

Refining the Use of Web Probing as Part of Questionnaire Pretesting

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Web Probing

- Using probing techniques commonly used in cognitive interviewing in web instruments
- Used to identify problematic survey questions
- Increasing in popularity in recent years
- While there are many benefits, they come with some data quality concerns

Pros	Cons
Increase sample size	No insights from non-verbal cues
Increase diversity of respondents	Unable to incorporate spontaneous probes
Increase geographic reach	Increased chance of “professional respondents” and bots
Data collection is quicker & more cost effective	May be difficult to meet quotas when studies require specific characteristics



Overview

- This study looks at how different approaches to web probing impact data quality
- Two CBSM projects conducted in-person interviews and web probing
 - Not comparing the projects to each other – different circumstances called for different approaches
- Assess data quality in both projects to identify effective approaches to web probing
- Research Questions:
 - Did web probing results produce similar findings as in-person interviews?
 - How do different approaches to web probing impact data quality?



2020 Tracking Survey: Overview

- Pretesting of a survey measuring attitudes about the 2020 Census
- 2 rounds of in-person cognitive interviews, retrospective probing
 - Round 1: N = 4; Round 2: N = 7
 - Participants recruited from the DC, Maryland, and Virginia metro area
- Online web probing English Sample: Opt-in panel, national non-probability data from Qualtrics
 - One round, N=267
 - Respondents received incentive for completing survey
 - Essentially an extension of Round 2 in-person testing
 - Subset of questions and probes, administered in same order
 - No Qualtrics data scrub was conducted on the data because they outsource the process and they'd need Special Sworn Status to work with Census data



2020 Tracking Survey – A potentially problematic question

Survey Question:

Round 1: How concerned are you, if at all, that the Census Bureau will share answers to the 2020 Census with other government agencies?

Round 2 & Web Probing: How concerned are you, if at all, that the Census Bureau will share individuals' answers to the 2020 Census with other government agencies?

Probes:

- Round 1: In your own words, what does the phrase “share answers with other government agencies” mean to you in this question?
- Round 2 & Web Probing: In your own words, what does the phrase “share individuals' answers with other government agencies” mean to you in the question above?
- Both rounds & Web Probing: What government agencies were you thinking of when you were answering this question?



Share Data – Findings across rounds

Probe	Round 1 Findings	Round 2 Findings	Web Probing Findings
Rephrasing in own words	<ul style="list-style-type: none"> • 3 participants interpreted Q as intended • 1 interpreted as sharing the aggregate data with other agencies • Revised Q to clarify 	<ul style="list-style-type: none"> • 4 participants interpreted Q as intended • 3 interpreted as sharing the aggregate data with other agencies 	<ul style="list-style-type: none"> • 36 interpreted Q as intended • 11 interpreted incorrectly (sharing aggregate data for intended purposes) • 34 gave vague responses about sharing with gov • 44 gave vague responses about sharing, doesn't specify government • 3 said DK/Unsure • 139 participants did not provide a meaningful answer to the probe
Agencies that come to mind	<ul style="list-style-type: none"> • ICE • IRS • FBI • Social Security • SNAP 	<ul style="list-style-type: none"> • HUD / “Housing people” • Police / Justice Department • ICE • Health and Human Services • SNAP/TANF/EBT 	<ul style="list-style-type: none"> • ICE/Homeland Security • Law enforcement and intelligence agencies • IRS • Social Security • SNAP • Branches of government



Substantive vs. Non-substantive responses

- The biggest data quality issue with this project was participants providing non-substantive responses
- Variety of non-substantive responses
 - Random typing
 - Pattern of repetitive responses
 - Incomplete responses
 - Non sequiturs
 - Copied survey text
- All questions in the instrument programmed to force a response
 - Required extensive researcher time to separate out useless responses
 - May not have been an issue if we were able to have Qualtrics do a data scrub



