

ABSTRACT

TEIXEIRA-POIT, STEPHANIE MARIE. Examining Poverty and Working Poverty in North Carolina Counties: The Role of Spatial Location, Local Opportunity Structure, and Household Composition. (Under the direction of Dr. Michael D. Schulman).

My research employs structural and human capital approaches to examine poverty and working poverty. The structural approach identifies that spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, and the relative power of labor are important to consider when studying poverty and working poverty. Meanwhile, the human capital approach highlights the importance of considering household composition when studying poverty and working poverty. After collecting cross-sectional data for North Carolina counties, I replicate previous research that examined the effects of the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor on poverty, as well as on working poverty. Additionally, I extend past studies by improving the measures of the quantity of jobs, quality of jobs, structure of the labor market, and relative power of labor and adding measures of spatial location and household composition. Ordinary Least Squares regression models indicate that sources of poverty and working poverty include the quantity of jobs, the quality of jobs, the structure of the labor market, the relative power of labor, and household composition.

Examining Poverty and Working Poverty in North Carolina Counties: The Role of
Spatial Location, Local Opportunity Structure, and Household Composition

by
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DEDICATION

I would like to dedicate my thesis to my friend and partner, Bryan Teixeira-Poit.

BIOGRAPHY

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INTRODUCTION

Sociologists debate about the causes of and solutions to poverty. Human capital theorists contend that people experience poverty because they do not have attributes needed for occupational success and mobility. Because of this, human capital theorists promote policies that focus on improving individuals, such as job training programs. Structural theorists argue that policies designed to enhance individuals are inadequate, because these policies just rearrange people waiting in line for jobs. Since structural theorists conceptualize poverty as a function of local opportunity structure, they recommend policies involving increasing labor market opportunities (Tomaskovic-Devey 1987, 1988a).

Recent research suggests that structural and human capital approaches are complementary, rather than conflicting perspectives (Cotter 2002). Realizing this, I employ structural and human capital approaches to examine poverty and working poverty. The structural approach identifies that spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, and the relative power of labor are important to consider when studying poverty and working poverty. Meanwhile, the human capital approach highlights the importance of considering household composition when studying poverty and working poverty.

In this study, I utilize cross-sectional data for all one-hundred counties in North Carolina. Employing Ordinary Least Squares (OLS) regression, I replicate previous research that examined the effects of the quantity of jobs, quality of jobs, structure of the

labor market, and relative power of labor on percent poor, as well as on percent working poor. Then I extend past studies by improving the measures of the quantity of jobs, quality of jobs, structure of the labor market, and relative power of labor and adding measures of spatial location and household composition. Findings indicate that sources of poverty and working poverty include the quantity of jobs, the quality of jobs, the structure of the labor market, the relative power of labor, and household composition.

LITERATURE REVIEW

Poverty

In the United States, money is important for social participation and for a socially acceptable standard of living. Poor people are not totally isolated from social participation, but are limited in their social participation. Realizing this, we can conceptualize poor people as “those people whose income is below the level needed for normal social participation” (Tomaskovic-Devey 1988b:4). This conceptual or relative definition of poverty differs from an empirical or absolute definition of poverty. The latter definition of poverty was formulated by Mollie Orshansky in the mid-1960s. Orshansky calculated poverty thresholds by multiplying by three the price for the minimum adequate diet for families of different sizes (derived from the United States Department of Agriculture’s Economy Food Plan). Orshansky considered families with incomes below the poverty threshold as being poor. In the late 1960s, the United States Bureau of Budget adopted Orshansky’s poverty thresholds as the government’s definition

of poverty (Institute for Research on Poverty 2007; Jensen 2006; Joassart-Marcelli 2005; Weber, Jensen, Miller, Mosley, and Fisher 2005).

Orshansky's poverty thresholds have several shortcomings. One problem is that Orshansky's poverty thresholds do not account for geographic cost-of-living differences (Jensen 2006; Weber et al. 2005). Another problem is that Orshansky's poverty thresholds assume poor people spend one-third of their income on food. Actually, poor people spend *more* than one-third of their income on food (Tomaskovic-Devey 1988b).¹ Yet another problem is that the poverty thresholds are calculated using gross money income – thereby ignoring the influence of government programs, such as housing assistance (Joassart-Marcelli 2005). Still yet another problem relates to the United States Census Bureau publishing annual poverty statistics by comparing the poverty thresholds to families' pre-tax money income. According to the Institute for Research on Poverty (2007):

For these tabulations, the thresholds are updated annually for price changes and so are not changed in real (constant-dollar) terms, in other words, the 2005 weighted average poverty threshold of \$19,971 for a family of four represents the same purchasing power as the corresponding 1963 threshold of \$3,128. (para. 4)

Not only was using the poverty thresholds problematic initially, but using the poverty thresholds becomes more problematic over time. The absolute definition of poverty drastically underestimates relative poverty in the United States (Cormier and Craypo

¹ Working families spend a substantial portion of their income on expenditures, such as childcare, which are not calculated into family budgets (Joassart-Marcelli 2005).

2000). Nevertheless, the official poverty line remains an analytically useful tool for studying poverty.

Working Poverty

The relative definition of poverty suggests that poor people are not totally excluded from social participation, but are limited in their social participation. Realizing this, poverty does not mean exclusion from the labor market. Many poor people are in the labor market, but have limited participation in the labor market (Tomaskovic-Devey 1988b). “Of the 7 million families that were in poverty in 1987, 3.4 million were there despite the fact that at least one member was in the labor force most of the year. This represents about 6 percent of all families with a working member” (Klein and Rones 1989:8). Thus, it is important to study not only the poor, but also the working poor. The term working poor is measured several ways. One measure of the working poor is the percent of people that work and fall below the official poverty line. Another measure is the percent of families with one working family member that fall below the official poverty line. Yet another measure is the percent of people that fall below some percent of the official poverty line (United States Census Bureau 2007). Sociologists commonly measure working poor as percent of people that fall below 125 percent of the official poverty line.²

² Since composite measures of work status and poverty status are unavailable, researchers use the third measure as a proxy for the working poor.

Trends in Poverty and Working Poverty

Poverty is a major problem on the global to local levels. In the United States, twelve percent of the population falls below the official poverty line (Central Intelligence Agency 2007). Within the nation, states differ greatly in their percent poor. New Hampshire has the lowest percent poor with 6.55 percent, while Mississippi has the highest percent poor with 19.93 percent. North Carolina ranks thirty-second in terms of percent poor with 12.28 percent. Within North Carolina, counties vary in their percent poor (United States Census Bureau 2000a). Rural counties tend to have high percent poor compared to urban counties: “Twenty-three counties in North Carolina have poverty rates over 18 percent. All of these counties are rural, and 19 of them are located in the Coastal Plain region” (North Carolina Rural Economic Development Center 2008:N.p.). Figure 1 illustrates the large number of high percent poor counties in the Coastal Plain region. Figure 2 demonstrates that not only high percent poor counties, but also high percent working poor counties are clustered in the Coastal Plain region.

-- Figure 1 About Here --

-- Figure 2 About Here --

Theoretical Frameworks

Theoretical frameworks for understanding poverty and working poverty include the culture of poverty, human capital, and structural approaches.

Culture of Poverty Approach

The culture of poverty approach claims that people experience poverty because they have cultural deficiencies. Banfield (1970) argues that the lower class has “an outlook and style of life which is radically present-oriented and which therefore attaches no value to work, sacrifice, self-improvement, or service to family, friends, or community” (211). The lower class has its own culture – a culture of poverty – but “poverty is its effect rather than its cause” (125). In a similar vein, Glazer and Moynihan (1970) contend that ethnic groups have varying values, beliefs, and behavior patterns. They highlight the weak family structure and high delinquency rates among African Americans, the lack of group-wide organizations among Italians, the prevalence of alcoholism among the Irish, the political radicalism among the Jewish, and the dependence on assistance among Puerto Ricans. They argue that these distinctions account for the ethnic groups occupying different economic and political positions.

The culture of poverty approach has been widely misinterpreted. Proponents of the culture of poverty approach acknowledge that structural factors, such as prejudice and discrimination, influence differences between ethnic groups (Moynihan 1965). When people encounter structural constraints, they employ cultural adaptations:

Opportunity structures shape behavior in such a way that they confirm their own prophecies. Those people set on high-mobility tracks tend to develop attitudes and values that impel them further along the track: work commitment, high aspirations, and upward orientation. Those set on low-mobility tracks tend to become indifferent, to give up, and thus to “prove” that their initial placement was correct. (Kanter 1977:158)

Anderson (1999) explains that it is a logical reaction for people experiencing structural constraints to participate in oppositional subcultures. Anderson highlights the code of the street in which the threat of violence regulates people's actions. Opposing the code of the street is the code of decency in which civility regulates people's actions. Depending on the situation, people may exhibit both "street" and "decent" behaviors. People acting "street" is an understandable cultural adaptation to extreme alienation.

Human Capital Approach

Human capital refers to resources that can translate into future returns (Coleman 1988). The human capital approach claims that people experience poverty because they do not have attributes needed for occupational success and mobility in a modern industrial society. The human capital approach is implied in status attainment theory (Hodge and Laslett 1980). Classic studies in the status attainment literature include Blau and Duncan (2000[1967]), Featherman and Hauser (1976), and the Wisconsin school (Sewell, Haller, and Portes 2000[1969]; Sewell and Hauser 1992). Blau and Duncan (2000[1967]) determine that educational achievement mediates the relationship between family background and occupational attainment. They highlight the importance of achieved, rather than ascribed attributes.

One critique of the human capital approach is its assumption of meritocracy and its promotion of individualism. Human capital theorists believe in the "invisible hand": the idea that people applying for jobs have equal chances of being considered. Royster

(2003) provides an alternative interpretation. Royster interviewed fifty males that graduated from a vocational high school and sought entry-level positions in the blue-collar labor market. After interviewing respondents, Royster determined that white and black respondents have similar academic, character, and motivation/preparedness levels. White respondents use multiple, well-placed social networks to obtain desirable jobs. Since black respondents are largely excluded from social networks, they tend to hold less desirable jobs than white respondents. This research suggests that people are embedded in social networks that help them obtain jobs. In other words, visible hands reproduce inequality – invisibly.

A related critique is that the human capital approach ignores structure. Human capital theorists argue that women and minorities receive lower wages because they are less productive in the labor market. Tomaskovic-Devey and Skaggs (1999) find that women and minorities are not less productive in the labor market. They present alternative explanations for women and minorities receiving lower wages: employers exploit women and minorities *and* advantaged employees engage in social closure. Kozol (1992) also highlights the importance of structure. Kozol examines inequalities between America's poor urban and wealthy suburban public schools. Generally speaking, urban areas collect fewer property taxes than suburban areas, so urban schools receive less funding than suburban schools.³ Since urban schools have less funding than suburban

³ For example, comparing urban schools in Chicago to neighboring suburban schools in Winnetka: "any high school class of 30 children in Chicago received approximately \$90,000 less each year than would have been spent on them if they were pupils in a school such as New Trier High" in Winnetka (Kozol 1992:54).

schools, urban schools tend to have fewer teachers, larger class sizes, fewer textbooks, and poorer infrastructure than suburban schools. Students residing in poor urban areas have different educational experiences than students living in wealthy suburban areas because of their structural circumstances rather than their individual characteristics.

Structural Approach

The structural approach conceptualizes poverty as a function of local opportunity structure. Generally speaking, local opportunity structure refers to the quantity of job opportunities and quality of job opportunities. If we only use the quantity of jobs and quality of jobs to predict poverty, we would assume that the solution to poverty is economic development. We would expect poverty to decrease and disappear with economic growth. A better approach to understanding poverty is examining local structures of inequality (i.e., distribution patterns). Two determinants of local inequality are the structure of the labor market and relative power of labor. Researchers theorize that the effects of the structure of the labor market and relative power of labor on poverty are mediated by the quantity of jobs and quality of jobs (Tomaskovic-Devey 1987, 1988a, 1988b, 1991).

An example of research employing the structural approach is Tomaskovic-Devey (1987), which examines the relationship between local opportunity structure and poverty rates using cross-sectional data from 46 counties in South Carolina in 1979. This research determines that the structure of the labor market and relative power of labor have direct

effects on the poverty rate, as well as indirect effects on the poverty rate – through the quantity of job opportunities and quality of job opportunities. Tomaskovic-Devey (1988a) builds on this research and focuses on the relationship between local opportunity structure and poverty rates using cross-sectional data from the 100 largest standard metropolitan statistical areas in the United States in 1980. He finds that the effects of the structure of the labor market and relative power of labor on the poverty rate are mediated by the quantity of jobs, the quality of jobs, and labor force poverty positions.

Several scholars argue that the structural approach is incompatible with the human capital approach. The structural approach contends that the local likelihood of being poor influences which individual characteristics correlate with poverty. Meanwhile, the human capital approach merely identifies individual characteristics that are more likely to experience poverty. Although some individual characteristics are associated with poverty, this correlation does not indicate causation (Tomaskovic-Devey 1987, 1988a). Recent research merges structural and human capital approaches and highlights the importance of considering spatial location, local opportunity structure, and household composition when studying poverty and working poverty (Cotter 2002).

Cotter (2002) examines the effects of labor market variables and household variables on poverty. Labor market variables include three demographic control variables (percent over age 65 and under age 18, percent with less than a high school education, and percent female-headed householders), two geographic variables (location in the South and nonmetropolitan status), one variable measuring the external division of labor

in the local labor market (percent employed in manufacturing), three variables measuring the internal division of labor in the local labor market (percent of women employed outside the home, tightness of the local labor market, and percent employed in good jobs), and one variable measuring local state action (educational expenditures). Household variables include householder's sex, race, and age. Household variables also include householder's marital, educational, employment, and disability status. Cotter determines that all variables are statistically significant, except the measure of the tightness of the local labor market. Moreover, he finds that the labor market variables predict poverty even when accounting for the household variables. Furthermore, he discovers that the household variables predict poverty even when accounting for the labor market variables.

