

CS130 Assignment #3

Date assigned: 1/18/12
Date due: 1/20/12 by 1pm
Points: 75

Create a Word document **PUNuetID-Answers.doc** using your PUNetID that will contain answers to each of the following questions in order when applicable. Your answer document and any other files created are to be placed in a folder called **PUNetID-Solution3** once again using your PUNetID.

Problem #1

Create Worksheet #5 - named "Crickets"

As crickets move their wings faster, the chirping sound produced becomes higher. It is believed that warmer ground temperatures cause crickets to move their wings faster. A study was done and here is the data:

ChirpsPerSecond	Ground Temperature (F)
20	88.6
16	71.6
19.8	93.3
18.4	84.3
17.1	80.6
15.5	75.2
14.7	69.7
17.1	82
15.4	69.4
16.2	83.3
15	78.6
17.2	82.6
16	80.6
17	83.5
14.1	76.3

- 1) Add worksheet #5 with a title and properly formatted to your Excel workbook used for assignments 1 & 2. The worksheet is to contain the above data.
- 2) Perform a linear regression on the data. Make sure that the independent variable is on the X-axis and the dependent variable is on the Y-axis.
- 3) Paste a copy of the Scatterplot with the regression equation and R^2 value in your Word document under a heading **Problem #1 - Question 1**.
- 4) Would this correlation be considered a "strong" correlation based on our discussions in class? Why or why not? Answer this question in your Word document under the heading **Problem #1 - Question 2**.
- 5) If the ground temperature were 92 degrees, at what approximate rate would you expect the crickets to be chirping. Answer this question in your Word document to two decimal places under the heading **Problem #1 - Question 3**.
- 6) If the crickets were chirping about 16 times per second, what was the approximate ground temperature to two decimal places. Answer this question in your Word document under the heading **Problem #1 - Question 4**.

Problem #2

Using the sample data set entitled "TreeData.txt" found in the CS130 Public folder and PASW create a dataset called **TreeData.sav** and report in the Word document PUNetIDAnswers.doc the answers to each of the following questions. When asked for, place a graph into your document with the appropriate explanation.

- 1) List each variable in the dataset TreeData.sav. Further, list the type and measure that each variable should be and briefly explain why. You will not get full credit if you select the wrong type or the wrong measure. Answer this question under a heading of **Problem #2 - Question 1**.
- 2) What is the mean, median, mode, and standard deviation for each of the variables: (a) Trunk Girth and (b) Weight. Paste in your answers to this question under a heading of **Problem #2 - Question 2**.
- 3) Construct a single bar chart that shows the Mean Weight of each root category. Paste in the answer to this question under a heading of **Problem #2 - Question 3**.
- 4) Using SPSS, perform the correct linear regression on weight and trunk girth. Make sure you properly identify the Dependent and Independent variable. Paste in only the **Coefficients** table. Answer this question under a heading of **Problem #2 - Question 4**.
- 5) Which variable is independent? Why? Give a detailed explanation for full credit. Answer this question under a heading of **Problem #2 - Question 5**.
- 6) Which variable is dependent? Why? Give a detailed explanation for full credit. Answer this question under a heading of **Problem #2 - Question 6**.

Note1: Make sure all of your graphs are properly and accurately labeled.

Note2: The Word document answers are to be in the exact order as specified above. As an example, do not put Step #6 results ahead of Step #2 results in the Word document.

Problem #3 Use SPSS to solve this problem.

Import (any way you choose) the following data into SPSS. Name the file PUNetID-Assign3Prob3.sav.

ID	Gender	Height (meters)	Average Steps per Day	Average Calories Burned Per Day
1	f	1.61	8789	2930
2	f	1.44	5072	1652
3	f	1.75	4297	1360
4	f	1.62	7570	2431
5	f	1.59	8997	2980
6	f	1.57	5780	1881
7	f	1.71	6475	2205
8	f	1.56	6646	2194
9	f	1.64	5437	1822
10	f	1.81	5458	1810
11	f	1.59	4630	1568
12	m	2.03	9375	3054
13	m	1.68	4802	1657
14	m	1.91	5974	1914
15	m	1.88	9479	3161
16	m	1.65	9576	3100
17	m	1.96	6654	2139
18	m	2.00	4791	1676
19	m	1.98	7159	2425
20	m	1.92	9812	3192

► Use correct spelling, punctuation, grammar, and capitalization in your answers. Label and format all charts professionally. In the Word document described above, answer each of the following questions in order under the heading specified. That is, list the heading in bold and then give your answer.

► You are to find if the Average Calories Burned Per Day by women is significantly different than the Average Calories Burned Per Day by men. Paste in the answers to the questions under a heading of **Problem #3 - Question 1.**

- 1) What hypothesis test will you need to perform to find this result? Fully explain why you selected the test you did.
- 2) State the NULL Hypothesis for the statistical test you selected.
- 3) Paste in the results of the statistical test.
- 4) State your conclusion.
- 5) Explain exactly what the Sig. (2-tailed) value means in this case. I don't want just if the value is less than 0.05 reject the null hypothesis or greater than 0.05 accept the null hypothesis, but in terms of the problem explain the meaning of the Sig. (2-tailed) value including the concept of chance occurrences. Someone without a statistics background must be able to understand your explanation.

► Does the mean height of all the subjects differ from 1.77 meters in a statistically significant way? Paste in the answers to the questions under a heading of **Problem #3 - Question 2**.

1)What hypothesis test will you need to perform to find this result? Fully explain why you selected the test you did.

2)State the NULL Hypothesis for the statistical test you selected.

3)Paste in the results of the statistical test.

4)State your conclusion.

5) How well does Average Steps per Day predict Average Calories Burned per Day? Back up your answer with data.

How to Submit and Grading Policies

A copy of your single **folder** (PUNetID-Solution3) with all of the files (properly named) is to be placed in the CS130 Drop folder by **1:00pm** on the due date to be considered on time.

Grading will be based on:

- Correctness of your results
- Completeness of your results
- Professional look of the worksheets and charts as described above and discussed in class
- Ability to perform a what-if analysis in any worksheet by changing any of the user input data with accurate results computed and displayed in the worksheet.