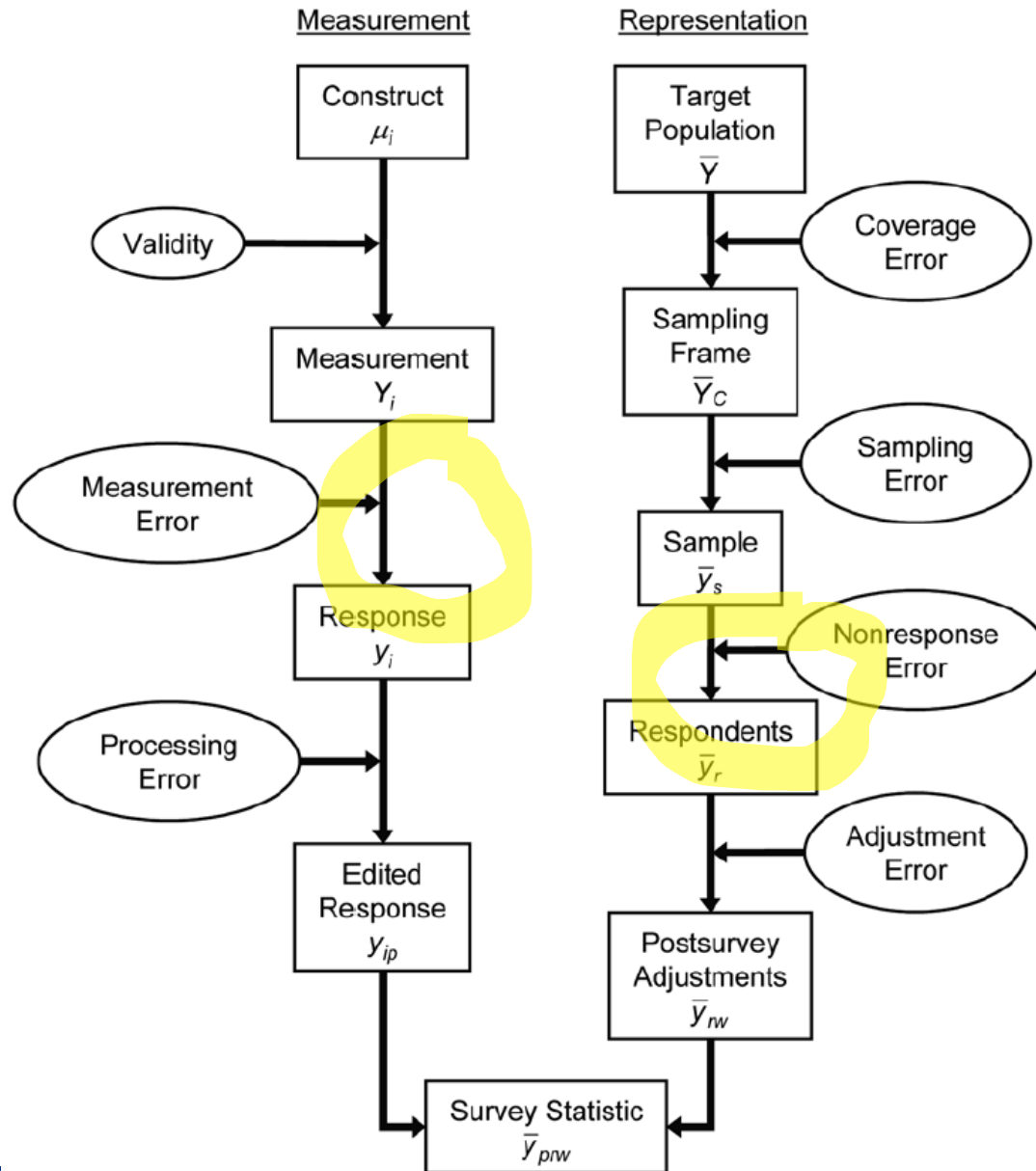


Statement of the Problem - Continued

Emilia Peytcheva



Sources of Survey Error



Groves et al. (2004) Survey Methodology

Item Nonresponse

- Def: Failure to obtain a response to a survey question
- Measurement error due to:
 - Item sensitivity
 - Respondent's lack of motivation
 - Skip logic error
- Reduction:
 - Questionnaire design features (e.g., skip instructions in paper surveys)
 - Probing protocols
- Correction:
 - Imputation

Unit Nonresponse

- Def: Failure to obtain any survey information from a sampling unit
- Components:
 - Noncontact
 - Refusal
 - Unknown eligibly
 - Unable to provide interview
- Sources of ambiguity
 - Excessive item missingness
 - Breakoffs
- Correction:
 - Weighting
 - Imputation

Nonresponse Rate

- Def: Proportion of estimated eligible sample members who do not complete the survey
- NOT Nonresponse Error
- Measure of the potential for Nonresponse Error
 - Survey Error= Bias²+ Variance
- Measured at the survey level (single number for the entire survey)
- Simple to compute and easy to interpret
- Computation can be relatively standardized (see AAPOR standards and guidelines, and calculator at www.aapor.org)
- Lack of alternatives

Nonresponse Bias

$$E[\bar{y}_r - \bar{y}_s] = E\left[\frac{m_s}{n_s} (\bar{y}_r - \bar{y}_m)\right]$$

