

FAMILY POLICES AND PUBLIC HEALTH INITIATIVES: A COMPARATIVE ANALYSIS
OF BREASTFEEDING OUTCOMES

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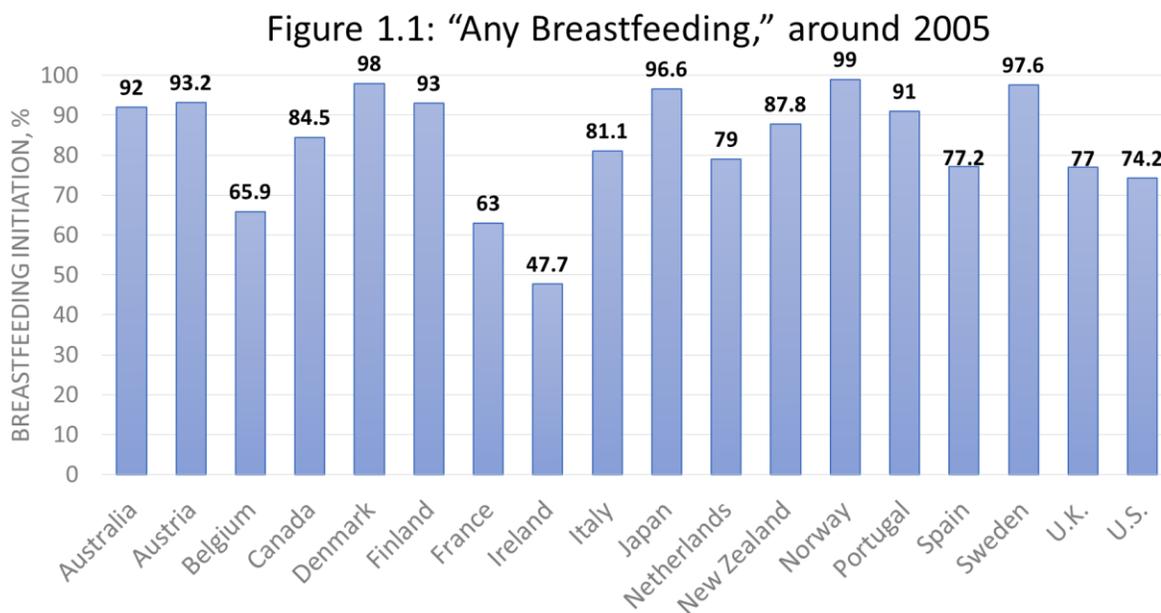
Abstract

Breastfeeding rates vary considerably among high-income countries who are members of the Organization for Economic Co-operation and Development (OECD). In the 1960's, breastfeeding outcomes, both initiation of breastfeeding and breastfeeding duration, were at an all-time low. Over the past half century, breastfeeding outcomes have increased among all OECD countries, but at very different rates. This dissertation examines both the policy-level and public health-level initiatives that have affected the differential growth of breastfeeding rates among 18 high-income, OECD countries. Using a combination of multiple regression, fuzzy-set qualitative comparative analysis, and small-n methods, I find that countries in the broad Scandinavian welfare regime have combined policy support for women's reproductive and productive labor, along with a strong female representation in government to facilitate positive breastfeeding outcomes. I find that countries who have a strong commitment to the World Health Organization's Baby-Friendly Hospital Initiative have higher breastfeeding initiation rates than countries who do not have a high percentage of hospitals following the WHO protocol. This dissertation adds to the broader understanding of how welfare state policies and public health initiatives operate in tandem to support positive breastfeeding outcomes among high-income countries.

Chapter 1: Introduction

Introduction to the Problem

Breastfeeding is the optimal source of infant nutrition and has been linked to positive health outcomes in early childhood and into adulthood (Galtry 2003; Oddy et. al. 2011). Breastfeeding rates in the United States are increasing: the rate of breastfeeding initiation among births in 2009 was 76.9% versus 64% in 1998 (CDC 2012, Galtry 2003). However, the rate of breastfeeding in the United States still falls short of the World Health Organization's recommendation that all mothers initiate breastfeeding, and the 76.9% initiation rate is below breastfeeding rates in many other developed nations. In high-income, Western OECD countries, breastfeeding initiation ranges from 44% to 99% (Figure 1.1) (OECD 2012). This wide range raises questions about what enables or constrains breastfeeding in different national settings.



Sociologists and economists have only recently begun to study breastfeeding as an outcome of social and political processes in both welfare state and public health research. Galtry

(2003) examined the effects of labor market policy and socio-cultural factors on breastfeeding rates in three high-income, OECD countries: Sweden, the United States, and Ireland. Cattaneo et al., (2005) examined the current situation of breastfeeding in 29 European Union member-states and affiliates, in advance of the EU-funded “Promotion of Breastfeeding in Europe” project. They found that labor market policies are a key predictor of breastfeeding rates in the EU countries. Cattaneo et al. (2005) also note that “different social and cultural determinants, as well as flawed policies and unequal support among and within health-care systems, could also explain differences in breast-feeding rates. But it is definitely difficult to understand why initiation and duration of breast-feeding vary so much, and more comparative research is needed” (42). Following that recommendation from Cattaneo et al., this dissertation will contribute to the small but growing body of comparative research on breastfeeding, labor market policies, and public health policies by analyzing breastfeeding outcomes in 18 high-income OECD countries, and examining mechanisms that produce changes in breastfeeding rates across six countries.

Why breastfeeding?

While public health research has long demonstrated the importance of studying breastfeeding trends, sociological research has only recently begun to view breastfeeding as a legitimate topic of inquiry. From a public health perspective, breastmilk is the ideal infant food. Breastmilk is “species specific,” meaning it contains the optimal balance of nutrients and protective properties for infants (American Academy of Pediatrics 2005). Breastfeeding provides a range of benefits for human infants, including protections against bacterial meningitis, diarrhea, respiratory infections, and diabetes (Eidelman, et. al. 2005; Oddy, et. al. 2011). Breastfeeding also has benefits for the mother, including the reduction of obesity, decreased risk

of breast and ovarian cancers, and increased levels of the mood-enhancing chemical oxytocin (Eidelman, et. al. 2005).

While health benefits to the mother and infant are compelling public health reasons, breastfeeding is also a social good. Breastfeeding provides benefits to the community, the economy, the environment, and the family (Eidelman et al. 2005; Edwards 2009). Formula feeding is expensive; families can spend upwards of \$1500 on formula alone during the first year of an infant's life (Edwards 2009). Weimer (2001) found that the United States would save a minimum of \$3.6 billion dollars annually on healthcare costs if breastfeeding rates increased to the minimum standards set by the Surgeon General's office: 75% initiating breastfeeding and 50% breastfeeding at 6 months. Because infants who are breastfed are generally healthier than their formula-fed counterparts, breastfeeding benefits communities and drives down healthcare costs. Healthier babies mean fewer visits to hospitals, clinics, and doctors' offices (Edwards 2009). Breastfeeding also benefits the environment. Formula manufacturing requires the use of natural resources and relies heavily on cow's milk, which can cause environmental issues ranging from pollution to landfill waste (Edwards 2009).

In addition to the benefits to the mother, child, and society, breastfeeding is sociologically relevant as a form of care work. Care work and the concept of social care were identified by feminist theorists since the 1970s. Paula England (2005) notes that care work can be either paid or unpaid, and that women do the majority of the care work in the United States. Care work includes paid labor market activities such as primary care teacher, nursing, and hospitality. It also includes unpaid labor such as child-rearing and housekeeping duties (England 2005). Breastfeeding is a form of unpaid care work that benefits society as a whole, although some governments provide more resources to support this care work than others do. As a form of

care work, breastfeeding is a uniquely female act that employers and government policies can encourage or discourage.

Summary of the Dissertation

In this dissertation, I examine the effects of public health initiatives and welfare state policies on breastfeeding initiation and duration across 18 high-income OECD countries using both multiple regression and fuzzy-set Qualitative Comparative Analysis (fsQCA). I then perform a small-n comparative analysis of breastfeeding rates in six high-income OECD countries. Much variation exists in both breastfeeding initiation and duration among high-income OECD countries, and the multiple regression and fsQCA analysis will examine the policy level and public health initiatives that influence breastfeeding outcomes.

The country case analysis examines six high-income OECD countries, following the work of Galtry (2003) who examined policy regimes in Ireland, the United States, and Sweden. Galtry specifically chose three countries with vastly different breastfeeding rates in 1997: Ireland at 38% breastfeeding initiation, the United States at 64%, and Sweden at 97%. While rates of breastfeeding have increased in all three countries since Galtry's research, the disparities among the three countries remain. I am conducting in-depth, case-oriented research for the countries of Ireland, the United States, Sweden, France, Canada, and Norway. I chose France, Canada, and Norway, because they have similar rates of breastfeeding and come from similar welfare regimes as Ireland, the United States, and Sweden respectively. Examining two countries with low, medium, and high levels of breastfeeding initiation will highlight the policy similarities and differences at each level of breastfeeding. Table 1.1 shows rates of breastfeeding in the six countries.

Table 1.1: Breastfeeding Rates by Country				
Country	Year	Breastfeeding Initiation	Breastfeeding at 3 months	Breastfeeding at 6 months
Sweden ²	2000	98%	83% ⁺	**
Norway ⁵	2008	99%	85% ⁺	80%
France ²	2000	63% [¥]	15%	**
Ireland ³	2006	55%	34%	**
Canada ¹	2006	87.3%	67.6%	53.9%
United States ⁴	2009	76.9%	**	47.2%

Sources: ¥ - measured in 2003 + - Measured at 4 months ** - Data unavailable

1 – Chalmers et al. 2009

2 – Cattaneo et al. 2004

3 – Begley et al. 2008

4 – CDC 2012

5 – [NHMRC 2011](#)

Available data for breastfeeding incidence and duration are historically plagued with problems of collection and comparability. Recognizing this dearth of information, the European Union, in conjunction with the World Health Organization, released a “Blueprint for Action” for the “Protection, Promotion, and Support of breastfeeding in Europe” in 2004 (European Commission 2004; Cattaneo et al. 2004). EU member states received questionnaires on breastfeeding rates and promotion in their countries, and the Blueprint aggregated this information into a multi-faceted plan for action to increase breastfeeding promotion across Europe. As part of this plan, the public health arm of the European Commission included breastfeeding as one of its 88 indicators of health for the 2008-2013 Health Programme (European Commission 2012).

This research will contribute to understandings of structural, policy-level, and individual-level barriers to breastfeeding in the United States, while examining successes and failures of

breastfeeding campaigns in other developed nations. My theories rest on two competing hypotheses: do public health campaigns targeting breastfeeding significantly affect motivations and breastfeeding behaviors, or do national- or state-level family policies provide necessary supports for women's breastfeeding decisions? How do public health campaigns work in tandem with family policies to provide the most conducive environment for breastfeeding? The results will provide the basis to inform policy in the United States related to breastfeeding promotion.

This study will provide two empirical analyses using different data. The first will analyze the national policies, labor market forces, and individual-level constraints that contribute to the large variation in breastfeeding rates among high-income Western OECD countries using data from the OECD, country-level surveys, and the World Health Organization. Using multiple regression and fuzzy-set Qualitative Comparative Analysis, I will analyze the effects of national policies and labor market structures on breastfeeding rates and duration at the national level in OECD countries. Then, I will perform a small-n comparative analysis examining breastfeeding trends over time in six countries, enabling me to ascertain mechanisms behind breastfeeding change.

This project combines public health research and sociological research in novel ways. While researchers have examined the role of welfare policies on child health outcomes, including breastfeeding (Ruhm 2000; Galtry 2003), and the role of public health initiatives on breastfeeding outcomes (DiGirolamo, Grummer-Strawn, and Fein 2008; Protheroe et al. 2003), no study to date has investigated the effects of both public health campaigns and national-level, family policies on breastfeeding outcomes. In addition, I utilize theories of carework and the welfare state to examine the role that welfare state policies support both women's productive labor (labor market activity) and reproductive labor (child rearing and caring).

Organization of the Dissertation

This dissertation is organized into chapters that present the relevant literature and background on breastfeeding, welfare policy regimes, and care work. The relevant literature includes theories about the devaluation of care work and theoretical perspectives on the welfare state (and how it is gendered), as well as specific initiatives to increase breastfeeding rates across the world through governmental intervention, NGO support, and public health groups. Empirical chapters analyze cross-national data using multiple regression and fuzzy set Qualitative Comparative Analysis, and then discuss mechanisms of breastfeeding change using small-n comparative analysis.

Chapter 2 presents the relevant theory and background for the dissertation. I begin with a brief history of breastfeeding outcomes rates and fluctuations worldwide, focusing on high-income OECD countries. This history includes an analysis of how various government agencies, NGOs, and public health groups worked to increase breastfeeding rates over time. I discuss how changes in welfare state structure have affected fertility in high-income, OECD countries, and examine comparisons to breastfeeding rates. I then review theories of the welfare state and how welfare policies are “gendered,” as well as theories of care work and its devaluation. These theories help to inform hypotheses about factors that produce differences in breastfeeding rates between countries, focusing on welfare state policies and public health initiatives. These policies and public health initiatives not only encourage or discourage breastfeeding, they also express a nation-state’s valuation of unpaid care work that only women perform.

Chapter 3 provides a detailed description of the data, variables, and methods that I use in my analyses. In my multiple regression and QCA analysis, chapter 3 discusses the policy-level and public health variables that I employ in the empirical analysis. I also discuss QCA in detail, explaining the purpose of the method and its usefulness in this study. For the small-n, case-based comparative analysis, I review the variables that I use, linking the variable selection to the most current research. I also review the methods involved in small-n case-based analysis.

Chapter 4 is the first of two empirical chapters. In chapter four, I use multiple regression and fuzzy-set Qualitative Comparative Analysis (fsQCA) to identify policy-level variables and public health initiatives that have an influence on breastfeeding initiation and duration among 18 high-income OECD countries. I find that the Baby-Friendly Hospital Initiative is the most strongly related to both breastfeeding initiation and duration. Countries with more hospitals that are designated as baby-friendly have higher levels of breastfeeding. I also find that paid maternity leave has no effect on breastfeeding duration, which is surprising given prior research. However, in the context of welfare state supports, some countries that provide long maternity leaves do not fully integrate women in the labor market, which can constrain women who are working part-time and create a situation where women are responsible for both carework and productive labor.

Chapter 5 is the second empirical chapter, in which I employ a small-n case-based analysis of six countries, examining the role that public health policies and national-level welfare state policies play in breastfeeding variation. In this analysis, I investigate how the evolution of public health policies and welfare state policies have affected breastfeeding rates across the development of these policies. I find that countries that are early adopters of the international recommendations targeting breastfeeding have increased their breastfeeding rates rapidly. I also

find that France and Ireland are similarly situated in a “one and a half breadwinner” model, where women are faced with the burden of carework, but also are increasingly present in the part-time labor market. Because of this double bind, women face difficulty with the time-intensive task of breastfeeding.

The sixth and final chapter of this dissertation provides the conclusion and implications of my analyses. My key findings, are that the Baby-Friendly Hospital Initiative is a significant predictor of both breastfeeding initiation and duration, that countries who are early adopters of the WHO/UNICEF international recommendations concerning breastfeeding have the highest rates of initiation and duration, and that countries where the “one and a half breadwinner” model is the overarching policy theme place women in a double bind concerning carework and paid labor, leading to less breastfeeding. I discuss the future implications of my research and identify some of the strengths and weaknesses of my analyses.

Chapter 2: Breastfeeding Rates, Welfare State Policies, and Public Health Initiatives: Literature and Background

2.1 Introduction

This literature review focuses on the relevant background and theory surrounding my core research questions:

1. Why does breastfeeding vary at the national level?
2. What specific policies help to promote breastfeeding among high-income, OECD countries?
3. Which policies and practices signal the valuation of breastfeeding as a form of care work?

In this review, I trace the historical development of breastfeeding rates over the past century, discuss the origin and implementation of public health policies targeting breastfeeding, couch discussion of family polices in the greater welfare state literature, and examine similar initiatives to improve fertility rates in high-income countries.

Infant feeding practices in much of the Western world began to shift starting in the late 1800s, when women started to supplement their own breast milk with cow's milk (Wolf 2003). Wealthy women in the late nineteenth century often used wet nurses for infant feeding. During the 20th century, technological advances in pasteurization, combined with increasing medicalization of childbirth, contributed to dramatic increases of formula use among mothers in industrialized countries (Edwards 2009, Wolf 2003). Formula companies marketed aggressively to both mothers and physicians, and as a consequence, by the mid-1960's, breastfeeding rates had dropped to an all-time low in most industrialized, Western countries (Edwards 2009, Wolf 2003).

To address the low rates of breastfeeding, the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) began a series of interventions aimed at increasing breastfeeding rates worldwide (WHO 1981, WHO/UNICEF 1999). In 1974, the twenty-seventh World Health Assembly, the annual meeting of the governing body of WHO, addressed breastfeeding rates, promotion of formula and other breast-milk substitutes, and changing cultural norms. They released a statement encouraging “member countries to review sales promotion activities on baby foods to introduce appropriate remedial measures, including advertisement codes and legislation where necessary” (WHO 1981). The 1974 statement began a wave of initiatives from WHO/UNICEF, individual WHO member-states, and grassroots groups of concerned women, including La Leche League International, all designed to increase breastfeeding rates.

This literature review begins by tracing the development of recommendations, initiatives, and legislation aimed at increasing breastfeeding rates from the mid-1970’s until today. I examine the role that the World Health Organization and UNICEF played in changing the trend of low breastfeeding rates. I then discuss impacts that various lay groups and grassroots organizations, such as La Leche League International, have had on changing breastfeeding norms and culture. This review continues with a discussion of the sources of variation in breastfeeding rates, including a review of the welfare state and associated family policies, public health initiatives and adherence to WHO/UNICEF recommendations, and breastfeeding culture in the eighteen high-income, OECD countries in my analysis. The analysis of fertility interventions provides insight and a useful comparison to interventions targeting breastfeeding cross-nationally, so I examine the effects of three factors – welfare state policies, public health initiatives, and culture – on fertility rates in high-income, OECD countries over the past few

decades. I conclude this chapter with my hypotheses, derived from the review of relevant literature and theory.

2.2 A History of Breastfeeding Over the Last Century

In the United States, public health promotion of breastfeeding began as early as 1912, as part of a campaign to reduce infant mortality (Wolf 2003). Breastfeeding rates began to drop in the late 1800's, as women started to wean their babies earlier and supplement breastmilk with cow's milk, which often was tainted with bacteria. This trend cut across social classes. Wealthy women would entrust the care of their infants to domestic workers who would feed them with cow's milk. Working-class women would wean their infants early so that they could leave them with older children or family members while they entered the labor force (Wolf 2003). During this time, nutritionists, physicians, and chemists began to develop breast milk substitutes. The first commercially-available formula contained wheat flour and cow's milk and was marketed and sold in both the United States and Europe in 1869 (Schuman 2003). By the 1920's, companies developed and marketed their own types of propriety infant formula. Recognizing the risks associated with breastmilk alternatives, the Department of Pediatric Health at the University of Minnesota instituted a state-wide breastfeeding promotion campaign in 1919 (Wolf 2003). Despite the success of the Minnesota program, breastfeeding rates continued to fall across the country, due mostly to improvements in pasteurization technology. While women continued to prepare homemade formulas from evaporated milk and sugar, store-bought formulas became the "standard" of infant feeding by the 1960s and 1970s (Schuman 2003).

As a result of these market trends, breastfeeding rates in the United States reached its lowest recorded levels by 1971, with only 25% of new mothers initiating breastfeeding

(Schuman 2003; Wolf 2003). Bottle-feeding became the standard feeding practice in most Western European countries too, where rates had dropped considerably since the development of commercially-produced infant formula (Baumslag and Michels 1995).

Grassroots feminist movements, alarmed by the trend of increased bottle-feeding, pushed the agenda of breastfeeding. Groups such as the La Leche League, founded in 1956 but given an international boost in 1971, worked to increase breastfeeding rates (La Leche League 2012). In Norway, a voluntary group of mothers and professionals began a group called Ammehjelpen in 1968, and this grassroots group has developed into a support system (Helsing 1988). On the international level, the World Health Organization and UNICEF began a campaign at around the same time also designed to increase breastfeeding rates worldwide. However, breastfeeding was still not given serious attention by the medical and public health communities until 1997, when the American Academy of Pediatrics released a statement detailing recommendations for breastfeeding. The United States Centers for Disease Control mentioned breastfeeding as an indicator of maternal and child health in their Healthy People 2000 survey (CDC 2012). Then, in 2000, the United States Department of Health and Human Services, for the first time, released an action plan targeting breastfeeding and including breastfeeding as an indicator for its Healthy People 2010 goals (Wolf 2003; CDC 2012). Thus, it has only been within the last 15 years that breastfeeding in the United States has been a targeted public health goal.

2.2.1 Interventions to Increase Breastfeeding Rates

In 1979, WHO and UNICEF held a joint meeting in Geneva to address issues of infant and young child feeding (WHO 1981, WHO/UNICEF 1999). The meeting emphasized five key issues: encouraging and supporting breastfeeding, promoting and supporting timely weaning

practices, strengthening education and training on infant feeding, promoting the health and social status of women and infant feeding, and addressing the marketing and distribution of formula and other breast-milk substitutes (WHO 1981, WHO/UNICEF 1999). The thirty-third World Health Assembly, held in 1980, addressed the marketing of infant formula. The following year, the World Health Assembly adopted the International Code of Marketing of Breast-milk Substitutes (the Code). The Code recommended that all WHO member-states adopt legislation or regulations in their respective countries that “contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of breast-milk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution” (WHO/UNICEF 1999).

In 1990, WHO and UNICEF convened another major joint policy meeting called “Breastfeeding in the 1990s: A Global Initiative,” which adopted the Innocenti Declaration on the Protection, Promotion, and Support of Breastfeeding (WHO/UNICEF 1999). Following the Code, the Declaration was the first of its kind to set a specific international standard for breastfeeding recommendation: “All women should be enabled to practice exclusive breastfeeding and all infants should be fed exclusively on breast-milk from birth to 4-6 months of age. Thereafter, children should continue to be breastfed, while receiving appropriate and adequate complementary foods, for up to 2 years of age or beyond” (WHO/UNICEF 1999). The Declaration declared that by 1995, all participating member-state governments should develop national breastfeeding policies, appoint a national breastfeeding coordinator, ensure that maternity hospitals and facilities follow the Ten Steps to Healthy Breastfeeding, adopt the principles of the International Code of Marketing of Breast-milk Substitutes, and enact legislation to protect the breastfeeding rights of working women (WHO/UNICEF 1999). The

Innocenti Declaration remains the standard of breastfeeding recommendations and policy, and the World Health Organization continues to base its recommendations and policy initiatives on the basic tenets of the Declaration.

The last major WHO/UNICEF initiative to promote breastfeeding happened in 1992. At the 45th World Health Assembly, the member-states were urged to adopt the Baby-Friendly Hospital Initiative (BFHI) in order to meet the goals set in the Innocenti Declaration (WHO/UNICEF 1999). The BFHI intervenes in hospital practices and procedures that can lead to poor breastfeeding outcomes among new mothers and encourages facilitation of the successful initiation of breastfeeding. The Baby-Friendly Hospital Initiative targets maternity care centers, hospitals with a maternity unit, and the health care workers who care for new mothers. Facilities can apply to become a Baby-Friendly hospital, and that designation is given when hospitals follow the Ten Steps to Successful Breastfeeding. The Ten Steps are as follows:

Insert 2.1: Ten Steps to Healthy Breastfeeding

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help mothers initiate breastfeeding within a half-hour of birth
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants
6. Give newborn infants no food or drink other than breast-milk, unless medically indicated
7. Practice rooming-in - allow mothers and infants to remain together - 24 hours a day
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

[Source: World Health Organization/United National Children's Fund, 1999]

Yngve and Sjoström (2001) performed a comprehensive study on the degree to which EU member-states complied with the WHO/UNICEF recommendations. They found vastly differing breastfeeding rates, along with varying degrees of compliance with the Innocenti Declaration. For example, they found that few countries have both a national breastfeeding coordinator and a national plan of action on breastfeeding, and that there is a great deal of variation in both initiation and duration of breastfeeding, even within similarly-situated countries. In addition, they find that breastfeeding rates are difficult to compare country to country because of varying definitions and operationalization of breastfeeding, including what is considered “exclusive” breastfeeding (Yngve and Sjoström 2001). In addition, countries have differing methods of measuring breastfeeding: some countries perform sample-based surveys, while others survey every mother who had given birth. Finally, they found that there is very little consistency in reporting of breastfeeding statistics in many countries because, unlike demographic characteristics like fertility, breastfeeding rates are not regularly reported and catalogued (Yngve and Sjoström 2001).

Cattaneo et al. (2004) built upon Yngve and Sjoström’s study, finding much of the same variation. In 2003, they distributed a questionnaire to key personnel to 18 countries: the 15 EU member states and Norway, Iceland, and Sweden. The questionnaire asked different actors – governmental agencies, public health institutions, and NGOs – to report the state of breastfeeding in their countries. All 18 countries responded, but there was some missing data in breastfeeding outcomes (Cattaneo et al. 2004). The survey asked about adherence to the Baby-Friendly Hospital Initiative, adherence to the International Code of Marketing of Breastmilk Substitutes, the degree to which volunteer groups are active in breastfeeding support, and the rates of both exclusive and complementary breastfeeding. Again, the survey found wide variation

in adherence to public health initiatives across countries, as well as a great degree of variation in breastfeeding initiation and duration (Cattaneo et al. 2004). For example, monitoring of breastfeeding rates is done differently across Europe. In some countries, notably Belgium, France, Ireland, and Sweden, health care professionals report breastfeeding rates routinely for all women who have had infants in hospitals and clinics (Cattaneo et al. 2004). Other countries, including Denmark, Italy, Spain, Norway, and the UK, collect breastfeeding information using sample-based data, which is often done at irregular intervals. Cattaneo and his colleagues suggest that monitoring and collection of breastfeeding rates be standardized across Europe. The study found wide variation in rates of adherence to the Baby-Friendly Hospital Initiative. Many Scandinavian countries, especially Norway and Sweden, have an excellent rate of compliance with the Baby-Friendly Hospital Initiative. As of 2010, 68% of all hospitals and maternity care centers in Norway have been designated as baby-friendly, while 97% of all hospitals and maternity care centers in Sweden have that designation (Cattaneo et al. 2004; Labbock 2012). Most other countries in the study, however, have not successfully implemented the Baby-Friendly Hospital Initiative, with very low participation rates.

