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# A CRITICAL REVIEW OF RURAL POVERTY LITERATURE: IS THERE TRULY A RURAL EFFECT?

**BRUCE WEBER**
*Department of Agricultural and Resource Economics, Oregon State University, and RUPRI Rural Poverty Research Center, Corvallis, OR, bruce.weber@oregonstate.edu*

**LEIF JENSEN**
*Department of Agricultural Economics and Rural Sociology and the Population Research Institute, Pennsylvania State University, University Park, ljensen@psu.edu*

**KATHLEEN MILLER**
*Rural Policy Research Institute, Truman School of Public Affairs, University of Missouri–Columbia, millerkk@missouri.edu*

**JANE MOSLEY**
*Truman School of Public Affairs, University of Missouri–Columbia, and RUPRI Rural Poverty Research Center, Columbia, MO, mosleyj@missouri.edu*

**MONICA FISHER**
*Truman School of Public Affairs, University of Missouri–Columbia, and RUPRI Rural Poverty Research Center, Corvallis, OR, monica.fisher@oregonstate.edu*

*Poverty rates are highest in the most urban and most rural areas of the United States and are higher in nonmetropolitan than metropolitan areas. Yet perhaps because only one-fifth of the nation's 35 million poor people live in nonmetro areas, rural poverty has received less attention than urban poverty from both policy makers and researchers. The authors provide a critical review of literature that examines the factors affecting poverty in rural areas. The authors focus on studies that explore whether there is a rural effect, that is, whether there is something about rural places above and beyond demographic characteristics and local economic context that makes poverty more likely in those places. The authors identify methodological concerns (such as endogenous membership and omitted variables) that may limit the validity of conclusions from existing studies that there is a rural effect. The authors conclude with suggestions for research that would address these concerns and explore the processes and institutions in urban and rural areas that determine poverty, outcomes, and policy impacts.*

***Keywords:*** *rural poverty; place effects; neighborhood effects; research methodology*

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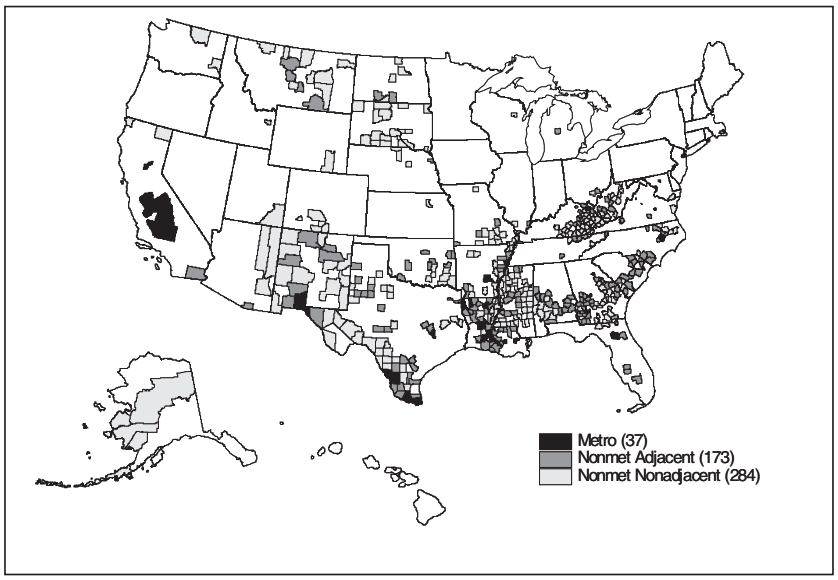


**FIGURE 1. Counties with Poverty Rates of 20 Percent or Higher, 1999**

*Source:* U.S. Census Bureau and Economic Research Service, U.S. Department of Agriculture. Prepared by RUPRI (Rural Poverty Research Institute, Columbia, Missouri). Reprinted with permission of RUPRI.

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 counties containing Indian Reservations in the Southwest and Great Plains (see Figure 1). Second, county-level poverty rates vary across the rural-urban continuum.[1] As can be seen from Figure 2, poverty rates[2] 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

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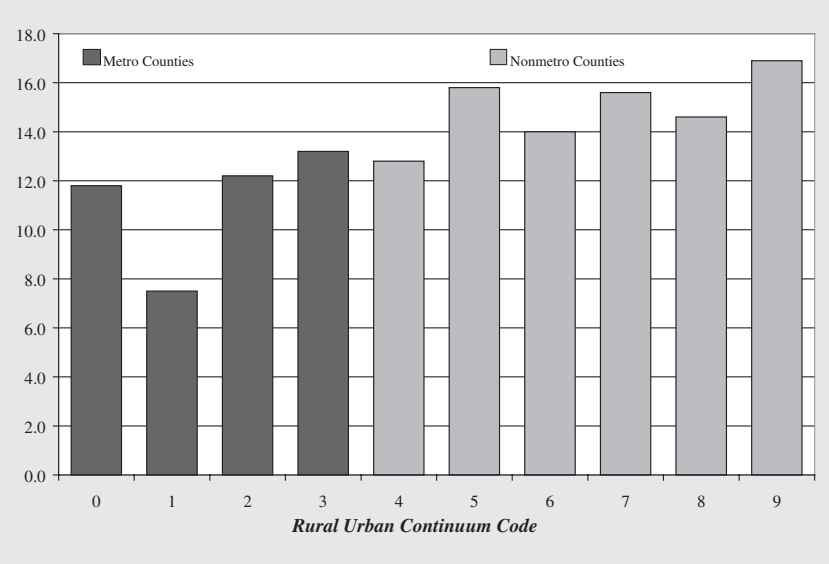


**FIGURE 2. Poverty Rates along the Rural Urban Continuum**

*Source:* U.S. Census Bureau and Economic Research Service, U.S. Department of Agriculture.

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 predominantly rural, with 95 percent being nonmetro. Furthermore, persistent poverty status is more prevalent among less populated and more remote counties. 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).

In this article, we provide a critical review of literature on rurality and poverty.[3] We examine studies that have sought to determine whether there is something about rural areas—above and beyond demographic characteristics and local economic context—that makes poverty more likely in these places. We focus principally on quantitative studies, recognizing full well that when it comes to capturing the richness of context and the constraints of place, ethnographic studies are superior. Such qualitative studies are critical for generating new insights, theories, and hypotheses that can then be examined in subsequent research.

