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Weighing In on Heavy Issues: Exploring Race, Nativity, and Pre-Pregnancy Body Mass Index in Relationship to Preterm Birth and Low Birth Weight

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Abstract

Black women in the United States occupy a unique position of disadvantage in our social strata. This dissertation explores the health consequences associated with race, nativity, and pre-pregnancy body mass index among Black and White women giving birth in the Central New York region using data from the 2004 through 2010 New York Statewide Perinatal Data System. It examines the likelihood of the occurrence of a preterm birth or low birth weight birth. This study also examines racial disparities in birth outcomes between Black women and White women overall in addition to nativity disparities in birth outcomes among Black women. This research finds that underweight, rather than obese, women are particularly at risk for poor birth outcomes. In addition, the idea of an obesity paradox is supported, in which obese women were significantly less likely than normal weight pre-pregnancy BMI women to have a baby born too early or too small. This research also reveals that comparable morbidity profiles among Black women eliminate the foreign-born advantage with regard to nativity disparities in low birth weight. Finally, differences in prenatal care counseling received and a lower amount of physical activity during pregnancy appears to eliminate the advantage that African women experience regarding low birth weight in comparison to U.S.-born Black women. In general, this dissertation addresses the embodiment of racial inequality and its adverse effects on health outcomes among Black women.

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Chapter 1

Introduction

Black women in America have experienced a legacy of inequalities that can adversely affect their health statuses. Poor birth outcomes are a persistent problem contributing to the Black-White gap in health in the United States. Black-White gaps in birth outcomes are salient in studies of infant mortality (David and Collins 2007; Frisbie et al. 2004; Wise 2003; Gortmaker and Wise 1997), preterm birth (Rosenthal and Lobel 2011; Mason et al. 2011; Lu and Halfon 2003; Rauh et al. 2001), and low birth weight (Barrington 2010; Mason et al. 2010; Reichman and Teitler 2006; Collins et al. 2004). Black-White disparities in birth outcomes are complicated by maternal nativity status. The relationship between race and nativity among Blacks is such that foreign-born Blacks generally fare better than U.S.-born Blacks on many health indicators (Palloto et al. 2000; Fang et al. 1999; Kleinman et al. 1991; Cabral et al. 1990; Chavkin et al. 1987). Socioeconomic, psychosocial, and biological theoretical frameworks posit causal pathways that seek to explain Black-White and U.S.-born Black/foreign-born Black disparities in birth outcomes (LaVeist 2005; Dressler 1993). Each of these theoretical frameworks, independently, cannot sufficiently explain the foreign-born health advantage relative to U.S.-born Blacks. This dissertation posits that research examining the impact of maternal body mass index and obesity, more specifically, has the potential to further explicate the relationship between race, nativity, and birth outcomes as obesity represents a convergence of socioeconomic, psychosocial, and biological phenomena.

With this research, I propose a model that conceptualizes obesity as a physical embodiment of inequality. Using data from the New York State Perinatal Data System for the years 2004 to 2010, my dissertation seeks to explore the relationship between race, nativity,

maternal body mass index, and birth outcomes by asking: "What is the relationship between race and birth outcomes?"; "What is the impact of maternal pre-pregnancy body mass index on birth outcomes?"; and "What impact does maternal pre-pregnancy body mass index have on the relationships between race, nativity, and birth outcomes. In this research, I hypothesize that there is a significant relationship between race and birth outcomes among Black and White women giving birth in the Central New York region for the years 2004 to 2010. I expected a significant relationship between nativity and birth outcomes as well as region of birth and birth outcomes among Black women. I also hypothesize that pre-pregnancy body mass index is a significant mediating factor in racial, nativity, and region of birth disparities in birth outcomes and that race, nativity, and region of birth each moderate the relationship between pre-pregnancy body mass index and birth outcomes. Ultimately, this research fills a gap in the health disparities literature by exploring biological, psychosocial, and socioeconomic manifestations of inequality through the examination of race, nativity, region of birth, and pre-pregnancy body mass index.

Black women in America are among those who stand to be adversely affected by biological, psychosocial, and socioeconomic inequalities. These inequalities influence health disparities noted between Black women relative to other social groups. Further examination of birth outcomes underscores health inequalities that Black women and their infants experience in America relative to White women.

Black-White Disparities in Birth Outcomes: A Brief Overview

Poor birth outcomes are a persistent problem contributing to Black-White health disparities in the United States. In the context of birth outcomes, scholars often highlight infant mortality rates. The infant mortality rate (IMR) refers to the number of deaths per 1,000 births (Weitz 2004). Neonatal and postneonatal mortality are two components that comprise infant

mortality. Neonatal mortality refers to infant deaths occurring within the first 27 days after birth, while postneonatal mortality refers to infant deaths that occur between 28 days and up to eleven months after birth (Weitz 2004: 100). Wise and Pursley (1992) suggest the significance of infant mortality stems from its function as a "social mirror" that reflects back or provides an indication of the extent to which social inequalities are perpetuating the continuation of poor health consequences in disadvantaged communities. From 1950 to 1991, the U.S. saw a decline in the IMR of about 3 percent per year. Since 1994, the overall rate has hovered around 7. This rate is still higher than other nations such as Japan, which had an IMR of 3.4 in 2002 (Weitz 2004: 68). For the years 1960, 1988, 1998, and 2005, the U.S. ranked 12th, 23rd, 28th, and 30th with regard to infant mortality (CDC Fact Sheet 2008; NCHS Data Brief 2008; Singh and Yu 1995: 957). While the U.S.'s poor international rankings on infant mortality cannot fully be explained by racial disparities in infant mortality, racial disparities make a significant contribution to the United States' poor rankings. Despite the improvements that the U.S. has experienced in infant mortality rates over the past 50 to 60 years, racial disparities in infant mortality have persisted.

Blacks have consistently had a likelihood of infant death that is twice that of Whites (David and Collins 2007; Frisbie et al. 2004; Wise 2003; Gortmaker and Wise 1997). For example, Whites had an infant mortality rate of approximately 7 in 2000 compared to an infant mortality rate of approximately 14 for Blacks (LaVeist 2005). Efforts to improve infant mortality, particularly the Black-White disparity, must explore the complex causes underlying infant death. Both preterm birth and low birth weight have been found to be associated with infant death. Addressing infant death, low birth weight, and preterm birth among other poor birth outcomes will require examination of Black women's health. Black women face several health challenges relative to women of other racial groups. Black women's health and

subsequent poor birth outcomes, take shape in an American context of inequality. Explicating the particulars of inequality in the American landscape can highlight the underlying factors shaping Black women's poor health and birth outcomes. The state of Black women in America suggests a plight that involves daily experiences of injustices and discriminatory treatment. Such treatment can have an adverse effect on the health of Black women and their infants.

State of Life for Black Women in America

The struggles of everyday life for Black women in America are often exacerbated by the burden of racism. The politics of race, class, and gender inequality have rendered Black women a disadvantaged group in the United States. Women and Black men suffer the consequences of American hierarchies that denigrate persons on the basis of gender and of race. The lives of Black women, however, are often plagued by poverty, unemployment, disease, incarceration, and substance abuse, among other social problems (Collins 2005). Additionally, Black women occupy a precarious position in the global labor market (Lusane 1999). The lives of Black women and their children are too often characterized by poverty (Roberts 1997). Even in the face of gender advancement in the economic sphere, Black women can be and often are disadvantaged relative to White women. Statistics underscore the fact that Black women earn less money than women of other races at each educational level (Braboy Jackson and Williams 2006). Additionally, Black women have unique health challenges compared to other marginalized groups. For example, HIV/AIDS was among the top ten leading causes of death among Black women, but not White, Asian/Pacific Islander, or Native American women for the year 2001 (LaVeist 2005). White women also tend to live longer than Black women by an average of 5 years (Williams 2002). Black women's infants are more than twice as likely as the infants of White women to die before reaching their first birthday (CDC 2011). The inequalities

that shape Black women's health contribute to a particular perspective and social location of Black women in the United States.

Given the pervasiveness of inequality in the daily lives of Black women, intersectionality theorists posit that Black women have a unique perspective on oppression. Black women's unique perspective on oppression can provide insights into systems of oppression in the U.S. and abroad. Among the three interdependent dimensions of African American women's oppression that Collins (2009) outlines, the exploitation of Black women's labor is emphasized as being essential to U.S. capitalism. Collins (2009) also notes that there is a political dimension to Black women's oppression that includes a legacy of denying voting rights and literacy. Thirdly, Black women's oppression is ideological. Ideological oppression involves controlling images such as mammy, Aunt Jemima, and Jezebel that draw upon and create stereotypical ideas of Black womanhood (Collins 2009). Within the context of Black womanhood, Black motherhood in the U.S. has been undervalued and undermined. The dimensions of oppression that Black women face impact their ability to exercise autonomy and agency in achieving and maintaining positive health statuses. It is perhaps the case that oppressions of the past have influenced socioeconomic inequalities of the present. These socioeconomic inequalities can limit Black women's access to the resources necessary to increase the chances of positive birth outcomes. American history bears out a legacy of racist, patriarchy that limited Black women's health autonomy.

Historical Context of Black Women's Reproductive Oppression

At least since slavery, scholars have documented the manner in which Black women's reproduction has been monitored and controlled by White men (Schwarz 2007; Washington 2006; Roberts 1997; Davis 1988). In 1807, the United States Congress officially ended America's participation in the Trans-Atlantic Slave Trade (Schwarz 2007). To maintain their

slave population, it became increasingly important to slaveholders for enslaved women to have children. Enslaved women who were able to demonstrate their fertility through childbearing were more highly valued (Schwarz 2007; Roberts 1997) than women who did not bear children. Slave masters would keep these women because of their reproductive capacities, but also, women who were seemingly fertile would sell for more money on the auction block (Roberts 1997). Enslaved women would be forced to procreate with other seemingly fertile men who were known as "bucks" and "travelin' niggers" (Schwarz 2007; Roberts 1997; Davis 1988). Roberts (1997: 22) recounts the story of an enslaved woman, Rose Williams, whose slave master arranged a sexual liaison between Williams and a male slave named Rufus. Rose did not like Rufus, but she had to engage in sexual relations with him because the decision was not Rose's. Rose, like many other slave women, was subject to control in a way that White women were not. Enslaved women's bodies and sexuality were subject to the control of both White men and Black men. True, White women have consistently been subject to the control of White men, but White men and vestiges of the state have sought to protect women's sexuality by protecting them from the "Black male rapist," which scholars have exposed to be a myth (Washington 2007; Schwarz 2006; Davis 1988). The law also allowed White women to cite their slave owner husbands "affection for slaves" as a reason for divorce (Roberts 1997: 32-33). Black women who had been raped by slave owners were also subject to the abuse of these slave owners wives through taunting and whippings (Roberts 1997). Roberts (1997) also notes that rape of slave women was not acknowledged as a crime. Laws of the state protected White women, but Black women remained more vulnerable to the abuses of rape.

Cultural representations of Black women's bodies have differed from those of White women's. These representations denote an undervaluing of Black women's bodies and,

subsequently, their reproduction. Understanding how Black women have been treated historically with regard to their health and reproductive capacities provides a context for understanding the inequalities that influence their birth outcomes.

Black bodies in general and Black female bodies in particular have been denigrated. Obstetricians were allowed to test out obstetric technologies on slave women without the benefit of anesthesia (Schwarz 2006). It is interesting to consider that Black women seem to have occupied a contradictory space in which their bodies were seen as inferior with regard to reproduction, but uniquely strong enough to withstand surgical procedures without anesthesia. Roberts explains that White reproduction is thought to be a beneficial activity for society, but "Black reproduction is treated as a form of degeneracy corrupting the reproduction process at every stage and transmitting inferior physical traits to the product of conception through their genes" (1997: 9). Black reproduction was cast as biologically inferior, but it was necessary to maintain the economic status of White slaveholders and ultimately the United States economy. Using notions of biological inferiority allowed slaveholders, on a micro-level, and the state, on a macro-level, to justify the oppression and control of Black bodies, sexuality, and reproduction. This history suggests concerted efforts to diminish the health of Black women.

Feminist literature points out that both Black and White women have been subject to gender oppression through their sexuality and reproduction. History also demonstrates that Black bodies, and Black women's bodies in particular, have been testing grounds for obstetric interventions, which were legitimized on biological grounds that were rooted in racist ideologies that Black bodies were inferior and needed to be tamed. Forced sterilization provides an example of such taming efforts. Roberts (1997) notes that government sponsored programs of the mid-twentieth century promoted forced sterilization among Black women. The Eugenics

Movement sought to tame Black bodies and othered bodies that were thought to be inherently inferior to Whites and simply not "well born" (Washington 2007: 190), while also seeking to coerce White women into childbearing. Those who constituted the well born were wealthy and well educated, while the eugenically inferior included Blacks, the poor, the uneducated, criminals, and recent immigrants (Washington 2007). Others who were considered to be champions of women's rights took up a eugenics agenda. Margaret Sanger was acknowledged as a feminist and birth control advocate. In January of 1939, Sanger established the Negro Project through the Birth Control Federation of America as a means to the limit the fertility of Blacks because Black reproduction was thought to be inherently tainted by inferiority (Washington 2007: 197). The eugenics program was even supported by Charles S. Johnson, the first Black President of Fisk University (Washington 2007: 197). Control of Black women's bodies, sexuality, and reproduction continued at the hands of multiple parties.

Black women's motherhood has been stigmatized. Racial stereotypes of the welfare queen, crack mother, and crack baby have been used to demonize motherhood among Black women (Washington 2007; Collins 2005; Solinger 2001; Roberts 1997). Washington (2007) and Roberts (1997) demonstrate that even the notion of "the crack baby" is a myth. A study published in September of 1985 and authored by Dr. Ira Chasnoff reported that babies born to mothers who used cocaine were more likely to be "smaller, sicker, moodier, and less social than other infants" (Washington 2007: 21). In 1992, however, the Lancet published an article demonstrating that there was in fact research suggesting that children born to cocaine users were not harmed by the drug use, but that these articles were less likely to be published. The crack mother image has been used to cast Black women as bad mothers, but data suggest that twice as many Whites use crack cocaine compared to Blacks (Washington 2007: 212). The various arms

of the control and denigration of Black motherhood and reproduction reflect social inequalities that can adversely affect their health and birth outcomes. Black American women's poor health statuses and birth outcomes relative to women of other racial/ethnic groups, offers some suggestion as to the adverse impact of inequality on Black women's health.

Black Women's Health By Race and Nativity

Black women's health experiences demonstrate the embodiment of the deleterious effects of social inequalities. Hypertension is a particularly threatening condition because it is a risk factor for heart disease, the number one killer among Americans. Hypertension is more prevalent among Black women than White women (Braithwaite et al. 2009; LaVeist 2005). Black women's social and economic marginalization puts them at greater risk for hypertension and the threats it poses to a long, healthy life. Due to inequalities and marginalization, Black women often suffer limited opportunities to prevent the dire consequences of poor health. Even though Black women are more likely to develop hypertension and at an earlier age, they are less likely than White women and males to receive treatment for their hypertension (Braithwaite et al. 2009). Research has also demonstrated that physicians' perceptions of patients can vary by race. Physicians rated 57 percent of White patients compared to 42 percent of Black patients as not at all likely to fail to comply with medical advice (LaVeist 2005: 119). These prejudicial notions that physicians maintain perhaps have an impact on healthcare delivery. Discriminatory behavior in health care delivery has been noted by health scholars. Physicians were least likely to recommend catheterization procedures for Black female hypothetical patients in comparison to White males, White females, and Black males (IOM 2003: 11). Black females suffering from a heart attack were also found to be less likely to receive a referral for diagnostic procedures or have lifesaving therapies be readily accessible (Braithwaite et al. 2009).

Not only does the research indicate that racial inequality harms Black women as a collective body, but racial inequalities seem to affect Black women's babies. Black babies are more than twice as likely as White infants to die within the first year of life. Black infants are also more likely to be born too small or premature than are White infants. Such disparities remain even when taking socioeconomic status factors into account. Given these statistics, researchers have concluded that the cumulative effects of racism account for racial disparities in birth outcomes (Lu and Halfon 2003; Williams 2002). For example, research has demonstrated that Black women with college degrees and above had an infant mortality rate of 11.4 in 1995 compared to a lower infant mortality rate of 9.9 among White women with less than a high school diploma (Williams 2002: 591). Research reveals that even equality in socioeconomic status does not yield the expected benefit to Black women and their children. Perhaps social inequalities in the U.S. limit Black women's abilities to transmit benefits of higher SES to their children. Scholars emphasize the significance of racism to birth outcomes for Black women in the United States. It is necessary, however, to recognize Blacks in the U.S. do not constitute a homogenous group.

There appears to be a complex relationship between race, nativity, and health amongst Blacks in the United States. For example, Black immigrants also tend to have better birth outcomes than U.S.-Born Blacks (Palloto et al. 2000; Fang et al. 1999; Kleinman et al. 1991; Cabral et al. 1990; Chavkin et al. 1987). Among all births for the years 1983 and 1984, and excluding Texas and California, foreign-born Black mothers had a 22 and 24 percent lower risk of neonatal and postneonatal mortality, respectively, than U.S.-born Black mothers (Kleinman et al. 1991: 194). Among all Black mothers who gave birth in New York City for the year 2000,

U.S.-Born women had higher low birth weight rates than the foreign-born women (Grady and McLafferty 2007).

Earlier research attempted to account for the Black immigrant advantage by taking a more individualized approach. This research emphasized that foreign-born Black women had better health behaviors than U.S.-born Blacks with regard to better pre-pregnancy weight, less cigarette use, and more regularized and earlier initiation of prenatal care (Cabral et al. 1990). Better socioeconomic profiles and health behaviors among Black immigrants relative to U.S.-born Black women may help explain the disparity between Black immigrants and Black American women, but an exclusive focus on behaviors risks blaming the victim for their plight. Black women experience social injustices at multiple levels that can limit their ability to implement better health behaviors. A thorough assessment of the myriad ways in which structural inequalities in America differentially impacts Black women in America and the health of their babies is needed. The politics of American inequality can contribute to limited economic opportunities. Additionally, Feagin and McKinney (2003) situate poor health behaviors as being associated with the hidden costs of racism. Overeating, for example, is potentially a behavioral response to the stresses of racism (Feagin and McKinney 2003; Beauboeuf-Lafontant 2003). This overeating can lead to obesity among Blacks, but we do not know if the impact of American inequality affects the dietary habits of U.S.-born Blacks differently than foreign-born Blacks either through economic limitations to access of nutritious foods or as a means of self-medicating the discomfort of inequality. In this research, I hypothesize that the effects of nativity and region of birth is fundamentally different for U.S. Blacks and Black immigrants. I examine the impact of pre-pregnancy body mass index on birth outcomes for U.S. Black women compared to foreign-born Black women.

Obesity and its Dangers

Obesity in America threatens the health of everyone but particularly the socioeconomically disadvantaged. For example, members of socioeconomically disadvantaged groups in developed nations demonstrate a greater risk of high body mass index (Sobal 1989), or obesity. Obesity, in particular, is a significant risk factor for death and disease. The literature suggests that body mass index (BMI) is a biological risk factor that contributes to maternal morbidities, such as diabetes mellitus, carbohydrate intolerance, hypertensive disorders, urinary tract infections, endometritis, and thromboembolic disorders that ultimately contribute to adverse outcomes (Vahratian et al. 2004; Cedergen 2004; Ramsay et al. 2002; Sebire et al. 2001; Galtier-Dereure et al. 2000; Naeye 1990). As of 2003, half of Black females aged 20 years and older were obese, and nearly 80 percent were at least overweight (LaVeist 2005). Black women stand to be at the greatest risk for elevated morbidity and mortality given the relationship between obesity, hypertension, and heart disease. The alarming concentration of obesity among Black females in the United States poses serious threats to Black women and their children.

Obesity has emerged as a significant risk factor for poor maternal and infant health. Briese et al. (2010) note that obesity is the most common risk factor for poor pregnancy outcomes. Maternal body mass index is also often conceptualized as a biological risk factor for adverse birth outcomes (Smith et al. 2007; Schieve et al. 1999; Naeye 1990; Kramer 1987). To emphasize the severity of obesity as a risk factor during pregnancy, Cedergren (2004) argues that pregnancies to obese women should be classified as high risk pregnancies. I argue that the combination of race and obesity underscores a double threat for adverse birth outcomes among Black women. There is limited discussion as to the impact that racism has on structuring obesity and behaviors that contribute to obesity among Black women. Additionally, there is limited

discussion as to the social structuring of obesity among U.S.-born Black women compared to foreign-born Black women.

Contribution of research

This research is informed by the paucities in the literature regarding U.S.-born Black women's poor health and social standing relative to White women, U.S.-born Black women's poor health and social standing relative to foreign-born Black women, and the health risks associated with obesity, particularly, and unhealthy pre-pregnancy body mass index, more broadly. My research makes a contribution to the literature on racial health disparities, immigrant health, and social determinants of health in several ways. My research explores the influence of maternal body mass index by nativity on birth outcomes among Black women. With this research, I explore the impact of social disadvantage on racial health disparities in birth outcomes. This work incorporates a slightly higher level of specificity by maternal region of birth among Black women that goes beyond the U.S.-born/foreign-born dichotomy. Also, this work examines the influence of pre-pregnancy body mass index. I was particularly interested in examining obesity as a phenomenon that represents socio-structural inequalities experienced by Black women. This work also attempts to contribute to a conversation about the experience of social inequalities in an American context, which may vary among Black women by nativity and influence their health.

I offer a conceptualization of maternal pre-pregnancy body mass index, obesity in particular, as a physical embodiment of social inequalities, which poses a serious threat to Black American women and their offspring. I argue that exploring the influence of maternal body mass index by nativity on birth outcomes among Black women can illuminate the convergence of biological, behavioral, and social factors that contribute to the occurrence of unhealthy pre-

pregnancy body mass index and the associated negative consequences. My work suggests Black immigrant women have different experiences with race and American racism than do U.S.-born Black women. U.S.-born Black women may suffer from inequalities associated with being a racial minority in the United States. Black immigrant women originating from majority-Black countries/regions may not have similar experiences with minority status. Differing experiences of race by nativity can shape the way racism affects the bodies of Black women in America. Exploring pre-pregnancy body mass index as a physical manifestation of structural inequality may shed light on the role of racism in the U.S. on the lives of Black women. The model I propose attempts to emphasize obesity as a biological, behavioral/psychosocial, and socio-structural phenomenon that affects birth outcomes. Ultimately, this research makes a significant contribution to the literature both empirically and theoretically. This research is also relevant for the development of interventions and policies that seek to prevent and minimize the harm of unhealthy pre-pregnancy body mass index on mothers and their infants. Appropriately addressing unhealthy body mass index will require attending to its biological, behavioral/psychosocial, and socio-structural causes. Addressing the problems of unhealthy pre-pregnancy body mass index and its causes can improve the social standing of Black women in America by confronting and working to eliminate the structural disadvantages that lead to poor pre-pregnancy body mass index and poor birth outcomes among Black women and their children.

In this research, I hypothesize that race has a fundamentally different effect on the birth outcomes of U.S.-born Black women compared to White women and foreign-born Black women when also accounting for pre-pregnancy body mass index. This dissertation involves logistic regression analyses of data from the 2004 to 2010 Statewide Perinatal Data System (SPDS),

focusing on a subset of women giving birth in the Central New York region of New York State. The Statewide Perinatal Data System is a data collection, registration, and reporting system that was developed by the Central New York Regional Perinatal Program and the New York State Department of Health. The SPDS builds on birth certificate data to provide detailed information related to areas such as quality improvement, immunization registry, and newborn screening program information. The Core Module of the SPDS is an enhanced electronic birth certificate that is used in all 21 birth hospitals throughout the 13 county Central New York region. The SPDS includes data on maternal demographics, payor status, entry into prenatal care, preterm labor, adequacy of weight gain during pregnancy, prenatal education, maternal risk factors, newborn outcomes, and breastfeeding in the early postpartum period.

Limitations of the study

There are strengths of the data with regard to level of specificity in country/region of origin, measures of pre-pregnancy weight and height, and weight at delivery that allows me to explore the potential relationships between nativity and obesity and birth outcomes among Black women. Exploring race in relation to birth outcomes is critical given persisting racial disparities in birth outcomes that underscore a Black disadvantage. Additionally, Briese et al.'s (2010) claim that obesity is the most significant risk factor for adverse birth outcomes underscores the significance of pre-pregnancy body mass index to birth outcomes. This research explores the race, nativity, and maternal pre-pregnancy body mass index together to further explicate how the health of U.S.-born Black women and their children may be harmed or influenced by inequality. Though I examine pre-pregnancy BMI overall, I was particularly interested in the influence of obesity.

There are several limitations of this study that are worth mentioning. The racial health disparities literature examining the impact of racism on birth outcomes encourages the use of

longitudinal research. My study, however, is cross-sectional. This is a particular limitation because it is not known if the women experienced significant body mass index changes over their life course. As a result, we do not know what structural factors might have been associated with potential body mass index changes. In addition, the potential impact of such changes on the health the women or on their birth outcomes is not known. I do not have variables that might indicate level of acculturation. Language and length of stay or residence in the U.S. are primary measures of acculturation. Language is a confounding factor that can influence access to and experiences with healthcare services. Length of stay might offer some indication of the women's life course body mass index trajectory. Specifically, length of stay might offer suggestions as to potential for women to experience increases in body mass index with increasing length of duration in the United States. My measures of SES do not include a direct measure of income. I do have a measure of the women's education. I have additional measures of whether or not the women received Medicaid and whether or not the women were WIC recipients. Low income level can be inferred from both the Medicaid receipt and WIC receipt variables.

Operationalization of terms

In this research, I draw on several key concepts that require some definition. In this dissertation, I incorporate Omi and Winant's conception of race as "a fundamental axis of social organization" (1994: 13). According to Omi and Winant, race is a shifting phenomenon that is defined and re-defined through a fluid process of racial formation that involves racial projects. Race is not solely fixed nor is it merely an illusion. Indeed race is an element of our social structure that is both a matter of social structure and cultural representation (Omi and Winant 1994: 56). Drawing on Omi and Winant's (1994) work, I define racism as an ideological and structural concept that involves the creation or reproduction of structures of domination based on

essentialist categories of race. Both race and racism affect our daily lives in overt and covert ways that shape the life chances of individuals and groups. I specifically use the term Black to refer to the phenotypic racial identification of the women without making distinctions by country of birth. According to Bashi (2004), Blackness in a global frame can be interpreted as a marker of social marginality and inferiority. Bashi (2004) also argues that there is a global proliferation of anti-Blackness, which can be noted in Western immigration policies that limit the amount of migration of Black persons to these Western nations. Such theoretical articulations make suggestions for the potential usefulness of comparing the experiences of Blacks globally. Public sentiment regarding Blackness in America, specifically, also affects the experiences of Black immigrants migrating to and residing in the United States (Shaw-Taylor 2007; Gordon 2007; Waters 1999). In this research, I use nativity and region of birth and to account for Black immigrants. There are a limited, but growing number of health studies on Black ethnics (Asage et al. 2013; Ojikutu et al. 2012; Geer et al. 2012). Health studies focusing on Black ethnics often homogenize Black immigrants as one large group. In this research, I build upon contemporary theoretical articulations of Black immigrant racial/ethnic identity and incorporation supported by empirical analysis of birth outcomes.

Pre-pregnancy body mass index (BMI) is a critical concept in this research, and is measured in kilograms per meter squared. A BMI of 30 kg/m^2 indicates obesity (Rasmussen and Yaktine 2009). The term "birth outcomes" include length of gestation and infant birth weight. Length of gestation is conceptualized as preterm birth at less than 37 weeks gestation and term birth at greater than or equal to 37 weeks gestation. Infant birth weight refers to the infant's weight at delivery measured in grams. Infant birth weight is a dichotomously coded variable that includes

the categories low birth weight and adequate birth weight. Low birth weight is defined as less than 2500 grams. Adequate birth weight is defined as greater than or equal to 2500 grams.

Historical Theoretical Overview

Several theories offer a critical interrogation of racial disparities in health that go beyond a biomedical paradigm. Biomedical models of illness and disease often focus on specific biological processes and pathogens that lead to the onset of a particular condition (Rodriguez 1997). Scholars suggest that epidemiological efforts toward specifying etiologic pathways to disease are problematic because of the emphasis on individual biological characteristics that largely ignore or minimize the social context within which persons experience health (/Krieger 2012; Krieger 1994: Link 2008). Studies that examine the relationship between parental nativity and health outcomes, nativity studies, and racial health disparities in birth outcomes broadly are used to refute the idea that poor birth outcomes are the result of inherent Black biological/genetic inferiority (David Collins 2007). Scholars argue that because African immigrants, for example, often have good birth outcomes and there is potentially a genetic link between U.S.-born Blacks and African born Blacks, we can then conclude that there is nothing genetically inferior about being Black with regard to birth outcomes.

Several scholars engaged in critical inquiry regarding racial health disparities have moved beyond basic, biological causes frameworks toward frameworks that include both social and biological factors that affect health outcomes. Dressler (1993) and LaVeist (2005) provide categorizations of theoretical models that influence the design and interpretation of health disparities research. For LaVeist (2005), these theories fall into the categories of biogenetic/physiological, psychosocial/behavioral, and socioenvironmental. Dressler (1993) offers typologies of racial health disparities theories that closely resemble LaVeist's (2005).

According to Dressler, the three categories of theoretical models are racial-genetic, health behavior/lifestyle, and socioeconomic status models.

Behavioral Health Models

Behavioral health model specifications provide theoretical articulations that seek to reconcile the effects of both societal and individual level factors that affect health among Blacks. Health behaviors can denote behaviors that promote good health (Cockerham 2000). In Williams and Collins' (1995) and Dressler's (1993) use of the term, health behaviors denote behaviors that may or may not promote good health. Dressler (1993) argues that health behavior models are problematic, in part, because poor health becomes the responsibility of the individuals who have not chosen health behaviors that promote health. Indeed, health behaviors such as smoking can detract from positive health and birth outcomes. It is important to keep in mind, however, that health behaviors are often influenced by socio-structural factors that can limit the ability of individuals and communities to choose health promoting behaviors.

Socioeconomic/Psychosocial Models

Socioeconomic status explanatory models of racial health disparities provide a stronger effort to address the institutional-level factors that affect birth outcomes. Socioeconomic status can be defined as "an individual or group's location in the structure of society that determines differential access to power, privilege, and desirable resources" (Williams 2002: 590). Black women demonstrate within-group improvements in birth outcomes as a result of higher SES. Defining SES in terms of education, Black women with less than a high school diploma had an infant mortality rate (IMR) of 17.3 compared to an IMR of 11.4 among Black women with college degrees or more in 1995 (Williams 2002: 591). Link's (2008) promotion of epidemiological sociology allows us to center socioeconomic status in the social shaping of

disease patterns. The improvements that result from implementation of innovations for medical technology and medical knowledge demonstrates Link's concept of the social shaping of disease. Higher SES groups are better positioned to take advantage of medical knowledge such as the adverse effects of smoking, and work toward quitting (Link and Phelan 1995) or pursue other health behaviors.

Socioeconomic status and psychosocial models provide further explanation of health behaviors among Black immigrants. Socioeconomic status models that attempt to explain U.S.-born Black/Black immigrant comparisons in health outcomes provide support for the immigrant selectivity hypothesis. Black immigrants' better health behaviors can perhaps be understood in relationship to their better socioeconomic profiles. Socioeconomic explanations of Black immigrant health, however, must be understood as more than a set of individual characteristics. Understanding, for example, the push and pull factors that contribute to more highly selected Black ethnic women with better socioeconomic profiles migrating to the U.S. can further help to illuminate distal, structural factors that can ultimately contribute to birth outcomes in the United States.

Despite the potential for socioeconomic/psychosocial risk factors to explain Black ethnic variation in birth outcomes, SES does not always totally account for racial/ethnic health disparities in birth outcomes. For example, White women with less than a high school diploma had an IMR of 9.9 in 1995, which was lower than the IMR of the most highly educated Black women (Williams 2002: 591). This is a rather surprising outcome given benefits that one might be expected to glean from increasing SES, which include the necessary income to increase access to and likelihood of health care use. The persistence of racial health disparities after controlling for SES signals problems within an SES model. Models that incorporate SES can be

strengthened by a more complex articulation of SES and its relationship to other institutional factors that shape health. Though life chances and SES are often stratified by race, it is vital that health disparities researchers interested in the impact of SES on birth outcomes, take efforts to more fully specify SES measures. In this research, I examine the effect of several socioeconomic indicators on birth outcomes among Black women. Beyond socioeconomic factors, additional socio-structural factors have been implicated in Black women's birth outcomes.

Socio-structural Models

Socioenvironmental theories articulate models that offer more thorough explanations of the structural factors affecting the relationships between race and birth outcomes than do SES models. SES models primarily consider race as being mediated by socioeconomic status, while socioenvironmental theories examine a full range of SES indicators in addition to other socio-structural factors that affect birth outcomes. For Lillie-Blanton and LaVeist (1996: 85), the social environment refers to socioeconomic factors, physical surroundings, social relations, and power arrangements that can all serve as potential determinants of health status. Scholarship on race and birth outcomes provides a discussion of the significance of a life course perspective in model specifications of health pathways (Lu and Halfon 2003; Dominguez et al. 2005). The weathering hypothesis was developed by Arlene Geronimus (1992; 1996) to explain the elevated incidence of low birth weight and infant mortality among Black women relative to White women. Weathering, which can be conceptualized as premature aging, takes place among Blacks as a result of "long term exposure to social and financial stress and prolonged active coping with stressful circumstances" (LaVeist 2005: 143). The weathering hypothesis is consistent with early programming models, which posit that health later in life is positively or

adversely affected by experiences earlier in life during periods of development, which affect the functions of an individual's organs or systems (Lu and Halfon 2003). Early programming, however, does not address changes in health within an individual's lifetime. The cumulative pathway framework is one that does take the life trajectory into account by arguing that negative health and function are the result of the accumulation of wear and tear over time (Lu and Halfon 2003). Unlike early programming, the cumulative pathways hypothesis does not take sensitive periods of development into account. Lu and Halfon (2003) articulate a life-course perspective model which brings early programming and cumulative pathways together by emphasizing the importance of reproductive potential being affected both during critical moments in early development, as well as over the life course, from "the womb to the tomb" (Lu and Halfon 2003). Discussions of the life course help to draw our attention to the significance of structural factors associated with race, socioeconomic status/psychosocial, behavioral, and biological/genetic factors that influence birth outcomes among Black women. The literature suggests that structural, life course factors contribute to ethnic variation among U.S.-born Black women and foreign-born Black women.

Socio-structural explanations of Black immigrant health advantages relative to U.S.-born Blacks emphasize racism, lifelong minority status, and racial context of origin. This emphasis on lifelong minority status suggests the potential for overt and covert adverse consequences of racism over the life course. Racial disparities research identifies racism as a potential distal factor in the causal pathway to health outcomes.

In this research, I do not have a direct measure of experiences with racism and/or discrimination. Including nativity in the analyses, however, can offer some suggestion as to differing experiences with racism. Black immigrants originating from predominantly Black

nations may not have the same experience as U.S.-born Black women with discrimination. The impact of these varying experiences with discrimination may be reflected in differing birth outcomes among Black women by nativity. Seeking to understand the influence of discrimination on birth outcomes also highlights the need for theoretical conceptualizations that effectively combine biological, behavioral, socioeconomic, and structural factors influencing birth outcomes. Empirical research examining maternal body mass index provides an avenue by which to articulate a merged theoretical framework.

Toward an Integrated Model

Obesity is emerging as a significant risk factor for adverse birth outcomes. Black women are at a greater risk of both adverse birth outcomes and obesity, but neither of these issues has been explored together to explain disparities that exist in birth outcomes among Black women by nativity. Contemporary research demonstrates a positive association between self-perceptions of experiences with racism and increasing BMI for Black women, but not Black men, White men, or White women (Cunningham et al. 2013). This literature suggests the sociobiological implications of obesity vary for Black women as opposed to other race and gender groups. In her discussion of racial health disparities, Krieger (2012) also emphasizes the application of an ecosocial approach that emphasizes the need for understanding the biological embodiment of the social worlds in which individuals and groups live and experience various forms of discrimination.

