

Math 165 Project: SPSS

The purpose of this worksheet is to introduce the statistical software package SPSS. We'll see how to enter data, obtain the five number summary, mean, and standard deviation of the data, and display it in boxplots and histograms.

The Data

Recently a study was done to compare the metabolic rates of men and women. The units of metabolic rate are calories burned per 24-hour period.

Subject	Gender	Rate	Subject	Gender	Rate
1	M	1792	11	F	1189
2	M	1666	12	F	913
3	F	995	13	M	1460
4	F	1425	14	F	1124
5	F	1396	15	F	1052
6	F	1418	16	F	1347
7	M	1362	17	F	1204
8	F	1502	18	M	1867
9	F	1256	19	M	1439
10	M	1614			

Entering the Data

Start SPSS. Click on the SPSS icon in your Dock at the bottom of the screen. If it is not there, double-click on the OSX icon at the top right hand corner of the screen, and select Applications. Then double-click on the SPSS folder. Locate the program SPSS (not the license manager) and double-click on it. After several seconds, a spreadsheet will appear, and then a menu over it will give you some options. Select "Type in Data."

You will enter the subject's gender in the first column. Double-click on vars at the top of the column. Several boxes appear:

Name: Type the name of the variable, in this case, "gender."

Type: This is what kind of data it is. The default is "Numerical." Since M and F are letters, you don't want Numerical. If you click on the shaded square in the right part of the box, you can see your options. For words or combinations of

letters and numbers, choose “String.” There are also “Dollar,” “Date,” etc. We won’t worry about the other boxes for now.

At the bottom of your screen, you see Data View and Variable View. You are currently in Variable View, so it is highlighted in blue. Click on Data View to get back to the spreadsheet. You can now enter your data, hitting return to move vertically down the column.

In the second column, you will enter the metabolic rate. Again, first double-click on var at the top of the column to name the variable. This is numerical data, so you can use the default “Numerical” for the Type of data. Now go back to the Data view, and type in the data.

Analyze the data

At the top of the screen, choose Analyze. Then select Descriptive Statistics, and finally Explore. The “Dependent List” is the variable you’re studying, in this case metabolic rate, so click on the icon that says rate, and then on the arrow next to the Dependent List. The “Factor List” is the gender; proceed similarly with that.

Click on “Statistics”. Be sure Percentile is selected, click “Continue”. Now, select “Plots”. Make sure the first selection under BoxPlots is selected and that Histogram is selected. Click Continue. Once you click O.K., a screen will appear with lots of data, and some plots.

Another way to Plot the data

Boxplot. Go to Graphs → Legacy Dialogs → Boxplot at the top of your screen. We would like one boxplot for each gender, so choose the option “Summaries for groups of cases.” (If you select “Summaries of separate variables” you will get a single boxplot for all of the data.) Click on “Define.” The variable in this case is the *rate*, and the category axis is the *gender*. Enter these using the arrows as you did before. Then click O.K.

Histogram. Go to Graphs → Legacy Dialogs → Histogram at the top of the screen. *Rate* is the variable. Click on the box that says “Display normal curve” to see a normal curve with mean and standard deviation drawn over the rectangles (we’ll talk about this next week), then click O.K. You can see that this procedure gives you a histogram of all of the data, men and women together.

We would like two separate histograms, one of women and one of men. Go to Graphs → Legacy Dialogs → Interactive → Histogram. The panel variable is “gender,” so highlight the icon that says “gender,” and drag it into the large box below the words “panel variables.” Next, drag the “rate” into the small horizontal box below the word “Count.” Click OK to see the Histogram in your output window.

Your Final Report

Keep the screen up that has your graphs on it. Click on Microsoft Word at the bottom of your screen, and open a word document. Go back to your histogram, and click on it as you would to highlight it. A box should appear around it. Click Apple-C (for copy). Then click on the Word document, and hit Apple-V (for paste), to paste the graph there. You can do the same thing with the data you found using Explore.

At the top of your Word document, type the names of the students behind this report. Then write a couple of sentences saying what the study is about so a casual reader can understand the graphs that follow. Finally, say whether you think men's metabolic rates are higher than women's metabolic rates. They are, of course, in this study, but say whether this study is enough to make you think that they are higher in general. Your answer will reflect your intuitive judgment.

You should save your SPSS data and output files to your Documents folder on the Math Server, or to your own Flash Drive. Save your Word document to the same place. To find your folder, click the globe at the bottom of your screen. This will bring up a list of student folders.

Print out your word document and have it ready to hand in at the beginning of class Monday, March 2.