

EPINOR Summer School 8 - 11 June 2015

Missing Data and Measurement Error

Jægtvolden Fjordhotell, Inderøya

Main course lecturer Jonathan Bartlett

Jonathan is a Lecturer at the Department of Medical Statistics at the London School of Hygiene & Tropical Medicine. His PhD investigated the use of missing data methods such as imputation for handling measurement error in regression models. His current research interests are focused on the development of methods for handling missing data, taking account of the various complexities that arise in the analysis of real data. He maintains the website www.missingdata.org.uk, and writes a blog at thestatsgeek.com.

Summer school Programme

Monday 8 June

We all meet at Trondheim Airport Værnes within 10.30 Monday for Epinor bus to HUNT Research Centre, Levanger

- Random Error by professor Imre Janszky
- Lunch
- Guided tour at the HUNT Research Centre facility
- Bus to Jægtvolden Fjordhotell, check-in and dinner

Tuesday 9 June

Before Lunch

- The impacts of missing data on analyses (bias and efficiency)
- Adopting a principled approach to handling missing data
- Missing data mechanisms and Rubin's taxonomy

During lunch

- Poster presentations by the participants

After Lunch

- A critique of ad-hoc methods for handling missing data
- The validity of complete case analyses
- Multiple imputation for one partially observed variable

Evening

- Social events

Wednesday 10 June

Before lunch

- Joint model imputation for imputation of multiple variables
- Chained equations / fully conditional specification imputation
- Variable selection, number of imputations, and practicalities

During lunch

- Poster presentations by the participants

After lunch

- Handling interactions and non-linearities in the substantive model when using imputation
- Imputing in survival analysis settings
- Imputation in clustered or hierarchical data

Evening

- Social events

Thursday 11 June – misclassification and measurement error

Before Lunch

- The effects of misclassification in binary covariates
- Adjustment for misclassification using predictive value weighting
- Adjustment for misclassification using multiple imputation

After Lunch

- The effects of covariate measurement error in regression models
- Multiple imputation for covariate measurement error
- Joint models of repeated measures and time to event data?

EpinoR bus will take us all back to Trondheim Airport Værnes, arrival the airport at latest 17.00

Pre-course suggested reading

- 1) [Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls](#)
- 2) [Multiple imputation: current perspectives](#)
- 3) [Multiple imputation for measurement error correction](#)

Further readings (probably best during/after course)

- 1) [Multiple imputation using chained equations](#): Issues and guidance for practice
- 2) [Multiple imputation of covariates by fully conditional specification: Accommodating the substantive model \(on handling interactions/non-linearities in the substantive model\)](#)