Rate of non-substantive responses by probe type

Probe types	Substantive response	Non-substantive Response	Total
Probes about meaning of concepts or words			
Meaning of "questions on the census form"	49%	51%	267
Meaning of "confidential"	71%	29%	267
Meaning of "The Census Bureau will not keep answers to the 2020 Census confidential"	51%	49%	267
Meaning of "share individuals' answers with other government agencies"	48%	52%	267
Meaning of the phrase "used against you"	55%	45%	267
Meaning of the "2020 Census" (Version 2 asked to half of the sample)	62%	38%	133
Conditional probe on the content of the question			
Concerns respondents had in mind when asked "How concerned you, if at all are, that the answers you provide to the 2020 Census will be used against you?"	49%	51%	267
Concerns respondents had in mind when asked "How concerned you, if at all are, that an unauthorized person from outside the Census Bureau will access your answers to the census?"	52%	48%	267
Government agencies respondent had in mind	58%	42%	267
Probes related to preference of the wording of a question			
Comparing two versions of the intention to participate in the census questions. Version A vs. Version B1 (Asked to half of the sample)	69%	31%	67
Comparing two versions of the intention to participate in the census questions. Version A vs. Version B2 (Asked to half of the sample)	52%	48%	73
Reasons for preference of Census awareness questions (Form 1)	69%	31%	77
Reasons for preference of Census awareness questions (Form 2)	74%	26%	76

(Garcia Trejo et al., forthcoming)



Privacy/Accuracy Tradeoff: Overview

- Pretesting a questionnaire to measure individuals' privacy risk tolerance
- 2 rounds of in-person cognitive testing, think-aloud with intermittent probing
 - Round 1: N = 27; Round 2: N = 17
 - Participants recruited from the DC, Maryland, and Virginia metro area
- Web probes did not mirror in-person probes, were developed using in-person findings
- No incentive for web surveys
- Proof of concept field test, half of Rs received additional web probing
 - Sample: 20,000 households, up to 3 emails per household, randomized national sample, Contact Frame
 - ~750 responses
- Proof of concept follow-up, additional web probing comparing versions of re-identification questions
 - Sample: 5,000 email addresses from an affinity panel maintained by the Census Bureau
 - ~200 complete responses collected
- Confirmation round of in-person cognitive testing (N=9)



Privacy/Accuracy Tradeoff: A Difficult Concept

- Like the 2020 Tracking Survey, most items in the Privacy/Accuracy Tradeoff questionnaire were working without issue
- Central concept, re-identification, proved to be tricky
- Data re-identification is the practice of matching anonymous data (also known as de-identified data) with publicly available information, or auxiliary data, in order to discover the individual to which the data belong to.
- Cognitive interviews and web probing were used in iterative rounds to find a way to explain the concept clearly enough to measure concerns about it



In-Person Interviews

Probes

Next, please tell me in your own words what the term “re-identification” means to you.

- a. **[IF R DID NOT GIVE ANY EXAMPLES]** When you think of the term “re-identification,” do any examples come to mind?
 - b. **[IF R ALREADY GAVE EXAMPLES]** Can you think of any other examples of “re-identification”?
- Term “re-identification” unfamiliar, our definition didn’t help much
 - Since term is not salient, participants broke down into familiar linguistic elements and attempted to interpret using those
 - Identity theft
 - Getting a new identity
 - Concrete examples improved comprehension
 - Used key findings from in-person testing to shape question text and web probing approach



Web Probing – Proof of Concept Probes

Question difficulty probe – All respondents

The last question asked how worried you are about your data being discovered through re-identification. How difficult was it to answer the question?

Extremely difficult

Moderately difficult

Somewhat difficult

Not at all difficult



Web Probing – Split-Ballot Probes

Open-ended probe

What does the term re-identification mean in your own words?



