

New tools help provide vital demographics, population statistics to policymakers

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Every year, \$400 billion in federal and state funds are distributed to state, county and local communities for infrastructure, public safety, community development and social services. When it comes to determining how the money is distributed, accurate data are paramount. Those looking for data and analytical reports often turn to the American Community Survey (ACS) from the U.S. Census, which provides data such as unemployment, median household income, and housing prices for multi-year periods. Now, using sophisticated statistical methods, University of Missouri researchers have developed a system that improves ACS data, allowing end users to more accurately analyze critical information in predefined geographic areas, making it easier for city, county, state and federal planners to use estimates in policy decisions.

"While the ACS data is quite helpful for those needing specific data, you can't get to the data that you want in a lot of cases," said Jonathan Bradley, postdoctoral fellow in the Department of Statistics in the MU College of Arts and Science. "For example, the Department of City Planning in New York City may be interested in making [policy decisions](#) based on community districts, data that doesn't exist within the ACS as multi-year estimates. Currently, the ACS can only provide annual data for populations of more than 65,000. Also, the ACS only publishes one, three and five-year period estimates, so planners wishing to access data on different time periods are unable to acquire the information they need."

The problem of getting socio-economic and demographic data at the desired regions and time periods is related to the idea of spatial and temporal correlations, Bradley said. He adds that one can take advantage of these correlations to produce precise estimates, since nearby observations are often similar in value. For example, nearby observations in space and time are correlated. Bradley and fellow MU researchers Christopher Wikle and Scott Holan, both professors of statistics, developed the methods needed for ACS users to be able to estimate demographic variables at any time period and for any geographical location. Moreover, this methodology makes data more accessible for those needing information on more rural and isolated communities.

"In our methodology we were able to make accurate estimates of income on Native American Reservations—data that normally is not easily accessible," Bradley said. "We were motivated by the section of language assistance from the Voting Rights Act, to determine if regions that require language assistance also require other types of assistance based on their income status. Additionally, planners will be able to access the data and [estimates](#) at any time."

Bradley's research is part of the Missouri node of the NSF-Census Research Network, an interdisciplinary team addressing the methodological questions important to the U.S. Census Bureau as the Census shifts from the 10-year long-form data to the ongoing survey that releases [data](#) annually.

Provided by University of Missouri-Columbia

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