

# STUDENT WORKBOOK

## INTRODUCTORY STATISTICS FOR CRIMINAL JUSTICE AND CRIMINOLOGY

Number of Arrests ( $X_1$ )	Sentence Length ( $X_2$ )
3	13
1	15
3	22
1	20
1	14
4	23
3	24
4	18
2	15
1	14
$\bar{X}_1 = 2.30$	$\bar{X}_2 = 17.80$
Mean ( $\bar{X}$ ) = $\frac{\sum X}{n}$	
$S_1 = 1.25$	$S_2 = 4.16$
Standard Deviation (s) = $\sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$	

$$\text{Mean } (\bar{X}) = \frac{\sum X}{n}$$

Standard  
Deviation (s) =

$$\sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$$

JON L. PROCTOR • DIANE M. BADZINSKI

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## PREFACE

This workbook is designed to be used in conjunction with the textbook – Introductory Statistics for Criminal Justice and Criminology. It is intended to provide you the opportunity to assess your understanding of statistical concepts and to practice computing different statistical tests.

The workbook chapters correspond to the chapters in your textbook. Most chapters contain a review of key terms, sample multiple-choice and true/false questions, summary of the procedures and formulas for calculating statistical tests, and computer application exercises. It is our hope that you find the workbook activities helpful in reviewing textbook material, completing class assignments, and studying for examinations.

Jon L. Proctor

Diane M. Badzinski

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## Chapter 1

### PURPOSE OF STATISTICS

#### KEY TERMS

**statistics**

**nonparametric statistics**

**descriptive statistics**

**population**

**inferential statistics**

**sample**

**parametric statistics**

#### Sample Questions (Multiple Choice)

1. \_\_\_\_\_ statistics are used to describe the characteristics of a sample.
  - a. Parametric
  - b. Descriptive
  - c. Inferential
  - d. Nonparametric
2. A \_\_\_\_\_ is a subset of a population.
  - a. Statistic
  - b. Observation
  - c. Sample
  - d. Descriptor

3. \_\_\_\_\_ involves the analysis of observations.
- a. Measurement
  - b. Statistics
  - c. Sampling
  - d. Observations
4. The authors of your text indicate that the \_\_\_\_\_ of crime necessitates an understanding of statistics.
- a. Cause
  - b. Indicator
  - c. Perception
  - d. Study
5. \_\_\_\_\_ statistics provide more powerful and efficient methods of data analysis.
- a. Parametric
  - b. Nonparametric
  - c. Descriptive
  - d. Summary
6. The entire collection of people or objects of interest in a study is commonly referred to as the:
- a. Population
  - b. Sample
  - c. Group
  - d. Organization

7. Criminal justice research commonly involves the generalization of research findings from a \_\_\_\_\_ to a \_\_\_\_\_.
- a. Population, sample
  - b. Sample, group
  - c. Group, organization
  - d. Sample, population
8. When a researcher says that 54% of her sample committed a delinquent act during the past 30 days, she is using \_\_\_\_\_ statistics.
- a. Inferential
  - b. Population
  - c. Parametric
  - d. Descriptive
9. \_\_\_\_\_ statistics allow researchers to make generalizations about populations.
- a. Descriptive
  - b. Inferential
  - c. Summary
  - d. None of the above

10. According to the authors of the text, knowledge of \_\_\_\_\_ statistics is considered a prerequisite for understanding \_\_\_\_\_ statistics.
- a. Inferential, parametric
  - b. Descriptive, inferential
  - c. Parametric, summary
  - d. Nonparametric, descriptive

### Sample Questions (True/False)

- 1. \_\_\_\_ Inferences about a sample are based on observations from a population.
- 2. \_\_\_\_ Nonparametric statistics are more powerful and efficient than parametric statistics.
- 3. \_\_\_\_ Descriptive statistics summarize the observations of a sample.
- 4. \_\_\_\_ A subset of individuals that are actually studied is commonly referred to as a sample.
- 5. \_\_\_\_ Parametric and nonparametric statistics are two categories of inferential statistics.
- 6. \_\_\_\_ The number of individuals in the sample is usually larger than the number of individuals in the population from which the sample was drawn.
- 7. \_\_\_\_ Nonparametric statistics are not useful for the study of crime.
- 8. \_\_\_\_ Generalizations about a population are commonly based on inferential statistics.
- 9. \_\_\_\_ It is impossible to make claims about a population based on observations from a sample.
- 10. \_\_\_\_ Inferential statistics are extremely common in criminal justice research.

