

MOTHERS' AWARENESS OF THEIR BREASTFEEDING RIGHTS: A FACTOR
INFLUENCING BREASTFEEDING RATES

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INFLUENCING BREASTFEEDING RATES

by

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DEDICATION

First, I dedicate this endeavor to my wife and my children. My wife, Eunice Jasso Smith was my support, my partner, and my *distraction* through it all. Second, my children Lisette, Mason, and Paxton, in addition to so many other things, were my motivation to forge ahead as they let me know how proud they were of me for going for a doctorate. Little means more to me than my family being proud of me. I love you all.

ABSTRACT

MOTHERS' AWARENESS OF THEIR BREASTFEEDING RIGHTS: A FACTOR INFLUENCING BREASTFEEDING RATES

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The University of Dallas, 2019

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Breast milk has been well established as superior to formula for infants. However, while exclusive breastfeeding initiation rates of 83.2% are relatively high in the U.S. (CDC, 2018), breastfeeding rates drop off considerably after three months, with an average rate of 46.9%, and only 24.9% at six months (CDC, 2018). In an effort to improve these rates, federal and state governments have passed laws to promote breastfeeding, educate parents, and protect mothers' rights while breastfeeding. However, new mothers do not appear to be aware of the rights that have been granted by these new laws. This study was designed as a field study to examine whether mothers' level of awareness of the breastfeeding-centric laws and of their rights thereunder are an additional factor in breastfeeding rates. The study used a cross-sectional descriptive survey, collecting data from 118 mothers from six states with high, median, and low breastfeeding duration rates as reported by the CDC. The results indicate that age, household income, education, and employment status do influence breastfeeding duration. There is no statistically significant indication that race, age, household income, education, state of residence, fathers' feeding preferences, number of children, or employment status influence mothers' awareness of

breastfeeding laws. There is also no statistically significant evidence that mothers' awareness of breastfeeding legislation influences breastfeeding duration rates.

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1. INTRODUCTION

Breast milk undoubtedly offers more health benefits than formula for infants, as indicated through multiple research studies (e.g., Riezzo, Castellana, DeBellis, Laporgia, Indrio, & Chiloiro, 2003; Lanting, Huisman, Boersma, Touwen, & Fidler, 1994). Unlike formula, breast milk provides stem cells, nucleotides, growth factors, enzymes, antibodies and a host of other beneficial elements that help prevent illness and promote good health (Davano, et al, 2013; Hale & Hartman, 2007; Lawrence & Lawrence, 2011; Mossberg, Hun Mok, Morozova-Roche & Svangorg, 2010). Nevertheless, the U.S. continues to struggle to improve breastfeeding initiation and duration rates.

In an effort to improve such rates, the Obama administration signed into law the Patient Protection and Affordable Care Act (a.k.a. ACA and Obamacare) on March 23, 2010. At that time, national breastfeeding initiation rates were meeting the *Healthy People 2010* target rate of 75%; however, the six-month duration rate only reached 43% rather than the target objective of 50% (Office of the Surgeon General, 2011). Seven years later, in 2017, breastfeeding initiation and duration rates had improved with initiation rates surpassing the *Healthy People 2020* target of 81.9% with a rate of 83.2%, and closing the gap on breastfeeding duration with a rate of 57.6% for six months versus the target of 60.6% (CDC, 2019). However, these are national averages and do not fully capture the variance between states. Some states have consistently

ranked at the top of the list for breastfeeding initiation and six-month duration, including Alaska at 93.1% and 69.2% and Washington at 92.4% and 72.7% (in 2018) respectively. On the other hand, other states have consistently continued to rank at the bottom, including Mississippi at 63.2% and 35.4% and Louisiana at 67% and 39% respectively (CDC, 2019). Furthermore, while the ACA is applicable to all states, there appear to be differences in the improvement in the reported rates between 2010 and 2018. Indeed, Alaska continued to lead in the categories of initiation and six-month duration with an increase of 40.1% and 43.3% respectively. Conversely, Mississippi continued to remain at the bottom and even backslid in initiation and six-month duration with a reduction of -10.3% and -0.5% respectively.

In addition to the ACA, all states have passed laws to improve lactation support for mothers and babies. Some states, like Washington, Mississippi, and Louisiana, have passed laws specifically to clarify that breastfeeding in public is not considered indecent exposure. Indeed, further legislation in those same states stipulated that women have a right to breastfeed in public (NCSL, April 2019). Other states, including Hawaii, Illinois, and Indiana, passed laws requiring that employers provide break times for mothers to express breast milk. Some states, such as Louisiana, have even surpassed the ACA's dedicated space requirements for breastfeeding by mandating that *all* state-owned or funded buildings are required to have such facilities regardless of the number of employees (State of Louisiana, 2011).

Previous studies have found multiple reasons mothers stop breastfeeding, which will be detailed in the Literature Review. Still, while numerous laws to protect breastfeeding mothers' and babies' rights have passed, it is unclear whether mothers are aware of these changes and whether that awareness has caused more mothers to pump at work and continue to do so for a longer period of time.

This raises the question as to whether all resources dedicated to providing additional protections have significantly improved mothers' awareness and positively influenced their breastfeeding decisions, thus improving breastfeeding initiation and duration rates. At the time of this proposal, there have been very few studies (Furey, Landfried, Kelly, & Jones, 2015; Kogan, Singh, Dee, Belanoff, and Grummer-Strawn, 2008) evaluating mothers' awareness of their legislative rights, and even fewer examining the effects of legislation on breastfeeding initiation and duration rates, which this study will expand upon. To explore this effect, the following research question is proposed for examination.

RQ: Does mothers' awareness of laws protecting their breastfeeding rights affect the relationship between breastfeeding centric laws and breastfeeding rates?

Chapter 2 provides a detailed literature review in which findings from previous studies are presented in narrative form to support the premise of this study proposal. The literature review will first discuss the benefits of breast milk and the benefits and shortcomings of infant formula, as well as the efficacy of breast milk versus formula. It will then present the reasons mothers espouse for why they cease breastfeeding and the primary causes for the disparities in breastfeeding rates between states. The second half of the literature review examines state and federal legislation implemented to support the breastfeeding efforts of mothers and their babies. The chapter closes with the hypotheses' development in support of this study's proposed model.

Chapter 3 discusses the methodology used in this study: a cross-sectional survey of the opinions of new mothers in Washington, Oregon, Missouri, New Jersey, Louisiana, and Mississippi. Chapter 4 provides the results and a detailed analysis including several linear regressions to test the partially mediated model. Chapter 4 will also provide results for other

findings that focus on the factors that mothers cite as reasons for their cessation of breastfeeding. Chapter 5 discusses the results and limitations of the study and provides conclusions and possible implications for policy makers, employers, academia, and future researchers. References and appendices are provided at the end of this document.

2. LITERATURE REVIEW

2.1 The benefits of breast milk

It is commonly understood that breast milk is beneficial for babies and is considered the “gold standard” for their nutritional needs (Yang et al., 2016). Distinct from the fats, proteins, and carbohydrates (Ballard & Morrow, 2013) commonly found in formula, breast milk provides babies with numerous essential health factors, such as: 1) Live cells, like stem cells and white blood cells for organ development and the promotion of healing (Hassiotou, Geddes, & Hartmann, 2013); 2) More than 1,000 proteins for the immune system and neuron development in the brain (Beck et al., 2015); 3) Amino Acids, such as nucleotides that may stimulate sleep (Zhang, Adelman, Rai, Boettcher, & Lönnerdall, B., 2013; Sánchez et al., 2009); 4) Oligosaccharides acting as prebiotics, possibly preventing infections and lowering incidences of brain inflammation (Moukarzel, & Bode, 2017); 5) Enzymes that assist digestion and the immune system, while also improving the absorption of iron (Hamosh, 2001); 6) Growth factors that promote the healthy development of blood vessels, glands, nervous system and intestines (Ballard & Morrow, 2013); 7) Hormones that help to regulate appetite, and sleep patterns (Hamosh, 2001); 8) Vitamins and minerals essential to growth and development for teeth and bones (Ballard & Morrow, 2013); 9) Antibodies that neutralize bacteria and viruses (Brandtzaeg, 2010); 10) Long-chain fatty bodies, building blocks for the nervous system, that promote brain

and eye development (Uauy, Mena, & Rojas, 2000); and 11) MicroRNAs, which fight against disease development and strengthen the immune system (Alsaweed, Lai, Hartmann, Geddes, & Kakulas, 2016).

Mohammad & Haymond's (2012) study found that breast milk "is associated with a decrease in incidence and/or severity of diarrhea, respiratory infections, otitis media [ear infection], bacteremia [live bacteria in the bloodstream], bacterial meningitis, botulism, urinary tract infection, and necrotizing enterocolitis (loss of bowel function) in infants" (p. 3076). In addition to health benefits, breast milk also has a positive impact on brain development and intelligence (Obesity, Fitness, & Wellness Week, 2002).

2.2 The benefits of formula

At the time of this study, no recent peer reviewed studies or medical journals were found promoting any biological benefits of formula that did not already exist in breast milk. However, numerous claims are made on the websites of some of the known manufacturers of infant formula, promoting the health of their products. Enfamil™ claims that their product Neuro Pro™ includes an ingredient called Milk Fat Globule Membrane (MFGM), which promotes cognitive development. However, Enfamil™ does admit that its results do not surpass those of breast milk (Enfamil, 2019). Enfamil™ also refers to a clinical study claiming that the addition of docosahexaenoic acid (DHA) promotes mental acuity and learning skills. However, Enfamil's website neglects to cite the clinical study for further review (Enfamil, 2019b). Similac's Pro-Advance, Pro-Sensitive, and Pro-Total and Gerbers' Good Start® GentlePro and SoothPro all contain human milk oligosaccharide (a.k.a. 2'-FL HMO) (Similac, 2019). 2'-FL HMO is structurally identical to what is found in breast milk and is a probiotic that potentially supports a baby's immune system (Puccio et al., 2017). Formula also provides significant convenience.

The challenges that mothers face in providing breast milk to their children can be stressful, and in some cases overwhelming. In order to breastfeed, mothers must allocate time throughout the day and night, secure suitable locations, and cope with societal pressures and prejudices

2.3 The efficacy of breast milk versus formula

Regardless of the claims of formula manufacturers, breast milk has been overwhelmingly established as superior to formula for providing beneficial nutrition for newborns and infants (Lawrence & Lawrence, 1998). Breast milk's advantage for infant and newborn nutrition (Yang et al., 2016) is primarily due to all of the health benefits that it delivers. There is little evidence that formula provides any health benefits surpassing breast milk other than its use in hospital settings where it can facilitate more rapid achievement of nutritional goals in critically ill infants (Van Waardenburg, De Betue, Van Goudoever, Zimmermann, & Joosten, 2009). Many studies, in fact, have substantiated significant drawbacks to the use of formula. Beaudry, Dufour, & Marcoux's (1995) study found that formula fed infants suffered ear infections two to five times more frequently, respiratory illnesses 1.5 times more frequently, and gastrointestinal infections 1.7 to 1.9 times more frequently than breastfed infants. These findings were supported by Dewey, Heinig, & Nommsen-Rivers (1995), Scariati, Grummer-Stawn, & Fein (1997), and the PROBIT Study Group (2001). Other studies found that formula fed infants suffered allergy-related problems 1.3 to 1.9 times more often than breast fed infants (PROBIT Study Group 2001; Kull et al., 2002; Oddy et al., 2003; van Odiijk et al., 2003) and had twice as many hospitalizations (Chen, Yu, & Li, 1988). Of even greater impact are those outcomes related to mortality rates. Incidents of Sudden Infant Death Syndrome (SIDS) were three to five times higher for formula fed infants (Mitchell et al., 1991; McVea, Turner & Pepler, 2000; Alm et al.,

2002) and a separate study found a 25% higher mortality rate in formula-fed infants one to 12 months of age (Chen & Rogan, 2004).

Furthermore, the negative impact of formula does not end with the transition from formula to solid foods. Breast milk has a protective effect against meningitis that carries through into adolescence (Silfverdal et al., 1997; Silfverdal, bodin, & Olcen, 1999). Numerous studies have found that children between the ages of 5 to 18, who were fed formula as infants, are 1.2 to 1.6 times more likely to be overweight (e.g., Gilman et al., 2001; Hediger et al., 2001). This increased probability of obesity is a likely contributor to the higher cholesterol levels and two to four-fold increase in the likelihood of juvenile-onset diabetes (Pettitt et al, 1997) seen in formula-fed children. This increase in the comorbidities of high cholesterol levels, obesity, and diabetes are likely contributors to the findings showing that individuals who were formula-fed as infants experienced 11% more heart disease as adults than breastfed infants (Owen et al., 2002).

There are also concerns about the efficacy of formula given that much depends on the quality of the water with which it is mixed. In many countries, the water supply is not sufficiently filtered or treated, resulting in contaminants that lead to diseases (e.g. diarrhea) (Carlton, Liang, McDowell, Li, Luo & Remais, 2012), especially in infants. Indeed, this was a driving concern for the World Health Organization when it ratified the International Code of Marketing of Breastmilk Substitutes in 1981 (WHO, 1981).

Breast milk itself has the potential to be contaminated by chemicals like “bisphenol A, polybrominated diphenyl ethers (PBDEs), hexachlorobenzene, and the cyclodiene pesticides, which include dieldrin, heptachlor, and chlordane” (Mead, 2008, p. A430), which can be present in the mothers’ environment. Mothers’ milk can also be contaminated by drugs ingested voluntarily (Peddlesden, 2005), the food they consume (Grobe, Manore, & Still, 2007), or

existing disease states (i.e. HIV) (Coutsoudis, Goga, Rollins, & Coovadia, 2002). However, concerns about these potential sources of contamination are generally outweighed by the benefits provided by breast milk (Yoshida, Smith, & Kumar, 1999).

It is clear from these findings that breast milk is superior to formula as a source of nutrition for babies. In support of this position and to better ensure newborns are provided breast milk as soon as possible, many policies and laws, which will be discussed later, have been enacted to promote the use of breast milk over formula. As a result, most newborns in the U.S., 83.2% (CDC, 2018), receive breast milk exclusively immediately after birth in the hospital with mothers also being educated on the value, importance, and methods of maintaining a milk supply for their babies (WHO, 2018).

2.4 Societal Pressure

Despite all of the studies and data clearly indicating the superiority of breastmilk to formula, mothers do not always make their decisions based on efficacy but are instead swayed by some external factors. Society and public perception play a role in why mothers may choose to use formula rather than breast milk. In the 1930s, the women's rights movement promoted the use of bottle feeding (using breast milk substitutes) as a sign of mothers' independence (Rhodes, 1982). Later, in the 1940s, bottle feeding was perpetuated as a sign of a modern household (Parfitt, 1994). Compounding the formula versus breastfeeding situation were the commonly held taboos about women breastfeeding in public and how doing so was considered indecent. Until the 2000s, it was still possible in many states for mothers to be charged with indecent exposure if witnessed breastfeeding in a public place. These and other factors helped drive breastfeeding rates to an all-time low of 22% for initiation rates and a mere 8% for duration at

three months in the early 1970s (McCarthy, 1966; French, 1978; Hirschman, 1979). [Initiation is defined as the early postpartum (in hospital) feeding of breast milk (National Center for Health Statistics, 2001).]

Since the 1970s, breastfeeding support has steadily increased. In fact, public pressure is now very high on parents to ensure that their babies are breastfed (Lee, Bristow, Faircloth, & Macvarish, 2014), resulting in a snowball effect: as the number of women breastfeeding expands, the more people apply pressure to breastfeed (Sauer, 2017). Mothers are being driven by the perception “that there [is] a great deal at stake if [they] opted against breastfeeding” (Lee et al., 2014, p. 2). There is also an increase in the number of women suffering from anxiety and depression as they struggle to provide milk for their babies and fail (Sauer, 2017). In some cases, the pressure is strong enough to drive some mothers, who are concerned with their milk supply, to turn to off-label (not FDA approved) use of pharmaceuticals, like Reglan and Domperidone (Morrissey, 2012). Nevertheless, and despite increasing numbers of women initiating breastfeeding, only 57.6% of babies in the U.S. are breastfed through six months and only 24.9% are breastfed *exclusively* through six months (CDC, 2018).

2.5 Why mothers use infant formula

Many studies have corroborated the primary reasons for mothers ceasing to breastfeed: mothers have insufficient milk supply (Hauck, Y.L., Fenwick, J., Dhaliwal, S.S., Butt, J., 2011; Tenfelde, Zielinski, & Heidarisaifa, 2013); babies have difficulty latching on (Odom, Li, Scanlon, Perrine, & Grummer-Strawn, 2013); breast milk alone doesn't satisfy babies (Brown et al., 2014); mothers desire a change in their diet (Schwager, 2013); mothers are not available to feed their baby (Schwager, 2013); baby self-weaned or lost interest; moms returned to work/school

(Rozga, Kerver, & Olson, 2015; Skafida, 2012); and formula manufacturers influenced parents through marketing practices (Sobel, Iellamo, Raya, Padilla, Olive, & Nyunt, 2011).

2.5.1 Insufficient milk supply.

The leading reason why mothers cease breastfeeding is their perception of insufficient milk supply for their babies (McCann & Bender, 2006). This is a genuine problem for some mothers that forces them to use formula or donor milk. Donor breast milk is provided by lactating mothers and acquired primarily from either milk banks or online. Milk banks are thoroughly regulated and utilize similar screening and selection processes as those used by blood banks (Corpeleijn, Vermeulen, van Vliet, Kruger, & van Goudoever, 2010) and charge \$3 to \$5 per ounce, which can be cost prohibitive for most mothers (\$60-\$100/day) (Nelson, 2012). Milk purchased from online sources may be more affordable at \$0.50 - \$2 per ounce, but there is some concern about improper handling and contaminants (St-Onge, Chaudhry, & Koren, 2015).

However, for many mothers, an insufficient milk supply is more perception than reality. There are a number of reasons for this perception, but some of them are based on false assumptions and information. For example, mothers sometimes believe that their milk is insufficient because their baby cries (Segura-Millán, Dewey & Pérez-Escamilla, 1994), but the American Academy of Pediatrics (1997) reports that crying can be caused by numerous alternative issues (e.g., wet diapers, colic, growth spurts, need to be held). Another issue is created by the false belief that breast size affects milk supply. Milk supply is typically dependent on the amount and frequency the breast milk is expressed either by infant, hand expression, or breast pump (Medela, 2019; Kent, 2007). There are also misunderstandings about the quantity of milk that infants need. Many mothers assume that, from birth, their babies require several ounces

of milk per feeding. This is an incorrect assumption as it does not reflect the actual capacity of the newborns' stomachs, which at day one is 0.1-0.2 oz (size of a cherry); day three is 0.8 to 1 oz (size of a walnut); day seven is 1.5 to 2.0 oz (size of an apricot); and day 30 is 2.5 to 5.0 oz (size of a large egg) (Tulla, 2015). This volume of production is within the capacity of the great majority of nursing mothers and can be addressed via breastfeeding education (Froozani, Permezhadeh, Dorosty Motlagh, & Golestan, 1999). Fewer than 5% of new mothers are biologically incapable of providing a sufficient milk supply for their babies (Neifert, DeMarzo, Seacat, Young, Leff, & Orleans, 1990; Butte, Garza, Smith, & Nichols, 1984). This would suggest that other factors are causing mothers to believe that they are unable to provide adequate milk supply for their babies' needs. One such factor for the perception of an insufficient milk supply can be by a suboptimal latch of the baby's mouth on the mother's nipple (Odom, et al., 2013).

2.5.2 Difficulties latching on.

A common problem for new mothers is the challenge of establishing a proper connection between baby and nipple [latching on] (Cadwell, 2007). Most mothers perceive that this process should be easy and straightforward by nature; however, to the inexperienced or untrained, it can sometimes be difficult and frustrating. Consideration needs to be given to proper breastfeeding position, methods for encouraging a baby to open its mouth, the baby's tongue placement, encompassment of the areola, positioning of the baby during breastfeeding, and attentiveness to the baby's body language (Medela, 2019). A poor latch frequently leads to cascading negative consequences that cause mothers to cease breastfeeding, such as sore and cracked nipples, insufficient milk removal, and reduced milk production (Neifert, 2004), as well as the potential

for blocked milk ducts and mastitis (Medela, 2019). Mastitis is the painful inflammation of the breast, commonly caused by an infection from a damaged nipple (Mayo Clinic, 2018). Mothers who get lactation mastitis commonly discontinue breastfeeding; however, the Mayo Clinic (2018) recommends that mothers with mastitis continue to breastfeed as it is better for the mother and the baby.

2.5.3 Breast milk is not nutritionally sufficient.

A primary reason that mothers choose to stop breastfeeding in the first three months is due to concerns that their milk is not meeting the nutritional needs of their baby (Williams, Innis, Vogel, & Stephen, 1999; Li, Fein, Chen, & Grummer-Strawn, 2008). This fear should not be confused with a mother's concerns about her milk supply (quantity), but rather with her milk's sufficiency (quality). In societies where a "chubby" baby is considered a healthy baby, many mothers believe that their milk is not providing their baby with the necessary caloric intake when their babies are not getting plump (Guendelman, Fernal, Neufeld, & Fuentes-Afflick, 2010). Lestyaningsih and Artaria's (2008) study found that infants who were fed formula in addition to breastmilk were significantly larger in weight and upper arm circumference than those exclusively breastfed, resulting in the appearance of being chubbier. Infants breastfed exclusively were taller with greater head circumference, resulting in a leaner, more developed appearance.

2.5.4 Mothers' change of diet.

There are many dietary constraints on mothers actively breastfeeding, which mothers can find too restrictive for their tastes or too demanding to keep up with. Stanford Children's Health

(2019) recommends a daily intake of at least 2,000 calories/day, supplemental vitamins for vegetarian diets, avoidance of caffeine and alcohol, and the cessation of tobacco products. Many mothers who wish to begin weight loss efforts through dieting after childbirth may feel they cannot do so while breastfeeding (Li et al., 2008; Ahluwalia, Morrow, & Hsia, 2005). Yet breastfeeding also precludes the use of dietary supplements or medications designed for accelerated weight loss.

