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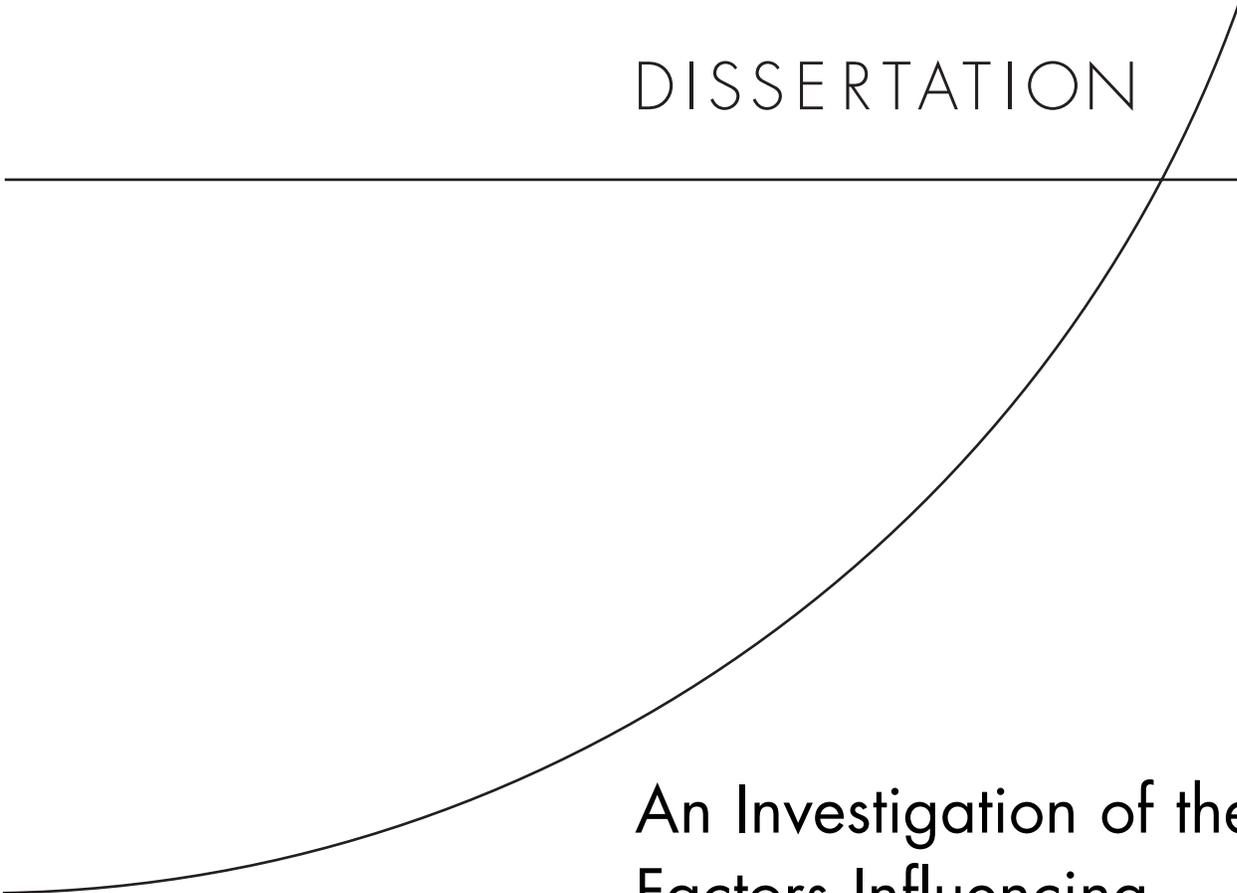
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DISSERTATION

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## An Investigation of the Factors Influencing Breastfeeding Patterns

ALISON JACKNOWITZ

This document was submitted as a dissertation in May 2004 in partial fulfillment of the requirements of the doctoral degree in policy analysis at the Pardee RAND Graduate School. The faculty committee that supervised and approved the dissertation consisted of Steven J. Haider (Co-Chair), M. Rebecca Kilburn (Co-Chair), Julie DaVanzo, and Robert F. Schoeni.



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## EXECUTIVE SUMMARY

This document briefly summarizes the dissertation, “An Investigation of the Factors Influencing Breastfeeding Patterns,” by Alison Jacknowitz.

### *Background and Motivation*

There are well-established short- and long-term benefits of breastfeeding to mothers and children. Research has shown that breastfeeding is associated with health, cognitive, and educational benefits for children. For example, studies in the United States (U.S.) and abroad have found evidence that children who are breastfed have lower rates of urinary tract infections, respiratory tract infections, diarrhea, allergic diseases, otitis media, bacterial meningitis, botulism, bacteremia, and necrotizing enterocolitis. In addition to the physiological health benefits, human milk may benefit children’s cognitive development. Studies also suggest that breastfeeding is beneficial for the mother’s health. The list of beneficial maternal health outcomes includes lowered risk of breast and ovarian cancers, decreased incidence of long-term osteoporosis and pregnancy-induced obesity, more rapid return to the prepartum state, and reduced menstrual blood loss. Some evidence also demonstrates an improved sense of maternal self-esteem, bonding with infant, and success with mothering.

