Swiss Epidemiology Winter School 2019

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Statistical Analysis with Missing Data
Using Multiple Imputation and Inverse Probability Weighting
January 24th – 26th, 2019

Faculty	**Prof. James Carpenter** London School of Hygiene and Tropical Medicine, University of London, United Kingdom Medical Research Council Clinical Trials Unit, 90 High Holborn, London, United Kingdom **Prof. Marcel Zwahlen** Institute of Social and Preventive Medicine (ISPM), University of Bern, Switzerland
Venue	**CH – 3823 Wengen | SWITZERLAND** Hotel Jungfraublick (see map on http://www.epi-winterschool.org/hotels)
Description	Missing data are ubiquitous in observational and experimental research. They lead to a loss of statistical power, but more importantly, may introduce bias into the analysis. In this course we adopt a principled approach to handling missing data, in which the first step is a careful consideration of suitable assumptions regarding the missing data for a given study and analysis. Based on this, appropriate statistical methods can be identified that are valid under the chosen assumptions. The course will focus particularly on the practical use of multiple imputation (MI) to handle missing data in realistic epidemiological and clinical trial settings, but will also include an introduction to inverse probability weighting methods and new developments that combine these with MI.
Objectives	By the end of this course participants will: • be introduced to the issues raised by missing data, and the associated statistical jargon (missing completely at random, missing at random, missing not at random) • be aware of the shortcomings of ad-hoc methods for 'handling' missing data • understand the reasons for using multiple imputation for statistical analysis with missing data • understand the need for and use accessible methods for exploring the sensitivity of inference to the missing at random assumption Through computer practical sessions using Stata®, participants will learn how to apply the statistical methods introduced in the course to realistic datasets.

Target audience	This course is aimed at epidemiologists, biostatisticians and other health researchers with quantitative skills and some experience in statistical analysis. Stata® will be used for the computer practical sessions, and so familiarity with the package is desirable, although code and solutions will be provided.
Outline	The course will run over three days and consist of lectures, group work and computer practical sessions. We start early in the morning with a review of the previous day. During the extended break in the afternoon participants may review course materials, catch up on emails or go skiing (not recommended simultaneously). We reconvene at 16:30 for the computer sessions. *Wednesday, January 24th (8:00 – 12:00 | 16:30 – 18:30)* *Friday, January 25th (8:00 – 12:00 | 16:30 – 18:30)* *Saturday, January 26th (8:00 – 12:00 | 16:30 – 18:30)*
Credits	1.0 ECTS
To bring along	Students should bring their own portable computers. A course license for Stata® will be available, to be installed before arrival. University of Bern IT staff onsite can provide help upon request per e-mail (it@ispm.unibe.ch)
Course book	Carpenter, J. R. and Kenward M. G. (2013). *Multiple Imputation and its Application*. The book will be provided on the first course day.
Course fee	SSPH+ students: CHF 0 *) Academic: CHF 950 Industry: CHF 2050 *) except students from University of Geneva (cohort 4) and Lucerne
Registration	You can register on the Winter School website www.epi-winterschool.org.
Accomodation	Participants must book their accommodations themselves. Please see our recommendations on www.epi-winterschool.org/hotels for special prices.