In 2008, a study from the University of Sydney's National Health and Medical Research Council examined the degree to which the WHO recommendations were implemented in eight countries: Canada, France, Germany, Ireland, New Zealand, Norway, the UK, and the US. The study further supported the results of previous studies, by revealing a wide variation in both breastfeeding rates and degrees of compliance with the WHO recommendations across the eight countries. For example, they found that a combination of factors, not just a single predictor, is responsible for both high and low levels of breastfeeding initiation and duration. A combination of lay breastfeeding support groups, trained healthcare providers, and skin-to-skin contact was

the best predictor of positive breastfeeding outcomes. In addition, social and cultural norms were a significant predictor of breastfeeding outcomes. Countries where there is a negative view of breastfeeding in public had lower rates of breastfeeding (NHMRC Clinical Trials 2008).

2.3 Welfare State Policy Explanations for Breastfeeding Variation

Family Policies

“Family policies,” broadly defined, refer to any policy attempting to “regulate social and economic relations within families as well as between families and other social institutions” (Brewster and Rindfuss 2000; Wennemo 1993). Gosta Esping-Andersen nested family policies within a broader welfare state classifications system based on differing arrangements of markets, the state, and families. Esping-Andersen (1990) identified three welfare state regimes: social-democratic, conservative, and liberal. The social-democratic welfare regime, present in most Scandinavian countries, offers a system in which vast social protections are extended to working-class and middle-class families, and the state provides a variety of family supports to all citizens. Benefits are neither dependent on the market nor tied to the social class of the recipient (Esping-Andersen 1990). Conservative welfare states, including Germany, Austria, and Italy, provide some social supports and financial benefits to mothers, but fewer universal benefits to all citizens. Thus, they offer benefits that exclude non-mothers. Also, the level of support for family work in the form of subsidized or public day care is very limited. Countries in the conservative regime offer long leaves that could encourage motherhood, but then effectively keep mothers out of the labor market because of their low level of support for child care. As a result, they present reproductive labor and productive labor as an either/or choice for women. The liberal regime includes the United States, the United Kingdom, and Canada. In the liberal regime, the state

provides very few social supports and financial benefits to families, instead leaving those supports and benefits up to the markets (Esping-Andersen 1990). The few state benefits that are available are typically means-tested and restricted to individuals with great need, rather than universal. Thus, the liberal regime does not support reproductive labor but rather takes a *laissez-faire* approach.

Scholars refer to Esping-Andersen's three welfare state regimes as ideal types. Comparative sociologists have argued that Esping-Andersen's typologies of the welfare state neglected to include the role of gender in shaping policy regimes, ignoring assumptions about men as primary breadwinners and women's variable relationship to the labor force. For example, Orloff (1993) argued that Esping-Andersen ignores the different positions in the labor market that women occupy. In this line of inquiry, my research examines welfare state regimes as differentially supportive of women's reproductive labor in addition to their productive labor in the traditional market.

Countries in the traditional social-democratic model have policies in place that support both women's productive and reproductive labor. These countries – Denmark, Finland, Norway, and Sweden – provide support for women's productive labor through explicit policies that support the dual-earner family and legislate gender equality in the labor force (Huber and Stephens 2001, Orloff 2002). Countries in the conservative welfare regime, which includes much of continental Europe, provide support for women's reproductive labor but do less than social-democratic countries to integrate mothers into the labor force. Finally, countries in the liberal welfare regime include the United States, the United Kingdom, Canada, and Australia. These countries provide few governmental supports for carework, leaving support for childcare to market-based organizations.

Korpi (2000) frames welfare states in terms of “agency inequality,” the notion that women’s opportunities are constrained through their differential positions and representation in politics, education, and the labor force. He operationalizes his categories in terms of the ways that welfare state policy constrains and facilitates women’s labor and reproductive choices (Korpi 2000). Korpi uses country-level definitions of citizenship (i.e., populations entitled to receive state-derived benefits, incentives, and assistance) that include or exclude the value of carework and reproductive labor. For example, a country may enact welfare state policies that encourage both men and women to have similar ties to the labor force, yet offer minimal support for the value of women’s traditional involvement in carework and reproductive labor. One example of this that Korpi discusses is socio-economic stratification. Women are often the ones engaged in paid care work, but these positions are underpaid. In the liberal, market-based welfare regime, for example, the women who work as caregivers receive low wages. The market doesn’t force their wages up because there is no universal support for carework at the policy-level, such as child care subsidies or government-funded child care.

In another instance, a country may validate women’s care work as the basis for their citizenship rights and positions, while men’s labor force participation could continue to shape their rights and positions in society. Men and women may be treated differently, but in this case, welfare policies may support carework and reproductive labor (Korpi 2000). For example, in the general family support model of welfare state regimes, which includes much of Esping-Andersen’s conservative welfare regimes countries, women are given generous subsidies for having children, thus supporting their reproductive labor, but these monetary subsidies are the substitute for wages from productive labor, and cement women’s positions as the caregiver. Korpi argues that neither of these solutions is optimal, and nation-states should move care work

into the public sphere instead, giving women a choice between paid and unpaid work and no constraints on that choice.

Lewis (2002) also argues for a shift in welfare/work policies that replaces the traditional “male breadwinner” model with one based on greater female labor force participation. However, she argues that while the male breadwinner model in most of continental Europe is shifting to a “one and a half breadwinner” model, the burden of care work still falls squarely on the shoulders of women. Thus, women are not fully integrated into the paid labor force or, if they are, they are still continuing to do the bulk of the care work at home. Korpi and Lewis both argue that supporting policies that restrict women to one sphere over another – that is, restrict women to only gain their hold in society through productive vs. reproductive labor, or vice versa – promote gender inequality. A shift of care work into the public sphere will increase women’s agency and work to eliminate gendered agency inequality.

Table 2.1 integrates Esping-Andersen’s welfare state typologies with Korpi’s and contemporaries’ attention to women’s labor force participation in order to derive more expanded description of welfare state regimes.

Table 2.1: Classifications of welfare states

Korpi definition (2000)	Esping-Andersen definition (1990)	Level of public support services for carework	Level of monetary transfers to families	Countries
Dual-Earner	Social-Democratic	High	High	Denmark, Finland, Norway, Sweden
General Family Support	Conservative	Low	Moderate to high	Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain
Market-Oriented	Liberal	Low	Low	US, UK, Canada, Australia, Switzerland

Welfare State Policies

Parental leave policies have been studied as an important policy variable in comparative research. Ray et al. (2010) note that “parental leave” is often used as an umbrella term to refer to a variety of policies that permit men and women time away from work to care for infants. Maternity and paternity leave refer, respectively, to short-term, job-protected leave taken during the time of childbirth or adoption for mothers and fathers. Parental leave refers to *additional* short-term, job-protected leave given for parents of young children once the initial period of maternity or paternity leave has been used up (citation). Because prior literature focuses on mothers as the primary care workers, I consider maternity leave policies as especially important supports for breastfeeding because they provide women with an opportunity to breastfeed without worrying about how to combine it with employment.

All Western European countries offer paid maternity leave, although the duration and level of financial support varies widely (Ray et al. 2010; Ruhm 2000). The United States, by contrast, does not provide any national policies for paid maternity leave. The Family and Medical Leave Act (FMLA) passed in the United States in 1993, was the first national policy in the United States to provide job-protected maternity leave, but the leave is unpaid.

Maternity leave generosity, scope, and design all vary from country to country. In 1992, the EU enacted the Pregnant Workers Directive. The PWD mandated all mothers have at least 14 weeks of maternity leave. It was supplemented by the 1996 EU Parental Leave Directive which mandated all workers be given parental leave for at least three months (Ray et al. 2010). Paid maternity leave, one form of job-protected leave, provides mothers with a proportion of their pay during the time that they are away from work. The consequences on both gender equality and labor market outcomes of paid maternity leave are mixed. On one hand, paid maternity leave allows women to care for their children without fear of financial losses. However, extended paid maternity leave can put women at risk for more difficult reintegration back into paid work (Bergmann 2009; Ray et al. 2010; Ruhm 1998; Waldfogel 1997).

Empirical studies show a positive impact of maternity leave on breastfeeding. Ruhm (2000) found that time off from work increases child health outcomes, including breastfeeding. Roe et al. (1997) found that breastfeeding increases as postpartum job absence increases. Theoretically, this makes sense. Women who do not have to return to their job immediately after having a child have more time to initiate and continue breastfeeding.

Public childcare expenditures are another family policy that has an effect on both child health outcomes and female labor force participation. In a process that Esping-Andersen

describes as “de-familialization,” the welfare state can act to provide care for its children and thus reduce the burden of childcare on families (Esping-Andersen 1990; Stier et al. 2001). One way this happens is via heavy subsidies for childcare or state-sponsored childcare. Providing childcare can increase female labor force participation and promote gender equality. Women who have subsidies for childcare may be more likely to return to the labor market and avoid penalties associated with being out of the labor market for an extended period (Hank and Kreyenfeld 2003; Stier et al. 2001).

With respect to breastfeeding, public childcare expenditures have mixed effects. On one hand, countries with more generous welfare state policies demonstrate a greater investment in gender equality and children, so that greater expenditures for public daycare may facilitate better breastfeeding outcomes. On the other hand, however, public daycare encourages women to return to the labor force and employment can be a barrier to breastfeeding outcomes, so that daycare expenditures may actually negatively affect breastfeeding.

Paid parental leave is one form of monetary support for reproductive labor. Child tax credits and child allowances are two others. When families receive cash allowances, it compensates women for their role in child-rearing while keeping them out of the formal labor force (Gauthier 1996; Steir et al. 2001). In looking at Korpi’s welfare state classifications, countries that provide large cash allowances incentivize fertility, but may inadvertently use those payments to determine the criteria for social standing and validate women’s care work as the basis for their citizenship rights and positions, while men’s labor force participation still shapes their rights and positions in society.

Welfare State Theories and the Link to Breastfeeding

Examining Jane Lewis' theory of the "one and a half breadwinner" model that many of the countries in the Conservative welfare regime have shifted towards provides a useful framework through which to understand breastfeeding outcomes. In the Social Democratic welfare states, policies support a dual earner model where both men and women are full participants in the labor market. Women work full time, but are also provided with generous maternity leave, allowing them to both stay in the labor force, and also to engage in reproductive labor without financial penalty. These policy supports for both female productive labor and reproductive labor are conducive to breastfeeding outcomes, because women are provided paid time off work to do caregiving, but the burden of care is not placed solely on the woman's shoulders. In fact, care is mostly supported and distributed by heavily subsidized childcare, father-dedicated paternity leave, and financial incentives for supporting children. When women are treated as full members of the labor force, but given the time and space to focus on caregiving after the birth of a child, breastfeeding becomes a viable option and one that women can perform without feeling a double bind of either having to do all of the caring, or having to return to work immediately.

Many countries in the conservative welfare regime have shifted to a "one and a half breadwinner model" (Lewis 2002), where instead of a male breadwinner and a female caregiver, women increasingly work part time and are also responsible for the bulk of the carework. Although the countries in the conservative regime support women's reproductive labor by providing long maternity leaves and high levels of cash transfers to families, they do not have a high level of public support for carework, and so the caregiving falls to individual women within isolated nuclear families. In a male breadwinner system where only women are responsible for

caregiving, this may be conducive to breastfeeding. However, the reality in these countries is that women are increasingly having to work part-time to supplement the family income, but the burden of carework still rests solely on women's shoulders, and has not shifted to either the men or to the state. Because of the double bind that women in these countries face, breastfeeding rates are negatively affected. Breastfeeding is a time-consuming care activity, and women who are working part-time often are not able to access paid maternity leave the way that full-time workers can. While conservative countries support reproductive labor, women are not fully integrated in the labor market, which creates challenges for women who are responsible for both care and paid employment.

In the liberal welfare regime, policies support women's productive labor, and women are integrated into the labor market. However, these countries lack policies that support women's reproductive labor. For example, the United States provides no paid maternity leave for mothers, instead only offering 12 weeks of job-protected, unpaid leave. Australia also did not have paid maternity leave until 2011, when a paid parental leave plan was implemented. Countries in the liberal welfare regime also provide little in the way of state supports for care, instead leaving care up to the markets. This also places women in a double bind; women who cannot afford to take time off of work to provide care, including breastfeeding, for their infants, are constrained by the policies that favor productive labor.

2.4 Carework, The Welfare State, and Breastfeeding Outcomes

Conceptualizing breastfeeding as an indicator of welfare state generosity ignores the uniquely gendered component of breastfeeding work. Breastfeeding is better classified as a form of reproductive labor, thus theories of carework must be applied to any comprehensive comparative study of breastfeeding. Paula England (2002) defined carework as work that

provides services that help to develop people's capabilities. In paid labor, carework jobs include child care, teaching, and nursing. Carework also includes unpaid care labor, such as childrearing, housecleaning, and cooking. Much carework is unpaid, among which parenting is arguably the most time-intensive and gender-unequal (England 2005). In childrearing, women spend twice as much time as men performing parenting duties (England 2005, Sayer et al. 2004). Within this framework, breastfeeding represents a form of unpaid carework that is both time- and labor-intensive and uniquely female. This review of carework will focus on theories of carework in parenting and theories of carework in the welfare state, with the goal of understanding and framing breastfeeding as care.

Paula England (2005) developed five conceptualizations of paid and unpaid carework. This review will focus on the two most salient theories of carework and relate them to breastfeeding and the welfare state. One framework of conceptualizing carework looks at carework as a devalued good because it is traditionally associated as women's work and receives relatively poor rewards in society. The welfare state supports women in childrearing by providing cash transfers or benefits to women as child allowances, by offering heavily-subsidized childcare and health care for women and children, and by providing job-protected, paid maternity leave. A second theoretical framework in the carework literature recognizes carework as a public good. Economists frame public goods as a form of good or service that benefits everyone, even those who do not pay into the good (England 2005). Public goods benefit the greater population and society, above and beyond individuals contributing to their value. When it comes to breastfeeding, breastfed infants gain increased cognitive potential and health that will help them contribute to the future economy. Research has shown that breastfeeding can reduce types of childhood illnesses, including ear infections, gastrointestinal

disorders, and allergy-related illnesses (Dewey, Heinig and Nommsen-Rivers 1995; Evenhouse and Reilly 2005; Oddy et al. 2003; Scariati, Grummer-Strawn, and Fein 1997). Other studies found that babies who are breastfed show greater cognitive advances than those who were not (Evenhouse and Reilly 2005). Supporting breastfeeding as a public good in turn supports the public health outcomes of the community. Welfare state policies have the potential to contribute to the devaluation of reproductive labor, including breastfeeding, by failing to extend resources to families for the purpose of supporting care work, or to value women's reproductive labor by providing monetary support. They also can support breastfeeding as a public good with well-developed public health objectives and programs. Framing carework as a public good acknowledges a significant investment by caregivers in the well-being of both the recipients of their care and the wider society.

Countries in the Social Democratic welfare regime encourage breastfeeding through policies that support women's reproductive labor and recognize breastfeeding as a public good. These countries provide long leaves, subsidized childcare, and strong public health initiatives. These countries promote a dual earner model where women are full participants in the labor force, and they also promote men's involvement in childcare by providing parental leave specifically for fathers (Orloff 2008; Lewis 2009). Childcare is subsidized and provided by the state, demonstrating the value of care and signifying support for care as a public good. Thus, these countries value and support carework and productive labor for both women and men. By doing so, they also provide conditions that facilitate near-universal breastfeeding.

In contrast, countries in the conservative welfare regime have a history of placing the burden for carework on mothers within isolated family units. These countries developed policy based on the nuclear family, where the father is the breadwinner and the mother is responsible

for childrearing and care (Korpi 2000; Lewis 2002). Countries in the conservative welfare regime have low levels of public support for care, and have lagged behind when supporting international-level public health initiatives targeting breastfeeding (Korpi 2000; Lewis 2002, Cattaneo et al. 2005). Care is thus devalued as primarily women's unpaid labor, and also not supported as a public good.

The liberal welfare regime provides even less support for reproductive labor, which is devalued in relation to productive labor. Because the liberal welfare states support market-based interventions for care, the value placed on that care is very low because it is traditionally unpaid women's work. Extant research has shown that jobs that are female-dominated are paid less than male-dominated jobs, because the jobs are female-typed, and thus devalued in a traditional market economy (England 2005; England et al. 2002; Folbre 2006). The market-based welfare states also do not value care as a public good. Support for international public health initiatives is lagging in the market-based regimes, because these initiatives often clash with the goals of the free market economy. For example, the United States struggles to implement the Baby-Friendly Hospital Initiative because they the government does not place restrictions on free formula samples and marketing of formula by companies.

Research on the welfare state, and specifically welfare state changes, has primarily focused on the position of women vis-a-vis the labor force (Lewis 2002). Over the past several decades, policy research has increasingly focused on issues of the work-family balance, specifically how policy interventions can affect the balance. Lewis (2009) notes that policies can address either the work side or the family side of the equation. On the work side, policy interventions include flexible working patterns, leave for caring for family – including maternity leave – and mandatory breaks for breastfeeding or pumping. On the family side of the equation,

policies include childcare subsidies and tax breaks for children. Lewis (2009) further argues that inherent in these policies to address the work-family balance has been the assumption of reconciliation of work and family. However, even as these policies are increasing across many high-income countries, they fail to acknowledge that women are still doing most of the carework at home at the same time as they are increasing their presence in the labor force. Scandinavian countries have attempted to tailor some of their policies towards explicitly addressing this inherent gendered inequality. For example, in Norway and Sweden, fathers have designated paid paternity leave that is only available to them. If they do not use the leave, they cannot transfer it to the mother. This policy is designed to shift some of the burden of carework and housework onto the father, thus increasing gender equality in the care sphere (Lammi-Taskula year). Breastfeeding is an important and unique aspect of care, however, that does not neatly fit into attempts to equalize care. Because breastfeeding is female-specific, and can only be done by women, even policies to address gender inequality in the care arena may not directly affect breastfeeding. In fact, Orloff (2008) argues that the gender-equality policies may actually be detrimental to women, because they ignore the biological and bodily attachment women have towards caregiving, namely pregnancy and breastfeeding. Instead, Orloff favors policies that enable women's choice and agency, rather than constrain or force a universal goal on all women in balancing work and family. In this analysis, however, providing fathers with leave (whether mandatory or optional) signals a commitment to women's productive labor; women are able to take the leave that they need for caregiving purposes, but then re-enter the labor force and allow the father to perform some of the caregiving.

Continuing the discussion of leave and its signifier as support for families, Kalwij (2010) finds that more generous maternal and paternal leave policies have a positive impact on fertility

in Western European countries because these policies reduce the opportunity cost of having children. They similarly reduce the opportunity cost of extended breastfeeding. Scandinavian countries, in particular, have high fertility rates compared to the rest of Western Europe, and the Scandinavian family policies encourage both fertility and labor force participation. These policies invest in, and therefore value, carework as a social good. Thus, I propose that more generous national family policies will reduce the opportunity cost of breastfeeding, and thus encourage both higher rates and longer duration of breastfeeding (Kalwij 2010).

2.5. The Case of Fertility

In this section, I discuss how policy and health initiatives worked in tandem to increase fertility rates in Europe. Researchers have extensively studied the role of welfare state policies with respect to their impact on fertility. Rovny (2011) performed a time-series analysis studying the effects of family policies and employment protection policies on fertility in 17 OECD countries. She found that more generous work and family policies, including subsidies for public daycare and paid maternal and paternal leave, have a significant positive effect on fertility (Rovny 2011). Gauthier (2007) provided a meta-analysis of the literature linking welfare state policies to demographic outcomes, including fertility, and proposed a mechanism by which the policies link to fertility outcomes. She finds that policies that affect fertility can operate through one of three channels: the policy reduces the cost of having children, the policy increases family income, or the policy increases the preference for children (Gauthier 2007). Examining breastfeeding as an outcome similar to fertility provides an appealing comparison. While breastfeeding is not a demographic characteristic, it does require time and energy, and is clearly related to the decision to have children. Using fertility as a case study provides a

foundation for understanding the ways in which family policies and public health initiatives can have a similar effect on breastfeeding outcomes.

For women, being in the labor force full time and caring for children are largely incompatible, so that women's labor force participation drives most changes in fertility behavior (Brewster and Rindfuss 2000). Accordingly, policies that target families and attempt to ease this incompatibility can increase fertility. It is child-rearing, not necessarily child-bearing, that creates the largest incompatibility between fertility and the labor force. Considering breastfeeding as a form of child-rearing can enhance the understanding of the conflict. While countries with higher female labor force participation rates also tend to have higher fertility rates, female labor force participation has been increasing in almost all countries but not all countries have experienced an increase in fertility (Brewster and Rindfuss 2000). For example, in the United States and Sweden, fertility remained steady even while more women entered the labor market. In Ireland and Spain, however, fertility rates dropped substantially when female labor force participation rose. The evidence shows that women in the former countries have found ways to combine work and child-rearing, while women in the latter countries have not. One could make a similar argument about combining labor force participation and breastfeeding. Note that Ireland, with the lowest breastfeeding rate in the Western world, also has experienced declining fertility. In Chapter 4 of this dissertation, I examine how the policy issues affecting fertility have similar effects on breastfeeding.

While generous family policies can have a positive impact on both fertility and female labor force participation in countries like Sweden, these policies are not a necessary condition for increasing both measures (Brewster and Rindfuss 2000). During the same period that Sweden instituted a variety of generous family policies, the United States also saw both fertility and

female labor force participation increase without enacting any broad-scale family policy (Brewster and Rindfuss 2000; Waldfogel 1999). This suggests that while family policies can have an impact on fertility rates, there can be other forces at play. In looking at different national contexts with respect to breastfeeding, I will paint a broader picture on the variety of policies and cultural assumptions that shape breastfeeding outcomes.

Gauthier (2007) examines the rational choice hypothesis with respect to family policies and fertility. Some sociologists and economists have suggested that the decision to have and rear children is a rational choice, and with any rational choice comes opportunity costs. Family policies, then, act as a means to lower the opportunity cost of having and rearing children. The rational choice hypothesis, however, has mixed support in the literature (Becker 1996; Becker and Murphy 2000; Gauthier 2007; Goldthorpe 2000).

2.6. Public Health Explanations

Welfare state policies provide a useful lens with which to examine breastfeeding outcomes. However, they are not the only predictive factor. Public health policies, including the application of international-level initiatives, have an important role in breastfeeding outcomes. More specifically, the ways in which individual countries have adopted policy recommendations from the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) affect the public health climate which either supports or discourages breastfeeding. These policy recommendations, however, do not operate independently from overall welfare state regimes or family policies. In fact, the degree to which welfare states acknowledge the value of care as a social good, and support that care, directly influences the degree to which externally-developed

public health recommendations are implemented. For example, in the United States, with a market-based welfare regime, there is very little adherence to the WHO's International Code of Marketing of Breast-Milk Substitutes. The United States government has little desire to regulate advertising and marketing of infant formula.

In this dissertation, I examine the ways that WHO/UNICEF initiatives have been adopted in the 18 analysis countries, as well as the ways in which lay groups devoted to breastfeeding operate. In my 18-country analysis, I examine the effects of the Baby-Friendly Hospital Initiative, Cesarean section rate, and public spending on health care on breastfeeding initiation and duration. In my small-n, comparative analysis, I expand on public health explanations by including a discussion of lay groups and their influences on breastfeeding outcomes, adherence to the Innocenti Declaration, and social and cultural norms.

2.6.1 Baby-Friendly Hospital Initiative

The Baby-Friendly Hospital Initiative is part of the four-part Innocenti Declaration. Myriad research has shown that the Baby-Friendly Hospital Initiative has a significant, positive effect on breastfeeding initiation. For example, Braun et al. (2003) studied pre- and post- BFHI breastfeeding outcomes at a hospital in Brazil that implemented the Baby-Friendly Hospital Initiative. They found that breastfeeding initiation and the duration of exclusive breastfeeding were both greater in the cohort of women who gave birth in the hospital after its transformation to Baby-Friendly. They also found that low-income women had the greatest increase in both initiation and duration after the implementation of the BFHI (Braun et al. 2003).

Similarly, Merten, Dratva, and Ackermann-Lebrich (2005) studied breastfeeding duration among mothers who gave birth in both Baby-Friendly hospitals and non-Baby-Friendly hospitals

in Switzerland in 1994 and 2003. They found that breastfeeding duration has been increasing overall, but women who gave birth at Baby-Friendly hospitals experienced greater gains in breastfeeding duration than those who did not. In Norway, many hospitals were transitioning to the WHO's recommended "Ten Steps to Health Breastfeeding" even before the Baby-Friendly Hospital Initiative was developed. Endresen and Helsing (1995) found that Norway's hospitals and maternity wards were overwhelmingly following the Ten Steps as early as 1991. In fact, breastfeeding at 12 weeks in Norway was greater than 80% in 1991, compared to only 30% in 1968. Endresen and Helsing found that in 1973, only 3% of women reported being able to feed their infant on demand, compared to 80% in 1991. They also found that in 1973, 58% of mothers spent five hours or fewer with their infants during the day, but by 1991, no women were spending as few as five hours with their infants. In fact, in 1991, 30% of mothers spent between 16.5 and 24 hours with their infants (Endresen and Helsing 1995).

2.6.2. Cesarean Section Rates

Cesarean section rates are higher than the WHO recommended rate of 15% of births in much of the Western world. In the United States, Cesarean rates were at about 5% of births in 1970, but by the 2012, the rate was at 35% of births (Porreco and Thorp 1996; CDC 2014). Cesarean rates have been increasing for a variety of reasons, including an increase in maternal age, more multiple births, and better technology enabling high-risk babies to be born prematurely (Porreco and Thorp 1996). However, some of the increase in Cesarean sections has been due to the increasing medicalization of childbirth, which allows physicians and women to elect this type of delivery (Beckett 2005). Cesarean delivery is major abdominal surgery and carries a

substantial amount of medical risk, including the risks of anesthesia, infection, and other life-threatening complications (Porreco and Thorp 1996).

Cesarean deliveries also have an effect on breastfeeding outcomes for women. For example, a study of Australian hospitals and maternity wards found that Cesarean delivery significantly delayed the time of initiation of first breastfeeding and of first skin-to-skin contact, which is a barrier to implementing Step 4 of the Ten Steps to Healthy Breastfeeding (Rowe-Murray and Fisher 2002). DiGiolamo et al. (2001) found that late breastfeeding initiation in hospitals is a strong predictor of early breastfeeding cessation. Because Cesarean delivery is associated with a longer delay in initiation of first breastfeeding, the rising Cesarean section rate is a public health-level variable that has significant implications in breastfeeding outcomes.