Both individuals and society accrue large benefits from breastfeeding. For example, one study finds that medical expenditures were 20 percent less for fully-breastfed infants compared to never-breastfed infants (Hoey and Ware 1997). In addition, an analysis by the U.S. Department of Agriculture’s Economic Research Service estimates at least \$3.6 billion in annual savings if the prevalence of exclusive breastfeeding was increased to those levels recommended by the Surgeon General (Weimer 2001). This figure reflects \$3.1 billion in savings attributable to preventing premature deaths and \$0.5 billion in savings associated with reduced medical

expenses and indirect costs of time and earnings savings to parents. These estimates should be considered conservative as they only include the costs of three common infant illnesses. They do not include any health benefits to mothers or longer-term health benefits to children.

Reflecting research that indicates that both children and mothers benefit from breastfeeding, numerous individuals and organizations support and recommend breastfeeding. These individuals and organizations include the Surgeon General, American Pediatrics Association, American Medical Association, American Dietetic Association, American Academy of Family Physicians, and the World Health Organization. The Surgeon General states, “The nation must address these low breastfeeding rates as a public health challenge and put into place national, culturally appropriate strategies to promote breastfeeding” (U.S. DHHS 2000). The U.S. government has selected increasing breastfeeding rates as a *Healthy People 2010* objective alongside other national health goals such as decreasing rates of cancer, sexually transmitted diseases, obesity, and food insecurity. In addition, the American Academy of Pediatrics (1997) endorses exclusive breastfeeding (i.e., without supplementation) for approximately six months after birth and recommends continued breastfeeding with supplementation until the infant is at least 12 months old. Although researchers, public health organizations, and physicians generally agree on the importance of breastfeeding, a sizable percentage of the population does not breastfeed.

While a share of women does not breastfeed (29.9 percent in the hospital and 66.8 percent six months after birth in 2002), the likelihood of breastfeeding has oscillated over time and has varied by maternal characteristics. Between the early 1970s and 1982, there was an upward trend in breastfeeding rates. However, national breastfeeding rates exhibited a steady decline between 1983 and 1990. In 1991, breastfeeding rates, both for initiation and six months

after birth, began to increase again. Between 1991 and 2002 breastfeeding rates for all mothers increased 16.8 percentage points (31.5 percent) at birth and 15.0 percentage points (82.4 percent) six months after birth (Ryan 2002). Further, mothers across all demographic characteristics experienced increases in breastfeeding rates.

Disparities in breastfeeding rates exist, with low-income, Black, less-educated, younger, and working women being less likely to breastfeed. For example, the difference in breastfeeding rates between working and non-working mothers is large. In 2002, 27.1 percent of mothers working full-time breastfed six months after birth compared to 35.2 percent of non-working mothers (Ryan 2002). Given the short- and long-term health benefits of breastfeeding to mothers and children, relatively low rates of breastfeeding among disadvantaged groups may contribute to well-established health disparities at all stages of the life cycle.

While these breastfeeding patterns are well-documented, the explanations for them are not. Because of the potential benefits of breastfeeding to approximately four million infants and mothers in the U.S. each year, this dissertation investigates three explanations of breastfeeding patterns identified in the literature that have not been previously tested empirically. This dissertation contributes to this important policy problem by investigating whether the following factors influenced breastfeeding over the last decade 1) demographic changes; 2) welfare work requirements; and 3) workplace characteristics.

### ***Demographic Changes***

The dissertation first examines whether increases in breastfeeding rates since 1991 can be attributed to demographic changes. To answer the research question this study decomposes breastfeeding trends using 1991 through 2002 data from the Ross Laboratories Mothers Survey (RLMS) and birth certificate data. This analysis suggests that changes in the composition of

births by the following comprehensive set of demographic characteristics explain approximately 20 percent of the upward trend in initiation and duration breastfeeding rates during the 1990s: maternal age, maternal education, race/ethnicity, birth order, and geographic location of birth. The changes in birth composition by maternal age and education are the most important of these factors, explaining 9.8 and 11.5 percent of the increase in breastfeeding initiation rates, respectively. Similar results are observed for breastfeeding rates six months after birth, with birth composition changes by maternal age and education explaining 10.2 and 9.0 percent of increasing breastfeeding rates, respectively. While the results do explain approximately 20 percent of the upward trend in breastfeeding rates, they also underscore the importance of exploring the effects of other factors on breastfeeding rates.

