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Anna's paper received a *Quaesitum* outstanding paper award.

Anna Church

An Analysis of Breastfeeding Initiation Trends of Shelby County, TN Women from 2007 to 2015

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Abstract

Breastfeeding is a prominent public health issue, and if guidelines were followed, the United States could save billions of dollars and hundreds of lives. The ability to do this starts with initiation. This study uses data from the Shelby County Health Department, located in Memphis, TN, to study breastfeeding initiation trends and the relationships between initiation, race, and age of the mother (n=74,496). These data span nine years (2007-2015) and were cross-tabulated to identify significant differences in initiation distribution by the racial and age group make-up of the mothers. There is a positive trend in the percentage of mothers initiating breastfeeding over time among all racial and age groups, but disparities within both variables persist. This study finds significant relationships between the variables and can be used to inform future research and community intervention.

Introduction

Breastfeeding is a prominent public health issue and one of increasing importance in Shelby County, TN, where infant deaths remain higher and breastfeeding rates remain lower than national averages. This area has historically fared poorly with various issues of health, particularly with the persistence of racial health disparities. Breastfeeding has been shown to have a positive impact on health in later life. At the national level, populations have become healthier over the years, but the racial disparity between non-Hispanic whites and blacks has continued to persist. When the Centers for Disease Control and Prevention evaluated all states against the Healthy People 2010 objectives, it was discovered that most states were not meeting the targets of any breastfeeding objectives for any racial or ethnic group; therefore, Shelby County and Tennessee as a whole are not alone in this struggle (Centers for Disease Control and Prevention 2010).

The data used in this study defined breastfeeding initiation as infants being breastfed directly after birth. While this measure is not able to indicate longevity of breastfeeding, if a woman does not get off to a successful start with breastfeeding while still in the hospital, surrounded by healthcare professionals, then it is very unlikely that she will continue to breastfeed upon her return home. If 90% of U.S. families were able to comply with medical recommendations to breastfeed exclusively for six months, the country would save $13 billion per year and prevent an excess of 911 deaths, nearly all of which would be in infants (Bartick and Reinhold 2010). Those six months of breastfeeding all begin with initiation.

There is a large amount of literature on the health benefits of breastfeeding for mothers and infants, as well as analyses of how national or workplace policies can affect breastfeeding rates. Macro-level analyses are necessary for various reasons, but they can cover up trends at the micro-level (for the purposes of this study defined as local- or county-level). A "one size fits all" approach is not always appropriate for health interventions, as every community has impeding structures, cultural variations, and ranging demographics. Micro-level analyses of breastfeeding women have not been disseminated in the same manner as macro-level ones. The current study aims to address this gap. It will supplement previous research in two important ways: (1) by focusing on initiation only rather than longevity of breastfeeding or reasons for early cessation, and (2) by focusing on the demographics of those women who chose to initiate rather than those

who did not.

This study uses data from the Shelby County Health Department to analyze the racial make-up of the sample, while considering respective age groups. The data spans from 2007 until the most recently available year at the time of analysis: 2015. Through this research, I strive to answer the question: How do race and age affect the likelihood of a woman initiating breastfeeding in Shelby County? Conclusions will be drawn about breastfeeding initiation trends over time and how those trends have been influenced by age and race as well. Other objectives of this study are to identify any race and/or age-based initiation disparities in the data and to potentially provide a tool that can identify target populations for future community intervention.

Literature Review

Health Benefits of Breastfeeding

The health benefits of breastfeeding are a common subject in the literature, and it is generally agreed upon that breastfeeding practices are an important subject for study. Across the world, breastfeeding saves the lives of infants, such as reducing their disease burden and providing protection from infections (Oddy 2001). Sudden Infant Death Syndrome (SIDS) is the leading cause of infant death from one- to six-months-olds in the developed world (Bernshaw 2016). There have been many theories introduced and proposed to explain SIDS deaths, with some related to adverse circumstances surrounding either the infant or the mother. Others suggest that a thiamine deficiency or a hormonal/biochemical imbalance in the infant is the ultimate cause (Bernshaw 2016). Breastfeeding is one method to prevent these imbalances, as previous research has shown that SIDS occurs significantly less frequently in breastfed infants. The health benefits of breastfeeding do not only extend to the infant, but the mother as well. These benefits include lactation amenorrhea, postpartum weight loss, and protection against ovarian and breast cancer (Leung and Sauve 2005). Lactation amenorrhea refers to a delay in the return of a menstrual cycle for breastfeeding women. This natural form of birth control assists with child spacing, which allows the mother sufficient time to rest from her most recent pregnancy and to be healthier if she wishes to get pregnant again (Leung and Sauve 2005).

