Race and poverty: Does geographical location matter?

Skye MacKay

University of New Hampshire, Durham

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Race and poverty: Does geographical location matter?

Abstract
This study utilizes the 2005 to 2007 American Community Survey data to examine two research questions: (1) Does knowledge of geographical location increase the prediction of poverty over individual/household characteristics and; (2) Does the effect of race on poverty vary by geographical location? This research supplements the existing literature by comparing across multiple categories of race (non-Hispanic white, non-Hispanic black, non-Hispanic other, Hispanic) and geographical location (region of the country and metropolitan status). Poverty is found to vary by individual characteristics and by region and location. However, multiple regression analyses demonstrates that when individual characteristics (race, sex, age, educational attainment, and household type) are controlled, location or its race interaction do not improve the prediction of poverty.

Keywords
Sociology, Ethnic and Racial Studies, Sociology, Demography
RACE AND POVERTY: DOES GEOGRAPHICAL LOCATION MATTER?

BY

Skye MacKay

Sociology, Justice Studies, BA, University of New Hampshire, 2008

THESIS

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in

Sociology

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This thesis has been examined and approved.

Thesis Director, Kenneth M. Johnson, Professor of Sociology and Senior Demographer at the Carsey Institute

Benjamin C. Brown, Associate Professor of Sociology

Sally K. Ward, Professor of Sociology

Date: 8/10/10
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ABSTRACT

RACE AND POVERTY: DOES GEOGRAPHICAL LOCATION MATTER?

By

Skye MacKay

University of New Hampshire, September, 2010

This study utilizes the 2005 to 2007 American Community Survey data to examine two research questions: (1) Does knowledge of geographical location increase the prediction of poverty over individual/household characteristics and; (2) Does the effect of race on poverty vary by geographical location? This research supplements the existing literature by comparing across multiple categories of race (non-Hispanic white, non-Hispanic black, non-Hispanic other, Hispanic) and geographical location (region of the country and metropolitan status). Poverty is found to vary by individual characteristics and by region and location. However, multiple regression analyses demonstrates that when individual characteristics (race, sex, age, educational attainment, and household type) are controlled, location or its race interaction do not improve the prediction of poverty.
INTRODUCTION

For a protracted period poverty has been the focus of much research across various disciplines. However, recently the focus has shifted from black urban poverty to a broader scope, encompassing whites, other minority groups, and other geographical areas, including both metropolitan and nonmetropolitan areas. The focus of current work continues to be on individual and household characteristics and how they affect poverty (Cotter 2002; Partridge and Rickman 2008). A critical factor neglected in previous works that must be taken into consideration is geographical location. Rather than examining geographical location as a key independent variable, much of the past literature has utilized it only as a setting in which study takes place. Although the literature no longer disregards the fact that poverty is characterized by more than one race in more than one area, it overlooks the potential relationship location can have with poverty and race. It is important to consider this relationship as much literature calls for the need for place-based poverty policies (Dreier, Mollenkopf and Swanstrom 2004; Irving 2008; Partridge and Rickman 2009; Spencer 2004).

This study expands upon previous literature by examining the relationship between poverty, race, and geographical location. It expands geographical location to include both metropolitan status (urban cores, suburban areas, nonmetropolitan adjacent areas, nonmetropolitan nonadjacent areas) and region (Northeast, Midwest, South, West). It also combines race and ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic other, Hispanic). This study addresses two main questions: (1) Does knowledge
of geographical location increase the prediction of poverty over and above
individual/household characteristics; and (2) Is there an interaction effect on poverty
between race\textsuperscript{1} and geographical location; that is, does the effect of race on poverty vary
by geographical location? Attention was paid to this relationship both among \textit{and}
between racial groups across geographical location (i.e., examining if the levels of
poverty are similar for the racial groups across geographical areas and if the differences
between the races and their poverty levels are consistent across geographical locations).
This research is among the first to employ a multi-year sample using the U.S. Census
Bureau’s American Community Survey (ACS) 2005 to 2007 data.

\textsuperscript{1} For the purposes of this study, the term race will be used as an umbrella term for race and ethnicity, as
this study examines both race and Hispanic origin.
CHAPTER I

LITERATURE REVIEW

Much literature has been dedicated to examining the relationship between race and poverty, race and geographical location, and geographical location and poverty. However, few studies have undertaken the examination of the potential interaction effect of geographical location on the race-poverty relationship. The background literature is able to portray the disparity between poverty levels among non-Hispanic whites and minorities, including non-Hispanic blacks and Hispanics.

There is extensive scholarship regarding race and poverty. This research goes beyond just the scope of race, poverty, and geographical location; it provides the foundation of the intricate relationship between race and economic opportunity. Two sets of researchers, Massey and Denton (1993) and Wilson (1978), set up the groundwork.

Massey and Denton (1993) argue that residential segregation is the “missing link” (1993: 3) in poverty research. They state that residential segregation continues to contribute to urban poverty among blacks. According to Massey and Denton (1993), other racial and ethnic groups do in fact experience segregation; however their segregation is “limited and transient” (1993: 2). Blacks have experienced residential segregation in the United States unlike any other group. This racial segregation has not significantly decreased over time, which assisted in the development of the black urban underclass.
The racial residential segregation was influenced by many historical events, which Massey and Denton (1993) discuss. In the early 1900s, the creation of the ghettos occurred with the influence of industrialization and transition of blacks from farms to cities. The demand for labor spurred by industrialization brought jobs to blacks and other migrants, but also created managerial positions, which were primarily for whites. Housing was built in mass for the workers, while technology (e.g., transportation) allowed for whites to move further away from the cities; the ghettos were created while the opportunity for suburbanization was realized. Segregation has continued with housing discrimination, especially between whites and blacks. Practices such as redlining and white flight from areas in which blacks moved further perpetuated the underclass. The geographical isolation also socially isolated this group and resources such as education were limited. Decreasing interest in these areas created low housing values, lack of tax money, and in turn depleted public resources. Lack of access to resources made it difficult to leave such poor economic situations and overall disadvantaged blacks.

Wilson (1978)'s work brought forward a main aspect of the race-poverty issue that previous research had not: class. Although there was no contention that race played a significant role in poverty, Wilson discussed the prevalent and increasing role of class as a source of economic inequality. According to Wilson (1978), there are three significant stages marking these changes.

The first stage was the antebellum slavery and the post antebellum era. This stage was characterized by overt racism during the time of plantations, in which caste-like groupings were instilled. The second stage was during the late nineteenth and early twentieth century. As Massey and Denton (1993) also noted, this was the industrialization
era. Not only were blacks and whites being separated into “classes” in the industrial jobs, a black working class began to form during this time. Both blacks and whites benefitted from advancements during this time, such as the New Deal; however, these benefits were reaped unequally. The third stage, post World War II, class began taking precedence over race: “racial conflict and competition in the economic sector... have been substantially reduced” (1978: 152). After the onset of the war, not only could blacks fight, but there were also many opportunities to work in factories. The black working class further developed and a middle class was eventually formed. The differences between these classes were substantial and because of this class inequalities became more prominent than racial inequalities.

Although the research on race and economic inequality is extensive, there is literature that specifically acknowledges the role geographical location has in this relationship. In 1960, the United States population was approximately evenly distributed between central cities, suburbs, and nonmetropolitan areas (Henry 2004). Over time, the population experienced suburban sprawl away from the cities coinciding with the change in the economic situation. In 1980, almost half of the population lived outside of the central cities but still within the greater metropolitan area; they were located in the suburbs, though not all of the racial groups experienced this migration equally. In 1990, 50.3% of whites were located in the suburbs, while 56.9% of blacks and 51.5% of Hispanics were located in the central city2 (Henry 2004).

