Announcement

One-week (five days) online workshop on

"**Introduction to R: Demographic and Spatial Analysis**"

April 5-9, 2021

Conducted by

International Institute for Population Sciences, Mumbai, India

in collaboration with

Max Planck Institute for Demographic Research, Rostock, Germany

&

Federal Institute for Population Research, Wiesbaden, Germany

Course coordinators and Instructors

Prof. Usha Ram, IIPS, Mumbai (India)

Prof. Archana Roy, IIPS, Mumbai (India)

Dr. Christian Dudel, MPIDR, Rostock (Germany)

Dr. Sebastian Klüsener, BiB, Wiesbaden (Germany)

IMPORTANT DATES

Registration starts: Feb 1, 2021

Last date: March 1, 2021

No. of seats available: 25

Target group: The target participants are students with a Masters / MPhil degree and research scholars pursuing their PhD and/or those completed in the past 2-3 years. We also encourage young faculty to apply for the same.

Eligibility: Selected candidates should have a demography/population studies background from a well-recognized university/institute with a good academic record.

Registration fee: Rs. 5000 /- (INR)

How to apply:
Please fill out this google form to submit your application in the training programme by no later than **March 1, 2021**:

https://forms.gle/wts1G8Er7u59Zyj36

Shortlisted candidates will be informed by email on **March 10, 2021 and will be communicated on the mode for payment of registration fee.**

The shortlisted candidates must pay the training fee on or before March 20, 2021.

The IIPS has a few scholarships for deserving candidates.

Please feel free to contact us for any query.

Contact:

Prof. Usha Ram, PhD
IIPS, Mumbai
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Course description:

Over the last years, the open-source statistical program R has become one of the most important tools for quantitative research. It not only allows researchers to conduct statistical analyses, but is also of great help in gathering and preparing data for such analyses. In addition, the spatial libraries of R offer great potential to perform spatial and spatio-temporal analyses. This course has two major objectives. The first objective is to give an introduction to performing statistical analyses in R, including a worked example on the COVID-19 pandemic. The second objective is to provide participants with skills to conduct spatial analyses in R. Spatial analysis methods are of high relevance as researchers often work with geographically referenced data. In comparative social demographic research, it is very common to contrast populations across countries or regions. As a result of the big data revolution, we are also witnessing a massive increase in individual-level data with spatial location information. Modeling geographical data, the exclusion of spatial information can lead to biases in the statistical models as important modeling assumptions may be violated. Therefore, understanding the spatial processes underlying the relationships of interest can improve overall knowledge of demographic events as well as enhance the usefulness and applicability of statistical models.

Course prerequisites:

Participants should be familiar with basic multivariate analysis techniques (such as linear regression) and basic demographic methods.

Prior knowledge of R, Geographic Information Systems, spatial statistics and cartographic techniques is not required.

IIPS

The International Institute for Population Sciences, which celebrated its Golden Jubilee in the year 2006, was established in Mumbai in July 1956 with the collaboration of the United Nations Population Fund (UNFPA), the Government of India, and the Sir Dorabji Tata Trust to serve as the regional Institute for training and research in population studies for the countries in Asia and the Pacific region. The Institute is a "Deemed University" functioning under the administrative control of the Ministry of Health and Family Welfare, Government of India. This is the only Institute of its kind in the world exclusively devoted to teaching and research in population and health-related issues. The IIPS alumnus is occupying prestigious positions in international and national organizations, universities, development agencies, and non-governmental organizations and has created a brand value for the Institute. The Institute runs several research activities in collaboration with international and national research institutes/organizations and universities. The Institute plays a pivotal role in planning and development of the country by generating valuable health and development indicators through large scale nationwide sample surveys at state and district level and is a National Nodal Agency for conducting prestigious surveys like NFHS (DHS-India), DLHS, LASI, SAGE, GATS, and Youth Study. Until 2018, the Institute has trained 3953 students (3275 from India and 678 from 41 different countries) through various courses.