Cotter (2002) makes several contributions to the scholarly literature. Cotter provides a critique of the structural approach. He emphasizes that structural and human capital approaches are complementary, rather than conflicting perspectives. He highlights the importance of considering spatial location, local opportunity structure, and household composition when examining poverty. Structural theorists commonly examine differences across spatial location. For example, Lobao (1990) explores "how the organization of economic production in farming and industry generates socioeconomic inequality across different localities in the United States" (1). She determines that localities with large non-family farms and localities with small family farms have low well-being, while localities with large family farms have high well-being. The

consideration of spatial location is especially important, because spatial location influences local opportunity structure (Tickamyer and Duncan 1990).⁴ For instance, resource inequalities influencing educational achievement and attainment are embedded within and differ across spatial location (Roscigno, Tomaskovic-Devey, and Crowley 2006).

Although the individual is the appropriate unit of analysis for micro-level studies, the labor market area is the correct unit of analysis for macro-level studies (Cotter 2002). “The geographic boundaries of this labor market are a function of individual-level transportation systems” (Tomaskovic-Devey 1987:59). In geographic areas where car ownership or mass transportation is widespread, the appropriate unit of analysis may be a large unit, such as the standard metropolitan statistical area. In geographic areas that are largely rural, the proper unit of analysis is the county. Counties are not only spatial elements, but also ecological and organizational entities. Examining middle-range spatial divisions, such as counties, facilitates understanding stratification processes (Lobao 2004). Realizing this, I utilize county-level data to examine poverty and working poverty.

Elaborating on the Structural and Human Capital Approaches

The structural approach identifies that spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, and the relative power of labor are important to consider when examining poverty and working

⁴ Please see Lobao (2004) and Tickamyer and Duncan (1990), which provide detailed discussions of spatial inequality.

poverty. Additionally, the human capital approach highlights the importance of considering household composition when studying poverty and working poverty. In this section, I elaborate on the structural and human capital approaches.

Spatial Location

Generally speaking, people residing in rural areas are more likely to be poor and working poor than people living in urban areas (Crowley and Roscigno 2004; Jensen 2006; Tickamyer and Duncan 1990; Weber et al. 2005). Moreover, people residing in nonmetropolitan areas are more likely to be poor and working poor than people living in metropolitan areas (Albrecht, Albrecht, and Albrecht 2000; Cotter 2002; Jensen and McLaughlin 1997; McLaughlin and Jensen 2000; Slack and Jensen 2002; Thompson and McDowell 1994). Furthermore, poverty rates have been increasing more rapidly for people residing in nonmetropolitan areas compared to people living in metropolitan areas (Lichter and McLaughlin 1995).

The *Rural/Urban Continuum Codes* or *Beale Codes* integrate rural and urban⁵ within metropolitan and nonmetropolitan areas – thereby acknowledging that counties can contain both rural and urban populations. Rural populations can exist in metropolitan counties, and urban populations can exist in nonmetropolitan counties (Isserman 2005). The rural/urban continuum classifies counties into nine groups. Groups one through three include populations in metropolitan counties. Groups four through seven include urban

⁵ The United States Census Bureau defines urban based on population thresholds and density (Cromartie and Bucholtz 2008; Isserman 2005).

populations in nonmetropolitan counties. Finally, groups eight and nine include rural populations or urban populations below 2,500 in nonmetropolitan counties (United States Department of Agriculture, Economic Research Service 2003).⁶

Poverty rates vary across the rural/urban continuum. Counties scoring high on the rural/urban continuum experience high poverty rates. Specifically, completely rural populations or urban populations below 2,500 that are not adjacent to metropolitan counties have high poverty rates. Additionally, counties scoring low on the rural/urban continuum (i.e., populations in metropolitan counties) are more likely to leave persistent poverty. Metropolitan counties are more likely to escape persistent poverty than nonmetropolitan counties, and nonmetropolitan counties are more likely to leave persistent poverty than nonadjacent nonmetropolitan counties (Miller and Weber 2003; Weber et al. 2005).

Counties with high poverty rates are spatially concentrated in certain regions of the United States. The Black Belt, Appalachia, Mississippi Delta, Rio Grande Valley, and Great Plains regions – along with indigenous communities in the southwest – experience high poverty rates (Miller and Weber 2003; Tickamyer and Duncan 1990; Weber et al. 2005).⁷ Of these regions, the Black Belt has the highest poverty rate. In the Black Belt, poverty is pronounced among people that are black, people residing in metropolitan and nonmetropolitan areas, and people that are black living in nonmetropolitan areas. In other

⁶ Isserman (2005) discusses the advantages and disadvantages of using the rural/urban continuum and proposes an alternative spatial measure, the rural/urban density codes.

⁷ Two of these regions, the Black Belt and Appalachia, are located in the South.

words, racial and nonmetropolitan subpopulations residing in the Black Belt tend to have poor quality-of-life conditions (Wimberley and Morris 1996, 1997). Realizing this, counties classified as black belt counties should have high percent poor and working poor compared to counties not classified as black belt counties.

The Quantity of Job Opportunities

The quantity of job opportunities does not relate to the amount of job opportunities, but rather to the amount of *available* job opportunities (Tomaskovic-Devey 1988b). Counties with few available job opportunities should have high poverty rates. A measure of the amount of available job opportunities is average monthly employment. Empirical results indicate that average monthly employment is significantly and negatively related to the poverty rate. However, average monthly employment reduces to insignificance when included in models with the structure of the labor market and relative power of labor (Tomaskovic-Devey 1987).

The Quality of Job Opportunities

Not only the quantity of job opportunities, but also the quality of job opportunities is important. Counties with low quality of job opportunities should have high poverty rates. Generally speaking, “good jobs” are high paying jobs and “bad jobs” are low paying jobs (Acemoglu 2001). Data analyses determine that annual payroll relative to the employed population is significantly and inversely related to the poverty rate. However,

annual payroll relative to the employed population becomes statistically insignificant when included in models with the structure of the labor market and relative power of labor (Tomaskovic-Devey 1987). Additionally, people with jobs paying less than minimum wage are more likely to be working poor than people with jobs paying more than minimum wage (Hong and Wernet 2007).

Expanding on the definition of “good jobs”, we can identify good jobs as providing adequate wages *and* benefits. Good jobs pay at least \$17 per hour (roughly \$34,000 per year), have employer-provided health insurance paid partly by the employer, *and* have employer-sponsored pension plans or retirement savings plans.⁸ In contrast, bad jobs do not pay at least \$17 per hour (roughly \$34,000 per year), do not have employer-provided health insurance or have employer-provided health insurance not paid partly by the employer, *and* do not have employer-sponsored pension plans or retirement savings plans. The share of good jobs declined in the 2000 business cycle. Although the share of jobs offering \$17 per hour increased, the share of jobs providing health insurance and pension plans or retirement savings plans markedly decreased (Schmitt 2007). Empirical results indicate that the effects of having employer-provided health insurance and having employer-sponsored pension plans or retirement savings plans is significantly and inversely related to the likelihood of being working poor. People without employer-provided health insurance are 76 percent more likely to be working poor, and people

⁸ Schmitt (2007) explains that these three characteristics are not the only measures of quality of job opportunities. For example, the quality of health insurance, the degree of job security, and the work schedule are other measures of the quality of job opportunities.

without employer-sponsored pension plans or retirement savings plans are 10.43 times more likely to be working poor (Hong and Wernet 2007).

The Structure of the Labor Market

Certain labor market and industrial sectors are more likely to produce low quality jobs – creating low wage jobs and poverty-level jobs. The agricultural sector tends to provide low wage jobs. The services sector offers low wage, low skilled jobs *and* high wage, professional jobs (Albrecht, Albrecht, and Albrecht 2000; Hodson 1984; Sassen 1990; Tickamyer and Duncan 1990).⁹ Some scholars argue that the manufacturing sector as a whole tends to provide high wage jobs, while other scholars assert that the core sector tends to offer high wage jobs because of its stability and ability to shift high wage costs to consumers (Edwards 1979; Gordon 1972; Lobao and Schulman 1991). The core sector includes durable manufacturing, utilities, communication, transportation, and construction. In contrast, the non-core sector consists of the state industry and peripheral industry, which includes extraction, personal services, nondurable manufacturing, and business services (Tomaskovic-Devey 1988a, 1991).

Empirical findings indicate that agricultural production, percent agricultural employment, farm sector concentration, percent extractive employment, percent services employment, percent state employment, and percent peripheral employment are

⁹ Goldschmidt (1978) contends that localities with large non-family farms have lower well-being than localities with large family farms. Lobao (1990) finds that localities with large non-family farms and localities with small family farms have low well-being, while localities with large family farms have high well-being.

significantly and positively related to the poverty rate (Crowley and Roscigno 2004; Lobao and Schulman 1991; Miller and Weber 2003). Moreover, data analyses show that manufacturing production and percent manufacturing employment are significantly and negatively related to the poverty rate (Cotter 2002; Haynie and Gorman 1999). Furthermore, counties with high percent core employment experience high poverty rates in some years and low poverty rates in other years (Reif 1987).

Regarding working poverty, empirical results suggest that percent manufacturing employment, percent agricultural employment, percent government employment, and percent services employment are significantly and positively related to percent working poor (Anderson, Goe, and Weng 2007; Joassart-Marcelli 2005). Although some scholars examine the services industry as a whole, other scholars distinguish between the low technical services industry and the technical business services industry. The low technical services industry provides low wages and corresponds to high percent working poor, while the technical business services industry or fixed-cost industry (i.e., construction, mining, transportation, and utilities) offers high wages and translates to low percent working poor (Cormier and Craypo 2000; Gleicher and Stevans 2005). Additionally, some researchers separate the construction industry from the technical business services industry. The construction industry provides high wages and corresponds to low percent working poor (Anderson, Goe, and Weng 2007).

Poverty not only varies by industrial structure, but also by industrial dependency. The United States Department of Agriculture, Economic Research Service (2004)

classifies counties in terms of their dependence on the farming, mining, manufacturing, federal/state government, and services industries. Federal/state government-dependent counties and non-specialized counties are more likely to experience persistent poverty than all nonmetropolitan counties. Non-specialized counties include both counties with diversified economies and counties with weak economies. In contrast, services-dependent counties are less likely to experience persistent poverty than all nonmetropolitan counties (Miller and Weber 2003).

Data analyses also determine that the structure of the labor market is significantly related to the quantity of job opportunities and quality of job opportunities. Agricultural production and manufacturing production are significantly related to the quantity of job opportunities. Also, agricultural production, manufacturing production, and total per capita capital investment¹⁰ are significantly associated with the quality of job opportunities. This suggests that the structure of the labor market has direct effects on the poverty rate, as well as indirect effects on the poverty rate – through the quantity of job opportunities and quality of job opportunities (Tomaskovic-Devey 1987).

The Relative Power of Labor

The relative power of the local population to demand high quality job opportunities is related to the poverty rate. Counties where the local population has to

¹⁰ Total per capita capital investment measures “the relative productive resources available in a county” (Tomaskovic-Devey 1987:62).

accept whatever jobs local employers offer tend to have high poverty rates (Cormier and Craypo 2000).¹¹

The relative power of labor refers to three concepts: tightness, discrimination, and market control. Tightness involves the relationship between the amount of jobs and the amount of job seekers. Measures of tightness include average unemployment rates and annual real growth rates in total income. Counties with high average unemployment rates and low annual real growth rates in total income should have high poverty rates (Lobao and Schulman 1991; Tomaskovic-Devey 1987, 1991). Data analyses indicate that average unemployment rates are significantly and positively related to the poverty rate and the working poverty rate, especially when jobs offer low wages (Crowley and Roscigno 2004; Haynie and Gorman 1999; Klein and Rones 1989; Miller and Weber 2003). Although these measures examine tightness, they do not account for underemployment. Empirical results indicate that underemployment is significantly and positively related to poverty (Slack and Jensen 2004; Weber et al. 2005).¹²

Direct and indirect discrimination influences the labor market opportunities of nonwhites. Since measures of discrimination are unavailable, percent nonwhite serves as a proxy for discrimination. Counties with high percent nonwhite tend to have more discrimination against nonwhites, more inequality between the working class, and high poverty rates (Tomaskovic-Devey 1987, 1988a, 1991). Although scholars widely

¹¹ Crowley and Roscigno (2004) find that the relative power of labor partially mediates the relationship between real estate concentration and poverty.

¹² Slack and Jensen (2004) find that underemployment is more prominent in the extractive industry and less prominent in the mining industry.

recognize the positive relationship between percent nonwhite and poverty rates, some scholars attribute this relationship to economic restructuring in urban areas (Sassen 1990). Since nonwhites are spatially concentrated in urban areas, the decline of manufacturing jobs in urban areas disproportionately affects nonwhites (Wilson 1985, 1987). Nonwhites are more likely to be poor and working poor than whites (Cormier and Craypo 2000; Crowley and Roscigno 2004; Gleicher and Stevans 2005; Hong and Wernet 2007; Miller and Weber 2003; Joassart-Marcelli 2005; Klein and Rones 1989; Slack and Jensen 2002; Thompson and McDowell 1994). Furthermore, nonwhites tend to spend more years in poverty and working poverty than whites (Caputo 2007). These relationships vary by region. Communities with high percent nonwhite in the Central and Southeast regions experience high poverty, while communities with high percent nonwhite in the Northeast region have low poverty (Lobao and Schulman 1991).

Market control refers to “the ability of labor market participants to limit their exposure to market forces” (Tomaskovic-Devey 1987:64, 1988a, 1991). One measure of market control is the existence of unions and professional associations. Counties with few unions and professional associations should experience high poverty rates. Empirical findings indicate that percent unionized is significantly and negatively related to poverty (Crowley and Roscigno 2004; Tomaskovic-Devey 1991). Meanwhile, data analyses suggest that percent unionized is negatively related to poverty in the Central region and positively related to poverty in the Eastern region (Lobao and Schulman 1991). Another measure of market control is level of education. More educated populations should have

greater ability to limit their exposure to market forces. Empirical results determine that high levels of education correspond to low poverty and working poverty (Cormier and Craypo 2000; Gleicher and Stevans 2005; Haynie and Gorman 1999; Hong and Wernet 2007; Klein and Rones 1989; Miller and Weber 2003; Thompson and McDowell 1994).

Additionally, data analyses determine that the relative power of labor is significantly related to the quantity of job opportunities and quality of job opportunities. Average unemployment rates and annual real growth rates in total income are significantly related to the quantity of job opportunities. Also, average unemployment rates are significantly associated with the quality of job opportunities. Thus, the relative power of labor has direct effects on the poverty rate and indirect effects on the poverty rate – through the quantity of job opportunities and quality of job opportunities (Tomaskovic-Devey 1987).

