Social Determinants of Health Inequality: Predictors of HIV Transmission among African Americans in the Deep South

Kayla Allison
Louisiana State University and Agricultural and Mechanical College, allisonkd17@gmail.com

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_dissertations
Part of the Social Work Commons

Recommended Citation
https://digitalcommons.lsu.edu/gradschool_dissertations/5045

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
SOCIAL DETERMINANTS OF HEALTH INEQUALITY: PREDICTORS OF HIV TRANSMISSION AMONG AFRICAN AMERICANS IN THE DEEP SOUTH

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The School of Social Work

by
Kayla Allison
B.S., McNeese State University, 1999
M.S.W., Louisiana State University, 2012
December 2019
This dissertation is dedicated to:

my siblings,

and

my friends,

I will forever fight until there is a cure!

my father,
Donald Carrier (11/25/1946 - 03/19/2014)

my stepfather,
Sgt. Joseph Adams (07/05/1945 – 08/19/2016)

and

my father-in-law,
Dennis Allison (10/18/1946 – 10/13/2017)

Hope I made you all proud!
ACKNOWLEDGEMENTS

First and foremost, I would like to thank my dissertation chair, committee members, and the Dean’s representative. To my chair, Dr. Cassandra Chaney, I would like to express my sincere gratitude to you for your continued support, motivation, enthusiasm, and immense knowledge. I could not have imagined any better advisor to guide this process. To Dr. Michelle Livermore, on this journey, I often thought back on a conversation we had when I was in my master’s program. Whether you realize it or not, your words planted the seed that led to this milestone. I thank you, and yes, I gave up many Saturdays! To Dr. Lori Martin, thank you for sharing your knowledge and wisdom, especially when it came to scholarship on the Black experience. I knew from the time I sat in your course on Race that I just had to have someone of your caliber on my committee. Thank you for agreeing to serve. Dr. April Chen, thank you for your time and support. I appreciate your service as my Dean’s representative.

I must acknowledge Dr. Catherine Lemieux. Thank you for the opportunity to work under your leadership as your graduate research assistant. The experience was truly invaluable. I must also acknowledge Dr. Tim Page and Dr. Juan Barthelemy. There was a time when I considered withdrawing from the Ph.D. program but remained because of their support and encouragement. I would also like to acknowledge program directors, professors, and staff in the School of Social Work who have helped me along this journey. To my classmates, I enjoyed the comradery. Amber Hebert, LCSW and Erin Lovett, LCSW, our motivational, supportive, and encouraging group texts were everything!

No one has been more important to me in pursuit of my Ph.D. then my family. I want to acknowledge and thank my husband, Lawayne Allison, whose love is always with me in whatever I pursue. I am forever grateful for your continued love, support, encouragement, understanding, and patience. I also wish to thank my amazing children, Amilya Allison and
Michael Allison. Thank you both for your everlasting love, support, and inspiration. I thank God for blessing me with such amazing souls as children. I must acknowledge my FAVORITE superhero, my grandson - Maddox Kade Victorian. You are so smart and loving. Grand-mère just don’t know what your mom and dad are going to do with you!

To my loving mother, Lois Adams, who I have watched care for her husband, father, and two of her children until the day they departed this life. I know that your love and tireless dedication helped them transition knowing they were loved. Thank you for your undying strength. I would also like to acknowledge my mother-in-law, yes, I said my mother-in-law, Dr. Dolly Allison. Your support and encouragement throughout this lengthy process have been irreplaceable. I especially would like to acknowledge my best friends in life, Tawana Smith, LCSW, and Cynthia Beverly for years of prayers, support, and encouragement. Lastly, I would like to thank family and friends who believed in me!
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................................................................................ iii

ABSTRACT ........................................................................................................................... vi

CHAPTER
   1  INTRODUCTION ........................................................................................................ 1

   2  LITERATURE REVIEW .......................................................................................... 10

   3  METHODOLOGY .................................................................................................. 46

   4  RESULTS ............................................................................................................... 60

   5  DISCUSSION AND CONCLUSION ......................................................................... 72

REFERENCES ..................................................................................................................... 85

APPENDIX A. IRB EXEMPTION APPROVAL ................................................................. 100

APPENDIX B. THE AMERICAN COMMUNITY SURVEY .............................................. 101

VITA .................................................................................................................................. 115
ABSTRACT

HIV/AIDS has become an epidemic in Black communities in the Deep South, which poses a major public health crisis. Unfortunately, the lack of attention from health officials has resulted in African Americans experiencing the greatest burden of the disease as compared to any other racial/ethnic group. Thus, this cross-sectional, correlational study examined predictors of HIV transmission with an emphasis on the course of the disease among African Americans in the Deep South region of the United States given the legacy of slavery, historical racism, and plight of African Americans in this geographical area. The institution of slavery was not isolated to southern states, but it was aggressively endorsed and had a stronger presence in the Deep South. This dark era in the nation’s history resulted social determinants that contribute to health inequalities that perpetuate disparities in health conditions that impact African Americans such as, diabetes, hypertension, obesity, and HIV. Social determinant of health is defined as circumstances in which people are born, grow, live, work, and age, which is formed by the distribution of power, wealth, and resources at multiple levels. The presented study employs a quantitative analysis of secondary social and economic data from 3,109 counties and county equivalents of the 48 contiguous United States that serve as social determinants of health that influence the trend of HIV/AIDS in Black communities. The current study also examined interrelationships among major variables of interest and identified empirically relevant correlates of the dependent variable. Multiple regression analysis yielded a set of predictors (sex, race, marital status, educational attainment, employment status, below poverty-level, access to health care system, housing tenure, and STD rates) that explained 61% of the variance in HIV rates. To examine whether the effect of African Americans on HIV rates differ in the Deep South as compared to other regions, carrying forward the legacy of historic racism, an interaction term was created. Results from the data analysis show no significant interaction between race and
region. The study concludes with implications for future research into factors that contribute to the HIV/AIDS epidemic in the Deep South such as stigma, conspiracy theories, and public health policies.
CHAPTER 1. INTRODUCTION

Of all the forms of inequality, injustice in health care is the most shocking and inhumane.
-- Dr. Martin Luther King, Jr.

Significance of the Study

The Human Immunodeficiency Virus (HIV) is a viral infection and is the virus that causes AIDS (Acquired Immunodeficiency Syndrome) in its advanced stage (Center of Disease Control and Prevention [CDC], 2014; World Health Organization [WHO], 2017). The public health community has observed a shift in the HIV epicenter since its discovery in the early 1980s from larger U.S. municipalities to states comprising the Deep South (Alabama, Georgia, Louisiana, Mississippi, North Carolina and South Carolina; CDC, 2016(a); Reif et al., 2014; Reif et al., 2015; Whetten & Reif, 2006). Reif, Safley, McAllaster, Wilson, and Whetten (2017) report the Deep South has consistently had the highest number of individuals newly diagnosed with HIV, as compared to any other region in the country, between 2008 and 2014. 

Unfortunately, African Americans residing in the Deep South comprised slightly under 11 million of the total population (United States Census Bureau, 2017a) but experience the most significant burden of the HIV epidemic as compared to any other racial group (CDC, 2016(a)(b); Doherty, Leone, & Aral, 2007; Menefee, 2012; Reif, Geonnotti, Whetten, & Pence, 2007; Reif et al., 2015; Sutton, Gray, Elmore, & Gaul, 2017).

Of individuals diagnosed with HIV in the Deep South in 2014, 53.5% were African Americans, which exceeds the national rate of 44% (Reif et al., 2017). Research and prevention efforts are often grounded in behavioral theories designed to change high-risk behaviors at the individual-level (micro-level), while ignoring structural approaches (macro-level; Aidala et al., 2016; Anasari et al., 2003; Bowen, 2012; Patterson & Wolf, 2010; Reif et al., 2007) to addressing racial disparities in HIV infections. In the Deep South, such disparities are rooted in historical realities unique to the culture and racist landscape of this region (Davis, Gardner, &
The current study seeks to advance the scientific understanding of emergent scholarship that examines racial disparities in HIV infections in a structural context. Specifically, the researcher investigates social determinants that predict HIV transmission with a specific emphasis on African Americans in the U.S. Deep South. Grounded in constructs from the WHO’s Social Determinants of Health theoretical framework (Solar & Irwin, 2010; WHO, 2012), the current study extends the knowledge base on structural and intermediary determinants that create health inequalities. Further, the Afrocentric Paradigm is introduced to provide an understanding that African culture is pivotal to HIV/AIDS research and prevention targeting African Americans. The results provide a rationale for future exploration of structural approaches to examining HIV/AIDS as well as other social problems impacting African Americans in the Deep South region of the United States.

**History of African Americans in the Deep South**

States in the Deep South possess a collective history that aggressively endorsed the institution of slavery to build a healthy agriculture and economic base in the cotton and tobacco industries (Menefee, 2012; Reif et al., 2014; Reif et al., 2015; Thomas & Quinn, 1991; Whetten & Reif, 2006). As a result, the Deep South has a societal hierarchy, which makes it difficult for African Americans to transcend the limitations of social class (Davis, Gardner, & Gardner, 2009). Krieger, Williams, and Moss (1997) define social class as social groups created because of interdependent economic relationships among individuals created by societies, thereby, making social class a byproduct of social relationships.

An essential element in class relations requires disproportionate economic exploitation of one group by another (Davis, Gardner, & Gardner, 2009; Krieger, Williams, & Moss, 1997).
Cobb (1968) insists that in every structured society “there must be a laboring class to execute the plans devised by wiser hands” (p. xxxvi). In his historical sketch of slavery, Cobb (1968) states bondage for Africans and African Americans arose naturally in the infancy of American as well as other societies, due to the social classification of this racial group. Interpreting class conceptually as social relationships help to provide insight into understanding social and economic inequalities (Davis, Gardner, & Gardner, 2009; Krieger, Williams, & Moss, 1997) among African Americans in a country still experiencing the effects of slavery (O’Connell, 2012).

This dark era in American history is closely related to the contemporary socioeconomic position of African Americans (Davis, Gardner, & Gardner, 2009), which is generated from social determinants that leads to health inequalities that perpetuate disparities in HIV rates among this racial group (Dean & Fenton, 2010; Doherty, Leone, & Aral, 2007; Reif et al., 2014; Reif et al., 2015; Thomas & Quinn, 1991). WHO (2012) defines social determinants of health as circumstances in which people are born, grow, live, work, and age, which is formed by the distribution of power, wealth, and resources at multiple levels – globally, nationally, and locally.

The institution of slavery existed in every region of the United States, however, its presence was strongest in the Deep South (Kennedy, 1864). Following the Civil War and failed attempts of the Reconstruction Act of 1866 (Davis, 2003), the Black Codes, Jim Crow Laws and other state and local laws rooted in ant-black sentiments were devised to further disenfranchise African Americans (Dailey, Gilmore, & Simon, 2000; Klarman, 2006; Richardson, 1969). These and other legalized forms of discrimination resulted in systematic racism that perpetuated disadvantages for African Americans (Davis, Gardner, & Gardner, 2009; Klarman, 2006).
Bonilla-Silva (1997) insisted that “racialized social systems” that define the pervasive nature of racism extends across political, social, and economic domains (p. 469).

Social disadvantages dating back to the arrival of the first African slaves over 500 years ago defined current unfavorable conditions of African Americans in the Deep South. According to the U.S. Department of Health and Human Services (HHS; 2009), individuals or groups that experience the most significant obstacles to receiving optimal health are those who have systematically experienced social and economic disadvantages. Some may view the AIDS epidemic in the Deep South as resulting from the region’s long history of institutional racism and perpetual systematic oppression of African Americans (Thomas & Quinn, 1991).

**Relevance to Social Welfare**

“Social workers are sensitive to cultural and ethnic diversity and strive to end discrimination, oppression, poverty, and other forms of social injustice” (NASW, 1996, p. 1). The profession possesses the experience and expertise to develop and advocate for social welfare policies that impact underserved, underrepresented, and marginalized groups concerning issues of inequality, social injustices, and race-related disparities (International Federation of Social Workers [IFSW], 2012; NASW, 1999). Social workers possess the knowledge and skills to develop, implement, monitor and evaluate HIV-related programs specific to settings – clinical, private practice, community mental health, criminal justice, educational, and community-based organizations (Lipschutz, 2012). By virtue of training, social workers are equipped to mobilize communities, stakeholders, and policymakers to begin an HIV-related dialogue, with the goal of creating positive social change concerning HIV-related stigma, high-risk population norms, and other issues that serve as barriers to HIV treatment and prevention.
Wheeler (2009) suggests that social work research include more investigations from underrepresented populations of color who share collective experiences of historical oppression as those impacted by HIV/AIDS. Implications for social work research include the acceptance of more qualitative research and advocating for mixed-methods studies, which allow an opportunity to understand how structural barriers (macro) impact or contribute to HIV transmission among African American and other racial and ethnic groups (Wheeler, 2009). The knowledge base of social workers supports the idea that systems in which individuals live, work, and network (person-in-environment) influence behaviors; therefore, the profession must examine how those influences impact the cycle of HIV transmission among high-risk African Americans (Wheeler, 2009).

NASW has a long history of addressing the well-being of individuals affected by HIV/AIDS. The national organization was awarded funds from the Substance Abuse and Mental Health Services Administration’s (SAMHSA) Center for Mental Health Services to expand HIV-related training to address mental health and psychosocial issues impacting individuals living with HIV/AIDS (Tomaszewski, 2012). Through a collaborative effort with its HIV/AIDS Spectrum: Mental Health Training and Education of Social Workers Project, NASW used the funding to create the NASW Chapter HIV/AIDS Partnership Initiative (Tomaszewski, 2012). Objective of the NASW HIV/AIDS Spectrum Project is to enhance practice, treatment, and research skills of social workers to better serve individuals, families, and communities impacted by HIV/AIDS by focusing mental health, substance abuse, medication adherence, trauma, and health effects of living with an HIV diagnosis (Tomaszewski, 2012). The NASW HIV/AIDS Spectrum Project curricula aligns with goals of the National HIV/AIDS Strategy (NHAS) by focusing on biomedical and behavioral health involvements required to increase HIV-specific knowledge, skills, and capabilities for social
workers, and other mental health providers, to better reduce factors that put individuals at risk
for HIV transmission (Tomaszewski, 2012). The NHAS was created under the administration
of President Barack Obama to address the devastating impact of the HIV/AIDS epidemic in this
country (Holtgrave, 2014; ONAP, 2011).

On July 29, 2000, International Federation of Social Workers (IFSW), the International
Association of Schools of Social Work (IASSW), and other international social work
associations brought together social workers from more than 30 countries to address the HIV
pandemic (IFSW, 2012). As a result, the Social Work Manifesto on HIV and AIDS [referred to
hereafter as the Manifesto], was created as a call to action to social work practitioners,
educators, and researchers. The Manifesto indicates that HIV affects poor, disenfranchised, and
groups who struggle with inequality and oppression (IFSW, 2012). African Americans in the
Deep South have experienced a long history of inequality and social injustices, which includes
inequality in HIV care and treatment, prevention efforts, and funding to address disparities in
diagnosis. The Manifesto highlights the role of the social work profession to combat such
injustices.

**Statement of the Problem: Public Health Crisis**

HIV/AIDS has become an epidemic in African American communities in the Deep
South region of the United States which has posed a major public health crisis (Centers for
Disease Control and Prevention [CDC], 2007; Menefee, 2012). At the beginning of the AIDS
epidemic, public health officials called the disease Gay-related Immunodeficiency Syndrome
(GRIDS) because it was believed to be a virus that only gay, white males contracted (Markel,
2001). Unfortunately, as infections increased among non-white males and individuals not
engaging in same-gender sex (Markel, 2001), the United States faced a major health crisis
among African Americans. In 1981, African Americans made up only 25% of new HIV
infections, however, less than ten years later, the rate of new HIV infections among African Americans surpassed those of Whites (Health Resources & Services Administration [HRSA], 2017).

The incidence of newly reported AIDS cases increased in the Deep South by more than one-third (35.6%), while increasing only slightly (4.0%) in other southern states (Florida, Kentucky, Tennessee, Texas, Virginia, and West Virginia) and only 5.2% nationally between 2000 to 2003 (Human Rights Watch, 2010; Reif, Geonnotti, & Whetten, 2006; Whetten & Reif, 2006). In a recent study, Reif et al. (2015) collected data from the CDC’s National HIV Surveillance System to examine rates of HIV diagnosis, prevalence, and survival among persons diagnosed with HIV in 2011. The study analyzed data on adults and adolescents (13 years and older) diagnosed with HIV at various stages of the disease at the time of diagnosis (Reif et al., 2015). Findings indicate that 38% of individuals diagnosed with HIV resided in the Deep South of which more than half (57%) were African Americans (Reif et al., 2015). The percentage of new diagnoses that were African Americans diagnosed with HIV in this segment of the south surpassed the national average (Reif et al., 2015).

HIV/AIDS has become a global pandemic resulting in the death of more than 35 million people (WHO, 2017). At the end of 2016, roughly 36.7 million people worldwide were living with HIV of which more than 1.7 million were newly infected (WHO, 2017). In the United States, an estimated 1.1 million people were living with the virus in 2015 (CDC, 2018(a)(b)). Regionally, 44% of all people diagnosed with HIV lived in the south (CDC, 2016a).

States in the south report the highest rates of individuals diagnosed with HIV/AIDS, as well as AIDS-related mortality. Individuals diagnosed with HIV in some southern states are three times more likely to die from the disease as compared to those living with the virus in other states. Of the 38 states reporting HIV-related mortality rates, data show that the majority
of the states with the highest death rates were in the south (Kaiser Family Foundation, 2011; Reif et al., 2015). For example, Louisiana reported that the percentage of people surviving three years post-AIDS diagnosis from 2002-2006 (74%, 76%, 74%, 74%, and 76%; respectively) was lower than the national average of 84% (CDC, 2012). Unfortunately, these findings result from the south reporting the lowest linkage to HIV-related care and treatment rates as compared to the rest of the country (CDC, 2016a).

For African Americans, HIV diagnosis, poorer health outcomes, and HIV-related mortality rates directly relate to social determinants that create perpetuate health inequities among African Americans (Adimora et al., 2014; Bogart & Thorburn, 2005; Foster, Thomas, & Lewis, 2016; Reif et al., 2014; Ross, Essien, & Torres, 2005; Thomas & Quinn, 1991). It is important to note that many of these realities are unique to the culture of the south, notably states in the south that makes up the Deep South, where more than half (52%) of new AIDS cases were diagnosed in 2015 (CDC, 2016).

**Contributions to the Knowledge Base**

Presently, there is a shortage of research that explicitly examine HIV infections among African Americans in the Deep South using predictive constructs of the WHO’s Social Determinants of Health theoretical framework. Several studies reviewed by this researcher examine the influence of social determinants of health on HIV/AIDS among African Americans in the United States, in general (Caiola, et al., 2014; Chopel et al., 2005; Sharpe et al., 2018; Singh et al., 2017). Others investigate the impact of social determinants of health on HIV transmission among African Americans in the South and Deep South (Doherty, Leone, & Aral, 2007; Hogben & Leichliter, 2008; Reif, Geonnotti, & Whetten, 2006; Reif et al., 2007; Reif et al., 2014; Reif et al., 2015; Reif et al., 2016; Reif et al., 2017; Scott & Wilson, 2011; Truong, et al., 2016; Zhang et al., 2014), specifically, using various theories and frameworks (i.e.,
ecological theory, transtheoretical model of change, social cognitive theory). No study to this researcher’s knowledge has focused on the severity of HIV/AIDS in the Black community in the Deep South specifically using constructs of the WHO’s Social Determinants of Health framework that serve as predictors of transmission.

