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Returning to Work, Breastfeeding, and Family Structure: A Portrait of Working Mothers in the U.S.

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ABSTRACT

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Using data from the Early Childhood Longitudinal Study (Birth Cohort 2001), this study investigates how the amount of time off from work after childbirth is associated with breastfeeding behavior, and how this association differs by maternal relationship status. Specifically, I observe how a delayed return to work after childbirth is associated with breastfeeding among a nationally representative sample of single, cohabiting and married working mothers. Using logistic regression, I find that returning to work after 12 weeks is associated with higher odds of breastfeeding beyond 3 months for married mothers. The amount of leave from work is not significantly associated with the breastfeeding behaviors of single or cohabiting mothers. These findings raise serious concerns about the design of current maternal leave policies, barriers in the workplace that discourage breastfeeding, and the ability of unmarried women to utilize benefits from a delayed return to work after childbirth.

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Table of Contents

Acknowledgements ..... **iii**

Table of Contents ..... **iv**

List of Tables ..... **v**

Returning to Work, Breastfeeding and Family Structure **1**

1.1. Theoretical Background 3

1.1.1. Breastfeeding and Maternal Characteristics 3

1.1.2. Theoretical Framework 6

1.1.3. Returning to Employment and Breastfeeding 9

1.1.4. Hypotheses 12

1.2. Methodology 13

1.2.1. Overview 13

1.2.2. Measures 14

1.2.3. Analysis 16

1.3. Findings 17

1.3.1. Maternal Demographics and Breastfeeding 17

1.3.2. Timing of Return to Work and Breastfeeding 20

1.3.3. Predicted Probabilities 24

1.4. Discussion and Conclusion 26

References **32**

List of Tables

Table 1.3.1— Maternal Demographics, Stratified by Relationship Status 18

Table 1.2.3—Logistic Regression, Predicting Breastfeeding (beyond 3 months) 23

Table 1.3.3—Predicted Probability of Breastfeeding, Within Relationship Status.. 26

Returning to Work, Breastfeeding, and Family Structure

The demographic profile of the U.S. labor force has dramatically changed over the past few decades, as women with young children are increasingly participating in the labor force and returning to work quickly after childbirth. As of 2012, the employment participation rate of mothers with children under age three was 61.4%, compared to just 34.3% of mothers in 1975 (U.S. Bureau of Labor Statistics 2012; U.S. Bureau of Labor Statistics 2009), and in 2001, roughly two thirds of working mothers returned to work within 12 weeks after giving birth (Han et al. 2008). The first few months of an infant's life are critical for establishing a positive health trajectory, and breastfeeding is an important investment that promotes a host of health benefits to mothers and infants (Eidelman, Schanler, Johnston, Landers, Noble, Szucs and Viehmann 2012). The American Academy of Pediatrics recommends six months of exclusive breastfeeding for maximum health benefits, yet research suggests that maternal employment, especially full-time (Murtagh and Moulton 2011; Kimbro 2006), and returning to work quickly after childbirth (within 12 weeks) are closely linked to breastfeeding cessation (Roe et al. 1999). It is unclear, however, whether this association is robust once we consider a diverse sample of full-time working mothers in the U.S.

Further, despite substantial changes to the structure of American families, research has not adequately addressed whether the association between a delayed return to work and extended breastfeeding differs by family structure (Roe et al. 1999; Berger et al. 2005; Kimbro 2006). Over the past few decades, there has been a substantial rise in

the number of births to unmarried women. As of 2010, 40.7% of all births were to unmarried women (Hamilton, Martin and Ventura 2012), the majority being cohabiters (Litcher 2012), who have a higher labor participation rate than married mothers (United States Department of Labor 2009). Notably, children of unmarried mothers have worse health profiles in infancy than children of married women (Jacknowitz and Schmidt 2008), and evidence suggests that single and cohabiting women typically breastfeed for shorter durations than their married counterparts (Kiernan and Pickett 2006). Most studies merely consider how the relationship between breastfeeding and length of leave from work postpartum varies between married and unmarried mothers (Ogbuanu, Glover, Probst, Liu and Hussey 2011; Chaterjii and Frick 2005; Berger et al. 2005), without considering the increasing heterogeneity among unmarried women (i.e. single versus cohabiting), while other studies observe differences by relationship status using selective samples of mothers (e.g. predominately white, high SES mothers) (Roe et. al 1999). It is unclear, therefore, how a mother's relationship status influences the association between breastfeeding and returning to employment once we account for the amount of leave mothers take from work postpartum and various sociodemographic characteristics that typically differ by family structure.

Therefore, this study explores the association between the amount of time off from work after childbirth and breastfeeding, and whether this association differs by family structure. Using the first and second waves of data from the Early Childhood Longitudinal Study (Birth Cohort 2001), I observe the relationship between the time off from work after birth and breastfeeding beyond three months among mothers from three

types of relationships: single, cohabiting and married. This study contributes to our understanding of whether family structure differences exist in the relationship between the amount of leave from work after childbirth and breastfeeding duration among a diverse sample of working mothers. The Early Childhood Longitudinal Study (ECLS-B) is especially apt for this research purpose as it provides detailed information regarding breastfeeding, a mother's relationship status, employment, and her timing of return to work after childbirth.

Specifically this study focuses on the following questions: First, how is the amount of leave from work after childbirth associated with breastfeeding beyond three months? Second, does a delayed return to work equally enhance the likelihood of breastfeeding for mothers across relationship status, or does family structure moderate the relationship such that the association between the amount of leave from work and breastfeeding operates differently for single, cohabiting and married mothers? For instance, if we observe single, cohabiting and married women who take similar amounts of time off from work after childbirth (e.g. between 7-12 weeks), will we see similar rates of breastfeeding among all mothers? By addressing these questions through the lens of family structure differences, this paper fills an important gap in the literature regarding the association between length of leave from work after childbirth and breastfeeding among a nationally representative sample of full-time working mothers in the U.S.