Household Composition

Cotter (2002) examines the effects of household variables and labor market variables on poverty. He finds that the household variables predict poverty even when accounting for the labor market variables. Additionally, he determines that the labor market variables predict poverty even when accounting for the household variables. He concludes that human capital and structural approaches are complementary, rather than conflicting perspectives.

The human capital and structural approaches are interrelated. Although human capital theorists would contend that percent with health insurance is a proxy for health status, structural theorists would argue that percent with health insurance is a measure of the quality of job opportunities. Both human capital and structural theorists are correct. People without health insurance are less likely to receive preventative medical care, more likely to have poor health status, and more likely to obtain emergency medical care than people with health insurance. People without health insurance may experience financial devastation because of the expense of emergency medical care.

Similarly, while human capital theorists would contend that percent with high school degrees is a measure of educational status, structural theorists would argue that percent with high school degrees is a measure of market control which is a dimension of the relative power of labor. Again, both human capital and structural theorists are accurate. People with high school degrees have greater ability to limit their exposure to market forces than people without high school degrees. Because of this, people with high school degrees are less likely to experience poverty and working poverty than people without high school degrees. Solutions to poverty and working poverty include increasing educational opportunities and, therefore, increasing market control.

Although human capital and structural theorists would argue about percent female-headed householders and percent householders over age 65, I consider these variables as measures of household composition. Female-headed householders are triply disadvantaged in the labor market. First, single-headed households have high poverty

compared to dual-headed households (Hong and Wernet 2007); female-headed householders lack male partners with access to high wages (Klein and Rones 1989). Second, although females are more likely to have high quality jobs than in the past, females are still more likely to have low quality jobs than males (Schmitt 2007). Females have relatively low wages in the labor market compared to males because of sexual discrimination and occupational segregation (Haynie and Gorman 1999). To make matters worse, female-headed householders are penalized for being mothers; females experience a wage penalty of seven percent per child (Budig and England 2001). Data analyses determine that percent female-headed householders has a strong, positive relationship with percent poor and working poor (Albrecht, Albrecht, and Albrecht 2000; Anderson, Goe, and Weng 2007; Lichter and McLaughlin 1995; Thompson and McDowell 1994).

Householders over age 65 have limited economic opportunities, while householders between ages 18 and 65 are potentially nondependent and able to capitalize on labor market opportunities (Tomaskovic-Devey 1988b). Following this logic, counties with high percent householders over age 65 and low percent householders between ages 18 and 65 should have high percent poor. While some empirical results determine that percent householders over age 65 and percent poor are positively related, other data analyses suggest the existence of a negative relationship (Haynie and Gorman 1999; Tomaskovic-Devey 1991). For example, counties that escape persistent poverty have high percent householders over age 65 compared to counties that do not escape persistent

poverty (Miller and Weber 2003). Regarding the working poor, empirical findings indicate that the relationship between percent householders over age 65 and percent working poor is significant and negative (Anderson, Goe, and Weng 2007).

Other Considerations

Poverty studies should control for public assistance income, which reduces the poverty level by providing household income above household earnings. Counties with low percent with public assistance income are expected to have high percent poor (Lobao and Schulman 1991).

Poverty studies should also control for poverty spillover effects (Crowley and Roscigno 2004). The poverty of counties can influence the poverty of neighboring counties; poverty can spillover into counties adjacent to high poverty counties (Crandall and Weber 2004; Rupasingha and Goetz 2003; Swaminathan and Findeis 2004).

HYPOTHESES

Based on the literature review, I formulate the following hypotheses. The first hypothesis relates to spatial location.

H1: Counties high on the rural/urban continuum and classified as black belt counties have high percent poor and working poor.

Regarding the quantity of job opportunities, counties with low quantity of job opportunities have high percent poor and working poor.

H2: Counties with low average monthly employment have high percent poor and working poor.

Regarding the quality of job opportunities, counties with low quality of job opportunities have high percent poor and working poor.

H3: Counties with low annual payroll relative to the employed population have high percent poor and working poor.

H4: Counties with low median hourly wages, low percent with employer-provided health insurance, and low percent with employer-sponsored pension plans or retirement savings plans have high percent poor and working poor.

Regarding the structure of the labor market, a county's industrial structure relates to its percent poor and working poor.

H5: Counties with high percent agricultural employment, low percent manufacturing employment, and high percent services employment have high percent poor and working poor.

H6: Counties that are farming-dependent, mining-dependent, manufacturing-nondependent, federal/state government-dependent, services-nondependent, and non-specialized have high percent poor and working poor.

Regarding the relative power of labor, counties with low relative power of labor have high percent poor and working poor.

H7: Counties with high percent unemployed, high percent nonwhite, and low percent with high school degrees have high percent poor and working poor.

H8: Counties with high percent unemployed, high percent underemployed, high percent nonwhite, low percent with high school degrees, low percent with some college education or associate degrees, and low percent with bachelor or graduate degrees have high percent poor and working poor.

The ninth hypothesis relates to both the structure of the labor market and relative power of labor.

H9: When modeled with the structure of the labor market and relative power of labor, the quantity of job opportunities and quality of job opportunities are not related to percent poor and working poor.

The tenth hypothesis relates to household composition.

H10: Counties with high percent female-headed householders and high percent householders over age 65 have high percent poor and working poor.

METHODS

Data

For this analysis, I collected cross-sectional data for 2000 for all one-hundred counties in North Carolina. When data for 2000 were unavailable at the county-level for North Carolina, I substituted data for adjacent years (e.g., using 1999 data for percent poor and percent working poor). Data sources include: the United States Census Bureau's *Census 2000, Summary File 3*; the North Carolina Department of Commerce's data on employment in North Carolina (available through the North Carolina State Data Center);

the North Carolina Employment Security Commission's *Occupational Employment and Wages in North Carolina* data; the United States Census Bureau's *Experimental Small Area Health Insurance Estimates*; the United States Department of Agriculture, Economic Research Services' *County Typology Codes*; the United States Department of Agriculture, Economic Research Services' *Rural/Urban Continuum Codes*; and data on black belt counties in North Carolina (provided by Dr. Ronald Wimberley).

Dependent Variables

This study has two dependent variables. The first dependent variable is percent poor. *Percent poor* is measured as percent below 100 percent of the official poverty line in the county in 1999. Figure 1 displays percent poor in North Carolina counties in 1999. The second dependent variable is percent working poor. *Percent working poor* is measured as percent below 125 percent of the official poverty line in the county in 1999. Figure 2 presents percent working poor in North Carolina counties in 1999.

Independent Variables

This study has two sets of independent variables. The first set of independent variables operationalizes several concepts: the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor. The measures of these independent variables are similar to, but not the same as, the measures of the independent variables in Tomaskovic-Devey (1987).

The quantity of job opportunities is measured using *average monthly employment*, operationally defined as average monthly employment in the county in 2000. The quality of job opportunities is measured using *annual payroll relative to the employed population*, operationally defined as annual payroll for all establishments relative to the number of paid employees for all establishments in the county in 2000.

The structure of the labor market is measured using percent agricultural employment, percent manufacturing employment, and percent services employment. *Percent agricultural employment* is operationally defined as percent of the civilian population 16 years and over employed in agriculture, forestry, fishing, and hunting in the county in 2000. *Percent manufacturing employment* is operationally defined as percent of the civilian population 16 years and over employed in manufacturing in the county in 2000. Meanwhile, *percent services employment* is operationally defined as percent of the civilian population 16 years and over employed in services (i.e., professional, scientific, management, administrative, waste management, educational, health, social, arts, entertainment, recreation, accommodation, food, and other services) in the county in 2000.¹³

The relative power of labor refers to three concepts: tightness, discrimination, and market control. Tightness is measured using *percent unemployed*, operationally defined as percent of the population 16 years and over in the labor force and unemployed in the

¹³ Although *total per capita capital investment* is another measure of the structure of the labor market, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

county in 2000.¹⁴ Discrimination is measured using *percent nonwhite*, operationally defined as percent Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, some other race alone, and two or more races in the county in 2000. Market control is measured using *percent with high school degrees*, operationally defined as percent of the population 25 years and over with high school degrees in the county in 2000.¹⁵

The second set of independent variables operationalize the concepts spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, the relative power of labor, and household composition. The measures of these independent variables improve on the measures of the independent variables in Tomaskovic-Devey (1987).

Spatial location is measured using position on the rural/urban continuum and classification as a black belt county. *Position on the rural/urban continuum* is measured using the *Rural/Urban Continuum Codes* or *Beale Codes* for 2003 (United States Department of Agriculture, Economic Research Service 2003). Scores of one through three include populations in metropolitan counties. Score one refers to populations above one million in metropolitan counties. Score two refers to populations between 250,000 and one million in metropolitan counties. Score three refers to populations below 250,000 in metropolitan counties. Meanwhile, scores four through seven include urban

¹⁴ Although *annual real growth rate in total income* is another measure of tightness, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

¹⁵ Although *percent unionized* is another measure of market control, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

populations in nonmetropolitan counties: with score four referring to an urban population of 20,000 or more that is adjacent to a metropolitan county, score five referring to an urban population of 20,000 or more that is not adjacent to a metropolitan county, score six referring to an urban population between 2,500 and 19,999 that is adjacent to a metropolitan county, and score seven referring to an urban population between 2,500 and 19,999 that is not adjacent to a metropolitan county. Finally, scores eight and nine include rural populations or urban populations below 2,500 in nonmetropolitan counties: with score eight referring to a completely rural population or an urban population below 2,500 that is adjacent to a metropolitan county and score nine referring to a completely rural population or urban population below 2,500 that is not adjacent to a metropolitan county.¹⁶ Figure 3 displays position on the rural/urban continuum for North Carolina counties in 2003.

-- Figure 3 About Here --

Classification as a black belt county is a dummy variable, with a code of one indicating that the county is classified as a black belt county in 2000 (i.e., the county is classified as a county with greater than 12 percent black in 2000). Figure 4 illustrates classification as a black belt county for North Carolina counties in 2000.

-- Figure 4 About Here --

¹⁶ Although position on the rural/urban continuum is a categorical rather than a continuous variable, I treat position on the rural/urban continuum as a continuous variable so that the interpretations of continuum scores are meaningful.

The quantity of job opportunities is measured using *average monthly employment*, operationally defined as average monthly employment in the county in 2000. The quality of job opportunities is measured using median hourly wage and percent with health insurance. *Median hourly wage* is operationally defined as estimated median hourly wage in the county in 2001. Since 2001 data are unavailable for Ashe County, I substitute 2002 data for Ashe County. Since both 2001 and 2002 data are unavailable for Allegheny County, I substitute 2003 data for Allegheny County. *Percent with health insurance* is operationally defined as estimated percent with health insurance in the county in 2000. Percent with health insurance is a proxy for percent with employer-provided health insurance which is unavailable at the county-level for North Carolina.^{17, 18}

The structure of the labor market is measured using the *County Typology Codes* for 2000, which include farming-dependent, mining-dependent, manufacturing-dependent, federal/state government-dependent, services-dependent, and non-specialized (United States Department of Agriculture, Economic Research Service 2004). *Farming-dependent* is a dummy variable, with a code of one indicating counties with 15 percent of more of average annual labor and proprietors' earnings derived from farming during 1998 to 2000 *or* counties with 15 percent or more employed in farming in the county in 2000. *Mining-dependent* is a dummy variable, with a code of one indicating counties with 15

¹⁷ Although *percent with employer-sponsored pension plans or retirement savings plans* is another measure of the quality of job opportunities, it is not included in the analysis because it is unavailable at the county-level for North Carolina.

¹⁸ According to Schmitt (2000), a better measure of the quality of job opportunities is jobs paying at least \$17 per hour (roughly \$34,000 per year), having employer-provided health insurance paid partly by the employer, *and* having employer-sponsored pension plans or retirement savings plans.

percent of more of average annual labor and proprietors' earnings derived from mining during 1998 to 2000. *Manufacturing-dependent* is a dummy variable, with a code of one indicating counties with 25 percent of more of average annual labor and proprietors' earnings derived from manufacturing during 1998 to 2000. *Federal/state government-dependent* is a dummy variable, with a code of one indicating counties with 15 percent of more of average annual labor and proprietors' earnings derived from federal/state government during 1998 to 2000. *Services-dependent* is a dummy variable, with a code of one indicating counties with 45 percent of more of average annual labor and proprietors' earnings derived from services (i.e., retail, trade, finance, insurance, real estate, and services) during 1998 to 2000. Finally, *non-specialized* is a dummy variable, with a code of one indicating counties did not meet the dependence threshold for any of the industries (i.e., farming, mining, manufacturing, federal/state government, or services industries) during 1998 to 2000.¹⁹

As mentioned above, the relative power of labor refers to tightness, discrimination, and market control. Tightness is measured using percent unemployed and percent underemployed. *Percent unemployed* is operationally defined as percent of the population 16 years and over in the labor force and unemployed in the county in 2000, while *percent underemployed* is operationally defined as percent of the population 16

¹⁹ Although *total per capita capital investment* is another measure of the structure of the labor market, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

years and over working one to 34 hours per week in the county in 1999.²⁰ Discrimination is measured using *percent nonwhite*, operationally defined as percent Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, some other race alone, and two or more races in the county in 2000. Market control is measured using percent with high school degrees, percent with some college education or associate degrees, and percent with bachelor or graduate degrees. *Percent with high school degrees* is operationally defined as percent of the population 25 years and over with high school degrees in the county in 2000. *Percent with some college education or associate degrees* is operationally defined as percent of the population 25 years and over with some college education (but no degree) and associate degrees in the county in 2000. Meanwhile, *percent with bachelor or graduate degrees* is operationally defined as percent of the population 25 years and over with bachelor, master, professional, or doctorate degrees in the county in 2000.²¹

Household composition is measured using percent female-headed householders and percent householders over age 65. *Percent female-headed householders* is operationally defined as percent of households with female householders in the county in 2000. *Percent householders over age 65* is operationally defined as percent of households with householders over age 65 in the county in 2000.

²⁰ Although *annual real growth rate in total income* is another measure of tightness, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

²¹ Although *percent unionized* is another measure of market control, this measure is not included in the analysis because it is unavailable at the county-level for North Carolina.

Control Variables

Control variables include percent households with public assistance income, adjacency to high percent poor county, and adjacency to high percent working poor county. *Percent households with public assistance income* is operationally defined as percent of households with public assistance income in the county in 2000.