**Purpose of the Study**

The purpose of this dissertation research is to examine the influence of social determinates on HIV transmission among African Americans in the Deep South. This dissertation research seeks to determine sociodemographic characteristics, structural determinants, and intermediary determinants that are significantly related to HIV rates. Several sociodemographic, structural determinants, and intermediary determinants were included in multiple linear regression models to determine variables that best predict HIV transmission among African Americans residing in the Deep South region of the United States.
CHAPTER 2. LITERATURE REVIEW

The first section of this chapter provides a detailed review of substantive literature and empirical research on the impact of HIV/AIDS among African Americans. Next is a discussion on responses by the federal government to address treatment and prevention efforts specifically in the African American community. The Social Determinants of Health theoretical framework is presented as a mechanism for examining social determinates that predict HIV transmission among African Americans, as well as create health inequalities that perpetuate the cycle of the disease. The last section describes the conceptual framework of the study and define the variables included in the analysis.

Literature of Review

“America’s epidemic is growing Blacker by the year, but that trend is in no small part driven by the growth of the South’s uniquely Black caseload” (Wright, 2006, p. 43). HIV/AIDS has become an epidemic in communities of color across the nation, particularly, Black communities in Deep South states. Wright (2006) says it best - “the AIDS epidemic is exploding in cities and towns throughout the South” (p. 46). Advocates for equality in HIV funding, prevention, and treatment suggest that HIV and AIDS are plagues that are destroying individuals and families throughout African American communities across the south.

The HIV epidemic affects populations of various ages, racial/ethnic groups, and socio-economical levels throughout the country. As previously stated, the shift in population diagnoses of HIV/AIDS has affected African Americans at disproportionate rates as compared to other racial/ethnic groups (Adimora et al., 2014; CDC, 2016b; Hall et al., 2013; Hickson, et al., 2015; Reif, Safley, McAllaster, Wilson, & Whetten, 2017; Reif, et al., 2014). Trends in HIV prevalence indicate that the south has been dealing with the most significant burden of HIV-related infections, illnesses, and mortality rates (Adimora et al., 2014; CDC, 2016a) which
directly affect rates among African Americans. In 2004, eight of the ten states with the highest prevalence of African Americans living with HIV were in the south (Wright, 2006).

If the current trend in HIV disparities persists, the lifetime risk of HIV transmission among African Americans will continue to exceed risks of any other racial/ethnic group. Estimated lifetime risk is the methodology used to describe the burden of disease on a population (i.e., breast cancer, cardiovascular disease, mental disorders, HIV), increasing the probability of diagnosis or mortality at some point in one’s lifetime (Álvarez et al., 2018; Hess et al., 2017; Pandey et al., 2018; Wang et al., 2018). In a study on age-specific lifetime risk of HIV, Hess et al. (2017) collected census, CDC mortality, and HIV diagnoses surveillance data between 2010 and 2014.

Nationally, 1 in 106 people are estimated to receive an HIV diagnosis over their lifetime, however, not surprisingly, states in the south have the most significant overall lifetime risk of HIV – Georgia (1 in 57), Florida (1 in 58), Louisiana (1 in 58), and Maryland (1 in 56; Hess et al., 2017). Regarding gender, Hess et al. (2017) report estimated lifetime risks for African Americans men (1 in 22) and women (1 in 54) were higher than the national risk (men: 1 in 68; women: 1 in 253). Similar disparities exist among racial groups with lifetime risk for African Americans being far more significant than Hispanics/Latinos (men: 1 in 51; women: 1 in 256), Whites (men: 1 in 140; women: 1 in 941), and Asians (men: 1 in 176; women: 1 in 943; Hess et al., 2017). The group experiencing the highest probability of contracting HIV at some point in their lifetime is men-who-have-sex-with-men (referred to hereafter as MSM; 1 in 6) with Black MSM (1 in 2) having the highest probability (Hess et al., 2017). According to Hess et al. (2017), lifetime estimates for White MSM (1 in 11) and Hispanic/Latino MSM (1 in 5) are no comparison to the disparaging risk among Black MSM.
For African Americans, the burden of the disease is attributed to social determinants of health that serve as barriers to HIV/AIDS prevention and treatment. Social determinants can be structural (lack of education, employment, poverty, race/ethnicity, and biological sex) and intermediary (i.e., access to treatment, housing tenure, and STD exposure) factors (Solar & Irwin, 2010) that account for racial disparities in diagnoses and mortality (Adimora et al., 2014; Watson et al., 2019). For African Americans in the Deep South, geography and cultural factors also serve as barriers to treatment and prevention efforts (CDC, 2016a, Scott & Wilson, 2011).

Rural communities in the southern U.S. have the greatest number of new HIV diagnoses as compared to any other region in the country (CDC, 2016a). Factors such as racism, religion, substance abuse, incarceration rates, and homophobia and transphobia (CDC, 2016a; Fullilove, 2006; Sutton & Parks, 2013) perpetuate the cycle of HIV in vulnerable rural communities in the Deep South (Scott & Wilson), by creating stigmas that serve as barriers to HIV testing, prevention, and treatment (Reif Wilson, & McAllaster, 2017b; Valdiserri 2002). Findings from Reif, Wilson, & McAllaster, (2017b) are that PLWHA experience high levels of HIV related stigma, both external and internal alike. Approximately 24% of PLWHA have been insulted within the last 3-months, 31% answered yes to the question, “Have you been told not to share your food or utensils with family because of your HIV?”, and many possess extreme fear about the consequences about disclosure of their HIV-positive serostatus (Reif, Wilson, & McAllaster, 2017b). Similarly, PLWHA report an increased number of missed medical appointments, medication non-adherence during the past 6 months, and lack of viral suppression because of internal stigma (Reif, Wilson, & McAllaster, 2017b).

Religion is another structural determinant that perpetuates existing HIV-related stigmas in the rural Deep South. In rural communities in the Deep South, the Black Church is recognized as an important and respected social institution (Foster et al., 2011; Sutton & Parks,
Identified as the underpinning of the “Bible Belt” church attendance in the Deep South might be higher as compared to other regions of the country (Foster et al., 2011). Barton (2010) describes the “Bible Belt” as the geographical area of the United States comprised of all Southern states, Oklahoma, Missouri, and West Virginia. Among racial/ethnic groups, more African Americans (88%) report affiliation with a formal religion as compared to Latino and Whites (86% and 78%, respectively; Pew, 2010). However, leaders of the Black Church often interpret the bible and other religious text in a manner that often create a culture that stigmatizes populations most at risk for HIV/AIDS, including MSM, commercial sex workers [CSW], high risk heterosexuals [HRH], and intravenous drug users [IDU], which adds to existing barriers in the Black community (Barton, 2010; Sutton & Parks, 2011). Barton (2010) investigates individual experiences and religious backgrounds of self-identified lesbians and MSM ages 18 to 74 (N = 46) living in the “Bible Belt” using qualitative analysis. Findings are that social attitudes about homosexuality in the conservative “Bible Belt” creates a culture of spiritual isolation, abuse, depression, and self-hatred and generates fear of being condemned to hell (Barton, 2010).

There has been an increase in public health and faith-based collaborations to address HIV/AIDS in Black communities but there is still much work to be done. Foster et al. (2011) reports that Black Baptist church leaders in the rural, Deep South were more receptive to implementing congregational HIV prevention activities if an interpersonal relationship existed with PLWHA or whether churches had an established health ministry. NHAS (2010) acknowledges the vital role of faith-based communities in addressing HIV/AIDS through collaborative collaborations between government entities, businesses, scientific community, PLWHA, and other stakeholders with the collective goal of decreasing HIV prevalence and health disparities. Although though the intersection of HIV, rural communities, and religion in
the Deep South this is not the focus of the current study, research recommends further investigation of these structural factors as predictors of HIV transmission among Black in this region (CDC, 2016a; Foster et al., 2011; Fullilove, 2006; Scott & Wilson, 2011).

**Predictors of HIV Transmission**

**Sex (Biological)**

Black women accounted for more than 63% of new HIV diagnoses among all women mostly attributed to high-risk heterosexual contact (88%) in 2010 (HRSA, 2017). During this time, the rate of new HIV infections among Black women was 20 times greater than that of their White and Latino counterparts, a rate that was only a 15-fold increase in 2006 (CDC, 2010; El Bassel et al., 2009). A slight decrease in new HIV diagnosis occurred among Black women (60%) at the end of 2014; however, the disproportional trend in diagnosis continued when compared to White and Hispanic women (17% equally; CDC, 2017a). Regarding trends in the south, Black women experienced an enormous burden of the disease, accounting for more than 68% of all HIV diagnoses among women (CDC, 2015). Such an increase in new HIV cases should force advocates to pose the following questions: Why are African Americans women contracting HIV at such alarming rates? What prevention strategies are being implemented? What challenges serve as barriers to prevention for African Americans women? (El Bassel et al., 2009).

To decrease the rate of new HIV/AIDS infections among Black women, it is imperative that scholars and practitioners address risk factors and social issues that contribute to transmission. Issues such as stigma, concurrent partnerships, childhood sexual assault, substance abuse, post-traumatic stress (PTSD), and domestic violence (IPV) can serve as barriers to HIV/AIDS treatment and prevention among Black women most at risk for
contracting HIV (Dale, Pierre-Louis, Bogart, O’Cleirigh, & Safren, 2017; El Bassel et al., 2009; Lichtenstein, 2005b).

To investigate the relationship between HIV transmission risk and domestic violence, Lichenstein (2005b) conducted an empirical study with 50 HIV-positive women in Alabama who had experienced domestic violence. The sample consists of Black (84%), White (12%), and Hispanic (4%) women who contracted HIV through heterosexual contact (88%; Lichenstein, 2005b). Participants report forcible rape, sexual coercion, verbal abuse (i.e., name-calling), and inability to negotiate sexual activity and use of barriers (i.e., condom use) when abusive domestic partners are men (Lichenstein, 2005b). Findings support the literature that suggests domestic violence is a factor that contributes to HIV infection.

Women living in poverty are at an even higher risk for HIV transmission. El Bassel et al. (2009) find that in a comparison of Black women from higher and lower socioeconomic-levels, women of lower socioeconomic-levels experience increased stressors that put them at greater risk for HIV transmission. A qualitative study with 40 women, predominately African Americans (92.3%, ages 29-69), in one of the poorest states in the South's Black Belt, finds that poverty, HIV-related stigma, access to treatment, legal issues, and relationship with providers serve as barriers to HIV-related treatment and prevention (Arya, Behforouzz, & Viswanath, 2009). Such findings highlight the importance of addressing not only micro-level influences but also macro-level influences that contribute to the perpetuation of this disease.

Race

Despite African Americans comprising only a small percentage (12%) of the total population in the United States, this population made up an astounding 44% of all new cases of HIV infections in 2010 (CDC, 2016b). In the southern U.S., African Americans made up more than half (54%) of new HIV cases in 2014 (CDC, 2016a). As previously mentioned, cultural
barriers contribute to racial differences in patterns of HIV/AIDS in the Black community such as racism, religion, homophobia, and mistrust of the medical community (Arp III, 2004; Bogart, Wagner, Galvan, & Banks, 2010; Valdiserri, 2002) serve as barriers to prevention and treatment.

The culture of the Deep South during a dark period in American history created mistrust of the U.S. government and public healthcare system among African Americans (Arp III, 2004; Bogart, Wagner, Galvan, & Banks, 2010; Ford, Wallace, Newman, Lee, & Cunningham, 2013; Foster, Thomas, & Lewis, 2016; Hagen, 2005; Thomas & Quinn, 1991). In a case study of prevention strategies in the Louisiana, Arp II (2004) collaborated with three AIDS Service Organizations (ASOs) in Baton Rouge. These agencies were funded by the state of Louisiana to conduct outreach prevention services in Black communities throughout the city. Findings indicate that strategies implemented were ineffective in confronting social factors that impact the spread of the disease among African Americans (Arp II, 2004). Further, Arp II (2004) find that African Americans distrust the public health system, which complicates prevention and treatment of HIV in a city that identified as having some of the highest AIDS rates in the country (CDC, 2016b). These findings support the idea that to be effective in changing the trend of the virus among African Americans, providers must change traditional approaches to prevention in the Black community to include those that discuss the history of racism in the country (Thomas & Quinn, 1991).

**Conspiracy Theories.** There are innumerable historical cases of medical mistreatment at the hands of the ‘white-government’ that force some African Americans to have an adverse response toward public health authorities (Arp III, 2004; Mattocks et al., 2017; Savitt, 1982), which complicates prevention and treatment efforts. Some African Americans in the Deep South support conspiracy theories surrounding the belief that the U.S. government created HIV
as a genocidal tactic (Bogart & Thorburn, 2005; Bogart, Wagner, Galvan, & Banks, 2010; Foster, Thomas, & Lewis, 2016; Mattocks et al., 2017; Thomas & Quinn, 1991; Wise, 2009). Jones (1993) and Miles & McBride (1997) suggest that other STD disparities among African Americans in the Deep South are also rooted in the racial history specific to this part of the country. For instance, White physicians practicing in the Deep South region frequently characterized African Americans as ‘syphilis soaked’ beyond the beginning of the 20th century, because of the Tuskegee Syphilis Study (Jones, 1993; Miles & McBride, 1997).

In this study, 399 African Americans men in rural Macon County, Alabama voluntarily enrolled with the promise of receiving free medical care; however, they received no treatment for the disease or education about the disease (Hagen, 2005; Thomas & Quinn, 1991). Participants, many of which were poor, illiterate sharecroppers and day laborers, were told they were receiving treatment for “bad blood” (Hagen, 2005; Jones, 1993; Miles & McBride, 1997; Thomas & Quinn, 1991), which was/is a term used to describe a range of ailments. The study was conducted between 1932-1972 (Hagen, 2005; Jones, 1993) by the United States Public Health Service with the support of cross-agency collaborations, and to date, is the most extended non-treatment medical experiment using human subjects in medical history (Jones, 1993; Rivers, Schuman, Simpson & Olansky, 1953; Thomas & Quinn, 1991). Such studies generated deep-rooted contemporary mistrust of the public health system and perpetuated barriers among African Americans in accessing medical care and prevention services for HIV/STD as well as treatment for other medical ailments (Ford et al., 2013; Mays, Coles, & Cochran, 2012; Thomas & Quinn, 1991).

Mays, Cole, and Cochran (2012) conducted a quantitative study investigating whether the Tuskegee Syphilis Study impact beliefs about HIV/AIDS among African Americans (N = 510) and Latinos (N = 253) residing in low-income areas of central Los Angeles. Participants
ages 18-45 were recruited using a random-digit-dial telephone exchange system. As in the Tuskegee Syphilis Study, researchers demonstrated a degree of cultural sensitivity to encourage participation (Rivers, Schuman, Simpson, & Olansky, 1953; Thomas & Quinn, 1991) by recruiting persons of color - Black and Latino women - to conduct structured interviews (Mays et al., 2012).

Findings indicate that almost 25% of participants believe that HIV/AIDS was created in a test tube by government scientists. Approximately 25% agreed that an AIDS vaccine exists but withheld by public health officials (Mays et al., 2012). Over 33% of African Americans report that a cure for HIV exists but not released by the U.S. government (Mays et al., 2012). Interestingly, 20% of African Americans believe that the government created HIV/AIDS as a genocidal tactic to destroy the Latino community, whereas, only 8% of Latino participants agreed with this statement (Mays et al., 2012). More Black men report belief in HIV/AIDS-related conspiracy theories as compared to Black women and Latino men and women.

Bogart and Thorburn (2005) conducted a national, cross-sectional anonymous random telephone survey with 500 African Americans age 15-44 to examine beliefs in conspiracy theories relative to the origin and treatment of HIV. Findings indicate that almost half (48%) believe HIV is a man-made virus created by the U.S. government, slightly more than half (53%) agreed that a cure for AIDS is available and withheld from the poor, and 44% consider individuals who take antiretroviral treatments as no more than government guinea pigs (Bogart & Thorburn, 2005).

Medical Mistrust. The history of African Americans in the Deep South has led to barriers to prevention such as (1) distrust for Eurocentric health care systems; (2) perceptions that HIV/AIDS epidemiological data are biased against African Americans; (3) impressions by Black men that they are unfairly targeted for disease surveillance; and (4) African Americans
who live in disadvantaged rural communities lacking the ability to access HIV/STD treatment and other forms of health care (Lichtenstein, 2005a; Mays et al., 2012). Access to health care is especially vital in segregated areas of the Deep South known as the “Black Belt” (Lichtenstein, 2005a). Initially, the Black Belt referred to the southern region of the United States known for its fertile, dark soil, which by no coincidence was also the region with the most significant number of slaves (Harris & Hyden, 2017; Washington, 1901). Today, the Black Belt frequently refer to counties in the south where the population of African Americans exceeds that of Whites (Washington, 1901). The Black Belt is comprised of Deep South states plagued by longstanding racism, poverty, economic disparities, and now, increased rates of African Americans living with HIV/AIDS (Bertocchi & Dimico, 2014; Harris & Hyden, 2017; Mays et al., 2012; United States Census Bureau, 2017; Wiltz, 2014).

**Educational Attainment**

Several empirical studies find an association between educational attainment and morbidity (i.e., HIV, cancer, heart disease, etc.), with odds being greater for racial/ethnic minorities with lower educational attainment (Gold, 2006; Hogben & Leichliter, 2008; Singh et al., 2017; Zeglin & Stein, 2015). Singh et al. (2017) examine empirical trends on health inequalities among diverse populations by addressing social determinants of health that predicts morbidity. Populations or groups with lower educational attainment experience greater rates of heart disease, psychological distress, and diabetes, as well as higher lung and colorectal cancer mortality risks compared to their educated counterparts (Singh et al., 2017). Between 2003-2011, cervical cancer mortality risk among women living in poverty and women without a high school diploma was higher (6.3 and 4.0, respectively) as compared to their counterparts at the highest educational attainment and income levels (Singh et al., 2017).
Gold et al. (2006) investigate the effect of race/ethnicity and socioeconomic position (i.e., educational attainment and household annual income) on the odds of lifetime morbidity among 162,000 postmenopausal women. Finding indicate that women with less than a high school education had greater morbidity odds (Black 45%, White 50%, American Indian/Alaska Native 45%) as compared to their counterparts with a high school diploma or higher (Gold et al., 2006). As women in general reach middle-age, the odds of lifetime morbidity are greater among women with less than a high school diploma, regardless of race/ethnicity. In an analysis of the combined effect of education and income, Black and American Indian/Alaska women with household incomes less than $20,000 and had less than a high school education had considerably higher morbidity odds compared to their educated counterparts, as well as substantially higher morbidity odds than White women with the comparable education levels (Gold et al., 2006). These findings support the need to investigate educational attainment as a predictor of HIV transmission among African Americans and other racial/ethnic groups.

**Employment Status**

Unemployment contributes to HIV transmission as well as serve as a barrier to HIV care (CDC, 2018c; Fullilove, 2006; Raj et al., 2014; Walcott et al., 2016), ultimately, perpetuating health inequalities among low-income populations. Using the social-ecological theoretical framework, Walcott et al. (2016) describe manners in which structural factors contribute to existing health inequalities by hindering access to HIV care among Black women in Alabama. Findings indicate that women living with HIV (89%), unemployed (88%), and earned less than $11,000 annually experienced significant barriers to HIV care, medication adherence, and transportation to treatment (39%; Walcott et al., 2016). Also, socioeconomic constraints (i.e., unemployment, lack of employment opportunities, low educational attainment) often leads to
sex work among destitute women, which increases the risk of HIV transmission (Olofinbiyi et al., 2019).

