Math 1040 StatCrunch Exercise 1

Exercises from Elementary Statistics 12th ed. By Mario F. Triola

The purpose of this exercise is to introduce you to the StatCrunch software that is available with your textbook and MyStatLab program. The skills you learn in this exercise will be needed for your term project and for some of your homework. You will learn how to access data sets in your book as well as input your own data and create graphical displays of this data.

Log in to MyStatLab, click on the “StatCrunch” button on the left-hand side, then click on the link for data sets from your textbook. The program opens in a new window where you may edit your data.

Part 1: Loading and sorting data, creating a histogram

First try loading data from an existing file. From the list of data at the left side of your screen choose Data Set 1: Body Measurements (Males). In the spreadsheet cells of StatCrunch you will see several columns of data. For this exercise, we will only work with the data in the PULSE column. Click on the Edit button, scroll down to Columns, and then click on “Delete”. Go down the list and select every column except PULSE and delete them by clicking “Compute!”. (You must hold down the “ctrl” key on your keyboard to select more than one column at the same time.) Now you will see just the one column of data that you are interested in.

Start by sorting the pulse data. At the top of your spreadsheet display, click on “Data”, “Sort”, and the column you want to sort (“Pulse”) by clicking on it. Click compute and close the options window that pops up. A new column of sorted values appears. Rename this column “Sorted Pulse Data” by clicking up in the column title. You will need to delete the current title before renaming it.

To create a histogram for this data, click on “Graph” on the tool bar at the top of your screen. Click on “Histogram”. Choose the column you would like a histogram for (“Pulse”), use the computer defaults and click on “Compute!”. You should now have a histogram. Notice that the computer selected the class limits and the class width. Try changing them by clicking “Options”, “Edit”, and then scrolling down. Try changing the class width (“Binwidth”) to 7 or to 12. Just click on “Compute!” again to see how your changes look. Notice that even though the data values are the same, the histogram looks different when you change the number of classes. Play with the other options in the histogram editing window. What happens if you change from a frequency histogram to a relative frequency histogram? Once you know how the options work, pick a class width and class start that you like, use the built-in histogram options to add **appropriate** **labels** to both axes and give the histogram an **appropriate** **title.** Your data represents pulse rates of males measured in beats per minute. The title and labels should make this clear to anyone looking at your graph. Remember the importance of using appropriate labels and titles when you create the graphs in your term project. Copy the histogram into the document file that you will submit (Word is a good choice). Save this document. You will be adding to it!

Using the Edit button as before, delete the pulse data columns.

Part 2: Entering data, creating a stem-and-leaf plot

Now try entering your own data. Suppose you collected the ages of the patrons waiting in line with you at the DMV. Enter the data by clicking in the first cell of the spreadsheet and type “18” and then “enter”. Continue in this manner and enter the following data set (note that you have already entered the first value).

18, 19, 21, 22, 26, 29, 34, 40, 40, 48, 51, 57

See if you remember how to rename the column and change its name to “Ages”. To create a stem-and-leaf plot for this data, click on “Graph”, then “Stem and Leaf”, and then on the column for which you wish to create the plot (“My Data”). Under Outlier trimming choose “none”. Click “Compute!” to see your plot. Copy this stem-and-leaf plot into the document file that contains your histogram. Save your document. You will be adding more graphs before it’s ready to turn in!

Part 3: Creating a pie-chart, creating a Pareto chart from data

Test your memory to see if you remember how to delete the numbers in the “Ages” column and then load the data from Data Set 8: Alcohol and Tobacco Use in Animated Children’s Movies. You can always look back at the previous instructions if you don’t remember!

You should now have a column called “Company” that contains the qualitative data representing the companies that made the various movies represented in the sample. A pie-chart is a good way to visualize the relative proportions within a set of categorical data. To create a pie-chart for this data, click on “Graph” then choose “Pie Chart” and “with data”. Choose the “Company” column and “Compute!”. You may not like the default choice of colors, so click on “Options” and “Edit”. Scroll down until you come to a menu with “Color Scheme” and try a different look. Just click on “Compute!” to see your results. Using the built-in options, give this pie chart an **appropriate title** and copy it into your document along with your histogram and stem-and-leaf plot.

Another option for analyzing categorical data graphically is the Pareto chart. Recall that a Pareto chart arranges the data by ordering it by count. This allows us to focus our attention on the most important categories and to quickly understand relative sizes. To create a Pareto chart for the movie company data, select “Graph”, the “Bar plot” and “with data”. Select the “Company” variable and then choose the “Order by” “Count Descending”. As always, include an **appropriate title**, and click “Compute!” to create your graph. Copy the Pareto chart into your document and save it. You may now delete the columns of movie data.

Part 4: Creating a pie-chart, creating a Pareto chart from a summary

Note that the pie chart you just created used all of the original data. It is also important to know how to create a pie chart from summary information. Suppose Northeast High School’s enrollment consists of 156 Freshmen, 104 Sophomores, 92 Juniors, and 89 Seniors. To create a pie chart for this data, list the categories (Freshman, Sophomore, Junior, Senior) in the first four cells of column one. Make the title of this column “Class”. In column two, list the corresponding enrollment numbers (156, 104, 92, 89) and title this column “Enrollment”. As before, click on “Graph” and “Pie Chart”, and this time choose “With Summary”. The “Categories in” column is “Class” and the “Counts in” column is “Enrollment”. Click on “Compute!” to create the pie chart. Using the built-in options, give this pie chart an **appropriate title** and copy it into your document along with your previous graphs.

Now create a Pareto chart for Northeast High School’s enrollment data. By now, you should be able to do this without the step-by-step instructions! Be sure to select the “With Summary” option and to order by “Count Descending”. Give your chart an appropriate title and copy it into your document. Save your document file.

Part 5: Wrapping up

Before you turn in any assignment, check to be sure everything is finished! Use this check list to be sure you have completed every task.

Your document must contain:

1. Your full name
2. An appropriately labeled and titled histogram showing male pulse rates
3. A stem-and-leaf plot showing DMV customer ages
4. Appropriately labeled and titled pie chart and Pareto chart showing movie companies that have tobacco use in children’s films
5. Appropriately labeled and titled pie chart and Pareto chart showing enrollments by class at Northeast High School

You may resize your graphs so that your document is not more than two pages long and is well presented. When resizing pie charts, be sure that the circular shape does not become distorted.

Print your document and turn it in by the posted due date.

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