

Statistics 101 – Homework 2

Due Wednesday, September 9, 2009

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

Reading: August 31 – September 4 Chapter 4
September 9 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.

- Chapter 4 – problems 5, 8, 10, 13, 22, 30, 43 and 45

2. The birth weights (in grams) of 18 baby girls born at a Brisbane, Australia hospital are given below.

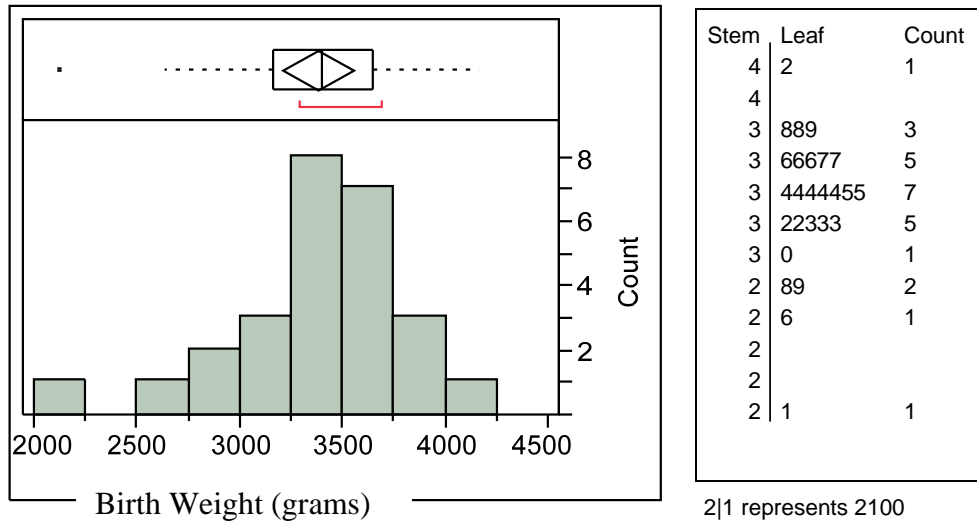
3,837 3,334 2,208 2,576 3,208 3,746 3,523 3,430 3,480
3,116 3,428 2,184 2,383 3,500 3,866 3,542 3,278 1,745

- Answer the questions Who? and What? for these data.
- Make a stem-and-leaf display of the baby girls' birth weights.
- Using the stem-and-leaf display, describe the distribution of birth weights for baby girls. Make sure you mention the shape, center, spread and any outliers or other interesting characteristics of the distribution.
- Calculate the sample mean birth weight.
- Calculate the sample median birth weight. Why is the sample median birth weight greater than the sample mean birth weight?
- Calculate the five number summary for these data.
- Given the value $\sum (y - \bar{y})^2 = 6,781,240.5$, calculate the sample standard deviation for these data.
- 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.

There were also 26 baby boys born at this Brisbane, Australia hospital. On the next page is JMP output for the distribution of baby boy birth weights.

- Describe the distribution of birth weights for baby boys. Make sure you mention the shape, center, spread and any outliers or other interesting characteristics of the distribution.
- Give the value of the sample mean birth weight for boys. Give the value of the sample median birth weight for boys. Explain why the sample mean is less than the sample median.
- Give the value of the sample standard deviation for boys.

Male Birth Weight



Five Number Summary			Summary Statistics	
100.0%	maximum	4162.0	Mean	3375.3077
75.0%	quartile	3645.0	Std Dev	428.04605
50.0%	median	3404.0	N	26
25.0%	quartile	3162.0		
0.0%	minimum	2121.0		

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.
- a. Answer the question Who?
 - b. Answer the question What? For each What? indicate whether the variable is categorical/qualitative or numerical/quantitative.
 - c. Looking at the histogram describe the shape of the distribution of horsepower. What might this shape indicate about horsepower?
 - d. Give the five number summary for horsepower.
 - e. Calculate the sample range and sample IQR for these data.
 - f. Looking at the box plot describe the shape of the distribution of horsepower.
 - g. Looking at the box plot, are there any apparent outliers? If so, what are their values?
 - h. Give the sample mean and sample standard deviation for these data.
 - i. Did JMP split the stems in the stem and leaf plot?
 - j. 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.