Using ArcGIS, I created a measure of *adjacency to high percent poor county*. First, I determined which 25 counties have the highest percent poor. I coded these counties as a two. Second, I figured out which counties are adjacent to one of the 25 counties with the highest percent poor.²² I coded these counties as a one. Third, I coded the remaining counties as a zero. These counties are not one of the 25 counties with the highest percent poor *and* are not adjacent to one of the 25 counties with the highest percent poor. Next, I recoded adjacency to high percent poor county into two dummy variables, with the reference category “the county is not one of the 25 counties with the highest percent poor *and* is not adjacent to one of the 25 counties with the highest percent poor”.

Using the same technique, I created two dummy variables measuring *adjacency to high percent working poor county*. The first dummy variable measures counties that are one of the 25 counties with the highest percent working poor. The second dummy variable measures counties that are adjacent to one of the 25 counties with the highest

²² These counties are adjacent to one of the 25 counties with the highest percent poor, but are not one of the 25 counties with the highest percent poor.

percent working poor.²³ Both of these dummy variables have the reference category “the county is not one of the 25 counties with the highest percent working poor *and* is not adjacent to one of the 25 counties with the highest percent working poor”.

Analytic Technique

In this study, I present four sets of nested OLS regression models: two sets of replication models and two sets of extension models. The replication models examine the effects of the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor on percent poor and percent working poor. In the replication models, the measures of the independent variables are similar to the measures of the independent variables in Tomaskovic-Devey (1987). Specifically, the measures of the independent variables include average monthly employment, annual payroll relative to the employed population, percent agricultural employment, percent manufacturing employment, percent services employment, percent unemployed, percent nonwhite, and percent with high school degrees. While the first set of replication models considers the dependent variable percent poor, the second set of replication models examines the dependent variable percent working poor.

Table 1 displays the bivariate correlations and descriptive statistics for the independent and dependent variables in the replication models. The bivariate correlations suggest that the data do not have problems with multicollinearity. Although not presented

²³ These counties are adjacent to one of the 25 counties with the highest percent working poor, but are not one of the 25 counties with the highest percent working poor.

in the table, the tolerance, variance inflation factor, and condition index statistics confirm that the data do not suffer from multicollinearity. After examining histograms, skewness statistics, first and second moment specification tests, and Durban-Watson tests, I determined that the data do not have problems with skewness, heteroscedasticity, or autocorrelation.

-- Table 1 About Here --

The extension models examine the effects of spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, the relative power of labor, and household composition on percent poor and percent working poor. In the extension models, the measures of the independent variables improve on the measures of the independent variables in Tomaskovic-Devey (1987). Specifically, the measures of the independent variables include position on the rural/urban continuum, classification as a black belt county, average monthly employment, median hourly wages, percent with health insurance, farming-dependent, mining-dependent, manufacturing dependent, federal/state government-dependent, services-dependent, non-specialized, percent unemployed, percent underemployed, percent nonwhite, percent with high school degrees, percent with some college education or associate degrees, percent with bachelor or graduate degrees, percent female-headed householders, and percent householders over age 65. While the first set of extension models considers the dependent variable percent poor, the second set of extension models examines the dependent variable percent working poor.

Table 2 displays the bivariate correlations and descriptive statistics for the control, independent, and dependent variables in the extension models. The bivariate correlations, along with the tolerance, variance inflation factor, and condition index statistics, indicate that the data have some multicollinearity problems.²⁴ Percent nonwhite is correlated with percent female-headed householders. Moreover, percent with high school degrees is related to percent with bachelor or graduate degrees. Furthermore, the descriptive statistics show that mining-dependent has no variation; no counties are mining-dependent. To address these problems, I deleted percent nonwhite, percent with high school degrees, and mining-dependent.²⁵ After examining histograms, skewness statistics, first and second moment specification tests, and Durban-Watson tests, I determined that the data do not have problems with skewness, heteroscedasticity, or autocorrelation.

-- Table 2 About Here --

RESULTS

Replication Models with Dependent Variable Percent Poor

All of the OLS regression models are statistically significant at alpha level 0.01. Table 3 displays the replication models with the dependent variable *percent poor*. Model 1R examines the effect of the quantity of job opportunities variable. The adjusted R-

²⁴ High percent poor county being correlated with high percent working poor county is not problematic, because these variables are not included in the same models.

²⁵ I do not include non-specialized in the regression analyses. The regression analyses indicate that including non-specialized biases the results.

square indicates that the quantity of job opportunities variable explains 12.23 percent of the total variation in percent poor. Average monthly employment is statistically and negatively related to percent poor. Counties with low average monthly employment have high percent poor.

Model 2R includes the quantity of job opportunities and quality of job opportunities indicators. The incremental F statistic suggests that adding the quality of job opportunities variable does not improve the predictive power of the model ($F = 1.60$; critical value ≈ 3.92).²⁶ Although average monthly employment is statistically significant, annual payroll relative to the employed population is not statistically significant.

Models 3R and 4R are important in understanding whether the structure of the labor market and relative power of labor are associated with percent poor. These two models provide evidence of a direct relationship (discussed in the fifth and seventh hypothesis) and an indirect relationship (implied in the ninth hypothesis). Model 3R reveals that the quantity of job opportunities, quality of job opportunities, and structure of the labor market variables explain 40.02 percent of the total variation in percent poor. Also, adding the structure of the labor market variables improves the predictive power of the model ($F = 13.78$; critical value ≈ 2.68). The quantity of job opportunities and quality of job opportunities indicators are not statistically significant. However, all the structure of the labor market variables are statistically significant. Percent agricultural

²⁶ In the Appendices, please see Table 7 which presents the incremental F statistics. Also, see the appendices for calculations of the incremental F statistics.

employment, percent manufacturing employment, and percent services employment are significantly and positively related to percent poor.

Model 4R shows that the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor variables explain 72.85 percent of the total variation in percent poor. Adding the relative power of the labor variables improves the predictive power of the model ($F = 36.68$; critical value ≈ 2.68). As in Model 3R, the quantity of jobs and quality of jobs indicators are not statistically significant. All the structure of the labor market indicators are statistically significant. Counties with high percent agricultural employment, high percent manufacturing employment, and high percent services employment have high percent poor. Also, some of the relative power of labor indicators are statistically significant. Counties with high percent unemployed and high percent nonwhite have high percent poor.

-- Table 3 About Here --

Replication Models with Dependent Variable Percent Working Poor

Table 4 displays the replication models with the dependent variable *percent working poor*. Model 1RW reveals that the quantity of job opportunities variable explains 14.46 percent of the total variation in percent working poor. Average monthly employment is statistically and negatively related to percent working poor. Counties with low average monthly employment have high percent working poor.

Model 2RW includes the quantity of job opportunities and quality of job opportunities indicators. Adding the quality of job opportunities variable does not improve the predictive power of the model ($F = 1.57$; critical value ≈ 3.92). Average monthly employment is statistically and negatively related to percent working poor. However, annual payroll relative to the employed population is not statistically associated with percent working poor.

Models 3RW and 4RW highlight hypotheses five, seven, and nine. These models examine whether the structure of the labor market and relative power of labor are related to percent working poor. Model 3RW shows that the quantity of job opportunities, quality of job opportunities, and structure of the labor market variables explain 40.63 percent of the total variation in percent working poor. Including the structure of the labor market variables improves the predictive power of the model ($F = 13.09$; critical value ≈ 2.68). While the quantity of jobs and quality of jobs variables are not statistically related to percent working poor, the structure of the labor market indicators are statistically and positively associated with percent working poor. Counties with high percent agricultural employment, high percent manufacturing employment, and high percent services employment have high percent working poor.

Model 4RW reveals that the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor variables explain 71.52 percent of the total variation in percent working poor. Also, adding the relative power of labor indicators improves the predictive power of the model ($F = 32.90$; critical

value ≈ 2.68). The quantity of job opportunities variable is statistically and negatively related to percent working poor, while the quality of job opportunities variable is not statistically associated with percent working poor. All the structure of the labor market variables have significant and positive relationships with percent working poor. Counties with high percent agricultural employment, high percent manufacturing employment, and high percent services employment have high percent working poor. Some of the relative power of labor variables are significantly and positively associated with percent working poor. Counties with high percent unemployed and high percent nonwhite have high percent working poor.

-- Table 4 About Here --

Extension Models with Dependent Variable Percent Poor

Table 5 displays the extension models with the dependent variable *percent poor*. Model 1E introduces the control variables, which explain 79.16 percent of the total variation in percent poor. All the control variables are significantly related to percent poor. Although the control variable for public assistance income is not in the expected direction, the control variables for poverty spillover effects are in the expected directions.

Model 2E reveals that the control and quantity of jobs variables explain 80.42 percent of the total variation in percent poor. Adding the quantity of jobs indicator improves the predictive power of the model ($F = 6.11$; critical value ≈ 3.92). Controlling for public assistance income and poverty spillover effects, average monthly employment

is significantly and negatively related to percent poor. Counties with low average monthly employment have high percent poor.

Model 3E shows that the control, quantity of jobs, and quality of jobs variables explain 83.03 percent of the total variation in percent poor. Adding the quality of jobs indicators improves the predictive power of the model ($F = 7.15$; critical value ≈ 3.07). After controlling for public assistance income and poverty spillover effects, the quantity of jobs variable and one of the quality of jobs variables are statistically significant. Average monthly employment and percent with health insurance are significantly and negatively associated with percent poor. Counties with low average monthly employment and low percent with health insurance have high percent poor.

Models 4E and 5E examine whether the structure of the labor market and relative power of labor variables are related to percent poor (see hypotheses six, eight, and nine). Model 4E considers the effects of the control, quantity of jobs, quality of jobs, and structure of the labor market variables. Adding the structure of the labor market indicators does not improve the predictive power of the model ($F = 0.52$; critical value ≈ 2.45). After controlling for public assistance income and poverty spillover effects, the quantity of jobs variable is significantly and negatively related to percent poor. One of the quality of jobs variables is statistically significant. Counties with low percent with health insurance have high percent poor. Also, one of the structure of the labor market variables is statistically significant. Counties that are manufacturing-dependent have low percent poor compared to counties that are not manufacturing-dependent.

Model 5E reveals that the control, quantity of jobs, quality of jobs, structure of the labor market, and relative power of the labor variables explain 86.25 percent of the total variation in percent poor. Including the relative power of labor indicators improves the predictive power of the model ($F = 4.37$; critical value ≈ 2.45). This model has the same variables statistically significant as in Model 4E – but with two additions. Two of the relative power of labor variables are statistically significant. Counties with high percent unemployed and low percent with some college education or associates degrees have high percent poor.

Model 6E shows that the control, quantity of jobs, quality of jobs, structure of the labor market, relative power of labor, and household composition variables explain 87.27 percent of the total variation in percent poor. Adding household composition variables improves the predictive power of the model ($F = 3.33$; critical value ≈ 3.07). In this model, only one of the control variables is statistically significant. Although the quantity of jobs variable is not significantly related to percent poor, one of the quality of jobs variables is significantly and negatively related to percent poor. Counties with low percent with health insurance have high percent poor. None of the structure of the labor market variables are statistically significant. However, two of the relative power of labor indicators are statistically significant. Counties with high percent unemployed and low percent with some college education or associate degrees have high percent poor. Also, both household composition variables are significantly and positively related to percent

poor. Counties with high percent female-headed householders and high percent householders over age 65 have high percent poor.

Model 7E shows that adding spatial location variables does not improve the predictive power of the model ($F = 1.83$; critical value ≈ 3.07). Model 7E provides slightly different results than Model 6E. Percent female-headed householders and percent householders over age 65 are not statistically significant. Moreover, percent underemployed is statistically significant. Counties with high percent underemployed have high percent poor. Furthermore, one of the spatial location variables is statistically significant. Counties scoring high on the rural/urban continuum have high percent poor. To clarify, completely rural populations or urban populations below 2,500 that are not adjacent to metropolitan counties have high percent poor.

-- Table 5 About Here --

Extension Models with Dependent Variable Percent Working Poor

Table 6 displays the extension models with the dependent variable *percent working poor*. Model 1EW introduces the control variables, which explain 75.54 percent of the total variation in percent working poor. All the control variables are significantly related to percent working poor. Although the control variable for public assistance income is not in the expected direction, the control variables for working poverty spillover effects are in the expected directions.

Model 2EW reveals that the control and quantity of jobs variables explain 77.69 percent of the total variation in percent working poor. Adding the quantity of jobs indicator improves the predictive power of the model ($F = 9.16$; critical value ≈ 3.92). After controlling for public assistance income and working poverty spillover effects, average monthly employment is significantly and inversely associated with percent working poor. Counties with low average monthly employment have high percent working poor.

Model 3EW shows that the control, quantity of jobs, and quality of jobs indicators explain 81.23 percent of the total variation in percent working poor. Adding the quality of jobs variables improves the predictive power of the model ($F = 8.77$; critical value ≈ 3.07). When controlling for public assistance income and working poverty spillover effects, the quantity of job opportunities variable and one of the quality of job opportunities variables are statistically significant. Average monthly employment and percent with health insurance are significantly and negatively related to percent working poor.

Models 4EW and 5EW are helpful in understanding whether the structure of the labor market and relative power of labor are related to percent working poor. These two models explore hypotheses six, eight, and nine. Model 4EW considers the control, quantity of jobs, quality of jobs, and structure of the labor market variables. Adding the structure of the labor market indicators does not improve the predictive power of the model ($F = 0.47$; critical value ≈ 2.45). Similar to Model 3EW, the quantity of job

opportunities variable and one of the quality of job opportunities variables are statistically significant. Counties with low average monthly employment and low percent with health insurance are associated with high percent working poor. Additionally, one of the structure of the labor market variables has a statistically significant relationship with percent working poor. Counties that are manufacturing-dependent have low percent working poor compared to counties that are not manufacturing-dependent.

Model 5EW shows that the control, quantity of jobs, quality of jobs, structure of the labor market, and relative power of labor variables explain 85.67 percent of the total variation in percent working poor. Adding the relative power of labor indicators improves the predictive power of the model ($F = 6.01$; critical value ≈ 2.45). Model 5EW has the same variables significantly related to percent working poor as in Model 4EW – but with two additions. Two of the relative power of labor variables have statistically significant relationships with percent working poor. Counties with high percent unemployed and low percent with some college education or associate degrees have high percent working poor.

