

STAT 145
Summer 2016
Regression Example

Name (Print): _____

Today we will revisit a 1905 study which was done to determine the relationship between head size and weight of the brain. Since we can not easily weigh somebody's brain (while they are still alive), we would like to use head size to predict brain weight. A subset of the data from the study is given below.

Head Size (in^3)	Brain Weight (mg)
210	2.7
220	2.9
230	2.8
250	3.0
280	3.4

1. Label the explanatory and response variable.
2. Create a Scatterplot of the data.



3. Calculate the mean and standard deviation of Head Size.

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4. Calculate the mean and standard deviation of Brain Weight.

 5. Calculate the correlation between the two variables.

 6. Calculate the slope (b) of the Regression Line.

 7. Calculate the intercept (a) of the Regression Line.

 8. Write out the equation of the Regression Line. Carefully plot this on you scatterplot.

 9. Think about, and answer each of these questions in terms of the problem.
 - (a) What is the value of r^2 ? What does it mean?

 - (b) What is the physical meaning of a? Does it make sense?

 - (c) What is the physical meaning of b?

 - (d) Your friend has a head size of 250 in^3 . What do you predict his brain weight is?

 - (e) If his brain weight was actually 3.0 mg, what is the residual for your friend?

 - (f) Now let's do some **extrapolation**, if you meet somebody whose head is 100 in^3 , what does your regression equation predict his brain will weigh? Do you trust this?