

Questionnaire Design

ECO 230: Business Research and Communication

Goals and Learning Objectives

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- Goals of this chapter:
 - Be aware of potential sources for bias in survey research
 - Identify survey questions & variables needed to answer a research question.
 - Identify pros and cons of open ended and fixed-alternative questions.
 - Be able to phrase questions to limit respondent bias.
 - Be able to order questions to limit respondent bias.
- Learning objectives:
 - LO2: Recognize and use the appropriate techniques to collect or use survey data to address a research problem.
 - LO2.C: Identify sources of respondent and administrative error and develop the ability to construct and administer a survey instrument that minimizes these errors.

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Basic Principles

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- 1 How to avoid bias in administering surveys?
- 2 What questions should be asked?
- 3 How should questions be phrased?
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Random Sampling

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Simple random sample: when all members of the population have an equal probability of being selected for the sample.

- Selection of one observation is independent of another being selected (no point-of-contact, cluster sampling, etc).
- This *does not* mean taking a representative sample - though you should still expect your example to be representative of the population.
- Most important: selection is independent from the outcome/dependent variable.

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Unbiased versus Biased Estimators

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- **Unbiased estimator:** when a sample estimate (statistic) of a population parameter on average returns the true population parameter.
- **Bias:** when a sample estimate on average returns a value different than the population parameter.
- **Random sampling error:** statistical fluctuations determined by chance due to random sampling.
 - Unbiased error.
 - Easy to estimate the size of the sampling error (you used this estimate for H-tests, confidence intervals).

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- It is typically impossible to measure systematic error.
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Nonresponse Error

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- **Nonresponse error:** systematic error that occurs when individuals surveyed choose not to participate in the research, *and the choice to not participate may be related to the outcome variable.*
- **Self-selection bias:** bias that results from nonresponse error.
- Examples:
 - Viterbo awareness survey: individuals less knowledgeable and/or less interested in Viterbo University were less likely to respond to the survey.
 - Customer satisfaction survey: individuals who are satisfied, but by no means excited, about product or service are less likely to respond to a customer satisfaction survey.

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Response Bias

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- **Response bias:** a bias that exists when respondents either consciously or unconsciously give answers to questions that misrepresent the truth.
- Appear intelligent: respondents deliberately falsify the answer to hide the fact they don't know or didn't keep track of this information.
 - Respondents might guess what answer is expected from them, give answers that would please the interviewer or researcher.
 - Example: Price paid for grocery items, respondents might guess instead of honestly answering they don't remember.
- Average person effect: respondents try to appear average, often happens with questions related to income or spending.

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Unconscious Response Bias

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- **Unconscious response bias:** well meaning respondents unconsciously give answers that misrepresent the truth.
- Situation might dictate response. Example: preference for aircraft given on the plane.
- Unexpected question: respondents have thought little about the question, give best initial answer they can.
- Example: intentions of buying a product, consumers may not accurately predict their own future buying behavior.
- Time lapse: respondents may under-report activities that occurred long ago which are difficult to remember in detail.

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Types of Response Bias

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- **Acquiescence bias:** when respondents tend to agree or disagree with every statement.
 - Can happen with surveys concerning new products.
- **Extremity bias:** when respondents choose to use extreme responses on a scale; some respondents have the opposite problem and almost always refuse to pick extreme responses.
- **Social desirability bias:** either consciously or unconsciously, respondents give answers to appear prestigious, socially conscious or avoid appearing socially unattractive.
 - Did you vote in the last election?
 - Do you have termites in your home?
 - Questions regarding sensitive issues, such as sexual activity.

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Structuring Surveys to Limit Error

- Structured questions: give respondents a limited categories to choose answer from.
 - Might not be necessary for age, unless you feel respondents are sensitive about this.
 - Might help with details that are difficult to remember, such as number of hours spent studying, price paid for a product.
 - Allow a “I don't remember” or similar response.
- Disguised questions: questions do not reveal purpose of the research project, which might cause extremity bias, acquiescence bias, or nonresponse bias.
 - Example: Satisfaction with Economics Ph.D. program.
 - Ask several different types of questions.
- Avoid questions concerning subconscious behavior.

