

Excel Homework for Descriptive Statistics: Due Friday, March 7, 2014

You have been provided with an Excel spreadsheet (on my website: http://profbutterworth.com/canada/can_Stat.html) containing 3 columns of data and a code key in the first sheet. In addition there are 4 other sheets containing gender & height, gender & community, gender only, and height only.

The data represent:

- Gender
- Community of Residence
- Height in Inches (reported)

The data was provided via a survey conducted by Foothill college students during the Spring 2013 quarter about the Foothill student population. The sample was collected mainly via convenience sampling.

For full credit on this homework you will complete Tasks 1 through 5:

Task #1: Summarize quantitative data using Excel

- 1) Sort the data on gender (use high to low this time) & delete the rows containing males (0's)
 - 2) Use Excel to find the mean of women's heights
Use `=average(columnrow:columnrow)`
 - 3) Use Excel to find the standard deviation of women's heights
Use `=stdev.s(columnrow:columnrow)` or `=stdev(columnrow:columnrow)`
 - 4) Use Excel to find the minimum of women's heights
Use `=min(columnrow:columnrow)` or `=quartile(columnrow:columnrow, 0)`
 - 5) Use Excel to find the first quartile of women's heights
Use `=quartile(columnrow:columnrow, 1)`
 - 6) Use Excel to find the median (second quartile) of women's heights
Use `=median(columnrow:columnrow)` or `=quartile(columnrow:columnrow, 2)`
 - 7) Use Excel to find the third quartile of women's heights
Use `=quartile(columnrow:columnrow, 3)`
 - 8) Use Excel to find the maximum of women's heights
Use `=max(columnrow:columnrow)` or `=quartile(columnrow:columnrow, 4)`
 - 9) Use Excel to count the number of women's heights
Use `=count(columnrow:columnrow)`
- **Print a table containing the summary information clearly denoted.**

Task #2: Learn to do mathematical operations with Excel

- 1) Use Excel to compute the number of classes that you will need for making a histogram for female heights. The formula is: $1 + \log_2(n)$. Don't forget to round it off appropriately.
Use `=log(array, base)`
- 2) Use Excel to compute the class width that you will need for making a histogram for female heights.
 - Step 1: Find the range using 8 & 4 in Task #1 Use `=rowcolumn - rowcolumn`
 - Step 2: Calculate the class width (unrounded) Use `=rowcolumn/rowcolumn`
 - Step 3: Give the correctly rounded class width (round up to the next highest 10th of an inch).

- **Print the table, the calculations for Sturge's formula & number of classes.**

Task #3: Use Excel to create a frequency table with lower & upper classes, boundaries & midpoints

- 1) Starting with the minimum, use Excel to find all the lower class limits (go one beyond the number of classes that you will actually need)
- 2) Use the lower class limits found in 3) to find the upper class limits using Excel. This can be done by subtracting a 10th from the next lower class limit.
- 3) Use Excel to calculate the class midpoints & boundaries
- 4) Use Excel's "countif" function to find the frequency.
Note: This is a little trickier than for qualitative data. You will use "<next lower class limit" for the first class as the criteria. You will use ">second to the last upper class limit" for the last class criteria. For all classes in between it will be a difference of two countif functions, where the first will have the criteria "<next lower class limit" and the second's criteria will be "<current lower class limit".
- 5) Use Excel to sum the frequencies to make sure the sum equals the count of females

- **Print your frequency table containing all the requested informations**

Task #4: Create a histogram for the female height frequency table

- 1) Highlight the counts for all the classes for all heights and create a bar chart (clustered column; vertical please)
- 2) Make the histogram pretty
 - a) Double click on a bar and make the "gap width" in the right hand side of the window 0%. This will move the bars so they touch as they should in a histogram
 - b) Remove the legend
 - c) Change the fill to "no fill"
 - d) Remove the labels on the horizontal axis
 - e) Remove the gridlines on the vertical axis
 - f) Give the horizontal axis the title of "Heights in Inches"
 - g) Give the vertical axis the title of "Frequency"
 - h) Give the Histogram an appropriate title such as "Histogram of Female Heights"
- 3) Put the histogram in its own sheet so it is 'nicely sized' (Choose the chart and then go to chart tools and select move chart and move to a new sheet)

- **Print the histogram**

Task #5: Create a side-by-side bar chart for gender by community (from last HW Task #5)

- 1) Highlight the headings and counts in the 2-way table created Task #5 from last HW
- 2) Choose chart, clustered column (vertical please)
- 3) Make the side-by-side bar chart “pretty”
 - a) Remove the legend
 - b) Change the fill to a different pattern for male & female
 - c) Remove the gridlines on the vertical axis
 - d) Give the horizontal axis the title of “Community”
 - e) Give the vertical axis the title of “Counts”
 - f) Give the Side-By-Side Bar Chart an appropriate title
- 4) Move the chart to its own sheet

• **Print the side-by-side bar chart**

I created a YouTube video on how to do many of these tasks in Excel. You can find it on my YouTube channel by searching “Excel” and looking for the Lab #1 video or by using this link:
<http://www.youtube.com/watch?v=JLP0EUXE9PA>

The data is on the page created for your class on my Website. Here is the link:
http://profbutterworth.com/canada/can_Stat/ExcelHWDDataF13.xls