Walcott et al. (2016) reports that financial difficulties lead many women to engage in prostitution and criminal activity to provide the basic needs for their family and children. Citing Walcott et al. (2016), one participant states: “Ok as far as taking care of the kids or the living arrangement or just providing for your family you have to do what you have to do [selling sex, stealing]”. Walcott et al. (2016) reveals similar finding among unemployed and low-income women living with HIV who report engaging in prostitution or undesirable relationships, which creates adverse environments impacting engagement in HIV care; including substance abuse.

Again, citing Walcott et al. (2016) one participant states:

Bottom line situation is that it all comes down to the money and being able to take care of what is left of our family. When money isn’t there or money comes up short we have to provide for our families in any kind of means we possibly can even if it means selling [sex] just for joe-blow [man on the street] or whatever situation. (p. 7)

In the United States, the CDC (2018c) report that populations accounting for the largest percentage of HIV diagnoses are those residing in census tracts in which 6% or more of the population are unemployed. Census tracts are defined as small, geometric subdivision of a county defined by a local commission of census data users for the sole purpose of presenting data and containing approximately 4,000 people and 1,600 housing units (United Stated Census Bureau, 2019). Finding by the CDC (2018c) align with Walcott et al. (2016) and Olofinbiyi et al. (2019) that unemployment predicts HIV transmission.

As with unemployment, investigation of occupational prestige as a social determinant of health provide a comprehensive understanding of persistent health inequities impacting certain groups and populations in the United States (Ahonen, et al., 2018). Occupational prestige, not to be confused with occupational classification, which captures relative social ranking or status, is defined as the general level of social positioning afforded to individuals of certain occupations
and mirror an occupation’s perceived contributions to society or public goods (i.e., service profession or teaching; Kleinjans, Krassel, & Dukes, 2017). As previously stated, socioeconomic position (social class) can have a reciprocal relationship with social determinates that contribute to health inequalities (Davis, Gardner, & Gardner, 2009). Socioeconomic position is described as the social position of populations, which designates access to social and economic resources and is demonstrated by measures wealth and income (Wani, 2018). The reciprocal interaction between socioeconomic position and occupation impacts health outcomes and mortality rates of populations at higher and lower positions, or classes (Ravesteijn, van Kippersluis, & van Doorslaer, 2013). Certain privileges such as access to better health care, attainment of education, and improved housing accommodations are afforded to those of a higher socioeconomic position (Solar & Irwin, 2010), which is influenced by the prestige of one’s occupation (Ravesteijn, van Kippersluis, & van Doorslaer, 2013).

Using an economics theoretical framework, Ravesteijn, van Kippersluis, & van Doorslaer (2013) conducted an analysis of empirical data that examining the contribution of occupation on health disparities by measuring (1) occupation selection and the estimation of contributing effects; (2) compensating behaviors and grouping of occupations; and (3) occupational characteristics and socioeconomic inequalities in health. Findings indicate that people chose certain occupations based upon salary, benefits, educational level, and health. Higher levels of educational attainment are associated with higher occupational prestige (Ravesteijn, van Kippersluis, & van Doorslaer, 2013), which often includes higher wages and benefits (i.e., health coverage, retirement plans). Similarly, individuals with lower levels of education are usually employed in lower level occupations that provide less wages and benefits (Ravesteijn, van Kippersluis, & van Doorslaer, 2013), which limits access to optimal healthcare. Workplace conditions also contribute to health inequalities by widening the gap between
socioeconomic position and health of workers (Ravesteijn, van Kippersluis, & van Doorslaer, 2013). Workers from lower socioeconomic positions who earn higher wages often work in hazardous and dangerous environments with lower occupation prestige (Ravesteijn, van Kippersluis, & van Doorslaer, 2013), which increases the potential for occupational-related health disparities.

**Poverty**

A contributing factor in the spread of HIV in the Deep South, as well as the South in general is poverty (Adimora, 2014; CDC2016a; Menefee, 2012). The CDC (2016a) finds that long standing disparities in income, poverty, and suboptimal health outcomes impacts the HIV epidemic in the South. The Deep South possess the highest rates of poverty in the country (Adimora, 2014; Menefee, 2012), which helps drive the burden of the disease. In this region of the country, approximately half of African Americans live below 200% of the poverty threshold (Reif, Geonnotti, & Whetten, 2006), increasing vulnerability to poorer health and overall poorer health outcomes.

Watson et al. (2019) empirically examined the role of social determinants of health (i.e., poverty and health insurance coverage) on mortality risk among Black women 18 years and older living with HIV at the county-level. In 2016, Black women accounted for slightly over 40% of all HIV-related deaths among women in the United States across all racial/ethnic groups. Using an ecological theoretical framework, Watson et al. (2019) finds that mortality risk has a significant association with poverty and health insurance. Mortality risk was higher for Black women ages 18-54 who resided in counties with the highest quartile of poverty and lack of insurance (Watson et al., 2019). Findings align with research that identify poverty as a predictor of HIV in the Deep South (Adimora, 2014; CDC, 2016a; Connell et al., 2019; Watson et al., 2019).
Housing Tenure

Housing provides more than merely a physical shelter, rather space where personal, social, and economic lives intersect (Aidala et al., 2016). Housing tenure is an intermediary determinant (Aidala et al., 2016; Solar & Irwin, 2010; WHO, 2012) that improves social and economic determinants as well as home-based wealth (Solar & Irwin, 2010; WHO, 2012). Aidala et al. (2016) investigated empirical data on the relationship between housing, medical treatment, and overall health outcomes of PLWHA. A systematic analysis of 152 empirical studies supports previous research findings that stable housing improves adherence to antiretroviral medications, HIV medical care, and sustained viral suppression (Aidala et al., 2016).

Access to the Health Care System

Most southern states have the highest number of uninsured and underinsured citizens compared to the rest of the nation (Adimora, Ramirez, Schoenbach, & Cohen, 2014; CDC, 2016a; KFF, 2018). Majority of state governments in the south refused to expand Medicaid, which would provide medical coverage to thousands of its residents (Adimora, Ramirez, Schoenbach, & Cohen, 2014), although, these states have the most significant proportion of people living with HIV/AIDS (referred to hereafter as PLWHA; Adimora et al., 2014; CDC, 2016a). Refusal to expand Medicaid prevent those with the highest medical needs from accessing health care services. Generally, people in the South have poorer overall health as compared to those in other regions of the country (CDC, 2016a). Individuals living in the South commonly have disproportionately higher rates of diabetes, cancer, obesity, hypertension, and infant mortality (CDC, 2016a; Department of Health & Human Services [DHHS], 2014), yet this region continues to have the highest number of uninsured (Adimora et al., 2014; CDC, 2016a; Kaiser Family Foundation, 2018). Of the four states in the country with the most
insured populations are in the South - Georgia (17.5%), Florida (17.2%); Oklahoma (18.1%); and Texas (18.8%; KFF, 2018).

Additionally, the geographical landscape of the Deep South also perpetuates patterns observed in HIV disparities as well makes accessing treatment of HIV/AIDS extremely difficult (Adimora et al., 2014; Anderson, Chandra & Mosher, 2005). The south is comprised of mostly rural and suburban area making it difficult to access HIV prevention and treatment services for African Americans residing in these areas (Adimora et al., 2014). Community-level HIV/AIDS outreach programs that provide HIV education, Counseling, Testing, and Referral services, STD screenings or other support services might not be available in these geographical areas. Slightly over 40% of the population in the Deep South reside in rural areas as compared to almost one-quarter (24.8%) nationally (Anderson, Chandra, & Mosher, 2005). These authors find that males residing in rural areas (41.6%) were less likely to get tested for HIV as compared to males in urban areas (49.3%), similarly, males in the Deep South are least likely to get tested for HIV (46.3%) as compared to those in the West (48.5%; Anderson, Chandra & Mosher, 2005). These delays in testing often lead to delayed diagnosis and entry into treatment, which tends to increase ‘unknowingly’ spreading the HIV within a region already burdened by the disease (Menefee, 2012).

**STD Rates**

The South has consistently ranked among the highest in the country regarding cases of sexually transmitted diseases (Aidmore et al., 2014; Reif et al., 2017a). However, the push for abstinence-only school-based initiatives in the south continues to perpetuate the cycle of HIV among its young people, particularly, African Americans. STDs profoundly affect African Americans adolescents and young adults. The Council of State Governments (2011) reported that STD/STIs are major health crises in the U.S. and present public health challenges.
Disparities in STD/STIs exist among Black adolescents in the Deep South as compared to adolescents in other racial groups.

CDC 2012 STD Surveillance Report finds that women represented 75% of all chlamydia cases and 57% of gonorrhea cases, with adolescent females between the ages of the 15-24 having the highest incidence rates. From 2003-2012, the rate of chlamydia was nearly seven times higher, and gonorrhea was 13 times higher for African Americans than those for White teens (DHH, 2014). Black adolescents and youth aged 13-24 accounted for 55% of new HIV diagnoses in 2015 (CDC, 2016). In 2015, newly diagnosed rates of HIV among Black adults and adolescents (44.3%) was approximately eight times higher than that of whites (5.3%) and almost twice the rate of Latinos (16.4%; KFF (2017). Conservative politics and strong religious beliefs in this region often influence health policies that serve as barriers to STD prevention and treatment (Adimora et al., 2014; Whetten & Reif, 2006). These findings are disturbing because STDs are risk factors for HIV transmission.

Federal Response

The federal response to the prevalence of HIV among people of color resulted in the development of policy-driven macro-level interventions that address racial disparities that exist in HIV-related prevention, treatment, and support services (Adimora et al., 2014; Aragon & Kates, 2004; Koh, Graham, & Glied, 2011; Office of National AIDS Policy [ONAP], 2011). This study will provide an understanding of legislation created to address the impact of HIV/AIDS in the African Americans community. This course of study will concentrate on three key pieces of legislation that aimed at reducing the disproportionate impact of HIV/AIDS among African Americans: Ryan White HIV/AIDS Program, Minority AIDS Initiative, and National HIV/AIDS Strategy.
**Ryan White HIV/AIDS Program**

The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act of 1990 established the Ryan White HIV/AIDS Program (RWHAP; Cahill, Mayer, & Boswell, 2015; Health Resources & Services Administration, [HRSA], 2016; Taylor, 2010). Since its enactment in 1990, RWHAP has been reauthorized and amended four times - 1996, 2000, 2006, and 2009 (HRSA, 2016). The Ryan White HIV/AIDS Treatment Extension Act of 2009 (Public Law 111-87), extended funding for the program through September 30, 2013 (CDC, 2013b; Cahill, Mayer, & Boswell, 2015; Johnson, 2011; Taylor, 2010); however, the program continues to receive federal funding (Cahill, Mayer, & Boswell, 2015). RWHAP was the first legislation that provided funding for community-based HIV care and support services for low-income, uninsured, and underinsured PLWHA (Cahill, Mayer, & Boswell, 2015; Taylor, 2010). The AIDS Act provided funding to metropolitan areas, states, and community-based organizations located in geographical regions with the highest rates of HIV (Johnson, 2011; Taylor, 2010).

The Ryan White HIV/AIDS Program is composed of four main parts (A-D) and one part (F), which has several components (Cahill, Mayer, and Boswell, 2015; HRSA, 2016; KFF, 2011; Taylor, 2010). Included in the PWHAP, Part E never received appropriated funding. Most of the program budget provides grant funding to Community-Based Organizations (CBOs), AIDS Service Organizations (ASOs), and health departments for Parts A and B. The remainder of the program budget is allocated to Parts C-F to fund early intervention grants, family-centered care for women, infants, children, and youth living with HIV, dental partnership programs, AIDS training centers, and the Minority AIDS Initiative (Cahill, Mayer, & Boswell, 2015; Johnson, 2011; KFF, 2011).

Although the Minority AIDS Initiative is designated under Part F, funding is allocated across the other parts (A-D) to address the disproportionality of HIV/AIDS-specific to racial
and ethnic minority groups (Cahill, Mayer, and Boswell, 2015; Johnson, 2011). The RWHAP has been successful in providing African Americans PLWHA with quality treatment, linkage to care, and retention in services; which aided in the creation of the National HIV/AIDS Strategy under the Obama administration.

**Minority AIDS Initiative**

The Minority AIDS Initiative (MAI). After Black community leaders viewed HIV surveillance data that showed extremely high rates among African Americans, community leaders demanded that the then Surgeon General, David Satcher, and Clinton Administration declare HIV a “state of emergency” in the African Americans community (Aragón & Kates, 2004, p. 1). As part of their demand, community leaders also called for the development of federal policies targeting African Americans within 90 days; establishment of federal funding to pilot new community-level planning and program projects; and correlational studies investigating allocation of federal funding for HIV/AIDS directly to communities and trends in diagnosis (Aragón & Kates, 2004). At the end of 1998, the Congressional Black Caucus, the White House’s Presidential Advisory Council on HIV/AIDS, and other interest groups endorsed the call for a state of emergency, and eventually, President Clinton declared HIV/AIDS a “severe and ongoing health care crisis in racial and ethnic minority communities” (Aragón & Kates, 2004, p. 1).

Formerly known as the Congressional Black Caucus Initiative, the MAI was renamed in 2001 after a cross-Caucus commitment (Congressional Black Caucus, Congressional Hispanic Caucus, and Congressional Asian Pacific American Caucus) to focus on the impact of HIV/AIDS in all communities of color (Aragón & Kates, 2004). The total budget of the MAI for the first year (FY 1999) was $116 million, which included $156 million allocated in the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1999 and $10
million reprogrammed funds from the Department of Health and Human Services (DHHS; Aragón & Kates, 2004). In FY 2016, the budget for the MAI was more than $400 million to improve health outcomes and address the disproportionate impact of HIV/AIDS in communities of color (AIDS.gov, 2017, 2019; Aragón & Kates, 2004).

MAI funds are distributed across federal agencies and offices and support more than 50 programs serving racial and ethnic minority groups most at risk for HIV transmission (AIDS.gov, 2019; Aragón & Kates, 2004; National Minority AIDS Council, 2003). These agencies include the CDC, Health Resources and Services Administration (HRSA), Substance Abuse and Mental Health Services Administration (SAMHSA), HHS Office of HIV/AIDS and Infectious Disease Policy (OHAIDP), and the HHS Secretary’s Minority AIDS Initiative Fund (SMAIF; AIDS.gov, 2019). The SMAIF is unique in its approach to addressing HIV/AIDS among racial and ethnic groups by addressing social determinants of HIV through innovative programs such as the Care and Prevention in the United States Project (CAPUS), Partnerships for Care (P4C) and THRIVE (CDC, 2019a; HIV.gov, 2019). These programs promote cross-agency collaboration by addressing social determinants - social, economic, clinical, and structural factors – that adversely impact HIV health outcomes as well as align with the goals of the National HIV/AIDS Strategy (CDC, 2019a).

**HIV/AIDS Strategy**

In 2010, the White House Office of National AIDS Policy (ONAP) established the National HIV/AIDS Strategy (NHAS 2010) for the United States to address the HIV/AIDS epidemic in this country (Holtgrave, 2014; ONAP, 2011). The Strategy was created with the vision of promoting an environment where new HIV infection rates would infrequently occur, however when they did happen, persons infected, regardless of demographics, sexual orientation, gender identity or socio-economic status, would have access to optimal health free
from HIV-related stigma (ONAP, 2011). The Strategy has three primary goals: (1) to reduce the number of new HIV infections; (2) to increase access to quality, life-sustaining care and treatment for PLWHA; and (3) to reduce HIV-related health disparities because of stigma, prejudices, and discrimination (Holtgrave, 2014; ONAP, 2011).

NHAS 2010 was successful in identifying evidenced-based biomedical and behavioral approaches to address the HIV epidemic among African Americans as well as other racial/ethnic groups at risk for HIV transmission. These approaches include:

- **Abstinence**: Individuals who abstain from sexual activity or reduce their number of sexual partner and substance use significantly reduce their risk of contracting HIV.
- **HIV testing**: Individuals who engage in behaviors that increase their risk of contracting HIV should receive routine testing to learn their HIV status. The sooner individuals who test positive enter treatment, the less likely they will be to transmit the virus to others. Further, individuals who are ignorant of their status are at higher risk of infecting others.
- **Condom availability**: Limited access to condoms for sexual intercourse is often the reason individuals report for not practicing safe sex.
- **Access to sterile needles and syringes**: Individuals who share equipment for injecting drugs and other drug use paraphernalia are at higher risk for contracting and transmitting HIV. As with condoms, access to sterile equipment can contribute to a decrease in HIV transmission.
- **HIV treatment**: Individuals who adhere to HAART (Highly Active Anti-Retroviral Treatment) medications will decrease the risk of transmitting HIV as compared to those who are HIV positive, but not receiving HIV treatment.

In 2015, the NHAS 2010 was updated and renamed, the National HIV/AIDS Strategy for the United States: Updated 2020. NHAS 2020 was created to reflect upon accomplishments of NHAS 2010, highlight new developments in the battle against HIV/AIDS, and provide an
update on collective federal action in HIV treatment and prevention efforts (HIV.gov, 2017). In consideration of the goals of NHAS 2020, HRSA has committed to continuously providing optimal treatment for African Americans PLWHA already being implemented under RWHAP (HIV.gov, 2017, 2019).

**Theoretical Framework: Social Determinates of Health**

When examining the prevalence of HIV among African Americans, it is essential to understand complex interactions between group members and systems that directly influence transmission risks, development of population norms, and prevention efforts. Social work research and practice often examine HIV via the person-in-environment (PIE) perspective associated with the General Systems Theory (Weckowicz, 2000). However, this study will explore social determinants that predict HIV among African Americans in the Deep South using constructs of the WHO’s Social Determinants of Health (SDH) theoretical framework (Solar & Irwin, 2010; WHO, 2012).

As with systems theories, the SDH framework focuses on the influence of systems, policies, and environmental factors, but it goes further by framing health as a social phenomenon (Solar & Irwin, 2010). By doing so, this deepens the ability to view health inequality as a social justice issue (Solar & Irwin, 2010), which includes racial disparities in HIV education, prevention, and treatment. Alternatively, this researcher believes Bronfenbrenner’s Ecological Systems Theory is a viable social work theory to investigate social systems that contribute to HIV among African Americans with the integration of the Afrocentric Paradigm for future investigation. These frameworks will be described in more detail later in this section. However, this study will only use the SHD theoretical framework.
Social Determinants of Health Framework

During his speech at the 2018 State of Black Health National Conference, Dr. David Satcher, 16th U.S. Surgeon General, stated that to achieve health equity, the public health community must first address social determinants that create differences in the quality of health across racial groups. The CDC (2014) defined social determinants of health as multifaceted social and economic structures that are responsible for most health inequities. These social and economic systems include the social environment, physical environment, health services, and structural and societal factors (Solar & Irwin, 2010; WHO, 2012). Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities, nations, and the world (Solar & Irwin, 2010; WHO, 2012).

Identifying these determinants alone will not result in changes in health equity (Satcher, 2018) until changes occur in social and public health policies (Human Rights Watch, 2010b). In the south, discriminatory laws and policies perpetuate the cycle of HIV/AIDS among African Americans (Adimora, Ramirez, Schoenbach, & Cohen, 2014; Human Rights Watch, 2010a) who bear the disproportionate burden of the disease (Human Rights Watch, 2010b). Racial disparities in HIV/AIDS are most prevalent in the south than any other region in the country (Human Rights Watch, 2010b), which is historically linked to systematic social and economic disadvantages experienced by African Americans. These disadvantages are considered social determinants of health that serve as predictors of HIV transmission. (Health and Human Services, 2009) as well as create social determinants of health inequalities.

