BARRIERS AND INCENTIVES TO BREAST CANCER SCREENING
AMONG AFRICAN AMERICAN AND CAUCASIAN WOMEN
IN THE MISSISSIPPI DELTA

by

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ABSTRACT

This study examined barriers and incentives to mammography screening among African American and Caucasian women in the Mississippi Delta. This study sought to identify the most salient barriers and incentives to mammography screening; determine if those barriers and incentives differed by race; and determine if barriers and incentives influenced mammography screening behavior. A cross-sectional survey design was used. The Breast Cancer Screening Measure was administered to 175 African American and Caucasian participants at eight different churches in Leflore County, and at the Mississippi State Capitol in Jackson, Mississippi. The survey measured barriers and incentives to mammography screening as well as breast cancer screening behavior. The study found that fear of breast cancer, perceived benefits of mammograms, and health motivation were the most salient barriers and incentives. It was also determined that African American women were more fearful of breast cancer and more motivated to care for their health when compared to Caucasian women. Finally, there were no differences in screening behavior by race; however, women who were more fearful of breast cancer were likelier to be overdue for a mammogram, and women who were motivated to care for their health more likely to be current. This study’s findings have important implications related to the continued need to address psychological barriers to breast cancer screening among “high-risk” women in the Mississippi Delta. Ultimately, the findings may be instrumental in helping future practitioners address fear of breast cancer as a barrier to mammography screening among African American and Caucasian women in rural areas.
DEDICATION

This dissertation is dedicated to my parents, Mr. and Mrs. Charles and Cassie Collins, and to my sister, Kanika Collins Sharp, who have provided unwavering support, love, and encouragement to me for many years. You have made my dreams your own and shared with me all aspects of this journey to earning a doctorate. For each of you, I am deeply grateful. It is also dedicated to the unsung heroines and heroes of the Mississippi Delta whose important voices are seldom ever heard, and to everyone who helped and guided me through the process of writing. It is dedicated to the faith-based community of Leflore County, Mississippi. Finally, this dissertation is dedicated to my young niece and nephew, Sidney and Reginald Sharp, II. May you always know your power in the world and may you never cease to dream.
LIST OF ABBREVIATIONS AND SYMBOLS

\( a \)  
Cronbach’s index of internal consistency

\( \beta \)  
Used to indicate the probability of failing to reject the hypothesis tested when that hypothesis is false and a specific alternative hypothesis is true

\( df \)  
Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data

\( F \)  
Fisher’s \( F \) ratio: A ratio of two variances

\( M \)  
Mean: the sum of a set of measurements divided by the number of measurements in the set

\( p \)  
Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

\( r \)  
Pearson product-moment correlation

\( t \)  
Computed value of \( t \) test

\( < \)  
Less than

\( = \)  
Equal to
ACKNOWLEDGMENTS

I thank Jesus Christ for provision and for the grace and strength to complete this process. At times, I felt discouraged and did not have answers, but my faith in God and in His power sustained me. For that reason, I committed my research study unto Him: “Commit thy plans unto the Lord and your plans will be established” (Proverbs 16:3). Words cannot express how truly grateful I am for the love, support, and encouragement I always receive from my parents, Charles and Cassie, and older sister, Kanika. They have been absolutely everything to me during this process. They have given me the strength to persevere despite trials and tribulations when I would have otherwise failed. I am truly grateful to Dr. Brenda D. Smith, chair of this dissertation, for advising, guiding, and supporting me throughout this journey and motivating me onward. I would also like to thank all of my committee members, Drs. Tyrone Cheng, Karl Hamner, Kathy Bolland, and Graham McDougall for their kindness, invaluable input, inspiring questions, and support of both the dissertation and my academic progress. I would also like to acknowledge how grateful I am for the consistent support and mentorship of Dr. Jimmy Williams. I am also grateful to the faculty and staff of the University of Alabama School of Social Work for their support.

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CHAPTER I

Introduction

Breast cancer is a disease that continues to affect the lives of many individuals living in the United States. In 2014 the National Cancer Institute (NCI) estimated that 232,670 new cases of invasive breast cancer were diagnosed in women, and 2,360 cases in men (NCI, 2014a). In 2014, it is estimated that 40,000 women died from the disease (NCI, 2014a). By 2015, it is estimated that 1.6 million women around the world will have breast cancer (National Breast Cancer Coalition [NBCC], 2012). Although recent reports found that the incidence of breast cancer is declining, early detection of the disease remains a persistent problem among women at high-risk for developing the disease (NCI, 2012b). Unless additional efforts to reduce the incidence of breast cancer are devised, by 2030, 2.2 million women around the world will have the disease, and 747,802 will die from it (NBCC, 2012).

Racial Disparities

From 2007 to 2011, breast cancer incidence among women in the United States varied by state. For example, all women were diagnosed with breast cancer at the rate of 124 per 100,000 (NCI, 2014a). Breast cancer is most commonly diagnosed among women age 55-64. The median age at diagnosis is 61 (NCI, 2014a). Caucasian women were diagnosed with breast cancer at the rate of 128 women per 100,000, and African American women were diagnosed at the rate of 122 per 100,000 (NCI, 2014a). It is important for diagnosis rates to be viewed within the context of mortality. From 2002-2011, the national breast cancer death rate among all
women was 23 per 100,000. During that same time frame, African American women died from breast cancer at the rate of 31 women per 100,000 and Caucasians died at the rate of 22 women per 100,000. Hispanic and Native American women died at the rate of 15-16 women per 100,000, and Asian Pacific women died at the rate of 12 women per 100,000 (NCI, 2014a).

Although all women are at risk for developing breast cancer, African American women are more likely to die from the disease at any stage of diagnosis when compared to Caucasian women and other ethnic minority women (American Cancer Society [ACS], 2012).

African American women also have poorer five-year relative survival rates when compared to Caucasian women (ACS, 2014a). While diagnosed less frequently than Caucasian women, African American women are more likely to develop breast cancer before age 40, present with larger, more aggressive breast tumors, and be diagnosed at the latest stage of the disease (ACS, 2014a). Research studies attribute the trend toward late-stage diagnosis and poorer five-year relative survival rates among African American women to the following factors: the availability/quality of mammogram screening; state differences in racial/socioeconomic composition; the presence of additional health problems/illnesses; unequal access to medical care; and disparities in health treatment (ACS, 2014b). Several of these issues will be addressed in this study.

Breast cancer diagnosed at the late-stage can lead to increased mortality among women at high-risk for the disease. High breast cancer mortality rates among African American women have been attributed to differences in access and utilization of breast cancer screening methods such as mammograms, and differences in tumor characteristics (ACS, 2014b). Late-stage breast cancer and high breast cancer mortality rates among African American women are directly related to this group’s underutilization of mammograms as a means of early detection. The
NBCC argues that more efforts to address barriers to screening are needed (NBCC, 2014). As such, this dissertation seeks to explain barriers and incentives to mammography screening among African American women, especially in comparison with Caucasian women, in the Mississippi Delta.

**Potential Role for Social Work**

Breast cancer is classified as a “cancer health disparity” because the disease affects African American women disproportionately. Public health social workers and academic researchers are working to advance health disparity research on breast cancer and its impact among high-risk racial minority groups, as well as members of vulnerable and oppressed populations (Social Work Policy Institute [SWPI], 2010; NCI, 2012b). Many social work researchers and other public health practitioners worldwide have taken an active interest in helping high-risk groups and communities learn the best ways to address cancer health disparities (Altpeter, Earp, & Schopler, 1998; Kerner et al., 2003; Simon, 2006). Similarly, many research studies have contributed to the knowledge base about the incidence of breast cancer among high-risk, ethnic minority groups. Although studies exist, there is a dearth of social work knowledge in the area of early detection, barriers, and incentives to breast cancer screening. To this end, social work research on mammography screening among high-risk groups is vitally needed.

**The Mississippi Delta and Poverty**

The Mississippi Delta is a low-lying area surrounding the southern portion of the Mississippi River, encompassed by seven states, but specifically considered as part of Mississippi, Louisiana, and Arkansas. The Delta Regional Authority’s Strategic Development Plan found that Mississippi, Louisiana, and Arkansas, comprise 56 percent of the 228
“distressed” counties in the Delta region (Delta Regional Authority [DRA], 2012). Distressed counties are those with a per capita income less than the national average. They are counties where the unemployment rate has been greater than the national average for 24 months (DRA, 2012). Of the economically distressed counties and parishes in the Delta region, Mississippi has 41 distressed counties; Louisiana has 46 distressed counties and parishes; and Arkansas has 22 distressed counties (DRA, 2012).

The Mississippi Delta region is unique when compared to other areas. Its poverty level, educational attainment level, employment rate, and per capita income are the lowest of all states including Alabama, Arkansas, Illinois, Kentucky, Louisiana, Missouri and Tennessee (DRA, 2012; USCB, 2012b). Also, the Mississippi Delta’s regional poverty level, educational attainment level; and employment rates are lower than state and national levels (DRA, 2012; USCB, 2012b).

When drawing comparisons within the Mississippi Delta, Arkansas and Louisiana were identified as two states in the Delta region with almost identical demographics with regard to large African American populations, below average incomes, below average educational attainment, and higher than average poverty levels (DRA, 2012). The Alabama Black Belt, an area neighboring the Delta, has similar social and geographic characteristics as Arkansas, Louisiana, and Mississippi; it is also one of the poorest regions in the nation (United States Census Bureau [USCB], 2012a).

The State of Mississippi. The Delta zone within the state of Mississippi is a distressed, medically underserved region with a large percentage of African Americans and an overwhelming presence of concentrated poverty (DRA, 2012). The Delta region of Mississippi state consists of 18 specific counties: Bolivar, Carroll, Coahoma, Desoto, Holmes, Humphreys,
Issaquena, Leflore, Panola, Quitman, Sharkey, Sunflower, Tallahatchie, Tate, Tunica, Warren, Washington, and Yazoo. Like Mississippi, the states of Alabama, Arkansas, and Louisiana have similar social conditions and health disparities among its residents (DRA, 2012). However, Mississippi is distinct from the other states in several areas. For instance, Mississippi’s per capita income consistently has been the lowest in the nation over the last 100 years (DRA, 2012). Since 1967, the United States Census Bureau has ranked Mississippi last or near last for annual poverty levels (DRA, 2012; USCB, 2012b), and the Delta is the poorest part of Mississippi.

**Leflore County.** In Leflore County, Mississippi, the site where this study was conducted, the population is 32,000. African Americans comprise 73% of the population, while Caucasians represent 26% of the county. The median household income is $24,000; the percentage of individuals living below the federal poverty line is 39.3% versus 15% at the national level (United States Census Bureau [USCB], 2014). In this county, social factors such as poverty limit a woman’s access to insurance that would provide standard and preventative health care such as mammogram screening. These social factors may ultimately influence the breast cancer screening practices of rural African American and Caucasian women in the Mississippi Delta region. Thus, continued inquiry in this area is needed.

**Breast Cancer Incidence among Women in Mississippi**

Mississippi has the fourth highest mortality rates from cancer in the United States (Mississippi Department of Health [MSDH], 2014a). In general, cancer is the second leading cause of death in the state (MSDH, 2014b). It is estimated that as of 2014, 15,740 Mississippians were diagnosed with cancer and that 6,350 Mississippians died of the disease (MSDH, 2014). Of all cancers, breast cancer is the second leading cause of death among Mississippi women regardless of their age and race (MSDH, 2014c). State estimates for 2014 suggest that 2,130
women were diagnosed with the disease, and 440 will die by year’s end (MSDH, 2014). The burden of cancer worsens in the Mississippi Delta region. In the Delta, there is a high percentage of uninsured residents, a large number of elderly citizens, a lack of public transportation, a lack of access to primary and secondary health care facilities, and toxins in the environment (MSDH, 2006b).

From 1998 to 2008, the Centers for Disease Control and Prevention found that all women in Mississippi were diagnosed with breast cancer at the rate of 109 to 117 per 100,000 (NCI, 2012c). During this same time frame, breast cancer death rates in Mississippi were 24 to 26 per 100,000 women (NCIC, 2012). Additionally, through the years of 2004-08, data from the Mississippi Cancer Registry (MCR) revealed alarming trends in the incidence of late-stage breast cancer among African American women (Mississippi Cancer Registry [MCR], 2008). Late-stage breast cancer incidence ranged from 92.2 to 132.1 per 100,000 Black women. Incidence was highest in Alabama, the District of Columbia, Kansas, Louisiana, Mississippi, New Jersey, Oklahoma, Pennsylvania, Tennessee, and Washington (CDC, 2012). Further, the incidence of late-stage breast cancer was highest among African American women aged 70-79.

Centralizing the issue of late-stage cancer to the Delta region, a racial/ethnic comparison between African American and Caucasian women living in the Delta region, and those living in non-Delta regions, found that irrespective of their geographic location, African American women living in Mississippi were more frequently diagnosed with breast cancer at the latest stage (MCR, 2008). Although the Delta area of Mississippi reports the lowest incidence of breast cancer throughout the entire state, African American women in the region were found to have poorer five-year relative survival outcomes when compared to Caucasian women. Of all racial groups, Black women’s national breast cancer mortality rates are highest, 31 per 100,000 when
compared to all other racial and ethnic groups including White, Asian/Pacific Islander, American Indian and Hispanic women (Surveillance Epidemiology and End Results [SEER], 2014).

Poorer survival outcomes are attributed to the high incidence of late-stage breast cancer (MSDH, 2010a). White women have a 90% five year survival rate whereas Black women’s survival rate is only 79% (SEER, 2012). Because late-stage cancer diagnosis is such a widespread problem affecting ethnic minority communities, the National Cancer Institute has made identifying barriers to cancer screening among underserved populations one of its top research priorities (Heron, 2006). As with previous findings, late-stage breast cancer is attributed to the underutilization of breast cancer screening. Higginbotham and associates found that rural African American women living in Mississippi face barriers to access and utilization of breast cancer screening programs and quality medical care (Higginbotham, Moulder, & Currier, 2001). Considering these findings, it is significant to research barriers and incentives to breast cancer screening among African American women in Mississippi.

The Burden of Advanced-Stage Breast Cancer

For women living in the Mississippi Delta, advanced-stage breast cancer is an added life stressor, as the five-year relative survival rate for African American women diagnosed with breast cancer at this stage is low (MSDH, 2014b). At the national level, African American women have a lower five-year survival of 121 per 100,000 compared to Caucasian women whose rates are 127 per 100,000 (SEER, 2009). Findings suggest that women who are diagnosed with cancer at the earliest stage have a 98% five-year survival rate, whereas women diagnosed with cancer at the latest stage have a 24% five-year survival rate (NCI, 2012c).

In addition to the health limitations it poses, late-stage breast cancer can also impact a woman financially, not only as the disease is costly to treat, but also because a woman may be
forced to forgo work due to sickness associated with the disease. Finally, advanced-stage breast cancer places emotional and physical burdens on many women who undergo chemotherapy treatment and mastectomy. Research findings suggest that many women have experienced psychological, self-esteem, and self-image issues following breast cancer treatment (Chan, 2006).

**Perceived Barriers**

Perceived barriers and incentives, and their influence on mammography screening rates among high-risk groups, are an important area of inquiry for new research, in view of the high incidence of late-stage breast cancer among African American women in Mississippi (MSDH, 2014c). For instance, it is important to determine how barriers and incentives to breast cancer screening among African American women in the Mississippi Delta differ from those of African American women in other areas of the United States. Numerous research studies have been conducted on the breast cancer screening behaviors of African American women overall (Bowie, Wells, Juon, Sydnor, & Rodriguez, 2008; Bullock & McGraw, 2006; Coleman et al., 2003; Russell, Champion, & Skinner, 2006; Coughlin, Thompson, Hall, Logan, & Uhler, 2002; Documet et al., 2008; Williams et al., 2008; Farmer, D’Agostino, Reddick, & Jackson, 2007; Lopez, Khoury, Dailey, Hall, & Chisholm, 2009; McAlearney, Reeves, Tatum, & Paskett, 2007). These significant studies helped to describe and develop the construct of breast cancer screening, and account for some of the screening issues pertinent to all African American women. But limited research exists specifically on Black women of the Mississippi Delta region.

**Barriers to Screening**

Thirty-one barriers to breast cancer screening can be found in the literature (ACS, 2012a; Banning, 2011; Roetzheim et al., 1999; Scheuler, Chu, & Smith-Bindman, 2008). It is plausible
that some of the same barriers apply to women in the Mississippi Delta; however, this has not been empirically validated by research. It is possible that factors such as delays in responding to abnormal breast symptoms; adherence to long-standing traditions, cultural attitudes, and beliefs about health; secrecy and shame; a lack of physical referral; and a lack of medical insurance or care could influence breast cancer screening practices and influence late-state diagnosis of the disease among women in the Mississippi Delta (Banning, 2011; Scheuler et al., 2008).

Interestingly, an extensive review of the literature found no studies that have clarified the most salient barriers and incentives to breast cancer screening among women in the Mississippi Delta (Banning, 2011; Scheuler et al., 2008).

**Similarities and Differences in Barriers.** Different barriers and incentives may be perceived by women in the Mississippi Delta region than are perceived by women in other regions. As mentioned above, the region is heavily influenced by persistent social, economic, educational, geographic, racial/ethnic, and healthcare disparities (USCB, 2012b). The region is economically distressed; its residents are medically underserved, and in many instances lack medical care or are medically uninsured. For these reasons, different barriers and incentives to breast cancer screenings are likely to apply to women in the Mississippi Delta.

Although African Americans comprise more than 60% of Mississippi Delta residents, they are marginalized in terms of access to quality healthcare (Lisovicz et al., 2006; Scarcini et al., 2010; USCB, 2012b). They report higher mortality and morbidity rates when compared to Caucasian Americans. For example, the incidence of chronic health conditions such as hypertension, cancer, diabetes, heart disease, and end-stage renal failure is higher among African Americans in the Mississippi Delta than among Caucasian Americans in the same region (Centers for Disease Control and Prevention [CDC], 2005a; CDC, 2009b; MSDH, 2012). The
issues related to healthcare among the poor and underserved in the Mississippi Delta are complex, but they are relevant. Of the many health issues to address in the Mississippi Delta, breast cancer is of the utmost importance. It is the second leading cause of death, among women in Mississippi as well as the nation (NCI, 2012a). The disease has a 1-in-8 chance of affecting any woman, regardless of her race/ethnicity, socioeconomic status, family history of disease, and educational level (NCI, 2012a). When it comes to African American women, issues around the disease become more complex. As mentioned above, African American women present with larger tumors and more aggressive forms of the disease, tend to have a late-state diagnosis, and thus are twice as likely to die when compared to Caucasian women (NCI, 2012b).

In short, identifying the barriers and incentives to breast cancer screening among African American women in the Mississippi Delta would help address a gap in the research literature, help reduce cancer mortality and morbidity trends, and save lives. Limited empirical social work research studies on breast cancer screening have been applied to samples of African American women in the Mississippi Delta, while searches in JSTOR, PsycInfo, Scout, and other academic databases revealed that no empirical studies have been conducted to determine how barriers and incentives influence breast cancer screening rates among these women.

**Purpose of this Study**

The first purpose of this study was to identify the most salient barriers and incentives to mammography screening among African American women in the Mississippi Delta. A second purpose was to determine if barriers and incentives to mammography screening differ between African American and Caucasian women. A third purpose was to assess the association between particular barriers and incentives and screening behavior. This study also sought to add to the knowledge base on cancer health disparities among African Americans in rural and medically
underserved areas, which is a top-priority research focus of the National Cancer Institute (Heron, 2006; Jones & Chilton, 2002; and NCI, 2012c). The findings from this study may be useful in addressing barriers and incentives to mammography screening and accounting for disparities in health care. Overall, this study aims to provide useful insight into the challenges related to breast cancer prevention and mammography screening among racial minority groups and communities.