2.5.5 Inadequate breastfeeding support at home.

In an Australian study, it was found that the leading reason for mothers to quit breastfeeding was due to their desire to have someone else help with feeding their babies (Scott, Aitkin, Binns, & Aroni, 1999). Li et al.'s study (2008) found that as babies grew older, an increased number of mothers needed to leave their babies for longer periods of time (i.e. work, school, personal time), therefore requiring others to assume feeding responsibilities. As a result, breastfeeding mothers must turn to the use of hand expression and breast pumps. Hand expression is the use of manual manipulation and massaging of the breast to extract breast milk into a receptacle for later use. A breast pump is the use of a mechanical device for the same purpose. While breast pumps are widely available in the U.S., both pumping milk and storing it are still time consuming and cumbersome. This, combined with a lack of support from home, works against a mother's desire to breastfeed as breastfeeding duration is correlated with the level of support provided by fathers (Sullivan, Leathers, & Kelley, 2004). That is, breastfeeding duration rates are lower in those instances where the father is less supportive.

2.5.6 Baby self-weaned or lost interest.

Li et al.'s (2008) study found that self-weaning occurred primarily after the first three months of breastfeeding. This is understandable as a baby's palate may change; however, it is also considered normal for both parents to begin introducing other nutrition sources to their babies. This becomes more common as the baby reaches six to eight months, which is when babies begin to teethe (Li et al., 2008). It is not surprising that mothers would be increasingly motivated to stop breastfeeding at this time as their babies may bite their nipples. Li et al.'s study (2008) also found that 47.9% of their participants who quit breastfeeding said, "My baby lost interest in nursing or began to wean himself or herself" (p. S71).

2.5.7 Mothers' return to work/school.

The U.S. workforce has shifted significantly since the late 1940s when women made up only 28.6% of the labor force; as of 2016, women made up 46.8% of the workforce (U.S. Dept. of Labor, 2019). This significant increase in labor force contribution may have been a leading contributor to why more women were terminating their breastfeeding efforts. For instance, in 2013, 57.3% of mothers with infants 12 months and younger returned to work (U.S. Department of Labor, 2019). Williams et al.'s study (1999) found that the primary reason mothers chose to quit breastfeeding after six months was due to their returning to work. However, the most significant drop off in breastfeeding rates occurs even earlier (just after three months), as many mothers return to work at that point (Ahluwalia et al., 2005).

These declines are primarily due to the demands that returning to work places on mothers who continue breastfeeding. Returning to work, by its very nature, usually requires that a mother separate herself from her baby to perform her duties, making her unavailable to nurse her child

except by extracting and storing milk for later use. Many women find nursing, when returning to work while caring for one or more infants, to be emotionally and physically wearing (Baily & Pain, 2001; Gatrell, 2007).

Continuing to breastfeed while at work poses significant logistical, social, and emotional burdens on women who are already dealing with the stresses of adapting to a return to the workplace. Adding to these pressures are negative attitudes that persist in many working environments (Gatrell, 2013). Gatrell's (2013) study suggests that despite social and health industry expectations, maternity at work is considered "inconvenient and unwelcome" (p. 637). Numerous studies (e.g. Kitzinger, 2005; Haynes, 2008a, b; Warren & Brewis, 2004) have found that lactating mothers and those responsibilities inherent (i.e. breastfeeding) can cause anxiety in employers, colleagues, and even other women (Gatrell, 2013). Such anxieties can manifest in ways that discourage mothers to continue their efforts to breastfeed at work. As such, mothers are in a conflicted situation: 1) Mothers are praised for their breastfeeding efforts and the good they are doing for their babies and humanity in general (Brewis & Warren, 2001; Warren & Brewis, 2004); and 2) Pregnant (and later lactating) women can be met with social distress and revulsion at work (Kitzinger, 2005; Gatrell, 2007). With all the pressures and demands that come with returning to work, compounded by contradictory influences in the work environment, it is not surprising that breastfeeding duration drops off so dramatically when mothers go back to work.

2.5.8 Formula marketing.

Sobel et al.'s (2011) study, amongst others (c.f., WHO, 1981; Kent, 2015; Zhang et al., 2015), found that the primary influencers on the decision to use formula are the formula

companies themselves, via their marketing practices. Such marketing occurs despite efforts to crack down on the pervasive and persuasive false, misleading, and even illegal practices by these companies (Reuters, 2015). Given the financial potential of formula sales, formula companies might be tempted to engage in questionable marketing practices.

2.6 Causes for disparities in performance

Besides mothers' professed reasons for ceasing breastfeeding, numerous studies have focused on breastfeeding statistics that go beyond what mothers acknowledge as their rationale for doing so (Reno, Barnhart, & Gabbe, 2018; Sebastian, Coronado, Otero, McKinney, & Ramos, 2019; Maralani & Stabler, 2018). Among those influences are such factors as mothers' place of residence (urban vs. suburban), pregnancy intentions (planned vs. unplanned) (e.g. Bartsh, Park, Young, Ray, & Tu, 2018), fertility factors (e.g. Maralani & Stabler, 2018), living situation (not living with the father), multiparous pregnancies (e.g. twins, triplets, etc.), and smoking rates (e.g. Lee, Rubio, Elo, McCollum, Chung, & Culhane, 2005). However, these factors are not significantly different on a state basis and will be treated as additional demographic data to be collected. The focus of the next section of this paper will be on income, education, race, culture, and father's involvement, which are thought to also be significant in the mother's decisions on breastfeeding.

2.6.1 Income.

Most studies agree that the most significant factor associated with early breastfeeding termination is low income (Schwager, 2013). This is somewhat counterintuitive as the perceived costs associated with breastfeeding are considerably lower than formula feeding. After all, breast

milk is free. According to the U.S. Surgeon General, the average cost of using formula is between \$1,200 and \$1,500 in the first year (Meyer, 2018). However, the equipment and other resources necessary to make breastfeeding and extraction possible are considerable. The costs associated with breastfeeding are estimated to be approximately \$1,000 in addition to income lost for those mothers who must take time off from work to feed or express. The latter is particularly important for those mothers who are paid hourly and most specifically those at the low end of the income spectrum.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), under the auspices of the USDA Food and Nutrition Service, is a program that focuses on providing nutritional support to low-income new mothers and children up to five years old (USDA, 2019b). WIC research has shown that low-income mothers are less likely to breastfeed (45%) than higher-income mothers (74%) (Guthrie, Catellier, Jacquier, Eldridge, Johnson, Lutes, Anater, & Quann, 2016). This research is supported by a more recent study utilizing a database of 8,815 newborns, which also showed that breastfeeding rates were higher amongst high-income versus low-income families (Bartsh et al., 2018).

Reno et al.'s (2018) examination of low-income mothers' perception of breastfeeding revealed that mothers' attitudes and support of breastfeeding were positive and that they were able to identify the benefits of breastmilk; however, they found the barriers to breastfeeding to be unreasonable. Low-income mothers commonly do not have access to insurance benefits that would otherwise fully cover the costs of their breast pump, storage bags, and other necessary accessories, and such mothers must therefore find free breast pumps through other and more laborious means (e.g. WIC). While WIC does educate mothers on the value of breast milk and

heavily promotes breastfeeding and pumping, they also provide low income mothers with formula (USDA, 2019a,b; Texas WIC, 2019).

These findings would suggest that those states with high household incomes would have higher breastfeeding rates. Indeed, available statistics would appear to support this assumption. Those states with the lowest median household incomes (e.g. West Virginia, Mississippi, Arkansas, Louisiana, Alabama, and Kentucky) (U.S. Census Bureau, 2019) are also those states with the lowest breastfeeding rates (CDC, 2018). According to the U.S. Census Bureau, 12.3% of the U.S. population is at or below poverty levels (Fentenot, Semega, & Kollar, 2018). The U.S. Census Bureau produced a report showing a two-year average for 2016 and 2017 levels of poverty by state (U.S. Census Bureau, 2018). In their report, New Jersey had the lowest poverty rate (9%) of the six states selected for this study. Washington (10.4%), Oregon (11%), and Missouri (12%) were next in order and just below the national average. Mississippi (19.7%) and Louisiana (20.8%) were at bottom of the list with the highest poverty rates in the country. These statistics again support the findings in previous studies indicating that there is a correlation between breastfeeding rates and income levels. However, this correlation does not consistently apply to poverty levels. For instance, while New Mexico (18.2%) is second only to Mississippi and Louisiana in poverty levels (U.S. Census Bureau, 2018), it has breastfeeding initiation and duration rates above both Missouri and New Jersey (CDC, 2018), who represent the median breastfeeding rates for the U.S.

2.6.2 Education.

Current studies emphasize two aspects to the education level of mothers. The first is the level of academic education that a mother has achieved (Arora, Manohar, Hayen, Bhole,

Eastwood, Levy & Scott, 2017; Swanson, Keely, & Denison, 2017; Yilmaz, Öcal, Yilmaz, Ceyhan, Kara, & Küçüközkan, 2017), and the other is the amount of education a mother has received regarding feeding her baby. Statistically, those states with the lowest average high school level of education attainment (Mississippi, Kentucky, Louisiana, Alabama, West Virginia, and New Mexico) (U.S. Census Bureau, 2010) have correspondingly low breastfeeding rates (CDC 2010). It would be reasonable to assume that the opposite would also be in effect: those states with the highest education levels (Wyoming, Minnesota, and Montana) should also have the highest breastfeeding rates. But this same relationship does not materialize (CDC, 2010). The discrepancy in the correlation between breastfeeding and education is not as great as that between breastfeeding and income; however, it too suggests that academic education attainment is not a driving factor in breastfeeding rates, and other moderating effects are in play.

Numerous studies purport that more breastfeeding education is necessary both prenatally and postnatally in order to better encourage and support mothers' breastfeeding efforts (e.g. Hmon, Li, Agho, Alam, & Dibley, 2017). This need for additional breastfeeding education is made clear by the Surgeon General's 2011 Call to Action (McGuire, S., 2011); however, such improvements may not be enough for those with the lowest breastfeeding rates. Indeed, African American mothers have consistently lagged behind in breastfeeding rates, and much of that has to do with their challenges and barriers being different than those addressed by common intervention methods, which prompts a need for a more integrative approach addressing the "layers of the social ecological spectrum" (Johnson, Kirk, Rosenblum, & Muzik, 2015, p.1).

In keeping with the influences fathers exert on feeding practices, discussed in a later section, Tohotoa, Maycock, Hauck, Hoat, Burns & Binns' (2010) study examined the influence of antenatal education programs through the lens of hegemonic theory, finding that educating

men on the values and challenges of breastfeeding supported mothers' breastfeeding efforts and thereby increased breastfeeding rates.

2.6.3 Race.

Sebastian et al.'s (2019) study analyzed the two-month breastfeeding duration practices of "Spanish-speaking Hispanic, English-speaking Hispanic, non-Hispanic Native American, and non-Hispanic White" (p. 858) women and found that Hispanic mothers (67.9%) were less likely to breastfeed up to two months than non-Hispanic mothers (76.6%). In a study that examined intent to breastfeed rates, Lee et al. (2005) found that low-income U.S.-born African Americans had higher intentions to breastfeed than non-Hispanic whites. However, while U.S.-born African Americans may voice an intent to breastfeed more frequently than non-Hispanic whites, their actions tell a different story. According to the National Immunization Survey, in the United States from 2011-2015, non-Hispanic white women (81.5%) had significantly higher initiation rates than Black, non-Hispanic women (64.3%), while Hispanic mothers surpassed both (81.9%) (Anstey, Chen, Elam-Evans, & Perrine, 2017). Sebastian et al.'s (2019) study may suggest that those states with significant Hispanic populations would have their breastfeeding rates negatively impacted; however, statistics provided by the CDC would say otherwise. Indeed, statistically speaking, those states with high concentrations of non-Hispanic black women have their breastfeeding rates negatively impacted, while states with high concentrations of Hispanic mothers are positively impacted. For instance, New Mexico (47.5%) and Texas (38.3%) have the highest concentration of Hispanics (Statistical Atlas, 2019), which positively corresponds with their breastfeeding rates (CDC, 2018). Furthermore, in a study by the CDC, it was found that breastfeeding rates were significantly lower amongst African American babies than white babies

in 23 of the 34 states studied, with 14 of those states showing a difference of greater than 15% (Anstey et al., 2017). It can therefore be expected that those states with the highest concentrations of Black, non-Hispanic mothers have the lowest breastfeeding rates. This assumption appears to be supported as Mississippi (37.5%) and Louisiana (32.2%) have the highest concentrations of Black populations in the U.S. (Statistical Atlas, 2019), which corresponds with the lowest breastfeeding rates in the U.S.; however, some states (e.g. Maryland) demonstrate quite the opposite relationship with the third highest concentration of Blacks (behind Mississippi and Louisiana) (31.2%) and the third highest breastfeeding initiation rates (behind Washington and Oregon) (91%).

2.6.4 Culture.

Myths and misinformation persist at a cultural level with regards to sleep, diet, and medication, which can work to undermine a mother's decision to breastfeed (Doan, Gardiner, Gay, & Lee, 2007). As an example, misunderstandings about breastfeeding related to pain cause African American women to be more fearful of breastfeeding induced pain than whites or Hispanics (Sriraman, & Kellams, 2016). Of a similar cultural nature is the effect of mothers trying to fit in and do as their peers do. Some African American mothers admit that they didn't breastfeed because none of their friends did (Stuebe & Standard, 2018). Trends like these cause their own form of expectation amongst some caregivers who often assume that African American mothers will default to the use of formula, and thus provide more education and support for formula than breastfeeding (Kulka et al., 2011).

Acculturation levels, as well, are influential in mothers' breastfeeding duration rates, with one study showing that Spanish-speaking Hispanic mothers (78.1%) were more likely to

breastfeed at least two months than English-speaking Hispanic mothers (66.1%) (Sebastian et al., 2019). This is of particular note as it highlights a key difference from the same study noted in the previous subsection (Race), which validates the rationale for differentiating between race and culture. This is supported by an unrelated study showing that immigrants were more likely to breastfeed at six months than non-immigrants (Bartsh et al., 2018). Lee et al.'s study (2005) found that in a study of 2,690 low-income new mothers, immigrant black, other Hispanic, and island-born Puerto Rican mothers were significantly more likely to have intentions to breastfeed than non-Hispanic whites. This would imply that states with higher immigration concentrations, particularly those bordering Mexico, would have higher breastfeeding rates.

2.6.5 Fathers' preferences and participation.

Some recent studies have analyzed the influence of fathers on feeding practices (e.g. Abbass-Dick, Stern, Nelson, Watson, & Dennis, 2015). In one example, African Americans' feeding decisions are heavily influenced by the father (Alexander, Dowling, & Furman, 2010). Furthermore, mothers of all races who perceived the fathers to prefer exclusive breastfeeding had both higher breastfeeding initiation and duration rates (Wang, Guendelman, Harley, & Eskenazi, 2018). Interestingly, Wang et al.'s (2018) study found that initiation and duration rates were higher even in those situations where the father preferred exclusive breast feeding, while the mother did not. A study by Wallenborn, Masho, and Ratliff (2016) adds to this understanding by looking at paternal pregnancy intent based on the age of the father. Wallenborn et al.'s (2016) study demonstrated that fathers 18 - 24 years old with unintended pregnancies had children with lower breastfeeding initiation and duration rates. However, there was no statistically relevant correlation for fathers with unintended pregnancies at 25 – 49 years of age. This finding is

supported by Rogers and Speizer (2007), who a decade earlier revealed a positive correlation between a father's pregnancy intent and his level of involvement. At the time of this paper, no research examines fathers' participation or feeding preferences on a state by state level; however, the information regarding unplanned pregnancies is something that can be tracked and used in evaluating the impact on breastfeeding rates. Kost (2015) calculated that greater than 50% of pregnancies in 2010 in the U.S. were unintended, with Mississippi (62%) and D.C. (65%) leading in this statistic. Louisiana (60%) also ranked high in unintended births, which would support the premise that high levels of unintended births are indicative of low levels of father participation, and thus lower breastfeeding rates. However, pregnancy intent may not be a good indicator for a father's level of participation and support. Alternatively, it might be more appropriate to utilize statistics measuring whether the baby was wanted or unwanted. Using this method, Kost's (2015) study found Maryland (38%), Delaware (38%), and New Jersey (36%) to have the highest levels of unwanted births, which conflicts significantly with the premise that unwanted births would ultimately result in lower breastfeeding rates. In light of these understandings, some effort to engage fathers in breastfeeding discussions has occurred using modern technology, specifically a "conversation forum embedded in a breastfeeding-focused app" (p. 1) called Milk Man (White, Giglia, Scott, & Burns, 2018).

Strong arguments and supportive studies address the major factors associated with why mothers choose to not breastfeed. However, as mentioned in the previous subsections, conflicting studies and reports make it unclear as to which, if any, of those factors are paramount. Government has effectively no way to moderate the factors of income, education, race, culture or a father's preferences and participation, but it does have the ability to lower or remove some of the hurdles that mothers face in attempting to provide their babies breast milk.

To that end, the next section will discuss those laws that have been established to help protect and support mothers and babies.

2.7 National level breastfeeding support and statistics

In 1912, in an effort to reduce infant mortality rates in the U.S., the United States Children's Bureau was created (Ladd-Taylor, 1986), which found a strong correlation between education levels and infant mortality. This identified correlation became a factor in the creation of the Sheppard-Towner Maternity and Infancy Protection Act of 1921 (Costin, 1983; Parfitt, 1994). As part of the Sheppard-Towner Act, mothers were educated on the values and benefits of breastfeeding. As a result, and through the efforts of the Children's Bureau, improving infant feeding education amongst women reduced infant mortality by 11% overall, and reduced deaths from gastrointestinal complications by 47%. However, the prevailing mindset in the 1930s was that such education and guidance should be in the hands of medical professionals (Ladd-Taylor, 1986) whose practices routinely interfered with successful breastfeeding implementation (Bean, 1990). Ultimately, the medical community promoted that formula was superior to breastfeeding (Apple, 1987). However, women's perceptions were also a significant factor in the growth of formula as, during this same period, citizens were fighting for women's suffrage and used bottle-feeding as a symbol of their emancipation (Rhodes, 1982). Adding to the impetus to support formula were the effects of World War II on domestic life and societal acceptance of a modern household's inclusion of a bottle-fed infant (Parfitt, 1994).

As a result of these and other influences, breastfeeding rates in the U.S. shifted significantly. In the 1930s, greater than 70% of newborns were provided breast milk at birth with a reduction to 45% at three months. In 1965, initiation rates had dropped to 38% with a reduction

to 12% at three months. Breastfeeding hit its lowest point in the U.S. in 1970, with initiation rates at 28% and a reduction to 8% at three months (McCarthy, 1966; French, 1978; Hirschman, 1979). At this point, research into breastfeeding began to gain attention with a focus on the nutritional, neurocognitive, physiological, and immunologic benefits for preterm infants (Gross, Geller, & Tomarelli, 1981). This additional attention gave rise to supporting organizations (i.e. La Leche League; The International Board of Lactation Consultant Examiners; Women, Infants, and Children (WIC)), which began to gain a foothold in the U.S.

When the World Health Organization (WHO) proposed the International Code of Marketing of Breastmilk Substitutes, the U.S. was the single dissenting vote (118-1) for its ratification in 1981 (WHO, 1981). Breastfeeding support in the U.S. continued to grow with the United States Department of Health and Human Services' (HHS) production of Healthy People 2000 in 1990 (National Center for Health Statistics, 2001), which under section 2.11 sought improvements in breastfeeding initiation and duration rates with a goal of 75% and 50% respectively; however, by 2000, initiation and six-month duration rates had only achieved 70.9% and 34.2% (Morbidity and Mortality Weekly Report, 2007). In 2000, the Office of the Surgeon General produced the Blueprint for Action on Breastfeeding as a means for attaining the goals of Healthy People 2010, which again sought to achieve breastfeeding initiation and durations rates of 75% and 50% respectively (Office of the Surgeon General, 2001). By 2010, the goals set by Healthy People 2010 were partially attained with breastfeeding initiation rates surpassing the goal of 75% at 76.7% but fell short on six-month duration achieving 47.5% rather than the projected 50% (CDC, 2019). In 2010, the HHS produced new goals with the publishing of Healthy People 2020, which had target rates of 81.9% for breastfeeding initiation and 60.6% for

six-month duration (CDC, 2018). As of 2018, the breastfeeding initiation goal was already surpassed with a rate of 83.2% and the six-month duration tracking closely at 57.6%.

In addition to overall public support of breastfeeding versus formula, the U.S. included specific breastfeeding centric language in the Patient Protection and Affordable Care Act (a.k.a. Affordable Care Act; ACA; Obamacare), enacted March 23, 2010. Section 4207 mandated reasonable break times for nursing mothers, required employers with more than 50 employees to provide mothers with a private (not bathroom) location to express breast milk, and legalized a reasonable break time for mothers to express their milk. However, section 4207 also states that employers are not required to pay mothers for time used in this manner (U.S. Dept. of Labor, 2010). This limitation diminishes the potential support for hourly wage nursing mothers as they have less control over their schedules and can face a reduction in compensation in order to express their milk (McGuire, 2011). In 2012, the ACA expanded its prevention coverage to require health insurance companies to fully cover breastfeeding support, supplies, and counseling (ACA, 2019). With this provision, most mothers were now able to acquire a breast pump and appropriate supplies with no out-of-pocket expense. These provisions were intended to “reduce socioeconomic disparities in breastfeeding rates and the related barriers for working mothers” (Hawkins, Dow-Fleisner, & Noble, 2015, p.3). This first national approach to supporting and promoting breastfeeding at work as well as better enabling mothers to access supplies, lactation support and counseling was designed as a minimum standard for the states to follow. Currently, no provisions prevent states from passing laws that provide improved coverage, limits, or other breastfeeding support. Yet while a substantial effort by the federal government has provided additional support and protected the rights of mothers and their babies, additional efforts at the

community level appear warranted (McIntyre, Hiller, & Turnbull, 1999; Scott, Landers, Hughes, & Binns, 2001), which is something all states have attempted to address through legislation.