1.1 Theoretical Background

1.1.1. Breastfeeding and Maternal Characteristics

Breastfeeding, as opposed to bottle feeding, is understood as a particularly health promoting activity. The American Academy of Pediatrics (AAP) (2012) presents breastfeeding as a public health issue rather than a behavioral choice, emphasizing the extensive short and long-term health benefits for infants and their mothers. For infants, breastfeeding is associated with a bolstered immune system, improved cognitive and neurodevelopmental outcomes, reduced risk of obesity and asthma, and reduced risk for a host of infections and diseases (Eidelman, Gartner and Morton 2005). Because of the significant short and long-term benefits of breastfeeding for development, the AAP advises that all preterm infants receive human milk (Eidelman et al. 2012). Breastfeeding is also associated with benefits for mothers, which include a reduced risk of rheumatoid arthritis (Karlson, Mandl, Hankinson and Grodstein 2004), breast and ovarian cancer (Ip, Chung and Raman 2007; Ip et. al 2009; Stuebe et. al 2009; Colloborative Group on Hormonal Factors in Breast Cancer 2002; Lipworth, Bailey and Trichopoulos 2000), cardiovascular disease (Schwarz et. al 2009), and diabetes (Stuebe et. al 2005; Schwarz et al. 2010). One recent study, using sibling comparisons and within-family fixed effect models, found that many of the long-term health benefits for children typically associated with breastfeeding (compared to bottle-feeding) were primarily the product of key sociodemographic characteristics (e.g. race/ethnicity, socioeconomic status) that select women into extended breastfeeding, rather than the result of breastfeeding per se (Colen and Ramey 2014). While this is an important possibility to consider and a finding that needs to be verified with additional research, the present study draws on decades of

research that supports the multiple short and long-term health benefits of breastfeeding for infants and their mothers.

Breastfeeding is also a commitment of time. For maximum health benefits, the AAP recommends exclusive breastfeeding for six months postpartum and continued breastfeeding with the introduction of food until the infant is at least 12 months of age (American Academy of Pediatrics 2012). Following guidelines of the AAP, Healthy People 2020 also set a national goal of exclusive breastfeeding for at least three months (U.S. Department of Health and Human Services 2013). Previously, Healthy People 2010 established five U.S. breastfeeding goals in 2000, none of which were achieved (Murtagh and Moulton 2011). Of children born in 2006, 74% were ever breastfed, 33.6% were breastfed exclusively for three months and only 14.1% for six months (Center for Disease Control and Prevention 2012); the Healthy People 2020 goals aim for 81.9%, 46% and 25% respectively (U.S. Department of Health and Human Services 2012). The Healthy People 2010 breastfeeding goals clearly exceeded actual rates of breastfeeding for 2000-2010, raising the question of why did so many women fail to meet the Healthy People 2010 breastfeeding goals, and what are the primary factors that encourage or discourage working women from breastfeeding?

A part of the reason why these goals were not met can be traced back to the social patterning of breastfeeding behaviors. There are significant and persistent differences in which women breastfeed, when they breastfeed, and for how long, and certain maternal characteristics, such as relationship status, are particularly powerful determinants. Married women are more likely to breastfeed longer than unmarried women (Gibson-

Davis, Brooks-Gunn 2007), and most research agrees that cohabiting mothers breastfeed longer than single mothers (Kiernan and Pickett 2006; for different findings see Guzzo and Lee 2008).

These differences are likely because married women, with the buffering support of a partner, often have fewer resource constraints than unmarried (especially single) mothers (Cherlin 2010) and therefore have more resources that facilitate extended breastfeeding. For unmarried mothers, the nature of the relationship with the child's father and paternal co-residence influence breastfeeding decisions (Gibson-Davis and Brooks-Gunn 2007). It is possible that married women are a select group, who breastfeed longer than unmarried mothers for reasons (i.e. unobserved heterogeneity) other than partner support or access to more time and financial resources (Guzzo and Lee 2008). Yet, overall, relationship status is associated with breastfeeding, independent of other related factors such as socioeconomic status, education attainment and maternal age (Murtagh and Moulton 2011; Gibson-Davis and Brooks-Gunn 2007; Singh, Kogan and Dee 2007).

1.1.2. Theoretical Framework

Breastfeeding is a demanding time-investment for mothers that must be balanced and weighed with competing investments (e.g. a quick return to work, caring for other children) and potentially scarce resources (e.g. flexible time, partner support, no lactation facility at work). Drawing from child health economic theories, the length of leave from work after birth (also, maternity leave) taken by women can be viewed as a time investment function of child health outcomes. Built upon the premise that parental time-

investments are a crucial component of child development, economic models view child health as an outcome of time and resource inputs (Becker 1981; Ruhm 2000). Time inputs measure the amount of time parents spend with children, while the various resource inputs range from parental income to access to medical technology and health care (Ruhm 2000). Therefore, a parent can improve a child's health outcome through increasing time-investments and/or financial resources.

It may initially appear that two competing factors influence the amount of time a woman spends at home after childbirth (increasing family income or taking more time off work to invest in one's child). Indeed, Family income is a large component of the resource inputs in child health economic models, such that increases in family income positively benefit child health outcomes (Leibowitz 2003). Yet, maternity leave (or, the amount of leave from work following birth) typically does not function to increase overall family income. Given the nature of maternity leave in the U.S.- which allows for 12 weeks maximum of *unpaid* leave under the Family Medical Leave Act (FMLA)– deciding between increasing income or time-investments is likely a forced decision rather than a free choice for most working mothers (United States Department of Labor 2012). Because maternity leave is not subsidized under the FMLA (which covers roughly half of working mothers), many women, even if they have job-protected leave, are likely returning to work because they cannot afford to lose 12 weeks of income (Han et al. 2009; Rossin-Slater, Ruhm and Waldfogel 2011). Even if a mother has subsidized leave benefits (which is at best 100% wage replacement), family income is being maintained

(during the time off after childbirth) rather than increasing in overall net worth (Rossin-Slater, Ruhm and Waldfogel 2011).

