List of lecturers

1. Suzanne Elayan (Loughborough University, UK)
2. Marta Fadda, PhD (University of Lugano)
3. Florian Fischer, PhD (University of Bielefeld, Germany)
4. Oliver Gruebner, Dr. rer. nat. (University of Zurich)
5. Mobarak Hossain Khan, PhD (East West University, Dhaka, Bangladesh)
6. Alexander Krämer, MD, PhD (University of Bielefeld, Germany)
7. Sven Lautenbach, PhD (University of Heidelberg, Germany)
8. Tobia Lakes, PhD (Humboldt-Universität zu Berlin, Germany)
9. Ivor Mardesic (University of Zurich)
10. Martin Sykora (Loughborough University, UK)

Location
University of Zurich
Rämistrasse 59
CH- 8001 Zurich
Room: RAA-E-30 EV
https://www.plaene.uzh.ch/RAA

Course fees
We greatly acknowledge financial support by Graduate Campus UZH
UZH students and scientists: CHF 150.–
External early career scientists*: CHF 450.–
External senior scientists: CHF 600.–
All others: CHF 900.–

*Master and PhD students, early PostDocs of up to three years after their PhD, proof required

Detailed information and registration
http://spatialepidemiology.strikingly.com

3 ECTS (30h in class, 30h preparation and 30h follow-up work)

Course language: English

Audience

The course is designed for researchers, public health professionals, epidemiologists, geographers, and clinicians familiar with solid knowledge of epidemiologic principles, and multivariable modeling.

Aims

The course addresses spatial and digital epidemiological approaches to social media data with a focus on urban health. We concentrate on state-of-the-art multivariable statistical and spatial statistical modeling to mental health outcomes as identified in geo-referenced Twitter data 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 and Digital Epidemiology 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, public health, and the data sciences makes it possible and fruitful for the participants to deal with spatial dimensions of health outcomes. The summer school faculty has long-lasting cooperation demonstrated by joint publications in the fields of urban and megacity health, spatial epidemiology and the application of social media analysis in urban health research.

Participants will be working with the statistical software R (http://www.r-project.org).

Basic knowledge in epidemiology and familiarity with R statistical software are prerequisites. For preparation you may consider taking a free online course to learn the concepts of epidemiology or R. Examples: https://www.coursera.org/learn/epidemiology, https://www.coursera.org/learn/r-programming, http://www.r-tutorial.nl/, and a new book on geo computation with R by Robin Lovelace, Jakub Nowosad, Jannes Muenchow: https://geocompr.robinlovelace.net/

Learning objectives

After completing the course, you will be able to:

1. Describe the relevance, potential, and challenges of spatial and digital epidemiological approaches to advance urban health research:
    a. Review concepts of geospatial data analysis and visualization
    b. Describe big geodata social media analytics for public health
2. Apply robust spatial and digital epidemiological approaches towards addressing important urban health challenges:
    a. Analyze mental health outcomes as identified in social media
    b. Employ geo-processing (e.g., integrating geo-spatial social media information)
    c. Perform exploratory spatial data analysis (e.g., geo visualization and mapping)
    d. Apply spatial statistics (e.g., hotspot analysis, spatial regression)
3. Develop a project with potential for real-world urban health impact using geospatial big data methods:
    a. Extend your multidisciplinary network.
    b. Work more effectively in collaboration with other disciplines for investigating multidisciplinary health problems.

Program August 5-9, 2019

Monday, August 5, 2019

Relevance, potential, and challenges of spatial and digital approaches to advance urban health research

08.30 – 8.45	Registration
08.45 – 09.00	Welcome and introduction (Gruebner)
09.00 – 10.30	Towards a spatial and digital epidemiology (Gruebner)
10.30 – 11.00	*Coffee break*
11.00 – 12.30	Mock session: Legal and ethical challenges in big social media data for public health research (Fadda)
12.30 – 13.30	*Lunch*
13.30 – 15.00	Lab work in R: Brief introduction to working with geosocial data in R (Gruebner)
15.00 – 15.30	*Coffee break*
15.30 – 17.00	World Café: Digital epidemiology (Fischer)
17.30	*Reception and speed networking*

Tuesday, August 6, 2019

Spatial and digital epidemiological approaches towards addressing important urban health challenges

09.00 – 10.30	Urban health (Krämer)
10.30 – 11.00	*Coffee break*
11.00 – 12.30	Epidemiological challenges and opportunities to urban mental health (Khan)
12.30 – 13.30	*Lunch*
13.30 – 15.00	Geographic Information Science for big social media data in urban health (Lakes)
15.00 – 15.30	*Coffee break*
15.30 – 17.00	Lab work in R: Assessing activity spaces of users based on geo-referenced social media data (Mardesic)

Wednesday, August 7, 2019

Develop a project with potential for real-world urban health impact using geospatial big data methods.

09.00 – 10.30	Lab work in R: Exploratory Spatial Data Analysis (Lautenbach)
10.30 – 11.00	*Coffee break*
11.00 – 12.30	Lab work in R: Exercises (Lautenbach)
12.30 – 13.30	*Lunch*
13.30 – 15.00	Lab work in R: Spatial dependence and cluster analysis (Lautenbach)
15.00 – 15.30	*Coffee break*
15.30 – 17.00	Lab work in R: Exercises (Lautenbach)

Thursday, August 8, 2019

09.00 – 10.30	Lab work in R: Spatial regression modelling (Lautenbach)
10.30 – 11.00	*Coffee break*
11.00 – 12.30	Lab work in R: Exercises (Lautenbach)
12.30 – 13.30	*Lunch*
13.30 – 15.00	Work on group assignment (Lautenbach, Gruebner)
15.00 – 15.30	*Coffee break*
15.30 – 17.00	Work on group assignment (Lautenbach, Gruebner)
18.00	*Coming together*

Friday, August 9, 2019

09.00 – 10.30	Detecting bots, emotions, and stress in social media data (Elayan, Sykora)
10.30 – 11.00	*Coffee break*
11.00 – 12.30	Team presentations (Lautenbach, Gruebner)
12.30 – 13.00	Closing session and award of certificates