### Exercises

- 1. Fifty Wisconsin state residents were asked their perceptions of the criminal justice system. The researcher provided the state with a report summarizing the people's perceptions of the

courts, corrections, and the police.

- a. What is the sample? \_\_\_\_\_.
- b. What is the population? \_\_\_\_\_.
- c. In summarizing the results, the researcher used what type of statistics (Descriptive or Inferential?) \_\_\_\_\_.

2. Professor Peters investigated the extent to which Boys and Girls Clubs were effective in reducing teenage loitering. The study involved measuring loitering among 100 teenagers enrolled in clubs and 100 teenagers not enrolled. She found that teenagers enrolled in Boys and Girls Clubs were less likely to loiter compared to teenagers not enrolled in clubs.

- a. What is the sample? \_\_\_\_\_.
- b. What is the population? \_\_\_\_\_.
- c. To test whether the clubs were effective in curbing loitering, the researcher used what type of statistics (Descriptive or Inferential)? \_\_\_\_\_.

## Chapter 2

### FOUNDATIONS OF RESEARCH

#### Key Terms

<b>exploratory research</b>	<b>quantitative variable</b>	<b>hypothesis</b>
<b>descriptive research</b>	<b>qualitative variable</b>	<b>independent variable</b>
<b>explanatory research</b>	<b>nominal</b>	<b>dependent variable</b>
<b>applied research</b>	<b>ordinal</b>	<b>research question</b>
<b>variable</b>	<b>interval</b>	
<b>attributes</b>	<b>ratio</b>	

#### Sample Questions (Multiple Choice)

1. Research that attempts to explain “why” one city has a higher crime rate than another city is known as \_\_\_\_\_ research.
  - a. Exploratory
  - b. Explanatory
  - c. Applied
  - d. Descriptive

2. \_\_\_\_\_ are qualities or quantities that describe a variable.
- a. Descriptors
  - b. Attributes
  - c. Statistics
  - d. Hypotheses
3. A researcher counts the number of times each subject in his sample used alcohol. The variable “alcohol use” is known as an:
- a. Quantitative variable
  - b. Qualitative variable
  - c. Nominal variable
  - d. Attribute
4. The highest level in which a variable can be measured at is the \_\_\_\_\_ level.
- a. Nominal
  - b. Ordinal
  - c. Interval
  - d. Ratio
5. A variable that produces a change in another variable is said to be the \_\_\_\_\_ variable.
- a. Independent
  - b. Dependent
  - c. Confounding
  - d. Qualitative

6. A statement regarding the effect of one variable on another variable is known as a:
- a. Negative statement
  - b. Theoretical statement
  - c. Hypothesis
  - d. Conceptual statement
7. \_\_\_\_\_ serves as guide that determines where one looks for facts.
- a. Hypotheses
  - b. Theory
  - c. Variables
  - d. Attributes
8. To say that older students have a higher average number of drinks per week than do younger students is to say that:
- a. Alcohol usage influences age
  - b. Age influences alcohol usage
  - c. There is no relationship between age and alcohol usage
  - d. None of the above are correct
9. Which of the following is NOT an appropriate level of measurement for a variable?
- a. Nominal
  - b. Ordinal
  - c. Ratio
  - d. Incremental



10. Which of the following levels of measurement lacks an absolute zero point?
- a. Nominal
  - b. Ordinal
  - c. Interval
  - d. All of the above

#### Sample Questions (True/False)

1. \_\_\_\_ Research that is primarily focused on describing events and/or situations is commonly referred to as applied research.
2. \_\_\_\_ Hypotheses are often derived from theories.
3. \_\_\_\_ The Minneapolis Domestic Violence study is an example of applied research.
4. \_\_\_\_ The variable criminal sentence is always considered to be a quantitative variable.
5. \_\_\_\_ A variable measured at the nominal level is said to be measured at the lowest level possible.
6. \_\_\_\_ Criminal justice researchers attempt to explain changes in a dependent variable as a result of the influence of an independent variable.
7. \_\_\_\_ The statement that younger respondents are more likely to be arrested than older respondents is an example of a research question.
8. \_\_\_\_ Researchers must determine whether a variable is independent or dependent.
9. \_\_\_\_ Age can not be measured at the nominal level.
10. \_\_\_\_ An ordinal level variable consists of a set of different attributes with a rank ordering among the categories.