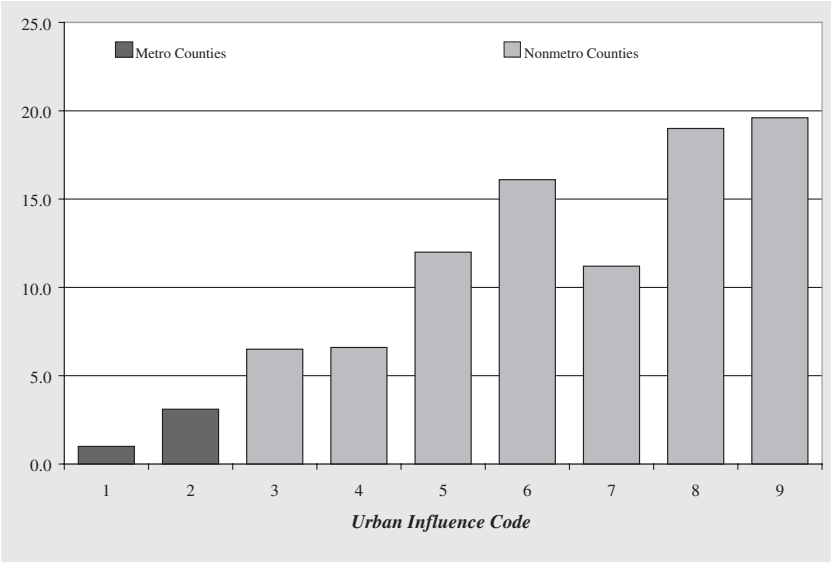


**FIGURE 3. Percentage of Counties in each Urban Influence Code in Persistent Poverty**
*Source:* U.S. Census Bureau and Economic Research Service, U.S. Department of Agriculture.

A seminal work in this genre, although not the first of its kind, is 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, then incorporates broader levels of context. Ultimately she considers 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, Duncan (1999) in *Worlds 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 portraits 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. Her work and that of Fitchen underscore that much more than just economic variables drive place effects. Local power relationships and levels of social isolation also are critical.

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 dichotomy of good jobs and bad jobs structures rural economic well-being and affects livelihood strategies—good jobs being more stable, well paying, more benefits, greater flexibility, and so forth; bad jobs lacking these qualities. 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, and entrepreneurship) that benefit the household. In this sense, good job households are doubly advantaged and bad job households doubly disadvantaged, a conclusion that counters the conventional wisdom that strategies like moonlighting will be more common among bad job households who turn to them as a last resort. 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.

In this article, we concentrate on the quantitative empirical literature exploring the relationship of rurality to poverty. Before reviewing the quantitative studies, we discuss some alternative approaches to modeling "place effects" and some challenges confronting those who wish to understand how poverty is affected by place.

## Analyzing How Rurality Affects Poverty

### *Defining and Measuring Poverty*

Virtually all the quantitative studies reviewed used the official Census definition of poverty. According to the official definition, a family is considered poor if its annual before-tax money income (excluding noncash benefits such as public housing, Medicaid, and food stamps) is less than its poverty threshold. Poverty thresholds vary according to family size, number of children in the family, and, for small households, whether the householder is elderly. The thresholds were developed in the 1960s by estimating the cost of a minimum adequate diet for families of different size and age structures multiplied by three to allow for other necessities. The

poverty thresholds are adjusted annually for inflation using the Consumer Price Index for All Urban Consumers but, apart from minor adjustments, have remained unchanged over the decades.

Dissatisfaction with the current poverty measure is widespread, particularly with respect to its ability to represent economic distress in rural and urban areas. The most common critique in this regard is that the official poverty thresholds do not account for cost-of-living differences across space (e.g. region, metro/nonmetro county).[4] It is expected that living costs are, on average, lower in rural versus urban locations, suggesting that current measures of rural-urban differences in poverty prevalence could be biased. Poverty analysts generally agree on the need to account for geographic cost-of-living differences, but data for such purpose are limited. Jolliffe (2004) uses a spatial price index based on Fair Market Rents data to account for cost-of-housing differences across metro and nonmetro areas; he shows a complete reversal in the metro-nonmetro poverty rankings, with metropolitan poverty incidence being higher in every year from 1991 to 2002.

Jolliffe's (2004) findings are accurate to the extent that housing cost differences adequately proxy overall cost differences across rural and urban places. Some research suggests that housing costs do not adequately represent overall living costs. Nord (2000), for example, uses an approach to account for living cost differences that rests on two assumptions: that households in different areas that report equal levels of food insecurity are equally well off; and that by comparing nominal income-to-poverty ratios for households with similar levels of food insufficiency in different places, one can estimate the relative costs of living in those places. His findings suggest that adjusting only for differences in housing costs systematically understates living costs in nonmetro areas and in small metro areas and overstates costs in large metro areas. The National Academy of Sciences Panel on Poverty and Family Assistance, after examining several alternatives for capturing geographic cost-of-living differentials, recommended adjusting poverty thresholds using housing costs as measured by the U.S. Department of Housing and Urban Development's fair market rents for two-bedroom apartments (Citro and Michael 1995). At the same time, the panel recognized that this is a second best solution to having a more complete inventory of the prices of necessities. Until then, the presumed lower cost of living in rural areas, as well as the corresponding overstatement of the prevalence of rural versus urban poverty, will remain speculative.

A number of analysts have recently proposed new metrics for examining economic distress in rural and urban areas. Cushing and Zheng (2000) and Jolliffe (2003) use a distribution sensitive Foster-Greer-Thorbecke poverty index to examine metro-nonmetro differences in poverty incidence, depth, and severity. Both find that the conclusion that nonmetropolitan poverty is higher than metro poverty is not supported if one uses distribution sensitive measures. Jolliffe, for example, finds that while the standard measure of poverty incidence is higher in nonmetro areas during the 1990s, neither the poverty gap (the depth of poverty) nor the severity of poverty (squared poverty gap) is consistently higher in rural areas. Moreover, the

average poverty gap (shortfall of income relative to the poverty threshold) is smaller in nonmetro areas, and the nonmetro poor are less likely to live in extreme poverty. In a subsequent paper, Jolliffe (2004) finds that if the official poverty threshold is adjusted (albeit not fully) for spatial cost of living differences, all three measures of poverty are worse in metropolitan areas over the 1990s.

Ulimwengu and Kraybill (2004) use the National Longitudinal Survey of Youth (NLSY1979) data to develop a measure of real economic well-being (a "living standard" defined as income divided by a cost-of-living-adjusted poverty threshold) for households who were in poverty at least once during the survey period. They find that, controlling for household demographics and local economic context, the expected living standard of the poor is higher—and the conditional probability of remaining in poverty is lower—for rural households during the mid-1980s to mid-1990s. Since the mid-1990s, the rural advantage is no longer statistically significant.