Determinants to Successful Breastfeeding

Current World Health Organization (WHO) guidance recommends exclusive breastfeeding until the infant is six months old, followed by the intake of breast milk up until two years old at least (Callaghan and Lazard 2012). Knowing all of the above benefits and the recommendations by world-renowned health organizations, just over half (55.3%) of U.S. mothers, according to the National Immunization Survey, were breastfeeding their infants at 6 months of age (Centers for Disease Control and Prevention 2017). An even smaller percentage (25.5%) were exclusively breastfeeding their infants at 6 months, the actual recommendation of the WHO (Centers for Disease Control and Prevention 2017). Previous literature has cited multiple reasons for the low numbers of women following breastfeeding guidelines. Ogbuanu et. al. (2011) found that women often cited work-related barriers to prolonged breastfeeding, such as a lack of supportive work environments which included the provision of lactation facilities and paid maternity leave. Brown et. al. (2014) found that one of the most common responses among women they surveyed who discontinued breastfeeding was a concern about milk supply and their ability to sufficiently feed their infants. Another factor of great significance was the fear of breastfeeding in public. This fear could be due to many things, including a fear of experiencing negative reactions (Roche, Owen, & Fung 2015), perceptions of social approval (Lippitt et. al. 2014), and embarrassing themselves and/or others (Acker 2009). Considering that infants need to eat every 2-3 hours, the chance that a woman may need to breastfeed her infant while out in the public sphere is quite high. All of the above barriers and fears may cause women to forgo breastfeeding altogether, much less follow the recommended duration guidelines.

Race and Age Disparities

National estimates from across the United States indicate substantial racial/ethnic differences in breastfeeding. A Morbidity and Mortality Report from the Centers for Disease Control and Prevention found that non-Hispanic blacks had lower rates of breastfeeding than non-Hispanic whites in all but two states (2010). Over the past few decades, national estimates of breastfeeding initiation have consistently increased, but the racial and ethnic differences remain substantial (Centers for Disease Control and Prevention 2010). The difference in breastfeeding initiation rates between non-Hispanic blacks and whites in 1990 was 35%, and the

difference found in the report from 2003-2006 showed that this difference had dropped to 20% nationally. However, in thirteen states (including Tennessee), this difference remained higher than 20%. Overall, Hispanics have slightly higher initiation rates than non-Hispanic whites, but this did vary by state. The relationship between time spent in the United States and breastfeeding initiation shows that those Hispanic women who had lived in the U.S. longer were less likely to initiate breastfeeding (Centers for Disease Control and Prevention 2010). These persistent racial disparities are common across many other health outcomes.

There also remain consistent disparities in the initiation of breastfeeding across age groups. Younger maternal age, lower income, lower education, and single marital status are all factors associated with not breastfeeding (Centers for Disease Control and Prevention 2010). All of these factors are characteristics more often found among younger mothers, which helps explain why this age group has lower rates of breastfeeding on average. Older women may have slightly higher than average breastfeeding initiation rates due to taking the time to establish a strong financial situation, which may give them the privilege of taking extended time off from work (Batzdorff 2002).

Description of Place

Tennessee's Breastfeeding Report Card, issued by the Centers for Disease Control, provides a clear picture of how the state measures up to the nation on various breastfeeding benchmarks. The rates of Tennessee infants (1) ever breastfed, (2) breastfeeding at 6 months, and (3) breastfeeding at 12 months are all lower than national averages (National Center for Chronic Disease Prevention and Health Promotion 2014). One contributing factor may be lack of professional lactation support which has been proven to help mothers initiate and continue breastfeeding. The most recent Report Card shows that Tennessee, one of eleven states, has a limited availability of this professional support with fewer than three certified lactation consultants per 1,000 live births (2014).

