

Class 4: Total Survey Error + Assignment Prep

MAST5953: Creating Your Own Data

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Outline of Today's Class

Survey Design: Revision

Total Survey Error

Assignment 1: Survey Report

Student Satisfaction Survey

Survey Design: Revision

Exercise 1

- ▶ In an effort to gauge public support for energy conservation, the (fictional) Andrews Foundation conducted a recent poll that found that 72% of Americans agreed with the following statement (phrased as an "Agree/ Disagree" question):
 - ▶ "I would support President Obama's decision to use the U.S. military to help local cities achieve energy independence by installing more energy efficient public lighting."
- ▶ Does it meet the analytic goal of assessing public support for installing more energy efficient public lighting? Why or why not?

Exercise 2

- ▶ A researcher wants to study the impact of social media on anxiety. They decide to ask respondents directly:
 - ▶ "Does social media impact your anxiety levels?"
- ▶ Why is asking a research question directly to survey respondents wrong?
- ▶ What better strategy would you suggest the researcher to study their hypothesis?

Exercise 3

- ▶ Describe two ways you could reduce the effects of social desirability when asking respondents to report tax avoidance.

Exercise 4

- ▶ Describe two different kinds of analyses one could do to assess the validity of answers to questions designed to measure a subjective state, such as happiness or anxiety.

Total Survey Error

The Total Survey Error Framework

'Survey quality is more than a margin of error' ¹

- ▶ The following two requirements must be met:

¹Wolf et al., 2016: Chapter 3

The Total Survey Error Framework

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 1. Answers accurately describe respondent's characteristics, behaviours, attitudes (*measurement*).

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The Total Survey Error Framework

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 1. Answers accurately describe respondent's characteristics, behaviours, attitudes (*measurement*).
 2. Respondents must be representative of the population (*representativeness*).

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The Total Survey Error Framework

'Survey quality is more than a margin of error' ¹

- ▶ The following two requirements must be met:
 1. Answers accurately describe respondent's characteristics, behaviours, attitudes (*measurement*).
 2. Respondents must be representative of the population (*representativeness*).
- ▶ But ... in reality survey analysts often have to grapple with:

¹Wolf et al., 2016: Chapter 3

Measurement Error

The Total Survey Error Framework



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'Shy Tory' effect, says leading pollster

'My sense is that certain approaches to polling [prior to election day] will have underestimated the amount of people likely to vote Conservative,' says ComRes pollster

