



**Big Data, Big Promise, Big Challenge:
Can Small Area Estimation Play a Role in the Big Data Centric World?**

P. Lahiri

Joint Program in Survey Methodology and Department of Mathematics,
University of Maryland
College Park
plahiri@umd.edu

The demand for various socio-economic, transportation, and health statistics for small geographical areas is steadily increasing at a time when survey agencies are desperately looking for ways to reduce costs to meet fixed budgetary requirements. In the current survey environment, the application of standard sample survey methods for small areas, which require a large sample, is generally not feasible when considering the costs. One of the key factors that lead to the success of small area estimation (SAE) methodology is the availability of strong auxiliary variables. The accessibility of big data from different sources is now bringing new opportunities for statisticians to develop innovative SAE methods. In this talk, I will provide an outline of how SAE methods can be adapted to incorporate big data in improving local area statistics. Then I will discuss my recent collaboration with my UMD colleagues --- Professor Cinzia Cirillo of Department of Civil and Environmental Engineering, and Professor Joseph Jaja of Department of Electrical and Computer Engineering, and the University of Maryland Institute for Advanced Computer Studies (UMIACS). Finally, as an example from our different collaborative research projects, I will explain how SAE can help solve a seemingly different problem of predicting in real-time traffic by exploiting rich vehicle probe big data.