\bar{y}_s Full sample mean

\bar{y}_r Respondent mean

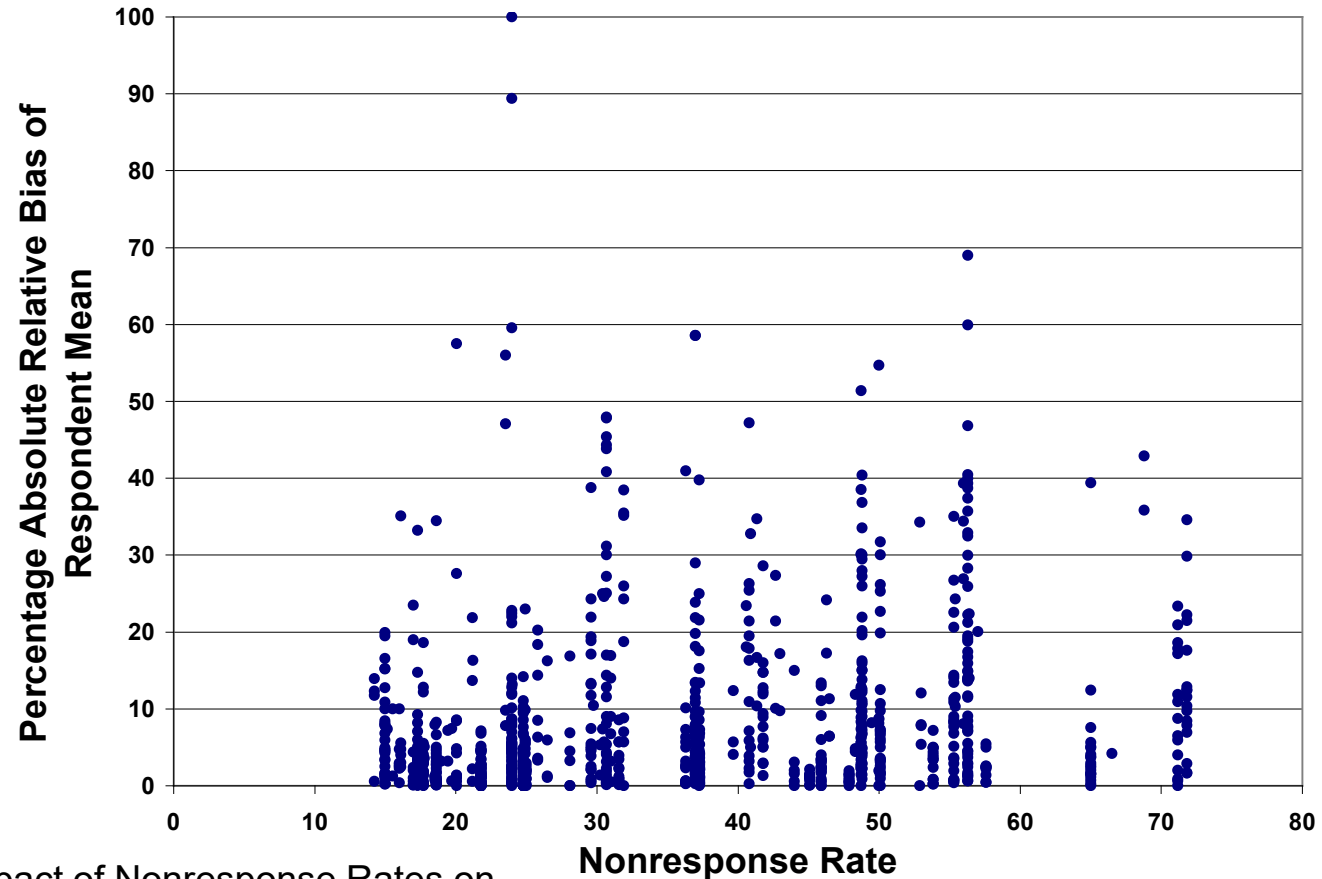
\bar{y}_m Nonrespondent mean

n_s Number of sample elements in full sample

m_s Number of nonrespondent sample elements

Nonresponse Rates and Nonresponse Bias: Between Surveys (Meta Analysis)

Percentage Absolute Relative Nonresponse Bias of 959 Respondent Means
by Nonresponse Rate of the 59 Surveys in Which They Were Estimated



Groves, R. M. and E. Peytcheva (2008). "The Impact of Nonresponse Rates on Nonresponse Bias: A Meta-Analysis." *Public Opinion Quarterly* 72(2): 167-189.

Nonresponse Rates and Bias

- Nonresponse rate is a weak predictor of nonresponse bias
- The magnitude of bias depends on how nonresponse bias is measured
- Bias varies more across statistics *within* studies than *between* studies
- Lack of association between rates and bias is *between* studies; no suggestion that you should not strive for a higher response rate

BUT

- Higher response rate can lead to *higher* nonresponse bias (Merkle and Edelman, 2009)
 - Difference between respondent and nonrespondent means increases to counteract the decrease in nonresponse rate
 - When the design feature to increase response rates appeals most to groups already overrepresented

Design Features to Reduce Nonresponse

- Incentives
- Sponsorship
- Number and timing of call attempts
- Data collection length
- Contacting materials
- Interviewer training
- Mode of data collection
- Survey length
- Respondent selection rule

Compensation for Unit Nonresponse

- Double sampling schemes
- Active management of data collection in anticipation of nonresponse
 - Responsive Design
 - Adaptive Survey Design
- Weighting procedures
- Selection bias model adjustments

Scope of the meeting

- Sampling
- Unit Nonresponse
 - Measuring
 - Reducing
 - Adjusting for nonresponse
- Administrative data use
- Reflections