Because social workers are frequently called upon to address social justice issues that may arise in the delivery of quality health care to medically underserved populations, the results of this study may be utilized to develop culturally appropriate screening interventions, and breast cancer screening models for high-risk populations (Clark, 2001; Csikai & Bass, 2000). Such interventions and models would be helpful in educating high-risk individuals of their potential for developing breast cancer, while promoting adherence to the American Cancer Society’s recommended mammography screening guidelines. It is hoped that the findings from this study will provide evidence that will prove useful in accounting for factors influencing health disparities in the Mississippi Delta region. By examining barriers and incentives to mammography screening, culture-specific social work interventions could be designed to help women of all racial/ethnic backgrounds better understand the importance of overcoming screening barriers, responding to abnormal breast health symptoms, and adhering to the recommended breast health guidelines.

The scarcity of research on this topic in the Mississippi Delta indicates a need for further investigation. Research in this area might yield important findings for social work practitioners and researchers who are interested in health promotion and work with high-risk, ethnic and racial populations. By identifying barriers and incentives to breast cancer screening among this
population, public health social workers and researchers from other fields may be able to design culturally specific interventions relevant to women in the Mississippi Delta.

Knowledge Base on Perceived Barriers to Mammography Screening

Limited research exists that focuses on the barriers and incentives to mammography screening among African American women in the Mississippi Delta. Several studies have highlighted the importance of community health workers (CHW) as agents who help educate women on the importance of breast health screenings (Foaud et al., 2010; Mayfield-Johnson, 2011; Williams, Brown, Hill & Schwartz, 2001). Other studies have highlighted the importance of the faith-based community in increasing breast health knowledge and awareness among women in rural areas (Beck, Young, Ahmed, & Wolff, 2007; Corbie-Smith et al., 2003; Powell et al., 2005). Similar studies have demonstrated the utility of the Health Belief Model (Rosenstock, 1974), discussed below, to conceptualize influences on health behaviors, such as breast cancer screening (Baum, Newman, Weinman, West, & McManus, 1997; Champion et al., 2002; Champion & Skinner, 2003; Champion et al., 2008). Few to no studies, however, have focused specifically on barriers and incentives to breast cancer screening among African American and Caucasian women in the Mississippi Delta.

It is clear that breast cancer mortality is a concern among women in the Mississippi Delta (MSDH, 2006b). Also, promoting breast cancer screening seems to be one way to reduce cancer mortality (Altpeter et al., 2005). However, whether or not barriers and incentives influence breast cancer screening practices among women in the Delta has yet to be determined. Because the most salient barriers and incentives to breast cancer screening among women in the Mississippi Delta have not been identified, it is difficult to determine their potential impact on screening adherence. Further because the barriers and incentives to breast cancer screening are
not well known, it is difficult to determine the exact factors influencing the trend of late-stage breast cancer diagnosis among this population.

It is hoped that by identifying the most salient barriers and incentives to breast cancer screening among women in the Mississippi Delta, future researchers will be able to: (1) design interventions to address the identified barriers and incentives to screening; (2) create a screening model that is culturally appropriate for use with this population; (3) reduce the incidence of late-stage breast cancer diagnosis; (4) promote disease education and awareness at the individual and community levels; and (5) reduce high breast cancer mortality trends among this population. Ultimately, research inquiry focusing on the barriers and incentives to breast cancer screening among women Mississippi Delta would fill a gap in social work research and literature, and add to the preexisting body of knowledge in this area.

Theoretical Framework: The Health Belief Model

The Health Belief Model (HBM) (Rosenstock, 1974) has been commonly used to conceptualize influences on health behaviors such as cancer screening and the adoption of a healthy lifestyle (Baum et al., 1997). The HBM was first developed in the 1950s by social psychologists Godfrey Hochbaum, Irwin Rosenstock, and Stephen Kegels. The researchers worked for the US Public Health Services and sought to respond to the failure of a free tuberculosis (TB) health screening program. They sought to determine what facilitates and inhibits people’s behavior regarding their health.

The model relies on the notion that people will work harder to prevent health hazards if they believe they are at risk for illness. It suggests that behavior changes occur based on a person’s rational for protecting one’s own health (Earl, Lloyd, Sidell, & Spurr, 2007). In its original form, it consists of seven conceptual components: perceived susceptibility, a person’s
subjective perception of the risk of developing a disease; *perceived severity*, the concerns about the seriousness of the disease and its consequences; *perceived benefits*, the individuals beliefs in the effectiveness of actions designed to reduce the severity of the disease; *perceived barriers*, the potential obstacles to implementing the desired behavior; *self-efficacy*, which is the confidence that a person can successfully practice the behavior required to produce the outcome; *health motivation*, the desire to maintain good health status; and finally, *cues to action*, internal or external prompting to engage in health-promoting behavior (Baum et al., 1997; Rosenstock, 1974).

**Applicability to this Study.** The HBM relates to the proposed study because of its similar focus on identifying influences on health-related behaviors. The model was selected because it is commonly used to explain mammography screening behaviors of African American women (Champion et al., 2002, 2003, 2008). In a 2003 study, researchers used an adapted version of the HBM to determine differences in mammography screening adherence between African American and Caucasian women. The study revealed that the model helped to account for 13% of the differences in screening behavior between the two groups (Vadaparampil, Champion, Miller, Menon, & Skinner, 2003). Champion’s 2008 study measured mammography beliefs among African American women and found that perceived barriers to screening decreased as women took more action to have a mammogram. The study also found that greater perceived benefits were associated with lower levels of fear of breast cancer. There was no association between perceived benefits and fear of breast cancer.

Using the HBM, social work researchers found that past mammogram experiences predicted future mammogram behavior (Altpeter, Mitchell, & Pennell, 2005). The HBM has also successfully been used with African American women to measure their perceptions of their
most serious health problems, their attitudes and health beliefs regarding type 2 diabetes self-management, barriers to obtaining mental health treatment, colorectal screening beliefs, psychosocial factors related to repeat mammogram screening, beliefs about depression, and HIV prevention (Lewandowski, Holden, Chang, & James, 2011; Rahim-Williams, 2011; Russell et al., 2006; Waite & Killian, 2008; Sadler et al., 2005).

The Health Belief Model is still commonly used to inform examinations of African American women’s perception of their risk for developing breast cancer (Champion et al., 2002, 2008; Champion & Skinner, 2003). It is used to help researchers identify the salience of barriers and incentives to screening. It is useful in helping practitioners focus on possible barriers to individual behavior change (Earl et al., 2007). However there are limitations to this model. For example, the HBM can be strengthened to encourage an awareness of threats to health. Also, this model does not promote healthy action and can lead to an oversimplification of information (Earl et al., 2007). The present study assessed how dimensions in the HBM relate to breast mammography screening. The Mississippi Delta has cancer health disparities are particularly acute and preventive medicine is exceptionally challenged; therefore screening barriers and incentives must be better understood.

**Components of the Health Belief Model.** This study examined perceived barriers and their relationship to screening behavior. Perceived barriers influence health behaviors in a negative way. Women who perceive barriers to mammography screening will be less likely to have a mammogram. African American women in the Mississippi Delta may experience even more barriers to mammography than do White women in the region. On the other hand, women who perceive incentives to mammography may be more likely to be current with their mammogram schedule. Given the high breast cancer death rates among African American
women in the Mississippi Delta, Black women in the region may have stronger incentives to have mammograms when compared to White women. Yet little is known about which barriers or incentives are most salient to women in the Mississippi Delta or whether African American women in the Delta perceive stronger barriers and incentives to breast cancer screening than do White women. To help address the knowledge gap, this study assesses aspects of Champion’s adapted HBM, including fear of breast cancer, perceived benefits, susceptibility to breast cancer, and self-efficacy.

Fear of breast cancer is likely to hinder breast cancer screening. A woman who fears cancer may be immobilized by the fear. She may put off mammograms due to fear of what they may find. Perceived benefits influence health behaviors in a positive way. Perceived benefits exist when an individual believes the benefits of taking a particular action would reduce the severity of an outcome (NCI, 2014). Essentially, if women think mammograms are beneficial and are likely to detect breast cancer, they would be likelier to have them. Susceptibility is a person’s beliefs about their chances of getting a condition. If a woman thinks she is susceptible to developing breast cancer, she will be likelier to have a mammogram. Finally, self-efficacy relates to health behaviors in an important way. It is the belief in one’s ability to take a certain action (NCI, 2005). If a woman thinks she can have a mammogram, then she will likely follow through with scheduling one and keeping the appointment.

Study Design

Research Questions

Based on the literature review on African American women and influences on mammography screening, this study addresses the following research questions:
Among African American and Caucasian women in the Mississippi Delta:

1. What are the most salient barriers and incentives to breast cancer screening?
2. Are barriers and incentives to breast cancer screening associated with race?
3. Are barriers and incentives to breast cancer screening associated with breast screening behavior?

Hypotheses

Hypothesis One: In the Mississippi Delta, barriers to breast cancer screening will be stronger among African American women than among White women.

Hypothesis Two: In the Mississippi Delta, women with stronger barriers to mammography screening will be less likely to be current in breast cancer screening.

Significance of the Study

Identifying the barriers to mammography screening among medically underserved populations is a high-priority research area of the National Cancer Institute (Heron, 2006). The significance of this study lies in its potential to identify screening barriers and incentives among African American women in the Mississippi Delta and to demonstrate associations between barriers and incentives to breast cancer and breast cancer screening. Although an extensive body of literature exists on barriers and incentives to mammography screening, no studies were found that focus specifically on women from the Mississippi Delta. To that end, this study sought to address this gap in social work literature.

Organization of the Dissertation

This dissertation contains five chapters. Chapter I, Introduction, includes the background of the study, statement of the problem, purpose of the study, and research questions. Chapter II presents a brief review of the literature and presents relevant theories that inform the study.
approach. Chapter III describes the research methodology. It addresses the selection of participants, instrumentation, data collection, and data analysis procedures. Chapter IV addresses the implications for social work, and Chapter V offers discussion and recommendations for future research.
CHAPTER II

Background

This section presents the rationale for researching barriers and incentives to mammography screening among women in the Mississippi Delta. For decades, public health researchers have studied breast cancer prevention among underserved women. However, this study seeks to extend the body of social work research literature in the area of mammography screening. Specifically, this study sought to further the knowledge base on barriers and incentives to mammography screening among women living in a medically underserved location: the Mississippi Delta. The research questions in this study highlight two significant areas of scholarship that are important to work with social work clients: disease prevention and health promotion, and racial/ethnic differences in access to and utilization of preventative health services among underserved groups.

Significance of the Study

Identifying the barriers and incentives to mammography screening among medically underserved populations is a high-priority research area of the National Cancer Institute (NCI) (Heron, 2006). This area of inquiry is also a burgeoning focus of social work research. The significance of this study lies in its potential to identify perceived mammography screening barriers and incentives among women in the Mississippi Delta and demonstrate associations between barriers and incentives to mammography screening and associated behavior. This section of the study includes a summary of the literature that is most relevant to the research.
Cancer Health Disparities

The NCI defines cancer health disparities as adverse differences in cancer incidence (new cases), cancer prevalence (all existing cases), cancer death (mortality), cancer survivorship, and the burden of cancer or related health conditions that exist among specific population groups in the United States (NCI, 2012d). Population groups most affected by health disparities are defined on the basis of age, gender, race/ethnicity, geographic location, age, disability, and gender. Irrespective of racial/ethnic background, the burden of disease is most prevalent among the poor, the uninsured, and those with limited access to quality health care services (NCI, 2012c, p.1).

Cancer health disparities among ethnic minority groups are attributed to a lack of medical insurance, poverty, and low social/economic status (NCI, 2012c). Additional cancer research indicates that individuals from medically underserved communities are more likely to be diagnosed with late-stage diseases (NCI, 2012c, p. 1-3). Financial, physical, and cultural beliefs are also barriers that prevent individuals or groups from obtaining effective health care. Because underserved African American women are diagnosed with breast cancer at the latest stage, they are more likely to die from it when compared to Caucasian women; thus the barriers and incentives to mammography screening among this group are important to explore (NCI, 2012a).

Racial and Ethnic Disparities in Health. African Americans, in general, are disproportionately affected by health disparities, and they suffer by comparison with Caucasian Americans on essentially every indication of morbidity, mortality, and access to health care (CDC, 2014). The health disparities impacting African Americans in the United States are not limited to cancer. For instance, chronic health issues such as heart disease, diabetes, stroke, end-stage renal disease (ESRD), and HIV/AIDS present challenges for this population, as African
Americans disproportionately bear the burden of these diseases (CDC, 2009b). When gender and physical ability are included in the context of racial and ethnic disparities, additional factors arise. For example, the US Department of Health and Human Services, Office of Women’s Health, reports that many racial minority women face “triple jeopardy,” which is discrimination on the basis of race, gender, and disability (Department of Health and Human Services [HHS], 2011a). Such factors are important to consider when examining barriers and incentives to mammography screening among this population.

To illustrate the racial/ethnic disparity in health between African American women and women from other races, studies have found that African American women have increased heart disease death rates because they are not given the same quality of care and medical tests as women from other races (HHS, 2003b). Prior studies also suggest that high breast cancer mortality rates among African Americans are attributable to a distrust of the health care system, a lack of health insurance, and a belief that mammograms are not necessary (MSDH, 2009c; Phillips, Cohen, & Moses, 1999). Likewise, studies have revealed that African American women are reluctant to engage in clinical trials and research studies; therefore addressing disparities in health among this group can be challenging for researchers and practitioners (Minkler & Wallerston, 2003).

To illustrate this point, fear of exploitation and unjust inequity in health treatment are commonly cited as the reasons many African Americans have been reluctant to engage in clinical trials or fully trust the medical community (Armstrong et al., 2008; Gamble, 1997; Musa, Schultz, Harris, Silverman, & Thomas, 2009; Quinn & Thomas, 2001). Despite the numerous challenges researchers may face when examining barriers and incentives to early breast cancer screening among African American women, it is clear that when the burden of any disease
disproportionately affects a specific population, specifically an underserved population, the need to identify a solution to that problem becomes more urgent.

**Breast Cancer Screening Guideline Changes**

Many breast cancer organizations commonly use the phrase “early detection is the best protection” to encourage women to adhere to breast cancer screening guidelines. However, in recent years, there has been debate over those same breast cancer screening guidelines. The American Cancer Society (ACS) recommends that all women age 40 and over have an annual clinical breast exam and mammogram; that women in their 20s and 30s have a clinical breast exams by a health professional at least every 3 years; that starting at age 20, women conduct monthly breast self-exams; and that women at high risk for breast cancer have an magnetic resonance imaging (MRI) and a mammogram every year beginning at age 30 (ACS, 2014c; ACS, 2014d). Lately there has been professional debate over these recommended breast health screenings for women. For example, in 2009, the US Preventative Services Task Force (USPTF), a group funded by the Agency of Healthcare Research and Quality, issued a breast cancer screening report in the *Annuals of Internal Medicine* (Cox, 2009; Park, 2011; United States Preventative Services Task Force, 2009). In the report, the group proposed new mammogram guidelines that recommended considerably less testing: biennial screening mammography for women aged 50 to 74 who were at average risk of developing breast cancer. The group also recommended that women forgo breast self-examinations (USPTF, 2009). They came to the conclusion that there was insufficient evidence to assess the benefits and harms of mammograms for women age 75 and older, and insufficient evidence to assess the benefits or harms of clinical breast exams (CBEs) beyond mammography in women 40 and older (USPTF, 2009). Further, they argued that there was insufficient evidence to determine the benefits or
The decision-making panel consisted of a group of researchers who in 2002 found that women between the ages of 40-49 who received mammogram screening every two years experienced a reduction in breast cancer mortality rates (USPTF, 2009). Nonetheless, the panel argued against increased screening because it increases a patient’s anxiety levels, provides a false sense of security, false positives, unnecessary biopsies, leads to radiation exposure, and results in over-diagnosis of disease (NCI, 2012c; USPTF, 2009). The group’s recommendations were for women who are at average risk for the disease, and not for those who are at high risk. However, the USPTF recommendations were met with opposition from women who felt the proposed guidelines would prevent them from receiving early screening. Many, including medical doctors, medical centers, and foundations, argued that the new guidelines were harmful to women and devalued lives (Cox, 2009).

Squires and associates (2011) summarized relevant news articles on the task force’s findings and discovered that the recommendations confused women more than they helped them to understand when to get a mammogram. They also found that high levels of confusion existed among women aged 40-49, among women who had previously had a mammogram, and among those who had one two years prior (Squires et al., 2011). Like the USPTF, the National Breast Cancer Coalition (NBCC) argues that there are many untrue notions about the effectiveness of mammograms as tools to detect breast cancer early. The Coalition states that there is limited scientific, empirically based evidence to suggest that early detection has a significant impact on the most fatal forms of breast cancer (NBCC, 2012). These controversial findings raise the
question: Should the use of mammography screening be promoted as a method to reduce breast cancer?

On the other hand, the Susan G. Komen Advocacy Alliance (SGKAA) emphatically argues for the use of annual mammograms. The Alliance states that 23 million women are not receiving the recommended mammography screening because they lack access to health professionals and health care services, and lack screening education or awareness (Susan G. Komen Advocacy Alliance [SGKAA], 2011). The Alliance claims that the USPTF’s recommended guidelines give the impression to wider audiences that mammography screening is not necessary. Further, the Alliance argues that federal budget cuts from the National Breast and Cervical Early Detection Program (NBCEDP) also send this message (SGKAA, 2011). This impacts women from the Mississippi Delta who are often medically underinsured.

Breast Cancer Screening Studies

Although debates over mammography screening guidelines continue, it is important to review the literature to determine what underserved women themselves identify as barriers and incentives to screening. Themes about women’s breast cancer screening perceptions were found in Lopez and associates’ 2009 study which examined characteristics of 987 women from the Deep South aged 40 and older. The cross-sectional study reflected results of a 15-20 minute telephone survey that was administered to 1,050 African American, Caucasian, and ethnic minority women across the state of Mississippi. Socio-demographic characteristics, health beliefs, enabling, and need variables were explored in this study. The socio-demographic variables included age, education, employment, marital status, and race/ethnicity.

More than half of the women in the study had a high school diploma or less; they were not employed outside the home; were single and not partnered; and had a household income of
$30,000 or less (Lopez et al., 2009). The majority of the participants had medical coverage, and a usual source of care. Caucasian women comprised 69% of the participants, whereas, African American women represented 29% of the participants. Interestingly, 1 in 3 study participants perceived their health status to be “poor” or “fair.” Regarding mammogram use, participants were ranked as “current,” “overdue,” and “never screeners.” The overall findings identified 760 current screeners, 117 overdue screeners, and 110 never screeners (Lopez et al., 2009).

In the study, African American women were four times more likely to report never having had a mammogram. Younger African American women were more likely than older African American women to be never screeners. Some of the findings suggested that non-screeners preferred to not know if they had cancer; commonly believed that surgery could expose breast cancer to the air, causing it to spread; were unaware that mammograms were the best way to find a small breast lump; agreed that radiation from mammograms could cause breast cancer; and believed it was difficult to get a mammogram (Lopez et al., 2009). Non-screeners were two times more likely to think there was nothing one could do to prevent breast cancer, and six times more likely to report having no usual health care provider (Lopez et al., 2009).