2.6.3. The International Code of Marketing of Breast-Milk Substitutes

In 1981, the 34rd annual World Health Assembly, conducted by the World Health Organization, enacted the International Code of Marketing of Breast-milk Substitutes (the Code). As part of the Code, member states of the World Health Assembly were encouraged to enact laws that regulated the marketing of infant formula and breast-milk substitutes. The Code aims to “contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of breast-milk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution” (International Code of Marketing of Breast-milk Substitutes, 1981).

The implementation of the Code is related to the specific valuation of breastfeeding as a public good. By limiting the power of formula companies to advertise and provide free samples of formula, breastfeeding is supported and valued. However, countries differ with respect to the

level of valuation placed on breastfeeding with respect to the Code. Countries with a high value on market-based policies, especially the United States, do not limit the power of these companies to market and provide samples. Conversely, many Scandinavian countries, specifically Sweden and Norway, have instituted strict limits on advertising and marketing of formula, and have complied with the Code, even making many provisions law.

The Code is completely voluntary, which limits its power, especially among countries with a laissez-faire attitude towards business and free-market economics. However, the specific WHO recommendations are that governments insure that information that is disseminated to pregnant women recognize the “superiority of breastfeeding” and that “donations of informational or educational equipment or materials by manufacturers or distributors should be made only at the request and with the written approval of the appropriate government authority or within guidelines given by governments for this purpose” (International Code of Marketing of Breast-milk Substitutes, 1981). Many countries, including the United States, do not uphold the limits of donating of supplies, education, or equipment from formula manufacturers.

2.7 Hypotheses and Conclusion

In this chapter, I discussed the history of changing breastfeeding rates among high-income, Western countries and the interventions designed to increase those outcomes. I then turned to a discussion of welfare state typologies and their relationship to fertility, gendered norms, and breastfeeding outcomes. I focused on policies that promote both female productive and reproductive labor, including maternity leave entitlements, and public spending on family benefits. I then expanded on the productive/reproductive labor divide by discussing theories of carework and how welfare state policies are supportive (or not) of carework such as

breastfeeding. I turned to welfare state explanations for fertility variation, providing a useful comparison to breastfeeding outcomes.

I then examine the public health explanations for breastfeeding variation. The WHO/UNICEF joint policies have increased breastfeeding outcomes worldwide, but there has been significant variation in how much breastfeeding has increased from country to country. The Baby-Friendly Hospital Initiative has had success in raising both breastfeeding initiation and duration in the years since it has been introduced. However, high Cesarean rates are a barrier to some of the Ten Steps to Healthy Breastfeeding, and may lead to early cessation of breastfeeding.

The previous review of literature has shaped my hypotheses:

- Policies that lower opportunity costs associated with breastfeeding, facilitate choice, and frame breastfeeding as a public good will increase *breastfeeding duration*
- Public health initiatives will increase *breastfeeding initiation*

In subsequent chapters, I will review both welfare state explanations and public health explanations for breastfeeding variation using a combination of multiple regression and Qualitative Comparative Analysis. I then examine policies in detail, including the effects of some policies on the efficacy of others using a small-n comparative analysis.

Chapter 3 – Description of Data, Variables, and Methods

3.1 Introduction

In this chapter, I discuss the data that I use in both phases of my analysis, describe the benefits of a mixed modeling approach, and detail the statistical analyses I employ. I begin by describing the 18 countries that I use for the first phase of the analysis, the multiple regression and Qualitative Comparative Analysis (QCA) models. I describe in detail the procedure for collecting the secondary data set, the predictor variables and outcome variables, and the challenges associated with gathering comparable breastfeeding data across countries. I then turn to a detailed discussion of calibration of fuzzy set scores for each of the predictor variables for use in the QCA models, as well as a justification for using QCA analysis for this particular dataset. I then turn to a discussion of the characteristics of the six countries I have selected for the second analytical phase, the small-n case analysis, including overarching policy regimes and welfare state policies. I describe the procedures used to complete the small-n analysis and the rationale for using this method.

3.2 Phase I Country Selection

Phase I of my analysis examines the policy-level and public health initiatives in eighteen high-income, OECD countries. The country selection is based on prior research and the availability of comparable breastfeeding data. In keeping with similar studies of breastfeeding, child health outcomes, and maternity leave (see Baker and Milligan 2008, Ruhm 2000) I selected only high-income, OECD countries to minimize variation in other influences on breastfeeding rates, including cost of formula, availability of clean water, and access to commercial formula.

The country selection was also driven by research by Cattaneo et al (2005, 2009), who were among the first to perform a comprehensive study of breastfeeding outcomes and adherence to World Health Organization initiatives to increase breastfeeding rate. In surveying the situation in Europe, Cattaneo and his colleagues found that “it is definitely difficult to understand why initiation and duration of breast-feeding vary so much, and more comparative research is needed” (2005).

The eighteen countries in my analysis represent a wide range of geography, economy, and culture, but are all members of the Organization for Economic Co-operation and Development (OECD), a global organization made up of 34 member-states dedicated to “promote policies that will improve the economic and social well-being of people around the world” (OECD 2014). The OECD member countries represent higher-income nations, most with a high Human Development Index (HDI) (United Nations Development Program 2012). In limiting my country selection to economically similarly-situated countries, I eliminate some potential sources of variation.

3.3 Variable Descriptions

Outcome Variable Specifications

For the first phase of my analysis, using both OLS regression and Qualitative Comparative Analysis (QCA), I have two main outcome variable specifications.

Breastfeeding initiation refers to the percentage of women who ever breastfed, even just once. Most countries collect data on breastfeeding initiation, even if they use different data collection procedures. Some countries survey women upon leaving the hospital or birthing center about whether they breastfed their infant at all, while others, notably Canada and Portugal, rely

on recall information. Breastfeeding initiation stands up to issues of recall memory better than measures of breastfeeding duration, because it is easier for a mother to recall if she ever breastfed than to remember how long she breastfed.

Breastfeeding duration is the second outcome variable in my analysis. I have operationalized it as “percentage of women breastfeeding exclusively at three months.” This definition falls in line with many of the national-level breastfeeding surveys that I used to compile the secondary data set. Breastfeeding duration data is collected in two forms – exclusive breastfeeding and any breastfeeding. Exclusive breastfeeding is defined by the World Health Organization as “no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse)” (WHO 2013). Any breastfeeding means that the infant is still fed breastmilk, but not necessarily exclusively. The designation is important because exclusive breastfeeding for six months is the feeding recommendation from the WHO (WHO 2013). However, any breastfeeding is still beneficial for infants and the WHO recommends that mothers should breastfeed when possible if they cannot exclusively breastfeed (WHO 2013). “Any breastfeeding” data is not collected as regularly or as widely as exclusive breastfeeding data, so I used exclusive breastfeeding as a measure of duration in order to ensure comparability of data.

In 2009, the OECD compiled rates of breastfeeding initiation and duration as part of its family database. Data were compiled from national-level surveys from each individual country. The following table displays the data source and year that the breastfeeding data were taken from:

[Table 3.1 about here]

One notable omission in this dataset is Germany. In the past 50 years, the only national-level survey of breastfeeding practices was the SuSe study in 1997-1998 (Kersting and Dulon 2002). Germany does have a national breastfeeding committee which was developed in 1994, and is now part of the Bundesinstitut für Risikobewertung, or Federal Institute for Risk Assessment (http://www.bfr.bund.de/en/national_breastfeeding_committee-742.html 2014). In 2005, the Risk Assessment Institute commissioned a study of breastfeeding rates in the German state of Bavaria. While the results are not nationally-representative, they show that 90% of women in Bavaria initiated breastfeeding and 41.7% were exclusively breastfeeding at 4 months (Kohlhuber et al. 2008). This is similar to the findings in the SuSe study of 1997-1998, where breastfeeding initiation was at 91% (Kohlhuber et al. 2008, Kersting and Dulon 2002). However, because of the dearth of available and recent national-level breastfeeding data, I omit Germany from the analysis. There is simply not enough data to support comparative analysis with the other OECD countries.

Table 3.2 and Figures 3.1 and 3.2 display the breastfeeding initiation and duration rates for each of the countries in the analysis. As Table 3.2 and Figure 3.1 illustrate, breastfeeding initiation rates are very high (>90%) in the Scandinavian countries, Austria, Portugal, and Japan. Table 3.1 and Figure 3.2 also reveal that breastfeeding duration rates are much lower, and are very low in France, Italy, and especially the United Kingdom.

[Table 3.2 here]

[Figure 3.1 here]

[Figure 3.2 here]

The following Figure 3.3 displays a visual depiction of the initiation and duration rates for each country. The space shows the countries with low initiation on the bottom and low duration on the left side. Countries that fall into the top right quadrant of the graph are countries with both high initiation and high duration. These include Sweden, Norway, Australia, Austria, New Zealand, Portugal and Finland. The countries in the lower left quadrant are those with both low initiation and low duration. France and Ireland fall into this group. The UK is a notable outlier. The UK falls about in the middle with breastfeeding initiation, but has an extremely low percentage of women still exclusively breastfeeding at three months.

[Figure 3.3 here]

Predictor Variable Specifications

I have separated the variables into three main categories: labor market indicators, public health variables, and control variables. I have nine total independent variables in my analysis, and I explain them below:

Labor Market Indicators

The first variable I examine is *Weeks Full-time Equivalent Paid Maternity Leave*. Maternity leave policies vary in both scope and breadth across the countries in the analysis. Broadly speaking, many countries have “parental leave” policies that can be either maternal leave, specifically to be taken by the mother, paternal leave, specifically to be taken by the father, or parental leave, which can be taken by either the mother or the father (Ray et. al. 2008). Maternity leave generosity is measured in two ways: the amount of time mothers can take from work without fear of losing their job, and the amount of compensation that women receive as a portion of their salary while they are taking leave. Most countries offer both: job-protected leave

that is paid at a portion of the salary. One notable exception is the United States, which provides job-protected leave only (Ray 2008). Maternity leave is an important predictor of breastfeeding outcomes cross-nationally because mothers in countries with generous maternity leave policies may have more opportunity to spend time at home with their infants, thus reducing the opportunity costs and any financial penalty associated with breastfeeding (Baker and Milligan 2008; Galtry 2002; Haider, Jacknowitz and Schoeni 2003; Visness and Kennedy 1997). I follow Ray (2008) and Ray, Gornick, and Schmitt (2010) and operationalize maternity leave as the number of weeks of full-time equivalent paid leave. The number of weeks of full-time equivalent (FTE) leave is calculated by multiplying the wage replacement rate by the number of weeks of job-protected leave. For example, if a country provides women with 50 weeks of leave, paid at 50% of her salary, the number of weeks FTE maternity leave would be 25.

Next, I include a measure of *female part-time employment rate*. This rate is calculated as the percentage of employed women between the ages of 15 and 64 who are working part-time. Part-time has different meanings in different countries, but I used the International Labour Organization definition of less than 30 hours per week (ILO 2014). Examining the female part-time employment rate will help me to operationalize a key part of my theory – that women in the one and a half breadwinner welfare regime are pinched at both ends. They are not full participants in the labor market, which would entitle them to generous maternity leave, but they do work, and they are also expected to do the bulk of the carework at home, which limits the time and energy that they have available to breastfeed. Female part-time employment rate and female full-time employment rate are collinear; because they measure the percentage of working women, full-time employment rate is simply $100 - (\text{part-time rate})$. As such, I only used one measure to examine female employment.

Finally, I examine *public spending on family benefits*, operationalized as a percentage of the country's overall GDP. As part of a welfare state model, many countries provide families with various subsidized services or cash transfers (OECD 2012). Subsidized services include low-cost childcare, provisions for needy families, and early childhood education (OECD 2012). Specifically in this analysis, "family benefits" are divided into three categories:

(1) Child-related cash transfers to families with children, including cash allowances for having children, public income payments during maternity and paternity leave, and income support for single parent families (OECD 2009)

(2) Public spending on services for families with children, including financing and subsidizing childcare and early childhood education, public spending for residential facilities, and spending on family services such as home care for needy families (OECD 2009).

(3) Tax breaks for families, which include tax exemptions, child tax allowances deducted from gross income, and child tax credits (OECD 2009).

These policies benefit families economically by encouraging female labor-force participation while providing the financial tools necessary to care for children. At first glance, it may seem like subsidized services like daycare would be negatively associated with breastfeeding, because children would be at daycare while the mother would be at work. However, in conjunction with generous maternity leave policies, generous public expenditures for daycare may instead be indicative of a family-centered policy approach. In addition to providing public expenditures for daycare, public spending for family benefits include cash transfers and tax breaks for families with children. If countries provide the policy structures in

place to assist families and children, I hypothesize that breastfeeding, a mother and infant centered activity, would also benefit from these supports.

Table 3.3 below displays the distribution of this variable, broken down by particular category, for each of the countries in my analysis.

[table here]

Countries vary with respect to the type and amount of spending on family benefits, even within the same general welfare typology. For example, in the market-based welfare regime, the United States allocates more of its benefits via services and tax breaks, but Canada and the UK, both classified under the same welfare regime, allocate very little in the form of tax breaks compared to cash and services. In addition, the United States spends the least amount of its GDP on family benefits, at 1.22%, while the UK spends 4.22%, the second most of any country in this analysis. Countries in the Scandinavian regime tend to allocate most of their benefits in the form of services, with very little (or none at all) in the form of tax breaks.

Public Health Variables

I also examine three public-health level variables in the multiple regression and fsQCA models. The first variable is *Percentage of Baby-Friendly Hospitals*. This variable is operationalized as the percentage of hospitals with maternity wards that are certified as meeting the WHO/UNICEF criteria for baby-friendly, meaning they follow the Ten Steps to Healthy Breastfeeding. The Baby-Friendly Hospital Initiative has shown success in increasing breastfeeding initiation rates at the individual and institutional level, and it is one of the more widespread public health programs targeting breastfeeding internationally.

The second variable under this subheading is *Cesarean Section Rate*. This variable is operationalized as the percentage of women delivering via Cesarean section, whether planned or unplanned. Cesarean section rate is rising among high-income countries, and is contraindicated to several of the Ten Steps to Healthy Breastfeeding. For example, women who give birth via Cesarean section often will not have initial skin-to-skin contact with their infant until after the recommended one hour time period (Rowe-Murray and Fisher 2002). DiGirolamo, et al. (2001) found that late initiation of breastfeeding in the hospital setting is associated with decreased breastfeeding duration. The rise of Cesarean sections and the associated consequences of late breastfeeding initiation require the addition of Cesarean section rate as a predictor variable.

The final variable under the public health subcategory is *Public Spending on Healthcare*. This variable is operationalized as the “sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health” (World Bank 2014). Health care spending is often separated from the greater welfare state because spending on health care often does not mirror spending on other programs within welfare state regimes (Moran 2000). For example, the United States, part of the liberal welfare regime, spends more money on health care than any of the other countries in my analysis (Moran 2000, World Bank 2014). Much of the variation in health care spending stems from the ways in which health care is administered in each country. For example, the United States spends considerably more per capita than any other country in this analysis, but much of that spending is due to the fragmented ways in which health care is delivered, coupled with high administrative costs (Reinhardt et al. 2004). Canada is also following this same path; health care spending per capita has been increasing rapidly in Canada compared to other OECD countries, for much of the same reasons. The United States also differs

from most other OECD countries in public vs. private health care funding sources; in most OECD countries, public sources cover the vast majority of the population. For instance, Norway covers their entire population using public funding. In the United States, however, private insurance accounted for 45.1% of the health care revenues in 2005 compared to 41.8% of revenues supplied by public insurance (Anderson and Frogner 2008). Health policy researchers (for example, Anderson and Frogner 2008, Reinhardt et al. 2004) suggest that the United States has such high health care costs because they pay more for the same medical services than other countries, thus decreasing value per dollar spent. Health spending includes spending on maternity care and post-natal care, but the relationship between dollars spent and breastfeeding outcomes remains unclear.

Control Variables

I control for several variables in my analysis. The first variable is *Fertility Rate*, operationalized as “the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates” (World Bank 2014). Previous research examining welfare state policies and child health outcomes have controlled for fertility rate (Baker and Milligan 2008, Ruhm 2000). Ruhm (2000) has suggested that controlling for fertility rate allows the researcher to look at economies of scale; that is, cost advantages that are provided when more of the product is produced.

I also control for *Percentage of Women in Parliament*. This variable is operationalized as simply the percentage of women in either the parliament or the upper house of a bicameral system during the given year. Kittilson (2008) and others (see Paxton, Kunovich and Hughes

2007 and Wangnerud 2009) find that women in governmental positions tend to drive votes on issues such as maternity leave, welfare reform, and other women-specific legislation.

3.4. Descriptive Statistics

Table 3.4 provides descriptive statistics for the predictor variables in my multiple regression analysis. As Table 3.4 reveals, the average maternity leave provision provide 19.5 weeks of FTE leave. Maternity leave varies from a low of zero paid weeks in both Australia and the United States to a high of 40 FTE weeks in Sweden and 38 FTE weeks in Norway. Many of the Scandinavian countries have high amounts of paid maternity leave, and many of the liberal welfare states have relatively low amounts of leave. Canada is a relative outlier compared to other market-based welfare state with 28.6 weeks of FTE leave. All countries with the exception of the United States and Australia provide women with a minimum of three months full-time equivalent maternity leave. It is important to note that these data are from 2008 or earlier. In January, 2011, Australia implemented a Paid Parental Leave (PPL) provision that provides women up to 18 weeks of paid leave (Dreyfus 2013). However, because the available comparable breastfeeding data are from 2005, I have measured maternity leave in Australia using the policy that was in place in 2005.

[Table 3.4 here]

Spending on family benefits averages 2.85% of GDP. The United States, for example, only spends about 1.22% of its GDP on family benefits, most of which are in the form of tax breaks. By contrast, Ireland spends 4.24% of its GDP on family benefits, the majority being cash allowances.

The implementation of the Baby-Friendly Hospital Initiative varies substantially among the countries in my analysis. Many countries have very low participation in the initiative. However, both Sweden and Norway were early adopters of the initiative, with 97% and 60%, respectively, of their hospitals certified as Baby-Friendly in 2005. Here the variation is distributed more or less along broad welfare typologies. The countries in the conservative and Mediterranean welfare regimes do not participate in the initiative, while the Scandinavian countries are leading the way. There is also a clear bimodal distribution: countries tend to have either no or very little participation, or they have almost full participation.

Cesarean section rates show the high trend compared with other similarly-situated, industrialized countries. The World Health Organization recommends that Cesarean section rate be no higher than 15% (source), but the average rate in my analysis countries is 23.2%. The Netherlands has the lowest Cesarean section rate at 13.5%, while Italy has the highest at 38.2%.

Health spending, as a percent of the GDP, is at an average of 9.62%. The United States tops this category with 15.8% of the GDP spent on healthcare. By contrast, Ireland spends only 7.6% of its GDP on healthcare.

In terms of control variables, fertility varies very little across these developed nations. Several countries have rates near 1.3 births/women – Japan, Italy and Spain. The United States has the highest fertility rate of my analysis countries at 2.1 births per woman. The average fertility rate is 1.69. Percentage of women in parliament varies from a high of 45.3% in Sweden to a low of 7.1% in Japan. The average percentage of women in parliament is 26.4%.

3.5 QCA Model Specifications

Fuzzy-Set Qualitative Comparative Analysis (fsQCA)

Qualitative Comparative Analysis (QCA) is a method developed by Charles Ragin that provides an analytic tool to bridge the gap between case-oriented and variable-oriented research (Ragin 2000). Case-oriented research involves in-depth small-n studies where many aspects of an individual case are examined and individual cases are compared and contrasted. Variable-oriented research falls on the other end of the spectrum, and is most common in survey-type research, where researchers examine one or two dependent variables and attempt to explain as much variation as possible using large datasets (Ragin 2000). QCA seeks to “examine similarities and differences across many cases while preserving the integrity of cases as complex configurations (Ragin 2000: 38). QCA uses the logic of set relations to address causal complexity and causal configurations in comparative research. Causal complexity is often present in social research – this means that outcomes do not arise from a single source, or cause, but rather by a combination of conditions that operate with each other to produce the outcome. In large, variable-oriented analysis, this type of complexity can be approximated by using interaction terms, but interaction terms fail to capture any nuance. That is, interaction terms assume the interaction is multiplicative, when in reality, two causes just may need to be present together, in any form, to produce the outcome (Ragin 2000, Epstein et al. 2006).

The basis of QCA stems from Boolean algebra and truth table analysis. The researcher identifies the outcome, and then identifies a number of causally relevant conditions. The truth table analysis, then, puts together all possible combinations of the causal conditions, called “configurations.” There are 2^k total possible causal configurations, with k being the number of

causal conditions (Ragin 2000). The truth table analysis performed in QCA then identifies the cases that conform to each of the causal conditions. This allows the researcher to examine causal complexity in determining which causal configurations produce the outcome.

Necessity and sufficiency are two terms that are important in a QCA analysis. A necessary condition is one in which the causal condition is present in all instances of the outcome. A sufficient condition is one that, when present, always leads to the outcome; that is, it is sufficient on its own to produce the outcome, but doesn't necessarily have to be present in all instances of the outcome (Ragin 2000).

Once necessity and sufficiency are determined, the QCA researcher can identify the results, keeping in mind simplifying assumptions. Simplifying assumptions take advantage of the fact that there is limited diversity in causal configurations, meaning that some of the logically possible configurations actually don't exist in the data (Ragin 2000). The pathways that remain after the simplifying assumptions are taken into account then form the basis of the explanations of causal complexity. These pathways are best explained in set-theoretic logic, for example, high membership in a set of one causal condition combined with low membership in the set of a second causal condition may lead to an outcome. In the following section, I discuss the concept of high vs. low membership in a set with a discussion of fuzzy sets.

Calibration of Fuzzy Sets

In a fuzzy-set QCA analysis, membership of cases in the fuzzy set specification are calibrated by the researcher. Fuzzy sets represent a fine-grained degree of membership in the set, and fuzzy set scores for each case range from 0 to 1. Calibration is based on theoretical considerations, prior research, and conceptualization of membership in the set. A fuzzy set score

of 0.05 is full non-membership in the set, a score of 0.5 is the crossover point, and a score of 0.95 is full membership in the set. It is important to note that fuzzy sets are not simply turning a variable into a continuous variable – they are instead used to determine degree of membership in a set, and the construction of fuzzy sets is based on theory and prior research (Ragin 2000).

Fuzzy Set Scores in this Analysis

For this analysis, I have developed fuzzy sets representing degree of membership that each case is in both the outcomes and in the causal condition. I have used theoretical knowledge to assign the degree of membership to the sets. I also have avoided simply comparing one country to another and attempting to make a continuous variable; cases that have high membership the outcome of breastfeeding initiation, for example, are those that consistently meet the WHO recommendations, rather than simply the countries in the top third of initiation. The following table displays the variables, the criteria for full membership, the crossover, and full non-membership in the fuzzy sets.

[Table about here]

The following tables display the fuzzy set scores for each of the variables in the dataset, sorted by policy explanations, public health explanations, and controls:

[Table about here]

Phase II: Small-n Comparative Analysis

3.6. Small-n Case Analysis – An Introduction

Phase two of the analysis focuses on six high-income, OECD countries with varying rates of breastfeeding initiation and duration. Each of the six countries in my analysis can be viewed as a distinct case. Andrew Abbott (1992) argues that we can think of sociological processes as cases going through plots (pg. 66). Abbott says that outcomes occur not on their own or because of a few independent factors, but because of “constellations of factors” (pg. 68). In studying breastfeeding outcomes, each country has its own particular constellation of factors involved in the current state of breastfeeding. Small-n analysis also allows me to examine necessary and sufficient conditions for each case, and then identify if any of the necessary and sufficient conditions are present across cases.

Lars Mjoset (2009) examines case study analysis as a type of contextualizing process. The results of case study analysis are not necessarily generalizable to a broad population, but certainly can “feed back into more general knowledge,” providing “denser and broader typologies, concepts and models of contextualized social interaction patterns” (Mjoset pg 53). Case study analysis also has value in tracing historical processes and uncovering mechanisms behind change. In examining changes in breastfeeding rates over time – specifically addressing what processes lead to some countries greatly increasing breastfeeding outcomes, while other countries have lagged behind, this analysis allows me to uncover processes leading to different levels of breastfeeding practice across nations. What are the pathways to high, medium, and low breastfeeding rates, and how did that change occur within countries?

My selection of six countries follows the work of Galtry (2003), who examined breastfeeding outcomes in Sweden, the United States, and Ireland. The three countries Galtry studied have vastly different rates of both breastfeeding initiation and duration; I have elected to study these three countries and include three more countries with similar breastfeeding outcomes from within the same welfare regimes as the three countries Galtry used.

Ireland has one of the lowest rates of breastfeeding of any high-income, OECD country (Ireland Ministry of Health and Children 2005; OECD 2012). With an initiation rate of 54.1% in 2010, Ireland falls well below the WHO recommendations that every infant be exclusively breastfed for six months, and it falls below Ireland's own breastfeeding goals (Ireland Health Research and Information Division 2012). For the purposes of this dissertation, "breastfeeding initiation" refers to any breastfeeding: if the mother ever breastfed, even just once, that is counted into the percent breastfeeding initiation. In order to add validity to the study of countries with low breastfeeding rates and ensure that Ireland is not an outlier, I have selected France as an additional country with low breastfeeding rates to study. France has a breastfeeding initiation rate of 68.7% in 2010, which is the second-lowest rate of all high-income OECD countries (Blondel et al. 2012). I have selected Ireland and France as case studies for low breastfeeding rates in the small-n case-oriented phase of my analysis.

Galtry chose the United States to study in her 2003 article. The United States had a breastfeeding initiation rate of 76.9% in 2009, which is slightly lower than the median breastfeeding rate for high-income, OECD countries (CDC 2012). In addition to the United States, I have selected Canada as another case study. In 2009, Canada's breastfeeding initiation rate was 87.9% (Statistics Canada 2010). Canada makes a useful comparison to the United States

because although there are cultural similarities between the United States and Canada, they have very different structural and governmental policies (Kaufman 2009).

Finally, Galtry studied breastfeeding in Sweden; Sweden had a breastfeeding initiation rate of 97.8% in 2007 (Gotvall 2011). Similarly, Norway had a breastfeeding initiation rate of 99% in 2008. Sweden and Norway have the highest breastfeeding initiation rates in the world (OECD 2012). Norway and Sweden provide the final two countries for the small-n, case oriented analysis in this dissertation. Examining the context behind two countries in each strata of breastfeeding outcomes will provide a richer analysis.

