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Isolation in the South: Poverty and Transportation Infrastructure in the Black Belt

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By

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Isolation in the South: Poverty and Transportation Infrastructure in the Black Belt

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This study examines the relationship between transportation infrastructure and social well-being in the United States South, especially in the Black Belt. Specifically, this study focuses on the impact of airport accessibility and improvements on social well-being within the community capital framework in which built capital and political capital acted as a foundational basis for the broader concept of positive community capital. The results indicated that many cumulative disadvantages exist in the Black Belt of the southern United States. The research found that a higher level of airport accessibility is associated with a lower level of poverty and higher levels of health outcomes and net migration. The research further found that having a college and university in a community is associated with higher high school graduation rates, lower poverty rates, and lower unemployment rates. This research has important implications for addressing the cumulative disadvantages and isolation in the Black Belt.

DEDICATION

This dissertation is dedicated to my beautiful wife, Andrea, who has made tremendous sacrifices for this dissertation to be completed. I could not have completed this dissertation without her love and understanding.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Statement of the Problem

The issue of isolation has been a historical concern with regard to the Black Belt population of the U.S. South (Wimberley and Morris 1997, 2002). Although a large portion of the African American population in the South has benefited from civil rights reforms since the 1960s, Black Belt residents have lagged behind the rest of the nation. The Black Belt is predominantly Black, remote, and rural. The main thesis of this study is that the Black Belt has become increasingly isolated because of its lack of accessibility to airports. Accessibility to airports is measured as a combination of nearness in distance to the airport and number of passenger boardings. Because airports usually are adjacent to urban areas, rural areas can become progressively isolated. As Kasarda and Lindsey (2011) point out, in a transformed, globalized world, airports are increasingly important for the economic development of urban areas. However, to date no studies have investigated how the location of airports affects economic development of rural areas.

Lack of government investment in other transportation infrastructure, such as interstate highways and railroads, has further isolated Black Belt residents. This study compares the transportation infrastructure of Black Belt counties in the South with non-Black Belt counties in that region. Specifically, this study examines how lack of transportation infrastructure might affect poverty in the Black Belt.

The study complements the literature on economic indicators and race (Bellamy and Parks 1994; Falk and Rankin 1992; Rankin and Falk 1991; Tomaskovic-Devey and Roscigno 1996). It also expands research into the enduring cycle of poverty in the Black Belt by adding a new dimension to existing scholarship: transportation infrastructure, with specific focus on airports (Driskell and Embry 2007; Wharton and Church 2009; Zekeri 2005). This investigation also explores the issue of health in the Black Belt using county health rankings from the University of Wisconsin and variables from other recent works (Wimberley 2008, 2010).

Literature Review Summary

The study incorporates a wide ranging literature from many different fields including rural sociology, urban studies, transportation, racial and residential segregation, community development, and political science to argue that a history of economic segregation and racial oppression have put the rural Black Belt at a cumulative disadvantage compared to other regions of the south. The cumulative disadvantage becomes pronounced through inadequate resources in all seven forms of community capital. Thusly, because of inadequate access to transportation infrastructure there becomes a lack of access to other forms of community capital which leaves the Black Belt mired in an historical cycle of poverty.

The lack of transportation infrastructure creates an economic disadvantage when competing for jobs within the global marketplace. Transportation leads to access to global markets; therefore the closer a county is to infrastructure that provides access to global markets such as airports the greater the likelihood of economic advantage. The lack of access to global markets creates a lack of economic diversification into other

industries therefore; agriculture remains the dominant industry in the region. Since agriculture remains the dominant industry in the region there is little pressure on politicians to fund schools further to create a highly skilled workforce because there is very few jobs that require a high education in the region outside of public schools most students who will go to college will not come back to the region.

The lack of economic diversification within the Black Belt region puts expanded pressure on the agricultural sector as the primary source of employment. Due to the competition for jobs within one sector a situation of low wage stagnation and even possibly low wage decline appears. Couple the low wages with high unemployment because one sector of the economy cannot employ an entire county even in a small rural region, a crisis develops that creates poverty and isolation within the Black Belt.

The low wage jobs and high unemployment then creates a lack of public infrastructure investment in public schools, which creates a self-reinforcing paradox where schools are not funded at a high level because there is a lack of economic development and high paying jobs will not come into the region because of a lack of funding for schools. This is further reinforced within many southern states by the huge tax abatements that are received by the timber industry on their property. Property taxes are the primary source of funding for schools in the south but many states including Alabama and Mississippi give tax abatements to the timber industry for the property they own. Since the timber industry owns a lot of land in the Black Belt South a large amount of property goes untaxed for many years (Norton and Bailey 2003).

A lack of economic development creates a lack of investment in policy programs at the local level to alleviate poverty in the region, thus a strong vehicle for trying to

alleviate poverty is federal programs such as Temporary Assistance for Needy Families(TANF), the food stamp program, Women with Infant Children, and Section 8 housing programs. Many of these programs have negative stereotypes attached to them by the larger society but are still very needed in this very isolated region of the United States therefore the debate on these programs is of primary importance in understanding the Black Belt and the symbolism and stereotypes of the people that make up the Black Belt.

The lack of transportation infrastructure which leads to a lack of economic and educational development is reinforced by the history of racial segregation, oppression, and violence in the Black Belt. Built capital becomes the foundational basis of community capital because of the history of the Black Belt the region is at a cumulative disadvantage in comparison to non-Black Belt counties. This disadvantage has created a historical residue which has created an imbalance in physical infrastructure in the South

Community Capital as the Theoretical Framework

This study incorporates transportation infrastructure—with a specific focus on airports—into a community capital framework (Flora and Flora 2008) as a built capital. Within the community capital framework are seven types of community capital, including: built capital, financial capital, social capital, political capital, cultural capital, natural capital, and human capital. These seven types of capital interact in a region to form its community capital. Flora and Flora define built capital as a force that "provides a supporting foundation that facilitates human activity" (2008:206).

All regions hold certain forms of community capital and embody a culture that creates cultural capital. Regions also possess a natural habitat, which creates natural

capital. Many regions also provide certain forms of built capital. The problem in cultivating community capital development is that some forms of community capital are valued more than others. For example, elites value capital similar to that which they possess. Community capital formation, additionally, requires a complex set of interactions to occur between different forms of capital. When one element of the seven types of community capital falters, it creates distress to the other types, which may produce cumulative disadvantages (Diprete and Eirich 2006).

Transportation and Cumulative Disadvantages in the Black Belt

The U.S. Black Belt is an appropriate region for analyzing the role that cumulative disadvantages play in the community capital framework. Each type of capital within the framework creates certain advantages for some and disadvantages for others. These disadvantages coalesce are thereby maintained within the Black Belt. Cumulative disadvantage refers to disadvantages that develop from various sources over time. This study therefore focuses on regional cumulative disadvantage and its interactions with various forms of community capital. Population out-migration, health disparities, high rates of single-parent families, lack of transportation infrastructure, poorly funded schools, scarcity of jobs, and lack of investment are numerous inherent disadvantages within the Black Belt that render a cumulative effect that creates higher poverty rates among its population.

The cumulative disadvantages documented in this study act as a barrier to economic independence and eventually lead to higher poverty rates within the Black Belt counties analyzed. Furthermore, Black Belt communities must deal with racial discrimination. Because the Black Belt is the poorest region in the country, with a

relatively large and racially oppressed Black population, a large number of variables can be employed to describe the disadvantages of living in the Black Belt.

Using transportation infrastructure to study cumulative disadvantage allows for a broader understanding of how racial discrimination, poverty, and oppression merge to create disadvantages within a region. Transportation provides a region with internal and external linkages. The roots of transportation infrastructure are based on the political power and the size of the population of a region, as well as the region's history and legacy. Transportation infrastructure is an essential component of organizing and creating healthy community capital.

The merger of racial discrimination, poverty, and oppression stems from the political capital of a region. Transportation systems are often funded by federal, state, or local governments, which give areas with stronger political capital more access to transportation funding.

Moreover, businesses always strive to reduce economic costs, with transportation a primary component of that goal. Thus, businesses are more likely to locate in areas that have better transportation systems—furthering the disadvantage of areas without adequate transportation infrastructure.

This study examines transportation infrastructure, with a specific focus on airports, to achieve a broader understanding of capital in analyzing the cumulative disadvantages that occur in the Black Belt and how a more extensive transportation infrastructure, which includes airports, creates greater economic opportunities. In this study, "isolation" is defined as the disadvantages in capital resources the Black Belt counties possess in comparison with non-Black Belt counties.

This study informs public policy issues in an effort to help overcome the cumulative disadvantages of the Black Belt. While the study's focus is on regional cumulative disadvantage and its interactions with the different forms of community capital, the main research question is how built capital (specifically, airport accessibility) interacts with other forms of community capital to create advantages for some counties and disadvantages for others.

Because built capital provides the building blocks for community capital (Flora and Flora 2008), the current study focuses primarily on physical infrastructure in relation to social infrastructure. Social infrastructure refers to the social, cultural, human, and political capital of a region. These forms of capital help shape opportunity and produce favorable infrastructure inputs. Infrastructure inputs are interactions within the community that allow for beneficial development of the community as a whole. Physical infrastructure refers to the financial, natural, and built capital available to the region. The social and physical infrastructures are embedded within elements of the community and allow for healthy or unhealthy development to occur. Healthy development refers to the creation of additional social and physical infrastructures that advance a region through social inclusion, the creation of a vital economy, and a healthy ecosystem.

Throughout this dissertation, two terms are important: community capital cultivation (sometimes called cultivating community capital) and community capital development. While interrelated, these terms have distinct connotations. *Community capital cultivation* refers to the process by which individuals in the community organize into groups to improve the living conditions of the area in which they reside. *Community capital development* refers to the process in which organizations and political leaders

work with the community and larger organizations to promote economic growth, civic participation, a healthy ecosystem, and social inclusion.

Prior Research

The study integrates various literature and theoretical frameworks from transportation, race, inequality, rural studies, urban studies, and regional economic development to explain how lack of community capital creates cumulative disadvantages for the residents of the Black Belt. A review of the literature underscores the importance of defining the Black Belt and explaining the history and legacy of the region, especially with regard to race relations.

Three common themes appear in the literature and theories examined in this research. One is the need for groups and individuals to interact and collaborate, not only with each other but also with the built and natural environments that surround them. Another theme is that transportation infrastructure, specifically airports, plays a crucial role in the creation of economic development, as well as in social inclusion and integration. Transportation is necessary for growth—a signal that an area is creating a healthy community capital framework and producing an incubator for potential economic growth. Conversely, if integration into the community capital framework does not occur in a cohesive and integrative manner, cumulative disadvantages can be created.

Transportation infrastructure is essential for regional social capital development. Because airports, along with other modes of transportation, provide access to global marketplaces and interactions, counties that have airports or highway infrastructure within proximity can be seen as areas of expanded interaction. For social capital to thrive, interactions are necessary. Thus, areas with less access to interactions often have less

adequate social capital compared with regions with more frequent interactions. Transportation infrastructure, therefore, facilitates the creation of social capital.

Another theme in the review of the literature is that the lack of built and natural infrastructures will often lead to more challenges in cultivating healthy social infrastructure and vice versa. The literature suggests that political capital and its relationship with the racial history and legacies of the Black Belt region play a crucial role in explaining the absence of both regional built and social infrastructures.

Finally, the literature shows how lack of integration of public policy prescriptions into the larger community capital framework, along with racial tension, disadvantages Black Belt communities.

Research Questions and Hypotheses

The central research question is: what role do airports play in alleviating poverty in the Black Belt? I hypothesize that the lack of airport access and cumulative disadvantages are more pronounced in the Black Belt than other regions. I further hypothesize that airports act as an enhancer of other types of community capital in alleviating poverty in the Black Belt.

Structure of the Dissertation

This dissertation is organized into five additional sections. Section 2 provides an extensive review of the literature including the history and background of poverty and cumulative disadvantages in the Black Belt, the community capital framework, and a discussion of transportation infrastructure and cumulative disadvantages in the Black Belt within this theoretical framework. Section 3 discusses the theoretical linkages and

research hypotheses. Section 4 introduces the data and methodology. Research findings are described in Section 5. Section 6 summarizes the research findings and discusses the contribution to the literature, policy implications, and research limitations and future directions.

CHAPTER II

LITERATURE REVIEW

Defining the Black Belt

The Black Belt often has been defined as a stretch of land from east Texas to northern Virginia. Originally named for the black soil of the cotton-producing areas of the South, it is now named for the Black majority population of the region.

Webster and Bowman (2008) and Webster and Samson (1992) argue that the term "Black Belt" has been a matter of significant historical contention (Cleland 1920; Gibson 1941). While no specific time period has been identified for when Black Belt began to refer to a demographic characteristic rather than soil composition, Webster and Bowman (2008) find the first hints of its use at the turn of the 20th century with W.E.B. Du Bois ([1903] 2003) and Charles Meriwether (1897). Du Bois ([1903] 2003), in *The Souls of Black Folk,* does not assign a definition for the term "Black Belt" but argues it is a place where Blacks outnumber Whites (Webster and Bowman 2008). Webster and Bowman (2008) also cite the works of Phillips (1904, 1905, 1906), who describes the Black Belt as counties that are more than 50 percent African American. In 1901, Booker T. Washington wrote about the Black Belt using a definition similar to those given by Du Bois and Phillips (and Webster and Bowman 2008).

Some argue that the term "Black Belt" lost the significance it once held (Kennedy 1934). Kennedy (1940, as cited in Webster and Bowman 2008:4) argues that "the Black

Belt should be characterized by neither population nor soil but for the way people live, giving rise to a complex set of variables that needs to be considered in defining the Black Belt."

Exploring the ways people live leads to a greater knowledge of regional cultural capital. Defining the way people live, and linking it to a certain geographical region, can lead to a better understanding of community capital development within a region and regional public policy prescriptions. However, defining the way people live by region may produce false dichotomies, which in turn create rigid stereotypes about population groups and perpetuate prejudices. To avoid the dangers of stereotypes, a greater comprehension of Black Belt history is necessary.

Traditionally, social scientists, especially historians, have deemed the Black Belt as being based in Alabama and Georgia (Du Bois [1903] 2003; Evans 1940; Flewellen 1940; Kennedy 1934, 1940; and Odum 1936). Today, many researchers expand the concept of the Black Belt to include the Delta regions of Mississippi, Arkansas, and Louisiana, as well as portions of east Texas. One of the first definitions of the Black Belt to include states other than Alabama and Georgia was given by Johnson (1941), whose designation included Mississippi and Tennessee.

Wimberley and Morris (1997) define the southern Black Belt as a 623-county region stretching from east Texas to northern Virginia. In the counties of the Black Belt region, African Americans are at least 12 percent of the population, matching their percentage in the national population. According to Wimberley and Morris (2002), African Americans constitute 40 percent or more of the population in Black Belt counties; moreover, 40 percent of all African Americans in the United States live in these

counties. Wimberley and Morris (1995, 1997, and 2002) also describe the Black Belt as home to nearly a quarter of the nation's poor, 30 percent of all non-metropolitan poor, and 84 percent of the African American non-metropolitan poor.

Webster and Bowman (2008) conducted a principal components factor analysis to describe the Black Belt in Alabama and Georgia. Analyzing many variables, including political, religious, demographic, and employment, they devised a broader description of the Black Belt geographically within the Alabama–Georgia region than Wimberley and Morris do (1997, 2002). Webster and Bowman (2008) incorporate capital characteristics and attitudes into defining the Black Belt, and they address past policy prescriptions that have been successful in the Black Belt, but they do not present further policy prescriptions or incorporate transportation infrastructure into their model.

Falk, Talley, and Rankin (1993) define the Black Belt as Southern counties where 33 percent or more of the population was African American (Allen-Smith, Wimberley, and Morris 2000; Wimberley and Morris 1995). When describing the Black Belt, race becomes an important factor and is embedded spatially within the rural dynamics of the region.

In the current study, the Wimberley and Morris model of the Black Belt is used. Although their definition of the Black Belt is narrow in terms of descriptive variables, Wimberley and Morris include the largest number of counties and states spatially. Therefore, that framework allows for an analysis that avoids the problem of false dichotomies because the region as they define it is spatially broad and defined at different racial levels.

Through an analysis of a broad region, the present study distinguishes patterns of unique variation through the application of spatial weights matrices. Wimberley and Morris classify the counties of the Black Belt into three types: counties, in which 12 to 24 percent of the population is Black, counties in which 25 to 39 percent of the population is Black, and counties in which 40 percent or more of the population is Black.

Figure 2.1 shows the counties of the Black Belt as defined by Wimberley and Morris (1997) at the 12 percent level of African Americans in the South. Black Belt counties are dark gray; non-Black Belt counties are light gray.

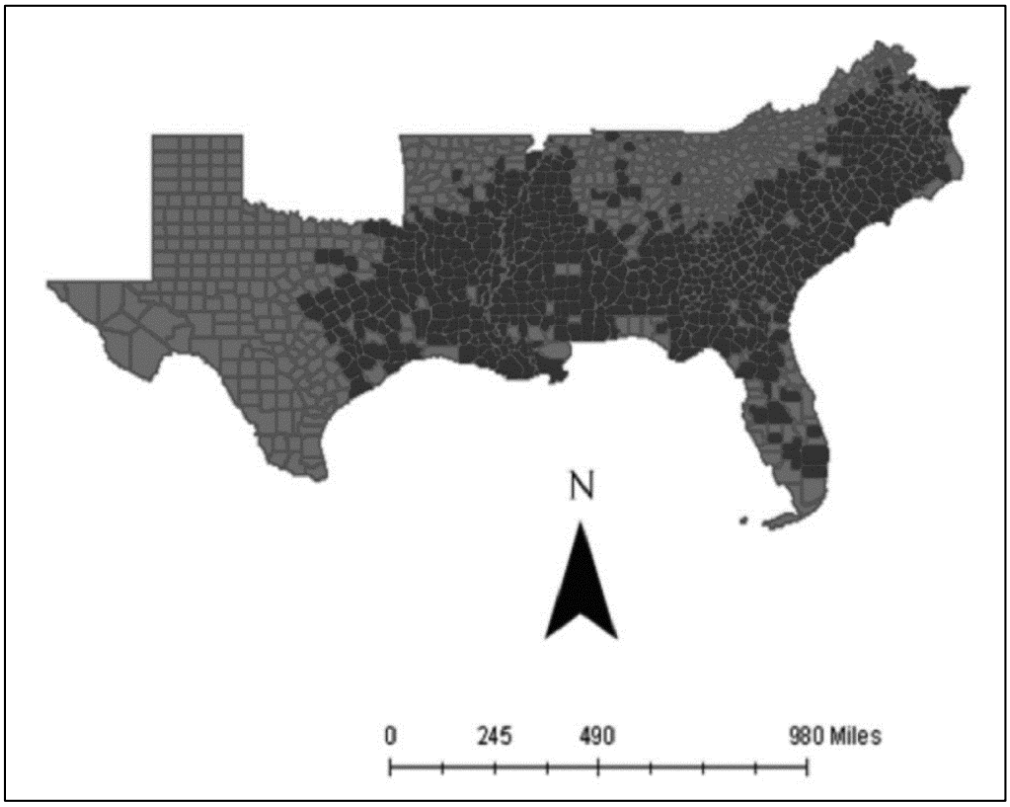

Figure 2.1 Counties of the Black Belt
(Wimberley and Morris 1997)

Figure 2.2 depicts the counties of the Black Belt and includes three percentage levels given by Wimberley and Morris (1997). These levels of the Black Belt allow for wider consideration of the racial isolation of the Black Belt.

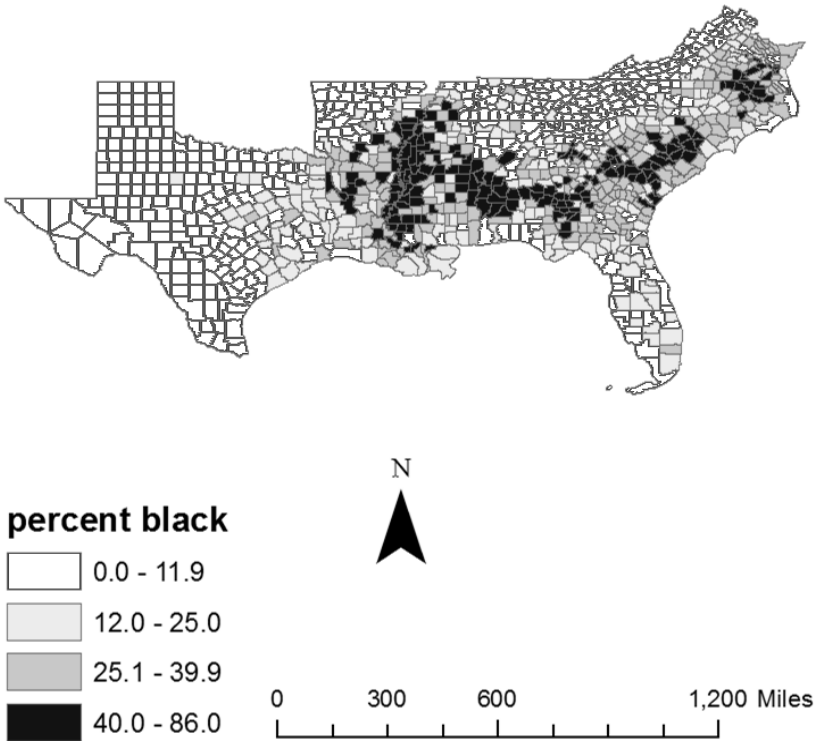

Figure 2.2 Percentage of Black residents by county

(U.S. Census Bureau 2010a)

The three R's of poverty—race, region, and rurality (Wimberley and Morris 2002)—play an integral role in defining not only the Black Belt but also the history and legacy of the region. These variables are crucial to understanding the shortage of infrastructure within the Black Belt region and the need for organized community capital. The combination of the three R's, an absence of infrastructure, and a lack of community capital creates regional cumulative disadvantage.

Researching cumulative disadvantages in a geographic region is not a unique enterprise in sociology. Wilson (1987) conducted an investigation of urban regions in the United States. Wimberley has produced many works on the Black Belt region, describing how the historical practices against minority groups shaped the legacy of the Black Belt. What is distinctive about the present research project is its investigation of the geographic transportation infrastructure (built capital) of the Black Belt, with a specific focus on airports and their role in cultivating the development of community capital.

History of the Black Belt and Racial Oppression

The history of the Black Belt region begins with the plantation system and slavery during the antebellum era. Because the Black Belt was a predominantly agricultural region, slavery stood at the heart of its economic system. Slavery provided cheap labor and enabled the exploitation of African Americans. The fears of plantation owners that African Americans would revolt often led to extreme measures of subordination and to policies prohibiting the education of Blacks.

After the Civil War, Blacks were freed from slavery, but when Whites regained political power in the South, Jim Crow laws were established to segregate Blacks from Whites. Also, many actions were taken to keep Blacks from voting, including all-White primaries, poll taxes, and literacy tests.

The pressure to keep Blacks disenfranchised resulted in their being denied political power. Blacks were excluded from crucial decisions about funding for roads, education, or other public projects. Because of the lack of political capital among Blacks, many forms of built capital were unavailable to them and the communities or neighborhoods in which they resided.

Along with Black exclusion, the concept of Whiteness came into being (Hale 1999; Roediger 1991). With the political system exerting exclusionary practices that prevented Blacks from participating in local and state governments in the South, poor Whites faced a dilemma: in some ways, their economic situation was similar to that of Blacks. However, the races were divided and estranged by enforcement of Jim Crow laws. Roediger (1991) argues that the more affluent Whites promoted dissension between Blacks and Whites, causing poor Whites to feel superior to Blacks—that is, the ideology of White supremacy.

The ideology of White supremacy created not just a belief system but also a set of practices that maintain the system of racial oppression. According to Downs (1957:96), "Ideology is not simply a belief or a set of beliefs; it is a framework for understanding the world that is rationalized in a set of logical understandings about the world concerning the role of government, business, morality, the individual, freedom, and equality."

These logical understandings about the world create themes that people organize conceptually in a logical fashion to create a coherent worldview. For poor Whites during the Jim Crow period, racial ideology became a key component of their understanding of the world surrounding them. The ascension of a southern White racial ideology permeated the attitudes of poor Whites, which began to see Blacks as a convenient scapegoat for societal and personal ills (Roediger 1991).

Ideology becomes a crucial component in creating the exclusionary bonding forms of social capital (Flora and Flora 2008). The ideology of White supremacy, Jim Crow laws, and other forms of prejudice produced exclusion in schools, churches, restaurants, bathrooms, water fountains, and other public places. This isolation of Blacks

led to an increase in bonding forms of social capital—and eventually to the Civil Rights movement. African American community capital development and the historical development of cumulative disadvantages have been understood to be not only social phenomena but also a spatial phenomenon, specifically with regard to transportation infrastructure (Bayor 1988; Chi and Parisi 2011; Connerly 2002; Dluhy, Revell, and Wong 2002; Mohl 1993; Silver 1984).

In the southern United States, the expression that "a person lives across the railroad tracks," is assumed to mean one side of the town is populated by Whites, usually in middle-class or upper-class housing, while the other side is populated by Blacks in lower-class housing. How the South became so geographically segregated by race is a topic of historical consideration, as well as a priority for understanding both the community capital framework and the cumulative disadvantages that persist in the Black Belt. When using spatial analysis, which the current study has done, it is important to understand the historical underpinnings of geographic segregation that led to spatial inequalities.

In Alabama, half of the enslaved population was concentrated in 10 counties in the Black Belt. During Reconstruction, Blacks held a wide variety of local, state, and national offices. In the 1870s, White rule was restored (Tullos 2004; Webster and Samson 1992). The country was tiring of Reconstruction, and many efforts to help Blacks achieve political and economic power were thwarted. Many southern states changed their constitutions in an effort to preserve the legacy of racial oppression.

In the 1880s and 1890s, a populist challenge arose against the White establishment, but it was defeated by what Tullos called "violence, appeals to white

supremacy, and massive voter fraud" (Tullos 2004:1). After 1901, White supremacy in Alabama became enshrined in the state's constitution and altered the legacy of the state forever. The hopes of the populist movement and Reconstruction to give Blacks more opportunity had faltered, and a period of Jim Crow reigned over Alabama for the next 60 years.

The legacy of Jim Crow looms as a strong force in the isolation of the Black Belt. History is a guiding point in understanding the barriers to gaining cultural, financial, and political capital. History illustrates how past disadvantages compound into future cumulative disadvantages. This racial segregation plays an important role in explaining the underdeveloped infrastructure of Black Belt counties. Owing to the absence of certain forms of community capital, built capital in the form of transportation infrastructure, particularly airports, has not been developed.

For the purpose of this research, race was a central component of defining the Black Belt and understanding the culture and legacy of that region. Lewis (1959) argues that a "culture of poverty" results in a perpetuating cycle of poverty that is reinforced generation after generation.

Moynihan (1965) contends that a "tangle of pathologies" creates a reversal of roles within the African American family, with women becoming the primary breadwinners. Flora and Flora (2008) argue:

> Because of their roots in slavery and persecution that followed emancipation, generations of blacks in the United States were not able to pass on significant material wealth to their children. Instead many focused on providing children with a social and cultural heritage that allowed them to survive in an often-hostile environment. Legacy for rural blacks meant stressing the linkages within the family and to the larger black community, as well as the mutual obligations and support such linkages provided. (75)

The assumption of the preceding argument is that cultural and social capital within the Black communities of rural areas has reinforced solidarity among Blacks but may have isolated them from other communities. Flora and Flora (2008) maintain that this is a form of bonding social capital; however, instead of wanting to exclude outsiders, the bonding of the Black community was a result of outsiders excluding them. Therefore, social capital and cultural capital can simultaneously create exclusion and be a response to exclusion.

The current study was centered on the notion that a geographic region can be defined not only by race and rural character but also by the lack of infrastructure and the disadvantages of the region. Race relations must be understood in the context in which they are created. Community capital development must also be understood in the context of its development. Neither the social construct of race nor the development of community capital is s one-time event; they are ongoing characteristics of certain regions.

In the current study, the question was asked: Do all rural communities have the same community capital patterns, or does community capital vary by race? Because the study focuses on African American communities in the Black Belt, differences that emerge from past research must be explored. Shuman (1975) challenges the assumption that economic factors are the major sources of Black dissatisfaction. Shuman argues that questions of social policy with regard to Black Americans have been influenced by stereotypes rather than actual beliefs of the Black citizens. Wiseman (1986) argues these stereotypes become problematic for economic development when the incorrect remedy is applied.

Many researchers have discussed political participation within Black rural communities. Danigelis (1982) and Wiseman (1986) argue that political climate plays an important role in Black political involvement. Furthering the work of Shuman (1975), Danigelis (1982) argues that in years when political intolerance was high, Blacks with higher levels of education were more likely than Blacks with little education to vote. However, with the passage of the Civil Rights Act and the Voting Rights Act, the political climate changed because of concerted federal and local efforts to remove barriers to political involvement. Thus, with the passage of time, the importance of education as a predictor of Black political involvement decreased because less-educated Blacks become motivated to participate (Danigelis 1982; Wiseman 1986).

Accordingly, even in rural Black areas, there may be variations of community capital based on educational and other contextual features of the community. Within rural communities, context matters; therefore, analysis was conducted to test not only for differences in race but also for differences in educational level, number of single-parent families, poverty rate, and unemployment level. The contextual nature of these variables enabled identification of similarities and differences between Black Belt and non-Black Belt counties.

The Legacy of Racial Oppression

Glaser (1994) argues that politics in the South are still dominated by racial attitudes—a legacy of 100 years of segregation and Jim Crow laws—that have resulted in the rise of the Republican Party and the decline of the Democratic Party in that region of the United States. He argues that conservative racial attitudes are at the heart of many elections in the South.

Moreover, unequal tax distribution in states with very low taxes can be interpreted through the prism of racial politics (Arise Citizens' Policy Project 2009; Levitis and Nicholas 2008). Because of the low tax base, schools in poor Black areas often do not receive adequate educational funding.

Swanson and Harris (1994) argue that the impact of the Civil War and Reconstruction remains a powerful force in the rural American South. This legacy has two dimensions: (1) the material goods that are passed down from parent to child, which can be described as a form of economic capital, and (2) the understanding of society and the child's role in it (Flora and Flora 2008).

For example, one recurring issue with regard to inheritance of material goods is the legacy of heir property. Dyer, Bailey, and Van Tran (2009:193–94) contend that "African Americans have lost land through a variety of means: tax sales, partition sales, land sales to non-African Americans, limited access to legal counsel, forceful land takings, discrimination by public and private institutions, and failure of the USDA and the land grant complex to provide adequate resources to small farmers."

Heir property often entails a large number of owners, which presents challenges when trying to develop the land or create agricultural uses for it. One problem is that developing the land could increase its value, which would then increase property taxes, which could in turn force one of the co-owners to partition the land for sale. Another problem with heir property is that owners are reluctant to sell its timber because of the confusion that may occur and the responsibility to make sure all owners are adequately compensated (Dyer 2007a, 2007b; Dyer, Bailey, and Van Tran 2009; for a counter-argument, see Gan, Kolison, and Tackie 2003).

