

**Asian Population Association (APA)  
Workshops**

# 1. IUSSP Two-Day Short Course Bayesian Small Area Estimation using Complex Survey Data: Methods and Applications

**Organizer:** IUSSP - International Union for the Scientific Study of Population

**Organizing committee:** *Sam Clark* (Department of Sociology, The Ohio State University)  
*Zehang Li* (Department of Statistics, University of Washington)  
*Jon Wakefield* (Departments of Statistics and Biostatistics, University of Washington).

**10-11 July 2018: 9:00 am. - 4:00 pm.**

## **Description:**

Small area estimation (SAE) is an important endeavor in global health, epidemiology, and increasingly, in demography. SAE is often based on data obtained from complex surveys, and one must acknowledge the survey design when statistical analysis is performed so that measures of uncertainty incorporate sampling variability. Often data in particular areas are sparse (perhaps non-existent) and so spatial smoothing is advantageous to ‘borrow strength’ from neighboring areas.

We will begin with introductions to complex survey data, SAE, space-time modeling, and Bayesian statistics and then bring these topics together to show how reliable SAE estimation can be performed. The course will end with a complex application: space-time smoothing of under-5 infant mortality using demographic and health survey (DHS) data. This application is part of an on-going collaboration that the instructors have with UNICEF. In this context, the use of both full and summary birth history data will be described. Throughout, hands-on experience will be gained through the use of the instructors’ SUMMER R package that carries out space-time smoothing of area-level complex survey data, based on methodology that has been published by the instructors.

## **Prerequisites:**

None, although familiarity with R, Bayesian methods, and mortality measurement are helpful. Participants may want to bring their own laptop with R installed so that they can follow along and experiment with the data and code.

**Number of Participants: 30.**

## **2. Modelling and Projecting Sub-national Population in selected Asian Countries: Dissemination and Conclusion (Invitation Only)**

**Organizer:** *Samir KC* (Ph.D., Demography, Professor, Human Capital and Development, ADRI, Shanghai University)

**10 July 2018: 9:00am. - 4:00 pm.**

### **Description:**

Understanding population dynamics and heterogeneity within a country provides important insights for explaining social and environmental changes. It also helps to identify vulnerable sections of the population that are affected most by these changes. Projections of population dynamics and heterogeneity can serve as a prediction that assists policymakers and other stakeholders in visualizing an alternative future, to assess what-if scenarios, or to simulate sensitivity tests of single or multiple variables. While demographers are interested purely in population dynamics, the users of population projections are spread in many disciplines, among them development studies with a focus on Sustainable Development Goals (SDG).

To assist government planning and setting targets for administrators, national statistical agencies are mandated to maintain population counts and monitor dynamics by various demographic and socioeconomic characteristics at the national and sub-national levels. The data are collected through censuses, surveys and other data sources, such as tables and/or micro-data that are available from the National Statistical Offices who often also conduct analyses and projections with varying quality and frequency between countries making it difficult to conduct cross-country comparisons and to predict the future population development.

National level and cross-country population dynamics are also maintained and projected at the international level. The downside of such extensive cross-country projections is that they employ a top-down approach that largely ignores what is happening in the country (local knowledge and expertise) and lack local ownership making them less popular among local users either for national level studies or at sub-national levels.

The incomparability of data produced by national statistical agencies due to quality issues and different methods and the moderate use of data produced by international agencies that apply a supra-national approach motivated us to develop a consistent method for studying population dynamics across and within countries by collaborating with local partner institutions.

Lead by Samir KC (applicant), researchers at the Asian Demographic Research Institute (ADRI) at Shanghai University and IIASA (Austria) have developed multi-dimensional/multi-state models to study population dynamics at the global, regional, national and sub-national level. Currently, an initiative to disseminate the methodology is underway in collaboration with institutional partners in eleven Asian countries/regions (Bangladesh, China, Hong Kong, India, Indonesia, Iran, Nepal, Pakistan, Philippines, Sri Lanka, and Thailand).

The first workshop took place during 7-11 April 2017 at ADRI, Shanghai University with more than 25 participants from more than 11 countries. The workshop focused on demographic and data issues in each country followed by an introduction to the methodology of multistate demography. A hands-on training session with an R-package (MSDem, Multistate Demography) was conducted.

We conducted out the second workshop with more than 22 participants (from 11 country teams) at ADRI during 22<sup>nd</sup>-24<sup>th</sup>, where all countries, except Pakistan, presented preliminary country-specific population model and results. We discussed important aspects of population dynamics in each country, followed by a general discussion on issues related to projection of demographic and human capital components and the future plans. Please find a list of participants attached to the email.

We plan to present the final set of results and analysis in each country during the proposed one-day workshop on “Modelling and Projecting Sub-national Population in selected Asian Countries: Dissemination and Conclusion”. Each country will showcase their population dynamics model and an application of the model on the country-specific population issue. We will finalize the details in coming days.

In parallel, based on country-specific model and analysis we propose to have a special session on “Asian Demography on Crossroads: Future Implications of Demographic Change”. Four papers on the following topics can be presented at the session. A methodological paper on human capital projections: A comparative illustration from selected Asian countries, Future of Health and Ageing in Asian countries, Demographic Dividend in Future of Asian rapid demography change, and Future of Education Trends in Asia.

### **3. Analyzing policy challenges with real world data using IPUMS**

**Organizers and Presenters:** Dr. Matthew Sobek and Dr. Sula Sarkar, IPUMS Center for Data Integration

**13 July 2018: 2:45 pm. - 4:15 pm.**

#### **Description:**

IPUMS-International is a global partnership of national statistical offices, international organizations and university researchers. Our goals are to preserve, harmonize, and disseminate confidentialized census data and documentation to qualified researchers world-wide, free of charge. Presently, the database disseminates data from 89 countries and 345 census samples with over 988 million person records available. The IPUMS-International project is housed at the IPUMS Center for Data Integration at the University of Minnesota.

This session will introduce researchers, educators, and statistical offices to the harmonized coding system for variables; we will also demonstrate the online interactive data tabulator and discuss additional research tools of special interest in the classroom. The presentation will include an introduction to IPUMS data and web access system, harmonized geography and available GIS files, constructed pointer variables to analyze household relationships, and how to access the free data for research or classroom use. Finally, there will be a guided discussion of the rewards and challenges of researching and teaching with real-world data. The objective of this session is to train scholars, statisticians, and educators to access and use census microdata harmonized across time and country for their own specific research.