Unpacking “Rural”: Using Geographic Information Systems to Better Understand Rurality  
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Abstract

Much of the current study of the challenges in health, nutrition, and food security faced by rural populations addresses rurality as a monolithic identifier, failing to consider the significant differences in needs and barriers between rural communities. This project explores intra-rural variation in participation in the Supplemental Nutrition Assistance Program (SNAP) through the use of dasymetric mapping and rural typologies developed through multivariate statistical analysis. Through the analysis of community sociodemographic factors and patterns of SNAP participation, paired with the physical aspects of the built environment, this study identifies community-level correlates of SNAP participation in rural regions. Dasymetric mapping was used to generate micro-level data surfaces for SNAP retailer access, SNAP participation, and community characteristics captured by the American Community Survey. Analysis of these data surfaces examined the impact of community-level socio-demographic characteristics and the built environment, namely physical access, on SNAP participation. The results help identify types of rural communities that under-utilize SNAP and so can help policy-makers and others better target outreach programs to ensure that benefits reach those rural communities with the greatest need.

Defining “Rural”

“Rural” is generally defined by exclusion (i.e., not urban/non-metro), and the rural and urban definitions used by most major US governmental agencies are based on population density and proximity to metropolitan areas.

Variable Selection

Following work conducted by Scholz and Herrmann (2010) to develop typologies of rural areas in the European Union, we employed K-means cluster analysis to develop a typology of rural census tracts in Arizona using variables in the general areas of community ecology, social ecology, and access. Variable selection was guided by social ecology work theorized by Cabeza de Baca and Figueredo (2015)

COMMUNITY ECOLOGY: Population Density, Slow Life History, Race/Ethnicity

SOCIAL ECOLOGY: Social Equality, Work Engagement, Housing Health, Migration, Median Age, Economic Sector of Employment (Primary, Secondary, Tertiary)

ACCESS: Resource Access

Exploring Rurality through Clustering

Dasymetric Mapping

Model

Takeaways:

1. Intra-county variability demonstrates the utility of small area analysis in better understanding rural populations.
2. SNAP retailer access plays an important role in SNAP enrollment for children.
3. Certain communities seem to be under-utilizing SNAP. Targeting outreach in these areas could better ensure that those who need assistance are receiving it.

Acknowledgements and References

Cabeza de Baca, T., & Figueredo, A. J. (2014). The cognitive ecology of Mexico: Climatic and socio-cultural effects on life history strategies and cognitive abilities. Intelligence, 47, 63–71. doi:10.1016/j.intell.2014.08.007


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