

IZA DP No. 3244

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December 2007

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Discussion Paper No. 3244

December 2007

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## **ABSTRACT**

### **Parental Leave Policies and Parents' Employment and Leave-Taking\***

Utilizing data from the June Current Population Survey (CPS) Fertility Supplement merged with data from other months of the CPS, we describe trends in parents' employment and leave-taking after birth of a newborn and analyze the extent to which these behaviors are associated with parental leave policies. The period we examine – 1987 to 2004 – is one in which such policies were expanded at both the state and federal level. We also provide the first comprehensive evidence as to how these expansions are correlated with employment and leave-taking for both mothers and fathers over this period. Our main finding is that leave expansions have increased the amount of time that new mothers and fathers spend on leave, with effects that are small in absolute terms but large relative to the baseline for men and much greater for college-educated women than for their counterparts with less schooling.

JEL Classification: J13, J18, J22

Keywords: parental leave policies, parental employment, leave-taking

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\* The authors gratefully acknowledge funding support from NICHD and helpful comments from Heather Hill and Elizabeth Washbrook.

The labor force participation of women with children has risen sharply in recent years and women have become much more likely to work continuously over their lifecycle. For no group has the change been more dramatic than for women with newborns. In 1968, only 21 percent of women with a child under the age of one were in the labor force (U.S. Bureau of the Census, 2001). By contrast, over half of such women have been in the labor force in every year since 1986 (Dye, 2005; U.S. Department of Labor, 2007).

The fact that mothers are employed does not mean that they are at work. In most countries, mothers with infants are entitled to take a period of paid and job-protected leave to recover from the birth and care for the newborn, and many nations have extended parental leave rights to fathers (Kamerman, 2000; Waldfogel, 2001a). The U.S. was long an exception in this regard, but in recent years, parental leave laws have been enacted at both the state and federal level. At the federal level, the U.S. had no parental leave law until the passage of the Family and Medical Leave Act (FMLA) in 1993. The FMLA requires employers with 50 or more workers to offer a job-protected leave of up to 12 weeks to qualifying employees who need to be absent from work for family or medical reasons. The leave is unpaid, but employers who offer health insurance must continue to do so during the leave. Because of the firm size and qualifying conditions, less than 50 percent of private sector workers are eligible for leave under the FMLA (Ruhm, 1997). Men are slightly more likely to be eligible than women; there are also differences by family income and education, with low-income and less-educated workers less likely to be covered than their peers (Commission on Family and Medical Leave, 1996; Cantor et al., 2001).

One intent of the federal and state laws is to provide mothers and fathers with the opportunity to take some time off work after the birth of a child, without the risk of losing their

job.<sup>1</sup> Even the most generous of U.S. laws provide leave for relatively short periods (typically, less than 3 months) and the limited previous research does not conclusively indicate how such legislation has influenced the leave-taking of mothers or fathers.

This study investigates whether recent changes in federal and state parental leave legislation have led to more mothers and fathers taking leave in the birth month and succeeding months. If so, this could have important implications for children as it would presumably increase the time that parents are able to spend with their infants. We also explore whether leave extensions have resulted in more mothers being employed post-childbirth, as opposed to leaving work altogether, as this would tend to have the opposite effect, reducing maternal time with young children.

Our primary finding is that the leave expansions have had little effect on overall employment rates but have increased the amount of time that new mothers and fathers spend on leave. The effects vary by education group as well as gender. We find positive effects of leave legislation on mothers' leave-taking in the birth month and the succeeding two months. However, these effects are confined to more educated mothers, probably because this group is more likely to be covered by the laws. Fathers, in contrast, typically take extremely short leaves (or none at all), so where we find effects of leave laws, these occur only in the birth month. As for mothers, the results for men differ by education group, with significant effects only for the more educated.

## **Background**

Understanding how parental leave legislation has affected employment and leave-taking is of more than academic interest. Rights to parental (particularly maternity) leave have been viewed as important to improve the job continuity of mothers – who without the entitlement to

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<sup>1</sup> Some laws also permit work absences for other reasons, such as to care for sick relatives.

leave would often be forced to terminate jobs in order to spend time with their children – and so to reduce the “family gap” in women’s wages (see, e.g., Fuchs, 1988; Waldfogel, 1998a, 1998b; Korenman & Neumark, 1992; Lundberg & Rose, 2000; Budig & England, 2001; Baum, 2003). Maternity leave might also improve the health of mothers and the limited research on this topic (e.g. Chatterji & Markowitz, 2005) provides suggestive but inconclusive evidence of benefits.

There is also evidence that extending maternity leave might improve children’s health. Cross-national studies have found that when parental leave entitlements are extended, infant mortality rates are lower (Ruhm, 2000; Tanaka, 2005). U.S. research indicates that when mothers return to work in the first 3 months, infants are less likely to be breast-fed, taken to the doctor for well-baby visits, or up-to-date on their immunizations (Berger, Hill, & Waldfogel, 2005). Another mechanism by which earlier returns to work might affect infant health would be through earlier enrollment in child care. However, while group child care in the first years of life does pose some health risks to children, these tend to be relatively minor and short-lived (Meyers, Rosenbaum, Ruhm, & Waldfogel, 2004).

Earlier maternal employment may also have implications for child development. There is a large body of research on the effects of first-year maternal employment and non-maternal child care on children's later cognitive and emotional well-being (see e.g. Haskins, 1985; Baydar & Brooks-Gunn, 1991; Belsky & Eggebeen, 1991; Bates et al, 1994; Belsky, 2001; Bornstein et al., in press). Specifically, maternal employment in the first year of life is associated with lower cognitive test scores for children at age three, four, or five (see, e.g., Desai, Chase-Lansdale, & Michael, 1989; Baydar & Brooks-Gunn, 1991; Blau & Grossberg, 1992; Han, Waldfogel, & Brooks-Gunn, 2001; Ruhm, 2004). And, children whose mothers work long hours in the first year of life, or who spend long hours in child care in the first several years, have been found to

have more behavior problems (see e.g. NICHD ECCRN, 1998, 2003). These effects may relate to the mother's absence (although time at work does not necessarily translate into less time with the child; see Bianchi, 2000; Huston & Aronson, 2005) or to enrollment in child care.

Only a few studies have examined the effects of parental leave laws on mothers' employment and leave-taking. Klerman and Leibowitz (1997), using data from the 1980 and 1990 Census for the pre-FMLA period, find that mothers covered by state parental leave laws took about two weeks more maternity leave than mothers who were not covered (see also Klerman & Leibowitz, 1998, 1999). Waldfogel's (1999b) analysis of the March 1992-1995 CPS indicated that the likelihood of women with infants being on leave rose 23 percent post-FMLA. Ross (1998), using the Survey of Income and Program Participation (SIPP), found that women took about six weeks more unpaid leave due to the FMLA. Han and Waldfogel (2003), also using SIPP data, found that longer leave entitlements corresponded to more leave-taking by mothers, but that the effects were often not significant when state fixed effects were included. However, the latter two studies did not examine paid-leave taking (since the SIPP tracks unpaid leave only) and none of the preceding analyses investigate leave-taking for more than a few years after implementation of the FMLA.

The second gap in the prior literature is the lack of research on how parental leave laws affect fathers. To the extent that paternity leave facilitates fathers establishing relationships with newborns and being more involved with their children subsequently, such policies have potentially important implications for child well-being. Yet, paternity leave is fairly new in the United States, and there has been little study of it. Limited research suggests that men are reluctant to take leave even when covered, with many reporting the fear that doing so would hurt their careers (Conference Board, 1994; Malin, 1994, 1998). Moreover, even when men take

leave, they are usually off work for only a week or two (Commission on Family and Medical Leave, 1996; Hyde, Essex, & Horton, 1993; Pleck, 1993). In analyses of families with children born in 2001, Neponmyaschy & Waldfogel (2007) find that about 90 percent of resident fathers have taken some leave after the birth, but most take only a week or two. However, men who take longer leaves are more involved with their children nine months later (Neponmyaschy & Waldfogel, 2007). Research shows that more men had access to paternity leave post-FMLA than before it (Waldfogel, 1999a, 2001b; Cantor et al., 2001) but we know little about the effect of the FMLA or other leave laws on men's leave usage. Han and Waldfogel (2003) represents the only prior analysis that included fathers and they examined unpaid leave-taking only. This paper fills that gap by examining paid and unpaid leave-taking among mothers and providing an in-depth investigation of how leave entitlements have affected the leave-taking of fathers.

A third shortcoming of prior research is that, to our knowledge, no studies have specifically assessed the effects of leave policies on families headed by less-educated parents, even though these families may need the support of leave policies the most. Prior research has found that workers with less education relatively infrequently have coverage or take parental leave, saying that they cannot afford to take unpaid leave (Cantor et al., 2001; Waldfogel, 2001b). We examine whether families headed by less-educated parents are differentially affected by leave policies by carrying out supplementary analyses focusing on this group.

A fourth limitation of related previous work is the lack of attention paid to other public policies. The potential role of means-tested benefits is readily apparent, particularly when considering less-educated families. We address this by estimating models that include controls for the welfare reforms of the 1990s, which made a host of changes to work requirements and other rules affecting the eligibility for cash welfare and other benefits. We also control for

changes in the Earned Income Tax Credit (EITC), which is known to be linked with female employment (e.g. Meyer & Rosenbaum, 2001), and may be spuriously correlated with changes in leave entitlements.

Utilizing data from the June Current Population Survey Fertility Supplement merged with data from other months of the CPS, we describe trends in parents' employment and leave-taking in the months immediately following childbirth and analyze the extent to which these are affected by parental leave policies. We provide the first comprehensive evidence as to how expansions of such policies during the period examined – 1987 to 2004 – affected employment and leave-taking for both mothers and fathers.

### **Parental leave policies**

Several authors (e.g. Klerman & Leibowitz, 1997; Ruhm, 1998; Waldfogel, 1999b) provide detailed discussions of the anticipated effects of parental leave policies. Most obviously, expanded entitlements are expected to increase the amount of leave-taking, by permitting time off work without having to quit jobs. The overall effects on employment are ambiguous, however, for two reasons. First, some parents may choose a short period of job-protected leave, when legislation guarantees their right to do so, instead of a longer absence that would require subsequently finding a new job. Some might also work more prior to childbirth so as to subsequently qualify for leave (particularly when leaves are paid). On the other hand, the policies sometimes permit a longer period off work after the birth, which might induce some parents to develop a taste for being at home with their child and so to leave their jobs. There are also indirect effects whose direction is ambiguous. For instance, some husbands may increase labor supply to offset leave-taking by wives and the mandates could affect wages or fertility.

We consider three types of leave policies: the federal FMLA; state parental leave laws; and state temporary disability insurance (TDI) programs. Data on these policies were from Han and Waldfogel (2003), with updated information from the National Partnership for Women & Families (2002) and Stutts (2006). Appendix Table A.1 summarizes the parental leave policies in effect in different years.

The FMLA, which was signed into law in February 1993 and took effect nationwide in August 1993, provides up to 12 weeks of unpaid leave for specified reasons, including the birth or assumption of care of a new child. The law applies only to workers who meet its qualifying conditions, which include having worked for at least 12 months for an employer with 50 or more employees. As discussed, slightly fewer than half of all private sectors workers are estimated to be eligible for leave under the FMLA, with men and more educated workers slightly more likely than their counterparts to be covered and eligible. Since we cannot distinguish in our data which new parents meet the qualifying conditions (and arguably whether they do so is potentially endogenous), we code any mother or father who had a child born on or after August 1993 as potentially eligible for 12 weeks of unpaid parental leave under the FMLA.

