GV205
Measuring Public Opinion
Total Survey Error & Survey Modes

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Overview

- Assignment Reminder
- Samples and Populations
- Total Survey Error Approach:
  - Sampling
  - Coverage
  - Non-Response
  - Measurement
- Survey Modes

Samples and Populations: A Reminder

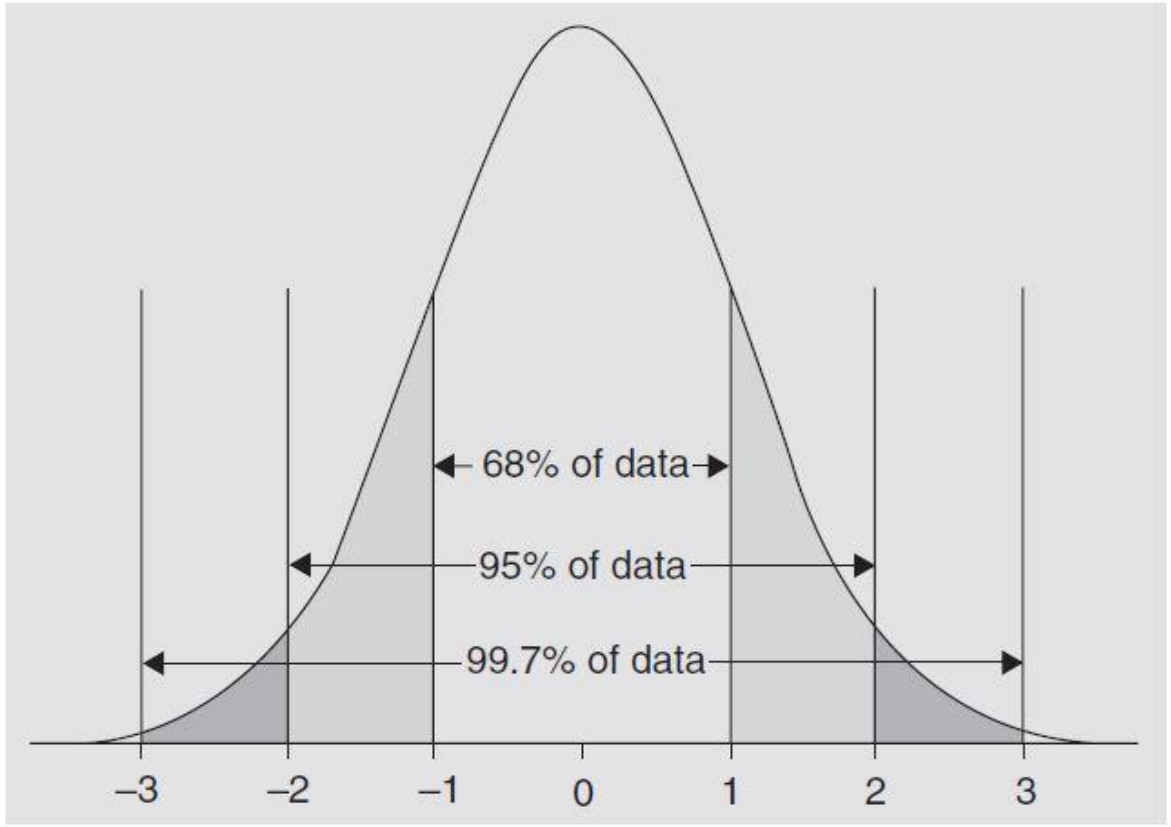
```
Call:
lm(formula = lr_avg ~ profile_gross_personal_r + profile_education_age_r,
    data = my.data, na.action = na.omit)

Residuals:
     Min       1Q   Median       3Q      Max
-1.69528 -0.63481 -0.08925  0.55527  2.96519

Coefficients:
                          Estimate Std. Error t value Pr(>|t|)
(Intercept)               1.994147   0.016382 121.727   <2e-16 ***
profile_gross_personal_r  0.050502   0.002093  24.124   <2e-16 ***
profile_education_age_r  -0.001968   0.004311  -0.456    0.648
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8269 on 18756 degrees of freedom
  (49866 observations deleted due to missingness)
Multiple R-squared:  0.03196,    Adjusted R-squared:  0.03185
F-statistic: 309.6 on 2 and 18756 DF,  p-value: < 2.2e-16
```

