Introduction

Data about rural people with disabilities have been unavailable for 15 years. This is a result of the shift from the Census long form to the American Community Survey (ACS). This lack of information and resulting knowledge gaps are critical for many rural areas. Recently released data offer insights into the distribution of disability across America and will improve understanding of the diverse and complex nature of disability. The limitations of these data are also important for understanding the implications for planning and implementing local, state, and federal policies, and programs that address issues of disability in rural America.

The Data: The American Community Survey (ACS)

The ACS replaced the U.S. Census’s detailed long form sample in 2000. The ACS form sample collected data on 13% of the population once per decade. The ACS sample 2.5% of the population each year. This arrangement produces data for larger areas annually, but it takes up to five years to accumulate a sample sufficiently large to conduct analyses for smaller, non-county areas (e.g., counties with population below 25,000). The five year windows for the estimates, rural areas have been published since 2010. However, because the disability indicator questions were not included in the 2000, disability data for the entire United States were collected through 2002 only.

Disability

Disability is a complex phenomenon and can be challenging to define. The World Health Organization’s International Classification of Functioning, Disability and Health (ICF) defines disability as “an umbrella term for impairments, activity limitations, and participation restrictions...” Impairments are problems in body function or structure, activity limitations are disabilities in an individual, and participation restrictions are problems in an individual’s ability to participate in life situations (WHO, 2001). More simply, disability can be understood as an intersection between individual functional abilities and limitations and their environment.

This analysis of disability is based on the ACS questions used to indicate of impairments and activity limitations. Four questions are on functional limitations and if a respondent has:
1. Serious difficulty seeing (or hearing) (15%)
2. Serious difficulty walking or climbing stairs (24%)
3. Difficulty understanding, remembering, or making decisions because of a physical, mental, or emotional problem (20%)
4. Serious difficulty with a self-care activity (5%)

Two additional questions inquire about difficulties with Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). These questions ask if a respondent has:
1. Difficulty getting in or out of bed (10%)
2. Difficulty bathing or dressing (12%)

A total impairment estimate is derived by counting any person who identified one or more of these as impairments or limitations.

Defining Rural

Defining “rural” is also not without challenges. Our analysis of rural disability shows that a clear and unified definition of non-metropolitan and rural-urbanized areas, with non-core counties considered to be “rural.” Two types of non-metropolitan classification are used by OMB: micropolitan and non-core counties. Micropolitan counties are defined as counties with one or more urban clusters of 100,000 to 499,999 persons, and non-core counties, with both less than 10,000.

Table 1: Populations and Persons with Impairments, U.S. total by County Type (Sources: Census 2010, 2001, 2000)

<table>
<thead>
<tr>
<th>County Type</th>
<th>Nonmetropolitan</th>
<th>Population</th>
<th>Persons with Impairments</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>2,084,048,264</td>
<td>231,646,180</td>
<td>34,340,170</td>
</tr>
<tr>
<td>Micropolitan</td>
<td>14,262,979,670</td>
<td>84,550,658</td>
<td>12,022,664</td>
</tr>
<tr>
<td>Non-Core</td>
<td>15,076,080,614</td>
<td>147,095,518</td>
<td>22,017,486</td>
</tr>
</tbody>
</table>

Overview: Impairment in America

Over 65 million Americans, 26 million report impairments at some level of disability. Most people with impairments, like most Americans, live in metropolitan areas. 85% of the total population, and 80% of people with impairments reside in metropolitan areas. Metropolitan counties house 87% of the total population and 11% of all people with impairments. Non-core counties contain only 3% of the total population, but 44% of all people with impairments. Combined, these rural counties encompass nearly 11% of the total population and nearly 22% of all people with impairments. While the national intentional rate stands at 12.5%, the rates of impairment are higher in metropolitan counties (13%) and lower in non-core counties (9%). People with impairments demonstrate a higher disability burden in metropolitan areas and a lower rate in non-core counties (Table D).