Several states enacted parental leave laws before the federal legislation took effect. The earliest state statute dates from October 1972 (in Massachusetts), and states have continued to pass laws even after the FMLA. Like the federal legislation, state laws apply only to qualifying workers, with small employers often exempt and some laws applying only to government (but not private sector) employees. Our data do not allow us to identify which workers meet qualifying requirements under state laws and we again code any parents with children born on or

after enactment of the state law as being potentially eligible for leave under that law.<sup>2</sup> Many state laws cover mothers only and so we code only mothers as being eligible under these laws.

Five states offer *paid* leave to disabled workers through Temporary Disability Insurance (TDI) programs. These states and the dates on which their laws came into effect are Rhode Island (1942), California (1946), New Jersey (1948), New York (1949), and Hawaii (1969). TDI laws, while not designed for this purpose, have the effect of providing paid parental leave to mothers for a period of time after giving birth because the 1978 federal Pregnancy Discrimination Act required TDIs to cover pregnancy and maternity-related disability in the same way as other types of disability. Typically new mothers are entitled to 6 weeks of paid leave through TDI programs (8 weeks after a Caesarean section), so we classify mothers giving birth in a month and year when such laws were in effect as being potentially eligible for 6 weeks of paid leave. We do not code fathers as being eligible under TDI programs since these laws apply only to mothers.

Parental leave entitlements became more widespread over the period examined. In our sample, the share of new mothers living in a state with a state parental leave or TDI law, or who could potentially be covered under the FMLA, rose from 26 percent in 1987 to 100 percent in 1994 (Appendix Table A1). The increase for men was even sharper – rising from 3 percent in 1987 to 100 percent in 1994. Both figures are 100 percent in 1994 and thereafter since all new parents are potentially eligible for parental leave under the FMLA beginning in 1993 (although whether they are actually covered and eligible depends on job tenure and firm size). However, there is still some variation by state post-FMLA since some states guarantee more than 12 weeks of leave. We account for this in supplemental models by controlling for the number of weeks of leave, rather than just leave coverage. As mentioned, some states provide paid leave through TDI

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<sup>2</sup> However, we exclude laws that apply to state employees only, as these cover only a small minority of parents.

programs, which we account for in supplemental models focusing on state laws and distinguishing between paid and unpaid leave entitlements.<sup>3</sup>

### **Other policies**

It is important to take into account other policies that might affect the employment and leave-taking of new parents, particularly those whose provisions have changed over the period analyzed. Especially important are policies related to welfare reform and the Earned Income Tax Credit. Most welfare reforms occurring in the 1990s were designed to increase parental employment, but the specific provisions enacted were diverse and may not have had uniform effects (e.g. see review by Blank, 2002). Nor is it clear whether or how these reforms should affect leave-taking. Our main focus is not to determine the impact of welfare reforms but rather to insure that our estimates of the effects of parental leave policies are not biased by omitting these potentially important covariates.

We control for three specific welfare system provisions that changed over the study period. The first is a dichotomous variable indicating whether the state had an approved welfare waiver program prior to the 1996 enactment of TANF, which indicates if welfare reform was underway in the state prior to 1996. Our second dummy variable is “turned on” in the month and year a state implemented TANF (and we “turn off” the waiver variable, if applicable, at the same time).<sup>4</sup> Our third welfare variable measures the length, in months, of any welfare work exemptions for mothers of infants. Prior to welfare reform, women were exempt from welfare’s work requirements until their youngest child was 36 months old. After welfare reform, mothers

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<sup>3</sup> Some states cover more workers than the FMLA because they have lower job tenure or firm size requirements; we do not account for this as we lack data on individuals’ tenure and firm size.

<sup>4</sup> TANF was passed at the federal level in 1996 but became effective in states at varying dates ranging from late 1996 to late 1998. We obtain our data on waivers and TANF effective dates from the Council of Economic Advisors (CEA) report on “The Effects of Welfare Policy and the Economic Expansion on Welfare Caseloads” and the TANF annual Reports to Congress from the U.S Department of Health & Human Services (<http://www.acf.dhhs.gov/programs/opre/director.htm>)

could be required to work when their child was as young as 3 months old (or even younger at state option). By 2000, 22 states had no exemption or required mothers to work as early as 3 months; another 3 states required work by 6 months, and 20 others (and the District of Columbia) required work by 12 months (Brady-Smith, Brooks-Gunn, Waldfogel, & Fauth, 2001; Hill, 2007). Mothers with young children are more likely to be employed in states that do not exempt them from work requirements (Hill, 2007) and these mothers also breast-feed their infants for shorter durations (Haider, Jacknowitz, & Schoeni, 2003).<sup>5</sup>

Finally, we control for the generosity of EITC benefits, as proxied by the natural log of the cash value of the maximum refundable benefit for a family with 2 or more children in the state and year. This measure combines amounts available under federal and state programs, where applicable.<sup>6</sup> We do not include, in this calculation, EITC programs in the few states providing non-refundable benefits, since these do not reach all low-income families.<sup>7</sup>

## **Data**

Data on the exact month and year that mothers gave birth was obtained from the June supplements to the monthly Current Population Surveys (CPS) available in even numbered years between 1988 and 2004. Information on labor force status, number of children, and demographic variables (age, education, marital status and race/ethnicity) of mothers and fathers residing with them was obtained from the regular monthly CPS. We also use the CPS sampling structure – where households are in the sample for four months, out for the next eight, and then surveyed again for four additional months – to identify labor force status for periods up to 12 months prior

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<sup>5</sup> Data on welfare work exemptions for mothers with infants are from various years of the Welfare Rules Databook compiled by the Urban Institute.

<sup>6</sup> We take our data on the EITC from Blau, Han, Kahn, & Waldfogel (2006).

<sup>7</sup> We considered but did not include controls for child care policies because we think child care subsidies are likely to have less effect on the labor supply of parents in the first few months of life than the other policies considered here. Hill's (2007) study, for instance, found no significant effects of child care subsidies on the labor supply of mothers with children age 0 to 60 months. Also, as a practical matter, we lack consistent data on child care subsidies over our time period.

to and following the birth, although this information is available for only some of the time period for each individual respondent.

Consider, for example, a woman surveyed for the second time in June of 1998 who has a child born in April of that year. For this mother, we will have data on labor force status only for one through four months after the birth month (measured in May through August of 1998). Conversely, for a woman whose child is born in June, we would have data for the month prior to the birth, the birth month, and the next two months, as well as for 11 and 12 months after the birth month. Finally, for a mother who is in the eighth survey month in June of 1998 and gave birth in May of that year, we would be able to identify labor force status in the birth month and previous two months (from the April through June 1998 interviews) but also for the 11<sup>th</sup> and 12<sup>th</sup> months prior to the birth month (from the surveys taking place in May and June of 1997). The latter are important because we will use women giving birth 11 or 12 months later as a control group in the difference-in-difference (DD) estimates emphasized below.

It is important to note that we are not able to identify the exact timing of births, since the June supplements give month and year but not the day of birth. Labor force status is measured in the week prior to the CPS survey (the reference week) which, during the birth month, may occur before or after the child was actually born.<sup>8</sup> This matters for two reasons. First, it implies that our estimates refer to the birth month rather than the child's first month of life and similarly for later months. We will sometimes refer to our results in terms of months of child age, for ease of exposition, when indicating the number of months before or after the birth month would be more accurate. (For example, we may discuss leave-taking during the child's second month, when we

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<sup>8</sup> Most CPS surveys occur during the third week of the month (according to the "Overview of CPS Monthly Operations" (US Department of Labor, 2002)). Consider the plausible case where the child is born on June 23 but the survey occurred on June 19 (with labor force measured for the previous week). This implies that the birth month will actually cover the period before the child was born and the data for the next month, obtained on or near July 19, will indicate employment behavior during the reference week during the child's first month of life.

really mean the second month following the birth month). Second, it means we will miss some very short leaves, which do not occur during the survey reference week. This is particularly relevant for men who generally take minimal amounts of leave. Specifically, our estimates will indicate the percentage of time that mothers or fathers are off work during the specified month, rather than the probability of their being on leave during that month.<sup>9</sup>

Two additional issues deserve mention. First, we only have data on fathers who reside with the child's mother. Although we cannot be certain, it seems probable that such fathers will take more leave around the time of the child's birth than fathers who not living with the mother. If so, our estimates will overstate the amount of paternity leave used. Second, with the procedures discussed above, we need to match individuals and families across survey months. This is done using the household identifier, household number, and personal line number, as recommended by the CPS user's guide, with information on the month in the sample used to match families across survey months. Average match rates were 85 percent or higher within three-month periods (e.g., birth month merged with two months prior to the birth or with two months after the birth) and about 50 percent for the months more than six months apart (e.g., birth month merged with 10 months prior to the birth).<sup>10</sup>

We then attach information on whether federal or state parental leave laws were in effect during the specified month, the number of weeks of leave entitlement, and also supplementary

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<sup>9</sup> Consider the case where all men take exactly one week of leave following the birth of a child. This will occur during the reference week approximately one-quarter of the time. It would not be correct to interpret this to indicate that only one-quarter of men take leave. Rather, the correct interpretation is that about 25 percent of male employment involves leave-taking during that month.

<sup>10</sup> These match rates refer to observations that are potentially matchable. One issue was that the structure of the household identifiers changed in 1995 in ways that precluded matching observations from this year with those from either 1994 or 1996. For this reason, information from 1995 was excluded.

policy variables related to state welfare system characteristics, EITC benefits, and state monthly unemployment rates.<sup>11</sup>

### **Empirical strategy**

We begin with descriptive analyses of trends in employment and leave-taking among parents of infants (aged 0 to 12 months). Using survey questions about each parent’s activity the prior week, we consider three outcomes: 1) employment (those working or with a job but not working during the prior week); 2) leave (those who had a job but were not at work in the previous week); and 3) leave for “other reasons” (those employed but not at work for reasons other than vacation, own illness, bad weather, labor dispute or layoff, or because they are waiting for a new job to begin). We lack a consistent explicit measure of maternity/paternity leave and so believe this is best accounted for through the measure of leave for “other reasons”, which we therefore focus upon below.<sup>12</sup> It is important to note that the 1994 redesign of the CPS resulted in a slight increase in reported employment rates for females (Polivka & Miller, 1995). The effects of this change will hopefully be captured by the inclusion of year effects in our regression models, but may make it difficult to estimate the effect of the FMLA which came into effect at roughly the same time as the redesign. In supplemental analyses, we estimate separate models for the pre-FMLA and post-FMLA periods. These help us to discern the effects of state policies before and after the FMLA came into effect, but can not shed light on the FMLA itself.

We next estimate a series of econometric models, the basic form of which is:

$$Y_{it} = \alpha_{it} + \beta_1 X_{it} + \beta_2 M_{it} + \beta_3 L_{it} + \gamma M_{it} \times L_{it} + \delta_1 S_i + \delta_2 T_t + \mu_{it}. \quad (1)$$

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<sup>11</sup> The unemployment data come from the U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics database, which can be accessed at: <http://www.bls.gov/lau>.

<sup>12</sup> The CPS does have questions about maternity or paternity leave starting in 1994. The percentages of mothers and fathers using “other” as the reason to be not at work in years prior to 1994 are similar to those of mothers and fathers using “maternity or paternity leave” as the reason to be not at work in years after 1994.

