



The American Community Survey and Rural Data Analysis

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Introduction

The United States, via the Constitution, is required to count the population every decade – a process we all know well as the Decennial Census. This count has occurred every decade since the very first Census, in 1790. That first Census was conducted door-to-door at a cost of \$45,000. Events of the Great Depression prompted the need for more detailed data, in order to most effectively design public policies. The first sample-based detailed survey was conducted in 1940. From that time, each Decennial Census included the “short form,” counting all residents in the United States, primarily for the purpose of Congressional apportionment, and a “long form,” a detailed survey of approximately one in six households to ascertain detailed social and economic conditions. This “long form data,” in addition to its use by the federal government in allocating funding and targeting resources, was the primary source of data for research.

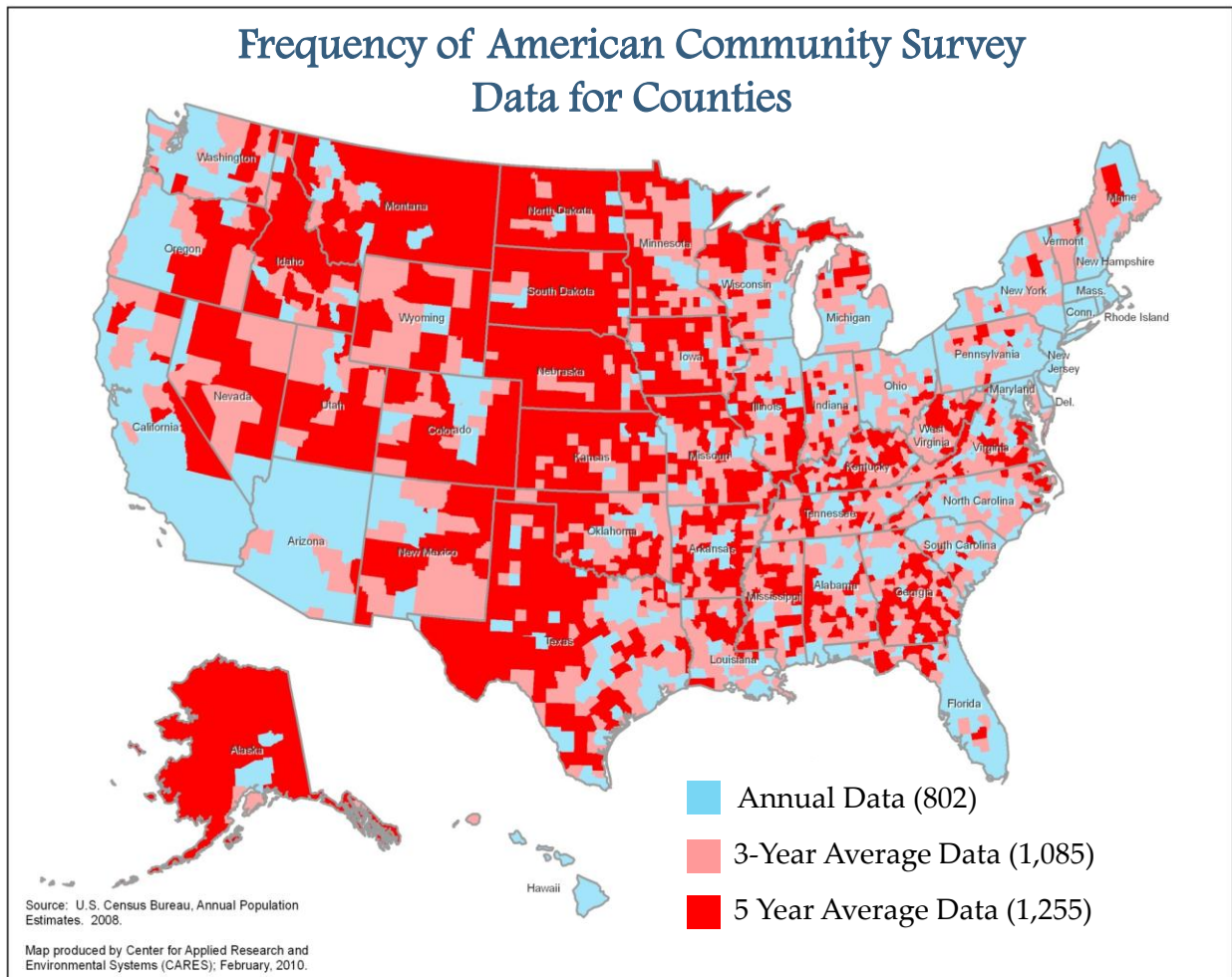
However, the 2010 Census was the first year since 1940 in which a long form was not included as part of the process. Despite its usefulness, the long form data had several downsides. Namely, the data became outdated as the decade progresses. Conditions changed much more rapidly than data could demonstrate. The replacement for this, the American Community Survey, was fully implemented in 2005. This survey, in which data is continuously sampled from a sample of the population, provides more recent estimates for social, demographic, and economic characteristics of communities.

