Hierarchical Spatio-temporal Statistical Models of the American Community Survey

A New Large NSF-Census grant could lead to improved estimates of community demographics and distribution of resources

Professors Scott Holan and Chris Wikle have recently been awarded a prestigious 5 year-$2.85 million grant from the National Science Foundation (NSF) to form a research node as part of a new joint effort between the NSF and the U.S. Census Bureau that seeks to build a new research network to conduct high impact interdisciplinary research focused on methodological questions of interest to the Federal Statistics System, particularly the U.S. Census Bureau. Scott and Chris will be leading the MU research node. They will coordinate educational and research activities for postdoctoral researchers and graduate research assistants at MU and work with researchers at The Ohio State University, led by Prof. Noel Cressie, to develop new data analysis and modeling methodologies for the American Community Survey conducted by the Census Bureau. This grant is the largest ever awarded in the Department of Statistics and one of the biggest in the College of Liberal Arts and Sciences at MU.

The American Community Survey is an ongoing survey that releases data annually, providing communities with the timely information needed to plan the distribution of resources and services. According to the U.S. Census Bureau (USCB), data from the survey provides input into how more than $400 billion in federal and state funds are distributed annually. The Census Bureau released the first five-year period estimates associated with this survey for all standard tabulation areas in 2010. This marks an interesting time in U.S. history as we experience a shift from the decennial census long-form data to using an ongoing survey that releases data annually. Making this transition presents many methodological challenges, both for the Census Bureau and for data users (stakeholders). The MU Statistics node will be instrumental in analyzing and combining information in novel ways that borrow strength across space and time, and that utilizes the dynamical, changing nature of population demographics. Many of these methods are motivated by the investigators previous interdisciplinary experiences modeling environmental and epidemiological processes such as weather, ocean dynamics, and invasive species.

A quick survey of recent articles in the media, the American Community Survey is used to: facilitate public health comparisons across spatial regions, evaluate the changing economic climate in cities, evaluate poverty, affordable housing, and wage gaps in regional populations, and even to compare high school sports participation as a function of income.

MU News Bureau Story: http://munews.missouri.edu/news-releases/2011/1012-mu-statisticians-to-develop-statistical-models-for-the-u-s-census-bureau%e2%80%99s-american-community-survey/

Tribune Story: http://www.columbiatribune.com/news/2011/oct/14/mu-gets-money-to-help-better-census-data-analysis/

Website of NSF-Census Research Network Program:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503587&org=SES&from=home

Website of American Community Survey: http://www.census.gov/acs/www/