2.8 State level breastfeeding support and statistics

In addition to the protections provided by the ACA, all states, DC, Puerto Rico, and the Virgin Islands have passed legislation meant to support nursing mothers to one degree or another (NCSL, 2019). All states have laws enabling mothers to breastfeed in public or private; 30 states plus DC, Puerto Rico, and the Virgin Islands exempt the act of breastfeeding from public indecency laws; 29 states plus Puerto Rico and DC have workplace setting breastfeeding laws; and 17 states plus Puerto Rico have laws providing jury duty exceptions and scheduling options for breastfeeding mothers (NCSL, 2019). However, regardless of the laws passed and the similarities of those laws from state to state, there remain significant disparities between the states on breastfeeding rates. Indeed, since the CDC launched its Healthy People initiative in 1990, there has been very little change in the state rankings for breastfeeding initiation and duration rates (National Center for Health Statistics, 2001; CDC, 2018, CDC, 2019). According to the CDC's Breastfeeding Report Card (2018), at the top of the rankings are Oregon and Washington with initiation rates of 89.4% and 92.4% and six-month duration rates of 72.5% and 72.7% respectively. At the bottom of the rankings are Mississippi and Louisiana with initiation rates of 63.2% and 67% and six-month duration rates of 35.4% and 39% respectively. The middle ground is represented by New Jersey and Missouri with initiation rates of 82.8% and 82.3% and six-month duration rates of 57.6% and 57.8% respectively (CDC, 2018).

2.9 State laws of high, middle, and low performing states

Each state, as a sovereign entity and as established by constitutional law, is free to pass legislation it deems appropriate as long as its laws do not violate or otherwise establish minimum standards below those set by federal laws (Rivera, 2018). Therefore, it is important to examine the differences between states' breastfeeding rates as related to the states' specific legislation. To do so, a summary of two high, two median, and two low breastfeeding performing states' laws is provided. Using the six-month breastfeeding duration as the selection criteria, those chosen states are Washington and Oregon (high), New Jersey and Missouri (median), and Mississippi and Louisiana (low) as established in the CDC's Breastfeeding Report Card (2018). The legislation for each state is in chronological order and should not be considered an indication of priority or significance.

2.9.1 Washington (high performance).

Washington is one of the more progressive states in that most of its breastfeeding laws were enacted prior to the ACA. The first law passed, Wash. Rev. Code § 9A.88.010 (2001), established that "breastfeeding or expressing breast milk is not indecent exposure." Also, in 2001, Wash. Rev. Code § 43.70.640 was passed supporting the "infant friendly" designation for those entities that satisfied the necessary requirements. In 2009, in House Bill 1596, Wash. Rev. Code § 49.60.30(g) and Wash. Rev. Code § 49.60.215 were passed protecting mothers' rights to breastfeed in public without fear of discrimination. In 2018, Washington passed Wash. Laws, Chap. 41 (2018), providing midwifery and doula services for incarcerated women and detailed those services to be provided. Today, Washington has a total of five laws protecting nursing mothers.

2.9.2 Oregon (high performance).

Like Washington, Oregon is also a progressive state with early adoption of breastfeeding support. Or. Rev. Stat. § 10.050 (1999) provided nursing mothers the option to opt out of jury duty with written notice. Also, in 1999, Or. Rev. Stat. § 109.001 was passed giving mothers the right to breastfeed in public. Then, in 2007, ahead of the protections provided by the ACA by three years, Oregon passed Or. Rev. Stat. § 653.075, § 653.077 and § 653.256, giving women the opportunity to take 30-minute breastfeeding or pumping breaks for every four hours worked. Today, Oregon has a total of three laws protecting nursing mothers.

2.9.3 New Jersey (median performance).

New Jersey was slower to provide specific legislation for nursing mothers with only one law passed prior to the ACA and two enacted afterwards. N.J. Rev. Stat. § 26:4B-4/5 (1997) gave mothers the right to breastfeed in public and went a step further by establishing fines for those venues that failed to comply. In 2018, N.J. Rev. Stat §54:32B-1 exempted breast pumps, collection and storage supplies, and even repair and replacement parts from sales tax. The intent of this law was to improve on the ACA by further reducing the barriers to access for low income households. Also, in 2018, N.J. Rev. Stat. § 10:5-12 was passed, protecting mothers from discriminatory employment practices by making it unlawful for employers to financially penalize pregnant or nursing mothers.

2.9.4 Missouri (median performance).

Missouri was one of the few states that, before the ACA, specifically addressed the need for additional support and education at the community level when it enacted Mo. Rev. Stat. § 191.915 in 1999. This piece of legislation required all hospitals and ambulatory surgical centers to provide new mothers with 1) breastfeeding information and the benefits to the child; 2) information on local breastfeeding support groups; or 3) breastfeeding consultation. This was a progressive law at the time as it was one of the first to directly work against the formula marketing efforts that were firmly entrenched within those organizations. Furthermore, effective in the year 2000, an additional provision required all licensed physicians providing obstetrical or gynecological consultations to educate mothers on “prenatal preparation for and postnatal benefits of breast-feeding a child” (Mo. Rev. Stat. § 191.915, § 2). Missouri also added one more subsection stating that the department of health and senior services would be responsible for producing and distributing appropriate educational materials to be used as directed in subsections 1 and 2. Also in 1999, mothers were given the right to breastfeed in public or private locations “where the mother is otherwise authorized to be” (Mo. Rev. Stat. § 191.918.1, 1999, 2014). This law also contained subsections 1 and 2 clarifying that breastfeeding does not constitute sexual conduct or contact and is not considered “public indecently, indecent exposure, sexual conduct, lewd touching, or obscenity or any other similar term” (Mo. Rev. Stat. § 191.918.1 §1&2). In 2014, Missouri passed Mo. Rev. Stat. § 494.430.2, giving mothers the option to be excused from jury duty with a written statement from a physician indicating that they are nursing.

2.9.5 Louisiana (low performance).

Louisiana, contrary to its low breastfeeding performance statistics, is second only to California and Illinois in the number of laws, resolutions, and acts supporting breastfeeding. However, it may be the state's consistently low performance rates that prompted such a breadth of legislation. In 2001, Louisiana protected mothers' rights to breastfeed in public and made a further point of clarifying that breastfeeding is not a violation of obscenity laws (La. Rev. Stat. Ann. § 51.2247.1, 2001). Louisiana passed a resolution in 2002 to "conduct a joint study of requiring insurance coverage for outpatient lactation support for new mothers" (La. House Concurrent Resolution 35, 2002). In 2003, Louisiana updated its discrimination laws as they pertain to child daycare facilities to include a prohibition against discrimination based on whether a child is breast fed (La. Rev. Stat. Ann. § 46.1409 (B)(5)). Many day care facilities find collecting, monitoring, storing, and use of breast milk to be onerous versus the convenience of formula. Senator Sherri Smith Cheek submitted and passed a resolution to support mothers whose babies remained in the hospital after birth while the mothers were discharged. The resolution called for a study by the Dept. of Health & Hospitals to consider a provision that would provide mothers with non-emergency transportation to the hospital to provide her breast milk to her baby (2008 La. Senate Resolution 110, 2008). La. Acts, P.A. 269 (2011) was passed requiring that all state-owned buildings and any buildings utilizing state funds (i.e. renovation, construction, remodeling, repair) provide mothers suitable accommodations for the exclusive use of breastfeeding or pumping mothers. This was a significant upgrade to the ACA as it removed the employer size exemption (< 50 employees) that would have otherwise allowed most state-owned or subsidized buildings to avoid having to provide such accommodations.

Similar to New Jersey, Louisiana sought to further reduce the financial hurdles low income mothers face when forced to rely on breast pumps by exempting pumps, certain accessories, storage bags, and replacement parts from sales and use tax (La. Rev. Stat. § 47:305.66, 2011). To help support mothers with inadequate or unhealthy (i.e. HIV, prescription drug, narcotics) milk supplies, resolution No. 52 was passed to have the Dept. of Health & Hospitals study “the feasibility of establishing a breast milk bank at a hospital in Northeast Louisiana” (p.1) and to project potential Medicaid savings from the creation of such a milk bank (La. House Concurrent Resolution 52, 2012). Louisiana enacted La. Acts, P.A. 87 (2013) to address a previous exemption provided in La. Acts, P.A. 269 (2011), by requiring that public schools also provide appropriate private accommodations to nursing mothers. It also required that those mothers be provided a reasonable amount of break time to express milk.

2.9.6 Mississippi (low performance).

Mississippi is uncommon in that it passed all of its legislation in support of breast feeding in a single year: 2006. Miss. Code Ann. § 13-5-23 (2006) established that nursing mothers were exempted from serving on a jury. Miss. Code Ann. § 17-25-7/9 (2006) protected mothers’ rights to breastfeed in public and private and went further to clarify that an exposed breast is incidental to breast feeding. In addition to this, Mississippi enacted Miss. Code Ann. § 97-29-31 and § 97-35-7et seq. (2006) specifying that breastfeeding is “not an act of indecent exposure, disorderly conduct, or disturbance of the public space.” Miss. Code Ann. § 43-20-31 (2006), similar to the law passed in Louisiana, was intended to prohibit discrimination by day care facilities and staff against breast fed babies; however, rather than simply stating that discrimination is illegal, it established the specific accommodations that were required. Specifically, licensed daycares must

provide appropriate lactation rooms (i.e. sanitary, not bathroom, private), a refrigerator for the storage of breast milk, training for staff in proper handling and storage of breast milk, and display materials promoting breastfeeding to the day cares' clients. Furthering their efforts to curtail discrimination against breast feeding, Mississippi passed Miss. Code Ann. Ch. 1 § 71-1-55 (2006), which prohibited employers from discriminating against mothers who took allowable break times to express their milk.

2.10 Hypothesis development

While many states have taken it upon themselves to enact laws in support of breastfeeding, the results of those efforts are not readily apparent. Given that the selected states have similar laws protecting and supporting breastfeeding and identical laws provided under the ACA, it could be speculated that the laws themselves are not individually impactful on breastfeeding rates, especially as the rankings of those states have remained more or less consistent over the last 20 years. Perhaps the problem is that mothers are not aware of the laws that have been passed to protect their breastfeeding rights. While some states have enacted laws requiring additional breastfeeding education to parents, that education was centered on the benefits of breast milk and breastfeeding guidance, with little or no attention paid to moms' specific rights, especially in the workplace. Also, as discussed previously, none of the major factors for the disparities in breastfeeding appear to be singularly indicative as to why some states have such low breastfeeding performance rates. It is likely that the identified factors work in combination to create a synergistic effect, but perhaps there is another factor that should be taken into consideration as well: Mothers' *awareness* of the laws that protect and support them and their babies' breastfeeding related rights.

In 1979, the federal government enacted laws requiring and regulating the use of car seats for children (Department of Transportation, 1979), the purpose of which was to reduce child traffic-related injuries and deaths. The success of these laws in reducing harm to children appears to be clear with studies by the National Highway Traffic Safety Administration (NHTSA) reporting that child safety seats reduced traffic related fatalities in infants by 71% and toddlers (1-4 years) by 54% (NHTSA, 2013). The relevance of the government's efforts to improve child safety through car seats is that it, like breastfeeding centric laws, is a regulatory effort at the state and national level intended to modify the behavior of individuals to do what is best for their children. What makes the car seat legislation different is that it appears to have been more successful in achieving its desired effect than breastfeeding legislation. Part of that success may be due to the greater breadth of federal regulations, which set more sweeping and stringent minimums for the states to follow. However, the success could be more specifically a result of efforts to ensure that parents were aware of their responsibilities in securing their children and the fines (ranging from \$10 - \$500) (Governors Highway Safety Association, 2019) associated with failing to do so. Indeed, today it is considered common knowledge that children are required to be properly secured in motor vehicles. This cannot be said for mothers' awareness of their breastfeeding rights.

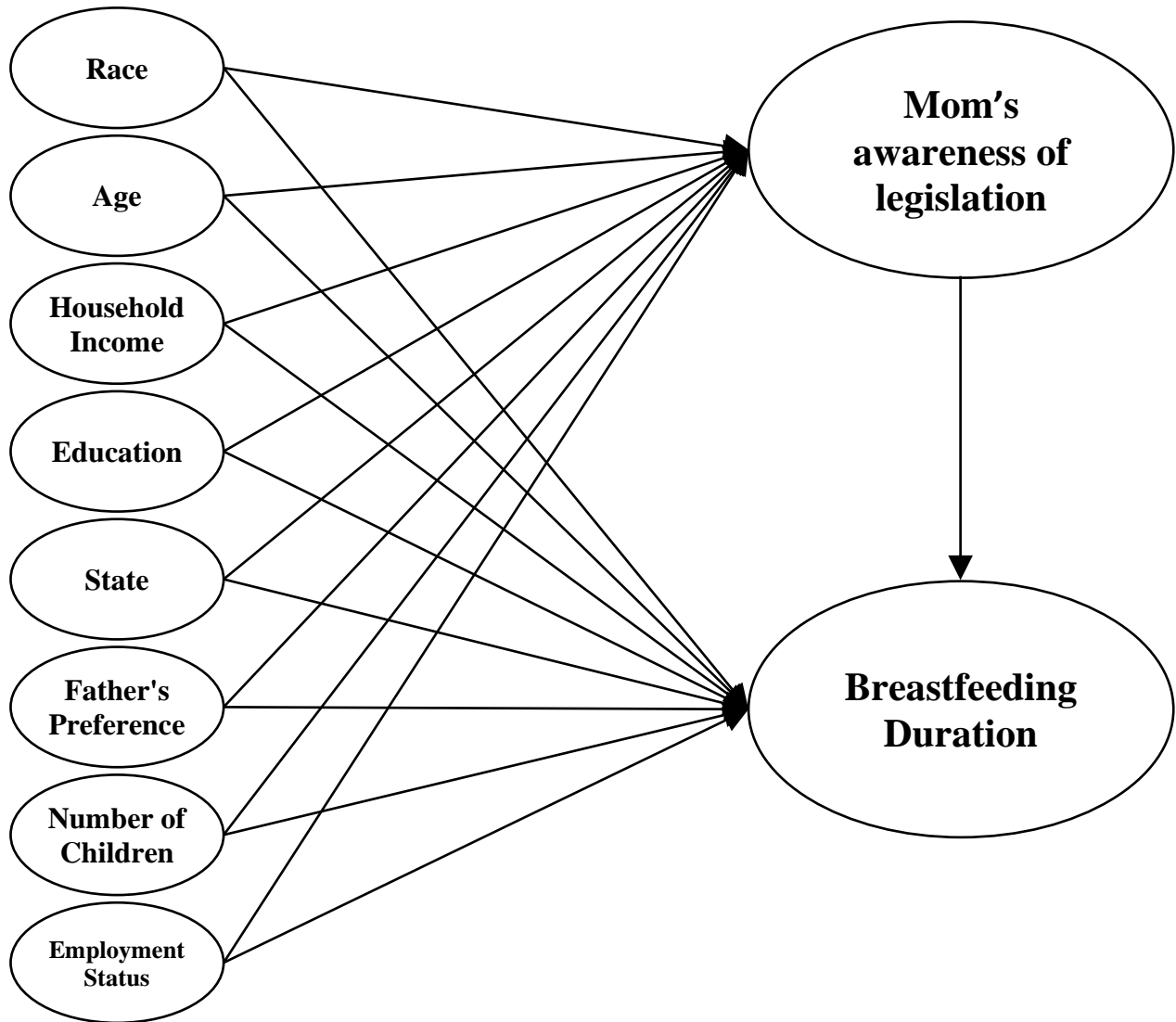
At the time of this paper, few studies (Kogan et al., 2008) examined the extent to which mothers are aware of the laws that protect or promote breastfeeding rights. Fewer studies examined the relationship between mothers' awareness of those laws and breastfeeding rates (Furey et al., 2015). This study was intended to rectify this insufficiency by proposing and examining the following hypotheses:

- H1:** A relationship exists between race, age, household income, education, state of residence, father's preference, number of children, employment status, and breastfeeding duration.
- H2:** A relationship exists between race, age, household income, education, state of residence, father's preference, number of children, employment status, and mothers' awareness of breastfeeding legislation.
- H3:** Mothers' awareness of breastfeeding legislation partially mediates the relationship between race, age, household income, education, state of residence, father's preference, number of children, employment status, and breastfeeding duration.

These hypotheses are collectively represented in Figure 2.1

Figure 2.1

Circle and Arrow Model Diagram



Partially mediated relationship of mothers' awareness of breastfeeding laws between race, age, household income, education, state, fathers' preference, number of children, and employment status and breastfeeding duration

3. METHOD

This study used a cross-sectional descriptive survey design. A cross-sectional study is preferable over a longitudinal study as cultures do not noticeably shift in the short term, and the collection of the data was in keeping with parsimonious intentions. Also, the study was conducted utilizing an online survey tool, and so, setting did not play a role in results.

3.1 Subjects

The subjects consisted of residents of Washington, Oregon, Missouri, New Jersey, Mississippi, or Louisiana. Several screening elements were utilized to improve the validity of the study by restricting the sample population to those who best represented the average mother and to remove potential outliers. The subjects were required to be eighteen years or older mothers.

3.2 Instrument

3.2.1 Amazon Mechanical Turk (MTurk)

The distribution of the survey and recruitment of participants were managed through the use of MTurk. MTurk was selected due to its established ability to obtain large diverse population samples from similarly diverse industries, occupations, and organizations

(Buhrmester, Kwang, & Gosling, 2011). Numerous studies have established MTurk as a reliable and tenable source of data (e.g. Behrend, Sharek, Meade, & Wiebe, 2011; Berinsky, Huber, & Lenz, 2012; Buhrmester et al., 2011; Feitosa, Joseph, & Newman, 2015). The participants in this survey, referred to by MTurk as ‘workers,’ were provided a constantly updated list of crowdsource support options (i.e. image/video processing, data verification and clean-up, data processing, and, pertinent to this study, information gathering. Such tasks, like the survey used for this study, are referred to as Human Intelligence Tasks (HITs)). Participants deemed to have completed the HIT on MTurk were paid a nominal remuneration of \$1.00, in keeping with the standard practices on MTurk and of which participants were informed prior to accepting the HIT. The workers received the terms of their participation on the MTurk website. The use of a financial incentive has been demonstrated to improve data collection speed without significantly impacting the quality of the data (Buhrmester et al., 2011). The \$1.00 compensation was deemed competitive by comparison to similarly situated surveys of similar survey length. Respondents were limited to only one HIT, meaning they could not retake the survey for greater total compensation, which could subsequently result in less reliable data. A complete listing of the workers’ frequently asked questions (FAQs), as posted on MTurk, is provided in Appendix A.

A total of 18 survey batches, a collective term used by MTurk to denote a collection of HITs, were created to collect the survey data. This consisted of three sets of batches for each of the six targeted states with a quota target of HITs (respondents) per batch. The separation by state was necessary in order to properly utilize the state of residence screener. The three sets of batches for each state were established in order to send out the batches in waves with a separation of about three days between each. Using waves allowed for adjustment of the HIT quotas and level of compensation as necessary between batches, thereby enabling higher

likelihood of success in achieving the desired number of useable responses. This is of importance as it was unclear as to the ratio of usable responses from the initial batches. Another reason for the waves was to accommodate the common ‘workers’ practice of sorting by the date HITs become available, and by sending the batches out in waves, the survey had a better chance of being listed near the top throughout the data collection period.

MTurk employs a participant selection system whereby the researcher, referred to as a ‘requester,’ can isolate only those participants who meet the requester’s requirements. However, due to the significant limits on the extent and choices available to the requester, this is not a wholly complete solution as the system was only able to screen for state of residence, gender, and parental status. To compensate for this shortfall, additional screening options were built into the survey via Qualtrics.

3.2.2 Qualtrics

A researcher-developed online survey was used for data collection and designed with Qualtrics, a web-based software platform used for the creation and data processing of online surveys. Twenty-six (including BOT check and consent) questions was included in the survey with an estimated completion time of seven minutes (as reported by Qualtrics). The scales used for the survey were created by the researcher and not previously validated. This was due, in part, to the scales not being reflective questions (i.e. psychological constructs such as organizational commitment or job satisfaction) but are instead formative ones based on objective data (i.e. reasons for ceasing to breastfeed or fathers’ breastfeeding preferences). Efforts were made to avoid unwanted social psychological effects like demand characteristics, hypothesis guessing, experimenter expectancy effects, and evaluation apprehension. *Demand characteristics* refers to a participant’s perception of what the study is about. To address this, the title of the survey was

titled Breastfeeding Duration Factors, which both advertised to potential MTurk participants that this was a survey likely meant for breastfeeding mothers while simultaneously not divulging that awareness of breastfeeding legislation was the primary variable. *Hypothesis guessing* refers to participants thinking they know what the study is about and potentially skewing their responses. This potential issue was approached by positioning the questions regarding legislation at the end of the survey. *Experimenter expectancy* effects refers to undue influence the experimenter may produce when interacting with the participant prior to presenting the survey. This was mitigated through anonymity and the use of an informed consent form that limited the intent of the study to the following: “This study has the potential benefit of improving breastfeeding duration rates by providing additional guidance for employers, consultants, and/or policy makers in their efforts to support new mothers and their breastfeeding rights.” *Evaluation apprehension* refers to the effects of participants’ perception that they are being watched. This is considered of little or no concern due to the nature of the medium being used.

The survey opened with a BOT check, wherein the respondents were presented with six images and asked to select only the dogs. A BOT check allows only human respondents to proceed so that the surveys are not answered by artificial intelligence (AI) (a.k.a. BOTs). BOTs can be detrimental to data integrity and ruinous for a survey-based study. The decision to use images of animals was due to AI’s inability to recognize images and thus inability to pass the check. Failure to pass the BOT check resulted in the termination of the survey, and no compensation was provided to the respondent. Passing the BOT check took the respondent to the informed consent page, which, if accepted, moved the respondent onto the screening questions. As mentioned previously, the respondents were required to be mothers living in one of the six selected states, which the screener questions were designed to filter for. Failure to satisfy any of

these requirements resulted in an immediate termination of the survey. However, due to MTurk requirements, rejected respondents were still eligible for compensation, and as such were provided HIT completion codes. Regardless of this limitation, the screener questions were still employed so as to eliminate unusable data where possible. Passing the screener questions took the respondent to questions collecting additional demographics (i.e. number of children, race, marital status, education, income, employment status). The categories used for these questions were adopted from numerous sources within the U.S. Department of Labor. Following the demographic centric questions was an eight-item matrix of Likert styled question (1 = Definitely not a reason I stopped; 5 = Definitely was a reason I stopped) asking respondents to indicate to what extent the listed factors influenced their decision to stop breastfeeding. Examples of these eight items included: “You were not able to produce enough milk for your baby”; “Your baby had difficulty latching on or suckling”; and “You wanted to change your diet.”