Hospital support can also be a factor in increasing rates of breastfeeding. The Baby-Friendly Hospital Initiative is a World Health Organization and UNICEF joint project that has a goal of increasing breastfeeding initiation and duration rates by developing specific protocols disseminated to all staff members to promote breastfeeding while in the hospital after birth (Hawkins et al. 2015). These hospitals have been prov-

en to reduce disparities in breastfeeding initiation by improving the rates of initiation for lower-income, lower-educated minority women (Hawkins et al. 2015). On average, 7.79% of live births occur at hospitals given a Baby-Friendly endorsement by the CDC, but in Tennessee only 0.13% of births occur in these hospitals (National Center for Chronic Disease Prevention and Health Promotion 2014). This can be attributed to the lack of hospitals with a Baby-Friendly certification as there are only two in the entire state, neither of which are within 200 miles from Shelby County. Many hospitals can promote breastfeeding initiation without being official Baby-Friendly designated hospitals, but without the protocols that this designation mandates, there is the potential that new staff or management could negatively influence the pro-breastfeeding culture in these institutions.

The heightened focus in this study on one singular county is necessary for various reasons. In the year 2005, Shelby County had the highest infant mortality rate in the entire United States, and by 2014 it still had the highest rate in the state of Tennessee (Quander 2014). Infant mortality rates and breastfeeding rates often go hand-in-hand. Shelby County is 52.1% black or African-American according to the 2010 Census, with the city of Memphis having one of the largest African-American populations of all U.S. metropolitan areas (Shelby County Tennessee 2010). Along with identifying breastfeeding initiation trends, stratified by race and age cohort of the mother, this study will also provide implications for further study on topics in the field of maternal and child health, such as infant mortality.

Methods

The data used for this study was provided by the Shelby County Health Department's Office of Epidemiology in aggregated form, which did not require IRB approval. The source of the original, person-level data is the Tennessee Department of Health Office of Policy, Planning and Assessment Division of Health Statistics, specifically drawn from Birth and Death Certificate Files for Shelby County residents. This sample is representative of Shelby County residents who have given birth to live infants spanning the years 2007 to 2015. The total size of the sample is 74,496 residents. This aggregated data set only includes those respondents that initiated breastfeeding. Due to missing values in the original source of the data (meaning those birth certificates which did not have any indication of

breastfeeding initiation shown) the percentages of those respondents that chose not to initiate breastfeeding cannot be determined with certainty.

There are two independent variables for this study: 1) race, and 2) age of the mother. The frequency of these variables was determined from self-identification of race and legal age as presented on birth certificate data from the Tennessee Department of Health. The categories for race include non-Hispanic white, non-Hispanic black, and Hispanic. An 'Other' category was included in the original data, but excluded from analysis due its very small values. The categories for the independent variable of age include 15-19 years old, 20-34 years old, and 35+ years old. The dependent variable for the analysis is the breastfeeding initiation indicator. The value for this variable was determined when in the hospital after birth, women were asked by a healthcare worker, "Is Infant Being Breastfed?" If the answer was 'Yes', then that would be marked appropriately on the birth certificate by the health care worker. 'No' answers were not included in the data set due to the aforementioned missing values.

Due to the lack in variation of the dependent variable (all 'Yes' answers), cross-tabulation analysis was performed using both independent variables in order to reveal disproportionate percentages of breastfeeding initiation between and within racial and age groups. This breakdown indicates how many members of each racial and/or age group in the sample initiated breastfeeding while also indicating the percentage of each age group that belonged to a certain racial group. The cross-tabulation analysis was performed on the first year and last year of the data set, 2007 and 2015 respectively, in order to determine if and how the variables changed over that timeframe.

Results

For all racial groups, the percentage of women initiating breastfeeding increased overall from 2007 to 2015 with some downward fluctuations from year-to-year. In Figure 1, non-Hispanic black women saw a substantial increase in the percent initiating breastfeeding (39.4% to 61.5%). Non-Hispanic whites and Hispanics did not see this large an increase, which is in part due to their higher beginning initiation percentages. There is not as much room for improvement when starting from an initiation percentage of over seventy. Non-Hispanic black women do continue to have lower rates of initiation than other racial groups despite their group's substan-

tial improvement. The Shelby County total, which represents the average for the county, is lower than both white and Hispanic, but higher than the black totals. All groups' initiation percentages steadily rose from 2007 to 2012, but since then have leveled off and been fairly constant, with white women's initiation percentage slightly decreasing over the past two years. The data displayed in Figure 1 indicate that the race of a woman does affect her likelihood to initiate breastfeeding.

