

Incomplete data analysis and sensitivity analysis

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Abstract

We sketch a general paradigm to describe missing data problems and to develop modeling strategies. The classical missing completely at random, missing at random, and missing not at random taxonomy is introduced. Based on this taxonomy, selection models, pattern-mixture models, and shared parameter models are defined and particular attention is paid to the concept of ignorability. Simple but traditionally popular methods such as complete case analysis and last observation carried forward are critically discussed. Likelihood-based ignorable analysis is introduced as a very attractive and versatile context within which incomplete data problems can be handled. Then, the issue of sensitivity of results to untestable model assumptions is described and a number of possible strategies to conduct appropriate sensitivity analyses are reviewed.