At this point in the survey, it is common to present the respondent with an instructional manipulation check (IMC) (a.k.a. an attention check question). The purpose of an attention check question is to avoid inaccurate responses born of inattentiveness (Oppenheimer, Meyvis, & Davidenko, 2009). This is of particular concern when using a distribution source like MTurk, which employs the use of respondents who churn through surveys as a source of income and, as such, may be motivated to complete the survey as fast as possible rather than providing accurate answers. Methods for such practices include choosing the first reasonable answer, selecting “don’t know” or “other,” straight-lining, and satisficing (Krosnick, 1999; Vannette & Krosnick, 2014). A common intent for the use of IMCs is to avoid compensating respondents who fail them, as failure to pass an IMC is considered an approved rationale for withholding compensation under MTurk’s terms. However, a number of studies (e.g. Anduiza & Galais,

2016; Berinsky, Margolis, & Sances, 2014, 2016; Miller & Officer, 2009) suggest that removing data from respondents who fail an IMC could inadvertently introduce demographic bias into the study. Given the brevity of the survey (26 questions), it was not deemed necessary to utilize an IMC in the survey. Furthermore, it was thought that the use of such a method may inadvertently upset the respondents resulting in unwanted outcomes (e.g. premature termination of survey, misleading answers).

One 5-point Likert style question (1 = Strongly preferred breastfeeding, 5 = Strongly preferred formula feeding) was used to establish the participants' perspectives on the fathers' feeding preferences. One 5-point Likert style question (1 = Very familiar, 5 = Not at all familiar) asked the participants their familiarity with breastfeeding laws. This question of familiarity was intended for potential post-hoc analysis as, while a self-reported response, it was not necessarily going to produce an objective response. For a more objective response to establish familiarity with breastfeeding laws, a different question style was implemented. This question was a multiple selection scenario (17 items) where participants were asked to select all of the listed laws that they believed were applicable to their state. The purpose of the format of this question was to avoid leading the participants into conveniently indicating legislation familiarity. This approach allowed for a more accurate self-reported indication of the mothers' familiarity with their states' breastfeeding laws than the previous question that simply asked for what they considered to be their level of familiarity. The answers to this question were coded in such a way as to provide one 'point' for each correct selection, minus one 'point' for each incorrect selection, and minus one 'point' for each correct option not selected. The coding was state of residence dependent for each respondent as each of the states have different laws. The 17 laws listed were consolidated from the six selected states. Similar pieces of legislation (i.e. no jury

duty) were summarized and grouped together in order to shorten the list and avoid redundancy. The two federal laws associated with the ACA (i.e. lactation rooms provided by employers with >50 employees; fully covered pumps, replacement parts, and counseling) were also included and scored as belonging to each state.

The final question, 5-point Likert style question (1 = Definitely No; 5 = Definitely Yes), summed up the purpose of the study by asking the respondents if they would have chosen to breastfeed longer if they had been more familiar with their breastfeeding rights. The complete survey in printable format is provided in Appendix D.

3.2.3 Sample Size & Power

To calculate the needed sample size, G*Power (v. 3.1.9.4), a free downloadable software package that provides an interactive platform for calculating both *a priori* power and sample size was used. The results of these calculations are presented in Table 3.1. The power of the statistical analysis was calculated to be 90%. Power indicates the likelihood (probability) that the null hypothesis will be rejected in a situation where the alternative hypotheses is correct. In this case, the sample size of 136 had a 90% probability of accuracy in rejecting a null hypothesis. It is commonly accepted that the minimum acceptable power is 80%, which if used for this study would have only required a state sample size of 109.

Table 3.1

*Example of G*Power Sample Size Calculation*

Test family	F Tests		
Statistical test	Linear multiple regression; Fixed model, R2 deviation from zero		
Type of power analysis	<i>A priori</i> compute required sample size - given α , power & effect size		
Input parameters		Output parameters	
Effect size	.15	Non-centrality parameter	20.4
Alpha error prob.	.05	Critical F	2.01
Power	.90	Number of df	8
# of predictors	8	Denominator df	127
		Total sample size	136
		Actual power	.90
<i>Note.</i> G*Power Analysis calculated via G*Power Software Program written by Franz Faul, Universität Kiel, Germany			

3.3 Pretesting

The design, tone, and choice of verbiage of the survey questions were initially based on the researcher’s preconceived perceptions of what would obtain the most valuable data in support of the research question. In order to refine the survey questions further, a pilot study was conducted. First, and upon receipt of approval and under the guidance of the university’s Institutional Review Board, a small group of volunteers were engaged to fine-tune the flow, choice of wording, and question selection. In order to ensure that the volunteers were able to access the entirety of the survey, the survey used in the pilot study was modified to allow for answers to screening questions that would otherwise have terminated the survey prematurely (e.g. Choosing ‘Other’ for the state of residence). Feedback from the pilot test resulted in an update to the final question, changing the logic to display state dependent verbiage. For example, a respondent who answered that they were from Oregon would be shown a list of those laws that

were specific to Oregon and asked: “Would knowing these specific laws influence you to have breastfed longer?”

3.4 Ethical Considerations

Ethical considerations were guided by the Belmont Principles established by the Belmont Report (Government Printing Office, 1979), based on the principles of respect for persons, beneficence, and justice. The Nuremberg Code, established in 1947, provides a more specific guideline, which was strictly applied in order to ensure the rights and health of the participants were always protected. All subjects were voluntary participants with no obligation to participate. While the results of the study were intended to provide additional guidance for state and federal legislatures, there is also considerable opportunity for the data to be used by breastfeeding coalitions and similar support organizations in driving public policy and therefore a benefit to society. There was no concern regarding informed consent or voluntary participation as the participants could cease participation at any time without repercussions. There was also no risk of physical suffering or an *a priori* reason to believe that injury or death could occur as a result of the study, so no additional precautions needed to be taken. With no discernable risk, it is reasonable to believe that the study’s importance exceeds any associated risk. There was, however, the potential for participants to experience some undue emotional stress should they perceive the survey questions as being critical of their practices. This ultimately was not of significant concern as breastfeeding has become a mainstream topic for conversation amongst new mothers. The participants were assured of confidentiality. Names and contact information were not collected to not only protect the participants from unwanted attention but persuade the participants to be less guarded and more open with their answers. The participants were also

informed of the nature and purpose of the study as well as the researcher's intent to publish the findings. Notwithstanding the previous statements regarding safety issues, the researcher remained vigilant and prepared to intervene at any time should harm or potential danger occur. With the Institutional Review Board's approval (Appendix B), the study was conducted under the supervision of a faculty member to identify any unforeseen ethical issues that may arise.

The researcher has been certified by the National Institute of Health (NIH) Office of Extramural Research for completion of the mandated "Protecting Human Research Participants" course with certificate number 2262552 (Appendix C). Ethical clearance for the study was obtained from the Institutional Review Board of the University of Dallas prior to administration of the survey.

4. RESULTS

4.1 Introduction

This chapter provides details on the study methods, the analytical framework applied, and the results of the analysis. A summary is provided regarding the demographic statistics of the participants as reported from each of the selected states (i.e. geographic distribution). This is followed by the descriptive statistics to provide an overview of the data collected for hypotheses testing as well as other findings. Details on the linear regression analyses are provided for the examination of the relationships between each of the independent variables and breastfeeding duration rates.

This study was intended to examine the relationship between the independent variables (race, age, household income, education, state of residence, father's feeding preferences, number of children, and employment status) and breastfeeding duration rates. Specifically, it was hypothesized that 1) A relationship exists between race, age, household income, education, state of residence, father's preference, number of children, employment status and breastfeeding duration (H1); 2) A relationship exists between race, age, household income, education, state of residence, father's preference, number of children, employment status and mothers' awareness of breastfeeding legislation (H2); and 3) A relationship exists between mothers' awareness of breastfeeding legislation and breastfeeding duration (H3). As a secondary objective, this study

was designed to reexamine other factors reported to influence mothers' decision to cease breastfeeding.

Responses from the six states' participants were collected using a cross-sectional descriptive survey design. The states were selected based on their six-month breastfeeding duration rankings according to the CDC: high (Washington, Oregon), median (New Jersey, Missouri), and low (Louisiana, Mississippi). The survey design was created using Qualtrics, an online survey design tool. The survey was conducted via Amazon Mechanical Turk (MTurk), a crowdsourcing marketplace tool useful in procuring participant data and conducting surveys online in a timely, efficient, and parsimonious manner. A total of 173 survey responses were received, of which 118 were determined to be acceptable and appropriate to the study. Those that were removed consisted of those that were not fully complete ($N = 48$) and those completed by males ($N = 7$).

The model being examined has two consequent (dependent) variables (mothers' awareness of breastfeeding laws and breastfeeding duration rates) and eight antecedent (independent) variables (race, age, household income, education, state of residence, father's preference, number of children, employment status). It is believed that the antecedent variables will influence mothers' awareness of breastfeeding laws and breastfeeding duration. In addition, mothers' awareness of breastfeeding laws is believed to influence breastfeeding duration. This model has been frequently used for interpretation for empirical studies in health (e.g. Doue & Roussiau, 2016), medicine (e.g. Meade, Conn, Skalski, & Safren, 2011), family studies (e.g. Waldinger & Schultz, 2016), and women's studies (e.g. Mittal, Senn, & Carey, 2013).

4.2 Geographic distribution

The following is a brief summary of this study's demographic breakdown by state. Tables showing the details can be found in Appendix E. Of the 118 responses, 29 were from Washington, 20 from Oregon, 16 from New Jersey, 21 from Missouri, 20 from Louisiana, and 12 from Mississippi. The races of the participants were overwhelmingly Caucasian with Louisiana having the greatest non-Caucasian participation (30%). Ages fell primarily in the childbearing years (18 – 44) with Oregon having the highest concentration of > 45 years (20%). Income was relatively evenly distributed around the U.S. median income level (\$63,179) (Semega, Kollar, Creamer, & Mohanty, 2019) with none of the states standing out as having a greater or lesser concentration of income. Education in Oregon and New Jersey was weighted more heavily towards a bachelor's degree, while Washington and Missouri were unexpectedly weighted more heavily towards having "some college" (each at $N = 11$). Education in Louisiana and Mississippi was evenly distributed. Perceptions of fathers' feeding preferences leaned predominantly towards breastfeeding with Oregon leading the way (60%); however, surprisingly, a high number of respondents selected "Did not have a preference," with Washington and Mississippi having the highest concentrations (48.3% and 50% respectively). The concentration of two children per household was highest in Washington and Mississippi (41.4% & 41.7% respectively) with the highest concentration of total children coming from Oregon and Missouri ($\geq \text{AVG} = 3$). Most participants indicated that they were employed ($N = 54$) with the highest concentration coming from Louisiana (60%) and the lowest coming from Mississippi (33.3%). Unemployment (including Homemaker, Student, and Retired) was highest in Mississippi (41.7%) and lowest in Missouri (28.6%).

4.3 Descriptive statistics

This section will provide an overview of the data collected on the independent variables used in the model. Table 4.1 lists those variables and their associated survey questions. Due to the nature of the study, many of the demographics collected are highly skewed and will be identified here.

Table 4.1

Independent Variables and Their Associated Survey Questions

Variable	Survey Question
State	In what state do you live?
Age	What is your age?
Duration	How long did you breastfeed your child(ren)?
No. of Children	How many children do you have?
Race	What is your race?
Education	What is your highest level of education?
Income	What is your household income?
Employment Status	What is your employment status?
Father's Preference	What was the father's preference for feeding your baby?
Familiarity Score	Which, if any, of the following are laws in your state? Check all that apply.

As discussed in Chapter 2, race is considered an influential factor in the determination of breastfeeding duration. Racial distribution (Table 4.2) was highly skewed toward White/Caucasian participants ($N = 99$ of 118).

Table 4.2

Racial Distribution

Race	Frequency	Percent
White / Caucasian	99	83.9
Black / African American	9	7.6
Hispanic / Latino	3	2.5
Asian / Asian American	3	2.5
American Indian / Alaska Native	1	.8
Native Hawaiian / Pacific Islander	0	0
Other	3	2.5
Total	118	100.0

The age range of the participants was from 18 to 55 or older. Specific ages were not collected but instead the following ranges were used: Under 18; 18 – 24; 25 – 34; 35 – 44; 45 – 54; and 55 or older as detailed in Table 4.2. The data was slightly skewed towards the younger ages. The Under 18 category was used as a screening question to eliminate underaged participation.

Table 4.3

Age Distribution

Age Ranges	Frequency	Percent
18 – 24	9	7.6
25 – 34	60	50.8
35 – 44	38	32.2
45 – 54	4	3.4
≥ 55	7	5.9
Total	118	100.0

Income, discussed in Chapter 2.6, is considered a significant factor in a mother’s breastfeeding decisions. To account for this variable, data was collected, as shown in Table 4.4, to gauge any correlations that may have occurred due to income stratification. Income levels

were measured for groups in ranges from less than \$19,999 to greater \$150,000. The distribution is approximately symmetric.

Table 4.4

Household Income Distribution

Level	Frequency	Percent
≤ \$19,000	6	5.1
\$20,000 - \$39,000	27	22.9
\$40,000 - \$59,000	28	23.7
\$60,000 - \$99,000	41	34.7
\$100,000 - \$149,000	11	9.3
≥ \$150,000	3	2.5
No Answer	2	1.7
Total	118	100.0

As discussed in Chapter 2.6, education is considered a factor in a mother’s breastfeeding decisions. With this in mind, this variable (Table 4.5) produced an approximately even distribution.

Table 4.5

Education Distribution

Level Achieved	Frequency	Percent
High School / GED	16	13.6
Some College	36	30.5
Associate’s Degree	17	14.4
Bachelor’s Degree	40	33.9
Master’s Degree	8	6.8
Doctorate / PhD	1	.8
Total	118	100.0

Six states were selected as being high, median, and low performers for breastfeeding duration rates at six months according to the CDC’s Breastfeeding Report Card (2018), as

discussed in Chapter 3. The participants were screened to ensure their state of residence was in one of these six identified states. Of the 118 participants in this sample group, the highest level of participation was from Washington ($N = 29$) and the lowest level from Mississippi ($N = 12$) with an approximately symmetrical distribution. When consolidated into groups Washington and Oregon (1 = high), New Jersey and Missouri (2 = median), and Louisiana and Mississippi (3 = low), the distribution remained approximately symmetric with slightly more participants coming from high performing states. Table 4.6 shows the breakdown of the participants by state.

Table 4.6

State Distribution

State	Frequency	Percent
Washington	29	24.6
Oregon	20	16.9
New Jersey	16	13.6
Missouri	21	17.8
Louisiana	20	16.9
Mississippi	12	10.2
Total	118	100.0

A Likert styled question was asked about the mothers' perception of fathers' preferences regarding formula versus breastfeeding (1= Strongly preferred breastfeeding to 5 = Strongly preferred formula), which is covered in Chapter 2.5.6. The results (Table 4.7) produced an approximately symmetrical distribution with a very slight skewness towards formula due to the relatively high outcome for "No preference".

Table 4.7

Perceptions of Fathers' Feeding Preferences

	Frequency	Percent
Strongly preferred BF	33	28.0
Preferred BF	25	21.2
No preference	53	44.9
Preferred Formula	6	5.1
Strongly preferred formula	1	.8
Total	118	100.0

The number of children was collected as a hypothesized influence in a mother's breastfeeding decisions. Table 4.8 shows that most of the participants ($N = 94$) had two or more children. The output was a moderately skewed distribution weighted towards two children.

Table 4.8

Number of Children per Participant

Children	Frequency	Percent
1	24	20.3
2	40	33.9
3	33	28.0
4	17	14.4
≥ 5	4	3.4
Total	118	100.0

As discussed in Chapter 2.5, many mothers choose to cease breastfeeding when they return to work or school due to demands on their time and available resources. An effort was made to garner the most accurate answers by avoiding offending participants (specifically stay-home mothers) who might inaccurately have indicated an employed status. Table 4.9 shows the breakdown of the participants' employment status with the largest group being employed full-time ($N = 54$) and smallest groups being unemployed ($N = 2$) and students ($N = 2$). The data

collected provided a moderately skewed distribution weighted towards a full-time employment status.

Table 4.9

Employment Status

Status	Frequency	Percent
Employed FT	54	45.8
Employed PT	23	19.5
Unemployed	2	1.7
Homemaker	34	28.8
Retired	3	2.5
Student	2	1.7
Total	118	100.0

Data regarding awareness of breastfeeding legislation was collected using a multi-select question in which the participants were asked to select all of the listed laws that they believed were in effect in their home states (Table 4.10). All of the laws listed were existing laws in either all or some of the participants' states. A score was produced by providing 1 point for every correct selection; -1 point for every incorrect selection; and -1 point for every correct law not selected. The resulting distribution was nearly perfectly symmetrical ($M = 2.97$; $SD = 1.25$; $Skewness = .01$).

Table 4.10

Familiarity with Breastfeeding Legislation Scores

Score	Frequency	Percent
-7	2	1.7
-5	3	2.5
-3	7	5.9
-1	7	5.9
1	15	12.7
3	17	14.4
5	28	23.7
7	23	19.5
9	9	7.6
11	4	3.4
13	2	1.7
15	1	.8
Total	118	100.0

Breastfeeding duration, a dependent variable of this study, was categorized into three-month increments, with the largest category being a breastfeeding duration of 10 – 12 months ($N = 39$). Separating the results at the six-month mark resulted in most of the participants ($N = 66$) breastfeeding for greater than six months as evidenced by the moderately skewed distribution. Results are shown in Table 4.11.

Table 4.11

Breastfeeding Duration

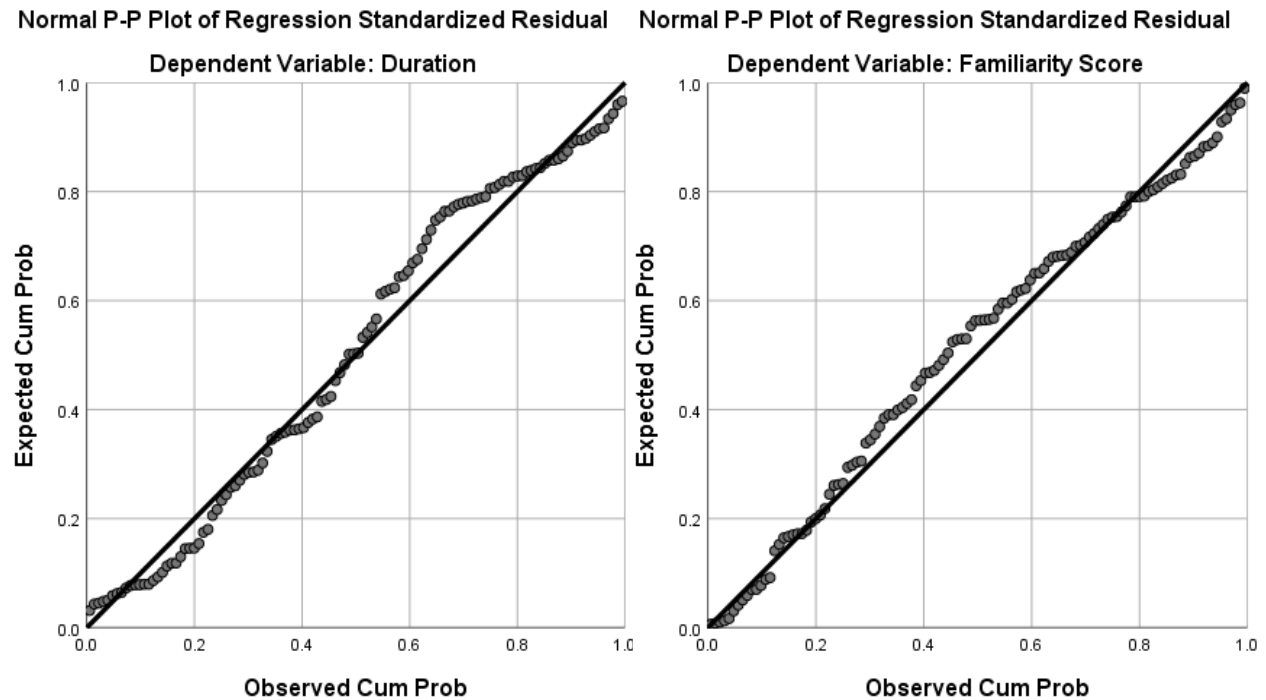
Months	Frequency	Percent
N/A	17	14.4
0 – 3	27	22.9
4 – 6	8	6.8
7 – 9	22	18.6
10 – 12	39	33.1
> 12	5	4.2
Total	118	100.0

4.4 Regression Analysis

Regression analysis is commonly used for creating prediction models, which is useful here for providing perspective and guidance as to the predictors of breastfeeding rates. A regression analysis is also important to this study as it provides insight into which of the independent variables matter most, how such variables may interact with each other, and what results can be considered measurably certain. Before running linear regression models, the data must first meet four assumptions. Assumption 1: The data must be normally distributed. In this study, normality was established for both duration and awareness of legislation by use of a P-Plot for expected residuals and actual residuals, following (for the most part) a 45-degree line (Figure 4.1).

Figure 4.1

P-Plot Evidence of Normality for Duration and Awareness of Legislation



Assumption 2: Observations must be independent. Independence was confirmed by collecting collinearity diagnostics via a regression analysis of the independent variables with duration as the dependent variable (Table 4.12), resulting in VIF values all lower than 10. A dummy variable was created for Race where Caucasian = 1, and Not Caucasian = 0. Two dummy variables were also created for State where for State_X1 1 = high performance and 0 = other and for State_X2 1 = median performance and 0 = other.

Table 4.12

VIF Evidence of Independent Observations

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Race	.948	1.055
Age	.804	1.244
Income	.873	1.146
Education	.802	1.246
State	.952	1.050
Father's Preference	.964	1.038
No. of Children	.871	1.148
Employment	.885	1.130

Assumption 3: Homoscedasticity must occur. There must be an equal variance around the trend line for all independent variables. Homoscedasticity for this study is established via scatterplot for duration (Figure 4.2) and awareness (Figure 4.3) of legislation. While the resulting scatterplot is widely dispersed, it is not without a distinctive pattern or clustering of dots due to the striated effect caused by limited number of categories (6) for the dependent variable (duration). It is therefore acceptable evidence of homoscedasticity.

