Pew Research Center

ACF/OPRE's 2023 Methods Meeting: Addressing Unit Missingness in Social Policy Survey Research

Non-probability sampling

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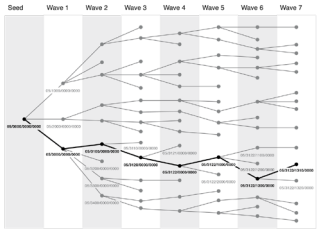
VP Methods and Innovation

Some types of non-probability samples

Volunteers in a clinical trial

Commercial list of adults in ethnic group

Respondent-driven sample



Online opt-in panel or marketplace

focus of this talk

When are online non-probability samples “fit for purpose”

Likely fit for purpose

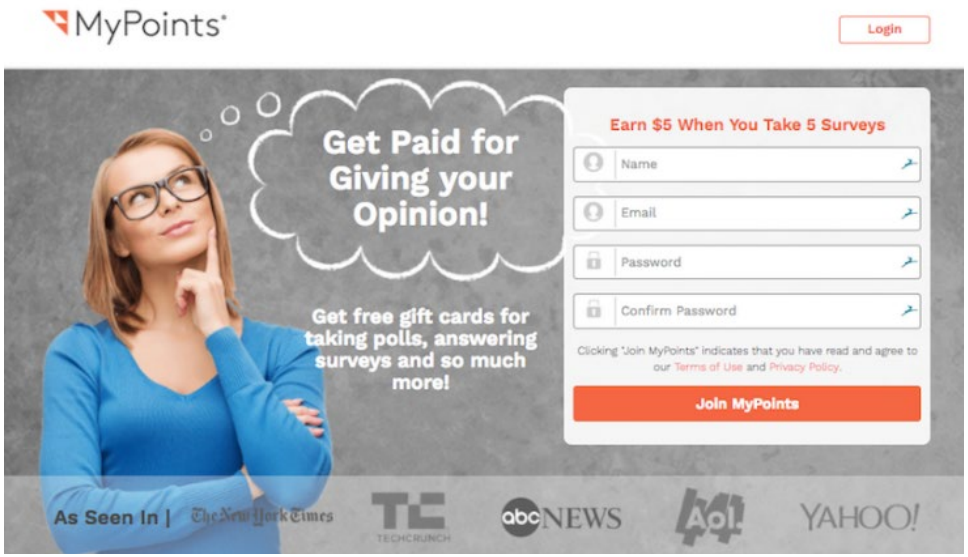
- Exploratory phase (e.g., before main study)
- A “rough estimate” is sufficient
- Some types of marketing research

Likely NOT fit for purpose

- Estimating a rare outcome
- Accuracy is important
- Estimates for racial and ethnic subgroups are important
- Estimates for young adults are important
- Testing for an effect that interacts with race, ethnicity, or age

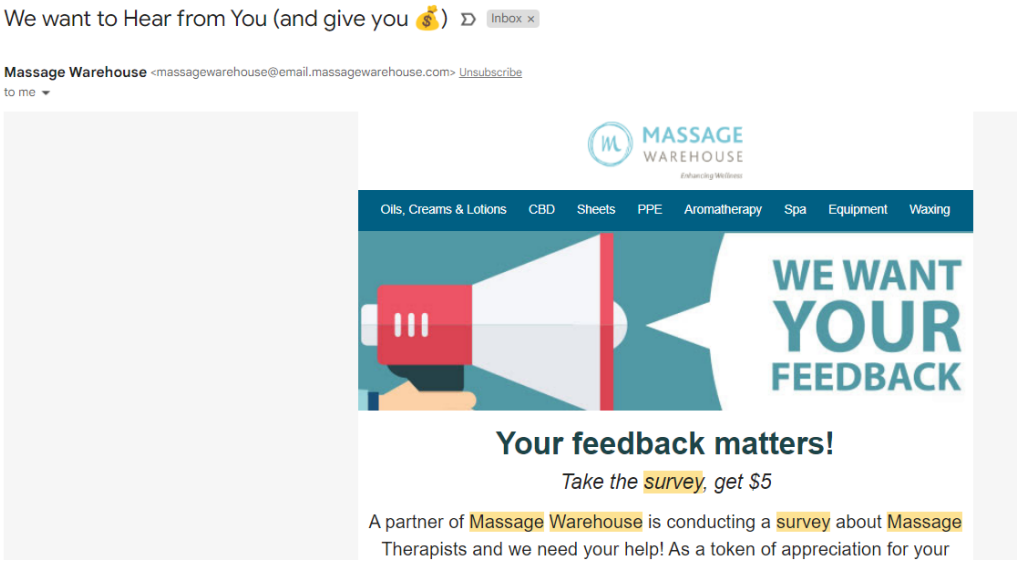
How online non-probability samples are created