The World Health Organization (WHO) created the Commission on Social Determinants of Health (CSDH) to promote health equity in the spirit of social justice (Lee, 2004). The CSDH worked to develop the social determinants of health (SDH) framework, which is a public health, action-oriented framework to reduce differences in the quality of health and healthcare among
social groups. The social determinants of health (SDH) framework is grounded in the theorization of social power and the social production of disease model (SPDM) and is comprised of three primary parts: 1) socioeconomic and political context; 2) structural determinants; and 3) intermediary determinants (Solar & Irwin, 2010; WHO, 2012).

Solar and Irwin (2010) and Valentine and Solar (2011) suggest that, to achieve the goal of reducing health inequities, the SDH framework must focus on three essential problems:

1) Where do health differences among social group orientate, if we trace them back to their deepest roots?
2) What pathways lead from root causes to the stark differences in health status observed at the population level?
3) Considering the answers to the first two questions, where and how should we intervene to reduce health inequities?

**Theorization of Social Power.** To adequately address health inequities experienced by African Americans, as well as other racial/ethnic groups, researchers must generate conversation about the systematic imbalance of power, prestige, and resources in society (Krieger, Williams, & Moss, 1997; Solar & Irwin, 2010; WHO, 2012). Such dialogue will help to explain the role that “power” play in creating social hierarchies, and ultimately (Krieger, Williams, & Moss, 1997; Solar & Irwin, 2010), health disparities, including disparities in HIV diagnosis, treatment, and mortality, experienced by African Americans.

**Social Production of Disease Model.** Initially introduced by Diderichsen and Hallqvist in 1998, SPDM was later modified by Diderichsen, Evans, and Whitehead to highlight the relationship between social position and specific exposures to certain health of an individual; which ultimately impacts population health (Solar & Irwin, 2010; WHO, 2012). Diderichsen (2004) expanded the SPDM even further to acknowledge societal mechanisms that contribute to inequities in health outcomes, due to social stratification. These mechanisms tend to generate and allocate “power, wealth, and risks”, and thereby, creating social contexts that leads to
“differential exposure to health damaging conditions and differential vulnerability” (Solar & Irwin, 2010, p. 23). For African Americans in the Deep South, such mechanisms have resulted in disproportional exposure to and vulnerability for HIV infection, as well as disparities in risk of obesity, type 2 diabetes, and poor oral health (Scott & Wilson, 2011).

**Socioeconomic and Political Context.** A major distinction of the WHO’s Social Determinant of Health theoretical framework from other social determinants of health models is the inclusion of socioeconomic and political contexts (Solar & Irwin, 2010). Social determinants of health inequalities are often generated or perpetuated by many divisive policies, including employment, labor, and social welfare polices among others (Solar & Irwin, 2010). Shokouh et al. (2017) conducted a narrative review of 248 publications using international databases to examine frameworks often used to explain social determinants of health that create health inequalities. Of the 21 publications included in the final review, WHO’s Social Determinant of Health framework was the only model found to have an integrative and action approach to addressing social determinants that predict health inequalities, which includes socioeconomic and political contexts (1) governance (definition of needs, patterns of discrimination), (2) microeconomic policy (fiscal, trade policies), (3) social policies (social welfare, housing distribution, labor), (4) public policy (i.e., education, medical care), (5) culture and societal value and (6) epidemiological conditions (i.e., HIV/AIDS; Shokouh et al., 2017; Solar & Irwin, 2010; WHO (2012). The first two parts of the framework, socioeconomic and political context and structural determinants have a reciprocal relationship in which they influence each other (Shokouh et al., 2017; Solar & Irwin, 2010). As a result, the current study only examines structural and intermediary determinants as contributors to health inequalities among African Americans.
**Structural Determinants.** WHO (2012) defines structural determinants as the interrelationship between social and political circumstances, structural systems that create social hierarchies, and the socioeconomic position of individuals (social class) that is created as a result. Structural determinants are factors responsible for creating health inequalities and inequities among social groups in society (Solar & Irwin, 2010; WHO, 2012), which include race/ethnicity, gender, income, poverty, educational level, employment status, stigma, discrimination, racism as well as other social factors.

**Intermediary Determinants.** Structural determinants function through a sequence of intermediary social factors, which Solar & Irwin (2010) refer to as intermediary determinants. These intermediary determinants are the result of social determinants of health inequities associated with a set of individual-level influences that are constructed based upon social stratification (Solar & Irwin, 2010; WHO, 2012). Intermediary determinants are social factors that contribute to disparities in exposure and susceptibility to certain conditions (Solar & Irwin, 2010; WHO, 2012) that compromise the overall health and wellbeing of individuals, and ultimately, an entire population. Solar & Irwin (2010 identified four main categories of intermediary determinants that impact health at the individual level, which are: material circumstances; psychosocial circumstances; behavioral; and the health system itself as a social determinant. This study will only focus on material circumstances (housing tenure), behavioral factors (STD rates), and the health system (health insurance coverage).

**Bronfenbrenner’s Ecological Systems Theory**

Bronfenbrenner’s Ecological Systems Theory (EST) is an expansion of the General Systems Theory (Bronfenbrenner, 1979). General Systems Theory was first introduced by the biologist Ludwig von Bertalanffy who insisted that systems should be viewed according to their relationships and interactions with other systems (Weckowicz, 2000), which was a departure
from previous perspectives that claimed to understand the system meant breaking it into distinct parts. Systems Theory was expanded to include the influence of environmental factors on the system when Germain and Gitterman (1996) introduced the ecological perspective into social work practice. These theorists supported a transactional view of the PIE relationship, which proposes that an individual and his or her environment are involved in continuous exchanges, influencing the other over time.

Bronfenbrenner (1979) further extended the General Systems Theory by introducing developmental psychology to the ecological systems perspective. This perspective believes that human development and behavior involves the relationships between an individual and his context (Bronfenbrenner, 1979; Tudge, Mokrova, Hatefield, & Karnik, 2009). Bronfenbrenner’s Ecological Systems Theory (EST) describes an individual's context regarding interrelated levels of influence (i.e., microsystem, mesosystem, exosystem, macrosystem, and chronosystem; Bronfenbrenner, 1977).

The microsystem comprises an individual’s immediate environment (i.e., home, school, church, and community) and includes face-to-face relationships and interactions. The mesosystem constitutes the interaction or interconnectedness between components of the microsystem, such as the influence of peers of an adolescent’s risk behaviors at a party in the neighbor. The exosystem is composed of elements in the broader environment that influence a developing individual’s immediate environment. This system includes larger social entities affecting individual systems by influencing behaviors, although the developing person is not directly involved with them. For an at-risk adolescent, this might include her parent’s workplace, the school board, community agencies, and social media. Next is the macrosystem, which is comprised of overarching environmental factors such as cultural values and beliefs, economic conditions, and political ideologies that influence the developing individual’s
behavior. Lastly, the chronosystem involves the dimension of time as it relates to changes in an individual’s environments. Elements in this system can include both internal factors (i.e., changes in health that occur naturally with aging) or external factors (i.e., birth of a child; Bronfenbrenner, 1977).

Regarding HIV/AIDS, EST is an appropriate theoretical framework for understanding how micro and macro-level systems influence HIV-related risk behaviors among high-risk African Americans, as well as reciprocal relationships between this population and its environment. Examination of African Americans within the social contexts of the Deep South warrants inclusion of relevant immediate environmental factors (microsystem) and cultural, political, and socioeconomic (macrosystem) conditions (McGoldrick, Giordano, & Pearce, 2009) that contributes to HIV transmission. Further, the EST provides insight into how an individual might be influenced by transitions and shifts in their lifespan (chronosystem; Bronfenbrenner, 1977) in response to HIV/AIDS. As mentioned previously, HIV/AIDS mortality rates are higher among African Americans in the Deep South as compared to other racial groups (Adimora et al., 2014; Reif et al., 2015a). The death of a parent secondary to AIDS complications, for example, may adversely affect a child’s behavior the first year after the death. In following years after, however, the child will better learn or understand how the death has influenced his or her environment.

Afrocentric Paradigm

Due to the history of African Americans in the Deep South, a paradigm that promotes cultural empowerment and pride in Blackness should be of the utmost importance (Asante, 2007; El-Bassel et al., 2010; NIDA, 2013; Oyebade, 1990). Rossman & Rollis (2011) define a paradigm as a collective understanding of reality. Afrocentric paradigm originated from the Afrocentricity conceptual framework, which posits that African culture and assumptions of

The Afrocentric theory posits that African Americans should re-assert a sense of agency and exert power through a revolutionary shift in thinking “proposed as constructural adjustment to black disorientation, decenterdness, and lack of agency” (Asante, 2009, p. 1). Constructural adjustment postulate that Afrocentric scholars re-assert and re-establish Africa and those of African descent at the center of their own narratives from their own perspectives, as opposed to inserting a Eurocentric worldview (Asante, 2007; Davis, Williams, & Akinyela, 2010; Robinson, 1994; Schiele, 1996). Early HIV prevention messages, for example, were traditionally targeted toward gay, White men.; while African Americans continued to be disproportionately affected by the virus (Davis, Williams, & Akinyela, 2010; Gilbert & Goddard, 2007). Research suggests that notable racial disparities in the rates of HIV/AIDS infections and delivery of treatment services support the need for culturally congruent, relevant, and competent prevention methods for African Americans (Davis, Williams, & Akinyela, 2010). An African-centered approach in the prevention of HIV/AIDS provides an opportunity for African Americans to reflect on real-world situations (Gilbert & Goddard, 2007), as well as
form healthier self-images and develop meaningful interpersonal relationships with others (NIMH, 2008; Robinson & Howard-Hamilton, 1994; Sherr, 2006).

El-Bassel et al. (2010) studied whether a culturally congruent, couple-based intervention would be useful in decreasing HIV/STD transmission among serodiscordant, heterosexual African Americans couples. The study implemented the Eban intervention which consists of 8 weekly sessions delivered by male and female co-facilitators who are African Americans. The African concept of Eban, or fence - symbol of safety, security, and love within an individual’s family and relationships - is incorporated throughout the intervention (CDC, 2017b). Eban achieves cultural congruence by emphasizing the principles of Nguzo Saba (unity, self-determination, collective work and responsibility, cooperative economics, purpose, creativity, and faith) to encourage consistent condom use among couples to protect each other as well as their community (CDC, 2017b; El-Bassel et al., 2010). Karenga (1980) stated that the principles of Nguzo Saba serve as the fundamental value system enabling African Americans to establish direction and meaning in their lives. Results of El-Bassel et al. (2010) showed that implementation of culturally congruent HIV interventions are effective in reducing sexual risk behaviors among serodiscordant African Americans couples, and use of African Americans co-facilitators provided a sense of security in disclosing high-risk sexual behaviors (El-Bassel et al., 2010; NIMH, 2008).

**Conceptual Framework**

The primary purpose of this study is to examine social determinants of health as predictors of HIV transmission with an emphasis on African Americans in the Deep South. Secondarily, the study will seek to test constructs within WHO’s Social Determinants of Health framework as predictors of HIV among African Americans in the U.S. Deep South. The correlational study will be cross-sectional and utilize secondary data to examine the research
questions. This chapter delineates the research questions and defines key terms related to the current study.

**Research Objective 1**

To describe sociodemographic characteristics, structural determinants, and intermediary determinants for counties and county equivalents of the 48 contiguous United States.

**Research Question:** What are the sociodemographic characteristics, structural determinants, and intermediary determinants for counties and county equivalents of the 48 contiguous United States?

**Research Objective 2**

To explore significant bivariate relationships between HIV rates and sociodemographic characteristics, structural determinants, and intermediary determinants variable using appropriate statistics.

**Research Question:** What are the significant bivariate relationships between HIV rates and sociodemographic characteristics, structural determinants, and intermediary determinants?

H<sub>0</sub>: There are no significant bivariate relationships between HIV rates and sociodemographic characteristics, structural determinants, and intermediary determinants.

H<sub>a</sub>: There are significant bivariate relationships between HIV rates and at least one sociodemographic characteristic, structural determinant, and intermediary determinant.

**Research Objective 3**

To determinants factors that best predict HIV rates specific to African Americans in the Deep South by investigating sociodemographic characteristics, structural determinants, and intermediary in counties and county equivalents of the 48 contiguous United States.

**Research Question:** What factors best predict HIV rates specific to African Americans in the Deep South after examining sociodemographic characteristics, structural determinants, and
intermediary determinants in counties and county equivalents of the 48 contiguous United States?

H0: There are no significant predictive relationships between HIV rates and African Americans in the Deep South after examining sociodemographic characteristics, structural determinants, and intermediary determinants.

H1: There are significant predictive relationships between HIV rates and African Americans in the Deep South on at least one sociodemographic characteristic, structural determinant, and intermediary determinant.

**Definition of Key Terms**

This section defines key terms used in the current study that examined potential predictors of HIV transmission. The instrumentation for measuring key concepts is described in the Methodology section.

**Educational attainment**

The highest level of education an individual has completed in terms of the highest degree or the highest level of schooling.

**Employment status**

Employment status refers to the classification of the population 16 years or older as either employed or unemployed. Employed is defined as populations 16 years or older who have worked one or more weeks as paid employees or who have a job but not at work (i.e., temporarily absent due to illness, bad weather, industrial dispute, vacation, or personal reasons; United States Census Bureau, 2017a). Unemployed is defined as populations 16 years or older who 1) have not worked nor with a job but not at work one or more weeks; 2) were actively job hunting during a specific time frame; and 3) were laid off and awaiting a call from their previous employer to return to work (United States Census Bureau, 2017a).
Health Care System

The health care system variable refers to a population’s access to health care based upon health insurance coverage – insured or uninsured. The ACS defined health coverage as an insurance plan or program that provide comprehensive health insurance coverage to individuals (United States Census Bureau, 2017). In this study, insured is defined as having public (i.e., Medicare, Medicaid, CHIP, or VA Health Care) or private (i.e., employer or union provided coverage, personally purchased, or TRICARE or military plans) health insurance coverage (United States Census Bureau, 2017a). On the other hand, uninsured is defined as having no health insurance or only having Indian Health service coverage (United States Census Bureau, 2017a).

Human Immunodeficiency Virus (HIV)

In 2014, the CDC expanded its 2008 definition of the HIV infection to include an additional stage of the virus, testing criteria for children, and cutoff classifications (CDC, 2014). There are five stages of HIV: Stage 0, Stage 1, Stage 2, Stage 3, and Unknown. Each stage has unique characteristics and criteria for advancement to the next stage.

Individuals receiving a confirmed HIV positive test result within six months after testing HIV negative are diagnosed with HIV infection, stage 0. This diagnosis will remain in this stage until six months after receiving an HIV positive test result. At that point, the diagnosis may be classified at a higher stage (1 or 2) of the infection based upon laboratory indicators of CD4-cell count and viral load (CDC, 2014). CD4-cells (or T-cells) are healthy cells that help support the immune system to fight off infections in the human body. Viral load is the amount of HIV infection or the number of copies of HIV in the blood of a person living with HIV (AIDS.gov, 2015). An extremely low viral load is considered viral suppression, and an undetectable viral load is one that is so low that it cannot be detected or measured (CDC, 2017).
HIV infection, stage 3 (advanced HIV) or a CD4 count of < 200 is an indicator of an AIDS-defining condition, meaning, the individual has advanced to an AIDS diagnosis and has become more susceptible to opportunistic infections (CDC, 2014, WHO, 2017). Depending on numerous factors specific to an individual (i.e., adhering to treatment, knowledge of status), HIV can advance to an AIDS diagnosis anywhere from 2 to 15 years (WHO, 2017). The final stage of HIV, stage unknown, is defined as the diagnosis an individual receives when they have no known AIDS-defining conditions, such as opportunistic infections, or no available information regarding CD4-cell counts (CDC, 2014).

There are two types of HIV (HIV-1 and HIV-2) and both types have multiple lineages or strains (Sharp & Hahn, 2010). HIV-1 is responsible for more than 97% of the world's HIV infections “and is most prevalent in the United States” (Sharp & Hahn, 2010), therefore, HIV-1 will be the focus in this study.

**Housing tenure**

The current study used the United States Census Bureau’s (2017a) definition of housing tenure, which described housing units as either owner-occupied or renter-occupied. Owner-occupied refers to housing units occupied by the owner or co-owner, whereas, renter-occupied housing units are not occupied by owner or co-owners (United States Census Bureau, 2017a).

**Poverty-level**

The Census Bureau follows the Office of Management and Budget's (OMB's) Directive 14 to determine populations living in poverty according to family size and structure (United States Census Bureau, 2017a). This study will refer to populations as living in poverty, or poverty level, in alignment with the Census Bureau, as the total annual pre-tax income of a family or unrelated individual that falls below the poverty level or threshold according to their family size and structure.
Race

The current study used the United States Census Bureau’s (2017a) definition of race, which describes the social definition of race as opposed to scientific or anthropological in nature.

Sex

Sex refers to the biological sex of an individual at birth - male or female.

Sexually Transmitted Diseases (STDs)

*Chlamydia.* Chlamydia is defined as a sexually transmitted disease caused by the *Chlamydia trachomatis* infection, which can occur in the genitals, rectum, and throat (CDC, 2017c). Chlamydia is a common infection among women ages 15-24 years old that is transmitted by engaging in unprotected oral, anal, or vaginal sex with an individual infected with chlamydia (CDC, 2017c). The CDC recommends annual, routine testing among sexually active women under the age of 25 as well as women over the age of 25 with elevated risk factors, which include not using a barrier during sexual activity (i.e., condoms or dental dams) and engaging in concurrent partnerships (CDC, 2017c).

*Gonorrhea.* Gonorrhea is defined as a sexually transmitted disease spread through unprotected oral, anal, or vaginal sex with a partner infected with the disease. The disease can occur in the genitals, rectum, and throat (CDC, 2017c). The populations most infected with gonorrhea are individuals between the ages of 15-24.

*Syphilis.* Syphilis in general is defined as a sexually transmitted disease that progress through a sequence of clinical stages - primary, secondary, latent (early latent and late latent), and late syphilis with clinical manifestations - that gets progressively worse (CDC, 2017c). Risk factors for contracting syphilis include engaging in unprotected oral, anal, or vaginal sex with a partner who is infected with the disease. Primary syphilis causes sores at the infection contact
site, which can include the genitals, anus, in the rectum, and/or the lips and in the mouth (CDC, 2017c). This stage of the disease lasts for approximately 3 to 6 weeks regardless of treatment or not. Symptoms of secondary syphilis may include: hair loss, fever, headaches, sore throat, swollen lymph glands, rapid weight loss, body ache, fatigue and rashes on certain areas of the body during or after the healing stage of primary syphilis (CDC, 2017c). These symptoms go away but treatment is still needed to prevent long-term complications, which can include neurosyphilis, cardiovascular disease, and optical syphilis resulting in visual impairment or blindness (CDC, 2017c). It is worth noting that STD surveillance data sources report primary and secondary syphilis together, because they represent the earliest stages of the infection as well as associated symptoms. This study will also report data on these stages of syphilis together.
CHAPTER 3. METHODOLOGY

This chapter provides a detailed description of the research methodology and procedures used in the current study. This chapter also describes the sample, discuss the issue of confidentiality, and the protection of human subjects. In addition, this section outlines the research design; discuss measurement, instrumentation, and issues regarding reliability and validity. The section concludes with an explanation of the proposed data analytic techniques.

