2	239	143.3
Birth Qtr +5	-662.5*	-1,285***	80.08	-258.7
	260.9	156.5	314.7	200.9
Birth Qtr +6	-886***	-1,313***	-201.3	-299
	234.7	147.6	247	178.8
Birth Qtr +7	-818.7***	-1,342***	-22.25	-175.7
	238.8	156.5	262	196
Birth Qtr +8	-784.3***	-1,355***	10.31	-241.9
	227	143.7	235.9	157.7
Observations	52500	168000	37000	106000
R-squared	0.038	0.009	0.069	0.017
Number of PIKs	1600	5200	1600	5100

Table 13: Earnings Event-Study Regression Coefficients, Number of Kids (Continued)

VARIABLES	1 Child	2+ Children	1 Child, Employed	2+ Children, Employed
Birth Qtr +9	-496.3	-1,204***	277.1	203.4
	258.7	167.5	277.6	191.5
Birth Qtr +10	-533.8*	-1,425***	261.6	-111.3
	258.2	159	277.1	173.3
Birth Qtr +11	-434.4	-1,448***	381.5	104.1
	275.2	168.3	306.3	190.5
Birth Qtr +12	-421.4	-1,464***	470.1	82.1
	281.9	161.6	300.4	167.1
Birth Qtr +13	-258.7	-1,372***	753*	296.7
	298.8	179.9	320.2	197.6
Birth Qtr +14	-389.9	-1,443***	628.5	148
	305.2	173.3	323.4	186.7
Birth Qtr +15	-241.2	-1,332***	882.3*	511.4*
	325.1	189.7	348.2	215.9
Birth Qtr +16	-213	-1,371***	842.1**	420.7*
	311.8	189.1	326	210.6
Birth Qtr +17	2.141	-1,151***	1,010**	805.5***
	324.1	201.6	342.9	225.5
Birth Qtr +18	46.37	-1,239***	1,267***	712.1***
	333.9	190.5	338.4	197.6
Birth Qtr +19	-114.5	-794.8	1,130**	1,613*
	338.5	441.9	351.7	713.4
Birth Qtr +20	-61.54	-1,257***	1,165***	890.7***
	336.7	208.9	349.7	230
Birth Qtr +21	-16.71	-1,264***	1,477***	980.8***
	375.2	207.9	399.3	209.6
Birth Qtr +22	183.6	-1,174***	1,574***	1,176***
	382.2	220.2	412.4	237.8
Birth Qtr +23	57.34	-1,230***	1,437***	1,140***
	374.5	231.4	398.8	253.1
Birth Qtr +24	115.9	-1,128***	1,388***	1,355***
	387.1	234.3	407.8	253
Constant	5,448***	6,677***	6,598***	7,628***
	617.3	411.4	492.6	330.7
Observations	52500	168000	37000	106000
R-squared	0.038	0.009	0.069	0.017
Number of PIKs	1600	5200	1600	5100

Notes: Event study specification where the dependent variable is earnings, with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Sample restricted to those whose youngest child was greater than 5 years of age. First and third columns include women with only 1 child, second and fourth include those with more than one child. Last two columns include only women with non-zero earnings. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 14: LFP Event-Study Regression Coefficients, Transitions

VARIABLES	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr -8	-0.04690***	-0.04793**	-0.08647***
	0.01	0.02	0.02
Birth Qtr -7	-0.03376***	-0.05863***	-0.1002***
	0.01	0.02	0.02
Birth Qtr -6	-0.02729***	-0.04874***	-0.07040***
	0	0.01	0.02
Birth Qtr -5	-0.01433***	-0.04821***	-0.04604**
	0	0.01	0.01
Birth Qtr -4			
Birth Qtr -3	0.01	-0.06409***	-0.1352***
	0	0.02	0.02
Birth Qtr -2	0.01448**	-0.2444***	-0.3367***
	0	0.02	0.02
Birth Qtr -1	0.02380***	-0.4926***	-0.5693***
	0.01	0.02	0.02
Birth Qtr	0	-0.6218***	-0.8800***
	0.01	0.02	0.01
Birth Qtr +1	-0.08114***	-0.4358***	-0.8816***
	0.01	0.02	0.01
Birth Qtr +2	-0.1108***	-0.2539***	-0.8857***
	0.01	0.02	0.01
Birth Qtr +3	-0.1223***	-0.1644***	-0.8877***
	0.01	0.02	0.01
Birth Qtr +4	-0.1371***	-0.1167***	-0.8897***
	0.01	0.02	0.01
Birth Qtr +5	-0.1504***	-0.1779***	-0.7884***
	0.01	0.02	0.02
Birth Qtr +6	-0.1628***	-0.2204***	-0.7395***
	0.01	0.02	0.02
Birth Qtr +7	-0.1795***	-0.2378***	-0.7144***
	0.01	0.02	0.02
Birth Qtr +8	-0.1814***	-0.2455***	-0.6828***
	0.01	0.02	0.02
Observations	251000	53500	44500
R-squared	0.07	0.08	0.33
Number of PIKs	8100	1700	1500

