Q4(a) Scatter plot of PIQ versus MRI count

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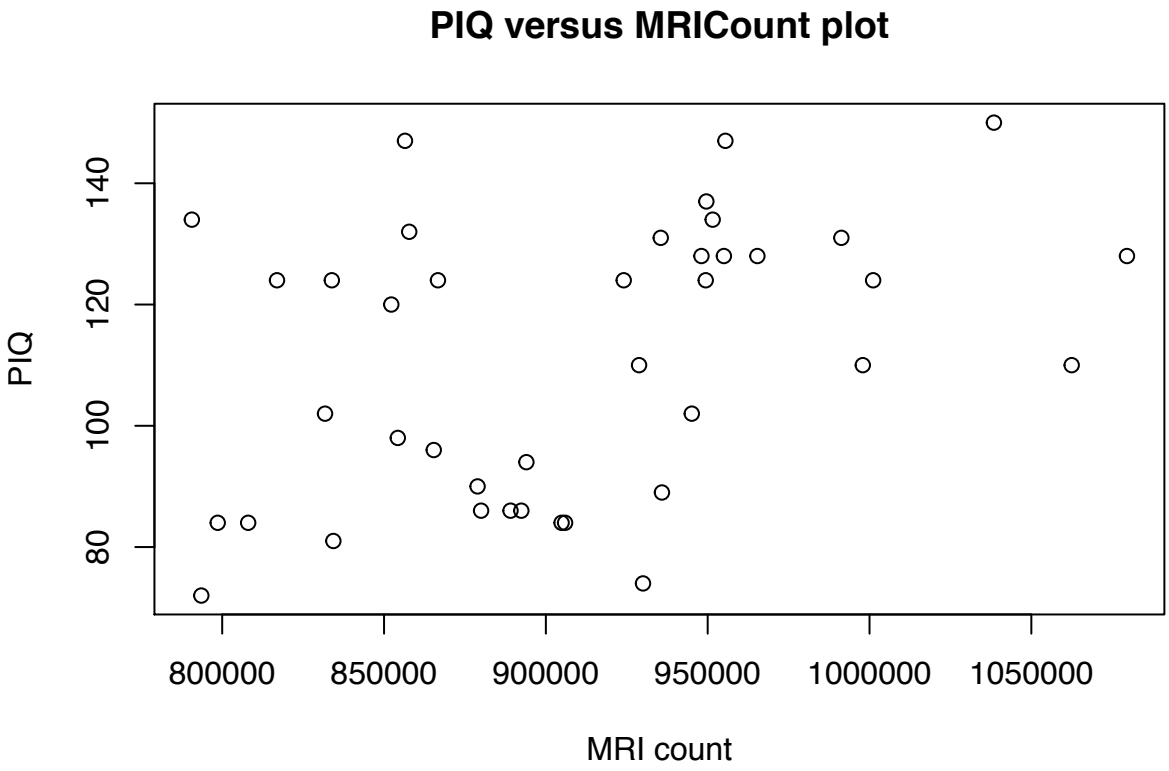
# scatter plot of PIQ versus MRI count
brain = read.table("/Users/doganakad/Desktop/uoft/first semester/STA302/A1/BrainData.csv",sep=" ",header=T)
#complete the following plot() command to get the scatter plot
plot(brain$MRIcount, brain$PIQ, main="PIQ versus MRICount plot", xlab="MRI count", ylab = "PIQ")
```



Q4(b) Regression analysis for two groups

Regression	R^2	Intercept (b_0)	Slope(b_1)	MSE	p-value for $H_0 : \beta_1 = 0$
High-IQ groups	0.0405	1.100e+02	2.265e-05	73.51348	0.3948
Low-IQ grups	0.3436	1.6363	1.003e-04	88.7552	0.0066

i.) Slope being small means that a change in the predictor variables causes a small change in the response variable. A change in MRI count will have a very small change in PIQ.Only looking at the slopes, we can't exactly say anything. We also need to take in account of their intercepts.

ii.) Since low-IQ groups have better R^2 value, they give a better fit if we use R^2 as a criteria.

iii.) Since high-IQ groups have lower MSE, they give a better fit if we use MSE as a criteria.

iv.) The value of R^2 indicates how close the data is to the fitted regression line whereas MSE measures the average of the squares of the difference between the estimator and what is estimated. It is reasonable because there is always a statistical error when fitting a regression line since the relationship between variables is not perfect, therefore lower MSE is more accurate.