

Theme Overview: Rural Poverty and Food

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JEL Classifications: I14, I30, I38, R10

Keywords: Food Access, Food Stamps, Inequality, Rural Poverty, SNAP

The topic of poverty and inequality has gained renewed public interest with recent publications on inequality and economic mobility by Thomas Piketty (2014) and Raj Chetty et al. (2014). Piketty argues that inequality is a central feature of capitalism and can be remedied only through government policy. He also speaks of improving education, skills, technological innovation, and diffusion as means for correcting inequities.

Chetty et al., focusing on intergenerational mobility, find substantial variations in mobility across areas within the United States and that higher parental income is associated with more child income in the future. They also identify less residential segregation, less income inequality, better primary schools, greater social capital, and greater family stability as factors correlated with upward mobility. Equally important to and interconnected with the subject of mobility and inequality is poverty.

Similar to the relationship between intergenerational incomes in Chetty et al., Mark Partridge points out in this theme of *Choices*, “more poverty today causes more poverty in the future through its intergenerational nature.” Government policies and programs, improving education and skills, and technological innovation have been linked to poverty reduction in general. Poverty has also been connected to residential segregation, income inequality, and social capital.

At the geographic level, poverty in the United States is overwhelmingly a rural phenomenon. Although the overall poverty rate in rural America declined slightly between 1990 and 2000, it has inched up by a considerable margin a decade later. Compared to rural America, urban America

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Rural Poverty, Food Access, and Public Health Outcomes

has been experiencing lower poverty rates. This gap has existed since the 1960s, when the poverty rates were first officially calculated, and it has been widening in the last few years. In December 2013, the Federal Reserve Bank of Atlanta (FRBA) hosted a research symposium on rural poverty issues in the United States (FRBA, 2013). While the symposium discussed a wide range of issues—including concentrated and persistent poverty, demography and poverty, social and cultural aspects, safety net programs and place-based policies—one of the themes that arose was the relationship between food and poverty. This *Choices* theme features three articles based on presentations from the symposium: one that focuses on costs of high poverty to society and general policy approaches for poverty alleviation; and two articles that focus on the relationship between poverty and food.

The article by Partridge points out that poverty is a problem but too often it is ignored and rural poverty is even more overlooked most probably due to its dispersed nature. He discusses the costs to the broader society of high levels of poverty. For example, he argues that low income citizens

have worse health outcomes and that poverty is linked to higher inequality which then can be linked to less economic growth in the global economy. Therefore, the United States cannot compete if a large share of its population is not contributing to their fullest capacity. He ends the article with some suggestions in order to make tangible reductions in poverty.

The article by Tim Slack addresses the geography of food stamp receipts by examining changes in them across U.S. counties during the Great Recession and identifying how changes in other local characteristics were associated with this outcome. He finds substantial local-level variations in the change in food stamp use during the recession, and that counties with higher levels of participation change tend to be regionally clustered. He further shows that areas where the signature characteristics of the Great Recession were most pronounced were precisely the places where food stamp use jumped most rather than places with historically high levels of

food stamp participation. The article suggests regionally targeted outreach and investment in food stamps and the use of the program as a responsive form of local stimulus during periods of economic crisis as potential areas for policy.

The article by Canto, Brown, and Deller focuses on food access and rural poverty. It presents a review of literature that studies the effects of food access on poverty and health and a summary of an analysis of access to food, health outcomes and rural poverty. Authors find a strong relationship between rural poverty and health where higher poverty is associated with poorer levels of public health. They also find that higher levels of healthy food access are associated with better health outcomes. Finally, they argue that the interplay between local foods, poverty and health is subtle, emphasize the need for more research before effective policies can be crafted, and present some ideas for future research.

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Is Poverty Worth Fighting Wars Over?

Mark D. Partridge

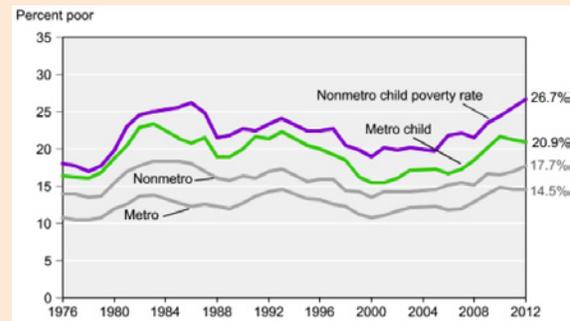
JEL Classifications: I30, J20

Keywords: Poverty; Inequality; War on Poverty

U.S. Census Bureau *Current Population Survey* data indicate that using the official federal definition, 46.5 million people were in poverty in 2012, which represents 15% of the U.S. population. Yet, despite a recent uptick in interest in January 2014 surrounding the 50th anniversary of President Johnson’s announcement of a “War on Poverty,” as well as President Obama’s proposals to raise the federal minimum wage, the plight of the lowest income Americans receives remarkably little attention despite the large numbers of people who are adversely affected. Similarly, while there is interest in rising income inequality, most of the discussion appears focused on the middle class.

It is somewhat surprising that poverty is not a bigger issue, especially in rural America. Figure 1 shows metropolitan area and nonmetropolitan area overall poverty rates and their child poverty rates using the official federal definition. It is apparent that nonmetropolitan poverty is consistently higher than metropolitan poverty (on the order of 3 percentage points) and this has been the case since the official measure was derived in the 1960s. The nonmetro/metro child poverty gap is even higher and the gap generally increased during the last 15 years. Most recently, the nonmetro/metro child poverty gap was at 6 percentage points. Likewise, 301 of the 353 counties defined as having persistent high poverty of greater than 20% in 1980, 1990, 2000, and 2007-2011 by the U.S. Department of Agriculture (USDA) are nonmetropolitan. Of course, while there may be mitigating factors such as lower rural cost of living, rural poverty and poverty, in general, are not things to be overlooked.