I propose a model that conceptualizes pre-pregnancy body mass index, broadly, and obesity, particularly, as a physical manifestation of the racial discrimination that Black women in America uniquely face on a daily basis. Understanding obesity as such requires the inclusion of biological, psychosocial/behavioral, and socio-structural factors that both influence and are the

consequences of obesity. Others scholars similarly suggest that obesity is both a cause and consequences of inequalities. These scholarly efforts focus on the consequences of obesity on wages (Mason 2012; Baum 2007; Baum & Ford 2004; Cawley 2004). My model takes up an ecosocial approach while emphasizing the potential significance of obesity as both a cause and consequence of health inequalities. Looking at birth outcomes in conjunction with obesity and race provides cues as to the health legacy that is being passed on to future generations of Black children. My model is one that can be used by researchers and health care professionals to ensure a nuanced understanding of race and to illuminate the appropriate strategies to eliminate the causes of noted disparities. A good deal of effort will need to be given to addressing the manner in which inequalities are interwoven into the social fabric of the United States and negatively impact Black women.

Chapter 2

Literature Review

Birth Outcomes, Black Women, and Obesity

Scholarly work has particularly emphasized the significance of preterm birth and low birth weight among birth outcomes. Preterm birth refers to births occurring before 37 weeks gestation (Goldenberg 2008). Low birth weight infants are those infants born weighing less than 2,500 grams (Collins et al. 2004). The significance of low birth weight and preterm birth, in part, lies in these birth outcomes relationships to infant mortality (Barrington 2010; Mason et al. 2010; Reichman and Teitler 2006; Lu and Halfon 2003). In addition to congenital anomalies, sudden infant death syndrome (SIDS), respiratory distress syndrome (RDS), accidents and adverse effects, and pneumonia and influenza, Singh and Yu (1995) identify preterm birth and low birth weight as the top causes of infant mortality in the United States. There is a debate in the literature on preterm birth and low birth weight as to which of these two birth outcomes has the stronger impact on infant mortality. Wise (2003), for example, argues that low birth weight is the strongest predictor of infant mortality. Additionally, Kramer (1987) argues that low birth weight is the most important contributor to neonatal mortality. Kramer et al. (2000) and Berkowitz and Papiernik (1993) argue that preterm birth is the most important predictor of infant mortality.

In addition to the increased risk of infant mortality, research has also demonstrated associations between preterm birth and low birth weight and morbidity. Low birth weight infants are at risk of impaired cognitive development, respiratory distress, asthma, and attention deficit disorder (Barrington 2010; Reichman et al. 2006). Scholars find similar morbidity risks associated with preterm delivery. Research has indicated a relationship between preterm birth

and an increased likelihood of neuro-developmental impairments, respiratory and gastrointestinal complications, and ophthalmologic morbidity (Goldenberg et al. 2008; Rider et al.; Kramer et al. 2000). Recognizing the associations between preterm birth and low birth weight and the increased risk of morbidity and mortality provides cues as to the significant health consequences and challenges of preterm birth and low birth weight.

The Black-White gap in birth outcomes is apparent in preterm birth rates in the United States. Preliminary data provided by the National Center for Health Statistics (2010) indicate a three-year decline in the preterm birth rate from 2006 to 2009. The preterm birth rate was 12.80, 12.68, 12.33, and 12.18 percent for the years 2006, 2007, 2008, and 2009, respectively (Hamilton et al. 2010). This 3-year decline is significant in that it marks the first consistent decline in preterm birth since 1981 (Hamilton et al. 2010). National trends demonstrate a more recent decline in preterm birth rates. In Table 2.1, I present the preterm birth and low birth weight percentages for the United States as a whole and by race. As seen in Table 2.1, the national preterm birth rate decreased from 12.49 percent in 2004 to 11.99 percent in 2010.

The overall decline in preterm birth can mask underlying racial disparities in the incidence of preterm birth. Non-Hispanic White infants and Hispanic infants experienced a statistically significant decline in preterm birth from 2008 to 2009, whereas non-Hispanic Black infants did not. Data also demonstrate Black-White disparities in preterm birth prevalence for previous years. According to the CDC (2008), Black infants were 2 times more likely than White infants to be preterm for the years 2000 to 2005. From 2000 to 2005, Blacks and Whites experienced an increase in infant mortality that resulted from preterm-related causes, but Blacks were more affected than Whites. Thirty two percent of infant deaths among White women were

related to preterm birth in 2005 compared to 46 percent for Blacks (CDC 2008). Examinations of low birth weight in the US also highlight Black-White health disparities.

Low birth weight rates in the U.S. do not demonstrate a similar decline as preterm birth rates and racial variations in the consequences of low birth weight persist. National trends demonstrate a slight increase in low birth weight rates. In Table 2.1, I present the preterm birth and low birth weight percentages for the United States as a whole and by race. As seen in Table 2.1, the national low birth weight rate increased from 8.08 percent in 2004 to 8.15 percent in 2010. Scholarly work has also demonstrated the racial disparity in the extremes of low birth weight, specifically very low birth weight. Very low birth weight (VLBW) infants are infants born weighing less than 1,500 grams (Collins et al. 2004: 2132). Data on birth weight indicate that from 1980-2000, Whites experienced a 14 percent increase in low birth weight rates compared to an increase of 2 percent among Blacks (CDC 2002). In the 1980s, VLBW rates increased 19 percent for Blacks and 6 percent for Whites (CDC 2002). From 1990 to 2000, however, the VLBW rate increased 5 and 20 percent for Blacks and Whites respectively (CDC 2002). Collins et al. (2004) claim that very low birth weight births accounted for 63 percent of the Black-White gap in infant mortality.

Table 2.1. Preterm Birth and Low Birth Weight Rates, 2004-2010

	Preterm Birth %				**Low Birth Weight %**		
Year	**Total**	**Black**	**White**		**Total**	**Black**	**White**
2004	12.49	17.91	11.50		8.08	13.74	7.20
2005	12.73	18.43	11.69		8.19	14.02	7.29
2006	12.80	18.46	11.70		8.26	13.97	7.32
2007	12.68	18.29	11.50		8.22	13.90	7.28
2008	12.33	17.54	11.14		8.18	13.71	7.22
2009	12.18	17.47	10.92		8.16	13.61	7.19
2010	11.99	17.12	10.77		8.15	13.53	7.14
Average	12.46	17.89	11.32		8.18	13.78	7.23

Source: National Center for Health Statistics, 2012

National statistics suggest a greater increase in low and very low birth weight rates among White women compared to Black women. White women and their infants, however, do not experience the consequences of low birth weight in the same manner as Black women. Infant death is among the consequences that more often affect the infants of Black women compared to the infants of White women. In fact, researchers argue that low birth weight along with preterm birth either significantly or completely explain the Black-White health disparities in infant death (Rosenthal and Lobel 2011; Mason et al. 2011; Lu and Halfon 2003; Rauh et al. 2001).

In addition to preterm birth and low birth weight, obesity has emerged as a prominent risk factor for poor birth outcomes among Black women in comparison to White women. Health research has indicated the potentially harmful impact of obesity on pregnancy and childbirth. Given Briese et al.'s (2010) assertion that obesity is the most prevalent threat to pregnancy, obesity seems to present a prominent risk for adverse pregnancy and childbirth outcomes for women as whole. Additionally, research has suggested that obesity itself is an independent risk factor for adverse birth outcomes (Weiss et al. 2004). For example, there is some literature indicating a higher incidence of preterm birth among overweight and obese women relative to their normal weight and underweight counterparts (Khatibi et al. 2012; Bhattacharya et al. 2007). While it is important to consider the significance of obesity to pregnancy outcomes, it is vital that race is not ignored in empirical research that explores the relationships between obesity and birth outcomes. The health literature examining the influence of obesity on birth outcomes often ignores the potential influence of race. The high prevalence of obesity among Black women in the United States relative to other racial/ethnic groups suggests the potentially significant role

that obesity can play in Black-White disparities (Ogden et al. 2010; LaVeist 2005). Data provided by the National Center for Health Statistics for the year 2003 indicate that among White, Black, and Hispanic males and females aged 20 years and older, Black women had the highest percentage of obese persons at 50 percent (LaVeist 2005: 219).

There is some evidence to suggest that maternal obesity may account for Black-White disparities in birth outcomes. Salihu et al. (2007) explored the impact of obesity on pregnancy outcomes by race. Using Missouri maternally linked cohort data for the years 1978 to 1997, Salihu et al. (2007) found that obese Black women were more likely to experience stillbirth than obese White women. Additionally the greatest disparity in number of stillbirths was noted between obese Black women and obese White women, thereby suggesting the potential significance of obesity in the context of Black-White disparities in infant death (Salihu et al. 2007). Further exploration of the impact of obesity on observed relationships between race and birth outcomes is necessary. It is important, however, that obesity is conceptualized as a factor that is the result of socio-structural influences rather than simply the result of poor lifestyle choices.

Behavioral models dominate in discussions of causes and prevention in the obesity literature. Several scholars argue that obesity differences between Black and White women are related to physical activity and dietary intake (McKinnon et al. 2008; Rasmussen et al. 2008; Black et al. 2006; Dye et al. 1997; Kumanyika 1987). Given the emphasis on physical activity and dietary intake, scholars often recommend that Black women should increase the daily amount of physical activity and make better choices regarding dietary intake. While these recommendations are important and perhaps necessary, such emphases run the risk of ignoring the socio-structural factors that affect the ability to make healthier choices regarding physical

activity and dietary choices. For example, minorities are often concentrated in unsafe communities that deter physical activity and in which access to healthy foods are limited (Black & Macinko 2008).

Beyond pre-pregnancy BMI, gestational weight gain is another facet of maternal weight and body mass index that is often conceptualized as a behavioral characteristic. The Institute of Medicine has issued guidelines for optimal weight gain during pregnancy, but the appropriate amount of weight to gain during pregnancy can be complicated by several factors. Gaining within the IOM recommendations has a positive effect on birth weight (Hedderson et al. 2006; Hellerstedt et al. 1997; West Suitor 1997). Hellerstedt et al. (1997) compared the birth weight of obese and normal weight cigarette smokers to their same weight, non-smoking counterparts. Hellerstedt et al. (1997) found that gaining weight within the IOM recommendations can reduce the risk of birth weight abnormalities, but no amount of weight gain can completely eliminate the risks of low birth weight associated with cigarette smoking. Gaining more weight than the IOM recommends increases the risk of macrosomia, or large sized infant (Hedderson et al. 2006). West Suitor (1997) points out that Black women typically do not gain the IOM recommended amount of gestational weight. Scholars are unclear as to why this is the case. Pre-pregnancy weight also matters for pregnancy weight gain. The IOM has issued guidelines for weight gain by BMI category. The IOM recommends that pregnant, obese women gain within 11 to 20 pounds during pregnancy (Rasmussen and Yaktine 2009). The IOM also recommends weight gains of 15 to 25 pounds, 25 to 35 pounds, and 28 to 40 pounds for overweight, normal weight, and underweight women, respectively. In my dissertation, I create an adequacy of pregnancy weight gain variable with the categories of low-, normal-, and high-weight gain by pre-pregnancy BMI based on the IOM recommendations. The relationships between pregnancy

weight gain and pregnancy outcome variations by race need to be more fully examined in empirical research. The influence of pre-pregnancy BMI in this research must be considered as well. Such research must consider the impact of social factors on birth outcomes in addition to offering a conceptualization of weight that goes beyond biogenetic and behavioral conceptualizations. It is equally important to note that Black women in America do not constitute a homogenous group. The health literature underscores a foreign-born advantage in birth outcomes among Black women.

There appears to be a complex relationship between race, ethnicity, and birth outcomes amongst Blacks in the United States. Black immigrants tend to have better birth outcomes than U.S.-Born Blacks (Pallotto et al. 2000; Fang et al. 1999; Kleinman et al. 1991; Cabral et al. 1990; Chavkin et al. 1987). A more recent study among pregnant women in Philadelphia demonstrated that African- and Caribbean-born women were significantly less likely to report smoking, alcohol use, or marijuana use than U.S.-born Blacks (Elo and Culhane 2010). Research has also demonstrated that foreign-born Black mothers in the Boston area had better pre-pregnancy body mass indices and were less likely to smoke cigarettes, drink alcohol, and use marijuana, cocaine, or opiates during pregnancy than their U.S.-born counterparts (Cabral et al. 1990: 70). Foreign-born Black women's better pre-pregnancy weight, Cabral et al. (1990) suggest, is reflective of better health behaviors. There still remains the potential for a Black immigrant disadvantage regarding pregnancy health behaviors. Prenatal care utilization can also be classified as a pregnancy health behavior. Scholars have previously found that Black immigrant women are at greater risks of not having prenatal care coverage (Salihu et al 2005) and inadequate prenatal care utilization relative to U.S.-born Blacks (Green 2012). Caution must

be exercised when interpreting foreign-born Black women's better pregnancy health behaviors relative to U.S.-born Black women.

There is limited discussion as to the impact that social factors have on structuring obesity and behaviors that contribute to obesity among Black women by nativity. There is some suggestion that immigrant selectivity accounts for their better SES and pre-pregnancy health (Read and Emerson 2005; Pallotto 2000). Highly selected Black immigrants may be better positioned to perform health promoting behaviors during pregnancy. It is important that pregnant obese Black women are not automatically vilified as bad mothers on account of their obesity. With an understanding of obesity as a "behavior related cause of death" (LaVeist 2005: 219), it is relatively easy to classify obesity as the result of choosing poor diets and inactive lifestyles. There is an urgent need to address the obesity problem among Black women by addressing the root causes. Choices around diet and physical activity are important considerations in obesity prevention and reduction. I would argue, however, that obesity must be understood as a manifestation of inequalities that U.S.-Black women too often wear on their bodies and can ultimately harm their babies. Such inequalities include economic inequalities, discrimination in the workplace, and perhaps even racial profiling. Currently, the health literature emphasizes obesity as a behavioral characteristic during pregnancy. There is also an absence of research that centralizes the impact of obesity on birth outcomes among Black women by nativity. Empirical analyses of nativity, obesity, and birth outcomes among Black women can gain depth by attending to the complexities that exist within the foreign-born category as well.

Black Immigrant Health

The category "foreign-born" is a broad one that masks the ethnic heterogeneity among foreign-born Black women. Africa and the Caribbean are the primary regions of origin

accounted for in the research. Caribbean-born Black women giving birth in Illinois from 1985 to 1990 demonstrated moderate low birth weight rates that were similar to Whites, but very low birth weight rates that were similar to U.S.-born Blacks (Palotto et al. 2005). According to analyses of vital records for 1980 through 1995, African-born Black women had a low birth weight rate of 7.1, while U.S.-born Black women and White women had low birth weight rates of 13.2 and 4.3, respectively (David and Collins 1997). These findings suggest that Caribbean immigrant women may have more similarities to U.S.-born Blacks than do African immigrants. However, there is a great deal of heterogeneity among Caribbean and African nations.

Other scholarly endeavors suggest that specific birthplace matters among Black immigrants. In a study of birth weight among foreign-born and U.S.-born Black women in New York City (Grady and McLafferty 2007), demonstrated that country of origin was the most significant predictor of birth weight among Black immigrant women. It is also interesting to consider that in this study, Haitian women had the highest low birth weight rate among Black immigrant women because it provides some indication of specific birth outcome inequalities among the foreign-born.

Immigrant selectivity may make further contributions to health status differences among Black immigrants. Because African immigrants have higher levels of educational attainment than Caribbean immigrants (Read and Emerson 2005), they appear to be more highly selected than Caribbean immigrants. The higher selectivity between African and Caribbean immigrants may account for better health statuses noted among African immigrants (Logan 2007; Read and Emerson 2005). With their higher SES, African immigrants are perhaps in a better position than both U.S.-Blacks and Caribbean immigrants to obtain health care. Disparities in health between Caribbean immigrants and African immigrants may widen due to the fact that Caribbean

immigrants experienced a decline in median income from 1990 to 2000, which Williams et al. (2007: 56) noted. Though there may be an African immigrant advantage relative to Caribbean immigrants, there is cause for alarm regarding the health of Black immigrants in general.

Comparisons of voluntary and involuntary migration among Black migrants can further highlight the complexities of health outcome variation among Black migrants to the United States. Among voluntary immigrants, scholars emphasize the immigrant selectivity hypothesis as accounting for better health outcomes. According to the immigrant selectivity hypothesis, the immigrants who are more likely to migrate to the U.S. have better socioeconomic profiles and fewer health risks compared to their U.S.-born counterparts (Lassetter and Callister 2008; Read et al. 2005; Read and Emerson 2005; LaVeist 2005). Unlike voluntary migrants, involuntary migrants perhaps experience greater risk of poor health. Refugees and asylum-seekers represent a growing demographic of involuntary Black migrants to the United States. As outlined by the 1951 Refugee Convention, refugees are "persons outside their country of origin who are unable or unwilling to return because of a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group, or political opinion" (http://www.unhcr.org/pages/49c3646c125.html). The Refugee Act of March 17, 1980 provided 500,000 visas annually and stimulated increased refugee migration from the horn of Africa, specifically Somalia, Ethiopia, and Eritrea (Mederios Kent 2007).

More recently, refugees have accounted for a greater proportion of African immigrants to the U.S. compared to Caribbean immigrants. For the years 2001 to 2006, three percent of Caribbean immigrants came to the United States as refugees compared to twenty-nine percent for sub-Saharan African immigrants. Scholars suggest that refugees are at a greater risk of health complications due to poor living conditions in their country of origin and the trauma associated

with leaving one's country of origin (Olness 1997). Refugees are said to be at greater risk for Posttraumatic Stress Disorder (PTSD), depression, sexually transmitted diseases, nutritional deficiencies, and use of indigenous herbs for medicinal purposes (Olness 1997). Little is known, however, about the health of Black immigrant refugees to the United States. The majority of this literature focuses on Somali refugees to industrialized nations such as Australia and the United States (Ellis et al. 2010; Pavlish et al. 2010; Guerin et al. 2003). Higher selectivity among African immigrants may contribute to better health profiles relative to both U.S.-born Blacks and Afro-Caribbean immigrants; however, the increasing proportion of African refugees may also provide cues as to risks for poor and more rapidly deteriorating health among African immigrants. Contemporary research fails to explore theoretically and empirically the extent to which entry status of Black immigrants to the United States may affect birth outcomes and other health consequences. I am unaware of existing data sets that measure entry status among Black immigrants and birth outcomes in addition to maternal factors such as height, pre-pregnancy weight or body mass index, and specific country of birth. Though I cannot account for entry status in my dissertation research, interpretations of the findings of my dissertation research can include considerations of the potential effects of immigrant entry status.

Health Studies, Race, Discrimination and Racism

More contemporary research exploring health outcomes and birth outcomes, specifically, among Black women emphasize the significance of racism. Several scholars have proposed conceptual models that directly and indirectly consider the influence of racism in health disparities. Williams (1997), in particular, offers an articulation of the pertinence of racism to health through a model that specifies basic health status as being immediately affected by biological processes, which are shaped by surface causes such as health practices, stress,

psychosocial resources, and medical care. These surface causes are shaped by social statuses such as race, gender, and SES. Most importantly, however, is that Williams specifies racism as a basic cause that precedes and influences social status, surface causes, biological processes, and ultimately health status. Other models do not specifically identify the location of racism in the pathway to health disparities, but imply that racism effects health by creating inequities during critical periods over the life course. Gee and colleagues (2012), for example, argue that racism affects the length of time that individuals spend being exposed to health promoting and health demoting factors. Blacks, for example, spend more time exposed to undesirable life conditions such as unemployment, but acquire less years of education compared to Whites. In my conceptual model, which I discuss in further detail later in this section; I indirectly address racism as operating through obesity. I propose racism interacts with race in such a way that contributes to an increased prevalence of obesity among Blacks. I further argue that obesity offers a strong indication of more racist experiences among Black women relative to both White women and Black immigrant women. Such an argument has not been made previously. The attempt to apply a model that also considers nativity in conjunction with racism in specifying the pathway to health disparities is relatively novel as well. Scholars have, however, offered some theoretical explanations for the nativity differences in health among Blacks.

Socio-structural explanations of Black immigrant health advantages relative to U.S.-born Blacks emphasize racism, lifelong minority status, and racial context of origin. Research suggests that country of origin is significant with regard to racial context of origin. Read et al. (2005) examine three measures of self-reported health, which include how they would rate their health, hypertension, and activity limitations. Analyzing data from the 2000-2002 National Interview Health Surveys and comparing U.S.-born Blacks with European Black immigrants,

West Indian immigrants, African immigrants, and South American Black Immigrants, Read et al. (2005) found that those Blacks who were less likely to experience lifelong minority status were more likely to report better health statuses. Applying the concept of lifelong minority status allows us to consider the overt and covert consequences of experiences with racism over the life course. Racial disparities research identifies racism as a potential distal factor in the causal pathway to health outcomes.

Racism can operate at the macro-level through institutions and institutional policy or at the micro-level through person-to-person discriminatory acts. Several studies have examined the relationship between racial, residential segregation and health outcomes (Subramanian et al. 2005; Williams & Collins 2001; LaVeist 1993). Examining infant mortality, Polednak (1996) demonstrates an increased risk of infant mortality among Black women who live in the most segregated communities. Racial, residential segregation can adversely affect health outcomes in several ways including limiting access to adequate health care services (Feagin & McKinney 2003) as well as access to educational and employment opportunities (Williams & Collins 2001) that can enhance one's ability to pursue health promoting behaviors.

There is a paucity of research that attempts to explore the relationship between race, perceptions of racism, nativity, and specific country of origin. Among a group of pregnant women enrolled in a cohort study, Project Viva, in Boston, age at migration and region of origin were significantly related to self-reported racism (Dominguez et al. 2009). Foreign-born women who migrated to the U.S. before age 18 years were more closely related to the U.S.-born sample than foreign-born women who migrated to the U.S. after age 18 years with regard to self-reported racism. Caribbean-born women were more similar to U.S.-born women regarding experiences of self-reported racism and perceptions of group racism than were African-born

immigrants. There is a need for research that seeks to determine relationships between perceptions of racism, country of origin, and birth outcomes among Black immigrant women and in comparison to U.S. born Blacks. Researchers must continue to work toward uncovering and determining ways to measure the distal factors that are associated with reproductive health outcomes among Black immigrant women. The research must find ways to provide theoretical conceptualizations that effectively combine biological, behavioral, socioeconomic, and structural factors implicated in the onset of adverse birth outcomes. Empirical research examining maternal body mass index provides an avenue by which to articulate a merged theoretical framework.

There is a limited body of research that discusses the influence of racism on obesity among Black women in their countries of origin. Beauboeuf-Lafontant (2003) argues that race, class, gender stereotypes and inequalities contribute to obesity among Black women. According to Beauboeuf-Lafontant (2003), Black women's dietary choices may represent efforts to medicate the pain of racism that they experience on a daily basis. Unfortunately, these dietary choices can contribute to obesity. Empirical research in the Caribbean demonstrates the potential influence of racism on obesity among Black women. Tull et al. (1999) found an increased likelihood of abdominal obesity among Afro-Caribbean women who experienced internalized racism. I am unaware of any comparable studies that examine the influence of racism on obesity among women on the African continent. Sobal (1991), however, notes that obesity in developing countries is more often associated with higher socioeconomic status. Further scholarship suggests a relationship between being overweight and wealthy in sub-Saharan Africa (Renzaho 2004). This literature suggests that the meanings of obesity, as an expression of inequality, may vary by country/region of origin among Black women. As such, the influence of

obesity may vary among Black women by country/region of origin. My research seeks to explore the influence of obesity on birth outcomes by region of birth among Black women. To fill the gaps in the existing literature, I pose several research questions to explore the relationships between race, nativity, body mass index, and birth outcomes.

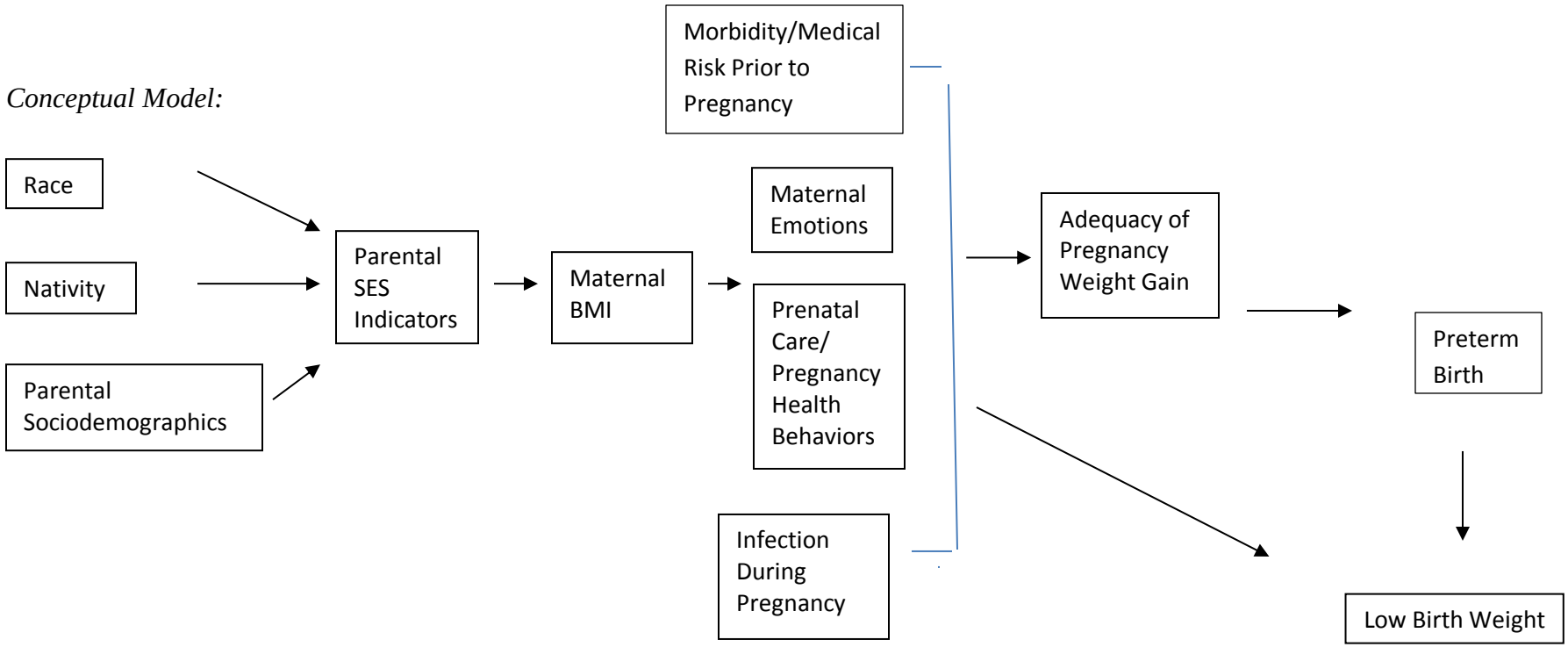
Research Questions and Conceptual Model

There is a considerable amount of research that highlights the complexities of racial health disparities in birth outcomes between Black women and White women. There is also a good deal of health research that highlights the foreign-born advantage in birth outcomes among Black women in comparison to U.S.-born Black women. Obesity is an important risk factor in pregnancy outcomes, but its influence on birth outcomes disparities is underexplored. Given the paucities in the literature, I seek to answer several research questions. Among these questions I ask: "What is the relationship between race and birth outcomes net of nativity, pre-pregnancy BMI, and additional control factors?" I also ask: "What is the influence of nativity on birth outcomes among Black women net of pre-pregnancy BMI, and additional control factors?" Lastly, I ask: "What are the combined effects of race, nativity, and/or pre-pregnancy body mass index on birth outcomes?" These questions are informed by a conceptual model that takes into account biological and prenatal care characteristics, sociodemographic and socioeconomic factors, and pregnancy health behaviors. The goal of this conceptual model is to provide a model of birth outcomes that includes a sociological conceptualization of pre-pregnancy body mass index giving particular attention to the role of obesity. See the conceptual model listed below.

My conceptual model emphasizes the salience of obesity. In my conceptual model, I argue that social statuses such as race, nativity, and SES influence obesity. Though racism is not pictured in my model, like Williams (1997), I propose racism precedes social statuses. The

impact of racism, I argue, can be noted in the onset of obesity among U.S.-Black women. Obesity, as a physical representation of the embodiment of inequalities, is a strong enough factor that can in turn affect medical risk/morbidity prior to pregnancy, previous pregnancy history, prenatal care and pregnancy health behaviors, maternal emotions, infection during pregnancy, and pregnancy weight gain. Ultimately, I argue, obesity influences these surface and biological causes to increase the likelihood of experiencing a preterm birth or having a low birth weight infant among U.S.-born Black women.

Conceptual Model:



Hypotheses

For this study, I will test three sets of hypotheses that focus on the total sample and the analytic sample of Black women exclusively. For the analyses that focus on the total sample, I will test for racial disparities in birth outcomes among the population of women who gave birth in Central New York from 2004 to 2010. The hypotheses I propose below aim to address my primary research question: "What is the relationship between race and birth outcomes net of nativity, pre-pregnancy BMI, and additional control factors?" These hypotheses also aim to test the nature of racial disparities among the total sample of Black and White women who gave birth in Central New York from 2004 to 2010. The following hypotheses also address my research question: "What are the combined effects of race, nativity, and/or pre-pregnancy body mass index on birth outcomes?" Specifically, the hypotheses I offer examine this question by examining the existence of Black-White disparities in birth outcomes taking the interactions of race and nativity and race and pre-pregnancy body mass index into account.

- Hypothesis 1a: There is a significant relationship between race and preterm birth such that Black women will have a greater likelihood of preterm birth than White women.
- Hypothesis 1b: There is a significant relationship between race and low birth weight such that Black women will have a greater likelihood of low birth weight than White women.
- Hypothesis 2a: The additive effect of nativity on race will account for the racial disparity in the likelihood of preterm birth.
- Hypothesis 2b: The additive effect of nativity on race will account for the racial disparity in the likelihood of low birth weight.
- Hypothesis 3a: The relationship between race and preterm birth will be mediated by maternal pre-pregnancy body mass index.
- Hypothesis 3b: The relationship between race and low birth weight will be mediated by maternal pre-pregnancy body mass index.
- Hypothesis 4a: Race will moderate the relationship between nativity and preterm birth.

- Hypothesis 4b: Race will moderate the relationship between nativity and low birth weight.

- Hypothesis 5a: Race will moderate the relationship between pre-pregnancy body mass index and preterm birth.

- Hypothesis 5b: Race will moderate the relationship between pre-pregnancy body mass index and low birth weight.

For the analyses that focus on Black women, I test for nativity disparities in birth outcomes among the population of Black women who gave birth in Central New York from 2004 to 2010. These hypotheses aim to test for heterogeneity in birth outcomes that may otherwise be masked by not considering nativity. The hypotheses I propose below aim to address my primary research question: "What is the influence of nativity on birth outcomes among Black women net of pre-pregnancy BMI, and additional control factors?" The following hypotheses also address my research question: "What are the combined effects of race, nativity, and/or pre-pregnancy body mass index on birth outcomes?" Specifically, the hypotheses I offer examine this question by examining the existence of U.S.-born/Foreign-born disparities in birth outcomes taking the interaction of nativity and pre-pregnancy body mass index into account.

- Hypothesis 6a: There is a significant relationship between nativity and preterm birth such that U.S.-born Black women will have a greater likelihood of preterm birth than foreign-born Black women.

- Hypothesis 6b: There is a significant relationship between nativity and low birth weight such that U.S.-born Black women will have a greater likelihood of low birth weight than foreign-born Black women

- Hypothesis 7a: The relationship between nativity and preterm birth will be mediated by maternal pre-pregnancy body mass index.

- Hypothesis 7b: The relationship between nativity and low birth weight will be mediated by maternal pre-pregnancy body mass index.

- Hypothesis 8a: Nativity will moderate the relationship between pre-pregnancy body mass index and preterm birth.

- Hypothesis 8b: Nativity will moderate the relationship between pre-pregnancy body mass index and low birth weight.

The following set of hypotheses seeks to test whether or not there are observed disparities in birth outcomes by region of birth among Black women who gave birth in Central New York from 2004 to 2010. These hypotheses also aim to test heterogeneity in birth outcomes that may otherwise be masked by not considering heterogeneity of specific region of birth among Black women. The hypotheses I propose below aim to address my primary research question: "What is the influence of nativity on birth outcomes among Black women net of pre-pregnancy BMI, and additional control factors?" Again, nativity is more complexly defined by region of birth rather than simply U.S.-born and foreign-born. The following hypotheses also address my research question: "What are the combined effects of race, nativity, and/or pre-pregnancy body mass index on birth outcomes?" Specifically, the hypotheses I offer examine this question by examining the existence of region of birth disparities in birth outcomes taking the interaction of region of birth and pre-pregnancy body mass index into account.

- Hypothesis 9a: There is a significant relationship between region of birth and preterm birth such that African-born women will have a decreased likelihood of preterm birth compared to U.S.-born Black women.

- Hypothesis 9b: There is a significant relationship between nativity and low birth weight such that African-born women will have a decreased likelihood of low birth weight compared to U.S.-born Black women

- Hypothesis 10a: The relationship between region of birth and preterm birth will be mediated by maternal body mass index.

- Hypothesis 10b: The relationship between region of birth and low birth weight will be mediated by maternal body mass index.

- Hypothesis 11a: Region of birth will moderate the relationship between pre-pregnancy body mass index and preterm birth

- Hypothesis 11b: Region of birth will moderate the relationship between pre-pregnancy body mass index and low birth weight.

Chapter 3

Methods

My dissertation examines the interrelationships of race, nativity, and maternal pre-pregnancy body mass index in birth outcomes. In Chapter 1, I provide a brief discussion of the nature of social inequality in the lives of U.S. Black women, and how obesity is both a contributor and threat to Black women's already precarious social status. Additionally, I propose a model of how obesity affects birth outcomes as experienced by Black women compared to White women and Black immigrant women in the U.S. In this chapter, I provide a description of the data and methods I use to investigate the relationships between race, nativity, obesity, and birth outcomes among Black and White women who gave birth in Central New York from 2004 to 2010.

Data

This research uses selected data from the New York Statewide Perinatal Data System (SPDS) centering on the Central New York region of New York State. The Central New York region is particularly unique and worthy of study given its maternal child health legacy over the past three decades. Syracuse, New York is a mid-sized town that serves as the urban center of the Central New York region. From the mid-1980s to the early 2000s, there were dramatic declines in the infant mortality rate among Black women. Black women had an IMR of 30.8 during the 1985-1987 time period, which was the highest among mid-sized cities in the nation (Lane 2008: 11). The IMR among Black women in Syracuse was reduced by more than half to 13.4 in the year 2000, but increased to 17.4 during the 2002-2004 time period (http://www.naccho.org/topics/modelpractices/database/practice.cfm?practiceID=46; https://perf-data.hrsa.gov/mchb/DGISReports/Abstract/AbstractDetails.aspx?Source=TVIS&GrantNo=H49

MC00067&FY=2011). In contrast to Black women in Syracuse, White women, in the 1985-1987, 2000, and 2002-2004 time periods demonstrated infant mortality rates of 9.5, 6.1, and 8.5, respectively. In addition to the obvious persisting Black-White disparity in infant mortality among women in Syracuse, both Black women and White women in Syracuse have posted infant mortality rates that are poorer than the national average of 7. Examining preterm birth and low birth weight among women in the Central New York region provides a unique opportunity for exploration of the complex manner in which adverse outcomes that affect infant survival occur. The SPDS provides birth data for women in the Central New York region that allows for such analyses.

The SPDS is a data system that was developed in the mid-1990s. The SPDS is an enhancement of birth certificate data that can be implemented in undertakings at local hospital, regional, and state levels to promote quality improvement. The SPDS can also comprise immunization and newborn screening registries. The Core Module of the SPDS is an enhanced electronic birth certificate that is used in all 21 birth hospitals throughout the 13 county Central New York region. These counties include Broome, Cayuga, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, St. Lawrence, and Tompkins counties. The Core Module of the SPDS requires the collection of data falling into several categories. These categories include maternal demographics, payor status, entry into prenatal care, preterm labor, weight gain during pregnancy, prenatal education, maternal risk factors, newborn outcomes, and breastfeeding in the early postpartum period. I was granted access to these data through a process that required submitting a data request form to the Perinatal Data Coordinator for Central New York, Pamela Parker. I was granted exempt status for this research

by the Syracuse University Institutional Review Board (IRB) (see Appendix 1 for documentation).

