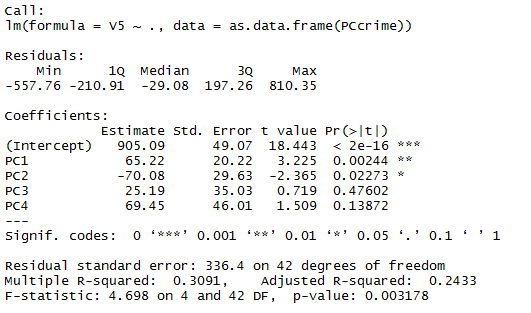
ISYE 6501, Week 6 HW

**Question 1**

Using the same crime data set as in Homework 5 Question 2, apply Principal Component Analysis and then create a regression model using the first 4 principal components. Specify your new model in terms of the original variables (not the principal components), and compare its quality to that of your solution to Homework 5 Question 2. You can use the R function prcomp for PCA. (Note that to first scale the data, you can include scale. = TRUE to scale as part of the PCA function.)

**Response –**

After PCA, the regression model came out to be –



Regression equation –

Crime rate = 905.1 - 21.28M + 10.22So + 14.32\*Ed + 63.45\*Po1 + 64.55\*Po2 -14.005\*LF – 24.44\*MF + 39.83\*Pop + 15.43\*NW -27.23\*U1 + 1.42\*U2 + 38.6\*Wealth - 27.5\*Ineq + 3.29\*Prob – 6.612\*Time