

Overview of Survey Research

BUS 230: Business Research and Communication

1

1.1 Goals and Learning Objectives

Goals and Learning Objectives

- Goals of this chapter:
 - Learn potential and sources for biases in survey research.
 - Learn about types of measurements that can be obtained with survey research.
- 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.

2 Errors in Survey Research

2.1 Biased versus Unbiased Estimators

Random Sampling

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.

Unbiased versus Biased Estimators

- **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).

Systematic Error

- **Systematic error:** some imperfect aspect of your research design causes additional error.
- It is typically impossible to measure systematic error.
- Systematic error causes **sample bias**, the persistent tendency of the results to be biased due to a problem in the sampling procedure.

2.2 Nonresponse Error

Nonresponse Error

- **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.

2.3 Response Bias

Response Bias

- **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.

Unconscious Response Bias

- **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.

Types of Response Bias

- **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.

2.4 Structuring Surveys to Limit Error

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.

3 Types of Data

Types of Data

- Explore four different types of data:
 - Nominal Data
 - Ordinal Data
 - Interval Data
 - Ratio Data
- Introduce the types of statistical methods appropriate for each.

3.1 Nominal Data

Nominal Data

- **Nominal Data:** qualitative data that consists of categories that cannot be ordered in a meaningful way.
- Example: Store Location

- Inside mall.
- Outdoor shopping complex.
- Stand-alone store.
- Statistical methods:
 - T-tests for difference in means tests: used for quantitative data, but the nominal data can define groups to compare.
 - * Test for a difference in sales volume between store locations.
 - Chi-squared test of independence: tests for a relationship between two categorical variables.
 - * Test to see if store location and customer satisfaction are related.
 - Z-tests for proportions: What proportion of all stores are inside malls?

3.2 Ordinal Data

Ordinal Data

- **Ordinal data:** qualitative data, but order is meaningful, but quantitative values assigned to categories are meaningless.
 - Excellent.
 - Very good.
 - Good.
 - Poor.
 - Very poor.
- It is *not appropriate* to add, subtract, multiply and divide ordinal data (and therefore cannot take averages).
- Statistical methods:
 - Compute medians.
 - Nonparametric methods: statistical methods that involve replacing data with ranks.
 - Example: Mann-Whitney U-Test tests whether the median of two samples are different.
 - Z-tests for Proportions: What proportion of the population rates 'Good' or better?

3.3 Interval and Ratio Data

Interval and Ratio Data

- Interval data: order is meaningful, *and* distances are meaningful. However, there is *no natural zero*.
 - Examples: temperature, time.
- Ratio data: order, differences, and zero are all meaningful.
 - Examples: weight, prices, speed.
- Statistical methods:
 - Too many to mention.
 - You can compute means, compare means between groups.
 - You can compute correlation between two variables that are interval or ratio.