On the other hand, women who were overdue for a mammogram had no usual source of medical care (no health care provider within 12 month); had no source of support from family and friends; had not had an annual medical checkup where they talked to a physical about their breast health; had no physician recommendation; had never talked with a doctor; and reported annual incomes of $10,000 to $19,000, which are below the national poverty guidelines (Lopez et al., 2009). In general, overdue screeners of all races were also more likely aged 50-59 years old who felt that treatment was worse than having cancer; found getting a mammogram to be a difficult process; cited cost as a barrier to screening; did not know that mammograms were the
best way to find a small lump; and felt they would not want to know if they had cancer. Of the women screened, 1 in 4 was overdue. Additional findings revealed that women who were off schedule or those who had missed having mammograms were eight or nine times more likely to have no annual checkup (Lopez et al., 2009). This study’s overall findings indicate that significant barriers to breast cancer screening exist among both African American and Caucasian women regarding knowledge, beliefs, and attitudes regarding screening and adherence to scheduled appointments.

A similar qualitative study by Avis-Williams and associates (2009) explored knowledge, attitudes, and practices of underserved women in the rural South toward breast cancer prevention and detection (Avis-Williams, Khoury, Kisovics, & Graham-Kresge, 2009). Their study consisted of focus groups with African American women in Mississippi. Nineteen open-ended questions were asked to assess awareness of breast cancer risk factors, perceived susceptibility for and severity of breast cancer, knowledge, attitudes, and practices regarding screening and treatment perceptions of clinical trials. A total of 58 women participated in the six focus groups; 37 of the participants were from rural areas in north Mississippi, which is part of the Delta region; 21 were from rural areas in south Mississippi, which is not considered to be part of the Delta region (Avis-Williams et al., 2009). Thirty-two of the 58 participants had incomes of $15,000 or less.

The findings revealed that rural, underserved African American women possessed a limited knowledge of breast cancer risk factors, namely age, reproductive factors, alcohol consumption, lack of physical activity, estrogen exposure, smoking, exposure to environmental toxins, food/chemical preservations, and injury to breasts (Avis-Williams et al., 2009). The participants’ primary means of receiving breast health information was through their physician,
the local health department, or community health center. Half of the participants had a family
history of the disease and believed that African American women were more susceptible to the
disease than Caucasian women (Avis-Williams et al., 2009). Some of the barriers to screening
among this group were fear of death, pain, and suffering from the disease. Participants reported
fear of the side effects of treatment and thought breast cancer would cause them to burden their
families. Regarding their knowledge and attitudes about screening, the participants were more
aware of mammography and breast self-exams. They had a limited knowledge of clinical breast
exams. Also, some of the participants believed mammograms were not necessary if they were
regularly having a breast self-exam.

Regular mammograms were not common among the group. The participants would only
have a mammogram if their physician recommended one, or if their friends or family suggested
doing so. Other findings suggested that the top three barriers to screening were cost, fear of
finding cancer and the associated consequences, and a limited knowledge of the value of early
detection. Among younger participants, mammogram cost was cited as a significant barrier to
screening, as well as the fear of finding cancer. Other barriers to screening included: perceived
pain of the test, transportation in rural areas and lack of a local mammography facility, fatalism,
apathy, and denial, especially among older women; and life pressures, including poverty,
v Violence, and other such social constraints (Avis-Williams et al., 2009). The perceived side
effects were: confusion about breast self-exam (not knowing what to look for when examining
breasts), being unaware of hormonal treatment, fear of experimental drugs, and being made part
of an extended study (that is, used in a study which was not what they originally agreed to) were
also cited as barriers to screening and participation in clinical trial. This study yielded many
important findings that specifically relate to women from rural Mississippi. The most important
findings pertained to the lack of knowledge of risk factors, the lack of knowledge of the value of early detection, and issues relating to cost and fear.

**Structural Barriers to Mammography Screening**

Two literature reviews revealed interesting findings about additional barriers to breast cancer screening among African American women. Fowler in 2014 conducted a very detailed review on neighborhood-level factors influencing delays in mammography screening among African American women between the ages of 40-65. Of the 17 studies written between 2004 and 2014, the researcher found the following barriers to follow up: living in a disadvantaged, racially segregated neighborhood; experiencing problems with public transportation and safety, and having inadequate medical facilities.

In another extensive literature review, Banning (2011) identified 60 studies that were written between 2004 through 2009. Fifteen of the studies were quantitative research studies. The review addressed breast cancer screening among African American women and found that spirituality, religiosity, social and family support, fear, and an underestimation of one’s own personal risk as factors which influence mammography use. African American women were found to emphasize prevention and conduct breast self-exams with the mindset that “God expected a woman’s body to be free from disease” (Banning, 2011). The studies also found media outlets to be successful tools for reaching this population with screening messages. While media messages were important for this population, African American women were often unable to decipher between “good breasts” and “bad breasts” (Banning, 2011). Because they were unable to determine a healthy breast from one that was tumorous, African American women may delay screening or not notice an abnormality. It was also revealed that older African American women are more likely than younger African American women to have insurance coverage.
Older women are also more likely than younger African American women to respond to telephone calls regarding mammography. The review found that African American women cited distrust of health care professionals, and previous negative mammography experiences that elicited feelings of pain, humiliation, and degradation as barriers to mammography screening (Banning, 2011).

The three most common actual barriers to screening identified in the review were: (1) anomie: feelings of hopelessness and powerlessness at the social level; (2) depressive feelings: treated or untreated or recognized depression was prevalent among women who were at risk for poor health maintenance; and (3) fear of being taken advantage of, associated with feelings of vulnerability; the latter was a strong predictor of lower mammography use (Banning, 2011).

Also, nine socio-cultural factors were associated with adherence to screening use: these included annual income of greater than $35,000; having current health coverage; being 40-65 years of age, or over 65 years of age; smoking status; being Black, having low blood cholesterol level, and one’s current exercise performance (Banning, 2011).

Larson and Correa-de-Araujo (2006) compared the screening behaviors among African American women from four locations: large metropolitan counties, small metropolitan counties, counties adjacent to metropolitan places, and counties not adjacent to metropolitan areas or with fewer than 10,000 residents. They found that rural women were more likely to be older, married, poor, Caucasian, less likely to report middle to high incomes, and less educated. Also, the study found that rural women receive less preventative health services, including dental exams and cholesterol tests, were less likely to report mammography screening during the previous two years, and less likely to report having breast exams during the previous two years when compared to women living in metropolitan areas. This study’s findings are consistent with a
pervious literature review of 28 studies on rurality and breast cancer screening. The analysis of the studies consistently indicated that rural women are less likely to have had a mammogram than women from urban areas, and are less likely to have had a mammogram within the last one to two years (Leung, McKenzie, Martin, McLaughlin, 2014). Overall, the findings from the aforementioned research studies conclude that psychosocial factors such as financial costs, need for transportation, insufficient breast health education and awareness, and lack of access to primary care are barriers to mammography screening among rural women.

**Perceptions as Perceived Barriers**

Several significant themes emerged regarding the thoughts and perceptions of breast cancer among African American women. The literature reviewed found that common perceptions were that breast cancer is “a White woman’s disease”; it is associated with the loss of femininity; it is God’s will; it is caused by traumatic heartbreak, a breakup with a significant other; wearing underwired and sports bras; family history; estrogen; silicone implants; breast density; fibroids; diet; smoking; and emotional trauma (Banning, 2011). Many of these perceptions were found among low-income African American women with no health history of breast cancer. Another important finding that emerged from this data indicated that breast cancer is most likely undiagnosed among African American women over the age of 50. Moreover, the increased risk of breast cancer associated with having a family history of disease is grossly underestimated among this population. This literature review found many themes that were consisted with previous literature on African American women and breast cancer screening (Banning, 2011).

Another extensive literature review by Schueler and associates (2008) examined 221 studies with 4,957,347 research participant. Schueler found that cost, mammography safety, and
pain were cited as the most common factors associated with screening use among African American and Latina women. Conversely, among Caucasian and Chinese women having no insurance was the most important factor. The findings stated that the dominant factor that influences breast cancer screening among women is access to physicians. The researcher concluded that women with poor access to physicians will likely not improve in their use of mammography and suggested that more efforts to address this problem are in order (Scheuler et al., 2008).

These two comprehensive literature reviews account largely for studies that have been conducted on breast cancer among African American women. Overall, the findings pinpointed a woman’s perception of breast cancer and breast cancer risk; breast cancer screening issues; spirituality and religious beliefs regarding breast health; economics; and psychological factors as the components that strongly influence screening behaviors among African American women. Perceptions can be subjective, but they can also reflect objective conditions. This present study will not evaluate the validity of perceptions. It will measure the perceptions and assess their association with race and screening behavior.

In general, the findings from these screening meta-studies suggest that rural African American women’s knowledge about breast cancer risk factors and screening guidelines is significantly less than non-rural women’s knowledge (Scheuler et al., 2008). The findings indicate the need for social work interventions and community-based health promotion models to address the barriers and incentives to mammography screening among this population. Many of the prominent barriers are associated with women’s beliefs or perceptions of their own personal risk for developing the disease; their understanding of breast cancer; and their understanding of mammography and early detection.
The review of literature supports findings that despite efforts to increase mammography screening among this population, rural African American women are more receptive to faith-based, community-oriented efforts that centralize the issue of breast cancer screening in a religious and spiritual context (Banning, 2011; Scheuler, 2008). Also, the findings on barriers to mammography screening from previous literature reviews appear to be consistent with current research studies. However, whether the same screening barriers and incentives are applicable to African Americans from the Mississippi Delta remains uncertain.

Knowledge of Disease History

In a 2008 study, Williams and associates examined the role of family in mammography screening among women age 40 and older. The cancer control module used was adapted from the 2000 National Health Interview Survey. It is a form of applied research that is administered every five years by the National Cancer Institute. It focuses on issues pertaining to knowledge, attitudes, and practices in cancer-related health behaviors, screening, and risk assessment. Of the 1,531 African American participants, 38% had a family history of breast cancer, and 39% of those who had a mammogram, had a family history of the disease. Research found that the participants were more motivated to have a mammogram if they had a family history of breast cancer. Factors such as age, education, marital status, health insurance type, and family history of breast cancer had significant associations with a recent mammogram (Williams et al., 2008). Specifically, age, education, marital status, health insurance, smoking status, and family history were associated with having ever had a mammogram.

Women aged 50-64 had the highest rate of mammography use and were more likely to have had a mammogram within the past year; women aged 40-49 were more likely to have had a mammogram. Further, African American women with a family history of the disease were 41%
more likely to have had a mammogram. Those with cancer in their immediate family were 39% more likely to have a mammogram than those with no family history of disease (Williams et al., 2008). Regarding insurance, women with private insurance reported having more mammogram use; women with public insurance reported having a recent mammogram as well as one in the past; and women with no insurance were 49% less likely to have a mammogram. Also, education factored into this study: women with less than a high school diploma were less likely to have mammogram (Williams et al., 2008). Women who were never married were less likely to have had a recent mammogram compared to those who were married. Overall, the study found that a woman’s knowledge of her family history of breast cancer influenced her screening behavior.

**Psychosocial Implications.** The findings from the literature review consistently suggest that psychosocial issues impact breast cancer screening. Those issues include: a lack of information and support; a lack of transportation; interruptions in family, work, and school life, and having limited financial resources. Examining psychosocial issues as perceived barriers to mammography screening is an important aspect of research vital to social work practice, research, and policy. In a 2007 cross-sectional study, Farmer and associates examined reasons that influence screening behaviors. The researchers sought to identify the factors which influenced a woman’s decision to wait to receive medical care after detecting a lump (Farmer, D’Agostino, Reddick, & Jackson, 2007). Nearly all of the 198 older, low-income, African American women from rural North Carolina reported having a mammogram at some point in their lives. The participants resided in low-income housing; their ages ranged from 30 to 84. The median age of the participants was 54. This study revealed valuable information about screening beliefs, attitudes, and behaviors of underserved women.
The findings indicated that a lack of knowledge about screening, as well as other persistent screening barriers, existed among this group. Regardless of current or overdue status, women presented with barriers to screening. For instance, women who had had a mammogram within the past 12 months identified barriers such as cancer fatalism, lack of social support, an extended waiting period after finding a lump, and only talking to God after having found a lump (Farmer et al., 2007). Current mammography users were found to have higher levels of education and social support; were not fatalistic about screening; and were generally optimistic. Women who were optimistic had less screening barriers, and social support was directly correlated with higher levels of optimism.

It was also discovered that 72% of the women had no family history of the disease; however, when they presented with symptoms, they most frequently noticed a “knot” or lump as well as nipple discharge, itching, pain, and change in skin color. Although these changes were noticed by the women, the median time to seek medical care was an alarming four months. More than half of the study’s participants, 59%, indicated they waited three months after noticing the breast symptom before they sought medical attention (Farmer et al., 2007). Sixty of the participants reported telling a person about the breast symptom; however, 28% indicated they “only spoke to God about the symptom.” Findings indicated that 67% of the study’s participants had stage 1 breast cancer.

Income was a predominate barrier to screening in this study. To illustrate, women with higher incomes were more likely to seek medical care soon after discovering a symptom in comparison to women with lower incomes. The longer the women waited to seek medical care, the more advanced the cancer stage was at diagnosis.
The psychosocial issues affecting screening were highlighted in another extensive literature review. Bettencourt and associates (2007) found that rural women who have been diagnosed with breast cancer typically travel over one hour to receive care; were less likely to adhere to treatment because of distance; were less likely to receive breast-conserving surgery; and were more satisfied with care if their primary care physician were local.

On the other hand, the limited availability of doctors in rural areas was a barrier to receiving primary care. Further, living outside a major city also hindered women’s access to health-related information, and mental health therapy (Bettencourt, Schelgel, Talley, & Molix, 2007). Another important finding from the review indicated that women with late-stage breast cancer often lacked cancer-related knowledge. Similarly, women who were diagnosed with early-stage breast cancer lacked general knowledge of breast cancer. Additionally, the study revealed that women in rural Mississippi and Alabama reported lower quality of lives when diagnosed with breast cancer. Further, many of the women reported self-esteem issues and felt ugly or disgusting after mastectomy.

Because of their roles as caregivers, many rural women found coping with breast cancer to be more difficult as they tried to carry out their traditional gender role demands (Bettencourt, et al., 2007). Many rural women also used denial and their faith in God to deal with a breast cancer diagnosis. The primary sources of social support for rural women were medical personnel and breast cancer survivors (Farmer et al., 2007). Many rural survivors indicated that having cancer put a strain on their family. Most important in this study was the finding that only a limited number of breast cancer patients received social support from social workers or other mental health professionals.
Similar to the aforementioned study, Wilson and associates (2000) found that women diagnosed with late-stage cancer were more likely to report poor treatment by the medical system, and rural women, regardless of stage at diagnosis, needed more education about breast cancer and more support after diagnosis (Wilson, Andersen, & Meischeke, 2000). Farmer and colleagues (2007) found that the primary barriers to mammography are transportation to and from clinics. This is added to the fact that rural breast cancer survivors are less likely to receive breast-conserving surgery; social and economic costs; isolation and a lack of psychosocial support after treatment; and feeling a greater sense of stigma and loss of privacy (Farmer et al., 2007). The findings from this study illustrate that women’s needs for effective screening in rural areas are being met to a limited degree. Also the findings suggest that women who are diagnosed with breast cancer face additional barriers. In general, the findings on barriers indicate the need for more support to be focused at women in the areas of breast cancer education and social support.

**Rural and Non-rural Findings**

Geographic location is equally important to the proposed research. Geographic location is a perceived barrier because one’s location influences an individual’s access to health care providers and services. Several studies have compared urban and rural differences in the mammography screening behaviors among women. For instance, Coughlin and associates (2002) conducted a one-year study which analyzed screening practices among women in rural and non-rural areas of the United States. The study was conducted in 11 southern states with predominately African American populations, including Mississippi. They found the following: approximately 67% of women aged 40 years or older who resided in rural areas had received a mammogram in the past two years, compared with 75% of women living in larger metropolitan
areas (Coughlin, Thompson, Hall, Logan, & Uhler, 2002). Also, 73% of women aged 40 years or older who resided in rural areas had received a clinical breast examination in the past two years, compared with 78.2% of women living in larger metropolitan areas. Similarly 81% of 121,813 rural women aged 18 years or older who had not undergone a hysterectomy had received a pap test in the past three years, compared with 84% of women living in larger metropolitan areas. The findings were statistically significant (Coughlin et al., 2002).

Metropolitan women were also more likely to have had a recent mammogram than suburban women, and were likelier to have seen a physician in the past year. Also the study found that having a higher education level; having health insurance coverage; good or excellent health status; fewer than three persons living in the household; and being currently married were all associated with having had a recent mammogram (Coughlin et al., 2002). While these factors are not associated with location, they do indicate that women with education and insurance coverage are likelier to have a doctor and better health. In turn, they are likelier to have a mammogram. On the other hand, certain women in rural areas may not have education, access to doctor, and medical coverage. Therefore, they have poorer health and are less likely to have a mammogram. Further, it was found that women aged 50 to 69 years old were more likely to have had a recent mammogram than women who were younger (Coughlin et al., 2002). The findings from this study suggest that psychosocial factors commonly influence mammography screening among rural women. The study also indicates that older rural women were likelier to have been screened than older metropolitan women.

In another screening study, Smith and associates (2003) found that among 320 low-income female clients (91% African American) age 50 and over, rural primary care clinics indicated that 15% of women self-reported a family history of breast cancer; 50% of the women
did not know their relative risk of developing breast cancer; and of those providing risk estimate, 67% perceived themselves at low-risk compared with other women their age (Smith et al., 2003). Moreover, women with a self-reported family history of breast cancer did not indicate greater worry about cancer nor did they have more accurate knowledge of mammography recommendations than women with no self-reported family history; two-thirds of the women with self-reported family history had never had a mammogram; and finally, monthly self-breast examination did not differ between women with self-reported family history and those with no self-reported family history of breast cancer (Smith et al., 2003).

In a 2003 study, Jones and colleagues examined breast cancer knowledge, beliefs, and screening behaviors among 214 older, low-income African American women. In the study, the researchers sought to determine if there were age-based differences in adherence to the American Cancer Society’s recommended screening guidelines. The study was conducted in four senior high-rise apartments in Fulton County, Georgia, and at one DeKalb County, Georgia senior’s center. Participants in the study were sectioned into three age-based groups.

The cross-sectional study included participants who were aged 65 and older with no personal history of breast cancer or mastectomy (Jones et al., 2003). The majority of the women were enrolled in Medicare and 52% were covered by Medicaid. The findings from the study revealed that of the 214 participants, only three had never heard of a mammogram (Jones et al., 2003).

The youngest group of women reported that women age 65 and older should have an annual mammogram. The youngest group of participants and the oldest group of participants were least likely to recognize risk factors. Also in the younger group, 94% of women knew that early diagnosis and treatment could save a woman’s life, versus 80% of the women in the older
Moreover, one half of the women in the oldest group were knowledgeable of the breast cancer risk factors. Women over the age of 85 believed that breast exams should be conducted only when a problem exists; half of the women in this age group also believed that cancer was God’s will (Jones et al., 2003).