The suburbanization of both whites and blacks has been income stratified, but a lower percentage of blacks live in higher income communities when compared with

---

2 These calculations examined Whites and Asians separately, however Asians experienced similar percentages in the suburbs, but almost half were located in the central city (Henry 2004).
whites, Hispanics, and Asians (Bullard 2007). Of those groups, blacks and Hispanics have experienced less suburbanization than whites (Henry 2004). This has been attributed to many factors, including housing and banking discrimination. When comparing predominately black suburbs with white suburbs, it has been found that black suburbs tend to be of lower socioeconomic status, have lower property values and higher population densities, and experience higher crime rates. These predominately black suburban areas experienced problems similar to those in inner cities. Unlike blacks, when Hispanics and Asians live in suburban areas they have higher levels of integration and contact with whites (Henry 2004).

During the 1970s and 1980s, the United States experienced income stratification that made the poor poorer and the affluent richer. The emergence of a global economy indicated a transition from labor-based employment to a services-based market focused on well-educated employees, leaving a surplus of labor workers without jobs. In the 1980s, three segments of the population experienced different economic situations; the top fifth saw a “sharp increase in real income” (Henry 2004: 173), the bottom fifth saw a decline, and the middle fifth experienced no change.

Kasarda (1993) examined the percentages of the races living in areas of extreme poverty in 1990 and found that 3% of whites, 24% of blacks, and 15% of Hispanics lived in extreme poverty neighborhoods. From 1970 to 1990, these percentages increased for both blacks and Hispanics, but remained stagnant for whites. Over time, blacks and Latinos have become more similar in their respective poverty rates and both groups continue to be more likely to experience poverty than whites (University of Maryland
1999). This economic inequality and distinction between classes was not just reflected socially, but also geographically.

As the economic conditions changed, so did the geographical location of poverty. Throughout the 1970s and 1980s, it became apparent that “poverty and its correlates have thus become more geographically concentrated and... was highly structured along racial lines” (Henry 2004: 179). The job market was transitioning from metropolitan centers to suburban areas and from the North to the South. Throughout this time, the wealthy sought residences away from the poor. The areas in which the wealthy concentrated saw an increase in income, while those where the poor congregated did not. The increase in poverty was associated with socially deviant behaviors, such as higher crime rates, making those areas undesirable to the more affluent (Henry 2004). The affluent had the means to leave the areas, while the poor did not. Residential segregation confounds poverty as it allows for the strengthening of “social divisions, making it easier for the privileged to monopolize their resources” (Dwyer 2010: 114). The isolation and exclusion of the poor brought in an age of extremes (Dwyer 2010).

The combination of income inequality and class segregation contributed to the concentration of poverty (Henry 2004). Poverty has been concentrated in extreme rural and urban areas, specifically the central cities of large metropolitan areas (Brown and Hirschl 1995; Cotter 2002; McLaughlin, Stokes and Nonoyama 2001; Partridge and Rickman 2006; Weber, Jensen, Miller, Mosley and Fisher 2005). In metropolitan areas black poverty rates have been shown to be higher than that of whites (Adelman and Jaret 1999).
In 1990, suburban areas had the least percentage in poverty at 6%. Since then, findings continue to suggest there are lower levels of poverty and higher levels of income in suburban areas (Squires and Kubrin 2005). However, suburban areas have been overlooked in much of the extant literature. They are often considered part of the metropolitan areas, though the demographics of urban cores and suburban areas differ (Orfield 2002). It is necessary to separate urban cores from suburban areas because many of their distinct demographic features are correlated with poverty. The central cities and nonmetropolitan areas both experienced over double the suburban percentage in poverty at 14% and 13% respectively (Henry 2004). This study addresses this weakness.

Rural areas contained a disproportionate share of the poverty given their population concentration (Fisher 2007; Kodras 1997; Tickamyer and Duncan 1990). Lichter and Johnson (2007) found that during the 1990s overall poverty rates “declined more rapidly in nonmetro than metro counties” (331). When the poverty rates were fluctuating in the 1970s and 1980s, it was found that the percentages of those in poverty in rural areas did not change equally among the racial groups, leaving rural blacks and Hispanics with the largest percentages of poverty (Allen and Thompson 1990). It has been reported that poverty rates have previously been high among minorities in rural areas (Allen and Thompson 1990). Concentrated poverty was also present among minorities living in rural areas, as approximately half of blacks and one-third of Hispanics were located in poor counties (Lichter and Johnson 2007). The isolation and social exclusion found in poor areas “often reinforce racial and class inequality” (Lichter and Parisi 2008: 2), which perpetuates concentrated poverty and stresses that race, geographical location, and poverty are entwined and should be examined in combination.
The racial composition of rural areas has changed. Beginning in the 1990s the “Hispanic population in nonmetropolitan areas grew at the fastest rate of any racial or ethnic group” (Johnson 2006: 1). The growth was slowest for whites, while that of blacks was modest. However, a large percentage of Hispanics continue to reside in metropolitan areas. Overall, the diversity in rural areas is increasing but it is difficult to see this at the local levels.

The physical, geographic isolation of the rural areas compounds concentrated poverty. Limitations such as the lack of access to transportation and social services makes it difficult to move out of poverty, both in terms of social mobility and physical location. There is also a greater stigma with seeking and receiving government social services among the rural population because the “culture places a high value on self-reliance” (Johnson 2006: 30). This demonstrates that the dynamics of rural poverty are different than those of urban poverty. It also indicates a need for separating the types of nonmetropolitan areas by distance from metropolitan centers. This study distinguishes between nonmetropolitan areas adjacent to metropolitan areas and non-adjacent nonmetropolitan areas.

Similar to class segregation, racial segregation has also contributed to the “social and economic distance between the races” (Lichter, Parisi, Grice and Taquino 2007). It has been found that racial segregation is not unique to metropolitan areas. Rural racial segregation has risen to levels similar to that in metropolitan areas, exceeding that in suburban areas. In nonmetropolitan areas, blacks are the most segregated minority. It has been found that levels of black-white and Hispanic-white segregation declined during the
1990s in rural areas. However, this decline in Hispanic-white segregation was not seen in metropolitan areas (Logan, Stults and Farley 2004).

Throughout the twentieth century, there was a large out migration of blacks from the rural South, particularly to urban areas. However, “[b]y the 1990s, the region [South] was absorbing more migrants from the North, Midwest, and West than it lost” (Gibbs 2003: 255). The Mississippi Delta and Black Belt, along with other areas in the row-crop plantation region, received the majority of these migrants. The South as well as the Midwest were experiencing an influx of Hispanics at the end of the twentieth century, two new destinations for this group (Lichter and Parisi 2008).

In regard to the four regions outlined by the U.S. Census Bureau (Northeast, South, Midwest, West) it has been found that there are greater concentrations of poverty in the South (Cotter 2002; Gibbs 2003; Partridge and Rickman 2006), especially that of rural poverty (Cotter 2002) and rural black poverty. Rural black poverty is especially prevalent in the Black Belt (Gibbs 2003). Also, Partridge and Rickman (2006) found that poverty was lower in the Midwest and during the 1990s, but was increasing in the West and Northeast. In 2004, the percent in poverty was highest in the southern regions, while lower in the Midwest and Northeast (Henry 2004).