Figure 1: Child and Overall Poverty Rates by Metro/ Nonmetro Residence



Source: United States Department of Agriculture Economic Research Service, 2014.

Partridge and Rickman (2006) describe why this benign neglect in addressing issues of poverty comes at a large expense to the nation. First, it smacks against a national notion of fairness and the “American Dream” that anyone has a chance to rise to the middle class or above. Second, more poverty today causes more poverty in the future through its intergenerational nature. For example, low-income families have fewer resources to pay for post-secondary education, whose costs are spiraling upward. College graduate attainment has been rising much faster for wealthy families than for those near the bottom of the income distribution (Bailey and Dynarski, 2011). In addition, money buys better educational opportunities well before university attendance, further constraining poor children’s future employment opportunities. Hence, poverty is being perpetrated

and economic growth is constrained by the large numbers of the population who cannot acquire the necessary education to pull themselves out of poverty.

Third, poverty is self-sustaining because young people who grow up in poor neighborhoods typically lack successful labor market role models, as well as successful labor market contacts to help them network for better employment. Thus, a large share of the population will not fully participate in the labor market, further reducing economic growth. In addition, low-income citizens also have worse health outcomes (Mellor and Milyo, 2002), making them more expensive to treat and less able to participate in the labor market, which also reduces economic growth.

There is also evidence that greater poverty reduces economic growth by increasing overall income inequality (Berg and Ostry, 2011). Bear in mind that a certain level of income inequality is necessary for economic growth; it provides incentives to acquire training and education, as well as promote entrepreneurship and innovation. The concern is that the United States has surpassed a tipping

point in which growth is constrained by rising income inequality for a host of reasons that often relate to social stability and promotion of rent seeking (Partridge and Weinstein, 2013). Cutting even one-tenth of a percentage point of growth per year would reduce national gross domestic product (GDP) on the order of \$16 billion every year. The overall point is that society is also paying a large cost by allowing poverty rates to remain so high. In the global economy, the United States cannot compete if a large share of its population is not contributing their fullest capacity.

Can Government Do Anything About Poverty?

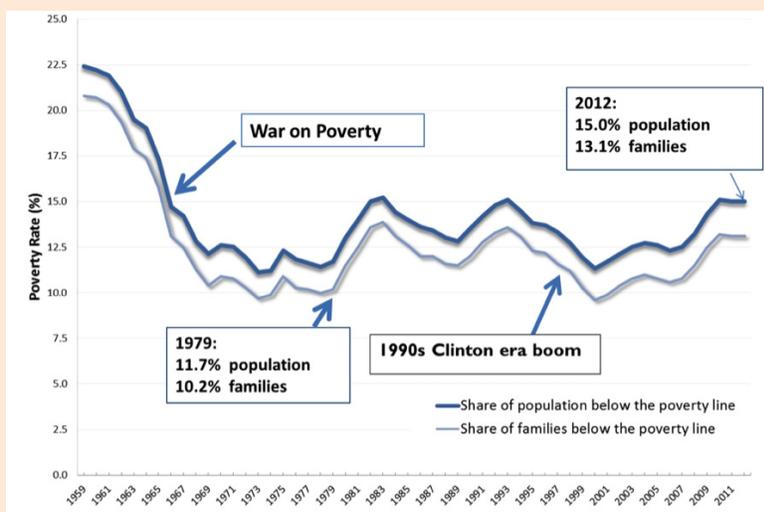
Americans have traditionally held conflicted views of welfare programs that revolve around race, notions of the “deserving poor,” all mixed in with “misinformed” perceptions of public assistance programs in general (Gilens, 1999). In this environment, it is not surprising that the degree to which government programs reduce poverty is one of the most controversial policy debates. To help settle this question, we examine overall poverty rates over the last two generations.

Figure 2 reports overall poverty rates from 1959 to 2012. It shows rapid decline in the 1960s and a more modest decline in the 1990s, during the “Clinton-era” economic boom. However, the general story is one of stagnation after the heady gains of the 1960s, much of which included President Johnson’s War on Poverty.

The overall poverty rate bottomed out at 11.1% in 1973, or almost 4 percentage points lower than in 2012. Given that the official poverty rate threshold is an absolute measure (adjusted for household size) that rises at the rate of inflation (for example, it was \$23,492 in 2012 for a family of four), any *real* economic growth that is shared at the bottom of the distribution would mechanically reduce the poverty rate. This discouraging trend of rising poverty rates is viewed by conservatives as proof that government efforts to reduce poverty have failed and go further to argue that Johnson’s War on Poverty failed (for example, see the U.S. House of Representatives’ Budget Committee Majority Report, 2014). Liberals are inclined to argue that government efforts have been too timid since the War on Poverty, which underlies the rise in poverty since the late 1960s.