Samples and Populations: A Reminder



Samples and Populations: A Reminder

- In our sample, we observe a relationship between ideology and income (controlling for education) with an estimated coefficient of 0.05, and a standard error of 0.002
- We are, thus, 95% sure that there is a relationship with a coefficient between 0.046 (i.e. the lower bound is 0.05 – (2 x 0.002)) and 0.054 (i.e. the upper bound is 0.05 + (2 x 0.002)) in the population
- Since the upper and lower bounds (i.e. confidence intervals) do not cross zero we can call the result statistically significant
- Again, all of this requires the sample to be random

Samples: Only One Source of Error

- The Total Survey Error Approach says that we should consider all sources of error in our surveys:
  - Sampling error
  - Coverage error
  - Non-response error
    - Unit non-response and item non-response
  - Measurement error
    - The many, many sources thereof
- We will consider each of these in turn

Survey Error: A Reminder

- Let *Wi* be the observed response on item *i*, i = 1*, 2,…, n:*
  - $W_i = X_i + e_i$
- Above, X_i is the true attitude on issue *i*, and e_i is error
- Our goal is to reduce error as much as possible so that we have survey measures that are valid and reliable

Total Survey Error: Sampling

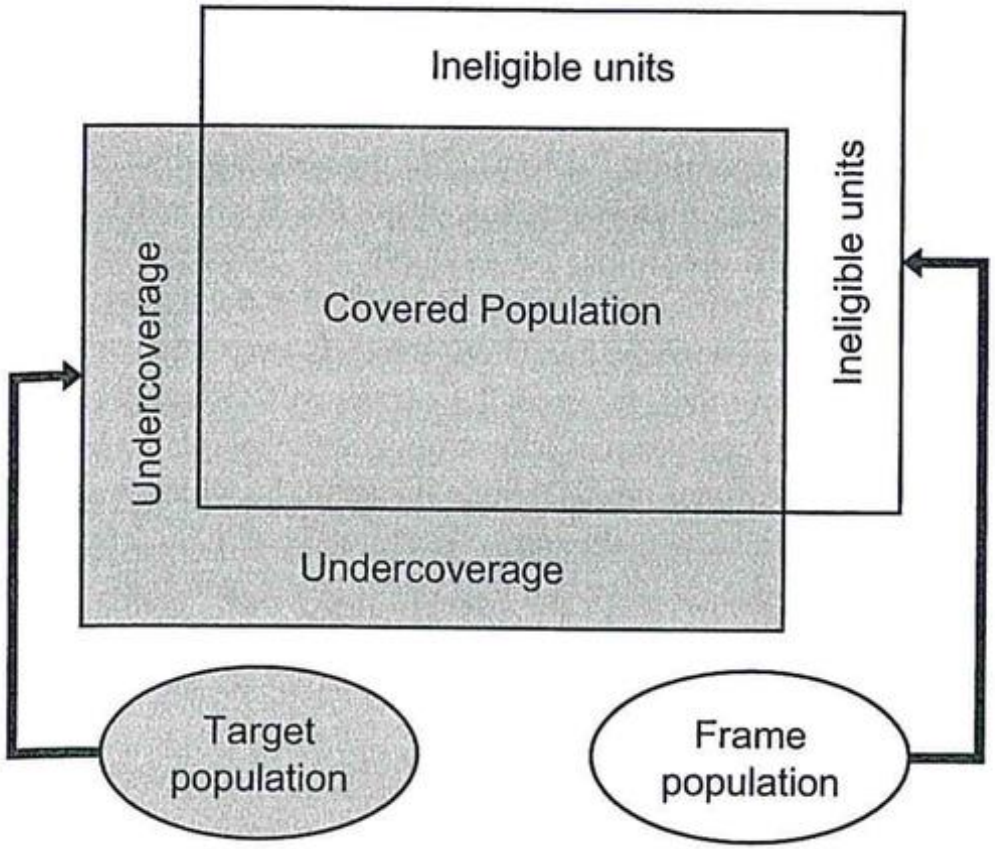
‘The problem with the BES survey is that the confidence interval for the 18-24 year-old voting percentage is very large, varying from at least 33 per cent to 63 per cent. Actually it is even worse, because besides having only a small number of young people from a limited number of constituencies, the sample is biased by the failure to validate the votes of one-third of those interviewed.’