When examining sub-regions, poverty was found to be concentrated in the Mississippi Delta, Black Belt, Rio Grande Valley, Appalachia, and the Dakotas around Native American reservations (Henry 2004; Kodras 1997; Partridge and Rickman 2006). In 2004, the percent in poverty was 29%, 27%, and 22% respectively for the Mississippi Delta, Black Belt, and Appalachia. The Rocky Mountains and Pacific Northwest, the regions with the lowest percentages in poverty, had 10% and 14%, respectively, in
poverty. Using Census data from 1980, it was found that being located in the Black Belt affected the earnings for both whites and blacks approximately equally, though blacks earned less than whites. Also, when compared with living in the other parts of the South, blacks were not penalized more for living in the Black Belt (Rankin and Falk 1991). The study found that the there were no interaction effects of race and residence; residing in the Black Belt and being black were only additive effects. This study seeks to examine a similar research question not specific to a particular region.

Fisher and Weber (2004) found that knowledge of metropolitan status and region improved the prediction of poverty. Rather than using an income-based definition of poverty, they examined this in the context of asset poverty. Their results demonstrated that both living in central metropolitan counties and nonmetropolitan counties contribute to asset poverty. Also, when compared with those living in the West, living in the South and Northeast also contribute to poverty. Adelman and Jaret (1999) found that being located in the Northeast in metropolitan areas lowered black and white poverty rates compared to metropolitan areas in other regions of the country. However, they considered metropolitan areas and only those two racial groups. Both studies failed to examine this in the context of the race-poverty relationship, a limitation this study will address.

This study contributes to the significant limitations in previous literature. First, this study utilized multiple metropolitan categories. Second, this study sampled the whole United States, rather than a particular area or region. Finally, the interaction between race and geographical location is taken into consideration. In previous literature, few studies have examined multiple metropolitan categories combined nor has region been widely considered. Many studies selected a single metropolitan status category to look at in a
single region with a focus on two or less racial groups. No study with inter-metropolitan area comparisons separated metropolitan areas into urban cores and suburban areas; often metropolitan classification encompassed both, but poverty is likely to have different characteristics in each area. Few studies looked at both race and geographical location in combination. Also the effect of an interaction between race and geographical location was rarely looked at. To contribute to the previous literature, these limitations are addressed in this study.
CHAPTER II

DATA AND METHODS

This study examined the interaction effect of geographical location, including metropolitan status and region of the country, on the relationship between race and poverty. The data used were obtained from the U.S. Census Bureau’s American Community Survey (ACS), specifically the 2005 to 2007 person level data. The ACS provides recent, inter-census estimates and provides estimates for “geographic areas with a population of 20,000 or more” (U.S. Census Bureau 2008a); data were of persons within the 50 states and the District of Columbia only.

The data were subset for this study. The ACS collects approximately three million cases per year. The 2005 to 2007 ACS data contained 8,842,783 cases. This study focused on adults of a wage-earning age; therefore, those between the ages of 25 and 64 were selected with a result of 4,691,934 cases. This allowed for the inclusion of most that completed their education and avoids the complexity derived from including those beyond their retirement when social security and Medicare complicate the analysis of poverty. A randomly selected sample of approximately 25% of the remaining cases was selected. The cases with missing data for the variables of poverty index (missing=12,570) and household type (missing=3,058) were then removed, as they could not be used for analysis and comprised a small proportion of the total sample (1.33%). The final sample contained 1,157,939 cases.
Prior to analysis, some of the existing ACS variables were adjusted and new variables were created. First, the geographical location variables, region of the country and metropolitan status, were systematically defined. The ACS provided a region variable, which is based on the U.S. Census Bureau's definitions of region (U.S. Census Bureau 2001); the categories used were Northeast, Midwest, South, and West.

The metropolitan status variable was created. The ACS does not use counties as its definer of geographical location; rather, it uses Public Use Microdata Areas (PUMAs). PUMAs are groups of areas that do not overlap or cross state boundaries but often contain multiple counties (U.S. Census bureau 2001). Because metropolitan status is defined based on counties, it is difficult to define the metropolitan status of PUMAs. The Missouri Census Data Center provides a resource to address this problem: the MABLE/Geocorr2K, subtitled "geographic correspondence engine with Census 2000 geography" (Missouri Census Data Center 2008).

Rather than using a two-part classification with metropolitan and nonmetropolitan areas, this study formed four categories: urban cores, suburban areas, nonmetropolitan areas adjacent to metropolitan areas, and nonmetropolitan nonadjacent areas. The MABLE/Geocorr2K resource, essentially a converter of geographical units, was able to classify each state's PUMAs into rural-urban continuum codes based on proportion of the population. The rural-urban continuum codes were used as an initial measure of metropolitan status because they distinguish "metropolitan counties by size and nonmetropolitan counties by degree of urbanization and proximity to metro areas" (Economic Research Service 2004). The definitions of metropolitan and nonmetropolitan...
areas were consistent with those set by the Office and Management of Budget (U.S. Census Bureau 2008d).

The rural-urban continuum codes, which utilize nine metropolitan and nonmetropolitan codes, allowed for the initial classification of the metropolitan areas. This allowed for distinguishing between metropolitan, nonmetropolitan adjacent, and nonmetropolitan nonadjacent areas. The MABLE/Geocorr2K system had its limitations though as it was not able to neatly define each PUMA as one of these three options. Instead, based on 2006 population estimates, it classified the counties within the PUMAs into rural-urban continuum codes and then stated what proportion of the population fell within that classification. For the areas with conflicting coding, meaning the individual counties within a PUMA did not all fit under one category, the metropolitan status under which the plurality of the population fell was chosen. The PUMA for each case in the data were then recoded to reflect its metropolitan status.

Next, those PUMAs classified as metropolitan categories were put through a process to subcategorize them as urban cores or suburban areas. The MABLE/Geocorr2K system was used, but the PUMAs were converted into place, city, town, and village level areas. Those PUMAs that had majority of their population residing in major urban cities, as defined by the U.S. Census Bureau as principle cities of the metropolitan statistical areas (U.S. Census Bureau 2008d), were classified as urban cores. Those PUMAs originally classified as metropolitan by the MABLE/Geocorr2K system without a majority residing in major urban cities were categorized as suburban areas.

Second, a variable combining race and ethnicity was created. This study focused on four racial groups: non-Hispanic whites, non-Hispanic blacks, non-Hispanic other, and
Hispanics. The ACS data set included both race and Spanish/Hispanic/Latino (hereafter Hispanic) origin variable, which were used for creating this variable. Other than the apparent coding (e.g., whites who are non-Hispanic into “non-Hispanic whites”), Asians were classified as “non-Hispanic whites” due to their closer similarities with whites than with the other races in regard to poverty (U.S. Census Bureau 2009). “Non-Hispanic other” included those who did not categorize themselves as Hispanic and were American Indian, Alaska Native, Native Hawaiian or other Pacific Islander, or another unstated race. Also, the original race variable presents those who classified themselves as one race separately from those who stated they were of two races; therefore, those in the latter group were recoded as “non-Hispanic other” if they were not of Hispanic origin. Any case coded as Hispanic, regardless of the race, was considered “Hispanic”. Considering Hispanics as a separate group is important because of their growing importance in the United States and their unique contribution to demographic trends, such as population growth (Johnson and Lichter 2008).

The third of the key variables is the dependent variable representing poverty status. Throughout these analyses poverty is treated as both a continuous and categorical variable. Poverty is defined using a pre-existing variable in the ACS data set: poverty index. The poverty index indicates that person’s percent of the poverty status, a division of the person’s income by their poverty threshold (U.S. Census Bureau 2008c). The

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3 The racial groups examined were not limited to minorities. However, when only blacks and Hispanics were included, an interaction between race and geographical location was still not found. The R-square of the original base model (See Table 8) was much higher at 0.506. However, when region and metropolitan status were added, the R-square barely changed to 0.510 and 0.515, respectively. There was no change when the interaction variables were added.