Sample and Procedures

Louisiana State University Institutional Review Board (IRB) approved an application to conduct this study (See Appendix A). The researcher conducted a secondary data analysis using 2013-2017 American Community Survey (ACS) 5-Year Estimates collected by the U.S. Census Bureau. The researcher also conducted a secondary data analysis using the Centers for Disease Control and Prevention’s (CDC) National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) AtlasPlus to collect 2015 HIV prevalence and 2016 sexually transmitted disease (STD) data.

Sample

The sample for this study consisted of 3,109 counties and county equivalents of the 48 contiguous United States, which include 3,002 counties, 64 parishes (Louisiana), 42 independent cities (1 in Maryland, 1 in Missouri, 1 in Nevada, and the remainder in Virginia), and 1 district (District of Columbia – DC).

Confidentiality

Data used are from public sources. No identifying information on survey participants was disclosed in the county-level data. The researcher used data with the oversight and supervision from the dissertation chair and other committee members. The data obtained was
sufficient for the purpose of this, as well as subsequent studies. The data analysis and findings will be used for educational purposes only. No consent forms were required as the data were from a public dataset and used secondarily for the purpose of this study.

Minimizing the Risks of Harm to Human Participants

This study used data previously collected on social determinants of health variables from the ACS and HIV/STD variables from the CDC’s AtlasPlus for 3,109 counties and county equivalents of the 48 contiguous United States. As a result, the researcher had neither contact with any survey participants nor obtained identifiable information on those living with HIV in counties under study. There was no risk of harm as the researcher will conduct a secondary data analysis using pre-existing data from public data sources.

Research Design

The current study utilized a cross-sectional, correlational design. After secondary data were collected, entered, cleaned, and summarized, the researcher conducted multivariate statistical analyses concurrently to investigate structural determinants and intermediary determinants that best predict HIV transmission.

Survey Instruments

American Community Survey

The United States Census Bureau conducts the ACS on an ongoing annual basis with the purpose of providing the most recent data on various subjects – demographic, economic, housing, and social (United States Census Bureau, 2017). Survey data is collected using the internet, mail, telephone, and personal visits at separate phases. Data from the ACS is aggregated over specific time periods (i.e., 1-year, 3-years, or 5-years). Unlike the U.S. Census that collects data on the number of people in the United States every ten years, ACS collects data on how people in the United States live every year (United States Census Bureau, 2017).
This study utilized secondary data collected from the ACS on sociodemographic characteristics (i.e., age, marital status, and total population), structural determinants (sex, race, educational attainment, employment status, and poverty level), and intermediary determinants (housing tenure and access to the health care system [i.e., insurance coverage]). The 5-year estimates that was used in this study is the most accurate for collecting small, county-level data (United States Census Bureau, 2017). See Appendix B for a copy of the 2013-2017 ACS 5-year survey.

**AtlasPlus**

In 2017, CDC launched the AtlasPlus as an enhancement to the NCHHSTP’s 2012 Atlas. The NCHHSTP is one of the CDC’s largest centers and is responsible for public health surveillance, prevention research, and programs to prevent and control HIV and AIDS as well as other STDs, viral hepatitis, and TB. The AtlasPlus provide de-identifiable HIV and STD data collected from all 50 states, the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands (CDC, 2017c), which is updated annually. However, the current study only collected secondary data from counties and county equivalents of the 48 contiguous United States. AtlasPlus reports HIV prevalence for adolescents and adults aged 13-years and older, however, STD data is provided for all ages. Rates are estimated per 100,000. To ensure confidentiality and protection of data, AtlasPlus use age groups (i.e., 5-year and 10-year age groups) as oppose to using a single year (CDC, 2017c). A secondary analysis was collected on data collected from AtlasPlus on 2015 HIV prevalence rates and 2016 STD rates.

**Issues of Validity**

*Internal Validity.* Internal validity refers to whether the treatment influenced the
measured outcome or if the effect was caused by an extraneous variable (Anastas, 2000; Shadish et al., 2005). Inferences about causal relationships are reinforced by showing that the cause preceded the effect and the cause was related to the effect (Shadish et al., 2005). Further, there must be no plausible alternative explanation for the effect. Although relational studies are more feasible to conduct as compared to randomized control trial experiment, relational studies are not effective in demonstrating high levels of internal validity. Relational studies lack the rigor needed to control for the threats of history, maturation, testing, instrumentation, attrition, selection bias, and statistical regression (Rubin & Babbie, 2005). Due to the design of this study and the use of secondary data, the researcher was not able to control for threats of internal validity. This limitation as well as other limitations will be discussed in a later section.

**External Validity.** External validity refers to the degree to which causal relationships hold over variations in participants, settings, treatments, and measurement variables (Shadish et al., 2005). External validity may be affected by pretest interaction effect, specificity of variables, selection effect, multiple treatment effect, experimenter effect, and the Hawthorne effect (Shadish et al., 2005). Random selection of addresses in every U.S. state, the District of Columbia, and Puerto Rico and large sample size on the 2013-2017 ACS will help to improve and support the generalizability of the research findings of this study. The ACS randomly selects approximately 3.5 million households annually to respond to the survey (United States Census Bureau, 2017). Regarding HIV/STD, surveillance data is collected from all 50 U.S. states and its territories. This sample size is also large enough to improve and support the generalizability of the study findings.

**Reliability.** Reliability refers to the consistency of the measurement results over time (Shadish et al., 2005). High measurement reliability yields good test-retest, inter-item, and interobserver reliability (Shadish et al., 2005).

The AtlasPlus is an updated platform of the 2012 Atlas introduced in 2017 by the CDC to provide interactive access the up-to-date HIV, viral hepatitis, STD, and TB surveillance data as well as to indicators on social determinants of health. In 1982, the CDC published its first surveillance report, which provided data on opportunistic infections (Kaposi’s Sarcoma [KS], Pneumocystis Carinii Pneumonia [PCP], and Other Opportunistic Infections [OI]) in seven states with the highest number of cases as well as aggregate data from other states (16) and counties (8; CDC, 1982). Opportunistic infections are cancers, infections, and diseases that occur in individuals diagnosed with Stage 3 HIV (Advanced HIV) or AIDS due to a weakened immune system (AIDS Info, 2017; WHO, 2017). After the first reported AIDS case in 1981 (Markel, 2001), surveillance reports released in 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and beginning to mid-1993 reported AIDS surveillance data, with the first report on data collected from all 50 states, the District of Columbia, and U.S. territories being in 1986 (CDC, 2018c). The CDC began reporting HIV and AIDS data in its 1993 Year-end
Edition and has consistently reported HIV/AIDS surveillance data collected from all 50 states, the District of Columbia, and U.S. territories in years since (i.e., 1994-2017; CDC, 2018c).

As with HIV/AIDS, the CDC’s NCHHSTP program has consistently measured STD rates and published annual surveillance reports. The NCHHSTP provide STD surveillance data from 1997-2017 (CDC, 2019b). Earlier editions (1984-1996) are archived through the CDC’s Wide-ranging OnLine Data for Epidemiologic Research (WONDER) database (CDC, 2019b). The NCHHSTP’s AtlasPlus provides access to more than 15-years of HIV/STD surveillance data reported by the CDC. Although indicators of social determinants of health are provided through AtlasPlus, only HIV/STD data was collected for this study.

**Operationalization of Key Terms**

This subsection operationalizes the terms introduced in the Conceptual Framework and describes how terms are measured on the questionnaire.

**Dependent Variable**

*HIV Rates.* HIV is measured by a positive (reactive) test result that has been confirmed using additional testing with a highly specific test (CDC, 2011) such as, the Western Blot. CDC (2011) require that both preliminary HIV-positive rapid and conventional tests be confirmed by additional testing before an individual is diagnosed with HIV.

**Independent Variables**

Several continuous structural determinants and intermediary determinants variables were included in a multiple linear regression model to estimate the effects on the dependent variable. Variables of interest placed in the model include structural determinants: (a) sex, (b) race, (c) educational attainment, (d) employment status, and (e) below poverty-level and intermediary determinants: (a) housing tenure, (b) health insurance coverage, and (c) STD rates.
**Sex (Biological Sex).** ACS participants’ sex was measured according to answers on the following question: “What is Person 1’s sex?”. Participants were asked to mark either male or female.

**Race.** On the ACS, race was initially measured as a nominal level variable in which survey participants self-identified by choosing one of the following options: White; Black or African American; American Indian or Alaska Native; Asian Indian; Chinese; Japanese; Filipino; Korean; Vietnamese; Native Hawaiian; Guamanian or Chamorro; Samoan; Other Asian (Print race, for example, Hmong; Laotian; Thai; Pakistani; Cambodian; and so on); and Other Pacific Islander (Print race, for example, Fijian; Tongan; and so on). Regarding Hispanics, the ACS appropriately measured this group as ethnicities as opposed to races. The question on origin was measured as a nominal level variable - Hispanic, Latino, or Spanish - with the following choices: No, not Hispanic, Latino, or Spanish; Yes, Mexican, Mexican American, Chicano; Yes, Puerto Rican; Yes, Cuban; Yes, another Hispanic, Latino, or Spanish origin (Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on). Data collected on race and ethnicity were classified into the six categories mandated by the OMB: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Some Other Race, and Two or More Races (Humes, Jones, & Ramirez, 2011; Torrieri, 2014). For the current study, race will be operationalized as the proportion of the population who identify as Black or African American.

**Educational Attainment.** On the ACS, the educational attainment variable was initially measured as an ordinal level variable in which participants 18 years old and over answered the question: “What is the highest degree or level of school this person has COMPLETED? Participants chose from one of the following choices: No schooling completed (No schooling
completed); Nursery or Preschool through Grade 12 (Nursery school; Kindergarten; Grade 1 through 11 – Specify grade 1 – 11; 12th grade-NO Diploma); High School Graduate (Regular high school diploma; GED or alternative credential); College or Some College (Some college credit, but less than 1 year of college credit; 1 or more years of college credit, no degree; Associate’s degree; Bachelor’s degree) and After Bachelor’s Degree (Master’s degree (for example: MA, MEd, MSW, MBA); Professional degree beyond a bachelor’s degree (for example: MD, DDS, DVM, LLB, JD); and Doctorate degree (for example: PhD, EdD).

The educational attainment variable was then recoded: High School Graduate or Higher (includes participants whose highest degree was a high school diploma or its equivalent, people who attended college but did not receive a degree, and people who received an associate’s, bachelor’s, master’s, or professional or doctorate degree) and Not Enrolled, Not High School Graduate (includes participants who were not high school graduates). This study will utilize the same data collected on the ACS and operationalize educational attainment as the proportion of the sample’s population, 25 years and older, who is a high school graduate or higher.

**Employment Status.** Employment status is measured according to answers by participants 16 years old and over to specific questions on the ACS, which measures whether participants are employed or unemployed. Participants are employed if they answered “yes” to the following questions: “LAST WEEK, did this person work for pay at a job (or business)?” and “LAST WEEK, was this person TEMPORARILY absent from a job or business? (i.e., on vacation, temporary illness, maternity leave, other family/personal reasons, bad weather, etc.).” Participants are considered unemployed if they answered “no” to the following questions: “LAST WEEK, did this person work for pay at a job (or business)?”; “LAST WEEK, did this person do ANY work for pay, even for as little as one hour?”; and “LAST WEEK, was this person TEMPORARILY absent from a job or business? (i.e., on vacation, temporary illness,
maternity leave, other family/personal reasons, bad weather, etc.)” and answered “yes” to the following questions: “LAST WEEK, was this person on layoff from a job?”; “Has this person been informed that he or she will be recalled to work within the next 6 months OR been given a date to return to work?”; and “LAST WEEK, could this person have started a job if offered one, or returned to work if recalled? (except for temporary illness)”. For the purpose of this study, only unemployment data will be utilized. In the current study, employment status will be operationalized as the proportion of the population that was unemployed in counties and county equivalents of the 48 contiguous United States.

**Below Poverty-level.** Poverty-level is measured by the Census Bureau using a set of income thresholds or levels according to family size and structure (United States Census Bureau, 2017b). On the ACS, participants are asked “What was this person’s total income during the PAST 12 MONTHS?”. If a household’s total income falls below an established poverty threshold or level, then that household, which includes every occupant, was considered to be living in poverty. In this study, the below poverty-level variable will be operationalized as the proportion of the sample’s population living below the poverty threshold.

**Housing Tenure.** The question about housing was initially measured as a nominal level variable in which housing structure was placed into three distinct categories: house, apartment, or mobile home. From this data, specific questions about housing tenure was asked at occupied housing units on the ACS (United States Census Bureau, 2017a). The housing tenure variable was categorized into two distinct categories: owner-occupied or renter-occupied. This study will operationalize the housing tenure variable as the proportion of the population that reported residing in owner-occupied housing units on the ACS.

**Health Care System.** For this study, the health care system variable will be measured by whether the sample’s population have access to the health care system by having health
insurance coverage. The question on the 2013-2017 ACS that measured insurance coverage asked: “Is this person CURRENTLY covered by any of the following types of health insurance or health coverage plans?” Survey participants who answered “yes” to having coverage provided through a current or former employer, union, or the Veterans Affairs, which includes individuals who access or are enrolled in VA care, were considered insured. On the other hand, individuals who reported no insurance coverage or only having coverage through the Indian Health Service were considered uninsured. In this study, the health care system variable will be operationalized as the proportion of the sample’s population that report having no insurance coverage.

**STD Rates.** As previously discussed, data on STDs will be collected from the CDC’s AtlasPlus. STD variables will include, chlamydia, gonorrhea, and primary and secondary syphilis. Chlamydia and gonorrhea are measured by a confirmatory (reactive) nucleic acid amplification tests (NAATs). Primary and secondary syphilis are also measured by confirmatory (reactive) laboratory serologic tests (CDC, 2017c). In the current study, the STD rates variable will be operationalized by reactive (positive) confirmatory laboratory tests for chlamydia, gonorrhea, and syphilis.

**Data Analysis**

Data were entered, cleaned, and then analyzed in Intellectus Statistics (Intellectus Statistics, 2019). Data were pre-screened to assess for accuracy and missing cases. Univariate, bivariate, and multivariate analyses were conducted to answer the research questions.

**Data Screening**

Frequency distributions and basic descriptive statistics (i.e., mean, standard deviation, skewness, and kurtosis) were computed for each variable to assess the accuracy of the data. The skewness and kurtosis were examined to measure asymmetry and behavior in the distribution of
variables. If the skewness of a variable is greater than 2 in its absolute value, then that variable is considered to be asymmetrical about its mean (Westfall & Henning, 2013). A kurtosis greater than or equal to 3 is an indication that a variable’s distribution is distinctly different than a normal distribution in its likelihood to produce outliers (Westfall & Henning, 2013). Outliers will be screened for using standard deviations (SD) where SDs greater than 3.29 in absolute value are indicative of associated outlying values (Tabachnick & Fidell, 2014). The research questions and analyses associated with each study objective are described in the following sections.

**Univariate Statistics and Bivariate Analysis**

Univariate statistics, including mean and standard deviation, were computed to describe each variable of interest. Bivariate analyses were conducted to examine the distribution of responses on two variables. A series of Pearson correlations were conducted between HIV prevalence and variables of interest associated with structural determinants and intermediary determinants. The Pearson correlation is the appropriate analysis to assess the relationship between two continuous variables (Schober, Boer, & Schwarte, 2018). As each variable of interest consists of frequencies, each variable of interest is continuous, making the Pearson correlation appropriate for the variable type and research objective.

Prior to these analyses, the assumptions of the Pearson correlation were assessed. These include approximate normality and linearity (Schober et al., 2018). The assumption of normality was assessed using the Shapiro-Wilk test, which is a statistical test of normality with a null hypothesis that the distribution is normal (Ghasemi & Zahediasl, 2012). The assumption of approximate normality is met if the Shapiro-Wilk test is not significant. However, the Shapiro-Wilk test can be overly sensitive with large sample sizes (e.g., n > 50; Ghasemi & Zahediasl, 2012). Any significant Shapiro-Wilk test was followed up with an assessment of skew and
kurtosis values to further determine the shape of the distribution of the data (Ghasemi & Zahediasl, 2012).

The assumption of linearity was assessed visually on scatterplots. Linearity is determined by a lack of curvature in relationships between the variables in the scatterplot (Schober et al., 2018). These assumptions were violated; therefore, the Spearman correlation was substituted. The Spearman correlation is the nonparametric version of the Pearson correlation and does not have the same distributional requirements as the Pearson (Schober et al., 2018).

**Multiple Regression Analysis**

Multiple linear regression is the appropriate analysis to assess the predictive relationship between a series of continuous or categorical predictor variables and single continuous dependent variable (Field, 2013). All variables of interest for this analysis are continuous, making the multiple linear regression an appropriate analysis for the variable type, number of variables, and research objective. In order to determine whether or not the effect of African Americans on HIV rates is different in Deep South counties as compared to other counties, the researcher created two models consisting of all cases. The first model includes Deep South, percentage of African Americans, and all other study variables. In the second model, Deep South, percentage of African Americans, and a Deep South * percentage of African Americans interaction term was analyzed. This allowed the researcher to examine whether the Deep South influence the mean of HIV rates, while holding the percentage of African Americans constant.

**Tests of Assumptions of Multiple Regression**

Assumptions of the multiple linear regression include approximate normality, linearity, and homoscedasticity, as well as absence of multicollinearity. A quantile quantile (QQ) plot was used to assess the assumption of approximate normality. If the datapoints generally follow the
theoretical diagonal line on the QQ plot, the assumption is met (Stevens, 2009). A scatterplot of the residuals was used to assess the assumptions of approximate linearity and homoscedasticity. If the datapoints generally form a random, block shaped pattern, with no obvious cone shaped or U-shaped pattern, the assumptions of linearity and homoscedasticity are met (Stevens, 2009).

Absence of multicollinearity was assessed using variance inflation factors (VIFs). VIFs below 5.00 are ideal, while 10.00 constitutes the maximum upper limit before parameters become extremely biased from multicollinearity (Stevens, 2009). Variables with VIFs higher than 10.00 were removed from the model until appropriate VIFs were found in order to provide more trustworthy regression results. Although this will reduce the complexity of the model, all of the individual bivariate relationships between the aforementioned predictor variables and the variable of HIV prevalence have already been statistically tested to meet Objective 2 of this study.

If it appears as if distributional assumptions (e.g., normality, linearity, homoscedasticity) are grossly violated, a binary logistic regression will be considered as an alternative. The binary logistic regression is a nonparametric regression type that utilizes a binary (e.g., two category), rather than continuous, dependent variable (Tabachnick & Fidell, 2014). This binary logistic regression does not rely upon distributional assumptions like normality, linearity, and homoscedasticity (Tabachnick & Fidell, 2014). As such, a median split of HIV prevalence into high and low categories was considered in the absence of any guiding literature.

If the overall $F$ test of the regression was significant at the .05 level, the $R^2$ value was interpreted as the proportion of variance in the dependent variable that is associated with the combination of predictor variables. The individual predictors were assessed for significance. If an individual predictor was significant, the unstandardized beta ($B$) was interpreted as an
increase in the dependent variable of $B$ amount per one unit increase in the predictor variable (Field, 2013).
CHAPTER 4. RESULTS

This chapter will present the results of the univariate, bivariate, and multivariate analysis of the current study. Univariate statistics may include means, standard deviations, skewness, and kurtosis. The researcher presented bivariate analyses for each independent variable in relation to the dependent variable. Multivariate analyses are also presented to discuss significant independent variables that significantly predict HIV transmission among African Americans in the Deep South. The data were analyzed using Intellectus Statistics (Intellectus Statistics, 2019), and an alpha level of 0.05 was used to determine significance for all analyses.

