

Statistics 101 – Homework 2

Due Friday, January 29, 2010

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

Reading: January 20 – January 25 Chapter 4
 January 27 Chapter 5

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 4 – problems 5, 8, 10, 13, 22, 30, 43 and 45
2. A random sample of 25 Division I-A Football teams is selected and the points they score during the first week of the 2009 season are recorded. The data are given below.

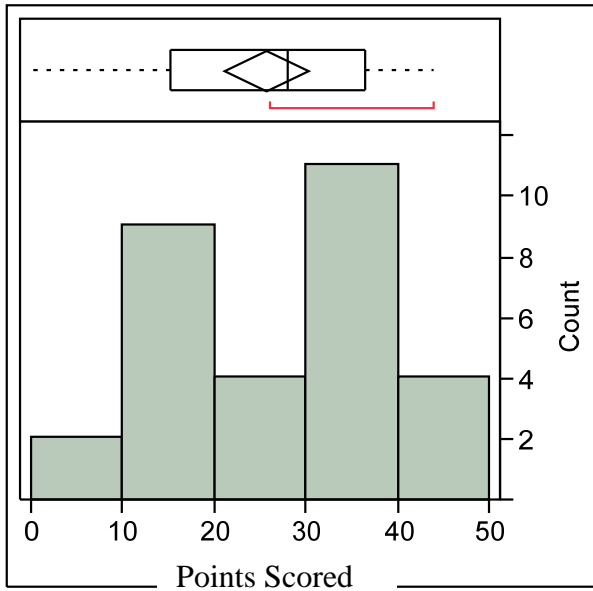
3	14	24	20	17	8	13	25	14	20
33	17	3	56	10	35	0	37	14	3
59	49	3	24	16					

- a) Answer the questions, Who? and What? for these data.
- b) Make a stem-and-leaf display of the scores.
- c) Using the stem-and-leaf display, describe the distribution of scores. Make sure you mention the shape, center, spread and any outliers or other interesting characteristics of the distribution.
- d) Calculate the sample mean score.
- e) Calculate the sample median score.
- f) Calculate the five-number summary for these data.
- g) Given the value $\sum (y - \bar{y})^2 = 6,377.44$, calculate the sample standard deviation for these data.
- h) Which do you think provides a more informative summary of these data; a five number summary or the sample mean and sample standard deviation? Briefly explain your answer.

During week twelve of the 2009 season the points scored by a different random sample of 30 Division I-A Football teams was also recorded. On the next page is JMP output for the distribution of scores for the week twelve.

- i) Describe the distribution of scores for the week twelve. Make sure you mention the shape, center, spread and any outliers or other interesting characteristics of the distribution.
- j) Give the value of the sample mean score. Give the value of the sample median score. What does the relationship between these two values indicate about the shape of the distribution?
- k) Give the value of the sample standard deviation of the scores.
- l) Construct side-by-side box plots (use a common scale) and use these to compare the distribution of the first week's scores to week twelve's scores.

Football Scores Week Twelve



Stem	Leaf	Count
4	1224	4
3	6888	4
3	0113444	7
2	6	1
2	011	3
1	6777	4
1	00333	5
0	7	1
0	0	1

0|0 represents 0

Five Number Summary		Summary Statistics	
100.0%	maximum	44.00	Mean 25.6
75.0%	quartile	36.50	Std Dev 12.29
50.0%	median	28.00	N 30
25.0%	quartile	15.25	
0.0%	minimum	0.00	

3. **(JMP assignment)** A sample of 57 cars is selected from the 2004 model year. Data on company, model, horsepower, city mpg, highway mpg and weight are recorded. The data are available on the course web page both as a JMP (.jmp). Follow the directions in the JMP Guide to download the file and create output. Make sure to print the output and turn it in with your assignment. Use the output in answering the following questions.
- Answer the question Who?
 - Answer the question What? For each What? indicate whether the variable is categorical/qualitative or numerical/quantitative.
- Use JMP to Analyze – Distribution for the variable Weight (lbs).
- Looking at the histogram describe the shape of the distribution of Weight. What might this shape indicate about the cars in the sample?
 - Give the five number summary for Weight.
 - Calculate the sample range and sample IQR for Weight.
 - Looking at the box plot describe the shape of the distribution of Weight. Comment on where the sample mean is relative to the sample median and where the mound is.
 - Looking at the box plot, are there any apparent outliers? If so, what cars are they and what are their weights?
 - Give the sample mean and sample standard deviation for these data.
 - Did JMP split the stems in the stem and leaf plot?
 - Which do you think is the most informative display of the data, the box plot, the histogram or the stem and leaf plot? Explain briefly.