Dyer, Bailey, and Van Tran (2009) argue that partition sales may be the main cause of land loss among African American landowners in rural areas. Within the Black Belt of Alabama, the forest products industry owns or leases 35 percent of the forestland, which shuts off land for use by the people of the Black Belt (Bliss et al. 1993). In Alabama, generous abatements are given to the pulp and paper industry, which erode the tax revenue base of local governments. While forestry and paper do provide jobs for people in the Black Belt region, they hurt education and public services because they degrade the tax base (Bliss, Sisock, and Birch 1998; Joshi and Bliss 1995). The decline in African American landowners owning heir property in the Black Belt and control of land by the forestry, pulp, and paper industry compound the problems of isolation.

Property ownership is important to development of financial capital and stability of a region. Property ownership also provides resources for the development of human capital. In addition, property ownership is a primary basis for funding educational institutions in most parts of the Black Belt region. With low property values and timber companies receiving tax abatements, developing an educational system that nurtures and cultivates human capital becomes problematic and can lead to a lack of economic diversification.

Illustrating this point, Norton and Bailey (2003) observe the lack of economic diversification in the four Alabama counties of Green, Hale, Sumter, and Marengo. The authors note that two of those counties are very timber dependent, with over 20 percent of the jobs in the county held by people working in the timber industry. The lack of economic diversification leads to a lack of social capital in these regions because

dependence on these industries leads to a lack of training in other areas of the economy (Norton and Bailey 2003).

Sociologists argue there is hope for the Black Belt and the South in general. Black and Black (1987) assert that politics in the South are no longer dominated by race but by the White urban middle class. Wright (1987) argues that the colonial economy no longer exists in the South because "outsiders have so thoroughly penetrated the South that both the people and the economy have lost their distinct identities, economically speaking" (Wright 1987:270; also cited in Slaughter 1988).

Recently, Hyundai and Mercedes plants have opened near Black Belt counties (Archibald, Hansen, and Spencer 2002b). Nonetheless, there is still a lot of pessimism about the future of the Black Belt. Racial attitudes, the national economy, and a sense of isolation, even now, permeate the conceptualization of the Black Belt among both residents and non-residents. The conservative political climate of the states of the South and nationally and the downturn of the economy have dampened investments in the Black Belt. Developing the Black Belt will require future investments and opportunities for cultivating community capital within the region.

Rurality in the Black Belt

Rurality can be seen as a natural form of capital. Many rural places have abundant natural amenities and can be developed around natural attractions. Many rural areas suffer from a lack of built infrastructure, which may include hospitals, health care clinics, restaurants, retail stores, and other institutions that many consider important attractions for migration to a region. Natural amenities can create a tourist attraction for many areas;

however, without certain forms of infrastructure, specifically transportation, the people may not come (Rasker et al. 2009).

Blessed with abundant natural resources that were noticed long ago, the Black Belt, according to Odum (1936), has a

> superabundance of well-nigh limitless sources of natural wealth and growing seasons; land and forests; minerals and mines, coal and iron and phosphate and hundreds of other minerals from the land undug; sticks and stones of fabulous quality and quantity for the fabrication of great buildings and for the construction of roads and bridges; energy and power, and tidal power; iodine and phosphorous and nitrogen wealth; chemical resources from pine and vegetable, cotton and corn, parks and playgrounds, mountain and seashore, summer and winter resorts, play places of a nation; nature reserves and sanctuaries for wild life. (29)

The Black Belt region continues to boast abundant natural resources and vast numbers of rivers and lakes, yet this abundance has not resulted in a widespread accumulation of income for the vast majority of residents. Brown and Warner (1991) write that while there have been sustained periods of economic growth in rural distressed areas, income gains and poverty rates have remained roughly the same over time. These authors suggest that policy experts and academics take account of historical, social, and political factors. They note one reason for underdevelopment is that the regional economy of the South is organized and developed based more on capital accumulation than on broader socioeconomic development. The South also has had a long history of low-wage jobs and anti-union efforts. Brown and Warner (1991) argue that these are reasons that rural areas have developed unevenly through the years.

While the elements of economic capital have led to isolation in the Black Belt, one should not discount the cultural capital of the region. Ever since Lewis's work (1959), there has been discussion of a culture of poverty. Johnson (1941) rejects the argument that stratification in the Black Belt was based on a caste system. He argues

there was a growing middle class in the Black Belt and that conflict arose between the middle class and the poor because the middle class viewed the poor as primarily to blame for its own poverty. The "culture of poverty" argument has been applied to African Americans specifically, as well as to the poor in general (Banfield 1970; Glazer and Moynihan 1970; Lewis 1963; Zekeri 2005).

Duncan (1999:191–92) argues that the social structure of rural areas is made up primarily of two classes: "upper class families that control the resources and participate in economic and political life and lower-class families that are powerless, dependent and do not participate." This social structure, Duncan contends, increases mistrust between the two classes. The elements of racial conflict and the history of the South further increase distrust. For true change to occur, Duncan says, more civic action and a more equal distribution of resources among the people must occur.

While noting the importance of class delineations within rural regions, researchers must not fall into the trap of creating false dichotomies. Isolation has largely been seen as part of the rural image, yet this interpretation presents an incomplete picture of rural areas (Flora and Flora 2008). Workers within many industries, such as logging, mining, and farming, are very mobile (Flora and Flora 2008). As Flora and Flora (2008:9) point out, "Other rural people were, in fact, isolated. However, they created a rich culture of self-sufficiency that maintained a way of life."

In the 20th century, improved transportation systems, such as canals, railroads, and highways, have altered the way we perceive isolation in rural areas (Flora and Flora 2008). Many rural people now commute to urban centers for jobs and entertainment. Advanced technologies, such as the Internet, allow rural residents to interact with others

around the globe. The increase in educational institutions has helped rural people become more educated and highly skilled. However, those improvements have caused some highly skilled workers to migrate to urban areas where their skills are more marketable. Even farming has become more scientifically based, with the advent of agricultural extension systems in the 1870s. The challenge for rurality, then, is to bring the diversity of the population into a community framework that promotes healthy infrastructure and development for the future.

Rurality provides several advantages and disadvantages in the cultivation of community capital. Kasarda and Janowitz (1974) identify three dimensions of community interaction: an interpersonal or network dimension, a participation dimension, and a sentiments dimension (Beggs, Hulbert, and Haines 1996). The interpersonal dimension has important positive ramifications for the local community because it describes the degree to which ties to friends or kin are concentrated within the community (Beggs, Hulbert, and Haines 1996). The strength of this dimension can be tapped only by the degree of involvement people have in their community (participation dimension) and the feelings they have about their community (sentiments dimension) (Kasarda and Janowitz 1974).

The lack of community attachment has been linked to certain problems within the community: “the exodus of workers in the prime years of earnings potential” (Tolbert and Lyson 1992:508), “a lack of jobs, which adequately utilize the available human capital” (Killian and Beaulieu 1995:40), and a declining economic infrastructure (Flora and Flora

2008; Walzer, Chicoine, and McWilliams 1987; Wilkinson 1986). According to these authors, there is a need to build a social infrastructure.[1]

Social infrastructure refers to the social, cultural, human, and political capital of a region. These forms of capital help to shape opportunity and lead to more favorable infrastructure inputs. Strong social infrastructure allows for healthy development that creates long-term opportunity for economic and social interaction. Additionally, a strong social infrastructure permits more inputs into policy prescriptions from the community and creates a stronger support base for and trusts in the leaders of the community.

Transportation and Race

The modern transportation system began in the 1820s with the development of railroads. The system was further influenced by creation of the car and internal combustion engine in the 1870s and the advent of air travel in the early 1900s. The creation of the modern transportation system, though, has contributed to the segregation of Blacks and Whites over the past century. Much of the literature on racial inequality has assessed the role of transportation as having negative effects on an area and on the redistribution processes[2] of neighborhoods (Chi and Parisi 2011; Deka 2004; Grineski, Bolin, and Boone 2007; Mennis and Jordan 2005).

Highways tend to bring pollution, noise, and fumes that may affect the health and quality of life of the nearby residents (Chi and Parisi 2011). Deka (2004) describes

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[1] Also see Beggs, Hulbert, and Haines (1996:407) for information on community attachment and problems within the community.

[2] Redistribution process is defined as the process by which certain populations leave neighborhoods and other populations inhabit neighborhoods (also known as residential succession).

highways as creating crime spaces[3]. In addition to increasing the crime rates, the presence of highways also lowers land values of surrounding communities, which often leads to White flight (Chi and Parisi 2011; Pastor, Sadd, and Hipp 2001). Many studies have noted that low real estate values near highways promote the in-migration of minorities, who take advantage of low property values (Been and Gupta 1997; Chi and Parisi 2011).

The environmental justice literature often argues that the disproportional presence of minorities brings "unfavorable infrastructure" (Chi and Parisi 2011:42) to an area (Atlas 2002; Baden and Coursey 2002; Been 1995; Been and Gupta 1997; Bullard 1990). In the 1970s, many economists began probing the problem of air pollution and its relationship to economic status. Their studies find that low-income and minority resident percentages were positively correlated with air pollution (Asch and Seneca 1978; Berry 1977; Burch 1976; Freeman 1972; Kruvant 1975; Szasz and Meuser 1997; Zupan 1973).

Bullard's (1990) classic work points out that many companies that pollute the air and water locate in minority communities. Often, this is due to three contributing factors: (1) the people in the town may want or need the jobs, (2) the people in the town lack the political capital to keep the companies from moving into their neighborhood, and (3) the politicians of the town may want the increased tax revenue that comes with the jobs.

Creating built capital, therefore, is not just about bringing in any type of infrastructure; it must require healthy infrastructure that interacts with other types of

[3] Crime spaces are areas isolated from the rest of a neighborhood where criminal activity can occur without interaction with people or police.

capital in the community. Otherwise, the short-term benefits of more jobs and greater tax revenue may lead to long-term problems with environmental erosion and pollution.

The environmental inequality and social justice literature prompts the question: Does the development of unfavorable infrastructure lead to Whites leaving the community and minorities coming in because of low property values and convenience to the interstate, or is unfavorable infrastructure located in places near minority communities? Connerly (2002) argues that public policies and planning tools such as zoning laws, public housing projects, and federal urban renewal programs were manipulated, used, and abused by some to prevent Blacks from moving to White communities. Previous case studies (Bayor 1988; Connerly 2002; Mohl 1993; Silver 1984) record how politicians employed the federal highway system to separate Blacks from Whites (Chi and Parisi 2011). Furthermore, Massey and Denton (1993) describe how residential segregation has occurred as a result of government policies such as the G.I. Bill, FHA loans, and other policies that created a minority underclass in urban areas.

Szasz and Meuser (1997) identify the effects of companies locating in minority and low-income neighborhoods: uncontrolled waste sites, licensed commercial hazardous waste facilities, and exposure to lead and other chemicals. An area along the Mississippi River in Louisiana stretching from New Orleans to Baton Rouge has become synonymous with environmental racism: this area has been called Cancer Alley because the presence of chemical companies in the region has led to high rates of cancer (Marshall 2004). Cancer Alley contains large minority communities that have existed there for generations.

Although the answer to the underlying question is complex, some answers do emerge. As discussed, it has been shown in the literature that when highways are constructed, Whites tend to leave (Been and Gupta 1997; Pastor, Sadd, and Hipp 2001), whereas minorities tend to relocate to these communities (Chi and Parisi 2011; Pastor, Sadd, and Hipp 2001). After the construction of highways, additional unfavorable infrastructure may move into the region, such as chemical companies or hazardous waste sites, owing to the lack of political capital of minorities or the need for jobs and tax revenue. However, we do not know if this is the case for rural areas because very little research has been done on transportation infrastructure and its effects on racial segregation in rural regions.

Expanding on the established research in urban areas, the current study examines the question of whether similar processes occur in rural areas. This study expands the literature to test the effects of airports on economic development and the creation of community capital. Also, this research poses and tests hypotheses to gain a more comprehensive understanding of the processes within the community capital framework that create cumulative disadvantages for those within the Black Belt region. The research also identifies ways in which migration affects the community capital framework, along with social and physical development.

Economic Oppression in the Black Belt

Understanding the development of community capital in the Black Belt requires an examination of the employment sector of the region. The Black Belt is still dominated by a large agricultural employment sector (Kennedy 1940; Tomaskovic-Devey and Roscigno 1996; Wimberley and Morris 1997), yet most of American society has moved

to the manufacturing sector and to the service sector economies. In addition to having an extensive minority population living in poverty, the Black Belt has also historically included a populace with vast wealth: many of the prosperous plantations of the Old South were located in this region (Cleland 1920).

Key (1949) writes that the main priority of Whites in the South, especially in the Black Belt South, was to defend the Jim Crow political system, which was described by Key as the backbone of the Old South (Glaser 1994). It should come as no surprise that the Black Belt was a region where many of the most intense battles over civil rights were fought (Webster 1992; Webster and Bowman 2008). The era of Jim Crow in many ways prevented the Black Belt from flourishing and left its mark, despite many Whites leaving (Glaser 1994).

In the 1920s and 1930s, the Black Belt became a hotbed of Communist activity, with many Communists calling for a right of self-determination for a Black Belt nation (Johnson 2011; Klehr and Thompson 2007; Tullos 2004). The primary organization leading this struggle was the Alabama Sharecroppers Union. While the Sharecroppers Union ultimately failed in many of its goals, Johnson (2011) argues that the organization planted the seed of radicalism that ultimately led to the Civil Rights movement in the South. Activities by members of the Sharecroppers Union paved the way for the development of a connection among African American citizens of the Black Belt, thereby creating social capital within the minority community and providing Blacks in the South with an opportunity to cultivate political capital.

While the impact of the Civil Rights movement was important to the Black Belt region and presented many economic opportunities for Black people—allowing them to

gain more political control—many Black residents nevertheless left the region (Bogie and Harrison 1982). Recent research (Driskell and Embry 2007) concludes that Blacks benefit from migration to a metropolitan region. However, this out-migration leaves the remaining residents even further behind, in a Black Belt without an educated workforce. Coombs et al. (1977) show that when Blacks gained control of Greene County, Alabama, in the early 1970s, substantial resources from outside agencies poured into the county and the standard of living increased. However, those gains were short lived—falling victim to a growing political desire to move away from the tumultuous 1960s, as well as to the beginnings of a backlash to the Civil Rights movement.

During the 1960s, African Americans in the Black Belt benefited politically with gains in voting and civil rights. However, because of the rural nature of the region, sufficient cultural, financial, and social assets did not exist to build on those political gains. Community capital formation requires that all forms of capital interact toward a common end. In the case of the Black Belt, the creation of political capital did not necessarily translate into economic gains because the region did not achieve social or cultural improvements. Therefore, the new human capital that was created as a result of better access to education and other institutions did not endure in the Black Belt, and the greater income and financial rewards that were expected did not materialize.

Out-migration has long been a problem in the Black Belt and the southern United States in general. During the period of the Great Migration (1915–1970), many Blacks and Whites migrated from rural areas to cities in the South. Gee (1937), comparing those on the *Who's Who* list of American school students, argues that the South was losing talent because of its impoverishment. Boyd (2006) shows that the development of a Black

business elite in the North was related to this out-migration. Boyd (2006) also finds that Blacks who out-migrated were upwardly mobile and often followed the ideology of self-help and racial solidarity espoused by Booker T. Washington.

Boyd (2009a:253) makes a very simple but profound point with regard to out-migration: "Individuals with high levels of education, occupational skills, or other characteristics that facilitate socioeconomic achievement will move from places where entrepreneurial achievement is scarce (e.g., rural areas in the Deep South) to places where such opportunities are abundant (e.g., urban centers such as Chicago)." Entrepreneurial achievement refers to the ability of individuals to start businesses or enter professions within a community.

While there was a migration to northern cities from southern rural areas from 1900–1970, many southern cities outside of the Black Belt enjoyed thriving Black commercial districts (Boyd 2009b). Boyd (2009b) argues that although Black commercial districts in many southern cities are now declining, those areas also may have attracted many migrants from the Black Belt during the period of the Great Migration.

The out-migration of highly educated and entrepreneurial Blacks from the rural South evokes the question: Would the people who out-migrated have been as successful if they stayed in the rural South? With the high levels of discrimination in the South and the lack of infrastructure, it would have been hard for the many Blacks who out-migrated to have had as much success in the South as they did in the North.

However, the people who stayed were active in American culture. Much of American music has its origins in the Black Belt (specifically, the Mississippi Delta region). The blues have made an enormous impact on southern culture as well as on

American culture in general. There are also a few colleges within the Black Belt, such as Tuskegee University and Grambling University among others, that have provided higher education opportunities for many citizens—an important factor in modern society, where education is becoming more necessary than ever to achieving a financially successful and viable life.

Unfortunately, the cumulative disadvantages (Diprete and Eirich 2006) have outweighed the opportunities in the Black Belt region. Mired by poorly funded schools, dilapidated infrastructure, inadequate health care, and rural isolation, the Black Belt maintains its standing as America's poorest region. Many have, therefore, called the Black Belt America's "Third World" (Archibald, Hansen, and Spencer 2002b; Slaughter 1988).

Slaughter (1988) argues that the Black Belt remains an area that has been affected by colonialism. He maintains that land-holding interests, such as timber companies, invest in and build their businesses in the Black Belt region; however, the money does not stay in the region but goes instead toward outside corporate profits.

Slaughter (1988) also argues against the advocates of the New South who claim that the Black Belt is now like other parts of the country in its political makeup (Black and Black 1987). He concludes that there is little difference between the Black Belt of 1988 and the Black Belt of 1948. Cromartie (1999) affirms this conclusion by suggesting that the struggles of the Black Belt are a result of the failure of the region to evolve from a slave-based, agrarian economy to becoming part of today's diverse and competitive global economy.

As society changes, so too must local, state, and national economies (Flora and Flora 2008). Regions that have less access to certain forms of capital will be at a distinct disadvantage as the world integrates socially, economically, and culturally. The legacy of the past limits the future for the Black Belt.

Policy Prescriptions

Numerous policies and programs exist to help residents in the Black Belt and low-income households in general. While some of these programs have had mild success, they have not cultivated adequate community capital to bring Black Belt residents as a whole out of poverty. Many researchers indicate the need to integrate an understanding of the community conditions of rural areas into our understanding of poverty (Lichter and Jensen 2001, 2002; Parisi et al. 2003; Zimmerman and Garkovich 1998). Policymakers must have a greater comprehension of a community's capital infrastructure to create innovative policy proposals that can alleviate the burden of isolation and poverty in the rural South.

Rural governments are faced with unique burdens when addressing poverty. The rural community often suffers under enormous financial stress. Today, rural governments rely on local sources of revenue for approximately 65 percent of their total budget, and this percentage represents a gradual rise over the last 30 years. In 1981, the Reagan administration made large-scale cuts to federal assistance for state and local governments. This precipitous decline in federal support forced state and local governments to increase their efforts in promoting economic development, which led to more responsibility but less money to satisfy the needs of rural residents (Brace 2002; Flora and Flora 2008).

The multiple government structures involved in addressing the needs of rural residents can also present a problem. There may be one government agency at the state or local level in charge of taking care of children, with another agency in charge of mental health. There has been some effort to create regional governmental districts to coordinate for efficiency. For example, in 1965 the Area Redevelopment Act was passed. This act created a series of regional and multicounty districts that allowed federally supported development efforts to become more focused. However, instead of promoting efficient coordination, it created a complex infrastructure for local and state governments to navigate (Flora and Flora 2008).

Less funding from the federal level, and past public policies, such as housing projects, FHA loans, G.I. Bill loans, and highway development, have helped maintain racially separate communities (Connerly 2002; Massey and Denton 1993). The racial history and legacies of the Black Belt region have played a role in the increasing distrust of political leaders of the region, especially from outside groups, and in turn, have caused those leaders to provide less funding for social programs.

Racial history and legacy have provided starting points for discussion on several public policy initiatives. Moynihan (1965) describes the increasing numbers of single-parent Black families, arguing that the rise led to a crisis. Moynihan underscores "the tangle of pathologies" that, he argues, occurred in Black families, that led to a reversal of roles in which women became the heads of households. The role of single-parent families in poverty is crucial to understanding poverty in the Black Belt. The feminization of poverty that began in the 1960s had a strong impact in the Black Belt, where many families in poverty are headed by women. Research has shown children from single-

parent families have a lower likelihood of educational success, and those with low levels of educational attainment tend to have higher levels of welfare participation and poverty (Bane and Ellwood 1983; Krein and Beller 1988).

Policymakers, concerned about the rise in single-parent families, have argued for a new welfare system. Many people believe that government was exacerbating the problem of poverty by creating a culture that fosters the dependency of poor people on federal government programs (Murray 1984). In agreement with that belief, Congress passed and President Bill Clinton signed into law the Personal Responsibility and Work Opportunity Reconciliation Act of 1996.

Many writers argue that the act was a result of an urban political agenda that ignored what was happening in rural areas (Lichter and Jayakody 2002; Parisi et al. 2003) and that the act may have hurt the rural poor (Beaulieu 1998; Findeis et al. 2001; Parisi et al. 2002, 2003). Some argue that people in rural areas face different disadvantages than do residents of urban areas (Lichter and Jensen 2001, 2002; Parisi et al. 2003; Zimmerman and Garkovich 1998). Howell (2002; see also Parisi et al. 2003) has shown that in the Mississippi Delta, which is part of the Black Belt, there is only one job available for every two welfare recipients. Among those finding employment, only a fraction are able to earn a living wage (Beaulieu et al. 2000; Parisi et al. 2003). Parisi et al. (2003) argue:

> Welfare reform that shifts responsibility for assisting TANF participants to successfully leave TANF to the local community has failed to consider the variability in community ability to meet this challenge. In many cases, poor economic conditions, low human capital, minority concentration, high inequality, and low civic engagement occur together, magnifying the disadvantages the poor experience in these communities. (508)

The battle over welfare reform is a reflection of the argument about the culture of poverty. In many ways, the current discussions about poverty are very similar to the ones heard 100 years ago (Katz 1996). Some argue that many of those in poverty are too lazy to work or too dependent on the government. Others think that structural deficiencies within the system cause the need for government programs and government benefits. Katz (1996) believes that more people have been helped out of poverty by government programs than by private charities.

While racial tensions have eased, there is nevertheless racial conflict in the Black Belt. Crowder (2002), in a special report to the *Birmingham News*, describes the rise and fall of the White academy in the Alabama Black Belt. Whites often argue the reason they send their children to such schools is due to the low quality of public schools in the area. However, many African Americans note that these White academies rose to prominence during the height of the Civil Rights movement. Andrews (2002) describes the movement of Whites into these "White flight" academies. He argues the formation of White flight academies in Mississippi was a response to integration, and the formation of these academies occurs

> (1) When there is a credible threat that desegregation will be implemented (implicitly signaling the "success" of the movement); (2) when blacks have the organizational capacity to make claims and voice protest within newly desegregated schools; and (3) when whites have the organizational capacity to resist desegregation. (911)

Not only have welfare reform and education been linked to racial isolation, transportation policy has also led to further isolation of minority communities (Bayor 1988; Connerly 2002; Mohl 1993; Silver 1984). The literature, which was detailed in an earlier section, focuses on urban regions, but transportation plays a crucial role in rural

regions and in the globalized society of today, even more than in the past. Many workers who live in rural areas commute to urban areas. Without adequate access to roads and regular maintenance of roads, worker commute times may be longer and barriers to opportunity may persist. Also, because of a lack of financial capital, not all residents of the Black Belt region have cars, and the lack of adequate public transportation to urban communities may present a barrier to their employment.

Moreover, in today's global economy, it is becoming more essential for regions to have access to—and invest in—air transportation. This presents a problem for residents of the Black Belt: many areas in the Black Belt are distant from airports, and companies want to locate in areas with access to air travel to ship goods to customers.

Cultivating community capital requires public policy prescriptions that focus on the financial and built capital of the region. Understanding the needs of the residents requires local leaders to cultivate political capital within and beyond their communities to achieve the means for built infrastructure that is beneficial to their region. Public policy prescriptions are often influenced by the biases and stereotypes that exist among and about the people of a region. The divergent views of the Black Belt are partly the result of the underdevelopment of cultural and social capital, which has occurred because of the legacy of Jim Crow and other types of discrimination.

To further identify the differentiated culture and regional aspects of the Black Belt, a thorough review of the types of capital is necessary, as is an understanding of each type of capital in relation to the Black Belt.

Cultural Capital

Cultural capital is built on the legacy of a community. Communities that are isolated create insufficient cultural capital for their residents. Wilkinson (199l:67) argues, "The rural characteristics of the locality suppress community interaction, and this reduces social well-being." Wilkinson asserts that the community is an important factor in social well-being because the community is where the individual meets society. The community represents a complete network of institutions. Wilkinson (1991) further notes the importance of the community in the emergence of interactions. The community is the primary place for most interactions in an individual's life. Wilkinson argues that the rural character of a community poses certain problems for one's social well-being, including the lack of jobs and income.

Cultural capital is a term made prominent by Pierre Bourdieu (1977a, 1977b, 1979, 1984; Bourdieu and Passeron 1977). Bourdieu argues that cultural capital is transmitted intergenerationally and that each field possesses its own cultural capital. (A field is a setting in which agents and their social positions are located.) Bourdieu maintains there is a distinction between classes of the practices (habitus) of individuals or social groups. Habitus, or practices, refers to the values and expectations of particular social groups based on their everyday experiences. For example, each class has different tastes: a wealthy person from New York may attend a symphony for a concert, whereas a poor person in Alabama may go to a country music festival. These practices become reproduced by the educational system.

For Bourdieu and others, cultural capital creates a system of social norms and expectations, and people with certain types of cultural capital hire, associate, and marry

people with similar types of cultural capital. Furthermore, some proponents of cultural capital argue that each class has a distinctive parenting style (Lareau 2003), language (Bernstein 1971), and tastes (Bourdieu 1984).

Flora and Flora (2002:1) state that "cultural capital influences what voices are heard and listened to, which voices have influence in what areas, and how creativity, innovation, and influence emerge and are nurtured. Cultural capital might include ethnic festivals, multi-lingual populations, or a strong work ethic." They argue that cultural capital reflects "the way people know the world" and how to act within it (2008:53).

Cultural capital includes the dynamics of whom we know and feel comfortable with, what heritages are valued, and collaboration across races, ethnicities, and generations. It is a dynamic conceptualization of our interactions and our networks. Cultural capital is different within each field. Fields are the common areas of space that take the form of each class. Bourdieu (1977a, 1977b) believed there are many types of classes, not just the standard four- or five-class model based on people's culture, economics, and social capital. Everyone has some form of cultural capital. However, certain types of cultural capital are valued more than others.

One of the major insights of Bourdieu's work is how education leads to a reproduction of inequality (Bourdieu 1977a, 1977b; Bourdieu and Passeron 1977; Lareau and Horvat 1999). Bourdieu argues that because of the differentiated experiences of upper-class and lower-class families, the quality of education depends on one's financial status. Thus, a wealthy student might attend a prestigious private school that encourages critical thinking skills, whereas a poor student may be taught at a public school that focuses on obedience to authority. According to Smith (1984), there are three important

periods of inequality in schooling and race within American history: the pre-Plessy era (1863–1896), post-Plessy era (1897–1954), and post-Brown era (1955–current).

After 1863, schooling was expanding rapidly for Blacks compared with Whites. The divergence in number of years in school declined between Blacks and Whites from 1863 to 1896 (Kalmijn and Kraaykamp 1996). In 1896, however, the U.S. Supreme Court, in *Plessy v. Ferguson*, ruled that segregation of schools on a "separate but equal basis" could be allowed. Many educational opportunities for Blacks were discontinued after that decision. Black schools also received less financial and social support than their White counterparts did (Kalmijn and Kraaykamp 1996). In the 1950s, "separate but equal" was declared unconstitutional with the U.S. Supreme Court ruling in *Brown v. Board of Education.* After that ruling, inequality in educational achievement declined but remains to this day (Kalmijn and Kraaykamp 1996).

Several research perspectives and theoretical frameworks try to explain why this gap in educational opportunity remains. Financial support for schools in Black school districts remains behind that of White school districts (Card and Krueger 1992; Kalmijn and Kraaykamp 1996). After integration, many Whites began moving their children to private schools, thereby diminishing support for public education in the South and maintaining the "separate but equal" system of educational inequality.

Compounding the problem of educational inequality was the fact that Black parents had lower levels of schooling than their White counterparts did; therefore, a focus on family background is important. Black children are more likely than White children to come from broken homes or single-parent families (Kalmijn and Kraaykamp 1996). Accordingly, the background of the Black family plays an important role in the interplay

between reproduction and inequality. In the 1960s, some proclaimed there was a crisis in the Black family (Moynihan 1965) and that a "tangle of pathologies" had permeated the African American family experience.

Bourdieu (1973), Bourdieu and Passeron (1977), and Kalmijn and Kraaykamp (1996) argue that with the expansion of higher education, cultural capital became a new ascriptive characteristic. Children from more privileged backgrounds experience more cultural activities, which are often associated with the higher class. This differentiated cultural experience is also linked to parents who may have attended college and, having experienced the pressures of college, are better able to prepare their own children for college.

Kalmijn and Kraaykamp (1996) posit that the integration of Blacks into White European–American culture occurred quickly after the verdict in *Brown v. Board of Education*; however, the role of cultural capital is modest when compared with the legal and cultural changes of society. The argument is that legal changes outpace cultural changes in society. Lareau and Horvat (1999) believe the institutional demands of society implicitly favor Whites; thus, any discussion of social and cultural capital must include the interplay with the institutions of modern society. Lareau and Horvat (1999) were specifically concerned with how a person's social and cultural capital interacted with administrators in the educational system. They believe that people who have positions similar to administrators are able to accomplish more for their children than those who have lower- or working-class backgrounds. Similarly, Roscigno and Ainsworth-Darnell (1999) argue that family structure and socioeconomic status play important roles in determining what schools children attend. Achievement, therefore, becomes a

collaboration between the institutions of society, the financial support the institution receives, and the cultural foundations of the society, which create a favorable or unfavorable social and physical infrastructure.

The Black Belt is therefore an important region for observing how race, cultural capital, and the larger institutions of society interact. Given the widespread social problems within the Black Belt, such an analysis provides an opportunity to further understand the interplay of social, cultural, and financial capital within the institutions of larger society to create cumulative disadvantage. Black Belt schools report low rates of high school graduation and high numbers of single-parent families, which give researchers the opportunity for a wide-ranging investigation of cultural capital within the South. In the current research, high school graduation rates and single-parent families are used as both independent and dependent variables.

