Basel Biometrics Society Training
Basel, December 11th, 2025

A critical introduction to causal mediation analysis for biostatistics

Date: December 11th, 2025 (9:00-13:00)
Location: Seminar room E46, D-BSSE, ETHZ, Klingelbergstrasse 46, Basel
Fees: Industry: CHF 200; Academia: CHF 100
Instructor: Vanessa Didelez (BIPS and University of Bremen)
Registration: link (Register early as places are limited.)

Course Description

Causal mediation analysis has emerged some 20 years ago as an alternative to purely parametric versions of mediation (mainly linear structural equation models). The causal direct or indirect effects are formalized in terms of potential outcomes and more or less hypothetical interventions; conditions for their identification from randomized or real-world data can be given; and various approaches for statistical inference are available. The recent interest in 'estimands' in view of intercurrent events has sparked renewed interest as one might attempt to assess the direct or indirect effects of treatments in view of these intercurrent events. However, the key notions of so-called natural (in)direct effects are also controversial: not only do they rely on unusual assumptions that are much more subtle than simply assuming 'no unmeasured confounding', these notions of causal effects themselves can be criticized as not providing any practically relevant / actionable insights. This short course will give an introduction to the basic concepts and the controversy of causal mediation analysis. Alternatives that can sometimes be more useful will be discussed. We will focus on concepts and interpretations rather than technical details.

The course will cover the following aspects:

1) Brief introduction to causal inference for causal effects of joint/sequential treatments, controlled direct effects and the problem of selection bias; interpretation, identification and basic methods (g-formula, inverse weighting).
2) Nested counterfactuals and the concepts of "natural" (in)direct effects; interpretation, identification and cross-world independence; relation to linear structural equation models.
3) Alternative concepts: interventionist theory of mediation and separable effects; interpretation, identification and relation to natural (in)direct effects.
4) Examples and relation to estimands / intercurrent events; overview of statistical methods and software implementation.

Organisers: Giusi Moffa (BMS) and Jack Kuipers (D-BSSE, ETHZ)

Logistics

The event will include coffee breaks.

After registering via the link above, payment details will appear on screen. Please **pay the fees by December 3rd** to confirm your spot. Cancellations by December 3rd may receive up to a 90% refund *only* if the seat is filled from the waitlist; otherwise, fees are **non-refundable**.

Registration is limited to 35 participants and will close once capacity is reached. A waitlist will be available for unconfirmed spots or last-minute cancellations.
If you require assistance with registration (e.g., due to restricted access to Google Forms), please contact giusi.moffa@unibas.ch