Figure 4.2

Scatterplot Evidence of Homoscedasticity for Duration

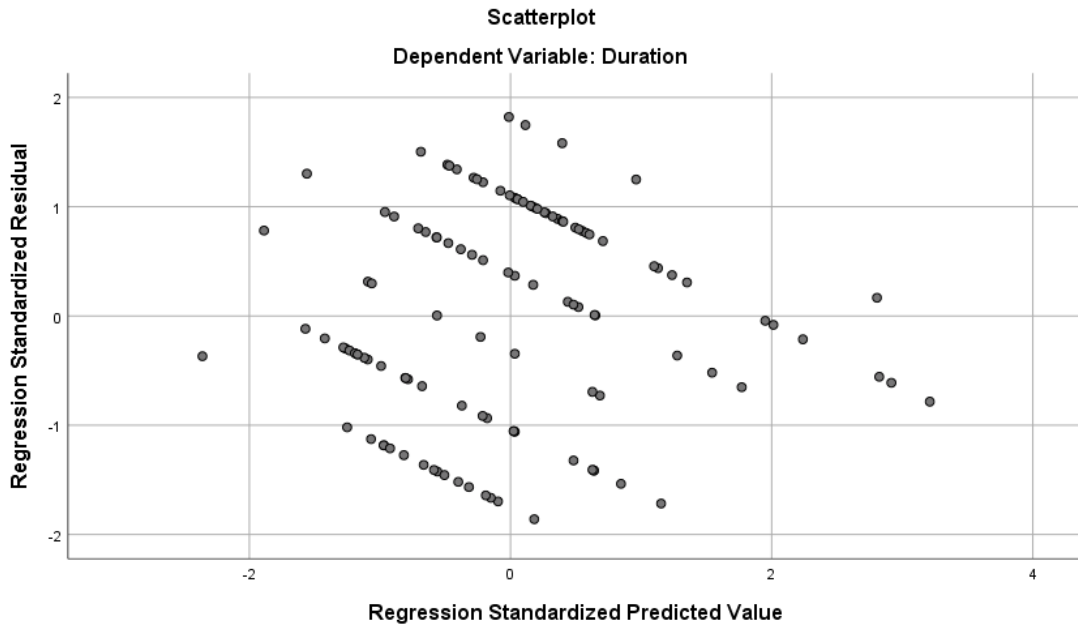
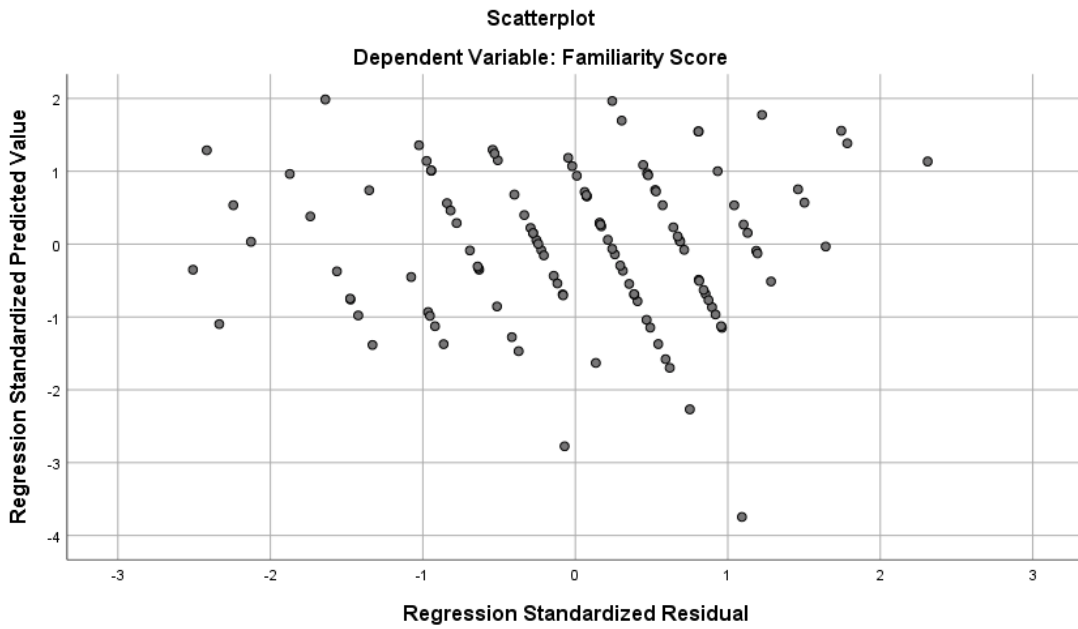


Figure 4.3

Scatterplot Evidence of Homoscedasticity for Awareness of Legislation



Assumption 4: Linearity must occur. There must be a linear relationship between X and the mean of Y. Evidence of normality (Assumption 1) and homoscedasticity (Assumption 3) make the assumption of linearity unnecessary and is therefore considered satisfied (StatisticsSolutions, 2020).

For H1, the independent variables were race, age, household income, education, state of residence, perceived fathers' feeding preferences, number of children, and employment status, and the dependent variable was breastfeeding duration. For H2, the independent variables were the same while the dependent variable was awareness of breastfeeding legislation. For H3, the independent variable was awareness of breastfeeding duration, and the dependent variable was breastfeeding duration. A linear regression was processed using IBM® SPSS®'s (v.26). Under the Statistics modifier, Model Fit, R square change, Descriptives and Collinearity diagnostics were selected. Under the Options modifiers, Exclude cases listwise in the Missing Values section was selected. A visual representation of these settings can be found in Appendix F. The responses of "Prefer not to answer" regarding income ($N = 2$) and the responses of "N/A" regarding duration ($N = 7$) were deleted so as to be properly addressed as missing values. A dummy variable was created for Race where Caucasian = 1, and Not Caucasian = 0. Two dummy variables were also created for State where for State_X1 1 = high performance and 0 = other and for State_X2 1 = median performance and 0 = other.

In the first regression to test H1, the results indicate that the Adjusted R Square value was .15 (Table 4.13), meaning that 15% of the variance in the dependent variable (breastfeeding duration) can be explained by this model. The model is statistically significant ($F = 2.97$; $p = .00$) (Table 4.14). The significant ($p < .05$) independent variables are age ($p = .01$; $Beta = .30$), income ($p = .01$; $Beta = .27$), education ($p = .01$; $Beta = -.28$), and employment ($p = .04$; $Beta =$

.21) (Table 4.15). Thus, there is partial support for H1 in that age, income, education, and employment significantly influence breastfeeding duration rates.

Table 4.13

Model Summary for H1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.480 ^a	.231	.153	1.215	.231	2.966	9	89	.004

a. Predictors: (Constant), State_X2, Income, No. of Children, Father's Preference, Education, Employment, Race, Age, State_X1

Table 4.14

ANOVA for H1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.392	9	4.377	2.966	.004 ^b
	Residual	131.335	89	1.476		
	Total	170.727	98			

a. Dependent Variable: Duration

b. Predictors: (Constant), State_X2, Income, No. of Children, Father's Preference, Education, Employment, Race, Age, State_X1

Table 4.15

Coefficients for H1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.776	.838		3.312	.001		
	Race_Dummy	-.192	.358	-.055	-.535	.594	.817	1.224
	Age	.426	.152	.296	2.800	.006	.773	1.293
	Income	.301	.117	.268	2.579	.012	.803	1.246
	Education	-.285	.108	-.276	-2.634	.010	.785	1.273
	Father's_Preference	-.196	.136	-.138	-1.439	.154	.938	1.066
	No. of Children	-.098	.130	-.078	-.756	.452	.808	1.238
	Employment	.187	.089	.209	2.090	.039	.864	1.157
	State_X1	.277	.320	.103	.865	.389	.615	1.625
	State_X2	-.026	.318	-.009	-.083	.934	.673	1.487

a. Dependent Variable: Duration

To test H2, a second multiple regression was run. The results indicate that the Adjusted R Square value is .00 (Table 4.16), meaning that 0.00% of the variance in the dependent variable (mothers' familiarity with breastfeeding legislation) can be explained by this model. In addition, the model is not statistically significant ($F = .98$; $p = .46$) (Table 4.17). As such, there is no support for H2 and, no further tests were run.

Table 4.16

Model Summary for H2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.277 ^a	.077	-.001	4.260	.077	.982	9	106	.459

a. Predictors: (Constant), State_X2, No. of Children, Income, Father's Preference, Age, Employment, Race, Education, State_X1

Table 4.17

ANOVA for H2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	160.396	9	17.822	.982	.459^b
	Residual	1923.604	106	18.147		
	Total	2084.000	115			

a. Dependent Variable: Familiarity Score

b. Predictors: (Constant), State_X2, No. of Children, Income, Father's Preference, Age, Employment, Race, Education, State_X1

To test for H3, a third regression was run. The results indicate that the Adjusted R Square value is -.01 (Table 4.18). In addition, the model is not statistically significant ($F = .14$; $p = .71$) (Table 4.19). As such, there is no support for H3, and no further tests were run.

Table 4.18

Model Summary for H3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.037 ^a	.001	-.009	1.322	.001	.135	1	99	.714

a. Predictors: (Constant), Familiarity Score

Table 4.19

ANOVA for H3

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.236	1	.236	.135	.714^b
	Residual	173.091	99	1.748		
	Total	173.327	100			

a. Dependent Variable: Duration

b. Predictors: (Constant), Familiarity Score

4.5 Other findings

In addition to the data collected to specifically address the hypotheses, this study also collected further data for the purposes of potentially explaining some of the results: marital status (specifically cohabitation), time to return to work, and the primary reasons mothers cited for ceasing breastfeeding. These primary reasons were presented to participants in these statements: You were not able to produce enough milk for your baby; Your baby had difficulty latching on or suckling; Breast milk was not providing your baby enough nutrition; You did not receive enough support at home/work; You wanted to change your diet; Your baby self-weaned; You returned to work/school; and Formula marketing persuaded you to switch. The descriptive statistics of which are shown in Table 4.20.

Table 4.20

Descriptive Statistics for Other Findings

Variable	N	Min	Max	Mean	Std. Dev.	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Marital Status	118	1	5	2.98	.877	.575	.223	1.439	.442
Cohabitation Y/N	118	1	2	1.17	.377	1.785	.223	1.205	.442
Time to Return to Work	118	0	2	1.18	.864	-.354	.223	-1.575	.442
Low Volume	118	1	5	2.23	1.625	.766	.223	-1.198	.442
Latching Issues	118	1	5	1.62	1.205	1.878	.223	2.253	.442
Low Nutrition	118	1	5	1.82	1.318	1.223	.223	-.141	.442
Low Support	118	1	5	1.90	1.349	1.209	.223	-.001	.442
Diet	118	1	5	1.53	1.043	1.860	.223	2.225	.442
Self-Weaned	118	1	5	2.70	1.676	.193	.223	-1.682	.442
Return to Work/School	118	1	5	2.15	1.517	.813	.223	-1.021	.442
Marketing Influence	118	1	5	1.37	.941	2.692	.223	6.636	.442
Familiarity	118	1	5	2.97	1.254	.012	.223	-.925	.442
Would Decision Change	118	1	3	1.71	.807	.574	.223	-1.229	.442

Marital status data was collected as shown in Table 4.21 with most of the participants indicating that they were married ($N = 79$). The distribution was moderately skewed ($M = 2.98$; $SD = 877$; $Skewness = .575$.)

Table 4.21

Marital Status

Status	Frequency	Percent
Never Married & Not Cohabiting	5	4.2
Never Married & Cohabiting	19	16.1
Married	79	66.9
Separated	3	2.5
Divorced	12	10.2
Total	118	100.0

For analysis purposes, the responses were reduced to two groups (Table 4.22): Cohabiting versus not cohabiting, which resulted in a highly skewed distribution leaning towards cohabitation ($M = 1.17$; $SD = .38$; $Skewness = 1.79$).

Table 4.22

Consolidated Marital Status → Cohabitation

Cohabitation	Frequency	Percent
Yes	98	83.1
No	20	16.9
Total	118	100.0

To further examine the effects of employment status on mothers returning to work, data was collected on the time between the mother giving birth and her returning to work (Table 4.23). The distribution was approximately symmetrical with a negative skew towards longer

durations between birth and work ($M = 4.36$; $SD = 1.495$; $Skewness = -.476$). The largest reported group were those returning to work between 9 and 12 weeks after giving birth ($N = 85$).

Table 4.23

Time to Return to Work Postpartum

Weeks	Frequency	Percent
N/A	2	1.7
1 – 2	11	9.3
3 – 4	12	10.2
5 – 6	16	13.6
7 – 8	17	14.4
9 – 12	27	22.9
Total	85	72.0
Missing	33	28.0
Total	118	100.0

The Return to Work factor was reduced by removing the N/A or Missing group and the remainder were consolidated into two groups (0 – 6 weeks; ≥ 7 weeks) (Table 4.24). An ANOVA test, using this reduced and consolidated group and duration as the dependent variable, showed that the model was statistically significant ($p = .017$; $Beta = .329$). That is, mothers returning to work earlier had significantly shorter breastfeeding duration rates.

Table 4.24

Consolidated Return to Work Postpartum

Weeks	Frequency	Percent
0 – 6	27	32.5
> 6	56	67.5
Total	83	100.0

An important, if tertiary, part of the study was focused on the reasons why mothers choose to cease breastfeeding. Data on those influencing factors was collected using a 5-item

Likert style scale in grid format asking for the participants' feedback on the level of influence the listed factors had on their breastfeeding decisions. Each of these factors is discussed in Chapter 2.5, the results of which are summarized here in frequency (Table 4.25) and percentile (Table 4.26). None of the factors for breastfeeding duration dominated the list of influences either for or against.

Perceptions of low milk production volume as a reason for stopping had a moderately positive skew towards not being a reason for stopping ($M = 2.23$, $SD = 1.63$; $Skewness = .77$) with 58.5% ($N = 69$) indicating that volume was “Definitely not” a reason. Problems with the infant latching were reported with a highly positive skew in favor that this was not a reason for stopping ($M = 1.62$, $SD = 1.21$; $Skewness = 1.88$) with 73.7% ($N = 87$) indicating that latching issues were “Definitely not” a reason for stopping. Concerns by participants that their infant was not getting enough nutrition from breast milk were highly skewed towards this not being a reason for stopping ($M = 1.82$; $SD = 1.32$; $Skewness = 1.223$) with 67.8% ($N = 80$) indicating that concerns of low nutrition supply were “Definitely not” a reason they quit breastfeeding. Support for breastfeeding efforts at home and/or work was a concern for some mothers, but the results of this study suggest that this is not a likely reason for ceasing breastfeeding ($M = 1.9$; $SD = 1.35$; $Skewness = 1.21$) as indicated by 62.7% ($N = 74$) selecting that this was “Definitely NOT” a reason. Some mothers desire to change their otherwise restricted diets while breastfeeding. This study found that most mothers did not see this as a reason for stopping breastfeeding ($M = 1.53$, $SD = 1.04$; $Skewness = 1.86$; “Definitely not” = 74.6%). Breastfeeding can come to an end due to an infant's self-weaning. The results for this question generated an approximately symmetrical distribution ($M = 2.7$; $SD = 1.68$; $Skewness = .19$), suggesting that this situation is more a product of time (breastfeeding duration) and less a concerning influence.

A commonly expressed reason for ceasing breastfeeding is a return to work or school; however, this study finds that this is not a leading reason mothers stop breastfeeding ($M = 2.15$, $SD = 1.52$; $Skewness = .813$). Formula manufacturers engage in marketing practices designed to influence mothers to use formula (albeit as a supplement rather than a replacement), but this study shows that this is a highly unlikely reason to stop breastfeeding ($M = 1.37$; $SD = .94$; $Skewness = 2.69$). Indeed, 83.1% ($N = 98$) indicated that formula marketing practices were “Definitely not” reasons for quitting while only 3.4% ($N = 4$) indicated that it “Definitely was.”

Table 4.25

Reasons why Mothers Claim to Cease Breastfeeding - Frequency

	Low Volume	Latching Issues	Low Nutrition	Low Support	Diet	Self-Weaned	Work /School	Marketing Influence
Response	Frequency							
Definitely NOT a reason I stopped	69	87	80	74	88	52	68	98
Probably not a reason I stopped	9	10	8	12	11	5	10	6
Not sure if this was a reason I stopped	3	8	6	11	7	13	7	8
Probably was a reason I stopped	18	5	19	12	10	22	20	2
Definitely WAS a reason I stopped	19	8	5	9	2	26	13	4
Total	118	118	118	118	118	118	118	118

Table 4.26

Reasons why Mothers Claim to Cease Breastfeeding - Percentile

	Low Volume	Latching Issues	Low Nutrition	Low Support	Diet	Self- Weaned	Work /School	Marketing Influence
Response	Percent							
Definitely NOT a reason I stopped	58.5	73.7	67.8	62.7	74.6	44.1	57.6	83.1
Probably not a reason I stopped	7.6	8.5	6.8	10.2	9.3	4.2	8.5	5.1
Not sure if this was a reason I stopped	2.5	6.8	5.1	9.3	5.9	11.0	5.9	6.8
Probably was a reason I stopped	15.3	4.2	16.1	10.2	8.5	18.6	16.9	1.7
Definitely WAS a reason I stopped	16.1	6.8	4.2	7.6	1.7	22.0	11.0	3.4
Total	100	100	100	100	100	100	100	100

The data collected was processed following the same procedures for the hypotheses. Each of the assumptions for linear regression was satisfied as shown in Figure 4.4, Table 4.27, Figure 4.5 and 4.6.

Figure 4.4

P-Plot Evidence of Normality for Duration and Awareness of Legislation

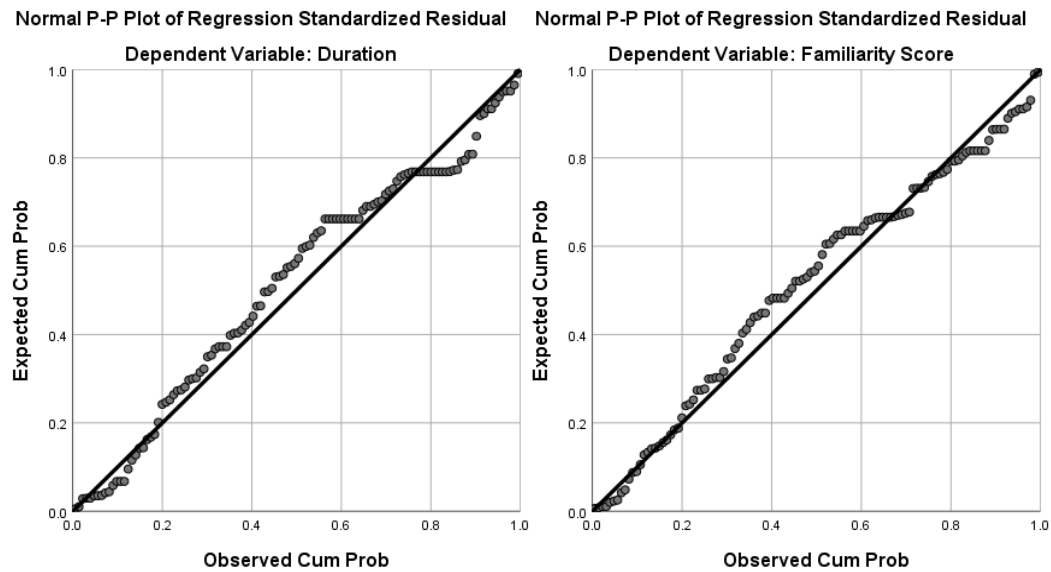


Table 4.27

VIF Evidence of Independence

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.364	.403		10.841	.000		
	Low Volume	-.299	.095	-.307	-3.138	.002	.646	1.549
	Latching Issues	-.061	.120	-.047	-.511	.610	.746	1.340
	Low Nutrition	.183	.116	.152	1.579	.117	.668	1.497
	Low Support	.071	.124	.060	.569	.570	.553	1.810
	Diet	-.108	.140	-.071	-.770	.443	.729	1.371
	Self-Weaned	.107	.079	.113	1.349	.180	.884	1.131
	Work School Conflict	-.506	.109	-.485	-4.659	.000	.571	1.751
	Marketing Influence	.262	.156	.156	1.682	.095	.723	1.384

a. Dependent Variable: Duration

Figure 4.5

Scatterplot Evidence of Homoscedasticity: Duration

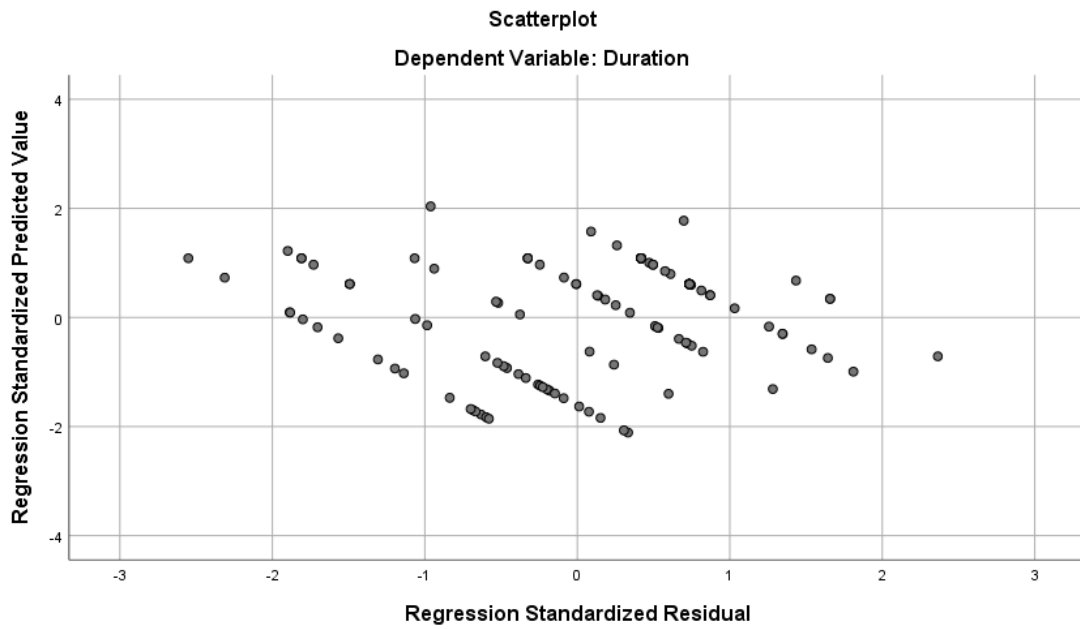
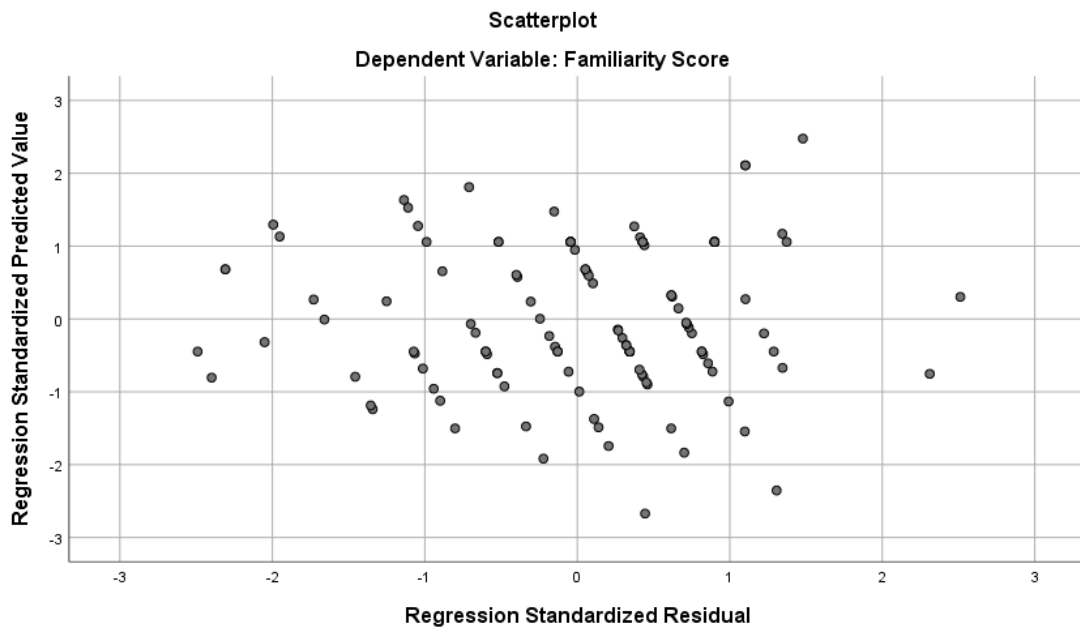


Figure 4.6

Scatterplot Evidence of Homoscedasticity: Awareness of Legislation



A linear regression was run in which the independent variables were concerns with low milk production; latching issues; perception of low nutrition; low support at work or home; desire to change diet; self-weaning, and formula marketing influences. The dependent variable was breastfeeding duration. For this model, the Adjusted R Square value is .276 (Table 4.28), meaning that 27.6% of the variance in the dependent variable (breastfeeding duration) can be explained by this model. The model is statistically significant ($F = 6.57$; $p = .000$) (Table 4.29) with the significant ($p < .05$) independent variables being concerns with low volume production ($p = .002$) and work/school conflicts ($p = .000$) (Table 4.30).

