

9th international summer school 2017

Spatial Epidemiology and Urban Health Concepts and Modeling

September 18-22, 2017

Program

Program Directors:

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King Faisal University, Saudi Arabia

Location:

Berlin School of Public Health – Campus Virchow Clinic 3, 2nd Floor, CIPOM

https://iph.charite.de/lehre/intensive_short_courses/

List of lecturers

- Florian Fischer, PhD (University of Bielefeld)
- Oliver Gruebner, Dr. rer. nat. (Humboldt-Universität zu Berlin, University of Zurich, Switzerland)
- Mobarak Hossain Khan, PhD (King Faisal University, Saudi Arabia)
- Alexander Krämer, MD, PhD (University of Bielefeld)
- Moritz Krämer, DPhil (Harvard Medical School, USA, University of Oxford, UK)
- Tobia Lakes, PhD (Humboldt-Universität zu Berlin)
- Sven Lautenbach, PhD (University of Bonn)
- SV Subramanian, PhD (Harvard School of Public Health, USA, pending)
- Blake Byron Walker, PhD (Simon Fraser University, Canada, Humboldt-Universität zu Berlin)

Aims

The course addresses spatial-epidemiological concepts and modeling with a focus on urban health. We concentrate on state-of-the-art multivariable statistical and spatial statistical modeling to health outcomes and associations with socio-ecological factors of urban contexts. We combine theoretical and lab work on statistical analysis and spatial-epidemiological modeling techniques in an interdisciplinary approach.

The summer school Spatial Epidemiology and Urban Health is attracting participants due to its interdisciplinary character. Combining the scientific approaches of the discipline of geography with its genuine focus on space with those of epidemiology, biostatistics and the public health sciences makes it possible and fruitful for the participants to deal with spatial dimensions of health. Some of the summer school faculty has long-lasting cooperation demonstrated by joint publications in the field of urban and megacity health.

Participants will be working with the statistical software R (<http://www.r-project.org>). Basic knowledge on R is recommended, but not an exclusion criterion. For preparation you may consider taking a free online course to learn R. For example: <https://www.coursera.org/learn/r-programming> that starts every month.

Learning objectives

After completing the course, participants will be able to:

- Review concepts of spatial epidemiology and urban health
- Analyze health outcomes of urban populations by applying:
 - Statistical techniques (multivariable regression analysis)
 - Spatial statistical techniques (autocorrelation analysis, geo processing)
 - Spatial-epidemiological modeling techniques (multivariable regression models that control for spatial dependencies in the data)
- Work more effectively in collaboration with other disciplines for investigating multidisciplinary health problems.

September 18-22, 2017

Monday, September 18, 2017

Introduction, concepts

- 08.00 – 08.30 Registration
- 08.30 – 09:00 Welcome and introduction (**Fischer, Gruebner, Lautenbach, Khan**)
- 09.00 – 10.30 The public health perspective on urban health: Concepts and recent challenges (**Alexander Krämer**)
- 10.30 – 11.00 *Coffee break*
- 11.00 – 12.30 The geographic perspective on urban health: Concepts and recent challenges (**Walker**)
- 12.30 – 13.30 *Lunch*
- 13.30 – 15.00 Spatial + epidemiological approaches for urban health (**Fischer**)
- 15.00 – 15.30 *Coffee break*
- 15.30 – 17.30 World café: Break out-groups discussing concepts and approaches of spatial epidemiology and urban health (**Gruebner**)
- 19.00 *Coming together (self paid social event)*

Tuesday, September 19, 2017

Quantitative statistics and mapping in R

- 09.00 – 10.30 Quantitative statistics (**Khan**)
- 10.30 – 11.00 *Coffee break*
- 11.00 – 12.30 Brief introduction in R, descriptive statistics, geo processing, and mapping (**Gruebner**)
- 12.30 – 13.30 *Lunch*
- 13.30 – 15.00 Group work exercise: Geo processing and mapping in R (**Gruebner**)
- 15.00 – 15.30 *Coffee break*
- 15.30 – 17.30 Explorative spatial data analysis (ESDA) in R (**Lautenbach, Gruebner**)

Wednesday, September 20, 2017

Regression modeling and explorative spatial data analysis (ESDA)

- 09.00 – 10.30 Quantitative spatial statistics and their applications in disease modeling (**Moritz Krämer**)
- 10.30 – 11.00 *Coffee break*
- 11.00 – 12.30 Regression modeling in R (**Lautenbach, Gruebner**)
- 12.30 – 13.30 *Lunch*
- 13.30 – 15.00 Spatial regression modeling in R: I (**Lautenbach, Gruebner**)
- 15.00 – 15.30 *Coffee break*
- 15.30 – 17.30 Group work exercise: ESDA and spatial regression modeling in R (**Lautenbach, Gruebner**)

Thursday, September 21, 2017

Spatial regression modeling

- 09.00 – 10.30 Spatial Regression modeling in R: II
(Lautenbach, Gruebner)
- 10.30 – 11.00 *Coffee break*
- 11.00 – 12.30 Spatial Regression modeling in R: III
(Lautenbach, Gruebner)
- 12.30 – 13.30 *Lunch*
- 13.30 – 15.00 Group work exercise: Spatial regression modeling in R
(Lautenbach, Gruebner)
- 15.00 – 15.30 *Coffee break*
- 15.30 – 17.30 Group work exercise: Spatial regression modeling in R
(Lautenbach, Gruebner)
- 19.00 *Coming together*

Friday, September 22, 2017

Group presentations, closing

- 09.00 – 10.30 Keynote: Geographic variation in urban health
(Subramanian)
- 10.30 – 11.00 *Coffee break*
- 11.00 – 12.30 Presentations of the participants
(Fischer, Gruebner, Lautenbach, Walker)
- 12.30 *Closing session*