3.6.1 Addressing Selection on the Dependent Variable

King, Keohane, and Verba caution against selection of cases for study on the dependent variable, noting that if we need more cases to study, we can select on the explanatory variable with no consequence to validity. However, King, Keohane, and Verba do acknowledge that selection of cases along a *range* of values on the dependent variable may be useful for preliminary causal analysis, as long as these cases are not selected in such a way that purposely supports the hypothesis of the author. Winship and Mare (1992) note that sampling on the dependent variable can lead to sample selection bias, where the researcher does not observe a random sample of a population of interest. However, Winship and Mare also note that most research in the social sciences is prone to sample selection bias in one form or another. Sample selection bias will threaten both internal and external validity, as Richard Berk (1983) showed in his analysis of sample selection bias, and is a real concern to think about when doing research. Geddes (1990) also notes that sample selection bias, as a result of sampling on the dependent variable, will truncate our distribution and we will then only observe a portion of our distribution

of cases, which can have inferential consequences – we wouldn't be able to generalize to a broader population. George and Bennett (2005) also note that selection on the dependent variable “always understates the strength of the relationship between the independent and the dependent variable” (pg 23).

However, while selection on the dependent variable is a very real concern for researchers, it is not the overwhelming problem that some scholars assert. Indeed, Winship and Mare (1992) note that sample selection bias is often unavoidable in social research. Because of the nature of what we study, selection bias is often rampant in our data – we just have to look out for it and be aware of its consequences. I believe that while King, Keohane, and Verba (1994) criticize researchers for selecting on the dependent variable, they fail to take into account that the result of this practice, selection bias, is still present in our data due to other reasons. Indeed, Collier, Mahoney, and Seawright (2004) note that King, Keohane, and Verba actually confound selection bias with conventional sampling error. Some other reasons that selection bias is present are when an observation enters the sample as a function of the dependent variable in truncated samples, or when we have censored samples that include people lying in a particular range of the dependent variable, but whose values lie outside of an exact value or known bound. George and Bennett (2005) also remark that in small-n analysis, selecting on the dependent variable can help identify the variables that are not necessary or sufficient conditions for the outcome. Finally, Geddes (1990), who wrote some cautionary words at the beginning of her article, follows up by claiming that there is a place in social sciences for studies that select on the dependent variable, because we can understand how phenomena come about, what plausible causal explanations exist, and how theories can be extended.

To address the issues associated with selection bias, I have chosen my six cases based upon previous research. I follow the work of Galtry (2003) in the selection of three countries – Sweden, Ireland, and the United States – all of which have different breastfeeding rates and different socio-political structures. Following the writings of George and Bennett (2005) and Geddes (1990), I have justified selection on the dependent variable by choosing the cases that are both theoretically interesting, and that also provide insight to the outcome.

In addition to selecting the six countries because of their varying breastfeeding rates, I also selected them based upon their welfare state status. As I discussed in Chapter 2 of this dissertation, there are three ideal types of welfare states as identified by Esping-Andersen - social-democratic, conservative, and liberal. Ireland and France fit most closely in the conservative welfare state regime, Canada and the United States in the liberal welfare state, and Norway and Sweden in the social-democratic. While these designations are only ideal types, they do provide a framework for studying policies and their effects on breastfeeding practices.

Tables, Graphs and Charts – Chapter 3

Table 3.1: Data sources for outcome variable specifications		
Country	Year	Source
Australia	2004	OECD Family Database 2009
Austria	2005	IBFAN 2012
Belgium	2007	OECD Family Database 2009
Canada	2003	OECD Family Database 2009
Denmark	2001	OECD Family Database 2009
Finland	2005	OECD Family Database 2009
France	2003	Vilian et al. 2005
Ireland	2005	Ireland Health Research and Information Division. 2012
Italy	2005	OECD Family Database 2009
Japan	2005	OECD Family Database 2009
Netherlands	2005	OECD Family Database 2009
New Zealand	2006	OECD Family Database 2009
Norway	2006	OECD Family Database 2009
Portugal	2003	OECD Family Database 2009
Spain	2006	OECD Family Database 2009
Sweden	2006	OECD Family Database 2009
United Kingdom	2005	OECD Family Database 2009
United States	2005	OECD Family Database 2009

Table 3.2: Breastfeeding Initiation and Duration		
Country	Percent Initiation	Percent Breastfeeding Exclusively at 3 months
Australia	92	56
Austria	93.2	60
Belgium	65.9	35.4
Canada	84.5	38.4
Denmark	98	48
Finland	93	51
France	63	25
Ireland	47.7	12.7
Italy	81.1	20
Japan	96.6	38
Netherlands	79	35
New Zealand	87.8	56
Norway	99	63
Portugal	91	54.7
Spain	77.2	41.2
Sweden	97.6	59.8
United Kingdom	77	13
United States	74.2	31.5

Figure 3.1: Breastfeeding Initiation

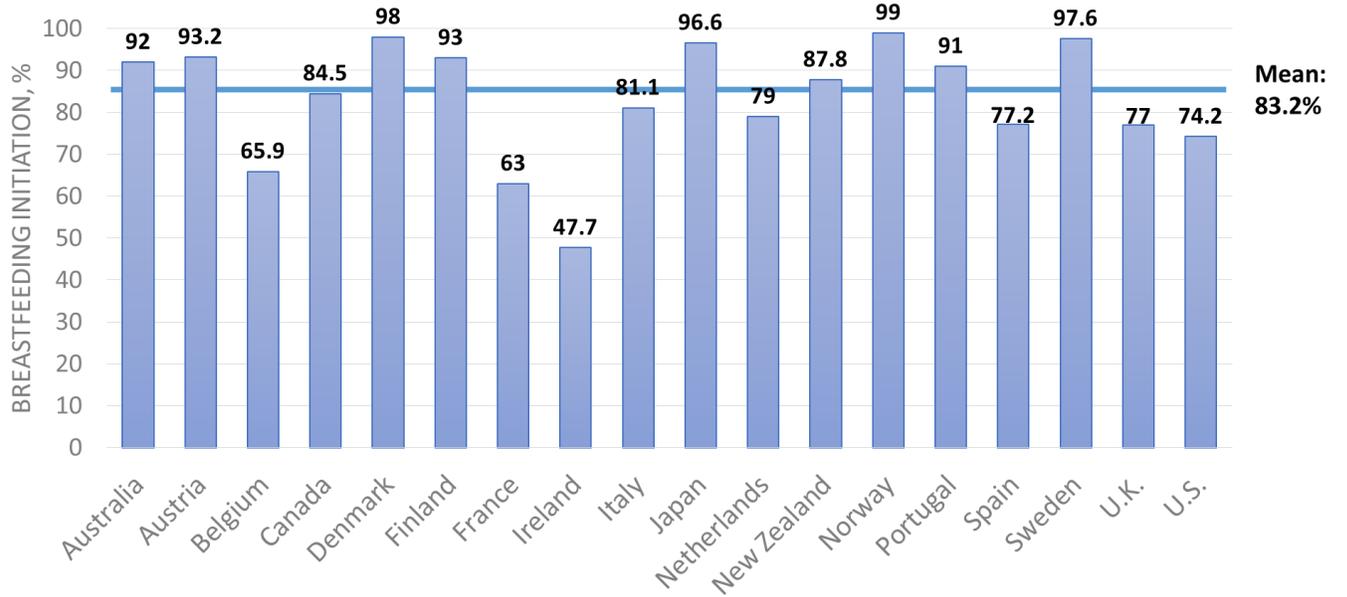


Figure 3.2: Exclusive Breastfeeding at Three Months

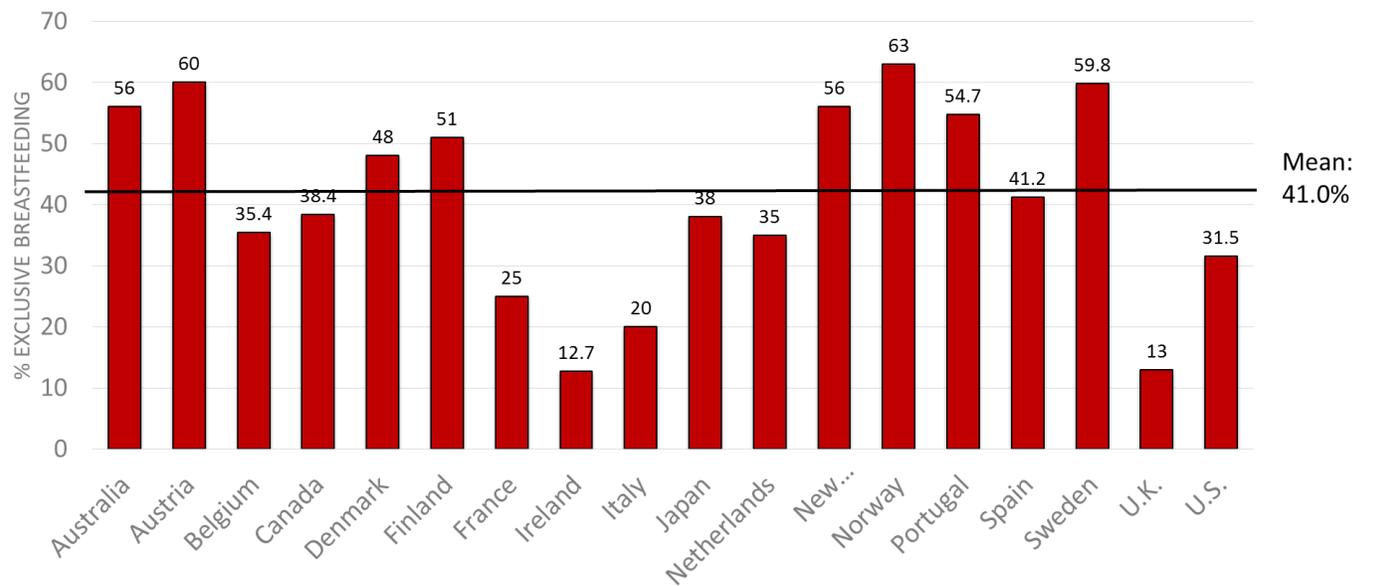


Figure 3.3: Breastfeeding Initiation and Duration

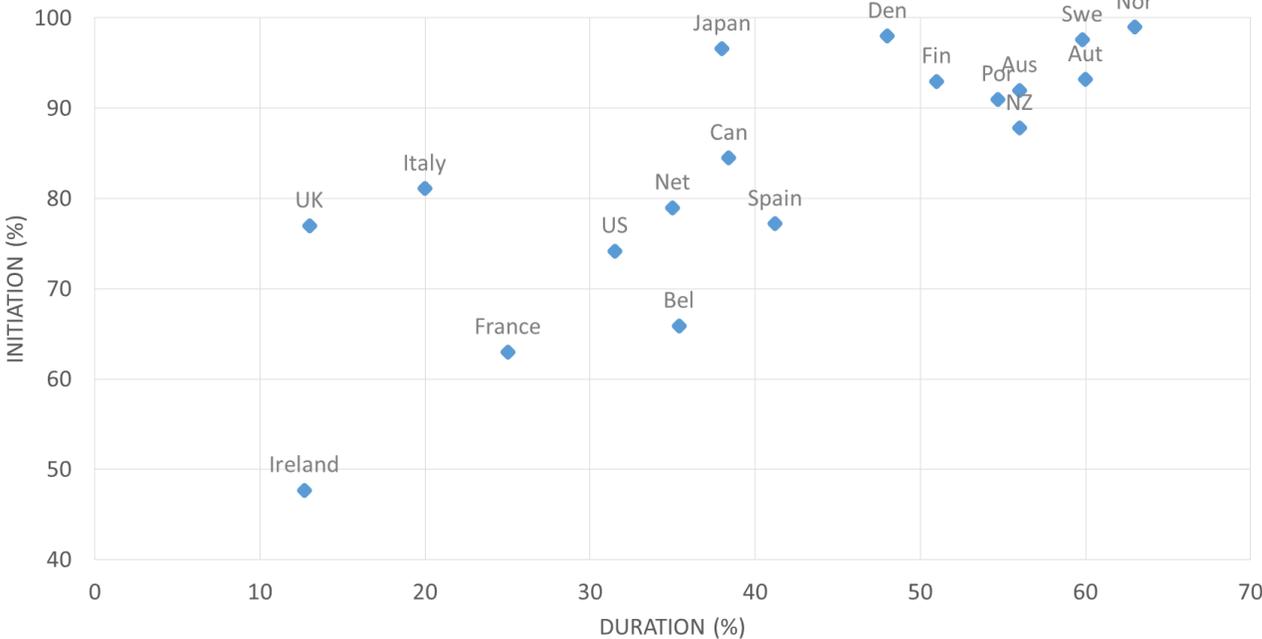


Table 3.3: Public Spending on Family Benefits as % of GDP, 2009

Country	Cash Allowances	Services	Tax Breaks	Total
Australia	1.94	0.84	0.05	2.83
Austria	2.34	0.57	0.04	2.95
Belgium	1.77	1.04	0.64	3.45
Canada	1.12	0.23	0.21	1.55
Denmark	1.63	2.27	0.00	3.90
Finland	1.67	1.62	0.00	3.29
France	1.44	1.76	0.78	3.98
Ireland	3.26	0.82	0.15	4.24
Italy	0.78	0.80	0.00	1.58
Japan	0.51	0.45	0.53	1.48
Netherlands	0.78	0.93	0.77	2.48
New Zealand	2.47	1.08	0.02	3.56
Norway	1.42	1.79	0.13	3.34
Portugal	1.03	0.47	0.20	1.71
Spain	0.67	0.85	0.25	1.77
Sweden	1.58	2.17	0.00	3.75
UK	2.46	1.38	0.38	4.22
US	0.11	0.59	0.52	1.22

Source: OECD Social Expenditure Database 2013

Table 3.4: Descriptive Statistics for Predictor Variables	
Predictor Variable	Mean (Standard deviation)
Labor Market Indicators	
Weeks FTE leave	19.5 (10.6)
Female Part-Time Employment Rate	29.15 (11.06)
Public Spending on Family Benefits (% GDP)	2.85 (1.05)
Public Health Variables	
Percent Baby-Friendly Hospitals	12.9 (25.3)
Cesarean Section Rate	23.2 (6.96)
Public Spending on Healthcare (% GDP)	9.62 (1.85)
Control Variables	
Fertility Rate (total)	1.69 (0.25)
Women in Parliament (% of seats)	26.4 (11.8)
	N = 18

Table 3.5: fsQCA Calibration			
Variable	Full Membership	Crossover	Full non-membership
Breastfeeding Initiation	95%	75%	50%
Percent Exclusive breastfeeding at 3 months	60%	40%	20%
Weeks FTE Maternity Leave	35	18	3
Percent Baby-Friendly Hospitals	75%	30%	5%
Spending on family benefits (% GDP)	4%	2.6%	1.5%
Percentage Cesarean Births	32%	22%	14%
Fertility rate, Total	2	1.8	1.4
Percentage of Women in Parliament	40%	29%	11%
Female Part-Time Employment Rate	50%	30%	15%
Health Spending, % GDP	12%	9%	8%

Table 3.6: Outcome Variable Fuzzy-Set Scores		
Country	Initiation	Breastfeeding Exclusively at 3 months
Australia	0.93	0.92
Austria	0.94	0.95
Belgium	0.25	0.33
Canada	0.81	0.44
Denmark	0.97	0.77
Finland	0.94	0.84
France	0.19	0.05
Ireland	0.04	0.65
Italy	0.71	0.05
Japan	0.96	0.43
Netherlands	0.65	0.32
New Zealand	0.87	0.92
Norway	0.97	0.97
Portugal	0.92	0.9
Spain	0.58	0.54
Sweden	0.97	0.95
U.K.	0.57	0.02
U.S.	0.48	0.22

Table 3.7: Policy-Level Variables, Fuzzy-Set Scores			
Country	Weeks FTE Maternity Leave	Female Part-Time employment Rate	Spending on Family Benefits (% GDP)
Australia	0.03	0.79	0.62
Austria	0.4	0.5	0.68
Belgium	0.31	0.61	0.86
Canada	0.87	0.35	0.05
Denmark	0.53	0.23	0.94
Finland	0.87	0.05	0.81
France	0.58	0.19	0.95
Ireland	0.62	0.67	0.97
Italy	0.78	0.44	0.06
Japan	0.8	0.56	0.05
Netherlands	0.4	0.99	0.42
New Zealand	0.31	0.68	0.89
Norway	0.97	0.61	0.83
Portugal	0.45	0.04	0.08
Spain	0.4	0.15	0.09
Sweden	0.98	0.1	0.92
U.K.	0.25	0.78	0.97
U.S.	0.03	0.08	0.02

Table 3.8: Public-Health Variables, Fuzzy-Set Scores

Country	Percentage Cesarean Births	Percent Baby-Friendly Hospitals	Health Spending, % GDP
Australia	0.92	0.07	0.18
Austria	0.82	0.06	0.8
Belgium	0.09	0.03	0.73
Canada	0.78	0.03	0.69
Denmark	0.44	0.19	0.69
Finland	0.11	0.13	0.14
France	0.23	0.03	0.88
Ireland	0.78	0.03	0.01
Italy	0.99	0.03	0.29
Japan	0.15	0.05	0.08
Netherlands	0.04	0.06	0.87
New Zealand	0.35	0.03	0.14
Norway	0.12	0.88	0.62
Portugal	0.97	0.03	0.8
Spain	0.76	0.03	0.11
Sweden	0.15	0.99	0.52
U.K.	0.5	0.13	0.11
U.S.	0.92	0.03	1

Table 3.9: Control Variables, Fuzzy-Set Scores		
Country	Percentage of Women in Parliament	Fertility Rate, Total
Australia	0.43	0.5
Austria	0.79	0.05
Belgium	0.83	0.5
Canada	0.21	0.1
Denmark	0.92	0.5
Finland	0.91	0.5
France	0.06	0.82
Ireland	0.07	0.82
Italy	0.05	0.02
Japan	0.03	0.02
Netherlands	0.91	0.32
New Zealand	0.47	0.95
Norway	0.92	0.5
Portugal	0.16	0.05
Spain	0.87	0.02
Sweden	0.99	0.5
U.K.	0.14	0.5
U.S.	0.09	0.99

Chapter 4: An Analysis of Family Policies and Public Health Initiatives on Breastfeeding Initiation and Duration

4.1 Introduction

In the previous chapters, I detailed the theoretical background of the welfare state, family policies, and public health initiatives. I then discussed the data and methods that I employ in my analyses. In this chapter, I measure the effect of family policies and breastfeeding initiatives on breastfeeding initiation and duration in two ways. First, I employ ordinary least squares regression to assess the effects of maternity leave, female part-time employment rate, public spending on family benefits, Baby-Friendly Hospital participation, Cesarean section rate, public spending on healthcare, total fertility rate, and the percentage of women in Parliament on both breastfeeding initiation and breastfeeding duration in eighteen high-income, OECD countries. Second, I use Qualitative Comparative Analysis to investigate the combinations of causal conditions that lead to high breastfeeding initiation and duration, and low breastfeeding initiation and duration. The predictor variables that I use, as well as the rationale for using these variables, are described in detail in Chapter 3.

4.2. Public Health Variables and Breastfeeding Initiation

In this section, I examine the effects of public health initiatives on breastfeeding initiation. I hypothesize that public health variables, specifically the Baby-Friendly Hospital Initiative, will have a substantial effect on breastfeeding initiation, since the public health supports aid in beginning the breastfeeding process and provide the necessary structural supports to initiate breastfeeding. Indeed, the key take-away point from this analysis is that Baby-Friendly

Hospital Initiative participation has the most significant effect on breastfeeding initiation. Table 4.1 displays the effects of the public health variables on breastfeeding initiation.

[Table 4.1 about here]

It is important to note that I transformed my outcome variables for both breastfeeding initiation and duration. Because the outcomes are measured in percentages, the OLS assumption of homoscedasticity is violated. In order to adjust for this, I transformed my dependent variables as $\ln(p/(1-p))$, with p as the proportion. This means that the effects of my independent variables will be measured in log odds.

Model 1 isolates the effect of the Baby-Friendly Hospital Initiative on breastfeeding initiation, which is significant at the 0.01 level. The effect of the BFHI, 0.0326, means that for every additional percentage increase in Baby-Friendly Hospitals, the log odds of breastfeeding initiation increase by 0.0326. In real terms, this means that if we exponentiate the log odds ratio, taking $e^{(0.0326)}$, we get the odds, of 1.03. This means that for every additional percentage of Baby-Friendly certified hospitals, on average, the odds of breastfeeding initiation increase by 1.03.

The second model adds fertility rate as a control variable. Prior research has controlled for fertility in examining child health outcomes (Baker and Milligan 2005). Also, policies and public health initiatives that support fertility may be similarly likely to support breastfeeding, so one expects these measures to at least demonstrate an association. When controlling for fertility, the effect of the Baby-Friendly Hospital Initiative increases slightly and remains significant with $p < 0.05$. However, fertility rate is not significant, and the F statistic shows that the model fit

actually does not get significantly better. The p-value for the F-statistic in Model 1 is 0.0035, compared to 0.0060 in Model 2.

The third model includes Cesarean section rate. As predicted, the effect of Cesarean section rate on breastfeeding initiation is negative, but it is not statistically significant. The effect of fertility rate not significant in this model, possibly as an artifact of the small sample size for multiple regression. The finding for Baby-Friendly hospitals is, however, robust in this model. Adding the C-section rate as a predictor variable does not significantly improve the model fit, as the p-value of the F statistic for Model 3 decreases to 0.0186. Finally, the fourth model adds health spending to the analysis. Again, the effect of Baby-Friendly hospitals is robust and significant with $p < 0.05$. As predicted the effect of health spending on breastfeeding initiation is positive, but is not statistically significant. The addition of health spending also does not significantly improve model fit.

The strong relationship between the Baby-Friendly Hospital Initiative and breastfeeding initiation is the key finding from this analysis. In a follow-up test for robustness, I jackknifed the sample, removing each individual case and running the regression equation with each case removed. The model is robust to removing each case in this analysis. The best model fit is Model 1, which only includes the effect of the Baby-Friendly Hospital Initiative. This model fit, with an F-statistic of 11.75 (df 1, 16), explains about 38.7% of the total variation in breastfeeding initiation.

What about when policy-level variables are introduced into the equation? Table 4.2 displays the OLS coefficients of the combination of policy and public health variables on breastfeeding initiation.

[Table 4.2 about here]

In this analysis, I begin by examining the effect of female part-time employment rate on breastfeeding initiation. In Chapter 2, I discussed the importance of female part-time employment, specifically in the conservative welfare regime. The conservative welfare regime has shifted from more of a male breadwinner model to a “one and a half breadwinner” model, in which women are continuing to do the bulk of the care, but are also increasingly entering the labor force, albeit part-time. Female part-time employment rate, thus, provides a picture of the attachment to the labor force that women have. I hypothesize that countries with a greater female part-time employment rate will have lower breastfeeding rates, because women face the double bind of full-time care work and part-time work in the traditional labor market.

In the first model, I find that female part-time employment rate has the predicted negative effect on breastfeeding initiation, but this effect is not significant at the 0.05 level. This is also not an ideal model fit, as the p-value for the F statistic is 0.48. I then added the effect of the Baby-Friendly Hospital Initiative in model 2. The effect of female part-time employment rate is still not significant, but the effect of the Baby-Friendly Hospital Initiative is significant at the 0.01 level. The significant F-statistic shows that the model fit greatly improved over the previous fit. In Model 3, I removed the effect of Female Part-Time Employment Rate and added the effect of FTE maternity leave. Adding maternity leave decreased the magnitude of the BFHI, but it is still significant at the 0.05 level. However, surprisingly, maternity leave has no significant effect on breastfeeding initiation. Here the model fit increases very slightly. In Model 4, I remove the effect of maternity leave and add percentage of women in parliament. The Baby-Friendly Hospital Initiative effect remains robust to changing the model specifications, and is still significant at the 0.05 level. The model fit does improve; the F-statistic increased from 5.70 to

5.85 with $df = (2, 15)$. Finally, Model 5 adds public spending on family benefits. This model is the best fit; the F-statistic for $df = (2, 15)$ is 6.68, significant at the 0.01 level. The adjusted r -squared for this model is 0.401, showing that the Baby-Friendly Hospital Initiative and public spending on family benefits accounts for about 40.1% of the total variation in breastfeeding initiation.

The key finding from these analyses is that in both of the models – the public-health only model and the public health/policy model – the Baby-Friendly Hospital Initiative is the only significant predictor of breastfeeding initiation. This finding supports my hypothesis that the public health variables will be the most salient factor in breastfeeding initiation outcomes. However, including policy variables in the model increases the explanatory power and still produces a significant result for the Baby-Friendly Hospital Initiative. This supports existing theory that in order for the Baby-Friendly Hospital Initiative to be successfully implemented, the policy environment in the country must support breastfeeding as a valued public good.

4.3 Family Policies and Breastfeeding Duration

In this section, I examine the impact of family policies on breastfeeding duration using ordinary least squares (OLS) regression. I hypothesize that family policies, specifically weeks of paid maternity leave, will have the greatest effect on breastfeeding duration, because paid maternity leave allows women to take time from the traditional labor market to perform care, without an economic penalty. Table 4.3 contains the estimates of the effects of the policy-level variables on breastfeeding duration. However, contrary to my initial hypothesis, the most salient finding from these models is that maternity leave appears to have *no* significant effect on

breastfeeding duration, even when the significant outliers of Australia and the United States (zero weeks of paid maternity leave) are removed.

[Table 4.3 about here]

Policy-level variables do not have an effect on duration of breastfeeding. The first model, looking only at the effect of maternity leave on breastfeeding duration, shows no significant effect. In fact, the r-squared for the model is extremely low, indicating that maternity leave explains very little of the variation in breastfeeding duration. Even when the two significant outliers in maternity leave, Australia and the United States, are removed, the effect of maternity leave is still not significant. One potential explanation for the lack of an effect here is related to how breastfeeding duration is measured. Exclusive breastfeeding at three months is the only comparable measure across all 18 countries. Since the mean number of weeks of leave in the sample is 19.5, measuring exclusive breastfeeding at three months may not fully capture the effect of maternity leave on breastfeeding duration.

The second model includes a measure of female part-time employment rate. Female part-time employment rate has no effect on breastfeeding duration at the country level, and does not significantly improve the model. Countries with higher rates of female part-time employment tend to fall in the conservative and market-based welfare regimes, because women's productive labor is not fully supported as the dual-earner model in these countries.