Given that the War on Poverty is a main bone of contention, it is worthwhile to appraise its impact and assess whether government programs can reduce poverty. Table 1 reports overall poverty rates and poverty rates by age sub-groups. First, the overall poverty rate was 22.4% in 1959, 19.0% in 1964, and 12.1% in 1969, when the new Nixon Administration began to scale back and at least partially dismantle the War on Poverty. In particular, the Nixon Administration started dismantling the “community action” aspects of the War, though welfare expenditures did not sharply turn down until the 1980s (Rose and Baumgartner, 2013). Thus, in the five years preceding the War’s onset, poverty rates fell by 3.4 percentage

Figure 2: Poverty Incidence in the United States (1959-2012)



Source: United States Department of Commerce Census Bureau, 2013.

points; during the War's five years of highest intensity, poverty rates fell by 6.9 percentage points, doubling the pace of poverty reduction.

When considering population subgroups with available data, child poverty rates fell by 4.3 percentage points in the five years prior to the War on Poverty, but by 9 percentage points in the subsequent five years. While data only begins in 1966, Table 1 shows that poverty rates were also declining for 18- to 64-year-olds and for those over 65, though these gains were nowhere near as impressive as for children. Afterwards, it can be seen that, between 1969 and 2012, the only sub-group that had a declining poverty rate was senior citizens, which likely relates to Social Security and other related programs. Conversely, child poverty rates and 18- to 64-year-old poverty rates had returned to the level of the mid-1960s. Conservatives tend to point to changes in family structure as a primary cause, questioning whether government programs are behind this demographic change. Liberals point to rising inequality and timid government efforts to reduce wage inequality, such as the falling real value of the minimum wage.

There were, of course, many things happening in the 1960s besides the War on Poverty, including a relatively strong economic expansion. Nevertheless, the descriptive evidence is consistent with the hypothesis that the War had poverty-reducing effects that were reversed once government efforts were at least partially scaled back. Thus, the raw data is consistent with the War having positive effects. While by no means definitive, it does suggest that "good" government policy can reduce poverty rates. In this vein, both the conservatives and liberals agree that the Earned Income Tax credit is effective in encouraging work among low-income households. So, there is at least some agreement that good government policies can help.

What Should Government Do Next?

As already noted, trying to develop good government policies to reduce poverty has proven to be challenging, but it is worthwhile to note a few observations.

First, reducing children poverty rates should be the highest priority (primarily through helping their parents). Reducing child poverty rates likely requires that their parents have sufficient resources to provide

more educational opportunities that would help break the cycle of poverty. Providing high-quality early education would be the first step, as well as efforts to improve affordability of college education for low-income students.

Second, poverty tends to be concentrated in poor neighborhoods and regions such as Appalachia (Partridge and Rickman, 2006). While it is controversial to geographically target poverty to "poor places" that struggle economically, there is evidence that job creation has much stronger poverty-reducing effects in high-poverty clusters, suggesting that poor households are willing to work their way out of poverty if the opportunity arises (Partridge and Rickman, 2007).

While reducing poverty has proven to be very costly and a frustrating process, not cutting poverty also has severe costs for both the affected individuals and the United States' long-term economic growth. Hence, there are clear reasons to mobilize the "troops" to restart the War.

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Table 1: Poverty Rates for Selected Age Groups and Years

	Total	Under 18 years	18 to 64 years	65 years and over
2012	15	21.8	13.7	9.1
1969	12.1	14	8.7	25.3
1968	12.8	15.6	9	25
1967	14.2	16.6	10	29.5
1966	14.7	17.6	10.5	28.5
1965	17.3	21	-	-
1964	19	23	-	-
1959	22.4	27.3	17	35.2
- indicates that the data was not reported				
Source: United States Census Bureau Current Population Survey - Annual Social and Economic Supplements.				

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How Did the Great Recession Impact the Geography of Food Stamp Receipt?

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JEL Classifications: I30, I38

Keywords: Food Stamps, Great Recession, SNAP, Spatial Inequality

From December 2007 to June 2009, the U.S. economy suffered the longest and deepest downturn since the Great Depression. Now aptly referred to as the Great Recession, the catalyst for this 18-month contraction was the bursting of a housing bubble that had become a profit center for the U.S. economy in the earlier part of the decade. As housing prices plummeted, mortgage defaults and foreclosures soared, and a systemic crisis took hold in the financial sector due to staggering losses on mortgage-backed securities and related products. The crisis created severe economic hardship for many Americans, including high and long-term unemployment, increases in the ranks of discouraged and involuntary part-time workers, and the greatest number of people in poverty in over 50 years. Given the magnitude of the crisis, the federal government responded with a series of bailout and stimulus programs aimed at mitigating the damage wrought by the downturn, the scale of which were unprecedented in the post-Depression era (Grusky, Western, and Wimer, 2011).

As the toll of the Great Recession mounted, another consequence was record-high levels of participation in the Supplemental Nutrition Assistance Program (SNAP). Formerly the Food Stamp Program (known most commonly simply as “food stamps”), SNAP is the nation’s largest food assistance program and one of the longest-standing components of the U.S. social safety net. While SNAP participation was widespread in the year leading up to the recession, averaging roughly 26 million people a month in 2007 (one in 11 Americans), by 2011, in the wake of the downturn,

about 45 million people were enrolled in the program on a monthly basis (one in seven Americans) (U.S. Congressional Budget Office, 2012).