The New York State Department of Health has taken measures to ensure the quality of the data collected from the parents and the hospital staff. The New York State Department of Health conducted an analysis of birth certificate data in the 1990s (Roohan et al. 2003). The findings from this analysis demonstrated that birth certificate data were more accurate at hospitals using the perinatal data system than the birth certificate data of those hospitals that were not using the perinatal data system. As a result, there is evidence to support the claim that data collected using the SPDS is superior to data collected using traditional birth certificate data. Additionally, the Perinatal Data Coordinator for the Central New York region trains birth registration staff regarding data definitions, coding, and using the data system to further ensure the quality of the data gleaned for the SPDS. Researchers have examined the reliability and validity of birth certificate data (Roohan et al. 2003; Buehler et al. 2000; Watkins et al. 1996; DiGiuseppe et al. 2002). By comparing the New York State birth certificate data to data from the medical record for the time period July 1, 1999 to December 31, 1999, Roohan et al. (2003) concluded that the information on the New York state birth certificate is largely accurate, although conditions such as eclampsia, previous spontaneous fetal death, and previous macrosomic infant were not reported with a high level of accuracy. To improve the accuracy of the data entered into the birth certificate data, Roohan et al. (2003) recommended that the New York State Department of health institute a "standardized, electronic system of data collection" (2003: 345). The SPDS was first implemented in upstate New York in January of 2004 and New York City in January 2008.

The quality of these data is underscored by the fact that several peer-reviewed, scholarly articles have been published using data from the Statewide Perinatal Data System. The SPDS has been used to explore the relationship between obesity and risk of cesarean delivery (Crane & Wojtowycz, et al. 1997) and the factors contributing to increasing pre-pregnancy body mass index (Yeh and Shelton 2005). Additional research has explored the relationship between father's nativity and likelihood of low birth weight (Krishnakumar et al. 2010). These and other published studies suggest the validity, reliability, and usefulness of the SPDS in empirical research that seeks to address issues pertinent to birth outcomes.

The benefits of using the SPDS data outweigh the limitations of using these data. The SPDS is high quality data on the population of women who have given birth in the central New York region. The SPDS is preferable to other national datasets such as the National Health and Nutrition Examination Surveys (NHANES), the Black Women's Health Study, and Natality Detail Files, which include national data on live births. In comparison to these data sets, the SPDS is preferable because of the level of specificity offered on several measures. These measures include parental characteristics such as the specific country of birth of both the mother and the father. Given the level of specificity regarding country of birth, I am able to examine nativity as foreign-born and U.S.-born and region of birth. Additionally the SPDS includes measures of pre-pregnancy weight, weight at delivery, and the mother's height, which allowed me to calculate the mothers' pre-pregnancy body mass index (BMI) and adequacy of pregnancy weight gain. These measures make it possible for me to explore my research questions pertaining to the interrelationships of race, nativity, and maternal pre-pregnancy body mass index to the likelihood of preterm birth and low birth weight.

SPDS data is limited in that it only offers cross-sectional data. Contemporary racial health disparities research emphasizes the need for longitudinal research that measures various factors over the life course (Braveman & Barclay 2009). As part and parcel of the cross-sectional nature of the SPDS, there is limited information available as to the dynamic nature of particular factors in the life course of the women in the study. The measures of previous pregnancy history such as total number of pregnancies, previous cesarean section, and previous preterm infant provide some of the closest approximations to life course measures. For example, it is not known if the women experienced significant body mass index changes over their life course. As a result, we do not know what structural factors might have been associated with potential body mass index changes. In addition, the potential impact of such changes on the health of the women or on their birth outcomes is not known. There are also limited immigrant-related variables available in the SPDS. I do not have variables that might indicate level of acculturation. Language and length of stay or residence in the U.S. are primary measures of acculturation. Language is a confounding factor that can influence access to and experiences with healthcare services. Length of stay might offer some indication of whether or not the women came to the U.S. as obese or became obese. My measures of SES do not include a direct measure of income. I do have a measure of the women's education. I have additional measures of whether or not the women received Medicaid and whether or not the women were WIC recipients. Income level can be inferred from both the Medicaid receipt and WIC receipt variables.

Variables

Primary Dependent Variables:

The primary outcome variables in my dissertation include length of gestation and infant birth weight. The gestation variable in the SPDS records the number of days of gestation. I

dichotomously coded length of gestation as preterm birth at less than 37 weeks gestation and term birth at greater than or equal to 37 weeks gestation, which is consistent with the World Health Organization's definition of preterm birth. The original birth weight variable is a continuous measure of infant birth weight. I recoded infant birth weight to include the categories low birth weight at less than 2,500 grams and adequate birth weight at greater than or equal to 2,500 grams, which is consistent with the World Health Organization's definition of low birth weight. I note that this category of adequate birth weight also includes macrosomic, or high birth weight infants.

Primary Independent Variables:

Maternal race, nativity, and pre-pregnancy body mass index are the primary independent variables I examine in this research. In these analyses, I restricted my sample to Black mothers and White mothers. In the SPDS, parents are allowed to select all racial categories that are pertinent to their racial self-identification. Each racial category is a separate variable. The racial categories include: White/Caucasian; Black or Afro-American; Asian Indian; Chinese; Filipino; Japanese; Korean; Vietnamese; Native Hawaiian; Guamanian or Chamarro; Samoan; American Indian or Alaska Native; Other Asian; Other Pacific Islander; and Other. For the analyses that follow, I use a dichotomously coded Black, non-Black variable. I should note that the Black category for the race variable includes multi-racial Black women. The White category includes multi-racial White women, but not White women that also report Black/African American. White women serve as the reference category for race in logistic analyses modeling the likelihood of preterm birth and the likelihood of low birth weight.

For each mother, the SPDS includes a maternal country of birth variable for which the mother lists her country of birth. I will utilize two nativity status variables. In analyses that

focus on comparing Black and White women, nativity status is coded as U.S.-born versus foreign-born. In some analyses that focus on Black women, this same nativity variable is used; however, in other analyses that focus on Black women, I use a more complexly specified nativity variable. For these analyses, nativity status is coded by region of birth. The categories of the nativity variable I use in these analyses include: U.S.; Africa; and Rest of the World. Research examining nativity effects on health outcomes such as preterm birth and low birth weight among Blacks often include a separate category or separate categories for Caribbean-born Blacks (Mason et al. 2010; Grady & McLafferty 2007). Other scholarly research has examined intragroup variation among Blacks comparing U.S.-born Blacks to African-born Blacks exclusively or Caribbean-born Blacks exclusively (Pallotto et al. 2000; David & Collins 1997). Racial context of origin is an important consideration when examining ethnic variation in health outcomes among Blacks. Read and Emerson (2005) find that Blacks from predominantly White countries are more likely to report poor health statuses. The categories of this second nativity variable highlight factors that the literature suggests is significant toward understanding nativity differences in health outcomes among Blacks. I was unable to create a more highly specified region of birth variable that included a Caribbean-born category because of small sample sizes. My more complexly specified nativity variable still offers some test of the racial context of origin hypothesis because the U.S. is primarily White. Also the majority of the African-born women in my sample originate from nations such as Somalia and Sudan, which are predominantly Black nations. In logistic regression analyses using this second nativity variable, I maintain U.S.-born women as the reference category.

Maternal Pre-Pregnancy Body Mass Index:

In the SPDS, pre-pregnancy weight and weight at delivery are recorded as continuous measures. Additionally, the mother's height is recorded as a continuous measure in inches. Pre-pregnancy weight is recorded from the prenatal chart which indicates the mother's weight at the first prenatal care visit. There are potential limitations of measuring pre-pregnancy weight by weight recorded at first prenatal care visit. Prenatal care may be initiated at a point in the pregnancy after which some weight gain has already begun. Despite these limitations, the obstetric/gynecological research supports the validity of mother's weight at the first prenatal care visit as an indicator of maternal pre-pregnancy weight (Park et al. 2011). In their study, Park et al. (2011) compared Florida birth certificate data on pre-pregnancy weight for the year 2005 to directly measured data on pre-pregnancy weight for participants in the Women, Infants, and Children (WIC) program. Park et al. (2011) found that birth certificate data over-reported underweight and underreported obesity. However, Park et al. (2011) conclude that the differences are marginal, and birth certificate data for pre-pregnancy weight are reliable and valid. Additionally, the IOM claims that measuring pre-pregnancy weight by weight at first prenatal care visit is an ideal manner in which to do so (Rasmussen and Yaktine 2009). New York State, however, is among the few states in the U.S. for which birth certificate data on pre-pregnancy weight is measured as such.

The maternal pre-pregnancy body mass index variable I use in these analyses is calculated using the mother's pre-pregnancy weight and height. The four categories for maternal pre-pregnancy BMI include underweight (18.5 kg/m^2), normal weight (18.5 to 24.9 kg/m^2), overweight (25.0 to 29.9 kg/m^2), and obese (30.0 kg/m^2 and above). These BMI categories are the standard conventions used by the World Health Organization (Rasmussen and Yaktine 2009).

In analyses incorporating maternal pre-pregnancy BMI, normal weight serves as the reference category.

Control Variables:

I have organized the remaining control variables in the analysis into several categories. These categories reflect socioeconomic, psychological, and biological factors both before and during pregnancy. These categories include demographic characteristics, socioeconomic status, pre-pregnancy morbidity, previous pregnancy history, maternal emotions, prenatal characteristics and pregnancy behaviors, and infections during pregnancy. Please refer to Figure 2.1, my conceptual model, for a pictorial depiction of how the control variables were entered in my hierarchical logistic regression models.

Socio-demographic Characteristics:

The parental socio-demographic variables included in this study are maternal and paternal Hispanic ethnicity, maternal and paternal age, maternal county of residence, paternal race, paternal nativity, and marital status. Maternal and paternal Hispanic ethnicity are dichotomously coded variables for which Hispanic ethnicity=1 and non-Hispanic ethnicity=0. Maternal and paternal age variables are continuous and record the mother's and father's age in years. I recoded these variables to create ordinal-level maternal and paternal age variables that include the age categories less than 20 years, 20-29 years, 30-34 years, and 35 years or more. These age categories are reflective of the standard conventions of the Health Resources and Services Administration (HRSA) of the United States Department of Health and Human Services (HHS). The 20-29 years old age group was the reference category. The paternal race variable is a four-category variable that is coded as White, Black, Other, and Missing. Paternal Hispanic ethnicity is a three-category variable that includes the categories 1) Non-Hispanic; 2)Hispanic;

and 3)Missing. There was a large enough percentage of missing data for father's Hispanic ethnicity to substantiate creating a missing category for Hispanic ethnicity. I recode the paternal nativity variable into two categories, which includes the categories 1)U.S.-born and 2)Foreign-born. Marital status is measured using the paternity acknowledgement variable. This is a three category, nominal variable. This is the only means by which to approximate marital status using these data. The three categories of this variable include single, not filed; yes, filed; and not required, in wedlock. I created a marital status variable that has the category "single" corresponding to the "single, not filed" and the "yes, filed" category in the paternity acknowledgement variable. The second category of the marital status variable is "married" and corresponds to the "not required, in wedlock" category. Lastly, this study includes a five-category measure of the mother's county of residence. I coded county based on counties that were the most populous. Four of the five categories of this variable include Onondaga, Oneida, Broome, and Jefferson counties. There is a fifth category of other counties, which captures the remaining counties of residence.

Socioeconomic Status

Socioeconomic status indicators included in this study are maternal and paternal education, measured as highest degree earned. The categories of the maternal and paternal education variables include eighth grade or less, 9^{th} to 12^{th} grade, no diploma, high school grad or GED, some college but no degree, associate degree, bachelor's degree, master's degree, doctorate degree, and unknown. The recoded maternal and paternal education variables in this study include the categories: less than high school diploma, high school diploma, some college but no degree, bachelor's degree, and college diploma and above. The paternal education variable includes an additional other/unknown category because education was unknown for

more than five percent of the cases. Also, this study includes an employment status variable that measures whether or not mothers were employed during pregnancy. I recoded employment status so that having worked during pregnancy=0 and not working during pregnancy=1.

Several additional socioeconomic indicators are included in this study. There are two separate variables that determine the party responsible for paying for the birth. These variables include "primary payor for birth" and "Medicaid as secondary payor for birth." The original primary payor for birth variable includes Medicaid or Family Health Plus, Private Insurance, Self-pay, Indian Health Service, CHAMPUS or TRICARE, Other Government, Other, Unknown. I created a primary payor for birth recoded variable that includes the categories of self-pay, private insurance, public insurance including Medicaid or Family Health Plus, Indian Health Service, CHAMPUS or TRICARE, other government, and a fourth category of other. Medicaid as secondary payor for birth is a variable is a two-category, nominal variable in which the women report yes if Medicaid is the secondary payor and no if Medicaid is not the secondary payor. In the recoded version of this Medicaid recipient variable, I recode Medicaid to include three categories. These three categories include: yes, no, and unknown. There is an unknown category because of a sizeable percentage of women for whom Medicaid status was unknown. Additional socioeconomic indicator variables include HMO or other managed care plan, and participation in the Women, Infants, and Children (WIC) nutrition program. HMO or other managed care plan is a variable that records yes if the women had an HMO or other managed care plan and no if they did not. For the purposes of this study, I recoded HMO into a 3 category variable that includes the categories yes, no, and unknown. As in the case of the Medicaid variable, there was a large enough proportion of mothers in the sample had unknown HMO

status to warrant the creation of a third "unknown" category. Participation in WIC is a nominal variable that records yes if the women participated in WIC and no if they did not.

Previous Pregnancy History

This study includes several measures related to previous pregnancy history. These measures include number of previous live births that resulted in a living infant, number of previous live births that resulted in a deceased infant, total number of pregnancies, previous preterm infant, poor previous pregnancy outcome, and previous cesarean section. Number of previous live births is coded as a 3-category, ordinal variable with the following categories: zero, one, and two or more. Previous live birth resulting in a deceased infant is a dichotomously coded variable with the categories "yes" and "no." Number of previous pregnancies is a continuous variable Poor previous pregnancy outcome, previous preterm infant, and previous cesarean section are dichotomously coded variables with the categories "yes" and "no."

Pre-pregnancy Morbidity

Pre-pregnancy morbidity/risk measures include several dichotomously coded variables for which the response categories are yes and no. The analyses include a measure of no maternal medical risk. There is an additional measure of whether or not a mother had any chronic disease. The remaining three measures for this sub-category of control variables include whether or not the mother had diabetes, hypertension, and whether or not the mother had a high risk referral for their pregnancy. Hypertension is a variable I created that includes both hypertension and pregnancy hypertension. I combine these two variables into one hypertension measure because the pregnancy hypertension variable may include women who had pre-pregnancy hypertension that did not get diagnosed until after pregnancy.

Maternal Emotions

I also include two psychological variables that measure maternal emotions during and regarding each mother's pregnancy. My analyses include a pregnancy intentions variable. For this variable, the mothers provide a response to being asked how she felt about becoming pregnant. The original variable includes the categories: wanted to be pregnant sooner, wanted to be pregnant later, wanted to be pregnant then, and did not want to be pregnant then or in the future. I maintain these categories in my analyses, but I also include a separate unknown category because there are a sizeable proportion of women for whom pregnancy intentions are missing. I also include a measure for depression among the mothers. The original categories of this variable include: not depressed at all, a little depressed, moderately depressed, very depressed, and very depressed and had to get help. In addition to the original categories of this variable, I include an unknown category for this variable as well because depression status was unknown for five percent or more of the sample.

Prenatal Characteristics and Health Behaviors

The analyses in this study include trimester of prenatal care initiation, attendant, primary provider of prenatal care, and counseling during pregnancy. The original trimester of prenatal care initiation variable is a six-category variable including prenatal care beginning between Day 1 and Day 90, prenatal care beginning between Day 91 and 180, prenatal care beginning between Day 181 and Day 300, prenatal care beginning after day 300, no prenatal care, and unknown day of initiation. The categories that include a specific day range correspond to the first, second, and third trimesters. I create a recoded variable that includes prenatal care initiation during the first trimester; the second trimester; third trimester; and missing/unknown. The attendant variable records the attendant title and includes the categories, Doctor of Medicine (MD), Doctor of

Osteopathy (D), Certified Nurse Midwife (CNM), Certified Midwife (CM), other, and unknown. I create a three-category attendant variable that combines the MD and DO categories, CNM and CM categories, and the other and unknown. Counseling during pregnancy measures whether or not a health care worker spoke with the mother about 1) smoking; 2) drinking; 3) illegal drug use; 4) how long to wait before having another baby; 5) birth control; 6) what to do if the woman's labor started early; 7) how to keep from getting HIV, and 8) physical abuse to women. Each of these topic areas represents an independent variable. For each of these categories, the record indicates "yes" if the mother received counseling on that particular topic from a health care worker. A response of "no" indicates the mother did not receive counseling on that particular topic. Each of the counseling variables has a third unknown/other category because a sizeable proportion of the women had unknown or missing information on each prenatal counseling variable.

Health behaviors during pregnancy variables in this study include measurements of exercise; tobacco use; amount of alcohol consumption; and illegal drug use. The exercise variable measures how many times a week the mother exercised for 30 minutes or more. The analyses include a tobacco use variable that measures whether or not the mother smoked before or during pregnancy. I also include a measure of alcohol consumption, which asked the mother to respond yes or no to whether or not she consumed alcohol during her pregnancy and the number of drinks consumed. Lastly, there is an illegal drug use variable for which mothers report "yes" if there was any illegal drug use and "no" if there was not.

Infections/Morbidity During Pregnancy

This study includes several measures of infection and morbidity during pregnancy. These measures include vaginal bleeding, syphilis, and bacterial vaginosis. I have also created

an infection variable that includes measures of hepatitis c, chlamydia, genital herpes, and gonorrhea. I created this infection variable because the number of cases of women who reported any of these infections was too small to analyze separately. Each of these variables is a dichotomously coded variable for which a "yes" reflects the mother did experience the condition and a "no" reflects the mother did not experience the condition.

Adequacy of Pregnancy Weight Gain:

I also create an adequacy of pregnancy weight gain based on weight gain recommendations by BMI category as issued by the Institute of Medicine (IOM). The categories of the adequacy of pregnancy weight gain variable include the categories low weight gain, high weight gain, and normal weight gain. Low pregnancy weight gain for underweight, normal weight, overweight, and obese mothers is weight gain less than 28, 25, 15, and 11 pounds, respectively, for pregnancies that go to term. High pregnancy weight gain for underweight, normal weight, overweight, and obese mothers is weight gain of more than 40, 35, 25, and 20 pounds respectively. Normal weight gain for underweight mothers is weight gain that is greater than or equal to 28 pounds but less than or equal to 40 pounds. Normal weight gain for normal weight mothers is weight gain that is greater than or equal to 25 pounds but less than or equal to 35 pounds. Normal weight gain for overweight mothers is weight gain that is greater than 15 pounds but less than or equal to 25 pounds. Normal weight gain for obese mothers is weight gain that is greater than or equal to 11 pounds but less than or equal to 20 pounds. I created a pregnancy weight gain by subtracting mother's pre-pregnancy weight from mother's weight at delivery, which assisted in the creation of the adequacy of pregnancy weight gain variable. In analyses incorporating adequacy of pregnancy weight gain, normal pregnancy weight gain serves as the reference category.

Description of Analyses:

In the first phase of analyses, I conducted statistical analyses on the total sample of Black mothers and White mothers who gave birth in the Central New York region during the years 2004 through 2010 and were included in the New York Statewide Perinatal Data System for these same years. Results from these analyses are presented in Chapter 4. In univariate analyses, I generate descriptive statistics for the overall sample on all of the variables included in this study, which includes percentages for each category of each variable and means where appropriate. In bivariate analyses, I generate descriptive statistics to demonstrate the preterm birth and low birth weight rates by maternal race. In additional bivariate analyses, I demonstrate the percent preterm birth and low birth weight by nativity and pre-pregnancy BMI. This study also includes bivariate analyses that demonstrate the percentages of maternal nativity, pre-pregnancy BMI, and each control variable by maternal race. Each of the bivariate analyses that describe preterm birth and low birth weight by my focal variables of pre-pregnancy BMI, nativity, and maternal race include the appropriate significance tests. This study also includes bivariate analyses in which I conduct simple logistic regression analyses with 3 separate models that test for the likelihood of a preterm birth and the likelihood of a low birth weight infant amongst the total sample by 1) race, 2) nativity, and 3) maternal pre-pregnancy BMI.

I conducted multivariate logistic regression analyses to further explore hypotheses 2a, 2b, 3a, and 3b, which pertain to the total sample of women in this study. Hypotheses 2a and 2b state the additive effect of nativity will account for the relationships between race and preterm birth (2a) and race and low birth weight (2b). Hypotheses 3a and 3b state the relationships between race and preterm birth (3a) and race and low birth weight (3b) will be mediated by pre-pregnancy BMI. To examine these hypotheses, I run separate logistic analyses each with preterm birth as

the dependent variable and low birth weight as the dependent variable. The first model included maternal race and nativity. The second model included maternal race, maternal nativity, and pre-pregnancy BMI. The third model includes maternal race, nativity, and pre-pregnancy BMI, and all covariates. Logistic regression analyses that model the likelihood of low birth weight include an additional model that controls for adequacy of pregnancy weight gain and preterm birth. Preterm birth limits weight that will be gained during pregnancy. As a result, examining the effects of pregnancy weight gain requires also controlling for preterm birth. The IOM guidelines that define adequate weight gain by BMI category only apply to term pregnancies. As a result, it is not appropriate to include adequacy of pregnancy weight gain when modeling the likelihood of preterm birth. The simple logistic regression analysis that models the likelihood of preterm birth and the likelihood of a low birth weight infant by race addresses Hypotheses 1a and 1b, which states that there is a significant relationship between race and preterm birth and race and low birth weight such that Black women will have a greater likelihood of preterm birth and low birth weight than White women.

I implemented interaction terms in logistic regression analyses modeling preterm birth and low birth weight by race to address hypotheses 4a, 4b, 5a, and 5b. Hypotheses 4a and 4b state the relationship between race and preterm birth (4a) and race and low birth weight (4b) will be moderated by nativity. Hypotheses 5a and 5b state the relationship between race and preterm birth (5a) and race and low birth weight (5b) will be moderated by pre-pregnancy BMI. To test for moderating effects of nativity and pre-pregnancy BMI, I run a series of logistic regression models that include interaction terms for race and nativity and race and pre-pregnancy BMI. The interaction term for race and nativity measures the interaction effects of being foreign-born,

Black. The interaction terms for race and pre-pregnancy BMI measure the interaction effects of being Black and underweight, Black and overweight, and Black and obese.

To fully explore hypotheses 4a and 4b, I conduct separate logistic regression analyses that modeled the likelihood of preterm birth and the likelihood of a low birth weight infant by race including each category of my control variables, nativity, pre-pregnancy BMI, and the race and nativity interaction term. To fully explore hypotheses 5a and 5b, I conduct separate logistic regression analyses that model the likelihood of preterm birth and the likelihood of a low birth weight infant by race including each category of my control variables, nativity, pre-pregnancy BMI, and each race and pre-pregnancy BMI interaction term.

In the second phase of analysis, I restrict my analyses to the self-identified Black women in the sample. Results from these analyses are presented in Chapter 5. It should be noted that this sample of Black women consists of mothers who selected African American/Black, but this group also includes mothers who may be multi-racial African-American/Black. I generate percent and frequency distributions for pre-pregnancy BMI and all control variables included in this study by nativity. In bivariate analyses, I demonstrate the percent preterm birth and low birth weight by nativity and pre-pregnancy BMI. Each of the bivariate analyses that describe preterm birth and low birth weight by my focal variables of nativity and pre-pregnancy BMI include the appropriate chi-square tests of significance.

I conduct logistic regression analyses to examine the existence of nativity disparities in likelihood of preterm birth and likelihood of low birth weight among Black women. I also test for the mediating effects of pre-pregnancy BMI on the relationship between nativity and preterm birth and nativity and low birth weight among Black women. Hypotheses 6a and 6b state there is a significant relationship between nativity and preterm birth and low birth weight such that

foreign-born women will be less likely than U.S.-born women to experience preterm birth (6a) or have a low birth weight infant (6b). Hypotheses 7a and 7b state there is a significant relationship between nativity and preterm birth (7a) and nativity and low birth weight (7b) such that U.S.-born Black women will have a greater likelihood of preterm birth and low birth weight than foreign-born Black women. To examine these hypotheses, I conduct logistic regression analyses that model the likelihood of preterm birth and the likelihood of a low birth weight infant amongst Black mothers by nativity, which is dichotomously coded as U.S.-born and foreign-born. U.S.-born serves as the reference category. In these models I incorporate 1) nativity only, 2) nativity and pre-pregnancy BMI, and 3) nativity, pre-pregnancy BMI, and all covariates. These regression analyses allow me to determine the nature of the relationships between nativity and pre-pregnancy BMI in relation to preterm birth and low birth weight before taking potential covariates into account. These models also allow me to explore the mediating effects of pre-pregnancy BMI.

I implemented interaction terms in logistic regression analyses modeling preterm birth and low birth weight by race to address hypotheses 8a and 8b, which state the relationships between pre-pregnancy BMI and preterm birth (8a) and pre-pregnancy BMI and low birth weight (8b) are moderated by nativity. To test for moderating effects of nativity and pre-pregnancy BMI, I run a series of logistic regression models that include interaction terms for nativity and pre-pregnancy BMI. The interaction terms for nativity and pre-pregnancy BMI measure the interaction effects of being foreign-born and underweight, foreign-born and overweight, and foreign-born and obese. To fully explore hypotheses 8a and 8b, I conduct separate logistic regression analyses that model the likelihood of preterm birth and the likelihood of a low birth

weight infant by nativity including each control variable, pre-pregnancy BMI, and each nativity and pre-pregnancy BMI interaction term.

In the third layer of analysis, I again conduct statistical analyses on the sample of self-identified Black mothers. At this level of the analysis, however, I implement a more complex nativity variable. For this level of analysis nativity was conceptualized as region of birth and included the categories: 1) U.S.; 2) Africa; and 3) Non-African. Results from these analyses are presented in Chapter 6. I generate percent and frequency distributions for pre-pregnancy BMI and all control variables included in this study by region of birth. In bivariate analyses, I demonstrate the percent preterm birth and low birth weight by region of birth. The analyses that describe preterm birth and low birth weight by region of birth include chi-square tests of significance.

I conduct logistic regression analyses to examine the existence of region of birth disparities in likelihood of preterm birth and likelihood of low birth weight among Black women. I also test for the mediating effects of pre-pregnancy BMI on the relationship between region of birth and preterm birth and region of birth and low birth weight among Black women. Hypotheses 9a and 9b state the U.S.-born disadvantage will be maintained, and there is a significant relationship between region of birth and birth outcomes such that African-born women are less likely than both U.S.-born and Non-African women to experience preterm birth (9a) or have a low birth weight infant (9b). Hypotheses 10a and 10b state the relationship between region of birth and preterm birth (10a) and region of birth and low birth weight (10b) will be mediated by maternal pre-pregnancy body mass index. To examine these hypotheses, I conduct logistic regression analyses that model the likelihood of preterm birth and the likelihood of a low birth weight infant amongst Black mothers by region of birth. In these models I

incorporate 1) region of birth only, 2) region of birth and pre-pregnancy BMI only, and 3) region of birth, pre-pregnancy BMI, and all covariates. These regression analyses allow me to determine the nature of the relationships between region of birth and pre-pregnancy BMI in relation to low birth weight and preterm birth before taking potential covariates into account. To fully explore the mediating effects of pre-pregnancy BMI, I run logistic regression models that model the likelihood of preterm birth and low birth weight including region of birth, pre-pregnancy BMI, and each set of my control variables.

I implemented interaction terms in logistic regression analyses modeling preterm birth and low birth weight by region of birth to address hypotheses 11a and 11b, which state the relationships between pre-pregnancy BMI and preterm birth (11a) and pre-pregnancy BMI and low birth weight (11b) are moderated by region of birth. To test for moderating effects of region of birth and pre-pregnancy BMI, I run a series of logistic regression models that include interaction terms for region of birth and pre-pregnancy BMI. The interaction terms for region of birth and pre-pregnancy BMI measure the interaction effects of being African and underweight, African and overweight, African and obese, non-African and underweight, non-African and overweight, and non-African and obese. To fully explore hypotheses 11a and 11b, I conduct separate logistic regression analyses that model the likelihood of preterm birth and the likelihood of a low birth weight infant by region of birth including each control variable, pre-pregnancy BMI, and each region of birth and pre-pregnancy BMI interaction term.

In each of these analyses, I was able to determine the nature of the relationships between race, nativity, and region of birth and the likelihood of preterm birth and the likelihood of low birth weight. I was also able to determine the mediating effects of pre-pregnancy BMI on the relationships between race, nativity, and region of birth and the likelihood of preterm birth and

the likelihood of low birth weight. In my analyses, I determined to what extent the relationships between maternal pre-pregnancy BMI and birth outcomes are moderated by race, nativity, and region of birth. Altogether, these analyses provide a foundation from which to examine my proposed conceptual model that emphasizes the salience of maternal pre-pregnancy body mass index in racial disparities in birth outcomes. In Chapter 4, I provide a detailed discussion of the findings of my first layer of analyses examining the total sample of Black mothers and White mothers.

Chapter 4

Examining Preterm Birth and Low Birth Weight Among the Total Sample

This chapter examines the extent of Black-White disparities in two birth outcomes – preterm birth and low birth weight – among women giving birth in the Central New York region for the years 2004 to 2010. I also examine whether maternal pre-pregnancy body mass index (BMI) mediates the association between race and birth outcomes, and whether race moderates the associations between nativity and maternal pre-pregnancy BMI on birth outcomes. Results from descriptive and multivariate logistic regression analyses are presented. Multivariate analyses include controls for a broad range of factors that the literature indicates are associated with birth outcomes. I group these variables into the following categories and enter them hierarchically into sequential models: sociodemographic variables; socioeconomic factors; morbidity/medical risk prior to pregnancy; previous pregnancy history; maternal emotions; characteristics of prenatal care and pregnancy behaviors; infection during pregnancy; and adequacy of pregnancy weight gain. For these analyses presented in this chapter, I use data from the New York Statewide Perinatal Data System. The Core Module of the SPDS is an enhanced electronic birth certificate that is used in all 21 birth hospitals within the 13-county Central New York region. The SPDS is an ideal data source because of the specificity of information collected on the mother's country of birth as well as her weight and height prior to becoming pregnant, which allows for the calculation of pre-pregnancy BMI. All analyses are conducted with SAS.

After providing a description of the analytic sample overall and by race, I present the results of a series of hierarchical, multivariate logistic regression analyses that test the hypotheses I outlined at the end of Chapter 3. Specifically, in this chapter, I test Hypotheses 1a

and 1b, 2a and 2b, 3a and 3b, 4a and 4b, and 5a and 5b. The results of the statistical analyses I perform to test hypotheses 1a and 1b highlight racial disparities in the likelihood of preterm birth and low birth weight among Black and White women. Testing hypotheses 2a and 2b, I examine the additive effects of race and nativity with respect to preterm birth and low birth weight (2a and 2b). Testing hypotheses 3a and 3b, I examine whether pre-pregnancy BMI mediates the associations between race and nativity on preterm birth and low birth weight, respectively. Finally, I introduce interaction terms into the models to examine whether race moderates the effect of nativity (4a and 4b) and/or pre-pregnancy BMI (5a and 5b) on preterm birth and low birth weight.

In my analyses, I model the likelihood of preterm birth separately from the likelihood of low birth weight. When modeling the likelihood of preterm birth, I include all of the control variables except adequacy of pregnancy weight gain. I do not include this control in analyses of preterm birth because there is no set standard of pregnancy weight gain for pregnancies that do not go full term. When modeling the likelihood of low birth weight, I include adequacy of pregnancy weight gain as well as all of the other control variables. I also control for preterm birth because preterm births will likely result in a low birth weight infant. I control for preterm birth when modeling the likelihood of a low birth weight infant to avoid endogeneity errors.

Describing the Sample as a Whole and By Race

In Table 4.1, I provide the frequency and percent distributions for the focal variables of my dissertation—race, nativity, and pre-pregnancy BMI. I provide the frequency and percent distributions for all of the control variables, for the total sample and by race, in Appendix 2. As seen in Table 4.1, the women in my analytic sample are largely White, U.S.-born, and in the normal BMI category. In the 13-county Central New York region between 2004 and 2010,

approximately 91 % of women who gave birth were White and approximately 95% were U.S.-born. Women who fell in the normal BMI category comprised 43.43% of the total sample. It is striking, however, that more than 50% of the total sample is overweight (26.35%) or obese (26.85%).

Table 4.1 also presents results by race. As seen in Table 4.1, there are significant associations between race and both nativity and BMI. Approximately 11% of Black women were foreign-born compared to approximately 4% of White women. The modal pre-pregnancy BMI category was normal weight for both Black (39%) and White (43%) women; however, Black women were more likely than White women to be overweight (27.76 versus 26.21) and obese (29.24 versus 26.62). Overall, 57% of Black women were either overweight or obese compared to 53% of White women.

Table 4.1. Select Sample Characteristics for the Total Sample and Focal Variables by Race, 2004-2010 SPDS									
	Total			Black[a]			White[b]		
Variable (Category)	%	N		%	N		%	N	
Race									
Black	8.92	10911		--	--		--	--	
White	91.08	111367		--	--		--	--	
Nativity									***[c]
US-Born	95.09	116270		88.77	9686		95.71	106584	
Foreign-Born	4.91	6008		11.23	1225		4.29	4783	
Pre-pregnancy Body Mass Index									***
Underweight	3.37	4118		3.83	418		3.32	3700	
Normal Weight	43.43	53108		39.17	4274		43.85	48834	
Overweight	26.35	32215		27.76	3029		26.21	29186	
Obese	26.85	32837		29.24	3190		26.62	29647	
N=122278									
[a]This category includes multiracial Black women.									
[b]This category includes White women and non-Black, multiracial White women.									
[c]Indicates significant chi-square analyses									

Examining Preterm Birth and Low Birth Weight by Race, Nativity, and Pre-Pregnancy Body Mass Index

In Table 4.2, I present bivariate associations between my focal independent variables and both of my dependent birth outcome variables—preterm birth and low birth weight—overall and by race. As seen in Table 4.2, overall 7.42% had a preterm birth and 5.72% had a low birth weight birth. Race, nativity, and pre-pregnancy BMI are all significantly associated with preterm birth and low birth weight, respectively. Focusing first on preterm birth and consistent with the literature, Blacks had a higher preterm birth rate than Whites (11.06% versus 7.06%); and U.S.-born women had a higher percent with a preterm birth than the foreign-born (7.49% versus 6.11%). The percent preterm birth was highest among women classified as underweight on the basis of pre-pregnancy BMI and lowest among those classified as overweight (11.78% versus 6.89%).

I also find significant associations of both nativity and pre-pregnancy BMI with preterm birth by race. As shown in Table 4.2, the association between nativity and pre-pregnancy BMI was stronger for Black women than White women. Among both Black women and White women the foreign-born had a lower percent with a preterm birth than the U.S.-born; however, the gap in percent with a preterm birth is larger for Black women (11.49% versus 7.67%) than White women (7.14% versus 5.71%). I also found that the association of pre-pregnancy BMI with preterm birth was more highly significant for White women than Black women. For both Black women and White women, those classified as underweight had the largest percent with a preterm birth relative to the other pre-pregnancy BMI groups. Among Black women, the obese had the lowest percent with a preterm birth. Among White women, the overweight had the

lowest percent with a preterm birth. The pre-pregnancy BMI-gap in percent with a preterm birth was slightly larger for Black women (16.03% versus 10.34%) compared to White women (11.30% versus 6.47%).

Turning to low birth weight, I find Blacks had a significantly higher percent with a low birth weight birth than Whites (11.36% versus 5.17%). Also, U.S.-born women had a significantly higher percent with a low birth weight birth than the foreign-born (5.79% versus 4.44%). Lastly, women classified as underweight on the basis of pre-pregnancy BMI had the highest percent with a low birth weight birth and the obese had the lowest (12.36% versus 5.06%).

Nativity and pre-pregnancy BMI were both significantly associated with low birth weight for both Black women and White women. Among Blacks, U.S.-born women had a higher percent with a low birth weight birth than the foreign-born (11.83% versus 7.59%). I also found among White women that the U.S.-born had a higher percent with a low birth weight birth than the foreign-born (5.24% versus 3.64%). The nativity gap in low birth weight was larger for Black women than White women. Among Blacks, underweight women had the highest percent with a low birth weight birth and obese women have the lowest (20.33% versus 9.87%). I found a comparably low pre-pregnancy BMI disadvantage and high pre-pregnancy BMI advantage in low birth weight by pre-pregnancy BMI among White women. For White women, also, underweight women had the highest percent with a low birth weight birth and obese women demonstrated the lowest percent with a low birth weight birth (11.46% versus 4.55%). Here, too, we see that the pre-pregnancy BMI gap was larger for Black women than White women.