Since its initiation, several series of data releases have been made, and recently the National Research Council of the National Academies of Science hosted a workshop: *The Benefits (and Burdens) of the American Community Survey*. A goal of this workshop was to showcase and discuss non-federal uses of the American Community Survey.

The American Community Survey and Rural Data

The American Community Survey is the primary data source to understand conditions and trends in rural America. No other data set provides the detail with a sufficient sample size to

analyze specific rural geographies. As with any survey-based data, there are concerns and considerations. One specific consideration with the American Community Survey and its use for rural data is the frequency of estimates. It is important to keep in mind that even though the ACS releases data every year, this does not equate to annual data for all geographies. For smaller population areas, data is collected over a number of years to create an adequate sample size. The general population thresholds are as follows: For geographies with populations of 65,000 or more, annual estimates are released from the ACS; for geographies with populations of 20,000 to 65,000, three year-average estimates are released; and for geographies with populations less than 20,000, five year average estimates are released. It is these latter two categories in which most rural geographies find themselves. The map below illustrates the frequency of ACS county level data releases (based on the 2008 population estimates for counties).



This does indeed present an imbalance with respect to county level data analysis. Counties shown in red in the map above, representing much of rural America, do not see the same frequency of data, and trends in these places can be harder to ascertain.

Some examples, below, illustrate the differences in poverty rate estimates between the single year estimates and the three-year average estimates for several counties in which both are available. Other than being nonmetropolitan, no selection criteria were applied to these counties.

County Name, State Name	ACS Estimate, 2006	ACS Estimate, 2007	ACS Estimate, 2008	ACS Estimate, 2006-2008
Navajo County, Arizona	23.3 (+/- 4.2)	22.8 (+/- 3.9)	21.1 (+/- 4.3)	22.4 (+/- 2.3)
Citrus County, Florida	10.6 (+/- 2.7)	11.8 (+/- 2.6)	18.3 (+/- 3.5)	13.4 (+/- 1.7)
Indiana County, Pennsylvania	16.0 (+/- 2.2)	20.8 (+/- 3.4)	16.1 (+/- 2.2)	17.9 (+/- 1.6)
Grant County, Washington	21.7 (+/- 3.8)	17.4 (+/- 3.3)	15.7 (+/- 3.6)	18.7 (+/- 2.8)
Isabella County, Michigan	22.7 (+/- 2.5)	24.7 (+/- 2.6)	32.0 (+/- 3.6)	27.3 (+/- 1.9)

