

Out of Sight, Not Out of Mind: Strategies for Handling Missing Data

Eric R. Buhi, MPH, PhD; Patricia Goodson, PhD; Torsten B. Neilands, PhD

Objective: To describe and illustrate missing data mechanisms (MCAR, MAR, NMAR) and missing data techniques (MDTs) and offer recommended best practices for addressing missingness. **Method:** We simulated data sets and employed ad hoc MDTs (deletion techniques, mean substitution) and sophisticated MDTs (full information maximum likelihood, Bayesian estimation, multiple imputation) in linear regression analyses. **Results:** MCAR data yielded unbiased pa-

rameter estimates across all MDTs, but loss of power with deletion methods. NMAR results were biased towards larger values and greater significance. Under MAR the sophisticated MDTs returned estimates closer to their original values. **Conclusion:** State-of-the-art, readily available MDTs outperform ad hoc techniques.

Key words: missing data, MDTs, FIML, imputation, Bayesian analysis, health behavior research

Am J Health Behav. 2008;32(1):83-92