It is clear that racial disparities, nativity disparities, and pre-pregnancy BMI disparities exist among women giving birth in Central New York from 2004 to 2010. Black women, U.S.-born women, and underweight women had the highest preterm birth and low birth weight percentages in their respective racial, nativity, and pre-pregnancy BMI groups. While Black women display higher percentages of adverse birth outcomes, it also seems that Black women reap greater benefits of foreign-born status and suffer most from being underweight compared to White women. In subsequent analyses, I aim to determine if there were indeed any significant relationships between race, nativity, and pre-pregnancy BMI net of controls. I also aimed to determine if there were significant interaction effects of race and nativity and race and pre-pregnancy BMI on the likelihood of preterm birth and low birth weight. To begin, I discuss the findings of logistic regression analyses in which I examine if there are significant independent, additive relationships between race, nativity, and pre-pregnancy BMI and whether those relationships persist net of all control factors.

Table 4.2. Bivariate Relationships between Birth Outcomes and Focal Variables, 2004-2010 SPDS

	Preterm Birth						Low Birth Weight					
	%	p	Black[a]	P	White[b]	P	%	p	Black	p	White	p
Total	7.42						5.72					
Variable												
Race		***[c]						***				
Black	11.06		--		--		11.36		--		--	
White	7.06		--		--		5.17		--		--	
Nativity		***		***		**		***		***		***
US-Born	7.49		11.49		7.13		5.79		11.83		5.24	
Foreign-Born	6.11		7.67		5.71		4.44		7.59		3.64	
Pre-pregnancy Body Mass Index		***		**		***		***		***		***
Underweight	11.78		16.03		11.30		12.36		20.33		11.46	
Normal Weight	7.36		11.18		7.02		5.99		12.26		5.44	
Overweight	6.89		10.96		6.47		5.11		10.40		4.56	
Obese	7.50		10.34		7.20		5.06		9.87		4.55	

N=122278

[a]This category includes multiracial Black women.

[b]This category includes White women and non-Black, multiracial White women.

[c]Indicates significant chi-square analyses

Analyses of Preterm Birth

Table 4.3 includes bivariate and hierarchical multivariate logistic regression models of preterm birth. The bivariate models present results that are consistent with the bivariate results that I have already presented. As shown in Table 4.3, prior to controlling for other variables, race, nativity, and pre-pregnancy BMI each significantly influenced the likelihood of a preterm birth. Specifically, Black women were 64% more likely than White women to have a preterm birth. Foreign-born women were 20% less likely than U.S.-born women to have a preterm birth. Looking at pre-pregnancy BMI, I found an underweight disadvantage and an overweight advantage. Compared to women classified as normal weight on the basis of pre-pregnancy BMI, underweight women were 68% more likely to experience a preterm birth, while overweight women were 7% less likely to have a preterm birth.

Controlling for nativity (Model 1) and nativity and pre-pregnancy BMI in (Model 2), respectively, Black women were still significantly more likely than White women to have a preterm birth. Accounting for nativity, Black women were 67% more likely than White women to have a preterm birth. Taking both nativity and pre-pregnancy BMI into account, Black women were 66% more likely to have a preterm birth. Both nativity and pre-pregnancy BMI had minimal influences on the racial disparity in preterm birth.

Model 3 includes all of the relevant covariates for the preterm birth analysis. I do not present reduced-form models because the results are, more or less, the same as those presented in Model 3. With all variables in the models, the likelihood of a preterm birth among Black women is reduced by 45% relative to Model 2; however, the difference remained statistically significant. Black women became 21 percent more likely than White women to have a preterm birth net of all potential mediators and controls.

Nativity and pre-pregnancy body mass index are also independently and significantly associated with the likelihood of preterm birth. Foreign-born women were significantly less likely than U.S.-born women to have a preterm birth (b= -0.23, p<0.001). Controlling for all covariates reduced the difference in the odds of preterm birth between women classified as underweight and normal weight by approximately 20%; however, the difference remained statistically significant (b=0.41, p<0.001). Relative to women classified as normal weight based on pre-pregnancy BMI, women classified as overweight (b=-0.15, p<0.001) and obese women (b= -0.20, p<0.001) were significantly less likely to have a preterm birth.

I also make comparisons by pre-pregnancy BMI by including post-estimation tests of coefficient statements that indicate whether there are significant differences in likelihood of outcomes between the different pre-pregnancy BMI categories. Incorporating these test statements when modeling the association between pre-pregnancy BMI and preterm birth, I find there are significant differences between underweight women and obese women, between underweight women, and between obese women and overweight women. The Wald statistics generated also indicate underweight women are significantly different from overweight and obese women (97.18*** and 114.18***, respectively). Obese women are not significantly different from overweight women.

The results reported in Model 2 of Table 4.3 indicate that the negative effect of obesity on preterm birth is not observed in Model 2, which only includes the three focal independent variables. The significant negative of effect of obesity is observed in Model 3, which controls for all covariates. This suggests that the effect of obesity emerges only when other variables associated with obesity and preterm birth are controlled. In order to understand this better, I examined the reduced-form hierarchical models I estimated to determine at what step obesity

emerged as statistically significant. Results indicate that morbidity/medical risk factors prior to pregnancy suppress the effect of obesity. Controlling for these variables leads the coefficient on obesity to become significant. Specifically, having diabetes, high blood pressure, having a high risk referral pregnancy, and having any medical risk factor prior to pregnancy is significantly associated with an increase in likelihood of preterm birth.

Table 4.3. Logistic Regression Analyses of Preterm Birth by Race, Nativity, Pre-pregnancy BMI, and All Covariates, 2004-2010 SPDS								
Preterm Birth								
	Bivariate Models		Model 1		Model 2		Model 3[d]	
	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR
Race (White)								
Black	0.49***[a] (0.03)	1.64	0.51*** (0.03)	1.67	0.51*** (0.03)	1.66	0.19*** (0.05)	1.21
Nativity (US-Born)								
Foreign-Born	-0.22***[b] (0.06)	0.80	-0.29*** (0.06)	0.75	-0.30*** (0.06)	0.74	-0.23** (0.07)	0.80
Pre-Pregnancy BMI (Normal Weight)								
Underweight	0.52***[c] (0.05)	1.68	--	--	0.51*** (0.05)	1.67	0.41***[e, f] (0.06)	1.51
Overweight	-0.07* (0.03)	0.93	--	--	-0.08** (0.03)	0.92	-0.15*** (0.03)	0.86
Obese	0.02 (0.3)	1.02	--	--	0.004 (0.3)	1.00	-0.20*** (0.03)	0.82
Constant			-2.57*** (0.01)		-2.57*** (0.02)		-2.73*** (0.05)	
Unweighted N: 122278								
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001								
[a] The constant is -2.58 with a standard error of 0.01.								
[b]The constant is -2.51 with a standard error of 0.01.								
[c]The constant is -2.53 with a standard error of 0.02.								
[d] This model also includes all covariates: sociodemographics, socioeconomic status, prior morbidity, previous pregnancy history, maternal emotions, prenatal care/pregnancy health behaviors, and infection during pregnancy.								
[e] Wald chi-square statistic indicates underweight women are significantly different from overweight women in likelihood of preterm birth (97.18***).								
[f] Wald chi-square statistic indicates underweight women are significantly different from obese women in likelihood of preterm birth (114.18***).								

Interaction Effects of Race with Nativity and Pre-Pregnancy Body Mass Index

Table 4.4 includes logistic regression models of preterm birth in which I examine the interaction effects of race and nativity and race and pre-pregnancy BMI, respectively. These analyses allow me to evaluate hypotheses 4a and 4b and 5a and 5b. Specifically, I am examining whether race moderates the effect of nativity and pre-pregnancy BMI, respectively, on preterm birth. As seen in Table 4.4, there was no significant interaction effect of race and nativity on the likelihood of preterm birth. Similarly, there was also no significant interaction effect of race and pre-pregnancy BMI.

Table 4.4 Logistic Regression Models of Preterm Birth Testing Interaction Effects of Race and Nativity and Race Pre-Pregnancy Body Mass Index				
Preterm Birth				
	Model 1[a]		Model 2[b]	
	B (S. E.)	OR	B (S. E.)	OR
Variable (Reference Category)				
Race (White)				
Black	0.19*** (0.05)	1.21	0.20** (0.06)	1.22
Nativity (U.S.-Born)				
Foreign-Born	-0.22** (0.07)	0.80	-0.23** (0.07)	0.80
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.41*** (0.05)	1.51	0.42*** (0.06)	1.52
Overweight	-0.15*** (0.03)	0.86	-0.16*** (0.03)	0.85
Obese	-0.20*** (0.03)	0.82	-0.19*** (0.03)	0.83
Race*Nativity (U.S. Born, White)				
Foreign Born, Black	-0.04 (0.14)	0.97	--	--
Race*Pre-Pregnancy Body Mass Index (White, Normal Weight)				
Black, Underweight	--	--	-0.08 (0.16)	0.92
Black, Overweight	--	--	0.09	1.09

			(0.09)	
Black, Obese	--	--	-0.10 (0.09)	0.91
Constant	-2.73*** (0.05)		-2.73*** (0.05)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				
[a] This model also includes all covariates.				
[b] This model also includes all covariates.				

Analyses of Low Birth Weight

We turn now to a parallel set of multivariate analyses focusing on low birth weight. Table 4.5 includes bivariate and hierarchical multivariate logistic regression models of low birth weight. The bivariate models present results that are consistent with the bivariate results that I have already presented. As shown in Table 4.5, prior to controlling for other variables, race, nativity, and pre-pregnancy BMI each significantly influence the likelihood of a low birth weight birth. Specifically, Black women were more than two times more likely than White women to have a low birth weight birth. Foreign-born women were approximately 24% less likely than U.S.-born women to have a low birth weight birth. The size of the disadvantage underweight women experienced relative to normal weight women was comparable to, but slightly less than the size of the Black-White gap in low birth weight. Underweight women were more than two times more likely to have a low birth weight birth than women classified as normal weight on the basis of pre-pregnancy BMI.

Controlling for nativity (Model 1) and nativity and pre-pregnancy BMI in (Model 2), respectively, Black women maintained an increased likelihood of a low birth weight birth compared to White women. Accounting for nativity and nativity and pre-pregnancy BMI, Black women were still more than two times more likely than White women to have a low birth weight birth. Both nativity and pre-pregnancy BMI had minimal influences on the racial disparity in low birth weight. Model 3 includes all of the relevant covariates for the low birth weight analysis. With all variables in the model, the likelihood of low birth weight among Black women compared to White women is reduced by more than 32.5% relative to Model 2; however, the difference remained statistically significant. Black women were 82% more likely than White women to have a low birth weight birth net of all potential mediators and controls.

Nativity and pre-pregnancy BMI are also independently and significantly associated with the likelihood of a low birth weight birth. Foreign-born women were significantly less likely than U.S.-born women to have a low birth weight birth. Controlling for all covariates reduced the difference in the odds of a low birth weight birth between women classified as underweight and normal weight by 73%; however, the difference remained statistically significant ($b=0.45$, $p<0.001$). Relative to women classified as normal weight based on pre-pregnancy BMI, women classified as obese ($b= -0.30$, $p<0.001$) were significantly less likely to have a low birth weight birth.

In analyses not depicted, I make comparisons by pre-pregnancy BMI by including post-estimation tests of coefficient statements that indicate whether there are significant differences in likelihood of low birth weight between the different pre-pregnancy BMI categories. Incorporating these test statements when modeling the association between pre-pregnancy BMI and low birth weight, I find that underweight women are significantly different from both overweight and obese women, respectively. Controlling for all covariates, the Wald Statistics indicates underweight are significantly different from overweight women and obese women with respect to the likelihood of having a low birth weight birth (42.69*** and 100.26***, respectively). Controlling for all covariates, I find that overweight and obese women are also significantly different from each other with respect to the likelihood of having a low birth weight birth (33.06***).

Comparing Model 2 to Model 3, it is evident that overweight women were no longer significantly different from normal weight women in their likelihood of a low birth weight birth once controls and potential mediators were introduced into the model. In hierarchical logistic regression models, I determined that the effect of overweight became insignificantly different

from normal weight in likelihood of a low birth weight birth when controlling for preterm birth and adequacy of pregnancy weight gain. Specifically, preterm birth is associated with an increased risk of a low birth weight infant. High pregnancy weight gain is associated with a decreased risk of having a low birth weight infant compared to normal weight gain, while low pregnancy weight gaining women experience an increased risk of a low birth weight infant.

Table 4.5. Logistic Regression Models of Low Birth weight by Race, Nativity, Pre-pregnancy Body Mass Index, and Covariates, 2004-2010 SPDS

	Low Birth weight							
	Bivariate Models		Model 1		Model 2		Model 3[d]	
	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR
Race (White)								
Black	0.85**[a] (0.03)	2.35	0.88*** (0.03)	2.41	0.89*** (0.03)	2.43	0.60*** (0.06)	1.82
Nativity (US-Born)								
Foreign-Born	-0.28***[b] (0.06)	0.76	-0.42*** (0.06)	0.66	-0.45*** (0.06)	0.64	-0.26** (0.09)	0.77
Pre-Pregnancy BMI (Normal Weight)								
Underweight	0.79***[c] (0.05)	2.21	--	--	0.78*** (0.05)	2.18	0.45***[e, f] (0.09)	1.57
Overweight	-0.17*** (0.03)	0.85	--	--	-0.19*** (0.03)	0.83	-0.04[g] (0.04)	0.96
Obese	-0.18*** (0.3)	0.84	--	--	-0.21*** (0.03)	0.81	-0.30*** (0.04)	0.74
Constant			-2.89*** (0.01)		-2.83*** (0.02)		-4.12*** (0.08)	

Unweighted N: 122278

Significance Levels: *=p<.05;**=p<.01; ***=p<.0001

[a] The constant is -2.91 with a standard error of 0.01.

[b] The constant is -2.79 with a standard error of 0.01.

[c] The constant is -2.75 with a standard error of 0.02.

[d] This model also controls for preterm birth and includes all additional covariates.

[e] Wald chi-square statistic indicates underweight women are significantly different from overweight women in likelihood of preterm birth (42.69***).

[f] Wald chi-square statistic indicates underweight women are significantly different from obese women in likelihood of preterm birth (100.26***).

[g] Wald chi-square statistic indicates overweight women are significantly different from obese women in likelihood of preterm birth (33.06***).

Interaction Effects of Race with Nativity and Pre-Pregnancy Body Mass Index

Table 4.6 includes logistic regression models of low birth weight in which I examine the interaction effects of race and nativity and race and pre-pregnancy BMI, respectively. These analyses allow me to evaluate hypotheses 4b and 5b. Specifically, I am examining whether race moderates the effect of nativity and pre-pregnancy BMI, respectively, on low birth weight. As seen in Table 4.6, there was no significant interaction effect of race and nativity on the likelihood of a low birth weight birth. Similarly, there was also no significant interaction effect of race and pre-pregnancy BMI.

Table 4.6. Logistic Regression Models of Low Birth weight Testing for Moderating Effects of Nativity and Pre-Pregnancy Body Mass Index, 2004-2010 SPDS				
Low Birth weight				
	Model 1[a]		Model 2[b]	
	B (S.E.)	OR	B (S.E.)	OR
Variable (Reference Category)				
Race (White)				
Black	0.60*** (0.06)	1.81	0.60*** (0.08)	1.83
Nativity (U.S.-Born)				
Foreign-Born	-0.29** (0.11)	0.75	-0.26** (0.09)	0.77
Pre-pregnancy BMI (Normal weight)				
Underweight	0.45*** (0.07)	1.57	0.46*** (0.08)	1.58
Overweight	-0.04 (0.04)	0.96	-0.03 (0.04)	0.97
Obese	-0.30*** (0.04)	0.74	-0.31*** (0.05)	0.73
Race*Nativity (U.S. Born, White)				
Foreign-Born, Black	0.08 (0.18)	1.08		
Race*Pre-Pregnancy Body Mass Index (White, Normal Weight)				
Black, Underweight	--	--	-0.06 (0.20)	0.95
Black, Overweight	--	--	-0.06 (0.11)	0.95
Black, Obese	--	--	0.06 (0.11)	1.06
Constant	-4.12***		-4.12***	

	(0.06)		(0.08)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				
[a] This model also controls for preterm birth and also includes all covariates.				
[b] This model also controls for preterm birth and also includes all covariates.				

Summary of Findings

Even though both Black women and White women in Central New York have lower preterm birth and low birth weight percentages than the national averages for their racial groups, there is still a noticeable racial disparity in the occurrence of both preterm birth and low birth weight among the women in this study. As shown in Table 2.1, the 2004 to 2010 national preterm birth average percentages for Black women and White women are 17.89 and 11.32 percent, respectively. The preterm birth percentages for Black women and White women in Central New York are 11.06 and 7.06 percent, respectively, for the same time period. Also shown in Table 2.1, the 2004 to 2010 national low birth weight average percentages for Black women and White women are 13.78 and 7.23 percent, respectively. Black women and White women in Central New York exhibit low birth weight percentages of 11.36 and 5.17 percent, respectively. These statistics demonstrate Black women in Central New York and their babies experience notable disadvantages in preterm birth and low birth weight compared to White women. These disparities persist after taking into account nativity, pre-pregnancy body mass index, and covariates. The low birth weight disparity is strikingly larger than the preterm birth disparity.

While I anticipated controlling for nativity and pre-pregnancy body mass index would reduce the Black-White gap in preterm birth and low birth weight, I find evidence to the contrary. Nativity and pre-pregnancy body mass index have a small effect on the racial disparity in birth outcomes. In fact, nativity and pre-pregnancy body mass index can potentially widen the racial disparity in birth outcomes. Also contrary to what I expected, I did not find significant interaction effects of nativity and pre-pregnancy body mass index on race and the likelihood of preterm birth and low birth weight.

There are nativity and pre-pregnancy body mass index disparities in addition to racial disparities in preterm birth and low birth weight. Foreign-born women are less likely than U.S.-born to experience either having a baby born too early or too small. I also noted underweight women were consistently and persistently much more likely than normal weight to experience a preterm birth or a low birth weight infant. Obese and overweight women, however, were less likely to experience a preterm birth or have a low birth weight infant. Understanding the Black-White gap in birth outcomes among the women in my sample is worthy of further investigation. Better understanding the Black-White gap may require closer inspection of the Black population, particularly with regard to nativity and pre-pregnancy body mass index. In Chapter 5, I focus on the influence of nativity and pre-pregnancy body mass index on birth outcomes among Black women exclusively.

Chapter 5

Examining Preterm Birth and Low Birth Weight Among Black Women by Nativity

This chapter shifts the focus to examination of nativity disparities in preterm birth and low birth weight among Black women giving birth in the Central New York region for the years 2004 to 2010. Among Black women, I also examine whether pre-pregnancy BMI mediates the relationship between nativity and these two birth outcomes, and whether nativity moderates the association between pre-pregnancy BMI and birth outcomes. I present results from descriptive and multivariate logistic regression analyses, and use a similar analytic approach as that followed in Chapter 4. In multivariate analyses, I include controls for a broad range of factors that previous research has found to be associated with preterm birth and low birth weight using the same groupings as described previously.

After providing a description of the analytic sample of Black women by nativity, I present the results of a series of hierarchical, multivariate logistic regression analyses that test the hypotheses I outlined at the end of Chapter 3. Specifically, in this chapter, I test Hypotheses 6a and 6b, 7a and 7b, and 8a and 8b. The results of statistical analyses I perform to test hypotheses 6a and 6b highlight nativity disparities in the likelihood of preterm birth and low birth weight among Black women. Testing hypotheses 7a and 7b, I examine whether pre-pregnancy BMI mediates the association between nativity and preterm birth and low birth weight, respectively. Finally, I introduce interaction terms into the models to examine whether nativity moderates the effect of pre-pregnancy BMI (8a and 8b) on preterm birth and low birth weight.

Describing Pre-Pregnancy BMI by Nativity

In Table 5.1, I provide the frequency and percent distributions for pre-pregnancy BMI by nativity. I provide the frequency and percent distributions for all of the control variables by nativity in Appendix 4. The frequency and percent distribution for all of the control variables among Black women overall is found in Appendix 2, as noted in Chapter 4.

As seen in Table 5.1, nativity was significantly associated with pre-pregnancy BMI. The modal pre-pregnancy BMI category for both U.S.-born and foreign-born women was normal pre-pregnancy BMI (38.80% and 42.12%, respectively). It is noteworthy that the combined percentage of women classified as overweight and obese made up more than 50% of the pre-pregnancy BMI distribution for both U.S.-born (27.20% and 30.18%) and foreign-born (32.16% and 21.80%) women. Foreign-born women had a larger percent overweight than U.S.-born women, while U.S.-born women had a larger percent obese than foreign-born women. Overall the combined percentage of overweight and obese women was larger for the U.S.-born than the foreign-born (57.38% versus 53.96%).

Table 5.1. Sample Characteristics Among Black Women by Nativity (US-Born and Foreign-Born), 2004-2010 SPDS				
	US-Born		Foreign Born	
Variable (Category)	%	N	%	N
Pre-pregnancy Body Mass Index***[a]				
Underweight	3.82	370	3.92	48
Normal Weight	38.80	3758	42.12	516
Overweight	27.20	2635	32.16	394
Obese	30.18	2923	21.80	267
N=10911				
[a] Indicates significance level of chi-square analysis.				

Bivariate Analysis of Birth Outcomes by Nativity and Pre-pregnancy body mass index

In Table 5.2, I present bivariate associations between my focal independent variables- nativity and pre-pregnancy BMI - and both of my dependent birth outcome variables—preterm birth and low birth weight. Additionally, I examine the association between pre-pregnancy BMI and each birth outcome by nativity. As seen in Table 5.2, the overall percent with a preterm birth was 11.06% and the overall percent with a low birth weight birth was 11.36%. Nativity and pre-pregnancy BMI were each significantly associated with preterm birth and low birth weight, respectively. Examining preterm birth first, U.S.-born Blacks had a higher percent preterm birth than foreign-born Blacks (11.49% versus 7.67%). Underweight women also had the highest percent with a preterm birth, and obese women had the lowest percent with a preterm birth (16.03% versus 10.34%). Turning to low birth weight, U.S.-born Blacks had a higher percent low birth weight than foreign-born Blacks (11.83% versus 7.59%). Underweight women also had the highest percent with a preterm birth, and obese women had the lowest percent with a preterm birth (20.33% versus 9.87%).

I found a significant association of pre-pregnancy BMI with preterm birth and low birth weight among U.S.-born Black women, but not among foreign-born Black women. As shown in Table 5.2, among U.S.-born Black women, underweight women have the highest percent preterm birth and obese women have the lowest percent preterm birth (17.03% versus 10.67%), and this association was statistically significant. Among the foreign-born, overweight women had the highest percent preterm birth and normal weight women had the lowest percent preterm birth (9.90% versus 6.40%); however, this difference was not statistically significant. Focusing on low birth weight, I found that U.S.-born women classified as underweight on the basis of pre-pregnancy BMI had the highest percent low birth weight and obese women have the lowest

percent low birth weight (21.08% versus 10.26%, respectively), and this association was statistically significant. Among the foreign-born, I found that women classified as underweight had the highest percent low birth weight and women classified as obese women had the lowest (14.58% versus 5.62%, respectively); however, as with preterm birth, this difference was not statistically significant. These findings suggest that pre-pregnancy BMI matters more for U.S.-born Black women's birth outcomes than is the case for foreign-born Black women.

Table 5.2. Bivariate Relationships between Birth Outcomes and Focal Variables, 2004-2010 SPDS												
	Preterm Birth						Low Birth Weight					
Variable	%						%					
		p	U.S.-Born	P	Foreign-Born	P		P	U.S.-Born	P	Foreign-Born	p
Total	11.06						11.36					
Nativity		***						***				
US-Born	11.49		--		--		11.83		--		--	
Foreign-Born	7.67		--		--		7.59		--		--	
Pre-pregnancy Body Mass Index		***		**				***		***		
Underweight	16.03		17.03		8.33		20.33		21.08		14.58	
Normal Weight	11.18		11.84		6.40		12.26		12.85		7.95	
Overweight	10.96		11.12		9.90		10.40		10.82		7.61	
Obese	10.34		10.67		6.74		9.87		10.26		5.62	
N=10911												
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001												

Analyses of Preterm Birth

Table 5.3 presents results from bivariate and hierarchical multivariate logistic regression models of preterm birth. As shown in Table 5.3 nativity and pre-pregnancy BMI independently and significantly influence the likelihood of a preterm birth. Specifically, foreign-born women were 36% less likely than U.S.-born women to have a preterm birth. Looking at pre-pregnancy BMI, I found an underweight disadvantage. Black women classified as underweight on the basis of pre-pregnancy BMI were 52% more likely to experience preterm birth than Black women classified as normal weight.

Controlling for pre-pregnancy BMI in Model 1, I found no change in the foreign-born advantage. Pre-pregnancy BMI does not mediate the relationship between nativity and preterm birth among Black women, although it does have a statistically significant association with preterm birth. Accounting for pre-pregnancy BMI, foreign-born women continued to be 36% less likely than U.S.-born women to have a preterm birth. Pre-pregnancy BMI is also independently and significantly associated with the likelihood of preterm birth. Accounting for nativity, women classified as underweight pre-pregnancy BMI are 51% more likely than normal weight women to have a preterm birth.

The addition of all other potentially mediating and control variables in Model 2 reduced the nativity disparity in the odds of preterm birth by approximately 29%; however, foreign-born women were still 27% less likely to have preterm birth than foreign-born Black women ($b= -0.32$, $p<0.05$). Pre-pregnancy BMI also continued to have a statistically significant association with preterm birth. Controlling for all other variables in Model 2 reduced the magnitude of the association between underweight pre-pregnancy BMI and preterm birth by approximately 9.76%; however, the association remained statistically significant. Women classified as being

underweight on the basis of pre-pregnancy BMI were 45% more likely to have a preterm birth. I also found the emergence of an obesity advantage when controlling for all covariates. Women classified as obese on the basis of pre-pregnancy BMI were significantly less likely to have a preterm birth compared to women classified as normal weight (b= -0.34, p<0.001).

I also compare women by pre-pregnancy BMI categories by including post-estimation tests of coefficient statements that indicate if there are significant differences in likelihood of preterm birth between the different pre-pregnancy BMI categories. Incorporating these test statements when modeling the association between pre-pregnancy BMI and preterm birth, I find that underweight women are significantly different from overweight women and obese women. In this same model, overweight women are not significantly different from obese women in likelihood of preterm birth. Controlling for all covariates, however, I find that underweight women continue to be significantly different from overweight women and obese women (9.07** and 19.28**, respectively). I also find that overweight and obese women become significantly different from each other in likelihood of preterm birth (6.53*).

It is further noteworthy that obesity becomes significant in relation to the likelihood of a preterm birth when controlling for all covariates. The emergence of the significance of obesity in the likelihood of preterm birth again indicates suppression effects. I examined the hierarchical logistic regression models that I had estimated to further examine the observed suppression effects. Results indicate that sociodemographic and socioeconomic factors suppress the effect of obesity. Specifically, a decreased likelihood of preterm birth is associated with White fathers compared to Black fathers, mothers with some college training in comparison to those with less than a high school diploma, and WIC recipients compared to those who did not receive WIC. Given the persisting and independent significance of pre-pregnancy BMI to preterm birth that I

note in both the relevant literature and in my empirical analyses; I further considered the potential interaction effects of nativity and pre-pregnancy body mass index in the likelihood of preterm birth.

Table 5.3 also includes logistic regression models of preterm birth in which I examine the interaction effects of nativity and pre-pregnancy BMI. This analysis allows me to evaluate hypotheses 8a. Specifically, I am examining whether nativity moderates the effect of pre-pregnancy BMI on preterm birth. As seen in Table 5.3, I found a significant interaction effect among foreign-born, overweight women ($b=0.58$, $p<0.05$). Table 5.4 includes the hand calculations of the coefficients and odds ratios of the interaction effects for nativity and pre-pregnancy BMI. Specifically, foreign-born, overweight women were 12% less likely than U.S.-born, normal weight women to have a preterm birth. Considering the interaction of nativity and pre-pregnancy body mass index demonstrates an advantage associated with the combined effect of foreign born nativity status and high pre-pregnancy BMI.

Table 5.3. Logistic Regression Models of Preterm Birth Among Black Women by Nativity, by Pre-Pregnancy BMI, and Covariates , 2004-2010 SPDS

	Preterm Birth							
	Bivariate Models		Model 1		Model 2[c]		Model 3[d]	
	B (S.E.)	OR	B (S. E.)	OR	B (S. E.)	OR	B (S.E.)	OR
Nativity (US-Born)								
Foreign-Born	-0.45***[a] (0.11)	0.64	-0.45*** (0.11)	0.64	-0.32* (0.16)	0.73	-0.54* (0.22)	0.58
Pre-Pregnancy BMI (Normal Weight)								
Underweight	0.42***[b] (0.14)	1.52	0.41** (0.14)	1.51	0.37* (0.15)	1.45	0.40* (0.16)	1.49
Overweight	-0.02 (0.08)	0.98	-0.02 (0.08)	0.98	-0.11 (0.08)	0.90	-0.17 (0.09)	0.85
Obese	-0.09 (0.08)	0.92	-0.10 (0.08)	0.90	-0.34*** (0.09)	0.71	-0.35*** (0.09)	0.70
Nativity*Pre-pregnancy BMI (U.S.-born, Normal weight)								
Foreign-born, Underweight	--	--	--	--	--	--	-0.39 (0.61)	0.68
Foreign-born, Overweight	--	--	--	--	--	--	0.58* (0.27)	1.79
Foreign-born, Obese	--	--	--	--	--	--	0.18 (0.33)	1.20
Constant			-2.03*** (0.05)		-2.29*** (0.23)		-2.18*** (0.24)	

Unweighted N: 10911

Significance Levels: *=p<.05;**=p<.01; ***=p<.0001

[a] The constant is -2.04 with a standard error of 0.03.

[b] The constant is -2.07 with a standard error of 0.05.

[c] This model also includes all covariates.

[d]This model also includes all covariates.
[e] Wald chi square tests indicate underweight women are significantly different from overweight women in likelihood of preterm birth (9.07**).
[f] Wald chi square tests indicate underweight women are significantly different from obese women in likelihood of preterm birth (19.28**).
[g] Wald chi square tests indicate overweight women are significantly different from obese women in likelihood of preterm birth (6.53*).

Table 5.4. Calculated Coefficients and Odds Ratios of Interaction Effects of Nativity and Pre-Pregnancy Body Mass Index				
Variable (Category)	Nativity			
	U.S.-Born		Foreign-Born	
Pre-Pregnancy BMI				
Underweight	0.40	1.49	-0.53	0.59
Normal Weight	--	--	-0.54	0.58
Overweight	-0.17	1.19	-0.13	0.88*
Obese	-0.35	0.70	-0.71	0.49
N=10911				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

Analyses of Low Birth Weight

Table 5.5 includes bivariate and hierarchical multivariate logistic regression models of low birth weight. The bivariate models present results that are consistent with the bivariate results that I have already presented. As shown in Table 5.5, prior to controlling for other variables, nativity and pre-pregnancy BMI each significantly influenced the likelihood of a low birth weight birth. Specifically, foreign-born women were 39% less likely than U.S.-born women to have a low birth weight infant. Looking at pre-pregnancy BMI, I found an underweight disadvantage and an overweight and obese pre-pregnancy BMI advantage. Compared to women classified as normal weight on the basis of pre-pregnancy BMI, underweight women were 52% more likely to have a low birth weight infant. Overweight and obese women were 17% and 22% less likely, respectively, to experience a low birth weight birth compared to women classified as normal weight on the basis of pre-pregnancy BMI.

Controlling for pre-pregnancy BMI in Model 1, foreign-born women were still significantly less likely than U.S.-born women to have a low birth weight birth. Accounting for pre-pregnancy BMI, foreign-born women continued to be 40% less likely than U.S.-born women to have a low birth weight birth. Pre-pregnancy BMI had minimal influences on the nativity disparity in low birth weight. Model 2 includes all of the relevant covariates for the analysis of low birth weight. With all the variables in the model, the nativity disparity in low birth weight is eliminated. In hierarchical logistic regression models, I was able to identify morbidity/medical risk factors prior to pregnancy as contributing to the elimination of the nativity disparity. I find that high blood pressure, high risk referral, and having any medical risk factor prior to pregnancy are associated with an increased likelihood of having a low birth weight infant.

Pre-pregnancy BMI is independently and significantly associated with the likelihood of a low birth weight birth. Controlling for all covariates reduced the difference in the odds of low birth weight between women classified as underweight and normal weight by 30%; however, the difference remained statistically significant ($b=0.42$, $p<0.05$). Underweight women were 52% more likely to have a low birth weight birth. Controlling for all covariates increased the magnitude of the obesity advantage in low birth weight by 11.5% ($b= -0.29$, $p<0.01$). I also found that the initial overweight advantage disappeared after controlling for preterm birth and adequacy of pregnancy weight gain.

I also compare women by pre-pregnancy BMI categories by including post-estimation tests of coefficient statements that indicate if there are significant differences in likelihood of a low birth weight infant between the different pre-pregnancy BMI categories. Incorporating these test statements when modeling the association between pre-pregnancy BMI and low birth weight, I find that underweight women are significantly different from overweight and obese women (33.92*** and 39.11***, respectively). Controlling for all covariates, underweight women continue to be significantly different from overweight women and obese women with respect to likelihood of a low birth weight birth (8.26** and 13.16**, respectively). There remains, however, no significant difference between overweight women and obese women with respect to likelihood of low birth weight.

Table 5.5 also includes a logistic regression model of low birth weight in which I examine the interaction effects of nativity and pre-pregnancy BMI. This analysis allows me to evaluate hypotheses 8b. Specifically, I am examining whether nativity moderates the effect of pre-pregnancy BMI on low birth weight. As seen in Table 5.4, there were no significant

interaction effects of nativity and pre-pregnancy BMI on the likelihood of a low birth weight birth.

Table 5.5. Logistic Regression Models of Low Birth weight Among Black Women by Nativity, by Pre-Pregnancy BMI, and all covariates , 2004-2010 SPDS

	Low Birth weight							
	Bivariate Models		Model 1		Model 2[c]		Model 3[d]	
	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR	B (S.E.)	OR
Nativity (US-Born)								
Foreign-Born	-0.49***[a] (0.11)	0.61	-0.51*** (0.11)	0.60	0.02 (0.19)	1.02	0.02 (0.19)	1.02
Pre-Pregnancy BMI (Normal Weight)								
Underweight	0.60***[b] (0.13)	1.83	0.60*** (0.05)	1.83	0.42*[e, f] (0.18)	1.52	0.42* (0.18)	1.52
Overweight	-0.19* (0.08)	0.83	-0.18* (0.03)	0.83	-0.14 (0.11)	0.87	-0.14 (0.11)	0.87
Obese	-0.24** (0.08)	0.78	-0.26** (0.3)	0.77	-0.29** (0.11)	0.75	-0.29** (0.11)	0.75
Nativity*Pre-pregnancy BMI (U.S.-born, Normal weight)								
Foreign-born, Underweight	--	--	--	--	--	--	0.18 (0.61)	1.20
Foreign-born, Overweight	--	--	--	--	--	--	-0.29 (0.35)	0.75
Foreign-born, Obese	--	--	--	--	--	--	-0.33 (0.42)	0.72
Constant			-2.75*** (0.02)		-2.57*** (0.29)		-2.58*** (0.30)	
Unweighted N: 10911								
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001								
[a] The constant is -2.04 with a standard error of 0.03.								
[b] The constant is -2.07 with a standard error of 0.05.								
[c] This model also controls for preterm birth and includes all covariates.								

[d] This model also controls for preterm birth and includes all covariates.
[e] Wald chi square tests indicate underweight women are significantly different from overweight women in their likelihood of low birth weight (8.26**).
[f] Wald chi square tests indicate underweight women are significantly different from obese women in their likelihood of low birth weight (13.16**).

