Foreword

Data Missing Not At Random

This special issue of *Statistica Sinica* contains a set of papers about theory, methods, and applications related to an important and challenging area in missing data, i.e. data missing not at random (DMNAR). While the case of missing at random is well understood in the statistics community, DMNAR poses many important and challenging issues that call for novel approaches. For example, identifiability under missing not at random is a notoriously difficult issue.

The twenty-five articles in this special issue cover a wide range of topics related to DMNAR. Both Miao and Tchetgen Tchetgen and Sadinle and Reiter deal with the issue of identification, while the sensitivity analysis is covered in Yang and Lok and White et al. Different approaches to likelihood-based parameter estimation are introduced in Fang et al. and Yu et al. Several semiparametric estimation methods are developed: Sun et al. via the instrumental variable, Bindele and Zhao via the empirical likelihood, and Zhang et al. via the method of moments. Chen et al. applies the empirical likelihood methodology to the survey sampling setting, Zhao et al. focuses on variable selection, and Han deals with the issue of multiple robustness.

The Bayes and the empirical Bayes approaches to DMNAR are also covered: Zhang et al. develops a Bayesian method under the two-phase sampling; Greenshtein and Itskov proposes a non-parametric empirical Bayes approach; Ibrahim et al. presents an application of the Bayesian method to HIV prevention trials; and Woo et al. develops a Bayesian approach to small area estimation.

For longitudinal data, Bi and Qu develops an estimating equation approach, while Kwon et al. proposes a robust calibration-assisted method of parameter estimation that handles cluster-specific nonignorable nonresponse. Li et al. considers the functional data setup and Chen et al. extends the Heckman selection model approach using call-back information.

Other interesting topics include optimal design under DMNAR by Lee et al., the propensity score matching by Lu and Ashmead, log-linear model by Kim and Kim, the nonmonotone missingness by Tchetgen Tchetgen et al., and strategic binary choice models by Nieman.

We hope that this special issue will provide a timely and the state-of-art coverage of researches on DMNAR and, in doing so, stimulate new ideas, methods and applications. We also hope that it will make *Statistica Sinica* a friendly home to many more advancements in DMNAR in the future.

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