The spatial analysis of cultural capital is central in this research. Differences among counties with regard to employment and poverty were correlated with certain cultural capital endowments, such as attendance at colleges and universities, percentage of single-parent families, and graduation rates. Employment and poverty were significantly correlated with these endowments within the Black Belt region. Because of the similarities in cultural experience, shared history, and legacy among residents of the Black Belt South, a spatial analysis was used to identify some connection between the history and legacy of the region, the region itself, and cultural capital.

Social Capital

Cultural capital can also lead to what is described as social capital. Social interactions are critical—and create further interactions, leading to creation of social

capital. The whole process of these interactions takes the form of networks. Granovetter (1973) describes the "strength of weak ties" in his discussion of networks, examining how people find jobs from information obtained from those with whom they have only weak or casual ties. Lin (1999) extends the analysis of Granovetter by arguing that people who have many weak ties with those higher up the economic ladder have a greater chance of finding jobs than people whose greatest number of weak ties are with those who are not managers or otherwise in positions that allow for hiring.

Social capital can be inclusionary or exclusionary: social capital within the community has been shown to be beneficial for those who live within the community (Halpern 2009), but social capital can lead to exclusion for those who lack it. Flora and Flora (2008) note that social capital builds bridges that can bring people together through new networks. However, social capital also creates bonds that contribute to tying people to a certain way of life.

Bourdieu (1986:249) argues that "social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." He believes that social capital is an attribute of elites. Coleman (1988) sees social capital in a slightly different fashion. He observed how individuals and institutions organize themselves on the basis of reciprocity. Coleman views social capital as not just an attribute of the elite but as something that could be beneficial to the working class as well.

Putnam (1993, 2000) discusses social capital and civic engagement. His argument is that a large number of institutions and social activities in the United States are declining as a result of more people living in suburbs, the increase in virtual

entertainment, and changes in the family structure. Putnam also argues that generational change is a strong reason for the decline, stating that seniors are more likely to be engaged in civic activities than other age groups are.

Flora and Flora (2008) describe two types of social capital: bonding and bridging. Bonding social capital refers to the close ties within the community that build cohesion. Bridging social capital refers to the weak ties that maintain bridges between organizations and between communities. The authors created a typology that includes both the positive and negative aspects of bonding and bridging social capital, and they use the term "clientelism" to describe possible effects of social capital. Clientelism, they argue, occurs when "community decisions are based on what outsiders from market, state, or civil society offer, building power of local elites and service providers" (Flora and Flora 2008:126).

According to Flora and Flora, another possible outcome of both types of capital is progressive participation, in which a "community decides priorities based on the common good" (2008:126). Still another possible outcome is class-identified self-interest. The wealthy invest for their own self-interest and exclude the concerns of the poor. The outcome is strong boundaries in which there is no external communication or trust. Communities that lack social capital, according to Flora and Flora (2008), also lack the capacity to change because it is through social capital that communities gain access to outside forces to create that change.

Some have questioned the ability of social capital to create change. One focus of the social capital debate is the disconnection between the middle class and wealthy people in suburban areas. DeFilippis (2001) argues:

> This sense of isolation presents a problem. If people who are affluent in the United States are struggling with social disconnectedness and isolation, why are people who are concerned with economic development in low-income areas emphasizing the importance of social connectedness and networks as a way of moving low-income people and communities out of poverty? There seems, in short, to be a disjuncture between, on the one hand, the experiences of the affluent and on the other, the prescriptions for the poor in American life. This disjuncture, in and of itself, should lead people to question the utility of the social capital framework in community economic development. (782)

Another problem of social capital is that it carries a wide variety of meanings, which makes for a very elastic concept (DeFilippis 2001). The concept of social capital varies according to the theorist. Putnam (2000) describes social capital as based on voluntary associations, Coleman (1988) describes social capital as based on trust. Bourdieu (1977a, 1977b) describes it as based on the networks created through one's financial standing.

Loury (1977) counters the human capital theorist framework of Becker (1957, 1964) and argues there is a conflict between the ideals of equality of opportunity and the contextual nature of a society that deems that all individuals have different chances in life. In other words, human capital formation, in and of itself, is a social process.

Furthering the work of Loury, Bourdieu (1985) poses a more complex definition of social capital in an attempt to understand class and class divisions. For Bourdieu (1984), social capital is never disconnected from financial capital. DeFilippis (2001:783) elaborates, "Capital, for Bourdieu … is simultaneously both economic and a set of power relations that constitute a variety of realms of social interaction normally thought of as noneconomic." Power and economic capital are significant factors in creating social capital within society.

Coleman (1988) describes social capital in terms of its functional processes. For Coleman, social capital is morally neutral. Social capital is neither desirable nor undesirable; it is the process by which actors operate for certain actions to take place and certain resources to be distributed among the population (DeFilippis 2001). For Putnam (1993), social capital goes from being realized or embedded within individuals to something possessed (or not possessed) within communities, groups, or regions. Thus, trust becomes an essential element in creating or denying social capital.

According to Loury (1977), Bourdieu (1985), and Coleman (1988), a person does not have social capital on his or her own; it is in embedded in a person's social relationships. Putnam (1993, 2000), however, argues that social capital is something an individual or group may or may not possess. The very nature of social capital is diverse, which makes the process of studying social capital theoretically and methodologically challenging.

In this study, social capital is viewed as an area for expanded interaction. Airports, for example, represent an opportunity for expanded interaction because they provide access not only to the marketplace but to diverse groups of people as well. Highways, too, can be seen as areas of expanded interaction—not only because they provide access to markets and people but also because they may provide easy destination points for travelers. Likewise, colleges and universities expand interactions among diverse groups of students and among faculty who may bring an accumulated knowledge that allows for development of both a social and a physical infrastructure.

Community Capital Framework

Over the past 30 years, extensive popular and scholarly discussion has revolved around the topic of urban poverty. Wilson's (1987) research on deindustrialization and job loss in urban areas and Massey and Denton's (1993) research on residential segregation provide classic explanations of poverty, especially in the urban African American community. Yet many of the problems that both works address could also apply to rural areas of the Black Belt. Bellamy and Parks (1994) argue that Black Belt counties gained fewer or lost more manufacturing jobs than non-Black Belt counties from 1980 through 1986. Slack and Jensen (2002) find that unemployment and underemployment were higher in rural areas than in urban areas, and 30 years after the Civil Rights era, there remained very significant levels of racial inequality across the country.

Understanding the cumulative disadvantages of the Black Belt requires a discussion about the African American residents of the Black Belt. One must understand the role of race in the growth of isolation of the Black Belt. Tomaskovic-Devey and Roscigno (1996) present two main theories of inequality: competition theory and class exploitation. Competition theorists (Blalock 1967; Lieberson 1980; Wilson 1978; all cited in Tomaskovic-Devey and Roscigno 1996) note the backlash that occurs when minorities move into an area and are perceived to threaten the economic and social dominance of the majority group population living in the area. Competition theorists also argue that the historical residues of racial discrimination lead to inherent disadvantages that persist.

Class exploitation theorists emphasize the split labor market (Barrera 1979; Bonacich 1972, 1980; Reich 1972, 1981; all cited in Tomaskovic-Devey and Roscigno 1996) and contend "the upper class usually instigates racial division, which in turn undermines working class solidarity and depresses the wages of all workers" (Tomaskovic-Devey and Roscigno 1996:566).

Zekeri (2005) maintains there are nine reasons for the enduring poverty in the Black Belt. Most research on the Black Belt focuses on one or more of these nine explanations:

1. Segregation and, more specifically, a high concentration of African Americans
2. High concentration of female-headed households
3. Lack of jobs and income
4. Business closings
5. Aging of the population—specifically, there has been an increase in the elderly population in Alabama's Black Belt at the same time there has been an out-migration of young people, which leads to a dependency phenomenon in the region, with few people in the job market to provide services to the elderly population
6. Lack of human capital endowment
7. Isolation
8. Globalization, which causes companies, such as textile manufacturers, and to leave for cheaper labor overseas
9. Inadequate public goods and services

One crucial cause of lasting poverty that encompasses the aforementioned explanations is access. Access is of primary importance in addressing issues in rural areas. McGranahan and Beale (2002) examined population loss in rural areas and argue that such loss is due to more than just a lack of jobs. The authors claim that having ready access to services, such as health care, schools, stores, and restaurants, is vitally important in maintaining a population. They argue that the farther a rural area is located from an urban area, the more likely it is that the rural area will lose population.

Access is also crucial to business location decisions. In that regard, access can be defined in relation to the matching of workers to the industry, transportation routes, consumers, and globalized markets. Businesses require access to transportation infrastructure, and they tend to prefer access to a well-educated workforce.

Flora and Flora (2008) define access in terms of a region's characteristics with respect to seven types of capital: natural capital, financial capital, social capital, human capital, political capital, built capital, and cultural capital. Under their theory, those seven types of capital lead to a vital economy, social inclusion, and a healthy ecosystem. To create a healthy ecosystem and a strong economy, the seven types of capital must interact to promote favorable infrastructure development. Figure 2.3 illustrates the conceptual framework of this vision.

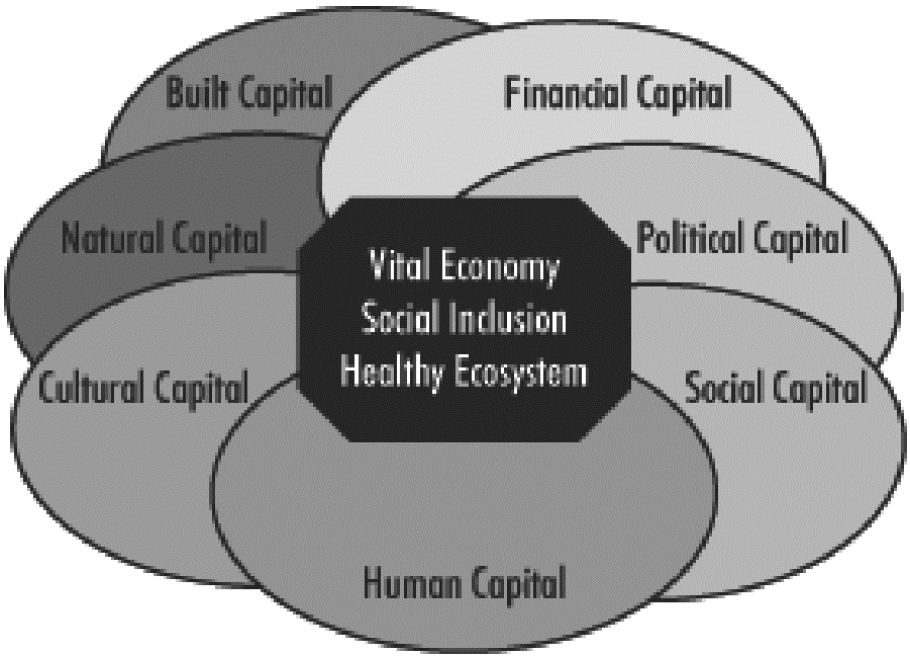

Figure 2.3 Community capital framework

(Flora and Flora 2008)

Flora and Flora (2008) describe natural capital as assets based on location, including amenities, natural resources, and beauty. Financial capital is identified as the financial resources available for community capacity building, including business development and the creation or further development of civic and social entrepreneurship. Civic and social capital are defined as the activities of businesses or nonprofit corporations that work toward a specific or general goal in the community. The purpose of those goals is generally to engage the community and reduce social and economic barriers that prevent upward social mobility.

Flora and Flora (2008) also assert that financial capital increases in importance in the globalized economy. They argue that in the past, commodities, natural resources, and manufacturing were the driving forces of the international economy. Today, however,

those forces are superseded by the flow of capital from one currency to another. Local areas have less control over what happens to them economically for three reasons: "changes to international monetary policy; the impact of trade relations and domestic fiscal policies; and the true internationalization of corporations" (249).

In the new international economy, the lack of financial capital in the Black Belt is exacerbated by the lack of political capital and built capital. Political capital refers to the accessibility of people to power brokers, along with the opportunity to influence companies, politicians, and others on standards, rules, and regulations. This access is connected to built capital, which is the infrastructure that supports the community. Built capital can refer to roads, sewer lines, airports, health care facilities, educational facilities, and manufacturing facilities. Often it takes a community with power to raise money from either public or private investors to acquire such assets for the residents of the community.

Both political and built capital can be directly linked to human capital. Human capital comprises the talents and abilities of the members of the community. In a globalized economy, education has become increasingly emphasized. Communities with greater access to educational institutions will usually proffer more highly valued human capital. Education is largely funded by local taxes, so if there are no jobs in the community, there are no taxes to support education. This creates a paradox. On the one hand, a company that locates to a community needs an educated workforce and easy accessibility to transportation; this company positively influences the community by developing an educated and stronger workforce and a larger tax base. On the other hand, companies often do not locate in communities lacking higher education, so those

communities cannot develop a strong tax base and will stagnate without access to the seven types of capital that can create opportunity in the region.

Thus is the paradox of rural development: For jobs to come to a community, the latter must have an educated workforce and a transportation infrastructure with easy access to a globalized world. However, to obtain an educated workforce and a transportation infrastructure, a community must have a strong tax base that provides jobs and opportunity for people within the region.

Boyd (2009a) illustrates the point that the depletion of human capital in the South is not a recent phenomenon but rather is a long-term historical process that began with the Great Migration. The depletion began with Blacks leaving for other urban parts of the South and the North, which severely drained the human capital of the Black Belt region. With many talented African Americans leaving the Black Belt, there remained fewer role models and fewer entrepreneurs to further develop the region.

Political capital is strongly related to the social and cultural capital of a region. As Bourdieu (1977a, 1977b) points out, there are differentiated types of cultural capital, with certain types of cultural capital beneficial to the higher classes and other types beneficial to those of lower socioeconomic status. As cultural capital becomes delineated (spread among the population), certain forms of cultural capital become transferred. As Kalmijn and Kraaykamp (1996) note, those who conform to a White European culture are more likely to achieve success in American society.

Because of the legacy and history of the Black Belt, African Americans have for the most part been educated in isolated schools and consequently developed fewer interactions with their White counterparts. Social capital, Flora and Flora (2012) argue,

can create exclusion in certain communities where distrust prevails. Thus, if those in power distrust those who are out of power, then an exclusionary form of social capital is created. The history and legacy of the South, along with the cumulative disadvantages prevalent in the Black Belt region, lead to distrust among residents in the predominantly White power structure in the southern states and reduce the political capital of African Americans.

Political capital is both a consequence and an incubator of financial and built capital. One way that the power of political capital is revealed is by an examination of highways and airports. Transportation decisions are often made in a political environment, so those with political power will bring more transportation funding to their region, leaving other, less powerfully connected regions without funding. Thus, political power can influence the placement of airports. Because airports are seen as access points to the world, many political players, as well as business leaders, favor the location of airports in or near their communities.

To fully understand the community capital framework, we must understand the interaction between physical and social infrastructures. Transportation is important in detailing these interactions. While transportation has been studied for many years in sociology, little research has examined how transportation creates (or denies) opportunity in rural areas. Literature on transportation has been guided by the study of urban areas rather than rural areas. The current research is the first to comprehensively examine the impact of transportation—specifically airports—in a rural setting with a focus on the community capital framework and cumulative disadvantage. How each capital is used in this analysis is presented in Table 3.1 in the next chapter.

Transportation and the Urban and Rural Environments

For many years, interest in transportation infrastructure has played an important role in the development of research and theories within urban sociology and human ecology. McKenzie (1924:290) states, "As new forms of transportation arise, new points of concentration occur and old points become accentuated or reduced." According to human ecological theorists, the study of transportation provides a crucial understanding of social interaction, economic growth, and social change. Burgess (1925) provides an understanding of the spatial distribution of groups within urban areas. In the concentric zone model, he described how transportation systems tend to radiate out from the central business district because residents in the outer zones with higher income can afford higher transportation costs to commute to the central business district.

Hawley (1986), in discussing his propositions on human ecology states,

> System development continues, ceteris paribus, to the maximum size and complexity afforded by the technology for transportation and communication possessed by the population and system development is resumed with the acquisition of new information that increases the capacity for the movement of materials, people, and messages and continues until the enlarged capacity is fully utilized. (7)

According to Hawley, all human effort is directed toward adaptation; thus, changes in the transportation infrastructure require a change in the human condition. These adaptations create new symbiotic and commensalistic relationships within the community. Hawley notes that the expansion of interrelationships among system units corresponds with the increase in communication and transportation technology (1950, 1971, 1986, 1992).

Irwin and Kasarda (1991) take an ecological view of air passenger linkages and employment growth in the United States. They find that an increase in air travel leads to

an increase in employment growth. Consistent with the works of Hawley, they also find that air travel increases interdependence and interaction among metropolitan areas. Kasarda and Lindsey (2011) argue that airports are creating a new urban form in which cities will be transformed and new forms of transportation will revolve around the airports. Advances in transportation technology will lead to a redesign of cities.

For many years, a debate has existed about how transportation affects economic growth and development. The question often asked is, "Does economic development come first or does transportation come first?" The debate about the relationship between economic development and transportation is based on three main theoretical lines of research: neoclassical growth theory (Solow 1956), growth pole theory (Perroux 1955), and location theory (Christaller 1966).

In neoclassical growth theory, three basic inputs produce outputs: land, capital, and labor (Solow 1956; Chi 2012). The role of highway infrastructure in the production process causes transportation to enhance labor and other inputs (Dalenberg and Partridge 1997; Eberts 1990). Neoclassical growth theory argues that "as the amount of highway infrastructure increases, economic output increases, which leads to population and employment growth" (Chi 2012:3; also see Dalenberg and Partridge 1997). Applying this proposition to airports leads to a similar conclusion. As the number of airports increases, economic output would also increase, as would population and employment growth. Airports can thus be framed as facilitators of economic growth because they expand access to other modes of transportation. In addition, hotels and restaurants often locate near airports, which leads to an increase in local jobs.

Growth pole theory looks at the concept of spread and backwash to predict the mutual geographic dependence of economic growth and development (Chi 2012). Mutual geographic dependence can be defined as the interrelated economic activities that occur between geographic boundaries. The concept of spread means that as one region or metropolitan area expands, other development will occur in outlying and rural regions. Backwash describes a situation in which one area is gaining in development, but the surrounding regions are losing in development. According to Thiel (1962) and Chi (2012), transportation infrastructure, highways, and airports are catalysts of economic change.

Another theory addressing the role of transportation in economic development is location theory. According to this theory, firms, businesses, plants, and corporations want to locate to an area that minimizes costs and maximizes profit; thus, transportation infrastructure becomes a facilitator of the flow of raw and finished material goods (Chi 2010a, 2012; Thompson and Bawden 1992; Vickerman 1991). Highways can produce inflows as well as outflows, thereby streamlining development. It follows that highways are necessary but not sufficient for the creation of local economic growth and development (Halstead and Deller 1997).

Neoclassical growth theory, growth pole theory, and location theory are critical to understanding the cumulative disadvantages within the Black Belt. Because the Black Belt is isolated and historically disadvantaged, determining the impact of transportation infrastructure is necessary to encourage stronger public policies to improve the economic circumstances of residents. Because transportation is both the result of and an incubator

for economic development, the three theories provide insight into the geographic dependence and linkage of regions.

By studying accessibility to airports, application of those theories can be updated. Airports play a crucial role in modern globalized society. Updating those theories, with a focus on cumulative disadvantage, extends them to a modern context. Studying the relationship of airports to cumulative disadvantage is important because airports play an important role in economic development (Chi 2012; Goetz 1992; Goetz and Sutton 1997). Airport travel reduces the distance limits of social and economic interaction (Irwin and Kasarda 1991). Air transport also links distant regions and links formerly isolated economic regions to the globalized economy (Brueckner 2003; Chi 2012).

Studies of rural areas show mixed results on the role of airports in economic development. Rasker et al. (2009) find that airports perform a critical function in economic development for high-amenity rural areas. The authors argue that this is the case because amenities themselves are not sufficient for economic development and that people need easy access to the area for tourism. However, Isserman, Feser, and Warren (2009) find that relative distance to airports is unimportant for economic development. Chi (2012), analyzing population growth, finds that both highway improvement and airport accessibility were associated with increased population growth from 1980 to 1990, and that airport accessibility had the strongest impact on population growth during that time.

The current study sets forth a theoretical framework and advances the many theories of urban transportation by applying each theory to a more rural setting. By use of

these urban transportation theories, the current study develops further pivot points to understanding community development in not only rural areas but also in urban areas.

CHAPTER III

THEORETICAL FRAMEWORK

The community capital framework sheds light on how transportation infrastructure might affect residents of the Black Belt. Airports can be classified as part of built capital; however, they also confer access to social capital, political capital, human capital, and cultural capital. Conversely, lack of those types of capital puts Black Belt communities at a disadvantage when trying to locate an airport in the region.

As discussed earlier, in a new globalized world the need to interact with others and to travel great distances gives counties with airports in or near them advantages in creating economic relationships with distant regions. Airports can enhance the cultural capital of an area by attracting new visitors and establishing amenities that had been formerly out of reach (Rasker et al. 2009). Airports also can improve the human capital of an area by attracting a college-educated labor force. Furthermore, airports can be regarded as a sign of the political strength of an area because airports often require heavy initial investment from state, local, and sometimes even federal governments. Thus, it is often through the political influence of the people in a county or region that airports locate in a particular area.

Location theory, which posits that firms, businesses, plants, and corporations prefer locations where costs are minimized and profits maximized (Christaller 1966), also plays a pivotal role in explaining how and why airports locate in a particular area.

Because corporations want to locate to areas that minimize costs, regions with less built infrastructure are at a distinct disadvantage. Locations without airports cause businesses to incur higher transportation costs than locations with airports; therefore, airports can be seen as a facilitator of economic growth.

Similarly, growth pole theory (Perroux 1955) helps explain the development of airports in communities. The theory states that as growth and development occur in one area, there could be a spread (economic growth spreading to other areas) or there could be backwash (one area attracts economic growth from neighboring areas, which leads to decline in neighboring areas). Mutual geographic dependence and isolation in the Black Belt limit the extent of outside connections; therefore, the lack of built infrastructure makes gaining other built infrastructure, such as airports, more difficult. Owing to the absence of airports, there could be a backwash when regions with airports attract jobs from regions without airports.

Neoclassical growth theory argues that areas that have airports and other transportation infrastructure experience increased economic inputs as a result of that infrastructure (Solow 1956). Accordingly, because airports attract other infrastructure, such as restaurants and hotels, regions with airports exert a large advantage over regions without them. The lack of airports in the Black Belt further hinders development of tourism and presents major barriers to the promotion of industry.

Likewise, areas in the South with colleges and universities often provide more cultural and human capital than areas without such institutions. Colleges and universities are incubators of human capital, at least in the form of education. Such institutions attract highly educated professionals to work, which creates new forms of cultural capital. Along

with the presence of colleges and universities in a county or other geographic region, high school graduation rate is a potential indicator of both cultural capital and human capital. Many companies locate in areas with highly educated workers. Therefore, better high school graduation rates support job creation by furnishing an able and ready workforce to an employer.

Another variable that can create, or potentially limit, human capital is the poverty rate. Poverty often leads to isolation and a lack of investment in communities (Wilson 1987). Also, poverty can lead to the out-migration of middle-class residents, compounding the isolation (Wilson 1987).

Access to health care plays an important role in the creation of human capital as well. Obrist et al. (2007) describe health care access as being based on physical, natural, human, and financial capital. Barriers to health care are caused by lack of these types of capital. Numerous studies have shown that lack of access to health care has detrimental effects on achievement in education and entry to the labor force (Kawachi et al. 1997; Ranis, Stewart, and Ramirez 2000).

Table 3.1 illustrates the variables in this study and the seven types of capital. Within the community capital framework, all seven types of capital must interact in a patterned sequence for development to occur. The table also describes access to other types of capital and the cumulative disadvantages that derive from lack of capital. These cumulative disadvantages result in isolation for the residents of the Black Belt.

Table 3.1 Conceptual Framework of Cumulative Disadvantages

Variable	Type of capital	Access to other types of capital	Cumulative disadvantage
Airports	Built	Social	Lack of access to global financial markets
		Political	
		Cultural	Lack of interaction
		Human	
Interstate highways	Built	Political	Lack of access to transportation for businesses
Poverty	Financial	Political	Lowers the social capacity for volunteer and social programs; less tax revenue for education creates poor school districts
		Social	
		Cultural	
		Human	
		Built	
Net migration	Cultural	Financial	Lack of educated workforce reduces employment and ability to attract new industry
		Human	
Colleges and universities	Human	Cultural	Lack of cultural events
		Financial	Lack of trained professionals
High school graduation rates	Human	Cultural	Lack of educated workforce
		Financial	Less highly skilled jobs
Single-parent families	Social	Financial	Lack of parental time
		Cultural	Dual requirements at home and work
Health factors	Human	Natural	Lower test scores and graduation rates
		Financial	Absenteeism
		Cultural	
Rurality	Natural	Built	Lack of access to infrastructure
		Cultural	
		Social	
Clinical care	Human	Natural	Less school achievement
		Financial	More time spent away from work
		Cultural	
Black Belt vs. non-Black Belt counties	Built	Natural	Lack of access to infrastructure
		Cultural	
		Financial	
		Political	High rates of poverty
		Human	
		Social	
Unemployment	Human	Financial	High rates of poverty
		Political	Lack of access to jobs infrastructure
		Cultural	

Built capital is a crucial yet understudied piece of the community capital framework. Flora and Flora (2008:206) define built capital as providing "the supporting foundation that facilitates human activity." In other words, built capital provides the building blocks for community capital. The physical infrastructure not only supports the development of a social infrastructure, but it also plays a central role in organizing and coordinating the development of the social infrastructure into the community capital framework.

Many works identify various community factors for study. Bernard (1949) examined a range of elements such as community organization, community competition, political organization, and disorganization and dissociation. Bernard (1949, 1973) became interested in how these elements are affected by the spatial and ecological aspects of the community.

Jonassen (1959) presents a list of community dimensions in an effort to establish a typology of communities. In the typology, he includes population, spatial structure, systems of integration, processes of change, consciousness of unity, and external relations

Wiseman (1986) postulates existence of an interaction with the environment beyond the community itself, with community identity and community political influence playing an influential role in determining the success or failure of public policy prescriptions. Furthering the analysis of Foskett (1955), Wiseman links social participation to decision making by people in authority. Wiseman (1986) also describes a pattern that often emerges in rural communities, a pattern in which residents find themselves protecting a set of long-held community traits while participating in a more complex society. For example, because of the history of agriculture in the Black Belt,

there remains a reliance on agriculture as a primary means of jobs in that region. In this way, linkages between the notions of community and the perceptions of public life beyond the community become relevant.

Larson and Rogers (1964) examined the increases in farm and nonfarm linkages, linkages between communities and the wider society, increased rural–urban interaction, rural–urban value differences, and the change in rural life from primary to secondary relationships. The very basis of the Larson and Rogers (1964) study assumes there are community-based effects on the larger political life. Bullard (1990) argues that the reasons chemical companies locate in poor regions are not always because of political pressure but sometimes are the result of internal forces within the community that wants the company to locate there. For example, the political leaders in a poor community may want a chemical company to locate within its boundaries because of the greater tax base or jobs it would provide to the community and its residents.

Community-based effects are an indication of a community's influence system. Barth (1961) argues that communities have influence systems (how power is distributed within the community) and offers three hypotheses relating social factors to the determination of the configuration of an influence system:

1. The rate of growth of the population base of a community is related to the shape of the community influence system. Other things being equal, the more rapid the rate of growth, the more diffuse the distribution of community influence.

2. Absentee-owned businesses or businesses headed by people not living in the community are found in communities with flat or disorganized business patterns. In such communities, those who control the means of power do not participate in community affairs.
3. The rapid expansion of the economic base of a community (especially where the community population is small before the expansion) is related to the development of clique structures (groups or individuals who are similar coming together) in the influence system (Barth 1961:59).
4. Incorporating community influence into the community capital framework requires an investigation of the community's political and social framework. How political and social capital develop within an influence system can create political or social capital that inhibits or facilitates transportation infrastructure. Along with political and social influences, it is important to investigate how rural communities utilize linkages from the outside world (Wiseman 1986).

Theoretical Linkages

The research brings together different theoretical linkages from many areas of study, including rural and community studies, sociology, urban studies, transportation, and economics. The theoretical underpinning of the research, as illustrated in Figure 3.1, is based on the argument that areas with low rates of built infrastructure (airports, highways, health care access, and colleges and universities) have less connection to outside forces to create community capital; therefore, the smaller likelihood of economic growth and social development spreading to areas with less physical infrastructure

inhibits the development of community capital and creates cumulative disadvantages for the region—specifically, the Black Belt in this study. These cumulative disadvantages are seen through higher poverty rates, lower high school graduation rates, more single-parent families, and less migration.

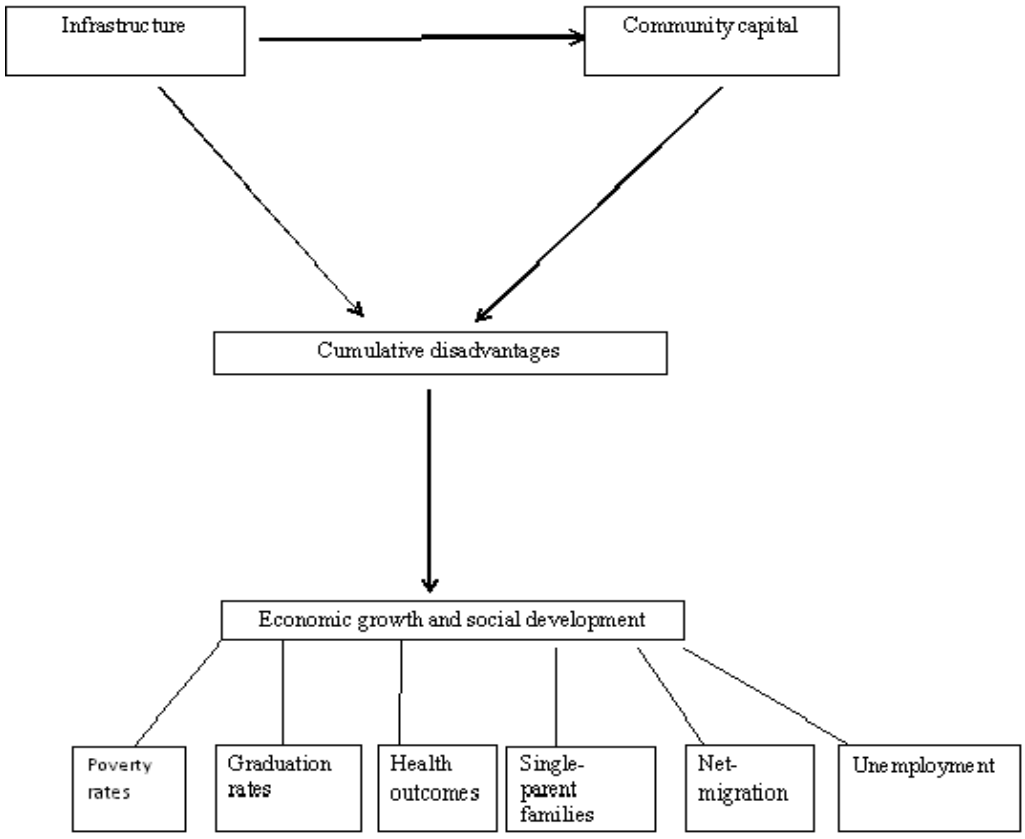

Figure 3.1 Diagram of theoretical linkages

Hypotheses

The two hypotheses of this research concern the relationship of built capital to other forms of capital and to measures of disadvantage. One hypothesis is that the lack of transportation and airport infrastructure and cumulative disadvantages are more

pronounced in the Black Belt region than other regions. The other hypothesis is that a county's distance from an airport positively correlates with several measures of disadvantage: poverty rate, unemployment rate, percentage of families headed by a single parent, out-migration, a low rate of high school graduation, and poor county health outcomes. Black Belt counties are hypothesized to have higher levels of disadvantage compared with non-Black Belt counties.