Summary of Findings

Nativity disparities in preterm birth persist even after accounting for pre-pregnancy body mass index and controlling for all appropriate covariates. Nativity disparities in low birth weight are eliminated when controlling for sociodemographics, socioeconomic status indicators, and medical risk factors. Pre-pregnancy BMI is independently associated with the likelihood of preterm birth and low birth weight. Specifically, underweight women had a greater risk of both preterm birth and low birth weight than normal weight women. Obese women had a decreased risk of preterm birth and low birth weight compared to normal weight women. Despite noting the independent association of pre-pregnancy BMI to birth outcomes, I did not find that pre-pregnancy BMI mediates the relationship between nativity and birth outcomes among Black women. There is, however, a significant interaction effect of nativity and pre-pregnancy body mass index on preterm birth. Specifically, there is a combined effect of nativity and pre-pregnancy BMI such that foreign-born, overweight women are less likely than U.S.-born, normal weight women to experience preterm birth. I did not find any significant interaction effects of nativity and pre-pregnancy body mass index on low birth weight.

Understanding nativity disparities in birth outcomes among Black women is also worthy of additional empirical exploration primarily because the foreign-born population does not constitute a homogenous group. Specific maternal region of birth matters for birth outcomes. In Chapter 6, I focus on the influence of region of birth and pre-pregnancy BMI on birth outcomes among Black women exclusively.

Chapter 6

Examining Preterm Birth and Low Birth Weight Among Black Women by Region of Birth

This chapter offers a more nuanced examination of Black women's birth outcomes by examining region of birth disparities in preterm birth and low birth weight among Black women giving birth in the Central New York region for the years 2004 to 2010. I also examined whether pre-pregnancy BMI mediates the relationship between region of birth and these two birth outcomes, and whether region of birth moderates the association between pre-pregnancy BMI and birth outcomes. I present results from descriptive and multivariate logistic regression analyses, and use a similar analytic approach as that followed in Chapters 4 and 5. In multivariate analyses, I include controls for a broad range of factors that previous research has found to be associated with preterm birth and low birth weight using the same groupings as described previously.

After providing a description of the analytic sample of Black women by region of birth, I present the results of a series of hierarchical, multivariate logistic regression analyses that test the hypotheses I outlined at the end of Chapter 3. Specifically, in this chapter, I test Hypotheses 9a and 9b, 10a and 10b, and 11a and 11b. The results of statistical analyses I perform to test hypotheses 9a and 9b highlight region of birth disparities in likelihood of preterm birth and low birth weight among Black women. Testing hypotheses 10a and 10b, I examine whether pre-pregnancy BMI mediates the association of region of birth on preterm birth and low birth weight, respectively. Finally, I introduce interaction terms into the models to examine whether region of birth moderates the effect of pre-pregnancy BMI (11a and 11b) on preterm birth and low birth weight.

Describing Pre-Pregnancy BMI by Region of Birth

In Table 6.1, I provide the frequency and percent distributions for pre-pregnancy BMI by region of birth. I provide the frequency and percent distributions for all of the control variables by region of birth in Appendix 7. Region of birth was significantly associated with pre-pregnancy BMI. As seen in Table 6.1, the modal pre-pregnancy BMI category for U.S.-born women, African women, and non-African/Other women was normal weight (38.80%, 42.43%, and 41.67%, respectively). Foreign-born women from both the African and non-African regions have larger percentages classified as normal weight than the U.S.-born women. U.S.-born women have a larger percent obese than both African and non-African/Other women. Both African and non-African/Other women have slightly larger overweight percentages than U.S.-born women. It was also noteworthy that the combined percentages of women classified as overweight and obese represented more than 50 percent of the women for U.S. born women, African women, and Non-African/Other women (57.38%, 54.05%, and 53.75%, respectively). Among all three region-of-birth categories, U.S. born women had the highest combined percentage of overweight or obese.

Table 6.1. Pre-Pregnancy BMI by Region of Birth, SPDS 2004-2010							
Variable (Category)	Region of Birth						
	United States		African		Non-African/Other		
	%	N	%	N	%	N	
Pre-Pregnancy BMI							***
Underweight	3.82	370	3.51	26	4.58	26	
Normal Weight	38.80	3760	42.43	314	41.67	200	
Overweight	27.20	2636	32.97	244	31.04	149	
Obese	30.18	2925	21.08	156	22.71	409	
N=10911							
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001							
[a] Indicates significance of chi-square analysis							

Bivariate Analysis of Birth Outcomes by Region of Birth and Pre-pregnancy body mass index

In Table 6.2, I present bivariate associations between my focal independent variables- region of birth and pre-pregnancy BMI- and both of my dependent birth outcome variables—preterm birth and low birth weight. Additionally, I examine the association between pre-pregnancy BMI and region of birth. As seen in Table 6.2, the overall percent with a preterm birth is 11.06% and the overall percent with a low birth weight birth is 11.36%. Region of birth and pre-pregnancy BMI are each significantly associated with preterm birth and low birth weight, respectively. Examining preterm birth by region of birth, I find that U.S.-born Blacks had the highest percent of women with a preterm birth (11.48%) followed by Non-African/Other women (8.96%). African women had the lowest percent with a preterm birth (6.89%). Shifting focus to low birth weight, I find that U.S.-born Blacks had the highest percent of women with a low birth weight birth (11.83%) followed by Non-African/Other women (9.38%). African women had the lowest percent with a low birth weight birth (6.49%). The percent distributions of both preterm birth and low birth weight suggested an African advantage among all Black women in my analytic sample. In subsequent analyses, I examined the African advantage in birth outcomes.

Though I demonstrate here and previously in Chapter 5 a significant association of pre-pregnancy BMI with preterm birth for U.S.-born Black women; I find no significant associations of pre-pregnancy BMI and low birth weight among either African or non-African/Other foreign-born women. As shown in Table 6.2, underweight women have the highest percent of low birth weight births and obese women have the lowest percent low birth weight than the U.S.-born (17.03% versus 10.67%). Among African women, underweight women had the highest percent preterm birth and obese women had the lowest percent preterm birth (11.54% versus 4.49%).

Among Non-African/Other women, underweight women had the lowest percent preterm and overweight women had the highest percent preterm birth (4.55% versus 12.08%). The association between pre-pregnancy BMI and preterm birth was significant for U.S.-born women, but the association was not significant for African and Non-African/Other women.

As I demonstrate here and previously in Chapter 5, there is a significant association of pre-pregnancy BMI with low birth weight for U.S.-born Black women; however, I find no significant associations of pre-pregnancy BMI and low birth weight for either African or non-African/Other women. As shown in Table 6.2, underweight women had the highest percent low birth weight and obese women had the lowest percent low birth weight among U.S.-born women (21.08% versus 10.26%, respectively). Among both African women and Non-African/Other women, underweight women had the highest percent of women with a low birth weight birth (15.38% and 13.64, respectively). Among African women, the percent low birth weight was lowest among obese women (3.21%). Among Non-African/Other women, overweight women had the lowest percent low birth weight (8.72%).

Table 6.2. Bivariate Relationships between Birth Outcomes and Focal Variables, 2004-2010 SPDS

	Preterm Birth								Low Birth Weight							
Variable	%								%							
		P	U.S.	p	Africa	p	Other	P		P	U.S.	p	Africa	P	Other	p
Total	11.06								11.36							
Region of Birth		***								***						
US-Born	11.48		--		--		--		11.83		--		--		--	
Africa	6.89		--		--		--		6.49		--		--		--	
Non-African/Other	8.96								9.38							
Pre-pregnancy Body Mass Index***[a]		***		**						***		***				
Underweight	16.03		17.03		11.54		4.55		20.33		21.08		15.38		13.64	
Normal Weight	11.18		11.84		6.37		6.50		12.26		12.85		7.01		9.50	
Overweight	10.96		11.12		8.61		12.08		10.40		10.81		6.97		8.72	
Obese	10.34		10.67		4.49		10.09		9.87		10.26		3.21		9.17	

N=122278

Significance Levels: *=p<.05;**=p<.01; ***=p<.0001

[a]Indicates significant relationship between region of birth category and preterm birth or low birthweight.

Analyses of Preterm Birth

Table 6.3 presents results from bivariate and hierarchical multivariate logistic regression models of preterm birth. Table 6.3 shows region of birth and pre-pregnancy BMI each independently, significantly influenced the likelihood of a preterm birth. Specifically, African-born women were 43% less likely than U.S.-born women to have a preterm birth. Looking at pre-pregnancy BMI, I found an underweight disadvantage. Underweight women were 52% more likely to experience preterm birth. Pre-pregnancy BMI does not mediate the relationship between region of birth and preterm birth. Accounting for pre-pregnancy BMI, African women continued to be 43% less likely than U.S.-born women to have a preterm birth. Model 2 includes all of the relevant covariates for the preterm birth analysis. With all variables in the model, the likelihood of a preterm birth among African women compared to U.S.-born women is reduced by only 8.77% relative to Model 1. African women became 40% less likely than U.S.-born women to have a preterm birth net of all potential mediators and controls.

I also offer comparisons between the region of birth categories by including post-estimation tests of coefficient statements that indicate if there are significant differences in likelihood of a preterm birth between the different regions. Incorporating these test statements when modeling the bivariate association between region of birth and preterm birth, when accounting for pre-pregnancy BMI, and when controlling for all covariates, I do not find any significant differences between African women and non-African/Other women.

As previously demonstrated in Chapter 5, pre-pregnancy BMI is independently and significantly associated with the likelihood of preterm birth among Black women. Controlling for all covariates reduced the difference in the odds of preterm birth between women classified as underweight and normal weight by 9.76%, but the difference remained statistically significant

(b=0.37, p<0.05). Relative to women classified as normal weight based on pre-pregnancy BMI women classified as obese also became significantly less likely than normal weight women to have a preterm birth (b= -0.34, p<0.0001). I find sociodemographic and socioeconomic factors suppress the effects of obesity. Specifically advantages were associated with White fathers, higher educational attainment, and receiving WIC.

Table 6.3 also includes a logistic regression model of preterm birth in which I examine the interaction effects of region of birth and pre-pregnancy BMI. This analysis allows me to evaluate hypotheses 11a. Specifically, I am examining whether region of birth moderates the effect of pre-pregnancy BMI on preterm birth. As seen in Table 6.3, there was no significant interaction effect of region of birth and pre-pregnancy BMI on the likelihood of a preterm birth.

Table 6.3. Logistic Regression Models of Preterm Birth Among Black Women by Region of Birth, by Pre-Pregnancy BMI, all Covariates, and Interaction Effects of Region of Birth and Pregnancy BMI, 2004-2010 SPDS

	Preterm Birth							
	Bivariate Models		Model 1[a]		Model 2[b]		Model 3	
	B (S.E.)	OR	B (S. E.)	OR	B (S. E.)	OR	B (S. E.)	OR
Region of Birth (U.S.)								
African	-0.56[a] (0.15)	0.57**	-0.57** (0.15)	0.57	-0.52* (0.22)	0.60	-0.32 (0.28)	0.73
Non-African	-0.28 (0.16)	0.76	-0.28 (0.18)	0.75	-0.17 (0.18)	0.85	0.01 (0.27)	1.01
Pre-Pregnancy BMI (Normal Weight)								
Underweight	0.42[b] (0.14)	1.52***	0.41** (0.14)	1.51	0.37* (0.15)	1.45	0.54** (0.15)	1.71
Overweight	-0.02 (0.08)	0.98	-0.02 (0.08)	0.98	-0.11 (0.08)	0.90	-0.27* (0.09)	0.76
Obese	-0.09 (0.08)	0.92	-0.10 (0.08)	0.90	-0.34*** (0.09)	0.71	-0.42*** (0.09)	0.66
Region of Birth*Pre-Pregnancy BMI (U.S., Normal weight)								
African, Underweight	--	--	--	--	--	--	-0.91 (1.12)	0.89
African, Overweight	--	--	--	--	--	--	0.69 (0.41)	1.66
African, Obese	--	--	--	--	--	--	0.60 (0.46)	0.75
Non-African, Underweight	--	--	--	--	--	--	-0.11 (0.73)	0.40
Non-African, Overweight	--	--	--	--	--	--	0.50 (0.35)	1.98
Non-African, Obese	--	--	--	--	--	--	-0.26 (0.48)	1.77
Constant			-2.03*** (0.05)		-2.58*** (0.18)		-2.31*** (0.18)	

Unweighted N: 11901
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001
[a] The constant for this model is -2.04 with a standard error of 0.03.
[b] This constant for this model is -2.07 with a standard error of 0.05
[c] This model also includes all covariates.

Analyses of Low Birth Weight

Table 6.4 includes bivariate and hierarchical multivariate logistic regression models of low birth weight including my focal independent variables. The bivariate models present results that are consistent with the bivariate results that I have already presented. As shown in Table 6.4, prior to controlling for other variables, region of birth and pre-pregnancy BMI each significantly influenced the likelihood of a low birth weight birth. Specifically, African women were 48% less likely than U.S.-born women to have a low birth weight birth. Looking at pre-pregnancy BMI, I found an underweight disadvantage and an overweight and obese pre-pregnancy BMI advantage. Compared to women classified as normal weight on the basis of pre-pregnancy BMI, underweight women were 52% more likely to experience preterm birth. Overweight and obese women were 17% and 22% less likely, respectively, to experience a low birth weight birth compared to women classified as normal weight on the basis of pre-pregnancy BMI.

Controlling for pre-pregnancy body index, African women were still significantly less likely than U.S.-born women to have a low birth weight birth. Pre-pregnancy BMI had minimal influences on the region of birth disparity in low birth weight. Accounting for pre-pregnancy BMI, African women were 49% less likely than U.S.-born women to have a low birth weight birth, which represents a 1.5% increase in the advantage African women experience relative to U.S.-born women in likelihood of a low birth weight birth. Model 2 includes all of the relevant covariates for the preterm birth analysis. With all the variables in the model, the region of birth disparity in low birth weight is eliminated. In hierarchical logistic regression models, I was able to identify pregnancy health behaviors/prenatal care characteristics as contributing to the elimination of the region of birth disparity. Not receiving prenatal care counseling on early

labor, smoking, and drug use was each associated with an increased likelihood of a low birth weight infant. Having a midwife and increasing physical activity during pregnancy were each associated with a decreased likelihood of a low birth weight birth.

I also offer comparisons between the region of birth categories by including post-estimation tests of coefficient statements that indicate if there are significant differences in likelihood of a low birth weight infant between the different regions. Incorporating these test statements when modeling the bivariate association between region of birth and low birth weight, when accounting for pre-pregnancy BMI, and when controlling for all covariates, I do not find any significant differences between African women and non-African/Other women. Pre-pregnancy BMI is independently and significantly associated with the likelihood of a low birth weight birth. Controlling for all covariates reduced the difference in the odds of low birth weight between women classified as underweight and normal weight by 30%; however, the difference remained statistically significant ($b=0.42$, $p<0.01$). Underweight women were 52% more likely to have a low birth weight birth. Compared to Model 1, controlling for all covariates in Model 2 increased the magnitude of the obesity advantage in low birth weight by approximately 11.5% ($b= -0.29$, $p<0.01$). Additionally, the initial overweight advantage disappeared after controlling for preterm birth and adequacy of pregnancy weight gain.

Table 6.4 also includes a logistic regression model of low birth weight in which I examine the interaction effects of region of birth and pre-pregnancy BMI. This analysis allows me to evaluate Hypothesis 11b. Specifically, I am examining whether region of birth moderates the effect of pre-pregnancy BMI on low birth weight. As seen in Table 6.4, there was no significant interaction effect of nativity and pre-pregnancy BMI on the likelihood of a low birth weight birth.

Table 6.4. Logistic Regression Models of Low Birth Weight Among Black Women by Region of Birth, by Pre-Pregnancy BMI, all Covariates, and Interaction Effects of Region of Birth and Pregnancy BMI, 2004-2010 SPDS								
Low Birth weight								
	Bivariate Models		Model 1		Model 2		Model 3[b]	
	B (S. E.)	OR					B (S. E.)	OR
Variable (Reference Category)								
Region of Birth(United States)								
African	-0.66*** (0.15)	0.52	-0.67*** (0.15)	0.51	-0.14 (0.27)	0.87	-0.07 (0.34)	0.94
Non-African	-0.26 (0.16)	0.77	-0.28 (0.16)	0.76	0.14 (0.23)	1.15	0.36 (0.32)	1.43
Pre-pregnancy BMI (Normal Weight)								
Underweight	0.60*** (0.13)	1.83	0.60*** (0.05)	1.82	0.42* (0.18)	1.52	0.40* (0.19)	1.50
Overweight	-0.19* (0.08)	0.83	-0.18* (0.03)	0.83	-0.14 (0.11)	0.87	-0.11 (0.11)	0.90
Obese	-0.24** (0.08)	0.78	-0.26** (0.3)	0.77	-0.29** (0.11)	0.75	-0.27* (0.11)	0.77
Region of Birth*Pre-Pregnancy BMI (Native-Born, Normal weight)								
African, Underweight	--	--	--	--	--	--	0.02 (0.84)	1.34
African, Overweight	--	--	--	--	--	--	-0.51 (0.50)	0.87
African, Obese	--	--	--	--	--	--	-0.29 (0.58)	0.71
Non-African, Underweight	--	--	--	--	--	--	0.30 (0.83)	1.04
Non-African, Overweight	--	--	--	--	--	--	-0.10 (0.45)	0.62
Non-African, Obese	--	--	--	--	--	--	-0.38	0.78

							(0.59)	
Constant			-1.92*** (0.05)		-3.02*** (0.25)		-3.04*** (0.24)	
Unweighted N: 10911								
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001								
[a] The constant for this model is -2.01 with a standard error of 0.03.								
[b] The constant for this model is -1.97 with a standard error of 0.01.								
[c] This model also includes all covariates.								

Summary of Findings

I was not able to account for the region of birth disparity in preterm birth by accounting for pre-pregnancy body mass index or covariates. Instead, I noted a persisting African advantage relative to U.S.-born women regarding preterm birth. In contrast, I was able to account for the region of birth disparity in low birth weight when accounting for prenatal care characteristics and pregnancy health behaviors. It appears that African-born women experience a prenatal care disadvantage in comparison to U.S.-born Black women. The African advantage was eliminated when I controlled for prenatal care and pregnancy health behaviors and this disappearance was maintained after controlling for all covariates. Pre-pregnancy body mass index, independently, was significantly related to preterm birth and low birth weight, but did not mediate the relationship between region of birth and either birth outcome. Nor did region of birth moderate the relationship between pre-pregnancy BMI and either birth outcome.

Chapter 7

Conclusion and Discussion of Findings

The health and well-being of Black women in Central New York and their infants is in jeopardy of deteriorating. In this dissertation, I examine the interrelationships of race, maternal nativity, and maternal pre-pregnancy body mass index on the likelihood of preterm birth and low birth weight both between Black women and White women and among Black women, exclusively. I find that Black women remain at an elevated risk of both preterm birth and low birth weight in comparison to White women despite taking nativity and pre-pregnancy body mass index into account as well additional socioeconomic and biological risk factors. The larger proportions of both foreign-born and overweight and obese women among Black women make the issues of nativity and body mass index particularly salient to understanding racial/ethnic disparities in birth outcomes. I find, after controlling for medical risk factors and morbidity prior to pregnancy, that foreign-born women are indistinguishable from U.S.-born Black women in their risk of low birth weight. Examining the heterogeneity among the foreign-born, Black population, Non-African/Other women, foreign-born Black women are not significantly different from U.S.-born Black women in their risk of either preterm birth or low birth weight. I do, however, find an initial African advantage in both preterm birth and low birth weight. The African advantage disappears after controlling for additional socioeconomic, biological, and behavioral risk factors. Prenatal care disparities among African women compared to U.S.-born Black women are particularly significant to the dissipation of the African health advantage.

Given these findings, we are able to see the specific health challenges associated with both nativity and pre-pregnancy body mass index within Black communities in Central New York. We are perhaps seeing further evidence supporting health scholars' fears that Black immigrants will assimilate into the U.S. health structure with outcomes that mirror U.S.-born

Blacks coming to fruition in Central New York. Poor birth outcomes among Black immigrant women may ultimately contribute to an even more bleak outlook regarding Black women's birth outcomes overall. Ultimately, we may be able to see the perpetuation and worsening of Black-White disparities in not only birth outcomes, but other health indicators and in life course health statuses among infants born to Black women. Serious attention must be given to these matters, with scholars weighing in on the issues of race, nativity, and pre-pregnancy body mass index in racial/ethnic disparities in birth outcomes. In the discussion that follows, I provide a more detailed summary of the guiding questions and findings of my analyses.

In this research I set out to answer several broad research questions. I ask: "What is the relationship between race and birth outcomes?" I also ask: "What is the influence of nativity on birth outcomes?" Additionally, I answer the question: "What is the impact of pre-pregnancy body mass index on birth outcomes?" Lastly, I ask: "What are the combined effects of race, nativity, and/or pre-pregnancy body mass index on birth outcomes?" Using data from the New York Statewide Perinatal Data System (SPDS) for the years 2004 to 2010, I examine the likelihood of preterm birth and low birth weight to answer these questions. In Chapter 4, I explore the relationship between race and preterm birth and race and low birth weight for Black women and White women included in the SPDS. I verify the existence of Black-White gaps in both the likelihood of preterm birth and the likelihood of low birth weight. I also demonstrate that taking into account nativity and pre-pregnancy body mass index has minimal effects on the Black-White gaps in preterm birth and low birth weight. Neither nativity nor pre-pregnancy body mass index interacts with race in significant ways to influence the likelihood of preterm birth and low birth weight.

Chapters 5 and 6 focus on the Black women in the SPDS. In Chapter 5, I explore the relationships between nativity and preterm birth and nativity and low birth weight among Black women. In Chapter 5, I measure nativity as a dichotomous variable that includes the categories U.S.-born and foreign-born. In Chapter 5, I demonstrate the existence of nativity disparities in both the likelihood of preterm birth and likelihood of low birth weight. My findings demonstrate a decreased likelihood of preterm birth and a decreased likelihood of low birth weight for foreign-born Black women compared to U.S.-born Black women. Taking into account pre-pregnancy body mass index widens the nativity disparity such that foreign-born women gain a greater advantage regarding their decreased likelihood of having a preterm birth and low birth weight infant. I am not able to account for the nativity disparity in preterm birth. I am, however, able to account for the nativity disparity in low birth weight taking pre-pregnancy body mass index into account and controlling for sociodemographic factors, socioeconomic status, and morbidity/medical risk factors prior to pregnancy. In chapter 5, I also find significant interaction effects of nativity and pre-pregnancy body mass index on the likelihood of preterm birth. Specifically, foreign-born, overweight women are less likely than U.S.-born, normal weight women to experience preterm birth. I do not, however, find any significant interaction effects between nativity and pre-pregnancy BMI regarding the likelihood of having a low birth weight infant.

I also examine the influence of nativity with greater specificity. In Chapter 6, I demonstrate nativity disparities in preterm birth and low birth weight by region of birth. In these analyses, region of birth includes U.S.-born, African, and non-African. In Chapter 6, I demonstrate region of birth disparities in preterm birth and low birth weight such that African-born women are significantly less likely than U.S.-born Black women to experience either

outcome. Taking into account pre-pregnancy body mass index widens the disparity in likelihood preterm birth and low birth weight. I cannot account for the region of birth disparity in preterm birth taking into account pre-pregnancy body mass index or any control variable. Taking into account, pre-pregnancy body mass index and controlling for sociodemographic factors, socioeconomic status, morbidity/medical risk prior to pregnancy, previous pregnancy history, maternal emotions, and prenatal care/pregnancy health behaviors accounts for the African-born advantage in low birth weight relative to U.S.-born Black women. I do not find any significant interaction effects of nativity and pre-pregnancy body mass index on the likelihood of either preterm birth or low birth weight among Black women.

In the discussion that follows, I offer interpretations of each portion of analyses. I discuss how these findings compare to contemporary health disparities literature. I discuss the theoretical and empirical contributions of this study. I also discuss directions for future research. Lastly, I discuss the policy implications of this work.

Examining the Black-White Gap in Preterm Birth and Low Birth Weight:

The persistence of the Black-White disparity in birth outcomes is a pernicious problem requiring research that employs innovative theoretical and empirical strategies to explain and examine the correlates of preterm birth and low birth weight. In my analyses of preterm birth among the total sample, I control for sociodemographic, socioeconomic, morbidity/medical risk prior to pregnancy, previous pregnancy outcomes, maternal emotions, prenatal care and pregnancy behaviors, and infection/morbidity during pregnancy. In my analyses of low birth weight among the total sample I control for adequacy of pregnancy weight gain and preterm birth in addition to the aforementioned control variables. After controlling for each of these factors, I find a persisting Black-White gap. In other research, scholars document that

racial/ethnic disparities in health persist after controlling for a host of factors including socioeconomic status, prenatal care, maternal risk behaviors, and psychosocial stress (Williams & Sternthal 2012; Colen et al. 2006; Lu & Halfon 2003; Williams 2002).

Examining findings regarding the likelihood of preterm birth leaves unanswered questions. When examining the likelihood of preterm birth, taking into account nativity and pre-pregnancy body mass index and controlling for all covariates contributes to the greatest decline in risk of preterm birth among Black women relative to White women. There are a host of psychosocial and biological risk factors that are associated with preterm birth. Many of which, I control for in my analyses of preterm birth. Among these factors we find prior obstetric/gynecologic history including prior preterm birth. Additional factors include being younger than 17 and older than 35 years of age, single marital status, low socioeconomic status, shorter stature, poor nutritional status, poor psychological wellbeing, and vaginal bleeding (Goldenberg & McClure 2010). My findings confirm the significance of these factors in contributing to preterm birth. Only taking race into account, I find that Black women are 64 percent more likely to experience preterm birth relative to White women. After taking nativity, pre-pregnancy BMI, and all covariates into account, I find that Black women are 21 percent more likely than White women to experience preterm. While these findings demonstrate a substantial decline in the Black-White gap in preterm birth, the persisting gap decline indicates there are additional factors not being accounted for that could further help to explain this lingering disparity in preterm birth.

Examining low birth weight points to the significance of sociodemographic, socioeconomic factors. Taking into account nativity and controlling for sociodemographics and socioeconomic status contributes to the greatest decrease in likelihood of low birth weight

among Black women compared to White women. Without considering the effect of nativity, pre-pregnancy body mass index, or additional covariates, I find that Black women are more than two times as likely to have a low birth weight infant compared to White women. Black women are 67 percent more likely than White women to have a low birth weight infant after taking into account nativity and controlling for sociodemographic and socioeconomic factors. I find that single marital status and age 30 years and above are associated with an increased likelihood of low birth weight. Birth weight disadvantage is also associated with maternal residence in Oneida and Onondaga counties and non-White fathers. Moms with less than some college education, moms who did not work during pregnancy and those whose pregnancies were paid for by a government source are also at an increased likelihood of having a low birth weight infant. My findings also underscore the birth weight advantage associated with those women who had graduate school education and WIC recipients. My findings are consistent with scholarly work emphasizing the significance of socio-structural factors associated with the likelihood of low birth weight (Collins et al. 2004; Lu & Halfon 2003; Kramer 1987). Increasing access to education and programs such as WIC are means by which to improve the Black-White gap in low birth weight.

While investments in education and social programs offer some potential improvements in both the incidence of preterm birth and low birth weight, future research is necessary to unearth the complex etiological pathways that contribute to the adverse birth outcomes. More contemporary research exploring birth outcomes among Black women emphasize the significance of racism and is challenged with how exactly to measure racism. Exploring the complexities of the impact of race is much needed in future empirical work. Scholars argue that measuring racism in health disparities research is necessary to better understand how such health

disparities occur (Smedley 2012; Gee et al. 2012; Williams & Sternthal 2010; Williams 2006; Geronimus et al. 2006; Feagin & McKinney 2003; Lu & Halfon 2003).

In my dissertation, I attempt to illustrate the role of race and the effects of racial prejudice and discrimination by taking nativity and pre-pregnancy body mass index into account. I did not have any explicit measures of racism that would allow me to examine its influence on the likelihood of preterm birth and low birth weight among the women in my analyses. Instead, I offer a conceptualization of nativity and maternal body mass index as indirect measures of experiences with racism during pregnancy and, potentially, over the life course.

Examining nativity can offer some indication of life course experiences with racial prejudice and discrimination. Several studies demonstrate an immigrant advantage in several health outcomes. Several immigrant groups across racial/ethnic groups have a decreased incidence of adult mortality, infant mortality, and obesity, and are less likely to participate in risky health behaviors such as smoking (Antecol & Bedard 2006; Singh & Siahpush 2002; Hummer et al. 1999). Antecol and Bedard (2006) are among scholars who argue that increasing obesity rates among immigrants with increasing length of residence in the United States offers an indication of negative acculturation into American culture. Focusing specifically on Black immigrants, research demonstrates that the Black immigrant health advantage varies by region of birth. The immigrant health literature suggests that foreign-born Blacks have less experience with racial prejudice and its deleterious health effects than do U.S.-born Blacks (Read & Emerson 2005; Read, Emerson, & Tarlov 2005). Taking nativity into account can potentially offer some approximation of experiences with racial prejudice and discrimination. The persisting nativity and region of birth disparities in preterm birth that I found among the Black women in my study may imply that difference in exposure to racism may contribute to the

continuing gap in preterm birth. Specifically, African women perhaps have lesser experiences with racism than U.S.-born Black women and Non-African Black women as a result of shorter duration in minority status. U.S.-born Black women and Non-African women are perhaps more likely to have experienced lifelong minority status and the inequality that scholars propose as plaguing minorities. Further support is given to the lifelong minority status argument in my findings that non-African women are not significantly different from U.S.-born Black women in likelihood of preterm birth and likelihood of low birth weight.

Measuring obesity may also offer an approximation of experiences with racial prejudice and discrimination. I include maternal pre-pregnancy body mass index in my analyses as a potential indirect measure of racial prejudice and discrimination. Given the increased prevalence of obesity in the Black community compared to other racial/ethnic groups (Baskin et al 2009; LaVeist 2005) and its association with racism (Cunningham et al. 2013; Beauboeuf-Lafontant 2003; Tull & Wickramasuriya et al 1999), it is plausible that obesity represents the physical manifestation of racial discrimination for Blacks in the United States. There is a very small body of published, empirical work suggesting the significance of obesity in explaining Black-White gaps in birth outcomes. Salihu et al (2007) have centralized obesity in explaining the Black-White gap in infant death, but they do not also include nativity as I do in my dissertation. Though I conceptualize nativity and obesity as approximations of racism, my findings do not suggest that either nativity or pre-pregnancy body mass index accounts for the Black-White gaps in preterm birth and low birth weight. I find that nativity and pre-pregnancy body mass index widens the Black-White gap such that Black women experience a greater risk of preterm birth and low birth weight when accounting for nativity and pre-pregnancy body mass index. I also do not find that either nativity or pre-pregnancy body mass index significantly interact with race to

affect the likelihood of preterm birth or low birth weight. Instead nativity and pre-pregnancy body mass index independently exert significant effects on the likelihood of preterm birth and low birth weight. Foreign-born women and obese women are less likely to experience adverse birth outcomes. The persisting foreign-born advantage may provide support for a framework that understands nativity as an indication of life course experiences of racial/ethnic prejudice and discrimination.

The decreased likelihood of poor birth outcomes among obese women is consistent with literature that demonstrate obese women do not exhibit a significantly elevated risk of preterm birth or low birth weight compared to their normal weight counterparts. Regarding low birth weight, it is possible that the obese women in my study are more likely to have high birth weight infants due to morbidities such as diabetes that may contribute to high birth weight infants, for example. In my dissertation I do not examine the potential association between race, obesity, and high birth weight infants; however, future empirical research examining women in the Upstate New York region could benefit from exploring this association. It is possible that obesity is negatively consequential for other outcomes that I do not test for in my dissertation.

The protective effect of obesity that I find with regard to preterm birth and low birth weight is consistent with other research documenting an obesity paradox. Specifically, the obesity paradox refers to the noted decreased likelihood of mortality among obese patients who have coronary artery disease, congestive heart failure, or hypertension (Chrysant & Chrysant 2013; Hamer & Stamatakis 2013). Obese women had the highest percentages of morbidities compared to women of the remaining pre-pregnancy body mass index categories. Despite this increased prevalence of morbidity among the obese, obese women are significantly less likely to have a preterm birth or low birth weight infant when taking these morbidities into consideration.

Further research examining the interaction effects of pre-pregnancy BMI and morbidity on the likelihood of preterm birth and low birth weight is necessary to provide more sound evidence for the existence of an obesity paradox in birth outcomes. Both the potential obesity paradox and the underweight disadvantage in birth outcomes warrant further consideration.

Given the persisting underweight disadvantage with regard to birth outcomes, perhaps being underweight provides a greater indication of experiences with racial/ethnic inequality. Beauboeuf-Lafontant (2003) argues Black women perhaps use food as a means by which to medicate the pains of racism. Perhaps obese women are those who have the socioeconomic means to acquire the food that serves therapeutic purposes. Underweight women may be among those who suffer the pains of racism and socioeconomically disadvantages to an extent that does not allow for purchasing food items that aid in coping. Lane et al. (2008) associate the lack of grocery stores in high risk neighborhoods of Syracuse, New York with structural violence. Ultimately, Lane et al. (2008) find a significantly positive association between not living near a grocery store and low birth weight. Further work is necessary to understand the associations between maternal pre-pregnancy body mass index and experiences of prejudice and discrimination in many forms including racial prejudice and discrimination. Given the persistence of the Black-White gap in birth outcomes among the women in my dissertation, there is a need to understand how risk factors operate among Black women.

Examining Nativity Disparities in Preterm Birth and Low Birth Weight Among Black Women

There is a complex relationship between nativity and preterm birth and nativity and low birth weight among Black women, which suggests interventions need to be tailored to the specific outcome. In my analyses of preterm birth among Black women, I control for sociodemographic, socioeconomic, morbidity/medical risk prior to pregnancy, previous

pregnancy outcomes, maternal emotions, prenatal care and pregnancy behaviors, and infection/morbidity during pregnancy. In my analyses of low birth weight among Black women, I control for adequacy of pregnancy weight gain and preterm birth in addition to the aforementioned control variables. In my dissertation, I find evidence of a nativity disparity in both preterm birth and low birth weight among Black women. This finding is consistent with previous empirical work documenting a foreign-born advantage in birth outcomes (Green 2012; Palloto et al. 2000; Fang et al. 1999; Hummer et al. 1999; Kleinman et al. 1991; Cabral et al. 1990; Chavkin et al. 1987). I also find that taking pre-pregnancy body mass index into account does not account for the nativity disparity in either preterm birth or low birth weight. Instead, accounting for pre-pregnancy body mass index widens the nativity disparity for both preterm birth and low birth weight. Taking pre-pregnancy body mass index into account has a minimal effect on the foreign-born advantage with regard to preterm birth and low birth weight.

In testing for the interaction effects of nativity and pre-pregnancy body mass index on birth outcomes, I find results varying by birth outcome. While I do not find significant interaction effects of nativity and pre-pregnancy body mass index on the likelihood of low birth weight, I do find significant interaction effects of nativity and pre-pregnancy body mass index on the likelihood of having a preterm birth. Foreign-born, overweight women were significantly less likely to have a preterm birth compared to U.S.-born, normal weight women. There is some literature indicating a higher incidence of preterm birth among overweight and obese women relative to their normal weight and underweight counterparts (Khatibi et al. 2012; Bhattacharya et al. 2007). It is noteworthy that these studies involved women in developed nations outside of the United States. My findings are contrary to this body of literature.

I am unaware of any studies that document the likelihood of preterm birth or low birth weight by pre-pregnancy body mass index among African, Caribbean, or other non-U.S. Black women. Data indicate an increase in obesity in Latin America and the Caribbean and specific African countries such as South Africa, but there is a paucity of research that documents the consequences of this increase in obesity on birth outcomes. If overweight Black women in countries other than the United States are at an increased risk of preterm birth, perhaps there is an unmeasured overweight disadvantage among the foreign-born women examined in my data maintain that is not noticeable given the health outcomes that I examine and the various factors that I control for in my analyses. Further research is necessary that entails an epidemiologic profile of birth outcomes by pre-pregnancy body mass index among Black women in the primary sending countries from which Black immigrant to the U.S. migrate. Taking pre-pregnancy body mass index into account clarifies some aspects of nativity disparities in birth outcomes while also complicating others. Factors other than pre-pregnancy body mass index are significant toward understanding nativity disparities in birth outcomes.