Surprisingly, the majority of the women in each of the three groups thought that bruising and smoking were risk factors. Women younger than 85 years of age reported having a mammogram in the previous two years. As the women increased in age, their perception of their own risk for breast cancer declined. Many of the study’s significant findings related to older women who were least likely to have a mammogram, least likely to have been screened, and least likely to have had their last examinations with the ACS’s recommended time frame (Jones et al., 2003). The correlation between age and screening adherence was not statistically significant, but older women appeared to be less aware of many aspects of breast cancer screening, including the specific terms of Medicare which covers annual mammograms. The finding were similar to the previously referenced studies which also indicate that a lack of physical referral, a lack of knowledge of the need for breast cancer screening, a lack of transportation, a lack of disease knowledge, and misconceptions about breast cancer served as barriers to mammography screening among rural women (Crosby, Wendel, Vanderpool, & Casey, 2013; Banning, 2011; Fowler, 2011).

Social Work Implications

The relevant themes that emerged from the review of literature indicate that African American women, despite advances in health promotion and community outreach initiatives, continue to underestimate their risk of developing breast cancer; are fearful and distrustful of public health professionals; face multiple barriers to obtaining mammograms, such as a lack of
transportation; and lack awareness of breast cancer risk factors. They were also found to lack access to quality health care services offered through primary and secondary care clinics; lack insurance; and in some cases lack social support from family members, friends, and other support systems that would be instrumental in their initiating mammography screening.

Spirituality and religiosity, as well as family and community support systems, were found to play vital roles in efforts aimed at screening and early breast cancer diagnosis. However, spirituality and religiosity also presented as barriers to screening among low-income women who thought cancer was “God’s will,” and among those who were reluctant to disclose breast symptoms, but instead solely discussed their symptoms with God.

Within the Mississippi Delta in particular, African American women face additional barriers associated with their rural health status. As the literature revealed, numerous barriers to breast cancer screening continue to exist among this population. Issues around having a lack of access to quality health care services; distrust and fear of the public health system; delays in responding to abnormal breast symptoms; having a lack of medical coverage; and having no regular physician continue to confront African American women in the Delta region. These issues directly affect mammography screening and the stage of breast cancer at diagnosis. Late-stage breast cancer among rural African American women in the region has been linked to a lack of access to mammography screening facilities (Nichols, Bradley, Zhang, Farque, & Duhe, 2014). The same issue is common in other Deep South states like Louisiana, Arkansas, Alabama, and Tennessee.

Ultimately, more culture-specific breast cancer screening interventions are needed to address the health care concerns of African American women in the Mississippi Delta. Public health practitioners and researchers are needed to work with high-risk groups and communities
to alleviate and reduce the incidence of breast cancer. Few empirical social work studies have addressed the barriers and incentives to mammography screening among African American women in the Mississippi Delta. As such the need to further the body of knowledge in this research area exists.
CHAPTER III

Methodology

This study sought to identify the most salient barriers and incentives to mammography screening among African American and Caucasian women in the Mississippi Delta. A second purpose was to determine if barriers and incentives to screening differ among African American and Caucasian women. A third purpose of the study was to assess the association between particular barriers and incentives and screening behavior.

Research Questions

Based on the literature review on African American and Caucasian women and mammography screening, this study was concerned with the following research questions:

Among African American and Caucasian women in the Mississippi Delta:

1. What are the most salient barriers and incentives to breast cancer screening?
2. Are barriers and incentives to breast cancer screening associated with race?
3. Are barriers and incentives to breast cancer screening associated with breast screening behavior?

Hypotheses

Hypothesis One: In the Mississippi Delta, barriers to breast cancer screening will be stronger among African American women than among White women.

Hypothesis Two: In the Mississippi Delta, women with stronger barriers to mammography screening will be less likely to be current in breast cancer screening.
Research Design

A cross-sectional survey design was used in this study. The research design entailed the one time use of a self-administered questionnaire.

Selection of Participants

Although previous studies have investigated mammography screening among African American and White women, this study was unique in that it was conducted in the Mississippi Delta, a unique geographic region that has not been widely examined in the area of breast cancer screening. This study utilized a convenience sample of 175 African American and Caucasian women living in the Mississippi Delta region. Participants were eligible to be included in the proposed study if they were: English-speaking women, African American or Caucasian, aged 40 and above, and residents of the Mississippi Delta. This population was selected based on findings which indicate that (a) the Mississippi Delta is a rural, economically distressed, and medically underserved region of the county; (b) African American women in the Mississippi Delta report higher breast cancer mortality rates when compared to Caucasian women living in the same region; and (c) participants from this region have not been extensively studied (Delta Health Alliance [DHA], 2012; MSDH, 2010a).

In setting a goal for the study sample size, I sought to ensure that my sample size was large enough to identify statistically significant effects for research questions 2 and 3. In addition, I adhered to recommendations to recruit five to ten sample members for each scale item in order to test instrument stability (Suresh & Chandrashekara, 2012). I aimed for the middle of this range. Because my measure of influences on breast cancer screening includes 38 items, I attempted to recruit a sample of 300 women ($7 \times 38 = 266$). A review of the literature revealed that a community-based approach which includes partnership with churches and other faith-
based organizations is a successful recruitment strategy for this population (Beck et al., 2007; Bullock et al., 2006; Corbie-Smith et al., 2003). In the Mississippi Delta church congregants are predominately African American and Caucasian. The participants were recruited from Leflore County, Mississippi. This county was feasible for me in terms of distance, and it offered groups of churches that I hoped would be willing to participate. I sought a survey sample size of 266 participants. However, 175 women were ultimately recruited to participate.

**Outreach**

I made an effort to reach out first to churches I had an established relationship with. I also made the best use of the contacts I had with all churches in the area. I contacted 14 churches in Leflore County. Individual letters were sent to pastors of the selected churches. The letters explained the purpose of the proposed research, and requested permission to survey participants at the selected churches. After the pastors approved, I placed notifications about the research project inside church bulletins. Then I provided a copy of the notification to the church’s secretary or announcing clerk and requested that they inform potential participants of the study. Two African American churches and two Caucasian churches did not respond to my invitation or attempts to contact them by phone. Two Caucasian churches were unable to participate. In particular, one Caucasian church had to meet with the deacons of the church to approval my request to recruit participants. After speaking with the pastor of that church, it was determined that the deacons felt it would be better if I did not attend their church, presumably because I am Black myself and this church did not approve of the racial implications or feminist aspects of my study. Another Caucasian church was unable to participate due to scheduling conflicts and summer travel. In all, a total of eight churches allowed me to come to recruit
participants: six African American and two Caucasian (one of which was multi-racial).

Altogether, 145 surveys were completed at churches.

After visiting several churches, I noticed that I was not collecting enough surveys to enable me to reach a sample of 266 participants. Specifically, I was not recruiting enough Caucasian participants. Because of my prior work as a team leader for the Leflore County American Cancer Society (ACS) Relay for Life, I attempted to recruit Caucasian female participants for my study from this organization by sending a direct email to the local coordinator whom I had worked with before. However, despite attempts to reach the local coordinator, I was not able to re-establish contact with her and was therefore not able to request permission to contact the ACS volunteers who are predominately Caucasian women. In a further effort to reach my target sample size, 20 participants were recruited from women who live in the Mississippi Delta, but work for the Mississippi Legislature in Jackson, MS, in the center of the state, and 10 additional participants were recruited from women who work at Mississippi Valley State University (MVSU), which is located in Itta Bena, MS.

Several MVSU employees were church members from one of the African American churches I visited, two of whom were not present at church services on the day I recruited participants. Later, after seeing some MVSU employees at church, I asked them if they would be interested in participating in my research study and completing the survey one Sunday after church. Using snowball sampling, I also asked them if they knew the names of other women from MVSU who would be interested. As a result, the faculty members also shared the names of other women who were interested in my study. To recruit the MVSU employees, I contacted them directly, explained the nature of my study, and asked them if they would complete my
survey after church. I then followed the same procedure of having them take the survey in the church fellowship hall or sanctuary.

The 20 participants employed at the Mississippi Legislature were recruited from a single participant who works at the state Capitol and knew the names of several women from the Mississippi Delta. I contacted those women by phone, explained the nature of my study to them, and asked them to complete the survey. The participants were instructed to read and sign the informed consent and return the survey to me via mail. The completed surveys were mailed to me. The addition of women from MVSU and the Capitol brought the total number of completed surveys to 175 altogether.

About six women from all churches declined to participate in the study although it was explained to them. The percentage of women who declined was very small, 3%. The women appeared to decline to participate in the study for several reasons: (a) writing and reading comprehension was a problem; (b) they did not have time to complete the survey after church because of other obligations (i.e. another church service or family obligations); and (c) they did not wish to participate. The women who expressed writing barriers were offered assistance. All women who declined to participate in my study still received a breast cancer awareness ribbon and a bookmark, as did all 175 participants who completed the survey.

Measures

For this study many of the variables were measured using an adaptation of Victoria Champion’s (1999) Revised Susceptibility, Benefits, and Barriers Scale for Mammography Screening (RSBBSMS), a widely used instrument for assessing women’s beliefs about breast cancer screening. The instrument has been tested and was found to be a valid, reliable instrument (Champion & Scott, 1997; Taymoori & Berry, 2009). The original, unmodified
version of Champion’s RSBBSMS was not used in this study. Instead, the measure was modified to better reflect the specific challenges and concerns of women in the Mississippi Delta. In addition to using some of the sub-scales from Champion’s measure, my instrument included items to measure some additional potential barriers and incentives to mammography screening.

The following sections of the Revised Susceptibility, Benefits, and Barriers Scale were used without modification: Perceived Benefits, Fear, and Susceptibility. In previous assessments of reliability, the Chronbach’s Alphas for these measures were as follows: Benefits (Mammography) .79, Susceptibility .93, and Fear .94 (Champion, 1999; Champion et al., 2008). As shown in Table 4.2, in my study, the Chronbach’s Alphas for each of these measures were as follows: Perceived Benefits .81, Fear .96, and Susceptibility .90.

The Health Motivation sub-scale was modified. Three items were deleted; four items remained. The deleted items were: “I want to discover health problems early”; “Maintaining good health is extremely important to me”; and “I have regular health check-ups even when I am not sick.” I deleted these items to keep the survey as short as possible, and to retain the items that were most important to my study. The remaining items were: “I eat nutritious meals”; “I exercise at least three times a week”; “I am involved in activities that will improve my health”; and “I actively seek out information that will improve my health.” I was able to reliably measure health motivation with these four remaining items. The Chronbach’s Alpha for Health Motivation in my study was .83.

In addition to modifying the Health Motivation section, I did not use two sub-scales: Seriousness and Confidence. I wanted to keep my survey as short as possible, and also to help ensure that the questions would be easily understood by the participants who may have had
potential literacy challenges. Further, because my study focused on barriers and incentives to screening, the sub-scales that measured Seriousness and Confidence were not as relevant as other sub-scales. Seriousness had seven items, including: “Problems I would experience with breast cancer would last a long time”; “Breast cancer would threaten a relationship with my boyfriend, husband, or partner”; “If I had breast cancer, my whole life would change”; and “If I developed breast cancer, I would not live longer than five years.”

I also did not use the Confidence sub-scale because the items pertained primarily to self-screening, rather than to mammography screening, the focus of my study. For example, the Confidence sub-scale included the items: “I know how to perform breast self-examination,”; “I am confident I can perform a breast self-examination correctly”; “If I were to develop breast cancer I would be able to find a lump by performing breast self-examination”; “I am able to find a breast lump if I practice breast self-examination alone”; “I am able to find a breast lump which is the size of a quarter”; “I am able to find a breast lump which is the size of a dime”; “I am able to find a breast lump which is the size of a pea”; “I am sure of the steps to follow for doing breast self-examination”; “I am able to identify normal and abnormal breast tissue when I do breast self-examination”; “When looking in the mirror, I can recognize abnormal changes in my breasts”; and “I can use the correct part of my finger when I examine my breasts.”

In addition to the influences on mammography screening identified in the Health Belief Model, my study included additional items to measure other possible salient barriers and incentives to breast cancer screening among women in the Mississippi Delta. My survey included items to measure mammogram Accessibility (four items), Beliefs and Attitudes (six items), Bad Experiences with mammograms (six items), and Cost (two items). Details of all measures are described below.
Dependent Variables

Breast Cancer Screening Behavior. Breast cancer screening behavior was the dependent variable for research question 3: “Are barriers and incentives to breast cancer screening associated with breast screening behavior?” The variable was computed based on responses to two survey items: “Are you current or overdue for a mammogram?” The response choices were: “Current,” “Overdue,” and “I don’t know.” “When is the last time you had a mammogram?” Responses were: “Within the past two years,” “More than two years ago,” and “Never.” Whether a woman was “Current” or “Overdue” for a mammogram was determined by her mammogram status within the past 24 months. Ultimately, a computed variable indicated whether each respondent was current (1) or not current (0) according to the National Cancer Institute’s recommended mammography guidelines.

Independent Variables

Race was the primary independent variable for research question 2. Perceived barriers and incentives to breast cancer screening were the primary independent variables for research question 3. As mentioned above, perceived barriers and incentives to breast cancer screening were measured with the Barriers to Mammography Screening Scale in my survey. The entire instrument is shown in Appendix H. As described above, the measure includes four dimensions from the Health Belief Model: Health Motivation (four items), Perceived Benefits (seven items), Fear (four items), and Susceptibility (five items). These items were previously tested for reliability and validity. Four additional dimensions were added to the measure: Accessibility (four items), Attitudes and Beliefs (six items), Bad Mammogram Experiences (six items), and Cost (two items). These additional dimensions were added to the measure based on common barriers and incentives identified in the review of literature on mammography screening among
African American women. Finally, I computed a Global Barriers scale involving items from all four of the additional barriers and incentives dimensions. The alpha reliability for all measures from the scale is shown in Table 4.2.

**Race.** Race was measured by the construct Race/Ethnicity. This construct is based on the following item: “Identify your racial/ethnic group?” The response choices were: “Caucasian or White,” “African American or Black,” and “Other.” (None of the participants indicated that their race was “Other.”)

**Susceptibility.** Perceived susceptibility to breast cancer can influence breast screening behavior in positive or negative directions. It was measured by the response to the following five items: “It is extremely likely I will get breast cancer in the future”; “I feel I will get breast cancer in the future”; “There is a good possibility I will get breast cancer in the next 10 years”; “My chances of getting breast cancer are great”; and “I am more likely than the average woman to get breast cancer.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Perceived Susceptibility was .897.

**Health Motivation.** Health behavior motivation was measured with the following four items: “I eat nutritious meals”; “I exercise at least three times a week”; “I am involved in activities that will improve my health”; and “I actively seek out new information that will improve my health.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Health Motivation was .755.

**Perceived Benefits of Breast Cancer Screening.** Perceived benefits were measured by the construct Benefits for Mammography. This construct was based on the following seven items: “When I get a recommended mammogram, I feel good about myself”; “When I get a
mammogram, I don’t worry as much about cancer”; “My doctor or nurse will praise me if I obtain the recommended mammogram”; “Having a mammogram or x-ray of the breasts will help me find lumps early”; “Having mammogram or x-ray of the breasts will decrease my chances of dying from breast cancer”; “Having mammogram or x-ray of the breasts will decrease my chances of requiring radical or disfiguring surgery if breast cancer occurs”; and “Having a mammogram will help find a lump before it is found by a health professional.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Perceived Benefits was .807.

**Fear of Breast Cancer.** Fear of breast cancer was measured with the following four items: “When I think about breast cancer, I get scared”; “When I think about breast cancer, I get depressed”; “When I think about breast cancer, I feel uneasy”; and “When I think about breast cancer, I feel anxious.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Fear was .956.

**Accessibility.** Accessibility to mammograms was measured with the following four items: “The mammogram clinic or hospital is hard to find”; “It’s hard to find a ride to get a mammogram”; “Parking at mammogram clinics and hospitals is inconvenient”; “It’s convenient for me to get a mammogram.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Accessibility was .870.

**Bad Mammogram Experiences.** Mammogram experiences were measured with the following six items: “Mammogram nurses or technicians are unfriendly”; “Mammogram nurses or technicians are judgmental”; “I do not trust health care providers who conduct
mammograms,”; “I do not trust mammogram equipment to be safe”; “The health care providers who give mammograms are very skilled”; “The health care providers who give mammograms are polite and kind.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Bad Mammogram Experiences was .821.

**Beliefs and Attitudes.** Beliefs and attitudes were measured with the following six items: “I don’t want others to know that I have to have a mammogram”; “I am embarrassed to discuss breast health”; “I am too busy to get a mammogram”; “I have too many caregiving responsibilities to fit in a mammogram”; “I have concerns that are more important than getting a mammogram”; and “I forget to have mammograms.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Beliefs and Attitudes was .888.

**Cost.** Cost was measured with the following two items: “Mammograms cost too much”; and “Mammograms require insurance that I don’t have.” The response options were: “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree.” The Chronbach’s Alpha for Cost was .826.

Finally, a global measure of barriers and incentives to mammography screening was measured with 18 items from the four sub-scales I created for my study. The Chronbach’s Alpha was .830.

**Control Variables**

Based on previous studies, the survey included a number of control variables. These were variables that other studies have found to be associated with breast cancer screening and its various barriers and incentives.
Age. Age based on number of years was measured with the question: “How old are you?”

Religiosity. Religiosity was measured by the following two items: “Frequency of Prayer” and “Frequency of Attendance at Religious Services.” The questions measuring Religiosity were: “How frequently do you attend religious services?” “How frequently do you pray?” The response options were: “Very Frequently,” “Frequently,” “Occasionally,” “Rarely,” “Very Rarely,” and “Never.”

Education Level. Educational level was measured by the following item: “What is the highest grade or year of school you completed?” Response choices were: “Never attended school or only kindergarten,” “Grades 1-8 (Elementary),” “Grades 9-12 (Some high school),” “Grade 12 or GED (High school graduate),” “College 1 year to 3 years (Some college or technical school),” and “College 4 years or more” (College graduate).

The Mississippi Delta region has low educational levels when compared to other states. As such, education was an important variable to consider in my study. My prior knowledge of my population influenced my decision to recode the education variable. I was particularly interested in knowing whether having a college degree was associated with screening behavior. Consequently, the education variable was recoded into a dichotomous variable indicating whether a participant had a college degree (“1”) or not (“0”).

Employment Status. Employment status was measured by the following item: “Are you currently employed?” Response choices were: “Employed for wages,” “Out of work, but looking,” and “Not looking for work” (e.g., homemaker, student, retired, not able to work). The reference group was “Employed for wages.”
Income. Income was measured by the following item: “Is your annual household from all sources?” Response choices were: “< than $10,000,” “$10,001-$25,000,” “$25,001-$60,000,” “More than $60,000,” and “Don’t know/Not sure.” The income variable was ultimately recoded to indicate whether a participant had an income less than or greater than $10,000 per year.

My research focused on women from the rural Mississippi Delta, one of the poorest regions in the United States. As such, income was an important variable to consider in my study. I was particularly interested in knowing whether women in the lowest income group were current in mammography screening, and better understanding barriers to mammography screening for women in the lowest income group. Consequently, the income variable was recoded into three dichotomous variables: “Lowest income vs. others,” “Higher income vs. others,” and “Unknown income vs. others.” For the logistic regression models, “Higher income vs. others” was omitted from the models as the reference group. The models indicate how the women in the lowest income group and those with unknown income compare to the higher income groups.

Health Insurance. Health insurance coverage was measured by two items: “Do you have any health care coverage? (i.e.: health insurance, HMOs, Medicaid or Medicare).” The response options were: “Yes,” “No,” and “Don’t know/Uninsured.” The second question measuring health insurance was: “What type of health care coverage do you have? (check all that apply).” The response options were: “Uninsured,” “Medicare,” “Medicaid,” “Employer-based Insurance,” “Privately-funded insurance,” “Military personnel/Veterans” and “Don’t know/Not sure.”

