

## ABSTRACT

**THESIS:** Evidence for a Multiple Imputation Approach to MNAR Mechanisms

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Missing data is a common problem for researchers. Before one can determine the best method to be used in handling missing data, one must first examine why the data is missing. That is, one must identify the missingness mechanism. Failure to discern an ignorable from a nonignorable missingness mechanism can greatly influence parameter estimates, standard errors and create other biases in statistical analyses. This study examined the efficiency and accuracy of a MNAR multivariate imputation by chained equations framework (miceMNAR) model proposed by Galimard et al. (2016). By applying their method to a real dataset (2018 National Survey of Children's Health) the efficacy of the miceMNAR model was examined. Imputations and parameter estimates using the miceMNAR method were compared to more commonly used methods for handling missing data: complete case analysis and multivariate imputation using chained equations (MICE). Overall, the miceMNAR approach provided very large standard error estimates compared to both complete case analysis and MICE and demonstrated difficulty in providing accurate parameter estimates under MNAR conditions. Further research is recommended on the miceMNAR method before applying it to real data with potential MNAR mechanisms. The results from this study will help inform researchers on potential best practices for dealing with missing data when the mechanism is unknown.