Model 3 removes female part-time employment rate and adds public spending on family benefits. Again, as in Model 2, the addition of public spending of family benefits does not significantly improve the model, and is not a significant predictor of breastfeeding duration.

Model 4 adds a measure of the percentage of women in Parliament or the upper house in bicameral governments. Myriad research indicates that women in positions of governmental power tend to drive votes and legislation on women-specific issues such as maternity leave and welfare reform, and women also have a greater orientation towards women's equality and family issues (Kittilson 2008). Because the proportion of women in government has the potential to drive policy and shape attitudes towards women's issues such as maternity care and breastfeeding, it could influence breastfeeding practices. In fact, the proportion of women in parliament is a significant predictor of breastfeeding duration. Adding the predictor variable of women in parliament significantly improves model fit; the F-statistic for model 4 is 5.31 with $df = (2, 15)$, which is significant at the 0.05 level. In addition, the adjusted r-square for this model is 0.337, a considerable improvement in explanatory power.

Finally, in Model 5, I remove the predictor variable of maternity leave, and re-run the analysis using only women in parliament as an independent variable. Model 5 is the best-fitting model; percentage of women in parliament is significant at the 0.01 level, and the F-statistic with $df = (1, 16)$ is 11.27, significant at the 0.01 level. The coefficient for women in parliament, 0.0417, is a log-odds ratio. Exponentiating the coefficient, or taking $e^{(0.0417)}$ gives an odds ratio of 1.04, meaning that for each unit change in percentage of women in parliament, the odds of having a higher percentage of breastfeeding at 3 months increases by 1.04. A 10% increase in percentage of women in parliament, then would lead to a log odds ratio of 0.417, and exponentiating that would mean that as 10% more women are in parliament, the odds of the outcome occurring, or that women will be breastfeeding exclusively at 3 months, are 1.52 times more likely.

After reviewing the five models, the best fitting model includes maternity leave, female labor force participation, and the percentage of women in parliament. Of these variable, only women in parliament is a significant predictor of breastfeeding duration. The finding that only women's representation in government is a significant predictor of breastfeeding duration is surprising. Family policies that decrease women's opportunity costs of having children, like paid leave, have a positive effect on fertility, and paid maternity leave should also reduce the economic cost of combining breastfeeding with paid employment. However, the null findings in this analysis suggest that looking just at maternity leave may be an over-simplification of the greater issues surrounding not only breastfeeding, but also policy regimes.

While I had hypothesized that the policy-level variables would have a substantial effect on breastfeeding duration, I must also test the hypothesis that both public health indicators *and* policy indicators have an effect on duration. Table 4.4 below shows the effects of the public health indicators and selected policy initiatives on breastfeeding duration.

[Table 4.4 about here]

The Baby-Friendly Hospital Initiative has a significant effect on breastfeeding duration at the 0.10 significance level when it is the only predictor of breastfeeding duration. When I added an additional indicator, Cesarean section rate, the effect remained significant but the model fit did not improve, as seen by the F-statistic. When adding a policy variable, weeks of FTE maternity leave, to the model, the Baby-Friendly Hospital Initiative variable loses its significance. However, adding the policy variable also does not significantly improve model fit. Finally, I controlled for women in parliament; the model fit did significantly improve (F-statistic with $df = (2, 15)$ is 5.42, significant at the 0.05 level), and the effect of the Baby-Friendly

Hospital Initiative disappeared. In the context of my research question, this calls into question the effect of the Baby-Friendly Hospital Initiative in countries where there is not a high level of women in leadership positions. It does appear as though the Baby-Friendly Hospital Initiative has to operate through a climate in which carework is supported by high levels of female representation. There also is a Scandinavian effect here: the Scandinavian countries have both high levels of female representation in parliament and also high adherence to the Baby-Friendly Hospital Initiative.

The results of these analyses bring up two important, and related, theoretical questions. First, why does maternity leave have no effect on breastfeeding duration? Indeed, while Scandinavian countries, particularly Norway and Sweden, provide long leave and have high breastfeeding duration, countries in the conservative welfare regime tend to also provide long periods of leave, but have the worst breastfeeding outcomes. One answer to this puzzle could lie in the second theoretical question: why does the percentage of women in parliament have such a strong, positive effect on breastfeeding duration?

When breastfeeding rates were at an all-time low across all high-income, Western countries in the 1960's, it was primarily grassroots feminist organizations that took the charge in re-defining breastfeeding as the standard of infant feeding (Wolf 2009; Amningshajalpen 2014). Indeed, because of aggressive marketing, even physicians were recommending formula during this time period across Western countries (Wolf 2009; Baumslag and Michels 1995). In the Scandinavian countries, particularly Norway and Sweden, feminist groups formed in the late 1960s to push back against the notion of formula feeding as the ideal, and worked to re-establish breastfeeding as a feminist choice (Amningshajalpen 2014; Nursing Council 2010).

Countries in the conservative welfare regime, by contrast, formed social structures primarily surrounding a religious (mostly Catholic) ideal of the family: a male breadwinner and a female mother and housewife (Esping-Andersen 1990, Lewis 2002). It seems counterintuitive that in a system where women are primarily responsible for caring for children, and are given long leaves from the labor market, that breastfeeding rates would be so low. However, looking back at the history of formula marketing and the slow progression from formula-feeding as the norm to breastfeeding as the current, scientifically backed ideal method of feeding, shows that the change was driven by a feminist movement (Wolf 2009; Amningshajalpen 2014; Nursing Council 2010). Feminist movements were much less powerful in conservative countries in the late 20th Century. Despite the long leave periods and regime type where women are responsible for the child-rearing and carework in the conservative welfare regime, this regime also is less female-friendly and many policies restrict women's autonomy as citizens (Orloff 1993). Because the resurgence of breastfeeding was driven in part by feminist groups, countries in more female-friendly welfare regimes tended to benefit from this shift. There are a variety of ways to conceptualize "female-friendly" welfare regimes; Borchorst and Siim (2008) examine women's representation in the political power structure as one way in which women's policy issues are addressed at the national level. Their work follows Hernes' (1987) assertion that the change in female representation in Parliament in Norway led to the development of female-friendly policies and ultimately, a female-friendly welfare regime. In examining the role that percentage of women in parliament plays in my analysis, I draw on these works to contend that because some of the conservative welfare countries with long leave do not have high levels of breastfeeding duration, it is more due to the climate of low female representation and reluctance to adopt feminist or female-friendly attitudes towards breastfeeding.

In order to fully understand the role of maternity leave on breastfeeding duration, specifically duration as it is operationalized in my analyses, I performed two additional analyses where I operationalized maternity leave provisions as (1) the wage replacement rate at three months and (2) a dummy variable designating whether or not women have paid maternity leave at the three month period. Appendix B shows the results of that analysis. There is still no effect of maternity leave on breastfeeding duration, even when maternity leave is operationalized in different ways.

4.4. Qualitative Comparative Analysis

While the multiple regression analyses conducted above provide a picture of what is happening, it is important to discuss the limitations of OLS regression when doing comparative analysis. Regression assumes net effects, and also assumes that the effects are additive, which is perhaps an oversimplification of the ways in which these variables influence breastfeeding outcomes. Indeed, a primary goal of this dissertation is to examine the ways that family policies and public health initiatives interact and build upon each other to create an overall climate that supports and encourages breastfeeding as carework. Treating both the policy variables and public health initiatives as additive effects, without examining possible causal pathways or combinations of causal conditions fails to address the core of my research questions. To add to the analysis, I employ Qualitative Comparative Analysis (QCA), a method developed for comparative research that uses Boolean algebra to assess causal pathways that include necessary and/or sufficient conditions for an outcome to occur. Chapter three of this dissertation expands

upon the logic and use of this method in my research; the following section will report the results of my QCA analyses.

4.4.1 Analysis of Necessary Conditions

Each of the variables in my analysis were coded into fuzzy sets, as specified in Chapter 3. The fuzzy set score represents the degree of membership in the set. The first step in a QCA analysis is to determine necessary conditions. Necessary conditions are those causal conditions that are present in all instances of the outcome. Because of the asymmetric nature of set-theoretic analysis, I elected to examine both the outcome and the negation of the outcome. Concretely, this means that the four outcomes I studied in the QCA analysis are countries in the subset of high breastfeeding initiation, countries in the subset of low breastfeeding initiation, countries in the subset of high breastfeeding duration, and countries in the subset of low breastfeeding duration. The following table displays the necessary conditions for each outcome variable.

[Table 4.5 about here]

The test for necessary conditions in the QCA analysis mirrors the results of the regression analysis. The most salient finding here is that a high percentage of Baby-Friendly hospitals is not necessary for high breastfeeding initiation or duration at the national level, but the absence of Baby-Friendly hospitals is necessary for low breastfeeding initiation and duration. That is, countries with low breastfeeding duration and low breastfeeding initiation also all have a low percentage of hospitals that participate in the Baby-Friendly Hospital Initiative.

4.4.2. Causal Recipes

In evaluating QCA solutions, both coverage and consistency are important. Coverage, scored from 0 to 1, refers to how much of the outcome is explained by each solution term and by the entire solution. The total solution coverage is the proportion of the membership in the outcome variable that can be explained by the complete solution (all individual causal “recipes”) (Ragin 2008). Raw coverage is the proportion of the membership in the outcome that can be explained by each causal recipe in the solution. Raw coverage can include cases that are covered by more than one solution. Unique coverage, on the other hand, is the proportion of cases in the sample that are only covered by the one solution.

Consistency in the QCA solutions refers to the degree to which membership in the solution is a subset of membership in the outcome (Ragin 2008). It also is measured from 0 to 1. A case is considered consistent with each solution term if membership in the solution term is less than or equal to membership in the outcome (Ragin 2008). For the whole solution consistency, we measure the degree to which membership in the set of solution terms is a subset of membership in the outcome.

The key is to balance consistency and coverage; a solution consistency score of 0.8 is considered meaningful, and a consistency score of 0.9 is highly significant (Bail 2008). The QCA algorithm requires the user to specify the criteria used to exclude and code configurations so that logically irrelevant conjunctions are eliminated (Grant, Morales and Sallaz 2009). In this analysis, 0.8 was used as the threshold for consistent subsets of the outcome.

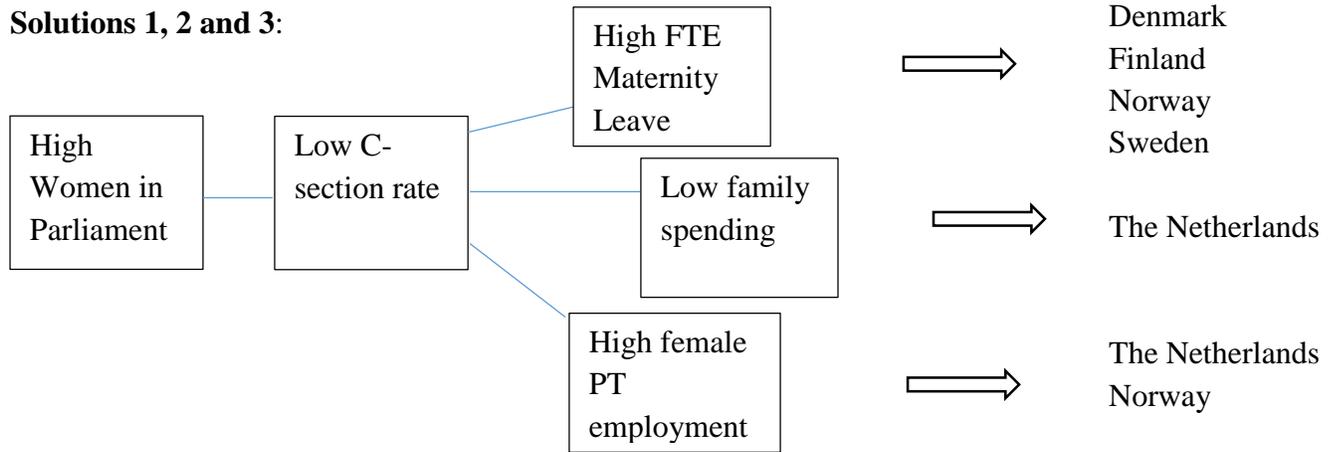
4.4.3. Results

Outcome variable: membership in the set of countries with high breastfeeding initiation

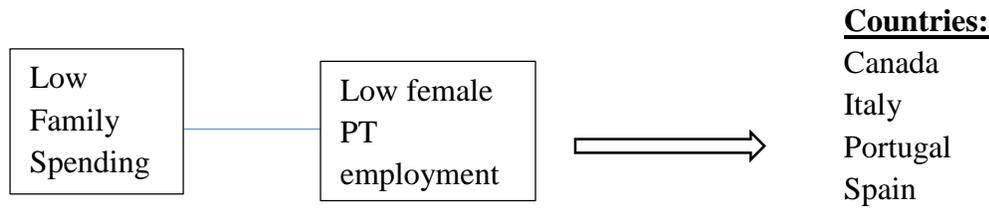
[Table 4.6 about here]

As Table 4.6 shows, there are six pathways leading to membership in the set of countries with high breastfeeding initiation,. The solutions can be displayed graphically in three models:

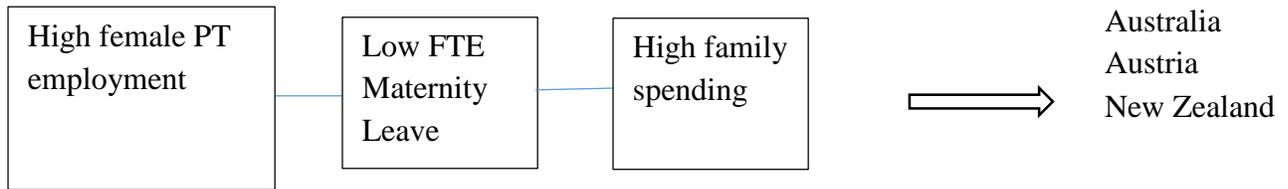
Solutions 1, 2 and 3:



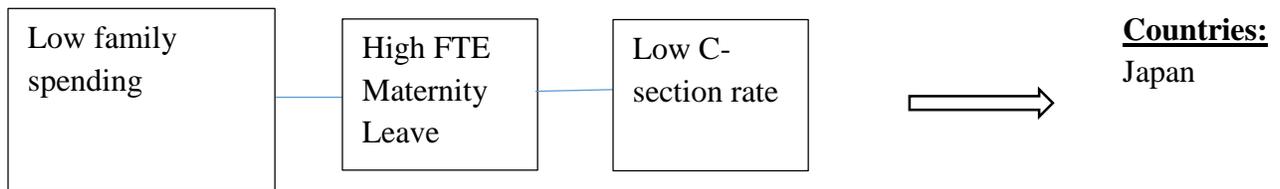
Solution 4:



Solution 5:



Solution 6:



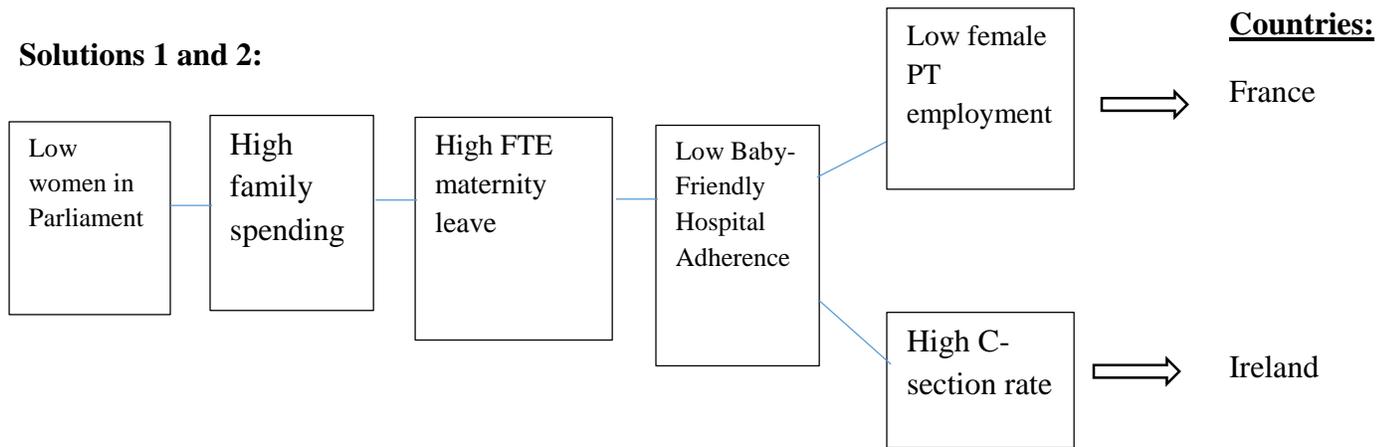
The first three solutions, including Denmark, Finland, The Netherlands, Norway, and Sweden all involve countries with both a high level of women in parliament and a low Cesarean section rate. The set of Scandinavian countries, Denmark, Finland, Norway, and Sweden, all with very high breastfeeding initiation, also share in common high levels of maternity leave. The fourth solution for high breastfeeding initiation includes Canada, Italy, Portugal, and Spain. These countries share a very different set of characteristics; they have low family spending but a low female part-time employment rate. The fifth solution again clusters different sets of countries. Australia, Austria, and New Zealand all have a high female part-time employment rate, high family spending, but low levels of maternity leave. Finally, Japan has high breastfeeding initiation but fits into a solution by itself, with low family spending, high maternity leave, and a low Cesarean section rate. Note that because there are no *necessary* conditions for

high breastfeeding initiation at the national level, there are several very different pathways that lead to membership in the set of countries with high breastfeeding initiation.

Outcome variable: membership in the set of countries with low breastfeeding initiation

[Table 4.7 about here]

As evidenced in Table 4.7, there are two pathways in the dataset that leads to low breastfeeding initiation. They can be shown graphically in one chart, below:



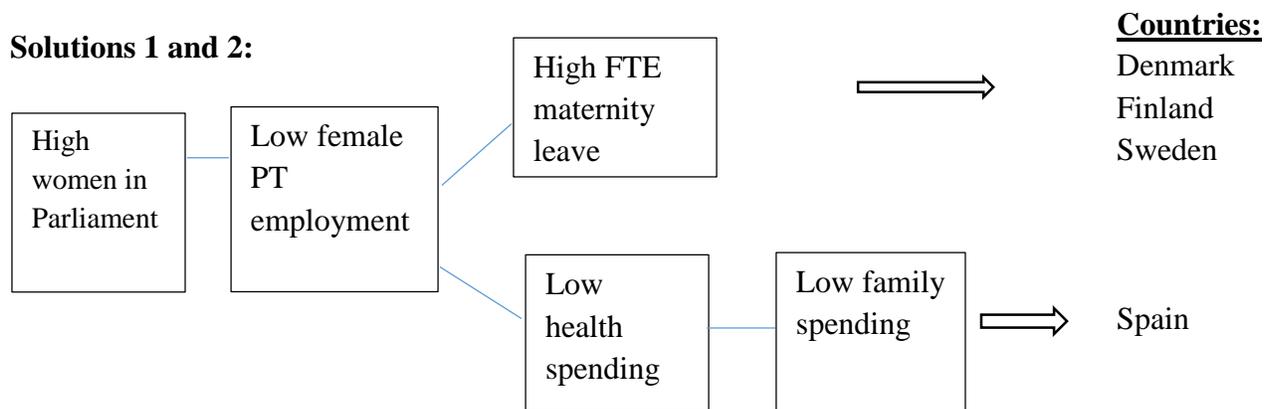
France and Ireland fit into the two solutions for low breastfeeding duration. In both France and Ireland, there is a low level of women in Parliament, high family spending, high levels of maternity leave, and low adherence to the Baby-Friendly Hospital Initiative. France has a low female part-time employment rate, and Ireland has a high Cesarean section rate. In looking at France and Ireland, they are both part of the conservative welfare regime, which supports the

model of the male breadwinner and female caregiver. As such, both countries have high levels of support for female reproductive labor, but do not have a high level of female representation in government, which demonstrates an overall lack of female-friendliness. As I discussed in Chapter 2, the conservative welfare regime developed in a very traditional model of family formation; the male breadwinner and the female caregiver. This model provides women supports for caregiving, but restricts women’s agency in traditionally feminist pursuits.

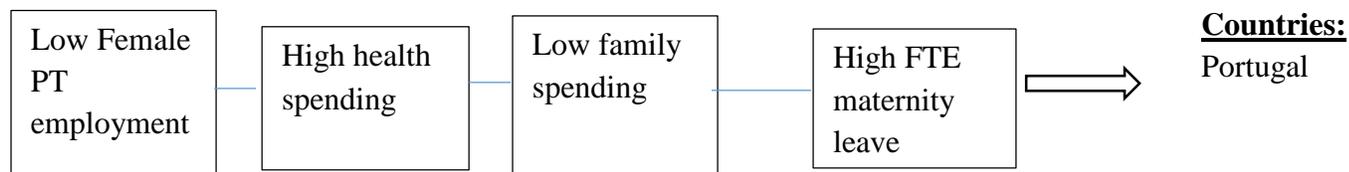
Outcome Variable: membership in the set of countries with high breastfeeding duration

[Table 4.8 about here]

As shown in Table 4.8, there are four solutions that lead to membership in the set of countries with high breastfeeding duration, but only three meet the 0.8 consistency cutoff. The solutions can be broken down into two separate pathways. The solutions can be displayed graphically:



Solution 3:



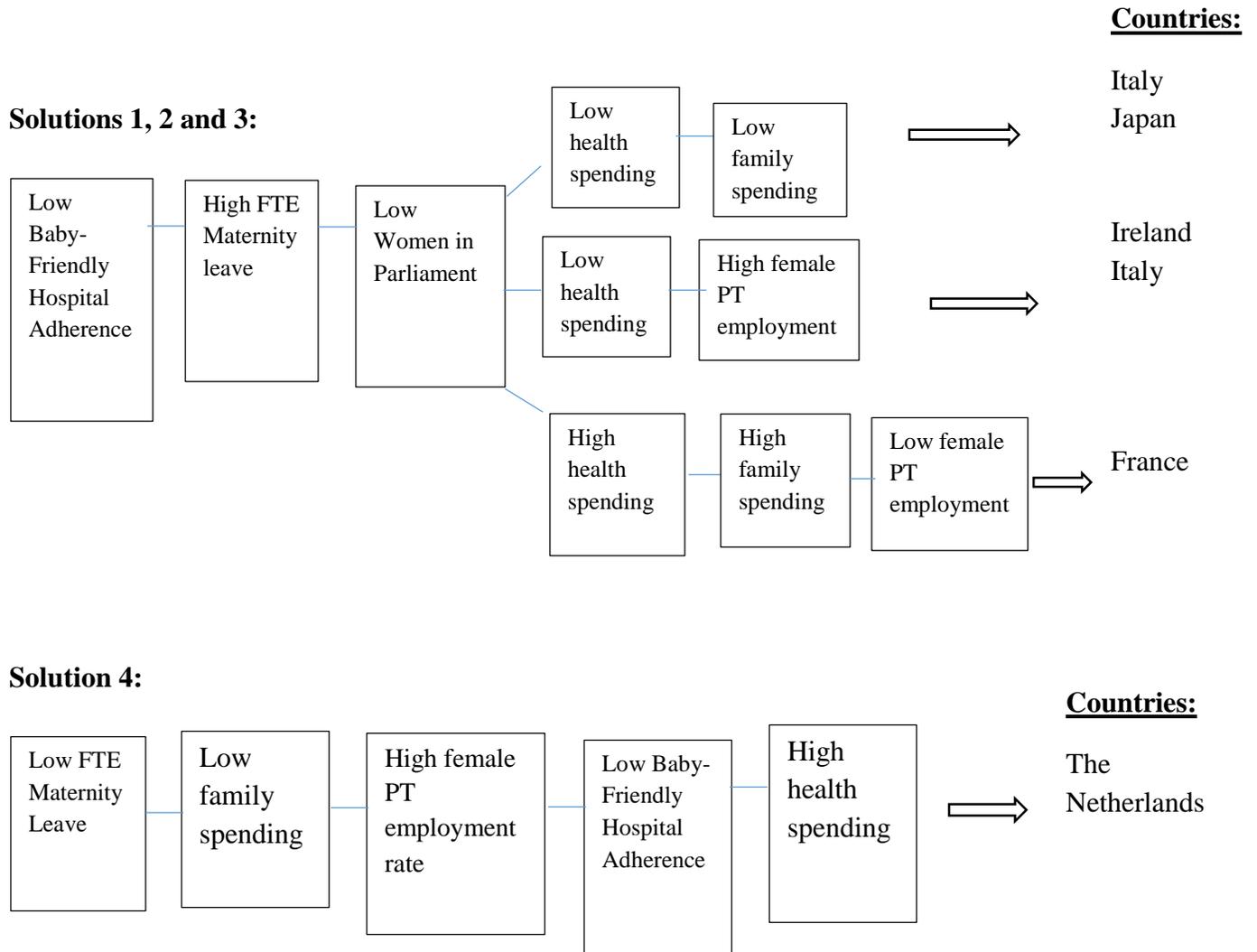
Denmark, Finland, and Sweden all have high levels of women in parliament, high levels of maternity leave, and low female part-time employment rates. Spain has both high levels of women in parliament and high levels of maternity leave, but also has low health spending and low family spending. Finally, Portugal fits into its own category, with high maternity leave, low family spending, high health spending, and a low female part-time employment rate. In these solutions, high maternity leave is shown as a significant causal condition in the set of countries with high breastfeeding duration, which lies in contrast to the results of the OLS regression, which did not show maternity leave as a significant predictor.

Outcome: Membership in the set with low breastfeeding duration

[Table 4.9 about here]

Table 4.9 shows the four solutions that have the required consistency cutoff of 0.8 for this outcome. All three solutions include countries with a low membership in the set of Baby-

Friendly Hospital Initiative participation, a necessary condition for this outcome. The solutions can be displayed graphically as follows:



In all four pathways leading to low breastfeeding duration, low adherence to the Baby-Friendly Hospital initiative is present, as it is a necessary condition. Italy, Ireland, France, and Japan all have low adherence to the Baby-Friendly Hospital Initiative, low percentage of women in parliament, and a high level of maternity leave. Italy and Japan also have low health spending and low family spending, Ireland and Italy have low health spending and a high female part-time employment rate, and France has high health and family spending, and a low female part-time

employment rate. The Netherlands, also with low breastfeeding duration, has a different causal pathway; it has low maternity leave, low adherence to the BFHI, low family spending, high health spending, and a high female part-time employment rate. As part of the conservative welfare regime, France, Ireland and Italy all have supports for women's reproductive labor, but again do not have high female representation in parliament. While women's reproductive labor is supported, breastfeeding is not expressly addressed. With low rates of Baby-Friendly hospital participation and a lack of female representation, the conservative welfare regime fails to support breastfeeding as a caregiving norm.

