

Training Workshop Series

Training Workshop I:

Methods and Models for Spatial Analysis on Population and Climate Change

Dates: Oct. 5-9, 2019, Shanghai, China

Host: Asian Demographic Research Institute (ADRI), Shanghai University

The human interventions on the environment and climate systems and the consequences of environmental and climate changes on human societies vary among geographic regions and differ across administrative levels. Climate change impacts and human exposures, vulnerabilities, and risks are generally place-based and require systematic and consistent spatial analysis across multiple geographic scales. While data, methods, and models have been increasingly developed for exploring population and climate change interactions, findings from researches of various regions based on different approaches and datasets are hardly comparable or used to draw general conclusions. To promote comparative studies and foster joint and compatible research, the Asian Demographic Research Institute at Shanghai University, in collaboration with the Population-Environment Research Network (PERN), the Vulnerable Population Initiative of City University of New York (CUNY), and the Computational and Spatial Analysis Core of the Population and Social Science Research Institutes of The Pennsylvania State University, is going to hold a training workshop on spatial analysis on population and climate change in Shanghai on October 5-9 of 2019.

Three leading scholars in spatial demographic research [Bryan Jones](#), [Guangqing Chi](#), and [Deborah Balk](#) (the latter joining remotely) will serve as the instructors. They are going to introduce various types of spatial data that are used in the analysis of climate-change impacts, and cover emerging methods for combining remotely sensed, satellite-type data with census/survey data to enhance population-environment research applications. Such analysis is often fraught with technical issues, as such they will introduce solutions to many of the most common problems associated with spatial inquiries. During the five-day intensive training sessions, the workshop will combine lectures with hands-on labs to cover explanatory spatial data analysis, spatial regression modeling, spatial downscaling models, methods for projecting spatially explicit data, and methods for assessing exposure, vulnerability, and the human response to climate hazards. As one result of the training workshop, joint research projects will be proposed for future collaborations among participants under the framework of the [Asian MetaCentre for Population and Sustainable Development Analysis](#).

The provisional agenda

Saturday, October 5, 2019:

- AM: Review of spatial analysis – data, methods, and models;
- PM: Overview of the fields and planned joint research

Sunday October 6, 2019:

- AM: Spatial Interactions modeling for population-environment research
- PM: Hands-on exercises

Monday, October 7, 2019

- AM: Downscaling modeling for projections of population and climate change impacts
- PM: Hands-on exercises

Tuesday, October 8, 2019

- AM: Explanatory spatial data analysis – concepts and methods for illustrating and detecting spatial dependence
- PM: Hands-on exercises

Wednesday, October 9, 2019:

- AM: Spatial regression modeling -spatial lag model and spatial error model
- PM: Hands-on lab, applications to climate change and migration

Research scholars and graduate students interested in spatial analysis of population - climate change interactions and collaborative research are welcome to apply. Basic knowledge of geographic information system (GIS) and experiences of using geocoded data for spatial analysis are required. The application should include a letter of intent, CV, and a sample of publications or GIS works. Limited funding is available to support participants from low-income countries. Successful applicants are also encouraged to participate in the 2nd Asian Population Forum in Shanghai on October 11-12 of 2019.

Deadline of application: July 15, 2019

Please apply through:

<https://www.surveymonkey.com/r/adri-workshop2019>

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Address: No. 99 Shangda Road, Shanghai, China

Training Workshop 2:

R for Demography and IUSSP Workshop on Estimating Migration with R

Dates: Oct. 5-9, 2019, Shanghai, China

Host: Asian Demographic Research Institute (ADRI), Shanghai University

Tutor: Guy Abel

This workshop has two parts. The first part focuses on the introduction of the R statistical language for handling, investigating and displaying demographic data. The second part, organized by the IUSSP Scientific Panel on [International Migration: Strengthening the Knowledge Base for Policy](#) explores methods for estimating migration, their implementation in R and visualizing migration patterns. Participants may attend only the second part if they are already familiar with R.

Upon completion of the workshop, participants will be familiar with the R environment, its basic functions and more advanced methods from some of the most popular R packages for importing, manipulating and visualizing data. They will also have accustomed to common strategies used to estimate migration and visualize patterns.

Practical hands-on exercises will be emphasized throughout the workshop to build up participants R experience. No prior knowledge of R is necessary, although participants should be comfortable using computers to handle data sets in statistical software (such as SPSS or Stata) and spreadsheets (such as Excel). The workshop will last for five days, with a tentative schedule for each day from Oct 5th-9th:

- 1) An introduction to R, including basic R functions, accessing R packages and using RStudio effectively.
- 2) Visualizing demographic data in R using the ggplot2 package, including basic charts, facet plots and maps.
- 3) Managing demographic data in R using the tidyverse suite of packages, including reading data of different formats into R and summarizing, combining and reshaping data within R.
- 4) Methods for estimating migration in a variety of missing data situations and their implementation in R.
- 5) Visualizing migration data in R using the circlize package.

Participants will gain the experience in each of these areas through lectures interspersed with practical computing exercises. Besides experience of handling data using statistical software, participants should also have a basic knowledge of demography, mathematics and statistics.

Deadline of application: July 15, 2019

Please apply through:

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Training Workshop 3

Methods in developing sub-national population and human capital models and its applications

Dates: Oct. 13-17, 2019, Shanghai, China

Host: Asian Demographic Research Institute (ADRI), Shanghai University

Tutor: Samir KC

In this workshop, we will use examples from the global population to sub-national projection. We will use Excel-VBA and R during the course.

Practical hands-on exercises will be emphasized throughout the workshop to build up participants Excel-VBA and R experience. Prior knowledge of basics in R is necessary and participants should be comfortable using computers to handle data sets in statistical software (such as SPSS or Stata) and spreadsheets (such as Excel). The workshop will last for five days, with a tentative schedule for each day from Oct 13th to 17th:

1. Introduction to various methods in developing sub-national population and human capital models starting with setting a national level cohort component model in Excel-VBA
 2. Setting the model in R and introduction to multi-dimensional projection model by adding educational attainment to the national level model in Excel-VBA
 3. Discuss issues and methods in dealing with the estimation of fertility, mortality, and migration by education and other sources of heterogeneity (e.g., living arrangement, sub-national levels, rural-urban place of residence, and so on). Setting the multi-dimensional model in R.
 4. Developing future scenarios (e.g., medium, high, and low variants; SDGs; Policy scenarios) and projecting the population.
 5. Visualizing and packaging for the users and the policymakers showing 2-3 applications of a sub-national population dynamics model in health, education, and labor force participation.
- Participants will gain experience in each of these areas through lectures interspersed with practical computing exercises. Besides the experience of handling data using statistical software, participants should also have a basic knowledge of demography, mathematics, and statistics

Deadline of application: July 15, 2019

Please apply through:

<https://www.surveymonkey.com/r/adri-workshop2019>

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