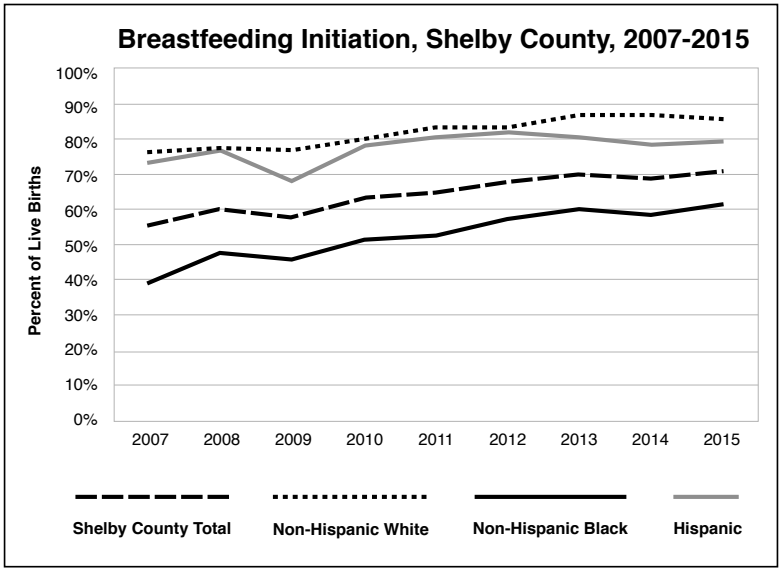

Figure 1. Breastfeeding Initiation by Race, Shelby County, 2007-2015

Data Source: Shelby County Health Department (SCHD), Office of Epidemiology and Infectious Diseases, prepared 3/20/17 from Birth and Death Certificate Files for Shelby County Residents, 2007- 2015, Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics.

The data in Figure 2 also show an overall increase in breastfeeding initiation across all age groups. As with the racial groups in Figure 1, the initiation percentages for each age group have also leveled off for the past three years after consistent increase. The Shelby County total, or average, is even with the 20- to 34-year-old group, which is also the age group containing the largest number of women. The 15- to 19-year-old group has the lowest rates of initiation, but has come within 10 percent of the Shel-

by County average and has seen the most drastic improvement over the 9-year timeframe. There was a slight decrease in initiation in 2015, so it will be important to see how the numbers change in the coming years. The 35+ year-old group has the highest rates of initiation, but the gap between this group and the 20- to 34-year-old group has decreased. A relationship between breastfeeding initiation and age is illustrated here: the higher the age of a woman, the more likely she is to initiate; whereas, the lower the age of a woman, the less likely she is to initiate. This makes it clear that age of a woman does affect her likelihood to initiate breastfeeding.