Impairment Rates of Metropolitan, Micropolitan, and Non-Core Counties

Impairment rates are lower for young people (45-64, age group) and higher for older people (65 and older), with nearly 30% for older people. Non-core counties have higher rates of impairment than metropolitan counties. An individual might expect that impairment is over-represented in these areas because of their relatively high rates of elderly. However, men and women with fewer access rates are higher across all age groups. The most rural (non-core) counties, following their metropolitan counties, have above average impairment rates for all age groups. For young people, they are similar to the national average in both non-core and older age groups. The rate of people with impairments in rural America, around the size of age groups into account.

Data Sources: ACS 2009-2013 5-year estimates, Table 140. 2014 County type designations, Office of Management and Budget.

Figure 1: Spatial Patterns of Impairment Rates

Disability Patterns in Rural Areas

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Hirst – Cold Spot Analysis

Figure 1, on the left, shows the impairment rates for metropolitan, micropolitan, and non-core counties that disability is not randomly distributed. Figure 2, below, displays the very same data but in a different color and highlights counties with above or below average rates of impairment. This same data is used in a heat map (Hirst – Cold Spot Analysis), which draws the country’s spatial clusters with above or below average impairment. This analysis can be useful to detect the presence of spatial clusters, which may point towards underlying geographic and policy changes. This is even more relevant to the rural-urban interface, where disability rates vary from county to county. If adjacent to counties with similar values, are the core of forming spatial clusters (hot spots or cold spots), while single and isolated high or low values do not form cluster and are usually extreme. Hot spot maps eventually reveal and accurate patterns of spatial clustering.

Figure 2: Impairment Rates by U.S. Counties

Non-Core Counties

The figure below, a cold spot map, draws the country’s spatial clusters with above or below average of impairment. The map highlights how cold spots of impairments are relatively low rates of disability trend to cluster around larger urban areas, as seen in the following map. Figure 3 shows that this is true for larger impairments, as well. The map is color-coded to show that a large part of significant cold spots across the country. A majority of these urban areas are found in the northern half of the country. Following the cold spot trend is the cold spot in the Midwest, which includes large and urban places in metropolitan, rural, and non-core counties. This particular method also shows that high spots are more prevalent in the South than the North. However, it is valuable to note that counties with high rates of impairment are highly fragmented, which gives rise to a non-core counties. The rate of people with impairments in metropolitan counties is only 11.3%, rolling for 12.5% nationally.

Figure 3: Spatial Hot and Cold Spot Clusters by County Type

Figure 4: Spatial Impairment Rates by U.S. Counties

Non-Core Counties

We use the Hirst – Cold Spot Analysis for two variables: disability rates for individuals 65 or older (Figure 4), and percentage of disability across age groups (Figure 5). We take into account differences in disability by age group and map it through a heat map. The color-coding of the map is based on the extent of age groups in clusters. In Figure 6, we can see the size and shape of clusters, the number of counties, and the location of hot and cold spots. The map draws the country’s spatial clusters with above or below average of impairment. The map can be used to detect the presence of spatial clusters, which may point towards underlying geographic and policy changes. This is even more relevant to the rural-urban interface, where disability rates vary from county to county. If adjacent to counties with similar values, are the core of forming spatial clusters (hot spots or cold spots), while single and isolated high or low values do not form cluster and are usually extreme. Hot spot maps eventually reveal and accurate patterns of spatial clustering.

Figure 5: Impairment Rates by U.S. Counties

Non-Core Counties

While most perceptual disabilities affect metropolitan areas or persons, rural-urbanized areas, rural areas are above average in non-metropolitan America. Additionally, while non-metropolitan counties, these rates are higher in the more rural non-core counties over the metropolitan through the rural-urbanized areas. The report’s findings are consistent with our knowledge of disability. For the latest reports, rural policy and decision makers need to consider the extent of the rural-urban interface of disability.