While the lion’s share of research on SNAP participation has reasonably focused on individual/household-level characteristics at one end of the continuum and state-level considerations at the other, several recent studies have drawn attention to the middle-range influence of local place-based factors (Goetz, Rupasingha, and Zimmerman, 2004; and Slack and Myers, 2012 and 2014). Focusing on counties, these studies demonstrate that places with high SNAP receipt are typically not geographically isolated, but instead tend to be members of regional clusters characterized by similar levels of SNAP use. For example, persistently poor multicounty regions such as Central Appalachia, the Lower Mississippi Delta, and the Rio Grande Valley stand out for having especially high levels of SNAP receipt (Slack and Myers, 2012).

We also know that the impacts of the Great Recession were geographically uneven. Take, for instance, one of the Great Recession’s signature features, the collapse of the residential housing market. During the downturn nearly half the states in the country actually had their housing prices hold steady. But in five states, median home values fell more than 30%: Nevada (-49%), Florida (-38%), Arizona (-38%), California (-37%), and Michigan (-34%) (Taylor et al., 2011). The same five states were plagued by some of the highest unemployment rates during the recession, with Nevada again ranking at the top of the list (+9.8%) (Walden, 2012).

Changing Geography of Local SNAP Receipt

The unevenness of the geographic impacts of the Great Recession and the record-high levels of food stamp receipt by the downturn's end led researchers to extend earlier work on the county-level prevalence of SNAP participation (Slack and Myers, 2012) to examine changes in

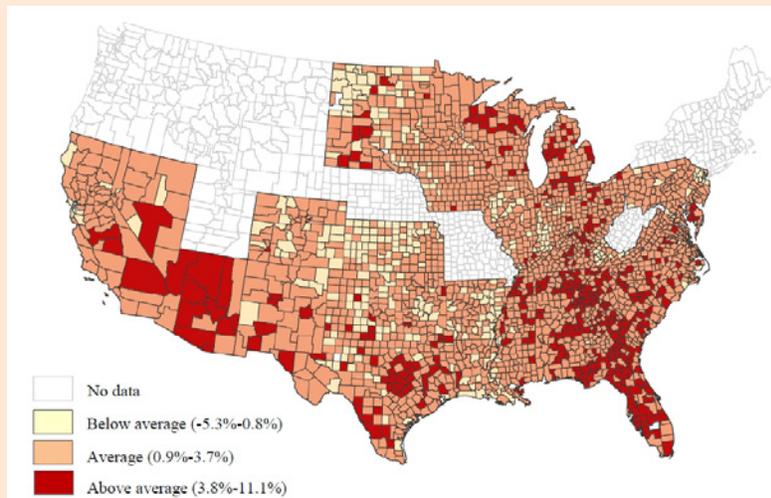
county-level SNAP receipt over the course of the crisis (Slack and Myers, 2014). The more recent study drew on data from the U.S. Department of Agriculture (USDA), U.S. Census Bureau, and other secondary sources. Available data allowed for the analysis of the percentage-point change in SNAP receipt between 2007 and 2009 in the contiguous United States for a total sample of 2,485 counties

in 32 states and the District of Columbia (county-level SNAP data are not available from the USDA for 16 states, primarily located in the Northeast and Northwest).

County-level SNAP receipt climbed an average of 2.3 percentage-points between 2007 and 2009, with counties ranging from a decrease of 5.3 points to an increase of 11.3. As illustrated in Figure 1, the geographic distribution of changes in SNAP participation was not geographically random. Of special note in the figure are counties that are more than one standard deviation above the mean—places with “above average” changes in SNAP receipt—and counties that are more than one standard deviation below the mean—places with “below average” changes in SNAP receipt. The map shows that counties where SNAP use climbed highest tend to be regionally clustered, with counties in Arizona and Florida standing out in particular. As pointed out earlier, during the Great Recession these were two states where the impact of the crisis was particularly severe.

Figure 2 puts this geographic clustering in even clearer relief. It shows a Local Indicators of Spatial Association (LISA) map of county-level change in SNAP receipt which highlights places at the center of statistically significant concentrations of changes in SNAP use. The terminology used in LISA maps for significant spatial clustering of high values is “high-high” (i.e., counties with high levels of SNAP change surrounded by neighboring counties with similarly high levels of SNAP change), while significant spatial clustering of low values is referred to as “low-low” (i.e., counties with low levels of SNAP change surrounded by neighboring counties with similarly low levels of SNAP change). What stands out in the LISA map is the significant regional clustering of places with high (N=349) and low (N=427) levels of change in SNAP receipt. Especially apparent

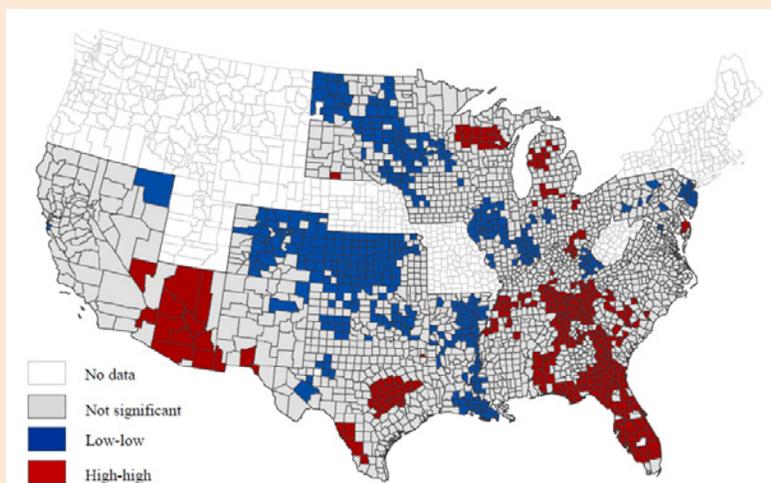
Figure 1: Change in County-Level SNAP Receipt, 2007-2009



Source: Slack and Myers, 2014.