Fisher and Weber (2004) use the Panel Study of Income Dynamics to develop measures of asset poverty for metro and nonmetro areas. They find that residents of central metropolitan counties are more likely to be poor in terms of net worth but that nonmetropolitan residents are more likely to be poor in terms of liquid assets. Rural people tend to have nonliquid assets such as homes they may not be able to convert to cash in times of economic hardship. Urban people, on the other hand, do not appear to be as able to accumulate nonliquid assets but may be better able to withstand short-term economic disruptions.

### *Alternative Approaches to Modeling "Place Effects" on Poverty*

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, Duncan, and Aber (1997), we distinguish "community" and "contextual" studies. Although this classification may be unfamiliar to many readers, we use it because it captures important differences among poverty studies in the goals, data structures, and methods of analysis.

*Community studies* explain differences in rates of poverty across communities as a function of community demographic and economic structure variables, including whether the community is rural or urban. *Contextual studies* explain differences in individual poverty outcomes as a function of individual demographic characteristics and community social and economic characteristics, again including whether the community is rural or urban. "Communities" in these rural quantitative studies are usually counties or labor market areas. Contextual studies are most relevant for understanding place effects on individuals as they directly examine the impact of community-level factors on individual outcomes. Community studies are relevant for understanding how community characteristics and community-level policy and practice affect local poverty rates. They are also useful complements to the

contextual studies. As Gephart notes, "To 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" (cited in Brooks-Gunn, Duncan, and Aber 1997, vol. 1, p. 12).

The distinction between community and contextual studies of poverty is perhaps best illustrated by considering two prototypes. A typical community study uses county-level data to estimate whether the county poverty rate is different for rural and urban counties, controlling for county demographic and economic characteristics:

$$P_j = a + b\mathbf{X}_j + c\mathbf{Y}_j + dRj + e,$$

where subscript $j$ denotes county, $P$ is the poverty rate, $\mathbf{X}$ is a vector of demographic characteristics (percentage elderly, for example), $\mathbf{Y}$ is a vector of county economic context variables (county unemployment rate, for example), $R$ is a binary variable indicating whether the county is nonmetropolitan, and $e$ is a random error term with zero expectation. The county poverty rate in this model is a linear function of the county's demographic composition, its economic conditions, and whether it is metropolitan or nonmetropolitan.

A typical contextual study, by contrast, uses individual-level data to estimate the extent to which the likelihood that a particular household would be in poverty depends on whether the household lives in a rural county, controlling for relevant household demographics and community contextual factors:

$$\Pr(P_{ij} = 1) = \frac{e^{\mathbf{X}_i\beta_1 + \mathbf{Y}_{ij}\beta_2 + R_j\beta_3}}{1 + e^{\mathbf{X}_i\beta_1 + \mathbf{Y}_{ij}\beta_2 + R_j\beta_3}},$$

where $P_{ij}$ is a binary variable with a value of 1 if the $i$th household in the $j$th county is poor, $\mathbf{X}_i$ is a vector of demographic characteristics of the $i$th household, and $\mathbf{Y}_j$ and $R_j$ are as above. The probability that a household is poor is, in this formulation, a nonlinear function of the household's own demographic characteristics, the economic characteristics of the local community, and whether the county of residence is a rural county.[5]

Both of these formulations explain poverty as the outcome of fixed demographic characteristics over which the individual has no control (race, gender, age, disability), demographic characteristics that are the result of past—often constrained—choices (education, marital status, number of dependents, employment status, occupation), exogenous area characteristics that define local economic opportunities (unemployment rate, job growth rate, industrial employment mix, occupational employment mix), and location of residence in a metropolitan or nonmetropolitan county. Some studies also include variables intended to capture the effects of policy

on poverty outcomes. Most empirical studies have treated all of these factors as exogenous.

### *Controlling for Local Economic Context*

Place of residence in this literature is viewed 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. Most analysts, however, also expect that there is something unmeasured (and perhaps unmeasurable) about rural places that makes it harder for rural people to succeed economically. As Blank (2005 [this issue]) suggests, it might be related to institutional barriers, community capacity, social networks, or cultural norms or practices that lead to different economic decisions and outcomes. To sort out the true effect of rurality that is independent of measured economic conditions requires that the analyst control for measured local economic conditions.

Since poverty is defined in terms of income, and most household income is from wages, the local economic context variables in almost all of these studies focus on local labor markets. Analysts have used many different variables to measure local labor market conditions that might affect income and poverty. The most commonly used labor market variables are unemployment rates, employment/population ratios, job growth rates, industrial sectoral composition, and occupational structure. Haynie and Gorman (1999), for example, include variables that capture unemployment and underemployment of men and women to explain household poverty status and variables that control for differences among places in age structure that may affect the supply of labor. Rupasingha and Goetz (2003) include a number of local labor market controls, including job growth, percentage of labor force employed, male and female labor force participation, and several variables capturing industrial composition. Crandall and Weber (2004) use job growth, and Swaminathan and Findeis (2004) use predicted employment growth. Levernier, Partridge, and Rickman (2000) point to the differences in industrial structure between rural and urban areas as a key to the higher poverty rates in rural counties, whereas Brown and Hirschl (1995) add an occupational structural variable to see if a different occupational structure may be resulting in higher poverty in rural areas.

Each of these variables captures some aspect of local labor conditions that may affect poverty, but none is without flaws. Unemployment rates, for example, do not capture potential discouraged or underemployed workers and often mask out migration. Because there are differences in opportunities for men and women and thus differential participation in the labor force, employment/population ratios for men and women may measure labor market tightness better than overall unemployment rates. Others have argued that job growth rates may better capture opportunities for low-income people than unemployment rates (Raphael 1998), although

new jobs in a locality are often filled by migrants and in-commuters (Renkow 2003; Bartik 1991). Bartik (1996), moreover, has suggested that job growth may be less endogenous than local unemployment rates.

The labor market is, of course, not the only contextual influence on poverty. Such things as the lack of affordable child care (Davis and Weber 2001) and greater need for transportation and lack of public transportation options in sparsely settled places (Duncan, Whitener, and Weber 2002) may impose barriers to labor force participation and employment for low-income adults that are more constraining in rural areas than urban areas. A given growth in labor demand signaled by job growth, for example, may not result in the same outcomes in rural and urban areas because of these barriers, and controlling for these differences may be important to get unbiased estimates of labor market context and rural residence impacts.