Marital Status. Marital status was measured by the following item: “Are you:” Response choices were: “Married or similar relationship,” and “Not married.”
**General Health Status.** General health status was measured by the following item: “My health status is:” Response choices were: “Excellent,” “Good,” “Fair,” and “Poor.”

**Pilot Study**

The survey instrument was pilot tested with a group of 10 individuals to ensure that the questionnaire could be easily completed by the respondents. The participants were recruited from my personal contacts. The pilot study was conducted to assess how much time the survey would take, to ensure the questions were clear to respondents, and to help ensure that the questions asked provided the researcher with the information needed for the research study. Before having groups of women complete the survey, I took a few women aside to discuss and explain each question one by one. I learned whether each question made sense. I determined whether additional items of perceived barriers needed to be added to the scale. This was done to determine if there were additional perceived barriers to breast cancer screening among women in the Mississippi Delta that remained unidentified. No additional barriers were added.

**Data Collection Procedures**

The data for this study was gathered from one source: self-reported questionnaires. Once the Institutional Review Board gave me permission to conduct the study, I sent a letter to pastors at 14 churches in Leflore County, Mississippi: eight African American churches, five Caucasian churches, and one multi-racial church. (I considered the multi-racial church as predominately Caucasian, however.) The letter explained the purpose of the study and its foreseeable benefits to the Mississippi Delta community. The letter also requested permission to administer questionnaires to individuals willing to participate in the study.

Although there were many other churches in Leflore County to recruit from, some churches only meet once or twice a month and have rather small congregations. The 14 churches
I selected were full-time churches. These churches have worship service four to five Sundays in a month. The churches were also selected for their large congregation size. Four churches did not reply to my invitation nor respond to my phone calls: two African American and two Caucasian churches.

I faced barriers to recruiting participants from churches because of “Special Sundays.” Many churches have special programs on certain Sundays (Men or Women’s Day, Youth Day, etc.), especially during the summer. When such programs occur, the entire service is devoted to that program. This affected the Sundays I could visit some churches. During my recruitment period, I had to reschedule church visits on several occasions. I did not have a pre-established rapport with the pastors or members of the Caucasian churches. This was a barrier to recruiting participants from those congregations. For example, at one predominately Caucasian church, the female participants were numerous but I was not allowed to speak to the audience. While I was there, the pastor made no mention of me and my research study although I had asked him to in person and via letter, and the women’s leader, who coordinated my visit, asked him to. I asked on several occasions to speak with the women, but was told to wait until the worship service ended. At the end of worship service, more than 50 Caucasian female participants left. However a small number of women did stay to complete the survey. Another predominately Caucasian church felt it would be better if I did not personally attend the church to administer the surveys. I did not recruit from that church. In a small way, this experience reflects the marginalization that all Black women still face in the Delta, and only strengthened my resolve to continue with this important study. Other churches asked me to coordinate with their women’s ministry leaders or to plan my visit to coincide with a church activity (health fair, carnival, etc.). I did try to
coordinate my visit with those activities, but those events were either rescheduled or cancelled. This impacted my ability to recruit participants from one Caucasian church.

For the remaining eight churches, I called or visited each individual church to determine the best date to schedule a visit to explain the purpose of the study to potential participants, recruit respondents, and collect data. After the logistics for data collection were finalized with each church, I attended the church service on the set date, recruited potential participants after church services, and explained the nature and purpose of the study.

An informed consent form accompanied the questionnaire. The informed consent form provided an explanation of why the study was being conducted, guidelines for participating in the study, the study’s benefits versus risks, the participant’s right to withdraw, and how confidentiality will be ensured. The participants completed the survey on the church premises. The survey took between 10-30 minutes to complete. This was sufficient time for all of the participants to complete the survey. Participants who completed the survey received a breast cancer awareness ribbon and bookmark as tokens of appreciation. All churches that participated in the study received a thank-you letter from the researcher and a certificate of participation.

To account for literacy challenges, I worked to ensure that the survey instrument used language at an easy reading level. I monitored the participants as they completed the survey. If I noticed that a participant paused or spent an extended amount of time completing one aspect of the survey, or the entire survey itself, I asked her if she had questions. If a woman appeared to not be able to read the survey, I read and explained the question(s) to her if she requested assistance. This occurred five times during the research period. Most participants understood the questions after I explained it to them. Also, in some instances, other female participants assisted women who had difficulty reading the survey.
Also, I prepared a script to be used if a participant was not cognitively able to complete the survey. The script was written and worded in a respectful manner as not to embarrass or devalue the participant. Some participants stopped their survey because they did not understand the questions. They typically called me aside and told me they could not complete the survey. I offered assistance where I could. Ultimately, I discarded all surveys of participants who did not understand the items. Those participants were still given an awareness ribbon and a bookmark. Due to my assistance, the completed surveys were completed in full. All in all, I collected data from eight churches. Six of the churches had predominantly African American congregations; two had predominantly White congregations. In addition to churches, to supplement my sample, as described above, I collected data from 10 women at Mississippi Valley State University, located in Itta Bena, MS, and from 20 women who live in the Mississippi Delta, but who work for the Mississippi Legislature, which is located in Jackson, MS.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) 21 was used for analysis of the survey data. Survey data was analyzed using descriptive statistics and frequencies. First, univariate analysis was used to describe and summarize each of the study variables. I computed the mean, median, standard deviation, and range for each continuous variable and frequencies for each categorical variable. To address question 1, descriptive statistics were conducted for each of the barriers and incentives to breast cancer screening. The relative importance of subdimensions was gauged by simply comparing the relative mean values of the scales.

To address question 2, t tests were conducted in which each of the barriers and incentives to breast cancer screening were dependent variables, and participant race (African American or Caucasian) was the dichotomous independent variable. To further address question 2, OLS
regression models were estimated. For these models, any of the barriers or incentives to breast cancer screening that were significantly different by race at the bivariate level were the dependent variables. The multiple regression models assessed whether the associations between barriers and incentives and race were maintained in a multivariate context controlling for age, poverty status, and education. These control variables were included based on their relationships to health beliefs and behaviors, as well as their association with race. Additional control variables were not included due to the small sample size and the importance of having a parsimonious model. Religiosity varied little in this sample, which is not surprising since most surveys were completed at church. Perceived health status and insurance coverage were not associated with health beliefs or race in preliminary tests.

To address question 3, first t-tests were conducted to assess mean differences in perceived barriers and incentives to breast cancer screening by breast cancer screening behavior (current or not). In addition the logistic regression models were conducted to assess whether associations between any statistically significant barriers and incentives to breast cancer screening were maintained when race and control variables were considered. Selection of control variables for these models followed the same logic described above. Logistic regression was used because the dependent variable measuring breast cancer screening behavior is a dichotomous variable.

**Missing Data**

The small amount of missing data was handled in two ways. In some instances, data were missing because the participants did not complete large portions of the survey questionnaire. If a majority of a survey was incomplete, I did not include the survey in the study. To account for missing data in surveys with minimal missing data, I used the listwise deletion approach.
CHAPTER IV

Results

Univariate Analysis

Table 4.1 shows the demographic statistics associated with the sample of 175 African American and Caucasian women from the Mississippi Delta who responded to the survey. The number of respondents for each variable vary from 171 to 175. Essentially, some variables have missing data. The descriptions indicate the appropriate n for each variable. A majority of the respondents were African American (88%). White respondents made up a smaller percentage (12%) of the sample. The mean age of respondents was 59; the range was from 40 to 84 years old. About 42% of the respondents were married. Approximately 39% of the respondents were unmarried and 19% were partnered.

Most respondents received some type of formal education and training, beyond high school. A majority of the respondents attended higher education institutions. Forty-six (42%) completed four or more years of college and 23% of the respondents reported having attended college from one to three years. About one fifth (21%) of respondents reported that they were a high school graduate. The percentage of respondents who attended some high school was 11%. Those who completed grade 8 comprised 2% of the sample, and one participant never attended school.

The majority (55%) of the respondents were employed for wages, and 41% of the respondents were not looking for work (e.g., homemaker, student, retired, and unable to work).
A small number (4%) of respondents were out of work, but looking. Regarding the respondents’ annual income, 35% earned between $25,001-$60,000; while 21% of the respondents earned between $10,001 and $25,001 each year. The percentage of women who earned less than $10,000 annually was 17%; whereas the percentage of respondents who earned more than $60,000 annually was 16%. Eleven percent (11%) of the respondents did not know their annual income or were unsure of it. After recoding income into three dichotomous variables, 17% had a “1” in the lowest income group; 72% had a “1” for the higher income group; and 11% had a “1” for the unknown or not sure group.

A majority (90%) of the participants had health insurance. A small percentage (10%) did not. The types of health coverage varied among the participants. More than half (56%) of the respondents had employer-based insurance. A large portion (30%) of the respondents had Medicare. A small percentage (11%) had Medicaid. Other participants (12%) received privately-funded insurance. Nearly 9% of the respondents had no insurance. None of the respondents was unsure as to whether he/she had insurance or not.

Most of the sample consisted of women who were affiliated with faith-based institutions or churches in the Mississippi Delta. As such, the majority (80%) of the respondents indicated that they attended religious services very frequently. Other respondents (13%) indicated that they attend religious services frequently; whereas 4% of respondents attended religious services occasionally. A small number (1%) of respondents attended religious services rarely. The percentage of respondents who attended religious services very rarely (1%) or never (1%) was also very small. Further, the vast majority (84%) of the respondents indicated that they pray very frequently; whereas 16% pray frequently, and only one respondent reported praying only occasionally.
Finally, a majority (57%) of the respondents considered their health to be “good.” Only 28% regarded their health as “excellent,” 13% regarded their health as “fair,” and 1% regarded their health as “poor.”
Table 4.1
Descriptives Statistics of Demographic Variables

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (n = 174)</td>
<td>58.6</td>
<td>58.00</td>
<td>9.5</td>
<td>40</td>
<td>84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/Ethnicity (n = 174)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>20</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black/African American</td>
<td>154</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital Status (n = 172)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Married or in a similar relationship</td>
<td>72</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>67</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>33</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Level (n = 171)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Attended School</td>
<td>1</td>
<td>&lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades 1-8 (Elementary)</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades 9-12 (Some high school)</td>
<td>19</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 12 or GED (High school graduate)</td>
<td>36</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College 1 year to 3 years</td>
<td>40</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College 4 years or more</td>
<td>71</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree Status (n = 171)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>With College Degree</td>
<td>71</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without College Degree</td>
<td>101</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual Income (n = 171)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10,000</td>
<td>29</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$10,001-$25,000</td>
<td>36</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$25,001-$60,000</td>
<td>59</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than $60,000</td>
<td>28</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't Know/Not Sure</td>
<td>19</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment (n = 175)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed for wages</td>
<td>96</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of work, but looking</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not looking for work (e.g. homemaker, student, retired, unable to work)</td>
<td>72</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1, *Descriptives of Demographic Variables (continued)*

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>154</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Type of Health Coverage (n = 171)**

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>15</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>51</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>18</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer-based Insurance</td>
<td>97</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privately Funded Insurance</td>
<td>20</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t Know/Not Sure</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Frequency of Religious Services**

*(n = 172)*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Frequently</td>
<td>138</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>23</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Rarely</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Frequency of Prayer (n = 172)**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Frequently</td>
<td>144</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently</td>
<td>27</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>1</td>
<td>&lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Health Status (n = 172)**

<table>
<thead>
<tr>
<th>Status</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>49</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>98</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>23</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.2 shows the descriptive statistics associated with the barriers and incentives to mammography screening. For each of the eight variables, higher mean scores indicated that respondents perceived the variable to be a greater barrier or incentive to mammography screening.

Table 4.2
Descriptives for Barriers and Incentives to Screening Behavior

<table>
<thead>
<tr>
<th>Variable</th>
<th>Alpha Reliability</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Motivation (4 items)</td>
<td>.762</td>
<td>3.8843</td>
<td>.80174</td>
<td>1.75</td>
<td>5.00</td>
</tr>
<tr>
<td>Fear (4 items)</td>
<td>.956</td>
<td>2.6586</td>
<td>1.21364</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Susceptibility (5 items)</td>
<td>.898</td>
<td>2.3451</td>
<td>.84430</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Perceived Benefits (7 items)</td>
<td>.811</td>
<td>3.8808</td>
<td>.72877</td>
<td>1.43</td>
<td>5.00</td>
</tr>
<tr>
<td>Accessibility (4 items)</td>
<td>.662</td>
<td>1.7509</td>
<td>.64156</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Attitudes/Beliefs (6 items)</td>
<td>.889</td>
<td>1.6857</td>
<td>.59609</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Bad Experiences (6 items)</td>
<td>.821</td>
<td>1.7786</td>
<td>.63135</td>
<td>1.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Cost (2 items)</td>
<td>.70</td>
<td>2.6571</td>
<td>1.136</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Global Barriers (18 items)</td>
<td>.830</td>
<td>2.2698</td>
<td>.53852</td>
<td>1.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

n =175
Bivariate Statistics

**Race and Screening Behavior.** Table 4.3 shows descriptive statistics for the dependent variables of race and screening behavior as well as the association between the two variables. Of the African American women who responded to the measure, 80% indicated they were current for a mammogram. Current versus overdue status was based upon whether or not a woman had had a mammogram within the past 12 months. Twenty (20%) of the respondents were overdue for mammography screening. The sample is 88% African American and 12% Caucasian. As shown in Table 4.3, African American respondents were seemingly more likely (20%) to be overdue for a mammogram compared to White respondents (15%), but the difference is not statistically significant ($X^2 = .35; p = .53$).

Table 4.3  
Association of Race with Screening Behavior

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Current</th>
<th>Overdue</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>80%</td>
<td>20%</td>
<td>88.5%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>85%</td>
<td>15%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Total</td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
</tr>
</tbody>
</table>

$X^2 = .296; p = .586; n = 174$
Race and Demographic Characteristics. Associations of race with age, education, and income were assessed to see if participants differed by race in the key demographic variables used in the study. The average age of African American participants was 58; whereas, the average age of the Caucasian participants was 63. A t test suggested that the mean age difference was not statistically significant in my study \((t = -1.657, \ p = .112)\). (The bivariate correlation coefficient for age and race, shown in Table 4.5 is statistically significant. That analysis assumes equal variances for both the white and African-American respondents. A Levene’s test, however, indicated that the variances are not equal, resulting in a higher standard applied for statistical significance in the t-test.) As shown in Table 4.4, a higher percentage of Caucasian participants were in the lowest income category (20%) than were African American participants (17%). Similar differences were observed for the “Higher Income” category. More African American participants had higher incomes (74%) than did Caucasian participants (60%). For the “Don’t Know” category, more Caucasian participants indicated they did not know their income (20%) than did African American participants (9%). These differences were not statistically significant.

I did find an association with race and education. As shown in Table 4.4, far more Caucasian participants indicated they had not attended college (85%) than did African American participants (56%). Likewise, more African American participants (44%) were college graduates than were Caucasian participants (15%). This difference is statistically significant \((X^2 = 6.230, \ p = .01)\).
Table 4.4
Association of Race with Income and Education

<table>
<thead>
<tr>
<th>Race</th>
<th>Lowest Income</th>
<th>Higher Income</th>
<th>Unknown Income</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>17%</td>
<td>74%</td>
<td>10%</td>
<td>88%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>20%</td>
<td>60%</td>
<td>20%</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>17%</td>
<td>72%</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>

\[ X^2 = 2.182; p = .336 \]

<table>
<thead>
<tr>
<th>Race</th>
<th>College Graduate</th>
<th>Not College Graduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>44%</td>
<td>56%</td>
<td>88%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>15%</td>
<td>85%</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>41%</td>
<td>49%</td>
<td>100%</td>
</tr>
</tbody>
</table>

\[ X^2 = 6.230, p = .01 \]

Correlation Matrix

Table 4.5 shows a correlation matrix of demographic variables and variables indicating barriers and incentives to mammography screening. Statistically significant correlations are indicated with stars. Some correlations of interest are as follows: accessibility and beliefs were positively correlated (r = .691**); bad experiences and beliefs were positively correlated (r = .496**). Based on these results, I would not put both accessibility and beliefs together in the same multiple regression model. Other correlations are not surprising. For example, education and income are positively correlated (r = .384**).
Table 4.5
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accessibility</td>
<td>1</td>
<td>.691**</td>
<td>-.068</td>
<td>.213**</td>
<td>.460**</td>
<td>.003</td>
<td>.175</td>
<td>.104</td>
<td>.424</td>
<td>-.126</td>
<td>-.191*</td>
<td>.090</td>
<td>.061</td>
</tr>
<tr>
<td>2. Beliefs</td>
<td>1</td>
<td>-.101</td>
<td>.191</td>
<td>.496**</td>
<td>.032</td>
<td>.170*</td>
<td>.160*</td>
<td>.570**</td>
<td>-.033</td>
<td>-.004</td>
<td>.068</td>
<td>.036</td>
<td></td>
</tr>
<tr>
<td>3. Perceived Benefits</td>
<td>1</td>
<td>-.088</td>
<td>-.198</td>
<td>.341**</td>
<td>-.027</td>
<td>.139</td>
<td>-.115</td>
<td>.097</td>
<td>.051</td>
<td>.031</td>
<td>.116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cost</td>
<td>1</td>
<td>.177*</td>
<td>.143</td>
<td>.104</td>
<td>.161*</td>
<td>.536**</td>
<td>-.099</td>
<td>-.136</td>
<td>.042</td>
<td>.107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Bad Experiences</td>
<td>1</td>
<td>-.045</td>
<td>.217**</td>
<td>.175*</td>
<td>.411**</td>
<td>-.130</td>
<td>-.060</td>
<td>.011</td>
<td>.066</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Health Motivation</td>
<td>1</td>
<td>-.006</td>
<td>.127</td>
<td>.117</td>
<td>.065</td>
<td>.055</td>
<td>.203**</td>
<td>.131</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Susceptibility</td>
<td>1</td>
<td>.101</td>
<td>.009</td>
<td>.037</td>
<td>-.069</td>
<td>-.017</td>
<td>-.062</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Fear</td>
<td>1</td>
<td>.152*</td>
<td>.014</td>
<td>.010</td>
<td>-.165</td>
<td>.251*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Global Barriers</td>
<td>1</td>
<td>-.209**</td>
<td>-.139</td>
<td>-.027</td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. College Graduate</td>
<td>1</td>
<td>.384**</td>
<td>-.034</td>
<td>.189*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Higher Income</td>
<td>1</td>
<td>-.039</td>
<td>.085</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Age</td>
<td>1</td>
<td>-.154</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

** p < .01  *p < .05
Barriers and Incentives by Race to Mammography Screening

Table 4.6 shows the bivariate analysis of the barriers and incentives by race (African American vs. Caucasian). An independent samples t test was used to compare differences in the means scores of each of the variables indicating barriers and incentives to breast cancer screening. The mean score, the t value, and the p values for each racial group are presented in this table. Members of both racial groups had similar perceptions about most barriers and incentives to mammography screening. Based on the findings, mean scores for four of the nine barriers and incentives to screening were higher for African American women when compared to Caucasian women. African American women indicated that accessibility, beliefs, and bad experiences seemingly were potential barriers to mammography screening when compared to Caucasian women; however, the differences by race for these barriers were non-significant. By comparison, the mean score for the barrier of susceptibility appeared to be higher for Caucasian women when compared to African American women, but also non-significant.