Notes: 'Below average' is more than one standard deviation below the mean, 'average' is within one standard deviation of the mean, and 'above average' is more than one standard deviation above the mean.

Figure 2: LISA Map of Change in County-Level SNAP Receipt, 2007-2009



Source: Slack and Myers, 2014.

Notes: 'Low-low' refers to counties at the center of geographic clusters with significantly lower change in food stamp receipt than would be expected at random. 'High-high' refers to counties at the center of geographic clusters with significantly higher change in food stamp receipt than would be expected at random.

is the significant clustering of high SNAP change in Arizona, Florida, and parts of Michigan—again places hit hard during the recession—as well as to parts of the southeastern United States and areas in Texas and Wisconsin. Equally striking is the significant clustering among counties with little change (or even reductions) in SNAP receipt over the course of the downturn. Areas that stand out in this regard include parts of Kansas, Colorado, and the Dakotas (the latter being in the midst of an energy boom), as well as regions with historically high levels of SNAP participation like the Lower Mississippi Delta and Central Appalachia.

What Local-Level Factors Can Be Linked to These Changes?

Slack and Myers (2014) specified models to assess how various characteristics of counties were linked to local changes in food stamp receipt, including measures tapping a county’s poverty experience, labor market characteristics, population structure, human capital, and residential context. (See Box 1 for more about the statistical models employed by Slack and Myers (2014) and described in this article.) Consistent with

expectations, the results showed that places where the impacts of the Great Recession were most pronounced also witnessed the most significant increases in SNAP receipt. Increased SNAP participation was associated with increases in poverty, unemployment, and home foreclosures. The study also found that SNAP receipt also jumped significantly in areas where the Latino population is growing—potentially reflecting the particular hardship the Great Recession inflicted on the construction sector, a part of the labor market where Latino labor factors prominently, as well as the disproportionate impact of the downturn on states with major Latino populations (e.g., Arizona, California, and Nevada)—and also showed the positive “neighbor effect” continued to hold in the presence of other variables. In addition, the results showed that changes in SNAP receipt were significantly lower in persistently poor regions of the country—places where SNAP participation has historically been highest—potentially due to the fact that the housing bubble was most pronounced in growing and more affluent locales and that SNAP use has already reached its “ceiling” in places with high long-term poverty.

Common Challenges in Statistical Models of U.S. Counties

When studying U.S. counties using statistical regression models, it is important to address the two related issues of state-level effects and spatial autocorrelation.

Statistically, state-level effects are important because unmeasured variables that are consistent across counties within a particular state can bias county-level estimates. For example, we know that states vary in their approach to the administration of social welfare programs. To address this issue, so-called *state fixed effects* must be controlled for in the models.

Another issue that must be addressed when studying U.S. counties is that local conditions in a given county are often linked to conditions in neighboring counties. This is known as *spatial autocorrelation*, and can also lead to biased estimates. One way to address this issue is to include the consideration of spatial “neighbor effects” in the model, that is, a *spatial lag*.

Counter to expectations, increases in the share of female-headed families, older populations, black populations, and less educated populations—groups that are often more vulnerable to economic hardship—were shown to be associated with significantly less change in food stamp receipt during the recession. In addition, residential segregation between poor and non-poor populations, an indicator of barriers to social and economic integration, was shown to be associated with significantly less change in SNAP receipt. And, finally, small-town America (micropolitan areas) was found to have experienced greater SNAP increases compared to other residential settings. Given the prominence of major metropolitan areas, like Phoenix and Las Vegas, in media accounts of the fallout from the recession, that SNAP use jumped most in small towns was not anticipated.

Overall, research suggests that the impacts of the Great Recession (in particular, poverty, unemployment, and home foreclosures) played a pivotal role in driving up county-level

Table 1: Local-Level Factors Linked to Changes in SNAP Participation

Significantly More Change in Places Characterized By:
Increases in poverty
Increases in unemployment
More home foreclosures
Increases in Latino populations
Micropolitan (small town) settings
Increases in SNAP receipt among neighboring counties
Significantly Less Change in Places Characterized By:
Persistent poverty
Increases in single female family headship
Increases in older populations
Increases in black populations
Increases in less educated populations
Increases in poor/non-poor segregation

SNAP receipt, while factors that have traditionally been linked to high SNAP participation (such as persistent poverty) were not associated with rising SNAP use during the crisis. Moreover, the study demonstrated that counties where SNAP use jumped most were not spatially random or geographically isolated places, but, rather, members of multi-county regional clusters. In sum, research showed that increased SNAP receipt was geographically uneven during the Great Recession and that local and regional configurations were at play in shaping this variation.

Policy Implications

The Agricultural Act of 2014, more commonly known as the 2014 Farm Bill, was signed into law on February 7, 2014, after much legislative theatre. Most of the bill will remain in force until 2018, with some elements extending beyond that time. According to the USDA's Economic Research Service (2014), the farm bill contains \$489 billion in total outlays, about 80% of which is budgeted for the nutrition title. SNAP, which represents the bulk of nutrition program spending, will see few changes in its eligibility requirements under the agreement. The bill does seek to clarify some resource guidelines related to eligibility and provides funds for innovation in the use of information technology to root out fraud. It also directs money toward the development of programs aimed at connecting more SNAP recipients to gainful employment as well as new provisions to help facilitate healthy food choices among those on SNAP. Perhaps especially important given the research outlined in this article, the new farm bill will provide increased resources for the Community Food Projects Competitive Grants Program, which provides funding for local-level efforts that seek to improve food security in low-income areas through nutrition education.