### *Selective Migration and Poverty*

Studies of residential differences in poverty risks often attribute causal significance to coefficients indicating a higher probability of poverty among rural than urban residents. Almost never, however, is people's freedom to move explicitly recognized. Perhaps certain kinds of people may be attracted to rural areas or be 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 effect of rural residence may be spurious. Alternately, positively selected individuals may be in a better position to out-migrate from rural areas, leaving behind a population more vulnerable to poverty.

Both the qualitative and quantitative studies of migration and poverty suggest that migration is selective with respect to income and earning capacity. Fitchen (1995) studied 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 multidwelling 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. 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, promotion of additional in-migration of low-income populations. Fitchen's work suggests that the poor may move more in response to cheaper cost of living than to better job prospects. Poor people seem to be attracted to poor places, places where other poor people live. Nord, Luloff, and Jensen (1995) also find that low-income people tend to move among low-income (and low-cost) places.

If, as much of the migration literature assumes, people also tend to move to places with better economic opportunity, migration might offer a route out of poverty at the individual level. Do moves from rural to urban areas actually improve economic well-being of the poor? 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. Furthermore, 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. Data from the National Longitudinal Survey of Youth 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 only *urbanward* migration that reduces poverty risks.

### *Analytical Challenges in Community and Contextual Studies*

All empirical analyses using spatial data face some common challenges. Available data may not accurately represent the theoretical constructs, and the boundaries of the geographic units for which the data are collected may not represent accurately the relevant community of influence.

In addition, community and contextual studies each have unique methodological and conceptual challenges. For community studies, challenges result from the fact that poverty is not distributed randomly across space. Spatial clustering of counties with high poverty rates (and low poverty rates) may mean that observed poverty rates are not independent of one another and that the assumption of spherical disturbances underlying the classical ordinary least squares (OLS) regression analysis is violated. Spatial correlation has been recognized as a problem for some time, but until fairly recently, econometric procedures and tools for dealing with spatial dependence have not been available for large data sets. Several recent studies have tested for the existence of spatial dependence and used spatial econometric models to correct for spatial dependence to obtain unbiased estimates of the effects of local context variables on poverty reduction. Rupasingha and Goetz (2003), Swaminathan and Findeis (2004), and Crandall and Weber (2004) all find strong evidence of spatial dependence in models of changes in poverty rates between 1990 and 2000 at the county and tract level. Reductions in poverty in one county (or tract) affect poverty change in neighboring tracts.[6]

The expected importance of adjacency to metropolitan centers in determining access to jobs and services and the observed pattern of higher poverty rates in nonadjacent nonmetro areas relative to their adjacent counterparts make it noteworthy that few of the rural poverty community studies disaggregated nonmetropolitan

areas into adjacent and nonadjacent. Rupasingha and Goetz (2003); Swaminathan and Findeis (2004); and Jensen, Goetz, and Swaminathan (2005) are exceptions.

In addition to the problem of spatial dependence and differential spatial access, community studies are also subject to ecological fallacy problems, that is, drawing unwarranted conclusions about the effect of community characteristics on individual outcomes. For this reason, those interested in rural impacts on individual outcomes turn to contextual studies.

Contextual studies avoid ecological bias because the individual outcomes (not group outcomes) are observed. However, these studies have other formidable data and methodological challenges. Foremost among the methodological challenges are possible misspecifications due to endogenous membership and omitted contextual variables. Current models of rural poverty treat nonmetro residence as an exogenous variable. The validity of this assumption is questionable, because as noted above, people have some degree of freedom to choose where they live. If people who decide to live in rural areas have unmeasured attributes that are related to human impoverishment, estimates of a rural effect can be biased. Bias related to endogenous rural residence can be treated as a type of omitted variable bias.[7] Accordingly, there are two components of bias: the "true" effect on poverty of the omitted variable and the correlation between rural residence and the excluded variable. If the bias components are either both positive or both negative in sign, then the coefficient estimate for rural residence's effect on poverty will be biased upward. Bias components having opposite sign imply an estimated rural effect on poverty that is too low.

Consider a simple example of a contextual poverty model that controls for all relevant explanatory variables with one exception—it does not include a binary variable for the extent to which an individual is geographically mobile. In fact, poverty models rarely control for geographic mobility, yet it is plausible that people who are more willing (or better able) to move in search of employment are less likely to be unemployed and poor. Also conceivable is that, compared to urban people, rural people are less mobile, having a preference for living close to their extended family and childhood friends. If mobility is negatively correlated with both poverty and rural residence, then the effect on poverty of living in a rural area could be overstated if one does not include a proxy variable for mobility in the empirical model.

## The Search for a "Rural Effect" in the Poverty Literature

We first review the *community studies* seeking to understand rural and urban differences in poverty rates. We then review and discuss recent *contextual studies* of how individual poverty outcomes and transitions are affected by living in a rural or urban place. A major conclusion is that, even when a large number of individual-level and community-level factors are controlled, there are unmeasured character-

istics of rural places that result in higher local poverty rates in rural areas and higher individual odds of being poor in rural places.

### *Community Studies: Rurality and Poverty Rates*

Researchers seeking to explain the higher prevalence of poverty in rural areas have pursued ecological approaches, in which the units of analysis are politically bounded geographic areas—frequently counties. Their characteristics are related to their poverty rates. These community studies frequently include as predictor variables measures of economic organization (e.g., industrial structure), human capital characteristics (e.g., percentage college graduates in a population), and demographic variables (e.g., percentage elderly), as well as measures of rurality.

Rural sociologists have been very active in using county-level data to explain poverty in nonmetropolitan areas. Albrecht (1998); Albrecht, Albrecht, and Albrecht (2000); Fisher (2001); and Lobao and Schulman (1991) have used county-level data for nonmetropolitan and farm counties to explore various hypotheses about the relationships between local economic (industrial) structure, family structure, labor supply, and poverty. To determine whether there is a rural effect, however, it is necessary to include data from both metropolitan and nonmetropolitan areas in the analysis.

We found only four studies that use data for all U.S. counties to examine whether there is a rural effect producing higher poverty rates in rural areas. These studies control for differences among counties in demographic characteristics, local economic structure, and include a dummy variable or series of dummy variables to capture the rurality of a place. If the rural variables in a properly specified model are significant, there is a place effect—some unmeasured characteristics of rural counties that affect poverty.

Lichter and McLaughlin (1995) analyze census data from 1980 and 1990 in their examination of the effects of demographic composition (education, age, race, mobility), industrial structure, and employment (percentage unemployed and percentage females employed) and rurality on county poverty rates. They 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. Other things equal, they find that nonmetropolitan counties have poverty rates that are 17 percent higher than metro counties. Since the average poverty rate in metropolitan areas was 11.9 percent, this implies that, holding other factors constant, nonmetro county poverty rates would be expected to be about 2 percentage points higher than metro rates in 1989.