Model 6EW reveals that the control, quantity of jobs, quality of jobs, structure of the labor market, relative power of labor, and household composition variables explain 87.33 percent of the total variation in percent working poor. Adding household composition indicators improves the predictive power of the model ($F = 5.44$; critical value ≈ 3.07). The control variables accounting for working poverty spillover effects are statistically significant. Although the quantity of job opportunities variable is

insignificant, one of the quality of job opportunities variables is significant. Percent with health insurance is significantly and inversely related to percent working poor. All the structure of the labor market variables are insignificant. Yet, three of the relative power of labor indicators and one of the household composition indicators are statistically significant. Counties with high percent unemployed, high percent underemployed, low percent with some college education or associate degrees, and high percent householders over age 65 have high percent working poor.

Finally, Model 7EW shows that adding spatial location variables does not improve the predictive power of the model ($F = 1.66$; critical value ≈ 3.07). Model 7EW has the same variables significantly related to percent working poor as in Model 6EW – with one addition. One of the spatial location variables has a statistically significant relationship with percent working poor. Counties scoring high on the rural/urban continuum have high percent working poor. In other words, completely rural populations or urban populations below 2,500 that are not adjacent to metropolitan counties have high percent working poor.

-- Table 6 About Here --

DISCUSSION

In this section, I discuss the extent to which the empirical results support my hypotheses. The first hypothesis highlights spatial location variables. Counties high on the rural/urban continuum (i.e., completely rural populations or urban populations below

2,500 that are not adjacent to metropolitan counties) and classified as black belt counties are hypothesized to have high percent poor and working poor. This hypothesis receives partial support. Models 7E and 7EW find that position on the rural/urban continuum is significantly and positively related to percent poor and working poor. However, Models 7E and 7EW determine that classification as black belt counties is insignificantly associated with percent poor and working poor.

The second hypothesis examines the effect of the quantity of job opportunities variable on percent poor and working poor. Counties with low average monthly employment are hypothesized to have high percent poor and working poor. This hypothesis receives partial support. Models 1R and 2E find that average monthly employment is significantly and inversely related to percent poor and Models 1RW and 2EW find that average monthly employment is significantly and inversely related to percent working poor. However, in Models 4R, 7E, and 7EW, these relationships are statistically insignificant.

Hypotheses Three and Four highlight the relationship between the quality of job opportunities variables and percent poor and working poor. The third hypothesis states that counties with low annual payroll relative to the employed population have high percent poor and working poor. This hypothesis does not receive support. Annual payroll relative to the employed population is insignificant in all of the replication and extension models that it is included.

The fourth hypothesis asserts that counties with low median hourly wages, low percent with employer-provided health insurance, and low percent with employer-sponsored pension plans or retirement savings plans have high percent poor and working poor. This hypothesis receives partial support. Although median hourly wages is insignificant in all of the replication and extension models that it is included, percent with health insurance is significant in all of the replication and extension models that it is included. These results have important implications for the measurement of the quality of job opportunities. Percent with health insurance may better predict percent poor and working poor than either annual payroll relative to the employed population or median hourly wages.

Hypotheses Five and Six examine the effects of the structure of the labor market variables on percent poor and working poor. The fifth hypothesis states that counties with high percent agricultural employment, low percent manufacturing employment, and high percent services employment have high percent poor and working poor. Partially supporting this hypothesis, Models 3R and 4R determine that percent agricultural employment and percent services employment are associated with percent poor and are in the expected direction. Although percent manufacturing employment is related to percent poor, it is not in the expected direction. Models 3RW and 4RW have similar findings when examining percent working poor.

The sixth hypothesis highlights dependency in the farming, mining, manufacturing, federal/state government, and services industries. As hypothesized,

counties that are manufacturing-dependent have low percent poor (see Model 4E) and working poor (see Model 4EW) compared to counties that are not manufacturing-dependent. These results are especially interesting. When measuring manufacturing in terms of percent employed, manufacturing has a positive relationship with percent poor and working poor. However, when measuring manufacturing in terms of dependency, manufacturing has a negative relationship with percent poor and working poor. These findings change after examining Models 7E and 7EW, where the effect of manufacturing-dependence on percent poor and working poor is statistically insignificant. Comparing Models 4R and 4RW to Models 7E and 7EW, we see that all of the measures of industrial structure are statistically significant in Models 4R and 4RW and insignificant in Models 7E and 7EW. This suggests that the measures in the former models may better predict percent poor and working poor than the measures in the latter models.

Hypotheses Seven and Eight highlight the relative power of labor. The seventh hypothesis states that counties with high percent unemployed, high percent nonwhite, and low percent with high school degrees have high percent poor and working poor. Models 4R and 4RW provide partial support for this hypothesis. Percent unemployed and percent nonwhite are significantly and positively related to percent poor and working poor.

The eighth hypothesis argues that counties with high percent unemployed, high percent underemployed, high percent nonwhite, low percent with high school degrees, low percent with some college education or associate degrees, and low percent with bachelor or graduate degrees have high percent poor and working poor. Models 5E and

5EW partially support this hypothesis. Percent unemployed and percent with some college education or associate degrees are significantly related to percent poor and working poor and are in the expected directions. These variables are also significant in Models 7E and 7EW – with one addition. Percent underemployed becomes significant in these models. Not surprisingly, percent unemployed predicts percent poor and working poor in all of these models.

This discussion suggests that the structure of the labor market and relative power of labor have direct relationships with poverty and working poverty. Hypothesis nine examines whether the structure of the labor market and relative power of labor also have indirect effects on poverty and working poverty – through the quantity of jobs and quality of jobs. This hypothesis receives mixed findings. Model 2R finds that the quantity of jobs variable is significantly associated with percent poor, while Model 4R determines that the quantity of jobs variable is insignificantly associated with percent poor. This suggests that the structure of the labor market and relative power of labor may have indirect effects on percent poor – through the quantity of jobs.

The replication models predicting working poverty and the extension models predicting poverty and working poverty have different implications. Regarding the replication models predicting working poverty, the quantity of jobs variable is significant in Models 1RW, 2RW, and 4RW and insignificant in Model 3RW. Regarding the extension models predicting poverty and working poverty, the quantity of jobs variable

remains statistically significant until the introduction of household composition and spatial location indicators.

Examining household composition, the tenth hypothesis states that counties with high percent female-headed householders and high percent householders over age 65 have high percent poor and working poor. This hypothesis receives partial support. Although percent female-headed householders is significantly and positively associated with percent poor in Model 6E, percent female-headed householders is insignificantly related to percent poor in Model 7E. Also, Models 6EW and 7EW determine that percent female-headed householders is not significantly associated with percent working poor. Percent householders over age 65 is significantly and positively related to percent poor in Model 6E and percent working poor in Models 6EW and 7EW. However, percent householders over age 65 becomes insignificant in Model 7E. These results suggest that percent householders over age 65 predicts percent working poor, but not percent poor. Given the measurement of percent working poor, these results indicate that many householders over age 65 are hovering slightly above the official poverty line.

The incremental F statistics have important implications. For the replication models, the quantity of job opportunities, structure of the labor market, and relative power of labor improve the prediction of percent poor and working poor. Turning to the extension models, the quantity of job opportunities, the quality of job opportunities, the relative power of labor, and household composition improve the prediction of percent poor and working poor. In the extension models, spatial location does not improve the

prediction of percent poor and working poor. Interestingly, the quality of jobs facilitates prediction in the extension models, but not in the replication models. In a similar vein, the structure of the labor market enhances prediction in the replication models, but not in the extension models. These findings suggest that there may be complex measurement issues involving the independent variables in the replication and extension models.

-- Table 7 About Here --

The structural approach conceptualizes poverty as a function of local opportunity structure. In contrast, the human capital approach contends that people experience poverty because they do not have attributes needed for occupational success and mobility (Tomaskovic-Devey 1987). Both structural and human capital approaches facilitate understanding poverty and working poverty. Drawing on the structural approach, this research determines that several dimensions of local opportunity structure improve the prediction of poverty and working poverty: the quantity of jobs, quality of jobs, structure of the labor market, and relative power of labor. Exploring the human capital approach, this study determines that household composition improves the prediction of poverty and working poverty.

CONCLUSION

In this paper, I employed structural and human capital approaches to examine poverty and working poverty. The structural approach identified that spatial location, the quantity of job opportunities, the quality of job opportunities, the structure of the labor

market, and the relative power of labor are important to consider when studying poverty and working poverty. Meanwhile, the human capital approach highlighted the importance of considering household composition when studying poverty and working poverty. After collecting cross-sectional data for North Carolina counties, I replicated previous research that examined the effects of the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor on percent poor, as well as on percent working poor. Then I extended past studies by improving the measures of the quantity of job opportunities, quality of job opportunities, structure of the labor market, and relative power of labor and adding measures of spatial location and household composition.

My findings indicate that counties with low percent with health insurance and low percent with some college education or associate degrees have high percent poor and working poor. Also, counties with high position on the rural/urban continuum (i.e., completely rural populations or urban populations below 2,500 that are not adjacent to metropolitan counties), high percent agricultural employment, high percent manufacturing employment, high percent services employment, high percent unemployed, high percent underemployed, and high percent nonwhite have high percent poor and working poor. An interesting finding is that percent householders over age 65 is significantly and positively associated with percent working poor, but is not related to percent poor. Given the measurement of the dependent variable percent working poor, these results suggest that many householders over age 65 are hovering slightly above the

official poverty line. Policy makers should take into consideration that these householders are at risk of falling below the official poverty line.

Additionally, my research highlights the utility of different measures of the labor market and industrial structure. When examining measures of the quality of job opportunities, percent health insurance is statistically significant in all of the models that it is included. Annual payroll relative to the employed population and median hourly wages are statistically insignificant in all of the models that they are included. This suggests that percent with health insurance may better predict percent poor and working poor than either annual payroll relative to the employed population or median hourly wages. Turning to measures of the structure of the labor market, all of the measures of industrial structure are statistically significant in the replication models and statistically insignificant in the extension models. This suggests that industrial employment may better predict percent poor and working poor than industrial dependency.

This study determines that structural and human capital approaches are useful for understanding poverty and working poverty. Overall, this research indicates that sources of poverty and working poverty include the quantity of job opportunities, the quality of job opportunities, the structure of the labor market, the relative power of labor, and household composition. Realizing this, solutions to poverty and working poverty that propose only to increase the number of available jobs or decrease the number of job seekers are insufficient. Solutions to poverty and working poverty also involve increasing the percent of jobs with employer-provided health care and the percent of jobs in

industries providing high wages. Moreover, policy makers need to focus on decreasing unemployment and underemployment, as well as increasing educational opportunities. Furthermore, policy makers need to pay special attention to nonwhite, aged, and rural populations, who have low labor market opportunities and are in or at risk of being in poverty and working poverty.

This research has several limitations. First, the dependent variable percent working poor is operationally defined as percent below 125 percent of the official poverty line in the county in 1999. As defined in this study, percent working poor is a more liberal measure of poverty, which includes people that are below the official poverty line and slightly above the official poverty line. Percent working poor is not a true measure of the working poor, but rather a measure of relative poverty. Better measures of percent working poor would be percent of people that work and fall below the official poverty line in the county *or* percent of people that work and fall below some percent of the official poverty line in the county.

Additionally, this study does not include several measures of the independent variables, because these measures are unavailable at the county-level for North Carolina: total per capita capital investment, annual real growth rate in total income, percent unionized, and percent with employer-sponsored pension plans or retirement savings plans.²⁷ Although percent with employer-provided health insurance is unavailable at the

²⁷ Total per capita capital investment is a measure of the structure of the labor market. Annual real growth rate in total income is a measure of tightness, which is a dimension of the relative power of labor. Percent unionized is a measure of market control, which is a dimension of the relative power of labor. Percent with

county-level for North Carolina, I utilize percent with health insurance as a proxy for percent with employer-provided health insurance. This research employs median hourly wage and percent with health insurance as measures of the quality of job opportunities. A better measure of the quality of job opportunities would be the percent of jobs paying at least \$17 per hour (roughly \$34,000 per year), having employer-provided health insurance paid partly by the employer, *and* having employer-sponsored pension plans or retirement savings plans (Schmitt 2000). However, this composite measure is not available.

Moreover, this study utilizes percent agricultural employment, percent manufacturing employment, and percent services employment as measures of the structure of the labor market. Better measures of the structure of the labor market would be percent employed in industrial divisions. For example, the literature review suggests that counties with high percent employed in durable manufacturing have different poverty rates and working poverty rates than counties with high percent employed in nondurable manufacturing. Counties with high percent employed in durable manufacturing are hypothesized to have low percent poor and working poor, while counties with high percent employed in nondurable manufacturing are hypothesized to have high percent poor and working poor.

Furthermore, this research does not address the social capital approach to understanding poverty and working poverty. The social capital approach examines the

employer-sponsored pension plans or retirement savings plans is a measure of the quality of job opportunities.

effects of community-level social capital and entrepreneurial social infrastructure on percent poor and working poor.²⁸ Communities with high levels of social capital and entrepreneurial social infrastructure have high economic development and, thus, low percent poor and working poor (Emery and Flora 2006; Flora and Flora 2003; Flora, Sharp, Flora, and Newlon 1997). Community-level social capital and entrepreneurial social infrastructure are not included in this analysis.²⁹ However, future researchers should further explore the effect of community-level social capital and entrepreneurial social infrastructure on poverty and working poverty.

Another limitation is that this research examines 100 counties in North Carolina, which is a small number of cases. Yet another limitation is that this study employs cross-sectional data and does not account for change over time. Currently, the United States is experiencing the worst economic crisis since the Great Depression – evidenced by the failure of institutions on Wall Street, such as Fannie Mae, Freddie Mac, and American

²⁸ Bonding social capital refers to connections among individuals and groups that are homogenous in terms of social characteristics. Meanwhile, bridging social capital refers to connections between diverse groups within the community and outside the community (Emery and Flora 2006). Bridging social capital is important when power is distributed asymmetrically in groups. Thus, the strength of weak ties is important for reducing inequalities of power. Communities with low bridging and low bonding social capital cannot change. They are likely to become individualistic and have social disorganization. Communities with low bridging and high bonding social capital resist change (e.g., organizing against outsiders and newcomers; being unwilling to cooperate with other groups). Communities with high bridging and low bonding social capital are likely to experience change dominated by elites outside the communities. In contrast, communities with high bridging and high bonding social capital are likely to experience locally initiated change. They are likely to engage in collective action or entrepreneurial social infrastructure (Flora and Flora 2003).

