

ISS 305:002
Evaluating Evidence:
Becoming a Smart Research Consumer

10. Evaluating Non-Experimental Evidence (Survey Research)

Reminder: Turn on your I<CLICKER

Q1: Why is a random (or probability) sample important in survey research?

- What is a probability sample?
 - Experimenter can estimate probability that each person in population will be included in the sample
 - *Random sample* is a special case--the probability is equal that each person will be included in the sample

Q1: Why is a random (or probability) sample important in survey research?

- What is a probability sample?
 - REMEMBER!
- Random Sampling: Each person in population has an equal likelihood of being in your study
 - Not necessary for a true experiment
 - Important for _____
- Random Assignment: Each person in your sample has an equal likelihood of being in any condition.
 - Assign conditions so that they are independent of the participant.
 - Necessary for a _____

Q1: Why is a random (or probability) sample important in survey research?

- Without a probability sample, it is very risky to generalize from sample to population values.
- Neither *samples of convenience* nor *purposive samples* (e.g., people who take unusual, dramatic, or newsworthy positions) are probability samples and are likely to be biased (i.e., not representative of the full population)
 - Example of polls done before the 2012 presidential election
- This is a special problem when survey respondents are volunteers (as they almost always are)
 - for surveys on sensitive topics (e.g., sexual behavior)
 - http://www.psychologytoday.com/files/u47/Henry_et_al.pdf
 - for phone-in surveys (e.g., on radio stations)
 - for journalists “surveys”

Response rate

- But even for non-sensitive topics, and even when one has a random sampling frame, final samples can be very non-representative if there is a poor response rate (due to failures to contact, refusals to participate, etc.)
 - <http://www.theatlantic.com/technology/archive/2012/09/cellphones-skew-political-polls-did-landlines-do-the-same-thing-in-1936/262640/>
- What’s “high”/adequate response rate?
 - US Census > 90%
 - Best surveys in private & non-profits: 60-70%
 - Media “quick-turnaround” surveys: ~30%
 - Most surveys of public opinion/attitudes: 40-50%

Solutions for “high” non-response rate?

- Offer incentives for participating (e.g., \$) or disincentives for declining (e.g., pester; penalties)
- Follow up (mailings, calls, home visits)
- Track down missing people
- Establish rapport
- Use specially trained interviewers
- See if those who do respond are demographically representative of the population of interest

BUT!

- All this is costly:
 - “In a typical telephone survey of the general public it would not be unusual for a survey to cost 50 percent to 70 percent more if its goal were a response rate of 60 percent instead of 40 percent. Moreover, it might take three times as long to complete the interviewing on the high response rate survey, compared with the survey with the lower rate.” (Robert Wood Johnson Foundation)
- Is it worth the cost?
- As a consumer,
 - Look for the response rate
 - Be wary of surveys with
 - “low” response rates
 - Some good reason why non-response may bias the sample

Survey sample size

- The fact that a sample is large does not guarantee that it is representative.
- If a sample is a random one, one can estimate population parameters fairly well with modest sized samples (as we'll soon see).
- With a probability sample, you can also judge just how far off you're likely to be by using your sample to estimate population parameters – you can determine a *margin of (sampling) error*. (see Q2)
- Without a probability sample, you can't.

Q2. What does a "confidence interval" or "margin of error" mean in survey research?

- Survey results are often reported as having a "margin of error" or plus or minus x%
 - for example, pollsters may report that Candidate X has a 10% point lead on Candidate Y, but also note that there's a margin of error of 2%
- This does not mean
 - that the true population value must be within x% of the sample estimate, or
 - that there's only a x% chance that the estimate is not equal to the population value

Q2. What does a "confidence interval" or "margin of error" mean in survey research?

