

Statistics 101 – Homework 4

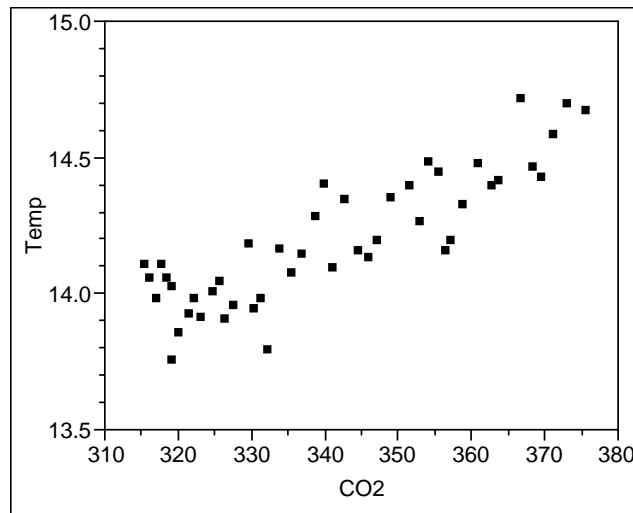
Due Monday, February 15, 2010

Homework is due on the due date at the end of the lecture.

Reading: February 8 – February 10 Chapter 7
February 12 – February 17 Chapter 8

Assignment:

1. Do the following problems from the text, *Intro Stats*, 3rd Edition. If you have an earlier edition of the text, check with someone who has the 3rd Edition to make sure you do the correct problems.
 - a) Chapter 7 – problems 3, 4, 5, 6, 11, 12, 25, and 26.
2. Climate change is a hot topic these days. One of the factors that may explain increases in global temperatures is the amount of carbon dioxide in the atmosphere. Annual atmospheric carbon dioxide (CO₂) concentrations measured as parts per million by volume (ppmv) are derived from air samples collected at Mauna Loa Observatory in Hawaii. Additionally the annual average global temperatures (degrees Celsius) are recorded. The data plotted below are for years from 1958 through 2003.



- a) Answer the questions Who? and What? for this problem.
- b) The value of the correlation for these data is most likely to be?
-0.95 -0.67 -0.31 +0.03 +0.55 +0.86
Explain the reason for your choice.
- c) Write a sentence or two explaining what this correlation means for these data. Write about CO₂ concentrations and global temperatures rather than about correlation coefficients.
- d) If the temperature were recorded in degrees Fahrenheit rather than degrees Celsius, how would the correlation change? Explain your answer.
- e) A news reporter looking at these data writes; “It is clear that increasing CO₂ in the atmosphere causes global temperature to increase.” Explain why this is not an appropriate conclusion from these data alone.

(OVER)

3. On homework 2 you used JMP to look at the weight for a sample of 57 cars selected from the 2004 model year. In addition to weight, the city mpg is given for each of the 57 cars. We wish to examine the association between city mpg and weight. You can find the JMP data table on the course website.
- a) Which variable would you use for the explanatory variable and which for the response? Explain your choice.
 - b) Use Analyze – Fit Y by X to obtain a plot of the weight and city mpg data. Describe the direction, form and strength of the association.
 - c) Use Analyze – Multivariate Methods – Multivariate to obtain the correlation between weight and city mpg. What is the value of the correlation?
 - d) Write a few sentences about what the plot and the correlation indicate about fuel economy.

Be sure to turn in the JMP output from parts b) and c).