Stewart, Clarke, Goodwin, and Whiteley, ‘Yes, there was a “youthquake” in the 2017 snap election – and it mattered’

Total Survey Error: Coverage

- Associated with issues connected to the sampling frame:
  - Clustering
    - One element in the sampling frame for many in the population
  - Multiplicity
    - One element in the population for many in the sampling frame
  - Undercoverage
    - When the sample frame does not cover the whole population
  - Ineligibles
    - When the sample frame includes ineligible units

Total Survey Error: Coverage

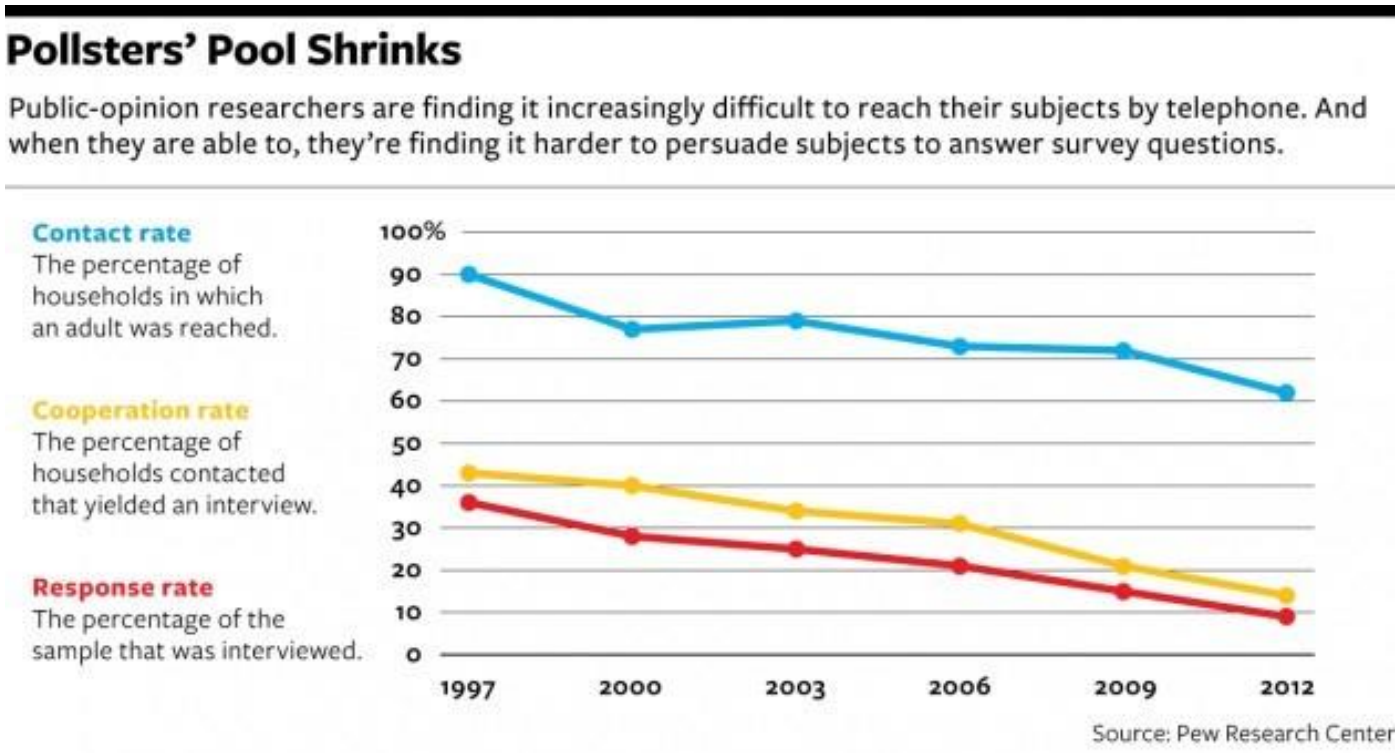


Groves et al., p. 55

Total Survey Error: Non-Response

- Unit Non-Response:
  - Refusals
  - Noncontacts
  - Other
- Item Non-Response:
  - Refusals
  - Don’t know
  - Prefer not to say
  - Not asked