There was a significant difference in the mean score for two barriers and incentives to mammography screening. Health motivation was significantly higher for African American ($M = 3.92, SD = .790$) than for Caucasian women ($M = 3.60, SD = .832; p<.05$). Finally, Fear of breast cancer was significantly higher for African American ($M = 2.77, SD = .1.18$) than for Caucasian women ($M = 1.81, SD = 1.16; p< .05$). These results suggest that fear of breast cancer may serve as a barrier to screening among African American women in the Mississippi Delta, but that African American women in my sample had greater health motivation than did the White women in my sample.
Table 4.6  
*Bivariate Analysis of Barriers and Incentives by Race*

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Mean</th>
<th>2-tail test</th>
<th>1-tail test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accessibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1.64</td>
<td>.808</td>
<td>.420</td>
</tr>
<tr>
<td><strong>Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1.62</td>
<td>.468</td>
<td>.641</td>
</tr>
<tr>
<td><strong>Perceived Benefits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>3.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3.65</td>
<td>1.53</td>
<td>.129</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.32</td>
<td>1.41</td>
<td>.161</td>
</tr>
<tr>
<td><strong>Bad Experiences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1.66</td>
<td>.862</td>
<td>.390</td>
</tr>
<tr>
<td><strong>Health Motivation</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Black</td>
<td>3.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>3.60</td>
<td>1.74</td>
<td>.084</td>
</tr>
<tr>
<td><strong>Susceptibility</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.49</td>
<td>- .814</td>
<td>.417</td>
</tr>
<tr>
<td><strong>Fear</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1.81</td>
<td>3.40</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Global Barriers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.21</td>
<td>.480</td>
<td>.632</td>
</tr>
</tbody>
</table>

n= 174
Table 4.7 represents the bivariate analysis by screening behavior. Independent samples $t$ tests were conducted to compare mean differences in barriers and incentives to mammography screening between respondents who were either current or overdue for a mammogram. The mean score, the $t$ value, and the $p$ values for each screening group are presented in the table. Both current and overdue respondents had similar perceptions about most barriers and incentives to mammography screening. The barriers and incentives to screening that were different for women who were current for a mammogram when compared to women who were overdue for a mammogram include: perceived benefits, bad experiences, health motivation, and fear of breast cancer. Overdue women also had a higher mean value on the global barriers scale than did current women.

Figures that stand out in the table, however, are the comparisons in the level of perceived benefits to mammography, bad experiences, health motivation, and, once again, fear of breast cancer. Women who are current in their mammogram perceive greater benefits to mammography ($M = 3.93, SD = .721$) than do women who are not current ($M = 3.70, SD = .722; p < .05$). They also have significantly higher health motivation ($M = 4.01; SD = .770; p < .05$) than do respondents who are not current ($M = 3.39, SD = .743; p < .05$). Women who are overdue in their mammogram perceive greater bad experiences to mammography ($M = .195, SD = .764$) than do women who are current. Finally, fear of breast cancer was higher for overdue ($M = 3.30, SD = 1.09; p < .05$) respondents than for current ($M = 2.50, SD = 1.19; p < .05$) respondents; $t (173)$. 

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Table 4.7
Bivariate Analysis of Barriers and Incentives by Screening Behavior

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Mean</th>
<th>T</th>
<th>p</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-tail test</td>
<td>1-tail test</td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>1.77</td>
<td>.730</td>
<td>.467</td>
<td>.234</td>
</tr>
<tr>
<td>Overdue</td>
<td>1.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Current</td>
<td>1.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>1.75</td>
<td>-6.86</td>
<td>.494</td>
<td>.247</td>
</tr>
<tr>
<td>Perceived Benefits</td>
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<tr>
<td>Current</td>
<td>3.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>3.65</td>
<td>2.078</td>
<td>.038</td>
<td>.019</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
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<td></td>
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<tr>
<td>Current</td>
<td>2.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>2.90</td>
<td>-1.42</td>
<td>.158</td>
<td>.079</td>
</tr>
<tr>
<td>Bad Experiences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>1.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>1.95</td>
<td>-1.81</td>
<td>.072</td>
<td>.036</td>
</tr>
<tr>
<td>Health Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>4.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>3.39</td>
<td>4.25</td>
<td>&lt;.001</td>
<td>.000</td>
</tr>
<tr>
<td>Susceptibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>2.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>2.37</td>
<td>-.161</td>
<td>.873</td>
<td>.436</td>
</tr>
<tr>
<td>Fear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>2.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>3.29</td>
<td>-3.57</td>
<td>&lt;.001</td>
<td>.000</td>
</tr>
<tr>
<td>Global Barriers</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>2.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overdue</td>
<td>2.40</td>
<td>-1.65</td>
<td>.102</td>
<td>.051</td>
</tr>
</tbody>
</table>

n = 173

Multivariate Analysis

Linear regression models. Tables 4.8 and 4.9 represent the linear regression analysis.

A linear regression analysis was conducted to determine whether fear of breast cancer and health motivation were still associated with race even when accounting for relevant demographic
characteristics. The hypothesis tested was that in the Mississippi Delta, barriers and incentives to breast cancer screening will be stronger among African American women than among White women. The beta, the standard error of the estimate, and the p value are presented in the table for Models 1-2. In these tables, the first model simply replicates the bivariate associations between race and both fear and health motivation. A second model includes the control variables.

Table 4.8 shows the results for fear of breast cancer. In Model 1, as with the bivariate t test, race is associated with fear ($B = .954; p < .01$). As shown in Model 2, race remained associated at a statistically significant level even when controlling for the demographic characteristics. In this study, African American respondents have higher levels of fear of breast cancer than have White respondents ($B = .873; p < .01$). The significance of this finding will be discussed below. In addition, the older the participants, the lower their fear of breast cancer ($B = -.016; p = .05$).

Table 4.8
Linear Regression Models for Fear of Breast Cancer

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>S.E.</td>
<td>p 2 tail</td>
<td>p 1 tail</td>
<td>B</td>
<td>S.E.</td>
</tr>
<tr>
<td>Constant</td>
<td>1.813</td>
<td>.264</td>
<td>.000</td>
<td>.000</td>
<td>2.80</td>
<td>.603</td>
</tr>
<tr>
<td>African American</td>
<td>.954</td>
<td>.281</td>
<td>.001</td>
<td>.001</td>
<td>.873</td>
<td>.289</td>
</tr>
<tr>
<td>Age</td>
<td>-.016</td>
<td>.009</td>
<td>.101</td>
<td>.051</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has college degree vs. Higher Income</td>
<td>-.021</td>
<td>.201</td>
<td>.916</td>
<td>.458</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest Income Group</td>
<td>.228</td>
<td>.263</td>
<td>.367</td>
<td>.184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't Know Income</td>
<td>-.227</td>
<td>.294</td>
<td>.441</td>
<td>.221</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 173

$R^2 = .063$, $F = 11.536$, p < .01

$R^2 = .090$, $F = 3.31$, p < .01
Table 4.9 shows the multiple regression model with health motivation as the dependent variable. The analysis was conducted to see if race retained its association with health motivation even when controlling for age, poverty status, and education. In Model 1, as with the t test results, race is associated with health motivation (B = .329; p < .01). As shown in Model 2, race remained statistically significant even when controlling for demographic characteristics. African American women have higher health motivation than White respondents (B = .383; p = <.01). In addition, age is associated with health motivation. On average, the older the women in this study, the more motivated they were to care for their health (B = .020, p = .003). Finally, compared to women in the higher income group, women in the lowest income group have higher health motivation (B = .291, p = .048). The plausible explanation remains unclear. Future research studies might address this question.

Table 4.9  
Linear Regression Models for Health Motivation

| Characteristic          |  | Model 1 |           | Model 2 |           |
|-------------------------|  |         |           |         |           |
|                         | B | S.E.    | p 2-tail  | p 1-tail| B         | S.E.    | p 2-tail  | p 1-tail |
| Constant                | 3.600 | .178 | .000 | .000 | 2.29 | .401 | .000 | .000 |
| African American        | .329 | .189 | .080 | .040 | .383 | .192 | .055 | .028 |
| Age                     | .020 | .006 | .005 | .003 |      |      |      |      |
| Has college degree      | .141 | .134 | .400 | .20  |      |      |      |      |
| vs. Higher Income       |      |      |      |      |      |      |      |      |
| Lowest Income Group     | .291 | .173 | .095 | .048 |      |      |      |      |
| Don't Know Income       | -.061 | .193 | .752 | .376 |      |      |      |      |

n = 173  
R² = .017,  
F = 3.03, p < .08  

R² = .260  
F = 3.093, p < .01
Logistic Regression Models

Table 4.10 shows the logistic regression analysis. Logistic regression analysis was conducted to determine if fear of breast cancer, perceived benefits of mammography, health motivation, and bad screening experiences were still associated with screening behavior even when controlling for race and the other demographic characteristics. The hypothesis tested was that in the Mississippi Delta, women with stronger barriers to mammography screening would be less likely to be current in breast cancer screening. This model also assesses whether incentives to mammography are associated with screening behavior. The beta value, the standard error of the estimate, and the alpha value are presented in each table for two models. The logistic regression models include all variables associated with screening behavior. Of all variables associated with screening behavior, fear and health motivation remained statistically significant. As shown in Model 1, both variables remain associated with screening behavior in a multivariate context. As respondents’ level of fear increases, the likelihood of being current with mammograms is reduced ($OR = .460; p < .01$). In addition, as respondents’ level of health motivation increases, they are over two times more likely to be current with their mammograms ($OR = 3.17; p < .01$). Perceived benefits to mammography, susceptibility, and bad experiences, however, are no longer associated with screening behavior in a multivariate context. Model 2 indicates that the same barriers and incentives are associated with screening behavior even when controlling for demographic characteristics. Model 3 indicates that the same relationships are maintained when also controlling for race. Race, in itself, is not associated with screening behavior when accounting for the other variables in the model.
Table 4.10
*Logistic Regression Models for Screening Behavior*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>S.E.</td>
<td>Odds</td>
<td>Ratio</td>
<td>p</td>
<td>B</td>
</tr>
<tr>
<td>Fear of breast cancer</td>
<td>-.776</td>
<td>.207</td>
<td>.460</td>
<td>.000</td>
<td>-.795</td>
<td>.212</td>
</tr>
<tr>
<td>Health Motivation</td>
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<td>.300</td>
<td>3.173</td>
<td>.000</td>
<td>1.079</td>
<td>.304</td>
</tr>
<tr>
<td>Perceived Benefits</td>
<td>.308</td>
<td>.323</td>
<td>1.361</td>
<td>.340</td>
<td>.206</td>
<td>.335</td>
</tr>
<tr>
<td>Bad Experiences</td>
<td>-.259</td>
<td>.352</td>
<td>.772</td>
<td>.462</td>
<td>-.270</td>
<td>.365</td>
</tr>
<tr>
<td>Age</td>
<td>.011</td>
<td>.025</td>
<td>1.011</td>
<td>.668</td>
<td>.010</td>
<td>.025</td>
</tr>
<tr>
<td>Has college degree</td>
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<td>.426</td>
<td>.429</td>
<td>.499</td>
</tr>
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<td>vs. Highest Income</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lowest Income Group</td>
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<td>.637</td>
<td>1.229</td>
<td>.746</td>
<td>.197</td>
<td>.637</td>
</tr>
<tr>
<td>Don't Know Income</td>
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<td>.460</td>
<td>.247</td>
<td>-.781</td>
<td>.671</td>
</tr>
<tr>
<td>African American</td>
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<td>.793</td>
<td>.640</td>
<td>.574</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.336</td>
<td>1.499</td>
<td>.263</td>
<td>.373</td>
<td>-1.34</td>
<td>2.07</td>
</tr>
<tr>
<td>-2 Log Likelihood</td>
<td>138.413</td>
<td></td>
<td>134.523</td>
<td></td>
<td>134.192</td>
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<tr>
<td>Chi Square, df</td>
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<td>37.376,</td>
<td></td>
<td>37.707,9</td>
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</tr>
</tbody>
</table>

n = 174
Research Question One

Question 1: What are the most salient barriers and incentives to breast cancer screening?

The first research question examined the results of the Breast Cancer Screening Measure. Participants were asked to respond to Likert-scale items that measured barriers and incentives to mammography screening including: accessibility, cost, susceptibility, attitudes/beliefs, bad previous mammogram experiences, perceived benefits, and fear of the disease. In addition, a “global” barriers measure constitutes a combined measure of the four barriers measures created for this study. Descriptive statistics were presented for each of the eight barriers and incentives to breast cancer screening. The importance of each influence and barrier was compared. As shown in Table 4.2, the positive influence with the highest mean value was health motivation ($M = 3.88$). Perceived benefits ($M = 3.88$) also had a relatively high mean value. Of all the barriers, fear ($M = 2.66$) had the highest mean value. However, cost ($M = 2.66$) and bad mammogram experiences ($M = 1.78$) also had high mean scores. This simple eyeball comparison is a first sign that fear, cost, and bad mammogram experiences may be important barriers to breast cancer screening among women in the Mississippi Delta. It is also a sign the health motivation may be an important incentive to breast cancer screening.

Research Question Two and Hypothesis One

Question 2: Are barriers and incentives to breast cancer screening associated with race?

Hypothesis One: In the Mississippi Delta, perceived barriers to breast cancer screening will be stronger among African American women than among White women.
To answer research question two and test hypothesis one, first $t$ tests were conducted in which the mean scores for barrier/incentives breast cancer screening sub-dimensions were the dependent variables, and participant race (African American or Caucasian) was the dichotomous independent variable. To further address question 2, OLS regression models were conducted to assess whether any significant bivariate associations between barriers/incentives and race were maintained or emerged in a multivariate context. The findings from the study indicate that fear of breast cancer and health motivation are more salient for African American women than for Caucasian women. Importantly, the study found that when controlling for having a college degree, income, and age, African American women were still more fearful of breast cancer when compared to Caucasian women. Similarly, health motivation also remained greater for African American women.

**Research Question Three and Hypothesis Two**

*Question 3: Are barriers and incentives to breast cancer screening associated with breast screening behavior?*

Hypothesis Two: In the Mississippi Delta, women who perceive stronger barriers to mammography screening will be less likely to be current in breast cancer screening.

To address question three and test hypothesis two, first $t$ tests were conducted to assess mean differences in barriers and incentives and other influences on breast cancer screening by breast cancer screening behavior (current versus overdue). In addition, logistic regression models were conducted to assess whether the significant associations between screening behavior and significant influences were maintained when race and control variables were considered. Logistic regression was used because the dependent variable measuring breast cancer screening behavior is a dichotomous variable.
Ultimately, two variables were associated with breast cancer screening behavior: women who were current on their mammograms had higher levels of health motivation and lower levels of fear than did women who were not current. Women who perceived greater benefits to mammography were more likely to be current in bivariate analysis, but the association was not maintained in multivariate analysis. Likewise, women with bad mammography experiences were less likely to be current in screening in bivariate analysis, but the relationships also were not maintained in multivariate analysis.

The health motivation finding indicates that women who ate healthy meals, exercised at least three times a week, sought out health-related information, and were engaged in activities to improve their health were more likely to be current in their mammograms. This finding is important as it suggests that women with a positive or proactive health orientation were more likely to be current for their mammograms. The analysis also revealed that even when controlling for education, income, age, and race, women with higher levels of health motivation were more likely to be current for a mammogram. Additionally, important information regarding the relationship between fear of breast cancer and breast cancer screening was revealed in the study. Even when controlling for education, income, age, and race, women with higher levels of fear were less likely to be current with breast cancer screening. Finally, the study found that at a bivariate level, women who perceive greater benefits to mammography were more likely to be current in their mammography schedule. The association, however, was not maintained in multivariate models controlling for demographic characteristics and the other factors associated with screening behavior.

The findings related to health motivation, perceived benefits, bad mammogram experiences, fear of breast cancer and screening behavior are especially important for women in
the Mississippi Delta who are found to have poorer health outcomes because of issues related to poverty, socio-economic status, access to health care, and resources. They indicate the need for continued efforts to increase women’s overall health knowledge, which would include understanding the importance of proper nutrition, diet, exercise, and screening education. Essentially, the more motivated women in the Mississippi Delta are to exercise, eat well, seek out health information, and engage in activities that will promote their health, the less likely they may be to delay mammogram screening and other important health screenings (i.e. high blood pressure, cholesterol, colorectal cancer, etc.). Because bad mammogram experiences was another important finding in my research study, it would be important to better understand the concerns of women in the Delta as the relate to experiences with mammogram technicians and professionals, the skill level of providers, and trust for providers.

Also, as discussed in the next chapter, the findings suggest that an important intervention to promote timely mammograms will be to reduce women’s fear of breast cancer.
CHAPTER V

Discussion

On average, women have a 1 in 8 chance of being diagnosed with breast cancer (ACS. 2014; NCI, 2014). Therefore, mammography screening is strongly encouraged by the American Cancer Society and the National Cancer Institute (ACS, 2014; NCI, 2014). Unfortunately, women in rural areas often face additional barriers to breast cancer screening. Those barriers may cause women to delay or forego mammography screening. In light of the challenges faced by rural women, this study sought to identify which screening barriers and incentives are most important to African American and Caucasian women in the Mississippi Delta. African American women in the Mississippi Delta have higher breast cancer mortality rates when compared to Caucasian women; therefore, it is important to determine and verify the barriers and incentives to mammography screening among this population.

Further, limited research has focused on the barriers and incentives to mammography screening among African American and Caucasian women in the Mississippi Delta, and thus the current knowledge base is meager. Studies have demonstrated the utility of the Health Belief Model to conceptualize influences on health behaviors such as breast cancer screening (Baum, Newman, Weinman, West, & McManus, 1997; Champion et al., 2002, 2008; Champion & Skinner, 2003). In this chapter, I summarize findings, address limitations, and discuss the meaning of my research findings. This section addresses the implications for each of the three research questions.
Research Question One

What are the most salient barriers and incentives to mammography screening among African American and Caucasian women in the Mississippi Delta?

To determine the most salient barriers and incentives to mammography screening, I assessed the relative importance of the salient health beliefs and influences identified in Victoria Champion’s Revised Susceptibility, Benefits and Barriers Scale for Mammography Screening (RSBBSMS), a widely used instrument for assessing women’s beliefs about breast cancer screening. In addition, I investigated the relative importance of other potential barriers and incentives to screening that could affect women in the Mississippi Delta.

The findings resulting from research question one indicate that the mean value of the barriers and incentives—Fear, Health Motivation, and Perceived Benefits—were higher than the mean value of other barriers and incentives such as Accessibility and Beliefs. Prior studies using similar sample sizes of African American women had similar findings. For example, Talbert (2008) used Champion’s Health Belief Model Scale to sample 120 African American women. The researcher found that fear and fatalism related to breast cancer screening compliance among a majority of the women and that culturally specific interventions are needed to accurately measure fear and fatalism. Benton’s (2011) dissertation research used the Fear and Mammography Adherence Model (FMAM) to measure fear and its influence on mammography adherence among African American women. The researcher sampled African American women in five churches and found that fear, breast cancer fear, and mammography fear all influence mammography screening adherence (Benton, 2011).

My study’s finding related to fear indicates that one of the dominant barriers to mammography screening may be psychological in nature. The finding also suggests that women
in the Mississippi Delta may feel depressed, anxious, scared, and uneasy when thinking about breast cancer. This finding raises concern because other research studies found fear to be a barrier to mammography screening among rural and urban African American women (Avis-Williams et al., 2009; Banning, 2011). Ultimately, misinformation about the causes of breast cancer, anxiety, and fear of the disease may influence a woman’s reluctance to adhere to the American Cancer Society’s recommended screening guidelines (Conedine, Magai, Krivoshekova, Ryzewicz, & Neugut, 2013; Marcus, Drummond, Dietz, & Kenya, 2013). Those guidelines encourage “high-risk” women to have a clinical breast exam and a mammogram beginning at 35. Delays in screening may increase the likelihood that women at risk for developing breast cancer may develop invasive or late-stage cancer (ACS, 2014). Ultimately, fear of breast cancer is an indicator that more education on breast cancer, its causes, and the importance of early detection and screening is needed for women in the Mississippi Delta.

