

# Swiss Epidemiology Winter School 2023



## Advanced Methods in (Network) Meta-Analysis – A Practical Course in R 19–21 January 2023

### Faculty

**Prof. Georgia Salanti**

Institute of Social and Preventive Medicine, University of Bern, Switzerland

**Dr. Guido Schwarzer**

Institute of Medical Biometry and Statistics, University of Freiburg, Germany

### Venue

**CH – 3823 Wengen | SWITZERLAND**

Bühlstube ([map](#))

### Course description

Standard meta-analysis methods for clinical and epidemiological studies are widely used. They compare two interventions, such as drug versus placebo or new interventions with standard practices. However, contemporary research questions require methods beyond the state-of-art. Investigators often synthesize data potentially subject to small-study effects/publication bias, analyse several health outcomes jointly, or compare more than two interventions for the same condition. Meta-analysis method extensions addressing these aims are subjects of much recent methodological research and increasingly applied.

Our course explains the theory and application of meta-regression models, methods to investigate risk of publication bias, multivariate meta-analysis, dose-response meta-analysis, and network meta-analysis. It is intended for statisticians, epidemiologists, and other quantitatively-minded researchers who want to understand and undertake beyond-the-standard syntheses of evidence.

Participants must be statistically literate with good understandings of linear regression, meta-analysis, and random-effects models. Computer practical sessions use R packages and require basic R software experience. Knowledge of systematic reviews and fundamentals of meta-analysis are also expected.

### Course objectives

By the end of our course, participants will:

- know principles, steps, and statistical methods involved in meta-regression, multivariate meta-analysis, dose-response meta-analysis, and network meta-analysis

### Contact:

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- describe potential and limitations of methods to detect and account for small-study effects
  - perform the above-mentioned methods using R packages
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**Course audience** Researchers in health sciences with some experience or understanding of the basics of meta-analysis who wish to expand their knowledge and skills within the context of clinical effectiveness evaluation.

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**Course outline** The course runs over three days and consists of lectures, group work, and computer practical sessions.

We start early in the morning by reviewing the previous day. During extended afternoon breaks, participants review course materials, catch up on email, or ski. We reconvene at 4:30 pm for computer practical sessions.

**Thursday, 19 January 8:15 am – 12:15 pm | 4:30 pm – 6:30 pm**

- Meta-analysis of pairwise comparisons; methods to estimate heterogeneity and summary effects
- Meta-regression models
- Methods to investigate the potential influence of publication bias

**Friday, 20 January 8:15 am – 12:15 pm | 4:30 pm – 6:30 pm**

- Multivariate meta-analysis
- Dose-response meta-analysis
- Indirect and mixed treatment comparisons

**Saturday, 21 January 8:15 am – 12:15 pm | 1:15 pm – 3:15 pm**

- Network meta-analysis
  - Reporting standards and quality assessment of network meta-analyses
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**Credits** 1.0 ECTS

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**Course materials** Bring a portable computer with the latest versions of R and R studio installed.

*We strongly recommend only bringing computers you have administration rights for to the course.*

Onsite University of Bern IT staff provides support upon e-mail ([it@ispm.unibe.ch](mailto:it@ispm.unibe.ch)) request.

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**Course book** On the first day of the course, we provide *Meta-Analysis with R*. (2015) by G. Schwarzer, J.R. Carpenter, and G. Rücker. OR *Systematic Reviews in Health Research: Meta-Analysis in Context* (2022) by M.Egger, J.Higgins, and G. Davey Smith.

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**Course fee**

PhD Bern Students:	CHF	400
PhD Students:	CHF	750
Academic:	CHF	950
Industry:	CHF	2050

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**Registration** Register on the [Winter School website](#). Pre-Registration starts 29 August 2022 at 12:00 pm (CET).

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**Accommodation** Book your accommodation separately. Please see [recommendations for special prices](#).

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