In equation (1), the subscripts  $i$  and  $t$  indicate the survey respondent and time period and  $Y_{it}$  is one of three labor force status dichotomous variables indicating employment, leave, or leave for “other reasons”. The latter two outcomes are estimated for the subsample of employed individuals, and so indicate rates of leave-taking conditional on employment.  $\mathbf{X}_{it}$  is a vector of supplementary regressors that includes: parent’s age, education, marital status, race/ethnicity, whether the child is a first-born, and the number of children in the household (all taken from the June CPS), as well as the welfare policies, EITC benefits, and monthly unemployment rate in the state during the survey month.  $\mathbf{M}_{it}$  is a vector of four dummy variables, respectively, taking the value of one in the birth month and the three following months,<sup>13</sup> with the reference group consisting of mothers (or fathers) who will have a birth 11 or 12 months *after* the survey date.  $L_{it}$  controls for whether any parental leave law (whether federal, state, or TDI) was in effect during the survey month.  $\mathbf{S}_i$  and  $\mathbf{T}_t$  are vectors of state and year dummy variables and  $\mu_{it}$  is an error term.

Several features of equation (1) deserve mention. First, we provide separate estimates for mothers and fathers, since their employment and leave-taking behavior are likely to differ dramatically. Second, state “fixed-effects” and general year effects control for all time-invariant but state-specific determinants of employment (such as local attitudes), as well as factors that affect all locations but differ across time periods (like national macroeconomic conditions). Third, because several of our variables are defined at the state rather than person level, the

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<sup>13</sup> We do not consider later months because parental leave benefits provided under state or federal law in the United States almost never extend beyond three months. In future work, however, it might be of interest to explore whether leave laws have effects on employment in later months.

standard errors in all of our models are adjusted for non-independence within states (using the cluster function in STATA).<sup>14</sup>

Even with the extensive controls just discussed, there could be omitted variables biases, if unobserved determinants of employment or leave-taking are correlated with changes in parental leave rights. For instance, it is possible that more generous parental leave entitlements are enacted in response to increased maternal employment, since these policies are viewed as an important way to help parents balance family and work responsibilities. Equation (1) addresses this by including a control group – men or women who will have a birth 11 or 12 months after the survey date – whose labor force behavior is likely to be affected by the confounding factors in similar ways as the new parents but who are not subject to the leave legislation itself.

Specifically, equation (1) is a difference-in-difference (DD) model. Notice that the coefficients on  $\mathbf{M}_{it}$  show the estimated differences in employment or leave-taking in the birth month and next three months, relative to the treatment group of parents who will have infants approximately one year after the survey date. Similarly, the main effects on parental leave refer to this reference group, and so indicate the effects of any uncontrolled confounding factors, while the interaction coefficients show how parental leave entitlements differentially affect parents in the month immediately after childbirth. The key assumption of the DD model is that the leave laws do not causally affect the labor market status of the reference group. This generally seems reasonable, although there could be small effects. For instance, it is possible that some women work more in the year prior to childbirth, in order to be eligible for maternity leave benefits. If so, expanded leave might increase employment among the control group and result in an

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<sup>14</sup> We experimented with instead clustering at the person level, since individuals appear in our sample more than once. The standard errors were similar using this procedure.

understatement (overstatement) of the extent to which leave rights increase (decrease) employment among the treatment group.<sup>15</sup>

We report results of linear probability (LP) models, even though the labor force dependent variables are dichotomous and probit or logit models might be more appropriate. The reason is that coefficients from the LP specifications are easier to interpret, especially when including interactions between leave laws and the timing variables (the birth month and following three months), where marginal effects depend on the values of the covariates and the associated probit or logit coefficients are often misleading.<sup>16</sup> However, prior to doing so, we estimated both LP and probit models for specifications that include all covariates except the interactions. The magnitudes and statistical significance of the marginal effects were quite similar, indicating that predictions from the linear probability estimates will be informative.

We also estimate several variants of the basic model. First, some specifications control for the duration (number of weeks) of leave provided through the state or federal leave law, rather than the dichotomous entitlement variable. Second, we estimate our basic model separately for less- and more-educated parents (defining these as those with less than college, or some college or more education, respectively). Third, we estimate separate models for the pre-FMLA and post-FMLA periods; we estimate these using our main entitlement variable, as well as with variables distinguishing between the availability of paid leave (through TDI programs) versus unpaid leave (through state parental leave laws).

## **Results**

### **Descriptive Results**

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<sup>15</sup> The employment effects are likely to be quite small, since most leaves are unpaid. It also seems unlikely that the leave rights will have much effect on leave-taking among the control group.

<sup>16</sup> Ai and Norton (2003) show that the coefficients may have the opposite sign as the predicted effect of the interaction on the dependent variable.

Table 1 displays average rates of employment and leave-taking for the control group of mothers and fathers whose child will be born 11 or 12 months later, as well as corresponding means for the birth month and the next three months. Women are much more likely to hold jobs before birth than after it – 66 percent of the control group is employed versus 46 to 49 percent of the treatment groups. Not only do rates of maternal employment fall after childbirth but many women also take brief periods of leave. For instance, over half of employed mothers are not working during the birth month and first month thereafter, compared to just 7 percent of the control group. The data also provide suggestive evidence that the leave for “other reasons” variable is a good proxy for maternity leave. Specifically, this accounts for less than 2 percent of employment among the control group, who will rarely be on parental leave, but 42 percent of employment of mothers in the month of birth and 55 percent in the following month.<sup>17</sup> Moreover, 82 (85) percent of work absences in the birth month (first month after birth) occur for “other reasons”, consistent with an important role of maternity leave during these periods. Notice, however, that consistent with prior evidence (see e.g. Berger & Waldfogel, 2004) most maternity leaves appear to be brief. Just 28 percent of mothers are absent for “other reasons” two months after birth and less than 12 percent three months subsequent to it. For both leave, and leave for “other reasons”, we find higher shares of women on leave one month after the birth than in the birth month. This reflects the issue discussed earlier, that the week for which labor force information is documented in the birth month is not always post-birth, whereas the week documented in the next month is.

Conversely, relatively few men stop working following the birth of a child. Ninety-two percent of fathers are employed during the birth month and each of the subsequent three months, compared to a 93 percent employment rate 11 or 12 months before the child was born. Paternity

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<sup>17</sup> There may be some maternity leave taken by the control group following the birth of an earlier child.

leave is also rare. Just 3 percent of employed fathers are absent for “other reasons” in the birth month and fewer than 1 percent in any of the following three months. Even using a more expansive definition of leave, including all fathers with a job but not working, just 7 percent of employed fathers report being off the job in the birth month and around 4 percent in the subsequent months. This is consistent with the commonly held belief that the presence of young children has a weaker impact on the labor supply behavior of men than of women. Recall also that our measure of leave will miss short work absences not occurring during the reference week. With many men taking leaves of just a week or two, this is more of a problem for fathers than mothers.

Sample averages for the explanatory variables are provided in Appendix Table A.2. Most of these are self-explanatory and so need not be discussed. However, it is important to note that the demographic characteristic means are similar for the control and treatment groups. This is desirable, since large disparities might reflect differential rates of matching across types of individuals and raise concern that the treatment and control groups are not comparable.

It is also worth pointing out that 62 to 75 percent of mothers and 45 to 63 percent for fathers are potentially eligible for parental leave, with average entitlements of 6 to 8 weeks for mothers and 5 to 8 weeks for fathers (Appendix Table A.2). As mentioned, the share of parents with parental leave entitlements rose from 26 percent for mothers and 3 percent for fathers in 1987 to 100 percent for both groups in 1994 and thereafter. Leave entitlements are higher in the treatment groups than in the control group, reflecting the evolution of policies over time. For the same reason, the control group has more months of infant welfare work exemptions and somewhat lower EITC benefits.

Figures 1 through 3 supply additional detail on time trends in maternal employment and leave-taking from three months before through 12 months after the birth month. Dates refer to the year of the June CPS survey from which birth information was obtained. Therefore, the births could have actually occurred in this or the previous year. Across all years, there is a decline in employment as a birth approaches, because some women leave employment altogether, followed by an additional reduction in the birth month and (for most years) a gradual increase beginning three or so months after birth (Figure 1). Even more pronounced is a sharp uptick in leave-taking at the time of the birth. Leave-taking also increases slightly at the end of pregnancy, much more dramatically immediately after birth, and then rapidly declines after the peak at one month post-birth to approximately reach pre-birth levels within only a few months (Figures 2 and 3).

These patterns can be illustrated using data from 2004, the latest period we analyze. In that year, rates of maternal employment fell from 55 percent in the third month prior to birth to 48 percent in the month prior to delivery and 44 percent in the birth month. They remained in the range of 45-46 percent during the next three months and then rose to between 49 and 51 percent for the 4<sup>th</sup> through 12<sup>th</sup> months after delivery. Using the broad definition of leave-taking (including all women who are employed but not working), 4 percent of employed mothers were on leave in the third month prior to birth, rising to 15, 45 and 69 percent in the month before birth, the birth month and the month after birth. Leave-taking declined to 40 and 19 percent over the next two months and ranged between 4 and 9 percent in the 4<sup>th</sup> through 12<sup>th</sup> months after delivery. Using our preferred and narrower definition of leave-taking (employed and absent from work for “other reasons”), 1, 3 and 11 percent of women were on maternity leave in the three months preceding delivery, 40 percent in the birth month, 34, 16, and 4 percent during the next three months, and between 1 and 3 percent during the 4<sup>th</sup> through 12<sup>th</sup> months after birth. What

these results indicate is that childbirth is associated with substantial reductions in maternal employment and increases in leave-taking. However, whereas a portion of the decline in employment lasts for at least one year, maternity leaves, while common, are of short duration. These results are largely consistent with analysis of CPS data for an earlier (1979-1988) period conducted by Klerman & Leibowitz (1994), except that they find a faster recovery of post-birth employment for the earliest portion (1979-1982) of their data.<sup>18</sup>

Whether leave-taking has increased among mothers over time is difficult to determine from Figures 2 and 3. The level of leave-taking was lowest in 1988 and higher in 2004 than in most years, but rates of leave-taking were also high in 1992 and 1994. This can be seen more clearly in Figure 4 which shows the share of mothers on leave for “other reasons” in the birth month and the succeeding three months. The figure shows that leave for “other reasons” in the birth month and first month after it rose from 1988 to 1994, dipped in 1998, and then grew slightly thereafter.<sup>19</sup> The dips occurring between 1994 and 1998 are not fully explained but are likely to reflect changes in the sampling strategy and household identification approach carried out between 1994 and 1996, as well as the CPS redesign implemented at the beginning of 1994.

The patterns for fathers, displayed in Figures 5-8, are quite different. First, there is no consistent employment trend when moving from three months pre-birth to 12 months post-birth (Figure 5).<sup>20</sup> Second, there is a sharp increase in leave-taking during the birth month. For instance, between 2 and 5 percent of fathers are employed but not working three months before birth (depending on the survey year) compared to 4 to 10 percent in the birth month. However,

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<sup>18</sup> For instance, in 1983-1985, maternal employment rates for mothers with 1, 3, 6 and 12 month old children were 38, 38, 37 and 40 percent, with 71, 20, 13 and 7 percent of these mothers being on maternity leave. Klerman & Leibowitz (1994) do not report results for the period before birth.

<sup>19</sup> Note that data on many of the persons surveyed in June of 1994 actually came from 1993, before the CPS redesign: for example, the birth month occurred in 1993 in 55 percent of such cases.