- It does mean that
 - if we drew a 100 representative, probability samples of the same size as used in the present survey, and
 - if we computed the confidence interval correctly,
 - then in only a few (usually 5%, sometimes 10%) of the samples would the true population value fall outside the confidence interval
- Thus, every such "margin of error" has an associated probability (which is usually not mentioned)
- It's more accurate to say that "the 90% (or 95% or 99%) confidence interval is from p-x% to p+x%", where p is the sample estimate

Sample size and confidence interval/ margin of error

- The larger the sample, the smaller the margin of error, all else being equal
 - <http://www.surveysystem.com/sscalc.htm#two>
- In estimating pop % from sample percentage (% for Candidate X among 2 candidates)
 - N = 10, 95% confidence interval is $\pm 31.0\%$
 - N = 100, 95% confidence interval is $\pm 9.8\%$
 - N = 500, 95% confidence interval is $\pm 4.4\%$
 - N = 1000, 95% confidence interval is $\pm 3.1\%$
 - N = 5000, 95% confidence interval is $\pm 1.4\%$
- Such estimates do not depend on the size of the population. Can use a 100 person random sample with equal effectiveness (i.e., same margin of error) to estimate margin of error for a
 - "small" population (e.g., all NBA players, 200+) or
 - for a large population (e.g., all people in U.S., 312 million+)

Projecting election winners:

- So, when TV networks "project" a winner, what they're doing is continuing to count votes from a representative sample of precincts until some confidence interval no longer includes a candidate getting less than half the votes
- They do so realizing that they'll be wrong a certain % of the time
 - For the 95% confidence interval, they'll be wrong 5% of the time.
- They get to choose that %
- Why not choose the 100% confidence interval?
- The higher they set it, the more votes they must count (and the later their projection will be made, hence the more likely another network will "scoop" them by announcing a winner)
 - Hi there 2000 presidential election!
 - http://en.wikipedia.org/wiki/United_States_presidential_election,_2000

Q3: How do such factors as the wording of a survey question and the identity of the person taking the survey affect survey results?

- Wording Problems
 - Question Wording
 - Question Order
- Identity of survey taker/interviewer

Question Wording

- Do you favor or oppose **homosexuals** serving in the military?
vs.
- Do you favor or oppose **gay men and lesbians** serving in the military?
- From 2010 - <http://www.cbsnews.com/news/support-for-gays-in-the-military-depends-on-the-question/>

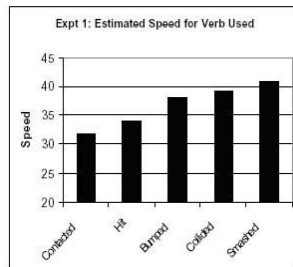
	"Homosexuals"	"Gay Men & Lesbians"
Strongly Favor	34%	51%
Somewhat Favor	25%	19%
Somewhat Oppose	10%	7%
Strongly Oppose	19%	12%

- Do you support **homosexuals** serving openly in the military? **44% favor**
vs.
- Do you support **gay men and lesbians** serving openly in the military? **58% favor**

Question Wording

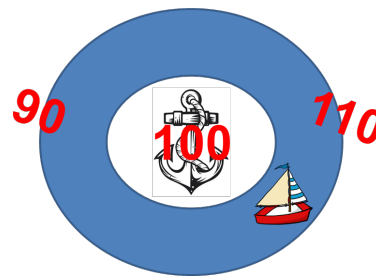
Loftus & Palmer (1974)

- Showed film of a car accident to participants
- Ps then asked, "How fast were the cars travelling when they _____ into each other?"
- [*contacted, hit, bumped, collided, smashed*]



Question Wording

Anchoring - Final judgments and behaviors are assimilated or become more similar to an initial anchor value



Question Wording

Anchoring - Final judgments and behaviors are assimilated or become more similar to an initial anchor value

Are the chances of nuclear war greater or less than 1%?
[Are the chances of nuclear war greater or less than 90%]
What are the chances of nuclear war?

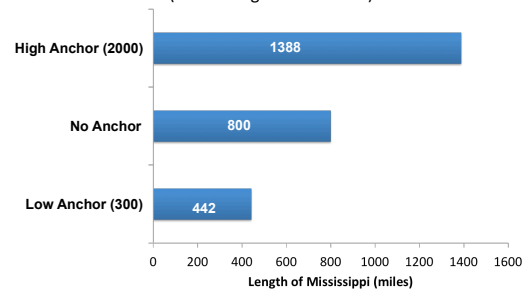
Low anchor	No anchor (control)	High anchor

Plous, 1989

Effects of Anchoring

Length of Mississippi

(Actual length: 2350 miles)



Question Wording

Some things to keep in mind...