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- Get data on relevant outcome variables.
- Get data on background variables and other explanatory variables.
- Example: Living on campus and academic performance
 - Outcome variables: semester GPA, cumulative GPA, frequency using campus resources, extra curricular activities.
 - Relevant explanatory variables: high school GPA, parents' income, year in school.
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Open-ended Questions

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- **Open-ended questions** can serve uses that fixed alternative questions cannot:
 - How can service be improved?
 - Viterbo might want to ask: What Viterbo community events are you aware of?
- Can get deeper answers, reasoning behind answers.
- Useful for exploratory research, though not exclusively.
- Responses can be grouped together into categories after data has been collected.
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Problems with Open-Ended Questions

- Greater chance for respondent biases.
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 - *Social desirability effect*: individual may give untrue responses to demonstrate he or she cares about an issue.
 - *Acquiescence bias*: individual may give a response to placate the interviewer.
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Fixed Alternative Questions

- **Fixed-alternative questions:** questions where the interviewer provides only a limited number of answers to choose from.
- Simple dichotomous questions: respondent must pick one and only one of two possible alternatives.
 - Have you attended any UW-L varsity athletic sporting events in the last year? Yes No
- Determinant-choice questions: respondent chooses one and only one choice from 3 or more options.
- What is your current academic status?
 - Freshman (undergraduate degree seeking / less than 30 credits accumulated)
 - Sophomore (undergraduate degree seeking / 30 or more credits and less than 60 credits accumulated)
 - Junior (undergraduate degree seeking / 60 or more credits and less than 90 credits accumulated)
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Avoid Problems with Determinant Choice Questions 15 / 25

- Don't force invalid responses: make sure your choices are **totally exhaustive**.
- Make sure the correct choice is clear:
 - Make sure wording is sufficient and appropriate (notice definitions about college year)
 - Make sure choices are **mutually exclusive**.
- Impossible for respondents to explain, clarify, or qualify an answer:
 - Do you think women should be able to legally get an abortion? Yes / No.

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Frequency Determination Questions

- **Frequency determination questions:** Questions which ask for how often some occurrence generally happens.
- How often do you study for your classes, besides completing homework assignments?
 - One or more times every day.
 - 4-6 times per week
 - 2-3 times per week
 - Once per week
 - One or two times per month.
 - Less than one time per month.
- Look out for:
 - Should you expect frequency to be constant, or does it change by season, semester, etc?
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Checklist Questions

- **Checklist question:** fixed-alternative question that allows respondent to provide multiple answers to a question.
- Please check which of the following sources of media you use at least twice per week, if any:
 - Facebook.
 - Network television.
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 - La Crosse Tribune*.
- Offers more flexibility than other fixed-alternative questions.

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Questionnaire Accuracy

- Write questions that generate accurate answers.
- Questions should have answers that are easy to recall.
- Be careful with questions regarding quantity or frequencies: make sure it is reasonable for respondents to accurately report these.
- Do the following questions have accuracy problems? How would you fix it?
 - How many hours per week do you usually study?
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Ordinal Scales

- **Ordinal scales:** Responses to a question that have a natural order/ranking.
- Common attitude scales:
 - Strongly agree, Agree, Disagree, Strongly disagree.
 - Very satisfied, somewhat satisfied, somewhat dissatisfied, very dissatisfied.
- Common quality scale:
 - Excellent, Very Good, Fair, Poor
- Avoid ambiguous frequency scales:
 - Always, Often, Occasionally, Rarely, Never

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Using Ordinal Scales

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- Avoid neutral responses (neutral response bias).
- Use no-answer responses if appropriate: no opinion / don't know.
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Phrasing questions

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- Avoid **leading questions**: questions that lead the respondent to a particular conclusion.
- Avoid **loaded questions**: questions that suggest a socially desirable answer, or questions or answers that are emotionally charged.
- Examples:
 - Should foreign-born terrorists caught and held in United States detention facilities be given the same legal rights as U.S. citizens?
 - Do you believe it is acceptable for the United States to detain potentially innocent battlefield detainees without legal representation and interrogate them by means that violate the Geneva Convention against torture?
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Explicit and Implicit Assumptions

23 / 25

- Avoid questions that make assumptions:
 - Should General Electric continue to pay its stockholders its outstanding quarterly dividends? Yes/No
 - Implied assumption for the respondent that he/she might not believe.
- Avoid questions that assume the respondents have thought about an issue, or have knowledge of an issue:
 - Should Wimberly Hall change its name? Yes / No
 - Many respondents will answer, even though they have no prior opinion and no prior knowledge of the topic.

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Sequencing Strategies

- **Funnel technique:** strategy of asking general questions before specific questions in order to limit question-sequence bias.
- Avoid bias by giving multiple alternative questionnaires that differ on order.
- **Filter question:** To eliminate bias caused by lack of knowledge or prior opinion, first ask questions that reveal the respondent's background on the topic, then proceed only if there is sufficient background.
 - Do you plan to vote in the upcoming Democratic primary election for the Wisconsin 95th Assembly seat?
 - Are you aware of existing arguments for and/or against changing the name of Wimberly Hall?

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