4 The current study found that 8.8% and 9.8% of non-Hispanic whites and non-Hispanic Asians were in poverty. The two groups also had similar percentages when broken down by types of poverty. Respectively 2.7% and 3.3% of non-Hispanic whites and non-Hispanic Asians were in severe poverty, 3.7% and 4.0% were in poverty, and 2.3% and 2.5% were near poverty. This demonstrates the similarities in levels of poverty between non-Hispanic whites and non-Hispanic Asians in the current study.
poverty threshold was determined using the family level, not individual, information; it is based on the size of the family, not household, number of related children, and the age of the householder if the person is part of a one or two person family (U.S. Census Bureau 2007). For the regression analyses, the poverty index variable, which is continuous and expressed in percentages, is used; it is top-coded at 501%.

However, for the purposes of the descriptive component of this study poverty index was transformed into a categorical variable. Based on the suggestions of U.S. Census Bureau, the cases which were below 50% of poverty were categorized as “Severe Poverty”, those between 50 and 100% as “Poverty”, and those between 100 and 125% as “Near Poverty” (U.S. Census Bureau 2008c). The analyses also simplify the poverty variable further into two categories: “In Poverty” and “Not in Poverty”. Being “In Poverty” was defined as below 125% of the poverty status and included those classified as in “Poverty”, “Severe Poverty”, and “Near Poverty”.

This study controlled for four individual/household level variables: sex, age, educational attainment, and household type. These variables were selected as the controls because they overlap with the variables used in past literature, and there is much theoretical work linking poverty with each of these variables (Allen and Thompson 1990; Fisher and Weber 2004; Iceland 1997). Educational attainment was an existing variable in the data but had multiple categories. It was recoded into four groups: less than high school education, high school graduate, some college (including an Associate’s degree), and college graduate. Household type was also recoded into five categories: married couple, female headed, male headed, male other, and female other households. The other households are those in which the participant lives alone or lives with someone else in a
non-family circumstance (e.g., living with non-spouse). Sex and age did not have to be recoded. For all of the categorical variables used in this study, dummy variables were additionally created for regression analysis.

Previous research has demonstrated the relationship between employment status and poverty (Adelman and Jaret 1999; Gallie, Paugam and Jacobs 2003; Hoynes, Page and Huff Stevens 2006; U.S. Census Bureau 2003). Looking at data from 1967 to 2003, it was found that poverty and unemployment rates mimic each other over time (Hoynes et al. 2006). Utilizing data from the Current Population Survey’s Annual Social and Economic Supplement from 2008, the estimates showed that for those between the ages of 20 and 64 who worked full-time, only 4.4% were below the poverty level. Of those who did not work (not including those who worked part-time), 30.15% were below the poverty level (U.S. Census Bureau 2008b). One study found that unemployment increases the risk of poverty as well as social isolation, which in turn has an influence on the amount of time a person is in unemployment (Gallie et al. 2003). These results may indicate that employment status may be better suited for examining chronic poverty.

Unemployment has an apparent economic connection with poverty, as a lack of monetary sources is indicative of poverty. However, this variable was purposefully not used in the study. As previously stated, poverty index is a division of the person’s income by their poverty threshold. If a person is unemployed, he/she has no income. This variable is so closely related to the construction of the poverty index that it could produce some level of circularity in the results. The other variables used in the study, including
race, sex, age, educational attainment, and household type, are closely related to both employment status and poverty.

5 In order to demonstrate the limited benefits of adding employment status to the study, preliminary regression analyses were executed. Employment status was categorized as unemployed and all others were considered employed. When employment status was added to the original base model (see Table 8), the R-square barely changed from 0.271 to 0.277; adding this variable added less than a percent of explained variance of poverty to the model. Similarly, when employment status was added to the base model and geographical location (metropolitan status and region), the increase in r-square was also under a percent. The control variables already established in this study must share characteristics with employment status that affect poverty similarly. The inclusion of employment status does not increase the explained variance of poverty significantly.
CHAPTER III

RESULTS

**Demographics**

Of the sample, 11.7% are in poverty; 3.6% are in severe poverty, 5.1% are in poverty, and 3.0% are near poverty (see Figure 1). Poverty was defined as below 125% of the poverty status and included all three categories, measured as below 50% of the poverty status, between 50% and 100%, and 100% to 124%, respectively. The mean poverty index is 347.7%. The mean personal income of the sample, used to calculate poverty index, is $40,903.44. It is important to note the mean family income is $85,995.03. The discrepancy between these personal income and family income values could provide insight into poverty differences among those in families and those who are not. The poverty index is calculated using the personal income; however, it also takes into account household/family variables, such as number of children.

At 78.1% a large majority of the cases are non-Hispanic white, 10.9% are Hispanic, 9.0% are non-Hispanic black, and 2.0% are non-Hispanic other (see Table 1). As previously noted, the non-Hispanic Asian group was included with non-Hispanic white. The Hispanic group included all races of Hispanic origin. The non-Hispanic blacks, non-Hispanic others, and Hispanics have relatively similar percentages in poverty: 22.8%, 20.1%, and 21.8%. Of the non-Hispanic whites, 8.8% are in poverty. This level of poverty and the percentage point difference between the groups is reflected in other literature (University of Maryland 1999).
Figure 1: Poverty Distribution of Sample

Table 1: Percent of Sample in Poverty by Race

<table>
<thead>
<tr>
<th></th>
<th>Non-Hispanic white (N=904,725)</th>
<th>Non-Hispanic black (N=103,908)</th>
<th>Non-Hispanic Other (N=23,255)</th>
<th>Hispanic (N=126,051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Poverty</td>
<td>8.8</td>
<td>22.8</td>
<td>20.1</td>
<td>21.8</td>
</tr>
</tbody>
</table>
The first measure of geographical location was region. Of the sample, 36.6% lives in the South, 22.6% in the Midwest, 22.5% in the West, and 18.3% in the Northeast (see Figure 2). Reflecting past research (Cotter 2002; Gibbs 2003; Partridge and Rickman 2006), 13.3%, the largest percentage of the cases in poverty, are located in the South; 11.8% living in the West, 10.6% in the Midwest, and 9.8% in the Northeast are in poverty (see Table 3). These differences in poverty by region are moderate.

Metropolitan status was the second measure of geographical region. At 60.5%, the majority of the cases are located in suburban areas, 19.5% in urban cores, 13.5% in nonmetropolitan adjacent areas, and 6.5% in nonmetropolitan nonadjacent areas (see Figure 3). Of those in the urban cores and nonmetropolitan nonadjacent areas, 15.8% and 15.5% are in poverty (see Table 2). Similarly, 14.3% of the cases in the nonmetropolitan adjacent areas are in poverty. The suburban areas have the lowest percentage of cases in poverty at 9.4%. This is consistent with previous literature, which found that poverty is concentrated in extreme rural and urban areas (Brown and Hirschl 1995; Cotter 2002; Partridge and Rickman 2006; Weber, Jensen, Miller, Mosley and Fisher 2005).