The study tested these two hypotheses by analyzing other aspects of infrastructure such as highways and the presence and proximity of colleges and universities. By determining how other types of infrastructure affect disadvantage, the analysis highlights the role of airport infrastructure in community capital development. In this study, airports can be seen as both a *catalyst* for economic development and a *consequence* of economic development. Airports (and other transportation infrastructure) constitute important assets of the physical infrastructure of a region, and airports tend to be located near geographical regions that are experiencing some development.

CHAPTER IV

RESEARCH DESIGN

A total of 1143 counties, all from states that were part of the Confederate States of America during the Civil War, were analyzed in this study. Of those counties, 618 are considered Black Belt counties, based on the criteria of Wimberley and Morris (1997). The current research is a comparison of transportation infrastructure in the 618 Black Belt counties of the South with that of the non-Black Belt counties.

The unit of analysis is counties, considering that many counties of the Black Belt are rural and have very small populations and that data are available more at the county than subcounty levels. Most researchers who study the Black Belt use counties as the unit of analysis (Tomaskovic-Devey and Roscigno 1996; Wimberley and Morris 1997, 2002). Counties have been the basic units of analysis for the Black Belt since the work of Du Bois ([1903] 2003) and have been the basis for defining the Black Belt (Webster and Bowman 2008; Wimberley and Morris 1997, 2002). This research also considers spatial effects, which enables a more thorough examination of how transportation access affects not only the immediate region but surrounding regions as well. Counties often vary in cultural and even geographic characteristics, with some counties comprising both rural and urban areas. This problem can be addressed by incorporating a measure of rural and urban clusters.

Data

Data for this research come from the Decennial Censuses of 2000 and 2010 and the American Community Survey (U.S. Census Bureau 2000a, 2010a), the 2000 and 2010 shape files (U.S. Census Bureau 2000b, 2010b) for highways from the Census, and county health rankings data compiled by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute (2012).

Distance from airports is derived from the National Atlas (2012). Shape files are spatial data, designed for use with GIS systems that show geographic and physical characteristics of an area. Georeference points for airports in the year 2000 were obtained from the National Atlas database of the U.S. Geological Survey/U.S. Department of the Interior.

The 2010 Census was chosen for the analysis because it provides the most recent data for determining current economic and social conditions in the Black Belt and coincides with the most accurate data available from the National Atlas. The 2000 Census is used to analyze how airport improvements from 2000 to 2010 play a role in improving the socioeconomic well-being of the counties in the study.

For the year 2000, the Robert Wood Johnson Foundation and the University of Wisconsin Population Institute health rankings are recreated for the health outcomes and health factors variable using data from a variety of sources chronicled in Appendix B. Table 4.1 provides the variable names, sources, and description of the data used in this study.

Table 4.1 Variable Names, Sources, and Data Used

Variable name	Sources	Description
Airport accessibility	National Atlas 2012	Log of the distance from the county centroid × enplanement
Interstate	National Atlas 2012	Distance from county centroid to interstate
Health factors	Robert Wood Johnson Foundation 2013	Comparison of clinics and facilities in the region
Colleges and universities	Collegestats.org	County with a college or university labeled 1; a county with none labeled 0
Black Belt county, 12 percent level	U.S. Census Bureau 2000, 2010	County with at least 12 percent Black residents is labeled 1; fewer than 12 percent is labeled 0
Black Belt county, 25 percent level	U.S. Census Bureau 2000, 2010	County with at least 25 percent Black residents is labeled 1; fewer than 25 percent is labeled 0
Black Belt county, 40 percent level	U.S. Census Bureau 2000, 2010	County with at least 40 percent Black residents labeled 1; fewer than 40 percent is labeled 0
Poverty	U.S. Census Bureau 2000, 2010	Number of people in poverty in county divided by total population of county
Percent rural	U.S. Census Bureau 2000, 2010	Total number of people in rural clusters in county divided by total population of county
Hispanics	U.S. Census Bureau 2000, 2010	Total number of Hispanic people in county divided by total population of county
Unemployed	U.S. Census Bureau 2000, 2010	Total number of unemployed in county divided by total population of county
Net migration	U.S. Census Bureau 2000, 2010	Number of in-migrants minus the number of out-migrants, by county
Single-parent families	U.S. Census Bureau 2000, 2010	Total number of female-headed households by county divided by total number of households in county
Health outcomes	Robert Wood Johnson Foundation	Infant mortality and morbidity rates, as well as number of good and poor health days
Percent high school graduation	U.S. Census Bureau 2000, 2010	Total number of people with at least a high school education (graduate) and above by county, divided by total population over 25
Airport Improvement	National Atlas	Passenger boardings 2010/passenger boardings 2000

Table 4.2 provides further information about the variables used in this research: the number or percentage of the independent variable (depending on the measurement used in the analysis) for the years 2000 and 2010, the source of the data, and the year for which the data in the sources are tallied.

Table 4.2 Descriptive Statistics

Variable name	No. or % of items, 2000	No. or % of items, 2010	Source	Year of source
Counties	1143	1143	U.S. Census Bureau	2000, 2010
Airports	151	151	National Atlas	2012
Colleges and universities	545	546	Collegestats.org	2014
Black Belt county, 12 percent level	618	618	U.S. Census Bureau	2000, 2010
Black Belt county, 25 percent level	393	393	U.S. Census Bureau	2000, 2010
Black Belt county, 40 percent level	179	179	U.S. Census Bureau	2000, 2010
Clinics	2,748	2,762	Robert Wood Johnson Foundation	2013
Poverty rate	15.1%	18.3%	U.S. Census Bureau	2000, 2010
Percent Black	20.18%	20.28%	U.S. Census Bureau	2000, 2010
Percent Hispanic	9.9%	11%	U.S. Census Bureau	2000, 2010
Percent rural	60.31%	59.31%	U.S. Census Bureau	2000, 2010
Unemployment	10.00%	12.03%	U.S. Census Bureau	2000, 2010
Net migration	698,036	721,136	U.S. Census Bureau	2000, 2010
Single-parent families	37.1%	37.4%	U.S. Census Bureau	2000, 2010

Splitting the Black Belt into three levels was first done by Wimberley and Morris (1997, 2002). Wimberley and Morris (1997) established those three levels to show how the level of racial affiliation affects the isolation of a county. Before the Wimberley and Morris interpretation of the Black Belt, it was widely assumed that the Black Belt comprised only counties at 40 percent Black level and above. Wimberley and Morris (1997, 2002) added to the definition and understanding of the Black Belt by creating three levels—12 to 24 percent African American, 25 to 39 percent African American, and 40+ African American Black. (For the sake of brevity, these levels will be referred to as the 12 percent level, 25 percent level, and 40 percent level.)

Variables

This study analyzes six dependent variables that, together, measure the consequences of isolation: poverty, unemployment, high school graduation rate, single-parent families, population loss, and county health outcomes. There are 10 independent variables: percent Hispanic, percent rurality, accessibility to airports, proximity to interstate highways, clinical care (defined below), proximity to colleges and universities, whether the county is a Black Belt or non-Black Belt county (at the 12 percent, 25 percent, and 40 percent levels of Blacks in the county), out-migration, airport improvements, and health factors. The dependent variables are used as control variables in models when they are not the dependent variables. All variables are measured at the county level.

The status of a county as Black Belt or non-Black Belt is a dummy variable, with Black Belt counties labeled 1 and non-Black Belt counties labeled 0. As previously noted, counties in this study are classified as Black Belt or non-Black Belt according to categories discussed by Wimberley and Morris (1997).

Proximity to airports is calculated by measuring the linear distance from an airport to a county centroid (in miles) and obtaining the number of passenger boardings in 2010. Similar to Chi's study (2012), this analysis considers the costs, location, and size of airports. In measuring airport accessibility, one cannot rely on location alone; some airports exert more influence because of their greater number of passenger boardings, which then allows for more interaction and movement of people and goods. In this analysis, airport accessibility = $\log(1/d^2_{\text{airport}} \times \text{boardings}_{\text{2000 and 2010 separately}})$.

The improvement in airport accessibility is measured as a function of both the inverse squared distance to the nearest airport and the airport's passenger growth rate between 2000 and 2010; the closer a county is to an airport, the greater the accessibility to the airport. Also, the greater the passenger growth rate for the nearest airport, the greater the improvement of the airport's accessibility—because a higher passenger growth rate reflects increased airport activities, which is an indirect indicator of the improvement of airport accessibility to other regions (Chi 2012). In this analysis, airport improvement = $\ln((1/\text{distance}) \times (\text{enplanement}_{2010}/\text{enplanement}_{2000}))$.

The percentage of single-parent families is calculated by dividing the number of single-parent families by the total number of families.

The rurality percentage is calculated by dividing the number of people living in rural areas by the total population.

The percentage of Hispanic residents is calculated by dividing the number of Hispanics in the county by its total population.

Proximity to interstate highways is calculated by measuring the linear distance from a county centroid to an interstate highway.

Proximity to colleges and universities is measured as the linear distance of a county centroid to the nearest college or university.

Health outcomes are measured by morbidity and mortality and are provided by the Robert Wood Johnson Foundation and University of Wisconsin Population Health Institute (2012).

Health factors are measured by health behaviors, clinical care, social and economic factors, and physical environment. The data are provided by the Robert Wood

Johnson Foundation and University of Wisconsin Population Health Institute (2012). Figure 4.1 illustrates how health outcomes and health factors are calculated.

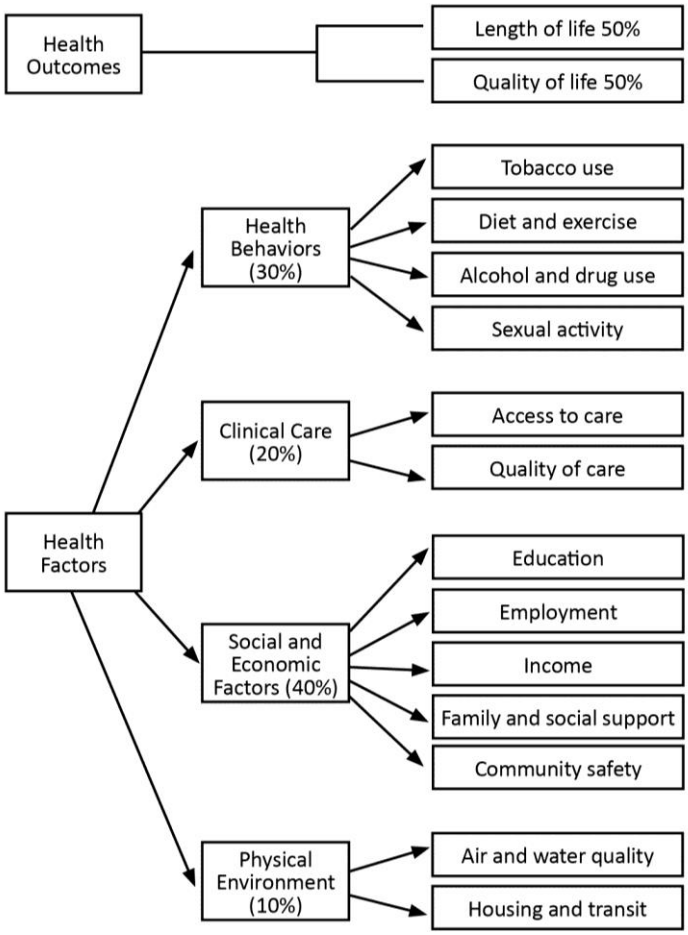

Figure 4.1 Calculation of health factor and health outcome models (source: County Health Rankings & Roadmaps)

Classifying the Black Belt

The Black Belt was identified using the classification of Wimberley and Morris (1997, 2002). Wimberley and Morris (1997) established those three levels to show how the level of racial affiliation affects the isolation of a county. Before the Wimberley and Morris interpretation of the Black Belt, it was widely assumed that the Black Belt

comprised only counties at 40 percent Black and above. Wimberley and Morris (1997, 2002) added to the definition and understanding of the Black Belt by creating three levels—12 to 24 percent African American, 25 to 39 percent African American, and 40+ African American Black. (For the sake of brevity, these levels will be referred to as the 12 percent level, 25 percent level, and 40 percent level.)

Below is figure 4.2 which shows the Black Belt counties at 12 percent level. There are 618 counties that fall into this criteria of having at least 12 percent of the population being African American in the southern region of the United States. These counties are largely concentrated in Alabama, Mississippi, Georgia, Louisiana, South Carolina, and the east coast of North Carolina, and Virginia. Also, there is a heavy concentration of counties of Black Belt counties which are bordering Memphis in both Tennessee and Arkansas.

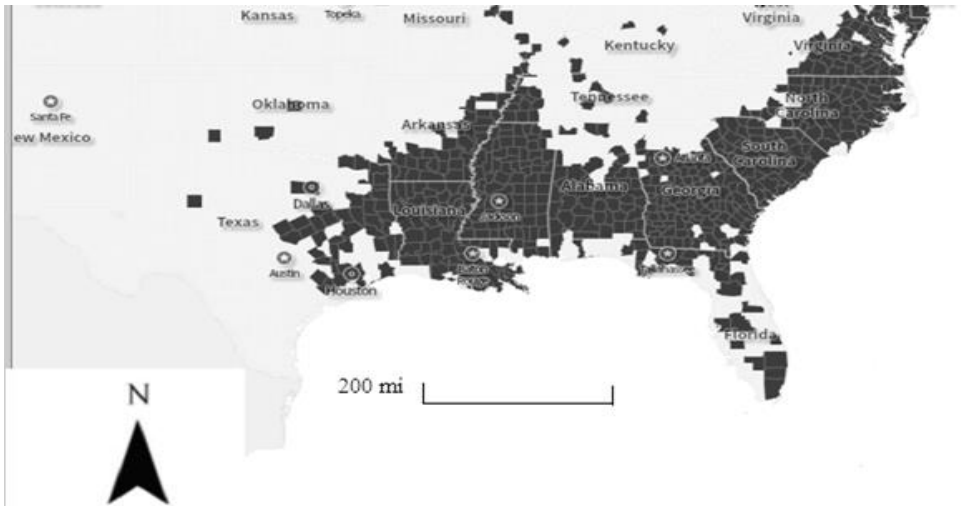

Figure 4.2 Black Belt Counties 12 percent

Figure 4.3 below shows the Black Belt counties at 25 percent African American and above. There are 393 counties in this configuration of the Black Belt. These counties are concentrated in Eastern Arkansas and Louisiana, Mississippi, Southern Alabama, Georgia, South Carolina, and the east coast of North Carolina and Virginia

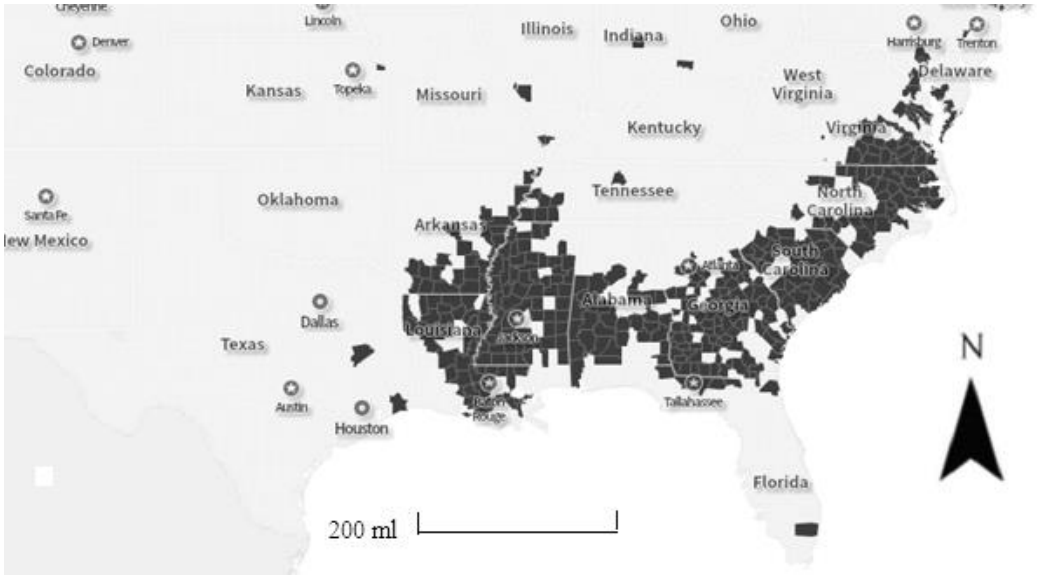

Figure 4.3 Black Belt 25 Percent and Above

Figure 4.4 below describes the Black Belt counties at the 40 percent level of African American population and above. There are 179 counties using this classification of the Black Belt. These counties are heavily concentrated in Mississippi, Southern Alabama, Georgia, and the PeeDee region of South Carolina.

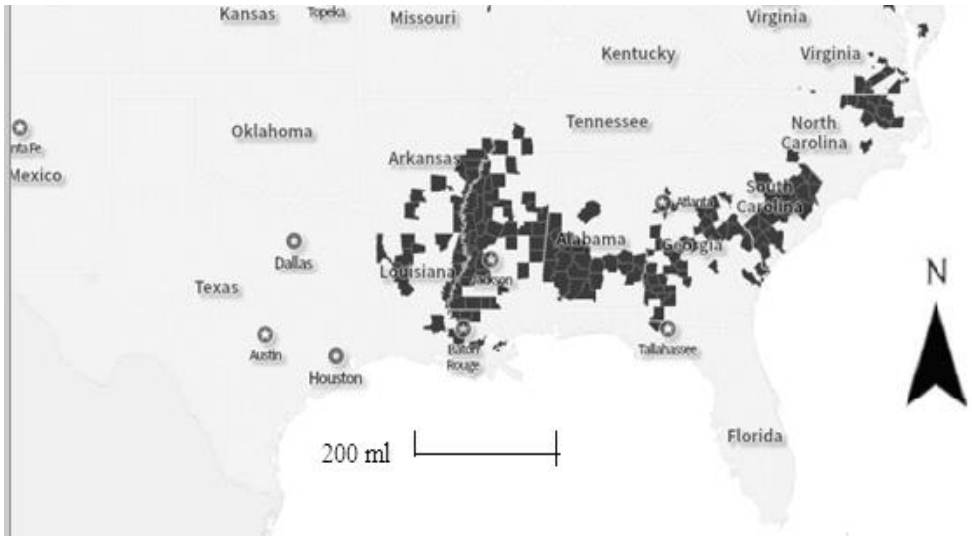

Figure 4.4 Black Belt 40 Percent and Above

Using three levels of analysis enables interpretation of types of disadvantages other than racial isolation. Furthermore, because the region is spatially broad and defined at different racial levels, the Wimberley and Morris framework allows for an analysis that avoids the problem of false dichotomies. Through an analysis of a broad region, the present study allows patterns of unique variation to be determined through the application of spatial weights matrices.

Using three levels of Black Belt analysis also allows the analyses to be more in line with the theoretical underpinnings of the study. It allows the use of race without using it as a control variable. This is an important consideration because the purpose of this research is not only to establish race as a factor in isolation in the Black Belt (which has been established in many previous studies) but also to determine the other variables that link to isolation and create social and economic disadvantage in the Black Belt South.

Methodology

This research employs descriptive statistics, Exploratory Spatial Data Analysis (ESDA), standard regression models, and spatial regression models to examine the impacts of airport access on poverty in the Black Belt. Fifteen weights matrices are used for ESDA and spatial regression modeling: distance weights matrices from 0 to 50 miles with 10-mile intervals, k-nearest neighbor weights matrices (from three to eight neighbors), and Queen and Rook contiguity weights matrices (order 1, 2). Moran's I provides the level of spatial autocorrelation achieved with the coefficients and often is used as a global diagnostic tool. According to Chi and Zhu (2008:22), "Moran's I statistic measures the degree of linear association between an attribute (y) at a given location and the weighted average of the attribute at its neighboring locations (Wy), and can be interpreted as the slope of the regression of (y) on (Wy)" (also see Pacheco and Tyrrell 2002). According to Anselin (1988), the weight matrix used should have the highest level of spatial dependence in companion with statistical significance.

The five-nearest-neighbor weights matrix provides the highest and statistically significant spatial autocorrelation of poverty with a score of .1960 (Table 4.3). Because the five-nearest-neighbor weights matrix had the highest Moran's I, it is used as the weights matrix for this analysis.

Table 4.3 Moran's I Rates for Poverty

	Moran's I (p-value)
Spatial weights matrix	**Change in poverty rate (2000–2010)**
Threshold distance WM 10 miles	.05833***
Threshold distance WM 20 miles	.00293***
Threshold distance WM 30 miles	.00313***
Threshold distance WM 40 miles	.0414***
Threshold distance WM 50 miles	.00552***
Three nearest neighbors	.0852***
Four nearest neighbors	.0559***
Five nearest neighbors	.1960***
Six nearest neighbors	.0522***
Seven nearest neighbors	.0819
Eight nearest neighbors	.1567
Rook WM order 1	.0162
Rook WM order 2	.1166
Queen WM order 1	.0663
Queen WM order 2	.0543

*** ≤ .001

The Moran scatter plot in Figure 4.2 illustrates the average poverty rate between 2000 and 2010 for each county in the analysis. The scatter plot shows the five-nearest-neighbor weight matrix. The upper right quadrant shows counties with high poverty rates surrounded by counties with high poverty rates. There are fewer counties with poverty rate decline (lower left quadrant) than with poverty rate growth.

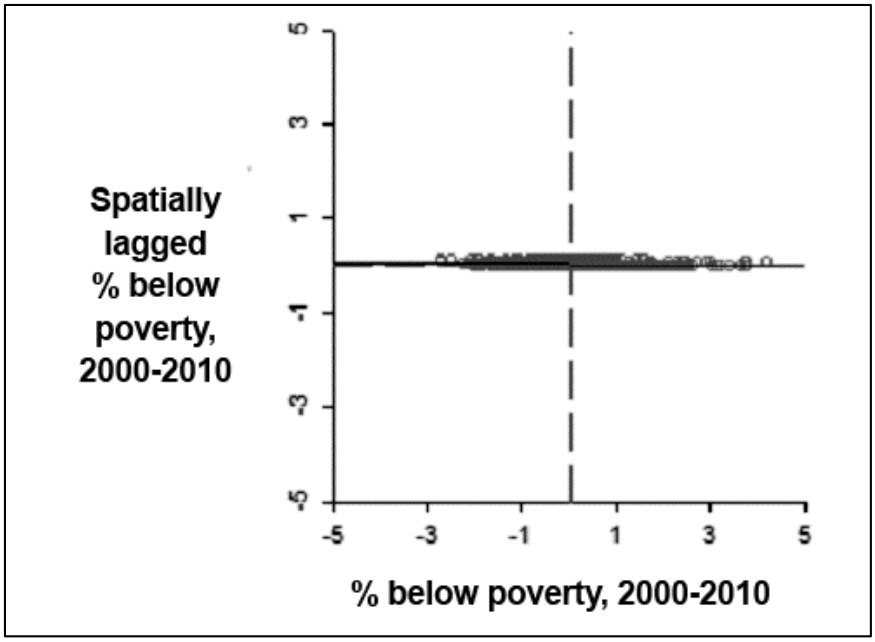

Figure 4.5 Moran scatter plot for poverty rate, 2000–2010

Five regression analyses were performed for each dependent variable,. The first model is a reduced ordinary least squares (OLS) model with only the transportation and infrastructure variables as independent variables. The second is an OLS model that includes percent Hispanic, percent rurality, and the variables from model 1. The third model is a full OLS model with all the independent and control variables. The fourth model is a full spatial lag model, and the last model is a full spatial error model. Each model is estimated three times using Black Belt counties at the 12 percent, 25 percent, and 40 percent African American levels.

Including counties at the 12 percent African American level makes it possible to determine whether the effects of the variables at the 12 percent level were similar to the effects in counties at the 25 and 40 percent levels. That determination, in turn, broadened the understanding about racial isolation in counties at the 40 percent level and allowed

comparison with racial isolation in counties that had significant social disadvantages without as high a rate of African American residents.

Five models were estimated using the Robert Wood Johnson Foundation's health outcomes as a dependent variable in the year 2000 and 2010. Independent variables include health factors, out-migration, percent Hispanic, percent rurality, proximity to airports, proximity to interstates, proximity to colleges and universities, and whether the county is Black Belt or non-Black Belt. A separate analysis was run for the year 2010 by adding airport improvements to the list of independent variables for all models.

A spatial regression model can be viewed, according to Chi and Zhu (2008:30), as a "generalization of standard regression models so that spatial autocorrelation can be allowed and accounted for explicitly by spatial models. The model parameters include the usual regression coefficients of the explanatory variables (β) and the variance of the error term (σ^2)." In addition, there is a spatial autoregressive coefficient (ρ) and a spatial weights matrix (W). A variance weight matrix (D) is pre-specified (Chi and Zhu 2008). A spatial lag model is specified as

$$Y= X\beta + \rho WY + \varepsilon \quad (4.1)$$

Where Y denotes the vector of response variables, X denotes the vector of explanatory variables, W denotes the weight matrix, and ε denotes the vector of error terms that are independent but not necessarily identically distributed (Chi and Zhu 2008). A spatial error model is specified as

$$Y=X\beta + u,\ u = \rho Wu + \varepsilon \quad (4.2)$$

For spatial lag models, spatial autocorrelation is modeled by a linear relation between the response variable (*y*) and the associated spatially lagged variable (Wy), but

for spatial error models, spatial autocorrelation is modeled by an error term (u) and the associated spatially lagged error term (Wu) (Chi and Zhu 2008; Anselin and Bera 1998).

Voss and Chi (2006) consider spatial lag and spatial error models separately. Chi (2010a) argues for a spatially integrated approach that considers spatial error and spatial lag simultaneously, a method he adopted by creating a spatial error model with lag dependence. Voss and Chi (2006) found in their study that both spatial error and spatial lag models are better than the standard OLS model, which leads to the formulation of the spatially integrated approach by Chi (2010a). Additionally, Voss and Chi (2006) found that both spatial error and spatial lag yield significant effects on the model, though spatial lag seems to provide a little better fit. The present analysis uses separate spatial error and spatial lag models, although a spatially integrated approach may also be appropriate.

Model 1 of the study is an OLS regression model that looks at the effects of the transportation and infrastructure variables (airport accessibility, airport improvements[4], interstate, health factors, and colleges and universities). Model 1 looks specifically at how much variance the transportation and infrastructure variables have on the overall model. Model 2 of the study adds to the regression model the other independent variables that are not also dependent variables (percent Hispanic, percent rural, and Black Belt county at the 12, 25, and 40 percent levels). Model 3 of the study is the full OLS model including the other dependent variables (percent poverty, net migration, health outcomes, single-parent families, high school graduation rates, and percent unemployed), excluding

[4] Airport improvement is included only in the C table of the analyses.

the variable that is dependent. Model 4 incorporates the spatial lag effect. Model 5 incorporates the spatial error effect.

CHAPTER V

FINDINGS

Introduction

The goal of the analyses presented in this chapter is to link physical infrastructure to various social conditions that set the U.S. Black Belt apart from other regions in the South. Each dependent variable (poverty, health outcomes, single-parent families, graduation rates, net migration, and unemployment percentages) is analyzed and presented separately in this chapter. Another purpose of the analyses is to identify differences between rural and urban residents with regard to these various social conditions

Through creating variables such as airport accessibility, proximity to interstate highways, health factors, and colleges and universities, this study creates a broad context on the effects of physical infrastructure on social infrastructure. These variables are related to three specific dimensions of physical infrastructure—education, health, and transportation. To gain a full understanding of the community capital framework, it is necessary to have a broad awareness of both the physical and social infrastructure in the community and to comprehend the interactions and social ramifications of infrastructure inputs.

For the analysis, each table is classified into five models. Model 1 is an ordinary least squares (OLS) regression that includes only the infrastructure variables. Model 2 is an OLS regression that includes the infrastructure variables and the other independent variables that are not included as dependent variables in other results. Model 3 is an OLS

regression with all independent variables included. Model 4 shows the spatial lag effects of the independent variables on the dependent variable. Model 5 shows the spatial error effects of all the independent variables on the dependent variable.

The best-fit model for each table is determined on the basis of the lowest scores for the Akaike information criterion (AIC), Bayesian information criterion (BIC), and log-likelihood. Models with lower scores have a stronger goodness of fit in the analysis.

Poverty

Table 5.1 presents the effects of the independent variables on the dependent variable poverty for the year 2000 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

None of the infrastructure variables shown in Table 5.1 is significant in the analysis. The independent variable Black Belt county at the 12 percent level is significant at the .05 level, indicating greater likelihood of higher poverty rates in Black Belt counties than in non-Black Belt counties. The independent variables percent rural, percent Hispanic, unemployed, and single-parent families are significant at the .001 level in a positive direction. High school graduation rates are significant in a negative direction at the .001 level, meaning that the higher the graduation rates, the lower the poverty rates.

The findings shown in Table 5.1 do not suggest significant results for infrastructure variables in the year 2000. The findings do show, however, that in the full models (models 3, 4, and 5), the percentage of poverty increases to a significant level for Black Belt residents in counties at the 12 percent population level of African Americans. The findings also indicate that in the year 2000, rurality is positively correlated with the

rate of poverty, consistent with earlier hypotheses in this study. Likewise, for the year 2000, the greater the number of Hispanics, the greater the poverty rate in a county.

The infrastructure variables are not as significant in this portion of the study and account for only 0.3 percent of the variance in model 1. This finding indicates that infrastructure variables have little significance in 2000 and that other social well-being variables such as unemployment, single-parent families, and high school graduation rates are more important in the year 2000.