Closed response option probe

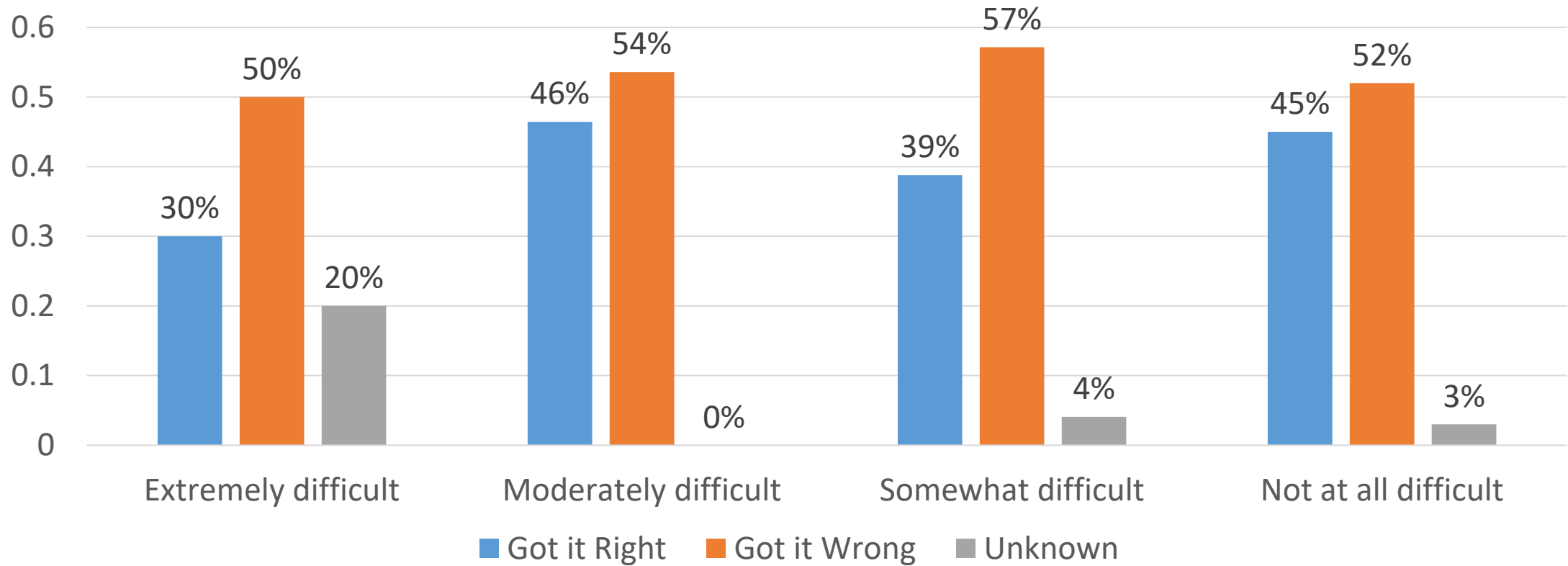
When you answered, how did you understand re-identification? *Select one*

Was it...

- Getting a new identity
- Having someone steal your identity
- Having someone identify you in a data set
- Something else. Specify:



Perceived difficulty of the reidentification question by comprehension



Re-identification Comprehension Findings

- Additional data strengthened in-person findings
- Describing the concept and using a concrete example increased understanding, using the term “re-identification” still complicated things
- Closed- and open-ended probes produced similar findings that aligned with in-person findings
 - Both can be effective in web probing



Web Probing – Proof of Concept Follow-up

- Follow-up probing focused on the concept of re-identification
- Dropped the term from survey questions
- Randomly assigned one of 3 versions – Census example used during in-person testing, taxicab example, no example
- No term to have participants define means we had to figure out a new way to ask the comprehension probe

Open-ended Probe

[Question text displayed in italics]

The last few questions asked about a kind of privacy risk that is different from data breaches. In your own words, please describe this other way your information could be at risk. *The question text is copied above for reference.*



Web Probing – Follow-up Findings

- The open-ended comprehension probe produced useful data
- Allowed us to assess respondents understanding of the concept
- Paraphrases differed between the 3 versions
 - Able to assess which version produced the best match between the concept and the types of risk the Bureau is interested in
- All three versions led to greater comprehension than previous versions that used the term “re-identification”
- Census example produced the best match
- Web probing followed by in-person interviews (N=9)
 - Confirmed that version with Census example was most effective



Lessons Learned

- When possible, conduct multiple rounds of web probing
 - Since you can't ask unscripted probes, multiple rounds allows you to revise probes to make sure you're eliciting the info you want
 - Could be a short round with small sample to check for problematic probes
- Reconsider forcing responses (or use judiciously)
 - Can't force a thoughtful response
 - Weigh the benefit of more web probing responses against the cost of researcher time sifting through them
- When conducting in-person and web probing, consider using them as iterative rounds
 - Supplementing the sample size by mirroring probes can be helpful to confirm in-person findings
 - Using findings from one mode to shape probes in the other can add depth, improve the quality of the findings
 - Especially useful when working on complex questions or with complex concepts



Next steps

- Split-ballot experiment to assess the impact of forcing responses
- Assess performance of different types of probes when excluding the “repetitive” bad actors
- Assess the impact of the number of survey questions and number of probes



Thank you!
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References

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