Project 2: Comparing Two Groups of Data

The purpose of this assignment is to compare two groups of data using descriptive statistics and statistical inference. You will first examine and describe each variable separately, then compare the two groups. This will involve making different representations of each data set, calculating measures of center and variability, as well as looking at the groups together using boxplots. You will also calculate confidence intervals for each group as well as a t-test to compare the groups. You may use a calculator or computer for any part of this assignment.

Step 1: First, you need a problem that will lead to the collection and analysis of two data sets. Here are some sample questions:

1. Do you think the average ages of coins are different? (e.g., for pennies vs. nickels)

2. Do you think there is a difference in the average cost of a haircut (including tip) for males versus females?

3. Do you think batting averages differ for players in the American League and the National League?

4. Do you think there is a difference in average price of “men’s magazines” vs. “women’s magazines?”

Progress Report 1:
Stating your problem: what is the problem.
What kind of data will you collect, how will you obtain your sample of data, how many values will you collect? DUE DATE

Step 2: Collecting and analyzing your data
After your topic has been approved, go ahead and collect your data.

Progress Report 2:
Provide a complete list of your data DUE DATE
Data Analysis

You may now enter your data into Data Desk to generate graphs and statistics. You need to cut and paste or attach printouts of all of the analyses as described below. You will need to:
1. Make at least two different representations of each variable (e.g., dot plot, histogram, boxplot). You may do these by hand or on the computer.
2. Calculate mean, median, mode, range, standard deviation, and interquartile range for each variable.
3. Graph the data sets together using boxplots.
4. Calculate confidence intervals for the mean of each group.
5. Conduct a t-test comparing the means of the two groups.

Step 3: Writing your report

Use the following format to interpret your data analyses and write the report. Use the four headings and attach copies of your analyses.

1. The Problem
State the problem you set out to investigate.

2. Method
Tell what your data represent, how many cases you collected, and where/how you gathered the data. (Include a copy or list of your data at the end of your report.)

3. Analysis/Results
Describe the first data set. Talk about the shape of the data, the center, and the spread in the context of the variable. Repeat for the second data set.

Compare the groups, using your summary statistics and boxplot. Interpret each confidence interval. Summarize the results of the t-test.

4. Conclusion:
What did you learn about the problem you investigated? What assumptions did you make in using the t-test? How valid do you think these are?

Attach this cover sheet to the front of your project with your name filled in and make sure the project is firmly stapled or clipped.

Name________________

Evaluation of Project 2

___Clear statement of the problem investigated. (2 pt)

___ Clear description of the data: what they represent, number of cases in each set, and how they were collected. (2 pt)

___ Analyses are complete and correctly done. (6 pt)

___ Graphs are completed and correctly done. (6 pt)

___ Each data set is described separately, and these descriptions are correct and complete. (6 pt)

___ The confidence intervals and t-tests comparing the two data sets are correctly done and interpreted (6 pt)

___ The conclusion is complete and seems reasonable. (5 pt)

___ A list or copy of the data is included. (1 pt)

___ The paper is legible (either typed or printed) and easy to read. (1 pt)