websites where people sign up to make money



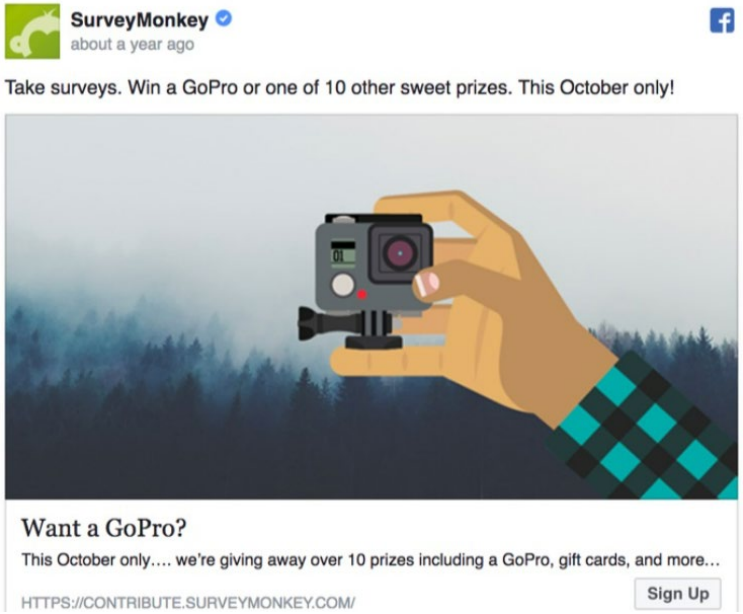
How online non-probability samples are created

emails to customer lists



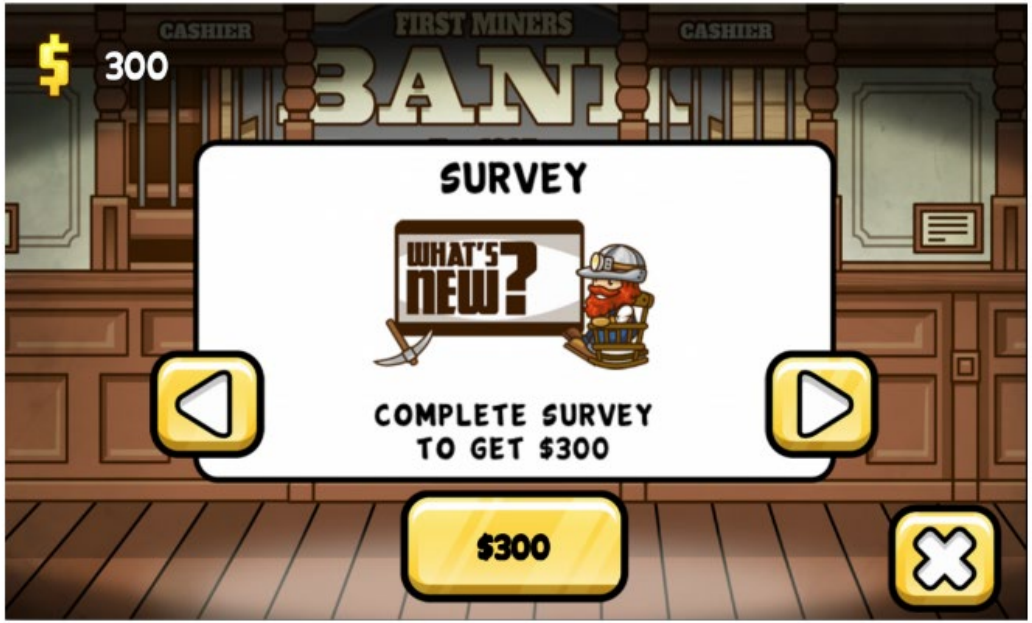
How online non-probability samples are created