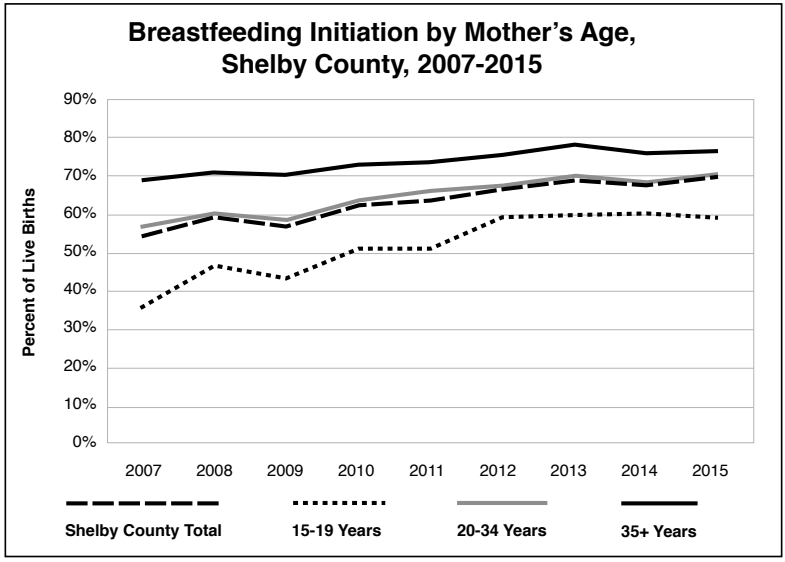

Figure 2. Breastfeeding Initiation by Age, Shelby County, 2007-2015

Data Source: Shelby County Health Department (SCHD), Office of Epidemiology and Infectious Diseases, prepared 3/20/17 from Birth and Death Certificate Files for Shelby County Residents, 2007- 2015, Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics.

The largest age group was the 20- to 34-year-olds, and the majority of the women in the sample were non-Hispanic black. The Hispanic sample is significantly smaller than the other two groups. Table 1 shows the racial make-up of each age cohort in the sample for the first year of the data set, 2007. Again, all of these women initiated breastfeeding and what this table tells us is how this group of women is broken down across

race and age. Well over half (68.5%) of the 15- to 19-year-old group was non-Hispanic black, whereas 11.9% was non-Hispanic white. The 20- to 34-year-old group had almost even percentages of non-Hispanic white and non-Hispanic black women, while 54.0% of the 35+ age group was non-Hispanic white women, and 33.9% of this group was non-Hispanic black women. White women had higher percentages of older women, while, black, and Hispanic women had higher percentages of younger women.

Race 07 * Age 07 Cross-tabulation

			Age 07			
			15-19 years	20-34 years	35+ years	Total
Race 07	Non-Hispanic White	Count	95	2508	532	3135
		% within Age 07	11.9%	42.3%	54.0%	40.7%
	Non-Hispanic Black	Count	548	2460	334	3342
		% within Age 07	68.5%	41.5%	33.9%	43.3%
	Hispanic	Count	157	957	119	1233
		% within Age 07	19.6%	16.2%	12.1%	16.0%
Total		Count	800	5925	985	7710
		% within Age 07	100.0%	100.0%	100.0%	100.0%

Table 1. Cross-tabulation of Race and Age, 2007

Table 2 is shown in order to illustrate the change in the racial make-up of each age group over nine years. The percentage of non-Hispanic white and Hispanic women aged 15 to 19 years old declined by 0.7% and 5.9% respectively, while the percentage of non-Hispanic black young women increased by 6.6% from 2007. The actual numbers of women in this age group decreased across all three racial categories, but the difference in the number of non-Hispanic black and non-Hispanic

Race 15 * Age 15 Cross-tabulation

			Age 15			
			15-19 years	20-34 years	35+ years	Total
Race 15	Non-Hispanic White	Count	77	2265	464	2806
		% within Age 15	11.2%	33.1%	41.8%	32.4%
	Non-Hispanic Black	Count	517	3795	440	4752
		% within Age 15	75.1%	55.4%	39.6%	54.9%
	Hispanic	Count	94	792	207	1093
		% within Age 15	13.7%	11.6%	18.6%	12.6%
Total		Count	688	6852	1111	8651
		% within Age 15	100.0%	100.0%	100.0%	100.0%

Table 2. Cross-tabulation of Race and Age, 2015

white women persisted. In 2015, there was an increase in the number of non-Hispanic black women aged 20 to 34, and 35+ years old. This increase, combined with the decreased number of non-Hispanic black 15- to 19-year-old women, suggests a positive future trend toward fewer teenage pregnancies.

One unexpected result from this analysis was the overwhelming percentage of 15- to 19-year-olds in the sample that were non-Hispanic black. If you picked a woman from this age group, it would be 5.75 times more likely that she would be black than white. This illustrates a quite large disparity in who the teenage mothers are in Shelby County. In 2007, there were 95 white 15- to 19-year-old women compared to 548 black women. In 2015, these values remained relatively equivalent, with 77 young white women and 517 black women in this age group.