Levernier, Partridge, and Rickman (2000) also analyze 1989 poverty rates for all counties in the lower forty-eight states, with special emphasis on county type: whether the county has a central city of a metropolitan area, or is a fringe county of a large metro area, a fringe county of a small metro, or a nonmetro county. Reflecting the curvilinear pattern of poverty rates across the rural-urban continuum,

**TABLE 1. The "Rural Effect" on 1989 Poverty Rates**

| *Authors (Year)* | *Binary Place Variable (Omitted Place Category)* | *Odds Ratio Calculated from Logistic Regression Coefficient* |
|---|---|---|
| Lichter and McLaughlin (1995) | Nonmetro county (Metro counties) | 1.167** |
| | | *Ordinary Least Squares Regression Coefficient* |
| Levernier, Partridge, and Rickman (2000) | Single county MSA | –2.35* |
| | Small (<350,000) MSA suburb | –2.21* |
| | Large (>350,000) MSA suburb | –2.13* |
| | Central-city county (Nonmetro counties) | –2.77* |

*Note:* MSA = metropolitan statistical area.
*$p < .05$. **$p < .01$.

descriptive findings show that nonmetro counties have the highest poverty rates, followed by central city counties, metropolitan counties, and fringe counties. Multivariate regression equations that include controls for local economic characteristics (industrial composition and structural change, employment growth, employment rates, labor force participation rates) and demographic characteristics (education, age, family structure, race, and mobility) are estimated with corrections for heteroscedasticity. Although the higher poverty rates in nonmetro counties are partly accounted for by industrial structure, "the economic and demographic characteristics of nonmetropolitan counties do not entirely explain their higher average poverty rates" (Levernier, Partridge, and Rickman 2000, 485). Other things equal, they find that poverty rates in various types of metropolitan counties are about 2 percentage points lower than those in nonmetropolitan counties. Table 1 summarizes the regression results for the full models of the two studies that estimate a rural effect using 1990 data.

Two other more recent community studies examine *changes* in poverty rates. Rupasingha and Goetz (2003) examine changes in poverty rates between 1989 and 1999 among counties in the lower forty-eight states. Although these studies include the usual array of population composition (education, age, race, and family structure) and economic variables (industrial structure and change, employment and employment growth, female labor force participation), they uniquely include seldom used theoretically salient variables. They found some evidence that, other things controlled, counties with a greater prevalence of "big-box" retail stores (Wal-Mart being the prototypical example) and characterized by one-party dominance were at a relative disadvantage over the 1990s, while those with higher levels

of social capital were advantaged in reducing poverty. They also found that, controlling for the other things that affect poverty change, poverty reductions in nonmetro counties with urban populations of twenty thousand or more and in nonadjacent nonmetro counties were smaller than in metro and adjacent nonmetro counties with less than twenty thousand urban population. There is something unmeasured about remote nonmetro counties with small urban populations that hinders poverty reduction above and beyond growth rates, industry structure, education, and ethnicity.

Swaminathan and Findeis (2004) expanded the Rupasingha and Goetz (2003) analysis by exploring interactions of welfare policy, employment growth, and poverty change between 1990 and 2000 across all U.S. counties. They first model change in employment rates as a function of change in per capita family assistance receipts, finding that—in the spatially corrected model—predicted reductions in public assistance payments do not increase employment change. When they model poverty rate change as a function of predicted employment change, they find that employment increases are associated with poverty reduction in metro areas, other things equal, but not so in nonmetro areas. Like Rupasingha and Goetz, they find that poverty reduction is slower in small remote nonmetro counties. The regression results for the rural effect on poverty change in both studies are summarized in Table 2. Since the expected change in the poverty rate over this period is negative, a positive coefficient on a variable suggests that the factor slows poverty reduction and a negative coefficient indicates a factor that increases poverty reduction.

Both Rupasingha and Goetz (2003) and Swaminathan and Findeis (2004) explicitly recognize that people and firms make decisions in a spatial context. They model the effect of spatial proximity econometrically by introducing a spatial weight matrix and examining poverty rate changes in a particular place as a function of both the own locality characteristics and the poverty changes in surrounding areas. Both studies found evidence of geographic spillover effects of poverty in surrounding counties on own poverty rates.[8] Changes in poverty in one place affect poverty reduction in neighboring places.

From the community studies we have learned that a rural county with a particular demographic composition and economic structure is likely to have a higher poverty rate than an urban county with identical measured characteristics. There appear to be unmeasured characteristics of rural places that increase the prevalence of poverty. From recent studies that correct for spatial dependence, we have learned that changes in poverty rates in one county have spillover effects on neighboring counties.

The place effect literature is ultimately interested in how individuals are affected by the places they live. Because community studies are not appropriately used to make inferences about individuals, community studies can only provide corroborating evidence in the discovery of how places affect individual behavior and outcomes. We must turn to the contextual studies to examine "place effects" on individuals.

**TABLE 2. The Rural Effect on 1989 to 1999 Poverty Rate Change**

| *Authors (Year)* | *Binary Place Variable (Omitted Place Category)* | *OLS Regression Coefficient* |
|---|---|---|
| Rupasingha and Goetz (2003) | Nonmetro county with urban population ≥ 20,000 adjacent to metro [Beale Code 4] | .311* |
| | Nonmetro county with urban population ≥ 20,000 not adjacent to metro [BC 5] | .353* |
| | Nonmetro county with urban population of 2,500 to 19,999 adjacent to metro [BC 6] | n.s. |
| | Nonmetro county with urban population of 2,500 to 19,999 not adjacent to metro [BC 7] | .430* |
| | Nonmetro county completely rural adjacent to metro [BC 8] | n.s. |
| | Nonmetro county completely rural not adjacent to metro [BC 9] | .635* |
| | (Metro counties) | |
| | | *Two-Stage Least Squares Regression Coefficient* |
| Swaminathan and Findeis (2004) | Nonmetro county with urban population ≥ 20,000 adjacent to metro [BC 4] | .457* |
| | Nonmetro county with urban population ≥ 20,000 not adjacent to metro [BC 5] | .786** |
| | Nonmetro county with urban population of 2,500 to 19,999 adjacent to metro [BC 6] | n.s. |
| | Nonmetro county with urban population of 2,500 to 19,999 not adjacent to metro [BC 7] | .604** |
| | Nonmetro county completely rural adjacent to metro [BC 8] | n.s. |
| | Nonmetro county completely rural not adjacent to metro [BC 9] | .774** |
| | (Metro counties) | |

*$p < .05$. **$p < .01$.

