



LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Statistical Analysis with Missing Data Using Multiple Imputation and Inverse Probability Weighting

January 15th – 17th, 2018

Course description

Faculty	Prof. James Carpenter London School of Hygiene and Tropical Medicine, University of London, United Kingdom Medical Research Council Clinical Trials Unit, Kingsway, London, United Kingdom Prof. Marcel Zwahlen 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	<p>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.</p> <p>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.</p>

Contact:

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Course objectives	<ul style="list-style-type: none"> • To provide an introduction to the issues raised by missing data, and the associated statistical jargon (missing completely at random, missing at random, missing not at random) • To illustrate the shortcomings of ad-hoc methods for 'handling' missing data • To introduce multiple imputation for statistical analysis with missing data • To compare and contrast this with other methods, in particular inverse probability weighting and doubly robust methods, and • To introduce accessible methods for exploring the sensitivity of inference to the missing at random assumption <p>Through computer practical sessions using Stata®, participants will learn how to apply the statistical methods introduced in the course to realistic datasets.</p>									
What you have to bring	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 on Sunday night.									
Outline of course	<p>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 review course materials, catch up on emails or go skiing. We reconvene at 5 pm for the computer sessions.</p> <p><i>Monday, January 15th (8:30 – 13:00 17:00 – 19:00)</i></p> <p><i>Tuesday, January 16th (8:30 – 13:00 17:00 – 19:00)</i></p> <p><i>Wednesday, January 17th (8:30 – 13:00 17:00 – 19:00)</i></p>									
Credit	1.5 ECTS									
Course book	Carpenter, J. R. and Kenward M. G. (2013) <i>Multiple Imputation and its Application</i> , Chichester: Wiley.									
Course fee	<table> <tr> <td>SSPH+:</td> <td>CHF</td> <td>0</td> </tr> <tr> <td>Academic:</td> <td>CHF</td> <td>950</td> </tr> <tr> <td>Industry:</td> <td>CHF</td> <td>2050</td> </tr> </table>	SSPH+:	CHF	0	Academic:	CHF	950	Industry:	CHF	2050
SSPH+:	CHF	0								
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Registration	You can register on the Winter School website www.epi-winterschool.org .									
Course hotels	Participants must book their accommodations themselves (see map and recommendations on www.epi-winterschool.org/hotels).									