Thus, because an early return to work functions to maintain rather than increase family income, the amount of time off from work after childbirth is likely to have the largest impact on child health outcomes through parental time investments (Ruhm 2000). A delayed return to work (for fathers or mothers) theoretically frees up more (flexible) time for parents to invest in their infant's health (Tanaka 2005), while employment detracts from available (flexible) time. Leibowtiz (1977) emphasizes that when measuring and evaluating time-investment inputs, the quality and exclusivity of parental time investments must be taken into consideration.

The current study is especially concerned with the time-demanding investment of breastfeeding, and how this investment in child health might vary among working mothers in different relationship statuses. While maternal employment does not necessarily compromise the amount of quality time that mothers spend interacting with their children (Bianchi 2000), it does condition the flexibility of a mother's available time and therefore the types of time-investments, like breastfeeding, that are possible. Assuming a delayed return to work frees up more flexible time for mothers to invest in their child's health and development (Berger et al. 2005), we might expect that a longer leave from work will result in more health-promoting behaviors, like breastfeeding. However, single and cohabiting mothers, who on average shoulder more parental responsibilities with fewer resources and less partner support than married women (McLanahan 2004; Cherlin 2010), might be especially susceptible to (flexible) time

constraints that hinder certain time investments, like breastfeeding, even during postpartum leave from work. As such, this study explores whether single and cohabiting working-mothers are equally as likely to breastfeed beyond three months as married working-mothers, while accounting for a mother's amount of leave from work after childbirth.

1.1.3. Returning to Employment and Breastfeeding

Ample research shows that maternal employment, especially full-time, has a negative impact on the duration of breastfeeding (Murtagh and Moulton 2011; Kimbro 2006), and that the timing of a mother's return to work is closely associated with the cessation of breastfeeding (Chatterji and Frick 2005). Taken together, this suggests that mothers are having difficulty combining employment and breastfeeding (Kimbro 2006). Working mothers who wish to continue breastfeeding at work face many logistical barriers, including a lack of lactation breaks (i.e. time), location and facility provisions (i.e. a private and clean location to express milk), or a supportive employer/work culture (Dunn, Zavela, Cline and Cost 2004).

In response to unsupportive work environments that discourage continued breastfeeding (Eidelman et al. 2012), twenty-three states (as of 2011) have enacted statues that address breastfeeding in the workplace (Murtagh and Moulton 2011), although these statues significantly vary from state to state. Also, the Patient Protection and Care Act passed in 2010 amended section 7 of the Fair Labor Standards Acts (FLSA) and mandates that employers covered by FLSA now provide private non-bathroom areas and "reasonable break time" for nursing mothers to extract milk for one

year after the child's birth (United States Department of Labor 2010). Nonetheless, the amended provision (and state-specific statutes) does not apply to all employed individuals (e.g. those not under the FLSA, employers with fewer than 50 employees who can demonstrate compliance with the provision causes undue hardship) and does not guarantee compensated (i.e. paid) breaks (United States Department of Labor 2010). Without comprehensive workplace policies (e.g. guarantee of paid breaks) that apply to all working women, employment is likely to remain a logistical barrier to breastfeeding for many working mothers.

Therefore, it is not surprising that the duration of breastfeeding is significantly associated with the timing of a mother's return to work, such that each additional week of leave after birth is associated with an increase in breastfeeding duration by almost one half of a week (Roe et al. 1999), and the greatest drop in breastfeeding occurs for women who return to work within 12 weeks, which is the maximum length of job-protected leave provided by the FMLA (Roe et al. 1999; Berger et al. 2005). Returning to work full-time (35 hrs+/wk), compared to part-time, particularly influences breastfeeding initiation and duration (Fein and Roe 1998; Mandal, Roe and Fein 2010; Berger et al. 2005; for opposing results see Chatterji and Frick 2005). For example, Berger and colleagues (2005) find that women who return to work full-time within 12 weeks are 17% less likely to breastfeed and breastfeed for fewer than six weeks compared to women who did not return to work by 12 weeks. Notably, Roe and colleagues (1999) find that mothers typically make employment decisions first (e.g. when to return to work, part-time/full-time), which then contributes to breastfeeding choices, rather than the other way around.

Together, these general patterns suggest that full-time employment and a quick return to work after childbirth complicates the already difficult challenge of extended breastfeeding for working women (Bidisha, Roe and Fein 2010).

Although research shows an extended leave from work promotes breastfeeding duration (Roe et al. 1999; Berger et al. 2005; Ogbuanu et al. 2011), the role of a mother's relationship status in the association between the amount of leave from work (and subsequently, returning to employment) and breastfeeding duration in the U.S. is unclear. Much of the research on returning to work and breastfeeding is based on a limited sample of women, which cannot be generalized to the broader population of working mothers (Roe et al.1999; Kimbro 2006). For instance, although Roe and colleagues (1999) find benefits of an extended leave from work after childbirth on breastfeeding duration, their study sample is predominantly white and of higher socioeconomic status. Other research fails to consider the complexity (or the effect) of maternal relationship status by simply indicating (i.e. controlling in the analysis for) whether a mother is married or unmarried (Berger et al. 2005; Chatterji et al. 2005; Ogbuanu et al. 2011). A dichotomous measure of relationship status (married/unmarried) masks significant heterogeneity (socioeconomically, demographically, etc.) among single, cohabiting and married mothers. Indeed, approximately half of all unmarried mothers are cohabiters, who typically have more resources (e.g. partner support, income) than their single counterparts (Cherlin 2010). Failing to consider the heterogeneity among unmarried women might obscure significant differences by family structure in the association between returning to work (i.e. length of leave) and breastfeeding.

As such, it is unclear whether there are differences in breastfeeding behavior between cohabiting and single working-mothers once we account for differences in the amount of leave and key sociodemographic characteristics, like education status, that are also related to breastfeeding. If unmarried mothers face additional time constraints compared to their working and married counterparts, it is possible that only married mothers will benefit (in terms of breastfeeding) from a longer leave from work. Thus, the current study fills important gaps in the literature by using a nationally representative sample of full-time working mothers to create a detailed portrait of the association between the amount of leave from work after childbirth and breastfeeding duration among single, cohabiting and married women.