4.4. QCA Discussion

The fsQCA results shed light on the combinations of causal conditions that lead to both high breastfeeding initiation and duration rates and also low breastfeeding initiation and duration rates. When looking at high breastfeeding initiation rates, seven countries fit the pathway that includes a high percentage of women in parliament. This finding is especially useful given the OLS regression results. Women in parliament is a significant predictor of breastfeeding *duration* in the regression analysis, but not a significant factor in breastfeeding initiation. However, in the fsQCA analysis, countries in the subset with high female representation in parliament also are in the set of countries with high breastfeeding initiation. The specific variable of women in parliament helps to cluster some of the countries. For example, all of the Scandinavian countries, Denmark, Finland, Norway and Sweden, and Austria, the Netherlands, and Spain have both high female representation in parliament and high breastfeeding initiation rates. In fact, of all the countries with a high percentage of women in parliament, only Belgium does not also have high

breastfeeding initiation. This suggests that having high representation of women in the governing body of a country may facilitate female-centered outcomes, notably in this case breastfeeding initiation. This follows existing theory on women in parliament, because countries that are more female-friendly in other ways may have both more female representation and be more accommodating of breastfeeding. In looking at my key research questions – how do state supports and public health initiatives work together to produce a climate conducive (or not) to breastfeeding, it make theoretical sense that having women in parliament will be a significant pathway to high breastfeeding initiation, because carework is more likely to be valued by a government with a higher percentage of women.

In the set of countries with high breastfeeding initiation, there are several very different pathways. One particularly noteworthy finding is that four of the six pathways include low Cesarean section rate. This variable was not significant in the OLS regression, but appears to have an effect on breastfeeding initiation in the fsQCA pathways. This supports research by Rowe-Murray and Fisher (2002) who find that Cesarean section birth increases the time between birth and skin-to-skin contact between mother and infant, which is contradictory to early breastfeeding success.

Of particular note in looking at the set of countries with high breastfeeding initiation is that the Baby-Friendly Hospital Initiative is not a significant predictor. In the OLS model, participation in the Baby-Friendly Hospital Initiative was significant and positive. Norway was an outlier that seemed to drive this conclusion, however, and when using the fsQCA models, the effect of the Baby-Friendly Hospital Initiative does not show up in the analysis. However, when looking at the negative outcome – the set of countries with low breastfeeding initiation – the Baby-Friendly Hospital Initiative *is* a significant factor in the solution. In fact, having low

participation in the Baby-Friendly Hospital Initiative is a necessary condition for having low breastfeeding initiation, meaning that while high participation may not be the driving force for high breastfeeding outcomes, low participation is a negating factor. This suggests that in countries that want to increase breastfeeding initiation, the Baby-Friendly Hospital Initiative may give countries that extra “push” to boost breastfeeding initiation to a point where other structural factors can play a larger role. However, participation in the Baby-Friendly Hospital Initiative often assumes that countries value carework and recognize breastfeeding as a public good.

There are three pathways that lead to membership in the set of countries with high breastfeeding duration. Again, the fsQCA analysis allows me to cluster my countries into sets which have similar pathways. Denmark, Finland, and Sweden, all in the social-democratic welfare regime, have high breastfeeding duration, and share the common pathway of high maternity leave, a low female part-time employment rate, and a high percentage of women in parliament. This pathway demonstrates a commitment to female-friendly policies that support both women’s productive and reproductive labor.

Portugal is a unique case; it falls into the solution for high breastfeeding duration with low female part-time employment rate, low family spending, high maternity leave. Portugal doesn’t fit cleanly into one of the three ideal types of welfare regime. Since Esping-Andersen, many comparative sociologists have sought to classify Spain and Portugal in a broader welfare state regime called the Mediterranean regime (Arts and Gelissen 2008). Early critics of Esping-Andersen had sought to classify the Mediterranean countries as a sort of “immature” conservative regime, but Arts and Gelissen (2008) contend that the Mediterranean countries comprise a fourth regime that is separate from the conservative model. This would make sense in the context of my fsQCA analysis, because there are a very different set of characteristics in

Portugal that still lead to high breastfeeding duration. The most salient factor is that while Portugal has a low female share of part-time work, they also have a fairly low level of female labor force participation. Portugal provides little in the way of family supports, but does have a fairly high level of maternity leave. This model suggests that Portugal lies somewhere between the dual-earner and the “one and a half breadwinner” types.

While the policy-level variables appear to have the largest effects on the set of countries with high breastfeeding duration given the results of my fsQCA, examining the set of countries with low breastfeeding duration provides solutions that combine public health and policy factors. In fact, the solutions leading to low breastfeeding initiation and low breastfeeding duration are rather complex. Of important note, lack of participation in the Baby-Friendly Hospital Initiative is a necessary condition leading to both low breastfeeding initiation and low breastfeeding duration. France and Ireland fit into the set of countries with both low breastfeeding initiation and low breastfeeding duration; the pathways leading to both are the same for both countries. France and Ireland have high levels of maternity leave and family spending, , combined with a low adherence to the Baby-Friendly Hospital Initiative, a low percentage of women in parliament, and a low overall female labor force participation. The results of my fsQCA analysis show that this pathway leads to low breastfeeding initiation and low breastfeeding duration in France and Ireland. Again, the theory behind low women in parliament holds in looking at France, Italy and Ireland; they have support for one particular type of female reproductive labor – that of the female caregiver, but no support for women’s agency in infant feeding choices.

The Netherlands, Italy, and Japan are all countries with low breastfeeding duration, but high breastfeeding initiation. The results of the fsQCA analysis show that these countries share similar pathways to low breastfeeding duration; these causal recipes shed some light on the

mechanisms occurring in these three countries where breastfeeding initially is successful, but then drops off at three months. In Japan, and Italy, the combination of low adherence to the Baby-Friendly Hospital Initiative, high maternity leave, and a low percentage of women in parliament, combined with EITHER low health spending and low family spending OR high female part-time employment and low health spending leads to low breastfeeding duration. Although these countries provides high levels of maternity leave, they have low spending on family benefits, low levels of women in parliament, and low adherence to the Baby-Friendly Hospital Initiative, suggesting that the lack of a supportive public health policy encouraging adoption of the BFHI in this context combines to discourage breastfeeding duration.

4.5. Conclusion

While the multiple regression analysis provides insight into the individual policies and public health factors that may influence both breastfeeding initiation and duration rates, the fsQCA analysis has started to develop clusters of countries that fall into particular breastfeeding patterns. For example, the Scandinavian countries are in the subset of countries with high breastfeeding duration, high female full-time employment rates, and long paid maternity leaves, indicating a commitment to both women's productive and reproductive labor. France and Ireland fall into a cluster, where both countries have low breastfeeding initiation and duration, and also have the same causal pathways to those low outcomes.

The fsQCA analysis also allows me to look at the subset of countries with low breastfeeding initiation and duration because of the asymmetry of set theory. For both initiation and duration, explanations for low rates of breastfeeding include both a policy-level component and a public health-level component. This suggests that countries whose polices do not support

carework may also not have the ability to develop and implement effective women-centered public health policies. That is, public health policies may require a strong support of women and carework in the welfare state policies before they can operate at the institutional level.

In Chapter 5, I examine six countries in detail: France, Ireland, Norway, Sweden, Canada, and the United States. I employ small-n comparative analysis to trace the development of breastfeeding rates from the 1970's until the early 2000s. I examine breastfeeding change in the context of policy, welfare regime, and public health initiatives. Chapter 5 builds on my findings from both the fsQCA analysis and the multiple regression models by investigating mechanisms behind breastfeeding change in six countries over a period of 40 years.

Tables and Charts – Chapter 4

Table 4.1: OLS Regression of Breastfeeding Initiation, Public Health Explanations.				
Outcome Variable is $\ln(p/(1-p))$				
Predictors	Model 1	Model 2	Model 3	Model 4
Percentage of Baby-Friendly Hospitals	0.0326** (0.00950)	0.0350** (0.00933)	0.0338** (0.0102)	0.0352** (0.00981)
Fertility Rate, Total		-1.36 (0.930)	-1.46 (1.01)	-1.40 (1.03)
Cesarean Section Rate			-0.0132 (0.0390)	
Health Spending, %GDP				0.0154 (0.140)
Constant	1.608*** (0.264)	3.87* (1.57)	4.36 (2.19)	3.78† (1.80)
Adjusted R-squared	0.387	0.428	0.392	0.387
F-value	11.75** P = 0.0035	7.35** P = 0.006	4.65* P = 0.0186	4.58* P = 0.0195
Note: In 2-tailed tests: †: p<.10 *: p<.05 **: p<.01 *** p=.000				

Table 4.2: OLS Regression of Breastfeeding Initiation, Public Health and Policy Explanations

Outcome Variable is $\ln(p/(1-p))$

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Percentage of Baby-Friendly Hospitals		0.0320** (0.00983)	0.0287* (0.0130)	0.0285* (0.116)	0.0364** (0.00995)
Weeks FTE Maternity Leave			0.0141 (0.0302)		
Women in Parliament				0.0158 (0.0251)	
Public Spending on Family Benefits, % GDP					-0.279 (0.240)
Female Part Time employment Rate	-0.0196 (0.0283)	-0.0101 (0.0225)			
Constant	2.60** (0.878)	1.91* (0.726)	1.38* (0.555)	1.24† (0.637)	2.35** (0.693)
Adjusted R-squared	-0.0313	0.355	0.356	0.363	0.401
F-value	0.48 P = 0.497	5.68* P = 0.0145	5.70* P = 0.0144	5.85* P = 0.0132	6.68** P = 0.0084
Note: In 2-tailed tests: †: p<.10 *: p<.05 **: p<.01 *** p=.000					

Table 4.3: OLS Regression of Exclusive Breastfeeding at 3 Months, Policy Explanations

Outcome Variable is $\ln(p/(1-p))$

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Weeks FTE Leave	0.0144 (0.0176)	0.0116 (0.0182)	0.0158 (0.0182)	0.00274 (0.0147)	
Female Part Time employment Rate		0.0132 (0.0175)			
Public Spending on Family Benefits			-0.0993 (0.184)		
% Women in Parliament				0.0411** (0.0133)	0.0417** (0.0124)
Constant	-0.706 [†] (0.388)	-0.268 (0.702)	-0.452 (0.617)	-1.56** (0.417)	-1.53** (0.357)
Adjusted R-squared	-0.0199	-0.0482	-0.0671	0.337	0.377
F-Value	0.67 P = 0.425	0.61 P = 0.557	0.47 P = 0.637	5.31* P = 0.0180	11.27** P = 0.0040
Note: In 2-tailed tests: †: p<.10 *: p<.05 **: p<.01 *** p=.000					

Table 4.4: OLS Regression of Exclusive Breastfeeding at 3 Months, Public Health and Policy Explanations				
Outcome Variable is $\ln(p/(1-p))$				
Predictors	Model 1	Model 2	Model 3	Model 4
Percentage of Baby-Friendly Hospitals	0.0127† (0.00683)	0.0125 (0.00761)	0.0150 (0.00914)	0.00281 (0.00712)
Cesarean Section Rate		-0.00153 (0.0277)		
Weeks FTE Maternity Leave			-0.00848 (0.0218)	
Women in Parliament				0.0384* (0.0153)
Constant	-0.590** (0.190)	-0.552 (0.708)	-0.454 (0.400)	-1.47** (0.390)
Adjusted R-squared	0.126	0.0679	0.0770	0.342
F-Value	3.45† P = 0.0818	1.62 P = 0.231	1.71 P = 0.214	5.42* P = 0.0170
Note: In 2-tailed tests: †: p<.10 *: p<.05 **: p<.01 *** p=.000				

Table 4.5: Analysis of Necessary Conditions, fsQCA Output		
Outcome Variable:	Necessary Conditions	Consistency
The set of countries with high breastfeeding initiation	None	
The set of countries with low breastfeeding initiation	~BFHI: Countries in the set of low Baby-Friendly Hospital Initiative participation	0.996
The set of countries with a high percentage of women breastfeeding at three months	None	
The set of countries with a low percentage of women breastfeeding at three months	~BFHI: Countries in the set of low Baby-Friendly Hospital Initiative participation	0.981

Table 4.6: fsQCA Coverage and Consistency				
Outcome variable: high breastfeeding initiation (intermediate solution)				
		raw coverage	unique coverage	consistency
1	~Female PT employment*~family spending	0.395	0.200	0.876
2	FTE*~c-section*~family spending	0.220	0.0282	1.00
3	Women in parliament*FTE*~c-section	0.399	0.157	0.983
4	Female PT employment*~FTE*family spending	0.307	0.107	0.816
5	Women in parliament*~c-section*~family spending	0.180	0.000	1.00
6	Female PT employment*women in parliament*~c-section	0.264	0.00549	0.838
solution coverage		0.833		
solution consistency		0.852		

Table 4.7: fsQCA Coverage and Consistency				
Outcome variable: low breastfeeding initiation (Intermediate solution)				
		raw coverage	unique coverage	consistency
1	~Female PT employment rate*~Women in Parliament*family spending*FTE*~BFHI	0.381	0.0819	0.810
2	~Women in Parliament*C-section rate*family spending*FTE*~BFHI	0.366	0.0667	0.803
solution coverage		0.448		
solution consistency		0.833		

Table 4.8: fsQCA Coverage and Consistency**Outcome variable: high breastfeeding duration (intermediate solution)**

		raw coverage	unique coverage	consistency
1	Women in Parliament*~Female PT employment rate*FTE	0.485	0.198	0.959
2	Female PT employment rate*health spending*women in parliament	0.317	0.0722	0.769
3	~Female PT employment rate*~health spending*women in parliament*~family spending	0.232	0.0175	0.872
4	~Female PT employment rate*health spending*~family spending*FTE	0.237	0.0588	0.833
	Solution Coverage	0.649		
	Solution Consistency	0.778		

Table 4.9: fsQCA Coverage and Consistency

Outcome variable: low breastfeeding duration (intermediate solution)

		raw coverage	unique coverage	consistency
1	~health spending*~women in parliament*~family spending*~BFHI*FTE	0.302	0.0361	0.818
2	Female PT employment rate*health spending*~family spending*~BFHI*~FTE	0.220	0.0722	0.821
3	Female PT employment rate*~health spending*~women in parliament*~BFHI*FTE	0.368	0.0878	0.877
4	~Female PT employment rate*health spending*~women in parliament*family spending*~BFHI*FTE	0.193	0.0554	0.856
solution coverage		0.544		
solution consistency		0.822		

Chapter 5: Small-n Analysis of Breastfeeding Outcomes

5.1. Introduction

In this chapter, I analyze six countries from the previous chapter in depth, focusing on the ways that family policies and public health initiatives influence each other over time to affect breastfeeding outcomes. The six countries in my analysis are Norway and Sweden from the Scandinavian/Social Democratic welfare regime, France and Ireland from the Conservative/Continental welfare regime, and Canada and the United States from the Liberal welfare regime. These six countries represent the three major ideal types of welfare regimes and they encompass a wide variety of breastfeeding initiation and duration rates. In the previous chapter, I focused on a single point in time when looking at breastfeeding variation. In contrast, this analysis will examine over-time developments in six countries. This will allow us to consider potential causes that can't be captured in quantitative indicators, to see whether the single-point-in-time analyses missed important influences, and to better assess interactions between causal factors.

Breastfeeding in Developed Nations

In the 1970's, breastfeeding rates in much of the developed world were at an all-time low, including rates in all six of the countries in this case study (Wolf 2009?). However, while breastfeeding rates worldwide have increased since the 1970's, they have done so at varying rates. What led some countries to increase their breastfeeding rates rapidly, while other countries stagnated? This analysis will examine the factors that led to the differential distribution of breastfeeding rates.

I examine two primary veins of policy, welfare state policies and public health initiatives, that often overlap with regards to breastfeeding. For example, the Innocenti Declaration, ratified in 1990, contains provisions that speak to both welfare state policies, including legislation supporting breastfeeding mothers in the workplace, and public health policies, including the Baby-Friendly Hospital Initiative (BFHI). In this analysis, I will examine the effects of the Innocenti Declaration across nations. The Innocenti Declaration involves four main components, three of which are directly related to public health initiatives, while one addresses national-level family policies. This analysis primarily focuses first on degree of compliance with the Declaration, enumerating the relationship between family policies and public health initiatives specifically targeting breastfeeding. The analysis also considers changes over time in maternity leave policy, the Baby-Friendly Hospital Initiative, and national-level breastfeeding committees and support.

5.2. Trends in Breastfeeding Outcomes

Breastfeeding outcomes, both initiation and duration, have been increasing steadily among high-income countries since the late 1970's (Wolf 2009). However, in some countries, breastfeeding rates have increased at a much faster rate than in others. The six countries in this analysis have widely differing breastfeeding outcomes. I have collected breastfeeding data for both initiation and duration of breastfeeding, representing a period of over 15 years for each of the six countries in this analysis. Because different countries collect data in different ways and at different times, direct comparability of the data is limited. However, because I examine data over time, I am able to paint a picture of the overall situation in each country, and I can compare the trends in breastfeeding rates between countries. When possible, I used multiple sources to verify

the breastfeeding data in order to ensure consistency, although most of the data only has one available source.

The following table displays the breastfeeding initiation data over time for the six countries in my analysis:

Table 5.1: Breastfeeding Initiation						
Year	Canada	France	Ireland	Norway	Sweden	US
1976		45.5				
1984			31.8			
1986			33.9		97	
1990			31.7			
1993						57
1995	63.9	52				
1997					97	
1998		53		99		64
2000			38		98	70.9
2001	81.5		41.6			
2002			43.9			71.4
2003	84.9	63	44.8			
2005	86.9		47.7			
2006			48.9	99	97.8	
2007	87.9		50.7			73.8
2008			51.2	99		
2009	87.3		52.8			73.9
2010		68.7	54.1			
See Appendix A for sources						

Breastfeeding initiation has been increasing in most countries in this analysis, although at very different rates.

Table 5.2: Breastfeeding Duration, Percentage

Year	Canada		France	Ireland	Norway		Sweden		US	
	3 months any	6 months any	3 months exclusive	3 months exclusive	3 months any	6 months any	4 months any	6 months any	3 months exclusive	6 months any
1968					25					
1972								5		
1980								50		
1982		25								
1986							67.9	50.7		
1990							70.2	52.6		
1994							79.8	67.3		
1995				12						
1996	53.6									
1998					88	80	83.8	73		29
2000							83.2	72.2		34.2
2001										36.9
2002						80				36.9
2003		38.7					79.7	72.4	29.6	39.1
2004				12.7			82.7	71.9	31.5	42.1
2005	67.6		25						32.1	
2006							80.9	69.2	33.6	43.5
2007										
2008										
2009		54						65		

See Appendix A for data sources

Data for breastfeeding duration vary widely among the six countries in this analysis. Some countries report breastfeeding duration as exclusive breastfeeding, while others only report mothers who are breastfeeding at all, regardless of whether solid foods or formula are complementary. It is difficult to directly compare breastfeeding rates because of the vast differences in data collection, but in this analysis, I will discuss changes over time and compare breastfeeding duration rates when possible.

5.2 The Innocenti Declaration

The Innocenti Declaration on the Protection, Promotion, and Support of Breastfeeding, ratified by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) in 1990 remains the standard upon which subsequent breastfeeding policies are based. The Innocenti Declaration stated that all countries should adhere to the following four policies to increase breastfeeding:

1. All participating member-state governments should develop national breastfeeding policies and appoint a national breastfeeding coordinator
2. All participating member-state governments should ensure that maternity hospitals and facilities follow the Ten Steps to Healthy Breastfeeding
3. All participating member-state governments should adopt the principles of the International Code of Marketing of Breast-milk Substitutes
4. All participating member-state governments should enact legislation to protect the breastfeeding rights of working women (WHO/UNICEF 1999).

Each of the six countries in my analysis has had varying degrees of compliance with the Innocenti Declaration. Sweden and Norway were “early adopters” of these international

recommendations, which is an important component of their successful pathway to high breastfeeding rates.

Innocenti Declaration Part 1 - National Breastfeeding Policies/National Breastfeeding Coordinator

The World Health Organization and UNICEF recommended that countries should implement a national breastfeeding policy that includes at least four basic components:

1. Policies should encourage mothers to start breastfeeding soon after birth
2. Policies should encourage mothers to breastfeed exclusively for six months
3. Policies should encourage mothers to breastfeed up to 2 years of age and beyond
4. Policies should implement the Ten Steps for Successful Breastfeeding (Cattaneo, et. al. 2004).

As of 2004, Sweden and Norway had implemented national breastfeeding policies that include three of the four components, while Ireland and France have national policies, but they only include a statement supporting exclusive breastfeeding for 6 months, representing only one of the four components (Cattaneo, et. al. 2004). Canada has had a national breastfeeding policy since 1991, just after the Innocenti Declaration. The United States has had a national breastfeeding committee since 1998.

The following table displays each country with the year a national breastfeeding committee was implemented (where available), the components included in the policy, and whether there is a national breastfeeding coordinator:

Table 5.3: Adherence to Part 1 of Innocenti Declaration						
	Year National Breastfeeding Committee Established	Policy Encourages mothers to breastfeeding soon after birth?	Policy encourages mothers to breastfeed exclusively for 6 months?	Policy encourages mothers to breastfeed up to 2 years of age?	Policy implements the Ten Steps for Healthy Breastfeeding?	National Breastfeeding Coordinator?
Canada	1991		Yes	Yes	Yes	Yes
France		No	Yes	No		No
Ireland	1994	No	Yes	No		
Norway	Voluntary group; 1968	Yes	Yes	No	yes	Yes; 1999
Sweden	Voluntary group; 1973 National Committee; 2009	Yes	Yes	No	Yes	No
United States	1998	Yes	No	No	yes	Yes; 1998
Sources: Cattaneo et al. 2004,						

Innocenti Declaration Part 2 - Ensure that maternity hospitals and facilities follow the Ten Steps to Healthy Breastfeeding

The Baby-Friendly Hospital Initiative certifies hospitals with maternity facilities based on their adherence to the Ten Steps to Healthy Breastfeeding. The Ten Steps are outlined below:

Insert 5.1: Ten Steps to Healthy Breastfeeding

Every facility providing maternity services and care for newborn infants should:

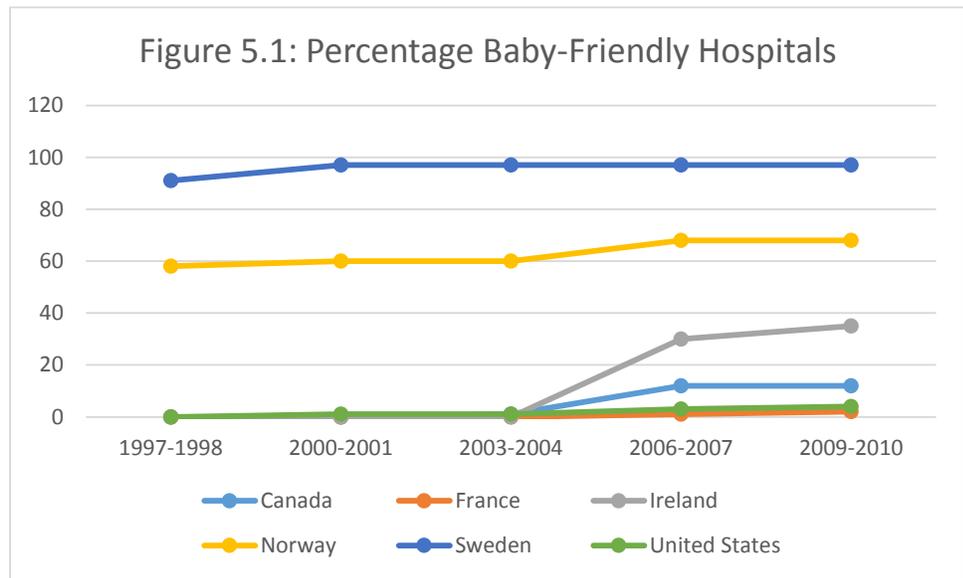
1. Have a written breastfeeding policy that is routinely communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help mothers initiate breastfeeding within a half-hour of birth
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants
6. Give newborn infants no food or drink other than breast-milk, unless medically indicated
7. Practice rooming-in - allow mothers and infants to remain together - 24 hours a day
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

[Source: World Health Organization/United National Children's Fund, 1999]

The table and graph below show the percentage of hospitals in each country that have been designated as Baby-Friendly over the past fifteen years.

Table 5.4: Percentage of Hospitals Designated as Baby-Friendly					
Country	1997-1998	2000-2001	2003-2004	2006-2007	2009-2010
Canada	0	0	1	12	12
France	0	0	0	1	2
Ireland	0	0	0	30	35
Norway	58	60	60	68	68
Sweden	91	97	97	97	97
United States	0	1	1	3	4

Source: Labbock 2012



Part 3 - Adopt the principles of the International Code of Marketing of Breast-milk Substitutes

Every country that attended the 1983 World Health Assembly ratified the International Code of Marketing of Breast-milk Substitutes, but few countries actually enacted the provisions into law.

Part 4 – Enact Legislation to Protect the Breastfeeding Rights of Working Women

The last part of the Innocenti Declaration declares that countries should protect the breastfeeding rights of working women, by legislating paid maternity leave of at least 12 weeks, ensuring that women get nursing breaks of 30 minutes per day, twice a day, and limit restrictions and exclusions of women from these laws (WHO 1999).

Social-Democratic Welfare Regimes: Norway and Sweden

As Tables 5.1 and 5.2 illustrate, the Scandinavian countries that represent the Social-Democratic welfare regime like Norway and Sweden have very high rates of breastfeeding initiation and duration. Breastfeeding initiation rates in Norway and Sweden have remained consistently high over the past decade. In 1997, breastfeeding initiation in Sweden was at 97%, and in 2007 initiation was at 97.8% (Galtry 2003; OECD 2012). Norway has similar breastfeeding rates. In 1999 breastfeeding initiation was 99% and remained at 99% in 2005, 2006, and 2008 (Haggkvist et. al. 2010; Lande et. al. 2003; OECD 2012). These countries also have high rates of female labor force participation (59% and 60% respectively). What kinds of policies have facilitated both high breastfeeding rates and high FLFP rates? First, these countries were early adopters of many facets of the Innocenti Declaration, which created a strong public

health initiative to encourage breastfeeding. As of 2004, Sweden and Norway had implemented national breastfeeding policies that included three of the four components of the Innocenti Declaration.