Table 4.28

Model Summary for Reasons Mothers Stop Breastfeeding

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.570 ^a	.325	.276	1.347	.325	6.566	8	109	.000

a. Predictors: (Constant), Marketing Influence, Self-Weaned, Latching Issues, Work/School Conflict, Low Volume, Diet, Low Nutrition, Low Support

Table 4.29

ANOVA for Reasons Mothers Stop Breastfeeding Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	95.373	8	11.922	6.566	.000^b
	Residual	197.915	109	1.816		
	Total	293.288	117			

a. Dependent Variable: Duration

b. Predictors: (Constant), Marketing Influence, Self-Weaned, Latching Issues, Work/School Conflict, Low Volume, Diet, Low Nutrition, Low Support

Table 4.30

Coefficients for Reasons Mothers Stop Breastfeeding Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.364	.403		10.841	.000		
	Low Volume	-.299	.095	-.307	-3.138	.002	.646	1.549
	Latching Issues	-.061	.120	-.047	-.511	.610	.746	1.340
	Low Nutrition	.183	.116	.152	1.579	.117	.668	1.497
	Low Support	.071	.124	.060	.569	.570	.553	1.810
	Diet	-.108	.140	-.071	-.770	.443	.729	1.371
	Self-Weaned	.107	.079	.113	1.349	.180	.884	1.131
	Work/School Conflict	-.506	.109	-.485	-4.659	.000	.571	1.751
	Marketing Influence	.262	.156	.156	1.682	.095	.723	1.384

a. Dependent Variable: Duration

4.6 Summary

Hypothesis 1 was partially supported with only age, income, and education proving to have a relationship with breastfeeding duration. However, neither H2 nor H3 proved to be statistically significant, thus indicating that: 1) There is no relationship between race, age, household income, education, state of residence, father's preference, number of children, employment status, or mothers' awareness of breastfeeding legislation; and 2) Mothers' awareness of breastfeeding legislation does not have a relationship with breastfeeding duration. Two of the reasons for quitting breastfeeding were found to be statistically significant with regard to breastfeeding duration, and thus, support previous study findings.

5. DISCUSSION

5.1 Introduction

Breast milk has long been established as the optimal food for infants' nutritional requirements. However, as discussed in Chapters 1 and 2, many deterrents and challenges have proven to be negative influences on adherence to breastfeeding. Many of those factors (i.e. race, income, education) have been critically examined and proven to have a relationship with breastfeeding duration. Indeed, most have been examined here as well, with the singular difference being that they were studied alongside the suspected influence of legislative awareness. In this chapter, I will discuss the results reported in Chapter 4, the outcomes of the hypotheses testing, the limitations of the study, and the implications for employers, legislatures, academia, and future research.

5.2 Significant findings

Race has been established by numerous studies (i.e. Sebastian et al., 2019; Let et al., 2005; Anstey, Chen, Elam-Evans, & Perrine, 2017) to be a significant factor in breastfeeding decisions. Some studies show that Hispanics are more likely to breastfeed than other races (Chen, Elam-Evans, & Perrine, 2017), while other studies attest to the opposite (Sebastian et al., 2019). Indeed, other studies have further challenged consensus about race and breastfeeding due

to contradicting outcomes (CDC, 2018; Statistical Atlas, 2019), altogether suggesting that race alone is not a deciding factor. In this study, the overwhelming majority of the participants were Caucasian (83.9%), with Blacks/African Americans constituting the next highest percentage (7.6%). This disparity is likely due to the sample source being MTurk, whose 'workers' are predominantly Caucasian, non-Hispanic (77%) with Black, non-Hispanic, Hispanic, and Other races coming in a very distant second (6%, 6%, & 11% respectively) (Hitlin, 2016). This heavily skewed sample towards Caucasians may explain why race did not stand out as statistically significant (Table 4.15); however, this result can also be interpreted to support other studies (Sebastian et al., 2019) by stating that race is ultimately not a relevant factor in breastfeeding decisions. For the purposes of this study, the latter position is taken. Race is not a significant factor in breastfeeding duration.

Little has been studied regarding the impact of the mothers' age and their breastfeeding decisions. While not the focus of this study, age was included in this study with the anticipation that it may be an additional factor in breastfeeding decisions and therefore consideration for future study. The age range for the study was 18 and older with the majority of the participants coming from the two age groups, 25 – 34 (N = 60) and 35 – 44 (N = 38), accounting for 83% of the sample population. The high concentration of participants in this age range is not surprising for a number of reasons. Like race, this could be due to the use of MTurk as a sample group as greater than 88% of their 'workers' are 18 – 49 years old (Hitlin, 2016). Another possible explanation is that women who are actively supportive or have participated in breastfeeding endeavors would likely be more interested in taking the survey than others. Mothers who did not breastfeed or who are ambivalent on the subject would be less inclined to take the survey. None of the age groups proved to have a normal distribution when age was correlated with duration.

Indeed, this lack of uniformity persisted when the age groups were consolidated into the childbearing years (18 – 45) ($N = 107$). A bivariate correlation does support the position that age and duration are strongly correlated, and there appears to be no correlation between age and awareness of breastfeeding legislation. This, along with the regression analysis, suggests that age is a statistically significant factor in breastfeeding duration.

One of the most significant factors associated with breastfeeding duration is income in that lower income households have lower breastfeeding rates (Schwager, 2013, USDA, 2019b; Guthrie et al., 2016). In this study, participants were closely distributed around the mean income at \$40,000 - \$59,999. Indeed, when consolidated into two groups--high and low income on either side of the U.S. median income of \$63,179 (Semega, et al., 2019)--the result is an almost even distribution. This distribution of income in the sample group is in keeping with that of the MTurk ‘worker’ population (Hitlin, 2016) and indeed with the U.S. The regression analysis (Table 4.20) indicates that income is a statistically significant factor in breastfeeding duration.

Numerous studies have shown that education is an indicator of breastfeeding duration rates. However, contradictions as to how education influences breastfeeding duration persist. Some studies (i.e. Arora et al., 2017, Swanson et al., 2017, Yilmaz et al., 2017) have shown that higher education results in higher breastfeeding rates. Conversely, state level breastfeeding statistics (CDC, 2010) have shown that this does not hold true in a uniform manner, which is discussed in Chapter 2. Indeed, this contradiction is demonstrated in this study, as well, as there is a trend towards lower breastfeeding duration rates with higher education levels. The education levels for this study’s participants were distributed with most of the participants having less than a bachelor’s degree (58.5%), in keeping with the U.S. populace (Hitlin, 2016), and resulted in generally longer breastfeeding rates along the lower end of the educational spectrum.

State of residence is considered to be an indicator of breastfeeding duration and not because the states inherently impart a certain sense of obligation. Instead, varying breastfeeding rates are a product of many other state specific demographics synergistically coming into play. This study was designed to capture most of those demographics and isolate them in a way that would possibly expose the additional influence of breastfeeding legislation, and, more specifically, mothers' awareness of said legislation. As discussed previously, the states were separated into high, median, and low breastfeeding levels, and the participants were surveyed from two states at each level. The regression analysis showed that state of residence was not a statistically significant factor in breastfeeding duration. Exploratory histograms support this outcome in that high, median, and low performing groups fail to demonstrate a normal distribution or a clear trend one way or the other. This may be another byproduct of the MTurk population since participants may represent a more homogeneous population of likeminded individuals that transcends state of residence demographics thereof. Thus, while this study finds state of residence to be statistically insignificant regarding breastfeeding duration, further studies with a different sample source might find the opposite to be true.

Perceptions of fathers' feeding preferences is a relatively new focus of attention in the world of breastfeeding debates. As discussed in Chapter 2, some recent studies have shown that fathers' preference for breastfeeding versus formula has a positive influence on breastfeeding duration rates (Wang, Guendelman, Harley, & Eskenazi, 2018). The results of the regression analysis (Table 4.15) on duration indicate that the perception of fathers' preferences is not statistically significant. However, further examination (via histograms and bivariate correlation) clearly indicate that there is a trend between duration and fathers' feeding preferences. This may

have been due to the high number (44.9%) of responses indicating that fathers were perceived to have no preference (Table 4.7).

The number of children per mother is included to act as an additional demographical data point for potential ad hoc analysis and future study potential. Not surprisingly, the regression analysis did not show number of children to be statistically significant. It should be noted that there was a trend towards higher duration rates with larger numbers of children. This could suggest a number of things. For example, mothers with more children are more likely to be homemakers (unemployed) and therefore less impacted by factors that create hurdles for breastfeeding (i.e. pumping at work). While this may not be considered a vital direction for examination, it does provide some potential for future study.

As mentioned in the previous paragraph, employment status can be a significant influence in breastfeeding decisions. Many studies (i.e. Ahluwalia et al., 2005) and government statistics (CDC, 2018) have shown that the greatest drop off in breastfeeding rates occurs at approximately the same time that mothers return to work. New nursing mothers returning to work can find the situation emotionally and physically exhausting (Baily & Pain, 2001; Gatrell, 2007), while work environment attitudes can be unwelcoming (Gatrell, 2013). This study included employment status as a variable statistic to further examine its impact on breastfeeding duration. As anticipated, the results support those of previous studies in that employment status does have a statistically significant effect on breastfeeding duration.

Mothers' awareness of breastfeeding legislation was captured in two parts. The first part was via a self-assessment question in which the participants were asked what they thought their level of familiarity was with breastfeeding laws in their respective states. The question was a five-item Likert style question (1 = Extremely familiar to 5 = Not familiar at all) asking, "How

familiar are you with laws protecting your breastfeeding rights?” The scores for this question (referred to as Perceived Familiarity) were not included in the regression analysis as they were only indicative of what the participants thought their familiarity was rather than their actual familiarity. Indeed, it was supposed at the time of the survey’s creation that participants may deliberately select higher familiarity options in avoidance of openly professing a lack of knowledge. Therefore, a second question (referred to as Familiarity Score) was asked using a multi-select question in which the participants were asked to select all of the listed laws that they believed were in effect in their home states. All of the laws listed were existing laws in either all or some of the participants’ states. A score was produced by providing 1 point for every correct selection; -1 point for every incorrect selection; and -1 point for every correct law not selected. This stratagem appears to have been appropriate as bivariate correlative analysis showed that there was no correlation between participants’ perceived and actual familiarity. It should be noted that while both sets of data produced normal distributions, the Familiarity Score distribution was skewed slightly towards more familiarity, which would suggest that perceived familiarity was indeed lower than reality. A third question related to familiarity with breastfeeding legislation was asked (the last question of the survey) to determine if participants’ breastfeeding decisions would have changed with additional awareness. With this question, a participant was shown the specific laws associated with their state and asked, “Would knowing these specific laws have influenced you to breastfeed longer?” Responses included a 5-item Likert option (1 = Definitely No to 5 = Definitely Yes), the results of which were indicative of the results of the regression analysis: familiarity with breastfeeding legislation has *no* relationship with breastfeeding duration.

Data on the factors most cited as reasons for mothers' cessation of breastfeeding was collected. The influence of formula marketing efforts had the least influence on breastfeeding duration (Definitely not; Probably not = 88.2%) while an infant's self-weaning had the highest influence (Definitely was, Probably was = 40.6%); however, self-weaning can be perceived as a decision that is effectively removed from a mother's control and therefore not considered an influence in breastfeeding decisions. Barring self-weaning as an influence, perception of low breastmilk production volume had the highest influence (Definitely was, Probably was = 31.4%). Unlike self-weaning, insufficient milk supply is frequently considered a misperception, as discussed in Chapter 2.5.1 and is therefore still considered an influence born of perception rather than reality.

5.2 Discussion of results

This section discusses the three hypotheses and provides a comparison to some of the previous studies discussed in the literature review. This section will be segregated into a section for each of the hypotheses.

5.2.1 Hypothesis 1

Hypothesis 1 proposed that a relationship exists between race, age, household income, education, state of residence, father's preference, number of children, employment status, and breastfeeding duration. As stated in Chapter 4, there is partial support for H1 in that age, income, and education demonstrate statistically significant levels of influence ($p < .05$). These results are not wholly in keeping with previous studies that showed (in addition to age, income, and education) race, state of residence, employment status, and fathers' preferences as influencers of breastfeeding duration rates. As discussed earlier in this chapter, this

discrepancy may be due to the sample population source: MTurk. MTurk ‘workers’ do not necessarily represent the rest of the U.S. The population mix was overwhelmingly weighted towards Caucasians, thus providing little opportunity for a balanced view of racial influence. Given that MTurk ‘workers’ are vetted volunteers for a crowdsourcing tool, it is reasonable to assume that they share similar perspectives, approaches, experiences, and so on, and do not appropriately represent the diversity between the states they live in. It is not surprising that employment status demonstrated a statistically significant relationship with breastfeeding duration. However, this outcome may also be affected by the use of MTurk since despite their responses to the employment question, all participants were MTurk ‘workers’ and therefore, by extension, employed. MTurk pays its ‘workers’ a nominal fee based on proposed pay rate for each survey or job they take. For example, this very study compensated each ‘worker’ \$1.00 for a completed survey. While acting as a crowdsourcing resource to MTurk may not be considered a job or a wage-earning career, the mindset of the participants may indeed resemble that of those who are gainfully employed. Fathers’ feeding preferences is a relatively new area of examination and has not demonstrated an established trend. There is nothing in this study or its results to indicate that the results are not appropriately indicative of the populace; instead of allowing for a ‘no preference’ option (44.% selected), the respondents could have been limited to pro breastfeeding versus pro formula options.

5.2.2 Hypothesis 2

Hypothesis 2 proposed that a relationship exists between race, age, household income, education, state of residence, father’s preference, number of children, employment status, and

mothers' awareness of breastfeeding legislation. The results of the regression analysis revealed that there was no relationship between any of the independent variables and mothers' awareness of legislation, and therefore H2 was not supported. It was previously believed that more educated women and women returning to work would have more knowledge of their rights. But this was not the case. Perhaps women know they have "rights" in general; they are just not sure exactly what they are.

5.2.3 Hypothesis 3

Hypothesis 3 proposed that mothers' awareness of breastfeeding legislation partially mediates the relationship between race, age, household income, education, state of residence, father's preference, number of children, employment status, and breastfeeding duration. This theory was tested by regression analysis with awareness of breastfeeding legislation (a.k.a. Familiarity Score) as the independent variable and breastfeeding duration as the dependent variable. The results showed that the model is not statistically significant (Table 4.19); therefore, H3 was not supported. This is not surprising given the lack of mothers' awareness of their specific rights as tested in H2. In addition, women who desire to breastfeed (or not) are going to do so, regardless of their rights, based on the many other aforementioned factors influencing their decision. This result appears to be supported by the final question of the survey which asked the participants directly if increased legislative familiarity would have influenced their breastfeeding decisions. The participants were shown the actual laws that pertain to their resident state and asked, via a 5-item Likert style scale, if knowing the specific laws would have caused them to breastfeed longer (1 = Definitely no to 5 = Definitely yes). While the majority indicated that increased familiarity would not have influenced them to breastfeed longer, 22% of the

sample indicated that knowing these specific laws *would* have influenced them to breastfeed longer. Given how important breastfeeding is to infant health, even the slightest increase in breastfeeding duration can have a dramatic public health impact.

The results for H3 support the findings of Furey et al. (2015), who determined that there is no statistically significant relationship between mothers' knowledge and awareness of breastfeeding laws and duration. Furey et al.'s (2015) study focused on a low socioeconomic group (WIC mothers) in the St. Louis, Missouri area with a sample size of 36 participants. Similar to this study, their study collected data on why mothers ceased breastfeeding. However, Furey et al.'s (2015) study found more mothers quitting due to perceptions of low milk volume (46.1% vs. 31.4%), difficulties with latching (30.7% vs. 11%), and less due to work conflicts/concerns (23.1% vs. 27.9%) than this study. These significant differences could have been caused by any number of factors associated with the sample groups and how the surveys were conducted. Overall, Furey et al.'s (2015) study participants were younger, lower educated, underemployed, and had lower incomes. The participants were approached in the WIC waiting rooms (prior to their appointments) and presented with the option to participate by way of survey, which may have created an environment not conducive to collecting accurate feedback due to a lack of anonymity and a sense of undue pressure to participate.

A study by Kogan et al. (2008) examined, among other factors, the relationship between breastfeeding initiation and duration (up to six months) and state legislation. Kogan et al. (2008) focused on the macrolevel effect that legislation created, different than the approach of this study. Their results indicated that states with more breastfeeding laws have higher breastfeeding rates than those states with few or no such laws. However, the researchers were unable to establish a causality: "It is impossible to discern from the data whether the impetus for breastfeeding

promotion legislation was driven by the prevalence of breastfeeding in a state or vice versa” (Kogan et al., 2008, p. 1877).

5.3 Limitations

No study is perfect and, as such, every study has limitations that should be acknowledged. This study is no exception. This section of Chapter 5 will provide details on threats to the study’s validity. Threats to validity are those elements that may unduly skew the results of the study and indicate that the posited hypotheses are spurious or limit the ability for the results to be generalized. These threats can come from internal or external sources, and therefore efforts should be taken in the design of the study to mitigate potential threats to validity as much as possible within the parsimonious limitations created by limited resources.

5.3.1 Threats to internal validity

As this is a cross-sectional study with survey attempts limited to one, there is no threat from attrition, testing, or regression to the mean. *Attrition* effects are from participants dropping out of the study prematurely. *Testing* refers to situations where the participants can or are required to take the survey more than once. *Regression to the mean* refers to participants’ tendency to try harder on subsequent attempts after a less than desirable initial outcome and vice versa; however, as this is a single survey with only one attempt available, this threat is not a concern. There is some threat to validity brought about by selection. *Selection* refers to the methods or criteria used in choosing participants. As discussed previously, MTurk was utilized for the distribution of the survey, which appears to have biased the demographics. MTurk’s use of individuals who must go through a screening process in order to become ‘workers’ could be isolating their workforce to a limited group. MTurk requires that ‘workers’ have accounts with

Amazon, have checking accounts (for compensation), have access to a computer, be self-motivated, be fluent in English, and, by the very nature of the platform, be well versed in the use of online applications (particularly crowdsourcing applications). These expectations significantly impact the likelihood of the study gaining a representative sampling of the states' population. However, it should be noted that numerous studies have found that MTurk's methods result in increased diversity, compared to a U.S. college sample, providing for greater generalizability (Behrend et al., 2011). *Local history* may also play a role in threatening internal validity as there is no control of idiosyncratic events that may occur in one state, but not in others. Since the primary purpose of this study is to examine the partially mediating effects of awareness of breastfeeding laws on breastfeeding duration rates, this is an expected result. There remains the concern that some local history affects those in the selected states in a unique and unexpected way that could adversely skew the results; however, given the historically stable nature (not influenced by season, holidays, etc.) of the subject (breastfeeding), this is of little concern. Furthermore, any such local history differences could actually be beneficial in explaining some of the results that are not otherwise understood.

There is also a threat from maturation. *Maturation* occurs when the study is conducted over an extended period of time and thus the participants' dispositions or perspectives could change through experience. While this study was conducted via a single use survey and does not occur over any length beyond that of answering the questions, the participants could have been providing feedback on breastfeeding decisions, actions, and perceptions from varying years of separation. For example, some participants could be currently breastfeeding, so all of their answers would come from recent experience, while other participants could have breastfed their

child(ren) years previously, and thus their responses and perceptions could have been altered by time and later experiences.