<sup>20</sup> The percentage of men employed is lower in the birth month than three months earlier in seven of eight survey years but the difference is small – generally less than two percentage points. The employment rate 12 months after birth is higher than in the birth month in three of eight survey years but the differences are again relatively small.

leave-taking returns to or near pre-birth levels within a month (Figure 6). This suggests that a small but growing fraction of fathers take paternity leaves, usually of very short duration. Interestingly, Figure 7 shows that leaves for “other reasons” in the birth month have increased over time, suggesting that parental leave entitlements may be having a noticeable impact on fathers: 1.1, 2.3, 3.0 and 2.7 percent of fathers were on leave for “other reasons” in the birth month in 1988, 1990, 1992 and 1994, compared with 4.5, 4.2, 5.0 and 6.1 percent in 1998, 2000, 2002 and 2004. This pattern is shown more clearly in Figure 8. We should also note that although the measure of work absences for “other reasons” is likely to be useful when considering maternity leaves, very low prevalence rates in most months for fathers imply that it will be difficult to obtain precise estimates for them, using this narrow definition of leave-taking.<sup>21</sup>

### **Leave Rights Increase Leave-Taking But Not Employment**

Table 2 presents our first econometric estimates of the effects of leave policies. As described, the samples include parents observed 11 or 12 months prior to a birth (the control group), in the birth month, or one to three months after it. The “main” effects show relationships for the control group and the interaction coefficients show DD estimates of the differential impact for the treatment groups of mothers or fathers, relative to those of the control group. The table shows marginal effects from linear probability models. These can be interpreted as indicating the percentage point increase in the dependent variable associated with a one unit change in each regressor.

Looking first at women, we find as expected, that mothers are less likely to be employed in the birth month as well as the three months post-birth, with employment rates falling by 16 to

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<sup>21</sup> For example, 5 or fewer males in our sample were absent from work for “other reasons” in any individual survey year. Given the short duration of leave-taking by fathers, it seems likely that many such absences would be covered by accrued vacation, sick leave or personal time and so would not fall into the “other reasons” category.

19 percentage points (from the base rate of 66 percent employed 11 or 12 months before the birth). However, there are no significant effects of leave policies on employment.

Conversely, we uncover some evidence that leave entitlements are associated with higher rates of leave-taking. This is less apparent in the model for any leave-taking (column 2), where the interaction terms are positive but not significant, than when we consider our preferred definition of leave-taking for “other reasons” (column 3). Here we find that mothers are significantly more likely to be on leave for “other reasons” in the birth month and the following two months if they have a leave entitlement, although the effect for two months after the birth is only marginally significant. In the birth month, having a leave law is predicted to raise leave-taking for “other reasons” by 5.4 percentage points, a growth of 13 percent relative to the base rate of 41.5 percent that month. The increase in the first month after the birth is 8.7 points, or 16 percent higher than the base rate; the increase in the second month after the birth is 5.6 percentage points, or 20 percent above the base rate.

Columns 4-6 of Table 2 summarize the econometric results for fathers. In contrast to mothers, we find little sensitivity of fathers’ employment or leave-taking to leave laws. The effects we do find are concentrated in the birth month, where fathers are 3.9 percentage points more likely to be on leave if covered by a leave law, an increase of 54 percent relative to the base rate of 7.2 percent. Narrowing our focus to leave for “other reasons”, fathers are 2.5 percentage points more likely to be on leave if they are covered by a leave law, an 83 percent increase relative to the base rate of 3 percent.<sup>22</sup>

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<sup>22</sup> Results for the full set of covariates, including the supplementary policy variables (available for women in Appendix Table A.3), indicate that the welfare reform policies and more generous EITC benefits are not significantly associated with women’s employment or leave-taking, except for a small positive effect on leave-taking of more generous welfare-related work exemptions for mothers. As we might expect, the welfare reform variables have no effects on men’s employment or leave-taking (results not shown but available on request).

Table 3 summarizes results of models that correspond to those in Table 2, except that we control for weeks of parental leave entitlement, rather than the dichotomous measure of whether or not a law was in effect. The results are quite consistent with those previously obtained. In particular, we again find no effect of leave entitlements on employment but some increases in leave-taking in specific months. For women, each additional 10 weeks of leave rights is predicted to raise the likelihood of being on leave for “other reasons” in the birth month and two subsequent months by 4, 6, and 5 percentage points respectively, although two of these effects are only marginally significant (column 3). For men, 10 extra weeks of leave entitlement is predicted to raise the likelihood of being on leave in the birth month by 3 percentage points (column 5) and leave for “other reasons” in the birth month by 2 percentage points (column 6).

#### **Leave Laws Most Strongly Affect Highly Educated Parents**

The results presented thus far point to small and imprecisely estimated effects of leave laws on leave-taking by women and men. One reason that our estimates may be attenuated is that not all women and men are covered by the leave laws. Although the data do not identify which women or men are covered, highly educated parents are more likely to be eligible for leave and are also more likely to take advantage of the mainly unpaid leave such laws offer.

We therefore re-estimated our models separating our samples of women and men into those with no college (less than high school or just high school) versus those with college educations (some college, a college degree, or more). Because college-educated workers are more likely to be covered by leave laws, we expect to find stronger effects for this group.

The results summarized in Table 4 are consistent with this expectation. Looking first at women, we do not uncover significant positive effects of leave rights among those with no college (most estimates are negative and insignificant). In contrast, among the college educated,

the leave laws have uniformly positive predicted effects and these are significant when examining leave for “other reasons” in the birth month and two succeeding months (column 3).

For men, the full sample coefficients are quite small and for the most part are estimated imprecisely. However, where we do find effects – in the birth month – these are larger and more precisely estimated in the more-educated group than in the less-educated group. This provides evidence that, as for women, leave policies increase leave-taking among the more-educated, but not the less-educated.

### **Estimates for the Pre-FMLA and Post-FMLA Periods**

As a further robustness check, we estimated separate models for women during the pre-FMLA and post-FMLA periods.<sup>23</sup> This allows us to examine samples pre- and post-CPS re-design. These analyses are also useful in that they focus in on the effects of state laws, holding the FMLA constant. We would expect the state laws to have quite strong effects pre-FMLA, as they would be the only source of mandated coverage (short of voluntary employer provision or provision negotiated via union agreements). After enactment of the FMLA, we expect state laws to have weaker effects, although there may be some impact if they cover more workers (because of less restrictive firm size or work hours requirements), provide longer leave periods, or supply paid leave (as the TDI programs do).

The results in Table 5 provide evidence that state leave laws influence leave-taking of women both pre- and post-FMLA. Prior to the FMLA period, the state laws have significant and sizable effects on leave-taking and leave for “other reasons” in each of the three months subsequent to the birth (although not in the birth month). Results are similar for the post-FMLA period, except that here we find significant effects of leave laws in the birth month as well. These

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<sup>23</sup> We do not conduct similar estimates for men because relatively few are eligible under state parental leave laws and none are covered for parental leave by TDI laws.

results suggest that state leave laws continue to play an important role, even in the post-FMLA period.<sup>24</sup>

## **Conclusions**

The expansion of leave laws, and in particular the implementation of the federal FMLA in 1993, increased the share of new parents potentially eligible for a job-protected parental leave from 26 percent of women and 3 percent of men in 1987 to 100 percent of both groups in 1994 and thereafter. Even though the state and federal leave laws typically provide only unpaid absences (with the exception of the TDI laws already in place prior to 1987 and California's new paid leave law which did not come into effect until after 2004), we find that these leave expansions did increase parents' leave-taking, although by varying amounts across gender and education groups.

The most robust effects of leave laws for women are for leave-taking for "other reasons" in the birth month and the succeeding two months, where the share of mothers on maternity leave rises by 5 to 9 percentage points, or 13 to 20 percent of the baseline level, when a leave law is in effect. For men, by contrast, we find effects of leave laws only in the birth month, with the share on leave predicted to rise by 4 percentage points and the fraction on leave for "other reasons" by 2.5 points, representing increases of 54 and 83 percent respectively relative to baseline rates.

U.S. leave laws do not cover the whole workforce. For instance, due to firm size and job tenure requirements, somewhat less than half the private sector workforce is covered and eligible under the FMLA. State leave laws also typically include restrictions as to which employees are covered. If around half of parents are eligible under these laws, our estimated effects should be

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<sup>24</sup> We also estimated models where we controlled separately for TDI laws (which provide paid leave) and other state parental leave laws (which provide unpaid leave) and find that both types of laws influence leave-taking in the pre- and post-FMLA periods.

approximately doubled to indicate the changes resulting from a given worker newly receiving leave rights. Doing so implies that leave laws raise leave-taking by 10 to 18 percentage points among mothers in the birth month and two succeeding months, and by 5 percentage points among fathers in the birth month.

Moreover, we know that highly educated workers are more likely to be covered by current federal and state laws than their less educated counterparts. Therefore, we expect the leave laws to have larger effects on more educated parents. Our results confirm this. In particular, leave laws have consistently stronger predicted effects on leave-taking among women with at least some college, but no significant effects for less educated mothers. Although the effects for men are small in absolute terms and confined to the birth month, we find the same pattern across education groups.

Many factors other than parental leave laws changed over the period we examine, and there may be other differences between states that do and do not enact parental leave legislation. To control for such factors, all of our models account for state and year fixed effects, parents' demographic characteristics, and the state's monthly unemployment rate. We also controlled for key policies (welfare waivers, the implementation of TANF, welfare work exemptions for mothers of infants, and the value of the state and federal EITC) that might affect parents' employment and leave-taking and vary by state and over time. Such policies had few effects on employment and leave-taking in our data and their inclusion did not alter the main results.

Another potential concern is that the largest change in leave laws, the implementation of the federal FMLA (in August 1993), occurred close to the time of the CPS re-design. However, when we split our sample and estimate our models separately for the pre-FMLA and post-FMLA

period, our main findings are unchanged. Specifically, we continue to find evidence that leave laws increase parental leave-taking by mothers in the birth month and two succeeding months.

Our results suggest that extensions of parental leave rights do result in more mothers being on leave in the months following a birth. Whether these effects are large enough to substantially influence maternal or child health is at this point unknown and firm conclusions must await studies directly examining maternal and child health outcomes. What is noteworthy is that current laws appear to primarily benefit relatively highly educated mothers and that other measures (such as paid leave) may be needed to provide similar benefits to those with less schooling.

The results for fathers, who have been the subject of little previous research, are also intriguing. We cannot precisely identify the duration of many of the typically very short leaves that men take (if they take any at all), because our data cover only the week prior to the monthly survey and so will miss many short work absences, but we can calculate the percentage of weeks that men are on leave in the birth month. Doing so, we find that although men take little leave during the period surrounding childbirth, the leave laws do increase male leave-taking. These effects are small in absolute terms, but quite large relative to the baseline percentage of men on leave without such laws – the percentage of the birth month employed fathers spend on leave is predicted to increase by 7 to 11 percent, or approximately two extra days off work. Since only around half of men are covered and eligible under the FMLA, the effects of actually gaining leave rights are roughly twice as large. As with women, we cannot project what impact this increased leave-taking might have for fathers' or children's well-being. This certainly merits further research.

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**Table 1. Employment and Leave-Taking by Mothers and Fathers Before and After Birth**

Labor Force Status	Control group (11/ 12 months before birth)	Birth month	One-month after birth	Two-months after birth	Three- months after birth
<i>Mothers</i>					
Employed	0.656 (0.011)	0.486 (0.008)	0.461 (0.007)	0.473 (0.007)	0.489 (0.007)
With a job but not at work among all population	0.046 (0.005)	0.246 (0.007)	0.299 (0.007)	0.161 (0.005)	0.080 (0.004)
With a job but not at work among employed	0.069 (0.007)	0.508 (0.011)	0.649 (0.010)	0.341 (0.010)	0.164 (0.008)
Employed, Absent due to “other” reasons	0.016 (0.004)	0.415 (0.011)	0.553 (0.011)	0.284 (0.010)	0.115 (0.007)
<i>Fathers</i>					
Employed	0.933 (0.011)	0.921 (0.008)	0.916 (0.007)	0.921 (0.007)	0.916 (0.007)
With a job but not at work among all population	0.021 (0.003)	0.066 (0.004)	0.039 (0.002)	0.042 (0.002)	0.036 (0.002)
With a job but not at work among employed	0.030 (0.005)	0.072 (0.005)	0.043 (0.004)	0.045 (0.004)	0.039 (0.003)
Employed, Absent due to “other” reasons	0.005 (0.002)	0.029 (0.003)	0.008 (0.002)	0.009 (0.002)	0.006 (0.001)
N	1865	3873	4401	4587	4697

Note: Analysis uses *Current Population Survey* data from 1988, 1990, 1992, 1994, 1998, 2000, 2002 and 2004. Observations are weighted to be nationally representative. Standard errors are shown in parentheses.