Sample Characteristics

The sample for this study consisted of 3,109 counties and county equivalents of the 48 contiguous United States, which include 3,002 counties, 64 parishes (Louisiana), 42 independent cities (1 in Maryland, 1 in Missouri, 1 in Nevada, and the remainder in Virginia), and 1 district (District of Columbia – DC). Sociodemographic characteristics included total population, percentage of the population over the age of 16 years, and population who has never been married, and HIV rates.

Sociodemographic Characteristics

As seen in Table 1, the mean for the total population of counties and county equivalents of the 48 contiguous United States was 77,279.26 ($SD = 149,449.70$) with majority being 16 years of age or older (80.21%). Regarding marital status, the proportion of the population who have never been married was slightly over one-fourth (27.31%, $SD = 6.46$). HIV rates per 100,000 for the sample had a mean of 162.12 ($SD = 145.98$).
Table 1. Sociodemographic Characteristics of Counties and County Equivalents of the 48 Contiguous United States (N = 2299-3084)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>77279.26</td>
<td>149449.70</td>
<td>3.85</td>
<td>16.75</td>
</tr>
<tr>
<td>Ages 16 and Over (%)</td>
<td>80.21</td>
<td>2.95</td>
<td>-0.25</td>
<td>0.86</td>
</tr>
<tr>
<td>Never Married (%)</td>
<td>27.31</td>
<td>6.46</td>
<td>0.83</td>
<td>0.76</td>
</tr>
<tr>
<td>HIV Rates</td>
<td>162.12</td>
<td>145.98</td>
<td>1.81</td>
<td>3.63</td>
</tr>
</tbody>
</table>

**Structural Determinants**

Structural determinants described in the current study were sex, race, educational attainment, employment status, and populations living below the poverty level in the sample of U.S. counties. As seen in Table 2, the proportion of males and females was almost equal (49.83% and 50.17%, respectively), however, the proportion of African Americans residing in counties across the United States was low (8.81%). Majority of the sample’s population 25 years and older earned a high school diploma or higher (86.30%). Although, the proportion of the population who was unemployed was low (6.21%), almost one-fourth (15.79%) report living below the national poverty level.

Table 2. Key Study Variables: Social Determinants of Counties and County Equivalents of the 48 Contiguous United States (N = 3049-3091)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49.83</td>
<td>1.71</td>
<td>1.15</td>
<td>3.20</td>
</tr>
<tr>
<td>Female</td>
<td>50.17</td>
<td>1.71</td>
<td>-1.15</td>
<td>3.20</td>
</tr>
<tr>
<td>Black Population</td>
<td>8.81</td>
<td>12.38</td>
<td>1.94</td>
<td>3.09</td>
</tr>
<tr>
<td>High School Grad or Higher</td>
<td>86.30</td>
<td>6.14</td>
<td>-0.73</td>
<td>0.10</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6.21</td>
<td>2.69</td>
<td>0.61</td>
<td>0.81</td>
</tr>
<tr>
<td>Below Poverty Level</td>
<td>15.79</td>
<td>6.08</td>
<td>0.68</td>
<td>0.48</td>
</tr>
</tbody>
</table>
Intermediary Determinants

Intermediary determinants described in the current study were housing tenure, lack of health insurance coverage, and STD rates (Table 3). Observation of housing tenure find that almost three-fourths (71.77%) of housing units for the sample were owner-occupied. Less than one-quarter (10.84%) of the sample’s population had no insurance coverage. Regarding STD rates, mean scores for chlamydia, gonorrhea, and syphilis as measured per 100,000 was 351.75 (SD=220.64), 81.12 (SD=83.91), and 2.77 (SD=4.43); respectively.

Table 3. Key Study Variables: Intermediary Determinants of Counties and County Equivalents of the 48 Contiguous United States (N =3059-3080)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Occupied</td>
<td>71.77</td>
<td>7.42</td>
<td>-0.68</td>
<td>0.57</td>
</tr>
<tr>
<td>No Insurance Coverage</td>
<td>10.84</td>
<td>4.57</td>
<td>0.73</td>
<td>0.24</td>
</tr>
<tr>
<td>STD Rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlamydia</td>
<td>351.75</td>
<td>220.64</td>
<td>1.27</td>
<td>1.94</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>81.12</td>
<td>83.91</td>
<td>1.67</td>
<td>2.94</td>
</tr>
<tr>
<td>Syphilis</td>
<td>2.77</td>
<td>4.43</td>
<td>2.12</td>
<td>4.66</td>
</tr>
</tbody>
</table>

Bivariate Analysis

This section will describe the nonparametric test used to explore bivariate measures of association between the dependent variable and independent study variables. The researcher planned to conduct a series of Pearson correlations between HIV prevalence and the variables associated with sociodemographic characteristics, structural determinants, and intermediary determinants. The Pearson correlation is the appropriate analysis to assess the relationship between two continuous variables (Schober, Boer, & Schwarte, 2018). As each variable of interest consists of frequencies, each variable of interest is continuous, making the Pearson
correlation appropriate for the variable type and research objective. However, the assumptions were violated.

Spearman correlation analysis was conducted to examine the relationships between the continuous variables. Cohen's standard was used to evaluate the strength of the relationships, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988). The Spearman correlation is the nonparametric version of the Pearson correlation and does not have the same distributional requirements as the Pearson (Schober et al., 2018). The null hypothesis will be rejected if at least one bivariate relationship is significant at the .05 level.

Assumptions

A Spearman correlation requires that the relationship between each pair of variables does not change direction (Conover & Iman, 1981). The assumption is violated if the points on the scatterplot between any pair of variables appear to shift from a positive to negative to relationship. A regression line has been added to assist the interpretation. In examining the scatterplots, there appears to be a linear correlation between the independent variables and HIV rates. Figures 1-3 presents the scatterplots of the correlations.

Figure 1. Scatterplots between each variable with the regression line added.
Figure 2. Scatterplots between each variable with the regression line added.

Figure 3. Scatterplots between each variable with the regression line added.

Figure 4. Scatterplots between each variable with the regression line added.

Correlation among Predictor Variables

Among all associations shown in Table 4, the strongest significant correlation emerged between HIV rates and percentage of African Americans ($r = .75$). Moderately strong, positive correlations also emerged between HIV rates and chlamydia and gonorrhea ($r = .52$ and $r = .58$; respectively). These latter correlations mean that as county HIV rates increases chlamydia and gonorrhea rates tends to increase.
HIV rates had a positive moderate effect on total population \((r = .30)\), which indicates that HIV rates are correlated with the total population in counties. HIV rates were also moderately correlated with unemployed \((r = .37)\), living below the poverty-level \((r = .32)\), and syphilis rates \((r = .36)\). These positive correlations indicate that counties with more people who are unemployed, living below the poverty-level, and report high cases of syphilis tend to have higher rates of HIV. Moderate negative correlations emerged between HIV rates and high school grads and higher \((r = -.32)\) and owner-occupied housing \((r = -.33)\), indicating that as HIV rates in counties increase the proportion of the population possessing a high school diploma or higher and citizens who own the homes they occupy tend to decrease. Significant small correlations emerged between HIV rates and females \((r = .27)\) and no insurance coverage \((r = .29)\), indicating that as HIV rates increases the proportion of females and percentage of the population who are uninsured in U.S. counties and county-equivalents also increased.
Table 4. Spearman Correlation Matrix among Key Study Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HIV Rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Total Population</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Age</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Females</td>
<td>0.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Blacks</td>
<td>0.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. High School Grad or Higher</td>
<td>-0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Unemployed</td>
<td>0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Below Poverty-level</td>
<td>0.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. No Insurance Coverage</td>
<td>-0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Owner-Occupied Housing</td>
<td>0.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Chlamydia Rate</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Gonorrhea Rate</td>
<td>0.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Syphilis Rate</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The critical values are 0.04, 0.05, and 0.07 for significance levels of .05, .01, and .001; respectively
Multivariate Analyses

After the subsamples were combined, another intercorrelation matrix was computed, and variables with significant bivariate correlations greater than .20 with the dependent variable were included as potential predictors in the multiple regression model. Nine significant correlates emerged: total population, sex (females), race (African Americans), employment status (unemployed), below poverty-level, housing tenure (owner-occupied housing units), chlamydia, gonorrhea, and syphilis (Table 4). Correlations between HIV rates and predictor variables ranged from -.03 (age) to .75 (African Americans) with no correlation over .80, indicating a low likelihood of issues with multicollinearity for the multivariate analyses (Tabachinick & Fidell, 2014).

The multiple linear regression was used to determine the combination of independent variables that best predicted HIV transmission. Significant correlates were entered in two separate models to determine whether being in the Deep South has an effect on HIV rates, while holding the percentage of African Americans constant. Model 1 includes Deep South, percentage of African Americans, and all other variables. Model 2 includes Deep South, percentage of African Americans, and a Deep South * percentage of African Americans interaction term.

Assumption

The assumptions of the multiple linear regression include approximate normality, linearity, and homoscedasticity, as well as absence of multicollinearity. Examination of residual scatterplots revealed that there were no obvious violations of normality, linearity, or homoscedasticity (Mertler & Vannatta, 2002).

Normality. Normality was evaluated using a Q-Q scatterplot (Bates, Mächler, Bolker, & Walker, 2014; DeCarlo, 1997; Field, 2013). The Q-Q scatterplot compares the distribution of
the residuals with a normal distribution (a theoretical distribution which follows a bell curve). In the Q-Q scatterplot (Figure 4), the solid line represents the theoretical quantiles of a normal distribution. Examination of the Q-Q scatterplot revealed that the datapoints followed the theoretical diagonal line, meeting the assumption of approximate normality.

Figure 4. Q-Q scatterplot testing normality.

**Linearity and Homoscedasticity.** In Figure 5, these assumptions were evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2013; Osborne & Walters, 2002). The approximate assumptions of linearity and homoscedasticity were met because the points appear randomly distributed with a mean of zero and no apparent curvature was observed.
Absence of Multicollinearity. Variance Inflation Factors (VIFs) were computed to assess issues with multicollinearity. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). No VIFs were over 10, therefore, multicollinearity was not considered a problem for these data (Tabachinick & Fidell, 2014).

Regression results for both models significantly predicted HIV rates, Model 1:

\[ F(14,2080) = 229.60, p<.001, R^2 = 0.61; \]

Model 2:

\[ F(15,2079) = 214.33, p<.001, R^2 = 0.61 \]

These models accounted for approximately 61% of the variance in HIV rates. Among all predictors, eleven significantly contributed to the model (i.e., total population, sex, age, race, marital status, educational attainment, poverty-level, access to health care, housing tenure, and STD rates (chlamydia and gonorrhea). A summary of regression coefficients for Model 1 and Model 2 is presented in Table 5 and Table 6. Results show no significant interaction between
race and region, suggesting that moving from the Deep South to other states does not have a significant effect on the mean of HIV rates.

Table 5. Model 1: Coefficients for Multiple Regression Model Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>CI</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>51.22</td>
<td>96.45</td>
<td>[-137.92, 240.37]</td>
<td>0.00</td>
<td>0.53</td>
<td>.595</td>
</tr>
<tr>
<td>Total Population</td>
<td>0.00</td>
<td>0.00</td>
<td>[0.00, 0.00]</td>
<td>0.24</td>
<td>13.99</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Female</td>
<td>-7.45</td>
<td>1.19</td>
<td>[-9.79, -5.11]</td>
<td>-0.10</td>
<td>-6.24</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Age</td>
<td>6.56</td>
<td>0.73</td>
<td>[5.13, 7.99]</td>
<td>0.14</td>
<td>9.00</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>African Americans</td>
<td>5.88</td>
<td>0.24</td>
<td>[5.41, 6.36]</td>
<td>0.58</td>
<td>24.18</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Never Married</td>
<td>1.39</td>
<td>0.46</td>
<td>[0.48, 2.30]</td>
<td>0.06</td>
<td>2.99</td>
<td>.003</td>
</tr>
<tr>
<td>High School Grad or Higher</td>
<td>-1.55</td>
<td>0.50</td>
<td>[-2.53, -0.56]</td>
<td>-0.07</td>
<td>-3.09</td>
<td>.002</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.74</td>
<td>0.99</td>
<td>[-0.21, 3.68]</td>
<td>0.03</td>
<td>1.75</td>
<td>.080</td>
</tr>
<tr>
<td>Below Poverty-level</td>
<td>-1.73</td>
<td>0.57</td>
<td>[-2.85, -0.60]</td>
<td>-0.08</td>
<td>-3.01</td>
<td>.003</td>
</tr>
<tr>
<td>No Insurance Coverage</td>
<td>3.00</td>
<td>0.53</td>
<td>[1.96, 4.05]</td>
<td>0.11</td>
<td>5.64</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Owner-Occupied Housing Units</td>
<td>-1.00</td>
<td>0.35</td>
<td>[-1.69, -0.31]</td>
<td>-0.06</td>
<td>-2.85</td>
<td>.004</td>
</tr>
<tr>
<td>Chlamydia Rates</td>
<td>-0.01</td>
<td>0.02</td>
<td>[-0.05, 0.02]</td>
<td>-0.02</td>
<td>-0.75</td>
<td>.453</td>
</tr>
<tr>
<td>Gonorrhea Rates</td>
<td>0.12</td>
<td>0.04</td>
<td>[0.04, 0.20]</td>
<td>0.08</td>
<td>3.00</td>
<td>.003</td>
</tr>
<tr>
<td>Syphilis Rates</td>
<td>3.05</td>
<td>0.46</td>
<td>[2.15, 3.95]</td>
<td>0.10</td>
<td>6.64</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>State Other States</td>
<td>5.74</td>
<td>6.57</td>
<td>[-7.15, 18.63]</td>
<td>0.02</td>
<td>0.87</td>
<td>.382</td>
</tr>
</tbody>
</table>

Note. CI is at the 95% confidence level. Results: $F(14,2080) = 229.60, p < .001, R^2 = 0.61$
Table 6. Model 2: Coefficients for Multiple Regression Model Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>CI</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>53.81</td>
<td>96.49</td>
<td>[-135.42, 243.05]</td>
<td>0.00</td>
<td>0.56</td>
<td>.577</td>
</tr>
<tr>
<td>Total Population</td>
<td>0.00</td>
<td>0.00</td>
<td>[0.00, 0.00]</td>
<td>0.23</td>
<td>13.79</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Female</td>
<td>-7.47</td>
<td>1.19</td>
<td>[-9.81, -5.13]</td>
<td>-0.10</td>
<td>-6.26</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Age</td>
<td>6.50</td>
<td>0.73</td>
<td>[5.07, 7.94]</td>
<td>0.14</td>
<td>8.88</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>African Americans</td>
<td>5.67</td>
<td>0.33</td>
<td>[5.02, 6.33]</td>
<td>0.56</td>
<td>16.94</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Never Married</td>
<td>1.40</td>
<td>0.46</td>
<td>[0.49, 2.32]</td>
<td>0.06</td>
<td>3.02</td>
<td>.003</td>
</tr>
<tr>
<td>High School Grad and Higher</td>
<td>-1.47</td>
<td>0.51</td>
<td>[-2.46, -0.47]</td>
<td>-0.07</td>
<td>-2.90</td>
<td>.004</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.74</td>
<td>0.99</td>
<td>[-0.20, 3.68]</td>
<td>0.03</td>
<td>1.76</td>
<td>.079</td>
</tr>
<tr>
<td>Below Poverty-level</td>
<td>-1.65</td>
<td>0.58</td>
<td>[-2.79, -0.52]</td>
<td>-0.07</td>
<td>-2.85</td>
<td>.004</td>
</tr>
<tr>
<td>No Insurance Coverage</td>
<td>3.00</td>
<td>0.53</td>
<td>[1.96, 4.05]</td>
<td>0.11</td>
<td>5.64</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Owner Occupied Housing Units</td>
<td>-0.98</td>
<td>0.35</td>
<td>[-1.67, -0.29]</td>
<td>-0.05</td>
<td>-2.78</td>
<td>.006</td>
</tr>
<tr>
<td>Chlamydia Rates</td>
<td>-0.01</td>
<td>0.02</td>
<td>[-0.05, 0.02]</td>
<td>-0.02</td>
<td>-0.73</td>
<td>.468</td>
</tr>
<tr>
<td>Gonorrhea Rates</td>
<td>0.12</td>
<td>0.04</td>
<td>[0.04, 0.20]</td>
<td>0.07</td>
<td>2.83</td>
<td>.005</td>
</tr>
<tr>
<td>Syphilis Rates</td>
<td>3.09</td>
<td>0.46</td>
<td>[2.19, 4.00]</td>
<td>0.10</td>
<td>6.70</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>State Other States</td>
<td>-1.12</td>
<td>9.96</td>
<td>[-20.67, 18.42]</td>
<td>-0.00</td>
<td>-0.11</td>
<td>.910</td>
</tr>
<tr>
<td>Black: State Other States</td>
<td>0.36</td>
<td>0.39</td>
<td>[-0.41, 1.13]</td>
<td>0.02</td>
<td>0.92</td>
<td>.360</td>
</tr>
</tbody>
</table>

*Note. CI is at the 95% confidence level. Results: $F(15,2079) = 214.33, p < .001, R^2 = 0.61$*
CHAPTER 5. DISCUSSION AND CONCLUSION

This chapter presents a summary of the current study. A discussion of the results and major findings are provided along with conclusions derived from the findings. Limitations of the study are briefly described. Lastly, implications for future research and the conclusion are delineated.

Summary of the Study

The goal of this study was to examine whether key social determinants of health variables predict HIV transmission rates among African Americans residing in the Deep South given the legacy of slavery and historical racism in this region. Variables of interest were collected from counties and county-equivalents of the 48 contiguous United States, which provided an opportunity to determine if the HIV/AIDS epidemic look different in the Deep South among African Americans as compared to other regions. Results showed no significant interaction between race and region. Race is the variable that has the strongest relationship with HIV rates regardless of region. Based on this sample, this suggests that moving from counties in the Deep South to counties in other states does not have a significant effect on the mean of HIV rates. These findings align with national epidemiological data (CDC, 2014, 2016(b), 2018(a)), which indicates that African Americans are disproportionately impacted by HIV, nationally.

Devastating rates of HIV/AIDS among African Americans in the Deep South are driven in part by socioeconomic factors unique to this region. Socioeconomic factors influence social determinants of health that impacts overall health outcomes. In comparison to other regions in the country, people residing in states comprising the Deep South tend to have poorer overall health outcomes because of factors such as poverty, income inequality, and lack of education. Results of this study also found significant correlations between HIV rates and other constructs of the Social Determinants Health theoretical framework. More specifically, poverty level,
educational level, housing tenure, sex (female), unemployment rates, lack of insurance coverage, and STDs were significantly correlated with HIV rates. The literature suggests that social determinants of health (i.e., social, structural, and political factors) expose inequities and inequalities that contribute to overall poorer health outcomes among already marginalized populations.

Although not examined in the current study, inherited cultural and historical factors unique to the Deep South also serve as roadblocks to HIV prevention and treatment efforts in the African American community. In addition to slavery, the South instituted laws and social policies rooted in anti-black sentiments devised to disenfranchise further African Americans, which contribute to the group’s contemporary socioeconomic position. Literature examining the impact of HIV among African Americans in the Deep South consistently address the role of historical racism and cultural beliefs such as stigma, conspiracy theories, and medical mistrust that perpetuate HIV transmission. According to the Department of Health and Human Services (2009), individuals or groups experiencing the most significant obstacles to receiving optimal health are those who have systematically experienced social and economic disadvantages.

