**Imputation of Incomplete Multilevel Data with R**

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**Suggested talk duration (15-60 minutes)**

Depending on the conference organization, our proposal would be suited either for a short paper presentation (15 minutes), or a longer interactive tutorial session (45-60 minutes).

**Summary (max. 500 words)**

Incomplete multilevel data require careful consideration of the missing data problem and analysis strategy. In this tutorial, we focus on a popular strategy to accommodate missingness in multilevel data: replacing the missing data with one or more plausible values, i.e. imputation. Imputation separates the missing data problem from the analysis and the completed data can be analyzed as if it were completely observed.

This tutorial illustrates the imputation of incomplete multilevel data with the statistical programming language *R*. We aim to show how imputation can yield less biased estimates from incomplete clustered data. We provide practical guidelines and code snippets for different missing data situations, including non-ignorable missingness mechanisms. For reasons of brevity, we focus on multilevel imputation by chained equations with the *R* package *mice* and its adjacent packages. Other imputation approaches and missing data methods are outside the scope of this tutorial.

**Relevance to conference theme**

Missing data are ubiquitous in the human data sciences, such as the social and medical sciences, where multilevel methods are commonly applied. Our work showcases how recent developments in imputation methodology can be leveraged by multilevel experts.

**Keywords (max. 3)**

Missing data, imputation, R