Secondly, these countries provide substantial maternity leave support that subsidizes income and provides job-protected time out of the workplace, to encourage mothers to establish breastfeeding.

Norway

Norway has two main breastfeeding promotion organizations: the National Centre for Breastfeeding at Oslo University and Ammehjelpen, a non-governmental support group for breastfeeding mothers. Both groups are instrumental in implementing the WHO/UNICEF recommendations in Norway. Ammehjelpen, or the Nursing Council, was formed in 1968 as a grassroots organization for mother-to-mother support (Helsing 1988). The Nursing Council receives the backing and financial support from the Health Ministry in Norway, and grew from a group of 10 mothers to a large group of over 100 volunteer nursing assistants (Nursing Council 2010). The National Centre for Breastfeeding is responsible for the implementation of the Baby-Friendly Hospital Initiative, and they have expanded the principles to the neonatal unit at the Oslo University Hospital (Hansen et al. 2012). Norway's national breastfeeding policy falls in line with three of the four WHO/UNICEF recommendations. The two breastfeeding promotion groups have been influential in supporting breastfeeding outcomes. In 1968, only 25% of mothers were breastfeeding at all at three months, but by 1998, 88% of mothers reported any breastfeeding at three months.

Norway's adherence to the Baby-Friendly Hospital Initiative has been steadily increasing since 1997. Sixty-eight percent of all hospitals and maternity facilities in Norway are now Baby-Friendly. Norway also took steps before the official Baby-Friendly Hospital initiative to increase support for breastfeeding mothers. Endresen and Helsing (1995) reported that between 1973 and 1991, Norway's hospitals and maternity wards made a concerted shift to improve the first contact between mother and infant, the time that the mother and baby are able to stay together, changed the recommended feeding pattern to allow feeding on demand, and reduced supplement use to breastfeeding mothers.

Norway ratified the Code in 1983, soon after it was enacted by the WHO. Much of the provisions of Norway's agreement with the Code are voluntary, but infant formula is regulated under Norway's food and drug administration (NHMRC Clinical Trials Centre 2011). Norway has been particularly responsive to recommendations from the World Health Organization; in 2008, Norway revamped a 2001 directive on infant formula manufacturing to comply with more of the provisions of the WHO Code. In Norway, formula labeling is strictly monitored; all formula must have a label that states breastfeeding is the superior method of infant feeding, and labels must also have no pictures of babies. Infant formula may not be advertised except in scientific publications that discuss the raw materials and facts of composition. Finally, manufacturers are prohibited from handing out free samples or promotions, either directly to mothers or through the health care facilities (NHMRC Clinical Trials Centre 2011).

In Norway, mothers and fathers have quite a bit of flexibility in taking leave. Mothers can take either 54 weeks, paid at 80% of their usual salary, or 44 weeks, paid at 100% of their salary (Ray 2008). Fifteen weeks of this leave is designated for one parent or the other (whoever chooses to take the 15 weeks), but then the remaining weeks can be divided up between both

parents as they see fit. In order to meet eligibility, the parent must have worked six months out of the previous ten months, and must have earned at least half of the National Insurance basic amount. If women do not meet this criteria to take the leave, they still receive a payment. In addition, both mothers and fathers are allowed one year of unpaid leave each after the National Insurance leave period, regardless of eligibility for the paid leave.

Norway has experienced continually high rates of breastfeeding initiation and duration; in the period from the early 1970s through the early 1990s, a substantial amount of changes occurred in hospitals and maternity wards that shifted hospital practices to become more baby friendly, even before the official BFHI launch. Norway's breastfeeding rates increased dramatically in the period following the 1970. In 1968, only 25% of women were breastfeeding at all at three months, but by 1998, 88% of women were breastfeeding at three months. Norway has embraced the WHO/UNICEF recommendations, and many provisions of the International Code of Marketing of Breast-Milk Substitutes are law. Infant formula marketing is strictly regulated in Norway, and the Scandinavian welfare state regime provides supports for families through governmental programs and supports. Norway has a strong history of grassroots breastfeeding support; the Norwegian Nursing Council has been active since 1968. Public health policies in Norway have "teeth;" the Norwegian government is supportive of public health policies both in practice and in policy.

Sweden

The Swedish International Development Authority (SIDA), a Swedish government-sponsored organization, was one of the co-sponsors of the WHO/UNICEF conference in Florence, Italy, called "Breastfeeding in the 1990s: A Global Initiative," where the Innocenti

Declaration was adopted (UNICEF 2014). As one of the early supporters of the WHO/UNICEF initiatives, Sweden has adopted many of the recommendations and provisions regarding breastfeeding. While there is no national breastfeeding committee, the Swedish Nursing Mother's Support group (Amningshjälpen) is a non-profit, voluntary group of women to support nursing mothers. The group was created in 1973, and its goals are to support breastfeeding women, and to provide information and a breastfeeding culture in Sweden (Amningshjälpen 2014). The Swedish Nursing Mother's Support group has been influential in helping to implement breastfeeding policy, including the Baby-Friendly Hospital Initiative. This voluntary group was the only breastfeeding committee until 2009, when Sweden established a National Breastfeeding Committee, attached to the National Board of Food Administration (Grguric et al. 2012).

With 97% of its hospitals and maternity facilities designated as Baby-Friendly since 2000, Sweden has consistently adhered to the joint directive from WHO/UNICEF. Sweden was among the first countries to adopt the Baby-Friendly Hospital Initiative. In 1997, WHO and UNICEF introduced the Baby-Friendly Hospital Initiative, and by 1997, 91% of hospitals in Sweden were designated Baby-Friendly (Hofvander 2005, Labbock 2012). By 2000, 97% of hospitals in Sweden were Baby-Friendly, and that number remains today. However, in 2004, the national authority responsible for administering the BFHI, the Swedish National Institute of Public Health, stopped overseeing the initiative, and individual regional coordinators were supposed to continue administration. Elisabeth Kylberg, a member of the National Swedish Breastfeeding Committee, comments that this plan did not come to fruition, and administration of the BFHI stalled nationwide (Grguric et al. 2012).

Sweden adopted the International Code of Marketing Substitutes in 1983, making it the first country (along with Norway) to do so (World Health Organization 1999). Many provisions of the Code are law in Sweden, and in 2013, Sweden's parliament voted to further restrict advertising and marketing of infant formula to only scientific publications and specialized baby-care publications (Swedish Code of Statutes 2013). In addition, the 2013 law restricts formula companies from providing free or low cost formula to mothers, except in cases where it is medically necessary (Swedish Code of Statutes 2013). These provisions were in place after the adoption of the Code in 1983, but only on a voluntary basis. By adopting the provisions into law, Sweden further strengthened its commitment to the WHO/UNICEF recommendations. In addition to the recent action, the government of Sweden has been active in funding and supporting implementation of the Code worldwide. In 1990, Sweden joined forces with the WHO and helped to fund a pilot study in 14 countries who wanted advice and support on how to best implement the Code (WHO 1996).

Swedish mothers have 50 weeks of maternity leave, paid at 80% of their regular income (OECD 2014). The parental leave is flexible – it can be divided between both parents, and can also be taken in half day or one-quarter day increments. The leave benefits have no requirement for job tenure or to have paid into the system, but parents who have been contributing to the insurance system receive a higher level of benefits. There is also a “gender equality bonus,” instituted in 2008, that provides an additional cash benefit to families if both parents share parental leave (OECD 2014, Ray 2008).

Sweden's breastfeeding rates are among the highest in the world. In 1997, 97% of mothers had initiated breastfeeding, and in 1998, 73% of mothers were still breastfeeding at six months (Galtry 2003). This was an increase from a 91.6% initiation rate and a 50.7%

breastfeeding rate at six months in 1986 (Hofvander 2005). However, since 1997, breastfeeding initiation rates have held steady, while breastfeeding duration has been decreasing. In fact, in 2009, only 65% of women were breastfeeding at 6 months (Gottvall 2011). Although Sweden has high breastfeeding initiation, which has remained steady over the past decade, breastfeeding duration in Sweden has actually been decreasing since 1998. In 1998, 74.8% of infants were breastfed at six months of age; by 2009 that number had dropped to 64.8% (Gottvall 2011). Likewise, in 1997 92.6% of infants were breastfeeding at two months of age, the highest incidence, but by 2009 only 88.1% of infants were being breastfed (Gottvall 2011). Sweden has a high rate of breastfeeding incidence, but breastfeeding duration has been decreasing steadily since the late 1990's. One factor which may account for this is Sweden's shift of focus in the public health arena away from breastfeeding. In 2003, Sweden adopted a public health policy which focused on eleven domains; breastfeeding is not mentioned in Sweden's newest public health policy documents (National Institute of Public Health – Sweden 2002). In addition, Sweden does not have a National Breastfeeding Committee or Coordinator, making it the only EU member state to lack these positions in accordance with the Innocenti Declaration. In fact, Sweden has a national breastfeeding policy, but lacks a national plan of action (Cattaneo, et. al. 2009). Sweden also dropped national control of the Baby-Friendly Hospital Initiative in 2004; in 1992, the BFHI was administered by the National Board of Health and Welfare in Sweden, and then from 1997-2003, the Swedish National Institute of Public Health administered the initiative (Grguric et al. 2012). However, in 2004, there was no longer a national authority that agreed to administer the program, and the BFHI was dropped. Hospitals in Sweden are still certified as Baby-Friendly, but there is no active national organization continuing to administer it. In 2009, a National Breastfeeding Committee was developed in Sweden, and they are actively petitioning

various governmental agencies to restart the initiative (Grguric et al. 2012). Sweden's failure to continue to administer the BFHI at a national level appears to have an effect on overall breastfeeding rates, especially duration.

Summary

Norway and Sweden have both experienced high rates of breastfeeding initiation and duration over the past several decades. Both countries had low rates of breastfeeding, especially breastfeeding duration, through the 1960s and 1970s, but through the targeted, early implementation of the WHO/UNICEF international public health initiatives, Norway and Sweden have become models demonstrating how to combine policy measures with public health initiatives. For example, Norway and Sweden are early adopters of the International Code of Marketing of Breast-Milk Substitutes, and both of those countries have worked with the WHO to implement provisions of the Code as law. This fits into the welfare state structure of Norway and Sweden; in the Scandinavian welfare state model, public policies are designed as a means of supporting the families and looking out for the best interest of families. As such, Norway and Sweden have limited the marketing of infant formula to promote public health and increase breastfeeding success. In addition, one common theme in the institution and founding of national breastfeeding committees in Norway and Sweden is the influence of independent, voluntary grassroots organizations. Norway and Sweden, both with very high breastfeeding rates, had voluntary organizations devoted to increasing breastfeeding even before the major WHO/UNICEF initiatives. Norway and Sweden also typify the dual-earner welfare state model. In this model, women are fully integrated into the labor force, but also are given sufficient

maternity leave and state supports to support carework, specifically child-rearing and breastfeeding.

Conservative Welfare Regimes: France and Ireland

France and Ireland have the lowest breastfeeding initiation rates among high-income, OECD countries. In 1998, 53% of French mothers initiated breastfeeding; that went up to 68% by 2010, but is still well below most other OECD countries. Similarly, in Ireland 38% of mothers initiated breastfeeding in 2007, and by 2007, initiated increased, but still only 50.7% of Irish mothers initiated breastfeeding. France and Ireland also have relatively low rates of female labor force participation (50% and 52%, respectively), so women in these countries are less attached to the labor force than in countries in other welfare regimes. In both France and Ireland, policies tend to support women's reproductive labor in isolation from productive labor, while not encouraging attachment to the labor market. The burden of all carework, then is squarely on the shoulders of mothers, who are not engaged in the traditional labor market, instead gaining their rights and positions in society through the informal care sector. Why, then, are breastfeeding rates so low? The most compelling reason is that France and Ireland fall into the "one and a half breadwinner" welfare typology. In both countries, women are responsible for the care, but they also are increasingly in the paid labor force, albeit as part-time workers. Indeed, the female share of part-time work in France and Ireland was 82% and 79%, respectively, which are among the highest rates in OECD countries. Because of the lack of state support for care, women are finding themselves in a double bind – they are still responsible for the traditional caring responsibilities at home, but are also working part-time in the labor force. This analysis will

show that breastfeeding rates in France and Ireland have stagnated relative to other countries because of the pressures that women face in a welfare state climate where they are responsible for *both* carework and part-time labor market attachment.

France

In the public health arena, France has been slow in adopting national recommendations on breastfeeding. Breastfeeding tracking and promotion is part of France's Programme National Nutrition Sante (PNNS), which is a public health program launched by the French government in 2001, specifically to address nutrition, obesity, health, and disease prevention (PNNS 2010). Breastfeeding falls under the objectives of the PNNS. The "Action Plan 2010" was released by the PNNS, and recommends that France designate a national breastfeeding coordinator, institute a national breastfeeding committee, and begin a national surveillance system to track breastfeeding duration and initiation on a national level (Turck 2010, NHMRC Clinical Trials Centre 2011). In the subsequent release of the PNNS Action Plan for 2011-2015, breastfeeding is still listed as a nutritional objective, but there were no further recommendations for action (PNNS 2011). France also has a non-profit breastfeeding promotion organization, the Coordination Francaise Pour L'Allaitement Maternel (coFAM), which was organized in 2000 and was designed to help organize both World Breastfeeding Week in France, as well as facilitate France's Baby-Friendly Hospital Initiative (CoFAM 2012, NHMRC Clinical Trials Centre 2011). The non-profit CoFAM is not part of the French government, but has been endorsed by the public health branch of the government, and they are currently responsible for promoting breastfeeding as part of the BFHI. They also perform regional surveys to assess the breastfeeding situation in France in the absence of national reporting.

France has implemented some of the principles of the International Code of Marketing of Breast-Milk Substitutes into law; in 1998, Decree number 98-688 declared that all information and education dealing with feeding of infants should include information on the benefits of breastfeeding and recommend that breastfeeding is the optimal method of infant feeding. The Decree further stated that equipment, information, and resources donated by infant formula companies can only be made if health care facilities request them. The decree also prohibits formula companies from donating free samples, except under certain conditions. There are fines associated with the decree; companies that distribute the free formula apart from the specific conditions are subject to financial penalty (French Decree No 98-688 1998).

France has some of the lowest breastfeeding initiation rates among high-income, OECD countries, and in fact, information on breastfeeding duration is not even collected at the national level. France has been extremely slow to adopt the Baby-Friendly Hospital Initiative; as of 2010, only 2% of France's hospitals were designated Baby-Friendly, the lowest percentage among the six countries in this analysis. In addition, France does not have a national breastfeeding committee or a national breastfeeding coordinator. While the Programme National Nutrition Sante (PNNS), a program under the national public health umbrella, is responsible for tracking breastfeeding data, France still has no national-level, representative surveys that report breastfeeding duration.

In a policy sense, France provides mothers with 16 weeks of maternity leave, paid at 100% of the mother's usual rate (Ray 2008). In addition, France provides parents with flexible time arrangements for taking care of their children. Mothers and fathers can take job-protected leave for up to three one-year increments after the initial leave period. France has an "Infant Accommodation Benefit" system called "prestation d'accueil du jeune enfant," or PAJE. This

system provides a minimum cash family allowance for the first three years after a child's birth, and also provides a "Supplement for Free Choice of Working Time," or "Complement de libre choix d'activite (CLCA)." Parents who choose to take additional time off, either full-time or part-time, during the three year period, also receive an income supplement. France has a long history of maternity leave legislation; the first paid maternity leave law was enacted in 1913 (Henneck 2003).

Despite generous maternity leave and some recognition of the WHO policy on regulating infant formula, France's breastfeeding rates remain very low. From a theoretical standpoint, France provides women with supports for reproductive labor; women have quite a bit of flexibility with respect to maternity leave, and the state supports the family after the birth of a child via cash subsidies. However, while these policies support women's reproductive labor, they also place the burden of carework on the woman, and women's rights and positions in France are shaped based upon the responsibility of care. France has a high female part-time employment rate (?), and when women face the responsibility of both care and working in the labor market part-time, they face constraints with respect to both care and productive labor

Ireland

Ireland has provided some public health supports for breastfeeding, but it has only been in the last decade that these policies have been implemented in any meaningful way. In 1991, Ireland implemented a voluntary agreement based on the International Code of Marketing of Breast-Milk Substitutes. The agreement is limited in nature and only covers basics of labelling and advertising (NHMRC Clinical Trials Centre 2011). Advertising of formula is restricted in the voluntary agreement, but the scope is limited and enforcement is spotty. The Food Safety

Authority of Ireland (FSAI) is responsible for monitoring the manufacturers and organizations, but little enforcement has been done. In fact, a report in 2003 stated that 34% of new mothers surveyed had received commercial gift packs from hospitals, and 81% had their names and addresses recorded by formula manufacturers (NHMRC Clinical Trials Centre 2011).

The first National Breastfeeding Policy for Ireland was published in 1994. It provided recommendations and targets for improving breastfeeding rates. The 1994 policy followed the recommendations of WHO and UNICEF, including the International Code on the Marketing of Breastfeeding Substitutes, the Innocenti Declaration, and the Baby Friendly hospital Initiative.

Ireland adopted the Baby-Friendly Hospital Initiative in 1998. They appointed a national breastfeeding coordinator in 2001 and established the National Committee on Breastfeeding in 2002. Volunteer groups such as La Leche League and Cuidiu-Irish Childbirth Trust made an impact on bf rates, according to the Interim Report of the National Committee on Breastfeeding (DOHC 2003).

Ireland's breastfeeding rates have been steadily increasing since 2001, but overall rates remain low. However, the rise of breastfeeding rates seems to parallel the rise of hospitals in Ireland designated as Baby-Friendly. In 2001, Ireland's breastfeeding initiation rate was 41.6%, and by 2010 the initiation rate was 54.1%. Ireland did not adopt the Baby-Friendly Hospital Initiative until 2005, but by 2010 thirty-five percent of Ireland's hospitals were designated as Baby-Friendly.

In 2005, Ireland's National Committee on Breastfeeding developed an action plan for increasing breastfeeding. Ireland's public health goals for breastfeeding follow the guidelines of the Ottawa Charter from the World Health Organization in 1986. The development of health

promotion practices and policy at international, national, and local levels is guided by the Charter. It defines promoting health as “the process of enabling people to increase control over, and improve their health.” Health promotion should follow five areas:

- Building healthy public policy
- Creating supportive environments
- Strengthening community action
- Developing personal skills
- Reorienting health services.

Source: WHO 2014

The goals of Ireland’s Breastfeeding Action Plan are:

- All families have the knowledge, skills, and support to make and carry out informed infant feeding decisions, particularly those least likely to breastfeed
- The health sector takes responsibility for developing and implementing evidence based breastfeeding policies and best practice
- Communities support and promote breastfeeding in order to make it the normal and preferred choice for families in Ireland
- Legislation and public policies promote, support, and protect breastfeeding
- Irish society recognizes and facilitates breastfeeding as the optimal method of feeding infants and young children.

The plan also has targets:

- Target 1: Data collection – the development of a comprehensive, accurate and timely infant feeding data collection
- Target 2: Breastfeeding rates – increase initiation by 2% per year and 4% per year for lower SES groups. Increase duration by 2% per year and 4% per year for lower SES groups. Will be measured at 3 months, 6 months, and 12 months
- Target 3: Baby Friendly Hospital Initiative – at least 50% of hospital births will take place in Baby friendly hospitals and 100% of hospitals will be Baby Friendly by 5 years from the start date.
- Target 4: Regional breastfeeding coordinators – implement 10 coordinators by October 2006

Source: Ireland Ministry of Health and Children, 2005

Policy-wise, mothers in Ireland are guaranteed 42 weeks of maternity leave total, with the first 26 weeks paid at 80% of the recipient's pre-tax wages (Ray 2008). The remaining 16 weeks is unpaid, but still job-protected. While there is no job tenure requirement for the maternity leave provision, mothers do have to have contributed to the insurance fund for at least 39 of the previous 52 weeks before taking it. There is no paid paternity leave, but mothers and fathers both have access to 14 weeks of unpaid leave, and they can take it any time up to the child's eighth birthday.

Ireland, like France, is part of the conservative welfare regime, which was shaped partly by the traditional male-breadwinner model. Ireland has the lowest breastfeeding rates, both

initiation and duration, of any country in this study, and in fact, of any high-income, OECD country. Despite fairly generous maternal leave entitlements and a public health commitment to breastfeeding that dates back to at least 1990, Ireland has struggled to raise its rates of breastfeeding. Part of the problem lies in monitoring and reporting; while Ireland's Perinatal Statistics Report has been collecting breastfeeding initiation data since 2003, there have been no nationally-representative studies that report breastfeeding duration. Ireland has increased its breastfeeding initiation rates since they have begun implementing the Baby-Friendly Hospital Initiative. As of 2010, 35% of Ireland's hospitals and maternity centers are certified Baby-Friendly, up from 0% as recently as 2004. While breastfeeding rates have been increasing, they are still the lowest among high-income, OECD countries. Like France, part of the problem lies in the "one and a half breadwinner" model that Ireland has shifted towards. Ireland has a large female share of part-time employment (79% in 2005, up from 72% in 1990), and so despite maternity leave entitlements that support women's reproductive labor and generous family benefits, women still are not fully attached to the traditional labor market, and are working part-time in addition to their caregiving responsibilities.

Summary

France and Ireland have the lowest rates of breastfeeding initiation and duration among all high-income, OECD countries. Both countries share a similar policy regime, what Jane Lewis (2002, 2009) describes as the "one and a half breadwinner" model. Women in both France and Ireland have generous supports for reproductive labor, but are not fully integrated into the labor force. France and Ireland have had some degree of success with implementing the WHO/UNICEF recommendations; France has a high degree of compliance with the International Code of Marketing of Breast-Milk Substitutes, while Ireland has increased its participation in the

Baby-Friendly Hospital Initiative. Despite the public health supports, women in France and Ireland face pressures to both perform all of the carework at home, but also work part-time in the traditional economy. This leads to a time deficit in which breastfeeding suffers.

Liberal Welfare Regimes – Canada and the United States

The United States and Canada, both part of the ideal type of the liberal, or market-based welfare regime, tend to provide support for women's attachment to the labor force, but have lower levels of support for women's reproductive labor. For example, the United States provides no nationally-mandated paid maternity leave, which makes it difficult for women to provide care for their infants and also continue to be economically active. Canada, though part of the same ideal type of welfare regime, provides more support for reproductive labor by guaranteeing 50 weeks of paid, job-protected maternity leave. Canada and the United States also have different breastfeeding outcomes. In 2009, 87.3% of Canadian mothers had initiated breastfeeding, while in the United States, only 73.9% of mothers initiated breastfeeding that same year. This analysis examines the ways in which Canada and the United States have instituted policies differentially, leading to different breastfeeding outcomes over the last several decades.

Canada

In the public health realm, Canada's national breastfeeding committee, called the Breastfeeding Committee for Canada (BCC) was founded in 1991. It was established as part of a Health Canada initiative, and is affiliated with multiple professional agencies and committees (Breastfeeding Committee for Canada 2014). The mission of the BCC is to "establish breastfeeding as the cultural norm for infant feeding within Canada" (Breastfeeding Committee for Canada 2014). The BCC is responsible for administering the Baby-Friendly Hospital

Initiative in Canada, and Canada's first Baby-Friendly hospital was certified in 1999. In 2002, the BCC developed a position statement that includes all of the recommendations from WHO and UNICEF, including promoting exclusive breastfeeding for 6 months, complementary breastfeeding for 2 years, and promoting the Baby-Friendly Hospital Initiative.

Canada only provides for voluntary enforcement of the provisions of the Code. Nathoo and Ostry (2009) argue that while Canada did quite a bit of promotion of breastfeeding in the 1980's, they stagnated in the 1990s, and were not overly supportive of WHO initiatives. In fact, because the provisions of the Code were only voluntary, infant formula companies were able to continue to market formula, largely unregulated. A 1993 survey of Canadian hospitals reported that over 80 percent had an exclusive contract with formula manufacturers (Nathoo and Ostry 2009). Formula companies marketed both in hospitals and, eventually, directly to mothers through the mail. The marketing continued through the 1990s, but things changed in the late 1990s, when hospitals began refusing the free samples and formula companies lost challenges in court (Nathoo and Ostry 2009).

Canada has increased its participation in the Baby-Friendly Hospital Initiative in recent years, and twelve percent of all hospitals in Canada had been designated as Baby-Friendly by 2006. While overall participation in the Baby-Friendly Hospital Initiative remains below that of many other countries, Canada's breastfeeding rates – both initiation and duration – have been slowly increasing. In 2003, when only one percent of Canada's hospitals were Baby-Friendly, breastfeeding initiation was at 84.9 percent (Canadian Community Health Survey 2010). By 2010, breastfeeding initiation had increased to 87.3 percent, and breastfeeding duration had increased from 46.7% at six months in 2003 to 53.1% at six months in 2007 (Kehler, et. al. 2009).

Policy-wise, Canada is a valuable case study because it underwent a major change in maternity leave policy in 2001. Before 2001, Canadian women were guaranteed 15 weeks of paid leave, followed by an additional 10 weeks that could be split between the mother and the father (Baker and Milligan 2008). Effective January 1, 2001, Canadian mothers received a substantial jump in their maternity leave coverage; they were guaranteed an additional 25 weeks of leave. Canada's maternity leave is administered at the provincial level, so some provinces offer slightly different coverage than others, but the leave is paid for by the federal Employment Insurance (EI). In order to qualify for the paid entitlement, employees must have been working at least 600 hours in the previous 52 weeks and paid into the system (Ray 2008). Those women who qualify then are guaranteed 55% of their regular annual salary for a period of 50 weeks (Ray 2008). Mothers also may continue to work part-time during the maternity leave period without losing the EI benefits, as long as they earn no more than 25% of their regular salary (Ray 2008). Fathers are also able to take job-protected, unpaid paternity leave; it varies from province to province, but the minimum amount in three provinces is 37 weeks (Ray 2008).