1.1.4. Hypotheses

This paper explores how the amount of time off from work after birth is associated with breastfeeding beyond three months for mothers in various relationship statuses, organized to test the following hypotheses. Drawing on the findings of past research (Roe et al. 1999, Berger et al. 2005), I suspect that a longer leave from work after childbirth (i.e. beyond 12 weeks) will be positively associated with breastfeeding beyond three months, regardless of a mother's relationship status. Second, given what we know about differences in family structure (e.g. partner support, available resources) and breastfeeding behaviors (Kimbro 2006), I suspect that the association between the amount of leave from work after childbirth and breastfeeding will be weaker for single and cohabiting mothers compared to their married counterparts. In other words, I will

test whether the association between the amount of leave from work after childbirth and breastfeeding beyond three months is moderated by family structure.

1.2. Methodology

1.2.1. Overview

This study uses data from the Early Childhood Longitudinal Study, Birth Cohort 2001 (ECLS-B), which is a nationally representative sample of U.S. children who were born in 2001. The ECLS-B is a longitudinal study that follows approximately 10,700 children from infancy to kindergarten, collecting extensive information on the health, development and socioeconomic characteristics of children and their families. Additionally, the ECLS-B is one of the few data sets to provide detailed information regarding a mother's timing of return to work, employment characteristics, breastfeeding behaviors, and detailed relationship status, making the ECLS-B an ideal dataset for this study.

To date, five waves of data have been collected, mostly through parent interviews, home visits, and professional assessments. I use parent interviews from the first two waves of data, which occurred nine-months (collected Fall 2001- Fall 2002) and two years (collected Fall 2003- Fall 2004) after the foci child was born, because only the first two waves of data ask about breastfeeding. I use the second wave of data only to ascertain a mother's foreign-born status and the final length of breastfeeding (for women who were still breastfeeding at wave one). Thus, while the longitudinal nature of the ECLS-B is a valuable attribute, the analysis will be cross-sectional in nature instead of longitudinal (with the exception of two questions about breastfeeding and nativity from

wave 2). For inclusion in the study, I restricted the sample to mothers who meet the following criteria: (1) biological mother (N= 10,550); (2) singleton birth (N= 8,800); (3) worked anytime in the 12 months prior to childbirth (N= 6,150); and (4) worked full-time (35 hours or more/week) by wave one or wave two. Finally, I restrict my sample to mothers with valid responses on all measures, for a final sample size of 2,600, women. Please note, sample sizes are rounded to the nearest "50" due to the restricted-use license requirement.

1.2.2. Measures

For the outcome measure, which assesses breastfeeding behaviors, I created an indicator for whether a mother reported breastfeeding beyond three months (1= yes) to mirror the Healthy People 2020 goal of exclusive breastfeeding for at least three months. Although for maximum benefits the AAP recommends exclusive breastfeeding (receiving only breast milk and no other milk, solids, or fluids other than water), the current study measures exclusive and non-exclusive breastfeeding beyond three months (i.e. both partial and exclusive). In terms of infant health benefits, combining partial and exclusive breastfeeding assumes that non-exclusive breastfeeding is better than no breastfeeding (Bahl et al. 2005; Quigley, Kelly and Sacker 2007). Further, partial breastfeeding beyond three months is likely a more attainable goal (compared to exclusive breastfeeding) for full-time working mothers, who face several challenges combining work and breastfeeding (Dunn et al. 2004; Kimbro 2006).

The ECLS-B provides extensive information about a mother's current relationship status and relationship to current residents in the child's household. To explore the role

of family structure, I classify mothers as married, cohabiting (with the biological father of the foci child or a partner), or single. In order to isolate the influence of a mother's amount of leave from work on breastfeeding, I control for key sociodemographic factors that research has shown to be related to a mother's amount of leave (and return to employment) and breastfeeding behaviors (Ogbuanu et al. 2011). As such, I account for a mother's race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic other), age, nativity status (foreign born=1), and parity (whether this is a first, second, third birth). Since research suggests that women who were employed before birth (as opposed to those who were not) return to work more quickly post-birth (Berger and Waldfogel 2004), I also control for whether a mother did not use any maternity leave because she quit or was unemployed during pregnancy.

Socioeconomic measures include a mother's level of education (less than high school, reference; high school degree or equivalent; some college or technical school; bachelor degree or higher), an indicator for occupational prestige, the federal poverty level (FPL) threshold status of households (below 100% FPL, reference; 100-130% FPL, 130-185%, and 185%+ FPL), and a mother's type of health insurance (public, private, or none). To account for the health status of the child and mother that might impact the timing of return to work and/or breastfeeding behaviors, I control for whether the child was born low birth weight (below 2500 g) and whether a mother reported fair/poor health (excellent/very good/ good, reference), had complications during childbirth, did not receive advice from her doctor about breastfeeding, and if the delivery was cesarean (vaginal, reference). Additional demographic variables include region of residence in the

U.S. (Northwest, reference; Midwest; South; West) and whether the respondent lives in an urban (rural, reference) setting.

The primary independent variable of interest is a mother's length of leave from work after childbirth, measured as the age of the child at the point when the respondent returned to work. Women who had started work by the 9-month interview were asked, "How old was [child] when you first went to work at a job?" I created a categorical indicator for length of leave, classified as 1 to 6 weeks (reference), 7 to 12 weeks, and 13 weeks or longer.

1.2.3. Analysis

To test the association between the amount of leave from work postpartum and breastfeeding beyond three months among full-time working mothers, I used logistic regression with progressive adjustments for sets of covariates. In addition to testing whether family structure moderates the relationship between timing of return to work and breastfeeding (see table 1.3.2, model 8), I calculated predicted probabilities from the full logistic regression model (see table 1.3.2, model 8) to explore the effect of family structure on the association between breastfeeding and length of leave (Allison 1999). Predicted probabilities allow me to observe the association between leave and breastfeeding within family structure categories. For example, I test whether the probability of breastfeeding for a single mother who returned to work between 1-6 weeks is significantly different than the probability of a single mother returning between 7-12 weeks and/or 13+ weeks. Probabilities were calculated holding other variables (e.g.

education, income, health status, etc.) at mean values conditional on relationship status and amount of leave (thus there are nine groups of women with a unique set of controls).