²⁹ Robert D. Putnam's *Social Capital Community Benchmark Survey* and Jan L. Flora's *Economic Development Strategies and Entrepreneurial Social Infrastructure* are primary data sources examining community-level social capital and entrepreneurial social infrastructure in select North Carolina counties (Flora 1992-1995; Putnam 2000). The former data source samples approximately twelve counties, while the latter data source samples approximately sixteen counties. Since these data sources are primary and sample only a few North Carolina counties, these data sources are not useable in this analysis.

International Group. Not only Wall Street, but also Main Street is feeling the effects of this financial crisis. People are losing their jobs, homes, and retirement savings and are entering poverty. In January, the newly-elected President of the United States will have to address these issues. The newly-elected President will not be able to resolve the financial crisis and eradicate poverty by only promoting individualistic policies. Instead, the President should take a structural approach to fixing the nation's problems – promoting structural policies, such as increasing labor market opportunities.

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APPENDICES

Tables

Table 1: Bivariate Correlations and Descriptive Statistics for Variables in Replication Models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Average Monthly Employment	1.00									
(2) Annual Payroll Relative to the Employed Population	0.66*	1.00								
(3) Percent Agricultural Employment	-0.37*	-0.45*	1.00							
(4) Percent Manufacturing Employment	-0.11	0.05	-0.16	1.00						
(5) Percent Services Employment	0.19‡	0.20†	-0.22†	-0.73*	1.00					
(6) Percent Unemployed	-0.02	-0.08	0.06	-0.14	0.27*	1.00				
(7) Percent Nonwhite	0.03	0.03	0.33*	-0.03	0.04	0.58*	1.00			
(8) Percent with High School Degrees	-0.61*	-0.48*	0.34*	0.42*	-0.68*	-0.10	0.05	1.00		
(9) Percent Poor	-0.36*	-0.35*	0.54*	-0.06	0.06	0.59*	0.68*	0.22†	1.00	
(10) Percent Working Poor	-0.39*	-0.37*	0.55*	-0.03	0.01	0.57*	0.66*	0.27*	0.99*	1.00
Minimum	1,863.92	15,911.30	0.20	4.85	25.20	1.78	1.54	15.87	7.06	10.32
Maximum	390,044.33	43,500.25	16.77	43.20	62.39	6.49	67.30	40.10	23.90	30.37
Mean	39,888.84	23,597.27	3.10	21.67	36.42	3.41	26.70	31.82	14.34	19.26
Median	22,258.21	23,093.91	2.42	21.80	34.80	3.09	25.82	32.27	13.41	17.87
Standard Deviation	59,518.33	4,346.20	2.98	9.10	6.53	1.00	17.66	4.24	4.30	5.31
Range	388,180.42	27,588.95	16.57	38.35	37.18	4.71	65.76	24.23	16.84	20.05

Table 1 (Continued)

Table entries in the upper panel are Pearson's r coefficients.

** Statistically significant at alpha level = 0.01*

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

N = 100

Table 2: Bivariate Correlations and Descriptive Statistics for Variables in Extension Models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Percent Households with Public Assistance Income	1.00											
(2) Adjacent to High Percent Poor County	-0.05	1.00										
(3) High Percent Poor County	0.65*	-0.41*	1.00									
(4) Adjacent to High Percent Working Poor County	-0.03	0.67*	-0.25†	1.00								
(5) High Percent Working Poor County	0.74*	-0.26*	0.84*	-0.35*	1.00							
(6) Average Monthly Employment	-0.27*	-0.06	-0.21†	-0.15	-0.21†	1.00						
(7) Median Hourly Wage	-0.40*	-0.15	-0.35*	-0.16	-0.37*	0.55*	1.00					
(8) Percent with Health Insurance	-0.74*	-0.03	-0.63*	-0.06	-0.72*	0.25†	0.48*	1.00				
(9) Farming-Dependent	0.22†	0.00	0.15	0.04	0.15	-0.13	-0.11	-0.18‡	1.00			
(10) Mining-Dependent	-	-	-	-	-	-	-	-	-	-		
(11) Manufacturing-Dependent	-0.12	-0.23†	-0.03	-0.30*	0.01	-0.04	0.13	0.01	-0.24†	-	1.00	
(12) Federal/State Government-Dependent	0.06	0.13	0.00	0.19‡	-0.07	-0.03	0.00	-0.07	-0.09	-	-0.35*	1.00
(13) Services-Dependent	-0.28*	0.03	-0.13	0.07	-0.20†	0.38*	0.16	0.22†	-0.09	-	-0.33*	-0.13
(14) Non-specialized	0.17‡	0.15	0.05	0.13	0.11	-0.14	-0.21†	-0.02	-0.14	-	-0.53*	-0.21†
(15) Percent Unemployed	0.52*	-0.16	0.59*	-0.10	0.54*	-0.02	-0.18‡	-0.51*	0.04	-	-0.17‡	0.16
(16) Percent Underemployed	-0.33*	0.04	-0.11	-0.04	-0.23†	0.22†	0.30*	0.33*	-0.11	-	-0.34*	0.40*
(17) Percent Nonwhite	0.76*	-0.06	0.58*	0.04	0.67*	0.03	-0.17‡	-0.71*	0.15	-	-0.09	0.11
(18) Percent with High School Degrees	0.32*	0.07	0.11	0.15	0.18‡	-0.61*	-0.51*	-0.25†	0.12	-	0.19‡	-0.16
(19) Percent with Some College Education or Associate Degrees	-0.36*	0.30*	-0.39*	0.40*	-0.40*	0.22†	0.19‡	0.26*	-0.16	-	-0.21†	0.18‡

Table 2 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(20) Percent with Bachelor or Graduate Degrees	-0.44*	-0.05	-0.22†	-0.11	-0.28*	0.60*	0.61*	0.41*	-0.18‡	-	-0.21†	0.17‡
(21) Percent Female-Headed Householders	0.76*	-0.13	0.57*	-0.06	0.65*	0.00	-0.18‡	-0.64*	0.11	-	-0.01	0.06
(22) Percent Householders Over Age 65	0.22†	-0.02	0.13	-0.01	0.10	-0.55*	-0.40*	-0.06	0.17‡	-	-0.11	-0.16
(23) Position on Rural/Urban Continuum	0.29*	0.06	0.29*	0.08	0.22†	-0.45*	-0.40*	-0.25†	0.26*	-	-0.27*	0.12
(24) Classification as Black Belt County	0.46*	0.04	0.29*	0.17†	0.38*	0.17‡	0.03	-0.44*	0.10	-	-0.09	0.15
(25) Percent Poor	0.80*	-0.13	0.81*	-0.07	0.80*	-0.36*	-0.45*	-0.79*	0.25†	-	-0.13	0.08
(26) Percent Working Poor	0.81*	-0.10	0.79*	-0.06	0.80*	-0.39*	-0.48*	-0.82*	0.23†	-	-0.11	0.06
Minimum	1.19	0.00	0.00	0.00	0.00	1,863.92	8.22	77.11	0.00	0.00	0.00	0.00
Maximum	7.04	1.00	1.00	1.00	1.00	390,044.33	15.95	89.25	1.00	0.00	1.00	1.00
Mean	3.24	0.33	0.25	0.27	0.25	39,888.84	10.81	85.00	0.06	0.00	0.47	0.12
Median	2.81	0.00	0.00	0.00	0.00	22,258.21	10.66	85.91	0.00	0.00	0.00	0.00
Standard Deviation	1.36	-	-	-	-	59,518.33	1.21	2.82	-	-	-	-
Range	5.84	1.00	1.00	1.00	1.00	388,180.42	7.73	12.13	1.00	0.00	1.00	1.00

Table entries in the upper panel are Pearson's r coefficients.

* Statistically significant at alpha level = 0.01

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

$N = 100$

Note: For the dummy variables, the Pearson's r coefficients are approximations. The reference category for high percent poor county and adjacent to high percent poor county is not high percent poor county and not adjacent to high percent poor county. The reference category for high percent working poor county and adjacent to high percent working poor county is not high percent working poor county and not adjacent to high percent working poor county. The reference category for farming-dependent is not farming-dependent, mining-dependent is not mining-dependent, manufacturing-dependent is not manufacturing-dependent, federal/state government-dependent is not federal/state government-dependent, services-dependent is not services-dependent, non-specialized is specialized, and classification as a black belt county is non-classification as a black belt county.

Table 2 (Continued)

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(13) Services-Dependent	1.00													
(14) Non-specialized	-0.20†	1.00												
(15) Percent Unemployed	-0.03	0.07	1.00											
(16) Percent Underemployed	0.22†	0.00	0.08	1.00										
(17) Percent Nonwhite	-0.16	0.06	0.58*	-0.27*	1.00									
(18) Percent with High School Degrees	-0.45*	0.16	-0.10	-0.64*	0.05	1.00								
(19) Percent with Some College Education or Associate Degrees	0.32*	-0.04	-0.08	0.25†	-0.24†	-0.28*	1.00							
(20) Percent with Bachelor or Graduate Degrees	0.48*	-0.13	-0.04	0.73*	-0.16	-0.91*	0.28*	1.00						
(21) Percent Female-Headed Householders	-0.17‡	0.03	0.59*	-0.26†	0.88*	0.10	-0.31*	-0.21†	1.00					
(22) Percent Householders Over Age 65	-0.06	0.20†	-0.18‡	-0.27*	-0.15	0.39*	-0.33*	-0.36*	-0.12	1.00				
(23) Position on Rural/Urban Continuum	-0.09	0.14	0.06	-0.16	0.03	0.26†	-0.29*	-0.31*	0.02	0.66*	1.00			
(24) Classification as Black Belt County	-0.14	0.03	0.34*	-0.10	0.77*	-0.08	0.02	0.05	0.64*	-0.27*	-0.13	1.00		
(25) Percent Poor	-0.25†	0.15	0.59*	-0.17‡	0.68*	0.22†	-0.47*	-0.35*	0.66*	0.27*	0.45*	0.38*	1.00	
(26) Percent Working Poor	-0.29*	0.17‡	0.57*	-0.22†	0.66*	0.27*	-0.47*	-0.41*	0.65*	0.29*	0.46*	0.35*	0.99*	1.00
Minimum	0.00	0.00	1.78	8.71	1.54	15.87	18.28	8.15	9.39	11.83	1.00	0.00	7.06	10.32
Maximum	1.00	1.00	6.49	26.10	67.30	40.10	37.52	51.49	29.56	34.26	9.00	1.00	23.90	30.37
Mean	0.11	0.24	3.41	12.19	26.70	31.82	25.99	16.17	17.49	23.66	4.64	0.64	14.34	19.26
Median	0.00	0.00	3.09	11.68	25.82	32.27	25.68	13.27	16.41	23.36	4.00	1.00	13.41	17.87
Standard Deviation	-	-	1.00	2.56	17.66	4.24	3.49	7.98	5.15	5.00	2.62	-	4.30	5.31
Range	1.00	1.00	4.71	17.39	65.76	24.23	19.24	43.34	20.17	22.43	8.00	1.00	16.84	20.05

Table 3: Replication Models with Dependent Variable Percent Poor

	Model 1R	Model 2R	Model 3R	Model 4R
Average Monthly Employment	<-0.01* (<0.01)	<-0.01‡ (<0.01)	<-0.01 (<0.01)	<-0.01 (<0.01)
Annual Payroll Relative to the Employed Population		<-0.01 (<0.01)	<-0.01 (<0.01)	<-0.01 (<0.01)
Percent Agricultural Employment			0.92* (0.14)	0.54* (0.11)
Percent Manufacturing Employment			0.21* (0.06)	0.12* (0.04)
Percent Services Employment			0.38* (0.09)	0.22* (0.08)
Percent Unemployed				1.24* (0.30)
Percent Nonwhite				0.09* (0.02)
Percent with High School Degrees				0.08 (0.10)
Intercept	15.38* (0.49)	19.71* (2.72)	-3.36 (4.76)	-4.12 (6.13)
Model F	14.79*	8.82*	14.21*	34.21*
Adjusted R ²	0.12	0.14	0.40	0.73

Table entries are unstandardized OLS regression coefficients and, in parentheses, standard errors.

** Statistically significant at alpha level = 0.01*

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

N = 100

Table 4: Replication Models with Dependent Variable Percent Working Poor

	Model 1RW	Model 2RW	Model 3RW	Model 4RW
Average Monthly Employment	<-0.01* (<0.01)	<-0.01† (<0.01)	<-0.01 (<0.01)	<-0.01‡ (<0.01)
Annual Payroll Relative to the Employed Population		<-0.01 (<0.01)	<-0.01 (<0.01)	<-0.01 (<0.01)
Percent Agricultural Employment			1.12* (0.17)	0.67* (0.14)
Percent Manufacturing Employment			0.25* (0.08)	0.14† (0.06)
Percent Services Employment			0.42* (0.11)	0.25† (0.10)
Percent Unemployed				1.51* (0.38)
Percent Nonwhite				0.11* (0.02)
Percent with High School Degrees				0.13 (0.13)
Intercept	20.66* (0.59)	25.90* (3.31)	-0.88 (5.84)	-3.33 (7.75)
Model F	17.74*	10.30*	14.55*	32.07*
Adjusted R ²	0.14	0.16	0.41	0.72

Table entries are unstandardized OLS regression coefficients and, in parentheses, standard errors.