## *CONTEXTUAL STUDIES: THE EFFECT OF LIVING IN A RURAL AREA ON INDIVIDUAL POVERTY STATUS*

During the past fifteen 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 twelve 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 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. Eight of the twelve studies used national data to directly test for the existence of a "rural effect."[9] In this section of the article, we examine these eight studies.

The rest of this article reviews the contextual studies of place effects in rural poverty, examines the limitations of existing studies, and offers a research agenda that will provide insight into the ways in which places may affect poverty. 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 the studies indicate whether the residence of the individual household is in a rural or urban area. For three of the studies (McLaughlin and Jensen 1993, 1995; Jensen and McLaughlin 1997), it is the only community variable. Two of the studies (Kassab, Luloff, and Schmidt 1995; Lichter, Johnston, and McLaughlin 1994) also include a variable that indicates the region of the country in which the individual household resides (or a dummy variable for the South). Only three of the eight (Brown and Hirschl 1995; Cotter 2002; Haynie and Gorman 1999) attempt to model other characteristics of the community of residence of the household. All three 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: percentage unemployed, percentage employed in core industries, and percentage employed in mid-level occupations. Cotter (2002) and Haynie and Gorman (1999) model the community opportunity structure using the labor market area (LMA) as the geographic unit of analysis. An LMA is a multicounty aggregate that seeks to bound a geographic area in which commuting to jobs takes place. Both Cotter and Haynie and Gorman 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: percentage of population older than 65, percentage younger than 18, percentage with less than high school education, percentage female-headed households, percentage of women in the labor force, educational expenditures per pupil, five-year average unemployment rate, percentage of jobs that are "good jobs," and percentage of jobs in manufacturing. Haynie and Gorman include percentage with less than high school education, old age and youth dependency ratios, rates of unemployment and underemployment, and percentage of employment in five 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 unem-*

*ployment 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 Haynie and Gorman (1999). 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 Cotter (2002) and Haynie and Gorman but not in Brown and Hirschl (1995). *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 Haynie and Gorman but not Cotter), higher shares of youth (significant in both Haynie and Gorman and Cotter), and lower shares of elderly (significant in Haynie and Gorman but not Cotter)

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 3 summarizes the findings from these studies about how much greater are the odds of being poor if a person lives in a nonmetropolitan area relative to living in a metropolitan area, holding constant a large number of individual, household, and community characteristics.[10] This table reports odds ratios of being in poverty in models with different sets of control variables of individual, regional, and community characteristics. Table 4 summarizes the findings of two studies 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). 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, inclusions or 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.

All this contextual 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 if they live in a rural labor market than an urban

**TABLE 3. Odds of Being in Poverty for Nonmetro Residents**

| *Population* | *Authors of Study* | *Odds Ratio* | |
|---|---|---|---|
| Studies with individual, regional, and county or labor market area (LMA) controls | | | |
| All households | Cotter (2002) | 1.19 | Relative to metro |
| Nonelderly households | Brown and Hirschl (1995) | 2.27 | Relative to metro core |
| | | 2.7 | Relative to fringe metro |
| | | 1.42 | Relative to other metro |
| Nonelderly married women and men | Haynie and Gorman (1999) | 1.43 | Relative to urban LMA |

| *Population* | *Authors of Study* | *Year* | *Odds Ratio* | |
|---|---|---|---|---|
| Studies with individual and region controls | | | | |
| All households <125% poverty | Kassab, Luloff, and Schmidt (1995) | 1979 | 1.66 | Relative to metro |
| | | 1989 | 2.12 | Relative to metro |
| Working adults >27 wks | Lichter, Johnston, and McLaughlin (1994) | 1979 | 1.68 | Relative to metro |
| | | 1989 | 2.30 | Relative to metro |
| Studies with individual controls | | | | |
| Elders | McLaughlin and Jensen (1993) | 1989 | 1.35 | Relative to central city |
| | | 1989 | 0.71 | Relative to suburbs |

**TABLE 4. Odds of Moving In or Out of Poverty for Nonmetro Residents (Individual Controls Only in These Studies)**

| *Population* | *Authors of Study* | *Gender* | *Odds Ratio* | |
|---|---|---|---|---|
| Odds of entering poverty for nonmetro residents | | | | |
| Elders | McLaughlin and Jensen (1995) | Men | 2.23 | Relative to metro |
| | | Women | 1.57 | Relative to metro |
| Odds of exiting poverty for nonmetro residents | | | | |
| Elders | Jensen and McLaughlin (1997) | | 0.80 | Relative to metro |

labor market even if the labor markets have the same industrial and occupational structure and unemployment rate.

Yet 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; Davis, Connolly, and Weber 2003). The rural-urban differences in poverty outcomes might be 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. Also, perhaps, if the studies reviewed had estimated robust standard errors, some of the variables reported as statistically significant would not have been significant.

Cotter (2002) provides a good summary of the current state of knowledge about the effects of rural residence on the likelihood of poverty:

> 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. 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. (Pp. 548-49)

If the models underlying the studies reviewed in this section 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.

Unfortunately, however, the studies reviewed have potentially serious methodological weaknesses. These weaknesses suggest withholding 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.

## Methodological Challenges in Assessing Place Effects in Contextual Studies

A number of methodological challenges confront those wishing to estimate place effects. 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, Connell, and Klebanov (1997), Robert (1999), Duncan and Raudenbusch (2001), Moffitt (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 is 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 section.[11]

### *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.

Most of those assessing the urban "neighborhood effect" literature believe that failure to address endogenous membership issues biases the estimates of neighborhood effects upward (Dietz 2002, 565). Duncan and Raudenbusch (2001) identify two nonexperimental approaches for addressing endogeneity that have potential for analysis of a rural effect.[12] 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. Yet 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 probably have been omitted in the analyses. To

the extent that this is true, estimates of the rural effect will reflect both any true effect and the spurious effect of the omitted characteristics.

Since one can never know whether all the possible characteristics had been included and thus the bias eliminated, the 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 is identifying an appropriate instrument, in this case a variable that is highly correlated with rural residential choice but not highly correlated with the error term in the model estimating the odds of an individual being poor.

