

measurement ERROR webinar series

Accounting for complex survey design in modeling usual intake (Webinar 4)

Objectives:

- Identify considerations in the analysis of dietary data collected as part of a complex survey, including stratification, clustering, and weighting.
- Identify methods of variance estimation for complex survey samples and how these are incorporated into estimation of usual intake distributions.

Recommended resources:

- Korn EL, Graubard BI. Analysis of Health Surveys. New York, NY: John Wiley & Sons; 1999.
- Tooze JA, Kipnis V, Buckman DW, Carroll RJ, Freedman LS, Guenther PM, Krebs-Smith SM, Subar AF, Dodd KW. A mixed-effects model approach for estimating the distribution of usual intake of nutrients: the NCI method. Stat Med. 2010;29(27):2857-68.

Key terms:

Cluster sampling	A type of sampling in which the population of interest is divided into groups or clusters and a random sample of clusters is selected.
Complex survey sample	A sample of the population of interest that is drawn using stratification and/or clustering techniques; probability of inclusion in the sample varies among individuals in the population and each member of the population has a known probability of selection.
Poststratification	A statistical adjustment procedure by which survey sampling weights are adjusted to reproduce known totals for subpopulations.
Quantiles	Values that divide data or a distribution into equal-size groups; for example, quartiles are quantiles that divide the data into four equally sized groups.
Resampling methods	Techniques used to approximate the variance of population parameter estimates. Methods include balanced repeated replication (BRR), bootstrap, and jackknife. An alternative to resampling methods is Taylor linearization.
Sample survey	A survey of a sample of individuals rather than the entire population of interest; every member of the population has a known probability of being selected into the sample.

Simple random sample	A sample in which each person in the population of interest has the same probability of being selected.
Standard deviation	A statistical measure of the level of dispersion of a set of values around their mean; square root of the variance.
Standard error	The standard deviation of the sampling distribution of an estimated population parameter; used to assess the precision of an estimate.
Stratified sample	A sample in which subsets of sampling units are selected separately from different subgroups of the population rather than from the population as a whole.
Survey design methods	Statistical techniques related to the design features of complex surveys, including clustering, stratification, and weighting.