Instructors

Miguel Hernán conducts research to learn what works to improve human health. Together with his collaborators, he designs analyses of health-care databases, epidemiologic studies, and randomized trials. Miguel teaches clinical data science at the Harvard Medical School, clinical epidemiology at the Harvard–MIT Division of Health Sciences and Technology, and causal inference methodology at the Harvard T.H. Chan School of Public Health, where he is the Kolo-kotrones Professor of Biostatistics and Epidemiology. His edX course Causal Diagrams and his book Causal Inference, co-authored with James Robins, are freely available online and widely used for the training of researchers. Miguel is an elected Fellow of the American Association for the Advancement of Science and of the American Statistical Association, an Editor of Epidemiology, and past Associate Editor of Biometrics, American Journal of Epidemiology, and the Journal of the American Statistical Association.

Katalin Gémes is a postdoctoral researcher at the Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden. She defended her PhD work in the field of Public Health Epidemiology. She currently works with combining data from observational studies and routinely collected administrative information to compare the effectiveness of different hypothetical interventions on diet and alcohol consumption on the risk of cardiovascular diseases.
Course description
The course introduces students to a general framework for the assessment of comparative effectiveness and safety, with an emphasis on the use of routinely collected data in healthcare settings. The framework relies on the specification and emulation of a hypothetical randomized trial: the target trial. The course explores key challenges for causal inference and critically reviews methods proposed to overcome those challenges. The methods are presented in the context of several case studies for cancer, cardiovascular, and renal diseases.

Course objectives
To learn how to determine "what works" using data from observational and randomized studies.

Audience
The course is designed for students and researchers, public health professionals, epidemiologists, and clinicians with a solid knowledge of epidemiologic principles and a familiarity with multivariable modeling.

Course prerequisites
Basic knowledge of epidemiology

Learning objectives
After successful completion of this course, students will be able to:
- Formulate sufficiently well-defined causal questions for comparative effectiveness research
- Specify the protocol of the target trial
- Design analyses of observational data that emulate the protocol of the target trial
- Identify key assumptions for a correct emulation of the target trial

Pre-course reading

Program
19 – 20 February 2020 | 9am - 5pm

Wednesday, 19 February
9:00 Introduction: Asking causal questions
10:30 Break
11:00 Emulating the target trial
12:30 Break
13:30 Choosing time zero
15:00 Break
15:30 Individual and group exercises
17:00 End

Thursday, 20 February
9:00 Confounding adjustment: emulating randomization
10:30 Break
11:00 Treatment strategies
12:30 Break
13:30 Individual and group exercises
15:00 Break
15:30 Individual and group exercises
17:00 End