Maya Oppenheim | Thursday 08 June 2017 17:27 | comments



Interviewer Effect

The Total Survey Error Framework

Journal of Survey Statistics and Methodology (2017) 5, 175–211

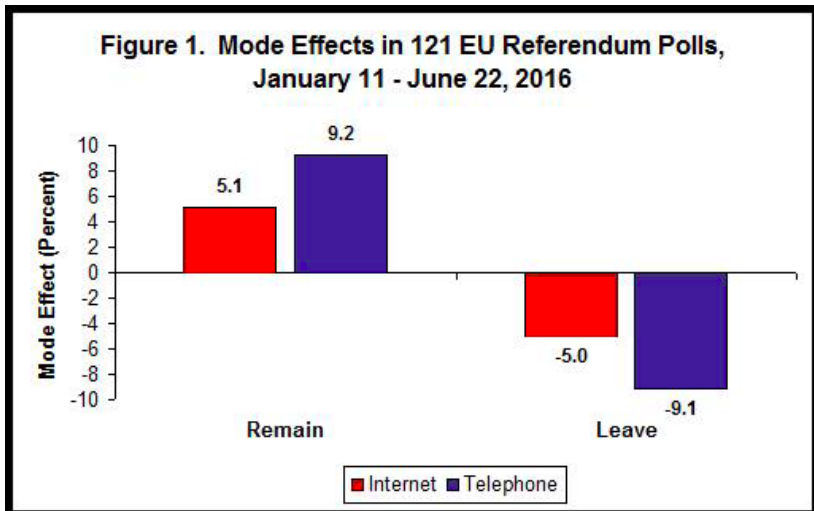
EXPLAINING INTERVIEWER EFFECTS: A RESEARCH SYNTHESIS

BRADY T. WEST*
ANNELIES G. BLOM

A rich and diverse literature exists on the effects that human interviewers can have on different aspects of the survey data collection process. This research synthesis uses the Total Survey Error (TSE) framework to highlight important historical developments and advances in the study of interviewer effects on a variety of important survey process outcomes, including sample frame coverage, contact and recruitment of potential respondents, survey measurement, and data processing. Included in the scope of the synthesis is research literature that has focused on *explaining* variability among interviewers in these effects and the different types of variable errors that they can introduce, which can ultimately affect the efficiency of survey estimates. We first consider common tasks with which human interviewers are often charged and then use the TSE framework to organize and synthesize the literature discussing the variable errors that interviewers can introduce when attempting to execute each task. Based on our synthesis, we identify key gaps in knowledge and then use these gaps to motivate an organizing model for future research investigating explanations for interviewer effects on different aspects of the survey data collection process.

Mode Effect

The Total Survey Error Framework



Sampling Error

The Total Survey Error Framework

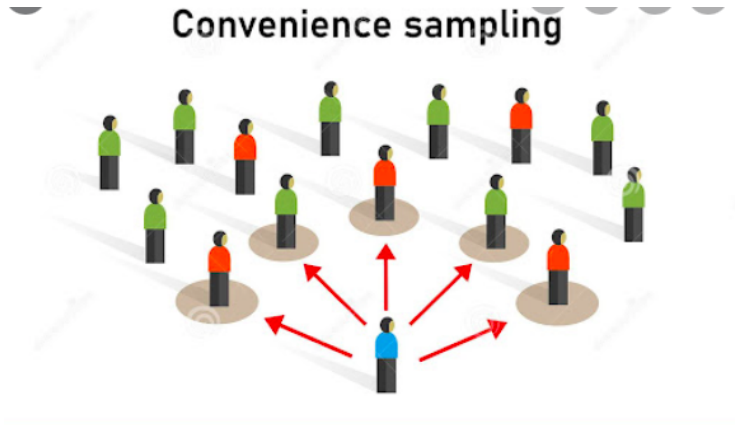


Image from: [ResearchArticles.com](https://www.researcharticles.com)

Coverage Error

The Total Survey Error Framework



Nonresponse Error

The Total Survey Error Framework

RESPONSE RATES

187

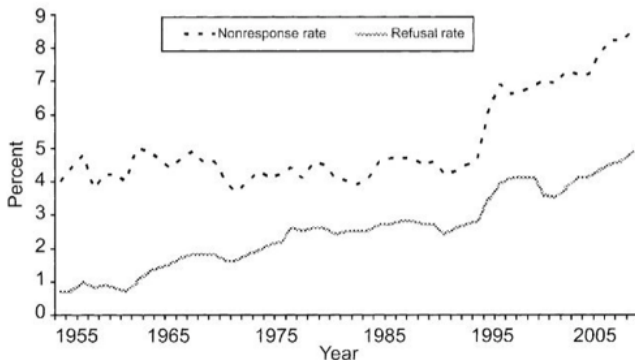
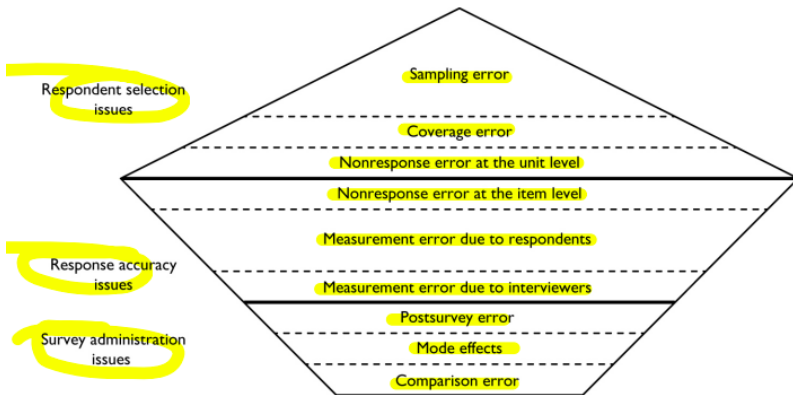


Figure 6.2 Nonresponse and refusal rates for the Current Population Survey by year. (Source: U.S. Census Bureau.)