These analyses controlled for four individual/household level variables: sex, age, educational attainment, and household type. Over half of the sample, 52.1%, is female while 47.9% are male. The mean age is 44.9; it must be noted, only those between ages 25 and 64 were kept in the sample. Educational attainment revealed minimal differences between the high school graduate, some college, which includes associate’s degree, and college graduate categories with 28.2%, 29.5%, and 30.5% respectively. However, 11.5% of the sample has less than a high school education.
Figure 2: Regional Distribution of Sample

Source: 2005-2007 U.S. Census Bureau American Community Survey

Table 2: Percent of Sample in Poverty by Metropolitan Status

<table>
<thead>
<tr>
<th></th>
<th>Urban Core (N=225,334)</th>
<th>Suburban Area (N=700,816)</th>
<th>Nonmetropolitan Adjacent (N=156,362)</th>
<th>Nonmetropolitan Nonadjacent (N=75,427)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Poverty</td>
<td>15.8</td>
<td>9.4</td>
<td>14.3</td>
<td>15.5</td>
</tr>
</tbody>
</table>
Figure 3: Metropolitan Status Distribution of Sample

Source: 2005-2007 U.S. Census Bureau American Community Survey

Table 3: Percent of Sample in Poverty by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>In Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>9.8</td>
</tr>
<tr>
<td>Midwest</td>
<td>10.6</td>
</tr>
<tr>
<td>South</td>
<td>13.3</td>
</tr>
<tr>
<td>West</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Source: 2005-2007 U.S. Census Bureau American Community Survey
Finally, in regard to household type, 67.7% of the cases live in a married couple household, 10.7% in a female headed household, 4.4% in a male headed household, 9.1% in a male other household, and 8.2% in a female other household (see Figure 4). The other households are those in which the participant lives alone or lives with someone else in a non-family circumstance. Of the female other households, 69.6% are living alone and 30.4% are living in a non-family circumstance; respectively, it is 64.2% and 35.8% for male other households (see Data and Methods for complete descriptions of variables).

**Bivariate Relationships**

In regard to race and region, the majority of non-Hispanic blacks and plurality of non-Hispanic whites live in the South at 60.5% and 33.9% respectively. At 42.0% and 42.8%, the plurality of both non-Hispanic others and Hispanics live in the West (see Table 4). For all groups except Hispanics, the smallest percentages are located in the Northeast; for Hispanics, the region is the Midwest. This is consistent with Lichter and Parisi (2008), who found that a new geographical destination for Hispanics was the South.

In regard to race and metropolitan status, the majority of all of the racial groups are located in suburban areas (see Table 5). The second largest plurality of all groups except non-Hispanic whites reside in urban cores; for non-Hispanic whites, it is split between urban cores and nonmetropolitan adjacent areas at 15.6% and 15.1%. Previous literature has shown that Hispanics are taking residence in rural areas at faster rates than other minorities; however, Hispanics are the least likely to live in nonmetropolitan areas (Lichter and Johnson 2006).
Figure 4: Household Type Distribution of Sample

Source: 2005-2007 U.S. Census Bureau American Community Survey
Table 4: Percent of Sample in Region by Race

<table>
<thead>
<tr>
<th>Region</th>
<th>Non-Hispanic white (N=904,725)</th>
<th>Non-Hispanic black (N=103,908)</th>
<th>Non-Hispanic Other (N=23,255)</th>
<th>Hispanic (N=126,051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>19.7</td>
<td>15.0</td>
<td>11.5</td>
<td>12.6</td>
</tr>
<tr>
<td>Midwest</td>
<td>25.6</td>
<td>15.7</td>
<td>15.2</td>
<td>7.8</td>
</tr>
<tr>
<td>South</td>
<td>33.9</td>
<td>60.5</td>
<td>31.3</td>
<td>36.8</td>
</tr>
<tr>
<td>West</td>
<td>20.8</td>
<td>8.7</td>
<td>42.0</td>
<td>42.8</td>
</tr>
</tbody>
</table>

Table 5: Percent of Sample in Metropolitan Status by Race

<table>
<thead>
<tr>
<th>Metropolitan Status</th>
<th>Non-Hispanic white (N=904,725)</th>
<th>Non-Hispanic black (N=103,908)</th>
<th>Non-Hispanic Other (N=23,255)</th>
<th>Hispanic (N=126,051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Cores</td>
<td>15.6</td>
<td>36.6</td>
<td>20.3</td>
<td>33.2</td>
</tr>
<tr>
<td>Suburban Areas</td>
<td>62.1</td>
<td>50.8</td>
<td>52.4</td>
<td>58.9</td>
</tr>
<tr>
<td>Nonmetropolitan</td>
<td>15.1</td>
<td>9.5</td>
<td>15.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Adjacent</td>
<td>7.3</td>
<td>3.1</td>
<td>12.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Nonmetropolitan</td>
<td>7.3</td>
<td>3.1</td>
<td>12.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Nonadjacent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Multivariate Relationships**

**Crosstabulations.** This study examined the interaction effect of geographical location, both metropolitan status and region, on the relationship between race and poverty. As seen in Table 6, for all of the racial groups the nonmetropolitan adjacent and nonmetropolitan nonadjacent areas have the largest percentages of those in poverty; suburban areas have the smallest percentages of persons in poverty. Non-Hispanic blacks have the largest concentration of poverty in the nonmetropolitan nonadjacent areas at 36.8%, which is 8.3 percentage points higher than the next group: non-Hispanic others. Non-Hispanic blacks are the most likely to be poor in nonmetropolitan adjacent areas, with 32.0% in poverty. With 18.9% in poverty, Hispanics are the most likely to be poor in suburban areas. Of the groups, non-Hispanic blacks and Hispanics in the urban cores have the largest percentages in poverty, 26.1% and 25.6% respectively. In all of the areas, non-Hispanic whites are the least likely to be poor. Much of previous literature focuses attention on urban core poverty, yet these findings show that regardless of race, it is rural areas where the largest percentages in poverty.

*Figure 5* shows the percentages in poverty relative to the other races within each metropolitan status. Non-Hispanic whites have the lowest percentages in poverty across the locations and have the most consistency in regard to the percentage in poverty. Non-Hispanic blacks have the highest percentages in poverty, but also have the most variability across the geographical locations. The patterns in the urban cores and the suburban areas and the two nonmetropolitan areas are very similar. In the latter, the gap between the non-Hispanic others and Hispanics is minimized. It can be seen in *Figure 5* that the percentages in poverty, although not exact, follow consistent patterns across all
<table>
<thead>
<tr>
<th></th>
<th>Non-Hispanic white (N=904,725)</th>
<th>Non-Hispanic black (N=103,908)</th>
<th>Non-Hispanic Other (N=23,255)</th>
<th>Hispanic (N=126,051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Cores</td>
<td>9.9</td>
<td>26.1</td>
<td>19.5</td>
<td>25.6</td>
</tr>
<tr>
<td>Suburban Areas</td>
<td>7.2</td>
<td>17.7</td>
<td>15.9</td>
<td>18.9</td>
</tr>
<tr>
<td>Nonmetropolitan Adjacent</td>
<td>12.0</td>
<td>32.0</td>
<td>28.2</td>
<td>27.3</td>
</tr>
<tr>
<td>Nonmetropolitan Nonadjacent</td>
<td>13.3</td>
<td>36.8</td>
<td>28.5</td>
<td>26.8</td>
</tr>
</tbody>
</table>
Figure 5: Percent in Poverty by Race and Metropolitan Status

Source: 2005-2007 U.S. Census Bureau American Community Survey
of the locations; the proportional differences between the poverty levels among the races appear to be constant. However, Table 6 and Figure 5 show that there are modest differences in the percentages in poverty by metropolitan status across the racial groups.

Figure 5 also emphasizes important rural-urban differences in poverty among the races. For all of the races, the percentages in poverty are much higher in the nonmetropolitan areas, especially nonmetropolitan nonadjacent areas, than in the urban core. Non-Hispanic blacks and non-Hispanic others experience the largest differences in poverty between the urban and rural areas. When examining child poverty, O'Hare and Johnson (2004) had similar findings with overall differences between rural and urban poverty among the races.