Table 5.1 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

			2000		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–.57	–.48	–.31	–.31	–.31
Interstate	2.44	2.35	2.16	2.16	2.19
Health factors	–.2E-3	–.2E-4	–.2E-4	–.2E-4	–.2E-4
Colleges and universities	–.47	–.28	–.28	–.28	–.28
Black Belt county, 12% level		.083	.37*	.37*	.38*
Percentage rural		4.22***	2.83***	2.83***	2.84***
Hispanics		.12***	.09***	.09***	.09***
Unemployed			.68***	.68***	.69***
Net migration			-4.24	-4.24	-4.24
Single-parent families			.70***	.70***	.70***
Health outcomes			–6.34	–6.35	–6.34
Percentage high school graduation			.31***	.32***	.31***
Constant	24.11***	6.32***	5.01***	12.95***	20.11
Spatial lag effects				.98***	
Spatial error effects					1.08***
Diagnostics					
R-squared	.3E-3	.116	.773	.772	.773
AIC	7315.91	7182.87	5583.91	5580.87	5581.96
BIC	7341.12	7218.17	5783	5777.36	5781.26
Log-likelihood	–3692.6	–3584.4	–2788.33	–2778.69	–2780.36

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.2 presents the effects of the independent variables on the dependent variable poverty for the year 2010 in Black Belt counties at the 12 percent population level for African Americans. Model 5 is the best-fit model for this analysis.

The findings support the thesis of this research that in 2010, the farther away a county is from an airport and the fewer the passenger boardings, the greater the poverty rate. In 2010, all of the infrastructure variables, with the exception of interstates, yield significant results. The findings therefore suggest that the physical infrastructure of a county is a crucial element in maintaining its social well-being. The findings also show that living in a Black Belt county increases the chance of poverty.

Also as shown in Table 5.2, living in a county with a high percentage of rural residents leads to a significant increase in poverty (model 2) in 2010. However, when the other control variables are added for the best-fit model (model 5), a county that has a greater percentage of rural residents actually shows a decrease poverty. This is contrary to the findings for the year 2000. There could be three reasons for these confounding findings.

One reason could be that large urban areas such as Atlanta, Memphis, Birmingham, Jackson, and New Orleans are included in this analysis. Those metro regions have large minority populations and high poverty rates in certain areas, which could affect the findings. A second reason could be the economic crisis of 2007–2008, which took a toll on financial markets and whose impact might have been stronger in urban areas than in rural areas, which are more reliant on agriculture and manufacturing. The third reason could be that rurality may not be as important as other control factors such as single-parent families, percentage of high school graduates, health outcomes, percentage of Hispanic residents, and the infrastructure variables in these analyses.

Further research should be conducted to separate the metro areas from the analysis or to perform a sector-level study of occupations prominent in rural areas compared with those in urban areas before and after the economic crisis.

The number of Hispanics in a county is related to the poverty rate—in this case, the more Hispanics, the less poverty (model 5). Single-parent families are related to a significant increase in the poverty level, and health outcomes are related to a decrease. Also, the higher the percentage of high school graduates in a county, the lower the poverty level.

Infrastructure also seems to be more crucial in the year 2010, accounting for almost 23 percent of the variance in model 1. The increased importance of infrastructure from 2000 to 2010 is something that warrants more study. Specifically, with regard to airports, individual case studies may be an avenue for future research to determine how airports and other infrastructure variables grew more influential over that decade. The increased importance of infrastructure in 2010 also may be a result of fewer funds available for infrastructure improvements after the economic crisis; in other words, counties that could afford greater infrastructure saw an improvement in overall economic returns compared with counties without significant infrastructure improvements.

Table 5.2 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.93***	3.75***	1.36**	1.36*	1.201*
Interstate	1.66	1.07	1.22	1.23	1.00
Health factors	.04***	.04***	.01***	.01***	.02***
Colleges and universities	1.10**	1.73***	1.41***	1.41***	2.19***
Black Belt county, 12% level		3.52***	1.49***	1.49***	1.37***
Percentage rural		.03***	–02***	–.02***	.02***
Hispanics		.03**	–0.05***	–.05***	–.04***
Unemployed			–2.29	2.29	–8.11
Net migration			6.90	6.90	4.19
Single-parent families			.27***	.27***	.27***
Health outcomes			–0.01***	–.01***	.01***
Percentage high school graduation			–.44***	–.44***	–.40***
Constant	42.24***	11.88***	9.96***	24.11***	39.25
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	0.23	0.24	0.67	0.67	0.67
AIC	7292.34	7276.66	6347.19	6347.18	6337.58
BIC	7317.55	7311.95	6407.68	6413.34	6398.07
Log-likelihood	–3641.20	–3631.33	–3161.59	–3160.90	–3156.80

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.3 presents the results of the independent variables on the dependent variable poverty for the year 2010 in Black Belt in counties at the 12 percent population level of African Americans. However, Table 5.1c also adds the airport improvement variable to the models. Model 5 is the best-fit model for this analysis.

The findings again support the thesis of this research that in 2010, the farther away a county is from an airport and the fewer the passenger boardings, the greater the poverty rate. For 2010, all of the infrastructure variables with the exception of interstates yield significant results. The findings suggest that the physical infrastructure of a county is a crucial element in maintaining its social well-being. The findings also show that living in a Black Belt county increases the chance of poverty.

As previously noted, Table 5.3 adds the airport improvement variable to the analyses for 2010. The variable does not change many of the effects shown in Table 5.2; that is, the findings indicate that the airport improvement variable decreases poverty but not in a significant way. If some of the improvements related to the airport had not yet been made, a significant lag effect might not be identified in the spatial lag model because the time period was the last two censuses only. Another reason may have to do with improvements, or lack thereof, to the overall infrastructure.

Table 5.3 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.74***	3.5 ***	1.21**	1.21*	1.001*
Airport improvement	–2.66	–2.18	–0.94	–0.93	–0.76
Interstate	1.44	1.00	0.99	1.00	0.97
Health factors	.042***	.038***	.019***	.019***	.020***
Colleges and universities	1.09**	1.43***	1.27***	1.26***	2.08***
Black Belt county, 12% level		3.44 ***	1.32 ***	1.33 ***	1.34***
Percentage rural		.023***	–020***	–.020***	–.020***
Hispanics		–.02**	–0.04***	–.042***	–.04***
Unemployed			–2.23	–2.24	–2.11
Net migration			6.90	6.79	6.78
Single-parent families			.27***	.27***	.27***
Health outcomes			–0.01***	–.01***	–.01***
Percentage high school graduation			–.41***	.41***	.41***
Constant	40.04***	11.66***	9.66***	23.88***	39.21
Spatial lag effect				.91***	
Spatial error effect					1.00***
Diagnostics					
R-squared	0.25	0.26	0.71	0.72	0.71
AIC	7101.37	7001.22	6200.99	6208.37	6215.46
BIC	7098.35	7033.76	6218.36	6225.88	6196.57
Log-likelihood	4.74***	3.5 ***	1.21**	1.21*	1.00*

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.4 presents the results of the independent variables on the dependent variable poverty for the year 2000 in Black Belt counties at the 25 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The only infrastructure variable significant in this analysis is colleges and universities. At the 25 percent African American population level, the results show that counties in the Black Belt have a higher poverty level than non-Black Belt counties. They also show that the stronger the rurality of a county, the more likely it is to have a higher poverty rate. Likewise, the higher the percentage of Hispanics, unemployed residents, and single-parent families in a county, the greater the amount of poverty in the county, at a very significant level.

The results shown in Table 5.4 are similar to those of Table 5.1, which indicate that poverty, while having large racial undertones in the South, is not exclusively a problem of race. The infrastructure variables are once again found to bear little significance in 2000; only the colleges and universities variable is significant. The social well-being variables likewise show more significance in the year 2000, with the percentage of rural residents and unemployed residents, high school graduation rate, and number of single-parent families all significant factors related to an increase in poverty.

Table 5.4 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 25 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–.57	–.31	–.23	–.23	–.23
Interstate	2.44	2.16	1.89	1.92	1.88
Health factors	–.2E-3	–.8E-4	.287E-4	.287E-4	.288E-4
Colleges and universities	–.47	.31*	–.3*	–.3*	–.3*
Black Belt county, 25% level		.26	.35*	.35*	.35*
Percentage rural			2.83***	2.83***	2.84***
Hispanics			.09***	.10***	.09***
Unemployed			.68***	.69***	.68***
Net migration			-4.24	-4.26	-4.24
Single-parent families			.68***	.68***	.68***
Health outcomes			.6.86	.6.87	.6.88
Percentage high school graduation			–2.62***	–2.64***	–2.63***
Constant	38.36***	7.69***	34.75***	18.11***	33.42
Spatial lag effect				.98***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.3E-3	.135	.782	.784	.782
AIC	7315.91	6034.52	5591.49	5588.63	5591.32
BIC	7341.12	5961	5652	5644.34	5648.72
Log-likelihood	-3692.6	3033.23	–2783.8	–2780.9	–2780.13

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.5 presents the results of the independent variables on the dependent variable poverty for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

For 2010, the only infrastructure variable that is not significant is interstate highways. Setting the African American population level to 25 percent produces significant effects in a positive direction on poverty in a Black Belt county. The rurality percentage is once again significant, but contradicting the results shown in Table 5.5, it is significant in a negative direction; in other words, the greater the rurality of a county, the lower the poverty rate.

The percentage of single-parent families is also a significant factor of increased poverty rates. Likewise, the higher a county's high school graduation rate and the better the health outcomes of a county, the lower the poverty rate.

Infrastructure again seems to be a crucial area with regard to poverty in the Black Belt region for the year 2010. As in the year 2000, rural areas in 2010 are less associated with poverty in models 3, 4, and 5. This finding suggests that policy makers might need to focus less on the rural/urban divide as it relates poverty and more on the social infrastructure and physical infrastructure variables. This finding is consistent with the community capital framework, which argues that community capital requires a holistic approach to development and that rural and urban areas can each leverage their resources in either positive or negative ways.

Table 5.5 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.93***	3.22***	1.87***	1.27**	1.27*
Interstate	1.66	1.87	1.84	1.28	1.27
Health factors	.04***	.04***	.01***	.02***	.02***
Colleges and universities	1.10**	1.23***	1.41***	1.43***	1.43***
Black Belt county, 25% level		6.00***	6.15***	2.68***	2.68***
Percentage rural		.03***	–.01*	–.02**	–.02**
Hispanics		.05***	–.01	–.03**	–.03**
Unemployed			–1.98	–1.74	–1.73
Net migration			–1.09	1.52	1.51
Single-parent families			.24***	.25***	.25***
Health outcomes			–.01**	.01***	.01***
Percentage high school graduation			–.37***	–.40***	–.40***
Constant	42.36***	9.69***	38.85***	21.21***	39.44
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.23	.34	.71	.68	.68
AIC	7292.34	7110.53	6180.76	6283.5	6281.5
BIC	7317.55	7145.82	6241.25	6349.04	6341.99
Log-likelihood	–3641.2	–3548.3	–3078.4	–3128.8	.3128.74

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.6 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable poverty for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The inclusion of the airport improvement variable in the analysis again produces no significant results in the findings. Airport accessibility, however, remains a significant factor for poverty, showing that the less accessible a county is to an airport, the greater the poverty rate. Health factors are also a significant factor for poverty, along with the presence of colleges and universities. The rurality percentage was likewise associated with a decline in poverty. Counties with a higher percentage of Hispanics have lower

poverty rates. And again, the higher the percentage of single-parent families in a county, the higher the poverty rate; and the higher the graduation rate and health outcome score, the lower the poverty rate for a county.

Table 5.6 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.74***	3.10***	1.08**	1.08*	1.06*
Airport improvement	2.66	1.88	.76	.77	.76
Interstate	1.44	.77	.96	.97	.97
Health factors	.04***	.04***	.01***	.01***	.01***
Colleges and universities	1.09**	1.18***	1.23***	1.22***	1.20***
Black Belt county, 25% level		3.27 ***	1.11***	1.11 ***	1.14***
Percentage rural		–.03***	–01***	–.01***	–.01***
Hispanics		–.02**	–2E-3***	–2E-3***	-4E-3***
Unemployed			–2.00	–1.99	–1.97
Net migration			6.65	6.63	6.62
Single-parent families			.18***	.17 ***	.175 ***
Health outcomes			–2.3E-3***	–2.3E-3	2.3E-3
Percentage high school graduation			–.35***	.35***	.35***
Constant	41.85***	9.34***	37.98***	21.05***	39.21
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.25	.29	.67	.67	.68
AIC	7101.36	7248.22	6526.18	6508.29	6672.98
BIC	7098.35	7477.43	6538.92	6521.26	6552.64
Log-likelihood	–3322.19	–3434.53	–3132.05	–3341.44	–3321.85

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Tables 5.7, 5.8, and 5.9 present the results of the analysis of the variables for Black Belt counties at the 40 percent population level of African Americans. As was found with Black Belt counties with African American populations at the 12 and 25 percent levels, no significant change is noted when using poverty as the dependent variable. This finding leads to the conclusion that infrastructure, high school graduation rate, single-parent families, health factors, and health outcomes remain significant factors

in the rate of poverty in Black Belt counties, regardless of whether the population level of African Americans is 12, 25, or 40 percent. As the analysis indicates, there are more factors related to poverty in the southern United States than just race and the lack of infrastructure, especially with regard to health; and colleges and universities are an important determinant of a county's success.

Infrastructure again seems to be more of a factor in 2010 than 2000, with only the infrastructure variable colleges and universities being significant in the year 2000. Social infrastructure, or social well-being, is a crucial factor in poverty rates in Black Belt counties at the 40 percent African American level for the year 2000. Unemployment, single-parent families, high school graduation rate, and percentage of Hispanics are all highly significant in this model.

Table 5.7 presents the results of the independent variables on the dependent variable poverty for the year 2000 for Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Colleges and universities are the only infrastructure variable shown to be related to significant decreases in the poverty level. The rurality percentage is shown to influence poverty in a positive direction for the year 2000. The percentages of Hispanic residents, unemployed residents, and single-parent families also influence poverty in a positive direction, while the percentage of high school graduates influences a county's poverty rate in a negative direction.

Table 5.7 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–.57	–.36	–.14	–.14	–.14
Interstate	2.44	.15	.18	.18	.17
Health factors	–2E-3	–6.48	5E-4	5E-4	8E-4
Colleges and universities	–.47	1.55**	1.80*	1.83*	1.82*
Black Belt county, 40% level		.07	.25	.25	.25
Percentage rural		4.23***	2.78***	2.79***	2.80***
Hispanics		.12***	.09***	.10***	.09***
Unemployed			.69***	.69***	.71***
Net migration			1.63	1.63	1.65
Single-parent families			.69***	.69***	.69***
Health outcomes			4.85	4.85	4.87
Percentage high school graduation			–.26***	–.26***	–.26***
Constant	7.23***	8.08***	8.44***	13.08***	29.46
Spatial lag effect				.96***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.3E-4	.12	.72	.72	.72
AIC	7315.91	7181.54	5883.92	5878.84	5880.56
BIC	7341.12	7211.8	6835.15	6821.14	6825.15
Log-likelihood	–3692.6	–3584.77	–3031.33	–3025.23	–3026.59

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Regardless of whether the Black Belt is calculated at the 12, 25, or 40 percent level of African Americans, the variables of infrastructure, high school graduation rate, single-parent families, health factors, and health outcomes have an impact on the poverty rate. (Counties with high rates of poverty in the South seem to have many similarities; thus, the tag Black Belt County is applied.) As the analysis indicates, there are more factors related to poverty in the southern United States than just race and infrastructure, or lack thereof, especially with regard to poverty in the South.

Table 5.8 presents the results of the independent variables on the dependent variable poverty for the year 2010 for Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Airport accessibility, health factors, and colleges and universities are once again significant factors related to decreased poverty rates in 2010. Having an African American population of 40 percent or more is strongly correlated with increased poverty in Black Belt counties in 2010. However, the rurality percentage and the percentage of Hispanics in a county are related to a decrease in poverty rates in 2010. The percentage of single-parent families in a county is again positively related to an increase in poverty rate, and the greater the percentage of high school graduates, the lower the poverty rate for a county. Higher health outcome scores are also related to a lower poverty rate.

Table 5.8 shows that infrastructure is again a more important factor in 2010 than in 2000. The number of African Americans, which is not a significant factor for poverty in 2000 at the 40 percent level, is a highly significant factor for poverty in 2010.

Table 5.8 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.93***	2.82***	2.84***	1.17*	1.17*
Interstate	1.66	1.34	1.38	1.33	1.35
Health factors	.04***	.04***	.04***	.02***	.02***
Colleges and universities	1.10**	1.95***	1.98***	1.50***	1.50***
Black Belt county, 40% level		7.9***	4.18***	4.08***	4.08***
Percentage rural		.03***	–.02**	–.01**	–.01**
Hispanics		.03*	–.03	–.03	–.04
Unemployed			–6.05	–6.03	.6.03
Net migration			1.39	1.30	1.30
Single-parent families			.27***	.25***	.25***
Health outcomes			–.01***	–.01***	–.01***
Percentage high school graduation			–.39***	–.39***	–.39***
Constant	8.64***	10.45***	10.45***	20.08***	38.30
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.23	.36	.69	.70	.70
AIC	7292.34	7083.03	6263.99	6233.66	6231.66
BIC	7317.55	7118.32	6304.95	6299.2	6292.16
Log-likelihood	–3641.17	–3534.51	–3113.37	–3103.83	–3103.83

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.9 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable poverty for the year 2010 for Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport accessibility, health factors, and colleges and universities are significant factors related to decreased poverty rates in 2010. Having an African American population of 40 percent or more is strongly correlated with increased poverty in Black Belt counties in 2010. However, the rurality percentage and percentage of Hispanics in a county are related to a decrease in poverty rate in 2010. The percentage of single-parent families in a county is again positively related to an increase in poverty rate, and the

greater the percentage of high school graduates, the lower the poverty rate for a county. Higher health outcome scores also are related to a lower poverty rate.

When adding airport improvements to the analysis (as shown in Table 5.3c), there are no significant differences compared with the findings presented in Table 5.3b. Airport improvements do not significantly alter the findings of the analysis with regard to poverty at any of the three levels of African American population levels (12, 25, and 40 percent) in the Black Belt and are not a significant factor related to poverty in the South.

Table 5.9 Effects of Independent Variables on Dependent Variable Poverty in Black Belt Counties, 40% Level of African Americans, Including Airport Improvement Variable (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	4.74***	2.67***	.99*	.98*	.99*
Airport improvement	2.66	1.07	.64	.63	.65
Interstate	1.44	.57	.49	.49	.49
Health factors	.04***	.02***	.01***	.01***	.01***
Colleges and universities	1.09**	1.13***	1.15***	1.16***	1.15***
Black Belt county, 40% level		4.25 ***	2.36***	2.34***	2.36***
Percentage rural		–.02***	–8E-4***	–.8E-4***	–.9E-4***
Hispanics		–.03**	–0.02***	–.02***	–.02***
Unemployed			–4.68	–4.67	–4.69
Net migration			1.76	1.76	1.75
Single-parent families			.18***	.18 ***	.19 ***
Health outcomes			–.02***	–.02***	–.02***
Percentage high school graduation			–.29***	–.29***	–.28***
Constant	8.64***	9.88***	9.68***	18.29***	36.54
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.25	.37	.66	.67	.65
AIC	7101.36	7201.36	6649.20	6628.54	6772.89
BIC	7098.35	7463.48	6721.51	6728.34	6752.39
Log-likelihood	–3322.19	–3688.17	–3586.39	–3837.52	–3847.26

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Health Outcomes

Infrastructure such as interstates and airports plays an important role in determining the health outcomes of a community, and the health factors variable plays a crucial role in determining the health outcome of a community. The data in Tables 5.10, 5.11, and 5.12 show the effects of multiple variables on health outcomes in Black Belt counties at the 12 percent population level of African Americans. The infrastructure variables account for more than 57 percent of the variance in model 1, which indicates that infrastructure is a strong measure of the health outcomes of a region. When airport improvements are included (Table 5.12), the results are largely the same, which suggests that airport improvements may not be a significant factor for 2010.

Table 5.10 presents the results of the independent variables on the dependent variable health outcomes for the year 2000 for Black Belt counties at the 12 percent population level of African Americans. Model 1 is the best-fit model for this analysis.

As shown in Table 5.10, airports are highly significant when it comes to the health outcomes of a county in the year 2000. In contrast to the relationship between infrastructure and poverty, infrastructure is a significant factor in a county's health outcomes in the year 2000. Of the factors analyzed for that year, only the infrastructure variables of airport accessibility and health factors are significant.

Table 5.10 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.73***	17.74***	18.12***	18.12***	18.12***
Interstate	1.86	1.87	1.99	1.98	2.00
Health factors	.73***	.73***	.73***	.73***	.73***
Colleges and universities	–1.66	–1.66	–1.72	–1.72	–1.74
Black Belt county, 12% level		.36	.34	.34	.34
Percentage rural		.72	–1.92	–1.93	–1.92
Hispanics		–.01	–.04	–.04	–.04
Unemployed			.28	.28	.28
Net migration			–4E-4	–4E-4	–4E-4
Single-parent families			–.12	–.12	–.12
Percentage below poverty			–.02	–.02	–.02
Percentage high school graduation			–.10	–.10	–.10
Constant	6.59***	14.87***	14.89***	17.91***	39.41
Spatial lag effect				.96***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.57	.57	.57	.57	.57
AIC	11208	11208	11218	11219.25	11220.5
BIC	11238.2	11239.2	11278.5	11284.63	11286.53
Log-likelihood	–5598	–5598	–5597.02	–5599.25	–5599.28

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.11 presents the results of the independent variables on the dependent variable health outcomes for the year 2010 for Black Belt counties at the 12 percent population level of African Americans. Model 2 is the best-fit model for this analysis.

As shown in Table 5.11, the poverty percentage level and percentage of African Americans are significant factors in determining a county's health outcome. Infrastructure variables account for 57 percent of the variance in the year 2010. All infrastructure variables shown in the table are significant, with the exception of colleges and universities.

In this analysis, being a Black Belt county at the 12 percent African American population level has a strong negative effect on health outcomes. As shown in model 2,

the greater the percentage of Hispanics, the more likely the county will have negative health outcomes. With the increasing influx of Hispanics into the United States, policy makers must therefore begin to address the disturbing inequalities that exist for the Hispanic community, both within the South and outside of it.

For the year 2010, interstates are a significant factor for health outcomes. The greater a county's proximity to an interstate, the more likely the county is to have positive health outcomes.

Table 5.11 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.94***	16.71***	17.78***	17.80***	17.78***
Interstate	1.56*	1.23*	1.93*	1.88*	1.93*
Health factors	.73***	.81***	.83***	.83***	.83***
Colleges and universities	–1.68	–1.17	.39	.39	.39
Black Belt county, 12% level		–7.31***	–4.92*	–4.93*	–4.92*
Percentage rural		–.02	–.03	–.03	–.03
Hispanics		–.57***	–.54	–.54***	–.54
Unemployed			–1.21	–1.21	–1.21
Net migration			–5E-4	–.5E-4	–.5E-4
Single-parent families			.17	.17	.17
Percentage below poverty			–.82***	–.82***	–.82***
Percentage high school graduation			–.06	–.04	–.06
Constant	7.61***	12.36***	12.22***	15.89***	35.21
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.57	.59	.60	.60	.60
AIC	11197.1	11135.2	11127.5	11127.6	11125.6
BIC	11222.3	11170.5	11187.5	11193.2	11186.1
Log-likelihood	–5593.57	–5560.59	–5551.60	–5550.80	–5550.81

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.12 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable health outcomes for the year

2010 with Black Belt counties at the 12 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

As the results in Table 5.4c show, the poverty percentage level and percentage of African Americans are significant factors in determining a county's health outcomes. Infrastructure variables explain 65 percent of the variance in the year 2010. As previously shown in Table 5.4b, all infrastructure variables are significant, with the exception of colleges and universities. In this analysis (Table 5.4c), being a Black Belt county at the 12 percent African American population level has a strong negative effect on health outcomes. Also as shown in model 3 of this analysis, the greater the percentage of Hispanics, the more likely the county is to have negative health outcomes, again underscoring the need to address the inequalities that exist for the Hispanic community both within the South and throughout the United States.

For the year 2010, interstates are a significant factor for health outcomes. The greater a county's proximity to an interstate, the more likely the county is to have positive health outcomes. With regard to poverty, the greater the percentage of people in poverty, the lower the health outcome score.

Table 5.12 shows Black Belt counties at the 12 percent African American population level, with the airport improvement variable included, for the year 2010. With airport improvements included in the analysis, there is little meaningful change in the data presented in Table 5.11.

Table 5.12 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	16.54***	16.21***	16.49***	16.51***	16.50***
Airport improvement	2.67	2.51	2.33	2.31	2.34
Interstate	1.33 *	1.18*	1.83*	1.84*	1.86*
Health factors	.67***	.71 ***	.73***	.74***	.74***
Colleges and universities	–1.58	–1.09	.31	.31	.31
Black Belt county, 12% level		–6.52***	–4.52*	–4.53*	–4.51*
Percentage rural		–.02	–.02	.02	–.02
Hispanics		–.52***	–.51***	–.51***	–.51***
Unemployed			–1.08	–1.09	–1.11
Net migration			–1.2E-5	–1.2E-5	1.2E-5
Single-parent families			.12	.12	.12
Percentage below poverty			–.65***	–.65***	–.65***
Percentage high school graduation			–.01	–42E-3	–51E-3
Constant	7.64***	12.48***	12.23***	15.99***	35.41
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.59	.62	.65	.66	.66
AIC	11176.1	11113.4	11107.3	11107.5	11107.8
BIC	11183.78	11153.52	11101.49	11101.51	11107.69
Log-likelihood	–5582.97	–5543.79	–5533.29	–5533.2	–5533.27

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Tables 5.13, 5.14, and 5.15 present the results for Black Belt counties at the 25 percent population level of African Americans. In this analysis, interstates no longer are significant in models 2, 3, 4, and 5 for the year 2010 or in any of the models for the year 2000. The increase in the African American population level from 12 to 25 percent may indicate there was less federal and state funding for interstate highways for counties with higher African American populations. The lack of political capital at the state level has been incorporated into the community capital framework that creates lower funding in African American counties.

Another interesting difference in this analysis compared with the analysis of Tables 5.14 and 5.15 is that the Black Belt variable is no longer significant. This finding

may be attributable to the design of the research study—because an increase in the African American population of Black Belt counties reduces the number of counties to analyze, which results in less statistical power.

Table 5.13 presents the results of the independent variables on the dependent variable health outcomes for the year 2000 for Black Belt counties at the 25 percent population level of African Americans. Model 1 is the best-fit model for this analysis.

Table 5.13 shows that only the infrastructure variables of airport accessibility and health factors are significant with relation to health outcomes—being highly significant in the positive direction. For every increase in airport accessibility and health factors, there is a corresponding increase in positive health outcomes.

Table 5.13 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 25 percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.73***	17.70***	17.92***	17.92***	17.92***
Interstate	1.86	1.88	1.92	1.94	1.93
Health factors	.73***	.73***	.73***	.73***	.73***
Colleges and universities	–1.66	–1.65	–1.70	–1.70	–1.70
Black Belt county, 25% level		–.18	–.35	–.35	–.35
Percentage rural		.73	–1.87	–1.87	–1.87
Hispanics		–.01	–.04	–.04	–.04
Unemployed			.29	.29	.29
Net migration			–4E-4	–5E-3	–4E-4
Single-parent families			–.13	–13	–13
Percentage below poverty			–9E-4	–1.10E-4	–1.00E-4
Percentage high school graduation			–.1	–.1	–.1
Diagnostics					
R-squared	.57	.57	.57	.58	.57
AIC	11208	11210	11218	11215.76	11217.45
BIC	11238.2	11245.3	11278.5	11275.43	11278.23
Log-likelihood	–5598	–5597.99	–5597.02	–5596.03	–5597.18

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.14 presents the results of the independent variables on the dependent variable health outcomes for the year 2010 with Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

The results presented in Table 5.14 are similar to those shown in Table 5.11. The only exception is that the Black Belt county variable is no longer a significant factor in health outcomes in model 5 of Table 5.14. This result may be because as the percentage levels of African Americans in the county increase, the need for an improved social infrastructure may overtake the needs related to physical infrastructure. However, the variance is still more than 57 percent.

Table 5.14 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.94***	18.60***	19.08***	19.09***	19.09***
Interstate	1.56*	1.99	1.56	1.58	1.58
Health factors	.73***	.80***	.82***	.82***	.82***
Colleges and universities	–1.68	–1.36	.277	.277	.277
Black Belt county, 25% level		–6.68**	–3.31	–3.32	–3.32
Percentage rural		–.03	–.03	–.03	–.03
Hispanics		–.55***	–.52***	–.51***	–.51***
Unemployed			–1.54	–1.54	–1.54
Net migration			–6.3E-4	–6.3E-4	–6.7E-4
Single-parent families			.16	.16	.16
Percentage below poverty			–.81**	–.82**	–.82**
Percentage high school graduation			–.08	–.08	–.08
Constant	7.64***	14.45***	13.38***	23.47***	42.40
Spatial lag effect				.89***	
Spatial error effect					1.01***
Diagnostics					
R-squared	.57	.59	.60	.60	.60
AIC	11197.1	11137	11129.9	11130.5	11128.5
BIC	11222.3	11172.3	11190.4	11196.1	11189
Log-likelihood	–5593.57	–5561.52	–5552.96	–5552.97	–5552.25

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.15 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable health outcomes for the year 2010 for Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

When the airport improvement variable is included in the analyses, the Black Belt variable once again becomes significant. As indicated in Table 5.15, infrastructure variables account for more than 59 percent of the variance in the analysis. Airport accessibility and health factors are both highly correlated with positive health outcomes. The greater the high school graduation rate in a county, the better the health outcomes. The higher the poverty level of a county, the lower the health outcome scores.

Table 5.15 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	16.54***	16.90***	16.83***	16.81***	16.82***
Airport improvement	2.67	2.72	2.69	2.69	2.68
Interstate	1.33 *	1.08	1.67	1.66	1.66
Health factors	.68***	.76***	.82***	.82***	.82***
Colleges and universities	–1.58	–.97	.28	.29	.28
Black Belt county, 25% level		–6.31***	–4.33*	–4.33*	–4.33*
Percentage rural		–.01	–.02	.02	–.02
Hispanics		–.51***	–.49**	–.49***	–.49***
Unemployed			–.97	–.95	–.96
Net migration			–1.16E-3	–1.16E-3	–1.17E-3
Single-parent families			.11	.11	.11
Percentage below poverty			–.54***	–.54***	–.54***
Percentage high school graduation			–.01	–.01	–.01
Constant	7.61***	12.28***	11.59***	14.97***	33.65
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.59	.63	.66	.66	.66
AIC	11176.1	11119	11104.44	11104.46	11104.51
BIC	11183.78	11148.52	11085.74	11083.71	11084.54
Log-likelihood	–5582.97	–5563.78	–5543.33	–5543.2	–5543.2

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.16 presents the results of the independent variables on the dependent variable health outcomes for the year 2000 for Black Belt counties at the 40 percent population level of African Americans. Model 1 is the best-fit model for this analysis.

