Swiss Epidemiology Winter School 2016

Causal Inference in Observational Epidemiology

January 21 - 23, 2016

Course description

Faculty	**Prof. Miguel Hernan, MD (course co-ordinator)** Harvard School of Public Health, Harvard University, Boston, USA **Prof. Marcel Zwahlen, PhD** Institute of Social and Preventive Medicine (ISPM), University of Bern, Switzerland
Place	**CH – 3823 Wengen | SWITZERLAND** Hotel Jungfraublick (see map on http://www.epi-winterschool.org/hotels)
Introduction	Causal inference from observational data is a key task of epidemiology and of allied disciplines such as behavioral sciences and health services research. Commonly used statistical methods estimate association measures which cannot always be causally interpreted, even when all potential confounders are included in the analysis. In contrast, a causally explicit approach formally defines causal effects, identifies the conditions required to estimate causal effects without bias, and uses analytical methods that, under those conditions, provides estimates that can be endowed with a causal interpretation. This course presents such framework for causal inference from observational data and recent methodological developments, with a special emphasis on complex longitudinal data. The application of these methods will be illustrated using data from a synthetic HIV cohort study. The course is aimed at epidemiologists, statisticians, and other researchers who work with longitudinal observational data.
Course objectives	By the end of this short course participants will have • An in-depth understanding of confounding and selection bias • An understanding of the role and potential of different methodological approaches to overcome these problems, including inverse probability weighting, marginal structural models and nested structural models • Practical data analysis experience using STATA software.
What you have to bring	Students will bring their own portable computers. A course license of Stata® will be available if required, to be installed by University of Bern IT staff on arrival.

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Outline of course	The course will run over three days and consists of lectures in the morning and computer practicals during the evening. During the extended break in the afternoon, participants review course materials, catch up on emails or go skiing. ***Thursday, January 21st (8:30 – 12:00 | 16:30 – 18:30)*** • Introduction to causal diagrams • Confounding • Selection bias and time-dependent confounding • Group work • Review of day 1 ***Friday, January 22nd (8:30 – 12:00 | 17:00 – 19:00)*** • Inverse probability weighting of marginal structural models • Applications of marginal structural models • STATA practical: Marginal structural models • Review of day 2 ***Saturday, January 23rd (8:30 – 12:00 | 17:00 – 19:00)*** • Further applications of inverse probability weighting such as the construction of adjusted survival curves. • STATA practical: Further applications of inverse probability weighting • Review of day 3 and course evaluation
Credit	1.5 ECTS
Maximum number of participants	The maximum number of participants on this course will be 25.
Course fee	Academic: CHF 900 Industry: CHF 1800
Registration	Registration on the Winter School website www.epi-winterschool.org.
Course hotels	The participants have to book their accommodation themselves (see map and recommendation on www.epi-winterschool.org/hotels).