CS130 Assignment #3

Date assigned: Thursday, January 16, 2014
Date due: Tuesday, January 21, 2014, 1**pm**
Points: 75

Goals: Excel Regression, SPSS data definition, type, measure, descriptive statistics, charts, hypothesis testing

Create a Word document **WordAnswers3PUNuetID.docx** using your PUNetID that will contain answers to each of the following questions in order. The Word document and all other files created are to be placed in a folder called **PUNetIDSolution3** once again using your PUNetID. Be sure to put your name at the top of the Word document.

Answer each question in your Word document under the header **Problem# - Question #.**

Problem #1 Use Excel to solve this problem

The file Economics_Public.xlsx in CS 130 Public contains data on Unemployment, the Dow Jones average, the S&P 500, and the Consumer Price Index from 1950 to 2011. The data from this file came from: http://people.stern.nyu.edu/churvich/Forecasting/Data/ as well as http://finance.yahoo.com/q/hp?s=%5EGSPC

1. Run a linear regression to determine how well Dow Jones predicts S&P500. Run a Polynomial regression (degree 3) to determine how well Dow Jones predicts Unemployment. Finally, run a logarithmic regression to determine how well Dow Jones predicts CPI. Copy the resulting chart, containing labels, a title, trendlines, equations, and R^2 values, into the Word document. Be sure to give each Series a meaningful name.

2. Which of the three regressions above gives the best R^2 value? What is that equation's R^2 value? Write your answer in the Word document.

3. What CPI is predicted when the Dow Jones average is 2,000? Use the Equation Editor to write the logarithmic regression equation in Word.

4. What Dow Jones average is predicted when S&P500 is 100? Use the Equation Editor to write the linear regression equation in Word.

Problem #2 Use SPSS to solve this problem

Copy the file EarthQuake7dayM25.sav from CS130 Public to your Desktop. Rename this file **EarthQuake7dayM25_PUNetID.sav**. Each variable's type has been set to string and each variable's measure has been set to nominal.   The date file was taken from this website: http://earthquake.usgs.gov/earthquakes/feed/v1.0/csv.php A glossary of the terms can be found here: http://earthquake.usgs.gov/earthquakes/feed/v1.0/glossary.php This file contains data on earthquakes that were at least magnitude 2.5 over a seven day period.

1)   Each variable's type has been set to string and each variable's measure has been set to nominal**.   Set each variable's type and measure correctly**. List each variable's type and measure in the Word document**.**

2)   Find the mean, sum, standard deviation, minimum, maximum, variance, and range for the magnitude and the depth. Copy the Descriptive Statistics box into your Word document**.**

3)   Build a Bar Chart to show how many earthquakes occurred in each network (net). Make sure that your chart has a title, label the axes, and change the color and depth of the bars. Copy the Bar Chart into your Word document.

4)   Build a Pie Chart to show how many earthquakes occurred in each network (net). Copy the Bar Chart into your Word document.

5)   Build a Scatter Chart to compare Depth and Median Magnitude. Copy the Scatter Chart into your Word document. Be sure to choose an appropriate independent variable.

Problem #3 Use SPSS to solve this problem.
Import (any way you choose) the following data into SPSS. Name the file Steps_PUNetID.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.

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

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

15)   Paste in the results of the statistical test.

16)   State your conclusion.

17)   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?

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

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

20)   Paste in the results of the statistical test.

21)   State your conclusion.

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

Submitting your work:

To submit your work, copy your <u>single folder</u> **PUNetIDSolution3** containing (**WordAnswers3PUNuetID.docx, EarthQuake7dayM25_PUNetID.sav, CEI_PUNet.xlsx,** and **Steps_PUNetID.sav**) into the **CS130 Drop** folder on Turing.

Grading:

1) Correctness of your results
2) Completeness of your results
3) Professional look and correctness of your