**Table 2. OLS Regression Estimates for Parental Employment Surrounding the Birth  
June CPS 1988-2004**

	MOTHERS			FATHERS		
	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER" REASONS (AMONG EMPLOYED)	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER" REASONS (AMONG EMPLOYED)
Birth month	-0.176 (0.027)***	0.416 (0.030)***	0.352 (0.026)***	-0.014 (0.018)	0.026 (0.011)**	0.011 (0.007)
One-month after	-0.191 (0.025)***	0.559 (0.033)***	0.469 (0.031)***	-0.013 (0.019)	0.002 (0.013)	-0.002 (0.007)
Two-month after	-0.181 (0.029)***	0.223 (0.035)***	0.220 (0.031)***	-0.013 (0.020)	-0.000 (0.017)	0.000 (0.008)
Three-month after	-0.158 (0.030)***	0.088 (0.028)**	0.088 (0.025)***	-0.009 (0.023)	-0.003 (0.014)	-0.004 (0.008)
Any leave provided by state and federal	-0.020 (0.032)	-0.051 (0.030)	-0.073 (0.026)**	0.000 (0.020)	-0.012 (0.020)	-0.003 (0.010)
Birth month & Any leave	0.024 (0.032)	0.033 (0.033)	0.054 (0.027)*	0.009 (0.021)	0.039 (0.018)*	0.025 (0.010)**
One-month after & Any leave	0.015 (0.027)	0.031 (0.032)	0.087 (0.028)**	0.005 (0.024)	0.011 (0.017)	0.005 (0.009)
Two-month after & Any leave	0.027 (0.032)	0.070 (0.043)	0.056 (0.032)+	0.008 (0.023)	0.014 (0.019)	-0.003 (0.008)
Three-month after & Any leave	0.020 (0.034)	0.018 (0.033)	0.006 (0.023)	-0.002 (0.025)	0.012 (0.017)	-0.000 (0.009)
R-square	0.1437	0.2307	0.2183	0.0636	0.0200	0.0180
Number of Observations	19423	9600	9600	13742	12680	12680

*Note.* Table shows unstandardized coefficients with robust standard errors, clustered by state, in parentheses. Control group is composed of people (women for mothers' sample and men for fathers' sample) at 12- and 11-months prior to the birth. Model also controls for mother's (father's) age, education, marital status, race/ethnicity, whether the child is first-born, the number of children, state monthly unemployment rate, state dummies, year dummies, and the month corresponding to the monthly unemployment rate. Other state/federal policies include: state policy on infant exemption (months after the birth women were exempted from work), the month/year passed waiver program, the month/year passed TANF program, and the maximum of (the natural log of) federal and state EITC refundable benefits, in dollars.

+  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 3. OLS Regression Estimates for Effects of Weeks of Leave Entitlement on Parental Employment and Leave-Taking  
June CPS 1988-2004**

	MOTHERS			FATHERS		
	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER REASONS" (AMONG EMPLOYED)	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER REASONS" (AMONG EMPLOYED)
Birth month	-0.168 (0.024)***	0.430 (0.027)***	0.358 (0.024)***	-0.012 (0.018)	0.025 (0.011)*	0.011 (0.007)
One-month after	-0.186 (0.022)***	0.580 (0.030)***	0.485 (0.030)***	-0.012 (0.019)	-0.001 (0.013)	-0.002 (0.007)
Two-month after	-0.185 (0.026)***	0.232 (0.030)***	0.224 (0.030)***	-0.011 (0.020)	-0.001 (0.017)	0.000 (0.008)
Three-month after	-0.159 (0.027)***	0.091 (0.025)***	0.088 (0.024)***	-0.007 (0.023)	-0.005 (0.014)	-0.004 (0.008)
Weeks of leave provided by state and federal	-0.004 (0.003)	-0.005 (0.002)+	-0.007 (0.002)**	-0.000 (0.002)	-0.000 (0.002)	-0.000 (0.001)
Birth month & Weeks of leave	0.001 (0.003)	0.001 (0.003)	0.004 (0.002)+	0.000 (0.002)	0.003 (0.001)*	0.002 (0.001)*
One-month after & Weeks of leave	0.001 (0.002)	0.000 (0.002)	0.006 (0.002)*	0.000 (0.002)	0.001 (0.001)	0.000 (0.001)
Two-month after & Weeks of leave	0.003 (0.003)	0.005 (0.003)	0.005 (0.003)+	0.000 (0.002)	0.001 (0.002)	-0.000 (0.001)
Three-month after & Weeks of leave	0.002 (0.003)	0.001 (0.002)	0.001 (0.002)	-0.000 (0.002)	0.001 (0.001)	-0.000 (0.001)
R-square	0.1438	0.2309	0.2181	0.0636	0.0201	0.0181
Number of Observations	19423	9600	9600	13742	12680	12680

*Note.* Table shows unstandardized coefficients with robust standard errors, clustered by state, in parentheses. Control group is composed of people (women for mothers' sample and men for fathers' sample) at 12- and 11-months prior to the birth. Model also controls for mother's (father's) age, education, marital status, race/ethnicity, whether the child is first-born, the number of children, state monthly unemployment rate, state dummies, year dummies, and the month corresponding to the monthly unemployment rate. Other state/federal policies include: state policy on infant exemption (months after the birth women were exempted from work), the month/year passed waiver program, the month/year passed TANF program, and the maximum of (the natural log of) federal and state EITC refundable benefits, in dollars.

+  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 4. OLS Regression Estimates for Effects of Parental Leave Laws on Parental Employment and Leave-Taking,  
By Parental Education  
June CPS 1988-2004**

	MOTHERS			FATHERS		
	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER REASONS" (AMONG EMPLOYED)	EMPLOYED	WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)	ABSENT FROM WORK DUE TO "OTHER REASONS" (AMONG EMPLOYED)
<b>A. Less Than College</b>						
Birth month & Any leave	0.042 (0.047)	-0.014 (0.045)	-0.015 (0.038)	-0.007 (0.032)	0.022 (0.019)	0.022 (0.014)
One-month after & Any leave	0.038 (0.041)	-0.075 (0.044)+	-0.053 (0.048)	-0.010 (0.040)	-0.006 (0.020)	-0.001 (0.012)
Two-month after & Any leave	0.040 (0.046)	0.011 (0.062)	-0.020 (0.048)	-0.007 (0.034)	0.002 (0.019)	-0.003 (0.013)
Three-month after & Any leave	0.027 (0.047)	-0.041 (0.041)	-0.068 (0.030)*	-0.024 (0.038)	-0.011 (0.018)	-0.002 (0.011)
R-square	0.1383	0.2540	0.2327	0.0812	0.0255	0.0293
Number of Observations	10006	3763	3763	5943	5274	5274
<b>B. Some College or More</b>						
Birth month & Any leave	0.023 (0.041)	0.060 (0.045)	0.099 (0.036)**	0.032 (0.029)	0.047 (0.025)+	0.031 (0.014)*
One-month after & Any leave	0.006 (0.042)	0.086 (0.048)+	0.167 (0.043)***	0.028 (0.030)	0.022 (0.026)	0.013 (0.012)
Two-month after & Any leave	0.034 (0.043)	0.080 (0.053)	0.084 (0.039)*	0.034 (0.028)	0.024 (0.028)	0.003 (0.012)
Three-month after & Any leave	0.029 (0.048)	0.044 (0.043)	0.047 (0.034)	0.031 (0.030)	0.027 (0.026)	0.005 (0.013)
R-square	0.0652	0.2277	0.2241	0.0549	0.0314	0.0240
Number of Observations	9417	5837	5837	7799	7406	7406

*Note.* Table shows unstandardized coefficients with robust standard errors, clustered by state, in parentheses. Control group is composed of people (women for mothers' sample and men for fathers' sample) at 12- and 11-months prior to the birth. Model also controls for mother's (father's) age, education, marital status, race/ethnicity, whether the child is first-born, the number of children, state monthly unemployment rate, state dummies, year dummies, and the month corresponding to the monthly unemployment rate. Other state/federal policies include: state policy on infant exemption (months after the birth women were exempted from work), the month/year passed waiver program, the month/year passed TANF program, and the maximum of (the natural log of) federal and state EITC refundable benefits, in dollars.

+  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 5. OLS Regression Estimates for Effects of Parental Leave Laws on Maternal Employment and Leave-Taking, by Pre-/Post-FMLA June CPS 1988-2004**

	<b>EMPLOYED</b>	<b>WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)</b>	<b>ABSENT FROM WORK DUE TO "OTHER REASONS" (AMONG EMPLOYED)</b>
<b>A. Pre-FMLA</b>			
Birth month & Having State law	0.009 (0.029)	0.053 (0.032)	0.046 (0.028)
One-month after & Having State law	0.020 (0.020)	0.074 (0.039)+	0.090 (0.039)*
Two-month after & Having State law	0.034 (0.028)	0.202 (0.044)***	0.149 (0.038)***
Three-month after & Having State law	0.045 (0.026)+	0.118 (0.040)**	0.076 (0.025)**
R-square	0.1495	0.2500	0.2145
Number of Observations	8753	4304	4304
<b>B. Post-FMLA</b>			
Birth month & Having State law	-0.023 (0.046)	0.101 (0.042)*	0.118 (0.043)**
One-month after & Having State law	-0.031 (0.043)	0.077 (0.040)+	0.102 (0.036)**
Two-month after & Having State law	-0.066 (0.044)	0.174 (0.038)***	0.155 (0.043)***
Three-month after & Having State law	-0.056 (0.046)	0.113 (0.044)**	0.106 (0.048)*
R-square	0.1562	0.2396	0.2344
Number of Observations	10670	5296	5296

*Note.* Table shows unstandardized coefficients with robust standard errors, clustered by state, in parentheses. Control group is composed of people (women for mothers' sample and men for fathers' sample) at 12- and 11-months prior to the birth. Model also controls for mother's (father's) age, education, marital status, race/ethnicity, whether the child is first-born, the number of children, state monthly unemployment rate, state dummies, year dummies, and the month corresponding to the monthly unemployment rate. Other state/federal policies include: state policy on infant exemption (months after the birth women were exempted from work), the month/year passed waiver program, the month/year passed TANF program, and the maximum of (the natural log of) federal and state EITC refundable benefits, in dollars.

