

Generating multiple imputation from multiple models to reflect missing data mechanism uncertainty: Application to a longitudinal clinical trial.

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We present a framework for generating multiple imputations for continuous variables when the missing data are assumed to be nonignorably missing. Imputations are generated from more than one imputation model in order to incorporate uncertainty regarding the missing data mechanism. Parameter estimates based on the different imputation models are combined using rules for nested multiple imputation. Through the use of simulation, we investigate the impact of missing data mechanism uncertainty on post-imputation inferences and show that incorporating this uncertainty can increase the coverage of parameter estimates. We apply our method to a longitudinal clinical trial of low-income women with depression where nonignorably missing data were a concern. We show that different assumptions regarding the missing data mechanism can have a substantial impact on inferences. Our method provides a simple approach for formalizing subjective notions regarding nonresponse so that they can be easily stated, communicated, and compared. This is a joint work with Juned Siddique and Catherine Crespi.