University of California, Santa Cruz
Department of Statistics
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Statistical Methods for the Biological,
Environmental, and Health Sciences
STAT 007

Answers to Quiz 2

In a cross-sectional study, the blood alcohol content (g/dL) of drunk drivers involved in fatal car crashes of 145 subjects was measured. From the study, the following statistics were computed:
the mean is 0.118, the median is 0.093, the midrange is 0.494, the range is 0.988, and the standard deviation is 0.035.
Answer the following questions regarding this study:

a) When constructing a table of the frequency distribution of the previously described blood alcohol content, the first two classes are 0.08 - 0.11 and 0.12 - 0.15. What is the class width? Explain how you obtain this value.
The class width is 0.04 ***[1 pts.]****. This value is obtained as the difference between 0.12, the lower class limit of the second class, and 0.08, the lower class limit of the first class* ***[2 pts.]****.*

b) Additional to the blood content, the age of the subjects involved in the study is asked. The first row of the stem-and-leaf plot of the age of the subjects is 1 | 67889. Identify the values represented by that row.
The ages of the subjects in that row of the stem-and leaf plot are 16, 17, 18, 18, 19 ***[3 pts.]****.*

c) Regarding the mean and median of the blood alcohol content. Would you say that the shape of its distribution is left-skewed, symmetric, or right-skewed? Justify your answer.
The shape of the distribution seems to be right-skewed ***[1 pts.]*** *because the mean is greater than the median, which is something that is observed when the shape of a distribution is right-skewed* ***[2 pts.]****.*

d) A subject has a blood alcohol content of 0.19 g/dL. Would you say that this is a significantly low, not significant, or significantly high value? Justify your answer.
This questions can be answered in two ways: Using the rule of thumb or using zScores.
Option 1: The blood alcohol content of 0.19 is a significantly high value ***[1 pts.]*** *because it is greater than* $\overline{x} + 2s = 0.118 + 2 * 0.035 = 0.188$ ***[2 pts.]****.*
Option 2: The blood alcohol content of 0.19 is a significantly high value ***[1 pts.]*** *because it's zScore* $z = \frac{0.19-0.118}{0.035} = 2.057$ *is greater than 2* ***[2 pts.]****.*