MPIDR

The Max Planck Institute for Demographic Research (MPIDR) in Rostock, Germany, is one of the leading demographic research centers in the world. Committed to basic research, international teams of researchers investigate demographic change, aging, fertility, digital demography, and other issues at the forefront of population research. The Institute has flat hierarchies, which also allow early-career scientists to propose and realize excellent research ideas; the level of financial support for data acquisitions, international collaborations, and conference participations is highly competitive. It is thus not surprising that over the last two decades the MPIDR has allowed many of today's leading demographers to boost their careers. The MPIDR is strongly committed to teach core demographic theories and methods to the next generation and to bring new promising approaches from other scientific fields into demography. The European Doctoral School of Demography (EDSD) is an 11-month program open to students with a master's degree, enrolled in a European PhD program. International Advanced Studies in Demography (IDEM) is a training program focused on offering courses on specific topics and methods. The MPIDR publishes the international peer-reviewed journal Demographic Research.

BiB

The Federal Institute for Population Research (BiB) in Wiesbaden, Germany, is an important reference for the German Federal Government and the Ministries when it comes to population-related issues. It is also an important partner for research facilities at home and abroad in the field of population studies. The Federal Institute for Population Research operates within a wide-ranging scientific field, including third party funded projects, and distributes service contracts, especially in connection with the analysis of large own surveys. Often, the BiB collaborates with international organizations – bilaterally and multilaterally. As a basis for decisions of the German Government and its ministries, the BiB gives advice concerning interpretations of demographic trends and analyses. Population topics are of cross-departmental importance – nationally as well as internationally –, for instance in the field of social security, health, migration, family and education. The Institute provides information and interprets demographic topics for representatives of the portfolio, members of parliament, government officials, the educational sector, the press, companies, and other groups. The BiB publishes the international peer-reviewed journal Comparative Population Studies (CPoS).

Day-wise details of the coursework

Class 1   **Introduction to R (CD)**
05/04/21   Introduction to the course: Why use R?; R as a pocket calculator; functions, objects,
10:00-13:00   and operators; using RStudio

Class 2   **Data wrangling and basic plotting (CD)**
05/04/21   Loading data; editing data; pipes; factors; missing values; basic ggplot2; exercises
14:30-17:30

Class 3   **Descriptive analysis and regression modelling (CD)**
06/04/21   Descriptive statistics; regression modelling; regression diagnostics
10:00-13:00

Class 4   **Programming basics (CD)**
06/04/21   for-loops; if and while; functions; exercises
14:30-17:30

Class 5   **A worked example (CD)**
07/04/21   Applying demographic methods to the COVID-19 pandemic
10:00-13:00

Class 6   **Spatial Demography (SK)**
07/04/21   Role of spatial location and distance in demographic processes;
14:30-17:30   spatial libraries of R; simple and publishable maps in R

Class 7   **Basic principles and challenges of spatial analysis (SK)**
08/04/21   Modifiable areal unit problem; ecological and indivualistic fallacies;
10:00-13:00   local and global measures of spatial autocorrelation

Class 8   **Introduction to spatial modeling (SK)**
08/04/21   Accounting for spatial dependence in regression models;
14:30-17:30   spatial econometric models (Lag/Error/Durbin); short introduction to Geoda

Class 9   **Combined analysis of raster, point, and vector data (SK)**
09/04/21   Handling and combining raster, point, and vector data;
10:00-13:00   geostatistical models combining raster, point, and vector data

Class 10   **Simulation approaches in spatial analysis (SK)**
09/04/21   Advantages and disadvantages of simulation approaches;
14:30-17:30   agent-based models of spatial phenomena

17:00-17:30   **Conclusion and outlook (SK+CD)**

Resource persons: CD: Dr. Christian Dudel; SK: Dr. Sebastian Klüsener