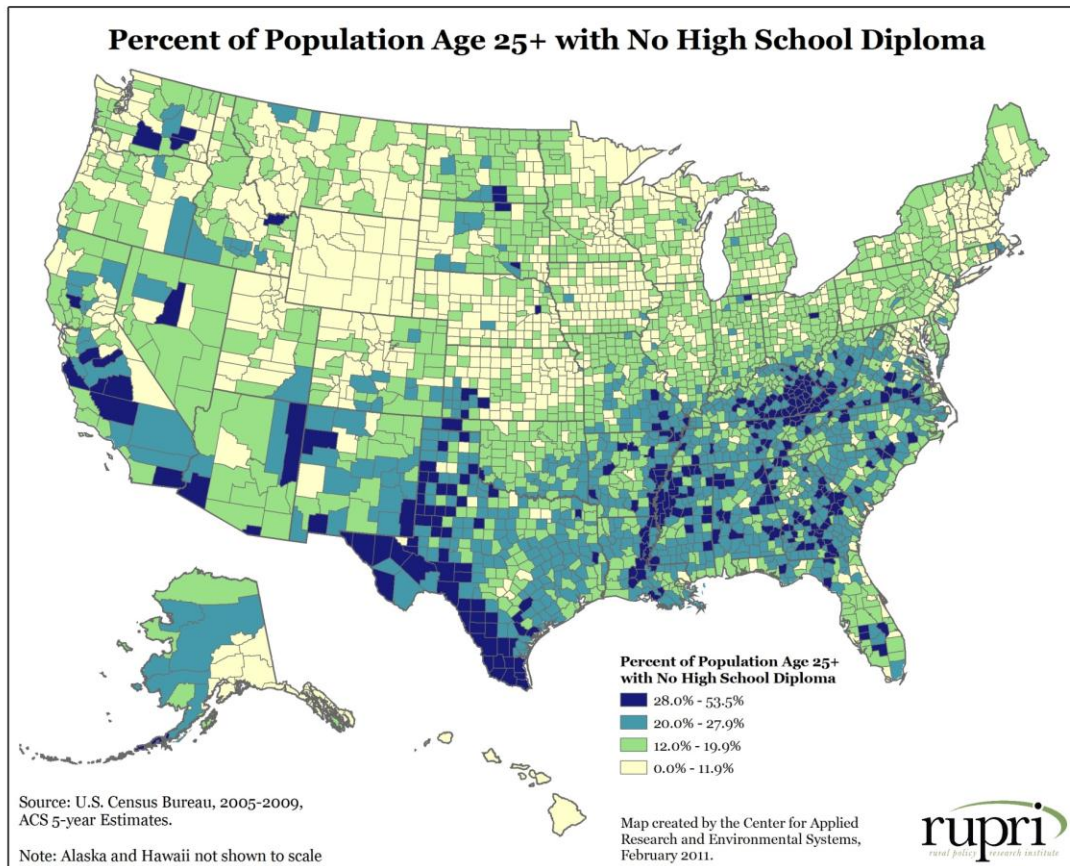
These counties, with the benefit of annual estimates, illustrate how three- or five- year averages can mask trends in poverty. This illustrates the disadvantage present in counties that only see three or five year averages. With only five year averages available for much of rural America, this presents us with only two non-overlapping time periods per decade with which to evaluate trends. While this is troublesome, it is also inevitable, if we want to have the most reliable data possible.

There is much discussion regarding the reliability of ACS estimates. The bottom line is that for smaller population geographies (thus smaller samples), the margins of error are higher. However, it is important to remember that this is not a new issue – and the same issues were present with the 2000 long form data. The difference is, as one Census Bureau representative put it during the recent NRC Workshop, the margins of error are now “in your face.” In truth, all researchers ought to keep the margins of errors in mind when analyzing data. However, the estimates are still, in fact, the estimates. With little to no alternative data sources, researchers as well as policy makers must make use of these data. The collection of data over a three- or five-year period provides us with considerably smaller margins of error than we would have with annual data for these small places. Rural areas, by their very nature, have smaller numbers and therefore will have larger margins of error – it’s inevitable, and the multi-year estimates ameliorate these large errors.

