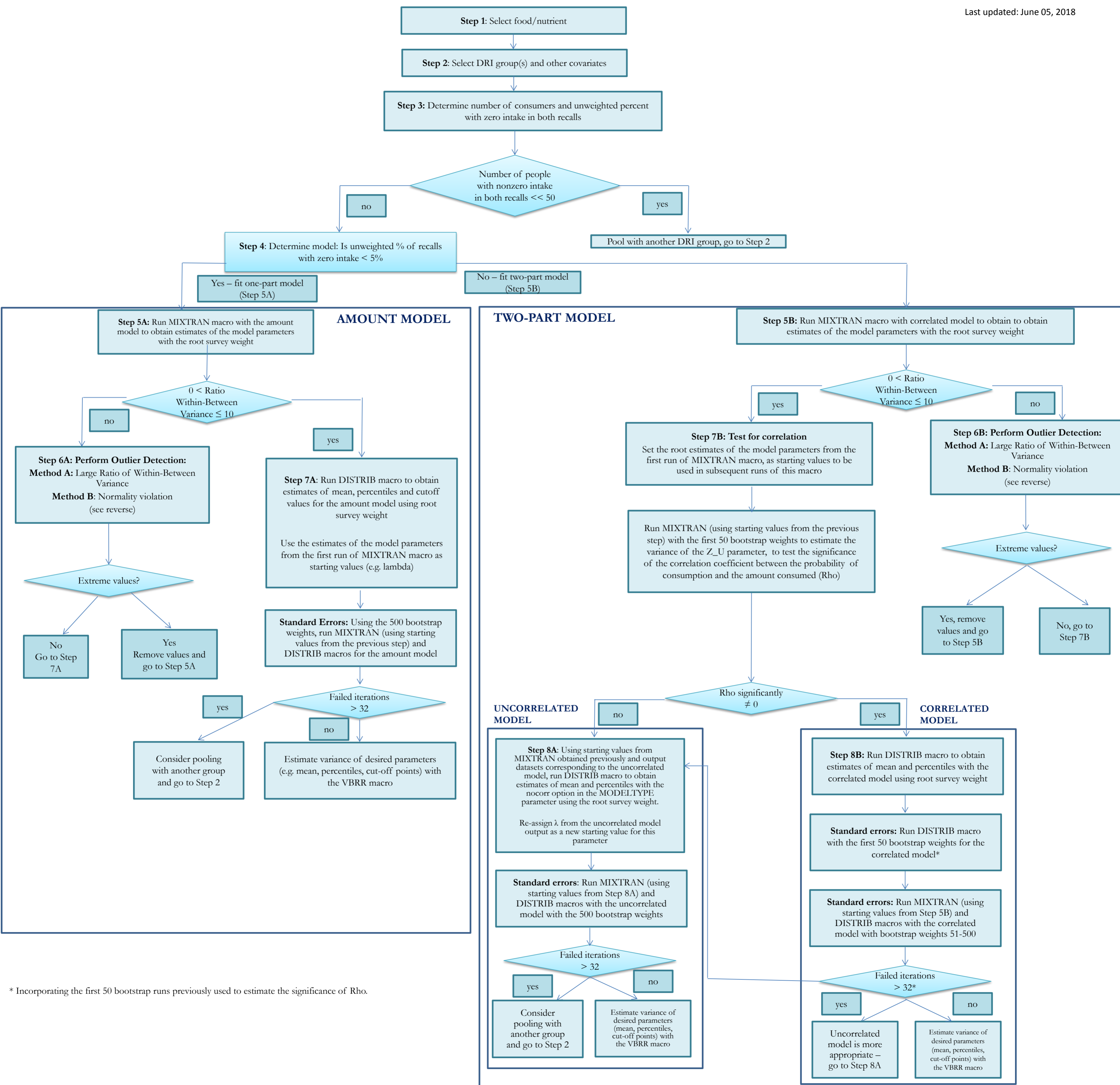


ESTIMATE OF USUAL INTAKE OF FOODS/NUTRIENTS WITH THE NCI METHOD: DECISION-FLOW DIAGRAM (DRAFT)

Last updated: June 05, 2018



\* Incorporating the first 50 bootstrap runs previously used to estimate the significance of Rho.

## Methods for Outlier Detection used in Analysis of Nutrients and Episodically Consumed Foods

### Method A: Large Within-Between Variance Components

- When the ratio of within/between variation is greater than 10, consider the mean distribution of the difference between Day 1 and Day 2 recalls.
- Values were identified as possible outliers if they fell  $\pm 3$ ,  $\pm 2.5$  or  $\pm 2$  SD away from the mean distribution of difference between Day 1 and Day 2 values
- Day 2 recalls were removed as Day 1 recalls are considered to be less biased
- The scenario which first resulted in the within-between variance ratio less than 10 and excluded the fewest second 24hr recalls was retained

### Method B: Normality Violation (refer to Krebs-Smith et. al. (2010))

- Perform a Box-Cox transformation of the raw non-zero values to approximate normality
- Extreme values identified as points either below the 25th percentile minus  $2.5 \times \text{IQR}$  of the transformed distribution OR above the 75th percentile plus  $2.5 \times \text{IQR}$  of the transformed distribution
- Analysis with and without extreme values conducted and compared

## References for the National Cancer Institute (NCI) Method for Analysis of Usual Intake – Univariate Analysis

Krebs-Smith SM, Guenther PM, Subar AM, Kirkpatrick SI, Dodd KW. Americans do not meet federal dietary recommendations. *The Journal of Nutrition* 2010; 140, 1832-1838.

Tooze JA, Midthune D, Dodd KW, Freedman LS, Krebs-Smith SM, Subar AF, Guenther PM, Carroll RJ, Kipnis V. A new statistical method for estimating the usual intake of episodically consumed foods with application to their distribution. *Journal of the American Dietetic Association* 2006; 1575-1587.

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. *Statistics in Medicine* 2010; 29: 2857-2868.