

Chapter 1: Why the Social Researcher Uses Statistics

Chapter At-a-Glance Grid

Detailed Outline	Print Supplements	Media Supplements
The Nature of Social Justice Research p. 1 <ul style="list-style-type: none"> • Variables and Constants • Unit of Observation • Hypothesis • Dependent and Independent Variables • Research Methods 	Test Bank: MC: 1- 4, 7, 13-16, and 18-22 TF: 1-4 and 10 Handout: 1.1	Companion Website: http://www.mysearchlab.com/
Why Test Hypotheses p. 9 <ul style="list-style-type: none"> • Reality vs. Perceptions 		
The Stages of Social Research p. 11 <ul style="list-style-type: none"> • Identify Problem • Develop Instruments • Collect Data • Analyze Data • Analyze Results 	Test Bank: MC: 8	
Using Series of Numbers to Do Social Research p. 11 <ul style="list-style-type: none"> • Levels of Measurement • Nominal • Ordinal • Interval/Ratio • Different Ways to Measure the Same Variable • Treating Some Ordinal Variables as Interval 	Test Bank: MC: 5-6, 9-12, and 23- 25 TF: 5-7 and 11 W: 1-10 Handout: 1.1	Overview of Statistical Thinking: http://faculty1.coloradocollege.edu/~mduncombe/web/levels.htm This website gives an overview of the levels of measurement discussed in Chapter 1.
Functions of Statistics p. 18 <ul style="list-style-type: none"> • Tool of Description or Decision Making • Frequency Distributions, Graphs, and Descriptive Statistics • Statistical Significance • Rounding 	Test Bank: MC: 17 TF: 8-9	
Summary p. 24		
Questions and Problems p. 25		

Learning Objectives

Students should be able to do the following at the end of this chapter:

- Recognize the importance of social research and its dependence on statistics
- Recognize dependent and independent variables
- Recognize the steps of hypothesis testing
- Recognize various levels of measurement

Detailed Lecture Outline

The Nature of Social Research – By using past experiences, either our own or those of others, to make predictions for future situations, we are acting as researchers on an informal basis. Social scientists observe and make predictions for society and social behaviors.

- **Variables and Constants** – Aspects such as gender of mother (female) are constants among population, whereas aspects such as age of mother vary across populations or over time.
- **Unit of Observation** – Data on individuals or aggregate data, such as cities or households
- **Hypothesis** – Statement of a relationship between two or more variables
- **Dependent and Independent Variables** – Independent variables are the presumed causes whereas the dependent variables are the presumed effects
- **Research Methods** – Experiment; survey; content analysis; participant observation; secondary analysis; and meta-analysis

Why Test Hypotheses? The social reality of matters are likely to be different from commonly held perceptions, so hypothesis testing helps us to empirically test the validity of relationships

The Five Stages of Social Research:

1. Identify Problem
2. Develop Instruments
3. Collect Data
4. Analyze Data
5. Interpret and Communicate Results

Using Series of Numbers to Do Social Research – Data help with performing statistical analysis and testing hypotheses.

- **Three Major Levels of Measurement** – Nominal, Ordinal, and Interval/Ratio
 - **Nominal** – Involves naming or labeling. The categories must be mutually exclusive, meaning that every case must be placed in one, and only one, category
 - **Ordinal** – Involves ordering cases in terms of the degrees to which they have any given characteristic. This yields information about the ordering of categories, but does not

indicate the magnitude of differences between categories.

- Interval/Ratio – Involves using constant units of measurement, which yield equal intervals between points on the scale.
- Some variables can be measured using different levels, depending on the hypothesis
- Variables that are ordinal may be treated as interval, when the ordered categories are fairly evenly spaced

The Functions of Statistics – Statistics functions as a tool of description or decision making

- Data can be described and analyzed through frequency distributions or graphs, or by basic descriptive statistics.
- Data can be used to make inferences – to make decisions based on data collected on only a sample of the larger group.
 - Statistical Significance – Researcher needs to establish a level of significance in his or her research
- Rounding Off – We usually round off the final answer to two decimal places, and do not round off while calculating the intermediate steps.

Summary (Page 24)

In the first chapter, we linked our everyday predictions about the course of future events with the experiences of social researchers who use statistics as an aid in testing their hypotheses about the nature of social reality. Almost daily, everyone takes educated guesses about the future events in their lives. Unlike haphazard and biased everyday observations, however, researchers seek to collect *systematic* evidence in support of their ideas. For this purpose, and depending on their particular research objective, they might decide to conduct a survey, an experiment, participant observation, content analysis, secondary analysis, or meta-analysis. Depending on the particular level of measurement, series of numbers are often employed by social researchers to categorize (nominal level), rank (ordinal level), or score (interval/ratio level) their data. Finally, social researchers are able to take advantage of two major functions of statistics in the data-analysis stage of social research: description (that is, reducing quantitative data to a smaller number of more convenient descriptive terms) and decision making (that is, drawing inferences from samples to populations).