Table 7 shows more consistency among the racial groups across the regions. The region in which the groups had the largest percent in poverty was the South for non-Hispanic whites (9.7%), Midwest for non-Hispanic blacks and non-Hispanic others (26.6%; 22.2%), and Northeast (22.5%) and South (22.8%) for Hispanics. In all of the regions, the least likely to be in poverty was the non-Hispanic white group. Figure 6 shows the percent in poverty by race and region of the country. Once again, non-Hispanic whites have the most consistency across the locations, while non-Hispanic blacks have the most variability. Overall there is a consistency in the percentages in poverty among the groups and proportional difference between the groups across location. Although not as significant as the differences by metropolitan status, there are still differences in poverty by region across the racial groups.

Regression Analyses. Ordinary least squares regression is used to examine the impact of individual characteristics including race, sex, age, educational attainment, and
Table 7: Percent of Sample in Poverty by Race and Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Non-Hispanic white (N=904,725)</th>
<th>Non-Hispanic black (N=103,908)</th>
<th>Non-Hispanic Other (N=23,255)</th>
<th>Hispanic (N=126,051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>7.7</td>
<td>19.9</td>
<td>18.5</td>
<td>22.5</td>
</tr>
<tr>
<td>Midwest</td>
<td>8.8</td>
<td>26.6</td>
<td>22.2</td>
<td>20.8</td>
</tr>
<tr>
<td>South</td>
<td>9.7</td>
<td>23.1</td>
<td>19.9</td>
<td>22.8</td>
</tr>
<tr>
<td>West</td>
<td>8.4</td>
<td>18.7</td>
<td>19.8</td>
<td>20.9</td>
</tr>
</tbody>
</table>
Figure 6: Percent in Poverty by Race and Region

Source: 2005-2007 U.S. Census Bureau American Community Survey

- Non-Hispanic White
- Non-Hispanic Black
- Non-Hispanic Other
- Hispanic
household type with region and metropolitan status on poverty. Dummy variables were created to represent the categorical variables in the models. The reference/excluded categories were non-Hispanic whites for race, male for sex, less than high school for educational attainment, married-couple household for household type, Northeast for region, and urban cores for metropolitan status.

The first model examined the impact of the individual/household level characteristics on the prediction of poverty index (see Table 8). Race alone accounts for 6.3% of the variance in poverty, an important amount for a set of dummy variables. Being non-Hispanic black reduces the poverty index by 0.161 standard deviations, non-Hispanic other reduces the poverty index by 0.064 standard deviations, and Hispanic, the largest reduction, reduces the poverty index by 0.205 standard deviations. This means that compared with non-Hispanic whites, being Hispanic and non-Hispanic black increases the level of poverty the most. It is important to note that the beta value for race, though decreasing as additional variables were added to the model, still remains important. Because race comes first in the model, some of its influence on poverty may be indirect through other variables. For example, previous literature has addressed the relationship between race and education (O’Gorman 2010). Therefore, race could affect education, which in turn could affect poverty.

6 The additive F-test determines whether the incremental improvement in explanatory power gained by including the additional variables added in each step is statistically significant. In order to do this, the R-square from the previous model is compared to that of the model including the additional variables. Due to the extremely large sample size of the ACS dataset used, the differences are found to be statistically significant. Statistical significance is necessary to determine empirical significance of variables; however, statistical significance is not sufficient to demonstrate it. In this analysis, both statistical significance of the incremental improvement in explained variance and the actual magnitude of that addition are considered. Although the improvement of the variables is statistically significant, in many cases the distinction between significance and importance needs to be made. For these cases, the actual gain in explanatory power is minimal and thus not very empirically important.
Table 8: OLS Regression Change in Poverty Index-- Base Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Race (NH white) Beta</th>
<th>Sex (Male) Beta</th>
<th>Age Beta</th>
<th>Education (Less than HS) Beta</th>
<th>Household Type (Married) Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH black</td>
<td>-0.161</td>
<td>-0.160</td>
<td>-0.156</td>
<td>-0.115</td>
<td>-0.074</td>
</tr>
<tr>
<td>NH Other</td>
<td>-0.064</td>
<td>-0.064</td>
<td>-0.061</td>
<td>-0.045</td>
<td>-0.035</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.205</td>
<td>-0.205</td>
<td>-0.192</td>
<td>-0.097</td>
<td>-0.092</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>-0.052</td>
<td>-0.052</td>
<td>-0.061</td>
<td>-0.038</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>0.100</td>
<td>0.129</td>
<td>0.114</td>
</tr>
<tr>
<td>HS Graduate</td>
<td></td>
<td></td>
<td></td>
<td>0.217</td>
<td>0.206</td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
<td></td>
<td>0.347</td>
<td>0.333</td>
</tr>
<tr>
<td>College Graduate</td>
<td></td>
<td></td>
<td></td>
<td>0.55</td>
<td>0.527</td>
</tr>
<tr>
<td>Male Headed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.618</td>
</tr>
<tr>
<td>Female Headed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.424</td>
</tr>
<tr>
<td>Male Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.450</td>
</tr>
<tr>
<td>Female Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.470</td>
</tr>
<tr>
<td>R-Square</td>
<td>0.063</td>
<td>0.065</td>
<td>0.075</td>
<td>0.209</td>
<td>0.271</td>
</tr>
<tr>
<td>Change in R-Square</td>
<td>N/A</td>
<td>0.002</td>
<td>0.010</td>
<td>0.134</td>
<td>0.062</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Additive F-Test</td>
<td>25,848</td>
<td>2,477</td>
<td>12,518</td>
<td>65,387</td>
<td>24,620</td>
</tr>
</tbody>
</table>

Notes: (1) F-Test is an overall for Race column; (2) Dummy variables were created; excluded reference group in parentheses as shown; (3) All variables are significant at p<0.001.
However, when all variables of the individual level model are added the relative explanatory power of race is not as large as that of most of the other variables. Throughout all of the models except that in which education was added, being Hispanic has the largest impact on poverty controlling for other variables. Being non-Hispanic black has the next largest impact. Given the narrowing of the difference in poverty rates between these two groups over time (University of Maryland 1999), this result was expected. Sex and age did not add much explanatory power to the race-only models, as the change in $R^2$ is less than a percent and 1.0%, respectively.

Educational attainment is an important contribution over and above the three-variable model with a 13.4% increase in $R^2$. Despite the minimal differences in the percentages with a high school education, some college, and a college education of the total sample, the impact of educational attainment on poverty is apparent. Being a high school graduate increased the poverty index by 0.217 standard deviations, having some college increased it by 0.347 standard deviations, and being a college graduate increased it by 0.550 standard deviations. Being a college graduate has the largest, positive impact on poverty index. The findings of this study regarding the powerful influences of education on poverty are consistent with past research. Those with a less than high school education experience considerably higher levels of poverty than others. The other groups have smaller differences in their levels of poverty, with college graduates having the lowest levels (University of Maryland 1999). Other literature has supported this relationship between educational attainment and decreased poverty level as well (O’Gorman 2010; Stern 2008).
The final addition to the model was household type, also an important contribution of 6.3% over and above the other variables. Being a male headed household increased the poverty index by 0.618 standard deviations, while a female other household had the next largest impact on poverty index by 0.470 standard deviations. Being a male other household increased the poverty index by 0.450 standard deviations and a female headed household increased it by 0.424. This means that compared with married households, poverty is lowest among male headed households and highest among female headed households.

When calculated, the predicted poverty can further emphasize this difference. For example, a black female, age 35 with a college degree in a married household has a predicted poverty index of 277.046; the same person in a female headed household has a predicted poverty index of 181.735. The factor of living in a female headed household represents a 95% difference in a person’s poverty index.