**Research Question Two**

*Are barriers and incentives to breast cancer screening associated with race?*

To address research question two, I assessed the associations between race and influences on breast cancer screening, such as health beliefs and other barriers and incentives. The findings for research question two revealed a significant association between race and two barriers and incentives: fear of breast cancer and health motivation. On average, African American women had higher levels of fear of breast cancer than did White women. My study’s finding on fear is supported by several extensive literature reviews. For example, However, Jones and colleagues conducted a recent literature review on breast cancer screening barriers among African American women (Jones, Maben, Jack, Davies, Forbes, Lucy, & Ream, 2014). The review consisted of 17 studies conducted in the United States and one United Kingdom study. It utilized 18 research
papers: 11 quantitative studies, six qualitative studies, and one mixed methods study. The total number of participants was 6,183 and the studies were within the past 10 years. The review revealed that African American women report having fear of cancer and related surgery. These specific aspects of fear may also serve as barriers to mammography screening for African American women in the Mississippi Delta. In my study, the association between race and fear was maintained in a multiple regression model controlling for income levels, educational levels, and age.

As previously highlighted, fear and anxiety related to breast cancer can lead to screening delays (Marcus, et al., 2013). While fear and anxiety can influence delays in breast cancer screening, a recent study found that independence, motivation, health outlook, and spiritualistic beliefs made older African American women between the ages of 60-80 more likely to adhere to breast cancer screening recommendations (George, 2012).

A recent study by Zollinger and colleagues (2010) found interesting information related to the effects of personal characteristics on African American women’s beliefs about breast cancer. From the sample of 334 African American women, older women felt they were less susceptible to cancer. It is plausible that a woman who perceives herself to be less susceptible to breast cancer may have less fear of cancer. To the contrary, women in the study were more fatalistic about breast cancer. When comparing the findings from Zollinger’s inquiry to my study, it is interesting to note that while fear and fatalism are two separate concepts, numerous research studies cite fear of dying and fatalistic attitudes about cancer as a barrier to breast cancer screening among African American women (Phillips, 1999; Banning, 2011; Jones, 2014; Scheuler, 2008).
Fear may have been a barrier in my study, but the study had a positive finding related to health motivation. African American women had greater health motivation levels than the Caucasian respondents. Strong health motivation levels are good in general, especially for women who are at high-risk for dying from breast cancer. In my study, health motivation related to the decisions made around nutritious eating, health seeking information, health related activities, and physical exercise. Similar findings on health motivation were discussed in a recent research study on cancer screening. A study by Cullati and associates (2009) examined men and women who have had at least one cancer screening (breast, prostate, cervical, skin, colon) within the past three years. Their research found that within the past year, women had more cancer screenings than men, but also among women, cancer screening was likelier when a woman had been to a doctor’s appointment within the past six months and reported a greater number of preventive health behaviors such as trying to eat a balanced diet, exercising at least 30 minutes three or more times a week, avoiding direct sunlight, wearing a seatbelt, visiting a dentist, and not smoking (Cullati, Charvet-Berard, & Perneger, 2009). From my study it is clear that African American participants were more likely than White participants to eat nutritious meals, exercise regularly, engage in health related activities, and seek out health related information.

**Research Question Three**

*Are barriers and incentives to breast cancer screening associated with breast screening behavior?*

The findings for research question three revealed a significant relationship between two variables and breast cancer screening behavior: fear of breast cancer and health motivation. Two other influences—perceived benefits and bad experiences—were associated only at a bivariate
Once again, fear of breast cancer was an important variable. Women with higher levels of fear were less likely to be current with their mammograms. This finding from my study is consistent with a recent research study, which found that that screening delays are associated with fear. For example, a qualitative study by Mulvihill (2012) on perceptions of breast cancer among 250 African American women living in rural eastern North Carolina found that fear of breast cancer was associated with delays in breast cancer screening. Participants indicated they feared “disfiguring surgery,” “climbing on the table,” and feared the “thought” of having cancer. Mulvihill’s finding on women fearing the “thought” of having breast cancer is consistent with my own research finding on fear. Women from my study also feared the “thought” of having breast cancer. It is plausible some women from the Mississippi Delta have pre-existing perceptions about what having cancer means, and based on that perception would rather delay or forego important health screening.

My study also found that women with increased health motivation were more likely to be current for a mammogram even when controlling for factors such as educational levels, age, race, and income levels. As previously noted, preventative health behaviors related to health motivation such as eating nutritious meals and exercising several times a week have been associated with adherence to recommended cancer screenings (Cullati et al., 2009). This finding is also consistent with a recent dissertation study by Sargent (2011). The researcher sought to investigate breast cancer screening behavior of African American and other diverse women. The study aimed to determine the most significant predictors of engagement in breast cancer screening. A convenience sample ($N = 106$) of African American, White, Hispanic, Asian, and Bi-racial women between the ages of 18 to 65 years was used. The findings indicated that a majority of the women who were in the “action stage” of engagement (i.e. action and
maintenance) with healthy behaviors (i.e. portion control, exercise, nutrition) were more likely to engage in breast self-exam and screening. It was also revealed that older women with high self-efficacy were most likely to engage in breast cancer screening. These conclusions support my study’s finding that health motivation is associated with breast health screening.

Health motivation was important in this study, but another interesting finding related to the perceived benefits of a mammogram emerged from my study. In bivariate associations, participants who perceived greater benefits to mammography were more likely to be current for a mammogram in this study. In my study, perceived benefits related to feeling positive about having a mammogram, being praised by nurses and doctors for having a mammogram and understanding that mammograms help detect breast abnormalities, etc. Several studies by Champion and colleagues are consistent with my finding. Essentially, women who identify greater perceived benefits to mammography screening are likelier to be current for their annual mammogram (Champion et al., 2003; Farmer et al., 2007; Menon et al., 2007). In my study, however, the association between perceived benefits and screening behavior was not maintained in multivariate analysis.

As previously indicated, in my study race was not associated with screening behavior. My study found that African American and Caucasian women are just as likely to undergo mammography screening. This finding is consistent with national findings (ACS, 2014; NCI, 2012; SGKAA, 2014). In previous years, African American had mammograms at lower rates than Caucasian women. From 1987 to 2000, screening trends rose for African American and Caucasian women due to interventions designed to increase screening. By 2003, 70% of African American and Caucasian women in the United States had had a mammogram within the past two years. Mammogram screening trends leveled in 2010, with screening rates being 66% for
African American women and 68% for Caucasian women. Because the recent screening trends by race were not statistically significant, it can be concluded that African American and Caucasian women in the United States undergo mammogram screening at the same rates (NCI, 2012).

In a 2011 study, Smith and colleagues examined patterns of screening mammogram use among 1,242 women age 41 and over in central Texas. The study found that women from racial/ethnic minority groups did not receive breast cancer screening at lower rates than Caucasian women. This finding is consistent with my study’s finding that race is not an additional barrier to breast cancer screening in the Mississippi Delta. In fact, Smith and colleagues found that African American women in the study had higher screening rates than did Caucasian participants, which was consistent with previous research studies (Smith et al., 2011; Lukwago, Kreuter, Holt, Steger-May, Bucholtz, & Skinner, 2003; Jeff & Schootman, 2008).

Smith’s study also revealed that women who had a lapse in insurance within the past three years, those who had not had a doctor’s visit within the past 12 months, and those who lived in a health-provider shortage area were less likely to have had a mammogram within the past two years. This finding relates to prior research findings on cost as a barrier to mammography screening (Banning, 2011). Another important finding in Smith’s study related to health behavior. Women with better health status or those in “good health” were likelier to undergo mammography screening. This finding relates to my study’s previously discussed finding that higher levels of health motivation are associated with mammography screening behavior.

Similarly, Virk-Baker and colleagues (2013) conducted a six year-study of mammography utilization among Black and White women aged 65-74. Medicare claims for
women aged 65-74 in 203 United States counties with the highest breast cancer mortality were used to identify the sample. The study found that screening was low in general among this population; however, African American women had the same or better odds of screening than Caucasian women (Virk-Baker, Martin, Levine, Wang, Nagy, & Pisu, 2013). It was found that African American women who utilized other preventative screening services and even those who did not, were likelier to have mammography screening when compared to Caucasian women. This was attributed to the success of programs designed to improve screening in rural areas. This conclusion supports my research finding that African American and Caucasian women undergo mammography screening at nearly the same rate.

While the aforementioned findings are consistent with the findings in my dissertation study as well as national trends that indicate no race-related differences in screening between Black and White women, other studies revealed contrasting information related to race and mammography screening. Williams and Thompson (2010) examined factors associated with delays from diagnosis and treatment of breast cancer in a group of White and African American women in Louisiana. In a sample of 247 participants, African American women experienced more diagnostic related delays (34%) when compared to White women (17%) (Williams & Thompson, 2010). The diagnostic procedures included mammography screening. The factors influencing delays were related to age and tumor size. Women who experienced diagnostic delays were likelier to be older and likelier to have larger tumors.

Another study by van Ravesteyn and colleagues (2011) on the race-specific impact of natural history, mammography screening, and adjuvant treatment on breast cancer mortality rates in the United States found reduced mammography screening and adjuvant treatment in Black women when compared to White women. The study attributed this to a high proportion of
un(der)insured Black women (van Ravesteyn, Schechter, Near, Heijnsdijk, Stoto, Draisma, & Mandelblatt, 2011). Despite this finding, African American women and Caucasian women screened at the same rates.

Further, Young and colleagues (2011) surveyed a random sample of 178 African American females aged 40 years from a high-cancer-risk area in Detroit, Michigan, to associate mammography screening with clinical, structural, and personal barriers. Clinical barriers such as patient education and communication were associated with lack of screening in the previous two years. Personal barriers (lack of trust and knowledge) and structural barriers (lack of insurance, facilities, and providers) also reduced screening. The study found that African American women in the high-risk, low-income area of Detroit had lower mammography screening rates than White women (Young, 2011). This finding supports prior research findings on bad mammogram experiences (i.e. trust) being associated with being overdue for a mammogram, and cost (i.e. insurance coverage) being associated with race. On the other hand, the study is not consistent with my finding that race is not associated with being current or overdue for a mammogram. It also contradicts present trends which indicate little to no racial differences in screening between African American and Caucasian women (ACS, 2014; NCI, 2011). Finally, I found an unexpected relationship between income and health motivation in my study. While I am unsure why women with lower incomes have higher health motivation, this finding might be important to explore in future research studies.

Limitations

The study has limitations that should be considered when interpreting the results. First, the scope of the study was limited. I chose to investigate a population of African American and Caucasian women over the age of 40 who live in the Mississippi Delta. Second, due to the use
of convenience sampling, the participants may not be representative of the larger population of women in the Mississippi Delta. This likelihood is greater because the sample recruiting focused on one county. However the church women, university women, and those employed at the Capitol are representative of individuals from the Mississippi Delta who are at risk of developing the more advanced and deadly stages of the cancer. Another factor limiting generalizability is the study’s small number of White participants. Although a racially-ethnically balanced sample was anticipated, the majority of the sample were African American women. Thus, the conclusions drawn from this study may not be generalizable within the Mississippi Delta, nor outside the Mississippi Delta. A third limitation relates simply to the small number of participants. The small sample size raises the possibility of a Type II error. That is, it is possible true relationships are not identifiable with the small sample. Fourth, because the study design is cross-sectional, I was only able to determine associations in my study. I could not assess the causal direction of various influences. For example, it could be that women who are current in mammograms become less fearful of breast cancer; not that women who are fearful become delinquent in mammograms.

The self-report measures constitute another limitation. It is possible the measures reflect social desirability. Social desirability is important to note because research studies have found that among African American women cancer is regarded as a taboo topic that is discussed in secrecy (Peek et al., 2008; Chatman & Green, 2011). African American women have been found to report a sense of stigma when discussing breast cancer. It is likely that study participants know they are supposed to get mammograms, so perhaps some women reported being current on their mammograms when they were not.
Implications

Each year, millions of lives are lost to breast cancer. Each year thousands of poor, rural African American and Caucasian women forgo mammograms because of accessibility issues, fear, stigma about breast cancer, the necessity to take care of others, and lack of insurance or other care (Banning, 2011; Fowler, 2014; Scheuler, 2008). In fact, some women African American women were found to turn to their faith in God to address their breast health, rather than visit the doctor (Gullatte, Brawley, Kinney, Powe, & Mooney, 2010). This was found to have the reactive effect of delaying response to abnormal breast health symptoms for up to three months. To this end, efforts to address barriers and incentives to breast cancer screening are needed, especially in the Mississippi Delta region.

It is important to address barriers and incentives to screening because advance stage breast cancer influences high breast cancer mortality among African American women in the Mississippi Delta. In fact, my study found one important barrier—fear— and one important incentive—health motivation—associated with breast cancer screening among the sample population. In addition, I found that African American women were more fearful of breast cancer when compared to Caucasian women, but not less likely to screen. I also found that women who feared breast cancer were likelier to be overdue for a mammogram. There are several ways for African American women and those who are overdue for a mammogram to counteract fear.

By better understanding what the symptoms of breast cancer are (i.e. abnormal breast changes, pain, discharge, etc.); having a realistic understanding of their risk for breast cancer by talking to their doctor (i.e. family history of disease, BRCA1 & 2 testing); and limiting their risk of developing breast cancer (i.e. limiting alcohol use, maintaining a healthy weight, reducing
exposure to hazardous toxins and chemicals, and reducing exposure to light at night), high risk African American women and those who are overdue for a mammogram can better address their fears associated with breast cancer. This might positively affect future mammogram screening behavior and lead to more women being current.

There were no significant racial differences in screening behavior, but two potential influences on mammography behavior had important meaning. For instance, African American women had higher levels of health motivation when compared to Caucasian women. The finding does indicate that African American women are engaged in healthy behaviors such as eating nutritious meals, exercising regularly, actively seeking out health information, etc. Health motivation is a positive influence on mammography screening behavior among women in the Mississippi Delta and should increase. Persons interested in studying screening among this population will find evidence to support an association between race and fear and health motivation. They will also find evidence to support the associations among screening behavior and fear of breast cancer, health motivation, and perceived benefits of mammography. Along those same lines, the bad mammogram experiences of women in the Mississippi Delta are important to examine in future research studies. While an association with mammography screening was found only in bivariate analyses, further investigation is warranted of this little-studied potential influence. While bad mammogram experiences may not always be avoidable, women can address this barrier by openly communicating with their doctor about their feelings and previous mammogram experiences, having a list of questions to ask the doctor, and so. They can also address this barrier by identifying a doctor who they feel is most caring, competent, empathetic, interested in their health and their breast health concerns, and by having mammograms conducted at a high-quality facility.
Because the study highlights breast cancer screening barriers and incentives in a specific location that is not only medically underserved and impoverished, but under-researched, researchers may find the information presented in this study to be useful for future research. Because no empirically-based social work studies have addressed the barriers and incentives to breast cancer screening among this Mississippi Delta population, this study could help establish a framework for research in this important area.

**Implications for Social Work Practice**

The charge to improve health conditions for all; to reduce and eliminate health disparities; and to champion health promotion through theory and practice is at the very core of social work’s professional foundation and directly aligned with the National Association of Social Workers Code of Ethics of 2010. For social work practitioners, this study offers insight into the psychosocial concerns of this population as they relate to fear of breast cancer, health motivation, and perceived benefits of mammography. From the findings in this study, practitioners may have clearer understanding of the barriers, incentives and influences among women in the Mississippi Delta that are more prominent by race (i.e. fear and health motivation), and which barriers, incentives and influences are associated with actual mammography screening behavior (again, fear and health motivation).

The psychological barrier of fear of breast cancer impacts African American women and is associated with being overdue for a mammogram. It is imperative that this barrier is addressed through pre-established cancer education and screening awareness program offered through the Mississippi Breast and Cervical Cancer Early Detection Program (MBCCEDP). Breast cancer screening initiatives such as the “Train the Trainer” model might be incorporated into strategic education and community awareness programs. By addressing the psychological barriers among
women in the Mississippi Delta, social workers, practitioners, and public health workers will help women fully understand the risks and benefits associated with early detection. Such efforts may help dispel myths about breast cancer and reduce the stigma associated with having breast cancer. Efforts in this area may lead to a reduction in anxiety and fear associated with breast cancer screening.

Because both health motivation and perceived benefits were positive findings in my study among African American women and women who were current for a mammogram, social workers in practice settings might partner with local organizations such as faith-based institutions, universities, federally qualified health centers, local health departments, clinics, and other places where women receive health education. Through partnerships with these entities, social work practitioners could discuss associations between mammography screening and health motivation behaviors such as proper nutrition, regular exercise, and seeking out health information and activities. Utilizing social workers to engage in health promotion in practice settings would help African American women and women who are already current for a mammogram understand the benefits associated with mammography screening. Focusing on health motivation and the perceived benefits of mammography could help African American women better understand the importance of mammograms as a means to reduce high mortality rates, which disproportionately impact their community. It may also help women from other racial backgrounds and those who are overdue for mammography screening recognize the importance of continued screening as a way to detect breast health abnormalities.

Practitioners could also help women from the Mississippi Delta empower themselves when they interact with doctors and mammogram technicians (e.g. by vocalizing concerns, asking questions, seeking out health information, etc.)
Practitioners would also be helpful in identifying referrals for women who disclosed trust issues with their doctors or who felt the technician is not competent when providing screening services.

**Implications for Social Work Research**

This study will also be useful for social work researchers interested in addressing cancer health disparities. Health disparities research among underserved communities is important to the field of social work. Continued research on African American and Caucasian women in the Mississippi Delta helps researchers establish an empirically-based framework on this underserved population. Previous studies found that African American women continue to underestimate their risk of developing breast cancer; are fearful and distrustful of public health professionals; and face multiple barriers to obtaining mammograms such as a lack of transportation and lack awareness of breast cancer risk factors. My study found that fear of breast cancer was higher among African American women. Although social workers are needed to address barriers to breast cancer screening among women of all backgrounds, the issue of advanced-stage breast cancer among African American women is very pronounced.

Several studies have found African American women to lack access to quality health care services offered through primary and secondary care clinics; lack insurance; and in some cases, lack social support from family members, friends, and other social systems that would be instrumental in their initiating mammography screening. These findings are relevant to the broader framework of understanding breast cancer barriers and incentives among African American women in general. The findings also substantiate my findings on fear. Nonetheless, the Mississippi Delta, despite its high concentration of vulnerable people at risk, has had only limited empirical studies that examined, in detail, the full range of concerns related to screening and access to care that are faced by African American women in this region. In fact, Dr. Harold
P. Freeman, past president of the American Cancer Society, argues that the most effective way to close the race mortality gap is to eliminate barriers to early detection (i.e. mammograms) and to increase access to quality treatment among African American women (Freeman, 2013). As such, more empirically-based social work studies that address barriers and incentives to mammography screening among high-risk groups are needed.

Future research might include a more diversified sample from which wider generalizability could be confidently projected. For instance, future researchers might utilize participants from other counties in the Mississippi Delta and other minority groups to determine if the findings of the present study will hold constant. Future researchers might identify younger women from the region who may be at an increased for developing breast cancer and provide education to them about the importance of screening.

