MATH221 Statistics for Decision Making

Week 2 Lab

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Statistical Concepts that you will learn after completing this Lab:

* Using Excel for Statistics
* Graphics
* Descriptive Statistics
* Empirical Rule

# Week 2 Lab Instructions-BEGIN

* Data have already been formatted and entered into an Excel worksheet.
* Obtain the Lab data file (Excel) for this lab from your instructor.
* Use the Week 1 spreadsheet (available from Week 1: Resources) for graphs and calculations. You will need to copy data from the Lab data file into the Week 1 calculations spreadsheet to answer some of these Lab questions.
* The names of each variable from the survey are in the first row of the Lab data Worksheet. This row has a double-underline to identify the heading row as the variable names. All other rows of the Worksheet represent a certain students’ answers to the survey questions. Therefore, the rows are called observations and the columns are called variables. On the last page of this Week 2 Lab document, you will find a Code Sheet section that identifies the correspondence between the variable names and the survey questions.
* Follow the directions below and then paste the graphs from Excel into the gray response areas for question 1 through 3. You will be using the Week 1 Excel Sheet for many of the calculations. Type your answers to questions 4 through 11 where noted in the gray areas. When asked for explanations, please give thorough, multi-sentence or paragraph length explanations.
* The completed Lab Word Document with your responses to the 11 questions will be the ONE and only document submitted to the **Week 2: Lab**. When saving and submitting the document, you are required to use the following filename format, replacing “Your\_Name\_Here” with your “Last name\_First name”:

MATH221\_W2\_Lab\_Excel\_***Your\_Name\_Here***.docx

# Week 2 Lab Instructions-END

Creating Graphs

1. Create a pie chart for the variable Car Color: Select the column with the Car variable, including the title of Car Color. Click on **Insert**, and then **Recommended Charts**. It should show a clustered column and click **OK**. Once the chart is shown, right click on the chart (main area) and select **Change Chart Type**. Select **Pie** and **OK**. Click on the pie slices, right click **Add Data Labels**, and select **Add Data Callouts**. Add an appropriate title.Copy and paste the chart here.

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1. Create a histogram for the variable Height. You need to create a frequency distribution for the data by hand. Use 5 classes, find the class width, and then create the classes. Once you have the classes, count how many data points fall within each class. It may be helpful to sort the data based on the **Height** variable first. Once you have the classes and the frequency counts, put those data into the table in the Freq Distribution worksheet of the Week 1 Excel file.Copy and paste the graph here.

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1. Create a scatter plot with the variables of height and money. Copy the height variable from the data file and paste it into the x column in the Scatter Plot worksheet of the week 1 Excel file. Copy the money variable from the data file and paste it into the y column. Copy and paste the scatter plot below.

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# Calculating Descriptive Statistics

1. Calculate descriptive statistics for the variable Height by Gender. Sort the data by gender by clicking on Data and then Sort. Copy the heights of the males form the data file into the Descriptive Statistics worksheet of the week 1 Excel file. Type the standard deviations below. These are sample data. Then from the data file, copy and paste the female data into the Descriptive Statistics workbook and do the same

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| --- | --- | --- |
|  | Mean | Standard deviation |
| Females |  |  |
| Males |  |  |

Short Answer Writing Assignment

All answers should be complete sentences.

1. What is the most common color of car for students who participated in this survey? Explain how you arrived at your answer.

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1. What is seen in the histogram created for the heights of students in this class (include the shape)? Explain your answer.

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1. What is seen in the scatter plot for the height and money variables? Explain your answer.

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1. Compare the mean for the heights of males and the mean for the heights of females in these data. Compare the values and explain what can be concluded based on the numbers.

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1. Compare the standard deviation for the heights of males and the standard deviation for the heights of females in the class. Compare the values and explain what can be concluded based on the numbers.

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1. Using the empirical rule, 95% of female heights should be between what two values? Either show work or explain how your answer was calculated.

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1. Using the empirical rule, 68% of male heights should be between what two values? Either show work or explain how your answer was calculated.

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**Code Sheet**

Do **NOT** answer these questions.

The Code Sheet just lists the variables name and the question used by the researchers on the survey instrument that produced the data that are included in the data file. This is just information. The first question for the lab is after the code sheet.

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| **Variable Name** | Question |
| Drive | Question 1 – How long does it take you to drive to the school on average (to the nearest minute)? |
| State | Question 2 – What state/country were you born? |
| Temp | Question 3 – What is the temperature outside right now? |
| Rank | Question 4 – Rank all of the courses you are currently taking. The class you look most forward to taking will be ranked one, next two, and so on. What is the rank assigned to this class? |
| Height | Question 5 – What is your height to the nearest inch? |
| Shoe | Question 6 – What is your shoe size? |
| Sleep | Question 7 – How many hours did you sleep last night? |
| Gender | Question 8 – What is your gender? |
| Race | Question 9 – What is your race? |
| Car | Question 10 – What color of car do you drive? |
| TV | Question 11 – How long (on average) do you spend a day watching TV? |
| Money | Question 12 – How much money do you have with you right now? |
| Coin | Question 13 – Flip a coin 10 times. How many times did you get tails? |
| Die1 | Question 14 – Roll a six-sided die 10 times and record the results. |
| Die2 |
| Die3 |
| Die4 |
| Die5 |
| Die6 |
| Die7 |
| Die8 |
| Die9 |
| Die10 |