Table 14: LFP Event-Study Regression Coefficients, Transitions (Continued)

VARIABLES	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr +9	-0.1943***	-0.2366***	-0.6800***
	0.01	0.02	0.02
Birth Qtr +10	-0.1970***	-0.2668***	-0.6510***
	0.01	0.02	0.02
Birth Qtr +11	-0.2102***	-0.2624***	-0.6445***
	0.01	0.02	0.02
Birth Qtr +12	-0.2170***	-0.2740***	-0.6163***
	0.01	0.02	0.02
Birth Qtr +13	-0.2264***	-0.2632***	-0.6059***
	0.01	0.02	0.02
Birth Qtr +14	-0.2354***	-0.2746***	-0.6001***
	0.01	0.02	0.02
Birth Qtr +15	-0.2431***	-0.2767***	-0.5953***
	0.01	0.02	0.02
Birth Qtr +16	-0.2495***	-0.2673***	-0.5779***
	0.01	0.02	0.02
Birth Qtr +17	-0.2491***	-0.2717***	-0.5579***
	0.01	0.03	0.02
Birth Qtr +18	-0.2554***	-0.2854***	-0.5508***
	0.01	0.03	0.02
Birth Qtr +19	-0.2600***	-0.2864***	-0.5523***
	0.01	0.03	0.02
Birth Qtr +20	-0.2521***	-0.3016***	-0.5484***
	0.01	0.03	0.03
Birth Qtr +21	-0.2677***	-0.2949***	-0.5436***
	0.01	0.03	0.03
Birth Qtr +22	-0.2726***	-0.2860***	-0.5313***
	0.01	0.03	0.03
Birth Qtr +23	-0.2699***	-0.3018***	-0.5559***
	0.01	0.03	0.03
Birth Qtr +24	-0.2725***	-0.2963***	-0.5400***
	0.01	0.03	0.03
Constant	1.001***	1.002***	0.9122***
	0.02	0.05	0.04
Observations	251000	53500	44500
R-squared	0.07	0.08	0.33
Number of PIKs	8100	1700	1500

Notes: Event study specification where the dependent variable is labor force participation (equal to non-zero earnings), with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Sample in column 1 defined as women who returned to their pre-birth employer within 1 year after their first birth, column 2 is a sample that change employers after childbirth, and column 3 is a sample that did not return to the labor force (with non-zero earnings) in the year after childbirth. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 15: Earnings Event-Study Regression Coefficients, Transitions

	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr -8	-1,040***	-99.99	-15.4
	116.8	129.7	154.3
Birth Qtr -7	-849.8***	45.04	128.2
	90.5	134.8	141.3
Birth Qtr -6	-479***	-95.03	74.45
	85.81	93.28	138.8
Birth Qtr -5	-330.3***	10.24	158.2
	68.73	73.77	129.8
Birth Qtr -4			
Birth Qtr -3	358.6***	-372***	-832.2***
	97.91	95.26	138.1
Birth Qtr -2	314.8***	-1,098***	-2,063***
	73.15	110	165.9
Birth Qtr -1	83.57	-2,160***	-2,996***
	85.22	113.5	212
Birth Qtr	-1,262***	-2,529***	-3,889***
	91.1	132.1	177.3
Birth Qtr +1	-2,047***	-1,983***	-3,892***
	108.7	147.7	178.4
Birth Qtr +2	-1,502***	-1,264***	-3,886***
	113.3	144.9	179.2
Birth Qtr +3	-1,066***	-844***	-3,897***
	148.2	151.6	182.3
Birth Qtr +4	-1,269***	-441.3**	-3,898***
	124.6	165.3	185.2
Birth Qtr +5	-1,232***	-327.6	-3,683***
	143.5	171.1	192.3
Birth Qtr +6	-1,269***	-315.4	-3,458***
	143.1	190.5	200.2
Birth Qtr +7	-1,311***	-393.5*	-3,268***
	165.2	193	209
Birth Qtr +8	-1,362***	-209.1	-3,116***
	161.2	211.2	213.9
Observations	251000	53500	44500
R-squared	0.008	0.063	0.144
Number of PIKs	8100	1700	1500

Table 15: Earnings Event-Study Regression Coefficients, Transitions (Continued)