ads on social media



How online non-probability samples are created

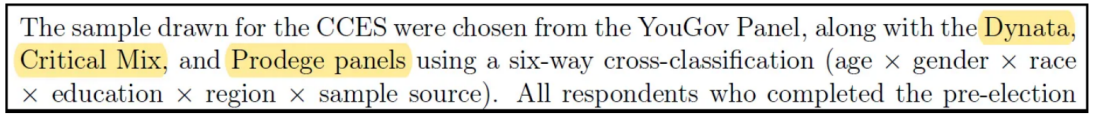
video games (in exchange for extra life or premium content)



How online non-probability samples are created

and, increasingly, by third party sourcing

Two of the most high profile surveys using nonprobability sample (CES, VoteCast) source from third-party panels.



The sample drawn for the CCES were chosen from the YouGov Panel, along with the Dynata, Critical Mix, and Prodege panels using a six-way cross-classification (age × gender × race × education × region × sample source). All respondents who completed the pre-election

Figure 1: Data sources for the Cooperative Election Survey (Ansolabehere, Schaffner, and Luks 2019, p.13)

Nonprobability sample

Nonprobability participants will include panelists from Cint, Prodege, or Dynata, including members of its third-party panels. Digital fingerprint software and panel-level ID validation is used to prevent respondents from completing the AP VoteCast survey multiple times.

AP VoteCast: 2022 Midterm General Election Methods Statement, NORC

Probability sampling

Population

Sampling frame

Selected sample

Responding sample

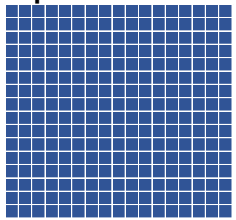
The *researcher* selects the survey sample

Non-probability sampling

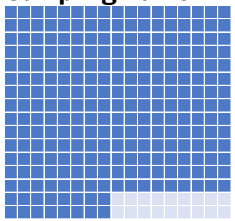
The *participants* select themselves into the survey

Probability sampling

Population



Sampling frame



Selected sample

Responding sample

The *researcher* selects the survey sample

Non-probability sampling

The *participants* select themselves into the survey

… which yields less representative samples and opens the door to fraud

How can we measure survey “accuracy”?

Benchmark Question:

Are you CURRENTLY covered by any of the following types of health insurance or health coverage plans? (American Community Survey)