Canada has a fairly high breastfeeding initiation rate, 87.3% in 2010. Canada's breastfeeding rates have shown a marked increase over the past several decades; in 1995, breastfeeding initiation was only at 69.3%. In addition, 38.7% of mothers were breastfeeding at six months in 2003, and that has jumped to 54% in 2009 (Canadian Community Health Survey 2010). How did Canada increase its breastfeeding rates so rapidly? This analysis has shown that a combination of early adoption of international-level public health initiatives, combined with a generous maternity leave policy, has supported mothers who choose to breastfeed. Canada established their national breastfeeding committee in 1991, only one year after the Innocenti Declaration was passed (NHMRC Clinical Trials Centre 2011). Compared to other countries in

this analysis, Canada was a relative early adopter of this provision of the Declaration. Canada also implemented the “Brighter Futures” initiative in 1992, which was the first national breastfeeding policy (Breastfeeding Committee for Canada 2014). By addressing breastfeeding as a key public health objective in the early 1990’s, Canada put breastfeeding in the forefront of public health initiatives. Canada continues to struggle, however, in implementing the Baby-Friendly Hospital Initiative. The BFHI was identified as a key goal in 1996, and was not implemented until 1998 (Breastfeeding Committee for Canada 2014). Compared to Sweden and Norway, both with higher rates of breastfeeding, Canada was slower to adopt the BFHI. Indeed, Canada’s incidence of designated Baby-Friendly hospitals remains low, with only twelve percent of hospitals being designated as Baby-Friendly in 2010 (Labbok 2012). In addition, Canada has adopted very few provisions of the International Code of Marketing of Breast-milk Substitutes; all of the provisions are voluntarily implemented. While Canada ratified the Code in 1981, it was left up to the individual provinces to enforce the provisions. As such, infant formula companies have had significant opportunity to market to Canadian mothers.

Maternity leave protections have facilitated duration of breastfeeding; in 2000, legislation was enacted to reform the duration of paid maternity leave (NHMRC Clinical Trials Centre 2011, Baker and Milligan 2008). Prior to 2000, mothers had 25 weeks of partially paid leave; in 2000, mothers got an increase in paid leave, to 50 weeks of partially-paid leave (Baker and Milligan 2008, Ray et. al. 2008). In their analysis of the maternity leave reform in Canada, Baker and Milligan found that breastfeeding duration increased 14% in the post-reform cohorts.

In the specific case of Canada, both incidence and duration of breastfeeding has been continuing to increase, and to increase at a fast rate. Canada is an early adopter of some of the provisions of the Innocenti Declaration – they started a national-level breastfeeding committee in

1992, only one year after the Declaration. While Canada is classified as part of Esping-Andersen's liberal welfare regime, the family policies are more supportive of both women's productive and reproductive labor. Canada has had maternity leave since 1971 as part of the Employment Insurance system, and the provision for fathers demonstrates a support for families beyond the male-breadwinner structure. While Canada is part of the liberal welfare regime, its more generous maternity leave structure demonstrates support for both productive and reproductive labor. Baker and Milligan (2008) studied the effect of the major 2001 change in maternity leave entitlements in Canada and found that in the three cohorts immediately after the longer leave was instituted, women breastfed 14% longer than the women in the pre-reform cohorts.

United States

In contrast, the United States has had a tenuous history with the WHO/UNICEF breastfeeding recommendations. The United States endorsed the Code in 1994, but no provisions of the Code are law, and marketing of formula is unregulated. In fact, the United States was the sole "no" vote when the International Code was passed, 118 to 1, in 1981 (Brady 2012). Infant formula has a long history of marketing in the United States; until the late 1980s, formula was marketed to health care professionals, who then supported and recommended certain formula brands to women in health care facilities (Shealy et al. 2005). However, starting in the late 1980s, formula companies began marketing directly to women, through magazines, commercials, and other direct-to-consumer means. As Shealy et al (2005) point out, the United States has a longstanding tradition of free speech and advertising, and that is at odds with the recommendations of the Code. The United States Food and Drug Administration (FDA) regulates infant formula nutrient content, and companies that wish to market formula in the

United States must register with the FDA. However, the FDA is not responsible for overseeing or regulating any such marketing (NHMRC Clinical Trials Centre 2011). The United States' limited adoption of the Code and unwillingness to regulate infant formula marketing is also in line with the market-based, or liberal welfare state. As part of the liberal welfare state, the United States tends to rely on the market to regulate social policies.

The United States Breastfeeding Committee (USBC) was founded as a tax exempt nonprofit in 2002, seven years after the planning started for the committee (USBC 2014). The committee was formed in response to the Innocenti Declaration, but it took 12 years from the Declaration until the USBC was founded. The USBC was planned and drawn up by a group of volunteers committed to increasing breastfeeding. The USBC has been active in setting up breastfeeding coalitions in all 50 U.S. states. However, these coalitions are often voluntary and do not have state or federal funding (USBC 2014). In 2000, the United States Centers for Disease Control (CDC) launched *Healthy People 2010*, a national initiative targeting a wide variety of health-related indicators. This was a follow up to *Healthy People 2000*, a similar program launched in 1990 (National Center for Health Statistics 2012). *Healthy People 2010* marked the first time that breastfeeding was included as an objective under the target public health objective of improving maternal, infant, and child health (National Center for Health Statistics 2012). The objectives include increasing any breastfeeding, breastfeeding at six months, breastfeeding at one year, and exclusive breastfeeding at both three and six months (National Center for Health Statistics 2012).

The United States has no paid maternity leave. Until 1993, there was no nationally-mandated, job-protected leave for new mothers in the United States. In 1993, the Family and Medical Leave Act (FMLA) was passed, which provides for 12 weeks of unpaid, job-protected

leave for new mothers. The 12 weeks of leave can also be taken due to illness, illness of a family member, or by fathers after the birth of a child. FMLA is unique among high-income countries, first because the leave is unpaid, and second because the leave is not exclusively for the birth of a child and can also be used for illness-related leave. In order to be eligible for FMLA leave, the recipients must have worked for at least one year in their job, and the job must be with an employer that has at least 50 workers.

The United States, as part of the liberal welfare regime, has a laissez-faire approach to many of the WHO/UNICEF recommendations, preferring instead to promote self-regulation and market-regulation of many of these breastfeeding-supportive policies. The United States has seen an increase in breastfeeding initiation and duration since the 1970s, but its rates still lag behind WHO recommendations and other countries in this analysis. The Family and Medical Leave Act of 1993 marked the first true governmental policy designed to address maternity leave, but this legislation came much later than legislation supporting maternity leave in other similarly-situated countries, including Canada, which is in the same welfare regime typology. The United States was late to adopt the Baby-Friendly Hospital Initiative, and as of 2010, only 4% of hospitals with maternity wards were designated Baby-Friendly. This lack of adherence to the BFHI ties in with the United States' welfare state typology; because formula companies have free reign to advertise and provide samples to mothers, it is increasingly difficult to certify hospitals as Baby-Friendly. The goals and objectives of major WHO/UNICEF recommendations such as the BFHI and the Code are at odds with a welfare state that promotes market-based solutions to family issues. In the United States, the maternity leave entitlement structure supports women's productive labor, but does not support their reproductive labor. Women have no paid maternity leave, and job-protected, unpaid leave was only introduced in 1993. As part of the liberal welfare

regime, the United States as general policy, entrusts the markets to take care of family-related leave and supports.

Discussion

While Canada and the United States are both part of the liberal welfare regime, they have differing breastfeeding outcomes, and very different approaches towards family policies. The United States has no paid maternity leave, and instead leaves much of the burden of care up to the markets. In Canada, women receive 52 weeks of maternity leave, paid at 55% of the mother's salary. While Canada does provide fewer family benefits, in line with the liberal welfare regime, they do support both women's reproductive and productive labor. Canada has a low female share of part-time employment (68% in 2005) and a high female labor force participation rate (61% in 2005). The United States has similar rates of female labor force attachment, but does not provide women with support for reproductive labor. In addition, Canada has increased its participation in the Baby-Friendly Hospital Initiative; as of 2009, 12% of Canada's hospitals were Baby-Friendly, as opposed to 4% in the United States. Studying the development of breastfeeding rates in both Canada and the United States is useful, because although both are in the same general welfare typology, the supports that Canada provides for women's reproductive labor allow women the time and agency to breastfeed.

Chapter 6: Summary and Conclusion

Summary

I began this dissertation by asking the overarching question: why does breastfeeding vary at the national level? Since the 1970's, breastfeeding rates among high income countries have been increasing, but at very different rates. I framed my analysis of breastfeeding variation through the lens of theories of carework and welfare state policies. Specifically, I asked:

What specific policies help to promote breastfeeding among high-income, OECD countries?

Which policies and practices signal the valuation of breastfeeding as a form of care work?

In investigating the literature surrounding carework, the welfare state, and breastfeeding, I focused on policies that support women's productive labor, that is, attachment to the labor force, and policies that support women's reproductive labor, that is, bearing and caring for children. Some countries, such as Norway and Sweden, have policies that support both productive and reproductive labor, including long maternity leaves, designated leave for fathers, childcare subsidies, and generous family benefits. Some countries, especially those in the market-based welfare regimes such as the United States, only offer little to no support for women in the labor force and don't provide policies that encourage and support reproductive labor. For example, the United States has no nationally-mandated, job-protected paid maternity leave. Other countries, especially those in the conservative welfare regime such as France and Ireland, support women's reproductive labor but do not encourage attachment to the labor force, so mothers can only gain their rights and positions in society through informal carework. Countries

in the conservative regime have increasingly shifted from a “male breadwinner” model to a “one and a half breadwinner” model, where women are still responsible for the majority of the care at home, but are also performing part-time work to supplement the family income. This produces a double bind for women and makes it difficult to engage in carework, especially time-intensive care such as breastfeeding.

I also examined the various international-level public health initiatives designed to increase breastfeeding rates worldwide. I focused on Innocenti Declaration, a 1990 joint World Health Organization (WHO)/United Nations Children’s Fund (UNICEF) policy recommendation and its subparts. The Innocenti Declaration aimed to increase breastfeeding by recommending that countries adopt a national breastfeeding coordinator and committee, ensure that hospitals follow the Ten Steps to Healthy Breastfeeding, encourage countries to adopt principles of the International Code of Marketing of Breast-Milk Substitutes, and provide maternity leave to mothers. The Ten Steps to Healthy Breastfeeding form the basis of the Baby-Friendly Hospital Initiative, where hospitals with maternity wards are certified as Baby-Friendly if they follow the Ten Steps. There is considerable variation among high-income countries in participation and adherence to these initiatives.

In the first phase of my analysis, I used both ordinary-least squares regression and fuzzy-set qualitative comparative analysis (QCA) to investigate the effects of both policies and public health initiatives on breastfeeding initiation and breastfeeding duration among 18 high-income, OECD countries. In my regression analysis, I found that participation in the Baby-Friendly Hospital Initiative is a significant predictor of breastfeeding initiation. I also found that the only significant predictor of breastfeeding duration was the percentage of women in parliament.

Interestingly, I found that there is no effect of maternity leave on breastfeeding duration, despite previous research that found a connection between maternity leave and breastfeeding outcomes.

In my QCA analysis, I found that adherence to the Baby-Friendly Hospital Initiative is a necessary condition for both breastfeeding initiation and duration. Specifically, I found that all countries in the set of low adherence to the Baby-Friendly Hospital Initiative are also in the sets of countries with low breastfeeding initiation and low breastfeeding duration. However, low adherence to the Baby-Friendly Hospital Initiative is not sufficient in and of itself to lead to low breastfeeding outcomes; there are other causal conditions involved in the configurations. I also found that France and Ireland share similar causal pathways to low breastfeeding initiation and duration, which clusters them together as part of the “one and a half breadwinner” model of the Conservative welfare regime.

In my second analytical phase of this dissertation, I examined trends in breastfeeding rates over time among six countries, Canada and the United States, part of the liberal welfare regime, France and Ireland of the conservative welfare regime, and Norway and Sweden, part of the social-democratic regime. In the early 1970’s, breastfeeding rates in all of these high-income countries were very low, but by the mid 2000’s, breastfeeding outcomes varied widely throughout all of the six countries in my analysis. Norway and Sweden have very high rates of breastfeeding initiation and duration, and also were early adopters of many of the World Health Organization international recommendations. Norway and Sweden have enacted policies that support both women’s productive and reproductive labor, such as generous maternity leave, designated leave for fathers, and high spending on family benefits. Both countries also have high female labor force participation and a lower share of women in part-time employment.

In contrast, France and Ireland, both have policies that support women's reproductive labor, such as generous maternity leave entitlements and high family spending, but do not encourage female attachment to the workforce. Women in these countries have to make a forced choice: do they want attachment to the labor market, or do they want a family? This is evidenced by low female labor force participation and a high female share of part-time employment. While women are provided supports for reproductive labor, they are not considered full members of the labor market, but instead must work part time to supplement family income. This places women in a double bind, where they must do the caring at home, but still work in the traditional labor market, with fewer of the supports than the Scandinavian countries provide.

Canada and the United States, both in the liberal welfare regime, provide few supports for female productive labor and even fewer for female reproductive labor. Canada differs from the United States, however, in that they do provide generous maternity leave and some public supports for care. The United States, by contrast, provides no paid maternity leave and very little in the way of public supports for care.

The differential policy regimes have led to the differential development of breastfeeding outcomes. In the Scandinavian countries, breastfeeding was able to rapidly increase because of policies supporting women's productive and reproductive labor, valuing care work as a public good and supporting international public health initiatives as public support for care. In France and Ireland, care is still considered the domain of the woman, and there is less in the way of public support for care. This lack of recognition of carework as a valued public good has resulted in lagging adherence to international public health initiatives targeting breastfeeding. Combined with the constraints women face in these countries due to the "one and a half breadwinner" model, breastfeeding rates have remained stagnant. In Canada, although it is part of the liberal

welfare regime, there are more supports for women's reproductive labor, and care is valued more as a public good and public supports for care are in place. As a results, Canada's breastfeeding rates have increased much more rapidly than in the United States, where support for women's reproductive labor is left up to market forces.

Conclusions and Theoretical Implications

As a results of my analyses, I have come up with several key conclusions that have theoretical implications in both gendered welfare state theory and public health literature. First, I found that countries that are early adopters of international recommendations have the highest breastfeeding rates. Compliance with the WHO/UNICEF initiatives, however, depends on welfare regime policies and overall support for women in both productive and reproductive labor. For example, Norway and Sweden were early adopters of the Baby-Friendly Hospital Initiative and many parts of the Innocenti Declaration. The Innocenti Declaration, one of the most comprehensive WHO/UNICEF policies targeting breastfeeding, recommends supports for women to engage in reproductive labor, specifically breastfeeding, and includes provisions for women to combine breastfeeding with productive labor in recommending a minimum amount of paid maternity leave. Both Sweden and Norway also have policies that recognize women as both contributors to the labor market and as valued providers of carework. In these countries, women gain their rights and positions in society through *both* productive and reproductive labor, and carework is supported as a valued public good.

Second, my results suggest that the Baby-Friendly Hospital Initiative is significantly related to higher breastfeeding initiation. Results from the multiple regression analyses in

Chapter 4 show that the percentage of baby-friendly hospitals among the 18 high-income OECD countries has a significant, positive influence on breastfeeding initiation. In addition, the results of the fsQCA analysis demonstrate that being part of the set of countries with low participation in the Baby-Friendly Hospital Initiative is a necessary condition leading towards being in the set of countries with both low breastfeeding initiation and low breastfeeding duration. That is, countries with low participation in the Baby-Friendly Hospital Initiative also belong to the set of countries with low breastfeeding duration. The results of my small-n analysis support the macro analysis. For example, Sweden, which has 97% of its hospitals certified as Baby-Friendly, has not kept up with institutionalized control of its Baby-Friendly Hospital Initiative since 2004 and many of its hospitals are failing to get recertified. Since 2004, the rate of breastfeeding duration in Sweden has also decreased from a high of 72.4% of women breastfeeding at six months in 2003 to only 65% in 2009.

Ireland, on the other hand, increased its Baby-Friendly Hospital Initiative participation throughout the 2000's, and Ireland's breastfeeding initiation has increased from 38% in 2000 to 54.1% in 2010. By contrast, France, in the same welfare regime and with similar breastfeeding outcomes, but only 2% of its hospitals certified as Baby-Friendly, only increased breastfeeding initiation from 63% in 2003 to 68.7% in 2010.

Finally, I find that women's representation in government and the political process is an important predictor of breastfeeding duration. Despite long maternity leave periods, women in the conservative welfare regime have very low breastfeeding duration, compared to women with similarly long leaves in Scandinavian countries. One reason for this is the differential treatment of female-friendly policies, driven in part by the much higher percentage of women in parliament in the Scandinavian countries. As breastfeeding rates began to rise from basement levels across

high-income Western countries in the 1960s and 1970s, feminist groups drove the push to increase rates, and to work towards legislation and taking up of international policies designed to support breastfeeding. Countries with high levels of women in parliament, mostly Scandinavian countries, have higher breastfeeding duration because of the female-friendly climate of these nations.

Limitations

My study has several important limitations. First, data limitations were a source of difficulty throughout the dissertation. Breastfeeding data across countries are collected through different means, at different times, and often with different definitions. In addition, breastfeeding initiation and duration data from the 1970's and 1980's is very sparse across all six of my comparison countries. This makes it difficult to see exactly when spikes in breastfeeding outcomes occurred, and to coordinate those changes with policy and public health changes. In addition, because breastfeeding data is collected by country surveys, data collections procedures are not comparable. Some countries rely heavily on recall information, asking women up to several years after the birth of her child to recall breastfeeding outcomes. Some countries survey every woman who has given birth in a hospital, while others rely on samples. Finally, data are not always directly comparable. For example, some countries collect breastfeeding duration data at three months, some at four months, and some at six months. Countries also may collect exclusive breastfeeding information, but not "any" breastfeeding information, and vice versa.

Related to data accessibility, a second limitation of this dissertation is that country selection was guided partly by available breastfeeding data. Data limitations led me to exclude

Germany, an important part of the Conservative welfare regime and a large economy in Western Europe, from my cross-country analysis. Switzerland is another country that was omitted from the analysis due to lack of comparable breastfeeding data. I also had to make decisions on which countries to include; some of the countries such as Greece and the Czech Republic were not included in my analysis because they have smaller economies would introduce more variation into my analysis of larger economic powers in the OECD. Increasing my sample size by including all OECD countries would provide better explanatory power and more degrees of freedom, but would introduce additional variation into the dataset. I could control for a measure of GDP per capita, for example, and this could be one avenue for future research.

Future Directions

Keeping in mind the limitations of directly comparing data across countries, future directions for this research would focus on nesting individual-level breastfeeding outcomes within broader country-level variables. One particular appealing direction is to examine individual-level breastfeeding outcomes in countries within the same welfare regime, such as the United States and in Canada. More research has been done in the United States in regards to the individual-level factors that influence breastfeeding outcomes, especially noting the significant racial, ethnic, and class disparities in breastfeeding rates. Much of the research has also focused on employment-level characteristics that may constrain or facilitate choice. However, since the United States is the only high-income OECD country that does not provide paid, job-protected leave, the individual level factors that influence breastfeeding may differ substantially in other countries. Because of this disparity, it may be helpful to compare the individual-level factors that

influence breastfeeding in two countries with cultural similarities but structural differences. Future research would compare the United States and Canada because these two countries are culturally similar, but have very different structural and institutional policies. Jason Kaufman (2009) comments that while Americans and Canadians are culturally well-integrated, they consistently diverge over governmental policies, such as the welfare state responsibility of the federal government, the separation of church and state, and the relationship between the federal government and the state or provincial governments. The differences between the United States and Canada can also be conceptualized in terms of support for women's reproductive and productive labor. Although the United States and Canada are both considered liberal welfare state regimes, Canada offers more government transfers to women after birth, including paid maternity leave, and the Canadian government offers supports for reproductive labor that are similar to many conservative and social-democratic welfare states. In contrast, the United States offers the least job-protected leave among all high-income, Western OECD countries, and is the only high-income Western OECD country that does not provide national paid maternity leave (Ray et. al. 2010). The United States guarantees 12 weeks of non-paid, job protected maternity leave, while Canada guarantees 29 weeks of paid, job-protected leave and 23 additional weeks of unpaid, job-protected leave (Ray et. al. 2010). Because women in the United States are not guaranteed paid maternity leave, they often have to combine paid professional work and childrearing duties very soon after giving birth, which makes extended breastfeeding very difficult. Conversely, women in Canada are likely to have more time at home after the birth of a child, which may facilitate increased infant feeding choice. Examining the differences in individual-level predictor variables, nested within a broader framework of policy, will elucidate the choices and constraints that women face.

Appendix A – Data Sources

Breastfeeding Initiation: Sources

Breastfeeding Initiation: Data Sources						
Year	Canada	France	Ireland	Norway	Sweden	US
1976		Turck 2010				
1984			National Committee to Promote Breastfeeding. 1994.			
1986			National Committee to Promote Breastfeeding. 1994.		Hofvander 2005	
1990			National Committee to Promote Breastfeeding. 1994.			
1993						Turck 2010
1995	National Longitudinal Survey of Children and Youth, 1995	Vilian et al. 2005				
1997					Galtry 2003	

1998		Vilian et al. 2005		Lande et al. 2003		Galtry 2003
2000			Galtry 2003		Gottvall, 2011	CDC 2014
2001	Statistics Canada 2014		Ireland Health Research and Information Division. 2012			
2002			Ireland Health Research and Information Division. 2012			CDC 2014
2003	Statistics Canada 2014	Vilian et al. 2005	Ireland Health Research and Information Division. 2012			
2005	Statistics Canada 2014		Ireland Health Research and Information Division. 2012			
2006			Ireland Health Research and Information Division. 2012	Norwegian Health Directorate 2008	OECD 2009	
2007	Statistics Canada 2014		Ireland Health Research and Information Division. 2012			CDC 2014
2008				OECD 2009		
2009	Statistics Canada 2014					CDC 2014

2010		Blondel et al. 2012				
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Breastfeeding Duration Data Sources:

Breastfeeding Duration, Percentage: Data Sources										
Year	Canada		France	Ireland	Norway		Sweden		US	
	3 months any	6 months any	3 months exclusive	3 months exclusive	3 months any	6 months any	4 months any	6 months any	3 months exclusive	6 months any
1968					Hansen et al 2012					
1972								Hofvander 2005		
1980								Hofvander 2005		
1982		Natho and Ostry 2009								
1986							Gottvall 2011	Gottvall 2011		
1990							Gottvall 2011	Gottvall 2011		
1994							Gottvall 2011	Gottvall 2011		

1995				Tarrant 2008						
1996	Canadian Perinatal Health Report 2000									
1998					Land e et al. 2003	Land e et al. 2003	Gottv all 2011	Gottvall 2011		Galtry 2003
2000							Gottv all 2011	Gottvall 2011		Nation al Center for Health Statisti cs 2010
2001										CDC 2012
2002						Hans en et al. 2012				CDC 2012
2003		Health Canada 2012					Gottv all 2011	Gottvall 2011	Nation al Center for Health Statisti cs 2010	CDC 2012

2004				Tarrant 2008			Gottvall 2011	Gottvall 2011	CDC 2012	CDC 2012
2005	Health Canada 2012		Blond el et al. 2005						CDC 2012	
2006							Gottvall 2011	Gottvall 2011	National Center for Health Statistics 2010	National Center for Health Statistics 2010
2007										
2008										
2009		Health Canada 2012						Gottvall 2011		

Full Dataset

Country	Weeks FTE Maternity Leave	Female Labor Force Participation	Percentage Baby-Friendly Hospitals	Public Spending on Family Benefits	Cesarean Section Rate	Fertility Rate, Total	Percentage of Women in Parliament	Health Spending, % GDP	Female Part-Time Employment Rate
Australia	0	57	8	2.83	30.3	1.8	27.4	8.5	38.7
Austria	16	51	7	2.95	27.1	1.4	33.9	10.4	30.1
Belgium	13.9	46	0	3.45	15.9	1.8	34.7	10	33.1
Canada	28.6	61	1	1.55	26.3	1.5	21.1	9.8	26.9
Denmark	18.6	61	18	3.9	21.4	1.8	38	9.8	23.9
Finland	29	57	14	3.29	16.3	1.8	37.5	8.4	14.8
France	19.8	50	0	3.98	18.8	1.9	12.2	11	22.6
Ireland	20.8	52	0	4.24	26.2	1.9	13.3	7.6	34.6
Italy	25.1	38	0	1.58	38.2	1.3	11.5	8.7	28.8
Japan	26	48	6	1.48	17.4	1.3	7.1	8.2	31.7
Netherlands	16	57	7	2.48	13.5	1.7	37.6	10.9	60.7
New Zealand	14	60	0	3.56	20.4	2	28.3	8.4	35.1
Norway	38	60	60	3.34	16.6	1.8	38.2	9.5	32.9
Portugal	17	55	0	1.71	34	1.4	19.1	10.4	14
Spain	16	46	0	1.77	25.9	1.3	36	8.3	21.5
Sweden	40	59	97	3.75	17.3	1.8	45.3	9.1	19
UK	12.6	55	14	4.22	22	1.8	18.1	8.3	38.5
US	0	58	1	1.22	30.3	2.1	15	15.8	17.8
Sources:	Ray, et al. 2012	World Bank, 2014b	Labbock, 2012	OECD 2009	OECD 2011	World Bank 2014a	World Bank 2014c	World Bank 2014d	ILO 2014

Appendix B – Additional Analyses from Chapter 4

Regression Models – alternative specifications of maternity leave

In this analysis, I run regress breastfeeding duration against two different specifications of maternity leave. The first specification is the wage replacement rate for women at three months. The second specification is a dummy variable, with 0 = no paid leave at 3 months and 1 = paid leave at 3 months, regardless of wage replacement rate. The data and model specifications are below:

Country	Wage replacement rate at 3 months	Paid leave at 3 months?
Australia	0	0
Austria	0	0
Belgium	75	1
Canada	55	1
Denmark	90	1
Finland	67	1
France	100	1
Ireland	80	1
Italy	80	1
Japan	60	1
Netherlands	100	1
New Zealand	100	1
Norway	100	1
Portugal	100	1
Spain	100	1

Sweden	80	1
UK	90	1
US	0	0

OLS Regression of Exclusive Breastfeeding at 3 Months, Alternative Maternity Leave Specifications Outcome Variable is $\ln(p/(1-p))$		
Predictors	Model 1	Model 2
Wage Replacement Rate at 3 Months	-0.00357 (0.00528)	
Paid Leave at 3 months		-0.459 (0.484)
Constant	-0.172 (0.417)	-0.0434 (0.442)
Adjusted R-squared	-0.0330	-0.0060
F-Statistic	0.46 P = 0.509	0.90 P = 0.357
Note: In 2-tailed tests: †: p<.10 *: p<.05 **: p<.01 *** p=.000		

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