Swiss Epidemiology Winter School 2014

Causal Inference in Observational Epidemiology (ws14-1)

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Faculty

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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 provide measures of association that lack a causal interpretation even when the investigator 'adjusts for' all potential confounders in the analysis. To eliminate the discordance between the causal goals and the associational methods in epidemiology, it is necessary to formally define causal concepts, identify the conditions required to estimate causal effects, and use analytical methods that, under those conditions, provide estimates that can be endowed with a causal interpretation. This course presents a framework for causal inference from observational data and the latest methodological developments, with a special emphasis on complex longitudinal data. The application of these methods will be illustrated using data from the Swiss HIV Cohort Study. The course is aimed at epidemiologists and statisticians 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.

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.

Monday

- Introduction to causal diagrams
- Confounding
- Selection bias and time-dependent confounding
- Group work
- Review of day 1

Tuesday

- Inverse probability weighting of marginal structural models
- Applications of marginal structural models
- STATA practical: Marginal structural models
- Review of day 2

Wednesday

- G-estimation of nested structural models
- Applications of G-estimation of nested structural models
- STATA practical: Nested structural models
- Review of day 3 and course evaluation

Maximum number of participants

The maximum number of participants on this course will be 25.

Course fee

Academic: CHF 900

Industry: CHF 1500

Course hotels

See www.epi-winterschool.org