Key Terms

Hypothesis
Variable
Experiment
Survey
Content analysis
Participant observation
Secondary analysis
Meta-analysis
Measurement
Level of Measurement
Nominal
Ordinal
Interval/Ratio

Lecture Launchers and/or Discussion Topics

The textbook has some examples on current events, or relevant social events, that might interest the students. However, it is important to pick a topic other than those from the textbook in order to better inform students as to the relevance of statistics. Pick a newspaper article at random and illustrate to students how social research is relevant.

Demonstrations and/or Activities

Pick any current issue, such as depression or cancer, and try to get students to determine what the independent variables might be for such an issue. Clearly demonstrate how the outcome is the dependent variable, whereas the inputs are all independent variables in such cases.

HANDOUT 1.1

DETERMINING LEVELS OF MEASUREMENT

Taken from Chapter 1, the following handout can be used as a quiz, an in-class assignment, or for discussion. The features that you might point out are as follows:

- Nominal variables classify or categorize data.
- Ordinal variables rank or order the variable attributes in a logical or meaningful way.
- Interval/Ratio variables assign a score that is at an equal distance or “interval” from those scores adjacent to them. This allows a greater number of mathematical techniques.

Handout 1.1

Name: _____ Date: _____ Class: _____

LEVELS OF MEASUREMENT

1. Suppose you were interviewing people about their views on gun control. You ask the respondents the following question: How much do you agree or disagree with this statement, “The United States needs stiffer laws controlling the purchase and ownership of guns.” The respondents are then asked to rank their feelings on the following scale: strongly agree, somewhat agree, neither agree or disagree, somewhat disagree, or strongly disagree. You would be using what level of measurement?
 - a. Nominal
 - b. Ordinal
 - c. Interval/Ratio
2. The jersey numbers associated with players on a baseball team are examples of scores on a(n):
 - a. nominal scale.
 - b. ordinal scale.
 - c. interval/ratio scale.
3. Compared to the ordinal level of measurement, the interval/ratio level:
 - a. not only indicates the order of categories, but also the exact distance between them.
 - b. does not provide labeling of each score.
 - c. starts from a true zero point.
 - d. only categorizes.
4. Statistics can be used to:
 - a. reduce data to more easily understood, descriptive terms.
 - b. generalize results.
 - c. determine when an observed difference between two or more groups is the result of chance, or when it is the result of “real” differences between groups.
 - d. all of the above
5. Sociologists use measurement to:
 - a. classify or categorize data.
 - b. rank order data.
 - c. assign a score.
 - d. all of the above

Handout 1.1 Continued

Name: _____ Date: _____ Class: _____

6. Nominal measurement is used primarily to:

- a. classify or categorize data.
- b. rank order data.
- c. assign a score.
- d. all of the above

7. Ordinal measurement is used primarily to:

- a. classify or categorize data.
- b. rank order data.
- c. assign a score.
- d. all of the above

Classify the measurement type in each of the following examples as:

- a. nominal
- b. ordinal
- c. interval/ratio

8. What city you live in _____

9. The number of children in a family _____

10. Tuition in dollars _____

11. Attitudes toward premarital sex between consenting adults (always wrong, usually wrong, sometimes wrong, never wrong) _____

12. The numbers on an athlete's jersey _____

13. Racial categories _____

14. Fear of crime (a lot, some, none) _____

15. The number of hours per week a survey respondent watches TV _____

16. The number of stolen cars in a city _____

Handout 1.1 Continued

Name: _____ Date: _____ Class: _____

What Are the Independent and Dependent Variables?

17. A social researcher is attempting to look at the relationship between race and income.

18. A sociologist conducts research on religious affiliation and views on premarital sex.

19. A sociologist examines the relationship between being drunk and a person's bowling score.

20. A sociologist examines the relationship between political party affiliation and views on the War in Afghanistan.

Answer Key

Instructor's Manual Handouts

Handout 1.1

1. b
2. a
3. a
4. d
5. d
6. a
7. b
8. a
9. c
10. c
11. b
12. a
13. a
14. b
15. c
16. c
17. IV = race; DV = income
18. IV = religion; DV = view on premarital sex
19. IV = consumption of alcohol; DV = bowling score
20. IV = political party; DV = views on the War in Afghanistan