While some progress has been made to address social determinants that contribute to HIV disparities in the South using various frameworks, presently, there is a shortage of research that explicitly examine predictors of HIV infections among African Americans in the Deep South using constructs from the WHO’s Social Determinants of Health theoretical framework. This framework is an action-driven approach that not only explores social and structural factors that contribute to social determinants of health inequality but also focuses on political influences. No study to this researcher’s knowledge has focused on the influence of social determinates on the severity of HIV/AIDS in the Black community in the Deep South using constructs of the framework previously mentioned.
In this cross-sectional, correlational study, the researcher conducted a secondary data analysis using 2013-2017 ACS 5-year estimates to collect social determinants of health data. As well, secondary data analysis was conducted to collect 2016 HIV and 2015 STD data using the CDC’s NCHHSTP AtlasPlus. The present study provided a comprehensive description of counties’ sociodemographic characteristics (i.e., total population, age, and marital status), structural determinants (i.e., sex, race, educational attainment, employment status, and poverty-level) and intermediary (i.e., access to health care system, housing tenure, and STD rates) determinants. This study also examined interrelationships among key variables of interest and identified relevant empirical correlates of the dependent variable. Multivariate regression analyses yielded a set of predictors that explained the variance in HIV rates. To determine whether or not the effect of the percentage of African Americans in counties on HIV rates differs in the Deep South as compared to other counties, an interaction term was included in the model with Deep South and percentage of African Americans (i.e., Deep South * % African Americans), which might carry forward the legacy of historical racism in the region.

Objective 1

Objective 1 was to describe sociodemographic characteristics, structural determinants, and intermediary determinants for counties and county-equivalents of the 48 contiguous United States. The sample for this study consisted of 3,109 counties and county-equivalents, which include 3,002 counties, 64 parishes (Louisiana), 42 independent cities (1 in Maryland, 1 in Missouri, 1 in Nevada, and the remainder in Virginia), and 1 district (District of Columbia – DC). The sociodemographic characteristics described included total population, age (percentage of the population age of 16 years and older), and marital status (i.e., proportion never married). Structural determinants described include sex, race (i.e., African Americans), educational attainment (i.e., high school graduate and higher), employment status (i.e., unemployed), and
proportion of the population living below the poverty level. The intermediary determinants described include housing tenure (i.e., owner-occupied housing units), health care system (i.e., no insurance coverage), and STD rates (chlamydia, gonorrhea, and syphilis).

The average total population of counties and county-equivalents of the 48 contiguous United States was 77,279.26 with the majority of the population being 16 years of age or older (80.21%). Slightly over a quarter of the population report never being married (27.31%). HIV rates per 100,000 for the U.S. had a mean score of 162.12.

Several social determinants were assessed. The proportion of the population residing in counties across the nation who identify as male and female was almost identical (49.83% and 50.17%, respectively). However, only a small proportion identified as Black (8.81%). More than three-fourths (86.30%) of the population 25 years and older earned a high school diploma or higher, only 6.21% reported being unemployed, and almost a quarter of sample’s population was living below the national poverty level (15.79%).

Intermediary determinants were also described. Majority of the sample’s population own the housing units in which they resided (71.77%) at the time ACS data was collected. The proportion of population with no health insurance coverage was less than one-quarter (10.84%), which might be in result of new health care reform. The mean scores for chlamydia rates (351.75) per 100,000 exceeded national HIV rates. Gonorrhea and syphilis rates as measured per 100,000 were 81.12 and 2.77; respectively.

**Objective 2**

Objective 2 was to explore significant interrelations between HIV prevalence and sociodemographic characteristics, structural determinants, and intermediary determinants variable using Spearman correlation analysis. The most significant relationship emerged between HIV rates and the proportion of the county that is Black, which is consistent with
previous research (Menifee, 2012). Aligning with previous research findings on the interrelationship between HIV rates and STDs (Aidmore et al., 2014; Reif et al., 2017a), strong, positive correlations were found between county HIV rates and chlamydia and gonorrhea rates. An assessment of HIV rates and the percentage of the county that was unemployed was moderately significant. Similarly, an assessment of HIV rates and proportion of the county living below the federal poverty level was found to be moderately significant. Lastly, a moderate significance was found between HIV rates and county syphilis rates. The current study found that the proportion of the county that is female, as well as the percentage with no insurance coverage, have only a small effect on HIV rates.

**Objective 3**

Objective 3 was to determinants factors that best predict HIV rates specific to African Americans in the Deep South by investigating sociodemographic characteristics, structural determinants, and intermediary in counties and county-equivalents of the 48 contiguous United States. To determine whether the effect of African Americans on HIV rates differ in the Deep South as compared to other regions of the country, the researcher created two models consisting of all cases. The first model includes Deep South, the percentage of African Americans, and all other study variables. In the second model, Deep South, percentage of African Americans, and a Deep South * percentage of African Americans interaction term was analyzed. This allowed the researcher to examine whether the Deep South influence the mean of HIV rates while holding the percentage of African Americans constant.

Predictive (independent) variables used in the multiple regression analysis were age (percentage 16 years and older), marital status (never married), sex (proportion of females), race (percentage of African Americans), educational attainment (percentage of the population 25 years and older with high school graduates or higher), employment status (unemployed),
percentage living below the poverty level, health care system (percentage with no insurance coverage), housing tenure (percentage of owner-occupied housing units), and STD rates (chlamydia, gonorrhea, and syphilis rates). The dependent variable in this study was HIV rates which were measured (defined) by a positive (reactive) HIV test result that has been confirmed using additional testing with a highly specific test (CDC, 2011) such as, the Western Blot. CDC (2011) requires that both preliminary HIV-positive rapid and conventional tests be confirmed by additional testing before an individual is diagnosed with HIV.

The strongest predictors of HIV rates were percentages of females, the proportion of the population aged 16 and over, percentage of African Americans, percentage with no insurance coverage, and syphilis rates. The proportion of county residents that are in owner-occupied housing units, living below the poverty level, earned a high school degree or higher, and have never been married and counties’ gonorrhea rates also showed significance in predicting HIV. The current study yielded a multivariate model that explained approximately 61% of the variance in counties HIV rates is explained by key study variables. Interestingly, results show no significant interaction between race and region. Based on the observation, this suggests that if the percentage of African Americans move from the Deep South to other regions of the country, it would not have a significant effect on the mean of HIV rate. Proposing that the proportion of African Americans in counties remain one of the strongest predictors of HIV regardless of geographical region.

**Limitations of the Study**

The results of this study can be the underpinning for exploring predictors of HIV among African Americans in the Deep South using constructs from the WHO’s Social Determinants of Health framework. However, the study is not without noteworthy limitations.
In this study, the researcher conducted a secondary analysis on social determinants of health constructs of interest from the 2013-2017 ACS 5-year estimates, which were collected self-reported data. The surveys were administered to households and housing units by U.S. Census Bureau census takers which ran an increased risk of social desirability bias. Social desirability bias occurs when survey participants respond to questions in a manner that might be viewed as favorable by the researcher (Rubin & Babbie, 2013). Social desirability is a limitation for many independent systems of measurement (Dishman et al., 2001) due to under-reporting, over-reporting, or lack of reporting. For instance, heads of households may provide responses based on whether the housing unit receives safety-net services or benefits. Also, due to public assistance eligibility guidelines, heads of household may choose not to provide information at all for fear of losing benefits.

Also, since the ACS survey was based on self-reports, results may vary based on age, race, and socioeconomic status. For example, if respondents had limited education, then reading questionnaires and selecting appropriate responses independently would be difficult. Additionally, if respondents had problems comprehending survey questions, then that might affect the quality and accuracy of responses provided as well. It is also possible that respondents would be more prone to respond to specific questions according to the data collection method (i.e., face-to-face, telephone, on-line).

Limitations existed concerning county-level, HIV data which may not be an accurate interpretation of rates because of data suppression. Values on small HIV data (below 5,000 cases) are suppressed to protect personal and identifiable information of individuals diagnosed with HIV. Also, public health officials suggest that for every person diagnosed with HIV, there are 5-10 undiagnosed persons who are unaware of their serostatus. Meaning, not all individuals infected with HIV have been tested.
A potential limitation to HIV testing is confidentiality, which is particularly an issue in rural communities. Research indicates that HIV-related stigma prevents those most at-risk for HIV transmission from getting testing for fear of being seen accessing testing services or being identified as being HIV positive. Confidential HIV testing services is a name-base testing system in which testers provide their name and identifying information for reporting purposes, but all information remains confidential. However, because stigma, many people chose anonymous testing or did not test at all. Many states offer the option to test anonymously, but results are not reported to state and local health department HIV registries (CDC, 2017c), which impacts the accuracy of HIV rates. CDC’s AtlasPlus provide and report HIV data on the minimum number of persons infected with HIV.

Another limitation to the current study was health care reform which was a historical event that affected HIV rates (dependent variable). In 2010, President Obama signed into law the Patient Protection and Affordable Care Act (ACA), commonly referred to as Obamacare. The ACA provided insurance coverage to millions of American who otherwise would have no healthcare coverage. Under the ACA, states expanded Medicaid coverage (i.e., Medicaid Expansion) for uninsured populations with incomes below the federal poverty level beginning in January 2014. Passage of these healthcare reforms increased access to HIV prevention, testing, and treatment during the time ACS and HIV/STD data were collected.

The methodology also is a limitation in the current study. As a result of the present study's use of a cross-sectional (point in time) research design, it is impossible to infer causality. One of the weaknesses in cross-sectional survey design is the limitations in internal validity (Rubin & Babbie, 2013). In this case, it is not possible to state the directionality of the relationship between HIV rates and key variables of interest. For example, the study shows that there is a significant relationship between HIV rates and chlamydia, but it not possible to
determine causality based on the results of this study. Therefore, in future studies, it would be useful to try to determine the nature of the relationship between HIV rates and chlamydia. This is important because there are some very different implications for intervention based on the cause of HIV transmission. This would guide social workers, psychologist, and other professionals in determining how to intervene.

**Implications for Social Work**

By virtue of training, social workers possess the expertise to develop interventions and advocate for public health policies that impact underserved, underrepresented, and marginalized groups surrounding issues of health inequality, social injustices, and race-related disparities (International Federation of Social Workers [IFSW], 2012; NASW, 1999). As indicated throughout this study, the Deep South has become the epicenter of the nation’s HIV/AIDS epidemic, with African Americans being disproportionately impacted. Although results of the study showed no significant difference between race and region on HIV rates, cultural and socioeconomic factors unique to the Deep South has led to HIV being just as much a racial justice issue as it is a public health crisis. These findings have significant implications for social work practice and research on African Americans in this region who are most at-risk as well as PLWHA.

Results of this study indicated that socioeconomic factors such as education level, unemployment rates, lack of insurance coverage, and STD rates must be addressed in order to decrease transmission rates among African Americans in this region effectively. Research indicates that African Americans lack access to an adequate education, more likely to be un-or underinsured, unemployed, and experience greater rates of STDs. Social workers must advocate and support social policies that impact factors that contribute to HIV transmission. For example,
policies that support the implementation or inclusion of comprehensive sex education programs in the school system.

Further, the findings of this study showed a relationship between females and HIV rates. Social workers in the field of HIV/AIDS must develop or implement culturally and gender-specific interventions to address factors that contribute to HIV rates among African American subpopulations such as women, adolescents, and MSM. Interventions that promote gender empowerment and condom negation-skills among women and adolescent females are needed to instill the idea of ownership of body, sexuality, and serostatus. Also, HIV lifetime risk for African American MSM is 1 in 2, meaning, this population has a 50% chance of contracting HIV at some point in their lifetime. For African American MSM in the Deep South, where the intersection of stigma, homophobia, and HIV run deep, accessing HIV testing and treatment services are often met with negativity. Social workers and other service providers must address not only the issues mentioned but also issues surrounding internalized homophobia. Research indicates that internalized homophobia is often a factor that influences the decision not to access prevention and treatment services among this population. These factors serve as barriers to healthcare for this already marginalized group.

A gap identified in the literature was the absence of medical providers, researchers, and social workers in racial/ethnic communities serving individual, families, and communities infected and affected by HIV. Due to the historical mistreatment of African Americans, medical mistrust and conspiracy theories serve as a barrier to care for many in communities most in need. The presence of social workers and other providers that the African American community trust and can identify with might impact the decision to access prevention and treatment services.
Implications for Future Research

The current study used a quantitative, cross-sectional analysis which was an appropriate analysis to gather information about the prevalence of disease outcomes or exposures (Setia, 2016). The cross-sectional design also provides an opportunity to estimate the odds ratios to study the relationship between exposure and outcomes. As previously noted, this analysis is one point-in-time measurement, which does not allow the opportunity to draw any conclusions about the causality of relationships. Future research should use more rigorous experimental designs that investigate causality in the relationship between HIV rates and variables of interest.

There also exists a need for more qualitative social work research to investigate the trend of HIV among racial/ethnic minority groups. Qualitative analysis will provide the opportunity to gather richer and more in-depth data on social determinants that contribute to HIV/AIDS among underserved, underrepresented, and underfunded communities of color.

Future research must address the gaps in the representation of people of color in HIV-related research at the community, medical, academic-level. This researcher will address this gap in future research by investigating Black representation in community-based organizations on the frontlines on fighting the HIV epidemic.

Further, future social work research needs to continue to explore the possibility of different culturally-specific assessment instruments that address barriers to prevention and treatment, such as medical mistrust, conspiracy theories, and historical racism. Such instruments paired with effective culturally congruent interventions designed to prevent HIV among African Americans might aid in decreasing disparaging rates among this population. Although the intersection of HIV, rural communities, and religion in the Deep South is not the focus of this study, further investigation of these structural factors as predictors of HIV transmission among
African Americans in this region is recommended (CDC, 2016a; Foster et al., 2011; Fullilove, 2006; Scott & Wilson, 2011). Future social work research should explore the role of religion and the African American Church in prevention efforts. The church has been a strong social institution in the African American community dating back to slavery when ancestors prayed of one day going to the Promise Land. NHAS (2010) acknowledges the vital role of faith-based communities in addressing HIV/AIDS through community collaborations between government entities, businesses, the scientific community, PLWHA, and other stakeholders with the collective goal of decreasing HIV prevalence and health disparities. Therefore, future social work research such investigate the influence of this social institution with regards to HIV prevention and treatment services.

Conclusions

This study intended to give support to the notion that disparaging rates of HIV/AIDS observed among African Americans in the Deep South were directly correlated to historical factors unique to this region. Although racial disparities in HIV infections in the United States extends far beyond borders of the Deep South, the devastation of the disease in this region has become a public health crisis among African Americans. Findings from this study identified the need for interventions and policies that address factors that perpetuate HIV among African Americans in the Deep South. Specifically, interventions must address the impact of historical racism, conspiracy theories, and mistrust of the very health system in charge of preventing the spread of HIV in the African American community. In order to be effective, HIV interventions have to engage in conversations about the influence of the Tuskegee Study on decisions to seek HIV testing and treatment services within the African American community. Further, interventions and research must address the disproportionality of incarceration of African American males and its impact of HIV rates in African American communities. Social workers
must be willing to address social and policy influences that are contributing to the HIV/AIDS epidemic in already marginalized communities.
REFERENCES


87


Morello-Frosch, R., & Shenassa, E. D. (2006). The environmental “riskscape” and social inequality: Implications for explaining maternal and child health Disparities. Environmental Health Perspectives, 114(8), 1150–1153. https://doi-org.libezp.lib.lsu.edu/10.1289/ehp.8930


94


APPENDIX A. IRB EXEMPTION APPROVAL

ACTION ON EXEMPTION APPROVAL REQUEST

TO: Kayla Allison
Social Work

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: January 25, 2019

RE: IRB# E11450

TITLE: Social Determinants of Health Inequality: Predictors of HIV Transmission among African Americans in the Deep South


Review Date: 1/25/2019

Approved X Disapproved

Approval Date: 1/25/2019 Approval Expiration Date: 1/24/2022

Exemption Category/Paragraph: 44.0

Signed Consent Waived?: N/A

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable): ____________________________

By: Dennis Landin, Chairman ____________________________

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects.
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant arising from the study.
8. SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc. Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.

* All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsue.edu/irb
APPENDIX B. THE AMERICAN COMMUNITY SURVEY

The American Community Survey

This booklet shows the content of the American Community Survey questionnaire.

Start Here
Response online today at:
https://respond.census.gov/acs
OR
Complete this form and mail it back as soon as possible.

If you need help or have questions about completing this form, please call 1-800-823-5820. The telephone call is free.

¿NECESITA AYUDA? Si usted habla espanol y necesita ayuda para completar su cuestionario, llame al numero sencillo al 1-877-833-5628. Usted tambien puede completar su cuestionario por telefono con un entrevistador que habla espanol. O puede responder por Internet en:
https://respond.census.gov/acs

For more information about the American Community Survey, visit our website at:
https://www.census.gov/acs

Please print today’s date.
Month Day Year

Please print the name and telephone number of the person who is filling out this form. We will only contact you if needed for official Census Bureau business.
Last Name
First Name
MI
Area Code - Number

How many people are living or staying at this address?
• INCLUDE everyone who is living or staying here for more than 2 months.
• INCLUDE yourself if you are living here for more than 2 months.
• INCLUDE anyone else staying here who does not have another place to stay even if they are here for 2 months or less.
• DO NOT INCLUDE anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

Fill out pages 2, 3, and 4 for everyone, including yourself, who is living or staying at this address for more than 2 months. Then complete the rest of the form.
### Person 3

1. **What is Person 3’s name?**
   - [ ] Last Name (please print) __________
   - [ ] First Name __________

2. **How is this person related to Person 1?** Mark (X) ONE box.
   - [ ] Husband or wife
   - [ ] Biological son or daughter
   - [ ] Adopted son or daughter
   - [ ] Stepson or stepdaughter
   - [ ] Brother or sister
   - [ ] Father or mother
   - [ ] Grandchild
   - [ ] Parent-in-law
   - [ ] Other relative

3. **What is Person 3’s sex?** Mark (X) ONE box.
   - [ ] Male
   - [ ] Female

4. **What is Person 3’s age and what is Person 3’s date of birth?**
   - [ ] Age (in years) ____________
   - [ ] Month ____________
   - [ ] Day ____________
   - [ ] Year of birth ____________

5. **Is Person 3 of Hispanic, Latino, or Spanish origin?**
   - [ ] No, not of Hispanic, Latino, or Spanish origin
   - [ ] Yes, Mexican, Mexican American, Chicano
   - [ ] Yes, Puerto Rican
   - [ ] Yes, Cuban
   - [ ] Yes, another Hispanic, Latino, or Spanish origin — Print origin, for example, Argentinian, Colombian, Dominica, Nicaraguan, Salvadoran, Spanish, and so on.

6. **What is Person 3’s race?** Mark (X) one or more boxes.
   - [ ] White
   - [ ] Black or African Am.
   - [ ] American Indian or Alaska Native — Print name of enrolled or principal tribe.
   - [ ] Asian Indian
   - [ ] Chinese
   - [ ] Filipino
   - [ ] Other Asian — Print race, for example, Hmong, Lao, Thai, Vietnamese, Cambodian, and so on.
   - [ ] Native Hawaiian
   - [ ] Japanese
   - [ ] Korean
   - [ ] Samoan
   - [ ] Other Pacific Islander — Print race, for example, Hawaiian, Filipino, Tongan, and so on.
   - [ ] Same other race — Print race.