This base model accounts for 27.1% of the explained variability in poverty index, demonstrating the importance of individual level characteristics. In predicting poverty index, the person with the highest poverty would be Hispanic, female, of a young age (age 25 is the minimum age of the sample), have less than a high school education, and would live in a female headed household. A person with these characteristics would have a predicted poverty index of 119.879. The person with the highest predicted poverty would be non-Hispanic white, male, older (64 is the maximum age of the sample), a college graduate, and in a married household. The poverty index for such a person would be 490.28. This is a 370% difference in the predicted poverty index.
The lack of explanatory power of sex is an interesting finding given the literature on the feminization of poverty, a theory pertaining to the increasing percentages of women in poverty over time (Tiamiyu and Shelley 2001). This increase in the representation of women in poverty is attributed to a few main factors, including wage earning and the single-parent female headed family. It has been found that women often earn a lower wage than men. In 2006, the female-to male earning ratio was 76.9% (U.S. Department of Commerce and U.S. Census Bureau 2008), an increase seen over time. Related to lower wage earnings is the economic troubles faced by female headed households, especially those with children. With lower wages, supporting a household alone is difficult. "Pink collar" jobs, usually those dominated by women which are lower paid and part-time, are often taken on by females heading families (Tiamiyu and Shelley 2001) due to their flexibility in scheduling. Though sex alone did not capture the essence of the feminization of poverty in the regression analysis, the household type was an important contributing factor to poverty index. Being a female headed household reduces the poverty index, meaning there is an increase in poverty among this group when compared with the other categories.

Next the two blocks of dummy variables reflecting geographical location are added to the base model (see Table 9). First, region is added. This addition hardly improves the explained variance. The $R^2$ change is less than one percent over the base model (including race, sex, age, education, and household type). Living in the Midwest results in a decrease of 0.052 standard deviations in the poverty index, while living in the South results in a 0.057 standard deviation decrease in it, and living in the West results in a 0.019 standard deviation decrease in it. These Beta values are very similar, especially
Table 9: OLS Regression Change in Poverty Index: Base Model and Additive Effects of Geographical Location

<table>
<thead>
<tr>
<th>Variable</th>
<th>Base Model (Northeast) Beta</th>
<th>Region (Urban) Beta</th>
<th>Metropolitan Status (Urban) Beta</th>
<th>Region &amp; Metropolitan Status (Northeast, Urban) Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH black</td>
<td>-0.074</td>
<td>-0.070</td>
<td>-0.078</td>
<td>-.074</td>
</tr>
<tr>
<td>NH Other</td>
<td>-0.035</td>
<td>-0.036</td>
<td>-0.033</td>
<td>-.033</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.092</td>
<td>-0.096</td>
<td>-0.103</td>
<td>-.103</td>
</tr>
<tr>
<td>Female</td>
<td>-0.038</td>
<td>-0.038</td>
<td>-0.038</td>
<td>-.038</td>
</tr>
<tr>
<td>Age</td>
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<td>0.114</td>
<td>0.116</td>
<td>.116</td>
</tr>
<tr>
<td>HS Graduate</td>
<td>0.206</td>
<td>0.205</td>
<td>0.204</td>
<td>.203</td>
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<tr>
<td>Some College</td>
<td>0.333</td>
<td>0.331</td>
<td>0.323</td>
<td>.323</td>
</tr>
<tr>
<td>College Graduate</td>
<td>0.527</td>
<td>0.523</td>
<td>0.508</td>
<td>.506</td>
</tr>
<tr>
<td>Male Headed</td>
<td>0.618</td>
<td>-0.080</td>
<td>-0.079</td>
<td>-.079</td>
</tr>
<tr>
<td>Female Headed</td>
<td>0.424</td>
<td>-0.191</td>
<td>-0.190</td>
<td>-.191</td>
</tr>
<tr>
<td>Male Other</td>
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<td>-0.135</td>
<td>-0.134</td>
<td>-.134</td>
</tr>
<tr>
<td>Female Other</td>
<td>0.470</td>
<td>-0.163</td>
<td>-0.162</td>
<td>-.163</td>
</tr>
<tr>
<td>Midwest</td>
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<td>-0.052</td>
<td></td>
<td>-.030</td>
</tr>
<tr>
<td>South</td>
<td></td>
<td>-0.057</td>
<td></td>
<td>-.047</td>
</tr>
<tr>
<td>West</td>
<td></td>
<td>-0.019</td>
<td></td>
<td>-.017</td>
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<tr>
<td>Suburban</td>
<td></td>
<td>0.043</td>
<td></td>
<td>.043</td>
</tr>
<tr>
<td>Nonmetro Adjacent</td>
<td></td>
<td>-0.057</td>
<td></td>
<td>-.053</td>
</tr>
<tr>
<td>Nonmetro</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonadjacent</td>
<td></td>
<td>-0.06</td>
<td></td>
<td>-.057</td>
</tr>
<tr>
<td>R-Square</td>
<td>0.271</td>
<td>0.273</td>
<td>0.282</td>
<td>0.284</td>
</tr>
<tr>
<td>Change in R-Square</td>
<td>N/A</td>
<td>0.002</td>
<td>0.011</td>
<td>0.013</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>12</td>
<td>15</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Additive F-Test</td>
<td>35,822</td>
<td>1,062</td>
<td>5,913</td>
<td>3,504</td>
</tr>
</tbody>
</table>

Notes: (1) F-Test is an overall for Base Model column; (2) Dummy variables were; excluded reference group in parentheses as shown; (3) All variables are significant at p<0.001.
for the Midwest and South, demonstrating little difference among the regions. Though the region variables contribute little explanatory power over the base model, they consistently show that poverty levels are likely to be higher in each region compared to the Northeast, with the negative impact greatest in the South.

Next, the metropolitan status was added to the base model; there was only a 1.1% explained variance increase. Living in a suburban area increased the poverty index by 0.043 standard deviations and living in nonmetropolitan adjacent and nonmetropolitan nonadjacent areas resulted in a decrease of 0.057 and 0.06 standard deviations in the poverty index. Although living in a suburban area has a slight advantage, there is not a large difference between that and the nonmetropolitan areas.

Finally, region and metropolitan status together were added to the base model, only accounting for a 1.3% increase in $R^2$. All of these models were unimportant contributions over and above the base model. The Beta values for the geographical locations remained relatively similar to the previous models.

To ascertain whether the influence of race differs by region, a set of interaction variables was developed. For example, non-Hispanic black was multiplied by each of the three region dummies. The resulting interaction terms can be used to determine whether the impact of being black is different in the South, for example, than it is in the other regions. To add the interaction between all of the races and regions to the regression model, this process was completed with all of the race dummy variables; each race dummy was multiplied by each subcategory of geographical location dummy variables. Because the dummy variables were coded as “0” for not a part of that group and “1” as part of that group, if someone was a member of both groups, the interaction variable value would be
a "1" for that case. Although all of the interaction variables were made, none of the variables were important contributions to the model. Therefore for discussion purposes, these interaction terms are referenced as one variable (a grouping) in both the text and Table 10. These interaction variables are not important contributions. The race and region interaction contributes no additional explained variability.

The race and metropolitan status interaction contributes less than a percent of explained variability over the base and metropolitan model. Neither of these interaction models adds any important explanatory power to the overall model. Table 10 summarizes the additive explanatory power of all of the models.

The previous literature did not provide any definite patterns when it came to the statistical relationship between poverty and geographical location. Although there is historical and theoretical background on geographically concentrated poverty and the interplay with race, the literature did not show interaction effects. However, few studies examined the potential interaction effect; those that did were not utilizing the same geographical location measures as this study.

