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**DS 710**

**R Programming Assignment**

**Assignment 3**

1. **Analyzing the running speed of mammals**
2. In R, type

install.packages("quantreg")

data(Mammals, package="quantreg")

This will load a data set called Mammals, on the maximum land speed of various species of mammal.  Attach the data and look at the first few lines.

(Source:  Garland, T. (1983) The relation between maximal running speed and body mass in terrestrial mammals, *J. Zoology*, 199, 1557-1570.

Metadata:  <http://vincentarelbundock.github.io/Rdatasets/doc/quantreg/Mammals.html>, accessed 7 June 2015.)

**Ans:**

**> attach(Mammals)**

**> head(Mammals)**

**weight speed hoppers specials**

**1 6000 35 FALSE FALSE**

**2 4000 26 FALSE FALSE**

**3 3000 25 FALSE FALSE**

**4 1400 45 FALSE FALSE**

**5 400 70 FALSE FALSE**

**6 350 70 FALSE FALSE**

b. Decide whether either of the quantitative variables should be transformed.  Justify your decision using appropriate plots and/or descriptive statistics.





**The quantitative variable “weight” should be transformed. A plot of the histogram for weight is heavily skewed to the right and transforming the variable will normalize the data. The histogram plot for the speed is not skewed and does not need to be transformed.**

c.  Use appropriate graphs and/or descriptive statistics to describe the relationship between maximum land speed and body weight.  Does it matter whether the animal is a “hopper” (such as a kangaroo)?  Explain why you chose the graphs and/or statistics that you chose.



**The scatterplot of weight against speed shows a weak positive correlation between the two variables. A correlation coefficient of 0.5751193 further indicates that the weight and speed have a moderately positive correlation.**



**The shape of the barplot is another indication that the weight of a mammal is not necessarily a predictor of that mammal’s maximum speed.**

**Both graphs seem to produce very similar conclusions that the weight and speed are moderately positively correlated but not strong enough to conclude that there really is any correlation between the two attributes of the mammals in our data set. In other words, the weight of an animal is a general indicator that it has higher maximum speed than that of less weight.**

Submit your graphs and written analysis and justifications as a .doc, .docx., or .pdf document.