Controlling for additional covariates, particularly socioeconomic status indicators, medical risk/morbidity prior to pregnancy, prenatal care provides further complexity to our understanding of preterm birth and low birth weight among Black women. Taking pre-pregnancy body mass index into account and controlling for all covariates contributes to the greatest decline in the nativity disparity in preterm birth. Foreign-born women are 36 percent less likely to experience preterm birth compared to U.S.-born Black women. Taking pre-pregnancy body mass index into account and controlling for all covariates, foreign-born Black women are 27 percent less likely to experience preterm birth. As in the case of the racial disparity in preterm birth, I note the persistence of a nativity disparity in preterm birth. This

finding suggests the importance of factors beyond what I include in my analyses. These factors may pertain to the experience of race over the life course, which needs to be explored in further research.

A notable contribution of my dissertation is that I was able to pinpoint the specific set of factors that eliminated the foreign-born advantage regarding low birth weight compared to U.S.-born Black women. In particular, accounting for morbidity/medical risk factors prior to pregnancy removes foreign-born Black women's decreased likelihood of a low birth weight infant in comparison to U.S.-born Black women. Foreign-born and U.S.-born Black women in Central New York had similar incidences of morbidity/medical risk prior to pregnancy. Foreign-born and U.S.-born Black women had comparable proportions of those with any medical risk factor, any chronic disease, high risk referrals, and diabetes. Hypertension was the only morbidity for which foreign-born women were less likely to experience compared to U.S.-born women. These findings further suggest the importance of providing the appropriate screening and treatment of conditions such as diabetes for both U.S.-born and foreign-born Black women. I am not aware of previous research that has determined the factors that completely erase the foreign-born advantage among Blacks. Previous research has, however, demonstrated sociodemographic risk factors in addition to maternal behavior and previous birth outcomes were found to be particularly salient toward helping to explain the nativity disparity in infant mortality among Blacks in the United States. Among the women in my data, there is a low birth weight disadvantage associated with being aged 35 years or older, living in Oneida County, being underweight, having a medical risk factor prior to pregnancy or high blood pressure, and having a high risk referral pregnancy. There is a birth weight advantage associated with having a White father or a father with a college degree as well as for mothers with some college education.

There is also an advantage associated with being a WIC recipient. These findings demonstrate the significance of education and social programs such as WIC to decreasing the risk of low birth weight among Black women. We cannot ignore the importance of medical history in designing intervention strategies.

Further research is necessary to examine the causal pathway that leads to the onset of any medical risk factor, diabetes, hypertension, and a high risk referral pregnancy among Black women by nativity. Such research may require understanding the migration experience of those women who migrate to the United States. Further research that collects and examines data regarding health histories of foreign-born Black women is necessary. It is possible that the comparable proportion of morbidity prior to pregnancy for U.S.-born women and foreign-born women offers some representation of the consequences of the experiences of inequality in either their country of birth, in the United States, or in both locations.

Portes and Zhou's (1993) Segmented Assimilation theory offers an articulation of the complex manner in which immigrant groups may be incorporated into a society, which contrasts with straight line assimilation theory. Though Portes & Zhou's Segmented Assimilation theory has been critiqued particularly because of its articulation of downward assimilation into an underclass, I do think segmented assimilation's discussion of the underclass can be usefully applied to Black immigrants and health. I am not able to perform the longitudinal analyses with these data that would allow me to determine health deterioration among Black immigrant women giving birth in the Central New York region. It seems plausible, however, that Blacks occupy a relatively unique space of disadvantage in health disparities; and over time, Black immigrants are incorporated into this underclass of poor health due to being phenotypically Black. It is additionally plausible that this disadvantage could be noted among Black immigrant women in

the Central New York region. Perhaps as it pertains to race, nativity, and region of the United States there is a health risk for those women who are Black, foreign-born, and migrate to the Northeastern region of the United States. In my analyses of birth outcomes by region of birth, I further specify the complex influences of nativity and pre-pregnancy body mass index.

Examining Region of Birth Disparities in Preterm Birth and Low Birth Weight Among Black Women

There is a clear African advantage among the women in my sample with regard to region of birth disparities among Black women. Region of birth is a 3-category variable that includes the categories: 1) U.S.-born; 2) African; and 3) Non-African. In my analyses of preterm birth among Black women, I control for sociodemographic, socioeconomic, morbidity/medical risk prior to pregnancy, previous pregnancy outcomes, maternal emotions, prenatal care and pregnancy behaviors, and infection/morbidity during pregnancy. In my analyses of low birth weight among Black women, I control for adequacy of pregnancy weight gain and preterm birth in addition to the aforementioned control variables.

In my dissertation, I find evidence of a region of birth disparity in both preterm birth and low birth weight among Black women. My findings demonstrating an African advantage are consistent with previous empirical work documenting an African advantage in health outcomes (Grady & McLafferty 2007; Read & Emerson 2005; Read, Emerson, & Tarlov 2005; Fang et al 1999). I also find that taking pre-pregnancy body mass index into account does not account for the region of birth disparity in either preterm birth or low birth weight. Instead, accounting for pre-pregnancy body mass index widens the region of birth disparity for both preterm birth and low birth weight. Taking pre-pregnancy body mass index into account has a minimal effect on the African-born advantage with regard to preterm birth and low birth weight when also

controlling for sociodemographics and socioeconomic factors. I also do not find any significant moderating effects of region of birth on the relationship between pre-pregnancy BMI and likelihood of either preterm birth or low birth weight. Region of birth and pre-pregnancy BMI independently, demonstrate significant relationships with preterm birth and low birth weight. I find a foreign-born advantage that extends to African women. I find an excess weight advantage that extends to obese mothers and a disadvantage that extends to underweight mothers.

It appears that other factors beyond pre-pregnancy BMI can further illuminate the pathways by which preterm birth and low birth weight occur among Black women by region of birth. Taking pre-pregnancy BMI into account and controlling for all covariates does not account for the African advantage in birth outcomes. It is noteworthy that the African advantage in preterm birth relative to U.S.-born Black women is greatest when taking pre-pregnancy body mass index into account and controlling for sociodemographic and socioeconomic factors. These findings offer some support of the immigrant selectivity hypothesis. Better SES and pre-pregnancy health relates to what scholars have referred to as immigrant selectivity (Read & Emerson 2005; Pallotto 2000). Because African immigrants have higher levels of educational attainment than Caribbean immigrants (Read & Emerson 2005: 185), they appear to be more highly selected than Caribbean immigrants. With their higher SES, African immigrants are perhaps in a better position than both U.S.-Blacks and non-African immigrants to obtain health care. African immigrants' socioeconomic profiles may also serve as a buffer for potentially negative consequences of experiences with racial/ethnic prejudice and discrimination.

It is notable that the African advantage in low birth weight is eliminated after taking pre-pregnancy body mass index into account and controlling for sociodemographics, socioeconomic factors, morbidity/medical risk prior to pregnancy, previous pregnancy history, maternal

emotions, and prenatal care/pregnancy behaviors. Prenatal care/pregnancy behaviors are particularly salient toward explaining the African advantage regarding infant birth weight. Of note, women who did not receive prenatal care counseling on what to do in the case of early labor were more likely to experience low birth weight. Cigarette smoking and drug use also increase the likelihood of a low birth weight infant. Physical activity and having a birth attendant other than a physician decreased the likelihood of a low birth weight infant. African women participated in the least amount of daily physical activity during pregnancy compared to U.S-born and non-African women. The salience of pregnancy behaviors in nativity and region of birth disparities in birth outcomes among Black women is also underscored in previous research (Hamilton & Hummer 2011; Elo & Culhane 2010; Hummer 1999). As do Elo and Culhane (2010), I find that the foreign-born advantage regarding pregnancy health behaviors was stronger for African women compared to non-African, non-U.S. women given the insignificance of the relationship to low birth weight for non-African immigrant women. Research and programmatic efforts that promote healthy activities during pregnancy may prove useful in improving low birth weight rates among Black women.

Revisiting the Conceptual Model

Based on the findings of my dissertation, I recommend an expansion upon my initial theoretical conceptualization of obesity as the central pre-pregnancy BMI category that is associated with adverse birth outcomes. In this work, I confirm the significance of maternal body mass index to racial, nativity, and region of birth disparities in preterm birth and low birth weight between Black women and White women and among Black women by nativity. Maternal body mass index, however, is not the only or necessarily the most important factor in disparities associated with preterm birth and low birth weight. In my conceptual model I

emphasize the significance of maternal body mass index in the causal pathway to adverse birth outcomes. I conceptualize maternal body mass index as being shaped by race, nativity, sociodemographics, and socioeconomic status. I further specify that maternal body mass index is a strong enough approximation of racial prejudice and discrimination that maternal body mass index would explain the racial, nativity, and region of birth disparities in birth outcomes. Such a conceptualization of maternal body mass index has previously been unexplored. Health scholars discuss the significance of specifying racism in the causal pathways that model the trajectories toward poor health (Smedley 2012; Ford & Airhihenbuwa 2010; Williams & Sternthal 2010; Williams 2006; Clark & Anderson et al. 1999; Williams 1997). Specifying a framework for studying race in health research, Williams (1997) proposes health status is ultimately the result of basic causes such as racism as well as culture, biology and geographic origins, economic structures, and political and legal structures. Williams goes on to propose that social status is influenced by these basic causes, which in turn affects the surface causes that influence biological processes that trigger particular health statuses.

My model places maternal body mass index after what Williams defines as social status and preceding surface causes such as health practices, stress, psychosocial resources, and medical care. Given the prevalence of obesity among Black women in the U.S. and the known negative consequences associated with obesity, I anticipated that obesity would be particularly harmful on birth outcomes. Instead, I find a protective effect of obesity between Black women and White women and among Black women. The maternal body mass index disadvantage is associated with being underweight. While maternal body mass index is significant to the likelihood of preterm birth and low birth weight, I did not find confirmation for my conceptual model. Instead, these findings support the need for a theoretical framework that examines both

underweight pre-pregnancy BMI and obese pre-pregnancy BMI as the embodiment of inequalities and contributing to poor maternal and infant health.

Further efforts to explicate the complex nature and effect of racial inequality in birth disparities will require clearly specified theoretical models of racial inequality. It is perhaps the case that maternal body mass index is indeed a physical expression of the effects of racism, but I must pursue more direct and clearly specified measures of racism in future health disparities research. Such research must continue to include measures of maternal body mass index along with direct measures of experiences with racial prejudice and discrimination and the health consequences of racial prejudice and discrimination. My dissertation contributes to the health literature by demonstrating the adverse effects of weight outside of what is generally defined as normal. I will continue to work toward refining my conceptual modeling of the influence of maternal body mass index on birth outcomes by race and nativity. Key to these refining processes will be determining the nature of the relationships between maternal body mass index and factors preceding birth outcomes including maternal emotions, prenatal care, pregnancy behavior, previous pregnancy history, morbidity/medical risk prior to pregnancy, and pregnancy weight gain. Because I find in testing for interaction effects of nativity and pre-pregnancy body mass index that foreign-born, overweight Black women are less likely than U.S.-born Black women to experience preterm birth, I will work to determine the nature of the relationships that the interactions of race, nativity, maternal body mass index have to these additional factors that precede birth outcomes.

Policy Recommendations and Directions for Future Research

There are several policy provisions that could be deployed to improve the chances of positive birth outcomes among Black women. Prenatal care should include routine screenings

for infections, particularly bacterial vaginosis. Bacterial vaginosis is salient because of its suggested association with preterm birth and increased prevalence among Black women compared to White women (Koumans et al. 2010; Lane 2008). In Chapter 4 I indicate that the preterm birth percentages overall and by race are lower than their respective national averages. These lower preterm birth percentages corroborates Lane's (2008) conclusion regarding the efficacy of routine screenings for infection that were implemented at the behest of maternal child health experts including Sandra Lane, Ph.D., Martha Wojtowycz, Ph.D., and Richard Aubry, M.D. (Lane 2008). Specifically, Lane (2008) underscores a significant reduction in the Black-White gap in preterm birth rates during the early 2000s as being associated with infection screenings. It is plausible that nationally regularized screenings for infections at the first prenatal care visit can help reduce the national preterm birth rate and minimize the Black-White gap in preterm birth.

Preconception counseling and inter-conceptual care should promote the achievement and maintenance of a healthy body mass index. Though maternal child health literature demonstrates a protective effect of obesity in several birth outcomes, obesity also contributes to other poor outcomes. My dissertation demonstrates an underweight disadvantage regarding preterm birth and low birth weight. Given the potential detriment of either extreme of BMI, efforts to dispense information that promotes healthy weight should be pursued. Such efforts may include public awareness strategies that provide information on achieving a healthy diet and adequate levels of physical activity. Additionally, there are noted benefits associated with being a WIC recipient. My findings indicate a need for the continuance of the WIC program.

Protocols for early screening and treatment for conditions that pose risks to the health of mothers and infants should be implemented by birth attendants. Diabetes and hypertension are

two primary conditions that are associated with obesity and for which pregnant women should be screened and treated. Among the women in my study, I find that diabetes and hypertension are independently and significantly associated with an increased likelihood of preterm birth. Hypertension is associated with an increased risk of a low birth weight birth. Appropriately treating these conditions can minimize the negative effects they may exert independently or in conjunction with a pre-pregnancy BMI that is either too high or too low.

Prenatal care and pregnancy health behaviors matter for length of gestation and preterm birth. It is important that health care providers provide information for each topic specified for content of prenatal care counseling in the New York Statewide Perinatal Data System. Further efforts may be necessary to ensure that all pregnant women are receiving the appropriate prenatal care counseling. Targeted interventions are also necessary to promote healthy behaviors during pregnancy. In particular, efforts to discourage drug use and promote smoking cessation and physical activity are necessary. Given the focus of my dissertation, my discussion highlights the relationship of maternal nativity to birth outcomes. I do, however, find that paternal nativity is significant to infant birth weight particularly among Black women. In fact, paternal nativity remains significant to the likelihood of low birth weight and maternal nativity does not. Black infants born to foreign-born fathers were significantly less likely to be born too small. Policies that encourage positive involvement of fathers throughout pregnancy may prove beneficial for birth outcomes. Programs such as Healthy Start can be granted funding to design and implement seminars and culturally appropriate interventions that encourage healthy relationships between moms and dads and healthy co-parenting. Pursuing these policy recommendations will require the energy of individuals, communities, and government officials. Efforts toward designing the appropriate intervention and prevention strategies can be better informed by continued research

examining the complex relationships between race, nativity, and maternal body mass index and their influence on birth outcomes.

The findings of my dissertation highlight the need for additional research. Comparable research for the Upstate region of New York State is necessary. Expanding on my dissertation work, I intend to obtain the birth data from the New York Statewide Perinatal Data System (SPDS) for the Western New York and Finger Lakes regions of New York State and run comparable analyses modeling the likelihood of preterm birth and low birth weight for these regions as I did for the Central New York region. Doing so would allow me to map the likelihood of preterm birth and low birth weight for the population of women giving birth in the Upstate New York region. There is a need for research that examines the pathways to adverse birth outcomes by more explicitly examining the relationships between race, nativity, and weight and intervening variables that ultimately influence length of gestation and preterm birth. I am interested in further examining the existence of an obesity paradox in birth outcomes by race, nativity, and weight. In this research, I would aim to examine the likelihood of preterm birth and low birth weight among obese women with pre-existing morbidities compared to women of the remaining pre-pregnancy BMI categories with pre-existing morbidities as well.

I am also particularly interested in understanding the potential mechanisms by which Black immigrant women's health can and does come to mirror U.S.-born Black women. To do so, I intend to examine differences in prenatal care receipt among Black women by nativity pre-pregnancy body mass index status. The goal of this research is to determine if foreign-born Black women receive the same quality of prenatal care as U.S.-born Black women. After examining whether or not there are any significant differences in content of prenatal care by nativity and weight among Black women, I will also examine the nature of the relationship

between content of prenatal care and pregnancy health behaviors including adequacy of pregnancy weight gain. Lastly, there is an urgent need for research that examines the influence of paternal nativity as well as maternal nativity on pregnancy, particularly among Black women. Ultimately, I intend to pursue a research agenda incorporating nativity and weight to provide new insights into how racial/ethnic disparities occur over the life course and means to prevent and eliminate such disparities. The time is now for scholars to weigh in on how we can work toward improving the health and quality of life of women and children today and for generations to come.

Appendix 1. IRB Approval Form

SYRACUSE UNIVERSITY
Institutional Review Board
MEMORANDUM

TO: Andrew London
DATE: May 10, 2011
SUBJECT: **Determination of Exemption from Regulations**
IRB #: 11-141
TITLE: *Weighing In on Heavy Issues: Exploring Race, Nativity, and Obesity in Relationship to Birth Outcomes Using Data from the 2004-2010 New York State Perinatal Data System*

The above referenced application, submitted for consideration as exempt from federal regulations as defined in 45 C.F.R. 46, has been evaluated by the Institutional Review Board (IRB) for the following:

1. determination that it falls within the one or more of the five exempt categories allowed by the organization;
2. determination that the research meets the organization's ethical standards.

It has been determined by the IRB this protocol qualifies for exemption and is assigned to category **4**. This authorization will remain active for a period of five years from **May 10, 2011** until **May 9, 2016**.

CHANGES TO PROTOCOL: Proposed changes to this protocol during the period for which IRB authorization has already been given, cannot be initiated without additional IRB review. If there is a change in your research, you should notify the IRB immediately to determine whether your research protocol continues to qualify for exemption or if submission of an expedited or full board IRB protocol is required. Information about the University's human participants protection program can be found at: http://www.orip.syr.edu/humanresearch.php. Protocol changes are requested on an amendment application available on the IRB web site; please reference your IRB number and attach any documents that are being amended.

STUDY COMPLETION: The completion of a study must be reported to the IRB within 14 days.

Thank you for your cooperation in our shared efforts to assure that the rights and welfare of people participating in research are protected.

Kathleen King, Ph.D.
IRB Chair

Note to Faculty Advisor: This notice is only mailed to faculty. If a student is conducting this study, please forward this information to the student researcher.
DEPT: Sociology, 302 Maxwell Hall **STUDENT:** Karyn Stewart

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121 Bowne Hall Syracuse, New York 13244-1200
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Appendix 2.

Table 4.1 (cont). Sample Characteristics of the Total Sample and By Race, 2004-2010 SPDS

N=122278

	Total			Black[a]			White[b]			
Variable (Category)	%	X	N	%	X	N	%	X	N	
Birthweight										***[c]
Normal Birthweight	94.28		115278	88.64		9672	94.83		105606	
Low Birthweight	5.72		7000	11.36		1239	5.17		5761	
Length of Gestation										***
Term	92.58		113203	88.94		9704	92.94		103499	
Preterm	7.42		9075	11.06		1207	7.06		7868	
Race										***
Black	8.92		10911	--	--	--	--	--	--	
White	91.08		111367	--	--	--	--	--	--	
Nativity										***
U.S.-Born	95.09		116270	88.77		9686	95.71		106584	
Foreign-Born	4.91		6008	11.23		1225	4.29		4783	
Pre-pregnancy Body Mass Index										
Underweight	3.37		4118	3.83		418	3.32		3700	
Normal Weight	43.43		53108	39.17		4274	43.85		48834	***
Overweight	26.35		32215	27.76		3029	26.21		29186	
Obese	26.85		32837	29.24		3190	26.62		29647	
Adequacy of Pregnancy Weight Gain										
Low Weight Gain	18.70		22864	24.98		2726	18.08		20138	***
Norml Weight Gain	29.28		35797	27.30		2979	29.47		32818	
High Weight Gain	52.03		63617	47.71		5206	52.45		58411	
Paternal Nativity										***
U.S.-Born	94.89		116028	89.85		9803	95.38		106225	
Foreign-Born	5.11		6250	10.15		1108	4.62		5142	

Marital Status										***
Wedlock/Married	56.65		69273	24.07		2626	59.84		66647	
Single	43.35		53005	75.93		8285	40.16		44720	
Maternal Hispanic Ethnicity										***
Hispanic	2.90		3552	5.45		595	2.66		2957	
Non-Hispanic	97.10		118726	94.55		10316	97.34		108410	
Mother's Age										***
Under 20 years	9.58		11717	19.76		2156	8.59		9561	
20-29 years	56.07		68556	57.83		6310	55.89		62246	
30-34 years	21.61		26422	8.11		885	22.32		24862	
35 years and older	12.74		15583	14.30		1560	13.20		14698	
Mother's County of Residence										***
Broome	10.58		12932	8.75		955	10.75		11977	
Jefferson	9.52		11644	7.70		840	9.70		10804	
Oneida	13.37		16345	14.96		1632	13.21		14713	
Onondaga	27.28		33355	61.01		6657	23.97		26698	
Other counties	39.26		48002	7.58		827	42.36		47175	
Father's Age										***
Under 20 years	16.32		19961	41.40		4517	13.87		15444	
20-29 years	39.60		48428	32.60		3557	40.29		44871	
30-34 years	22.19		27139	11.42		1246	23.25		25893	
35 years and older	21.88		26750	14.58		1591	22.59		25159	
Father's Race										***
Black	6.92		8465	48.38		5279	2.86		3186	
White	76.15		93115	8.94		975	82.74		92140	
Other	3.59		4388	6.57		717	3.30		3671	
Missing	13.34		16310	36.11		3940	11.11		12370	
Father's Hispanic Ethnicity										***
Hispanic	3.37		4123	4.85		5239	3.23		3594	

Non-Hispanic	83.31		101869	59.07		6445	85.68		95424	
Missing	13.32		16286	36.08		3937	11.09		12349	
Mother's Education										***
Less than High School	15.35		18773	35.10		3830	13.42		14943	
High School	27.42		33531	29.60		3230	27.21		30301	
Less than Bachelor's	32.33		39538	28.05		3060	32.75		36478	
Bachelor's	13.24		16191	4.64		506	14.08		15685	
Graduate Training	11.65		14245	2.61		285	12.54		13960	
Father's Education										***
Less than High School	11.60		14182	16.46		1796	11.12		12386	
High School	28.30		34601	22.38		2442	28.88		32159	
Less than Bachelor's	25.84		31594	17.41		1900	26.66		29694	
Bachelor's	12.19		14908	3.13		342	13.08		14566	
Graduate Training	8.05		9847	2.49		272	8.60		9575	
Other/Missing	14.02		17146	38.12		4159	11.66		12987	
Mother Employed During Pregnancy										***
Yes	60.88		74443	44.18		4821	62.52		69622	
No	39.12		47835	55.82		6090	37.48		41745	
Primary Birth Payor										***
Government	45.99		56230	77.64		8471	42.88		47759	
Self	51.77		63301	20.76		2265	54.81		61036	
Other	2.25		2747	1.60		175	2.31		2572	
Medicaid as Second Payor										***
Yes	6.08		7429	6.61		721	6.02		6708	
No	73.56		89943	71.14		7762	73.79		82181	
Unknown	20.37		24906	22.25		2428	20.18		22478	

WIC recipient										***
Yes	48.64		59470	79.34		8657	45.63		50813	
No	51.36		62808	20.68		2254	54.37		60554	
HMO										***
Yes	26.09		31904	42.59		4647	24.47		27257	
No	66.86		81753	51.22		5589	68.39		76164	
Unknown	7.05		8621	6.19		675	7.13		7946	
Pregnancy Intentions										***
Wanted to be pregnant sooner	12.79		15634	6.75		736	13.38		14898	
Wanted to be pregnant later	27.55		33686	41.09		4483	26.22		29203	
Wanted to be pregnant then	44.91		54910	28.00		3055	46.56		51855	
Did not want to be pregnant then or Later	6.13		7498	12.83		1400	5.48		6098	
Missing	8.63		10550	11.34		1237	8.36		9313	
Depression										***
No Depression	61.76		75518	47.94		5231	63.11		70287	
A little depressed	22.89		27989	29.99		3272	22.19		24717	
Moderately Depressed	5.86		7170	7.93		865	5.66		6305	
Very Depressed	1.02		1245	2.87		313	0.84		932	
Very Depressed and Had to Get Help	0.94		1151	1.66		181	0.87		970	
Missing	7.53		9205	9.61		1049	7.32		8156	
Total Number of Pregnancies		1.58			2.21			1.52		***
Previous Live Birth-Living										***
0 births	41.45		50686	37.18		4057	41.87		46629	
1 birth	32.25		39438	26.08		2846	32.86		36592	

2 or more births	26.30		32154	36.73		4008	25.27		28146	
Previous Live Birth-Dead										***
Yes	1.05		1286	2.14		233	0.95		1053	
No	98.95		120992	97.86		10678	99.05		110314	
Previous Preterm Infant										***
Yes	3.01		3677	5.68		620	2.74		3057	
No	96.99		118601	94.32		10291	97.26		108310	
Previous Cesarean Section										*
Yes	13.40		16390	14.15		1544	13.33		14846	
No	86.60		105888	85.85		9367	86.67		96521	
Prior Poor Pregnancy Outcome										***
No	4.97		6076	5.05		551	4.96		5525	
Yes	95.03		116202	94.95		10360	95.04		105842	
Any morbidity/medical risk										***
No	67.40		82418	65.01		7093	67.64		75325	
Yes	32.60		39860	34.99		3818	32.36		36042	
Chronic Disease										***
Yes	4.13		5054	4.08		445	4.14		4609	
No	95.87		117224	95.52		10466	95.86		106758	
Diabetes										***
Yes	0.79		972	1.10		120	0.77		852	
No	99.21		121306	98.90		10791	99.23		110515	
Hypertension										***
Yes	1.48		1812	2.49		272	1.38		1540	
No	98.52		120466	97.51		10639	98.62		109827	
High Risk Referral										***
Yes	2.98		3643	4.70		513	2.81		3130	
No	97.02		118635	95.30		10398	97.19		108237	
Birth Attendant										***

Physician	82.66		101076	84.48		9218	82.48		91858	
Midwife	16.99		20781	14.22		1551	17.27		19230	
Other	0.34		421	1.30		142	0.25		279	
Initiation of Prenatal Care (Trimester)										***
First Trimester	75.39		92191	56.39		6153	77.26		86038	
Second Trimester	18.83		23029	33.32		3636	17.41		19393	
Third Trimester	3.25		3976	6.96		759	2.89		3217	
Blank/Missing	2.52		3082	3.33		363	2.44		2719	
Smoking Prenatal Care Counseling										***
Yes	82.18		100482	81.97		8944	82.19		91538	
No	9.30		11371	6.89		752	9.54		10619	
Unknown	8.53		10425	11.14		1215	8.27		9210	
Drinking Prenatal Care Counseling										***
Yes	81.83		100057	81.55		8898	81.85		91159	
No	9.30		11754	7.32		799	9.84		10955	
Unknown	8.53		10467	11.13		1214	8.31		9253	
Drug Prenatal Care Counseling										***
Yes	80.63		98590	81.14		8853	80.58		89737	
No	10.79		13190	7.65		835	11.09		12355	
Unknown	8.59		10498	11.21		1223	8.33		9275	
Wait Time to Next Pregnancy Prenatal Care Counseling										***
Yes	57.08		69800	58.42		6374	56.95		63426	
No	34.08		41676	29.99		3272	34.48		38404	
Unknown	8.63		10802	11.59		1265	8.56		9537	
Birth Control Prenatal Care Counseling										***

Yes	69.39		84846	73.51		8021	68.98		76825	
No	21.82		26676	15.04		1641	22.48		25035	
Unknown	8.80		10756	11.45		1249	8.54		9507	
Early Labor Prenatal Care Counseling										***
Yes	85.16		104127	81.36		8877	85.53		95250	
No	6.15		7525	7.08		773	6.06		6752	
Unknown	8.69		10626	11.56		1261	8.41		9365	
HIV Prevention Prenatal Care Counseling										***
Yes	72.71		88906	76.94		8395	72.29		80511	
No	18.47		22585	11.47		1251	19.16		21334	
Unknown	8.82		10787	11.59		1265	8.55		9522	
Physical Abuse to Women Prenatal Care Counseling										***
Yes	67.29		82284	69.64		7631	67.03		74653	
No	23.83		29133	18.32		1999	24.36		27134	
Unknown	8.88		10861	11.74		1281	8.60		9580	
Alcohol (Alcohol Consumed During Pregnancy)										***
Yes	0.98		1200	1.72		188	0.91		1012	
No	99.02		121078	98.28		10723	99.09		110355	
Drugs (Illegal Drugs Consumed During Pregnancy)										***
Yes	2.52		3085	7.42		810	2.04		2275	
No	97.48		119193	92.58		10101	97.96		109092	
Smoking (Smoked before or during Pregnancy)										
Yes	28.81		35223	29.44		3212	28.74		32011	

No	71.19		87055	70.56		7699	71.26		79356	
Exercise During Pregnancy (Number times exercised for 30 minutes or more per week)		1.72			1.68			1.73		***
Gestational Diabetes										***
Yes	4.42		5408	3.15		344	4.55		5064	
No	95.58		116870	96.85		10567	95.45		106303	
Pregnancy Hypertension										*
Yes	3.72		4552	4.15		453	3.68		4099	
No	96.28		117726	95.85		10458	96.32		107268	
Eclampsia										
Yes	0.11		130	0.15		16	0.10		114	
No	99.89		122148	99.85		10895	99.90		111253	
Vaginal Bleeding										***
Yes	2.86		3492	3.68		402	2.77		3090	
No	97.14		118786	96.32		10509	97.23		108277	
Gonorrhea										***
Yes	0.21		253	1.14		124	0.12		129	
No	99.79		122025	98.86		10787	99.88		111238	
Syphilis										***
Yes	0.02		28	0.13		14	0.01		14	
No	99.98		122250	99.87		10897	99.99		111353	
Genital Herpes										***
Yes	3.38		4130	5.24		572	3.19		3558	
No	96.62		118148	94.76		10339	96.81		107809	
Chlamydia										***
Yes	1.86		2278	7.48		816	1.31		1462	
No	98.14		120000	92.52		10095	98.69		109905	
Hepatitis B										***
Yes	0.11		134	0.56		61	0.07		73	

No	99.89		122144	99.44		10850	99.93		111294	
Hepatitis C										
Yes	0.12		141	0.10		11	0.12		130	
No	99.88		122137	99.90		10900	99.88		111237	
Bacterial Vaginosis										***
Yes	7.97		9742	22.20		2422	6.57		7320	
No	92.03		112536	77.80		8489	93.43		104047	
Gum problems										***
Yes	24.51		29971	21.59		2356	24.80		27615	
No	67.80		82903	68.75		7501	67.71		75402	
Unknown	7.69		9404	9.66		1054	7.50		8350	
[a]This category includes multiracial Black women										
[b]This category includes White women and non-Black, multiracial Black women.										
[c]Indicates statistical significance, ***=p<.0001, **=p<.01, *=p<.05										

Appendix 3.

Tables 4.3-4.6 (cont.) Logistic Regression Analyses of Preterm Birth and Low Birth Weight by Race, Nativity, Pre-pregnancy BMI, and All Covariates, and Interaction Terms, 2004-2010 SPDS

	Preterm Birth		Low Birth Weight	
Variable (Reference Category)				
	B (S.E.)	OR	B (S.E.)	OR
Race (White)				
Black	0.19*** (0.05)	1.21	0.60*** (0.06)	1.82
Nativity (U.S.-Born)				
Foreign-Born	-0.23** (0.07)	0.80	-0.26*** (0.09)	0.77
Maternal Hispanic Ethnicity (Non-Hispanic)				
Hispanic	0.04 (0.07)	1.04	0.10 (0.09)	1.11
Marital Status (In Wedlock)				
(Not in Wedlock)	-0.01 (0.03)	1.00	0.02 (0.05)	1.02
Mom's Age (20-29 years)				
Under 20 years	0.01 (0.05)	1.01	-0.18** (0.06)	0.84
30-34 years	0.03 (0.04)	1.03	0.26*** (0.05)	1.30
35 years and older	0.09* (0.04)	1.10	0.36*** (0.06)	1.44
Dad's Age (20-29 years)				
Under 20 years	0.19** (0.07)	1.21	-0.09 (0.09)	0.92
30-34 years	0.04 (0.04)	1.04	0.02 (0.05)	1.02

35 years and older	-0.03 (0.04)	0.97	0.02 (0.05)	1.02
Mom County of Residence (Other County)				
Oneida	0.12** (0.04)	1.13	0.17** (0.05)	1.19
Broome	0.02 (0.04)	1.02	0.12* (0.06)	1.13
Jefferson	0.11* (0.05)	1.11	0.09 (0.06)	1.09
Onondaga	-0.17*** (0.03)	0.85	-0.09* (0.04)	0.92
Dad's Race (White)				
Black	0.14** (0.05)	1.15	0.19** (0.07)	1.21
Other	0.04 (0.06)	1.04	0.10 (0.09)	1.10
Missing Race	-0.44 (0.31)	0.65	-0.26 (0.38)	0.78
Dad's Hispanic Ethnicity (Non-Hispanic)				
Hispanic	0.08 (0.07)	1.08	0.06 (0.09)	1.06
Missing	0.12 (0.03)	1.13	0.52 (0.37)	1.69
Dad Nativity (U.S.-Born)				
Foreign-Born	-0.01 (0.06)	0.99	-0.06 (0.09)	0.94
Mom's Education (Some College)				
Less than High School	0.18** (0.04)	1.13	0.27*** (0.05)	1.31
High School	0.07*	1.07	0.18***	1.20

	(0.03)		(0.04)	
Bachelor's	-0.003 (0.04)	1.00	-0.003** (0.06)	1.0
Graduate School	-0.11* (0.05)	0.90	-0.24 (0.08)	0.79
Dad's Education (High School)				
Unknown/Missing	0.27* (0.11)	1.31	-0.08 (0.16)	0.93
Less than High School	-0.002 (0.04)	1.00	0.08 (0.05)	1.08
Some College	-0.02 (0.03)	0.98	-0.05 (0.05)	0.95
Bachelor's	-0.10* (0.05)	0.90	-0.25** (0.07)	0.78
Graduate School	-0.14* (0.06)	0.87	-0.25** (0.09)	0.78
Work (Employed)				
Not Employed	0.03 (0.03)	1.03	0.09* (0.04)	1.10
Primary Birth Payor (Self-Pay)				
Government	0.06 (0.04)	1.06	0.07 (0.05)	1.07
Other	0.001 (0.08)	1.00	-0.14 (0.11)	0.87
Medicaid as Secondary Birth Payor (No)				
Yes	-0.05 (0.05)	0.95	0.04 (0.07)	1.04
Missing/Unknown	-0.30*** (0.04)	0.74	-0.06 (0.05)	0.94
WIC recipient (No)				

Yes	-0.11**	0.90	0.06 (0.04)	1.06
HMO (No)				
Missing/Unknown	-0.03 (0.05)	0.98	0.09 (0.07)	1.09
Yes	-0.02 (0.03)	0.98	-0.08* (0.04)	0.93
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.41*** (0.05)	1.51	0.45*** (0.07)	1.57
Overweight	-0.15*** (0.03)	0.86	-0.04 (0.04)	0.96
Obese	-0.20*** (0.03)	0.82	-0.30*** (0.04)	0.74
Previous Live Birth (None)				
One	-0.42*** (0.03)	0.66	-0.66*** (0.05)	0.52
Two or more	-0.52*** (0.04)	0.59	-0.70*** (0.06)	0.50
Previous live birth – Dead (No)				
Yes	-0.10 (0.10)	0.91	-0.19 (0.14)	0.83
Total Number of Pregnancies	0.05*** (0.01)	1.05	-0.02 (0.01)	0.98
Previous Preterm (No)				
Yes	1.32*** (0.05)	3.73	0.42*** (0.07)	1.52
Poor Prior Outcome (No)				
Yes	-0.20* (0.05)	0.89	-0.05 (0.07)	0.95

Previous C-Section (No)				
Yes	-0.10* (0.04)	0.91	-0.11 (0.06)	0.90
Any Morbidity/Medical Risk (No)				
Yes	0.55*** (0.04)	1.73	0.38*** (0.05)	1.47
Chronic Disease (No)				
Yes	0.05 (0.05)	1.05	-0.04 (0.07)	0.97
Diabetes (No)				
Yes	0.93** (0.08)	2.53	-1.05*** (0.13)	0.35
Hypertension (No)				
Yes	0.82*** (0.04)	2.28	0.80*** (0.06)	2.22
High Risk Referral (No)				
Yes	1.22*** (0.04)	3.40	0.64*** (0.07)	1.89
Pregnancy Intentions (Wanted to be pregnant then)				
Missing	0.18* (0.08)	1.20	0.30** (0.11)	1.35
Wanted to be pregnant sooner	0.04 (0.04)	1.014	0.05 (0.05)	1.05
Wanted to be pregnant later	-0.03 (0.03)	0.97	-0.02 (0.04)	0.98
Did not want to be pregnant then or later	0.02 (0.05)	1.02	0.03 (0.07)	1.03
Mom’s Depression (No depression)				
Unknown/Missing	-0.29*	0.75	-0.11	0.90

	(0.12)		(0.16)	
A little Depressed	0.10** (0.03)	1.10	0.04 (0.04)	1.04
Moderately Depressed	0.15** (0.05)	1.16	0.02 (0.06)	1.02
Very Depressed	0.36** (0.10)	1.43	0.24 (0.13)	1.27
Very Depressed and Got Help	0.16 (0.11)	1.18	-0.08 (0.15)	0.92
Trimester of Prenatal Iniiton (First trimester)				
Unknown/Missing	0.67 (0.06)	1.95	0.27** (0.09)	1.31
Third Trimester	0.01 (0.06)	1.01	-0.05 (0.09)	0.95
Second Trimester	-0.02 (0.03)	0.98	0.17*** (0.04)	1.18
Primary Birth Attendant (Physician)				
Other/Unknown	0.71*** (0.13)	2.02	0.77*** (0.18)	2.15
Midwife	-0.58*** (0.04)	0.56	-0.32*** (0.05)	0.73
Prenatal Counseling – Smoking (Yes)				
Missing	-0.13 (0.28)	0.88	-0.27 (0.39)	0.77
No	-0.09 (0.09)	0.91	-0.33** (0.12)	0.72
Prenatal Counseling – Drinking (Yes)				
Missing	-0.02 (0.35)	0.98	-0.23 (0.49)	0.80

No	0.005 (0.11)	1.01	0.16 (0.16)	1.18
Prenatal Counseling – Drugs (Yes)				
Missing	0.39 (0.33)	1.48	0.38 (0.47)	1.46
No	-0.14 (0.10)	0.87	0.04 (0.14)	1.05
Prenatal Counseling – How long to Wait before becoming Pregnant Again (Yes)				
Missing	0.002 (0.22)	1.00	-0.06 (0.30)	0.94
No	0.03 (0.03)	1.03	0.002 (0.05)	1.00
Prenatal Counseling – Birth Control(Yes)				
Missing	0.001 (0.22)	1.00	0.17 (0.29)	1.18
No	0.12** (0.04)	1.13	-0.02 (0.05)	0.98
Prenatal Counseling – Early Labor(Yes)				
Missing	0.63** (0.20)	1.88	0.25 (0.28)	1.29
No	0.78** (0.04)	2.18	0.36*** (0.06)	1.43
Prenatal Counseling – HIV Prevention (Yes)				
Missing	-0.34 (0.23)	0.71	-0.25 (0.32)	0.78
No	-0.11*	0.90	-0.08	0.92

	(0.05)		(0.06)	
Prenatal Counseling – Abuse (Yes)				
Missing	-0.14 (0.20)	0.87	0.10 (0.27)	1.11
No	-0.14** (0.04)	0.87	-0.06 (0.06)	0.94
Physical Activity	-0.05** (0.01)	0.95	-0.004 (0.008)	1.00
Smoked at all (No)				
Yes	0.17*** (0.03)	1.18	0.60*** (0.04)	1.83
Alcohol Use (No)				
Yes	0.03 (0.10)	1.03	-0.05 (0.14)	0.95
Drug Use (No)				
Yes	0.43** (0.06)	1.53	0.32*** (0.08)	1.38
Gestational Diabetes (No)				
Yes	-0.06 (0.05)	0.94	-0.54*** (0.08)	0.58
Vaginal Bleeding (No)				
Yes	0.78*** (0.05)	2.19	0.26** (0.08)	1.29
Infection (No)				
Yes	-0.09 (0.05)	0.91	-0.23** (0.07)	0.80
Bacterial Vaginosis (No)				
Yes	0.09* (0.04)	1.09	0.03 (0.05)	1.03
Gum Problems (No)				
Unknown/Missing	-0.06 (0.10)	0.95	-0.18 (0.14)	0.84

Yes	-0.09** (0.03)	0.92	-0.01 (0.04)	1.00
Length of Gestation (Term)				
Preterm	--	--	3.73*** (0.03)	41.47
Adequacy of Pregnancy Weight Gain (Normal)				
Low	--	--	0.60*** (0.04)	1.83
High	--	--	-0.53*** (0.04)	0.59
Race*Nativity (U.S. Born, White)				
Foreign Born, Black	-0.04 (0.14)	0.97	0.08 (0.18)	1.08
Race*Pre-Pregnancy BMI (White, Normal weight)				
Black, Underweight	-0.08 (0.16)	0.92	-0.06 (0.20)	0.95
Black, Overweight	0.09 (0.09)	1.09	-0.06 (0.11)	0.95
Black, Obese	-0.10 (0.09)	0.91	0.06 (0.11)	1.06
Constant	-2.73*** (0.05)		-4.12*** (0.08)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

Appendix 4.