These findings demonstrate that there are modest regional differences in poverty and more significant, though still modest, differences by metropolitan status across the races as demonstrated by the crosstabulation analyses. However, when the individual level characteristics are introduced, adding region or metropolitan status does not improve the model. Thus the chances one is in poverty and the depth of that poverty is primarily a function of individual level characteristics. Therefore, the regional and metropolitan differences are likely to be due to differences in the regional distribution of the individual level characteristics, such as education and family type (e.g., the rural areas
Table 10: OLS Regression Change in Poverty Index: Base Model and Geographical Location

<table>
<thead>
<tr>
<th></th>
<th>Base Model</th>
<th>Base &amp; Region</th>
<th>Base &amp; Metropolitan Status</th>
<th>Base, Metropolitan Status, &amp; Region</th>
<th>Base, Region, &amp; Interaction</th>
<th>Base, Metropolitan Status, &amp; Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Square</td>
<td>0.271</td>
<td>0.273</td>
<td>0.282</td>
<td>0.284</td>
<td>0.273</td>
<td>0.283</td>
</tr>
<tr>
<td>Change in R-Square</td>
<td>N/A</td>
<td>0.002</td>
<td>0.011</td>
<td>0.002</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>12</td>
<td>15</td>
<td>15</td>
<td>18</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Additive F-Test</td>
<td>35,822</td>
<td>1,062</td>
<td>5,913</td>
<td>5,930</td>
<td>18,147</td>
<td>179</td>
</tr>
</tbody>
</table>

Notes: (1) Interactions are between Race and the geographical location variable; (2) F-Test is an overall for Base Model column; (2) All models are significant at p<0.001.
may have lower levels of education, so poverty is higher there). It is important to note that the differences in these individual level characteristics among the regions appear to affect the racial groups similarly, as there is no interaction effect between race and geographical location.

At most, race accounts for 6.3% of the explained variability in poverty index (see Table 8). As it came first in the model, it could be argued that race suppresses any shared explanatory power it had with the geographical location variables. To address this issue, the geographical location variables are placed first in the model in Table 11. Region explains 0.5% and metropolitan status explains 2.2% of predicted poverty index when no other variables are considered. When race is added, the change in $R^2$ is almost the same as the contribution race has when considered alone. It explains 6.2% and 6.4% over and above region and metropolitan status, respectively.

Allowing region and metropolitan status to account for so much explained variance as they could by placing them first in the regression model demonstrates that the vast majority of the explained variance is due to the individual characteristics. Therefore, there was not any shared explanation between race and location that was arbitrarily assigned to race in the models examined for this study. Table 11 furthers the support for this study in that the Beta values for region and metropolitan status become more similar when race is introduced, demonstrating that the differences between the areas are most likely due to differences in individual level characteristics, such as race.
Table 11: OLS Regression Change in Poverty Index: Geographical Location and Race

<table>
<thead>
<tr>
<th>Variable</th>
<th>Region (Northeast)</th>
<th>Race (NH white)</th>
<th>Metropolitan Status (Urban Core)</th>
<th>Race (NH white)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Beta</td>
<td>Beta</td>
<td>Beta</td>
</tr>
<tr>
<td>Midwest</td>
<td>-0.053</td>
<td>-0.066</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>-0.098</td>
<td>-0.066</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>-0.046</td>
<td>-0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suburban</td>
<td></td>
<td>0.123</td>
<td>0.069</td>
<td></td>
</tr>
<tr>
<td>Nonmetro Adjacent</td>
<td>-0.025</td>
<td>-0.079</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonmetro</td>
<td></td>
<td>-0.030</td>
<td>-0.070</td>
<td></td>
</tr>
<tr>
<td>NH black</td>
<td>-0.157</td>
<td></td>
<td>-0.164</td>
<td></td>
</tr>
<tr>
<td>NH Other</td>
<td>-0.066</td>
<td></td>
<td>-0.060</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.211</td>
<td></td>
<td>-0.215</td>
<td></td>
</tr>
<tr>
<td>R-Square</td>
<td>0.005</td>
<td>0.067</td>
<td>0.022</td>
<td>0.086</td>
</tr>
<tr>
<td>Change in R-Square</td>
<td>N/A</td>
<td>0.062</td>
<td>N/A</td>
<td>0.064</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Additive F-Test</td>
<td>1,988</td>
<td>25,649</td>
<td>8,688</td>
<td>27,027</td>
</tr>
</tbody>
</table>

Notes: (1) F-Test is an overall for Region and Metropolitan Status columns; (2) Dummy variables were created, excluded reference group in parentheses as shown; (3) All variables are significant at p<0.001.
CHAPTER IV

CONCLUSION

These analyses demonstrate that poverty does vary by geographical location and race. However, when considering individual/household characteristics, geographical location does not significantly increase the prediction of poverty over individual/household characteristics. The regional and metropolitan differences are likely to be due to differences in the regional distribution of the individual level characteristics. Also, there is no interaction effect on poverty between race and geographical location, meaning the effect of race on poverty does not vary by metropolitan status or region of the country. For example, the largest percentages of those in poverty were in nonmetropolitan areas, both adjacent and nonadjacent, regardless of the race.

The results of this study need to be approached cautiously, as it has multiple limitations. First, person level data may overestimate the prevalence of poverty because multiple people in a household may be represented in the sample. Also, there are not clear linkages between person level variables and poverty. For example, the poverty threshold is based on the householder’s income, family size, and age. If the case in the data was not a householder, the poverty threshold may not accurately represent that person’s circumstances. Also, a person’s characteristics may be only partially influential in determining poverty in a multi-person household.

Second, poverty index may not be an accurate representation of poverty and has
its limitations. Poverty goes beyond income and may be better measured by variables such as wealth (Fisher and Weber 2004). Conley (1999) argues that wealth plays a more significant role in poverty than mere income because it is not equally distributed among the racial groups or economic classes.

Third, the ACS data was subset, thus the results may not be applicable to all populations. Only those cases between the ages of 25 and 64 were analyzed; therefore, these results are not necessarily representative of child or elderly poverty. Future research should attempt to address these limitations. This study should be replicated using different economic classes and control for the social characteristics of the geographical locations, perhaps in a multilevel modeling context.

The findings of this study have a main implication for public policy: individual level variables are extremely important when examining poverty. In the current study, individual level, rather than geographical, variables had the most influence on poverty index. Blank (2005) states that although demographic variables do not show a causal relationship with poverty, they can give important insight into creating policy. "[T]hey are correlated with specific behavioral issues" (Blank 2005: 456) and therefore provide a target which policy can be formed around.

The significant influence of individual levels variables indicates that policy should be used to enhance human capital. For example, educational attainment was a critical factor in the reduction of the poverty index. Policy should focus on specific ways to increase educational attainment. These individual level variables are not limited to specific geographical areas. Therefore, a policy calling for additional funding and resources to be put into education should be effective regardless of location; it should be
effective whether it is happening in the metropolitan Northeast or in the nonmetropolitan South. It is important to note that policy may be more effective if it is inclusive of many factors (Blank 2005), and these findings show that more than one individual level factor has a significant impact on poverty.
LIST OF REFERENCES


Gibbs, Robert M. 2003. “Reconsidering the Southern Black Belt.” Presented at the presidential address at the annual meeting of the Southern Regional Science Association. April 12, Louisville, KY.


(http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?_pageld=sp1_acs&_submenud=).


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Critical Review of Rural Poverty Literature: Is There Truly a Rural Effect?"  


APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

University of New Hampshire
Research Integrity Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

04-Mar-2009

MacKay, Skye
Sociology, Horton SSC
21 Fossen Way
Andover, MA 01810

IRB #: 4520
Study: Race & Poverty: Does Geographical Location Matter?
Approval Date: 03-Mar-2009

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/oer/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

[Signature]
Julie F. Simpson
Manager

cc: File
Johnson, Kenneth