** Statistically significant at alpha level = 0.01*

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

N = 100

Table 5: Extension Models with Dependent Variable Percent Poor

	Model 1E	Model 2E	Model 3E	Model 4E	Model 5E	Model 6E	Model 7E
Percent Households with Public Assistance Income	1.36* (0.20)	1.29* (0.20)	0.87* (0.21)	0.73* (0.22)	0.65* (0.22)	0.29 (0.26)	0.34 (0.26)
Adjacent to High Percent Poor County	1.17† (0.48)	1.03† (0.47)	0.58 (0.46)	0.33 (0.48)	0.59 (0.45)	0.67 (0.43)	0.46 (0.43)
High Percent Poor County	5.73* (0.69)	5.55* (0.67)	4.60* (0.68)	4.49* (0.68)	3.52* (0.68)	3.52* (0.65)	3.17* (0.66)
Average Monthly Employment		<-0.01* (<0.01)	<-0.01* (<0.01)	<-0.01† (<0.01)	<-0.01* (<0.01)	<-0.01 (<0.01)	<-0.01 (<0.01)
Median Hourly Wage			0.14 0.20	0.18 (0.20)	0.10 (0.21)	0.20 (0.21)	0.17 (0.20)
Percent with Health Insurance			-0.43* (0.10)	-0.47* (0.11)	-0.48* (0.10)	-0.52* (0.10)	-0.49* (0.10)
Farming-Dependent				0.57 (0.82)	0.54 (0.75)	0.52 (0.73)	0.23 (0.72)
Manufacturing-Dependent				-0.90‡ (0.48)	-0.79‡ (0.45)	-0.60 (0.45)	-0.41 (0.44)
Federal/State Government-Dependent				-0.10 (0.63)	-0.16 (0.62)	-0.07 (0.60)	-0.47 (0.61)
Services-Dependent				-0.74 (0.71)	-0.40 (0.71)	-0.64 (0.69)	-0.47 (0.70)
Percent Unemployed					0.42‡ (0.22)	0.45† (0.23)	0.43‡ (0.23)
Percent Underemployed					0.09 (0.12)	0.19 (0.12)	0.25† (0.12)
Percent with Some College Education or Associate Degrees					-0.23* (0.06)	-0.18* (0.06)	-0.17* (0.06)
Percent with Bachelor or Graduate Degrees					0.02 (0.05)	-0.01 (0.05)	-0.02 (0.05)
Percent Female-Headed Householders						0.10† (0.06)	0.09 (0.06)
Percent Householders Over Age 65						0.14* (0.05)	0.08 (0.05)

Table 5 (Continued)

	Model 1E	Model 2E	Model 3E	Model 4E	Model 5E	Model 6E	Model 7E
Position on Rural/Urban Continuum							0.20† (0.09)
Classification as Black Belt County							0.52 (0.48)
Intercept	8.10* (0.57)	8.79* (0.61)	45.24* (9.11)	49.54* (9.37)	54.86* (8.91)	51.04* (8.75)	48.26* (8.65)
Model F	126.36*	102.66*	81.73*	50.80*	45.35*	43.41*	40.65*
Adjusted R ²	0.79	0.80	0.83	0.83	0.86	0.87	0.88

Table entries are unstandardized OLS regression coefficients and, in parentheses, standard errors.

** Statistically significant at alpha level = 0.01*

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

N = 100

Note: The reference category for high percent poor county and adjacent to high percent poor county is not high percent poor county and not adjacent to high percent poor county. The reference category for farming-dependent is not farming-dependent, manufacturing-dependent is not manufacturing-dependent, federal/state government-dependent is not federal/state government-dependent, services-dependent is not services-dependent, and classification as a black belt county is non-classification as a black belt county.

Table 6: Extension Models with Dependent Variable Percent Working Poor

	Model 1EW	Model 2EW	Model 3EW	Model 4EW	Model 5EW	Model 6EW	Model 7EW
Percent Households with Public Assistance Income	1.57* (0.31)	1.47* (0.30)	1.07* (0.29)	0.90* (0.30)	0.65† (0.29)	0.21 (0.33)	0.28 (0.32)
Adjacent to High Percent Working Poor County	1.72† (0.68)	1.31‡ (0.66)	0.17 (0.66)	-0.29 (0.70)	0.97 (0.66)	1.27‡ (0.64)	1.11‡ (0.66)
High Percent Working Poor County	6.78* (1.03)	6.44* (0.99)	3.97* (1.07)	3.80* (1.08)	3.47* (0.99)	3.96* (0.95)	3.68* (0.96)
Average Monthly Employment		<-0.01* (<0.01)	<-0.01* (<0.01)	<-0.01* (<0.01)	<-0.01† (<0.01)	<-0.01 (<0.01)	<-0.01 (<0.01)
Median Hourly Wage			0.02 (0.26)	0.10 (0.26)	0.15 (0.27)	0.31 (0.25)	0.30 (0.25)
Percent with Health Insurance			-0.64* (0.15)	-0.72* (0.15)	-0.67* (0.14)	-0.72* (0.13)	-0.70* (0.13)
Farming-Dependent				0.28 (1.06)	0.12 (0.95)	0.07 (0.89)	-0.20 (0.89)
Manufacturing-Dependent				-1.29† (0.63)	-1.01‡ (0.58)	-0.62 (0.56)	-0.47 (0.56)
Federal/State Government-Dependent				-0.12 (0.83)	-0.30 (0.80)	-0.04 (0.75)	-0.51 (0.77)
Services-Dependent				-0.88 (0.92)	-0.28 (0.90)	-0.67 (0.85)	-0.78 (0.86)
Percent Unemployed					0.62† (0.27)	0.75* (0.27)	0.66† (0.27)
Percent Underemployed					0.21 (0.15)	0.35† (0.15)	0.36† (0.15)
Percent with Some College Education or Associate Degrees					-0.35* (0.07)	-0.28* (0.07)	-0.24* (0.07)
Percent with Bachelor or Graduate Degrees					-0.03 (0.06)	-0.08 (0.06)	-0.07 (0.06)
Percent Female-Headed Householders						0.08 (0.07)	0.11 (0.08)

Table 6 (Continued)

	Model 1EW	Model 2EW	Model 3EW	Model 4EW	Model 5EW	Model 6EW	Model 7EW
Percent Householders Over Age 65						0.22* (0.06)	0.14† (0.07)
Position on Rural/Urban Continuum							0.25† (0.11)
Classification as Black Belt County							-0.12 (0.62)
Intercept	12.02* (0.83)	13.10* (0.86)	69.79* (12.72)	76.71* (13.26)	77.32* (12.03)	70.75* (11.49)	68.45* (11.32)
Model F	102.89*	87.17*	72.43*	44.95*	43.28*	43.65*	40.68*
Adjusted R ²	0.76	0.78	0.81	0.82	0.86	0.87	0.88

Table entries are unstandardized OLS regression coefficients and, in parentheses, standard errors.

* Statistically significant at alpha level = 0.01

† Statistically significant at alpha level = 0.05

‡ Statistically significant at alpha level = 0.10

N = 100

Note: The reference category for high percent working poor county and adjacent to high percent working poor county is not high percent working poor county and not adjacent to high percent working poor county. The reference category for farming-dependent is not farming-dependent, manufacturing-dependent is not manufacturing-dependent, federal/state government-dependent is not federal/state government-dependent, services-dependent is not services-dependent, and classification as a black belt county is non-classification as a black belt county.

Table 7: Incremental F Statistics

Model	Obtained Value	Critical Value	Improvement
2R	1.60	3.92	No
3R	13.78	2.68	Yes
4R	36.68	2.68	Yes
2RW	1.57	3.92	No
3RW	13.09	2.68	Yes
4RW	32.90	2.68	Yes
2E	6.11	3.92	Yes
3E	7.15	3.07	Yes
4E	0.52	2.45	No
5E	4.37	2.45	Yes
6E	3.33	3.07	Yes
7E	1.83	3.07	No
2EW	9.16	3.92	Yes
3EW	8.77	3.07	Yes
4EW	0.47	2.45	No
5EW	6.01	2.45	Yes
6EW	5.44	3.07	Yes
7EW	1.66	3.07	No

Note: The first panel presents the replication models with dependent variable percent poor. The second panel presents the replication models with dependent variable percent working poor. The third panel presents the extension models with dependent variable percent poor. The fourth panel presents the extension models with dependent variable percent working poor.

Table 8: Empirical Support for Hypotheses

Hypothesis	R	RW	E	EW
H1: Counties high on the rural/urban continuum and classified as black belt counties have high percent poor and working poor.			P	P
H2: Counties with low average monthly employment have high percent poor and working poor.	P	S	P	P
H3: Counties with low annual payroll relative to the employed population have high percent poor and working poor.	N	N		
H4: Counties with low median hourly wages, low percent with employer-provided health insurance, and low percent with employer-sponsored pension plans or retirement savings plans have high percent poor and working poor.			P	P
H5: Counties with high percent agricultural employment, low percent manufacturing employment, and high percent services employment have high percent poor and working poor.	P	P		
H6: Counties that are farming-dependent, mining-dependent, manufacturing-nondependent, federal/state government-dependent, services-nondependent, and non-specialized have high percent poor and working poor.			P	P
H7: Counties with high percent unemployed, high percent nonwhite, and low percent with high school degrees have high percent poor and working poor.	P	P		
H8: Counties with high percent unemployed, high percent underemployed, high percent nonwhite, low percent with high school degrees, low percent with some college education or associate degrees, and low percent with bachelor or graduate degrees have high percent poor and working poor.			P	P
H9: When modeled with the structure of the labor market and relative power of labor, the quantity of job opportunities and quality of job opportunities are not related to percent poor and working poor.	S	N	N	N
H10: Counties with high percent female-headed householders and high percent householders over age 65 have high percent poor and working poor.			P	P

R = Replication models with dependent variable percent poor

RW = Replication models with dependent variable percent working poor

E = Extension models with dependent variable percent poor

EW = Extension models with dependent variable percent working poor

S = Supported hypothesis

P = Partially supported hypothesis

N = Not supported hypothesis

Figures

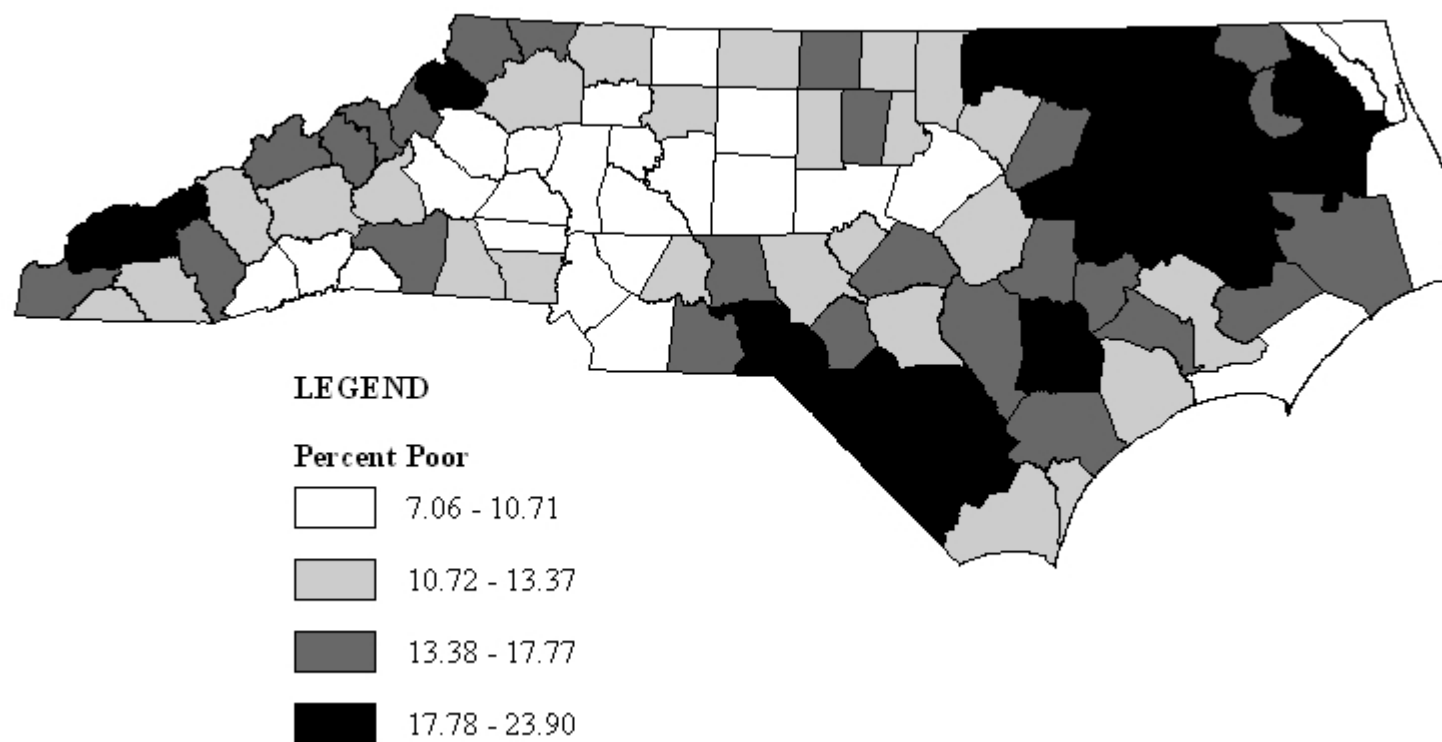


Figure 1: Percent Poor in North Carolina Counties in 1999

Source: United States Census Bureau (2000a)