Slack and Myers' (2012 and 2014) research suggests there may be opportunities for targeted regional approaches to SNAP outreach and education. Building regional networks among SNAP providers and affiliated groups could allow for the better alignment of resources, increased capacity, and more effective sharing of best practices. Moreover, because key local-level factors show significant associations with changes in SNAP receipt, policymakers could use this information in the development of community profiles to identify and anticipate demand for food assistance. Administrative innovation and modernization efforts at the state level are being encouraged by the USDA. Efforts aimed at engaging local community partners on SNAP outreach and education and building inter-state regional collaborations might be fruitful in this regard as well.

Regarding the Great Recession and future downturns, SNAP was especially responsive to the increased economic hardship wrought by the crisis. In short, the program did what it is designed to do. This is especially notable since Temporary Assistance for Needy Families (that is, cash assistance) showed no response to the downturn, continuing the steady downward caseload trajectory the program has been on since the welfare reform bill of 1996. It is also important to note that SNAP not only mitigates food insecurity, it also acts as an efficient and effective form of local economic stimulus. Spending on SNAP yields a substantial local multiplier effect, with every \$1 of SNAP benefits spent in a community generating an additional \$1.80 in local spending (USDA Food and Nutrition Service, 2011). This means investing in SNAP not only helps millions of Americans feed their families, it is also good stimulus policy in the context of an economic crisis.

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Rural Poverty, Food Access, and Public Health Outcomes

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Public health within the United States is becoming a concern not only from the perspective of rapidly expanding health care costs but also in terms of economic productivity. Obesity and other diet-related diseases are said to be coming epidemic. At the same time, in both rural and poorer urban areas, the notion of “food deserts”—geographic areas with limited access to and availability of affordable healthy foods—is gathering significant attention. While the complex relationships between poverty and health outcomes are well-documented, it is not clear if food access changes these relationships, especially in the rural United States.

Understanding Links Between Rural Poverty and Public Health

The links between poverty and poor health outcomes are numerous, complex, and intertwined. Since Lyndon Johnson’s call for a “War on Poverty” in 1964 launching a new era of welfare legislation, defining and addressing poverty issues have been focal points for public policy discussions and social welfare organizations. While there is well-developed literature in urban food access and poverty, rural poverty issues have received notably less attention in both the academic research and policy arenas. This is significant since poverty rates are highest in the most urban and most rural areas of the United States. Additionally, high and persistent poverty disproportionately occurs in rural areas (Weber et al., 2005).

It is well understood by community development professionals that “place matters” in discussions of poverty, or in other words, the causes, consequences, and policy measures for addressing poverty may differ across the

urban-rural continuum. If this is the case, we might then ask, “What does rural poverty look like?” Most quantitative literature defines poverty according to the official U.S. Census definition in which a family is considered poor if its annual pre-tax income (excluding non-cash benefits such as food stamps) is less than the federal poverty threshold. These thresholds vary according to household size, but have not changed substantially since the 1960s. Studies will often look at contextual or community issues affecting poverty since income is typically used as the measure for defining being poor. According to these studies, the persistent effects of poverty in rural areas may be rooted in rural households’ isolation from schools, services, social interactions, and labor-market resources. Local community dynamics affecting cross-class relations, social capital, and race may also have an effect on poverty in rural areas. Similarly, contextual research suggests that living in a rural area may increase one’s chances of being poor (Weber et al., 2005). It is important to note, however, that the current and most commonly used measure of poverty has been substantially critiqued in that it fails to adjust for changes in standards of living over time or geography, or for availability of public goods which may vary significantly between urban and rural areas.

There are numerous personal and social ills associated with poverty. One that is well documented is its relationship with health. Disparities in health outcomes based on income alone are observed across subpopulations, accounting for race, ethnicity, and education, among other social factors. In addition, a growing body of literature places these social factors, known as social determinants of health, at the root of health inequalities (Marmot, 2005).

Galea et al. (2011) recently found that 133,000 deaths in the United States were attributable to individual-level poverty; 199,000 to income inequality; and 39,000 to area-level poverty. These authors go on to note that their findings suggest a need to broaden the frameworks for defining health and accompanying program and policy responses—which can include the facilitative effects on reducing the negative health impacts associated with poverty.

Rates of both diet-related chronic disease and food insecurity have increased substantially in recent decades, and low-income and rural populations are disproportionately affected. Although the rate of growth in obesity appears to be slowing, more than one-third of adults and almost 17% of adolescents were obese in 2009-2010 (Flegal et al., 2010; and Ogden et al., 2012), and the incidence and prevalence of type 2 diabetes continues to rise with nearly one-third of the population in the United States classified as having diagnosed diabetes in 2010 (U.S. Center for Disease Control, 2011). Meanwhile, in 2012, approximately 17.6 million households, or 14.5% of the U.S. population, were classified as food insecure, meaning they lack assured access to affordable, healthy foods at all times (Coleman-Jensen, Nord, and Singh, 2013).