	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr +9	-1,300***	-173.9	-2,980***
	170	210.7	214.9
Birth Qtr +10	-1,255***	-322.1	-2,918***
	190.3	213.6	220.8
Birth Qtr +11	-1,300***	-253.6	-2,788***
	183.8	225.4	221.8
Birth Qtr +12	-1,459***	-139.5	-2,665***
	191.1	263.7	230.1
Birth Qtr +13	-1,317***	-148.1	-2,496***
	215.7	243.8	235.8
Birth Qtr +14	-1,315***	-163.7	-2,440***
	210.9	255.7	240.9
Birth Qtr +15	-1,237***	-230.1	-2,302***
	229.9	262.3	252.8
Birth Qtr +16	-1,382***	-29.07	-2,125***
	236	275.8	259.3
Birth Qtr +17	-1,186***	31.55	-1,949***
	247.6	284.5	267.6
Birth Qtr +18	-1,186***	-25.24	-1,775***
	240.2	292.6	273.2
Birth Qtr +19	-915.7**	-74	-1,621***
	330.3	304.5	282.4
Birth Qtr +20	-1,211***	4.253	-1,606***
	283.3	315.9	287.8
Birth Qtr +21	-1,199***	112.6	-1,567***
	297.9	327.1	296.9
Birth Qtr +22	-1,112***	-26.81	-1,428***
	281.9	335.2	311.2
Birth Qtr +23	-1,110***	-61.99	-1,328***
	290.6	347.6	335.8
Birth Qtr +24	-1,073**	1.729	-1,271***
	348	358.6	338
Constant	9,494***	4,500***	3,263***
	469.7	595	517.5
Observations	251000	53500	44500
R-squared	0.008	0.063	0.144
Number of PIKs	8100	1700	1500

Notes: Event study specification where the dependent variable is earnings, with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Employer stayers returned to their pre-birth employer within a year of birth, employer leavers went to a different employer post-birth, and labor force leavers did not have non-zero earnings in the year immediately following birth. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

Table 16: Earnings Event-Study Regression Coefficients, Employed Transitions

VARIABLES	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr -8	-796.6***	37.05	222.8
	118.7	135.4	165.6
Birth Qtr -7	-690.4***	113.3	469.3**
	85.1	157.7	149.7
Birth Qtr -6	-350.1***	-21.65	307.4*
	84.05	108.2	143.9
Birth Qtr -5	-267.9***	116.7	310.9*
	66.89	94.21	145
Birth Qtr -4			
Birth Qtr -3	273.7**	-200.3	-282.2
	101.6	112	162.8
Birth Qtr -2	180.4*	-567.1***	-808.1***
	72.94	139	176.7
Birth Qtr -1	-79.06	-1,606***	-1,556***
	83.99	181.9	405.8
Birth Qtr	-1,392***	-1,563***	
	90.38	194.4	
Birth Qtr +1	-1,813***	-1,072***	
	110	165.8	
Birth Qtr +2	-982.8***	-701.4***	
	113.2	146.7	
Birth Qtr +3	-292.3	-486.6**	
	160.1	148.3	
Birth Qtr +4	-366.8**	-159	
	119.3	171.9	
Birth Qtr +5	-168.8	165.5	-1,447***
	146.5	169.7	320.6
Birth Qtr +6	-137.4	385.5	-948.5**
	144	203.9	300.8
Birth Qtr +7	-6.913	364.4	-268.8
	173	187.4	283.1
Birth Qtr +8	-63.36	711.4***	-139.5
	165.5	214	296
Observations	200000	35000	15500
R-squared	0.016	0.076	0.076
Number of PIKs	8100	1700	1500

Table 16: Earnings Event-Study Regression Coefficients, Employed Transitions (Continued)

	Employer Stayers	Employer Leavers	Labor Force Leavers
Birth Qtr +9	150.1	764.3***	285.1
	170.1	202.7	280.5
Birth Qtr +10	294.5	724.8***	94.75
	202.3	196	311.5
Birth Qtr +11	384.8*	764.2***	405.2
	186	208.9	275.9
Birth Qtr +12	291.5	1,124***	585.8*
	193.2	281.4	284.5
Birth Qtr +13	588*	940.4***	815.7**
	230.2	223.4	283.3
Birth Qtr +14	691.3**	1,029***	825.9**
	217.7	232.4	264.9
Birth Qtr +15	935***	952.8***	1,125***
	241.3	234.9	291.8
Birth Qtr +16	755.4**	1,139***	1,133***
	248.7	250.9	297.5
Birth Qtr +17	1,073***	1,305***	1,095***
	263.1	248.8	320.9
Birth Qtr +18	1,152***	1,356***	1,502***
	240.2	257.5	299.1
Birth Qtr +19	1,599***	1,343***	1,868***
	397.5	267.3	321.7
Birth Qtr +20	1,185***	1,544***	1,735***
	304.1	281.4	332.2
Birth Qtr +21	1,380***	1,626***	1,678***
	324	286.2	333
Birth Qtr +22	1,584***	1,416***	1,969***
	285.1	289.4	343.2
Birth Qtr +23	1,579***	1,443***	2,433***
	295.3	302.9	396
Birth Qtr +24	1,703***	1,562***	2,448***
	392.4	309.7	394.1
Constant	9,957***	4,990***	3,435***
	443	485.8	460.8
Observations	200000	35000	15500
R-squared	0.016	0.076	0.076
Number of PIKs	8100	1700	1500

Notes: Event study specification where the dependent variable is earnings, with 4 quarters before birth as the excluded category. Models are estimated using OLS, with inverse probability weights. Employer stayers returned to their pre-birth employer within a year of birth, employer leavers went to a different employer post-birth, and labor force leavers did not have non-zero earnings in the year immediately following birth. Sample includes only women with non-zero earnings (thus estimates for labor force leavers are not identified for quarters 1–4). *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$