

measurement ERROR webinar series

Combining self-report dietary assessment instruments to reduce the effects of measurement error

(Webinar 10)

Objectives:

- Describe methods of combining self-report dietary instruments to reduce measurement error and improve the power to detect diet-health associations.
- Understand situations in which combining information from various instruments may provide the most benefit.

Recommended resources:

- Carroll RJ, Midthune D, Subar AF, Shumakovich M, Freedman LS, Thompson FE, Kipnis V. Taking advantage of the strengths of two different dietary assessment instruments to improve intake estimates for nutritional epidemiology. *Am J Epidemiol*. In press.
- Kipnis V, Midthune D, Buckman DW, Dodd KW, Guenther PM, Krebs-Smith SM, Subar AF, Toozé JA, Carroll RJ, Freedman LS. Modeling data with excess zeros and measurement error: application to evaluating relationships between episodically consumed foods and health outcomes. *Biometrics*. 2009;65:1003-1010.

Key terms:

Bias	Systematic deviation of observations or estimates from the truth.
Energy adjustment	Adjustment of nutrient intake for total energy intake.
Food frequency questionnaire (FFQ)	A dietary instrument that asks respondents to report their usual frequency of consumption of each food in a list of foods over a specific period of time.
Food record	A dietary instrument in which a respondent is asked to record all foods and beverages and amounts of each consumed over one or more days.
Long-term instrument	A dietary instrument that captures intake over a long period of time, such as a food frequency questionnaire.
Power	The probability that a test correctly rejects the null hypothesis when the alternative hypothesis is true.
Regression calibration	A statistical method for correcting estimated regression coefficients for bias due to measurement error in one or more continuous covariates.

R-squared	A statistical measure of how much variation in the outcome is explained by the variable or set of variables in a linear regression model.
Self-reported intake	Intake as reported by the individual who actually consumed the dietary component; can be measured using various dietary instruments.
Short-term instrument	A dietary instrument that captures intake over a short period of time, such as a food record or 24-hour recall.
Standard error	The standard deviation of the sampling distribution of an estimated population parameter; used to assess the precision of an estimate.
Twenty-four-hour dietary recall (24HR)	A dietary instrument that requires the respondent to remember and report all foods and beverages consumed in the preceding 24 hours or during the preceding day.