The rise in diet-related chronic disease can be attributed to a number of factors, among them poor dietary choices, limited knowledge about nutrition, food environments characterized by deficient access to and availability of healthy foods, public policies, and social norms. While all are likely at play, there has been growing interest in the notion of “food deserts,” particularly in urban areas. The role of food deserts in understanding the relationship between poverty and health outcomes is not well understood. A central question within this small but growing literature is if

access to healthier foods within the food environment alleviates the poverty and poor health relationship.

Food Access in Rural America

The recently popular notion of “food deserts” is gathering significant attention with regards to the role this particular food environment plays in influencing dietary behavior and health outcomes. The general premise is that these areas have limited access to supermarkets which are more likely to offer a wider variety of healthy food products at lower prices when compared to other food outlets, such as convenience stores and fast food restaurants (Ver Ploeg et al., 2009). Both urban and rural food desert census tracts in the United States have been characterized as having not only higher rates of poverty, but also greater concentrations of Latino and African-American populations. Further, residents in rural and urban food deserts tend to have lower vehicle access rates and are more likely to rely on public transportation or alternative methods of commuting when compared to other rural and urban areas (Dutko, Ver Ploeg, and Farrigan, 2012). Given that the majority of U.S. citizens are highly dependent on a vehicle for grocery shopping, access to transportation is a particularly critical factor for low-income households in rural food deserts.

Prior research attempting to document the health-related impacts of geographic areas with limited food access has yielded mixed results and has been largely centered on urban food environments. Jilcott, et al (2011) found that in rural counties, but not urban counties, obesity rates were significantly lower in areas with a higher density of farmers’ markets. Supercenters and grocery stores were also found to be inversely associated with obesity rates in both rural and urban areas. Similarly, Ahern, Brown, and Dukas (2011) found that in both rural and urban counties more

convenience stores were associated with poorer health outcomes, including adjusted mortality, diabetes, and obesity rates. Variations across rural and urban counties, however, appeared when comparing healthier food retail options. In rural counties, a greater number of per capita grocery stores were associated with lower diabetes and mortality rates, but greater obesity rates. By contrast, lower obesity rates in rural counties were associated with more per capita fast-food restaurants. Adjusted mortality rates were also inversely associated with greater per capita full-service restaurants and grocery stores, and greater per capita direct farm sales.

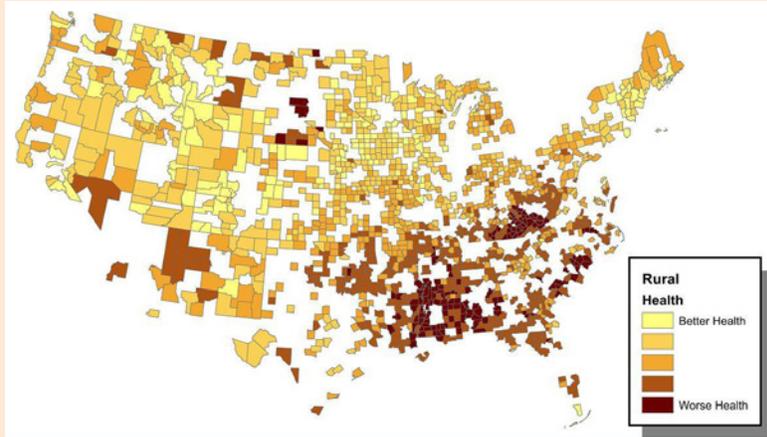
The unexpected association between obesity and grocery store presence in rural counties has been supported, to some degree, by others investigating the relationship between obesity, fruit and vegetable consumption, and distance to the grocery store—finding no association for rural areas (Michimi and Wimberly, 2010). These contrasting findings, and lack of causal pathways, suggest the need for additional factors mitigating the relationships between diet-related disease and food environments, particularly in rural areas.

Food Access as a Mitigator

To explore the extent to which various levels of food access—“healthy” or “unhealthy”—mitigates the strong and predictive relationship between poverty and health outcomes, we examine the extent to which these variables are correlated. More specifically, we show the geographical relationships by mapping rural poverty, public health outcomes, and food access using data for non-metropolitan counties for calendar year 2010. Our analysis cannot address issues of causation, but only association.

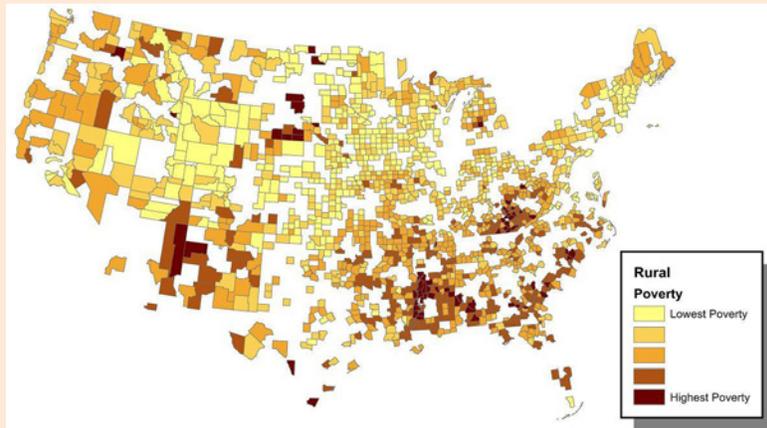
The food access index was constructed using data available on the U.S. Department of Agriculture (USDA) Food Environment Atlas.

Figure 1: Rural Health Patterns



Source: University of Wisconsin—Madison, Population Health Institute. Calculations by the authors.

Figure 2: Rural Poverty Patterns



Source: United States Census

Figure 3: Rural Food Access Patterns



Source: United States Department of Agriculture Food Atlas. Calculations by the authors.