### Person 4

1. **What is Person 4’s name?**
   - [ ] Last Name (please print) __________
   - [ ] First Name __________

2. **How is this person related to Person 1?** Mark (X) ONE box.
   - [ ] Husband or wife
   - [ ] Biological son or daughter
   - [ ] Adopted son or daughter
   - [ ] Stepson or stepdaughter
   - [ ] Brother or sister
   - [ ] Father or mother
   - [ ] Grandchild
   - [ ] Parent-in-law
   - [ ] Other relative

3. **What is Person 4’s sex?** Mark (X) ONE box.
   - [ ] Male
   - [ ] Female

4. **What is Person 4’s age and what is Person 4’s date of birth?**
   - [ ] Age (in years) ____________
   - [ ] Month ____________
   - [ ] Day ____________
   - [ ] Year of birth ____________

5. **Is Person 4 of Hispanic, Latino, or Spanish origin?**
   - [ ] No, not of Hispanic, Latino, or Spanish origin
   - [ ] Yes, Mexican, Mexican American, Chicano
   - [ ] Yes, Puerto Rican
   - [ ] Yes, Cuban
   - [ ] Yes, another Hispanic, Latino, or Spanish origin — Print origin, for example, Argentinian, Colombian, Dominica, Nicaraguan, Salvadoran, Spanish, and so on.

6. **What is Person 4’s race?** Mark (X) one or more boxes.
   - [ ] White
   - [ ] Black or African Am.
   - [ ] American Indian or Alaska Native — Print name of enrolled or principal tribe.
   - [ ] Asian Indian
   - [ ] Chinese
   - [ ] Filipino
   - [ ] Other Asian — Print race, for example, Hmong, Lao, Thai, Vietnamese, Cambodian, and so on.
   - [ ] Native Hawaiian
   - [ ] Japanese
   - [ ] Korean
   - [ ] Samoan
   - [ ] Other Pacific Islander — Print race, for example, Hawaiian, Filipino, Tongan, and so on.
   - [ ] Same other race — Print race.
**Person 5**

1. **What is Person 5's name?**
   - Last Name (Please print) ____________________________
   - First Name ____________________________

2. **How is this person related to Person 1?** (Mark one box)
   - Husband or wife
   - Biological son or daughter
   - Adopted son or daughter
   - Stepson or stepdaughter
   - Brother or sister
   - Father or mother
   - Grandchild
   - Parent-in-law
   - Other relative
   - Son-in-law or daughter-in-law
   - Other relative
   - Roommate or boarder
   - Housemate or roommate
   - Unmarried partner
   - Foster child
   - Other nonrelative

3. **What is Person 5's sex?** (Mark one box)
   - Male
   - Female

4. **What is Person 5's age and what is Person 5's date of birth?**
   - Please report babies as age 0 when the child is less than 3 year old.
   - Age (in years) ______
   - Month ______
   - Day ______
   - Year of birth ______

   **NOTE:** Please answer BOTH Questions 5 about Hispanic origin and Question 6 about race. For this survey, Hispanic origins are not races.

5. **Is Person 5 of Hispanic, Latino, or Spanish origin?**
   - No, not of Hispanic, Latino, or Spanish origin
   - Yes, Mexican, Mexican Am., Chicano
   - Yes, Puerto Rican
   - Yes, Cuban
   - Yes, another Hispanic, Latino, or Spanish origin — Print origin, e.g., Colombian, Dominican, Nicaraguan, Nicaraguense, Salvadoran, and so on. 

6. **What is Person 5's race?** (Mark one or more boxes)
   - White
   - Black or African Am.
   - American Indian or Alaska Native — Print name of enrolled or principal tribe
   - Asian
   - Asian Indian
   - Chinese
   - Filipino
   - Other Asian — Print race, for example, Filipina, Guamanian or Chamorro, Samoan
   - Japanese
   - Korean
   - Native Hawaiian
   - Other Pacific Islander — Print race, for example, Alaskan, Hawaiian, and so on
   - Some other race — Print race

7. **If there are more than five people living or staying here, print their names in the spaces for Person 6 through Person 12. We may call you for more information about them.**

---

**Person 6**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 7**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 8**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 9**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 10**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 11**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______

**Person 12**

- Last Name (Please print) ____________________________
- First Name ____________________________
- Sex: Male ☐ Female ☐ Age (in years) ______
### Housing

Please answer the following questions about the house, apartment, or mobile home at the address on the mailing label.

#### 1. Which best describes this building? Include all apartments, lots, etc., even if vacant.
   - [ ] A mobile home
   - [ ] A one-family house detached from any other house
   - [ ] A one-family house attached to one or more houses
   - [ ] A building with 2 apartments
   - [ ] A building with 3 or 4 apartments
   - [ ] A building with 5 to 9 apartments
   - [ ] A building with 10 to 19 apartments
   - [ ] A building with 20 to 49 apartments
   - [ ] A building with 50 or more apartments
   - [ ] Boat, RV, van, etc.

#### 2. About when was this building first built?
   - [ ] 2009 or later – Specify year
   - [ ] 1999 to 1999
   - [ ] 1993 to 1998
   - [ ] 1978 to 1979
   - [ ] 1975 to 1979
   - [ ] 1970 to 1979
   - [ ] 1965 to 1979
   - [ ] 1960 to 1969
   - [ ] 1939 or earlier

#### 3. When did PERSON 1 (listed on page 2) move into this house, apartment, or mobile home?
   - Month:  
   - Year:  

#### 4. How many acres is this house or mobile home on?
   - [ ] Less than 1 acre → SKIP to question 6
   - [ ] 1 to 9.9 acres
   - [ ] 10 or more acres

#### 5. IN THE PAST 12 MONTHS, what were the actual sales of all agricultural products from this property?
   - [ ] None
   - [ ] $1 to $99
   - [ ] $100 to $2,499
   - [ ] $2,500 to $4,999
   - [ ] $5,000 to $9,999
   - [ ] $10,000 or more

#### 6. How many separate rooms are in this house, apartment, or mobile home?

   - Rooms must be separated by built-in architrave or walls that extend out at least 8 inches and go from floor to ceiling.
   - Include bedrooms, kitchens, etc.
   - EXCLUDE bathrooms, porches, balconies, foyers, halls, or unfinished basements.
   - Specify number of rooms.

#### 7. Does this house, apartment, or mobile home have...
   - [ ] Hot and cold running water?
   - [ ] A bathtub or shower?
   - [ ] A sink with a faucet?
   - [ ] A stove or range?
   - [ ] A refrigerator?
   - [ ] Telephone service from which you can both make and receive calls? Include cell phones.

#### 8. At this house, apartment, or mobile home - do you or any member of this household own or use any of the following types of computer?
   - [ ] Desktop or laptop
   - [ ] Smartphone
   - [ ] Tablet or other portable wireless computer
   - [ ] Some other type of computer
   - Specify

#### 9. At this house, apartment, or mobile home - do you or any member of this household have access to the Internet?
   - [ ] Yes, by paying a cell phone company or Internet service provider
   - [ ] Yes, without paying a cell phone company or Internet service provider → SKIP to question 11
   - [ ] No access to the Internet at this house, apartment, or mobile home → SKIP to question 11

#### 10. Do you or any member of this household have access to the Internet using a...
   - [ ] Cellular data plan for a smartphone or other mobile device?
   - [ ] Broadband (high speed) Internet service such as cable, fiber optic, or DSL service installed in this household?
   - [ ] Satellite Internet service installed in this household?
   - [ ] Dial-up Internet service installed in this household?
   - [ ] Some other service?
   - Specify service

---

105
### Housing (continued)

#### 11 How many automobiles, vans, and trucks of one ton capacity or less are kept at home for use by members of this household?
- [ ] None
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5
- [ ] 8 or more

#### 12 Which fuel is used MOST for heating this house, apartment, or mobile home?
- [ ] Gas from underground pipes serving the neighborhood
- [ ] Gas bottled, tank, or LP
- [ ] Electric
- [ ] Fuel oil, kerosene, etc.
- [ ] Coal or coke
- [ ] Wood
- [ ] Solar energy
- [ ] Other fuel
- [ ] No fuel used

#### 13 a. LAST MONTH, what was the cost of electricity for this house, apartment, or mobile home?
- [ ] Included in rent or condominium fee
- [ ] No charge or electricity not used

**Last month's cost – Dollars**

$[ ]

**OR**

#### 13 b. LAST MONTH, what was the cost of gas for this house, apartment, or mobile home?
- [ ] Included in rent or condominium fee
- [ ] No charge or gas not used

**Last month's cost – Dollars**

$[ ]

**OR**

#### 14 IN THE PAST 12 MONTHS, did you or any member of this household receive benefits from the Food Stamp Program or SNAP (Supplemental Nutrition Assistance Program)? Do NOT include WIC, the School Lunch Program, or assistance from food banks.
- [ ] Yes
- [ ] No

#### 15 Is this house, apartment, or mobile home part of a condominium?
- [ ] Yes
- [ ] No

**Monthly amount – Dollars**

$[ ]

**OR**

#### 15 Is this house, apartment, or mobile home – Mark ONE box.
- [ ] Owned by you or someone in this household with a mortgage or loan
- [ ] Owned by you or someone in this household free and clear without a mortgage or loan
- [ ] Rented
- [ ] Occupied without payment of rent – SNAP to G on the next page

---

**Page 106**
**Housing (continued)**

**B**

17. a. What is the monthly rent for this house, apartment, or mobile home?  
   Monthly amount – Dollars
   [Blank]

17. b. Does the monthly rent include any meals?  
   □ Yes  
   □ No

18. Answer questions 18 – 22 if you or any member of this household OWNS
   or is RENTING this house, apartment, or mobile home. Otherwise, SKIP to
   question 25.

19. About how much do you think this house and lot, apartment, or mobile
   home (and lot, if owned) would sell for if it were for sale?  
   Amount – Dollars
   [Blank]

20. What are the annual real estate taxes on THIS property?  
   Annual amount – Dollars
   [Blank]

20. What is the annual payment for fire, hazard, and flood insurance on THIS
   property?  
   Annual amount – Dollars
   [Blank]

21. a. Do you or any member of this household have a mortgage, deed of trust, contract to purchase, or similar
debt on THIS property?  
   □ Yes, mortgage, deed of trust, or similar debt  
   □ Yes, contract to purchase  
   □ No → SKIP to question 22a

21. b. How much is the regular monthly mortgage payment on THIS property?  
   Include payment only on FIRST mortgage or contract to purchase.  
   Monthly amount – Dollars
   [Blank]

21. c. Does the regular monthly mortgage payment include payments for real
   estate taxes on THIS property?  
   □ Yes, taxes included in mortgage payment  
   □ No, taxes paid separately or not required

21. d. Does the regular monthly mortgage payment include payments for fire,
   hazard, or flood insurance on THIS property?  
   □ Yes, insurance included in mortgage payment  
   □ No, insurance paid separately or no insurance

22. a. Do you or any member of this household have a second mortgage or a home equity loan on THIS property?  
   □ Yes, home equity loan  
   □ Yes, second mortgage  
   □ Yes, second mortgage and home equity loan  
   □ No → SKIP to D

22. b. How much is the regular monthly payment on all second or junior
   mortgages and all home equity loans on THIS property?  
   Monthly amount – Dollars
   [Blank]

23. What are the total annual costs for personal property taxes, site rent,
   registration fees, and license fees on THIS mobile home and its site?  
   Encl: real estate taxes.  
   Annual costs – Dollars
   [Blank]

24. Answer questions about PERSON 1 on the next page if you listed at least one person
   on page 2. Otherwise, SKIP to page 25 for the mailing instructions.
### Person 1 (continued)

1. **Is this person CURRENTLY covered by any of the following types of health insurance or health coverage plans?**
   - Yes
   - No
   a. Insurance through a current or former employer or union (of this person or another family member)
   b. Insurance purchased directly from an insurance company (of this person or another family member)
   c. Medicare, for people 65 and older, or people with certain disabilities
   d. Medicaid, Medical Assistance, or any state or federal government assistance program for those with low incomes or a disability
   e. TRICARE or other military health care
   f. VA (including those who have ever used or enrolled for VA health care)
   g. Indian Health Service
   h. Any other type of health insurance or health coverage plan—Specify

2. **Is this person deaf or does he/she have serious difficulty hearing?**
   - Yes
   - No

3. **Is this person blind or does he/she have serious difficulty seeing even when wearing glasses?**
   - Yes
   - No

4. **Answer question 5a-c if this person is female and 15-50 years old. Otherwise, SKIP to the questions for Person 2 on page 12.**

5. **Because of a physical, mental, or emotional condition, does this person have serious difficulty concentrating, remembering, or making decisions?**
   - Yes
   - No

6. **Does this person have serious difficulty walking or climbing stairs?**
   - Yes
   - No

7. **Does this person have difficulty dressing or bathing?**
   - Yes
   - No

8. **How long has this grandparent been responsible for these grandchildren?**
   - Less than 6 months
   - 6 to 11 months
   - 1 to 2 years
   - 3 or 4 years
   - 5 or more years

9. **Has this person ever served on active duty in the U.S. Armed Forces, Reserve, or National Guard?**
   - Never served in the military—SKIP to question 26.
   - On active duty now—SKIP to question 26.
   - On active duty in the past, but not now.
   - In the past 12 MONTHS did this person get...
     - Married?
     - Widowed?
     - Divorced?

10. **In what year did this person last get married?**
    - Year

11. **In the PAST 12 MONTHS, has this person given birth to any children?**
    - Yes
    - No

12. **Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?**
    - Yes
    - No → SKIP to question 26

13. **Is this grandparent currently responsible for most of the basic needs of any grandchildren under the age of 18 who live in this house or apartment?**
    - Yes
    - No → SKIP to question 26

14. **What is this person's service-connected disability rating?**
    - 0 percent
    - 10 percent
    - 20 percent
    - 30 percent
    - 50 percent
    - 75 percent or higher
**Person 1 (continued)**

29. LAST WEEK, did this person work for pay at a job or business?
   - Yes ☐
   - No ☐
   - Did not work at all ☐

30. At what location did this person work LAST WEEK? If this person worked at more than one location, give all locations, and where he or she worked most last week.
   - Address (Number and street name):
     - If the exact address is not known, give a description of the location such as the building name or the relative street or intersection.
   - Name of city, town, or post office:

31. How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, mark the box of the one used for most of the distance.
   - Car, truck, or van ☐
   - Motorcycle ☐
   - Bus or trolley bus ☐
   - Subway or elevated ☐
   - Streetcar or trolley-car ☐
   - Train ☐
   - Railroad ☐
   - Ferryboat ☐
   - Other method ☐

32. How many people, including this person, usually rode to work in the car, truck, or van?
   - Person(s):

33. What time did this person usually leave home to go to work LAST WEEK?
   - Hour: __________
   - Minute: __________
   - a.m. ☐
   - p.m. ☐

34. How many minutes did it usually take this person to get from home to work LAST WEEK?
   - Minutes: __________

35. LAST WEEK, was this person on layoff from a job?
   - Yes ☐
   - No ☐

36. LAST WEEK, was this person TEMPORARILY absent from a job or business?
   - Yes, on vacation, temporary illness, maternity leave, other family/personal reasons, or bad weather, etc. ☐
   - No ☐

37. During the LAST 4 WEEKS, has this person been ACTIVELY looking for work?
   - Yes ☐
   - No ☐
   - SKIP to question 36 ☐

38. How many weeks has this person worked 9 or more weeks? Count paid time off as work.
   - Yes ☐
   - No ☐

39. How many weeks did this person work, even for a few hours, including paid vacation, paid sick leave, and military service?
   - 50 or more weeks ☐
   - 46 to 49 weeks ☐
   - 40 to 47 weeks ☐
   - 31 to 39 weeks ☐
   - 14 to 29 weeks ☐
   - 1 to 3 weeks ☐

40. During the PAST 12 MONTHS (82 weeks), did this person work 50 or more weeks? Count paid time off as work.
   - Yes ☐
   - No ☐
Person 1 (continued)

What kind of work was this person doing?
- For example, registered nurse, general manager, supervisor of order department, secretary, accountant.

What were this person's most important activities or duties?
- For example, administering, developing, editing, producing, supervising, ordering stock, clerking, typing, and filing, reconciling financial records.

In the past 12 months
- Mark (X) the "Yes" box for each type of income this person received, and give your best estimate of the TOTAL AMOUNT during the PAST 12 MONTHS.
- Note: The "past 12 months" is the period from today's date one year ago through today.

For income received jointly, report the appropriate share for each person — or, if that's not possible, report the whole amount for only one person and mark the "No" box for the other person.

- Wage, salary, commission, bonuses, or tips from all jobs: Report amount before deductions for taxes, bonds, dues, or other taxes.
- Self-employment income from nonfarm businesses or farm businesses, including proprietorships and partnerships: Report net income after business expenses.
- Interest, dividends, rental income, royalty income, or income from estates and trusts: Report even small amounts credited to an account.

Any other sources received regularly such as Veterans' NAF payments, unemployment compensation, child support or alimony. Do not include lump sum payments such as money from an inheritance or the sale of a home.

Any public assistance or welfare payments from the state or local welfare office.

Social Security or Railroad Retirement.

Supplemental Security Income (SSI).

Retirement, survivors, or disability pensions.

Any other sources of income received regularly such as Veterans' NAF payments, unemployment compensation, child support or alimony. Do not include lump sum payments such as money from an inheritance or the sale of a home.

Any public assistance or welfare payments from the state or local welfare office.

Social Security or Railroad Retirement.

Supplemental Security Income (SSI).

Retirement, survivors, or disability pensions.

Any other sources of income received regularly such as Veterans' NAF payments, unemployment compensation, child support or alimony. Do not include lump sum payments such as money from an inheritance or the sale of a home.

Any public assistance or welfare payments from the state or local welfare office.

Social Security or Railroad Retirement.

Supplemental Security Income (SSI).

Retirement, survivors, or disability pensions.

Any other sources of income received regularly such as Veterans' NAF payments, unemployment compensation, child support or alimony. Do not include lump sum payments such as money from an inheritance or the sale of a home.

Any public assistance or welfare payments from the state or local welfare office.
The balance of the questionnaire has questions for Person 2, Person 3, Person 4, and Person 5. The questions are the same as the questions for Person 1.
Mailing Instructions

Please make sure you have...

- listed all names and answered the questions on pages 2, 3, and 4
- answered all Housing questions
- answered all Person questions for each person.

Then...

- put the completed questionnaire into the postage-paid return envelope. If the envelope has been misplaced, please mail the questionnaire to:
  U.S. Census Bureau
  P.O. Box 5240
  Jeffersonville, IN 47199-5240
- make sure the barcode above your address shows in the window of the return envelope.

Thank you for participating in the American Community Survey.

For Census Bureau Use

<table>
<thead>
<tr>
<th>POP</th>
<th>EDIT</th>
<th>PHONE</th>
<th>JIC1</th>
<th>JIC2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDIT CLERK</td>
<td>TELEPHONE CLERK</td>
<td>JIC3</td>
<td>JIC4</td>
<td></td>
</tr>
</tbody>
</table>
VITA

Kayla Allison was born in Lafayette, Louisiana, in 1971. She was raised in Sulphur, Louisiana and attended Richard W. Vincent Elementary School, W.W. Lewis Middle School, and Sulphur High School. Kayla graduated from Sulphur High School in 1990. After graduation she moved to Inglewood, California. She received an Associate in Arts Degree from El Camino College in Redondo Beach, California in 1996. She received her Bachelor of Science Degree in Psychology with a Minor in Sociology from McNeese State University in Lake Charles, Louisiana in 1999. Kayla received a Master of Social Work Degree from Louisiana State University in Baton Rouge, Louisiana in 2012, where she was nominated for the James Midgley Leadership Award. She is a 2013 Fellow of the National Association of Social Workers HIV/AIDS Spectrum: Mental Health Training and Education of Social Workers Project as well as a 2008 Fellow of the Black AIDS Institute: Community Mobilization College. Kayla’s employment history includes mental health, substance abuse, medical social work, and health promotions (public health) with a special interest in HIV/AIDS.