

Multiple Imputation by Predictive Mean Matching in Cluster-Randomized Trials

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ABSTRACT

Multiple imputation using random effects regression imputation has been recommended for cluster randomized trials (CRTs) because it is congenial to the appropriate analytic model for CRTs. This imputation method relies on parametric assumptions and may not be robust to misspecification of the imputation model. Imputation by predictive mean matching (PMM) is a semiparametric alternative, but implementation of PMM for multilevel data is limited in current software. For some time, only imputation models that ignore clustering or use fixed effects for clusters could be used for imputation, resulting in underestimation (ignoring clustering) or overestimation (fixed effects for clusters) of variance estimates. This talk will discuss and compare approaches to handling multiple imputation by predictive mean matching with a focus on procedures that can be readily implemented with existing software.