Another common threat to validity is length; the longer the survey, the more likely the participant is to suffer from participant fatigue. This is compounded by MTurk, a crowdsourcing platform whereby participants are treated as vetted and compensated ‘workers’ who frequently engage in surveys as a minor source of income. As the ‘workers’ are compensated for completion rather than time, there is a strong likelihood the participants are primarily interested in the rapid, rather than accurate, completion of the survey, which can threaten the validity of the data collected.

A similar threat to validity could have come from timing issues conveyed by the questions, particularly questions about marital status, education, income, fathers’ preferences, and employment. These questions were intended to gauge the participants’ responses based on the time when breastfeeding was most recently relevant. In other words, what was their marital status, level of education, income, employment status, and the perceived preferences of the fathers at the time their child was being breastfed, not necessarily at the time of the survey. This would not have been a potential threat to validity if the study had been restricted to mothers who are currently breastfeeding. However, such a limitation would have prohibitively reduced the sample size, and thus the power of the results.

5.3.2 Threats to external validity

External threats to validity are born of factors that limit the study’s ability to generalize to other locations or times. This is a potential concern as the results of the survey will not necessarily represent the U.S. population, despite the sample coming from states with high,

median, and low breastfeeding duration rankings. For example, Washington and Oregon (1st & 2nd place ranking) are adjacent and have similar climate, race, culture, and socioeconomic factors; however, Vermont and Alaska (3rd & 4th place ranking) do not. Furthermore, no restrictions were made regarding the participant selection process to ensure that there was appropriate racial representation for each of the states. For example, Mississippi has a black population of 38% (World Population Review, 2019), but the survey returned only 7.6%. The concern of timing for the study is not considered relevant as the survey is a snapshot in time meant to examine the current state of factors influencing breastfeeding duration rates.

5.4 Implications

This section discusses the implications of this study and provides some limited suggestions as to how they could be used by employers, legislatures, and future research.

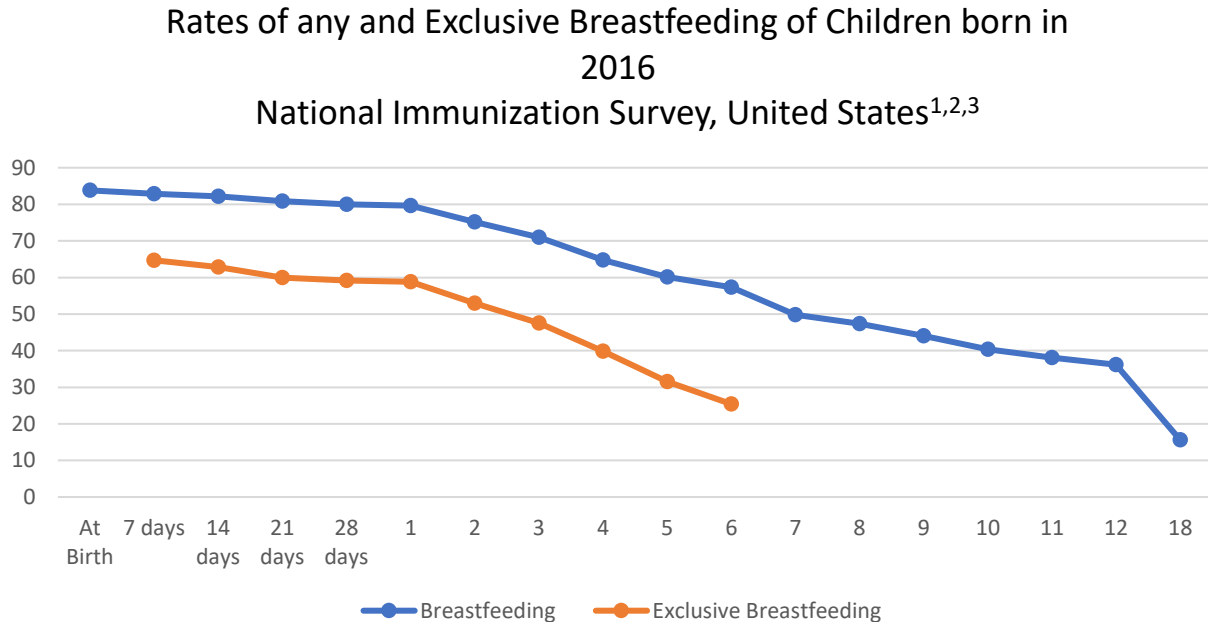
5.4.1 Employers

While breastfeeding initiation rates continue to climb, there remains a significant decline in breastfeeding duration rates when mothers go back to work (CDC, 2015). This decline is evident at the one-month mark (Figure 5.1) when most working mothers return to work. Despite the breastfeeding laws intended to protect breastfeeding rights and improve breastfeeding rates, less than 20% of mothers are knowledgeable of their breastfeeding rights in the workplace (Flaherty, 2019). According to a survey from Byram, a medical device provider, 52% of women are not aware that their employer is required to provide a lactation room, 54% are not aware that the room should provide privacy (e.g. shades or no windows), and 42% do not know that the room is required to have a lock (Flaherty, 2019). While such nuances as lock requirements and window treatments could be considered minutiae, these statistics still underscore the findings of

this study in that mothers are not aware of their breastfeeding rights. Regardless of mothers' lack of knowledge of their breastfeeding rights, many employers are not happy with legislative and other requirements, with more than half of women in a recent survey citing that their hours were reduced because of their status as new mothers (Flaherty, 2019). However, research has shown that employers would be well served in taking a different stance on breastfeeding support. Indeed, by providing an employer-sponsored breastfeeding support program, an employer could experience a 77% reduction in absenteeism (U.S. Breastfeeding Committee, 2010), a 94% increase in employee retention (Batrack & Reinhold, 2010) and an improvement in healthcare spending (Ortiz, McGilligan, & Kelly, 2004). These statistics and those produced by this study could be used by employers to not only justify the expenditures of a breastfeeding support program, but also help provide guidance in how best to invest.

Figure 5.1

Postpartum Breastfeeding Duration Rates



¹Data from 2009 to 2015 births were based on landline and cellular telephone sampling and data for 2016 births were based on cellular telephone sampling only. See [survey methods](#) for details.

²Data from U.S. territories are excluded from national breastfeeding estimates to be consistent with the analytical methods for the establishment of [Healthy People 2020 targetsexternal icon](#) on breastfeeding

³Exclusive breastfeeding is defined as ONLY breast milk — NO solids, water, or other liquids.

5.4.2 Legislatures

Governments pass laws to protect individuals' safety, to ensure that their rights are protected from abuses from other individuals, corporations, and organizations. For example, there are laws about food and drugs, licensing for certain professions (e.g. doctors), transportation (e.g. speed limits), discrimination (e.g. race, age, gender), and basic freedoms (e.g. Bill of Rights: freedom of speech, religion, etc.). These protections are well known to the general populous and or are highly regulated so that even an unaware public receives protection. What makes such laws most effective, however, is the public's very awareness of them. Indeed, the less awareness there is for a law, the greater the likelihood that it will go unenforced. As has

been demonstrated with car seats, laws designed to protect infants can be very successful when advertised and rigidly enforced. In the case of the protections provided by the Affordable Care Act, very little has been made public by the government or law enforcement agencies about the sections regarding breastfeeding. This may be due to the requirements being applied to employers and insurance companies rather than the public. Nevertheless, in order to be as effective as possible, new parents need to be versed in what their rights are. That said, this study demonstrates that new mothers are only minimally aware of their breastfeeding rights, and thus are unlikely to demand them of public venues or their employers. State and federal legislatures are certainly doing their part by passing laws to protect and support breastfeeding as is evidenced by the number and similarity of laws enacted (Table 5.1). However, there does not appear to be much evidence of investment in promoting awareness of these laws. Indeed, other than some breastfeeding rights posters being hung in human resource offices, there appears to be no effort or financial support to promote public awareness of this issue. Varying levels of commitment to raising awareness may explain why it is that Louisiana (low breastfeeding duration levels) has the most laws supporting breastfeeding while Oregon (high breastfeeding duration levels) has the fewest. With this information, legislatures could potentially lobby for additional funding to increase public awareness.

Table 5.1

Summary of Breastfeeding Laws by State

Support	WA	OR	MO	NJ	LA	MS
BF Not Indecency	X		X		X	X
BF Allowed in Public	X	X	X	X	X	X
Jury Duty Exemption		X	X			X
Workplace Rights		X				X
Sales Tax Exemption				X	X	
BF Support & Info			X			
BF Discrimination				X	X	X
BF Education			X			
Infant Friendly Designation	X					
Support for Incarcerated	X					
Fed Fund = Rooms					X	
Public School = Rooms					X	

5.4.3 Academia

This study has provided additional information on factors that influence breastfeeding decisions impacting breastfeeding duration. It also collected data useful for gauging mothers' awareness of breastfeeding legislation. This data, alone or collectively, represents a resource for use in schools associated with healthcare, law, and business. Schools focusing on healthcare could use the data to generate models for explaining and predicting future breastfeeding behaviors and their results. Researchers could also use the data to further educate their students on those factors that influence breastfeeding decisions and to better prepare those future practitioners for what to expect from the real world. Law schools could use the data to examine and explain potential repercussions (or lack thereof) of legislation on breastfeeding and other activities that could be improved through legal guidance. Businesses have been notably impacted by the passing of the Affordable Care Act due to its sweeping mandates on breastfeeding support, which has correspondingly required business schools to update their curriculum for

future graduates. This study could be used by those business schools to further finetune courses that touch on subjects such as healthcare, work-life balance, human resources, requirements, and effects of current legislation.

5.4.4 Future Research

At the time of this paper, very few studies (Furey, et al., 2015; Kogan et al., 2008) have examined the effects of mothers' awareness of breastfeeding legislation on breastfeeding duration rates. As such, this study can be added to the baseline knowledge of such awareness and its effects. In this way, it will be possible to gain a longitudinal perspective on how awareness is changing and how this change is or is not affecting breastfeeding duration rates. Alternatively, working from the assumption that mothers of older children are older, more experienced, wiser or at least more knowledgeable of their rights, a future study could be used to examine the differences in awareness by surveying mothers with older children and comparing the results with those of this study. However, this approach brings its own collection of issues with validity (i.e. moms not currently breastfeeding, breastfeeding occurred in a different time).

This study collected data on the factors influencing mothers' decision to quit breastfeeding but did not utilize the data to create additional independent variables that could further explain the relationship between those indicated in the hypotheses and breastfeeding duration rates. Creating more independent variables presents a significant opportunity to more reliably model breastfeeding rates and guide legislatures in their efforts to improve the effects of their breastfeeding laws.

As discussed regarding the limitations of the study (Chapter 5.3.1), this study did not apply screening that would ensure that racial ratios would correspond to that of the states from which they were collected. Future replications could correct for this in their sampling methods,

and thereby improve the generalizability of the data. Taking this a step further, future studies could survey all states so as to improve on generalizability.

5.5 Conclusion

Despite increasing public awareness of the benefits of breastfeeding versus formula and apparent increases in social pressure for mothers to breastfeed, breastfeeding duration of six months or more continues to be a challenge in the U.S. (CDC, 2018). Studies have cited numerous reasons why mothers cease breastfeeding prematurely, and this study found evidence to support some of those results. However, the focus of this study was to examine whether an additional factor may be in play: awareness of breastfeeding legislation. Firstly, this study hypothesized (H1) that race, age, household income, education, state of residence, fathers' preferences, number of children, and employment status influenced breastfeeding duration rates. Secondly, the study hypothesized (H2) that those same factors influenced mothers' awareness of breastfeeding legislation. Finally, this study hypothesized (H3) that legislation awareness influenced breastfeeding duration rates. In the first hypothesis (H1), this study found partial support in that age, household income, education, and employment did factor in influencing breastfeeding duration rates. However, neither of the other hypotheses (H2 and H3) were supported, indicating that there was no relationship between mothers' awareness of breastfeeding legislation and duration rates or any of the other factors. It should be noted that these results are not conclusive, due in part to some of the limitations discussed previously, and do not therefore fully represent the impact of legislative familiarity. Further study on this subject is encouraged.

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Table 1

2018 CDC Breastfeeding Report Card							
Breastfeeding Rates among Infants Born in 2015*/ Percentage of Live Births Occurring at Baby-Friendly Facilities, 2018†							
State/Territory	Ever breastfed	Breastfeeding at 6 months	Breastfeeding at 12 months	Exclusive breastfeeding through 3 months	Exclusive breastfeeding through 6 months	Breastfed infants receiving formula before 2 days of age	Live births occurring at Baby-Friendly facilities, 2018
Washington	92.4	72.7	48.2	58.9	29.1	12.7	18.4
Oregon	89.4	72.5	51.7	57.8	33.4	13.4	52.6
Vermont	89.3	70.9	51.3	62.8	38	9.9	10.4
Alaska	93.1	69.2	49.7	65.3	42.1	11.4	3.4
Maryland	91	66.8	41.1	50.1	26.2	19.1	18.2
California	87.2	66.7	40.2	53	26.3	15.1	44.8
Hawaii	90.6	65.6	47.2	54.9	32.9	17.3	12.1
District of Columbia	83	65.5	43.6	52.6	29.1	14	49
Minnesota	89.2	65.3	38.9	56.3	37.2	7.2	30.6
New Hampshire	87.4	64.7	45.6	55.9	30.2	11.4	49.4
Colorado	90.9	63.9	40	57.2	22.4	10.6	48.9
South Dakota	83.3	62.6	42.7	54.3	32.2	11.7	4.9
Utah	89.7	62.5	40.8	49.7	27.8	20.1	8.6
Virginia	81.7	62.5	39.3	45.6	26.6	20.9	12.7
Idaho	90.1	62.1	39	52.4	28.4	9.5	9.8
Maine	85.3	62.1	41.8	52.5	34.1	13.3	18.4
Montana	83.9	61.1	40.5	56.8	35.7	9.2	27.9
New Mexico	87.7	59.8	35.1	53	27.6	11.5	54.3
Connecticut	86.3	59.6	39.1	45.5	23.6	20.3	46.3
New York	85.1	59.5	38.3	42.8	21.4	26.5	21.6
Wyoming	90	59.4	38.6	56.8	28.8	9.4	2.4
Pennsylvania	83.8	59.2	39	48.9	25.6	14.4	25
Wisconsin	82.2	59	39.3	48.8	28.3	15.6	16
North Carolina	84.9	58.8	33.2	48.1	27	15.6	37.6
Kansas	83.6	58.2	36.5	50.4	26.1	13.5	41.1
North Dakota	81.7	58.2	33.4	46.2	29.1	10.8	13.8
Missouri	82.3	57.8	33.1	52.7	31.3	14	13.2
US National§	83.2	57.6	35.9	46.9	24.9	17.2	26.1
New Jersey	82.8	57.6	36.1	40.6	24.4	25.7	18.9
Nebraska	82.2	57	40.2	46.7	25.4	17.5	12.8
Texas	85	56.6	35.2	48	24.1	18.3	20.1
Massachusetts	87.4	55.6	36.8	46.5	26.6	13.7	19
Michigan	77.7	55.6	34.6	44.1	23.9	13.2	30.3
Delaware	77.4	55.6	33.4	47.2	23.6	14.4	88.1
Georgia	84	55.5	34.9	43.8	22.1	20.6	31.1
Arizona	82.7	55.3	35.5	51.8	26.3	15.8	6.8
Florida	82.6	54	33.5	41.6	21.3	23.9	17.5
Indiana	78.8	53.5	33	47.5	31.7	11.8	31
Ohio	81.9	53.1	30.7	44.4	23.7	12.6	16.5
Illinois	80.3	53	33.8	39.6	19.5	20.7	22.3
US Virgin Islands	83.9	51.9	33.1	31.6	19.9	27	0
Iowa	81.5	51.4	30.2	51.6	29.5	8.4	8.1
Nevada	83.5	49.9	30.6	44.1	20.8	23.7	16.3
Tennessee	75.7	49.8	34.4	34.5	22.7	21.3	21.1
Rhode Island	81.4	49.6	30.9	47.9	28.9	18.3	86
Guam	80.6	49	29.7	38.8	19.4	23.8	0
Oklahoma	75.9	49	31	44.2	21.6	16.8	21.7
Kentucky	73.9	48.6	28.2	39.8	21.1	19.8	24.5
Puerto Rico	85.9	47	29.8	48.4	26.5	19.6	1.1
Arkansas	73.8	45.2	24.2	39	20.4	12.6	21.7
South Carolina	76.4	45.1	28	42.7	24.4	15.2	41.7
West Virginia	68.6	40.1	24.3	36.3	20.2	14.9	8.1
Alabama	68.1	39.1	24.8	34.1	20.6	11.8	16.5
Louisiana	67	39	20.6	39.4	20.2	15.7	41.6
Mississippi	63.2	35.4	18.3	28.2	13	25.1	12.5
Average	82.7	56.7	36.0	47.6	26.3	16.0	24.6
Median	83.3	57.6	35.5	47.9	26.2	15.1	19

*Source: CDC National Immunization Survey (NIS) 2016-2017, among 2015 births. Breastfeeding rate is

†Sources: Baby-Friendly USA, 2018 and National Center for Health Statistics, 2017.

§Data from Guam, Puerto Rico, and the US Virgin Islands are not included in the national average for

Appendix A

About Amazon Mechanical Turk

What is Amazon Mechanical Turk?

Amazon Mechanical Turk (MTurk) is a marketplace for work that requires human intelligence. The Mechanical Turk service gives businesses access to a diverse, on-demand, scalable workforce and gives Workers a selection of thousands of tasks to complete whenever it's convenient.

Amazon Mechanical Turk is based on the idea that there are still many things that human beings can do much more effectively than computers, such as identifying objects in a photo or video, performing data de-duplication, transcribing audio recordings, or researching data details. Traditionally, tasks like this have been accomplished by hiring a large temporary workforce (which is time consuming, expensive, and difficult to scale) or have gone undone.

Where does the name Mechanical Turk come from?

In 1769, Hungarian nobleman Wolfgang von Kempelen astonished Europe by building a mechanical chess-playing automaton that defeated nearly every opponent it faced. A life-sized wooden mannequin, adorned with a fur-trimmed robe and a turban, Kempelen's "Turk" was seated behind a cabinet and toured Europe confounding such brilliant challengers as Benjamin Franklin and Napoleon Bonaparte. To persuade skeptical audiences, Kempelen would slide open the cabinet's doors to reveal the intricate set of gears, cogs and springs that powered his invention. He convinced them that he had built a machine that made decisions using artificial intelligence. What they did not know was the secret behind the Mechanical Turk: a chess master cleverly concealed inside.

What is a HIT?

A Human Intelligence Task, or HIT, is a question that needs an answer. A HIT represents a single, self-contained task that a Worker can work on, submit an answer, and collect a reward for completing.

How do I create a Worker account on MTurk?

Click the "Get Started with Amazon Mechanical Turk" link in the upper right corner of the [Worker website](#). You will be asked to provide your name, email address, and password. In addition, you will be asked to agree to the [Amazon Mechanical Turk Participation Agreement](#) and provide your country of residence. We will send you an email when your registration request is accepted.

Where can I view and edit my name, email address, and password?

You can view and edit your account information by accessing your [Account Settings](#) page. Your MTurk Worker account is associated with your Amazon.com account so you will be redirected to Amazon.com to change your name, email address, and password.

My country of residence is the United States. Where can I view and edit my contact address and bank account information?

You can view and edit your [contact address](#) and [bank account information](#) via Amazon Payments.

My country of residence is outside the United States. Where can I view and edit my contact address and bank account information?

You can view and edit your [contact address](#) on Amazon.com. If you have the option to transfer your earnings to your local bank account, you can change your bank account information [here](#).

Working on HITs

How do I complete a HIT?

To work on a HIT, sign in to the [Worker website](#) and visit the HITs page. There you will see a list of HITs you are qualified to work on. Click on the "Accept & Work" button for the HIT you want to work on. Complete the HIT according to the Requester instructions, and click the "Submit HIT" button. After you submit your results for the HIT, another similar HIT will be presented for you to accept.

Who creates HITs and how are they created?

Requesters have a great deal of control over the content and design of their HITs. In some cases, HITs created by Requesters may be hosted externally on their own servers instead of systems managed by Amazon Mechanical Turk. Because MTurk isn't directly involved in the creation of HITs posted by Requesters, you should always take steps to protect yourself from scams and phishing attempts. For example, do not respond to HITs that ask you to provide your email address, password, or other personally identifiable information. When MTurk asks you for your Amazon sign-in information the URL in your browser will end with amazon.com. If a Requester's HIT appears suspicious or violates our [Acceptable Use Policy](#), please use the "Report this HIT" link on the HIT preview page or the HIT page itself and select "Policy Violation" to report it.

How do HITs get approved?

Requesters determine whether to approve your work and pay you within 30 days after you submit your Human Intelligence Tasks (HITs). Amazon Mechanical Turk does not determine whether or when to approve or reject HITs and does not estimate when your HITs will be approved. Completing HITs accurately will help ensure that Requesters will want you to continue to work for them. Read instructions thoroughly, answer HITs accurately, and return HITs you are unable to complete correctly, to build a positive reputation as a Worker. Keep in mind that returned HITs will not affect your rating.

In the event you have questions about the content of a HIT or the approval status, you can [contact the Requester directly](#).

How much time do I have to work on a HIT?

Requesters can specify a HIT's "Allotted Time" or how long a Worker can hold on to a HIT. Once the Worker accepts the HIT, a timer begins counting up to the HIT's allotted time. This timer is visible to the Worker on the Worker web site. When the timer reaches the HIT's allotted time, the HIT is made available for other Workers to accept and work on. This ensures that work is completed in a reasonable time period.

Why is the number of HITs I can do each day limited?

Amazon Mechanical Turk limits the number of HITs Workers can do on a daily basis as a means of combating conduct that would violate the [Participation Agreement](#), including, for example, use of robots, scripts or other automated methods to complete HITs.

My work was rejected, what can I do?

A Requester may reject your work if they believe the answer is wrong, the HIT was not completed correctly, or that the instructions were not followed. If you believe that your work was rejected in error, you may decide to contact the Requester directly.

You can reach out to a Requester by following these steps:

1. Go to the HITs page on the Worker website and search for HITs containing the Requester's name.
2. Click on the title of the HIT in question.
3. On the lower right-hand side of the box, click Contact the Requester of this HIT.
4. Enter your question about the HIT and submit.