Simplicity - Keeping your language simple increases the chance that people will interpret your question in the same way

•Avoid jargon (and slang)

- Do you have a family history of cerebrovascular accident?
 - Do you have a family history of stroke?
- Slang terms go out of fashion

•Define terms

- Do you support the MDHHS initiative?
 - Spell out Michigan Department of Health and Human Services
- Is walking on campus a problem?
 - Doesn't clearly define what is being asked

Question Wording

Some things to keep in mind...

Avoid Double-Barreled Questions

- Avoid asking multiple things at once
 - How satisfied are you with your pay and job conditions?
 - Is this class interesting and useful?
 - Do you agree or disagree that the U.S. will be strong and prosperous in the next 5 years?

Avoid Loaded (or Leading) Questions

- Designed to elicit a certain response
 - Should the mayor spend more tax money to keep the city's excellent streets in super shape?
 - How much do you think tuition will go up next year?
 - Are you still wasting your life in that same dead end job?

Question Wording

Some things to keep in mind...

Avoid Loaded (or Leading) Questions

- How to ask about support for right to strike.
 1. "Because every person is entitled to safe and healthy working conditions, labor should be allowed to strike for them."

Majority agrees

2. "Because working conditions in this country are the best in the world, labor should not be allowed to strike about them."

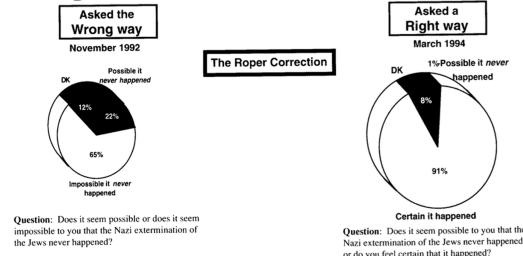
Majority also agrees

Question Wording

Some things to keep in mind...

Avoid Double-Negatives

Might the Holocaust Have Never Happened?



Question Wording

Some things to keep in mind...

Avoid Negative Wording

- Avoid questions where agreement means disagreement
 - Do you think that Congress should not pass a new gun control law?
 - Do you believe that the university should not have the right to search your dorm room?

Question Order – Contrast Effect

Order results in **greater differences** in responses

More People Favor Civil Unions When Asked After Gay Marriage

Asked first	Legal agreements	%	Gay marriage	%
	Favor	37	Favor	33
	Oppose	55	Oppose	61
	Don't know	8	Don't know	6
		100		100
Asked second	Gay marriage		Legal agreements	
	Favor	30	Favor	45
	Oppose	58	Oppose	47
	Don't know	12	Don't know	8
		100		100
N		780		735

PEW RESEARCH CENTER Oct. 2003.

Question Order – Assimilation Effect

Responses are **more similar** as a results of their order

More Endorse Working Together When Asked Second

Asked first	Should Rep. leaders...	%	Should Dem. leaders...	%
	Work with Obama	66	Work with Rep. leaders	82
	Stand up to Obama	28	Stand up to Rep. leaders	13
	Don't know	6	Don't know	5
		100		100
Asked second	Should Dem. leaders...		Should Rep. leaders...	
	Work with Rep. leaders	71	Work with Obama	81
	Stand up to Rep. leaders	21	Stand up to Obama	15
	Don't know	8	Don't know	4
		100		100
N		744		756

PEW RESEARCH CENTER Nov. 2008 Post-election survey.

Question Order

Context of questions can affect answers

– Could get very different answers to question about "How satisfied are you with your life?" if the preceding question were

– "How satisfied were people in concentration camps with their lives?" vs

– "How satisfied were vacationers on the French Riviera with their lives?"

- meaning given to a word may change depending on context

– The word "aggression" may be interpreted differently if earlier questions are on sports vs. crime

Identity of survey taker/interviewer

- Likewise, the identity of an interviewer can affect responses.
 - A man versus a women asking questions about gender attitudes
 - More likely to get socially desirable responses, not honest ones for certain combinations