Discussion

Non-Hispanic white and hispanic women have higher percentages of their populations initiating breastfeeding than the Shelby County average. Non-Hispanic white women have slightly higher percentages of initiation than Hispanic women, which is contrary to the common finding that Hispanic women are more likely to breastfeed (Trigo 2014). The reason for this different finding cannot be determined from this analysis, but how long the Hispanic women in this sample have resided in Shelby County or the United States in general should be explored further. The longer a woman has lived in the United States, the less likely she is to initiate breastfeeding (Trigo 2014). The non-Hispanic black population consistently has lower rates of breastfeeding initiation than all other categories. It is important to take note of the fact that Shelby County has seen improvement in the breastfeeding initiation rates of its mothers, but a gap between non-Hispanic black women and other groups continues to exist. In 2007, there was a 37.1% difference between non-Hispanic whites and non-Hispanic blacks, and in 2015 this difference dropped to 24.4%. This demonstrates the necessity for continued research into why this disparity continues and how it can best be addressed.

Age of the mother is also an important indicator for the likelihood to initiate breastfeeding. Young mothers oftentimes share many characteristics that make them unlikely to breastfeed, such as low education, low income, and being unmarried, and this shows in their breastfeeding

rates. Women age 15 to 19 exhibit lower initiation rates compared to the Shelby County average and compared to older women in the sample. In 2007, women 35+ years old were almost twice as likely to breastfeed as women aged 15 to 19. This difference improved between 2007 and 2015, where the 35+ year-old group had 17% more women initiating breastfeeding than the 15- to 19-year-old one. The 20- to 34-year-old group exhibited breastfeeding rates that were close to the Shelby County average. The 35+ year-old group exhibited the highest breastfeeding rates of the sample. From 2007 to 2015, there was a 13.9% increase of non-Hispanic black women initiating in the 20- to 34-year-old group. The number of non-Hispanic white women decreased from 2007 to 2015 in both the 20 to 34 and 35+ year-old groups, while the number of non-Hispanic black women increased in both. Giving birth at an older age carries less risk than giving birth as a teenager and, while women older than 35 do carry some childbirth risks that inevitably come with aging, they are still more likely to initiate breastfeeding and have better birth outcomes than significantly younger populations.

Limitations

The limitations of this research are mostly due to the nature of the data set itself. There is no variation in the dependent variable, because this sample contains only women who answered 'Yes' when it came to initiating breastfeeding. Due to missing values in the data, the exact number of women who did not initiate breastfeeding cannot be determined. This does limit the analysis, because we cannot know anything about these women. The categories used for both independent variables, race and age, were provided by the Shelby County Health Department. The age variable does not include mothers who were under the age of 15, and the racial categories are quite broad, possibly obscuring smaller ethnic groups within these larger categories. This analysis does not address the complex reasons behind how these initiation trends occur or how the place (Shelby County) specifically influences them. This study does not take into account the varied and complex reasons behind the initiation disparities seen, including phenomena like systemic racism in healthcare and the increased stress level that black women experience in everyday life. These are ideas and concepts that should be taken up with further research.

Conclusion

This study indicates that there are significant relationships between breastfeeding initiation, race, and age of the mother. Black and Hispanic women are less likely to initiate breastfeeding than white women, and the older a mother is, the more likely she is to initiate breastfeeding. The trends found in Shelby County fit into what has been said on the national level about what type of women breastfeed. This data also mirrors the national trend of racial disparities amongst breastfeeding women. Across all racial and age groups, breastfeeding initiation has increased over the time of the sample, but the differences between racial groups have remained significant. Across the United States, we see health outcomes improving but racial disparities persisting. This can be frustrating, because we have at our disposal many of the tools needed to fight this, including Baby-Friendly hospital designations and increased breastfeeding-friendly workplace policies, which are two resources that research has proven increase breastfeeding initiation among low-income, low-education, and minority mothers.

Breastfeeding maximizes infants' positive health outcomes and reduces infant death rates. An increase in breastfeeding in Shelby County could greatly impact other infant health measures. Shelby County has struggled for decades with a comparatively high infant mortality rate, and this research provides a tool with which to understand this. There are hundreds more young, non-Hispanic black mothers, and the intersectionality of race and age can produce devastating outcomes for infant mortality. Shelby County has seen a decrease in its overall infant mortality rate, but black infants are still 2.5 times more likely to die than whites (Quander 2014). Infant mortality is a multi-faceted, complex issue that cannot be simplified to a single cause. What I argue here is that this study could be used, along with others, to identify potential target areas for future policies and interventions dealing with breastfeeding and infant mortality. Some of this work is being undertaken by various organizations in Shelby County with positive outcomes already being seen. By implementing interventions designed to decrease the number of teenage mothers, particularly black mothers, and to increase breastfeeding initiation for all individuals, Shelby County can see improvement not just in its overall infant mortality and breastfeeding initiation rates, but in its racialized health disparities as well.