1.3. Findings

1.3.1. Maternal Demographics and Breastfeeding

Table 1.3.1 presents means and standard deviations for our variables of interest, disaggregated by a mother's relationship status, and shows statistical comparisons between married (reference), single and cohabiting women. Among the full sample, approximately 68.78% of the sample is married, 14% cohabiting, and 18% single. Also, among the full sample, 32.57% of women breastfed beyond three months. Regarding the amount of leave from work postpartum, roughly 27% of mothers returned to work between 1-6 weeks of giving birth, 49% between 7-12 weeks, and 24% sometime after 12 weeks.

We also see significant differences emerge across family structure in table 1.3.1. Married mothers are more likely to report breastfeeding beyond three months (37.14%) compared to cohabiting (25.23%) and single (21.29%) women. Interestingly, the amount of leave after childbirth did not significantly vary across relationship types. We observe the expected variation in relationship status and race/ethnicity, such that married mothers are more likely to be non-Hispanic white, while minority women are more likely (than non-Hispanic whites) to be single or cohabiting. At every level of education, except for attending "some college" (including vocation/tech school), married women attained significantly higher levels of education than their unmarried counterparts. Cohabiting and single women were also more likely to live in households below 185% of the poverty

threshold (at all levels), with single women particularly vulnerable to living below 100% of the poverty threshold (31.48%) compared to married women (5.92%). As expected, compared to married mothers (10.55%), significantly more cohabiting and single women have public (Medicaid) health insurance, compared to private insurance. Cohabiting and single mothers also have significantly lower occupational prestige scores (38.13 and 38.96, respectively) compared to their married counterparts (45.03). Turning to the measures on maternal and child health, single women are more likely to report being in poor/fair health (9.47%), having a low birth weight baby (5.79%), and not receiving advice from their doctor about breastfeeding (9.8%) compared to cohabiting (7.38%, 7.52%, and 8.59%, respectively) and married mothers (4.57%, 12.42% and 6.15%, respectively). With the exception of fewer cohabiting mothers in the south, there are no significant differences across family structure in terms of region (or urban/rural) residence. Overall, there are significant differences across family structures for several sociodemographic factors, including breastfeeding beyond three months.

Descriptive Statistics for ECLS-B Mothers Who Worked 12 Months Before the Birth, Stratified by Relationship Status

Variables	Mean (SD's) Full Sample N= 2,600	Married (ref) N= 1,750	Cohabiting N= 350	Single N= 450
Leave from Work				
1-6 Weeks	26.97	25.93	28.59	29.57
7-12 Weeks	48.80	50.46	44.81	45.68
13 + Weeks (includes not yet returned)	24.28	23.62	26.60	24.75
Breastfed: 3+ months (%)	32.57	37.14	25.23***	21.29***
No maternity leave because quit or unemployed during pregnancy	11.83	6.43	23.85***	22.68***
Maternal Demographics				
Relationship Status (%)				
Married (ref)	67.78			
Cohabiting	13.61			
Single	18.62			

Race-Ethnicity (%)				
White (ref)	59.08	67.85	48.65***	34.80***
Black	16.47	9.50	17.81**	40.88***
Hispanic	18.28	16.00	26.39***	20.64
Other	6.16	6.65	7.14	3.68**
Maternal Age (SD)	28.82(5.95)	30.33	25.98***	25.43***
Foreign Born (%)	14.40	14.65	18.78*	10.32
Parity (%)				
1 (ref)	40.15	38.93	40.01	44.66
2	32.76	34.56	30.45	20.04
3+	18.58	18.16	21.62	17.87
Missing	8.52	8.36	8.08	9.43
Socioeconomic Status				
Maternal Education (%)				
No HS diploma (ref)	10.04	4.81	22.91***	19.72***
HS diploma/equivalent	29.08	23.35	38.13***	43.32***
Some college/vocation/tech.	33.13	34.43	30.98	29.98
College degree or higher	27.74	37.41	7.97***	6.98***
Poverty Threshold (%)				
Below 100% (ref)	1 2.67	5.92	20.50***	31.48***
At/above 100%, below	10.33	6.10	17.89***	20.20***
130%	12.80	9.79	17.81**	20.11***
At/above 130%, below	64.20	78.18	43.80***	28.21***
185%				
At/above 185%				
Self-Rated Health: Fair/ Poor	5.87	4.57	7.38	9.47**
(ref: Excellent/very good/good)				
Occupational Prestige	42.96(11.45)	45.03	38.13***	38.96***
Health Insurance (%)				
Public (Medicaid) (ref)	23.08	10.55	43.23***	53.95***
Private Insurance	59.26	68.62	42.50***	37.43***
None (Self-income, other)	17.66	20.83	14.27*	8.62***
Health Behaviors/Child Health				
Did Not Receive advice from	10.52	12.42	7.52	5.79**
doctor about breastfeeding (%)				
Low birth weight (>2500 g) (%)	7.16	6.15	8.59	9.80**
Other				
Delivery Method: Cesarean (%)	27.89	29.43	21.61*	26.88
(ref.: vaginal)				
Birth Complications (%)				
No (ref)	63.57	63.32	63.50	64.50
Yes	31.22	30.99	32.50	31.13
Missing	5.21	5.69	4.00	3.37
Region of Residence (%)				
Northeast (ref)	15.88	16.23	14.51	15.60
Midwest	24.03	24.22	29.97	19.01
South	40.63	40.34	31.32*	48.49
West	18.46	19.21	24.20	16.90
Urban (ref: rural) (%)	83.81	82.64	87.42	85.42

*p<0.05; ** p<0.01; ***p>0.001
Note[1]: Categories were created for missing values if missing values exceeded 100 cases per variable.