The Role of Community Churches in Future Social Work Research. Because of its significance to the community, churches in the Mississippi Delta might benefit from the findings in this study. African American pastors and respondents were receptive and eager to participate in the research study. This implication relates to previous studies which report the effectiveness of addressing screening through partnership with faith-based institutions. The church is a place where information is disseminated. Fear of breast cancer and its association with both race and a woman’s being overdue for a mammogram is an important finding that could be addressed through faith-based awareness and education programs. Churches in the Mississippi Delta might also address concerns related to cost by partnering with local organizations such as the Fannie Lou Hamer Cancer Foundation which offers funds for women to have mammograms. Churches in the Delta may also apply the findings related to health motivation and perceived benefits of mammography screening to their local health ministries. Through health ministries, churches
would be able to have local doctors and health professionals educate women in the Mississippi Delta of the importance of healthy behaviors and the benefits of continued mammography screening as a means to reduce cancer mortality rates among African American women locally.

**Implications of Racial Segregation in Future Social Work Research.** Important to note is the limited number of Caucasian respondents in my study. The gap in participation between African American and Caucasian respondents indicates the need for more ongoing community engagement in cancer awareness initiatives that would incite equal participation from participants of diverse backgrounds. As such, discovering ways to recruit participants of diverse backgrounds to engage in research studies is needed. Future researchers might utilize research assistants from diverse backgrounds to help establish rapport in racially separated, hard-to-reach communities like the Mississippi Delta.

As it relates to racial separation and breast cancer screening, African American and poor women in the Mississippi Delta do not have the same access to quality health care services as others in the United States. Findings from previous studies argue to prevent such barriers. For example, Wilson et al., (2000) found that African American women diagnosed with late-stage cancer were more likely to report poor treatment by the medical system. This relates to prior research findings on bad mammogram experiences as a barrier to being current for a mammogram. Instead of responding to an unusual breast health symptom in a timely manner, some African American women wait for up to three months tell their doctors of a lump or symptom.

Regardless of their reasons to forgo breast cancer screening, research in this area is very clear: breast cancer among African American women is often diagnosed late, when the cancer has advanced to the near-fatal stage. Research indicates that rural women, regardless of their
stage at breast cancer diagnosis, need more education about breast cancer and more support after
diagnosis (Wilson et al., 2000). The findings of the present study illustrate the need for social
work research and interventions to address mammography screening barriers and the persistent
threat of cancer health disparities which continue to reduce the quality of life for women in the
Mississippi Delta.

**Social Work as Applied Solutions.** The social work profession is concerned with
applied solutions to issues that impact vulnerable groups such as the women in my study, as well
as the elderly and all racial and ethnic minorities. Fresh remedies and ways to counter barriers
should be explored, such as Healthy People 2020, a national health promotion initiative designed
to eliminate health disparities, address social determinants of health, improve access to quality
health care, strengthen public health services, and improve the availability and dissemination of
health information. For example, local programs countering barriers such as fear, cost, and bad
mammogram experiences would be helpful in meeting the Healthy People 2020 objective of
reducing overall breast cancer mortality among women in the United States from 23 to 20 per
100,000 by 2020. If the Healthy People 2020 goal is met, it would yield a 10% improvement in
breast cancer mortality across the United States.

Breast cancer is a truly personal disease that affects individuals, families, and
communities in many different ways. Therefore, it is important that empirically-based social
work research contributes to the knowledge base in this area. I propose that an in-depth and
personal study that addresses barriers and incentives to breast cancer screening among African
American and Caucasian women in the Mississippi Delta would further knowledge on the issue,
and hopefully inform breast cancer prevention as well as social work policy, practice, and
research.
ACA and Implications for Social Work Policy

The issue of breast cancer is personal and the issue is political. Women who fear breast cancer deserve to know that their voices are heard, and that their lives are of value. To that end, it can be determined that social support systems, both emotional and systematic, would be beneficial to the women in the Mississippi Delta to help them address barriers related to fear of breast cancer. Members of social support systems may include family, church members, coworkers, and community members to whom women feel comfortable expressing their fear of cancer. Systemic support systems may include empathetic social workers, doctors, and patient navigators who are able to help women from the Delta address their concerns about cancer and screening. Preexisting policies such as the Patient Navigator Act are important federal initiatives that address health disparities and barriers to cancer screening. For example, the Affordable Care Act would benefit women in the Mississippi Delta in several ways, if it were enacted here. A part of the Act specifically addresses health disparities to help uninsured and medically underserved populations surmount barriers related to cost, quality of care, and access to care. In other parts of the nation, ACA has proved popular as it engages in prevention initiatives, supports community health centers which members of underserved communities rely upon, and offers culturally competent training for health care workers who work with racial/ethnic minorities and other underserved populations.

To add, patient navigation is included in the ACA. “Navigation” focuses on overcoming individual patient-level barriers to accessing care, aims to reduce delays in accessing care, is provided to individuals for a defined episode of cancer-related care, targets a defined set of health services relevant to that episode (i.e. following up on an abnormal screening test), and has a defined endpoint when providing services. The patient navigator component of the ACA
focuses on racial/ethnic minorities and medically underserved populations, the promotion of a patient-centric health care service delivery model, the integration of a fragmented health care system for the benefit of patients, and the elimination of barriers to timely and appropriate care. This component of the ACA helps leaders and advocates at the local, state, and federal level address concerns related to racial differences in fear, cost, and to screening barriers associated with bad mammogram experiences. Thus, by addressing health disparities and by addressing cancer concerns through the patient navigator component, the ACA would help women in the Mississippi overcome barriers to mammography screening, if it were adopted.

Unfortunately, Mississippi is among those states that have opted against expanding Medicaid and thus the ACA. As a result, many poor women who are not yet eligible for Medicare at age 65 are disentitled for subsidies and effectively shut out of health insurance, and consequently health care. Such disparities in access to health insurance creates an addition barrier to breast health among many women in the Mississippi Delta. It would be helpful if Governor Phil Bryant and other Mississippi legislators reconsidered the unfortunate ramifications of their decision to not expand Medicaid. The decision to not expand Medicaid to the state of Mississippi means less women are eligible for Medicaid, ineligible for mammography screening, and more deaths from breast cancer will result.

A recent study by Harvard Medical School and City School of New York estimated the personal impact of not expanding Medicaid on the lives of people living in one of the 25 states that have opted to not expand Medicaid under the Affordable Care Act. The health implications are startling. Among those living in those 25 states, 7.78 million people who would have gained coverage will remain uninsured; 712,037 more persons will be diagnosed with depression; 240,700 more persons will suffer catastrophic medical expenses; 422,533 fewer diabetics will
receive medication; 195,492 fewer women will receive mammograms and 443,677 fewer women will receiving pap smears. It may also lead to a 25-state death toll of 17,100 people annually (Dickman, Himmelstein, McCormick, & Woolhandler, 2014).

**The Responsibility Rests with Us.** Ultimately, it is important for social work practitioners, researchers, and policymakers to address the cancer-related issues impacting high-risk, ethnic minority populations. The most effective way for these policies to benefit women in the Mississippi Delta is if community members, social workers, legislators, researchers, public health professionals, and other advocates worked together to ensure that the available funds and resources to address the preexisting racial health disparities and barriers to screening were applied to the region.

Because cultural competence, social justice, acknowledging the dignity and inherent worth of the person, and other important values are at the very core of social work’s professional foundation, it is imperative that our practitioners and researchers work collaboratively with researchers from other disciplines to ensure that the specific barriers of fear, cost, and bad mammogram experiences do not continue to reduce the quality of life for women in the Mississippi Delta. The charge is for these groups to recognize the urgent need to address cancer health disparities in the Mississippi Delta. Moreover, the charge is for these groups to understand the direct connection between barriers to screening like fear, cost, and bad mammogram experiences and high breast cancer mortality rates in the Mississippi Delta. Finally, the charge is for these uniquely qualified groups to respond to the needs of African American women in the Mississippi Delta through informed practice, advocacy, and policy creation. Moreover these groups can respond by offering plausible, empirically-based research
explanations and solutions to better understand, address, and fight cancer inequity in the impoverished, medically underserved region of the Mississippi Delta.
References


riers_in_Underserved_Populations.ppt


Appendix A: Letter to Pastors

Post Office Box 121
Greenwood, MS 38935

Friendship M.B. Church
601 Avenue E.
Greenwood, MS 38930

April 1, 2013

Dear Pastor Doe,

I hope this letter finds you well. I am a social work doctoral student at the University of Alabama interested in understanding how perceived barriers affect mammography screening among African-American and Caucasian women in the Mississippi Delta. A community-based approach involving partnership with the faith-based community is frequently cited as a means to reach ethnic minority individuals and groups. Because of your church’s commitment to health promotion and disease prevention, I would like to invite female members from Friendship M.B. Church to participate in research that would help to identify perceived barriers to mammography screening.

To this end, I am asking you to participate in two ways: 1) by sharing the attached flyer with members of your congregation, and encouraging women from your congregation who are over age 45 to participate in this study and 2) allowing me to administer brief surveys to female members of your congregation during the months of May, June, and July 2013. If you agree, I would administer the survey after Sunday services that are most convenient for your congregation members, at your church, in the fellowship hall or church sanctuary.

Participation in the research study is completely voluntary. No compensation will be given to women for their participation; however, all women who participate will receive a small token gift of appreciation. Your church will also receive a certification of appreciation for being a part of the study. Individual responses are confidential, but the results of the study will be publicized upon completion of the research.

Thank you for your consideration of this request. I look forward to communicating with your or your staff about my request. If you have any questions please contact me by phone at: (662) 299-4598 or by email at: skcollins@crimson.ua.edu.
Sincerely,

Shani K. Collins, M.A. MSW
Doctoral Candidate
School of Social Work
The University of Alabama
Appendix B: Recruitment Flyer

Women from the Mississippi Delta Invited to Participate in a Research Study

You are invited to participate in an important research study that examines how perceived barriers affect mammography screening among women in the Mississippi Delta. This is an opportunity to share your experience. Participation is voluntary.

Who can participate?

Any woman from the Mississippi Delta who is over the age of 45.

How you can participate:

I invite you to complete a 20-30 minute survey that will be administered at your local church. Participants will remain strictly confidential in all documentation and data collected. All participants will receive a token of appreciation for their participation. For more information, contact Shani K. Collins by phone at: (662) 299-4598 or by email at: skcollins@crimson.ua.edu; shanikcollins@aol.com
Appendix C: Telephone Script For Pastors

Dear Pastor Doe,

My name is Shani Collins. I am a social work doctoral student at the University of Alabama. My research examines barriers to mammography screening among Black and White women in the Mississippi Delta. I am interested in learning what women from the Delta identify as reasons why they delay having a mammogram or do not get one at all, despite the recommended screening guidelines.

With your permission, I would like to visit your church service to survey women from your congregation. The process would entail my visiting your church, and introducing myself and my research project to your congregation or to your Women’s Ministry. Then, I would ask those women who are interested to remain after service to complete a voluntary survey which should take 20-30 minutes. All participants will receive a breast cancer pen and ribbon for their participation. Your church would also receive a certificate of appreciation for its participation.

If you would like to see the survey, I have a copy available with me. If you are interested in participating, I would like to arrange a day to visit your congregation to collect the data, please. If you have further questions, please feel free to contact me by phone at: (662) 299-4598 or by email at: shanikcollins@aol.com. Thank you very much.
Appendix D: Script for Churches

Dear Pastor Doe and The Friendship Church Family,

Good morning. My name is Shani Collins. I am a social work doctoral student at the University of Alabama. For several years, I have been interested in studying breast cancer. I am now at the point in my doctoral program where I am required to conduct my dissertation research. I am interested in learning why black and white women from the Mississippi Delta may delay or forgo having a mammogram despite the recommended screening guidelines. Limited social work studies have been conducted in the Mississippi Delta on this topic.

I am actively recruiting female participants from local area churches to participate in my study. To participate, I kindly ask that female participants over the age of 45 remain after service to complete the short survey which should take 20-30 minutes to complete. We will meet in the church’s fellowship hall or remain in the church sanctuary. Of course, participation is voluntary. All participants will receive a small token of appreciate for their participation. Also, your church would also receive a certificate of appreciation for its participation. The findings of my research will be publicized and made available to Pastor Doe and your congregation.

Thank you very much for allowing me to speak to you today. I will be here for the duration of today’s service, and will remain in the sanctuary or fellowship hall after service to administer the surveys.
Appendix E: Script for Cognitive Difficulties

Are you having trouble with the questions? That’s OK. It looks as if the contributions you have already made will be helpful. Thank you so much for sharing your experience.
Appendix F: Bulletin Insert

You are invited to participate in an important research study that examines how perceived barriers affect mammography screening among women in the Mississippi Delta. This is an opportunity to share your experience.

Women from the Mississippi Delta Invited to Participate in a Research Study

Who can participate?

Any woman from the Mississippi Delta who is over the age of 45.

How you can participate:

I invite you to complete a 20-30 minute survey that will be administered at your local church. Participation is voluntary. Participants will remain strictly anonymous in all documentation and data collected. All participants will receive a token of appreciation for their participation. For more information, contact Shani K. Collins by phone at: (662) 299-4598 or by email at: skcollins@crimson.ua.edu; shanikcollins@aol.com.
Appendix G: Researcher’s Verbal Recruitment Script to Congregants

Good Morning. I am Shani K. Collins, a native of Greenwood, MS, a member of Friendship M.B. Church, and a social work doctoral student at the University of Alabama. As a native Mississippian, I have always been interested in the health and health care concerns of the residents of the Mississippi Delta. I am particularly interested in breast cancer research, and have decided to focus my dissertation research on the Mississippi Delta. I am interested in learning about barriers to mammography screening, or in knowing what factors may prevent a woman from having a mammogram.

I have received approval from the University of Alabama’s Institutional Review Board to conduct my study. To this end, I invite all female members of your congregation who are over the age of 45 to participate in my research study. To participate, you will be asked to complete a survey following today’s service. The survey should take 20-30 minutes to complete.
Participation is completely voluntary.

If you are interested in completing the survey, we will meet in the church fellowship hall or sanctuary immediately following worship service. If you choose to participate, I will explain the research study to you, read the informed consent to you, address any questions you may have about the study, ask you to sign the informed consent sheet, and then ask you to complete the survey. You will receive a token of appreciation for your participation. Thank you very much.
Appendix H: Breast Cancer Screening Measure

Please choose the best response for each question.

<table>
<thead>
<tr>
<th>Health Motivation</th>
<th>Strongly Agree (5)</th>
<th>Agree (4)</th>
<th>Neutral (3)</th>
<th>Disagree (2)</th>
<th>Strongly Disagree (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I eat nutritious meals.</td>
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<td>I exercise at least three times a week.</td>
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<td>I am involved in activities that will improve my health.</td>
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<td>I actively seek out information that will improve my health.</td>
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</tbody>
</table>

Section I: Barriers to Mammography Screening

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>Mammograms cost too much.</td>
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<tr>
<td>Mammograms require insurance that I don’t have.</td>
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<tr>
<td>Mammograms are embarrassing.</td>
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<tr>
<td>Mammograms will cause cancer.</td>
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<tr>
<td>Mammograms are painful.</td>
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<tr>
<td>Mammograms take too much time.</td>
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<td>Mammograms are dangerous due to radiation.</td>
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<td>Mammogram clinics and hospitals are too big.</td>
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<tr>
<td>Mammograms are an important preventive health procedure.</td>
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</tbody>
</table>

Barriers to Mammography Screening (continued)

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>
Mammograms will make me worry about breast cancer if I find a lump.

Mammograms may interfere with God's will for my life.

My physician did not recommend a mammogram.

I don't know where to go to have a mammogram.

I don't understand the purpose for mammograms.

Mammograms make me worry about breast cancer.

Breast cancer won't affect me.

Only women with certain risk factors get breast cancer.

If I get breast cancer, I will know it.

<table>
<thead>
<tr>
<th>Mammogram Accessibility</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have to travel a long distance to have a mammogram.</td>
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<td>The mammogram clinic or hospital is hard to find.</td>
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<td>It's hard to find a ride to get a mammogram.</td>
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<tr>
<td>The mammogram health clinic does not provide quality service.</td>
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<table>
<thead>
<tr>
<th>Mammogram Accessibility (continued)</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>Parking at mammogram clinics and hospitals is inconvenient.</td>
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<tr>
<td>It's convenient for me to get a mammogram.</td>
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<tr>
<td>Attitudes/Beliefs about Mammograms</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
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<tr>
<td>I don’t want others to know that I have to have a mammogram.</td>
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<tr>
<td>I am embarrassed to discuss breast health.</td>
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<tr>
<td>I am too busy to get a mammogram.</td>
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<tr>
<td>I have too many care-giving responsibilities to fit in a mammogram.</td>
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<tr>
<td>I have concerns that are more important than getting a mammogram.</td>
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<tr>
<td>I forget to have mammograms.</td>
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</table>

**Social Support**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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</thead>
<tbody>
<tr>
<td>My family members do not support me getting a mammogram.</td>
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</table>

**Mammogram Experiences**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>Mammogram nurses or technicians are unfriendly.</td>
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<tr>
<td>Mammogram nurses or technicians are judgmental.</td>
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**Mammogram Experiences (continued)**

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<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>I do not trust health care providers who conduct mammograms.</td>
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<td>I do not trust mammogram equipment to be safe.</td>
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<tr>
<td>The health care providers who give mammograms are very skilled.</td>
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<tr>
<td>The health care providers who give</td>
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</table>
mammograms are polite and kind.

<table>
<thead>
<tr>
<th>Section II: Susceptibility</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>It is extremely likely I will get breast cancer in the future.</td>
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<tr>
<td>I feel I will get breast cancer in the future.</td>
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<td>There is a good possibility I will get breast cancer in the next 10 years.</td>
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<td>My chances of getting breast cancer are great.</td>
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<tr>
<td>I am more likely than the average woman to get breast cancer.</td>
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<table>
<thead>
<tr>
<th>Section III: Perceived Benefits</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>When I get a recommended mammogram, I feel good about myself.</td>
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<tr>
<td>When I get a mammogram, I don't worry as much about cancer.</td>
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<tr>
<td>Perceived Benefits (continued)</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
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<tr>
<td>My doctor or nurse will praise me if I obtain the recommended mammogram.</td>
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<tr>
<td>Having a mammogram or x-ray of the breasts will help me find lumps early.</td>
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<tr>
<td>Having a mammogram or x-ray of the breasts will decrease my chances of dying from breast cancer.</td>
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<tr>
<td>Having a mammogram or x-ray of the breasts will decrease my chances of requiring radical or disfiguring surgery if breast cancer occurs.</td>
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<tr>
<td>Having a mammogram will help find a lump before it is found by a health professional.</td>
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<tr>
<td>Fear</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Strongly Disagree</td>
<td>Disagree</td>
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<tr>
<td>When I think about breast cancer, I get scared.</td>
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<tr>
<td>When I think about breast cancer, I get depressed.</td>
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<tr>
<td>When I think about breast cancer, I feel uneasy.</td>
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<tr>
<td>When I think about breast cancer, I feel anxious.</td>
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<tr>
<td>Please feel free to make additional comments regarding your mammogram experiences:</td>
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</table>
April 10, 2014

Shani Collins, MSW
School of Social Work
The University of Alabama
Box 870314


Dear Ms. Collins:

The University of Alabama Institutional Review Board has granted approval for your renewal application.

Your renewal application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on April 9, 2015. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpanito T. Myles, MSM, CIM, CIP
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama