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Poverty and Place: A Critical Review of Rural Poverty Literature

Bruce Weber

Leif Jensen

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RUPRI Rural Poverty Research Center
214 Middlebush Hall
University of Missouri
Columbia MO 65211-6200
PH 573 882-0316

RUPRI Rural Poverty Research Center
Oregon State University
213 Ballard Extension Hall
Corvallis OR 97331-3601
PH 541 737-1442



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Bruce Weber

*Department of Agricultural and Resource Economics
Oregon State University
and RUPRI Rural Poverty Research Center*

Leif Jensen

*Department of Agricultural Economics and Rural Sociology
and the Population Research Institute
The Pennsylvania State University*

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Contact information:

Bruce Weber
Department of Agricultural and Resource Economics
Oregon State University
Ballard Hall 213
Corvallis OR 97331-3601
Telephone: (541)737-1432
Fax: (541)737-2563
bruce.weber@oregonstate.edu

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ABSTRACT

Poverty rates are highest in the most urban and most rural areas of the United States, and are higher in non-metropolitan (nonmetro) than metropolitan (metro) areas, yet rural poverty remains relatively obscured from mainstream political and popular attention. This fact has motivated considerable research by rural social scientists on the relationship between poverty and place generally, and rural-urban differences in poverty, in particular. We provide a critical review of the literature on rural poverty, paying particular attention to methodological and statistical challenges facing quantitative analyses. This body of research confirms the higher prevalence of poverty in nonmetro areas, and finds that while both compositional (individual) and contextual (structural) factors are at play, a complete explanation remains elusive. We note endogenous membership, omitted variable, and other challenges facing researchers, and conclude with suggestions for further research.

INTRODUCTION

Three striking regularities characterize the way that poverty is distributed across the American landscape. First, *high poverty counties are geographically concentrated*: counties with poverty rates of 20 percent or more are concentrated in the Black Belt and Mississippi Delta in the south, in Appalachia, the lower Rio Grande Valley and “Indian Country” (counties containing Indian Reservations) in the southwest and Great Plains (see Map 1). Second, *county-level poverty rates vary across the rural-urban continuum*¹. As can be seen from Figure 2, poverty rates² are lowest in the suburbs (the fringe counties of large metropolitan areas) and

highest in remote rural areas (nonmetropolitan counties not adjacent to metropolitan areas). Third, *high poverty and persistent poverty are disproportionately found in rural areas*. About one in six U.S. counties (15.7 percent) had *high poverty* (poverty rates of 20 percent or higher) in 1999. However, only one in twenty (4.4 percent) metro counties had such high rates, whereas one in five (21.8 percent) remote rural (nonadjacent nonmetro) counties did. Furthermore, almost one in eight counties had *persistent poverty* (poverty rates of 20 percent or more in each decennial census between 1960 and 2000). These persistent-poverty counties are overwhelmingly rural, with 95 percent being nonmetro. Further, persistent poverty increases as population centers become smaller and as places become more remote from urban centers. While less than 7 percent of nonmetro counties adjacent to large metropolitan areas are persistent poverty counties, almost 20 percent of completely rural counties not adjacent to metropolitan areas are persistent poverty counties (Figure 3).

That poverty is not distributed randomly across space is well recognized, and has been the focus of considerable academic scrutiny. The social science literature has three basic ways of thinking about how places affect individual or household poverty. One way of thinking, underlying much of the urban neighborhood poverty literature, is that places (neighborhoods) are sources of information and networks and norms that determine one's aspirations and opportunities to work and prosper. Recognizing that this class of models includes a variety of theoretical frameworks, we label these as "social interaction models."

A second framework for thinking about poverty and place is the "structuralist" tradition that underlies almost all of the rural sociological and rural economic research on poverty. Structuralists view "place" as the locus of a set of opportunities (e.g. jobs in various occupational categories that are offered by the existing set of industries in the locality) and barriers (e.g., local

unemployment conditions that affect the likelihood of getting one of the jobs). Data on rural places usually confirm that rural areas offer fewer opportunities and higher barriers to economic success. This literature is distinct from the “individualist” traditions that explain poverty in terms of individual and household decisions about education, marriage, work and childbearing and firm decisions about production and hiring. Individualist and structuralist explanations can, of course, be complementary, as argued by Cotter (2003) and others.

A third way of thinking about place and poverty recognizes that people and firms make decisions in a spatial context. Neighborhoods in which people reside are situated spatially with respect to jobs and job information access. Some neighborhoods provide easy access to jobs and job information either because of high job density or because of good transportation links, whereas others do not. The “spatial interaction models” explicitly account for residential location and proximity to opportunity or risk factors in explaining an individual’s likelihood of being in poverty, and consider the opportunities and barriers in adjoining places as well as in one’s own neighborhood. Two types of spatial interactions are examined in the quantitative studies. “Spatial mismatch” models examine how variations across neighborhoods in job access affect work outcomes of residents. This literature has focused mostly on urban areas – Blumenberg and Shiki (2003) is an exception— and only on work, not poverty per se. Ihlanfeldt and Sjoquist (1998) provide a good review of this literature. “Spatial spillover” models examine the probability of being in poverty as a function of both the characteristics of one’s own neighborhood and the characteristics of surrounding neighborhoods. Rupasingha and Goetz (2003) have studied these spillover effects of regional poverty on own county poverty rates.

POVERTY AND PLACE: A REVIEW OF THE LITERATURE

In this paper we provide a critical review of the literature on rural poverty. We focus principally on quantitative studies in this review, recognizing full well that when it comes to capturing the richness of context and the constraints of place, ethnographic studies are superior. Qualitative studies the likes of which we briefly mention here, are critical for generating new insights, theories and hypotheses that can then be examined in subsequent research. While not the first of its kind, a seminal work in this genre is the late anthropologist Janet Fitchen's (1981) *Poverty in Rural America: A Case Study*. Based on hours of in-depth interviews with families in a struggling agricultural hamlet in rural upstate New York, Fitchen portrays the day-to-day struggles of living on the edge. Fitchen begins with a tight focus on how families make and spend money, but then incorporates broader levels of context. Ultimately this includes consideration of the relationships of poor families with the institutions of the surrounding county, concluding that their relative isolation from these institutions (schools, county offices, the labor market) – which is maintained both by themselves and these institutions – is complicit in their desperate economic circumstances.

More recently, Cynthia Duncan (1999) in *World's Apart: Why Poverty Persists in Rural America*, suggests that the depth and persistence of rural poverty are rooted in a rigid two-class system of haves and have-nots. Based on years of fieldwork in Appalachia and the Mississippi Delta, Duncan paints vivid and intricate portrait of power and privilege. The “haves” wield their power over jobs and opportunities to maintain their privilege, while at the same time subjugating the “have-nots” who are desperately poor and socially isolated. In both settings those historically in power have manipulated all facets of the local social structure to maintain their position. Moreover she finds that the social isolation of those at the bottom has deprived them of

the "cultural tool kit" they need to participate. For comparison, Duncan also studied a paper-mill town in Maine and found no evidence of the same rigid class hierarchy. Rather, because of its unique economic and social history, the town was characterized by inclusiveness, trust, widespread community participation, and high social capital. Importantly, this work and that of Fitchen underscores that it is much more than just economic variables that drive place effects. Local power relationships and levels of social isolation also are critical.

Before we turn to the quantitative studies that are the focus of this review, we caution that the quantitative-qualitative dichotomy should not be taken too far. Hybrid studies that incorporate a mix of methods also hold a key place in the literature. One such study is Nelson and Smith's (1999) *Working Hard and Making Do: Surviving in Small Town America*. For them, the important feature that structures rural economic well-being is that between good jobs and bad jobs – good jobs being more stable, well-paying, more benefits, greater flexibility, and so forth; bad jobs lack these qualities – and how this dichotomy affects livelihood strategies. A key finding is that good job households, by virtue of the greater security, stability, social connections, and other advantages that come with a good job, are better positioned than bad job households to engage in other economic pursuits (e.g., moonlighting, secondary earners, entrepreneurship) that benefit the household. In this sense good job households are doubly advantaged and bad job households doubly disadvantaged. Due to data limitations they cannot address the exogenous factors that sort people into good jobs and bad jobs in the first place.

Qualitative and mixed-method studies, of which these are only a sampling, are important for providing rich insight into the lives of the rural poor and the importance of place. Because such studies are extremely time-consuming and expensive, they are necessarily limited to a relatively small number of places, and low sample sizes constrain what can be done in terms of

multivariate analysis. We now turn to a review of quantitative studies of the interaction of place and rural poverty, and note that many of them also are limited in what they can say.

Recent Quantitative Studies³

What can quantitative research tell us about how rural residence affects poverty and how rural residence moderates the effects of individual characteristics, community characteristics and policy? Following Brooks-Gunn et al. (1997), we distinguish “community” and “contextual” studies. *Community studies* are those that explain differences in rates of poverty across communities as a function of community demographic and economic structure variables, including whether the community is a rural or urban community. *Contextual studies* are those that explain differences in individual poverty outcomes as a function of individual demographic characteristics and community social and economic characteristics, including whether the community is a rural or urban community. (“Communities” in these rural quantitative studies are usually counties or Labor Market Areas.) Contextual studies are most relevant for understanding place effects as they directly examine the impact of community-level factors on individual outcomes. Community studies are useful complements, however, to the contextual studies. As Gephart notes, “[t]o the extent that the social structural and compositional characteristics of neighborhoods and communities predict differences among communities in rates and levels of behavior, our confidence in interpreting their contextual effects on individual behavior increases” (Brooks-Gunn et al., 1997, Vol. I, p. 12)

Each of these types of studies has methodological and conceptual challenges. Community studies are subject to ecological fallacy problems, to drawing unwarranted conclusions about the effect of community characteristics on individual outcomes. Contextual studies avoid ecological bias because the individual outcomes (not group outcomes) are

observed. However, these studies have other formidable data and methodological challenges. Assuming that the available data accurately represent the theoretical constructs and that the boundaries of the geographic units for which the data are collected represent accurately the relevant community of influence, there are methodological issues. Foremost among these are possible misspecification due to endogenous membership and omitted contextual variables. These issues will be discussed in a later section of the paper.

The remainder of this section of the paper is organized as follows. Although much of the rural poverty literature implicitly assumes that people are not mobile, in fact people can and do move between rural and urban places. Thus we begin with a discussion of how migration affects the spatial distribution of poor people and households. We then review the several “community studies” seeking to understand rural and urban differences in poverty rates. This is followed by a review and discussion of recent contextual studies of how individual poverty outcomes and transitions are affected by living in a rural or urban place. A major conclusion from this review is that, even when a large number of individual-level and community-level are controlled, rural households are much more likely to be poor than urban households. There is a large unmeasured difference between rural and urban places that increases the odds of being poor in rural places.

Studies of rural poverty and migration

As noted, studies of residential differences in poverty risks often attribute causal significance to coefficients indicating a higher probability of poverty among rural than urban residents. Invariably, however, the freedom people have to move is not recognized. It could be that certain kinds of people may be attracted to rural areas, or otherwise reluctant to leave them. If the defining characteristics of these kinds of people are unmeasured, and if they also are

related to poverty, then some of the presumed “impact” of rural residence may be spurious. Or positively selected individuals may be in a better position to out-migrate from rural areas, leaving behind a population more vulnerable to poverty. At any rate it is important to consider the interplay between poverty, migration and rural residence.

In a 1994 study, Janet Fitchen conducted in-depth interviews with low-income families in upstate New York. Detailed residential histories uncovered a great deal of residential mobility, that is, a high frequency of short-distance moves, in reaction to problems like marital discord, inability to pay rent and other factors that put this group at risk of homelessness (see also Fitchen 1992). She found that people tended to orbit around the same basic community. These moves seemed to be negatively related to age, number of children, home ownership, income, and the strength of social support networks (Fitchen 1994).

Elsewhere Fitchen (1995) studied more deeply the role of migration in the relationship between poor people and poor places. She describes an eastern New York town experiencing increasing welfare caseloads and out-migration of the well-to-do. Vacated buildings and storefronts in the downtown were bought up by out-of-town investors, subdivided into multi-dwelling apartment buildings, and let to low-income residents attracted by cheap rents and access to services. Suggested in her data also was a progressive movement of people to less and less urban places. In sum, she finds a patterned process of the in-migration of the poor in rural areas: structural calamity, economic decline, out-migration of the middle class, a drop in the cost of housing, a rise in supply of low income housing, pioneers moving in from more urban areas (where housing costs are higher) and, once social linkages are established, additional in-migration of low-income populations is promoted.

Whether migration is a form of human capital, or at least allows some to gain a greater return on what human capital they have, theoretically the poor should tend to move to places with better economic opportunity. Migration then might offer a route out of poverty at the individual level, and might attenuate spatial inequality in the aggregate. Fitchen's work suggests that the poor may move more in response to cheaper cost of living than to better job prospects. Poor people may be attracted to poor places. That low-income people tend to circulate has been suggested elsewhere (Nord, Luloff and Jensen 1995).

The suggestion that migration may represent a route out of poverty is a key underlying assumption in the more specific question of whether moves from rural to urban areas carry an economic benefit in this regard. Wenk and Hardesty (1993) ask whether rural to urban migration of youth reduces the time spent in poverty. If urban areas offer more lucrative job opportunities, then moving to those opportunities should reduce the probability of being poor and the time spent in poverty. Further, they hypothesize that it is those with more education and other positively selected attributes who have the most to gain, leaving those with less promise behind. They analyze data from the National Longitudinal Survey of Youth that allow them to disentangle the effect of migration itself, from those characteristics that might induce someone to migrate. Estimates from proportional hazards models suggest that moving from a rural to an urban area indeed reduces time spent in poverty among women. The study does *not* examine urban to rural moves, and thus ignores the question of whether it is migration per se or a necessarily *urbanward* migration that reduces poverty risks.

Community (County-Level) Studies

As researchers seek to explain the higher prevalence of poverty in rural areas, it is only natural that ecological approaches would be pursued. The units of analysis are politically

bounded geographic areas – frequently counties – the characteristics of which are related to their poverty rates. While measures of economic organization (e.g., industrial structure) are frequently the focus, additional predictors often mimic individual-level analyses by including human capital characteristics (e.g., percent college graduates in a population) or demographic variables (e.g., percent elderly).

Albrecht et al. (2000) use county-level 1990 U.S. Census data for nonmetropolitan counties to address the relationship between industrial structure, family structure, men's and women's labor supply, and poverty. Their work was motivated by the higher poverty rates in rural areas, the comparative neglect of rural poverty, and the increasing divergence between rural and urban poverty. They are interested in seeing how rural poverty has been affected by transformation of rural industry in recent decades and, in particular, the decline in agricultural employment and rise in service employment. Given that they are interested in change, it is noteworthy that they use industrial structure data for 1990 only, without using changing industrial structure.

They hypothesize that the industrial structure of the nonmetro U.S. has placed some counties at greater risk of poverty. Specifically, they theorize that as male-oriented agricultural industries decline and more female-oriented service industries increase in importance, men out-migrate, while women stay. Further, they hypothesize that places dominated by agricultural should have stronger families and fewer opportunities for women, leading to lower non-marriage; and that places dominated by services should have less strong families and more opportunities for women (and independence) and higher divorce. As a result of these processes, they anticipate increasing poverty. Noteworthy is that much of the theoretical rationale is at the individual level, but the analysis itself is ecological.

The empirical test of these ideas is built around three sets of cross-sectional regressions. Specifically, they regress three dependent variables (percentage of females employed full-time, percentage of males employed full-time, and the sex ratio on industrial structure and two control variables (percent minority and percent high school graduate). Second, they regress percentage in married couple households and percent female-headed households on the percentage of women and the percentage of men who are employed full time, as well as the sex ratio, industrial structure, and controls. Their key finding is that the percentage of females employed full time positively affects percentage female-headed. While this is consistent with their theory, the direction of causation is completely unclear. Finally, they regress poverty on a host of correlates, showing the direct, indirect and total effects of various predictors. They find that agricultural employment leads to higher levels of male employment and lower proportions of female-headship, both of which decrease poverty. Service employment has a stronger total positive effect on poverty, operating partly by reducing male employment. Also, female full-time employment has a strong negative effect on poverty, that is offset somewhat by its positive effect on female headship. They conclude that, "...female employment leads to more female-headed households, which subsequently increase poverty levels." We question the strong causal language here. To their credit, they close with an obvious caveat, "[A]n exploration of change over time could be useful. An obvious weakness of this study is that our model suggests change, although the analysis was conducted at only one point in time."

In a comparative analysis, Fisher (2001) seeks to explore the interplay between natural resource dependency and rural poverty. Noting that prevailing studies tend to be spatially or temporally local, she compares the state of Wisconsin and Hokkaido Prefecture in Japan, both of which have a variety of extractive activities. Ecological data are analyzed from the 51 nonmetro

counties of Wisconsin, and 178 towns and villages in Hokkaido. The author underscores important differences between the data in the two sites. The geographic units in Japan are smaller, and the measure of resource dependency differs. The dependent variables also differ. In Wisconsin, the poverty rate is used, while in Hokkaido it is the welfare assistance rate as a proxy for poverty. This is problematic if places differ in the propensity of those eligible to avail themselves of assistance. Nonetheless the comparative nature of the paper is welcome, as is Fisher's use of data from two points in time, 1970 and 1990. OLS is used to regress the measures of poverty on both the level of dependence on natural resource industries (fishing, forestry, mining and agriculture) and other industries, as well as change in natural resource dependency between 1970 and 1990. The findings are equivocal on whether dependence on resource extraction and changes in this dependence have detrimental or even beneficial effects. Dependence on fishing, forestry and agricultural appeared beneficial in Hokkaido, but not Wisconsin. Interestingly the percent of land that is forested had beneficial effects in both countries.

Lobao and Schulman (1991) bring together two theoretical perspectives to understand the impact of farming patterns and rural restructuring on poverty. First, drawing on the agrarian political economy perspective of the 1970's, they discuss the creation of a dualistic farm structure stemming from the penetration of capital into farming. The result is a bifurcation in farming with a movement toward very large, corporate owned and operated farms, and toward very small and marginal farms (typified by significant off-farm employment), and fewer moderate-sized farms. Following Goldschmidt, presumably people in communities typified by large-scale industrialized farms have higher poverty rates, *ceteris paribus*, than those with a lot of family-run concerns. Second, they draw on the rural restructuring perspective, which points to

industrial restructuring and its implications for higher risks of poverty, the weakening of organized labor, and uneven development. Bringing these two perspectives together, they explore their implications for poverty.

Using data for nonmetro counties in 1970 and 1980, they estimate multivariate models of 1980 poverty rates drawing on variables measuring the key causal factors in the agrarian political economy and industrial restructuring perspectives. For farming patterns, counties were characterized by the predominance of three types of farming: industrialized farming, larger family farming, smaller family farming. To capture county industrial structure, they used the percentage of the workforce employed in core, periphery and state industries, as well as average number of employees in local businesses. Also, a block of variables designed to tap the “population’s general ability to modify structural constraints” included percent nonwhite, unemployed, mean school years, unionization rates, and monthly mean AFDC payment per capita. Other spatial variables included percent urban, the ratio of farm to rural population, and proximity to the nearest metro area. They found that the economic structure of counties, and their social relations (socio-demographic characteristics) explain much of poverty. Farming patterns actually explained very little. Methodologically, the study is noteworthy for being attentive to problems of both spatial autocorrelation and heteroscedasticity.

Albrecht (1998) also examines the impact of the industrial transformation of farm communities, through an analysis of 281 Great Plains counties. Motivating the study is the observation that the transformation of agriculture communities tended to take two paths. Those that attracted new industries were presumably better off than those that remained agricultural. First, using cluster analysis with industrial distribution data from 1940 for all 310 counties in the Plains, he identifies 281 that were agriculture dependent. Using the same technique he cluster

analyzes these 281 counties using data from 1990, and identifies counties that remained agriculture dependent, those that became service dependent, and those that had mixed economies. He finds that those counties that remained agricultural, despite having declining population between 1940 and 1990, had *lower* poverty rates than those that became service oriented, and had poverty rates that differed insignificantly from those that had economies that were mixed by 1990. The findings remain significant after controlling for total population, number of farms, and total agricultural sales in 1990.

Levernier, Partridge and Rickman (2000) analyze 1990 poverty rates for all counties in the lower 48 states, with special emphasis on county type: whether the county has a central city of metropolitan area, is a suburb of large metro area, a suburb of small metro, or is nonmetro. Other variables are in two categories, economic and demographic. Economic variables include employment growth, labor force participation rates, industrial structure and the like. Demographic variables include human capital characteristics (e.g., percent college graduate), age composition, children per family, percent minority and the like. Reflecting the curvilinear pattern of poverty rates across the rural-urban continuum, descriptive findings show that nonmetro counties have the highest poverty rates, followed by central city counties, metropolitan counties, and suburban counties. Multivariate regression equations are estimated with corrections for heteroscedasticity. The higher poverty rates in nonmetro counties are partly accounted for by industrial structure, but “the economic and demographic characteristics of nonmetropolitan counties do not entirely explain their higher average poverty rates” (Levernier et al., 2000:485).

As opposed to looking at variation in poverty rates across counties at a single point in time, several studies look at changing poverty rates among counties. In a thorough study, Lichter

and McLaughlin (1995) analyze summary (tape) file data from 1980 and 1990, with an eye toward understanding the implications of demographic composition, industrial structure and employment for both the level and trend in poverty rates among counties. They *do* estimate models of rates in the cross-section for 1980 and 1990 separately. Results indicate a nonmetro disadvantage that is partially accounted for by higher rates of unemployment and lower female labor supply, but which is exaggerated once the lower nonmetro percent of female-headed families is factored in. They use both descriptive and multivariate techniques to focus in on changes in poverty rates between 1980 and 1990. They found that over the 1980's, poverty rates increased more rapidly in nonmetro counties, and that among nonmetro counties, female labor supply and single headship were associated with rising nonmetro poverty.

Jensen, Goetz and Swaminathan (2004) (see also Rupasingha and Goetz 2003) examine changes in poverty rates between 1990 and 2000 among nonmetro counties in the lower 48 states. While these studies include the usual array of population composition (e.g., education and age structure) and economic (e.g., industrial structure) variables, they are unique for their inclusion of theoretically salient variables seldom used elsewhere. So, for example, they found some evidence that, other things controlled, counties with a greater prevalence of "big-box" retail stores (Wal-Mart being the prototypical example), with greater job losses due to NAFTA, and more characterized by one-party dominance were at a relative disadvantage over the 1990's, while those with higher levels of social capital were advantaged.

Contextual Studies of Effect of Living in a Rural Area on Poverty

During the past 15 years, social scientists have done a considerable amount of research attempting to explain how living in a rural area affects life chances and opportunities. We identified 12 contextual studies that quantitatively examined the "effect" of living in a rural area

on an individual's odds of being poor, holding a variety of individual and household characteristics and community characteristics constant. These "structuralist" studies model individual-level poverty status and poverty transitions as a function of community characteristics and individual characteristics and their interaction with "rural" residence of the individual. In this section of the paper, we examine the 8 studies that used national data to directly test for the existence of a "rural effect".

Each of these studies is contextual in the sense that individual characteristics and one or more characteristics of the "community" are included in a model of individual poverty status or poverty transitions. The individual/household characteristics included in the models are such variables as age, race, education, disability status, and employment/labor force status of the household head and (sometimes) spouse, family structure, and number of children. There is considerable variation in the extent of "community" characteristics. All of the studies indicate whether the residence of the individual household is in a *rural* or urban area. For three of the studies (MacLaughlin and Jensen 1993, MacLaughlin and Jensen 1995 and Jensen and MacLaughlin), this is the only "community variable". Two of the studies (Kassab et al. and Lichter et al.) also include a variable that indicates the *region* of the country in which the individual household resides (or include a dummy variable indicating that the household lives in the South). Only three of the eight (Brown and Hirschl, Cotter and Haynie and Gorman) attempt to model other characteristics of the community of residence of the household. All three of these studies model the (log)odds of being in poverty as a function of individual/household characteristics, region of residence and economic/social structural variables that characterize the opportunity structure facing the individual in the county or Labor Market Area.

Brown and Hirschl (1995) model community characteristics using county-level variables: percent unemployed, percent employed in core industries and percent employed in mid-level occupations in Brown and Hirschl [B/H]. Cotter (2002) and Haynie and Gorman (1999) model the community opportunity structure using the Labor Market Area as the geographic unit of analysis. A Labor Market Area (LMA) is a multi-county aggregate that seeks to bound a geographic area in which commuting to jobs takes place. Both Cotter [C] and Haynie/Gorman [H/G] attempt to characterize (1) the age, gender and educational makeup of the labor force, (2) the tightness of the labor market and (3) the industrial composition of the labor market. Cotter includes the following contextual variables: percent of population over 65, percent under 18, percent with less than high school education, percent female headed households, percent of women in the labor force, educational expenditures per pupil, five-year average unemployment rate, percent of jobs that are “good jobs”, and percent of jobs in manufacturing. Haynie and Gorman include percent with less than high school education, old age and youth dependency ratios, rates of unemployment and underemployment, and percent of employment in 5 broad industrial classifications.

The effect of community characteristics on the odds of being in poverty was relatively consistent in sign across studies, but varied in significance:

- The *local unemployment rate* coefficient had the expected sign (a higher unemployment rate increased the individual’s odds of being poor) in all three studies, but was significant only in H/G.
- The *industrial structure* variables also had the expected sign. Higher shares of jobs in manufacturing and higher paying occupations were associated with lower poverty risks in all three studies, and were significant in C and H/G but not in B/H.

- *Labor market demographics* had similar effects in the two studies that included these variables. The odds of poverty were higher for households in labor markets with
 - larger shares of population without a high school diploma (significant in H/G but not C);
 - higher shares of youth (significant in both H/G and C); and
 - lower shares of elderly (significant in H/G but not C)

The expectation in many of these studies is that controlling for individual and community contextual variables will reduce the “effect” of living in a rural area. We know that unemployment rates are generally higher in rural areas, for example, and that unemployment is often associated with poverty. So if we control for unemployment, we might expect that the rural residence variable might explain less of the variation in the odds that a household would be poor.

Table 1 summarizes the findings from these studies about how much greater are the odds of being poor if you live in a nonmetropolitan area relative to living in a metropolitan area, holding constant a large number of individual, household, and community characteristics. This table reports odds ratios of being in poverty in models with different sets of control variables of individual, regional and community characteristics, Table 2 summarizes the findings of the two studies that look at the odds of entering or leaving poverty about the effect of being in a rural area on the odds of moving in or out of poverty (these studies control only for individual characteristics). All of the tables show that rural households are more likely to be poor than urban households. Even though the odds ratios are somewhat higher with only individual variables or individual and region variables, omission of community controls does not change the ultimate conclusion: households in rural areas are more likely to be poor than their urban

counterparts.. There is apparently something unmeasured about being in a nonmetro/rural area that affects the odds of being in poverty, even with controls for individual and community characteristics.

Table 1. Odds of being in poverty for nonmetro residents

Studies with individual, regional and county or LMA controls

<i>Population</i>	<i>Authors of study</i>	<i>Odds ratio</i>	
All households	Cotter	1.19	relative to metro
Non elderly households	Brown & Hirschl	2.27	relative to metro core
		2.7	relative to fringe metro
		1.42	relative to other metro
Non elderly married women and men	Haynie & Gorman	1.43	relative to urban LMA

Studies with individual and region controls

<i>Population</i>	<i>Authors of study</i>	<i>Year</i>	<i>Odds ratio</i>	
All households (<125% pov)	Kassab et al	1979	1.66	relative to metro
		1989	2.12	relative to metro
Working adults (>27 wks)	Lichter et al	1979	1.68	relative to metro
		1989	2.30	relative to metro

Studies with individual controls

<i>Population</i>	<i>Authors of study</i>	<i>Year</i>	<i>Odds ratio</i>	
Elders	McLaughlin & Jensen 1993	1989	1.35	relative to central city
		1989	.71	relative to suburbs

Table 2. Odds of moving in or out of poverty for nonmetro residents (individual controls only in these studies)

Odds of entering poverty for nonmetro residents				
<i>Population</i>	<i>Authors of study</i>	<i>Gender</i>	<i>Odds ratio</i>	
Elders	McLaughlin & Jensen 1995	Men	2.23	relative to metro
		Women	1.57	relative to metro
Odds of exiting poverty for nonmetro residents				
Elders	Jensen &		.80	relative to metro

WHAT HAVE WE LEARNED?

All of this research suggests that there is something about living in a rural area that increases one’s odds of being poor. This conclusion holds even when one controls for individual and household characteristics. Two people with identical racial, age, gender and educational characteristics in households with the same number of adults and children and workers have different odds of being poor if one lives in a rural area and the other lives in an urban area. The one living in a *rural* area is more likely to be poor. The conclusion holds when one also controls for certain community characteristics: people with similar personal and household characteristics are more likely to be poor they live in a *rural* labor market than an *urban* labor market even if the labor markets have the same industrial and occupational structure and unemployment rate.

Interestingly, in studies of low income labor markets, rural and urban differences in the probability of getting a job or the length of an unemployment spell often disappear in a statistical sense when individual and community level controls are introduced (and when robust standard errors are used to determine statistical significance of the “rural” variable). (See for example, Davis and Weber, 2002; and Davis, Connolly and Weber, 2003) This may suggest that the rural-urban differences in poverty outcomes are less related to labor market decisions than to decisions about other processes that affect poverty status, such as marriage, childbearing, education, and public assistance participation. (It may also suggest that, if the studies reviewed had appropriately controlled for clustering in estimating standard errors, some of the variables reported as statistically significant would not have been significant).

Perhaps the best summary of what rural poverty researchers have learned about the effects of community characteristics and rural residence is found in the conclusion to Cotter's paper:

One of the central findings of this analysis is that a number of labor market characteristics prove to be powerful predictors of poverty, above and beyond the household-level predictors, and that many household-level predictors retain their general effect on poverty after introduction of labor market characteristics. This finding underscores the conceptual argument that individualist and structuralist perspectives on poverty, at least two so closely aligned as human capital and labor market ecology, may be viewed most effectively as complementary rather than competing.

A second major finding is that the effects of nonmetropolitan status on a household's likelihood of poverty persist over and above a considerable array of household and labor market variables. Although the overall effect is diminished with the addition of both the household and the labor market variables, it remains both statistically and substantively significant. The effect of living in a nonmetropolitan areas is reduced by the labor market characteristics rather than by characteristics of the households. When the characteristics of labor markets are not taken into account, households with similar characteristics are some 40 percent more likely to be poor in nonmetropolitan areas. After accounting for labor market characteristics, households in nonmetropolitan areas are just 19 percent more likely to be poor than their metropolitan counterparts. This suggests that much of the difference in poverty is attributable to the *context* of nonmetropolitan America rather than

to the *composition* of nonmetropolitan Americans. Although labor market characteristics account for more than half of the difference in poverty between metropolitan and nonmetropolitan areas, residents of nonmetropolitan areas are significantly more likely to be poor.....

The findings reported above suggest that rural poverty is likely to remain intractable as long as attention is not given simultaneously to individual and structural issues that create poor people and poor places.

METHODOLOGICAL CHALLENGES IN ASSESSING PLACE EFFECTS IN CONTEXTUAL STUDIES

The contextual rural poverty studies reviewed in the previous section suggest that, even after controlling for individual and community characteristics, the odds of being poor are higher in rural areas than in urban areas. If the models underlying these studies are appropriately specified, then one could conclude from this review that there are unmeasured characteristics of rural places that lead to worse poverty outcomes in rural areas, even for people with identical demographic characteristics and (sometimes) employment status and even for people who live in communities with identical measured unemployment and industrial structure. One could conclude that researchers ought to learn about the social processes and unmeasured structural barriers to economic well-being in rural areas, and that public policy directed at reducing poverty should seek to change the underlying disadvantages in rural places.

While these studies, for the most part, are carefully specified, there are a number of methodological challenges that confront those wishing to estimate “place effects”. The failure of

many of these studies to address these challenges is reason to withhold judgment about the “effect” of living in a rural area on poverty risk until further research tests properly specified models test with appropriate data and methods.

During the past decade, there have been quite a number of careful reviews of literature on “neighborhood effects” in urban areas that identify these challenges and possible estimation strategies that overcome these challenges. Building on the seminal review of Jencks and Mayer in 1990, Duncan et al. (1997); Robert (1999); Duncan and Raudenbusch (2001); Moffit (2001); Dietz (2002); and Sampson, Morenoff, and Gannon-Rowley (2002) have identified methodological issues that confound the research looking for “place” effects on individual social, economic and health outcomes. None of the challenges they identify are unique to the search for neighborhood effects; they are common issues in statistical analysis in social sciences. We will mention seven of these that seem particularly important in attempts to understand how living in a rural area might affect poverty status.

Model Specification Challenges

The first four issues are specification issues, and pose serious challenges to the validity and/or usefulness of the rural poverty studies reviewed in the previous section⁴:

Endogenous membership.

“Rural residence” is not an exogenous characteristic of the household, since people can choose where to live. How do we know whether rural-urban differences in poverty odds observed in the literature are due to “place” factors rather than “differential selection” into “places” (poor neighborhoods/rural communities)? Do poor people tend to sort themselves into rural areas, or is there something about living in rural areas that is bad for economic well-being? Sorting this out is critical for public policy design, because if higher poverty in rural areas is merely the result of poor people choosing to live in rural places then policy could reasonably be

directed at changing individual and family characteristics associated with poverty. If, on the other hand, there is something about rural places that affects the poverty of rural residents above and beyond their individual characteristics, then place-based policies are a critical element in an overall public strategy to alleviate poverty.

The literature reviewed above does not consider the process by which households sort themselves into rural and urban areas. None of the studies explicitly consider the possibility of endogenous membership or test for endogeneity of rural residence. Most of those assessing the urban “neighborhood effect” literature believe that failure to address endogenous membership issues biases the estimates of neighborhood upward (Dietz, p. 565). The high likelihood that there has been differential selection into rural and urban areas based on unmeasured variables argues strongly for withholding judgment about the validity of claims of rural effects on poverty risk from the extant rural poverty literature.

There are tests for endogeneity that could sort out whether this is or is not a problem with these studies. If it turns out that rural residence is endogenous, there are strategies for addressing this problem.

Duncan and Raudenbusch (2001) identify two nonexperimental approaches to this issue that have potential for analysis of a “rural effect”⁵. The first is to view the problem as an “omitted-family variable” or “omitted-individual variable” problem and address it by finding data with family- or individual-level measures that “capture the determinants of the process of contextual choice” (p. 114) Many of the studies reviewed above included individual and household characteristics that may help explain residential choice, so it is possible that the measured characteristics capture the things that determine why people live where they do. But it is likely that there are unmeasured characteristics that determine a household’s choice to live in a rural place (i.e., that are correlated with rural residence) and also affect the risk of poverty that

have been omitted in the analyses. To the extent that this is true, the estimates of the “rural effect” in the studies reviewed above will reflect both any true effect and the spurious effect of the omitted characteristics.

Since it is never possible to know that one has included all the possible characteristics and thus eliminated the bias, a second strategy of using instrumental variables is often recommended. This procedure uses an “instrument” to predict a household’s choice of residence and then uses the predicted value of “residence” in the poverty equation. By using the predicted value of “residence”, one presumably eliminates the endogeneity by purging the residence variable of the spurious correlation with unmeasured characteristics of the household that determine its residential choice. The key to this strategy is identifying an appropriate instrument, in this case a variable that is highly correlated with rural residential choice but is not highly correlated with the error term in the model estimating the odds of an individual being poor. Finding such a variable is a significant challenge to using this strategy.

Omitted-context variables

Most of the contextual studies of poverty reviewed in the previous section controlled for individual or household characteristics and relied on a single context variable (rural residence) or two context variables (rural residence and residence in the Southern U.S.) to capture the effect of “place” on individual poverty risk. In those studies in which the rural dummy variable was significant, many of the studies concluded that living in a rural area had an “effect” on the odds of being in poverty.

If there are other variables, however, that are related to poverty risk and that are correlated with rural residence, then the estimates of rural effect will be biased if these variables are not included in the analysis. For example, if unemployment rates are related to poverty risk and correlated with rural residence, then the effect of unemployment in the labor market on

poverty will be attributed to rural residence if unemployment is not included, biasing upward the effect of living in a rural area. Such a conclusion would erroneously attribute some part of the poverty risk to living in a rural areas that should instead be attributed to high unemployment rates. Since there are many theoretical paths or processes through which context might operate to affect poverty risk (employment, marriage, public assistance receipt, childbearing, for examples), many contextual variables are needed to accurately describe “place” context.

Duncan and Raudenbusch suggest a major difficulty with using Census-based sources of context variables, as almost all of the rural poverty literature does. Administrative and Census data do not capture many of the neighborhood influences that theory suggests may be important in explaining poverty. Measures of institutional capacity, school quality, local administrative practice access to services, community collective efficacy, social ties are not reliably collected or consistently reported, for example. Hence omission of these variables may lead researchers to attribute to rural residence something that belongs to strong social ties that could exist in rural and urban places.

The four studies that did include other contextual variables besides rural residence and region often found these variables to be significant and reported slightly smaller rural “effects” than the studies with only rural and region variables.

Interactions between rural residence and community/ individual characteristics

If the effect of living in a rural area on poverty risk varies with fixed individual (race, for example) and community (industrial structure, for example) characteristics, then a model that does not take the interaction between rural residence and the individual or community characteristic may misspecify the impact of rural residence on the odds of being poor. In many of the studies reviewed, interactions were tested, usually to see if the effect of individual and community characteristics on poverty risk was different in rural and urban areas.

Half of the contextual studies of individual poverty risk reviewed examined *interactions between nonmetropolitan residence and individual characteristics (race, gender, education) and individual work status and effort (labor force participation, whether the head was employed, hours worked)*. These examined the moderating effect of rural residence on the effect of individual and community characteristics on the odds of individual poverty. Six studies found significant interactions.

Brown and Hirschl found that employment of a household head reduced the odds of being poor less for those living in a rural area. Lichter et al. found that working additional hours reduces poverty less in rural areas than in urban areas. McLaughlin and Jensen found that participation in the labor force lowered the risk of poverty less in rural than urban areas. These studies find that work and work effort appear to be less effective for reducing poverty risk in rural areas. Cotter's multi-level analysis comes to the opposite conclusion. "the effect of employment on likelihood of poverty is greater in nonmetropolitan than in metropolitan areas". (p. 549)

Lichter et al. found that those with less than high school education were more at risk of poverty (and those with more than high school education more at risk) than those in urban places. Haynie and Gorman ran separate models for urban women, rural women, urban men and rural men. They found that "individual-level attributes and credentials" had less effect on poverty for rural women than urban women. In a study focusing on minority poverty using 1985 Texas data, Saenz and Thomas ran separate regressions for Black metro, Black nonmetro, Latino metro, Latino nonmetro, Anglo metro and Anglo nonmetro populations. For Anglos and Latinos, there were no significant differences in the effects of individual characteristics on poverty risk between metro and nonmetro households. For Blacks, however, lack of high school diploma and being in a female headed household with children increased the odds of being poor less for

nonmetropolitan households than for metro households; and being in a childless female headed household increased the poverty odds in nonmetro areas more.

Two of the studies examined *interactions between rural residence and community characteristics (unemployment rates, economic structure)*. Haynie and Gorman found that area unemployment was a stronger predictor of poverty for rural women than urban women, but did not have a significantly different impact for rural men and urban men. Saenz and Thomas found that high local economic dependence on agriculture increased the odds of poverty for nonmetro Blacks but not metro Blacks, and that high unemployment rates increased poverty risk for metro Latinos and Anglos but not for metro Blacks or nonmetro households.

The existence of significant interactions between rural residence and individual and community characteristics validates the concern that models that estimate a rural effect as a simple linear effect are likely misspecifying the impact of living in a rural area on poverty risk. The fact that the results do not appear to be consistent across studies suggests that additional attention should be paid to conceptualization of the processes by which rural residence might affect poverty odds.

Community and individual characteristics as mediators of the rural effect.

The effect of being in a rural area may be both direct and indirect (through the impact of rural residence on individual characteristics (like employment status) and on community characteristics (like educational levels of the workforce) that affect the odds of an individual being in poverty. Most studies of the “rural effect” on poverty (and most studies of neighborhood effects in urban areas) ignore the potential that individual and community characteristics may mediate the impact of being in a rural area on poverty. “The most common strategy in multilevel neighborhood research is to estimate a direct effects model whereby a host of individual, familial, peer, and school variables are entered as controls alongside current neighborhood

characteristics of residence. But this strategy confounds the potential importance of both long-term community influences and mediating developmental pathways...Put differently, static models that estimate the direct effect of current neighborhood context on a particular outcome... may be partitioning out relevant variance in a host of mediating and developmental pathways of influence.” (Sampson et al., 2002, p. 469)

Failing to model direct and indirect effects may bias the “place effect” downward (Duncan and Raudenbush, 2002, p. 116). If rural areas negatively affect employment probabilities and low employment probabilities increase poverty risk, for example, then an estimate of the impact of rural residence that controlled for employment status but did not account for the indirect effect of rural residence on employment status would understate the impact of rural residence on poverty risk.

Data and Estimation Challenges

The final three challenges are data and statistical estimation issues, not specification issues. Two of these are measurement issues that are common to any study that uses readily available data:

Relevant “community” boundaries are not captured by the geographic boundaries used in data collection.

Counties and labor market *areas* are used as geographic units in the contextual studies, and counties and tracts are used in the community studies. It is not clear what the appropriate “local community” boundaries are for a study of place effects on poverty odds. Sampson et al. argue, citing Suttles, that “the local community is best thought of not as a single entity, but rather as a hierarchy of progressively more inclusive residential groupings. In this sense, we can think of neighborhoods as ecological units nested within successively larger communities. In practice, most social scientists and virtually all studies of neighborhoods we assess rely on

geographic boundaries defined by the Census Bureau of other administrative agencies (:e.g., school districts, police districts). Although administratively defined units such as census tracts and block groups are reasonably consistent with the notion of overlapping and nested ecological structures, they offer imperfect operational definitions of neighborhoods for research and policy.” (p. 445) Given the lower population densities of rural areas and thus the larger geographic extent of administrative units such as census tracts, administrative units are likely more imperfect for defining communities in rural area research than in urban research.

Measures of community characteristics in the Census and other publicly collected data are imperfectly related to theoretical concepts about causes of poverty.

The theoretical underpinnings of most extant rural poverty research consider poverty odds for an individual or household as determined by the interactions of macro social structural forces (racial or gender discrimination, occupational gender stratification) and local economic structure (industrial composition, occupational structure, residential segregation by race) with fixed individual characteristics (age, gender, race/ethnicity) and characteristics resulting from previous personal decisions about educational investments, work, marriage, childbearing (education level, employment status, household structure). Brown and Hirschl, Haynie and Gorman and Cotter clearly articulate this framework as the theoretical underpinnings for their empirical models.⁶

The studies reviewed relied on Census and other data to explain individual poverty risk as a function of these community and individual characteristics. The studies sometimes recognized that data limitations restricted the scope of their analysis to a static analysis that did not address the causal processes leading to poverty. Haynie and Gorman, for example, suggest that “future research should address the contextual mechanisms that drive female-headed families and women’s lack of opportunities in the labor market”. (p. 195)

The “neighborhood effects” literature has begun to focus on “social processes and mechanisms”. Sampson et al. describe the shift in emphasis:

During the 1990s, a number of scholars moved beyond the traditional fixation on concentrated poverty, and began to explicitly theorize and directly measure how neighborhood social processes bear on the well-being of children and adolescents. Unlike the more static features of sociodemographic composition (e.g., race, class position), social processes or mechanisms provide accounts of *how* neighborhoods bring about a change in a given phenomenon of interest (Sorenson 1998, p. 240). Although concern with neighborhood mechanisms goes back at least to the early Chicago School of sociology, only recently have we witnessed a concerted attempt to theorize and empirically measure the social-interactional and institutional dimensions that might explain how neighborhood effects are transmitted. (p.447)

As the attention of researchers shifts from *whether* living in a rural area affects the odds of being in poverty to *how* rural residence affects poverty odds, researchers will need to become more clear about how institutions and processes mediate the effects of living in a rural area on poverty risk. Then there will need to be concerted efforts to obtain the data on these institutions and processes in ways that allow them to be related to community context and individual outcomes.

Modeling a multi-level hierarchical system

The final methodological challenge is an issue of statistical method, focusing on how to correct for problems introduced by including both individual and household and community variables in a single analysis.

Empirical models that include data from different levels (individual, household, community) without regard for the level at which they are measured may introduce serial correlation when individuals within the same community have the same values on the community variables. Unless the analysis accounts for the different levels in some way, there is a risk of overestimating the significance of community effects.

Two common ways of accounting for different levels in the same analysis are hierarchical linear models (HLM) and estimation of robust standard errors (which can be done for many analyses in commonly used statistical packages). In the 12 contextual studies we examined, only one (Cotter) attempted to account for the multi-level modeling. Using HLM, Cotter did find that rural residence increased the odds of being in poverty in rural areas relative to living in urban areas. Interestingly, Cotter's estimate of the rural effect is the smallest of any of the studies.

NEW DIRECTIONS IN STUDYING PLACE EFFECTS: TOWARD A RURAL POVERTY RESEARCH AGENDA

From past research, we have learned that the odds of being poor are higher in rural areas; they are greatly affected by individual characteristics such as education, race, gender and age, and by community characteristics such as local unemployment rates, industrial structure; that the likelihood of being poor is higher in rural areas even after accounting for differences in community and individual characteristics; and that the effect of some individual and community characteristics on poverty odds differs between rural and urban places.

The methodological problems with most studies that support these conclusions give us pause, however, and make us hesitant to accept these conclusions about the “rural differential” in the absence of more compelling evidence. Some would argue that the main concern about the validity of existing rural poverty research is endogenous membership – the concern that poverty

is higher in rural areas not because of an “effect” of living in a rural area on poverty risk, but rather because poor people are more likely in a systematic way to select themselves into rural places. Sampson et al. call for additional research into the selection issue: “When individuals select neighborhoods, they appear to do so based on social characteristics such as neighborhood racial segregation, economic status, and friendship ties. Research needs to better understand the mutual interplay of neighborhood selection decisions, structural context, and social interactions.” (p. 474) *The first item on the rural poverty research agenda is more carefully specified models that are estimated with existing data and using methods appropriate for multi-level analysis.*

Even correctly specified and estimated models of individual odds of poverty as a function of rural residence and individual and community characteristics, however, will only tell us *that* having a job or an education or living in a rural area affects the likelihood of individual poverty, not *how* living in a rural area affects one’s chances of being poor, and not *how* policy interventions can change these odds. The neighborhood effects literature has begun to explore these questions in urban neighborhoods and develop measures of neighborhood-level mechanisms that affect individual outcomes. Sampson et al. call for increased attention to this line of inquiry: “We... know little about the causes of key social processes or whether they are responsive to neighborhood policy interventions. For example, what produces or can change collective efficacy and institutional capacity? Although much effort has been put into understanding the structural backdrop to neighborhood social organization, we need a deeper focus on cultural, normative, and collective-action perspectives that attach meaning to how residents frame their commitment to places.” (p. 474) *The second agenda item is additional theorizing about how social processes and institutions in local communities affect poverty odds and new data that would allow exploration of the links between policy interventions and social processes/ institutions and poverty in rural and urban places.*

Understanding about these links will not come from sole reliance on carefully specified econometric analysis of existing large datasets. *The third agenda item is additional support for multi-method multi-site studies of rural households that allow probing of the links between policy, community-level social processes and institutions and household decisions affecting economic well-being.*

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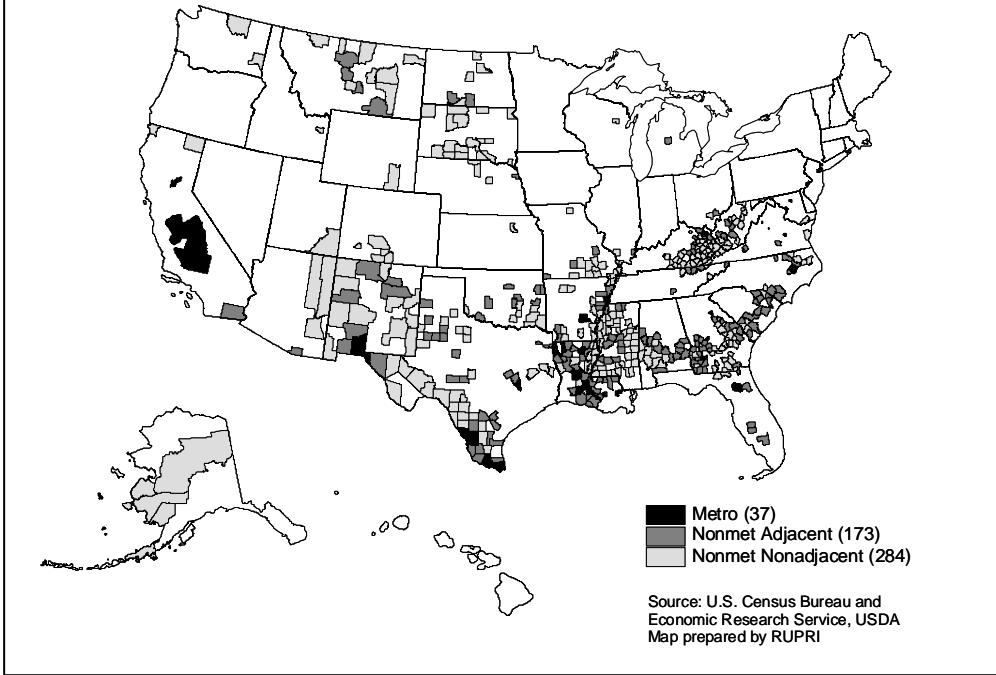
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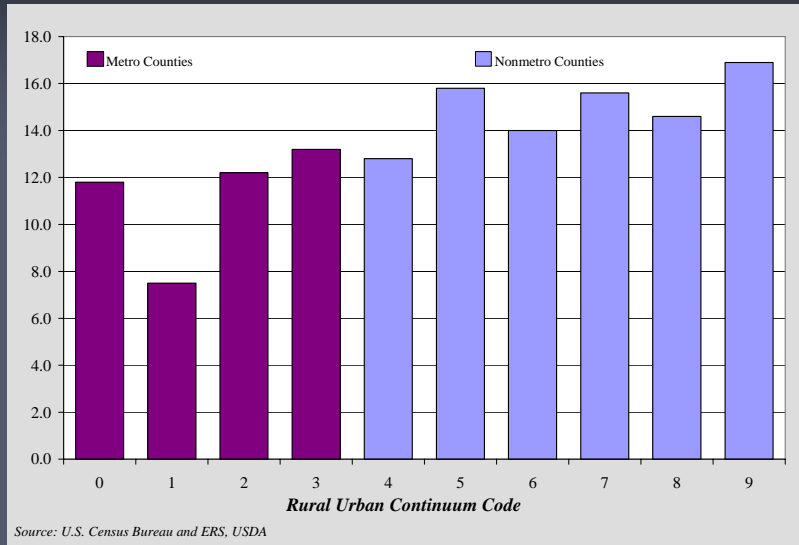
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Map 1. High Poverty Counties, 1999
Counties with Poverty Rates of 20% or Higher

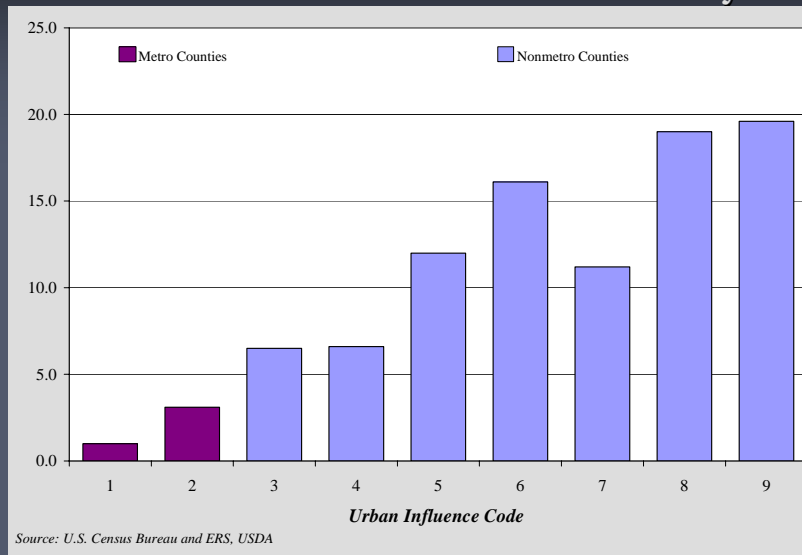


Poverty Rates Along the Rural Urban Continuum



RUPRI Rural Poverty Research Center

Percent of Counties in each Urban Influence Code in Persistent Poverty



RUPRI Rural Poverty Research Center

¹ We use the terms “rural” and “nonmetropolitan” (“nonmetro”) and “urban” and “metropolitan” (“metro”) interchangeably, but are aware of the difficulties in using the terms in this way. The Office of Management and Budget (OMB) has classified each county as metropolitan or non-metropolitan based on presence of a city with more than 50,000 people and/or commuting patterns that indicate interdependence with the “core” city. The U.S. Census designates, on a much finer level, each area as rural or urban, using a definition of 2,500 people as the cutoff for urban populations. Urban populations are defined as those living in a place of 2500 or more and rural populations live in places with less than 2500 population or open country. Both of these classifications leave much to be desired in terms of poverty research. The metro/nonmetro classification uses a county geography that is often too coarse, classifying as metropolitan many residents who are rural under the Census definition but live metropolitan counties. The rural/urban classification, using a simple cutoff of population, fails to capture geographic proximity to the opportunities afforded those rural residents who live on the fringes of large urban centers.

² Poverty rates in the Census are for the previous calendar year, since the Census question in the 2000 Census, for example, asks about income in 1999. When we identify poverty rates with a particular decennial Census, the poverty rate is for the previous calendar year.

³ In addition to the studies we review here that look at differential effects of personal and community characteristics on poverty in rural and urban areas, we found three studies (one experimental and two quasi-experimental) that examined the differential impacts of poverty-related policy in rural and urban areas.. One quasi-experimental study (McKernan et. al., 2002) found no metro-nonmetro difference in policy impacts on employment, but the two others did find metro-nonmetro differences. In the experiment examining impacts of a pilot welfare program in Minnesota, Gennetian et al. (2002) found that policy impacts on employment were larger in metropolitan areas. In the other quasi-experimental study, Weber et al. (2004) found that policy impacts on both employment and poverty were larger in nonmetropolitan areas.

⁴ Some of the reviews emphasized the possibility of simultaneity or reverse causation in estimating neighborhood effects. If place-related contextual factors affecting household poverty

(such as community norms about work or marriage, for example) are also in part determined by individual household behavioral decisions (such as the decision to get a job or to get married), then a single equation model will not correctly estimate the impact of contextual factors on poverty. This is likely to be more of a problem in very localized neighborhood studies than in studies that measure contextual variables at the county level or for Labor Market Areas, as is common in much rural research. We do not judge the possibility of simultaneity to pose a threat to the validity of rural “place effect” research

⁵ They identify two additional strategies for addressing the endogenous membership problem: an experimental design (in which households would be randomly assigned to live in rural and urban areas) and a quasi-experimental design .

⁶ Others such as Schiller (1998) and Summers (1995) expand this theoretical framework to include interaction with government programs and policies. We did not find any empirical studies that use this expanded framework.