One plausible identifying instrument is a binary variable indicating that the household head's main occupation is farming-related. Farm families are somewhat more likely to live in nonmetro areas, but it is not expected that farmers are more or less likely to be poor compared with nonfarmers, a hypothesis that can be tested directly. Another conceivable identifying instrument is an indicator variable for whether the householder has a religious preference (such as Amish or Mennonite) that is not well represented in urban areas. As these proposed instruments illustrate, finding an appropriate instrument is a significant challenge.

Tests should be conducted for the validity of identifying instruments. First, analysts can examine whether the identifying instrument is highly correlated with rural residential choice, which involves tests of individual and joint significance of identifying variables in an empirical model of rural residential choice. Second, a Sargan test of overidentifying restrictions can be implemented to test the null hypothesis that the instruments are uncorrelated with the error term of the poverty equation.

The rural poverty literature almost never considers the process by which households sort themselves into rural and urban areas. Only two studies (Rupisingha and Goetz 2003; Fisher 2005) explicitly consider the possibility of endogenous membership or test for endogeneity of rural residence. Fisher (2005) examines the possibility of endogeneity in rural poverty studies and concludes that failure to correct for endogeneity in contextual studies of rural poverty does in fact lead to overestimation of the rural effect. 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 previous rural poverty literature.[13]

### *Omitted-Context Variables*

Most of the contextual studies of poverty 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 United States) 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 other variables are related to poverty risk and 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, and childbearing, for example), many contextual variables are needed to accurately describe "place" context.

Duncan and Raudenbush (2001) 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. For example, measures of institutional capacity, school quality, local administrative practice, access to services, community collective efficacy, and social ties are not reliably collected or consistently reported. 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 three 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 comparable 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 consider 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. More than half of the contextual studies 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). Thus, they examined the moderating influence of rural residence on the effect of individual and community characteristics on the odds of individual poverty.

Five studies found significant interactions. Brown and Hirschl (1995) found that employment of a household head reduced the odds of being poor less for those living in a rural area. Lichter, Johnston, and McLaughlin (1994) found that working additional hours reduces poverty less in rural areas than in urban areas. McLaughlin and Jensen (1993) 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 (2002) multilevel analysis comes to the opposite conclusion: "The effect of employment on [reducing the] likelihood of poverty is greater in nonmetropolitan than in metropolitan areas" (p. 549).

Lichter, Johnston, and McLaughlin (1994) found that those in rural areas with less than high school education were more at risk of poverty (and those with more than high school education more at risk) than their counterparts in urban places. Haynie and Gorman (1999) 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.

Haynie and Gorman (1999) examined interactions between rural residence and unemployment rates. They 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.

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. If rurality negatively affects 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. Failing to model direct and indirect effects may bias the place effect downward (Duncan and Raudenbush 2002, 116).

### *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. The appropriate "local community" boundaries for a study of place effects on poverty odds remain unclear. Given the lower population densities of rural areas and thus the larger geographic extent of administrative units such as census tracts, such administrative units are likely more imperfect for defining communities in rural area research than in urban research.

Even more fundamentally, any analysis using spatially aggregated data is subject to the Modifiable Areal Unit Problem: relationships identified using a given set of spatial data can vary depending either on the number of spatial zones used in the analysis, the scale problem, or on the ways that smaller units are aggregated into larger units, the aggregation problem (Martin 1996). Regional scientists have long recognized the enormous heterogeneity within nonmetropolitan and metropolitan counties and the inadequacy of these spatial units for capturing rural-urban differences related to poverty. A good example of the aggregation problem is found in Fisher and Weber (2002), who show how conclusions about the geography of poverty change by aggregating central cities and the surrounding territory into a single category of metropolitan areas and adjacent and nonadjacent nonmetro counties into the category of nonmetro areas. Isserman (2005 [this issue]) suggests an alternative way of sorting counties based on population density and economic integration that better distinguishes rural and urban geography.

If aggregation is a problem in spatial analysis of poverty, evidence from community level studies suggest that scale may not be. Swaminathan and Findeis's (2004) county-level analysis of changes in poverty rates between 1990 and 2000 reaches conclusions about the factors affecting poverty reduction very similar to those of Crandall and Weber's (2004) tract-level analysis of poverty rate changes over the same period.

#### *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, occupa-

tional 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 (1995), Haynie and Gorman (1999), and Cotter (2002) clearly articulate this framework as the theoretical underpinnings for their empirical models.[14]

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 (1999, 195), 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."

The "neighborhood effects" literature has begun to focus on "social processes and mechanisms." Sampson, Morenoff, and Gannon-Rowley (2002) 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. Concerted efforts are necessary 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 Multilevel 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 correlated error terms 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 twelve contextual studies we examined, only one (Cotter 2002) attempted to account for the multilevel modeling. Using HLM, Cotter (2002) did find that the odds of being in poverty increased 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.

## 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 community characteristics such as local unemployment rates and industrial structure. Yet the likelihood of being poor is higher in rural areas even after accounting for differences in community and individual characteristics, and 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.

*The first item on the rural poverty research agenda is more carefully specified models of factors affecting poverty odds that are estimated with existing data and using methods appropriate for multilevel analysis*. Some would argue that the main concern about the validity of existing rural poverty research is endogenous membership: poverty is higher in rural areas not because of an "effect" of living in a rural area on poverty risk but because poor people are more likely to select themselves in a systematic way into rural places. Sampson, Morenoff, and Gannon-Rowley (2002, 474) 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."

Knowing whether there is truly a rural effect may focus attention on the unique context of rural poverty. Of greater interest to policy makers, however, is whether antipoverty policy has different impacts 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. Experimental design studies randomly assign households into "treatment" and "control" groups, administer different treatments to the two groups, and conclude that the "treatment" had an effect if the outcome measures of interest are significantly different between the two groups. Quasi-experimental design studies use existing data and compare outcomes of a group that has been affected by a policy change (the "treatment group")

with outcomes of another group that is assumed not to be affected by the policy change. Studies of impacts of changes in welfare policy that affect single mothers might, for example, compare outcomes of single mothers (the "treatment" group) with single women without children who are ineligible for welfare. One such 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, Redcross, and Miller (2002) found that policy impacts on employment were larger in metropolitan areas. In the other quasi-experimental study, Weber, Edwards, and Duncan (2004) found that policy impacts on both employment and poverty were larger in nonmetropolitan areas. *The second element of a rural poverty research agenda is new experimental or quasi-experimental studies of the effects of social policy in rural and urban areas.*

*The third element of a rural poverty research agenda 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*. Even correctly specified and estimated models of individual odds of poverty as a function of rural residence and individual and community characteristics 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. Even properly designed experimental or quasi-experimental studies of policy impacts will only tell us *whether* the policy has a different impact and not *how* policy interventions work differently. The neighborhood effects literature has begun to explore these questions in urban neighborhoods and develop measures of neighborhood-level mechanisms that affect individual outcomes. As Sampson, Morenoff, and Gannon-Rowley (2002, 474) note, "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."

