



BAKER COLLEGE
STUDENT LEARNING OUTCOMES
BUS8300 Quantitative Research Methods I
3 Semester Credit Hours

Student Learning Outcomes and Enabling Objectives

1. Explain the basics of data, data preparation, the available statistical packages as it pertains to business, and why we use it.
 - a. Differentiate between quantitative and qualitative research methods and data for business practitioners.
 - b. Explore theoretical frameworks, conceptual frameworks, and operationalized variables.
 - c. Distinguish between independent, dependent, moderating, and mediating variables.
 - d. Differentiate between the four types of data (nominal, ordinal, interval, ratio).
 - e. Distinguish between descriptive and inferential data
 - f. Describe the statistical package (SPSS) and define levels of measurement for a set of data in SPSS.
 - g. Model data in SPSS
 - h. Discuss differences between primary and secondary data.
2. Prepare data in an ethical way using a statistical software package.
 - a. Demonstrate ethical usage of statistics
 - b. Review descriptive statistics, including frequencies, measures of central tendency, and dispersion.
 - c. Conduct a descriptive analysis for variables at all four levels of measurement in SPSS and write up the results using APA format.
 - d. Create visualizations of descriptive statistics in SPSS and present results in APA format.
3. Describe normally distributed data and statistical significance
 - a. Explain the components of a normal distribution and how it impacts data analysis.
 - b. Identify types of variable skewness using SPSS.
 - c. Explore the concept of a Z-score and how to use it.
 - d. Explain the relationship between the normal curve, statistical significance, and probability levels.

- e. Conduct transformations of skewed variables in SPSS
 - f. Rationalize the decision process using SPSS
4. Explain sampling from a population and its implications for data analysis.
 - a. Discuss the connection between a sample, population, and a sampling frame for business practitioners.
 - b. Determine the standard error of the mean and the sampling error using SPSS.
 - c. Explain the Central Limit Theorem.
 - d. Estimate confidence intervals around the population parameter using SPSS.
 - e. Compare and contrast probability and non-probability sampling methods.
 - f. Explain a descriptive analysis report for selected variables from a sample business data set.
5. Devise how to form a hypothesis test, the potential types of errors, and estimation of point and confidence intervals
 - a. Explain hypothesis testing and why testing a null hypothesis is necessary.
 - b. Identify testable hypotheses
 - c. Apply different statistical significance levels as conditions in testing the null hypothesis.
 - d. Differentiate between and discuss how directional and non-directional hypothesis tests (one-tailed vs. two-tailed) potentially impact the test decision.
 - e. Categorize and define Type I and Type II Errors.
 - f. Outline findings of a point estimate and confidence interval for a population mean using a SPSS and present findings in APA format.
 - g. Explain Tableau for presenting visualizations of analysis.
6. Compose the principles of a one-sample hypothesis test to make a statement about a population parameter such as the mean, using SPSS.
 - a. Discuss hypothesis testing for the modern business practitioner.
 - b. Create a hypothesis test using a statistical package following the correct procedure.
 - c. Determine when to use a one-tailed or two-tailed test, defending your decision in hypothesis testing in APA format.
 - d. Calculate a hypothesis test about a population mean using SPSS.
 - e. Compute and explain the p -value.
 - f. Compute using a t -statistic in a hypothesis test and the probability of making a Type II error in the test.
 - g. Distinguish when to use a parametric versus a non-parametric test.
7. Summarize the principles of a two-sample hypothesis test to make a statement about two independent population parameters such as the mean, using a statistical package.
 - a. Develop a hypothesis test that two independent population means are equal, under the assumption that the standard deviations of both populations are known and equal.
 - b. Develop a hypothesis test that two independent population means are equal, when the population standard deviations are unknown.

- c. Devise when to use a one-tailed or two-tailed test, depending your decision in hypothesis testing.
 - d. Develop a hypothesis test for the mean population difference among paired or dependent observations.
 - e. Evaluate the difference between dependent samples and independent samples.
8. Distinguish the principles of a two-sample non-parametric hypothesis test to make a statement about two independent population parameters, such as the mean, using a statistical package.
- a. Outline how to test the assumptions of variables to determine when to use a parametric or non-parametric test.
 - b. Produce a two-sample, non-parametric hypothesis test
 - c. Present findings of a non-parametric hypothesis test

Big Ideas and Essential Questions

Big Ideas

- Data
- Ethical processes in SPSS
- Statistical significance
- Sampling
- Hypothesis testing

Essential Questions

1. What is data?
2. How does SPSS process statistical testing?
3. How is statistical significance measured?
4. What sampling procedures are used for hypothesis testing?
5. Why do we use hypothesis tests?

These SLOs are not approved for experiential credit.

Effective: Fall 2023