References

Acker, Michele. 2009. "Breast is best…but not everywhere: Ambivalent sexism and attitudes toward private and public breastfeeding." *Sex Roles*, *61*(7-8): 476-490.

Bartick, Melissa and Arnold Reinhold. 2010. "The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis." *Pediatrics*, *125*(5): 1048-1056.

Batzdorff, Janice Merrill. 2002. "(not so young) Mothers and Breastfeeding". *New Beginnings* 18(9): 124-127.

Bernshaw, Nicole J. 2016. "Does breastfeeding protect against Sudden Infant Death Syndrome?" *Journal of Human Lactation*, *7*(2): 73-79.

Brown, Catherine R.L., Linda Dodds, Alexandra Legge, Janet Bryanton, and Sonia Semenic. 2014. "Factors influencing the reasons why mothers stop breastfeeding." *Canadian Journal of Public Health / Revue Canadienne De Santé Publiqu*, *105*(3). Retrieved November 15, 2017 (http://www.jstor.org.ezproxy.memphis.edu/stable/canajpublheal.105.3.e179).

Callaghan, Jane E.M., and Lisa Lazard. 2012. "'Please don't put the whole dang thing out there!': A discursive analysis of internet discussions around infant feeding." *Psychology & Health*, *27*(8): 938-956.

Centers for Disease Control and Prevention. 2010. "Racial and Ethnic Differences in Breastfeeding Initiation and Duration, by State — National Immunization Survey, United States, 2004–2008". *Morbidity and Mortality Weekly Report*, *59*(11). Retrieved November 15, 2017 (http://www.jstor.org.ezproxy.memphis.edu/stable/23319650).

Hawkins, Summer, Ariel Dora Stern, Christopher Baum, and Matthew W. Gillman. 2015. "Evaluating the impact of the Baby-Friendly Hospital Initiative on breast-feeding rates: A multi-state analysis." *Public Health Nutrition*, *18*(2): 189-197.

Leung, Alexander K. C., and Reginald S. Sauve. 2005. "Breast is best for babies." *Journal of the National Medical Association*, *97*(7): 1010-1019.

Lippitt, Margaret, Amelia Reese Masterson, Anya Sierra, Amy B. Davis, and Marney A. White. 2014. "An exploration of social desirability bias in measurement of attitudes toward breastfeeding in public." *Journal of Human Lactation*, *30*(3): 358-366.

National Center for Chronic Disease Prevention and Health Promotion. 2014. *Breastfeeding Report Card United States/2014*. Center for Disease Control and Prevention. Atlanta, GA. Retrieved November 20, 2018 (https://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf).

Oddy, Wendy. 2001. "Breastfeeding protects against illness and infection in infants and children: A review of the evidence." *Breastfeed Rev.*, *9*(2): 11-18.

Ogbuanu, Chinelo A., Saundra Glover, Janice C. Probst, Jihong Liu, and James R. Hussey. 2011. "The effect of maternity leave length and time of return to work on breastfeeding." *Pediatrics*, *127*(6): e1414–e1427.

Quander, Michael. 2014. "Shelby County has highest infant mortality rate in Tennessee". *WREG*, September 3.

Roche, Andrea T., Kimberly B. Owen, Teresa T. Fung. 2015. "Opinions toward breastfeeding in public and appropriate duration." *ICAN: Infant, Child, & Adolescent Nutrition*, *7*(1): 44-53.

Shelby County Tennessee. 2010. "Demographics". Demographic Profile Data, U.S. Census Bureau. Retrieved November 20, 2017 (https://shelbycountytn.gov/211/Demographics).

Trigo, Besore Celia. 2014. "Barriers to breastfeeding for Hispanic mothers." *Breastfeeding Medicine*, *9*(7). Retrieved March 9, 2018 (https://www.liebertpub.com/doi/full/10.1089/bfm.2014.0090).