*The fourth agenda item is new multimethod, multisite 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*. Understanding about these links will not come from sole reliance on carefully specified econometric analysis of existing large data sets. It will require employing a mix of analytical approaches in a number of rural places to examine the hypotheses growing out of the theorizing suggested above.

This review has focused on studies of the factors that lead to poverty in rural areas and, in particular, to the ways in which rural residence may affect one's poverty status. We have not examined any feedback effect of the existence of poverty

on rural communities. High poverty rates surely affect communities. *This suggests a fifth line of inquiry in the rural poverty agenda: how concentrated poverty in rural places affects rural communities*. There is a rich theoretical and empirical literature that explores the effects of concentrated poverty in urban communities on such community attributes as collective efficacy (Sampson and Raudenbush 1997) and social capital (Kawachi et al. 1997).[15] Some of the qualitative research reviewed in this article suggests how concentrated poverty affects rural communities. However, we did not uncover any recent quantitative studies of the effects of concentrated poverty on rural community well-being. Given the different scale of concentration of poverty and employment in rural places, and the different levels of services available to rural people, and the differences in institutions and social norms, there is certainly some reason to expect that the link between poverty concentrations and community outcomes might be different in rural areas. If in fact these links are different, different strategies for reducing poverty in rural places may be needed.

Our efforts to reduce poverty in rural areas are hampered by our lack of knowledge about how living in a rural area affects one's life chances and about how poverty interventions can change the odds of economic success, as well as by our lack of understanding about the effects of concentrated rural poverty on rural communities. Increased attention to the social processes and institutions in local communities, in particular, would provide a firmer foundation for our understanding of causes and effects and for our ability to contribute to policy design.

## NOTES

1. We use the terms "rural" and "nonmetropolitan" ("nonmetro"), and "urban" and "metropolitan" ("metro"), interchangeably. We 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 nonmetropolitan based on presence of a city with more than fifty thousand 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 twenty-five hundred people as the cutoff for urban populations. Urban populations are defined as those living in a place of twenty-five hundred or more, and rural populations live in places with less than twenty-five hundred 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 in 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. See the more comprehensive annotated bibliography of the literature prepared by Kathleen Miller and Jane Mosley available online: http://www.rupri.org/rprc/biblio.pdf.

4. Other important criticisms of the official poverty measure include (1) the official poverty thresholds developed in the 1960s are outdated; (2) the income measure does not include the value of in-kind benefits, nor does it deduct payroll/income taxes as well as expenses required to hold a job and

to obtain medical care; and (3) income alone is an insufficient indicator of economic well-being, so consumption- and wealth-based indicators are also important.

5. This is equivalent to estimating the log-odds as a linear function of the demographic and economic characteristics and rural residence: $\ln \frac{PR(P_{ij}=1)}{1-PR(P_{ij}=1)} = \mathbf{X}_i\beta_1 + \mathbf{X}j\beta_2 + R_j\beta_3$.

6. All three studies also found evidence of spatial error, suggesting that measurement error is associated with spatial boundaries (that the processes affecting poverty reduction act at a different level of spatial aggregation than counties or tracts). This problem was more serious in the tract-level analysis than in the county-level analysis.

7. The discussion here draws on Jargowsky (2005), who provides an excellent mathematical exposition of omitted variable bias.

8. A related literature looks for a "spatial mismatch" between where poor job seekers live and where new jobs are being created. "Spatial mismatch" models examine how variations in job access across space affect work outcomes of residents of poor neighborhoods. This literature has focused mostly on urban areas—the article by Blumenberg and Shiki (2004) is an exception. Ihlanfeldt and Sjoquist (1998) provide a good review of this literature. In places where there is a spatial mismatch, one would expect limited spatial spillovers. Allard (2004) has also examined the spatial mismatch between social services and disadvantaged populations in urban places. We did not find any studies of rural spatial mismatch in services.

9. There is a rich economic literature of contextual studies of locality-specific factors affecting employment, earnings, economic well-being, and welfare participation in rural and urban areas. A summary of that literature can be found in Weber, Duncan, and Whitener (2001). More recent studies include Findeis and Jensen (1998); Davis and Weber (2002); Davis, Connolly, and Weber (2003); Kilkenny and Huffman (2003); Yankow (2004); and Ulimwengu and Kraybill (2004). This literature provides insight into the working of the labor market and welfare system as they affect life chances and poverty in rural areas. Since this article focuses on the causes of poverty, however, we have limited our review to studies that use poverty status as the dependent variable.

10. These odds ratios reflect the effect of living in a nonmetro area (relative to a metro area or some other reference place) on the odds of being poor. Some of the studies in the table reported the odds ratios while others reported the logistic regression coefficients. We took antilogs of the logistic regression coefficients to convert them to odds ratios to simplify comparisons of the results across the different studies. While some researchers describe effects on the odds as the effect on the likelihood of being poor, the odds ratios are not directly interpretable (without additional calculations) as an effect of a predictor on the probability of being poor or on the poverty rate.

11. One anonymous reviewer emphasized the possibility of 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 problem is more likely 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. Reverse causation is not likely to pose a threat to the validity of rural "place effect" research.

12. 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.

13. Given sufficient time, nearly any factor can be endogenous. Those variables over which individuals and households have the greatest short-run control are least likely to be exogenous. Among the reviewed studies, the explanatory variables that appear most likely to be endogenous to poverty include marital status, employment/labor force status, and community characteristics (including rurality). Cotter (2002), for instance, includes as a predictor of poverty, the percentage of labor-market-area residents with less than high school education. Just as low-income households may sort themselves into rural

locations, the poor may gravitate toward places where educational attainment is relatively low. Thus, endogeneity bias is not restricted to the measurement of the rural effect on poverty, but we focus on this issue because the rural effect is the main concern of this article.

One anonymous reviewer suggested that selectivity bias is likely not as problematic in urban poverty research as in the urban neighborhood literature, since a poor neighborhood in inner-city Chicago, for example, will have much greater homogeneity and selectivity than the diverse set of counties that compose rural America. Indeed, selectivity may not be as strong in rural counties as in urban ghettos, but this empirical question needs to be examined if the conclusions from rural poverty research are to be accepted as valid.

14. 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.

15. We are grateful to an anonymous reviewer for calling this to our attention and for suggesting references to the urban literature.

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