Table 5.1 (cont.). Sample Characteristics Among Black Women by Nativity (US-Born and Foreign-Born), 2004-2010 PDS

N=10911

	US-Born			Foreign Born			
Variable (Category)	%	N	x	%	N	x	
Birthweight							***
Normal Birthweight	88.17	8540		92.41	1132		
Low Birthweight	11.83	1146		7.59	93		
Length of Gestation							***
Term	88.51	8573		92.33	1131		
Preterm	11.49	1113		7.67	94		
Pre-pregnancy Body Mass Index							***
Underweight	3.82	370		3.92	48		
Normal Weight	38.80	3758		42.12	516		
Overweight	27.20	2635		32.16	394		
Obese	30.18	2923		21.80	267		
Adequacy of Pregnancy Weight Gain							***
Low Weight Gain	24.60	2383		35.27	432		
Normal Weight Gain	26.81	2597		30.04	368		
High Weight Gain	48.59	4706		34.69	425		
Paternal Nativity							***
US-Born	96.77	9372		35.18	431		
Foreign-Born	3.24	314		64.82	794		
Marital Status							***
Single	81.11	7856		35.02	429		
In Wedlock	18.89	1830		64.98	796		
Maternal Hispanic Ethnicity							***
Hispanic	94.76	9178		92.90	1138		
Non-Hispanic	5.24	508		7.10	87		

Mother's Age							***
Under 20 years	21.53	2085		5.80	71		
20-29 years	58.82	5697		50.04	613		
30-34 years	12.78	1238		26.29	22		
35 years and older	6.88	666		17.88	219		
Mother's County of Residence							***
Broome	8.09	784		13.96	171		
Jefferson	7.28	705		11.02	135		
Oneida	15.09	1462		13.88	170		
Onondaga	62.11	6016		52.33	641		
Other counties	7.42	719		8.82	108		
Father's Age							***
Under 20 years	44.72	4332		15.10	185		
20-29 years	33.63	3257		24.49	300		
30-34 years	10.20	988		21.06	258		
35 years and older	11.45	1109		39.35	482		
Father's Race							***
Black	45.96	4452		67.51	827		
White	8.89	861		9.31	114		
Other	6.04	113		9.22	113		
Missing	37.69	171		13.96	171		
Father's Hispanic Ethnicity							***
Hispanic	4.71	456		5.96	73		
Non-Hispanic	56.40	5463		80.16	982		
Missing	38.89	3767		13.88	170		
Mother's Education							***
Less than High School	34.80	3371		37.47	459		
High School	31.00	3003		18.53	227		
Less than Bachelor's	28.34	2745		25.71	315		
Bachelor's	3.89	377		10.53	129		
Graduate Training	1.96	190		7.76	95		
Father's Education							***

Less than High School	15.78	1528		21.88	268		
High School	23.38	2265		14.45	177		
Less than Bachelor's	16.80	1627		22.29	273		
Bachelor's	2.16	209		10.86	133		
Graduate Training	1.31	127		11.84	145		
Other/Missing	40.57	3930		18.69	229		
Mother Employed During Pregnancy							***
Yes	44.42	4303		42.29	518		
No	55.58	5383		57.71	707		
Primary Birth Payor							***
Government	79.15	7666		65.71	805		
Self	19.28	1867		32.49	398		
Other	1.58	153		1.80	22		
Medicaid as Second Payor							***
Yes	6.55	634		7.10	87		
No	70.89	6866		73.14	896		
Unknown	22.57	2186		19.76	242		
WIC recipient							***
Yes	80.75	7821		68.24	836		
No	19.25	1865		31.76	389		
HMO							***
Yes	43.07	4172		38.78	475		
No	51.06	4946		52.49	643		
Unknown	5.86	568		8.73	107		
Pregnancy Intentions							***
Wanted to be pregnant sooner	5.99	580		12.73	156		
Wanted to be pregnant later	43.01	4166		25.88	317		
Wanted to be pregnant then	27.12	2627		34.94	428		
Did not want to be pregnant Then or Later	13.52	1310		7.35	90		

Missing	10.36	1003		19.10	234		
Depression							***
No Depression	47.04	4556		55.10	675		
A little depressed	31.24	3026		20.08	246		
Moderately Depressed	8.26	800		5.31	65		
Very Depressed	3.07	297		1.31	16		
Very Depressed and Had to Get Help	1.81	175		0.49	6		
Missing	8.59	832		17.71	217		
Total Number of Pregnancies			2.1898			2.3997	***
Previous Live Birth-Living							***
0 births	38.02	3683		30.53	374		
1 birth	23.29	2539		25.06	307		
2 or more births	35.76	3464		44.41	544		
Previous Live Birth-Dead							***
Yes	1.77	171		5.06	62		
No	98.23	9515		94.94	1163		
Previous Preterm Infant							***
Yes	6.04	585		2.86	35		
No	93.96	9101		97.14	1190		
Previous Cesarean Section							*
Yes	14.14	1370		14.20	174		
No	85.86	8316		85.80	1051		
Prior Poor Pregnancy Outcome							***
Yes	4.99	483		5.55	68		
No	95.01	9203		94.45	1157		
No morbidity							***
Yes	64.80	6277		66.61	816		
No	35.20	3409		33.09	409		
Chronic Disease							
Yes	4.05	392		4.33	53		

No	95.95	9294		95.67	1172		
Diabetes							***
Yes	1.13	109		0.90	11		
No	98.87	9577		99.10	1214		
Hypertension							***
Yes	6.84	663		5.06	62		
No	93.16	9023		94.94	1163		
High Risk Referral							***
Yes	4.70	455		4.73	58		
No	95.30	9231		95.27	1167		
Birth Attendant							***
Physician	84.08	8144		87.67	1074		
Midwife	14.53	1407		11.76	144		
Other	1.39	135		0.57	7		
Initiation of Prenatal Care (Trimester)							***
First Trimester	56.47	5470		55.76	683		
Second Trimester	33.37	3232		32.98	404		
Third Trimester	6.78	657		8.33	102		
Blank/Missing	3.38	327		2.94	327		
Smoking Prenatal Care Counseling							***
Yes	83.57	8095		69.31	849		
No	6.15	596		12.73	156		
Unknown	10.27	995		17.96	220		
Drinking Prenatal Care Counseling							***
Yes	83.11	8050		69.22	848		
No	6.63	642		12.82	157		
Unknown	10.26	994		17.96	220		
Drug Prenatal Care Counseling							***
Yes	82.78	8018		68.16	835		

No	6.93	671		13.39	164		
Unknown	10.29	997		18.45	226		
Wait Time to Next Pregnancy Prenatal Care Counseling							***
Yes	59.54	5767		49.55	607		
No	29.80	2886		31.51	386		
Unknown	10.66	1033		18.94	232		
Birth Control Prenatal Care Counseling							***
Yes	75.41	7304		58.53	717		
No	14.10	1366		22.45	275		
Unknown	10.66	1033		19.02	233		
Early Labor Prenatal Care Counseling							***
Yes	82.82	8022		69.80	855		
No	6.60	639		10.94	134		
Unknown	10.58	1025		19.27	236		
HIV Prevention Prenatal Care Counseling							***
Yes	78.76	7629		62.53	766		
No	10.58	1025		18.45	226		
Unknown	10.65	1032		19.02	233		
Physical Abuse to Women Prenatal Care Counseling							***
Yes	71.34	6910		58.56	721		
No	17.90	1734		21.63	265		
Unknown	10.76	1042		19.51	239		
Alcohol (Alcohol Consumed During Pregnancy)							***
Yes	1.88	182		0.49	6		
No	98.12	9504		99.51	1219		
Drugs (Illegal Drugs							***

Consumed During Pregnancy)							
Yes	8.31	805		0.41	5		
No	91.69	8881		99.59	1220		
Smoking (Smoked before or during Pregnancy)							***
Yes	32.55	3153		4.82	59		
No	67.45	6533		95.18	1166		
Exercise During Pregnancy (Number times exercised for 30 minutes or more per week)			1.7113			1.4188	***
Infection							***
Yes	14.02	1358		4.73	58		
No	85.98	8328		95.27	1167		
Gestational Diabetes							***
Yes	3.02	293		4.16	51		
No	96.98	9393		95.84	1174		
Vaginal Bleeding							***
Yes	3.91	379		1.88	23		
No	96.09	9307		98.12	1202		
Syphilis							***
Yes	0.10	10		0.33	4		
No	99.90	9676		99.67	1221		
Hepatitis B							***
Yes	0.32	31		2.45	30		
No	99.68	9655		97.55	1195		
Bacterial Vaginosis							***
Yes	23.48	2274		12.08	148		
No	76.52	7412		87.92	1077		
Gum problems							***
Yes	22.24	2154		16.49	202		
No	68.93	6677		67.27	824		
Unknown	8.83	855		16.24	199		

[a]This category includes multiracial Black women
[b]This category includes White women and non-Black, multiracial Black women.
[c]Indicates statistical significance, ***=p<.0001, **=p<.01, *=p<.05

Appendix 5.

Table 5.3 (cont.). Logistic Regression Analyses of Preterm Birth among Black Women by Nativity, 2004-2010 SPDS

	Preterm Birth			
Variable (Reference Category)	Model 2		Model 3	
	B (S.E.)	OR	B (S.E.)	OR
Nativity (U.S.-Born)				
Foreign-Born	-0.32* (0.16)	0.73	-0.54* (0.22)	0.58
Maternal Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.24 (0.16)	0.79	-0.18 (0.20)	0.78
Marital Status (Not In Wedlock)				
In Wedlock	0.24* (0.11)	1.27	0.24* (0.11)	1.28
Mom's Age (20-29 years)				
Under 20 years	0.16 (0.11)	1.18	0.16 (0.11)	1.18
30-34 years	0.002 (0.11)	1.00	-0.002 (0.11)	1.00
35 years and older	0.03 (0.14)	1.03	0.02 (0.14)	1.02
Dad's Age (20-29 years)				
Under 20 years	-0.13 (0.16)	0.88	-0.13 (0.16)	0.88
30-34 years	0.01 (0.19)	1.01	0.02 (0.19)	1.01
35 years and older	-0.23 (0.19)	0.79	-0.23 (0.19)	0.79
Mom County of Residence				

(Onondaga)				
Oneida	0.71*** (0.12)	2.03	0.71*** (0.12)	2.03
Broome	0.08 (0.14)	1.09	0.08 (0.14)	1.08
Jefferson	0.37* (0.15)	1.45	0.37* (0.15)	1.45
Other Counties	0.23 (0.14)	1.25	0.24 (0.14)	1.26
Dad's Race (Black)				
White	-0.23 (0.13)	0.79	-0.23 (0.13)	0.79
Other	-0.06 (0.14)	0.94	-0.05 (0.14)	0.95
Missing Race	-1.80* (0.73)	0.17	-1.81* (0.73)	0.16
Dad's Hispanic Ethnicity (Non-Hispanic)				
Hispanic	0.10 (0.17)	1.11	0.10 (0.17)	1.10
Missing	1.17 (0.70)	3.21	1.17 (0.70)	3.23
Dad Nativity (U.S.-Born)				
Foreign-Born	-0.10 (0.16)	0.90	-0.10 (0.16)	0.91
Mom's Education (Less than High School)				
High School	-0.10 (0.09)	0.78	-0.10 (0.09)	0.90
Some College	-0.25* (0.10)	0.79	-0.25* (0.10)	0.78
Bachelor's	-0.24 (0.20)	1.02	-0.25 (0.20)	0.78

Graduate School	0.02 (0.26)	1.74	0.01 (0.26)	1.01
Dad's Education (High School)				
Unknown/Missing	0.55** (0.21)	1.00	0.56** (0.21)	1.75
Less than High School	0.004 (0.11)	0.95	0.008 (0.11)	1.01
Some College	-0.05 (0.11)	0.69	-0.04 (0.11)	0.96
Bachelor's	-0.38 (0.24)	0.72	-0.38 (0.24)	0.69
Graduate School	-0.33 (0.28)	0.97	-0.33 (0.28)	0.71
Work (Employed)				
Not Employed	-0.03 (0.08)	1.16	-0.03 (0.08)	0.97
Primary Birth Payor (Government)				
Self	0.14 (0.11)	1.28	0.14 (0.11)	1.16
Other	0.25 (0.25)	0.57	0.26 (0.25)	1.30
Medicaid as Secondary Birth Payor (No)				
Yes	-0.24 (0.16)	0.79	-0.24 (0.16)	0.79
Missing/Unknown	-0.56*** (0.11)	0.77	-0.57*** (0.11)	0.57
WIC recipient (No)				
Yes	-0.26** (0.09)	0.73	-0.26** (0.09)	0.77
HMO (No)				

Missing/Unknown	-0.32 (0.18)	0.92	-0.31 (0.18)	0.73
Yes	-0.09 (0.07)	0.98	-0.09 (0.07)	0.92
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.37* (0.15)	1.45	0.40* (0.16)	1.49
Overweight	-0.11 (0.08)	0.90	-0.17 (0.09)	0.85
Obese	-0.34*** (0.09)	0.71	-0.35*** (0.09)	0.70
Previous Live Birth (None)				
One	-0.20* (0.10)	0.82	-0.20* (0.10)	0.82
Two or more	-0.38** (0.12)	0.69	-0.38** (0.12)	0.69
Previous live birth – Dead (No)				
Yes	-0.30 (0.21)	0.74	-0.30 (0.21)	0.75
Total Number of Pregnancies	0.05** (0.02)	1.06	0.05** (0.02)	1.06
Previous Preterm (No)				
Yes	1.15*** (0.11)	3.14	1.15*** (0.11)	3.16
Poor Prior Outcome (No)				
Yes	0.28* (0.14)	1.33	0.29* (0.14)	1.33
Previous C-Section (No)				
Yes	-0.04 (0.10)	0.97	-0.04 (0.10)	0.96
No Morbidity/Medical Risk				

(Yes)				
No	0.43*** (0.10)	1.53	0.43*** (0.10)	1.53
Chronic Disease (No)				
Yes	-0.14 (0.15)	0.87	-0.14 (0.15)	0.87
Diabetes (No)				
Yes	0.95*** (0.23)	2.58	0.95*** (0.23)	2.58
Hypertension (No)				
Yes	1.02*** (0.11)	2.78	1.02*** (0.11)	2.79
High Risk Referral (No)				
Yes	1.01*** (0.12)	2.75	1.01*** (0.12)	2.75
Pregnancy Intentions (Wanted to be pregnant later)				
Missing	0.30 (0.19)	1.35	0.30 (0.19)	1.34
Wanted to be pregnant sooner	0.02 (0.14)	1.02	0.02 (0.14)	1.02
Wanted to be pregnant then	-0.02 (0.09)	0.98	-0.02 (0.09)	0.99
Did not want to be pregnant then or later	-0.03 (0.11)	0.97	-0.03 (0.11)	0.97
Mom’s Depression (No depression)				
Unknown/Missing	-0.40 (0.28)	0.67	-0.38 (0.28)	0.68
A little Depressed	0.12 (0.08)	1.13	0.13 (0.08)	1.13
Moderately Depressed	0.12	1.13	0.12	1.14

	(0.13)		(0.13)	
Very Depressed	0.35* (0.18)	1.42	0.36* (0.18)	1.43
Very Depressed and Got Help	0.83*** (0.21)	2.30	0.83*** (0.21)	2.30
Trimester of Prenatal Initiation (First trimester)				
Unknown/Missing	0.85*** (0.15)	2.33	0.85*** (0.15)	2.35
Third Trimester	-0.07 (0.14)	0.93	-0.07 (0.14)	0.93
Second Trimester	-0.16* (0.08)	0.86	-0.16* (0.08)	0.86
Primary Birth Attendant (Physician)				
Other/Unknown	0.55* (0.23)	1.74	0.55* (0.23)	1.73
Midwife	-0.68*** (0.12)	0.51	-0.68*** (0.13)	0.51
Prenatal Counseling – Smoking (Yes)				
Missing	-0.02 (0.68)	0.98	-0.07 (0.68)	0.94
No	-0.05 (0.30)	0.95	-0.05 (0.30)	0.95
Prenatal Counseling – Drinking (Yes)				
Missing	-0.38 (0.74)	0.68	-0.44 (0.74)	0.64
No	-0.08 (0.37)	0.93	-0.07 (0.37)	0.93
Prenatal Counseling – Drugs (Yes)				

Missing	0.90 (0.76)	2.46	0.96 (0.76)	2.60
No	-0.15 (0.33)	0.86	-0.16 (0.33)	0.85
Prenatal Counseling – How long to Wait before becoming Pregnant Again (Yes)				
Missing	0.15 (0.56)	1.16	0.16 (0.56)	1.17
No	0.11 (0.09)	1.12	0.11 (0.09)	1.12
Prenatal Counseling – Birth Control(Yes)				
Missing	-0.25 (0.59)	0.78	-0.24 (0.60)	0.79
No	0.14 (0.11)	1.15	0.14 (0.11)	1.15
Prenatal Counseling – Early Labor(Yes)				
Missing	0.74 (0.55)	2.09	0.75 (0.55)	2.11
No	0.50** (0.14)	1.65	0.49** (0.14)	1.64
Prenatal Counseling – HIV Prevention (Yes)				
Missing	-0.29 (0.58)	0.75	-0.26 (0.58)	0.77
No	-0.12* (0.14)	0.89	-0.12 (0.14)	0.89
Prenatal Counseling – Abuse (Yes)				
Missing	-0.34	0.71	-0.35	0.70

	(0.52)		(0.52)	
No	0.002 (0.16)	1.00	0.003 (0.12)	1.00
Physical Activity	-0.04** (0.02)	0.96	-0.04** (0.02)	0.96
Smoked at all (No)				
Yes	0.11 (0.08)	1.12	0.11 (0.08)	1.11
Alcohol Use (No)				
Yes	0.15 (0.21)	1.16	0.15 (0.21)	1.17
Drug Use (No)				
Yes	0.47*** (0.16)	1.61	0.47*** (0.12)	1.60
Gestational Diabetes (No)				
Yes	0.15 (0.17)	1.17	0.16 (0.17)	1.17
Vaginal Bleeding (No)				
Yes	0.68*** (0.14)	1.97	0.68*** (0.14)	1.97
Infection (No)				
Yes	-0.07 (0.10)	0.94	-0.06 (0.10)	0.94
Bacterial Vaginosis (No)				
Yes	0.16 (0.08)	1.17	0.16 (0.08)	1.17
Gum Problems (No)				
Unknown/Missing	0.006 (0.24)	1.01	0.007 (0.24)	1.01
Yes	-0.17* (0.09)	0.84	-0.17* (0.09)	0.84
Nativity*Pre-Pregnancy BMI (White, Normal				

weight)				
Foreign-Born, Underweight	--	--	-0.40 (0.61)	0.68
Foreign-Born, Overweight	--	--	0.58* (0.27)	1.79
Foreign-Born, Obese	--	--	0.18 (0.33)	1.20
Constant	-2.19*** (0.24)		-2.18*** (0.24)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

Appendix 6.

Table 5.5 (cont.). Logistic Regression Analyses of Low Birth Weight by Nativity and Pre-Pregnancy BMI, 2004-2010 SPDS

	Low Birth Weight			
Variable (Reference Category)	Model 2		Model 3	
	B (S.E.)	OR	B (S.E.)	OR
Nativity (U.S.-Born)				
Foreign-Born	0.02 (0.19)	1.02	0.15 (0.25)	1.16
Maternal Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.18 (0.20)	0.83	-0.18 (0.20)	0.84
Marital Status (Not In Wedlock)				
In Wedlock	-0.06 (0.14)	0.94	-0.06 (0.14)	0.94
Mom's Age (20-29 years)				
Under 20 years	-0.20 (0.14)	0.82	-0.20 (0.14)	0.82
30-34 years	0.22 (0.14)	1.25	0.22 (0.14)	1.25
35 years and older	0.43* (0.17)	1.54	0.44* (0.17)	1.56
Dad's Age (20-29 years)				
Under 20 years	-0.41* (0.20)	0.66	-0.41* (0.20)	0.66
30-34 years	-0.46 (0.23)	0.63	-0.46* (0.23)	0.63
35 years and older	-0.16 (0.23)	0.85	-0.16 (0.23)	0.86

Mom County of Residence (Onondaga)				
Oneida	0.38* (0.15)	1.46	0.38* (0.15)	1.46
Broome	0.13 (0.17)	1.13	0.13 (0.17)	1.14
Jefferson	0.24 (0.19)	1.27	0.24 (0.19)	1.27
Other Counties	-0.11 (0.18)	0.90	-0.12 (0.18)	0.89
Dad's Race (Black)				
White	-0.33 (0.17)	0.72	-0.33 (0.17)	0.72
Other	-0.06 (0.14)	1.34	0.28 (0.18)	1.33
Missing Race	-0.61 (0.93)	0.55	-0.60 (0.93)	0.55
Dad's Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.37 (0.23)	0.69	-0.37 (0.23)	0.69
Missing	0.70 (0.90)	2.02	0.52 (0.37)	2.02
Dad Nativity (U.S.-Born)				
Foreign-Born	-0.51* (0.21)	0.60	-0.50 (0.21)	0.61
Mom's Education (Less than High School)				
High School	0.008 (0.11)	1.01	0.006 (0.11)	1.01
Some College	-0.02 (0.13)	0.98	-0.02 (0.13)	0.98
Bachelor's	0.01	1.01	0.01	1.01

	(0.26)		(0.26)	
Graduate School	0.03 (0.34)	1.03	0.027 (0.35)	1.03
Dad's Education (High School)				
Unknown/Missing	-0.52 (0.30)	0.59	-0.53 (0.31)	0.59
Less than High School	-0.07 (0.14)	0.93	-0.07 (0.14)	0.93
Some College	-0.11 (0.14)	0.90	-0.11 (0.14)	0.89
Bachelor's	-0.60 (0.34)	0.55	-0.61 (0.34)	0.55
Graduate School	0.003 (0.36)	1.00	0.01 (0.36)	1.01
Work (Employed)				
Not Employed	0.03 (0.10)	1.03	0.03 (0.10)	1.03
Primary Birth Payor (Government)				
Self	-0.14 (0.14)	0.87	-0.14 (0.14)	0.87
Other	0.26 (0.32)	1.30	0.25 (0.32)	1.29
Medicaid as Secondary Birth Payor (No)				
Yes	-0.22 (0.21)	0.80	-0.22 (0.21)	0.80
Missing/Unknown	-0.23 (0.14)	0.79	-0.23 (0.14)	0.79
WIC recipient (No)				
Yes	0.12 (0.12)	1.13	0.12 (0.12)	1.13

HMO (No)				
Missing/Unknown	-0.24 (0.23)	0.78	-0.25 (0.23)	0.78
Yes	-0.09 (0.09)	0.92	-0.09 (0.09)	0.92
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.42* (0.18)	1.52	0.40* (0.19)	1.50
Overweight	-0.14 (0.11)	0.87	-0.11 (0.11)	0.90
Obese	-0.29** (0.11)	0.75	-0.27** (0.11)	0.77
Previous Live Birth (None)				
One	-0.42** (0.12)	0.66	-0.41** (0.12)	0.66
Two or more	-0.78*** (0.16)	0.46	-0.78*** (0.16)	0.46
Previous live birth – Dead (No)				
Yes	-0.41 (0.29)	0.66	-0.40 (0.19)	0.67
Total Number of Pregnancies	-0.009 (0.03)	0.99	-0.11 (0.11)	0.99
Previous Preterm (No)				
Yes	0.53*** (0.15)	1.70	0.52*** (0.16)	1.69
Poor Prior Outcome (No)				
Yes	0.11 (0.18)	1.12	0.11 (0.18)	1.12
Previous C-Section (No)				
Yes	-0.10 (0.14)	0.91	-0.10 (0.14)	0.91

No Morbidity/Medical Risk (Yes)				
No	0.43* (0.14)	1.54	0.43** (0.14)	1.54
Chronic Disease (No)				
Yes	-0.12 (0.20)	0.89	-0.11 (0.20)	0.89
Diabetes (No)				
Yes	-1.06** (0.33)	0.35	-1.06** (0.33)	0.35
Hypertension (No)				
Yes	0.90*** (0.15)	2.45	0.89*** (0.15)	2.44
High Risk Referral (No)				
Yes	0.20 (0.17)	1.22	0.20 (0.17)	1.22
Pregnancy Intentions (Wanted to be pregnant later)				
Missing	0.17 (0.24)	1.18	0.17 (0.24)	1.19
Wanted to be pregnant sooner	-0.29 (0.19)	0.75	-0.29 (0.19)	0.75
Wanted to be pregnant then	0.02 (0.11)	1.02	0.02 (0.11)	1.02
Did not want to be pregnant then or later	-0.14 (0.14)	0.87	-0.14 (0.14)	0.87
Mom's Depression (No depression)				
Unknown/Missing	-0.37 (0.36)	0.69	-0.37 (0.36)	0.69
A little Depressed	-0.04 (0.10)	0.97	-0.04 (0.10)	0.97

Moderately Depressed	-0.05 (0.16)	0.96	-0.05 (0.16)	0.95
Very Depressed	0.19 (0.23)	1.20	0.18 (0.23)	1.20
Very Depressed and Got Help	-0.10 (0.29)	0.91	-0.10 (0.29)	0.90
Trimester of Prenatal Initiation (First trimester)				
Unknown/Missing	-0.05 (0.23)	0.95	-0.05 (0.23)	0.95
Third Trimester	-0.07 (0.17)	0.93	-0.07 (0.17)	0.93
Second Trimester	0.11 (0.09)	1.12	0.11 (0.09)	1.12
Primary Birth Attendant (Physician)				
Other/Unknown	0.60* (0.30)	1.81	0.61* (0.30)	1.83
Midwife	-0.31* (0.14)	0.74	-0.30* (0.14)	0.74
Prenatal Counseling – Smoking (Yes)				
Missing	-1.06 (0.81)	0.35	-1.05 (0.82)	0.35
No	-0.27 (0.37)	0.76	-0.27 (0.37)	0.77
Prenatal Counseling – Drinking (Yes)				
Missing	-0.55 (0.93)	0.58	-0.54 (0.93)	0.59
No	0.008 (0.48)	1.01	0.003 (0.48)	1.00
Prenatal Counseling –				

Drugs (Yes)				
Missing	1.65 (0.96)	5.22	1.66 (0.97)	5.26
No	0.32 (0.43)	1.38	0.32 (0.43)	1.37
Prenatal Counseling – How long to Wait before becoming Pregnant Again (Yes)				
Missing	0.16 (0.64)	1.18	0.16 (0.64)	1.18
No	0.14 (0.12)	0.88	-0.13 (0.12)	0.88
Prenatal Counseling – Birth Control(Yes)				
Missing	-0.17 (0.68)	0.85	-0.18 (0.69)	0.84
No	-0.003 (0.15)	1.00	-0.008 (0.15)	0.99
Prenatal Counseling – Early Labor(Yes)				
Missing	0.67 (0.64)	1.96	0.68 (0.64)	1.98
No	0.55** (0.18)	1.73	0.55** (0.18)	1.73
Prenatal Counseling – HIV Prevention (Yes)				
Missing	-0.20 (0.74)	0.82	-0.22 (0.74)	0.80
No	-0.03 (0.19)	0.97	-0.03 (0.19)	0.97
Prenatal Counseling – Abuse (Yes)				

Missing	-0.08 (0.62)	0.93	-0.08 (0.62)	0.93
No	-0.26 (0.15)	0.77	-0.26 (0.15)	0.77
Physical Activity	-0.01 (0.02)	0.99	-0.01 (0.02)	0.99
Smoked at all (No)				
Yes	0.53*** (0.10)	1.69	0.53*** (0.10)	1.69
Alcohol Use (No)				
Yes	-0.14 (0.28)	0.87	-0.15 (0.28)	0.87
Drug Use (No)				
Yes	0.24 (0.15)	1.27	0.24 (0.15)	1.27
Gestational Diabetes (No)				
Yes	-0.71** (0.24)	0.49	-0.70** (0.24)	0.49
Vaginal Bleeding (No)				
Yes	-0.05 (0.20)	0.95	-0.17 (0.13)	0.95
Infection (No)				
Yes	-0.17 (0.13)	0.84	-0.17 (0.13)	0.84
Bacterial Vaginosis (No)				
Yes	0.06 (0.10)	1.06	0.06 (0.10)	1.06
Gum Problems (No)				
Unknown/Missing	0.03 (0.31)	1.03	0.03 (0.31)	1.03
Yes	-0.11 (0.11)	0.89	-0.11 (0.11)	0.89
Length of Gestation (Term)				

Preterm	3.77*** (0.09)	43.36	3.77*** (0.09)	43.55
Adequacy of Pregnancy Weight Gain (Normal)				
Low	0.53*** (0.11)	1.70	0.53*** (0.11)	1.70
High	-0.44*** (0.11)	0.64	-0.44*** (0.11)	0.64
Nativiity*Pre-Pregnancy BMI (White, Normal weight)				
Foreign-Born, Underweight			0.18 (0.61)	1.20
Foreign-Born , Overweight			-0.29 (0.35)	0.75
Foreign-Born , Obese			-0.33 (0.42)	0.72
Constant	-2.58*** (0.30)	0.05	-2.58*** (0.30)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

Appendix 7.