As shown in Table 5.16, airport accessibility and health factors are the only two variables of significance. The analysis of the health care variable for the year 2000 indicates that infrastructure is a consistent and strong indicator of a county's health outcomes, whether at the 12, 25, or 40 percent level of African Americans in the county. Analyses also indicate that for the year 2000, airport accessibility and health factors are of primary importance in improving a county's health outcomes.

Table 5.16 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.73***	17.95***	17.984***	17.96**	17.99***
Interstate	1.86	1.88	1.83	1.85	1.86
Health factors	.73***	.73***	.73***	.73***	.73***
Colleges and universities	–1.66	–1.69	–1.71	–1.70	–1.70
Black Belt county, 40% level		.02	–.01	–.01	–.01
Percentage rural		–.77	–1.89	–1.87	–1.88
Hispanics		–.01	–.04	–.04	–.04
Unemployed			.29	29	29
Net migration			–4E-4	–.4E-4	–4E-4
Single-parent families			–.12	–.12	–.12
Percentage below poverty			–.01	–.01	–.01
Percentage high school graduation			.10	.10	.10
Constant	7.77***	14.68***	19.32***	23.38***	47.77
Spatial lag effect				.97***	
Spatial error effect					1.09***
Diagnostics					
R-squared	.57	.57	.57	.57	.57
AIC	11208	11210.5	11218.1	11215.1	11220.1
BIC	11238.2	11250.8	11278.6	11276.8	11280.5
Log-likelihood	–5598	–5597.26	–5597.03	–5595.45	–5600.21

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.17 presents the results of the independent variables on the dependent variable health outcomes for the year 2010 for Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

As indicated in Table 5.17, the percentage of Hispanics has an increasingly significant impact on negative health outcomes in a community. Poverty, similar to what is shown in Tables 5.11 and 5.14, is also a crucial factor in understanding a county's health outcomes. A substantial amount of literature details the importance of alleviating poverty to increase positive health outcomes. Many poor residents might be uninsured or underinsured, which means they receive medical treatment less frequently (Flora and

Flora 2008). That situation often increases the costs of health care because under- or uninsured people tend to seek treatment only for emergencies.

Table 5.17 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	17.94***	19.22***	19.74***	19.75***	19.76***
Interstate	1.56*	2.16	2.55	2.56	2.55
Health factors	.73***	.80***	.81***	.81***	.82***
Colleges and universities	–1.68	–1.56	.39	.39	.39
Black Belt county, 40% level		–5.45*	–.22	–.22	–.22
Percentage rural		.03	–.03	–.03	–.03
Hispanics		–.50***	–.47***	–.47***	–.47***
Unemployed			–1.63	–1.63	–1.63
Net migration			–.6E-4	–.6E-4	–7E-4
Single-parent families			.16	.16	.18
Percentage below poverty			–.91***	–.91***	–.91***
Percentage high school graduation			–.07	–.07	–.07
Constant	7.64***	14.88***	19.86***	25.38***	50.11
Spatial lag effect				.91***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.57	.59	.60	.60	.60
AIC	11197.1	11142.6	11131.9	11132.5	11130.5
BIC	11222.3	11177.9	11192.4	11198.1	11191
Log-likelihood	–5593.57	–5564.29	–5553.96	–5553.26	–5553.28

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.18 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable health outcomes for the year 2010 for Black Belt counties at the 40 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

Throughout the analysis of all models of health outcomes as the dependent variable (Tables 5.12 and 5.15), very little change is found in the health outcomes when examining the 2010 data. These findings are confounding because airport accessibility is shown to be an important variable for the health outcomes of a community. However, this

finding might be the result of the models not adequately identifying the lag effects that are involved in airport improvements.

Table 5.18 Effects of Independent Variables on Dependent Variable Health Outcomes in Black Belt Counties, 40 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	16.54***	19.07*	19.32*	19.31*	19.32*
Airport improvement	2.67	2.84	2.53	2.54	2.54
Interstate	1.33 *	1.17	1.01	1.01	1.01
Health factors	.68***	.67***	.59***	.58***	.58***
Colleges and universities	–1.58	–1.43	.29	.28	.30
Black Belt county, 40% level		5.33*	–.16	–.16	–.16
Percentage rural		.01	–.01	–.01	–.01
Hispanics		–.37***	.26***	.26***	.26***
Unemployed			–1.38	–1.38	–1.38
Net migration			–3E-4	–.4E-4	–4E-4
Single-parent families			.11	.11	.11
Percentage below poverty			.89***	.89***	.89***
Percentage high school graduation			.06	.06	.06
Constant	7.64***	12.68***	18.75***	22.33***	48.12
Spatial lag effect				.91***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.59	.61	.64	.65	.65
AIC	11176.1	11133.7	11121.94	11128.86	11121.96
BIC	11183.78	11155.54	11135.47	11138.75	11138.78
Log-likelihood	–5582.97	5533.59	5528.89	5533.79	5528.88

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

High School Graduation Rate

The rate of high school graduation is consistently shown in this analysis and other studies (Wimberley and Morris 1997, 2002) to be linked to poverty. According to the data in Tables 5.19 through 5.27, many factors can be linked to lower high school graduation rates.

Airport proximity and passenger boardings are significant to high school graduation rate only in the first two models for the year 2010 and in no models for the

year 2000. This finding suggests that the factors added to the variables in the models in 2010 are more significant indicators of high school graduation rates.

Health factors are a significant indicator of high school graduation rate in 2010 in all models but not in 2000. Also, the presence of colleges and universities is a significant factor in all models in 2010 but not 2000. The coefficient of determination (R-squared) in model 1 of .302 in 2010 but .003 in 2000 (Tables 5.7 and 5.8) suggests that infrastructure is a stronger factor in graduation rates in 2010 than in 2000.

Consistent with the findings of other analyses in this research, counties with an increased presence of Hispanics have significantly lower graduation rates in Black Belt counties at all three African American population levels (12, 25, and 40 percent) in 2000 and 2010.

Another finding relating to high school graduation rate is that the greater the net migration into a county, the greater its graduation rate. A possible explanation for this finding is that better school systems often lead to greater economic development (Flora and Flora 2008; Diprete and Eirich 2006), which in turn encourages an influx of new jobs and new residents into the community. There is a paradox between education and economic development: to have a quality education system, a county must have a strong tax base to support the system; however, to have quality economic development, a county must have a strong school system. The findings of this research suggest that creating an economic environment that matches the needs of new residents may lead to gains in the school system—and overcome the paradox.

Table 5.19 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2000 for Black Belt counties at the 12

percent population level of African Americans. Model 3 is the best-fit model for this analysis.

Table 5.19 shows that none of the infrastructure variables is significant with relation to high school graduation rate in 2000 in Black Belt counties at the 12 percent population level of African Americans. A higher percentage of rurality is negatively associated with high school graduation rate, while net migration is positively associated. These findings demonstrate the significant effects of isolation on rural areas in the South—that is, isolation appears to have a considerable effect on graduation rate, which in turn may affect poverty rates.

Table 5.19 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

			2000		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	1.18	1.18	.6685	.668	.668
Interstate	1.04	1.18	.86	.87	.85
Health factors	.4E-3	.1E-3	.2.9E-3	.3.0E-3	3.2E-3
Colleges and universities	.20	–.10	–.31	–.31	–.31
Black Belt county, 12% level		.28	.39	.39	.40
Percentage rural		–12.42***	–8.15***	–8.16***	–8.17***
Hispanics		–.19***	–.11	–.11	–.11
Unemployed			.26	.26	.26
Net migration			3.3E-4***	. 3.3E-4***	3.3E-4***
Single-parent families			–.11	–.11	–.11
Percentage below poverty			–.77***	–.77***	–.78***
Health outcomes			–2.2E-4	2.2E-4	2.2E-4
Constant	8.95***	6.28***	8.85 ***	17.64***	25.32
Spatial lag effect				.97***	
Spatial error effect					1.08***
Diagnostics					
R-squared	3E-3	.29	.64	.64	.64
AIC	7996.2	7605.64	6830.77	6829.87	6831.78
BIC	8016.37	7640.94	6891.27	6890.31	6894.17
Log-likelihood	–3994.1	–3795.82	–3403.38	–3400.38	–3406.89

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.20 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2010 for Black Belt counties at the 12 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

For the year 2010, the infrastructure variables of college and universities and health factors become a significant factor relating to graduation rate. Those infrastructure variables account for more than 30 percent of the variance shown in Table 5.20.

Counties with higher populations of Hispanics have lower high school graduation rates. Also, the graduation rates in counties that are more rural tend to be lower than in the more urban counties, and counties with higher poverty rates tend to have lower graduation rates. In addition, the greater the amount of migration into a county, the higher its graduation rate.

Table 5.20 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–5.05***	–2.05**	.1678	.1679	.1678
Interstate	2.33	2.08	2.00	2.02	2.00
Health factors	.06***	.05***	.02***	.02***	.02***
Colleges and universities	1.73***	.12	.97***	.97***	.97***
Black Belt county, 12% level		–1.67***	.14	.14	.14
Percentage rural		–.08***	–.06***	–.06***	–.06***
Hispanics		–.13***	–.12***	–.12***	–.12***
Unemployed			–1.59	–1.59	–1.59
Net migration			2.2E-4***	2.2E-4***	2.2E-4***
Single-parent families			–.01	–.01	–.01
Percentage below poverty			–.52****	–.52****	–.52***
Health outcomes			–1.1E-4	–1.1E-4	–1.1E-4
Constant	7.94***	9.85***	9.75 ***	18.88***	28.28
Spatial lag effect				.92***	
Spatial error effect					1.01***
Diagnostics					
R-squared	.30	.42	.63	.63	.63
AIC	7260.15	7061.47	6554.35	6554.96	6552.96
BIC	7285.36	7096.76	6614.85	6620.5	6613.46
Log-likelihood	–3625.08	–3523.74	–3265.17	–3264.48	–3264.48

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.21 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable high school graduation rate for the year 2010 for Black Belt counties at the 12 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

Airport improvements are not a significant indicator of high school graduation rate. Similar to what is shown in Table 5.20, rurality maintains its significance, possibly indicating a need to focus on improving schools in rural areas in the South.

Once again, there is strong evidence that the greater the percentage of Hispanics in a county, the lower the graduation rate and that the higher the net migration into a

county, the higher the graduation rate. In addition, this analysis again shows that the greater the percentage of poverty, the lower the graduation rate.

Table 5.21 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–4.69***	–1.88**	.16	.16	.16
Airport improvement	1.98	.17	.17	.17	.17
Interstate	2.01	1.90	1.83	1.84	1.84
Health factors	.05***	.04***	.02***	.02***	.02***
Colleges and universities	1.54***	.12	.94***	.94***	.94***
Black Belt county, 12% level		1.63***	.11	.11	.11
Percentage rural		.07***	.05***	.05***	.05***
Hispanics		–.12***	–.12***	–.12***	–.12***
Unemployed			1.43	1.44	1.45
Net migration			1.8E-4***	1.7E-4***	1.9E-4***
Single-parent families			–.01	–.01	–.01
Percentage below poverty			.49***	.50***	.49***
Health outcomes			1E-5	1E-5	1E-5
Constant	7.94***	7.33***	7.38 ***	15.33***	25.21
Spatial lag effect				.92***	
Spatial error effect					1.01***
Diagnostics					
R-squared	.32	.45	.65	.65	.65
AIC	7252.14	7048.24	6543.11	6542.18	6543.03
BIC	7265.33	7085.94	6600.72	6602.16	6601.7
Log-likelihood	–3601.99	–3498.17	–3255.87	–3256.13	–3256.13

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.22 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2000 for Black Belt counties at the 25 percent population level of African Americans. The findings indicate that model 5 is the best-fit model for this analysis.

In this analysis, the findings indicate very little significance in the infrastructure variables for the year 2000. The number of Hispanics in the community negatively affects the graduation rate. Graduation rate is also shown to be affected by the number of new migrants into a community: the greater the amount of in-migration, the higher the

graduation rate. Poverty is once again a strong variable that negatively affects graduation rate.

Table 5.22 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 25 Percent Level of African Americans (Year 2000)

			2000		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	1.18	1.12	.61	.61	.62
Interstate	1.04	.89	.91	.90	.94
Health factors	4E-3	1.1E-3	2.9E-3	3.3E-3	2.7E-3
Colleges and universities	.197	–.019	–.314	–.314	–.316
Black Belt county, 25% level		.31	.59	.59	.59
Percentage rural		–12.40***	–8.12***	–8.14***	–8.15***
Hispanics		–.19	–.11***	–.11***	–.11***
Unemployed			.26	.27	.27
Net migration			3E-4***	.3E-4***	3E-4 ***
Single-parent families			–.11	–.11	–.11
Percentage below poverty			–.78***	–.78***	–.78***
Health outcomes			–2.12E-3	–2.12E-3	–2.12E-3
Constant	7.95***	8.53***	8.45***	16.36***	32.41
Spatial lag effect				.97***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.3E-3	.30	.65	.65	.65
AIC	7996.2	7605.57	6828.66	6830.45	6825.39
BIC	8016.37	7640.87	6889.17	6892.47	6886.22
Log-likelihood	–3994.1	–3795.79	–3402.33	–3406.89	–3400.12

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.23 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2010 for Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Infrastructure is crucial in the findings for the year 2010, with health factors and colleges and universities at significant levels, which affect graduation rates in a positive direction. The current study is one more in a long line that has found a connection between health factors and high school success. For example, as detailed in Bullard

(1990) and other works, many chemical companies locate to poor areas; those areas are more likely to have landfills with serious environmental degradation issues, which affect children in the form of childhood birth defects, increased rates of asthma, more days away from school, and other serious effects. Health factors might also have an effect graduation rates: a lower health factor score might mean that parents have less income because they miss more days at work or have to rely on disability payments. There is a significant level of correlation between those with lower income and those with lower graduation rates.

When it comes to graduation rates, however, an interesting finding from this analysis is that health outcomes are not significant. The physical infrastructure appears to be more important than social infrastructure in relation to health.

Rural counties are more likely than non-rural counties to have lower graduation rates. Another social factor that is shown to be of crucial importance in the understanding of graduation rate is the number of Hispanics: the greater the percentage of Hispanics in a county, the lower the graduation rate. The number of migrants into a county increases its graduation rate. Migration is a factor that allows for increased diversity and a greater understanding of different cultures and practices.

Table 5.23 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–5.05***	–1.89**	.039	.039	.039
Interstate	2.33	2.31*	2.01	2.01	2.01
Health factors	.06***	–.04***	–.02***	–.02***	–.02***
Colleges and universities	1.73***	.13	.95***	.96***	.96***
Black Belt county, 25% level		–3.51***	–.38	–.38	–.38
Percentage rural		–.08***	–.06***	–.06***	–.06***
Hispanics		–.15***	–13***	–13***	–13***
Unemployed			–1.36	–1.36	–1.36
Net migration			2.2E-4***	2.2E-4***	2.2E-4***
Single-parent families			–.01	–.01	–.01
Percentage below poverty			–.51***	–.51***	–.51***
Health outcomes			–1.4E-3	–1.4E-3	–1.4E-3
Constant	7.95***	8.83***	9.43***	18.88***	35.33
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.30	.45	.63	.63	.63
AIC	7260.15	6983.82	6553.16	6553.78	6551.78
BIC	7285.36	7019.1	6613.66	6619.32	6612.27
Log-likelihood	–3625.08	–3484.91	–3264.58	–3263.89	–3263.88

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.24 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable high school graduation rate for the year 2010 for Black Belt counties at the 25 percent population level of African Americans.

The results shown in Table 5.24 are similar to those in Table 5.8b. Again airport accessibility is significant in models 1 and 2 but loses significance in models 3, 4, and 5. When other independent variables are added, airport accessibility becomes less important than the social infrastructure variables. Model 5 is the best-fit model for this analysis.

As shown in Table 5.24, an increase in health factors actually leads to a decrease in graduation rate—which is an interesting yet confounding finding. This finding could result from federal funding of programs for impoverished communities.

A college or university in a county is shown in this study to have a positive effect on graduation rate. The results of the social factor variables are similar to what is found in the previous analyses of graduation rates in this research.

Table 5.24 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–4.69***	1.85**	.03	.03	.03
Airport improvement	1.98	1.73	.07	.07	.07
Interstate	2.01	2.25*	1.43	1.44	1.44
Health factors	.05***	–.04***	–.02***	–.02***	–.02***
Colleges and universities	1.54***	.11	85***	85***	85***
Black Belt county, 25% level		–3.43***	–.32	–.32	–.32
Percentage rural		–.06***	.04***	.04***	.04***
Hispanics		–.15***	–.11***	–.11***	–.11***
Unemployed			–1.01	–1.01	–1.02
Net migration			1.9E-4***	1.9E-4***	2.1E-4***
Single-parent families			–3E-3	–4E-3	–.01
Percentage below poverty			–.49***	–.49***	–.49***
Health outcomes			–8.2E-5	–8.4E-5	–8.5E-5
Constant	7.95***	8.56***	9.28***	17.93***	34.88
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.32	.47	.63	.63	.63
AIC	7252.14	6972.51	6543.6	6542.7	6541.3
BIC	7265.33	7007.47	6573.89	6566.8	6564.93
Log–likelihood	–3601.99	–3481.82	–3241.53	–3241.51	–3240.33

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.25 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2000 for Black Belt counties at the 40 percent population level of African Americans. Either model 3 or model 5 could be the best-fit model for this analysis.

The results of the analysis of Table 5.25 are similar to those of Tables 5.19 and 5.22 for the year 2000 relating to the dependent variable high school graduation rate. One difference from analyses conducted by other researchers of high school graduation rates is that the Black Belt becomes significant at the 40 percent population level of African Americans. Another difference from past analyses is that none of the infrastructure variables has a significant effect on graduation rate.

The major finding presented in Table 5.25 is that race appears to play an important role in determining high school graduation rate: as the percentage of African Americans increases, the rate of high school graduation decreases.

Table 5.25 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	1.18	1.12	.58	58	58
Interstate	1.04	.89	.67	.67	.67
Health factors	4E-3	1E-3	3E-3	3E-3	3E-3
Colleges and universities	.20	–.09	–.30	–.30	–.30
Black Belt county, 40% level		.59	.69*	.69*	.69*
Percentage rural		–12.38***	–8.10***	–8.11***	–8.10***
Hispanics		–.19***	–.11***	–.11***	–.11***
Unemployed			.25*	.25*	.25*
Net migration			.3.3E-4***	.3.3E-4***	3.3E-4***
Single-parent families			–.11	–.11	–.11
Percentage below poverty			–.77***	–.77***	–.77***
Health outcomes			–.2E-3	–.2E-3	–2E-3
Constant	7.95***	9.74***	8.55**	20.03***	32.35
Spatial lag effect				.97***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.3E-3	.29	.65	.65	.65
AIC	7996.2	7604.95	6829.35	6827.46	6829.35
BIC	8016.37	7640.24	6889.86	6886.47	6889.86
Log-likelihood	–3994.1	–3795.47	–3402.68	–3396.89	–3402.68

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.26 presents the results of the independent variables on the dependent variable high school graduation rate for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

In this analysis, graduation rates are less likely to depend on net migration. Health factors and colleges and universities both significantly affect graduation rate in a positive direction. Poverty rate is no longer a factor. The reasons for these findings are unclear, and more research should be conducted.

Table 5.26 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–5.05***	–1.64*	.08	.08	.08
Interstate	2.33	1.67	1.00	1.00	1.00
Health factors	.06***	–.04***	–.02***	–.02***	–.02***
Colleges and universities	1.73***	.01	.96**	.96**	.96**
Black Belt county, 40% level		–4.45***	–.28	–.28	–.28
Percentage rural		–.08***	–.06***	–.06***	–.06***
Hispanics		–.14***	–.12***	–.12***	–.12***
Unemployed			–1.49	–1.49	–1.49
Net migration			2.20E-4***	2.20E-4***	2.22E-4***
Single-parent families			–.01	–.01	–.01
Percentage below poverty			–.51	–.51	–.51
Health outcomes			–.1.2E-3	–1.2E-3	–1.2E-3
Constant	7.95***	9.93***	8.99**	21.23***	34.23
Spatial lag effect				.89***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.30	.45	.62	.62	.62
AIC	7260.15	6981.62	6554.07	6554.68	6552.68
BIC	7285.36	7016.91	6614.56	6620.22	6613.18
Log-likelihood	–3625.08	–3483.81	–3265.03	–3264.64	–3264.33

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.27 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable high school graduation rate for

the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

When the airport improvement variable is added, health factors and colleges and universities in a county remain significant factors in increasing the high school graduation rate. The percentage of Hispanics in a county also remains significant in negatively affecting the graduation rate. Net migration is barely significant but is in a positive direction.

Table 5.27 Effects of Independent Variables on Dependent Variable High School Graduation Rate in Black Belt Counties, 40 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

			2010		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–4.69***	–1.59	.01	.01	.01
Airport improvement	1.98	1.37	1.32E-3	.1.32E-3	1.33E-3
Interstate	2.01	1.47	.95	.97	.97
Health factors	.05***	–.04***	–.01***	–.01***	–.01***
Colleges and universities	1.54***	.01	.85***	.85***	.85***
Black Belt county, 40% level		–4.31***	–.24	–.24	–.24
Percentage rural		–.08***	–.52***	–.52***	–.52***
Hispanics		–.13***	–.11***	–.11***	–.11***
Unemployed			–1.27	–1.28	–1.28
Net migration			.4.3E-5*	5E-5*	5E-5*
Single-parent families			–3.30E-4	–3.5E-4	–3.3E-4
Percentage below poverty			.40	.40	.40
Health outcomes			–4.3E-4	–4.1E-4	–4.1E-4
Constant	7.95***	9.85***	8.45**	21.02***	33.98
Spatial lag effect				.90***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.32	.47	.65	.65	.65
AIC	7252.14	6977.53	6543.76	6543.85	6542.84
BIC	7265.33	7015.44	6606.68	6603.29	6603.76
Log-likelihood	–3601.99	3478.69	3255.08	3252.08	3257.29

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Migration

A large number of factors that account for an increase in migration seem to be outside the bounds of this analysis, with the best model accounting for only 33.8 percent of the variance. The infrastructure variables are less important to migration patterns than to the other dependent variables in this study.

Of critical consequence to migration is rurality: the greater that percentage, the less likely people are to migrate to the area. Another finding is that the greater the percentage of Hispanics, the more likely a county is to have a positive net migration pattern. Because of the influx of Hispanic immigrants into the United States and the concentration of immigrants in certain regions, it is expected that the number of Hispanics in a county will be positively correlated with a greater net migration rate. It was also found that the higher the graduation rate, the more likely a county is to have a positive net migration pattern.

The one confounding finding from this study is that the higher the unemployment rate in 2010, the greater the net migration. An explanation for this finding might be similar to that discussed in analysis of poverty: specific communities with high rates of immigration, especially Hispanic immigration, felt the effects of the economic downturn more than rural areas did, thus reflecting an increase in unemployment and net migration.

The findings also show that counties with a large number of single-parent families tend to have lower migration rates. Single-parent families are often highly correlated with poverty and low graduation rates from high school. These compounding effects suggest that migrants avoid moving to a county with a high number of single-parent families.

Table 5.28 presents the results of the independent variables on the dependent variable net migration for the year 2000 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The findings show that the infrastructure variables are of little importance in the year 2000. Rurality is highly significant in a negative direction with relation to migration levels. One reason might be that most of the new jobs in the service-sector economy are in cities and suburbs rather than in agriculture-dominant rural areas.

The percentage of Hispanics in a county also correlates with a larger number of migrants. One reason is that a segment of the Hispanic population is migrants, and migrants often set up communities or enclaves with other migrants or family members who have settled a particular area.

As was discussed previously, Black Belt counties are negatively associated with graduation rate. The resulting lack of opportunities in many of those counties might dissuade migrants from moving to the Black Belt.

Table 5.28 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	420.43	476.72	277.321	277.34	277.36
Interstate	101.13	108.55	65.32	65.38	65.40
Health factors	–.77	–.98	1.11	1.05	1.09
Colleges and universities	–76.4	–63.46	–53.91	–53.91	–53.91
Black Belt county, 12% level		–491.88	–335.54*	–335.55*	–335.55*
Percentage rural		–.33***	–1916.78***	–1916.80***	–1916.78***
Hispanics		3.40	26.78***	26.78***	26.78***
Unemployed			47.14	47.19	47.14
Graduation rate			88.27***	88.30***	88.27***
Single-parent families			37.20	37.20	37.20
Percentage below poverty			–34.15	–34.18	–34.15
Health outcomes			–2.309	–2.309	–2.309
Constant	18983.76***	25865.31***	28672.54***	16068.77	28805.53
Spatial lag effect				.74	
Spatial error effect					.86
Diagnostics					
R-squared	.0019	.13	.20	.22	.23
AIC	21366.8	21201.3	21126	21122.5	21122.55
BIC	21387	21231.5	21186.5	21182.6	21182.83
Log-likelihood	–10679	–10594.6	–10551	–10547.3	–10548.4

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.29 presents the results of the independent variables on the dependent variable net migration for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

For the year 2010, none of the infrastructure variables is significant. The Black Belt variable also loses its significance in the year 2010.

The higher unemployment rate seems to have a positive effect on net migration in 2010. This is a confounding finding because it is logical to assume that the higher the unemployment rate, the fewer jobs available to migrants. However, because 2010 closely followed the recession of 2007–2008, this finding may be an artifact because migrants are more likely to migrate to urban areas and to areas where similar migrants have settled.

A higher graduation rate is associated strongly with higher net migration. Conversely, the higher the percentage of single-parent families, the lower the amount of net migration.

Table 5.29 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2170.59***	–1035.84***	–465.59	–466	–465.59
Interstate	1018.53**	564.37**	228.36	229.45	228.36
Health factors	–4.62**	–10.07***	–1.36	–1.36	–1.36
Colleges and universities	977.45***	387*	208.199	208.39	208.199
Black Belt county, 12% level		325.27*	241.27	241.48	241.28
Percentage rural		–23.52***	–14.2***	–14.19***	–14.2***
Hispanics		27.88***	29.64***	29.668***	29.65***
Unemployed			.017***	.017***	.017***
Graduation rate			61.95***	62.01***	61.95***
Single-parent families			–18.18*	–18.199*	–18.18*
Percentage below poverty			2.34	2.34	2.34
Health outcomes			–3.06	–3.07	–3.06
Constant	14153.83***	22225.33***	25442.78***	13068.73	24803.50
Spatial lag effect				.77	
Spatial error effect					.90
Diagnostics					
R-squared	.11	.195	.34	.34	.333
AIC	21222.6	21110	20901	20901.6	20899.6
BIC	21247.8	21145.3	20961.5	20967.2	20960.1
Log-likelihood	–10606.3	–10548	–10438.5	–10437.8	–10437.8

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.30 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable net migration for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis. The results are almost identical to those in Table 5.29.

Table 5.30 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2157.53***	–945.77***	–443.89	–443.88	–443.87
Airport improvement	50.23***	37.28**	25.39	25.38	25.38
Interstate	1001.63**	484.39**	215.36	215.36	215.37
Health factors	–4.34**	–9.18***	–1.09	–1.10	–1.09
Colleges and universities	892.95***	376.54*	193.48	193.49	193.48
Black Belt county, 12% level		314.47*	227.14	227.14	227.13
Percentage rural		–20.82***	–12.58***	–12.57***	–12.58***
Hispanics		25.43***	23.64***	23.65***	23.64***
Unemployed			.01***	.01***	.01***
Graduation rate			56.65***	56.66***	56.65***
Single-parent families			–15.36*	–15.37*	–15.36*
Percentage below poverty			2.05	2.05	2.05
Health outcomes			–2.93	–2.93	–2.93
Constant	14015.66***	22115.93***	25232.16***	12978.59	23999.99
Spatial lag effect				.76	
Spatial error effect					90
Diagnostics					
R-squared	.13	.20	.35	.35	.35
AIC	21214.36	21104.89	20877.76	20873.59	20874.46
BIC	21226.07	21063.45	20943.45	20943.45	20943.38
Log-likelihood	–10593.98	–10518.96	–10422.38	–10420.98	–10420.49

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.31 presents the results of the independent variables on the dependent variable net migration for the year 2000 in Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

For the year 2000, little change is noted between Black Belt counties at the 12 and 25 percent African American population levels. Social infrastructure is of more importance than other infrastructure variables in that year. Black Belt counties are negatively associated with net migration, along with rurality. The percentage of Hispanics and the graduation rate are positively associated with an increase in migration.

Table 5.31 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 25 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	420.43	411.83	348.54	348.60	348.57
Interstate	101.13	109.93	48.33	48.33	48.36
Health factors	–.77	–.61	.94	.94	.94
Colleges and universities	–76.4	–55.04	–56.47	–56.47	–56.55
Black Belt county, 25% level		–355.83*	–364.11*	–364.14*	–364.12*
Percentage rural		–3235.4 ***	–1932.42***	–1932.4***	–1932.4***
Hispanics		3.53***	26.52***	26.54***	26.52***
Unemployed			–49.72	–49.43	–49.56
Graduation rate			88.98***	88.78***	88.68***
Single-parent families			38.47	38.48	38.49
Percentage below poverty			–33.48	–33.49	–33.50
Health outcomes			–2.36	–2.40	–2.21
Constant	18468.68***	29458.27***	29352.76***	16789.51	28444.31
Spatial lag effect				.76	
Spatial error effect					.85
Diagnostics					
R-squared	1.9E-3	.14	.20	.21	.23
AIC	21366.8	21198.3	21125.3	21115.7	21120.8
BIC	21387	21233.6	21185.8	21174.23	21181.66
Log-likelihood	–10679	–10592.2	–10550.7	–10538.42	–10540.42

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.32 presents the results of the independent variables on the dependent variable net migration for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

The findings presented in Table 5.32 show that proximity to an interstate is a significant determinant of net migration patterns in 2010. The analysis shows that migration is occurring at higher rates in urban and suburban areas, which are more likely to be in close proximity to an interstate and may lead to an outgrowth of population.

Table 5.32 also shows that airport accessibility is a significant factor for the year 2010 in all models of the analysis. As was found with high school graduation rates, the increased isolation of rural areas may be a detriment not only to increasing population and improving graduation rates but also in creating favorable physical infrastructure.

Table 5.32 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2170.58***	–116.79***	–552.37*	–552.86*	–552.38*
Interstate	1018.533**	589***	386.54*	386.84*	386.54*
Health factors	–4.62**	–8.37***	–.57	.57	–.57
Colleges and universities	977.45***	–409.84**	209.45	209.635	209.45
Black Belt county, 25% level		–217.63	36.00	36.03	36.00
Percentage rural		–23.67***	–14.2***	–14.20***	–14.20***
Hispanics		20.691***	26.65***	26.677***	26.65***
Unemployed			.02***	.02***	.02***
Graduation rate			62.52***	62.581***	62.52***
Single-parent families			–17.83*	–17.84	–17.83*
Percentage below poverty			5.46	5.46	5.46
Health outcomes			–3.26	–3.26	–3.26
Constant	13953.68***	22205.13***	23842.68***	12798.67	22228.53
Spatial lag effect				.80	
Spatial error effect					.90
Diagnostics					
R-squared	.108	.19	.33	.33	.33
AIC	21222.6	21112	20903.2	20903.9	20901.9
BIC	21247.8	21147.3	20963.7	20969.4	20962.3
Log-likelihood	–10606.3	–10549	–10439.6	–10438.9	–10438.9

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.33 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable net migration for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

As previously discussed, the findings presented in Table 5.32 show that airport improvements created an increase in net migration.