Healthy food access measures—including grocery stores, supercenters, and farmers markets—were combined with all on a per 1,000 population basis. Unhealthy food access measures include fast food restaurants and convenience stores, also on a per 1,000 population basis. This simple measure of access to healthy foods reflects a weakness in the ecological food environment literature since access to these different types of food outlets is just one component influencing personal dietary behavior. For example, access to a full-range grocery store is generally assumed to be associated with better food access, but this simple measure does not provide any insight into the buying and eating habits of consumers, which may also be driven by personal preference, price, convenience, cooking skills, and nutrition knowledge, among others. In addition, grocery stores carry both healthy and unhealthy foods. It is clear that access to food, both healthy and unhealthy, does not ensure any particular type of eating habits and is just one component of the social-ecological factors influencing dietary behavior.

We also constructed a measure of public health reflective of the dietary behavior impact on morbidity and mortality using data from the County Health Rankings project, a collaboration between the University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation (2013). The health index consists of five variables: percent of adult obese, percent of adult diabetic, percent low-birth weight, percent fair/poor health, and years of potential life lost (premature death). Higher values of each of these metrics in the public health index are associated with poorer overall levels of health. One of the limitations to the public health data is that the data are not available for all non-metropolitan counties for every year. This means that data values may be missing for smaller, more rural counties.

A simple mapping of the three county characteristics of central interest—rural poverty, health outcomes, and food access—are provided in Figures 1-3. There are clear spatial clusters or concentrations of high-poverty areas in the southern United States and parts of the southwest areas associated with Native American reservations. The corresponding mapping of our health index—where higher values are associated with poorer health—reveals a very similar pattern to poverty: poorer rural health is concentrated in the southern United States and lands associated with Native American tribes. Indeed, there almost appears to be a one-to-one mapping and is consistent with the strong poverty-health relationship. The mapping of food access, proxied by our simple measure, is less clear but a similar pattern to poverty and health is evident: lower access to healthy foods tends to be clustered in the southern United States and a smaller region of the southwestern United States. Better access to healthy food appears to be in the Midwest, Great Plains, and towards the Pacific Northwest. On face value, there appear to be relationships between our three variables of interest.

To further explore the relationships between poverty, health, and access to healthy foods, we used several advanced statistical techniques and found the results are generally consistent with the findings from our mapping. We generally find a strong relationship between rural poverty and health where higher poverty is associated with poorer levels of public health. We also find that higher levels of healthy food access are associated with better health.

The more important finding is that higher concentrations of poverty and healthy food access tend to be associated with better health. At the same time, lower levels of poverty coupled with lower access to healthier

foods tend to be associated with worse health. What this is telling us is that promoting access to healthier foods in rural areas may help mitigate the poverty and health relationship. This is consistent with a previous study exploring the attenuating effect of food environment factors on the relationship between obesity and county-level, persistent poverty in rural areas (Bennett, Probst, and Pumkam, 2011).

Concluding Comments

There is a growing interest in understanding how access to food, particularly healthier food, impacts the poverty and health-outcome relationship. While the association between poverty and poor health has been well documented, the direct impact of healthier food environments on alleviating the negative effects of that relationship is less well understood and recognizably complex. Although an understanding of food access in urban areas is growing, there are fewer studies focused solely on rural food access. Not only are the insights from the urban food environment literature mixed, but they may not be transferable to a rural setting. Our simple discussion of the food access, poverty, and health relationships provide limited insights, but it does suggest some important questions:

- Is food access the fundamental link to positive health outcomes or is it only one piece of a more complex puzzle? For example, we know there are multiple influences on health and, in particular, when looking at chronic disease outcomes, additional factors may play important roles. There is some research to suggest that healthier food access improves individual dietary outcomes, but the extent to which these improvements in dietary behavior mitigate the negative effect of poverty is unclear.

- What role does transportation play in navigating the impact of limited food access, especially in rural areas? Future research should consider household access to a vehicle and further test the relationship of poverty, food access, and health-outcomes.
- Finally, we might consider the extent to which participation in poverty alleviation programs, such as the Supplemental Nutrition Assistance Program (SNAP), may play in supporting access to food and also health outcomes.

A natural question centers on the effectiveness of programmatic responses to date. For example, the response to the “food deserts” literature has prompted First Lady Michelle Obama’s “Let’s Move” initiative and other non-profits to call for the introduction of supermarkets in areas of limited access and availability of affordable, healthy foods. In addition, growing attention towards local and regional food systems have prompted interest in exploring the role of direct-to-consumer food access initiatives such as farmers’ markets and community-supported agriculture. However, citing the complex market and behavioral economic forces behind consumer shopping behaviors, others have criticized these initiatives. Low-income households tend to shop where food prices are lowest, when possible, and purchases at convenience stores make up a small percentage of overall total food expenditures. Critics, therefore, question whether these programs aimed at promoting access to healthy foods fall into the “if you build it, they will come” trap?

An additional difficulty with outlining policy options for looking at “food deserts” within the context of rural poverty and health is that the research foundation is weak. While there has been a growing urban-focused literature, the scientific rigor

of much of this research is lacking. Much is descriptive and based on limited case studies—almost anecdotal story-telling—making it difficult to draw generalizations. While the limited evidence suggests that promoting the access of healthier foods in rural areas could be a potential strategy to mediate poverty's link to poor health, more work is required before effective policies can be crafted.

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