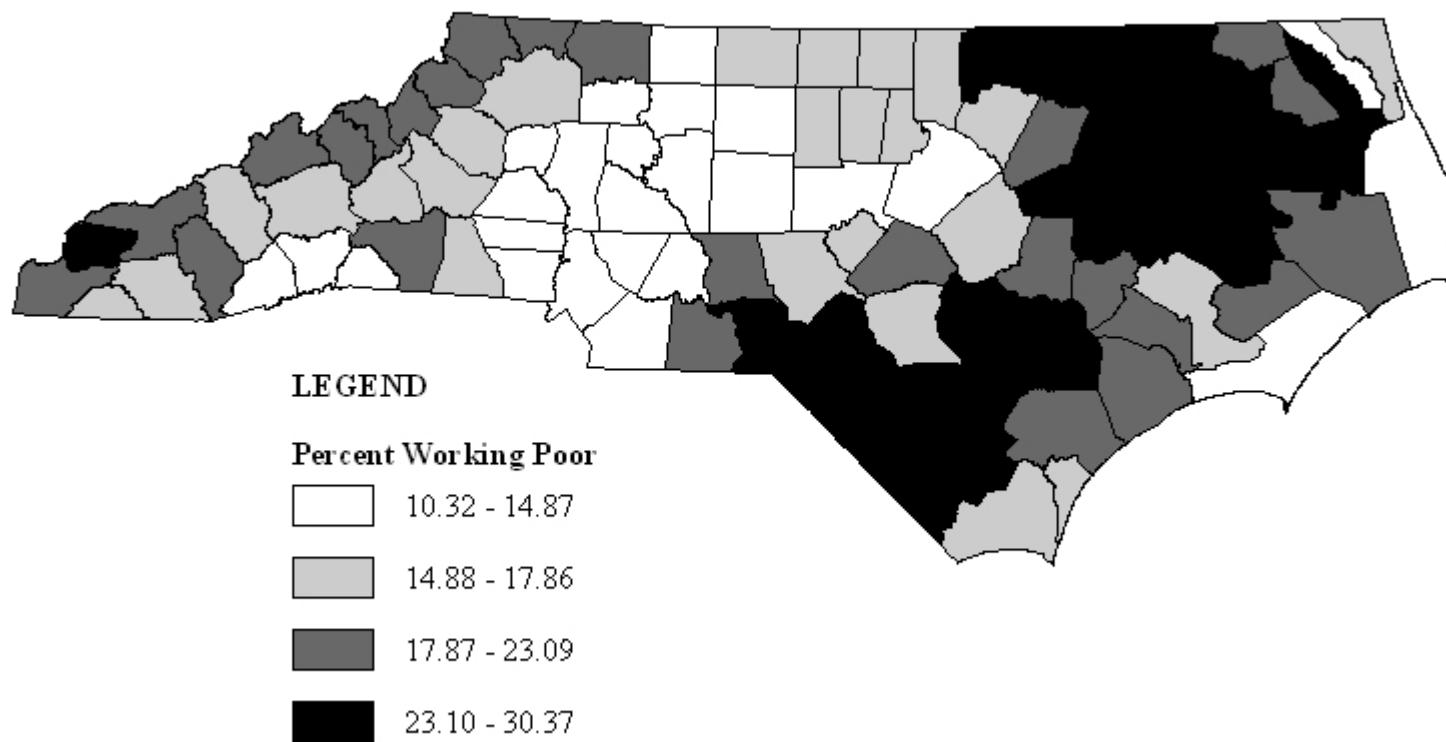


Figure 2: Percent Working Poor in North Carolina Counties in 1999

Source: United States Census Bureau (2000a)

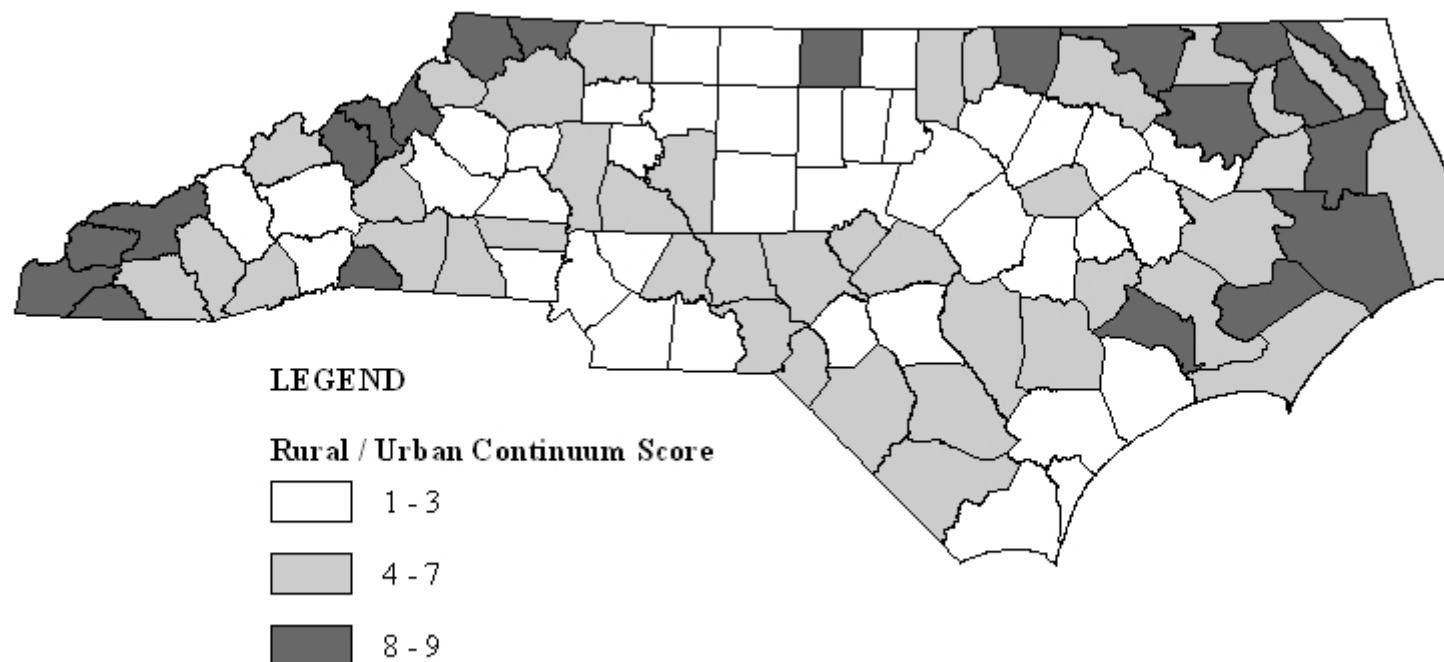


Figure 3: Position on the Rural/Urban Continuum for North Carolina Counties in 2003

Source: United States Department of Agriculture, Economic Research Service (2003)

Note: Scores of one through three indicate populations in metropolitan counties. Scores of four through seven indicate urban populations in nonmetropolitan counties. Scores of eight and nine indicate rural populations or urban populations below 2,500 in nonmetropolitan counties.

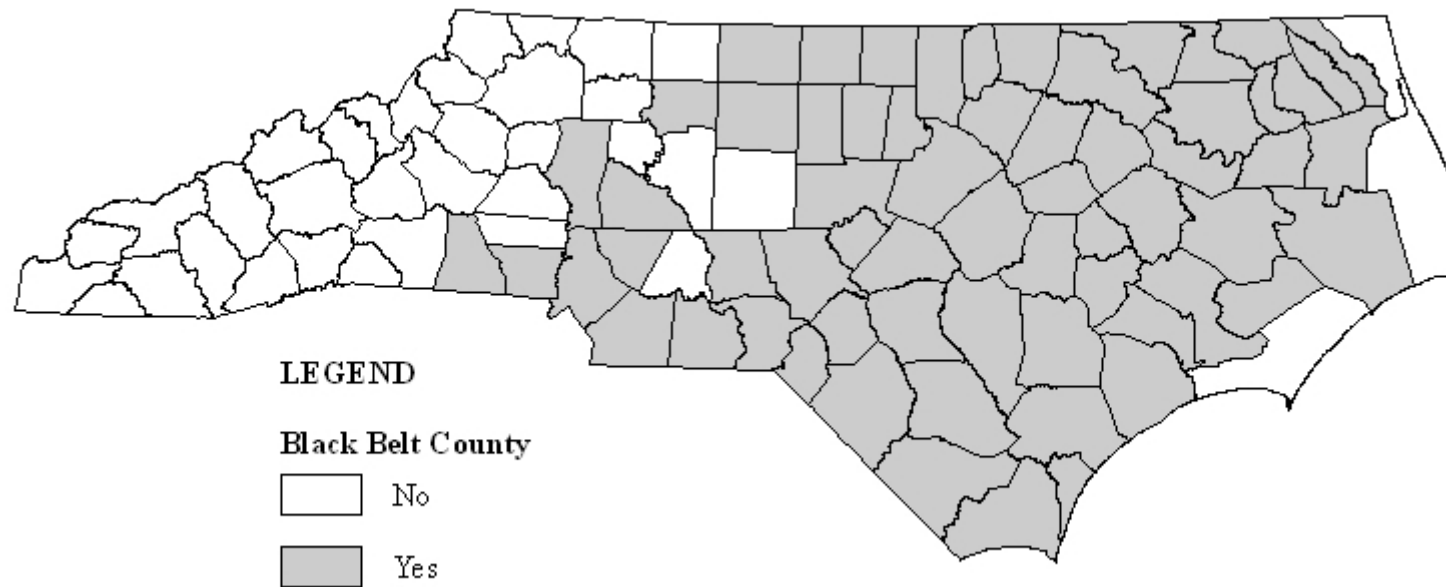


Figure 4: Classification as a Black Belt County for North Carolina Counties in 2000

Source: Wimberley (2000)

Calculations of Incremental F Statistics

Formula for Calculations of Incremental F Statistics

$$F = [(R_u^2 - R_c^2) * (N - k - 1)] / [(1 - R_u^2) * J]$$

Where:

- R_u^2 is the adjusted R^2 for the unconstrained model
- R_c^2 is the adjusted R^2 for the constrained model
- N is the number of cases
- k is the number of independent variables in the unconstrained model
- J is the number of independent variables in the unconstrained model minus the number of independent variables in the constrained model

Replication Models with Dependent Variable Percent Poor

Model 2R:

$$F = [(0.1365 - 0.1223) * (100 - 2 - 1)] / [(1 - 0.1365) * 1]$$

Obtained value for F = 1.60

Critical value for F with 1 and 97 degrees of freedom ≈ 3.92

Adding the quality of job opportunities variable does not improve the predictive power of the model.

Model 3R:

$$F = [(0.4002 - 0.1365) * (100 - 5 - 1)] / [(1 - 0.4002) * 3]$$

Obtained value for F = 13.78

Critical value for F with 3 and 94 degrees of freedom ≈ 2.68

Adding the structure of the labor market variables improves the predictive power of the model.

Model 4R:

$$F = [(0.7285 - 0.4002) * (100 - 8 - 1)] / [(1 - 0.7285) * 3]$$

Obtained value for F = 36.68

Critical value for F with 3 and 91 degrees of freedom ≈ 2.68

Adding the relative power of labor variables improves the predictive power of the model.

Calculations for Incremental F Statistics (Continued)

Replication Models with Dependent Variable Percent Working Poor

Model 2RW:

$$F = [(0.1582 - 0.1446) * (100 - 2 - 1)] / [(1 - 0.1582) * 1]$$

Obtained value for F = 1.57

Critical value for F with 1 and 97 degrees of freedom ≈ 3.92

Adding the quality of job opportunities variable does not improve the predictive power of the model.

Model 3RW:

$$F = [(0.4063 - 0.1582) * (100 - 5 - 1)] / [(1 - 0.4063) * 3]$$

Obtained value for F = 13.09

Critical value for F with 3 and 94 degrees of freedom ≈ 2.68

Adding the structure of the labor market variables improves the predictive power of the model.

Model 4RW:

$$F = [(0.7152 - 0.4063) * (100 - 8 - 1)] / [(1 - 0.7152) * 3]$$

Obtained value for F = 32.90

Critical value for F with 3 and 91 degrees of freedom ≈ 2.68

Adding the relative power of labor variables improves the predictive power of the model.

Extension Models with Dependent Variable Percent Poor

Model 2E:

$$F = [(0.8042 - 0.7916) * (100 - 4 - 1)] / [(1 - 0.8042) * 1]$$

Obtained value for F = 6.11

Critical value for F with 1 and 95 degrees of freedom ≈ 3.92

Adding the quantity of job opportunities variable improves the predictive power of the model.

Model 3E:

$$F = [(0.8303 - 0.8042) * (100 - 6 - 1)] / [(1 - 0.8303) * 2]$$

Obtained value for F = 7.15

Critical value for F with 2 and 93 degrees of freedom ≈ 3.07

Adding the quality of job opportunities variables improves the predictive power of the model.

Calculations for Incremental F Statistics (Continued)

Model 4E:

$$F = [(0.8342 - 0.8303) * (100 - 10 - 1)] / [(1 - 0.8342) * 4]$$

Obtained value for F = 0.52

Critical value for F with 4 and 89 degrees of freedom ≈ 2.45

Adding the structure of the labor market variables does not improve the predictive power of the model.

Model 5E:

$$F = [(0.8625 - 0.8342) * (100 - 14 - 1)] / [(1 - 0.8625) * 4]$$

Obtained value for F = 4.37

Critical value for F with 4 and 85 degrees of freedom ≈ 2.45

Adding the relative power of labor variables improves the predictive power of the model.

Model 6E:

$$F = [(0.8727 - 0.8625) * (100 - 16 - 1)] / [(1 - 0.8727) * 2]$$

Obtained value for F = 3.33

Critical value for F with 2 and 83 degrees of freedom ≈ 3.07

Adding household composition variables improves the predictive power of the model.

Model 7E:

$$F = [(0.8782 - 0.8727) * (100 - 18 - 1)] / [(1 - 0.8782) * 2]$$

Obtained value for F = 1.83

Critical value for F with 2 and 81 degrees of freedom ≈ 3.07

Adding spatial location variables does not improve the predictive power of the model.

Extension Models with Dependent Variable Percent Working Poor

Model 2EW:

$$F = [(0.7769 - 0.7554) * (100 - 4 - 1)] / [(1 - 0.7769) * 1]$$

Obtained value for F = 9.16

Critical value for F with 1 and 95 degrees of freedom ≈ 3.92

Adding the quantity of job opportunities variable improves the predictive power of the model.

Model 3EW:

$$F = [(0.8123 - 0.7769) * (100 - 6 - 1)] / [(1 - 0.8123) * 2]$$

Obtained value for F = 8.77

Critical value for F with 2 and 93 degrees of freedom ≈ 3.07

Adding the quality of job opportunities variables improves the predictive power of the model.

Calculations for Incremental F Statistics (Continued)

Model 4EW:

$$F = [(0.8162 - 0.8123) * (100 - 10 - 1)] / [(1 - 0.8162) * 4]$$

Obtained value for F = 0.47

Critical value for F with 4 and 89 degrees of freedom ≈ 2.45

Adding the structure of the labor market variables does not improve the predictive power of the model.

Model 5EW:

$$F = [(0.8567 - 0.8162) * (100 - 14 - 1)] / [(1 - 0.8567) * 4]$$

Obtained value for F = 6.01

Critical value for F with 4 and 85 degrees of freedom ≈ 2.45

Adding the relative power of labor variables improves the predictive power of the model.

Model 6EW:

$$F = [(0.8733 - 0.8567) * (100 - 16 - 1)] / [(1 - 0.8733) * 2]$$

Obtained value for F = 5.44

Critical value for F with 2 and 83 degrees of freedom ≈ 3.07

Adding household composition variables improves the predictive power of the model.

Model 7EW:

$$F = [(0.8783 - 0.8733) * (100 - 18 - 1)] / [(1 - 0.8783) * 2]$$

Obtained value for F = 1.66

Critical value for F with 2 and 81 degrees of freedom ≈ 3.07

Adding spatial location variables does not improve the predictive power of the model.