Total Survey Error: Unit Non-Response



http://blog.qsample.com/the-looming-online-survey-crisis-and-one-way-to-avoid-it/

Total Survey Error: Item Non-Response

- What leads to non-responses?

Total Survey Error: Item Non-Response

- What leads to non-responses?
  - Sensitive topics
  - Challenging topics
  - Complex or unclear wording
  - Unclear or complicated answer options
  - Genuine ambivalence or indifference

- What do we do about missing data?
  - This will be covered in subsequent weeks

Total Survey Error: Measurement

- What are the sources of measurement error?
  - Clue: there are lots

Total Survey Error: Measurement

- What are the sources of measurement error?
  - Sensitive topics
  - Challenging topics
  - Complex or unclear wording
  - Unclear or complicated answer options
  - Genuine ambivalence or indifference
  - Interviewer effects
  - Telescoping
  - Primacy and recency
  - Acquiescence

Total Survey Error: Optimising or Satisficing

- Willingness to optimise is a function of three factors:
  - Respondent ability
  - Respondent motivation
  - Task difficulty

$$p(optimising) = \frac{RA \times RM}{TD}$$

Total Survey Error: Measurement

- How to minimise it:
  - Simple, accessible wording
  - Unbiased, non-leading wording
  - Quotes to deal with bias
  - Answerable questions
  - Single questions
  - Appropriate length, balanced scales
  - As easy as possible to answer
  - Don’t knows (usually)
  - Mid-points (usually)
  - Randomise or reverse

Modes of Survey: Over Time

- Face-to-face in person interviewing
  - And later, Computer-Assisted Personal Interviewing (CAPI)
- Self-administered paper and pencil surveys (via post)
- Phone surveys (human interviewer)
  - And later, Computer-Assisted Telephone Interviewing (CATI)
- Phone surveys (robo-call)
- Online (self-administered) surveys

Modes of Survey: A Note

- Do not conflate sampling approach with survey mode
- Any of the modes can be used to reach more or less random samples
- Mode has implications for the sample but, alone, does not define it

- Example:
  - Harris Interactive
  - Knowledge Networks

Modes of Survey: Chang and Krosnick

‘The results from the national field experiment suggest that the Internet offers a viable means for survey data collection and has advantages over telephone interviewing in terms or response quality. These results also demonstrate that probability samples yield more representative results than do nonprobability samples.’

p. 35

Modes of Survey: Sanders et al.

‘the marginal distributions on key variables in models of voting behavior differ (although not greatly) across national probability and Internet samples collected in the 2005 BES.’

‘there is no way of determining whether the probability or the Internet marginal distributions more accurately reflect the ‘‘true’’ views of the British electorate.’

‘the in-person and Internet surveys yield remarkably similar results when it comes to estimating parameters in voting behavior models.’

p. 279

Modes of Survey: Another Note

- The sample quality is the most important ingredient
- Online surveys can have great samples, but it depends on how people were recruited
- The important question is whether the selection mechanism is random and whether there are coverage problems (potentially through non-response)
- But: We often fail to adhere to the random sample standard for various reasons and that is when we use various modeling and weighting strategies that we will discuss in subsequent weeks

Survey Mode: Group Work

- One group each considers the strengths and weaknesses of:
  - Face-to-face interviewing
  - Self-administered pencil and paper
  - Telephone (human) interviews
  - Online self-completion
- Things to think about:
  - Sampling error
  - Coverage error
  - Non-response error
  - Measurement error
  - Cost
  - Timescales
  - Practical issues
  - Other issues