Table 5.33 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2157.53***	–107.64***	–548.37*	–548.36*	–548.37*
Airport improvement	50.23***	34.39**	30.38*	30.38*	30.37*
Interstate	1001.63**	57***	385.21*	385.22*	385.20*
Health factors	–4.34**	–8.11***	–.493	–.492	–.493
Colleges and universities	892.95***	–401.72**	201.83	201.83	201.82
Black Belt county, 25% level		–197.45	33.82	33.82	33.82
Percentage rural		–19.76***	–12.68***	–12.67***	–12.68***
Hispanics		19.78***	23.21***	23.21***	23.21***
Unemployed			.01***	01***	01***
Graduation rate			55.42***	55.42***	55.42***
Single-parent families			–15.85*	–15.84*	–15.85*
Percentage below poverty			5.23	5.24	5.23
Health outcomes			–3.08	–3.08	–3.08
Constant	13953.68***	22198.26***	23462.27***	12543.33	21198.53
Spatial lag effect				.76	
Spatial error effect					.90
Diagnostics					
R-squared	.12	.19	.35	.35	.35
AIC	21214.36	21112	20898.72	20896.78	20895.77
BIC	21226.07	21147.3	20902.65	20908.75	20902.78
Log-likelihood	–10593.98	–10549	–10386.54	–10386.44	–10382.34

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.34 presents the results of the independent variables on the dependent variable net migration for the year 2000 in Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Table 5.34 illustrates a similar framework to Tables 5.28 and 5.31. In other words, there are not many significant changes in the year 2000 for the South concerning migration in Black Belt counties, regardless of whether the population level of African Americans is 12, 25, or 40 percent.

Table 5.34 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	420.43	439.46	373.29	373.33	373.29
Interstate	101.13	105.06	81.16	81.14	81.16
Health factors	–.77	–.67	.87	.87	.87
Colleges and universities	–76.4	–62.02	64.13	64.14	64.13
Black Belt county, 40% level		397.46*	–426.*	–427*	–426.*
Percentage rural		–3260.59***	–1949.35 ***	–1949.35***	–1949.35***
Hispanics		3.71***	26.91***	26.91***	26.91***
Unemployed			–46.01	–46.03	–46.01
Graduation rate			88.68***	88.68***	88.68***
Single-parent families			39.37	39.37	39.37
Percentage below poverty			–35.42	–35.42	–35.42
Health outcomes			–2.34	–2.34	–2.34
Constant	20953.43***	30000.28***	35863.68***	19798.56	25558.64
Spatial lag effect				.68***	
Spatial error effect					1.04***
Diagnostics					
R-squared	.0019	.14	.20	.20	.20
AIC	21367	21199.6	21126.4	21127.31	21125.32
BIC	21387	21234.6	21186.9	21187.28	21185.94
Log-likelihood	–10679	–10592.8	–10551.2	–10551.35	–10551.10

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.35 presents the results of the independent variables on the dependent variable net migration for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Migration patterns are similar for both 2000 and 2010. Infrastructure, once again, as determined in the analysis of the other dependent variables, seems to be more important in 2010 than in 2000. Rurality has a negative influence on net migration in both years of the study and at all levels of African American population. Both the graduation rate and the percentage of Hispanic residents have a positive influence on net migration in both years of the study and at all levels of African American population. The Black Belt county variable has no significant effect in the year 2010 for either the 25 or 40 percent population levels of African Americans.

Table 5.35 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2170.59***	–1180.24***	–553.09*	–553.58*	–553.09*
Interstate	1018.53**	586.49*	265.09*	266.13*	265.09*
Health factors	–4.62**	–8.30***	–.53	–.54	–.53
Colleges and universities	977.45***	401.26*	211.31	211.49	211.31
Black Belt county, 40% level		–383.85*	56.32	56.36	56.33
Percentage rural		–23.83***	–14.16***	–14.17***	–14.16***
Hispanics		20.67***	26.58***	26.60***	26.58***
Unemployed			.02***	.02***	.02***
Graduation rate			62.49***	62.54***	62.49***
Single-parent families			–17.66*	17.67*	–17.66*
Percentage below poverty			4.88	4.88	4.88
Health outcomes			–.33	–.33	–.33
Constant	12898.64 ***	20105.18***	20804.78***	10098.64	19753.81
Spatial lag effect				.97	
Spatial error effect					1.04
Diagnostics					
R-squared	.11	.19	.33	.33	.33
AIC	21222.6	21110.3	20903.2	20903.8	20901.8
BIC	21247.8	21145.6	20963.7	20969.4	20962.3
Log-likelihood	–10606.3	–10548.2	–10439.6	–10438.9	–10438.91

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.36 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable net migration for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

The airport improvement variable is significant only in model 1. When other variables are added to explain migration, airport improvement is not a significant factor. Other results are similar to those presented in Table 5.35.

Table 5.36 Effects of Independent Variables on Dependent Variable Net Migration in Black Belt Counties, 40 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–2157.53***	–1185.24***	–573.09*	–573.10*	–573.08*
Airport improvement	50.23***	41.76	36.77	36.78	36.77
Interstate	1001.63**	589.49*	261.09*	261.10*	261.09*
Health factors	–4.34**	–7.26***	–.508	–.508	–.509
Colleges and universities	892.95***	385.15*	203	203.21	204
Black Belt county, 40% level		–401.45*	51.44	51.45	51.44
Percentage rural		–20.76***	–10.16***	–10.16***	–10.16***
Hispanics		19.98***	22.81***	22.81***	22.81***
Unemployed			.001***	.001***	.002***
Graduation rate			56.98***	56.98***	56.99***
Single-parent families			–17.66*	–17.65*	–17.66*
Percentage below poverty			4.66	4.65	4.66
Health outcomes			–.29	–.29	–.29
Constant	12898.64 ***	20000.05***	21104.08***	10568.74	20001.96
Spatial lag effect				.97	
Spatial error effect					1.04
Diagnostics					
R-squared	.12	.20	.35	.35	.35
AIC	21214.36	21063.89	20703.66	20703.69	20709.54
BIC	21226.07	21095.65	20903.59	20909.89	20903.78
Log-likelihood	–10593.98	–10508.78	–10339.55	–10343.55	–10339.77

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Single-Parent Families

The analysis of single-parent families draws interesting comparisons between the study years of 2000 and 2010. The rurality percentage, percentage of Hispanics, percentage unemployed, and designation as a Black Belt county are all significant factors in a county having more single-parent families in 2000 but not in 2010.

In the year 2010, the number of Hispanics is negatively correlated with the number of single-parent families. The Black Belt and rural areas seem to have fewer single-parent families than other areas. These results may not be surprising when one considers the fact that those three demographic groups (Hispanics, rural residents, and Black Belt counties) tend to have stronger religious ties than other groups, and thus are

less likely to divorce. When the analysis reached the 40 percent African American level, the Black Belt variable is no longer significant in 2000. The impacts of those three variables are no longer significant in 2010. The lessening impact might have been the result of the economic crisis, but more research should be done to investigate this phenomenon.

Health factors are the only infrastructure variable significant in this analysis for the full models and only for the year 2010. The most consistent factor over both study years of the analysis is poverty. The data presented previously in Tables 5.1 through 5.9 show that the variables health factors and single-parent families have a significant impact on poverty. Thus, it is reasonable to conclude that three variables—airports, health factors, and interstate highways—may have a converging relationship: the higher the poverty rate, the less likely there is to be significant infrastructure with regard to health care and the more likely there are to be large numbers of single-parent families.

Table 5.37 presents the results of the independent variables on the dependent variable single-parent families for the year 2000 in Black Belt counties at the 12 percent population level of African Americans. Model 3 is the best-fit model for this analysis.

The findings show that the rurality percentage and the Black Belt variables have less correlation to single-parent families than do counties that are more urban or not in the Black Belt. Additional findings are that the greater the percentage of Hispanics in a county, the less likely it is to have a high percentage of single-parent families; the lower the graduation rate in a county, the higher the number of single-parent families; and the higher the poverty rate, the higher the number of single-parent families. Infrastructure

variables have no significance relating to the number of single-parent families in a county.

Table 5.37 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	8.52***	6.30***	.07	.07	.07
Interstate	3.39**	2.55**	.003	.003	.003
Health factors	.048***	.04***	.002	.002	.002
Colleges and universities	.27	1.45*	.11	.11	.11
Black Belt county, 12% level		4.67***	–.41**	–.41**	–.41**
Percentage rural		.06***	–4.66***	–4.66***	–4.66***
Hispanics		.059**	–.11***	–.11***	–.11***
Unemployed			.32***	.32***	.32***
Graduation rate			–.03*	–.03*	–.03*
Net migration			3.87	3.87	3.87
Percentage below poverty			.56***	.56***	.56***
Health outcomes			–.0007	–.0007	–.0007
Constant	26.68***	20.77***	12.32***	–15.88***	12.39
Spatial lag effect				.96***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.12	.14	.68	.68	.68
AIC	8683.15	8666.17	5366.61	5367.59	5367.56
BIC	8708.36	8701.46	5427.12	5428.25	5423.14
Log-likelihood	–4336.6	–4326.09	–2671.31	–2674.38	–2673.55

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.38 presents the results of the independent variables on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Health factors is the only infrastructure variable significant in all models. The variance for Table 5.38 is similar to that of Table 5.37, with the infrastructure variables explaining 12.7 percent of the variance. Higher poverty levels are strongly associated with higher rates of single-parent families. Net migration is negatively associated with

single-parent families—the higher the rate of net migration in a county, the lower the number of single-parent families.

Table 5.38 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	8.52***	6.30***	1.45	1.45	1.45
Interstate	3.39**	2.55**	.77	.77	.77
Health factors	.05***	.04***	.02*	.02*	.02*
Colleges and universities	.27	1.45*	–.49	–.49	–.49
Black Belt county, 12% level		4.67***	.64	.64	.64
Percentage rural		.06***	.01	.01	.01
Hispanics		.06**	.03	.03	.03
Unemployed			1.55	1.55	1.55
Graduation rate			–.02	–.02	–.02
Net migration			–2.3E-4*	–2.3E-4*	–2.3E-4*
Percentage below poverty			.56***	.56***	.56***
Health outcomes			.01	.01	.01
Constant	28.34***	24.70***	15.38***	–20.88***	15.38
Spatial lag effect				.93***	
Spatial error effect					1.02***
Diagnostics					
R-squared	.13	.14	.51	.51	.51
AIC	8683.15	8666.17	8043.53	8044.15	8042.15
BIC	8708.36	8701.46	8104.43	8109.69	8102.64
Log-likelihood	–4336.6	–4326.09	–4009.77	–4009.7	–4009.07

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.39 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport improvements are not significant when it comes to single-parent families and do little to change any outcomes shown in Table 5.38.

Table 5.39 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	7.93***	6.30***	1.29	1.30	1.29
Airport improvement	4.93	3.67	3.23	3.23	3.24
Interstate	3.28**	2.13**	.63	.63	.64
Health factors	.04***	.03***	.01*	.01*	.01*
Colleges and universities	.22	1.23*	–.40	–.40	–.40
Black Belt county, 12% level		3.89***	.55	.55	.54
Percentage rural		.03***	.004	.004	.004
Hispanics		.038**	.02	.02	.02
Unemployed			1.27	1.27	1.28
Graduation rate			–.02	–.02	–.02
Net migration			–.1.8E-5*	–.1.8E-5*	–.1.8E-5*
Percentage below poverty			.49***	.49***	.49***
Health outcomes			.01	.01	.01
Constant	28.34***	24.33***	15.17***	–20.33***	14.98
Spatial lag effect				.93***	
Spatial error effect					1.02***
Diagnostics					
R-squared	.14	.17	.53	.53	.53
AIC	8669.44	8649.25	8030.69	8028.74	8030.87
BIC	8668.29	8667.56	8065.39	8065.87	8062.53
Log-likelihood	–4306.4	–4200.34	–3997.87	–3988.91	–3991.56

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.40 presents the results of the independent variables on the dependent variable single-parent families for the year 2000 in Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Being a Black Belt county, while still significant, is less of a factor for the year 2000 than for 2010. None of the infrastructure variables is significant in any of the models; they explain only .014 percent of the variance. The results for the rurality percentage variable are similar to those shown in Tables 5.40, 5.41, and 5.42, showing a negative association with single-parent families.

The percentage of Hispanics is associated with a low number of single-parent families in a county. The results also show that the higher the percentage of unemployed

residents in a county, the greater the number of single-parent families. Higher graduation rates lead to a decrease in the number of single-parent families. Once again, the more people at or below the poverty level in a county, the greater the number of single-parent families.

Table 5.40 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 25 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	.050	–.052	.19	.19	.19
Interstate	.023	.33	.26	.26	.26
Health factors	.00092	.0003	.0014	.0014	.0014
Colleges and universities	–.59	–.04	.11	.11	.11
Black Belt county, 25% level		–.13	–.29*	–.29*	–.29*
Percentage rural		–2.30***	–4.70***	–4.70***	–4.70***
Hispanics		–.044***	–.12***	–.12***	–.12***
Unemployed			.31***	.31***	.31***
Graduation rate			–.03*	–.03*	–.03*
Net migration			4.01	4.01	4.01
Percentage below poverty			.56***	.56***	.56***
Health outcomes			.0007	.0007	.0007
Constant	27.66***	17.53**	12.26**	11.09	11.10
Spatial lag effect				.98	
Spatial error effect					1.09
Diagnostics					
R-squared	.000137	.04	.68	.68	.68
AIC	6646.74	6605.97	5370.25	5371.26	5369.45
BIC	6666.91	6641.27	5430.76	5425.46	5428.36
Log-likelihood	–3319.4	–3295.99	–2673.13	–2673.83	–2672.83

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.41 presents the results of the independent variables on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Table 5.41 shows results similar to those presented in Table 5.38 for a Black Belt county at the 25 percent African American population level. One difference between the

results in the two tables is that health factors are no longer significant. Net migration and poverty are the only factors significant in the analysis of the data in Table 5.14b.

Table 5.41 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	8.52***	8.33**	1.23	1.24	1.23
Interstate	3.39**	3.51**	.78	.79	.78
Health factors	.05***	.045***	–.01	–.01	–.02
Colleges and universities	.2735	.2735	–.4811	–.4815	–.4812
Black Belt county, 25% level		4.3***	.16	.16	.16
Percentage rural		.05***	.01	.01	.01
Hispanics		.04**	.03	.03	.03
Unemployed			2.05	2.05	2.05
Graduation rate			–.02	–.02	–.02
Net migration			–.0002*	–.0002*	–.0002*
Percentage below poverty			1.18***	1.18***	1.18***
Health outcomes			.01	.01	.01
Constant	28.34***	25.45**	20.80**	15.45	15.45
Spatial lag effect				.94	
Spatial error effect					1.02
Diagnostics					
R-squared	.13	.14	.51	.51	.51
AIC	8683.15	8666.17	8044.7	8045.31	8043.31
BIC	8708.36	8701.46	8105.19	8110.85	8103.8
Log-likelihood	–4336.6	–4326.09	–4010.35	–4009.65	–4009.65

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.42 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 25 percent African American population level. Model 5 is the best-fit model for this analysis.

Airport improvements are not a significant factor in an increase or decrease in the number of single-parent families in a county. The results of the other variables are similar to those in Table 5.41, which show that only net migration (negatively) and poverty (positively) affect the percentage of single-parent families in a county.

Table 5.42 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	7.93***	8.33**	1.05	1.05	1.05
Airport improvement	4.93	3.51	.96	.97	.96
Interstate	3.28**	2.83**	.63	.63	.64
Health factors	.04***	.04***	–.004	–.004	–.006
Colleges and universities	.22	.18	–.28	–.28	–.28
Black Belt county, 25% level		3.76***	.106	.105	.106
Percentage rural		.029***	.01	.01	.01
Hispanics		.02**	.06	.05	.06
Unemployed			1.73	1.73	1.74
Graduation rate			–.01	–.01	–.01
Net migration			–.000*	–.000*	–.000*
Percentage below poverty			1.07***	1.05***	1.07***
Health outcomes			.0019	.0021	.0019
Constant	28.34***	25.29**	20.40**	15.22	15.22
Spatial lag effect				.94	
Spatial error effect					1.02
Diagnostics					
R-squared	.14	.16	.56	.56	.56
AIC	8669.44	8626.69	7974.7	7964.8	7972.68
BIC	8668.29	8656.02	8038.52	8032.59	8035.2
Log-likelihood	–4306.43	–4216.09	–3976.76	–3976.84	–3976.79

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.43 presents the results of the independent variables on the dependent variable single-parent families for the year 2000 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The infrastructure variables show very little significance. They also do not affect the number of single-parent families in a county for that year. Similar to the other models for single-parent families in the year 2000, rurality, poverty, unemployment, and high school graduation rates are significant indicators of the number of single-parent families in a county.

Table 5.43 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	.05	–.05	.21	.21	.21
Interstate	.02	.07	.01	.008	.01
Health factors	.00092	.00049	.00137	.00139	.00137
Colleges and universities	–.59	–.04	.09	.09	.09
Black Belt county, 40% level		–.26	–.33	–.33	–.33
Percentage rural		–2.32***	–4.72***	–4.72***	–4.72***
Hispanics		–.04***	–.12***	–.12***	–.12***
Unemployed			.32***	.32***	.32***
Graduation rate			–.03*	–.03*	–.03*
Net migration			4.11	4.11	4.11
Percentage below poverty			.56	.56	.56
Health outcomes			–7E-4	–7E-4	–7E-4
Constant	27.66***	22.99***	14.93**	18.78***	13.52
Spatial lag effect				.94	
Spatial error effect					1.01
Diagnostics					
R-squared	.000137	.04	.68	.68	.68
AIC	6646.74	6605.69	5371.2	5370.33	5373.23
BIC	6666.91	6640.98	5431.71	5429.26	5434.76
Log-likelihood	–3319.4	–3295.84	2673.6	2673.4	2673.4

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.44 presents the results of the independent variables on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

The Black Belt variable becomes significant as a factor related to fewer single-parent families in all models in the study. All other variables have results similar to those presented in Tables 5.38 and 5.41. Net migration is negatively associated with the percentage of single-parent families in a county, while the percentage of people in poverty in a county is positively associated with an increased percentage of single-parent families.

Table 5.44 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	8.52***	4.93**	.9965	.997	.9965
Interstate	3.39**	2.28*	.3865	.3867	.3865
Health factors	.048***	.046***	–.01	.01	–.01
Colleges and universities	.27	1.73*	–.59	.59	–.59
Black Belt county, 40% level		8.03***	–1.83*	–1.83*	–1.83*
Percentage rural		.06***	.01	.01	.01
Hispanics		.05*	.01	.01	.01
Unemployed			1.93	1.94	1.93
Graduation rate			–.02	–.02	–.02
Net migration			–.00022*	–.00022*	–.00022*
Percentage below poverty			1.23***	1.23***	1.23***
Health outcomes			.01	.01	.01
Constant	28.34***	25.35***	15.53**	20.72***	15.54
Spatial lag effect				.94	
Spatial error effect					1.01
Diagnostics					
R-squared	.12	.17	.50	.51	.51
AIC	8683.15	8627.9	8039.17	8039.78	8037.78
BIC	8708.36	8663.19	8099.67	8105.32	8098.28
Log-likelihood	–4336.6	4306.95	–4007.58	–4006.89	–4006.89

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.45 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable single-parent families for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport improvements are non-significant in all models. All other results are similar to those shown in Table5.44.

Table 5.45 Effects of Independent Variables on Dependent Variable Single-Parent Families in Black Belt Counties, 40 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	7.93***	4.36**	.90	.90	.90
Airport improvement	4.93	4.23	.78	.78	.78
Interstate	3.28**	2.08*	.32	.32	.32
Health factors	.04***	.04***	–.01	–.02	–.01
Colleges and universities	.215	1.53*	–.54	–.54	–.54
Black Belt county, 40% level		7.86***	–1.78*	–1.78*	–1.78*
Percentage rural		.05***	.01	.01	.01
Hispanics		.03*	.0022	.0023	.0022
Unemployed			1.46	1.47	1.46
Graduation rate			–.01	–.01	–.01
Net migration			–.00011*	–.00013*	–.00012*
Percentage below poverty			1.11***	1.12***	1.13***
Health outcomes			.01	.01	.01
Constant	28.34***	25.35***	15.53**	20.72***	15.54
Spatial lag effect				.94	
Spatial error effect					1.01
Diagnostics					
R-squared	.14	.17	.53	.53	.53
AIC	8669.44	8627.9	8025.29	8020.28	8015.66
BIC	8668.29	8663.19	8069.76	8063.77	8066.76
Log-likelihood	–4306.43	4306.95	–3957.53	–3955.44	–3959.75

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Unemployment

For the year 2000, airport accessibility is a significant factor in the unemployment rate in the full models at the 12 percent African American population level. Airport accessibility is not significant in 2010 and in fact is in the negative direction. The explanation might be that airport infrastructure may have been subject to budget cuts after the economic crisis in 2006–2007. Colleges and universities are a significant factor in the full models for 2010, indicating that places with colleges and universities may have been partially shielded from the effects of the economic crisis. Counties with a higher percentage of rural residents have less unemployment in 2000, at a significant level. In

2010, rural counties also have less unemployment, but that finding is not significant. Graduation rate is also significant in 2000 but not in 2010.

From this analysis, it can be assumed that rural areas tend to have less unemployment than urban areas. This might be related to the 2006–2007 economic crisis. Also, the reduction in infrastructure expenditures may be a factor in unemployment rates when the airport infrastructure variable is considered. In addition, graduation rate is a significant factor in 2000 for less unemployment, and colleges and universities are a significant factor in decreased unemployment rates in 2010, which could indicate that counties that provide more funding for education tend to have greater employment advantages than other counties.

Table 5.46 presents the results of the independent variables on the dependent variable unemployment for the year 2000 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

It was found that airport accessibility is a significant factor in increased unemployment. The explanation for this finding might be that airports are usually located in the more urban areas, and urban areas are more likely to have higher levels of unemployment than their rural counterparts. Geography also played an important role: being classified as a Black Belt county is a significant indicator of unemployment; however, the greater the rurality percentage of a county, the lower the level of unemployment.

Social factors such as the percentage of Hispanics, graduation rate, and net migration are associated with decreased unemployment. Single-parent families are

associated with increased unemployment. In model 4, infrastructure is unimportant in the overall analysis of unemployment, explaining only 8 percent of the variance in model 1.

Table 5.46 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 12 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	.12	.20	.26*	.26*	.26*
Interstate	.10	.10	.11	.11	.11
Health factors	–.0007	–11.37	–.001	–.001	–.001
Colleges and universities	.017	.03	.08	.08	.08
Black Belt county, 12% level		.12	.13*	.13*	.13*
Percentage rural		–.66***	–.79***	–.79***	–.72***
Hispanics		.01**	–.00137	–.00137	–.00137
Single-parent families			.06***	.06***	.06***
Graduation rate			–.02*	–.02*	–.02*
Net migration			–5.35**	–5.35**	–5.35**
Percentage below poverty			.12***	.12***	.11***
Health outcomes			.0033	.0033	.0033
Constant	12173.93***	20065.49***	24403.37**	11294.38	22798.66
Spatial lag effect				.96***	
Spatial error effect					1.08***
Diagnostics					
R-squared	.8E-4	.03	.37	.37	.37
AIC	4110.6	4080.2	3584.04	3583.14	3584.23
BIC	4130.77	4115.9	3649.59	3647.59	3649.59
Log-likelihood	–2051.3	–2033.1	–1779.02	–1778.62	–1778.65

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.47 presents the results of the independent variables on the dependent variable unemployment for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 5 is the best-fit model for this analysis.

Counties in proximity to a college or university have a decreased unemployment level. Net migration, while significant in 2000 at the .01 level, is even more significant in 2010 at the .001 level. The rurality percentage and percentage of Hispanics are not significant in 2010.

Table 5.47 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 12 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27850.9***	–17327.06*	–7581.001	–7587.616	–7581.001
Interstate	–138.54***	88.66	22.68	22.79	22.68
Health factors	–104.60**	–166.65***	–54.55	–54.59	–54.55
Colleges and universities	16999.78***	111550.9**	8912.30*	8920.89**	8912.30*
Black Belt county, 12% level		14584.48***	12380.58***	12391.38***	12380.58***
Percentage rural		–211.28**	–26.74	–26.76	–26.74
Hispanics		337.17**	66.44	66.49	66.44
Single-parent families			60.18	60.23	60.18
Graduation rate			–225.98	–226.18	–225.98
Net migration			8.29***	8.3104***	8.29***
Percentage below poverty			–390.51	–390.86	–390.51
Health outcomes			–31.62	–31.65	–31.62
Constant	16174.93***	24445.63***	28255.92***	15248.7	28255.99
Spatial lag effect				.95***	
Spatial error effect					1.01***
Diagnostics					
R-squared	.07	.09	.22	.22	.22
AIC	28198.8	28177.6	28009.9	28010.5	28008.5
BIC	28224	28212.9	28070.4	28076	28069
Log-likelihood	–14094.4	–14081.08	–13992.9	–13992.2	–13992.23

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Table 5.48 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable unemployment for the year 2010 in Black Belt counties at the 12 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport improvements have little effect on unemployment in 2010. All other results are similar to those shown in Table 5.47.

Table 5.48 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 12 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27540.82***	–16948.66*	7570.21	7570.25	7570.23
Airport improvement	13481.95	12895.31	4835.90	4835.94	4835.92
Interstate	–129.65***	74.32	20.29	20.30	20.29
Health factors	–98.65**	–149.58***	–58.99	–58.99	–58.99
Colleges and universities	16558.64***	10890.93**	8899.65*	8899.66*	8899.65*
Black Belt county, 12% level		13384.69***	123678.45***	123678.45***	123678.49***
Percentage rural		–196.59**	–24	–24.31	–24.22
Hispanics		310.15**	60	60.01	60.02
Single-parent families			54.35	54.35	54.34
Graduation rate			–225.98	–226.01	–225.99
Net migration			7.29***	7.30***	7,29***
Percentage below poverty			–370.69	–370.71	–370.69
Health outcomes			–24.39	–24.39	–24.39
Constant	16174.93***	24405.63***	28211.89***	15189.76	28198.66
Spatial lag effect				.95***	
Spatial error effect					1.01***
Diagnostics					
R-squared	.09	.10	.23	.24	.23
AIC	28098.74	28093	28000	28011.53	28006.79
BIC	27669.23	2809.69	28033.3	28023.39	28024.69
Log-likelihood	–13986.77	–13999.89	–13976.52	–13975.56	–13976.31

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.49 presents the results of the independent variables on the dependent variable unemployment for the year 2000 in Black Belt counties at the 25 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport accessibility is no longer significant for Black Belt counties at the 25 percent African American population level. The rurality percentage and net migration in a county remain negatively associated with unemployment in the year 2000. Interestingly, the higher the graduation rate in a county, the greater the unemployment rate. It was also found that the higher the percentage of single-parent families, the higher the unemployment rate.

Table 5.49 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 25 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	.12	.16	.23	.23	.23
Interstate	.099	.09	.91	.91	.92
Health factors	–7E-4	–12E-3	–11E-3	–11E-3	–13E-3
Colleges and universities	.02	.03	.08	.08	.08
Black Belt county, 25% level		.11	.08	.08	.08
Percentage rural		–.65***	–.78***	–.78***	–.78***
Hispanics		.0076**	–.0013	–.0013	–.0013
Single-parent families			.06***	.06***	.06***
Graduation rate			.02*	.02*	.02*
Net migration			–5.44**	–5.44**	–5.44**
Percentage below poverty			.12***	.12***	.12***
Health outcomes			3E-4	3E-4	3E-4
Constant	12.173.93	14006.68	10058.22	15185.95	25444.06
Spatial lag effect				.97***	
Spatial error effect					1.05***
Diagnostics					
R-squared	8E-4	.03	.38	.38	.38
AIC	4110.6	4082.38	3585.93	3584.88	3584.92
BIC	4130.77	4122.72	3651.48	3649.33	3646.54
Log-likelihood	–2051.3	–2033.19	–1779.96	–1779.33	–1779.37

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.50 presents the results of the independent variables on the dependent variable unemployment for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The Black Belt variable is no longer a significant factor in unemployment, unlike for the year 2000, when it was a significant factor.

Table 5.50 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 25 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27850.9***	–12494.7*	–8210.645	–8210.645	–8210.645
Interstate	–138.54***	60.24	55.31	55.33	55.31
Health factors	–104.60**	–50.47	–54.83	–54.83	–54.83
Colleges and universities	16999.78***	8735.10*	8608.31*	8608.32*	8608.31*
Black Belt county, 25% level		4329.97	1171.57	1171.57	1171.59
Percentage rural		–9.93	–40.53	–40.54	–40.53
Hispanics		–15.23	27.88	27.88	27.88
Single-parent families			36.32	36.34	36.32
Graduation rate			–231.56	–231.56	–231.56
Net migration			8.31***	8.31***	8.31***
Percentage below poverty			–186.18	–186.18	–186.18
Health outcomes			–31.94	–31.94	–31.94
Constant	10047.9	16097.86	12254.35	16888.74	28868.68
Spatial lag effect				.94***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.07	.22	.22	.22	.22
AIC	28198.8	28013.6	28013.1	28019.2	28027.33
BIC	28224	28053.9	28091.11	28088.7	28083.3
Log-likelihood	–14094.4	–13998.8	–13991.5	–13989.5	–13996.5

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.51 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable unemployment for the year 2010 in Black Belt counties at the 25 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Again, airport improvements have very little significance with relation to unemployment in a county. The results of Table 5.51 are similar to those of Table 5.50.