+  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Appendix Table A.1 Number of Weeks of Leave Available to New Mothers (and Fathers) under State or Federal Leave Laws,  
by State and Birth Year**

	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994 and onwards</b>
Alabama	0	0	0	0	0	0	0 / 12	12
Alaska	0	0	0	0	0	0	0 / 12	12
Arizona	0	0	0	0	0	0	0 / 12	12
Arkansas	0	0	0	0	0	0	0 / 12	12
California	12 (0)	12 (0)	12 (0)	12 (0)	12 (0 / 12)	12	12	12
Colorado	0	0	0	0	0	0	0 / 12	12
Connecticut	6 (0)	6 (0)	6 (0)	6 (0) / 12	12	12	12	12
Delaware	0	0	0	0	0	0	0 / 12	12
District of Columbia	0	0	0	0	0 / 16	16	16	16
Florida	0	0	0	0	0	0	0 / 12	12
Georgia	0	0	0	0	0	0	0 / 12	12
Hawaii	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0) / 12	12
Idaho	0	0	0	0	0	0	0 / 12	12
Illinois	0	0	0	0	0	0	0 / 12	12
Indiana	0	0	0	0	0	0	0 / 12	12
Iowa	0	0	0	0	0	0	0 / 12	12
Kansas	0	0	0	0	0	0	0 / 12	12
Kentucky	0	0	0	0	0	0	0 / 12	12
Louisiana	0	0	0	0	0	0	0 / 12	12
Maine	0 / 10 (0)	10 (0)	10 (0)	10 (0)	10 (0)	10 (0)	10 (0) / 12	12
Maryland	0	0	0	0	0	0	0 / 12	12
Massachusetts	8 (0)	8 (0)	8 (0)	8 (0)	8 (0)	8 (0)	8 (0) / 12	12
Michigan	0	0	0	0	0	0	0 / 12	12
Minnesota	0 / 6	6	6	6	6	6	6 / 12	12
Mississippi	0	0	0	0	0	0	0 / 12	12
Missouri	0	0	0	0	0	0	0 / 12	12
Montana	0	0	0	0	0	0	0 / 12	12
Nebraska	0	0	0	0	0	0	0 / 12	12
Nevada	0	0	0	0	0	0	0 / 12	12
New Hampshire	0	0	0	0	0	0	0 / 12	12
New Jersey	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0) / 12	12
New Mexico	0	0	0	0	0	0	0 / 12	12
New York	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0) / 12	12
North Carolina	0	0	0	0	0	0	0 / 12	12
North Dakota	0	0	0	0	0	0	0 / 12	12
Ohio	0	0	0	0	0	0	0 / 12	12

Oklahoma	0	0	0	0	0	0	0 / 12	12
Oregon	0	0 / 12	12	12	12	12	12	12
Pennsylvania	0	0	0	0	0	0	0 / 12	12
Rhode Island	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0) / 12	12
South Carolina	0	0	0	0	0	0	0 / 12	12
South Dakota	0	0	0	0	0	0	0 / 12	12
Tennessee	0 / 16 (0)	16 (0)	16 (0)	16 (0)	16 (0)	16 (0)	16 (0) / 12	16 (12)
Texas	0	0	0	0	0	0	0 / 12	12
Utah	0	0	0	0	0	0	0 / 12	12
Vermont	0	0	0	0	0	0	0 / 12	12
Virginia	0	0	0	0	0	0	0 / 12	12
Washington	6 (0)	6 (0)	6 (0) / 12	12	12	12	12	12
West Virginia	0	0	0	0	0	0	0 / 12	12
Wisconsin	0 / 6	6	6	6	6	6	6 / 12	12
Wyoming	0	0	0	0	0	0	0 / 12	12
United States	2.13 (0.22)	2.32 (0.35)	2.81 (0.54)	2.97 (0.98)	3.67 (1.61)	2.94 (2.26)	5.40 (4.95)	12 (12)
% of mothers at birth month with state or federal leave laws	25.85	27.66	36.11	33.85	43.00	31.91	55.48	100.00
% of fathers at birth month with state or federal leave laws	2.97	3.17	7.78	9.90	18.50	18.42	45.16	100.00

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*Note.* Whenever the number of weeks leave is different between mothers and fathers, the numbers in parentheses are for the fathers.

**Appendix Table A.2 Demographic Characteristics of Mothers and Fathers**

Demographic Variable	Control group (11/ 12 months before birth)	Birth month	One-month after birth	Two-months after birth	Three-months after birth
<i>Characteristics of Mother/Child</i>					
Age (years)	27.74 (5.64)	27.72 (5.98)	27.57 (6.04)	27.51 (6.14)	27.47 (6.08)
<High School Graduate	0.130 (0.337)***	0.161 (0.368)	0.166 (0.372)	0.175 (0.380)	0.179 (0.384)
High School Graduate	0.264 (0.441)***	0.315 (0.464)	0.321 (0.467)	0.329 (0.470)	0.330 (0.470)
Some College	0.177 (0.382)***	0.214 (0.410)	0.221 (0.415)	0.218 (0.413)	0.229 (0.420)
College Graduate	0.302 (0.459)***	0.268 (0.443)	0.269 (0.444)	0.264 (0.441)	0.258 (0.438)
Married	0.759 (0.428)	0.746 (0.436)	0.730 (0.444)*	0.715 (0.452)***	0.705 (0.456)***
Non-Hispanic White	0.737 (0.440)	0.711 (0.453)	0.707 (0.455)	0.705 (0.456)	0.695 (0.460)
Non-Hispanic Black	0.094 (0.292)	0.108 (0.310)	0.112 (0.316)	0.114 (0.318)	0.120 (0.325)
Hispanic	0.119 (0.323)	0.123 (0.329)	0.127 (0.334)	0.130 (0.336)	0.133 (0.339)
Other Race	0.050 (0.218)	0.058 (0.234)	0.054 (0.225)	0.050 (0.219)	0.052 (0.222)
Child is First-Born	0.340 (0.474)***	0.369 (0.483)	0.379 (0.485)	0.385 (0.487)	0.385 (0.487)
Number of children	2.18 (1.21)**	2.10 (1.22)	2.08 (1.20)	2.06 (1.18)	2.07 (1.20)
<i>Characteristics of Father</i>					
Age (years)	32.01 (7.10)	31.87 (6.34)	31.64 (6.35)	31.88 (6.45)	31.80 (6.54)
<High School Graduate	0.096 (0.295)	0.100 (0.300)	0.098 (0.297)	0.096 (0.295)	0.109 (0.312)
High School Graduate	0.248 (0.432)	0.302 (0.459)	0.292 (0.455)	0.298 (0.457)	0.312 (0.463)
Some College	0.183 (0.387)	0.221 (0.415)	0.206 (0.405)	0.224 (0.417)	0.225 (0.418)
College Graduate	0.345 (0.475)	0.354 (0.478)	0.357 (0.479)	0.354 (0.478)	0.350 (0.477)
Non-Hispanic White	0.801 (0.400)	0.786 (0.410)	0.787 (0.410)	0.794 (0.405)	0.783 (0.412)
Non-Hispanic Black	0.050 (0.218)	0.050 (0.217)	0.054 (0.225)	0.052 (0.222)	0.050 (0.218)
Hispanic	0.107 (0.309)	0.107 (0.309)	0.110 (0.313)	0.108 (0.310)	0.118 (0.323)
Other Race	0.042 (0.201)	0.057 (0.233)	0.049 (0.216)	0.046 (0.210)	0.048 (0.214)
<i>State/Federal Characteristics &amp; Policies</i>					
State Unemployment Rate	5.64 (1.65)**	5.54 (1.63)	5.51 (1.59)	5.53 (1.60)	5.54 (1.59)
Any State/Federal Maternity Leave Entitlement (%)	62.14***	70.82	72.63	74.00	74.50
Weeks of State/Federal Maternity Leave Entitlement	6.28 (6.00)***	7.28 (5.85)	7.56 (5.80)	7.83 (5.74)	7.95 (5.71)
Any State/Federal Paternity Leave Entitlement (%)	45.80***	57.49	60.10	62.09	63.73
Weeks of State/Federal Paternity Leave Entitlement	5.39 (5.96)***	6.74 (5.92)	7.12 (5.87)	7.36 (5.83)	7.56 (5.78)
State infant exemption (child's age in months)	31.88 (22.52)***	26.50 (17.01)	25.36 (16.00)	24.30 (15.41)	23.72 (14.87)
State providing waiver program (%)	3.85	3.53	3.24	3.20	3.50
TANF (%)	12.06	12.21	12.74	13.21 *	13.41 **
Federal and state max. refundable EITC (log)	7.69 (0.50)***	7.74 (0.51)	7.76 (0.51)	7.78 (0.50)	7.80 (0.50)

*Note:* Analysis uses *Current Population Survey* data from 1988, 1990, 1992, 1994, 1998, 2000, 2002 and 2004. Observations are weighted to be nationally representative. Standard errors are shown in parentheses. Asterisks in the control-group column indicate significant differences between the control group and all of the treatment groups. Asterisks in the individual treatment-group column indicate significant differences between the control and that individual treatment group. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

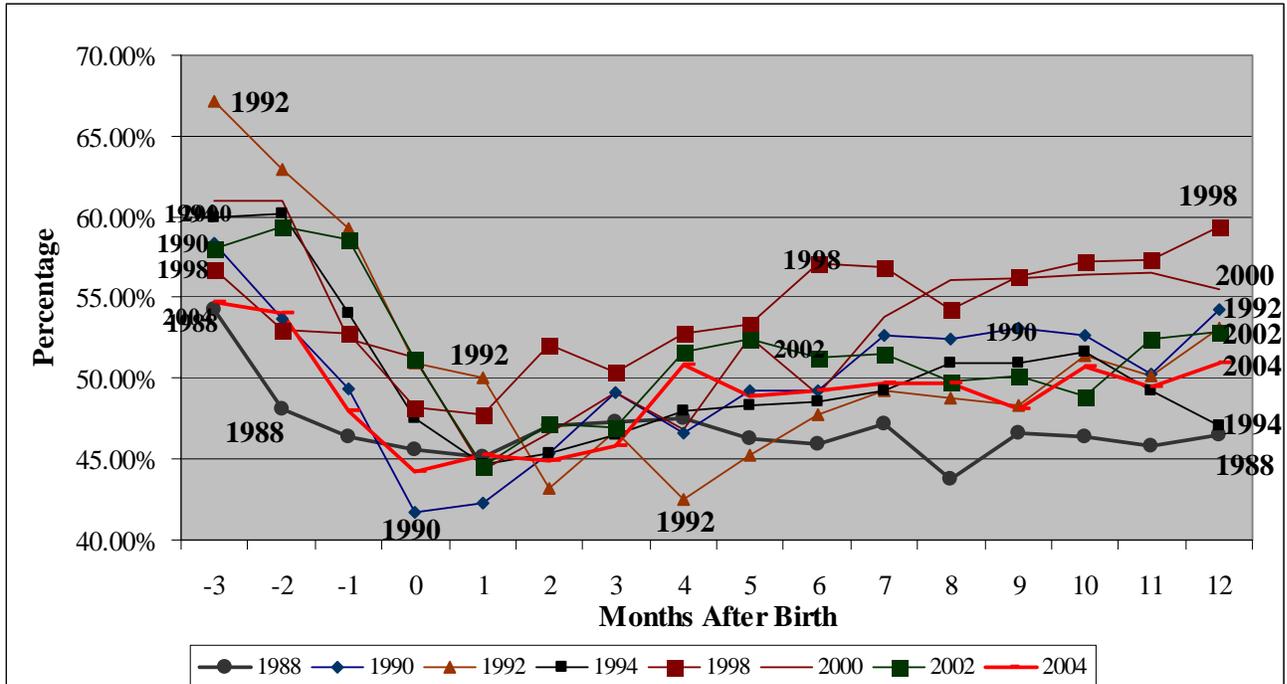
**Appendix Table A.3. OLS Regression Estimates for Effects of Leave Laws on Maternal  
Employment and Leave-Taking Surrounding the Birth  
June CPS 1988-2004**