Table 6.1 (cont.). Sample Characteristics Among Black Women by Region of Birth (U.S., African, Other), 2004-2010 PDS

N=10911

	U.S.			Africa			Other			
Variable (Category)	%	N	x	%	N	x				
Pre-pregnancy Body Mass Index										***
Underweight	3.82	370		3.51	26		4.58	22		
Normal Weight	38.80	3758		42.43	314		41.67	200		
Overweight	27.20	2635		32.97	244		31.04	149		
Obese	30.18	2923		21.08	156		22.71	109		
Adequacy of Pregnancy Weight Gain										***
Low Weight Gain	24.60	2383		35.27	432		23.13	111		
Normal Weight Gain	26.81	2597		30.04	368		46.25	222		
High Weight Gain	48.59	4706		34.69	425		30.63	147		
Paternal Nativity										***
US-Born	96.77	9372		16.35	121		63.96	307		
Foreign-Born	3.24	314		83.65	619		36.04	173		
Marital Status										***
Single	81.11	7856		25.68	190		49.38	237		
In Wedlock	18.89	1830		74.32	550		50.63	243		
Maternal Hispanic Ethnicity										***
Non-Hispanic	94.76	9178		98.78	731		83.75	402		
Hispanic	5.24	508		1.22	9		16.25	78		
Mother's Age										***
Under 20 years	21.53	2085		6.35	47		5.00	24		
20-29 years	58.82	5697		47.84	354		53.33	256		
30-34 years	12.78	1238		28.24	209		23.13	111		
35 years and older	6.88	666		17.57	130		18.54	89		
Mother's County of Residence										***

Broome	8.09	784		10.41	77		18.96	91		
Jefferson	7.28	705		4.19	31		21.67	104		
Oneida	15.09	1462		16.35	121		10.21	49		
Onondaga	62.11	6016		61.62	456		21.67	184		
Other counties	7.42	719		7.43	55		10.83	52		
Father's Age										***
Under 20 years	44.72	4332		9.73	72		23.54	113		
20-29 years	33.63	3257		24.49	300		28.13	135		
30-34 years	10.20	988		21.06	258		19.79	95		
35 years and older	11.45	1109		46.35	343		28.54	137		
Father's Race										***
Black	45.96	4452		77.70	575		51.46	247		
White	8.89	861		4.32	32		17.08	82		
Other	6.04	113		8.79	63		10.42	50		
Missing	37.69	171		9.46	70		21.04	101		
Father's Hispanic Ethnicity										***
Non-Hispanic	4.71	456		89.19	660		66.04	317		
Hispanic	56.40	5463		1.49	11		12.12	62		
Missing	38.89	3767		9.32	69		21.04	101		
Mother's Education										***
Less than High School	34.80	3371		53.51	396		13.13	63		
High School	31.00	3003		13.78	102		25.63	123		
Less than Bachelor's	28.34	2745		15.81	117		40.83	196		
Bachelor's	3.89	377		10.00	74		11.25	54		
Graduate Training	1.96	190		6.89	51		9.17	44		
Father's Education										***
Less than High School	15.78	1528		30.54	226		8.54	41		
High School	23.38	2265		11.08	82		19.58	94		
Less than Bachelor's	16.80	1627		17.23	129		29.58	42		
Bachelor's	2.16	209		10.54	78		11.25	54		
Graduate Training	1.31	127		14.05	104		8.54	41		
Other/Missing	40.57	3930		16.35	121		22.50	108		

Mother Employed During Pregnancy										***
Yes	44.42	4303		34.32	254		54.38	261		
No	55.58	5383		65.68	486		45.63	219		
Primary Birth Payor										***
Government	79.15	7666		68.38	506		61.67	296		
Self	19.28	1867		30.41	225		35.63	171		
Other	1.58	153		1.22	9		2.71	13		
Medicaid as Second Payor										***
Yes	6.55	634		7.70	57		6.25	30		
No	70.89	6866		68.78	509		79.58	382		
Unknown	22.57	2186		23.51	174		14.17	68		
WIC recipient										***
Yes	80.75	7821		71.62	530		63.33	304		
No	19.25	1865		28.38	210		36.67	176		
HMO										***
Yes	43.07	4172		49.05	363		23.13	111		
No	51.06	4946		41.89	310		68.75	330		
Unknown	5.86	568		9.05	67		8.13	39		
Pregnancy Intentions										***
Wanted to be pregnant Sooner	5.99	580		14.73	109		9.79	47		
Wanted to be pregnant later	43.01	4166		22.84	169		30.63	147		
Wanted to be pregnant then	27.12	2627		32.70	242		38.13	183		
Did not want to be pregnant Then or Later	13.52	1310		3.21	45		9.38	45		
Missing	10.36	1003		23.65	175		12.08	58		
Depression										***
No Depression	47.04	4556		57.16	423		51.88	249		
A little depressed	31.24	3026		14.73	109		28.33	136		
Moderately Depressed	8.26	800		4.46	33		6.67	32		
Very Depressed	3.07	297		1.22	9		1.46	7		

Very Depressed and Had to Get Help	1.81	175		0.41	3		0.63	3		
Missing	8.59	832		22.03	163		11.04	53		
Total Number of Pregnancies			2.19			2.70			1.94	***
Previous Live Birth-Living										***
0 births	38.02	3683		27.16	201		35.83	172		
1 birth	23.29	2539		21.49	159		30.83	148		
2 or more births	35.76	3464		51.35	360		33.33	160		
Previous Live Birth-Dead										***
Yes	1.77	171		7.43	55		1.25	6		
No	98.23	9515		92.57	685		98.75	474		
Previous Preterm Infant										***
Yes	6.04	585		2.57	19		3.33	16		
No	93.96	9101		97.43	721		96.67	464		
Previous Cesarean Section										*
Yes	14.14	1370		14.59	108		13.75	66		
No	85.86	8316		85.41	632		86.25	414		
Prior Poor Pregnancy Outcome										***
Yes	4.99	483		5.81	43		5.21	25		
No	95.01	9203		94.19	697		94.79	455		
No morbidity/medical risk										***
Yes	64.80	6277		67.43	499		65.21	313		
No	35.20	3409		32.57	241		34.79	167		
Chronic Disease										
Yes	4.05	392		4.32	32		4.38	21		
No	95.95	9294		95.68	708		95.63	459		
Diabetes										***
Yes	1.13	109		1.22	9		0.42	2		
No	98.87	9577		98.78	731		99.58	478		
Hypertension										***
Yes	6.84	663		3.51	26		7.50	36		

No	93.16	9023		96.49	714		92.50	444		
High Risk Referral										***
Yes	4.70	455		4.46	33		24	5.00		
No	95.30	9231		95.54	707		456	95.00		
Birth Attendant										***
Physician	84.08	8144		91.62	678		394	82.08		
Midwife and Other	15.92	1542		8.38	62		86	18.92		
Initiation of Prenatal Care (Trimester)										***
First Trimester	56.47	5470		48.11	356		67.29	323		
Second Trimester	33.37	3232		39.05	289		23.96	115		
Third Trimester	6.78	657		10.00	74		5.63	27		
Blank/Missing	3.38	327		2.84	21		3.13	15		
Smoking Prenatal Care Counseling										***
Yes	83.57	8095		63.51	470		78.13	375		
No	6.15	596		14.73	109		9.79	47		
Unknown	10.27	995		21.76	161		12.08	58		
Drinking Prenatal Care Counseling										***
Yes	83.11	8050		63.78	472		77.71	373		
No	6.63	642		14.46	107		10.21	49		
Unknown	10.26	994		21.76	161		12.08	58		
Drug Prenatal Care Counseling										***
Yes	82.78	8018		62.70	464		76.67	368		
No	6.93	671		14.73	109		11.25	54		
Unknown	10.29	997		22.57	167		12.08	58		
Wait Time to Next Pregnancy Prenatal Care Counseling										***
Yes	59.54	5767		41.22	342		54.79	263		
No	29.80	2886		30.81	228		32.50	156		

Unknown	10.66	1033		22.97	170		12.71	61		
Birth Control Prenatal Care Counseling										***
Yes	75.41	7304		52.97	392		67.08	322		
No	14.10	1366		24.05	178		20.00	96		
Unknown	10.66	1033		22.97	170		12.92	62		
Early Labor Prenatal Care Counseling										***
Yes	82.82	8022		466	62.97		80.21	385		
No	6.60	639		101	13.65		6.88	33		
Unknown	10.58	1025		173	23.38		12.92	62		
HIV Prevention Prenatal Care Counseling										***
Yes	78.76	7629		59.05	437		67.92	326	326	
No	10.58	1025		17.97	133		19.17	92	92	
Unknown	10.65	1032		22.97	170		12.92	62	62	
Physical Abuse to Women Prenatal Care Counseling										***
Yes	71.34	6910		55.54	411		63.96	307		
No	17.90	1734		20.95	155		22.71	109		
Unknown	10.76	1042		23.51	174		13.33	64		
Alcohol (Alcohol Consumed During Pregnancy)										***
Yes	1.88	182		0.68	5		0.21	1		
No	98.12	9504		99.32	735		99.79	479		
Drugs (Illegal Drugs Consumed During Pregnancy)										***
Yes	8.31	805		0.14	1		0.63	3		
No	91.69	8881		99.86	739		99.38	477		
Smoking (Smoked before or during Pregnancy)										***
Yes	32.55	3153		1.08	8		10.63	51		

No	67.45	6533		98.92	732		89.38	429		
Exercise During Pregnancy (Number times exercised for 30 minutes or more per week)			1.71			1.29			1.61	***
Infection										***
Yes	14.02	1358		3.11	23		7.08	34		
No	85.98	8328		96.89	717		92.92	446		
Gestational Diabetes										***
Yes	3.02	293		4.19	31		4.17	20		
No	96.98	9393		95.81	709		95.83	460		
Vaginal Bleeding										***
Yes	3.91	379		0.13	14		0.08	9		
No	96.09	9307		98.11	726		98.13	471		
Bacterial Vaginosis										***
Yes	23.48	2274		12.70	94		53	11.04		
No	76.52	7412		87.30	646		427	88.96		
Gum problems										***
Yes	22.24	2154		13.78	102		100	20.83		
No	68.93	6677		66.22	490		330	68.75		
Unknown	8.83	855		20.00	148		50	10.42		
[c]Indicates statistical significance, ***=p<.0001, **=p<.01, *=p<.05										

Appendix 8.

Table 6.3 (cont.) Logistic Regression Models of Preterm Birth Among Black Women by Region of Birth, by Pre-Pregnancy BMI, all Covariates, and Interaction Effects of Region of Birth and Pregnancy BMI, 2004-2010 SPDS

	Preterm Birth			
Variable (Reference Category)	Model 2		Model 3	
	B (S.E.)	OR	B (S.E.)	OR
Region of Birth (United States)				
Africa	-0.52* (0.22)	0.60	-0.32 (0.28)	0.73
Non-Africa/Other	-0.17 (0.18)	0.85	0.01 (0.27)	1.01
Maternal Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.25 (0.16)	0.76	-0.33* (0.16)	0.72
Marital Status (In Wedlock)				
Not in Wedlock	0.25* (0.11)	1.29	0.11 (0.11)	1.11
Mom's Age (20-29 years)				
Under 20 years	0.16 (0.11)	1.18	-0.009 (0.11)	0.99
30-34 years	-0.0008 (0.11)	1.00	0.16 (0.11)	1.18
35 years and older	0.02 (0.14)	1.02	0.31 (0.14)	1.36
Dad's Age (20-29 years)				
Under 20 years	0.13 (0.16)	1.14	0.33 (0.15)	1.39
30-34 years	0.15	1.16	0.06	1.06

	(0.12)		(0.12)	
35 years and older	-0.09 (0.12)	0.91	0.13 (0.12)	1.14
Mom County of Residence (Onondaga)				
Oneida	0.71*** (0.12)	2.03	0.70*** (0.11)	2.01
Broome	0.07 (0.14)	1.07	0.13 (0.13)	1.14
Jefferson	0.35* (0.15)	1.42	0.34* (0.15)	1.41
Other	0.22 (0.14)	1.25	0.10 (0.14)	1.11
Dad's Race (Black)				
White	-0.24 (0.13)	0.79	-0.32 (0.14)	0.73
Other	-0.07 (0.14)	0.94	0.12 (0.14)	1.12
Missing Race	-1.80* (0.73)	0.17	-1.53* (0.75)	0.22
Dad's Hispanic Ethnicity (Non-Hispanic)				
Hispanic	0.09 (0.17)	1.09	-0.19 (0.18)	0.83
Missing	1.16 (0.70)	3.20	1.12 (0.72)	3.05
Dad Nativity (U.S.-Born)				
Foreign-Born	-0.03 (0.17)	0.97	-0.25 (0.18)	0.78
Mom's Education (Less than High School)				
High School	-0.11	0.90	-0.12	0.89

	(0.09)		(0.09)	
Some College	-0.26* (0.10)	0.77	-0.28** (0.10)	0.75
Bachelor's	-0.26 (0.20)	0.77	-0.29 (0.20)	0.75
Graduate School	-0.02 (0.26)	0.99	-0.04 (0.26)	0.96
Dad's Education (High School)				
Unknown/Missing	0.57** (0.21)	1.77	0.14 (0.22)	1.15
Less than High School	0.02 (0.11)	1.02	-0.02 (0.11)	0.98
Some College	-0.05 (0.11)	0.95	-0.11 (0.11)	0.89
Bachelor's	-0.37 (0.24)	0.69	-0.73 (0.28)	0.48
Graduate School	-0.30 (0.29)	0.74	-0.20 (0.29)	0.82
Work (Employed)				
Not Employed	-0.03 (0.08)	0.97	0.01 (0.07)	1.02
Primary Birth Payor (Govt)				
Self-Pay	0.14 (0.11)	1.16	0.008 (0.11)	1.01
Other	0.24 (0.25)	1.27	0.29 (0.25)	1.33
Medicaid as Secondary Birth Payor (No)				
Yes	-0.23 (0.16)	0.79	-0.31 (0.16)	0.73
Missing/Unknown	-0.56*** (0.11)	0.57	-0.48*** (0.11)	0.62

WIC recipient (No)				
Yes	-0.25** (0.09)	0.78	-0.11 (0.09)	0.90
HMO (No)				
Missing/Unknown	-0.32 (0.18)	0.73	-0.33 (0.18)	0.72
Yes	-0.08 (0.07)	0.92	-0.09 (0.07)	0.91
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.37* (0.15)	1.45	0.54** (0.15)	1.71
Overweight	-0.11 (0.08)	0.90	-0.27* (0.09)	0.76
Obese	-0.34*** (0.09)	0.71	-0.42*** (0.09)	0.66
Previous Live Birth (None)				
One	-0.20* (0.10)	0.82	-0.34** (0.10)	0.71
Two or more	-0.38** (0.12)	0.69	-0.67*** (0.12)	0.51
Previous live birth – Dead (No)				
Yes	-0.29 (0.21)	0.75	-0.41 (0.22)	0.66
Total Number of Pregnancies	0.06** (0.02)	1.06	0.03 (0.02)	1.03
Previous Preterm (No)				
Yes	1.14*** (0.11)	3.13	1.04*** (0.11)	2.83
Poor Prior Outcome (No)				
Yes	0.28* (0.14)	1.33	0.24 (0.14)	1.27

Previous C-Section (No)				
Yes	-0.03 (0.10)	0.97	-0.11 (0.10)	0.90
Any Morbidity/Medical Risk (No)				
Yes	0.43*** (0.10)	1.53	0.53*** (0.10)	1.69
Chronic Disease (No)				
Yes	-0.14 (0.15)	0.87	-0.14 (0.15)	0.87
Diabetes (No)				
Yes	0.95*** (0.23)	2.59	0.01 (0.26)	1.01
Hypertension (No)				
Yes	1.02*** (0.11)	2.77	1.08*** (0.11)	2.94
High Risk Referral (No)				
Yes	1.01*** (0.12)	2.75	0.79*** (0.12)	2.21
Pregnancy Intentions (Wanted to be pregnant later)				
Missing	0.31 (0.19)	1.36	0.25 (0.19)	1.28
Wanted to be pregnant sooner	0.03 (0.14)	1.03	-0.13 (0.15)	0.88
Wanted to be pregnant then	-0.02 (0.09)	0.98	0.006 (0.08)	1.01
Did not want to be pregnant then or later	-0.04 (0.11)	0.96	-0.10 (0.11)	0.90
Mom’s Depression (No depression)				
Unknown/Missing	-0.39	0.68	-0.41	0.66

	(0.28)		(0.28)	
A little Depressed	0.12 (0.08)	1.13	0.04 (0.08)	1.05
Moderately Depressed	0.12 (0.13)	1.13	0.03 (0.13)	1.03
Very Depressed	0.35* (0.18)	1.42	0.37* (0.17)	1.45
Very Depressed and Got Help	0.83*** (0.21)	2.29	0.46* (0.23)	1.58
Trimester of Prenatal Iniiton (First trimester)				
Unknown/Missing	0.85*** (0.15)	2.34	0.65*** (0.16)	1.93
Third Trimester	-0.07 (0.14)	0.94	-0.03 (0.14)	0.97
Second Trimester	-0.15 (0.08)	0.86	-0.02 (0.07)	0.98
Primary Birth Attendant (Physician)				
Other/Unknown	0.55* (0.23)	1.73	0.73** (0.22)	2.07
Midwife	-0.68*** (0.12)	0.51	-0.61*** (0.12)	0.55
Prenatal Counseling – Smoking (Yes)				
Missing	-0.04 (0.68)	0.96	-0.83 (0.66)	0.44
No	-0.05 (0.30)	0.95	-0.30 (0.30)	0.74
Prenatal Counseling – Drinking (Yes)				
Missing	-0.40 (0.74)	0.67	-0.49 (0.72)	0.61

No	-0.08 (0.37)	0.93	-0.01 (0.36)	0.99
Prenatal Counseling – Drugs (Yes)				
Missing	0.94 (0.76)	2.56	1.58* (0.72)	4.88
No	-0.15 (0.33)	0.86	0.14 (0.32)	1.15
Prenatal Counseling – How long to Wait before becoming Pregnant Again (Yes)				
Missing	0.15 (0.56)	1.16	0.03 (0.53)	1.03
No	0.12 (0.09)	1.12	-0.02 (0.09)	0.98
Prenatal Counseling – Birth Control(Yes)				
Missing	-0.24 (0.59)	0.78	0.04 (0.56)	1.04
No	0.14 (0.11)	1.15	0.12 (0.11)	1.12
Prenatal Counseling – Early Labor(Yes)				
Missing	0.74 (0.55)	2.10	0.83 (0.53)	2.28
No	0.50** (0.14)	1.65	0.65 (0.14)	1.91
Prenatal Counseling – HIV Prevention (Yes)				
Missing	-0.31 (0.58)	0.73	-0.27 (0.57)	0.76
No	-0.13	0.88	-0.09	0.91

	(0.14)		(0.15)	
Prenatal Counseling – Abuse (Yes)				
Missing	-0.33 (0.52)	0.72	-0.32 (0.50)	0.73
No	-0.005 (0.12)	1.00	-0.18 (0.12)	0.83
Physical Activity	-0.04** (0.02)	0.96	-0.04* (0.02)	0.97
Smoked at all (No)				
Yes	0.10 (0.08)	1.11	0.35 (0.08)	1.42
Alcohol Use (No)				
Yes	0.16 (0.21)	1.16	0.03 (0.21)	1.03
Drug Use (No)				
Yes	0.47*** (0.12)	1.60	0.44*** (0.11)	1.55
Gestational Diabetes (No)				
Yes	0.16 (0.17)	1.17	-0.36 (0.19)	0.70
Vaginal Bleeding (No)				
Yes	0.68*** (0.14)	1.97	0.43** (0.14)	1.53
Infection (No)				
Yes	-0.07 (0.10)	0.93	-0.11 (0.10)	0.89
Bacterial Vaginosis (No)				
Yes	0.16 (0.08)	1.17	0.13 (0.08)	1.14
Gum Problems (No)				
Unknown/Missing	0.005 (0.24)	1.01	0.01 (0.23)	1.01

Yes	-0.17* (0.09)	0.84	-0.19* (0.08)	0.83
Region of Birth*Pre-Pregnancy BMI (U.S. Born, Normal Weight)				
African, Underweight			0.03 (0.65)	1.03
African, Overweight			0.25 (0.36)	1.28
African, Obese			-0.59 (0.53)	0.55
Non-African/Other, Underweight			-0.23 (0.73)	0.79
Non-African/Other, Overweight			-0.11 (0.41)	0.90
Non-African/Other, Obese			0.17 (0.44)	1.19
Constant	-2.58*** (0.18)		-2.31*** (0.18)	
Unweighted N: 122278				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

Appendix 9.

Table 6.4 (cont). Logistic Regression Models of Low Birth Weight Among Black Women by Region of Birth, by Pre-Pregnancy BMI, all Covariates, and Interaction Effects of Region of Birth and Pregnancy BMI, 2004-2010 SPDS

	Low Birth Weight			
Variable (Reference Category)	Model 2		Model 3	
	B (S.E.)	OR	B (S.E.)	OR
Region of Birth (United States)				
Africa	-0.14 (0.27)	0.87	-0.07 (0.34)	0.94
Non-Africa/Other	0.14 (0.23)	1.15	0.36 (0.32)	1.43
Maternal Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.20 (0.20)	0.82	-0.20 (0.20)	0.82
Marital Status (Not in Wedlock)				
Wedlock	-0.05 (0.14)	0.96	-0.05 (0.14)	0.95
Mom's Age (20-29 years)				
Under 20 years	-0.20 (0.14)	0.82	-0.20 (0.14)	0.82
30-34 years	0.22 (0.14)	1.25	0.22 (0.14)	1.25
35 years and older	0.43* (0.17)	1.54	0.44* (0.17)	1.55
Dad's Age (20-29 years)				
Under 20 years	0.41* (0.20)	1.50	0.41* (0.20)	1.51
30-34 years	-0.05	0.96	-0.04	0.96

	(0.16)		(0.16)	
35 years and older	0.26 (0.15)	1.29	0.27 (0.16)	1.31
Mom County of Residence (Onondaga)				
Oneida	0.38* (0.15)	1.46	0.38* (0.15)	1.46
Broome	0.12 (0.17)	1.12	0.12 (0.17)	1.13
Jefferson	0.21 (0.19)	1.24	0.22 (0.19)	1.25
Other	-0.11 (0.18)	0.89	-0.12 (0.18)	0.89
Dad's Race (Black)				
White	-0.33 (0.17)	0.72	-0.33 (0.17)	0.72
Other	0.29 (0.18)	1.34	0.28 (0.18)	1.32
Missing Race	-0.61 (0.93)	0.55	-0.60 (0.93)	0.55
Dad's Hispanic Ethnicity (Non-Hispanic)				
Hispanic	-0.39 (0.23)	0.68	-0.38 (0.23)	0.69
Missing	0.69 (0.91)	1.99	0.69 (0.91)	2.00
Dad Nativity (U.S.-Born)				
Foreign-Born	-0.45* (0.22)	0.64	-0.44* (0.22)	0.64
Mom's Education (Less than High School)				
High School	0.002	1.00	-0.002	1.00

	(0.11)		(0.11)	
Some College	-0.03 (0.13)	0.97	-0.04 (0.13)	0.96
Bachelor's	-0.003 (0.26)	1.00	$6.95x10^{-7}$ (0.26)	1.00
Graduate School	0.002 (0.35)	1.00	-0.01 (0.26)	0.99
Dad's Education (High School)				
Unknown/Missing	-0.50 (0.31)	0.60	-0.51 (0.31)	0.60
Less than High School	-0.06 (0.14)	0.94	-0.06 (0.14)	0.94
Some College	-0.11 (0.14)	0.89	-0.12 (0.14)	0.89
Bachelor's	-0.61 (0.34)	0.55	-0.61 (0.34)	0.55
Graduate School	0.02 (0.36)	1.02	0.04 (0.36)	1.04
Work (Employed)				
Not Employed	0.03 (0.10)	1.03	0.03 (0.10)	1.03
Primary Birth Payor (Govt)				
Self-Pay	-0.14 (0.14)	0.87	-0.14 (0.14)	0.87
Other	0.25 (0.32)	1.29	0.24 (0.32)	1.27
Medicaid as Secondary Birth Payor (No)				
Yes	-0.22 (0.21)	0.80	-0.22 (0.21)	0.81
Missing/Unknown	-0.24 (0.14)	0.79	-0.23 (0.14)	0.80

WIC recipient (No)				
Yes	0.12 (0.12)	1.13	0.12 (0.12)	1.13
HMO (No)				
Missing/Unknown	-0.25 (0.23)	0.78	-0.25 (0.23)	0.78
Yes	-0.08 (0.09)	0.92	-0.09 (0.09)	0.92
Pre-Pregnancy BMI (Normal Weight)				
Underweight	0.42* (0.18)	1.52	0.40* (0.19)	1.50
Overweight	-0.14 (0.11)	0.87	-0.11 (0.11)	0.90
Obese	-0.29** (0.11)	0.75	-0.27* (0.11)	0.77
Previous Live Birth (None)				
One	-0.42*** (0.12)	0.66	-0.41** (0.12)	0.66
Two or more	-0.77*** (0.16)	0.46	-0.78*** (0.16)	0.46
Previous live birth – Dead (No)				
Yes	-0.41 (0.29)	0.67	-0.40 (0.29)	0.67
Total Number of Pregnancies	-0.008 (0.03)	0.99	-0.008 (0.03)	0.99
Previous Preterm (No)				
Yes	0.52** (0.15)	1.69	0.52** (0.16)	1.68
Poor Prior Outcome (No)				
Yes	0.12	1.12	0.11	1.12

	(0.18)		(0.18)	
Previous C-Section (No)				
Yes	-0.10 (0.14)	0.91	-0.11 (0.14)	0.90
Any Morbidity/Medical Risk (No)				
Yes	0.43** (0.14)	1.54	0.43*** (0.14)	1.54
Chronic Disease (No)				
Yes	-0.12 (0.20)	0.89	-0.11 (0.20)	0.90
Diabetes (No)				
Yes	-1.05** (0.32)	0.35	-1.06** (0.33)	0.35
Hypertension (No)				
Yes	0.89*** (0.15)	2.44	0.89*** (0.15)	2.43
High Risk Referral (No)				
Yes	0.20 (0.17)	1.22	0.20 (0.17)	1.22
Pregnancy Intentions (Wanted to be pregnant later)				
Missing	0.17 (0.24)	1.19	0.18 (0.24)	1.20
Wanted to be pregnant sooner	-0.29 (0.19)	0.75	-0.28 (0.19)	0.76
Wanted to be pregnant then	0.02 (0.11)	1.02	0.02 (0.11)	1.02
Did not want to be pregnant then or later	-0.14 (0.14)	0.87	-0.14 (0.14)	0.87
Mom’s Depression (No depression)				

Unknown/Missing	-0.37 (0.36)	0.69	-0.37 (0.37)	0.69
A little Depressed	-0.04 (0.10)	0.96	-0.04 (0.10)	0.96
Moderately Depressed	-0.05 (0.16)	0.96	-0.05 (0.16)	0.96
Very Depressed	0.18 (0.23)	1.20	0.17 (0.23)	1.19
Very Depressed and Got Help	-0.10 (0.29)	0.91	-0.10 (0.30)	0.91
Trimester of Prenatal Initiation (First trimester)				
Unknown/Missing	-0.05 (0.23)	0.95	-0.05 (0.23)	0.95
Third Trimester	-0.07 (0.17)	0.93	-0.07 (0.17)	0.93
Second Trimester	0.12 (0.09)	1.12	0.12 (0.09)	1.12
Primary Birth Attendant (Physician)				
Other/Unknown	0.59* (0.30)	1.81	0.61* (0.30)	1.84
Midwife	-0.31* (0.14)	0.74	-0.30* (0.14)	0.74
Prenatal Counseling – Smoking (Yes)				
Missing	-1.07 (0.82)	0.35	-1.07 (0.82)	0.34
No	-0.26 (0.37)	0.77	-0.25 (0.37)	0.78
Prenatal Counseling – Drinking (Yes)				
Missing	-0.56	0.57	-0.56	0.57

	(0.93)		(0.94)	
No	-0.006 (0.48)	1.01	-0.006 (0.48)	1.00
Prenatal Counseling – Drugs (Yes)				
Missing	1.68 (0.95)	5.35	1.69 (0.97)	5.43
No	0.32 (0.43)	1.37	0.31 (0.43)	1.37
Prenatal Counseling – How long to Wait before becoming Pregnant Again (Yes)				
Missing	0.15 (0.64)	1.16	0.14 (0.64)	1.15
No	-0.13 (0.12)	0.88	-0.13 (0.12)	0.88
Prenatal Counseling – Birth Control(Yes)				
Missing	-0.17 (0.68)	0.84	-0.17 (0.68)	0.85
No	-0.003 (0.15)	1.00	-0.004 (0.15)	1.00
Prenatal Counseling – Early Labor(Yes)				
Missing	0.69 (0.64)	1.99	0.70 (0.64)	2.03
No	0.55** (0.18)	1.73	0.55** (0.18)	1.73
Prenatal Counseling – HIV Prevention (Yes)				
Missing	-0.21 (0.74)	0.81	-0.24 (0.74)	0.79

No	-0.03 (0.19)	0.97	-0.03 (0.19)	0.97
Prenatal Counseling – Abuse (Yes)				
Missing	-0.08 (0.62)	0.93	-0.08 (0.62)	0.92
No	-0.26 (0.15)	0.77	-0.26 (0.15)	0.77
Physical Activity	-0.01 (0.02)	0.99	-0.01 (0.02)	0.99
Smoked at all (No)				
Yes	0.52*** (0.10)	1.68	0.52*** (0.10)	1.68
Alcohol Use (No)				
Yes	-0.14 (0.28)	0.87	-0.14 (0.28)	0.87
Drug Use (No)				
Yes	0.24 (0.15)	1.27	0.24 (0.15)	1.27
Gestational Diabetes (No)				
Yes	-0.70** (0.24)	0.49	-0.70** (0.24)	0.50
Vaginal Bleeding (No)				
Yes	-0.06 (0.20)	0.94	-0.06 (0.20)	0.94
Infection (No)				
Yes	-0.17 (0.13)	0.84	-0.17 (0.13)	0.84
Bacterial Vaginosis (No)				
Yes	0.06 (0.10)	1.06	0.06 (0.10)	1.06
Gum Problems (No)				
Unknown/Missing	0.03	1.03	0.03	1.03

	(0.31)		(0.31)	
Yes	-0.11 (0.11)	0.89	-0.11 (0.11)	0.89
Adequacy of Pregnancy Weight Gain (Normal)				
Low	0.53*** (0.11)	1.70	0.53*** (0.11)	1.70
High	-0.44*** (0.11)	0.64	-0.44*** (0.11)	0.64
Length of Gestation (Term)				
Preterm	3.77*** (0.09)	43.28	3.77*** (0.09)	43.46
Region of Birth*Pre-Pregnancy BMI (U.S. Born, Normal Weight)				
African, Underweight	--	--	0.30 (0.83)	1.35
African, Overweight	--	--	-0.10 (0.45)	0.90
African, Obese	--	--	-0.42 (0.59)	0.65
Non-African/Other, Underweight	--	--	0.02 (0.84)	1.02
Non-African/Other, Overweight	--	--	-0.53 (0.51)	0.59
Non-African/Other, Obese	--	--	-0.30 (0.58	0.75
Constant	-3.02*** (0.02)		-3.04*** (0.24)	
Unweighted N: 10911				
Significance Levels: *=p<.05;**=p<.01; ***=p<.0001				

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VITA

Karyn Stewart
Place of Birth: Chicago, IL
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ACADEMIC APPOINTMENTS

Washington University in St. Louis
Postdoctoral Fellow in African and African American Studies, Starting Fall 2013

EDUCATION

Ph.D. in Sociology, Syracuse University, Syracuse, New York, June 2013
Dissertation: "Weighing In on Heavy Issues: Exploring Race, Nativity, and Pre-Pregnancy Body Mass Index in Relationship to Preterm Birth and Low Birth Weight"

Dissertation Committee: Andrew London, Ph.D. (Dissertation Chair), Christine Himes, Ph.D. Amy Lutz, Ph.D. Janet Wilmoth, Ph.D. Martha Wojtowycz, Ph.D.

M.A. in Sociology, Southern Illinois University Edwardsville, Edwardsville, Illinois, May 2007
Thesis: Too *Light* to be Stressed?: An Examination of Light Skinned Black Women and Their Experiences with Stress and Stress Management.

Thesis Committee: Florence Maatita, Ph.D. (Thesis Chair), Mark Hedley, Ph.D., Lisa Welch, Ph.D.

B.S. in Sociology, Minor in Biology, Truman State University, Kirksville, Missouri, May 2005

AREAS OF SPECIALIZATION

Medical Sociology/Sociology of Health, Racial Health Disparities, Maternal and Child Health, Health Policy, Race/Ethnic Relations, Black Diaspora Studies, Intragroup Differences Among Blacks

AWARDS AND RECOGNITION

Accepted for participation in 2011 Annual International Research Internship for Health Science Researchers, Declined (Spring 2011)
Accepted for Moynihan Institute of Global Affairs Goekjian Summer Research Grant, Declined (Spring 2011)
Phi Kappa Phi, Graduate Student Honor Society (September 2008)
McNair Fellow, Syracuse University (August 2007)
Southern Illinois University Edwardsville Best Student Research Award Recipient (April 2007)

PUBLICATIONS

She'll Cut You Deep: Examining Within Group Violence Among African American Female College Students. Published in Missouri Electronic Journal of Sociological Papers. (2004) and Truman McNair Scholarly Review. (Volume 11, Spring 2005)

PAPERS IN PROGRESS

Falling Through the Cracks: Examining The Lack of Health Insurance Among African Americans and Black Immigrants in the United States (co-authoring with Andrew London, Ph.D.)

Balancing the Scales: Examining the Relationship Between Maternal Weight and Placental Infection (co-authoring with Sandra Lane, Ph.D., M.P.H. and Alexandra Spadola, M.D.)

Shedding Light on the Matter: Colorism and Racism in Educational, Relationship, and Economic Settings

CONFERENCE PRESENTATIONS

August 2012 Society for the Study of Social Problem, *Presentation topic:* Heavy Load: Examining Nativity, Obesity, and Low Birthweight Among Black Women and their Infants

Feb. 2012 Eastern Sociological Society, *Presentation topic:* Weighing in on Heavy Issues: Exploring Race, Nativity, and Obesity in Relationship to Fertility

August 2011 Society for the Study of Social Problems, *Presentation topic:* Falling Through the Cracks: Examining the Lack of Health Insurance Among Elderly African Americans and Black Immigrants in the United States

Feb. 2011 Eastern Sociological Society Annual Conference, *Presentation topic:* Weighing In on A Heavy Issue: An Intersectional Exploration of Obesity, Reproduction, and Motherhood

March 2010 Eastern Sociological Society Annual Conference, *Presentation topic:* Our Forgotten Sisters: Comparing Birth Outcomes between Black Women on the US Mainland and Territories. This paper also presented at the Society for the Study of Social Problems, August 2010

June 2009 Association of Black Sociologists Annual Conference, *Presentation topic:* So Different Yet So Alike?: A Comparison of Birth Outcomes Between Black Women on the US Mainland and US Territories

August 2009 American Sociological Association Annual Conference, Balancing the Scales: A Look at the Relationship between Maternal Weight and Placental Infection

March 2009 Eastern Sociological Society Annual Conference. *Presentation topic:* Seeing the Light: A Womanist Perspective on Colorism among Light Skinned Black Women also presented at the Sociology Department Workshop, Fall 2009

August 2008 Society for the Study of Social Problems. *Presentation topic:* Shedding Light on the Matter: Colorism and Racism in Educational, Relationship, and Economic Settings

April 2007 Southern Illinois University Edwardsville Student Research Symposium . *Presentation topic:* The Blacker the Better?: An Examination of Skin Tone and Perceived Experiences Among Blacks

2005 Truman State University's 10th Annual Women and Gender Studies Research Conference. *Presentation topic:* She'll Cut You Deep: Examining Within Group Violence Among African American Female College Students

2004 Violence and African American Women.

- Louis Stokes Access to Knowledge Conference, Univ. of Missouri-Columbia, Columbia, Missouri
- National McNair Research Conference, Delevan, Wisconsin
- Missouri Sociological Association Conference, Osage Beach, Missouri (2004)
- Annual McNair Conference, Truman State University, Kirksville, Missouri (2004)
- Moore Undergraduate Research Apprentice Program, North Carolina, Chapel Hill (2004)

TEACHING EXPERIENCE

Instructor of Record, Syracuse University, Syracuse, New York

SOC 101: **Introduction to Sociology** (Summer 2012, Summer 2013)

Teaching Assistant, Syracuse University, Syracuse, New York

MAX 201: **Quantitative Methods for the Social Sciences** Taught by Andrew London, PhD (Spring 2012, Fall 2012, Spring 2013)
SOC 102: **Introduction to Social Problems** Taught by Arthur Paris, PhD (Fall 2011)
SOC 248: **Racial and Ethnic Inequality** Taught by Amy Lutz, PhD (Fall 2008, Spring 2009, Spring 2010, Fall 2010)
SOC 300: Latin American Migration and Transnationalism (Spring 2011) Taught by Amy Lutz, PhD

Teaching Assistant, Southern Illinois University Edwardsville, Edwardsville, Illinois

Women and Gender in Society (Fall 2005-Sp. 2006) Taught by Lisa Welch, Ph.D.
Criminology (Fall 2006) Taught by Connie Frey, Ph.D.
Student Development (Spring 2007) Co-Taught by Marvin Finkelstein, Ph.D. and Florence Maatita, Ph.D.

PROFESSIONAL ASSOCIATIONS

American Sociological Association
Association of Black Sociologists
Society for Study of Social Problems
Eastern Sociological Society
National Healthy Start Association

SERVICE

To the University

Maxwell Review Student Journal

Co-Editor in Chief (Fall 2009-Spring 2010)
Associate Editor (Fall 2008-Spring 2009)
Peer Reviewer (Fall 2007-Spring 2008)

To the Department

Graduate Representative to SU Sociology Job Search Committee (Fall 2011)
Graduate Representative to SU Sociology Faculty Meetings (Fall 2009-present)
Graduate Representative to SIUE Sociology/Criminal Justice Faculty Meetings (Fall 2005-Spring 2007)

To the Professor

Graduate Assistant, Literacy Initiative for Empowerment: Haitian Youth Literacy Program, Barry University, Miami Shores, Florida, Charlene Desir, Ph.D. (Summer 2010)
Research Assistant, Amy Lutz, Ph.D. (Summer 2009, Summer 2010, Summer 2011)
Student Researcher for Meredith Award Recipient, Madonna Harrington Meyer, Ph.D. (Summer 2008)
Graduate Assistant to SIUE Black Studies Office (Fall 2005-Spring 2007)

COMMUNITY INVOLVEMENT

Syracuse Chapter of Healthy Start Association, Member of Executive Council (Spring 2012-Fall 2012)