ANALYZING AND INTERPRETING COURSE GRADES AND ASSESSMENT DATA

Session 2: Summarizing Data

November 03, 2017

Aaron Baggett, Ph.D., and Trent Terrell, Ph.D.

University of Mary Hardin-Baylor
Department of Psychology

OVERVIEW

OVERVIEW

Session 1: Preparing Data for Analyses

Session 2: Summarizing and Visualizing Data

Session 3: Using Data to Make Decisions

OBJECTIVES

OBJECTIVES

- At the conclusion of this presentation, you should be able to:
  1. Calculate basic descriptive statistics.
  2. Construct informative data figures.
  3. Use both in order to form meaningful questions of interest.
- Slides for today are available here:
  http://bit.ly/summarizing_data

DATA IMPORT

DATA IMPORT

- We've created a dummy data set for this session
- You can download it here: `http://bit.ly/quiz_scores`
- We'll import our `quiz_scores.csv` file into SPSS

DATA IMPORT

- Let's import our grades data into SPSS
  1. File >> Open >> Data
  2. Navigate to your grades data
     2.1 Be sure to select `Text (*.txt, *.dat, *.csv, *.tab)` under Files of type:
  3. Open
  4. Continue
  5. Select **Yes** under Are variable names included at the top of your file?
  6. Continue to Step 6 of 6 and select Done

DATA SETUP

DATA SETUP

- From here we need to set up our data file so our output is a little more organized
    1. Select Variable View
    2. I like to add clean variable names under Labels (e.g., ID, Gender, Quiz, Score)
    3. We need to tell SPSS that Gender: 1 = “Female”; 2 = “Male”
    4. Similarly, we need to label the values for each quiz (e.g., Quiz: 1 = “Quiz 1”)

DATA SUMMARY

DATA SUMMARY

- Now we're ready to examine our data
- What questions are we interested in answering?

DATA SUMMARY

- Now we're ready to examine our data
- What questions are we interested in answering?
    1. What is the mean quiz score by gender?
    2. Holding gender constant, what is the mean score by quiz?
    3. Do quiz scores differ among men and women?

QUIZ SCORES BY GENDER

1. What is the mean quiz score by gender?

- Descriptive Statistics:
    1. Analyze >> Compare Means >> Means
    2. Dependent variable: `score`
    3. Independent variable: `gender`
    4. Options:
        - 4.1 Number of Cases
        - 4.2 Minimum
        - 4.3 Mean
        - 4.4 Maximum
        - 4.5 Standard Deviation

QUIZ SCORES BY GENDER

1. What is the mean quiz score by gender?

Gender	n	Min.	M	Max.	SD
Female	50	4.00	18.30	26.00	5.21
Male	50	6.00	16.12	26.00	5.45

QUIZ SCORES BY GENDER

- What's the best way to visualize our by-gender quiz score differences?
  A. Scatter plot
  B. Line plot
  C. Box plot
  D. Bar plot

QUIZ SCORES BY GENDER

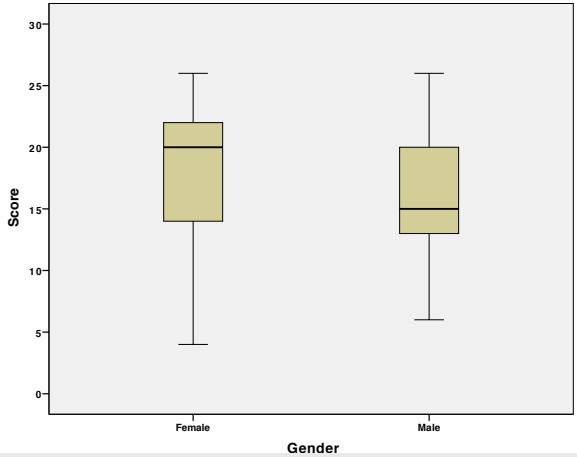
- What's the best way to visualize our by-gender quiz score differences?
  A. Scatter plot
  B. **Line plot**
  C. **Box plot**
  D. **Bar plot**

QUIZ SCORES BY GENDER

- Let's look at a box plot
    1. Graphs >> Legacy Dialogs >> Boxplot
    2. Select Simple then Define
    3. Variable: `score`
    4. Category Axis: `gender`
    5. Select OK

QUIZ SCORES BY GENDER

- Let's look at a box plot
  - What can we tell about the distribution of quiz scores by gender?



QUIZ SCORES MINUS GENDER

- On your own, let's answer our next question:
  2. Holding gender constant, what is the mean score by quiz?
     - 2.1 Be sure to calculate descriptive statistics
     - 2.2 Build a plot of your choice

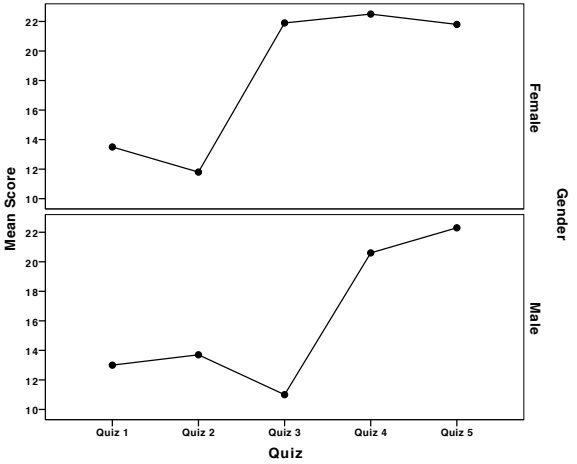
QUIZ SCORES MINUS GENDER

2. Holding gender constant, what is the mean score by quiz?

Quiz	n	Min.	M	Max.	SD
1	20	9.00	13.25	19.00	2.45
2	20	4.00	12.75	22.00	4.24
3	20	7.00	16.45	24.00	6.02
4	20	16.00	21.55	26.00	2.31
5	20	19.00	22.05	26.00	2.19

QUIZ SCORES MINUS GENDER

2. Holding gender constant, what is the mean score by quiz?



QUIZ SCORES MINUS GENDER

3. Do quiz scores differ among men and women?
    - What's the best way to answer this question?

QUIZ SCORES MINUS GENDER

3. Do quiz scores differ among men and women?
    - What's the best way to answer this question?
        3.1 Independnet-samples t test

QUIZ SCORES MINUS GENDER

3. Do quiz scores differ among men and women?
    - 3.1 Analyze >> Commpare Means >> Independent-Samples T Test
    - 3.2 Test Variable: `score`
    - 3.3 Grouping Variable: `gender` (1, 2)

SESSION 3

SESSION 3

- Using Data to Make Decisions
- Wednesday April 13, 12:00 PM
- We'll use a modified version of the course grades data to:
    1. Identify which tests of inferential statistics are most appropriate given the question(s) and nature of their data.
    2. Implement tests of inferential statistics.
    3. Interpret inferential test results.

QUESTIONS?