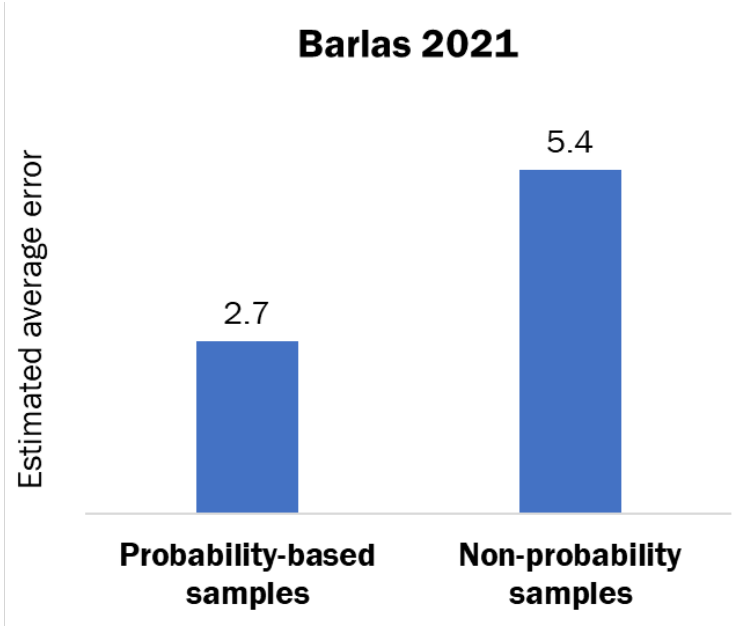
Benchmark estimate	Survey estimate	Difference	Absolute difference
89%	85%	- 4 pp	4 pp

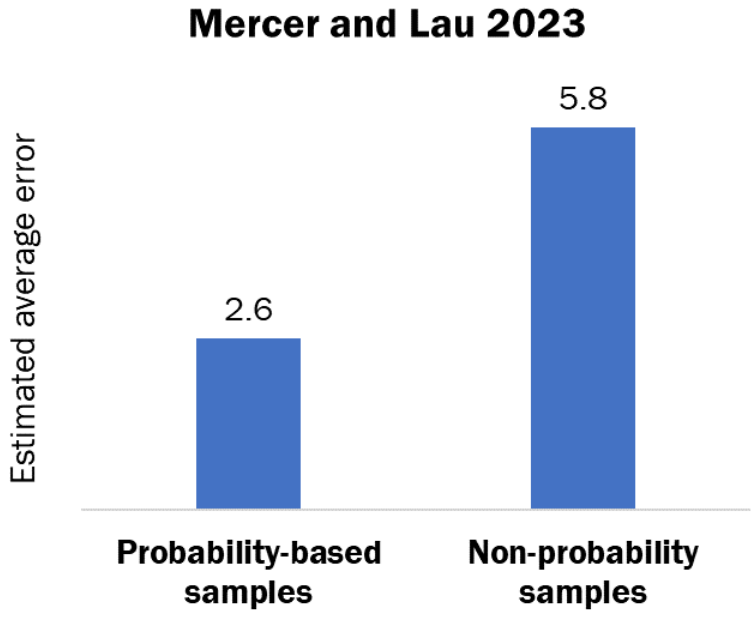
Studies often compute this for all the benchmark estimates and then examine the average of the absolute differences