Table 5.51 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 25 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27540.82***	–12386.22*	–7369.55	–7369.55	–7369.58
Airport improvement	13481.95	9.681.25	8155.49	8155.49	8155.49
Interstate	–129.65***	50.84	41.09	41.09	41.09
Health factors	–98.65**	–39.75	–43.28	–43.28	–43.31
Colleges and universities	16558.64***	8338.55**	8499.55*	8499.55*	8499.59*
Black Belt county, 25% level		4109.75	1099.16	1099.19	1099.16
Percentage rural		–9.72	–29.85	–29.85	–29.85
Hispanics		–14.68	23.50	23.53	23.50
Single-parent families			30.82	30.82	30.82
Graduation rate			–208.63	–208.63	–208.64
Net migration			7.73***	7.73***	7.73***
Percentage below poverty			–168.8	–168.8	–168.8
Health outcomes			–24.16	–24.16	–24.16
Constant	10047.9	16076.96	12103.76	16771.81	28711.11
Spatial lag effect				.94***	
Spatial error effect					1.00***
Diagnostics					
R-squared	.09	.24	.26	.27	.26
AIC	28098.74	2773.7	27966.3	27956.45	279659.32
BIC	27669.23	28020.66	28035.22	28025.12	28029.56
Log-likelihood	–13986.77	–13948.69	–13889.34	–13877.32	–13886.66

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.52 presents the results of the independent variables on the dependent variable unemployment for the year 2000 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

The Black Belt variable level was a significant factor in the positive direction for unemployment. As the percentage of African Americans in a county increases, the Black Belt variable went from being a factor in decreased unemployment (Table 5.46) to a factor in increased unemployment (Table 5.49). This finding suggests that race may be a significant contributor to unemployment in a county. The rurality percentage remains a major factor in unemployment for the year 2010.

Table 5.52 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 40 Percent Level of African Americans (Year 2000)

	2000				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	.12	.17	.23	.23	.23
Interstate	.10	.93	.84	.85	.84
Health factors	–.0007	–.0008	–.0011	–.0013	–.0011
Colleges and universities	.02	.03	.08	.08	.08
Black Belt county, 40% level		.21	.19*	.19*	.20*
Percentage rural		–.65***	–.78***	–.78***	–.78***
Hispanics		.01**	–1.4E-3	–1.4E-3	–1.4E-3
Single-parent families			.06	.06	.061
Graduation rate			.02***	.02***	.02***
Net migration			–5.27***	–5.27***	–5.27***
Percentage below poverty			.12***	.12***	.12***
Health outcomes			3.4E-4	3.4E-4	3.4E-4
Constant	12793.81	–12007.33	26487.49	13.742.66	27549.58
Spatial lag effect				.96***	
Spatial error effect					1.03***
Diagnostics					
R-squared	.0008	.03	.37	.38	.38
AIC	4110.6	4078.95	3582.87	3577.91	3579.82
BIC	4130.77	4114.25	3648.42	3643.46	3645.94
Log-likelihood	–2051.3	–2032.48	–1778.44	–1774.34	–1774.49

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.53 presents the results of the independent variables on the dependent variable unemployment for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport accessibility becomes a significant factor in determining a county's unemployment rate. Colleges and universities are also associated with a decrease in a county's unemployment rate. Net migration is positively associated with an increase in the unemployment rate, which is contradictory to the data shown in Table 5.51. The variance for all models of unemployment shows very little significance, suggesting a reason for high rates of unemployment that is unexplained by the model.

Table 5.53 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 40 Percent Level of African Americans (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27850.9***	–13202.07*	–12714.62*	–12725.72*	–12714.62*
Interstate	–138.54***	55.81	53.44	53.68	53.44
Health factors	–104.60**	–37.62	–11.37	–11.38	–11.37
Colleges and universities	16999.78***	8850.28**	8855.90*	8863.62*	8855.90*
Black Belt county, 40% level		–1331.69	–2203.84	–2205.77	–2203.84
Percentage rural		–14.48	–32.79	–32.826	–32.79
Hispanics		–74.93	–127	–127.11	–127
Single-parent families			75.86	75.93	75.86
Graduation rate			–214.52	–214.71	–214.52
Net migration			8.49***	8.50***	8.49***
Percentage below poverty			–114.50	–114.61	–114.50
Health outcomes			–42.87	–42.91	–42.87
Constant	10047.81	–12095.81	30847.28	17842.25	30847.28
Spatial lag effect				.96***	
Spatial error effect					1.03***
Diagnostics					
R-squared	.072	.21	.22	.21	.21
AIC	28198.8	28015.1	28021.6	27219.4	28020.2
BIC	28224	28055.4	28082.1	27285	28080.7
Log-likelihood	–14094.4	–13999.5	–13998.8	–13596.7	–13998.11

*$p \leq 0.05$
**$p \leq 0.01$
***$p \leq 0.001$

Table 5.54 presents the results of the independent variables, with the airport improvement variable included, on the dependent variable unemployment for the year 2010 in Black Belt counties at the 40 percent population level of African Americans. Model 4 is the best-fit model for this analysis.

Airport improvements do not significantly improve unemployment rates in the model. All other results are similar to those in Table 5.18b.

Table 5.54 Effects of Independent Variables on Dependent Variable Unemployment in Black Belt Counties, 40 Percent Level of African Americans, Including Airport Improvement Variable (Year 2010)

	2010				
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Airport accessibility	–27540.82***	–13.089.56*	–12505.4*	–12505.34*	–12505.4*
Airport improvement	13481.95	5877.69	5777.58	5777.58	5777.58
Interstate	–129.64***	37.49	35.49	35.53	35.49
Health factors	–98.65**	–24.39	–10.99	–11.01	–10.97
Colleges and universities	16558.64***	6650.24**	8656.80*	8656.82*	8656.81*
Black Belt county, 40% level		–1211.42	–2123.22	–2123.22	–2123.22
Percentage rural		–12.98	–327.56	–327.59	–327.58
Hispanics		–68.83	–112.59	–112.60	–112.59
Single-parent families			64.38	64.39	64.38
Graduation rate			–197.66	–197.71	–197.66
Net migration			7.69***	7.72***	7.69***
Percentage below poverty			–101.96	–101.98	–101.96
Health outcomes			–29.85	–29.86	–29.85
Constant	10047.81	–12081.81	30766.44	17533.82	30766.48
Spatial lag effect				.96***	
Spatial error effect					1.03***
Diagnostics					
R-squared	.09	.23	.24	.24	.24
AIC	28098.74	28010.4	28006.63	28002.66	28008.29
BIC	27669.23	28034.6	28053.61	28049.82	28055.66
Log-likelihood	–14024.4	–13653.4	–13644.9	–13636.5	–13648.78

*p ≤ 0.05
**p ≤ 0.01
***p ≤ 0.001

Summary

Table 5.55 presents a description of each hypothesis of the study. Each table from which a conclusion about the hypothesis was drawn is shown in the second column.

The table then shows whether the analysis supported the hypothesis for the year 2000 and for the year 2010, in the third and fourth columns, respectively.

Hypotheses 1 was rejected in the year 2000 but supported in 2010. Hypothesis 2 was rejected in 2010 but supported in 2000. Hypotheses 3 and 5 were rejected in both years of the study. Hypotheses 4, 6, 7, and 8 were supported in both years of the study.

Table 5.55 Hypotheses Rejected and Accepted

Hypothesis	Tables that address the hypothesis	Support or reject (2000)	Support or reject (2010)
1. The more accessibility a county has to an airport, the lower the poverty rate	5.1a–5.3c	Reject	Support
2. The more accessibility a county has to an airport, the lower the unemployment rate	5.16a–5.18c	Support	Reject
3. The more accessibility a county has to an airport, the lower the number of single-parent families	5.13a–5.15c	Reject	Reject
4. The more accessibility a county has to an airport, the greater the net migration into the county	5.10a–5.12c	Support	Support
5. The more accessibility a county has to an airport, the higher the graduation rate	5.7a–5.9c	Reject	Reject
6. The more accessibility a county has to an airport, the greater the health outcomes	5.4a–5.6c	Support	Support
7. Black Belt counties has higher levels of disadvantage than non-Black Belt counties	All tables	Support	Support
8. Lack of infrastructure will be more pronounced in Black Belt compared with non-Black Belt counties	All tables	Support	Support

CHAPTER VI

CONCLUSION

Summary

The Black Belt of the U.S. South, which is predominantly Black, remote, and rural, has been experiencing poverty and isolation for a long time. A large body of literature has investigated the possible causes including historical, demographic, economic, social, regional, and governmental factors. However, the role that transportation infrastructure especially airport access plays has been rarely examined in prior research. This dissertation fills the gap in the literature by focusing on the role that airports play in alleviating poverty in the Black Belt within the community capital framework. Overall, the findings indicate that airports act as an enhancer of other types of community capital in alleviating poverty in the Black Belt.

A Summary of Data and Methodology

I adopted the integrated spatial regression methods (Chi 2010a, 2010b, 2012; Voss and Chi 2006) for studying transportation and poverty. A total of 54 tables, with five models in each table, presented the results of the analysis conducted in this study. Six dependent variables (poverty, health outcomes, single-parent families, unemployment, net migration, and high school graduation rates) were tested against the physical and social infrastructure variables. All models were run using three percentages of African American residents in a county: 12, 25, and 40 percent. These three levels of

analysis were important in determining how race affects not only the isolation of the Black Belt but also the very definition of "Black Belt" itself. Each dependent variable was analyzed for two time periods, the year 2000 and the year 2010. For 2010, there was a comparison of two types of data in the tables—one without the airport improvement independent variable and one with the airport improvement variable.

The analysis used three forms of regression models: an ordinary least squares (OLS) regression, a spatial lag regression, and a spatial error regression. The best-fit model was determined by finding the lowest scores of the Akaike information criterion (AIC) and Bayesian information criterion (BIC), and the highest log-likelihood values. Airport accessibility was determined by calculating the log of the distance from the county centroid multiplied by number of passenger boardings. Data for the research were obtained from the U.S. Census Bureau, the Robert Wood Johnson Foundation, and the National Atlas.

A Summary of the Research Findings

The central hypothesis of this study—that distance from airports and the number of passengers boarding affect poverty rates of a county—was supported by the analysis results. There is an association between airport proximity and passenger boardings and poverty, unemployment rates, and the health outcomes of a region. The farther away a county was located from an airport, the more likely that county would be to retain one or more of the cumulative disadvantages. Moreover, the greater the inaccessibility to an airport, the greater the cumulative disadvantage. This association presented itself more clearly in the year 2010 than in the year 2000. The airport improvement variable showed

very little significance in any of the models. However, an explanation for this finding might be that the lag effects had not yet occurred.

It can also be shown from this study that the greater the number of passenger boardings and the closer a region to an airport, the more likely it is that economic improvements exist to alleviate poverty and create more funding for schools, which may be the force leading to improved graduation rates. Counties with colleges and universities exhibited more advantages than counties without those institutions. The advantage was exceptionally pronounced with regard to educational outcomes.

Health outcomes were found to be heavily dependent on infrastructure variables such as airport proximity and enplanement. This relationship may be because airports facilitate economic development and lead to growth in other infrastructure. Kasarda and Lindsey (2011) found that airports may also be a central aligning feature of regional development patterns, as predicted in the growth pole theory (Perroux 1955). Thus, an expanse of infrastructure becomes increasingly important to social well-being in a region. Counties located within reasonable proximity to an airport that serves frequent customers have a distinct advantage over regions without an airport.

This study identified built capital as a key foundational element in creating a healthy community capital framework. A strong transportation system can be seen as an indicator of a strong political system. A strong transportation system also facilitates greater cultural, social, and financial capital. The current study supported the findings of Rasker et al. (2009) that transportation infrastructure can provide access to natural capital in rural areas.

In the analysis, all the infrastructure variables (colleges and universities, airport proximity and enplanement, airport improvements, interstate highways, and health factors) showed significance with at least one dependent variable and provided an association for social well-being.

The strengths of association between the infrastructure variables and the dependent variables became weaker as the number of African Americans increased in the Black Belt. Unemployment was the exception to this pattern. While poverty is not exclusively a problem of race, it would be incorrect to assume that race is not a factor in poverty. The weaker levels of association found in Black Belt counties with a greater number of African Americans were possibly a result of the lack of infrastructure in the Black Belt region; therefore, other independent variables had stronger impacts. The analysis leads to the conclusion that the fewer African Americans in a given Black Belt county, the more the region's success is dependent on infrastructure. The cumulative disadvantages have a stronger impact at the 40 percent level of African Americans in a county.

Contributions

In the current research, a theoretical framework that specified seven types of capital (political, natural, cultural, social, human, built, and financial) was tested in the Black Belt region of the U.S. South. This research used spatial analysis and statistical methods to add to other studies (Wimberley and Morris 1997, 2002; Webster 1992) that have addressed cumulative disadvantage in the Black Belt region. This research made seven contributions to the literature.

First, the theoretical framework of this research integrated urban transportation theories such as neoclassical growth theory, growth pole theory, and location theory into the community capital framework of Flora and Flora (2008) and argued that the basis for understanding and cultivating community capital is the built and physical infrastructure of the community. The lack of development of built capital (airports, interstates, and colleges and universities) gives the Black Belt a significant disadvantage compared with the rest of the southern United States. The disadvantage in transportation and built infrastructure then spreads to the other forms of capital.

Second, arguing that the basis of the community capital framework is built capital created a need to develop areas of built infrastructure that was helpful in creating social infrastructure. This research focused on the division between metropolitan areas in the U.S. South—such as Atlanta, Charlotte, Nashville, Austin, and similar areas that have experienced extensive growth and development—and the Black Belt, which is largely rural, isolated, and impoverished. The research was concerned with the isolation endured in the Black Belt for many years and how the processes of isolation have affected the social infrastructure of the region through the built infrastructure. The built infrastructure leads to the accumulation of other capital resources and strengthens the community capital framework.

Third, this research advanced the work of Wimberley and Morris (1997, 2002) by creating a comprehensive framework that looked at cumulative disadvantage in a region, along with the work of Flora and Flora (2008), by testing their comprehensive framework on a region and providing a foundational basis of built capital to begin analyses of their work.

Fourth, the research contributed to the elaboration of the conceptual framework of community capital proposed by Flora and Flora (2008). The framework developed in the current study comprised various forms of capital that enhance the quality of life, create a vital economy, promote social inclusion, and establish a healthy ecosystem in communities. The analysis examined built capital, social capital, political capital, human capital, and financial capital within counties. The analysis suggested that airports, as elements of built capital, provide access to the social and political capital necessary for the development of human and financial capital. Thus, the research adds to our knowledge of the community capital framework by highlighting connections among different forms of capital—connections that other investigations, for the most part, have failed to consider.

Fifth, this research was the first one to study transportation, specifically airports, in the rural context of the U.S. South. The Black Belt of the South has faced many challenges, and solutions to the problems of this region are not easily found. The ultimate goal of this research was to develop a new line of inquiry into the Black Belt that may provide avenues of reform to policy makers and give community planners and economic development experts a greater understanding of transportation and airports. A central premise of this research was that the Black Belt is largely isolated and is falling further behind other areas of the U.S. South because of its lack of access to the physical and built infrastructure. The lack of access has exacerbated cumulative disadvantages within the social infrastructure of the Black Belt. The current study was the first to test a wide range of physical and social characteristics of rural areas in a broad context. It was conclusively found in this research that airport accessibility was significantly related to

unemployment, poverty, net migration, and health outcomes. Airport accessibility is important in creating a healthy economic infrastructure by granting access to our new globalized world. The effects of transportation on rural areas in a globalized context must be addressed by future research if we want to alleviate rural social problems occurring because of globalization.

Sixth, this study was the first to test social improvement (or well-being) variables alongside infrastructure variables within a community capital framework, specifically, the effects of airports on various social development variables: poverty, graduation rates, single-parent families, health outcomes, net migration, and health factors. To my best knowledge, this research was the first to test how airports affect social development in the Rural South. The underlying premise is that a better understanding of airports and their effects on even the most remote regions of society in turn provides a stronger awareness of how rural America fits into a globalized society. This work emphasized that moving forward in an advanced globalized society necessitates that the physical infrastructure of the Black Belt be updated and transformed.

Seventh, the use of spatial analysis and statistical methods enabled a finer delineation of the Black Belt counties and a more robust control of spatial effects. The study used geospatial techniques to compare Black Belt with non-Black Belt counties in the southern United States. Through use of spatial analysis, the current research was able to effectively delineate Black Belt from non-Black Belt counties and create variables that effectively integrated the built and physical infrastructure. The analysis showed that the Black Belt region is a unique region in the South when tested at the 12, 25, and 40 percent levels of African American residents and pointed to the existence of major

cumulative disadvantages. Spatial regression methods also allowed measurement of effects from neighboring counties. This research relied on the work of Chi (2010a, 2010b, 2012) and Voss and Chi (2006) by using their integrated spatial regression approach for transportation and population research and applying it to poverty research.

Substantive Significance

The social significance of this study proceeds from describing the role transportation infrastructure, specifically airports, plays in alleviating poverty and fostering economic development within the U.S. South. While others have explored problems within the Black Belt on the basis of race, rurality, region, or poverty, the current study posited a foundational linkage among the seven types of community capital, transportation infrastructure, and poverty.

This research also has social significance from a historical and economic perspective. The Black Belt is a region that in many ways is a relic of a plantation-style agrarian economy in the age of technology and information. Many of these relics continue to leave the Black Belt mired in isolation. For the Black Belt to fully develop economically and socially, its communities must create viable, sustainable institutions adapted to modern technology and information. Airports, the focus of this research, can link communities to resources and opportunities that were traditionally out of reach for the region and offer a means to escape social and economic isolation. Airports can also become a central organizing structure for future development if adequate planning is provided.

By focusing on poverty in the Black Belt region, this research addressed an important yet neglected topic. The Black Belt is a southern sub region of the United States characterized by the spatial concentration of the non-metropolitan Black population and by a broad range of social and economic problems related to isolation from the mainstream of American society. Historically, the Black Belt was a major concern of sociologists, many of whom studied the disadvantages of the Black Belt population. Yet it currently receives relatively little scholarly attention. In recent years, many studies of Black poverty have focused on urban areas. Owing to the "Great Migration" and urbanization of the 20th century, the non-metropolitan Black population of the South has diminished. However, the population is still substantial and therefore deserving of investigation.

This research brought together two lines of sociological inquiry that unfortunately have been separated. One is the literature that documented how the Black Belt has suffered economically from the twin problems of inadequate physical infrastructure and isolation from the more economically developed regions of the nation. This literature originated with the works of Odum (1936) and Vance (Reed and Singal 1982). More recently, this line of research has been advanced by Falk (Falk and Rankin 1993; Falk, Talley, and Rankin 1992) and Wimberley and Morris (1997).

Research has also addressed the critical importance of airports to the economic and demographic vitality of regions. Studies by Kasarda and Lindsey (2011) and Chi (2012) have shown that by enabling access to other regions, airports are key elements of a transportation infrastructure that facilitates business development and population growth.

By merging these two lines of inquiry, the current study tested the hypothesis that, in the U.S. South, variations in poverty rates between counties of the Black Belt and counties outside the Black Belt can be partially explained by differential access to airports that provide important linkages to other regions. This research expanded on the idea and included ground transportation (that is, interstate highways) as well.

A major influential infrastructure variable that was found to be important in determining a county's unemployment rate and high school graduation rate was whether there is a college or university in the county. A college or university offers some advantages to a county. One, a college or university provides a county with a more diverse population, and the population benefits from unique perspectives from outside the region. Two, a college or university has a workforce that values education; therefore, the county itself will invest more in education. Three, a college or university offers a wide range of jobs, even for unskilled workers (janitorial and construction jobs, for example).

Implications

This research found both an inadequate amount of community capital cultivation and community capital development in the Black Belt. The implication of this finding is that social programs that use civic engagement models may therefore be beneficial to an improved future for the Black Belt. It is apparent from the results that there is a considerable lack of built capital in the region, which is caused at least partially by a lack of political capital. The built capital of a region was shown in this research to be a foundational basis for other areas of community capital. However, political capital can also be seen as equally important to creating a healthy community capital infrastructure.

With the creation of infrastructure inputs, a region requires the cultivation of community capital to advance the infrastructure inputs to direct the region toward its goals. By exploring the role of transportation infrastructure and how it relates to the seven types of capital, the study broadened our understanding of the concept of capital. This research identified some of the possibilities for, and results of, creating social and human capital in the Black Belt (Coleman 1988) and some of the barriers to that creation (Bourdieu 1984). Therefore, this research informs policy makers in a variety of ways.

First, although it is not possible or practical to have an airport in every county, by creating regional partnerships between counties and encouraging development of airports already in use to increase passenger boardings, more opportunities for jobs and economic development will occur. Airports have been shown in this research to be a facilitator of economic growth; thus, encouraging expansion of airports when feasible may bring more investment. The analysis conducted in this research suggested that cuts to public infrastructure hurt Black Belt counties in 2010 (infrastructure was not as significant a factor in 2000). The findings showed that more investment in public infrastructure in general might create enhanced opportunities to alleviate poverty.

Second, migration may play a role in alleviating the paradox between education and economic development. The paradox is that to have businesses come to an area you need a strong education system. However, to have a strong educational system, you must have a strong tax base—which often is funded by the presence of successful businesses. By investing in infrastructure such as airports—which encourage a migratory population—a county may bring in more jobs, which in turn bring in more investment in education. While it could be argued that a county would still need investment in

education to provide jobs for a mobile workforce, there are many jobs for which that may not be the case, such as construction. A strong investment in a public works program that is coordinated to gain jobs in infrastructure is an avenue policy makers might pursue.

Third, the poverty in the Black Belt could be alleviated by investing in higher education. A college cannot be put in every county, but investments can be made by state and local governments to help students attend college in return for them coming back to their home county to live and work after graduation. This step would also require investment in developing small businesses to provide employment for the students who return, investing in a public works program, or both.

Fourth, counties with significant populations of African Americans may benefit more from programs to alleviate poverty and to increase high school graduation rates than from investment in infrastructure. That is not to say there should not be any investment in infrastructure; however, a more comprehensive approach to reducing the disadvantages of heavily African American counties is required. For those counties, partnering with colleges and universities in the region may be a possible avenue to both achieving increased infrastructure and reducing poverty.

Fifth, investing in infrastructure alone is not enough. Black Belt counties, especially those with an African American population greater than 40 percent, must have the political capital to obtain greater infrastructure funding and to encourage investments in other types of capital. Conservatives recently have become extremely reluctant to invest in infrastructure, and the racial history of the South has often led to uneven development. These two forces may point to a cumulative disadvantage effect, especially for counties with a population greater than 40 percent African American.

Sixth, states in the South must address the financial disparities that exist between rural Black Belt counties and the wealthy suburbs that outline many metropolitan areas. The tax structure of many states in the South has led to an unequal distribution of resources with regard to education, health care, and transportation. The unequal distribution of resources has in turn exacerbated the cumulative disadvantages that have occurred as a result of the racial history and legacy of the region.

Counties in the Black Belt must form strong regional alliances and advance development not only in a stronger physical infrastructure but also in a stronger social infrastructure, especially counties with a population of African Americans at 40 percent and greater. Counties must work with state and federal governments to create social programs that address the problems of poverty, net migration, and health outcomes specifically (these were found to be significant in both 2000 and 2010), but even more generally, they must address the problems of single-parent families and low graduation rates (found to be significant in 2010).

Seventh, this research makes it clear that a comprehensive understanding of how the rural Black Belt fits within a wider global context is required. Black Belt counties must either move away from an agrarian economy or reframe their agrarian economies within the context of a globalized framework. There also must be a move by governments in those regions to diversify their economic infrastructure. Most of the jobs in the Black Belt region are in agriculture, but because of property tax abatements in many states (especially in relation to the logging industry) and the low pay of these jobs, the county tax system remains weak.

Limitations and Future Research

This study has at least six limitations. First, it is a study of the southern United States only; the research findings may not be generalizable to the nation as a whole. The southern United States is unique in that unlike other parts of the United States, many Blacks are concentrated in rural areas there.

Second, some variables—such as race—were not included in the study because of multi-collinearity issues. However, using three levels of analysis of counties (with the percentage of African American residents set at 12, 25, and 40 percent) adds more dimension to our understanding of the complexity in creating a community capital framework in an isolated, largely minority, region.

Third, heir property was not included in this research because the data were unavailable (Dyer 2007a, 2007b). Such data are necessary for a more complete understanding of legacy, human capital, and creation of financial capital. An analysis of heir property would allow for a better understanding of how the development of land affects economic development in the Black Belt.

Fourth, political variables were not included because of the difficulty in obtaining relevant data, so the full effect of political capital might not be understood.

Fifth, because this study was of two recent time points (2000 and 2010), it could not pick up long-term trends.

The impact of airports on alleviating poverty could be further investigated from five perspectives. First, future longitudinal research could include more factors, such as the historical development of isolation in the Black Belt over a longer period of time and incorporate political variables to test the effects of both political and social capital on

built capital. The current study showed that political capital is one avenue that could be further addressed. Although this study did not include political variables, extensive political science literature details the conservative climate of the South (Black and Black 1987). There is also a long line of literature that details the racial history of the South. These two factors may help explain the reasons for a lack of infrastructure in particular regions.

Second, further research could separate metro areas from the rest of the analysis or undertake a sector-level study of occupations prominent in rural areas compared with urban areas before and after the recent economic crisis.

Third, it may be interesting to address airports and economic development in terms of researching individual case studies of airports, especially in rural areas.

Fourth, future research could analyze how transportation affects crime and residential segregation in the Black Belt. The rise of private schools in the Black Belt region since the 1960s, while not a part of this analysis, might also be considered as a variable in future research, especially how such schools relate to educational outcomes.

Fifth, there is a need for more research into migration in the U.S. South. The variables in the current analysis did not explain that topic. Perhaps an analysis could focus on areas of high immigration and not include areas of low immigration to determine the relationship between immigration and community capital. A confounding finding from this analysis was that increased unemployment was associated with higher migration rates. This finding may be because metropolitan areas face greater disadvantages from an economic crisis, which itself is a factor that warrants additional research.

Sixth, the issue of reverse causality must be investigated further. It could be argued that airports are not going to locate to high poverty rural areas where there is little economic development. The research did not clearly address this argument. While the study posited that airports are both a catalyst and a consequence of economic development, the mechanisms by which airports become a catalyst and a consequence must be further developed through case studies of individual airports.

The study found that transportation variables (specifically airports) were more important in 2010 than in 2000. There are at least two reasons for this finding:

1. The economic downturn that occurred in 2007 and 2008 could have created an economic environment in which transportation and airports became a more important variable.
2. The impact of globalization and the rapid expansion of the service sector economy in this 10-year period may have increased the significance of airports.

Further study must be conducted to understand the disparity in the effects of transportation variables for the years 2000 and 2010.

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APPENDIX A

AIRPORT IMPROVEMENT VARIABLES: A STEP BY STEP PROCESS

Creation of the Distance Proximity and Enplanement Variable and Airport Improvement Variable

Step 1: DATA UPLOAD

A. Uploaded dataset airportlayers.shp into ARCGIS

B. Uploaded dataset blackbeltcounties6262013.shp into ARCGIS

Step 2: CONVERSION TO POINT FILE

A. Open ARCGIS TOOLBOX

B. Open Data Management tools

C. Open features

D. Open Feature to point

E. Input feature blackbeltcounties6262013.shp

F. Hit OK

G. Blackbeltcounties1 file shows on table of contents on the side

Step 3: ESTABLISHING POINT DISTANCE

A. Open Analysis tools

B. Open Proximity tools

C. Open NEAR

D. Input feature(blackbeltcounties1) file

E. Near features airportlayers.shp

F. Distance usage in miles

G. New table appears blackbeltcounties 2 with distance measures

Step 4: JOINING DATABASE

A. Left click blackbeltcounties

B. Push Join and relates

C. Field join will be based on is GEOID

D. The table joined with blackbeltcounties2

E. The field to base the join will be FID

F. Hit OK

Step 5: CONVERSION TO DBASEFILE

A. Go to ARCGIS Toolbox hit conversion tools

B. Hit to dbase

C. Table to dbase

D. Input file blackbeltcounties

E. Output to jumpdrive

Step 6: CONVERSION TO SPSS FILE

A. Open up STATTRANSFER

B. Transfer new blackbeltcounties file to SPSS

Step 7: CREATING THE VARIABLE

A. Open file in SPSS

B. Hit transform

C. Hit compute variable

D. Find ln (natural log)

E. Variable reads ln(1/distance × Enplanement)*

*Distance refers to county centroid to nearest airport. Enplanement refers to 2010 passenger boardings data.

Target variable = distanceprox

Hit OK

Step 8: Repeat steps 1–7 for 2000 airport data.

Step 9: AIRPORT IMPROVEMENT VARIABLE

A. Open file in SPSS

B. Hit transform

C. Find ln (natural log)

D. Variable reads ln((1/distance) × (Enplanement2010/Enplanement2000))

Target variable = Airportimprov

Hit OK

APPENDIX B

2000 MEASURE AND DATA SOURCES

MEASURE	DATA SOURCE	YEARS OF DATA
Health Outcomes		
Length of Life		
Premature death	National Center for Health Statistics	1998–2000
Quality of Life		
Poor or fair health	Behavioral Risk Factor Surveillance System	1994–2000
Poor physical health days	Behavioral Risk Factor Surveillance System	1994–2000
Poor mental health days	Behavioral Risk Factor Surveillance System	1994–2000
Low birthweight	Behavioral Risk Factor Surveillance System	1994–2000
Health Factors: Behaviors		
Tobacco Use		
Adult smoking	Behavioral Risk Factor Surveillance System	1994–2000
Diet and Exercise		
Adult obesity	National Center for Chronic Disease Prevention and Health Promotion	2000
Physical inactivity	National Center for Chronic Disease Prevention and Health Promotion	2000
Access to exercise opportunities	ESRI, and U.S. Census TIGER/Line Files	2000
Alcohol and Drug Use		
Excessive drinking	Behavioral Risk Factor Surveillance System	1994–2000
Alcohol-impaired driving deaths	Fatality Analysis Reporting System	1994–2000
Sexual Activity		
Sexually transmitted infections	National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention	2000
Teen births	National Center for Health Statistics	1994–2000
Health Factors: Clinical Care		
Access to Care		
Uninsured	Small Area Health Insurance Estimates	2000
Primary care physicians	HRSA Area Resource File	2000
Dentists	HRSA Area Resource File	2000
Mental health providers	CMS, National Provider Identification	2000
Quality of Care		
Preventable hospital stays	Medicare/Dartmouth Institute	2000
Diabetic screenings	Medicare/Dartmouth Institute	2000
Mammography screenings	Medicare/Dartmouth Institute	2000
Social and Economic Factors		
Education		
High school graduation	National Center for Education Statistics	2000
Some college	U.S. Census	2000
Employment		
Unemployment	U.S. Census	2000
Income		
Children in poverty	U.S. Census	2000
Family and Social Support		
Inadequate social support	Behavioral Risk Factor Surveillance System	1995–2000
Children in single-parent households	U.S. Census	2000
Community Safety		
Violent crime	Uniform Crime Reporting (FBI)	1998–2000
Injury deaths	CDC WONDER	1996–2000
Physical Environment		
Air and Water Quality		
Air pollution, particulate matter	CDC WONDER	2000
Drinking water violations	Safe Drinking Water Information System	FY 1999–2000
Housing and Transit		
Severe housing problems	HUD, Comprehensive Housing Affordability Strategy	1996–2000
Driving alone to work	U.S. Census	2000
Long commute—driving alone	U.S. Census	2000