The Total Survey Error Framework

Figure 3.1 The different types of survey error source. Source: Adapted from Weisberg (2005, p. 19).



Are We Doomed?

- ▶ “The job of a survey designer is to minimize error in survey statistics by making design and estimation choices that minimize the gap between two successive stages [measurement and representativeness, *ndr*] of the survey process.” (Groves et al 2009: 49)
- ▶ “Despite all these potential sources of error, carefully designed, conducted, and analyzed surveys have been found to be uniquely informative tools” (Groves et al 2009: 41)

Error-Minimisation Strategies

Measurement Error & Item Non-Response

- ▶ Survey pilots/cognitive interviewing
- ▶ Telephone/face-to-face modes allow for clarifications
 - ▶ But be wary of using them for sensitive topics!
- ▶ Multiple Imputation (next week)

Error-Minimisation Strategies

Interviewer effects

- ▶ Self-administered surveys
- ▶ Interviewer training

Error-Minimisation Strategies

Nonresponse

- ▶ highlight academic sponsorship - purpose is to help research
... Universities generally perceived more favourably
- ▶ Cash incentives
- ▶ Choose a long data collection period - to give time to everyone
- ▶ Put sensitive questions at the end of the questionnaire
- ▶ Keep questionnaire short
- ▶ Contact non-responders repeatedly - using different mediums
(pre-notification letter, persuasion letters, change to
face-to-face mode ...)

Exercises

Minimising nonresponse

- a) Assume that your goal is to maximize cooperation rates. Choose whether to use the sponsoring organization's letterhead (the organization paying for the survey) or the data collection organization's letterhead (the organization collecting the data, which you can assume to be relatively unknown among sample persons); then explain the reason for your decision.

Sponsor	Data Collection Organization	Target Population	Which organization's stationery for advance letter?	Reason for answer
Commercial credit company	Academic survey center	U.S. households		
Federal government	Commercial market research firm	Low-income households		
Highway Construction lobbying organization	Nonprofit research organization	Presidents of highway construction companies		

Exercises

Minimising nonresponse

b) Now assume that you are interested in minimizing the nonresponse bias of the following estimates for each survey.

Sponsor	Data Collection Organization	Target Population	Which organization's stationery for advance letter?	Reason for answer
Commercial credit company	Academic survey center	U.S. households	Mean amount of credit card debt	
Federal government	Commercial market research firm	Low-income households	Percent with favorable attitudes about food stamp program	
Highway Construction lobbying organization	Nonprofit research organization	Presidents of highway construction companies	Percentage judging lobbying effort effective	

Error-Minimisation Strategies

Sampling/Coverage Error

- ▶ Probability sampling
- ▶ Adequate sampling frames (ideally official/government lists)
- ▶ Post-adjustments: weighting (next week)

Assignment 1: Survey Report

Steps

1. Complete the ethics checklist for the study
2. Design your own, original survey question
 - ▶ E.g. “To what extent do you support/oppose the European Union?”
[strongly support - strongly oppose]
3. Run a cognitive interview to gauge the 4 stages of the response process
 - ▶ What does the word “support” mean to you?
 - ▶ What was going through your mind when deciding how to answer?
What steps you took to answer this question?
 - ▶ Was the question hard or easy to answer? Why?
4. Modify the wording (if needed - on the basis of the results from the cognitive interview) & run final survey
 - ▶ Your final survey should contain
 - 4.1 your original item
 - 4.2 2/3 demographic items (e.g. age, gender, education)
 - 4.3 a theoretical correlate
5. Run the validity checks
6. Write up the report

Q&A on Assignment

► Any questions?

What did we learn today?


- ▶ The various errors that can threaten survey quality
- ▶ How to minimise measurement errors
- ▶ Assignment Dos and Don'ts

Student Satisfaction Survey

Survey is on your Moodle Page

► Check 'Module Evaluation' Box

✓ The default year for Moodle is now 2021. Users needing to access previous years should use the 'Moodle Archives' button on the menu shown in the top left of your screen.

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