

## **WSS Short Course Big Data for Small Area Estimation**

**Date:** Wednesday, March 13, 2019

**Time:** 9:00 am – 4:30 pm

**Instructor:** Dr. Partha Lahiri, Joint Program in Survey Methodology and Department of Mathematics, University of Maryland, College Park

**Place:** Bureau of Labor Statistics

Conference rooms 1-3, 2 Massachusetts Avenue NE, Washington, DC

### **Course Content:**

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 led to the success of small area estimation (SAE) methodology is the availability of strong auxiliary variables. The accessibility of Big Data from different sources (e.g., administrative/register records, social media data, mobile phone data, sensor data, satellite data, etc.) is now bringing new opportunities for statisticians to develop innovative SAE methods. We will begin the course by presenting a brief history of small area estimation, basic concepts and issues. Then we will discuss different existing methods for producing small area estimates using Big Data. We will discuss a few case studies to illustrate the utility of combining information from multiple databases for small area estimation. The goal of this short course is to provide a broad overview of the subject and will avoid derivations of complex results. Active participation from the attendees will be strongly encouraged.

### **About the Instructor:**

Dr. Partha Lahiri is Professor of the Joint Program in Survey Methodology (JPSM) and Department of Mathematics at the University of Maryland, College Park, and an Adjunct Research Professor of the Institute of Social Research, University of Michigan, Ann Arbor. Prior to coming to Maryland, Dr. Lahiri was the Milton Mohr Distinguished Professor of Statistics at the University of Nebraska-Lincoln. His research interests include survey sampling, small-area estimation, record linkage and Big Data. Dr. Lahiri's research has been widely published in leading journals such as the Journal of the American Statistical Association, Annals of Statistics, Biometrika and Survey Methodology. Dr. Lahiri has served on a number of advisory committees, including the U.S. Census Advisory committee and U.S. National Academy panel. Over the years Dr. Lahiri advised various local and international organizations such as the United Nations Development Program, World Bank, Gallup Organization. Dr. Lahiri is a Fellow of the American Statistical Association and the Institute of Mathematical Statistics and an elected member of the International Statistical Institute.

**Course Schedule:**

- 8:15 - 9:00 Coffee, breakfast, and check in
- 9:00 - 10:15 Introduction & Welcome
- 10:15 - 10:30 Break
- 10:30 - 12:00 Alternative data sources
- 12:10 - 1:00 Lunch (provided)
- 1:00 - 2:30 Small Area Modeling and Methods
- 2:30 - 2:45 Break
- 2:45 - 4:00 A few case studies
- 4:00 - 4:30 Discussion

**Advance registration:** In addition to your RSVP here, please go to <https://www.eventbrite.com/e/wss-short-course-big-data-for-small-area-estimation-tickets-55049104353> to register and pay for the class. Online registration will close on March 8, 2019; earlier if the course fills up.

**Registration Fee:**

- Full-time students (at most 8): \$63.69 advance, \$80 at the door
- WSS members: \$187.89 advance, \$200 at the door
- All others: \$218.94 advance, \$240 at the door

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