Table 1.3.1—Maternal Demographics, Stratified by Relationship Status

1.3.2. Timing of Return to Work and Breastfeeding

Table 1.3.2 presents the odds ratios from the logistic regression analyses, predicting breastfeeding beyond three months. Model 1 observes the unadjusted impact of timing of return to work on breastfeeding, and here we see that compared to women who returned to work between 1-6 weeks, those who returned to work after 12 weeks (i.e. 13+ weeks) had significantly higher odds (OR= 1.76) of breastfeeding beyond three months. Interestingly, mothers who return to work between 7-12 weeks do not significantly differ in the odds of breastfeeding compared to women who return within 1-6 weeks. As a side, I test for differences within the 13+ week group by separating out women who take leave for longer than six months but found no significant differences or substantial changes in the size of the coefficients. In line with prior research, model 2, which includes only a measure for family structure, shows that cohabiting and single mothers have lower odds of breastfeeding beyond 3 months (OR= 0.56, 0.45) compared to their married counterparts. Returning to work after 12 weeks (i.e. 13+ weeks or 3+ months) remains associated with higher odds of breastfeeding beyond three months, suggesting that family structure does little to explain the association between a delayed return to work and breastfeeding. Indeed, once demographic controls, like race/ethnicity and maternal age, are included in model 3, relationship status does not remain a

[1] Categories were created for missing values if missing values exceeded 100 cases per variable.

significant predictor of breastfeeding behaviors. This indicates that much of the difference in breastfeeding behaviors among single, cohabiting and married women is linked to demographic differences. We do see in model 3, however, that older maternal age and being foreign born is significantly associated with breastfeeding duration; an association that remains significant throughout table 1.3.2.

Model 4 adjusts for socioeconomic status, such as maternal education and occupational prestige, and includes a measure for a mother's self-rated health. Returning after 12 weeks (i.e. 13+ weeks) remains associated with higher odds of breastfeeding duration. Differences also emerge across education categories. Compared to women with no high school diploma, those with a high school diploma (or equivalent) have lower odds of breastfeeding beyond three months (OR=0.52), while those with a college education have higher odds of breastfeeding (OR=1.73). Having no maternity leave because the respondent quite or was unemployed during pregnancy is no longer associated with lower odds of breastfeeding duration (see model 3). Models 5 and 6 adjust for health related measures and other controls, like region of residence in the U.S. Consistent with previous models, returning to work after 12 weeks (i.e. 13+ weeks) remains associated with higher odds of breastfeeding beyond 3 months (OR=1.76 and 1.77, respectively). We do see in model 6 that occupational prestige is marginally associated with higher odds of breastfeeding beyond three months.

Next, I consider whether the relationship between the timing of return to work after childbirth and breastfeeding differs by a mother's relationship status by adding family structure interactions in model 7 and model 8. The fully adjusted model (model 8)

shows that even after accounting for demographic and socioeconomic factors, returning to work after 12 weeks of giving birth (i.e. 13+ weeks or +3 months) remains significantly and positively associated with breastfeeding beyond 3 months. In fact, mothers who return to work after 12 weeks have double the odds of breastfeeding beyond three months (OR=2.00) compared to women who return to work within 1-6 weeks. Although the relationship status variables and family structure interactions are insignificant predictors of breastfeeding in model 8, the main effect is both significant and larger in the fully adjusted model (compared to the other models), suggesting that married women are driving the benefits of a longer leave. To further explore this finding, I calculate predicted probabilities to observe the association between the amount of leave from work and breastfeeding within relationship categories.

In sum, table 1.3.2 shows that a longer leave from work after childbirth facilitates extended breastfeeding. More specifically, even after accounting for maternal sociodemographic characteristics and variation by relationship status (i.e. family structure), returning to work after 12 weeks (i.e. 13+ weeks) remains significantly and positively associating with breastfeeding beyond 3 months. Notably, across all models, women who return to work between 7-12 weeks do not significantly differ in terms of odds of breastfeeding beyond three months compared to women who return between 1-6 weeks.

Logistic Regression, Predicting Breastfeeding (beyond 3 months) for ECLS-B Mothers who Worked 12 Months before the Birth N= 2,600

	ODDS RATIOS							
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Leave from Work								
1-6 Weeks (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7-12 Weeks	1.18	1.14	1.00	0.93	0.93	0.93	1.19	0.99
13+ Weeks (includes not yet returned)	1.76***	1.77***	1.85***	1.74***	1.76***	1.77***	2.02***	2.00***
Relationship Status (%)								
Married (ref)		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cohabiting		0.56***	0.77	0.91	0.92	0.84	0.65	1.13
Single		0.45***	0.71	0.86	0.87	0.86	0.57*	0.99
Maternal Demographics								
No maternity leave because quit or unemployed during pregnancy			0.68*	0.78	0.78	0.81		0.84
Race-Ethnicity (%)								
White (ref)			1.00	1.00	1.00	1.00		1.00
Black			0.75	0.76	0.78	0.87		0.88
Hispanic			0.83	0.92	0.92	0.81		0.81
Other			0.77	0.70	0.71	0.58*		0.58*
Maternal Age			1.06***	1.03*	1.03*	1.03*		1.03*
Foreign Born (%)			2.60***	2.70***	2.69***	3.02***		3.04***
Parity (%)								
1 (ref)			1.00	1.00	1.00	1.00		1.00
2			0.88	0.99	0.98	1.01		1.01
3+			0.57***	0.80	0.79	0.75		0.75
Missing			0.75	0.84	0.86	0.85		0.85
Socioeconomic Status								
Maternal Education (%)								
No HS diploma (ref)				1.00	1.00	1.00		1.00
HS diploma/equivalent				0.52***	0.52***	0.55***		0.55**
Some college/vocation/tech.				0.80	0.80	0.83		0.82
College degree or higher				1.73*	1.69*	1.80*		1.78*
Poverty Threshold (%)								
Below 100% (ref)				1.00	1.00	1.00		1.00
At/above 100%, below 130%				0.83	0.83	0.81		0.80
At/above 130%, below 185%				0.85	0.85	0.83		0.82
At/above 185%				0.85	0.84	0.84		0.83
Self-Rated Health: Fair/ Poor (ref: Excellent/very good/good)				0.93	0.95	0.94		0.92
Occupational Prestige				1.01	1.01	1.02*		1.02*
Health Insurance (%)								
Public (Medicaid) (ref)				1.00	1.00	1.00		1.00
Private Insurance				1.08	1.09	1.05		1.06
None (Self-income, other)				1.07	1.09	0.96		0.97
Health Behaviors/Child Health								
Did Not Receive advice from doctor about breastfeeding (%)					0.89	0.88		0.89
Low birth weight (>2500 g) (%)					0.56***	0.60**		0.60**
Other								
Delivery Method: Cesarean (%)						0.84		0.84