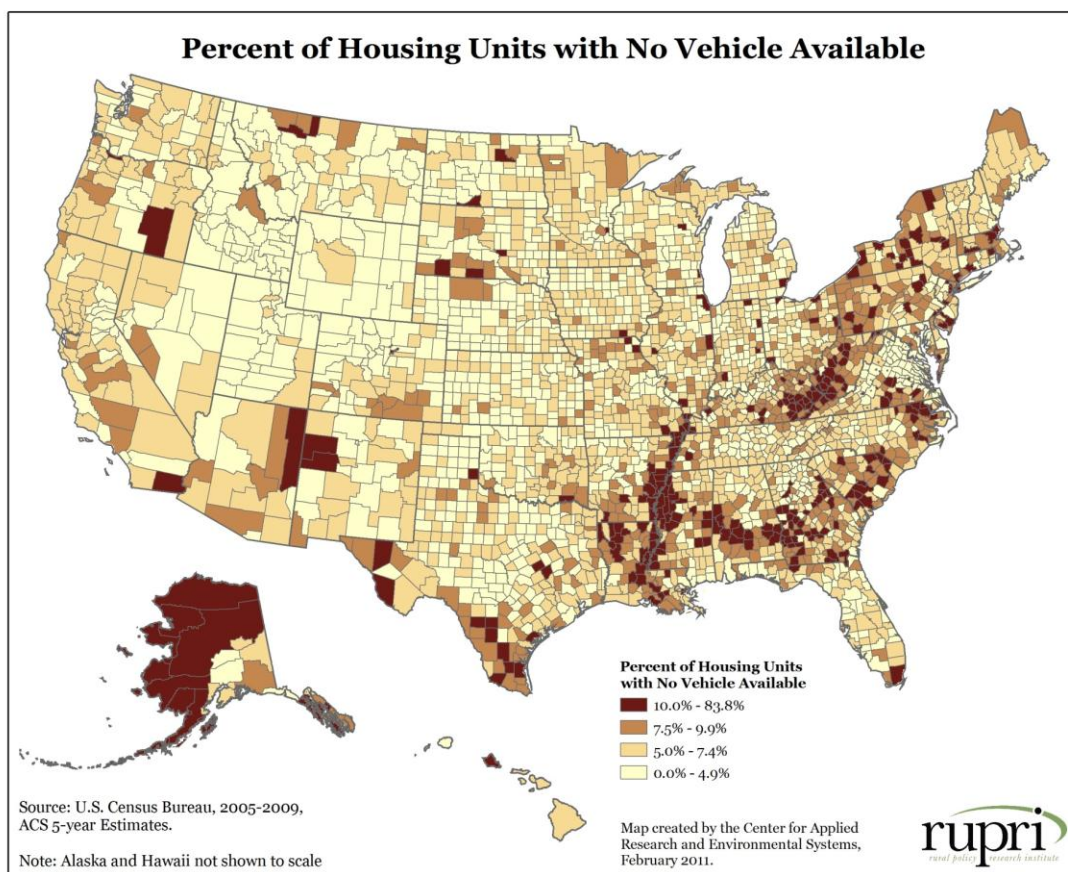
What Can We Learn About Rural America from the American Community Survey?

As mentioned, the ACS provides the most detailed data available for understanding conditions in rural America. A recent study by the Rural Policy Research Institute (RUPRI) utilized the

ACS to examine human services needs across rural geographies (Heflin and Miller, 2011). The study utilized ACS data to understand and document the broad range of needs across rural America. The first release of five year data estimates (2005-2009) from the American Community Survey were utilized for this study, and this represented our first look at much of rural America since the 2000 Census. Some maps below illustrate the depth of understanding we can gain about rural America from the American Community Survey data.



The map above illustrates the educational attainment of the population – this indicator is not available at such geographic detail from other sources, and the ACS 2005-2009 estimates represented our first look at educational attainment in much of rural America, since the 2000 Census. Noteworthy is the portion of the country in the bottom 10% on this indicator (shown in dark blue) that are also light or dark red on the prior map. Several areas of the country are highlighted – Appalachia, the Black Belt, Mississippi Delta, Texas Border Region, Native American regions, and the Central Valley in California – many of these areas are rural.



The percent of households with no vehicle available, also taken from the five year estimates, represents a troubling pattern across the US – areas that are recognized as regions of persistent poverty and hardship are also illustrated by transportation barriers. This indicator in combination with other indicators of need can be instrumental in policy and program planning for these regions.

Conclusions

There are certainly workarounds for the issues surrounding rural data analysis. The Public Use Microdata (PUMS) with annual data releases can be utilized to counter the limitations of the five year estimates. In addition, model based estimates can all help fill in the gaps. Clearly, much of our work understanding rural America cannot be done without the American Community Survey. The issues regarding less frequent estimates, smaller sample sizes, and larger margins of error, while real, do not outweigh the benefits of the ACS. In an era of tight resources, and the need to most efficiently and effectively meet the needs of all populations, we need to analyze the detailed data at small geographies. It isn't perfect, but it is critical to our understanding of rural America.