	<b>EMPLOYED</b>	<b>WITH JOB BUT NOT AT WORK (AMONG EMPLOYED)</b>	<b>ABSENT FROM WORK DUE TO "OTHER" REASONS (AMONG EMPLOYED)</b>
Birth month	-0.176 (0.027)***	0.416 (0.030)***	0.352 (0.026)***
One-month after	-0.191 (0.025)***	0.559 (0.033)***	0.469 (0.031)***
Two-month after	-0.181 (0.029)***	0.223 (0.035)***	0.220 (0.031)***
Three-month after	-0.158 (0.030)***	0.088 (0.028)**	0.088 (0.025)***
Any leave provided by state and federal	-0.020 (0.032)	-0.051 (0.030)+	-0.073 (0.026)**
Birth month & Any leave	0.024 (0.032)	0.033 (0.033)	0.054 (0.027)*
One-month after & Any leave	0.015 (0.027)	0.031 (0.032)	0.087 (0.028)**
Two-month after & Any leave	0.027 (0.032)	0.070 (0.043)	0.056 (0.032)+
Three-month after & Any leave	0.020 (0.034)	0.018 (0.033)	0.006 (0.023)
Year of 1988	0.026 (0.034)	0.054 (0.043)	0.060 (0.041)
Year of 1989	0.021 (0.042)	0.164 (0.048)***	0.182 (0.044)***
Year of 1990	0.047 (0.041)	0.103 (0.053)*	0.118 (0.045)**
Year of 1991	-0.345 (0.187)+	-0.001 (0.238)	0.020 (0.202)
Year of 1992	-0.405 (0.256)	0.023 (0.329)	0.022 (0.286)
Year of 1993	-0.530 (0.302)+	-0.036 (0.397)	-0.046 (0.346)
Year of 1994	-1.254 (0.745)+	-0.181 (0.962)	-0.154 (0.831)
Year of 1997	-1.692 (1.013)	-0.320 (1.307)	-0.340 (1.120)
Year of 1998	-1.702 (1.018)	-0.283 (1.322)	-0.311 (1.133)
Year of 1999	-1.669 (1.007)	-0.255 (1.316)	-0.295 (1.105)
Year of 2000	-1.704 (0.997)+	-0.253 (1.297)	-0.265 (1.105)
Year of 2001	-1.700 (1.007)+	-0.232 (1.303)	-0.271 (1.105)
Year of 2002	-1.730 (1.019)+	-0.233 (1.322)	-0.257 (1.132)
Year of 2003	-1.677 (1.012)	-0.281 (1.306)	-0.290 (1.116)
Year of 2004	-1.727 (1.009)+	-0.221 (1.310)	-0.234 (1.126)
State infant exemption (in child's age in month)	0.000 (0.001)	0.003 (0.001)**	0.002 (0.001)**
State providing waiver program	0.002 (0.023)	0.022 (0.027)	0.026 (0.028)
TANF	0.030 (0.024)	-0.005 (0.020)	-0.022 (0.021)
Federal and state maximum refundable EITC in log value	1.540 (0.914)+	0.419 (1.165)	0.482 (1.000)
Mother's age	0.011 (0.001)***	0.005 (0.001)***	0.005 (0.001)***
Mother's education < 12	-0.310 (0.021)***	-0.096 (0.024)***	-0.048 (0.019)**
Mother's education = 12	-0.127 (0.014)***	-0.056 (0.012)***	-0.004 (0.013)
Mother's education > 12 & <16	-0.028 (0.020)	-0.057 (0.016)***	-0.016 (0.013)
Mother divorced/separated	0.004 (0.014)	-0.090 (0.017)***	-0.081 (0.017)***
Mother never married	-0.061 (0.028)*	-0.089 (0.026)***	-0.062 (0.025)*
Non-Hispanic Black	-0.017 (0.018)	0.027 (0.023)	0.032 (0.022)
Hispanic	-0.084 (0.016)***	-0.035 (0.016)*	-0.036 (0.018)*
Other race/ethnicity	-0.083 (0.026)**	-0.027 (0.030)	-0.012 (0.021)
Baby is first born	0.053 (0.014)***	0.017 (0.014)	0.026 (0.017)
Number of children	-0.038 (0.006)***	-0.034 (0.007)***	-0.032 (0.007)***
State monthly unemployment rate	-0.006 (0.007)	-0.002 (0.007)	-0.001 (0.007)
R-square	0.1437	0.2307	0.2183
Number of Observations	19423	9600	9600

*Note.* Table shows unstandardized coefficients with robust standard errors, clustered by state, in parentheses. Control group is composed of people (women for mothers' sample and men for fathers' sample) at 12- and 11-months prior to the birth. Model also controls for state dummies and the month corresponding to the monthly unemployment rate dummies. The reference group is non-college educated married non-Hispanic white mothers surveyed in 1987.

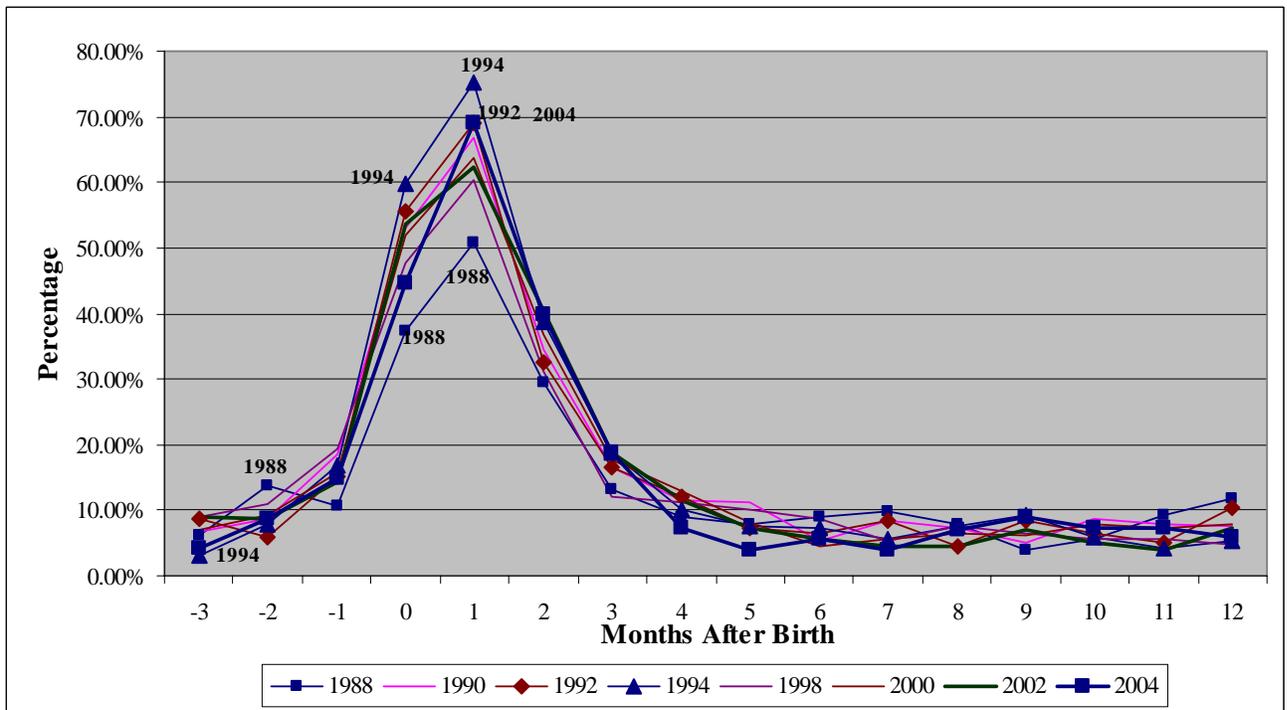
+  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Figure 1: Maternal Employment Before and After Birth**

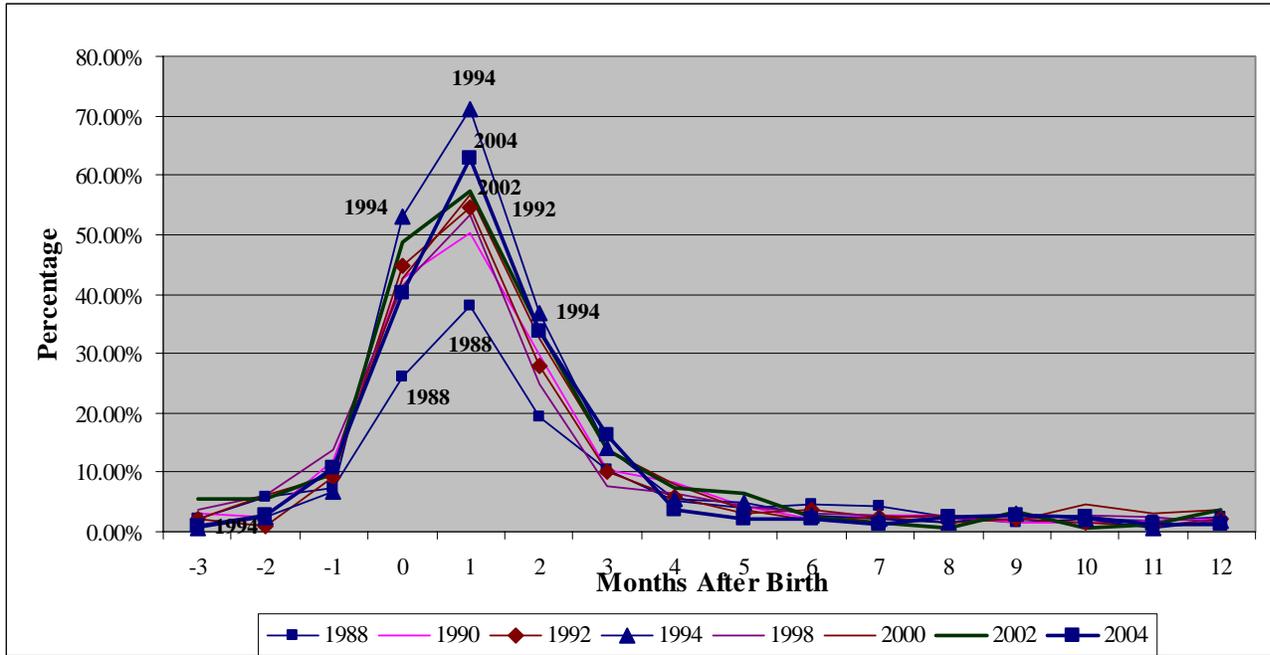


Note. Employment includes both “At work” and “With a job but not at work.”