(ref.: vaginal)			
Birth Complications (%)			
No (ref)	1.00		1.00
Yes	0.91		0.91
Missing	0.97		0.97
Region of Residence (%)			
Northeast (ref)	1.00		1.00
Midwest	1.83**		1.84**
South	1.20		1.21
West	2.58***		2.62***
Urban (ref: rural) (%)	1.00		0.99
Family Structure Interactions			
Relationship Status Interactions			
Cohabiting * 7-12 weeks		0.91	0.72
Cohabiting * 13+ weeks		0.71	0.59
Single * 7-12 weeks		0.84	0.89
Single * 13+ weeks		0.59	0.71

*p<0.05; ** p<0.01; ***p>0.001

Note[2]: Categories were created for missing values if missing values exceeded 100 cases per variable.

Table 1.2.3—Logistic Regression, Predicting Breastfeeding (beyond 3 months)

1.3.3. Predicted Probabilities

Next, I calculate predicted probabilities of breastfeeding beyond three months by relationship status and leave categories, and use pairwise comparisons to assess whether the predicted probabilities for each group significantly differs. Table 1.3.3 displays the pairwise comparisons between the predicted probabilities of breastfeeding beyond three months across categories of leave (i.e. 1-6 weeks, 7-12 weeks, 13+ weeks) within each relationship category (married, cohabiting, single). Table 1.3.3 also assesses the relative size of the differences in probabilities (i.e. contrast) between groups in breastfeeding duration. In other words, table 1.3.3 explores whether a longer leave from work, which is associated with higher odds of breastfeeding (see table 1.3.2), is equally beneficial for single and cohabiting mothers as it is for married mothers. For instance, will single

[2] Categories were created for missing values if missing values exceeded 100 cases per variable.

women who return to work 13+ weeks after giving birth be more likely to breastfeed beyond three months than single mothers who return to work within 1-6 weeks or within 7-12 weeks?

Table 1.3.3 shows that single and cohabiting mothers get fewer returns (in terms of breastfeeding) from taking a longer leave from work after birth compared to married women. Only married mothers have a higher predicted probability of breastfeeding beyond three months when they return to work after 12 weeks, or three months, of giving birth. Married mothers who take 13+ weeks off from work after childbirth have a .48 predicted probability of breastfeeding beyond 3 months, while their married counterparts taking 1-6 weeks and 7-12 weeks have a respective .31 and .34 probability of breastfeeding. Mirroring the results of model 8 in table 1.3.2, we see significant differences in the likelihood of breastfeeding beyond 3 months for women who delay returning to work at least 12 weeks (i.e. 13+ weeks). For married mothers, taking at least 12 weeks of leave is associated with a significant .17 and .14 increase in probability of breastfeeding compared to married mothers who return within 1-6 weeks or 7-12 weeks.

Interestingly, the amount of leave from work does not statistically increase or decrease the predicted probability of breastfeeding beyond three months among cohabiting or single mothers. For instance, a cohabiting mother who takes at least 13 weeks of leave after giving birth does not have a significantly higher probability of breastfeeding beyond 3 months than a cohabiting mother who returns to work within 1-6 weeks or between 7-12 weeks. The same is true for single women. The results in table 1.3.3, along with the results in table 1.3.2, show that married women are driving the

significant and positive relationship between breastfeeding and a delayed return to work after childbirth (i.e. 13+ weeks). In other words, in this sample of working mothers, the increased odds of extended breastfeeding beyond three months that is facilitated by a longer leave from work (i.e. 13+ weeks) is a phenomenon experienced primarily by married women. Thus, the gains of a longer leave from work after childbirth are not equally shared across all relationship statuses.

Predicted Probability of Breastfeeding for Beyond 3 months by Amount of Leave from Work after Birth, Within Relationship Status.

	Married	**Cohabiting**	**Single**
Base			
1-6 weeks	.31 [.25, .37]	.21 [.10, .31]	.19 [.11, .26]
7-12 weeks	.34 [.29, .38]	.21 [.13, .28]	.17 [.11, .24]
13+ weeks	.48 [.43, .54]	.28 [.17, .40]	.24 [.13, .34]
Contrast			
1-6 weeks versus 7-12 weeks	.03	.00	.01
1-6 weeks versus 13+ weeks	.17 ***	.08	.04
7-12 weeks versus 13+ weeks	.14 ***	.08	.05

*p<.05, **p<.01, ***p<.001
Note: Predicted probabilities calculated from full logistic regression model (see Model 8,Table 1.3.2) and pair-wise contrasts are made within each relationship status category.
Note[3]: Other variables in the model were held at means for each of the 9 groups of women. See methods section for details.

Table 1.3.3—Predicted Probability of Breastfeeding, Within Relationship Status

1.4. Discussion and Conclusion

[3] Other variables in the model were held at means for each of the 9 groups of women. See methods section for details.

This paper contributes to the literature on breastfeeding and employment by observing the breastfeeding behaviors among an updated and diverse sample of working mothers in the U.S., while focusing on the role of family structure. The current study sought to address two important questions: What is the association between the amount of leave from work after childbirth and breastfeeding beyond three months, and does this association vary by maternal relationship status? I find strong support for the first hypothesis, that a longer leave from work (i.e. beyond 12 weeks) is associated with extended breastfeeding. Indeed, in line with prior research (Berger et al. 2005; Chatterji and Frick 2005; Roe et al. 1999; Ogbuanu et al. 2011), I find that even after accounting for several sociodemographic factors, taking at least 12 weeks of leave (i.e. more than 3 months) from work after giving birth is significantly and positively associated with breastfeeding beyond three months. In other words, women who delay returning to work for at least 3 months have higher odds of breastfeeding beyond three months. This shows us that a majority of breastfeeding is occurring at home while mothers are still on leave, not at work, and thus similar to findings in prior research (Dunn et al. 2004; Kimbro 2006), a significant amount of working mothers in this sample are not combining breastfeeding and employment.

