Acceptable Approaches for Addressing Missing Data Under WWC Group Design Standards 4.0

Method	Study design	Can be used to include participants with missing… Baseline data	Outcome data	Additional Requirements (see below)
Complete case analysis	All			
Regression imputation	All	✓	✓	3 requirements for imputation model
Dummy imputation	Non-compromised RCTs only*	✓		
Maximum likelihood	All	✓	✓	Use standard statistical package or include relevant citations
Non-response weights	All		✓ †	2 requirements for missing outcome data models

Table notes

*However, for QEDs and compromised RCTs, dummy imputation can still be applied to baseline measures NOT specified in the review protocol as required to assess baseline equivalence. A compromised RCT occurs when different analytic choices such as changing a subject's group membership after random assignment compromise the validity of an otherwise well-executed random assignment process.

†With non-response weights, participants without observed outcome data will not be included in impact estimation models, but participants with observed outcome data will be weighted so that they resemble the full sample with and without outcome data.

Additional requirements

Regression imputation: The imputation regression model must (a) be conducted separately by condition or include an indicator variable for condition, (b) include all covariates used for adjustment in the impact model, and (c) include the outcome when imputing missing baseline data.

Non-response weights: The missing outcome data model must (a) estimate probabilities of missingness separately by condition or include an indicator variable for condition and (b) include all baseline measures specified in the review protocol as required for baseline equivalence.

Source

WWC Standards Handbook Version 4.0, pages 39-40. https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_standards_handbook_v4.pdf