Non-probability survey estimates tend to be less accurate

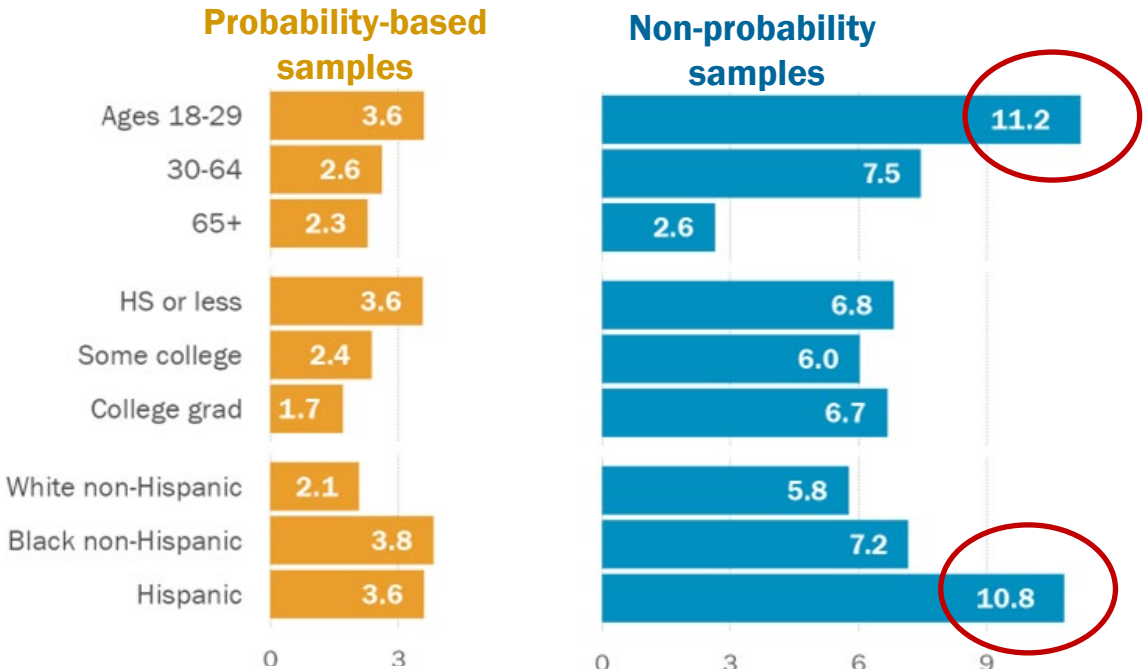
Found non-probability surveys were less accurate	Found non-probability surveys were just as accurate
Malhotra and Krosnick (2007)	Vavrek and Rivers (2008)
Chang and Krosnick (2008)	Ansolabehere and Schaffner (2014)
Yeager et al. (2011)	
Szolnoki and Hoffmann (2013)	
Erens et al. (2014)	
Sturgis et al. (2016)	
Dutwin and Buskirk (2017)	
MacInnis et al. (2018)	
Pennay et al. (2018)	
Silver (2018)	
Barlas (2021)	
Mercer and Lau (2023)	

Non-probability survey estimates tend to be half as accurate





Non-probability estimates for young adults and Latinos have especially large errors



Average absolute error on 25 benchmark variables

Source: Mercer and Lau 2023

“Some of the biggest threats to (non-probability) data quality are bots and cheaters. Often bots will complete surveys en masse, or a person will take surveys on behalf of someone else multiple times.”

Qualtrics website

https://www.qualtrics.com/support/survey-platform/survey-module/survey-checker/fraud-detection/

“Just 10 years ago, researchers would need to remove 5%-10% of all interviews from online (non-probability) samples because of poor quality. That proportion is now in the 35%-50% range.”

Geraci, John. 2022. *Pollarized*, p 153
(emphasis added)

Bogus cases tend to say “Yes” or “Agree” no matter what is asked

Are you licensed to operate a nuclear submarine?

- ○ Yes
- ○ No

Are you of Hispanic, Latino, or Spanish origin, such as Mexican, Puerto Rican or Cuban?

- ○ Yes
- ○ No

Source: Kennedy, Mercer, Lau forthcoming

Bogus cases lead to over-estimates of rare outcomes

Belief in conspiracy theories
(Lopez and Hillygus 2018)

Support for political violence
(Westwood et al. 2022)

Ingesting bleach to protect from COVID
(Litman et al. 2020)

Americans' favorability of Putin
(Kennedy et al. 2021)

Key takeaway #1

- Online non-probability vendors have measures in place to detect and remove bogus respondents. These include:
  - Screening out foreign IP addresses
  - Digital fingerprinting to prevent duplicate interviews
  - IP proxy testing
  - Validation of email addresses
  - Machine learning to flag suspicious patterns

- How well do these work?
  - Not very well. Geraci noted that the share of non-probability cases that need to be dropped because of poor quality is now “in the 35%-50% range” despite vendor checks.

Key takeaway #2

Statements like…

“Yes, this study was non-probability, but it’s OK because I used a ‘good’ panel”

… should not be taken at face value. Read Enns and Rothschild (2022) for a primer. In short, even nonprobability panels that were once considered ‘good’ now routinely source respondents from third-party suppliers, which are often a black box.

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Thank you