I also find support for the second hypothesis, that the relationship between timing of return to work and breastfeeding will be weaker for cohabiting and single mothers, and thus vary across maternal relationship status. Specifically, I find that benefiting from a longer leave from work after childbirth (in terms of breastfeeding) is conditional upon a mother's relationship status, such that married mothers, who are typically more

advantaged than their single or cohabiting counterparts (Cherlin 2010), positively and disproportionately benefit (in terms of breastfeeding) from an extended leave from work (at least 12 weeks) compared to their unmarried counterparts. In stark contrast to married mothers, a longer leave from work (in any timeframe) has no significant or positive effect on the likelihood of breastfeeding beyond three months for single or cohabiting mothers.

The positive health advantage found from a longer leave from work bificurates along marital, rather than partner, status. Because a longer leave is not associated with extended breastfeeding for cohabiters, it cannot be merely the presence of a live-in partner that explains married women's breastfeeding advantage. At least one study by Kimbro (2006) also finds that married, but not cohabiting mothers, have higher odds of extended breastfeeding in a similar return to work timeframe, although this study is based on a sample of predominately low-income women. One explanation is that cohabiting mothers receive less support from their partners (Kiernan and Pickett 2006), particularly as it relates to lower levels of father support (Carlson, McLanahan and England 2004), compared to married couples, which might negatively influence breastfeeding behaviors among these women. Also, compared to single parents, and to a lesser degree cohabiters, married couples typically share more parenting responsibilities (Guzzo and Lee 2008).

With a heavier share of parenting responsibilities and less partner support (in terms of time or resources), cohabiting and single working mothers might have too many competing time demands that simply render breastfeeding a time-investment that is too costly (in terms of feasibility or appeal). Thus, the cost of breastfeeding might outweigh the benefits even in light of a longer leave postpartum, which married women are able to

utilize. It is also possible that selection into different union types based on certain maternal characteristics, which this study did not capture, explain the differences in breastfeeding, rather than relationship status per se (Guzzo and Lee 2008).

This study has some limitations. This sample of women, although initially based on a nationally-representative sample, is select (purposefully) in that it explores the breastfeeding behaviors of full-time working mothers in the U.S. who were employed at least some time in the 12 months prior to birth. Although the findings apply to a select group, the majority of mothers with young children in the U.S. are employed (U.S. Bureau of Labor Statistics 2012), and thus it is crucial to consider the breastfeeding patterns of this population. Second, the measure of breastfeeding considers partial and exclusive breastfeeding beyond three months, rather than exclusive breastfeeding, which the AAP recommends (Eidelman et al. 2012). Combining partial and exclusive breastfeeding assumes that some breastfeeding is better for infant health than none and also assumes that any breastfeeding is a more reasonable goal for full-time working mothers than exclusive breastfeeding, given the extensive obstacles that women face in trying to balance employment and breastfeeding. It is possible that measuring breastfeeding at three months obscures important differences in breastfeeding rates at other durations (e.g. 6 months). However, given that just 32.67% of women in my sample breastfed beyond 3 months, this seemed like a reasonable cut point to explore the types of breastfeeding behaviors that are currently indicative (and feasible) among full-time working women. I was also unable to measure breastfeeding intent. Further, it is possible that unobserved factors, which are related to both breastfeeding and the amount

of leave that mothers take from work, are driving the relationship rather than the amount of leave per se, although, accounting for key sociodemographic factors helps me isolate the effect of length of leave. Finally, due to data limitations, I could not ascertain women's access to maternity leave benefits (i.e. whether they had leave available and how much through their employment), which might be an important factor to consider.

Nonetheless, this study uses some of the most recent and comprehensive data available to explore the complex relationship between leave from work after childbirth, relationship status and patterns of breastfeeding among a sample of U.S. working women. Much research explores the social patterns of breastfeeding, and a growing body of literature measures a mother's leave from work following childbirth, but little research addresses how these two topics interact, especially in light of the complex interaction of maternal characteristics, such as relationship status.

This study finds that although returning to work after 12 weeks (i.e. after three months) is associated with breastfeeding beyond three months, a delayed return to work (i.e. 13+ weeks) does not enhance the likelihood of breastfeeding beyond three months for single and cohabiting mothers. The only federal law in the U.S. regarding maternity leave, the FMLA, provides up to 12 weeks of unpaid leave (United States Department of Labor 2012); a cut-off point in this study that is not significantly associated with breastfeeding beyond three months for even the most advantaged women in this study, the married mothers. Further, most women in this study are not combining breastfeeding and employment. These findings raise serious concerns about the standards and provisions of maternity leave policies in the U.S. and work-place policies (e.g. statutes

relating to breastfeeding, workplace culture) that enable women to balance breastfeeding and employment. The findings also suggest that unmarried mothers, who do no not benefit from a loner leave from work postpartum, are not receiving the support they need while at home (i.e. on work leave) to comply with breastfeeding recommendations.

In an era where the majority of women work, many of whom are the primary breadwinners for their families, existing work-family and work-place policies (e.g. the FMLA) lag behind the changing demographic profile of the labor force, and fail to address the needs of working individuals and families in the U.S. Breastfeeding should be facilitated through accessible work-leave policies (i.e. parental leave) and family-friendly work cultures (e.g. lactation rooms, flexible time). However, because a longer leave only benefited married women, future research interested in the association between family structure, breastfeeding, and employment should explore the additional barriers that single and cohabiting mothers face in establishing extended breastfeeding during their postpartum leave from work. If working mothers, particularly unmarried women, are not able to utilize the benefits of a longer leave from work, there could be important health consequences for the infants of unmarried mothers.

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