### ***Welfare Work Requirements***

The third chapter examines whether the work requirements adopted as part of welfare reform have affected the prevalence of breastfeeding. A central theme of the recent welfare reform is the requirement that welfare recipients engage in work-related activities. In many states this requirement applies to mothers whose children are just a few months old. Holding a job increases the costs of breastfeeding, which in turn could reduce the propensity of new mothers to breastfeed their children. Both the descriptive statistics described earlier and multivariate studies illustrate that working negatively affects breastfeeding. Therefore, it is important to understand how these welfare work requirements affect breastfeeding rates. The analyses of data from the RLMS, presented in Chapter 3, suggest that if welfare reform had not been adopted, national breastfeeding rates six months after birth would be 5.5 percent higher.

### ***Workplace Characteristics***

Chapter 4 of the dissertation seeks to understand the role of workplace characteristics in the breastfeeding practices of working women. Working women are an important group to study because they comprise a large portion of new mothers, with over half (50.4 percent) of mothers with infants under 12 months of age working in 2002 (BLS 2003). As mentioned earlier, working women are also less likely to breastfeed than their non-working counterparts. The effects of availability of employer-sponsored child care, availability of a flexible schedule, hours worked at home, and working a rotating schedule on breastfeeding outcomes are estimated using the National Longitudinal Survey of Youth 1979 (NLSY79). The availability of employer-sponsored child care increases the likelihood of breastfeeding six months after birth by 59 percent. In addition, working an additional eight hours at home per week increases the probability of breastfeeding by approximately 9 and 21 percent at birth and six months after birth, respectively.

### ***Policy Implications and Future Research***

Three important lessons emerge from this dissertation. The first lesson is generated by exploring the rise in breastfeeding rates that began in 1991. Findings from this dissertation suggest that approximately 20 percent of the upward trend in breastfeeding rates is explained by well-known demographic changes. In contrast, findings suggest that welfare work requirements negatively influence breastfeeding rates, indicating that welfare reform does not help explain breastfeeding increases. In fact, breastfeeding rates would have been higher in the absence of welfare reform.

This dissertation also finds that some workplace characteristics positively influence breastfeeding rates. Because of data limitations, it is not possible to empirically test whether

workplace characteristics explain the increase in breastfeeding rates. However, ample information is available to hypothesize that if workplace characteristics explain any of the increase in breastfeeding rates since 1991, it is a small portion. It is generally believed that the prevalence of family-friendly workplace characteristics increased over the last decade, which suggests that workplace characteristics might explain some of the upward trend in breastfeeding rates. However, a little over 50 percent of mothers with children age one and under work and an even smaller portion of these working mothers have workplace characteristics that facilitate breastfeeding available. These two factors suggest that workplace characteristics play a small role in the recent increases in breastfeeding rates. Finally, the passage of two types of state breastfeeding laws is explored in this dissertation. Analyses suggest that these laws had little impact on national breastfeeding rates, indicating that they do not explain increases in breastfeeding rates.

While a portion of the increase in breastfeeding rates are explained by demographic changes, this dissertation demonstrates that other factors play a larger role in influencing breastfeeding trends and we need to continue exploring other explanations for the increases. Factors that might explain increases in breastfeeding rates are technological innovation and increased information. Technological innovation includes more advanced and less expensive breast pumps. On the other hand, innovations in formula technology may also contribute to lower breastfeeding rates. Increased public information on breastfeeding might also explain rising breastfeeding rates. The increasing number of research studies illustrating the benefits of breastfeeding and public health informational campaigns promoting breastfeeding is well-documented. However, it is not known whether this rise in information on the benefits of breastfeeding has lead to the observed increases in breastfeeding since 1991.

The second lesson learned from this dissertation is that policies can have unintended consequences that counter the efforts of other policies and programs. Results from this dissertation suggest that welfare work policies imposed a significant unintended cost on infants and their mothers by reducing the prevalence of breastfeeding and contributing to health disparities between the poor and non-poor. Thus, while the primary intention of welfare work requirements is to increase self-sufficiency among impoverished mothers, the policy has negative unintended consequences on breastfeeding and health disparities, both public health problems that the federal government is actively trying to address. The government must weigh the cost of these welfare work requirements against the potential benefits associated with them. However, the vast majority of the harmful effects on breastfeeding would be eliminated if mothers of infants were not required to work full-time, a requirement that is currently in place in about half of all states. Policies to facilitate breastfeeding among working mothers should also be explored.

The final lesson learned is the importance of understanding the underlying reasons for behavioral patterns when developing policy. For example, it is well-documented that women who work are less likely to breastfeed than those who do not, but it is not understood why some working women breastfeed and others do not. To create effective policies to increase breastfeeding among working women, it is crucial to understand the underlying reasons for their differences in behavior. This dissertation demonstrates that both working from home and the availability of employer-sponsored child care are promising practices to increase breastfeeding rates among working women. However, for the most part, these are not the practices promoted by the state breastfeeding laws.

To further understand the role of workplace characteristics in breastfeeding, more information on workplace characteristics is necessary. Of the workplace characteristics offered

those most likely to affect breastfeeding include availability of a lactation room, an office with a door, employer policies regarding job-sharing, and the frequency and duration of breaks. Future data collection efforts on the topic should include questions on these workplace characteristics.