**Figure 2: Mothers Employed but Not at Work Before and After Birth**

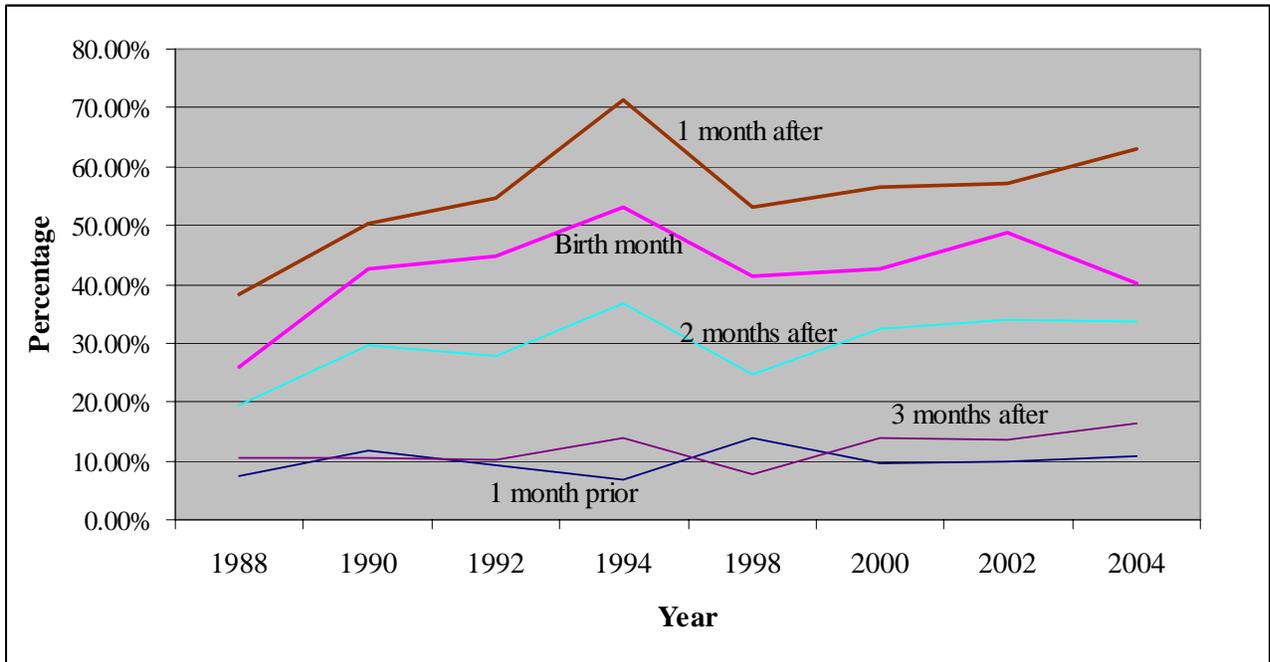


**Figure 3: Maternal Leave-Taking Before and After Birth**

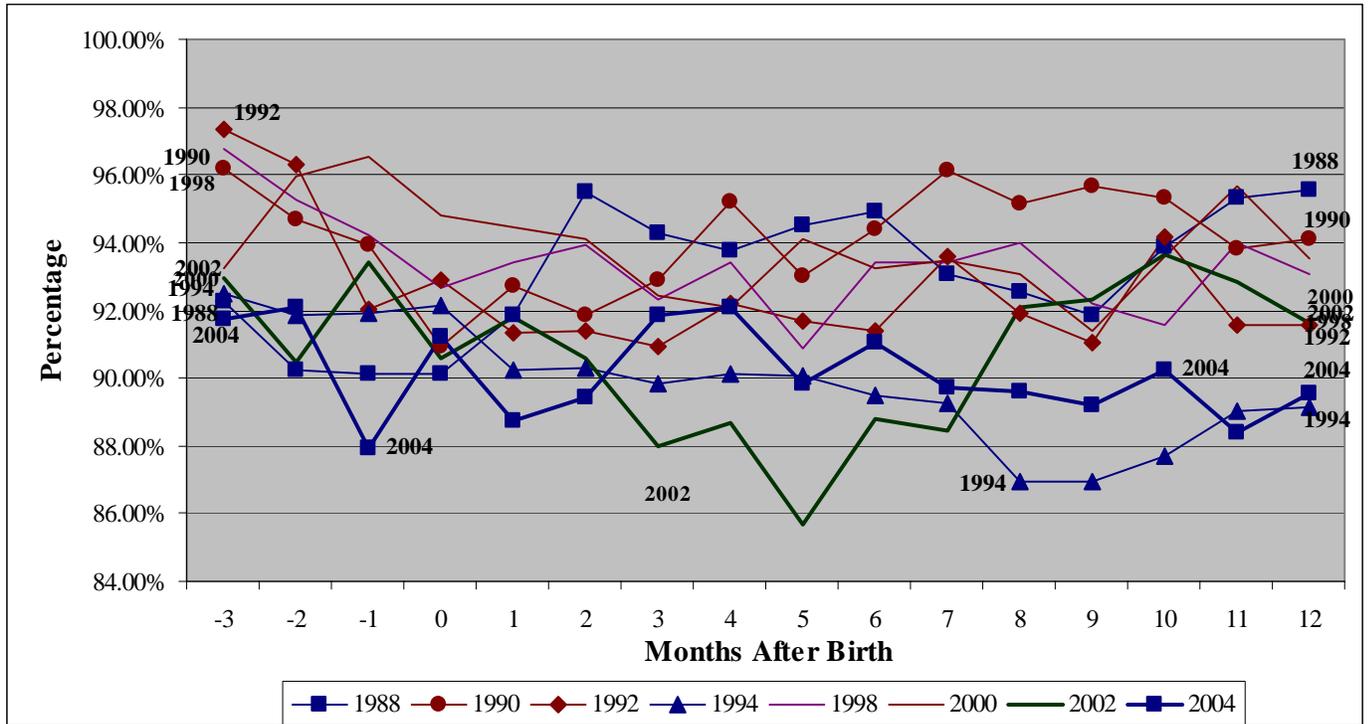


Note: Leave-taking measured as being with a job but not at work for “other reasons”.

**Figure 4: Mothers Absent from Work Surrounding the Birth Month for “Other Reasons”**

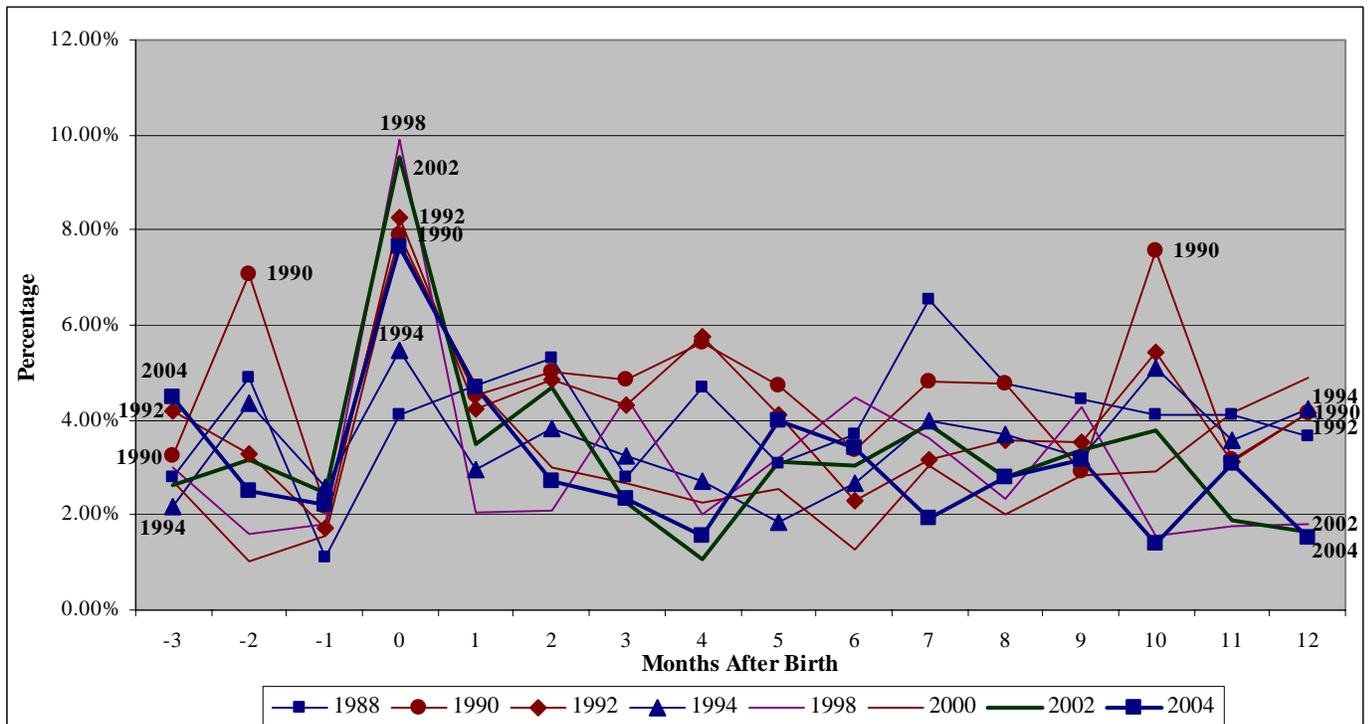


**Figure 5: Paternal Employment Before and After Birth**

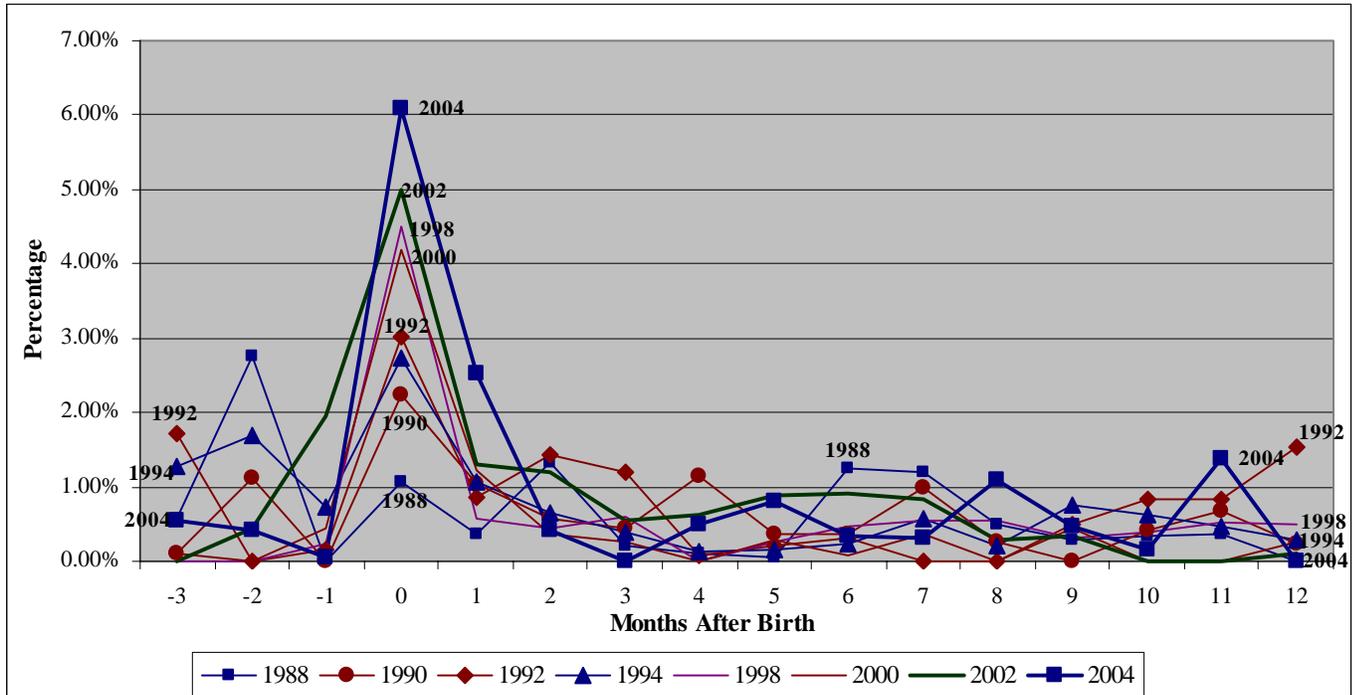


Note. Employment includes both “At work” and “With a job but not at work.”

**Figure 6: Fathers Employed but Not at Work Before and After Birth**



**Figure 7: Paternal Leave-Taking Before and After Birth**



Note: Leave-taking measured as being with a job but not at work for “other reasons”.

**Figure 8: Fathers Absent From Work Surrounding the Birth for “Other Reasons”**