Your name and e-mail address will be made available to the Requester when you submit the "Contact the Requester of this HIT" form. After you have sent your message, you may need to wait a few days for a reply. Some Requesters do not monitor their messages every day.

Can I re-use the HIT answers that I submit to Requesters for other purposes?

No. All work product that you submit to answer a HIT on MTurk is the property of the Requester.

How can I use the HIT content that Requesters publish?

You may only use the HIT content that Requesters publish to perform the HIT. Do not share the HIT content (or your answer) with anyone except the Requester, or with MTurk to report abuse.

How do I report a HIT that violates the Amazon Mechanical Turk policies?

If you see a HIT that violates the [Amazon Mechanical Turk Participation Agreement](#) including the [Acceptable Use Policy](#), please report the HIT by clicking on the "Report this HIT" link so that we can investigate.

Should I keep my computer secure while using Amazon Mechanical Turk?

When you complete HITs on Amazon Mechanical Turk, you are accessing the Internet to perform work for Requesters that may not be Amazon. We recommend that you secure your computer with the latest operating system security updates and virus protection software, update your browser and plug-ins with the latest versions, and use caution when directed to other websites or asked to download software.

Getting Paid

How do I get paid?

When the Requester approves your submitted HIT, Amazon Mechanical Turk account will automatically display your earnings on the [Dashboard](#) and [Earnings](#) pages.

As a security requirement, if you are a new Worker, there is an initial holding period before rewards are transferred to your earnings balance. Your rewards are held until you have been

active on Amazon Mechanical Turk for at least 10 days, starting from the day you submit your first HIT. After this initial holding period, you will be able to disperse funds from your earnings balance by visiting the [Earnings](#) page. You are limited to one transfer per calendar day.

U.S. Workers: You can transfer your earnings to your Amazon Payments account or to an Amazon.com gift card. You can disburse to your bank account as soon as your earnings are transferred to your Amazon Payments account.

Non-U.S. International Workers You can transfer earnings to an Amazon.com gift card. Eligible Workers may also receive the option to disburse earnings to a US bank account obtained from Hyperwallet or from another third party service provider.

How do I transfer my earnings to my bank account?

Go to the [Earnings](#) page. You will see your amount available for transfer. Enter the amount you wish to transfer and click the Continue button. You will need to enter your password when prompted for your Amazon Payments account. Once logged in, follow the steps to transfer the funds to your bank account.

If this is the first time you have transferred money to a bank account, you will need to enter your bank account information. Follow the instructions to enter your bank routing and account numbers in the form provided.

What is a bonus payment?

A bonus is an additional grant of money from a Requester. A Requester can choose to pay a bonus in addition to the stated reward for completing a HIT. Bonuses are granted at the Requester's discretion and are usually paid to Workers who do particularly good work.

If I am a non-US Worker, how do I receive payment in the local currency of my country?

If you are an eligible non-US Worker with a US bank account, you may transfer your earnings to your US bank account. If you are a Hyperwallet customer, Hyperwallet will automatically transfer earnings from your US Hyperwallet account to your local currency bank account. If you are not a Hyperwallet customer, you may use a third party service provider of your choice to transfer earnings from your US bank account to your local currency bank account. You will receive instructions on the [Earnings](#) page when this transfer option is available to you.

What if I don't want to transfer my earnings to my bank account?

If you do not want to transfer your earnings to your bank account, you have the option of transferring your earnings to an Amazon.com gift card.

Tax Information for US Residents

Why am I asked to register with Amazon Payments?

An Amazon Payments account allows you to transfer Amazon Mechanical Turk earnings to your bank account. We also require U.S. Workers to provide valid taxpayer identification information when registering with Amazon Payments. You must create an Amazon Payments account to work on HITs and your earnings may be subject to tax reporting with the Internal Revenue Service (IRS). To learn more, click [here](#).

Do I have to pay taxes on earnings from Amazon Mechanical Turk?

The earnings you receive may constitute taxable income to you. Please refer to the [IRS website](#) or consult your tax advisor to help determine if you should pay taxes on your earnings or report them on an income tax return.

Tax Information for Non-US Residents

Why am I asked to provide my tax information?

We require Workers to provide valid taxpayer identification information in order to comply with U.S. tax reporting regulations governed by the U.S. tax authority (Internal Revenue Service or "IRS"). The tax information interview collects the information needed to complete an IRS tax form (e.g. IRS Form W-8) which will be used to certify your non-U.S. status, determine if your earnings are subject to IRS reporting, and the rate of U.S. tax withholding (if any) applicable to your earnings.

Can I work on HITs if I don't provide my tax information?

No. We are required to collect this information before you work on HITs in the Mechanical Turk marketplace.

I'm a U.S. citizen living outside the U.S. and I am getting the message "Tax Status Not Supported".

Unfortunately, Mechanical Turk currently does not support U.S. persons residing outside the United States.

If you selected "Yes" to the U.S. person question in the interview in error, please update your tax information. If you selected "Yes" correctly, you may retake the tax interview if your circumstances change.

What information will I need to provide in the tax information interview?

U.S. tax status (U.S. person or non-U.S. person), the name of the individual that will report the income on an income tax return, and permanent residence address.

What does electronic signature mean?

As part of the registration process, you are required to complete a tax information interview form. Consenting to an electronic signature allows you to sign and submit the form to us electronically by checking the boxes, typing your name, and typing the email address you use to access your account. No special hardware or software is required to provide your electronic signature.

Do I have to consent to provide an electronic signature?

No, an electronic signature is not required. However, if you consent to an electronic signature, you will be able to certify, sign, and submit your form electronically by checking the boxes, typing your name, and typing the email address you use to access your account.

If you do not provide consent, you will be required to print a hard copy of your IRS tax form, sign with blue or black ink, and mail to the address below:

Amazon
Attn: FinOps Tax

PO Box 80683
Seattle, WA 98108-0683
USA

Please note that consenting to electronic signature allows Amazon Mechanical Turk to validate your information online, which generally enables you to have your tax information and account processed immediately. If you do not consent to electronic signature, it can take 7 to 10 business days for your form to be processed after being received.

Can you help me complete the tax information interview?

Help content is available within the interview by clicking on the "Tax Information Interview Guide" in the top right hand corner of the interview. We are unable to provide tax advice. For more information on the various tax forms, instructions, and descriptions of which form(s) may be appropriate for you, please refer to the [Internal Revenue Service website \(www.irs.gov\)](http://www.irs.gov) or consult an independent U.S. tax advisor.

Will I be subject to U.S. tax reporting by the U.S. tax authority (Internal Revenue Service, "IRS")?

If you are a non-U.S. Worker, you will not be subject to U.S. tax reporting as part of your participation in the Mechanical Turk marketplace.

Do I have to pay taxes on my Mechanical Turk earnings?

The earnings you receive may constitute taxable income to you. Please consult a tax advisor in your country of residence. Your tax advisor can help you determine if you should pay taxes on your earnings or report them on an income tax return.

MTurk Master Worker

What is a Mechanical Turk Master Worker?

A Master Worker is a top Worker of the MTurk marketplace that has been granted the Mechanical Turk Masters Qualification. These Workers have consistently demonstrated a high degree of success in performing a wide range of HITs across a large number of Requesters. We leverage statistical models that analyze all Workers based on several Requester-provided and marketplace data points to make that determination. Some of the key categories of data that are considered to be granted and maintain the Masters Qualification include the Worker's ability to consistently submit high-quality results (as indicated by Requester approval rates and other related factors), marketplace tenure, and variety of work performed. Master Workers have access to work that requires a Masters Qualification.

How do I receive the Masters Qualification?

Mechanical Turk automatically grants the Masters Qualification based on statistical models that analyze Worker performance based on several Requester-provided and marketplace data points. Those who score the highest across these key data points are granted the Masters Qualification. Workers cannot apply for this status. To receive the Masters Qualification, try tasks across a variety of Requesters and consistently submit a lot of high quality work.

Can the Masters Qualification be revoked?

Yes, the Masters Qualification can be revoked if the Worker's performance declines and he or she no longer scores highest across Requester-provided and marketplace data points, or the Worker otherwise violates our [Participation Agreement](#). If Workers have the Masters Qualification revoked, they will have an opportunity to improve and will be eligible to regain the Masters Qualification in the future.

Premium Qualifications

How can I participate in the Premium Qualifications feature?

Requesters use Premium Qualifications to access the contributions of those Workers that are best-suited to their workloads. To become eligible to complete HITs that use Premium Qualifications, Workers can complete Profile Information HITs available [here](#). Please note that some Premium Qualifications are only available for Workers in certain locations.

Do I have to complete the Profile Information HITs?

No. Providing information via Profile Information HITs is optional. You can complete as many or as few Profile Information HITs as you choose. Certain HITs are only available to Workers who have completed certain Profile Information HITs.

Where can I view the Profile information HITs I have submitted?

Once your Profile Information HITs have been processed, which may take up to 30 days, you can view your related Premium Qualifications on the [Qualifications Assigned to You](#) tab.

How can I change or have my Premium Qualifications removed?

Amazon Mechanical Turk will re-publish the Profile Information HITs on a periodic basis. Workers can be granted new Premium Qualifications by changing their responses when re-taking Profile Information HITs. If you want to remove any of your Premium Qualifications at any time, please [contact us](#) and we will remove you from that Premium Qualification.

How does Amazon Mechanical Turk use my Profile Information HITs?

We use your Profile Information HIT responses to associate Premium Qualifications with your Worker ID, so that Requester HITs requiring those Premium Qualifications can be made available to you. We will not otherwise use this information for any purpose (including marketing purposes) without your consent. You can contact us at any time to opt-out of Premium Qualifications and revoke your consent for us to use the profile information you provided. To learn more about our information practices, please read our [Privacy Notice](#).

Appendix B



IRB00007703

FWA 00016247

IORG0006409

September 15, 2019

Russell Smith
Doctoral Candidate, Business Administration
Satish & Yasmin Gupta College of Business
University of Dallas
Irving, TX 75062

RE: IRB approval of proposal # 20019064

Dear Russell Smith:

Thank you for submitting your research proposal for prior approval by the Institutional Review Board (IRB). Your proposal was reviewed under the procedure for expedited review, as it poses minimal risk for participants using surveys with adults. You indicate that steps will be taken to procure informed consent and protect participants' identities. The reviewer(s) recommended approval of your request to complete the research described in your proposal under the conditions stated above.

As you complete your research, please keep in mind that substantive changes to the research method, participant population or project end date will require IRB review, and that any participant injuries or complaints must be reported to the IRB at the time they occur. The IRB policies require that you provide an annual report of the progress of this research project, or a report upon completion, whichever occurs first.

On behalf of the members of the IRB, I wish you success in this project.



Gilbert Garza, Ph.D.
IRB Chair

1845 East Northgate Drive, Irving, TX 75062-4736

Appendix C

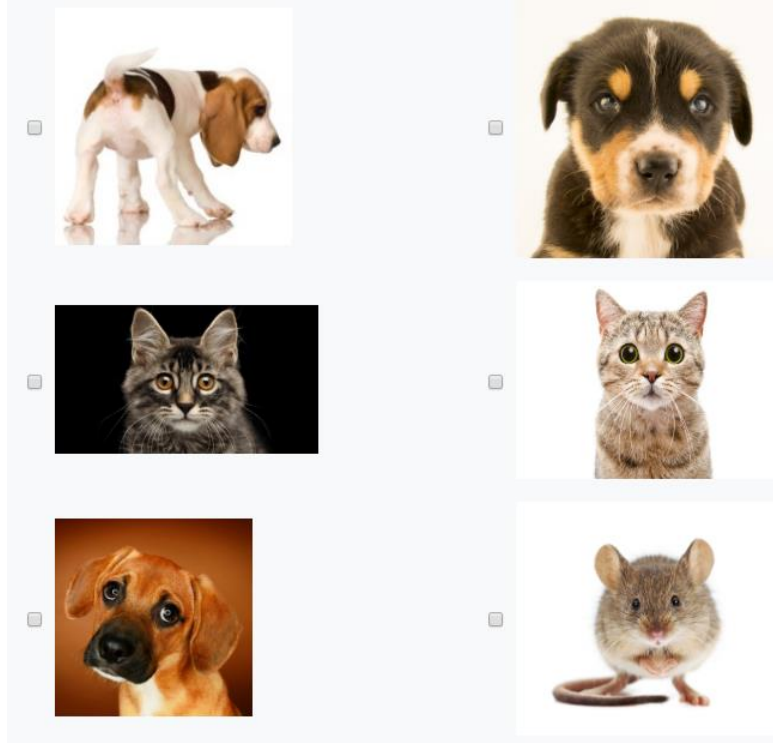


Appendix D

Survey

Start of Block: BOT test

Q1 Select all the dogs.



End of Block: BOT test

Q2 CONSENT TO PARTICIPATE IN A RESEARCH STUDY University of Dallas

Factors influencing breastfeeding decisions:

Below is a description of the research procedures and an explanation of your rights as a research participant. In accordance with the policies of the University of Dallas, you are asked to read this information carefully.

The purpose of this study is to examine some factors that may influence breastfeeding decisions or new mothers. Your participation is completely voluntary, and if you begin participation and choose to not complete it, you are free to not continue without any adverse consequences.

If you agree to be in this study, you are asked to do the following:

- Confirm that you are at least 18 years of age.
- Confirm that you voluntarily agree to complete an online multiple-choice survey.
- Be willing to take approximately 7 minutes to answer all questions honestly.
- Complete the survey in one setting.

The first 5 questions are screening questions to determine if you are an appropriate participant for the study.

There are no known risks associated with this study. This study has the potential benefit of improving breastfeeding duration rates by providing additional guidance for employers, consultants, and/or policy makers in their efforts to support new mothers and their breastfeeding rights.

Because you will not be providing any clues to your identity, you can be assured that your responses will remain anonymous. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail rsmith1@udallas.edu, or if you have any questions about your rights as participant, you make contact the Chair of the University of Dallas IRB, Dr. Gilbert Garza at (972) 721-5366 or garza@udallas.edu.

By selecting 'Yes' below, you acknowledge that you have read and understand the expectations of this study and will proceed to the survey. If you choose not to participate, select 'No' and your participation will be terminated.

- Yes, I choose to participate in this study.
- No, I choose not to participate in this study.

Q3 In what state do you live?

- Washington
 - Oregon
 - New Jersey
 - Missouri
 - Louisiana
 - Mississippi
 - Other
-

Q4 What is your age?

- Under 18
 - 18 - 24
 - 25 - 34
 - 35 - 44
 - 45 - 54
 - 55 or over
-

Q5 What is your gender?

- Male
 - Female
-

Q6 Do you have a child between 6 - 24 months old?

- Yes
 - No
-

Q7 Did you breastfeed this child?

- Yes
- No

End of Block: Screening Questions

Start of Block: Content

Q8 How long did you breastfeed your child? This includes breastfeeding in combination with formula.

- 0 - 3 months
- 4 - 6 months
- 7 - 9 months
- 10 - 12 months
- More than 12 months
-

Q9 How many children do you have?

- 1
- 2
- 3
- 4
- More than 5
-

Q10 What is your race?

- White or Caucasian
 - Black or African American
 - Hispanic or Latino
 - Asian or Asian American
 - American Indian or Alaska Native
 - Native Hawaiian or other Pacific Islander
 - Another race
-

Q11 What is your marital status?

- Never married and not cohabiting
- Never married and cohabiting
- Married
- Separated
- Divorced

Q12 What is the highest level of education?

- Less than high school
 - High school or equivalent
 - Some college
 - Associates degree (2 year)
 - Bachelors degree (4 years)
 - Masters degree
 - Doctorate or professional degree
-

Q13 What is your household income?

- Less than \$19,999
 - \$20,000 - \$39,999
 - \$40,000 - \$59,999
 - \$60,000 - \$99,999
 - \$100,000 - \$149,999
 - More than \$150,000
 - Prefer to not answer
-

Q14 What is your employment status?

- Employed full time
- Employed part time
- Unemployed
- Homemaker
- Retired
- Student full time
- Student part time

Q15 How soon did you return to work after giving birth?

- 1 - 2 Weeks
 - 3 - 4 Weeks
 - 5 - 6 Weeks
 - 7 - 8 Weeks
 - 9 - 12 Weeks
 - Greater than 12 Weeks
 - Not applicable
-

Q16 For the following, please indicate to what extent each factor influenced your decision to stop breastfeeding.

	Definitely NOT a reason I stopped	Probably not a reason I stopped	Not sure if this was a reason I stopped	Probably a reason I stopped	Definitely WAS a reason I stopped
You were not able to produce enough milk for your baby.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your baby had difficulty latching on or suckling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Breast milk was not providing your baby enough nutrition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You did not receive enough support at home/work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You wanted to change your diet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your baby self-weaned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You returned to work/school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Formula marketing persuaded you to switch.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Start of Block: Content Continued

Q17 What was the father's preference for feeding your baby?

- Strongly preferred breastfeeding
 - Preferred breastfeeding
 - Did not have a preference
 - Preferred formula
 - Strongly preferred formula
-

Q18 How familiar are you with the laws protecting your breastfeeding rights?

- Extremely familiar
 - Very familiar
 - Moderately familiar
 - Slightly familiar
 - Not familiar at all
-

Q19 Many laws regulate aspects of breastfeeding. Which, if any, of the following laws apply to your state? **Check all that apply.**

- Employers are required to provide reasonable time for nursing mothers to express milk. [ACA]
 - Employers with more than 50 people are required to provide a private (not bathroom) and appropriate (not storage closet) room for mothers to express milk. [ACA]
 - Insurance companies are required to pay for breast pumps, related supplies, and counseling. [ACA]
 - Breastfeeding is not considered indecent exposure. [WA, MO, LA, MS]
 - Breastfeeding in public is a protected right. [WA, OR, MO, NJ, LA, MS]
 - Discrimination of publicly breastfeeding women is unlawful. [WA]
 - Midwifery and doula services are provided to incarcerated women. [WA]
 - Breastfeeding mothers are exempt from jury duty. [OR, MO, MS]
 - Breastfeeding mothers must be provided 30 minutes to express milk for every 4 hours worked. [OR]
 - Breast pumps, related supplies and replacement parts are exempt from sales tax. [NJ, LA]
 - Employers cannot financially penalize pregnant or nursing mothers. [NJ]
 - Hospitals and surgical centers are required to provide breastfeeding information and consultation. [MO]
 - Physicians are required to provide information on prenatal preparation for and postnatal benefits of breastfeeding a child. [MO]
 - Children cannot be discriminated against because they are breastfed. [LA, MS]
 - All state-owned and state-subsidized buildings are required to have rooms dedicated for nursing mothers. [LA]
 - All public schools are required to have dedicated space for nursing mothers [LA]
 - Employers cannot discriminate against mothers who take allowable time to breast pump. [MS]
-

Q20 Would you have chosen to breastfeed longer if you had been more familiar with your breastfeeding rights?

- Definitely No
- No
- Unsure
- Yes
- Definitely Yes

End of Block: Content Continued

The following are the breastfeeding laws in your state.

- Employers are required to provide reasonable time for nursing mothers to express milk
- Employers with more than 50 people are required to provide a private (not bathroom) and appropriate (not storage closet) room for mothers to express milk.
- Insurance companies are required to pay for breast pumps, related supplies, and counseling.
- Breastfeeding in public is a protected right.
- Breastfeeding is not considered indecent exposure.
- Discrimination of publicly breastfeeding women is unlawful.
- Midwifery and doula services are provided to incarcerated women.

Would knowing these specific laws cause you to have breastfed longer?

- Definitely No
- No
- Unsure
- Yes
- Definitely Yes

Appendix E

Race * State Crosstabulation

Race		State						Total
		WA	OR	NJ	MO	LA	MS	
White / Caucasian		26	19	11	20	14	9	99
Black / African American		1	0	1	0	4	3	9
Hispanic / Latino		0	0	2	1	0	0	3
Asian / Asian American		1	0	2	0	0	0	3
American Indian / Alaskan Native		0	0	0	0	1	0	1
Another Race		1	1	0	0	1	0	3
Total		29	20	16	21	20	12	118

Age * State Crosstabulation

Age		State						Total
		WA	OR	NJ	MO	LA	MS	
18 - 24		4	0	0	0	5	0	9
25 - 34		12	10	10	13	4	11	60
35 - 44		8	6	5	8	10	1	38
45 - 54		3	0	0	0	1	0	4
55 or Over		2	4	1	0	0	0	7
Total		29	20	16	21	20	12	118

Income * State Crosstabulation

		State						Total
		WA	OR	NJ	MO	LA	MS	
Income	Less than \$19,999	2	0	1	0	2	1	6
	\$20,000 - \$39,999	3	7	5	5	3	4	27
	\$40,000 - \$59,999	10	3	2	8	4	1	28
	\$60,000 - \$99,999	9	7	5	8	7	5	41
	\$100,000 - \$149,999	4	2	2	0	2	1	11
	Greater than \$150,000	0	1	1	0	1	0	3
	Prefer not to answer	1	0	0	0	1	0	2
Total		29	20	16	21	20	12	118

Education * State Crosstabulation

		State						Total
		WA	OR	NJ	MO	LA	MS	
Education	High School / GED	3	2	2	1	6	2	16
	Some college	11	4	2	11	5	3	36
	Associates degree	2	4	2	4	1	4	17
	Bachelor's Degree	10	9	9	3	7	2	40
	Master's Degree	2	1	1	2	1	1	8
	Doctorate / PhD	1	0	0	0	0	0	1
Total		29	20	16	21	20	12	118

Father's Preference * State Crosstabulation

		State						Total
		WA	OR	NJ	MO	LA	MS	
Father's Preference	Strongly preferred breastfeeding	8	7	2	4	9	3	33
	Preferred breastfeeding	5	5	6	5	2	2	25
	Did not have a preference	14	8	7	9	9	6	53
	Preferred formula	1	0	1	3	0	1	6
	Strongly preferred formula	1	0	0	0	0	0	1
Total		29	20	16	21	20	12	118

No. of Children * State Crosstabulation

No. of Children	State						Total
	WA	OR	NJ	MO	LA	MS	
1 Child	7	4	4	2	5	2	24
2 Children	12	2	6	8	7	5	40
3 Children	4	8	5	8	4	4	33
4 Children	4	6	1	2	3	1	17
5 or More Children	2	0	0	1	1	0	4
Total	29	20	16	21	20	12	118

Appendix F

