

Pre-lab 5

Stats 413: Applied Regression Analysis

due Oct 29, 2020 before the first lab session

Pre-labs are due on Canvas on the due date. For problems that require programming, please properly comment your code and submit it together with any output. You are encouraged to collaborate on pre-labs with classmates, but the final write-up (including any code) **must be your own**.

1. **Using the `which` function.** Generate a vector Z of 100 iid standard normal variables. Use `which` to find the indices for which $Z_i > 1.8$. Print the values of Z_i for these indices. Use `which` to find the index of $\max_i Z_i$ and $\max_i |Z_i|$.
2. **Converting data frames to matrices.** Import the `Carseats` dataset from the ISLR package. Convert the variable `Sales` to a vector of length 400. Remove the three categorical variables, then convert the remaining continuous variables in the dataset to a matrix of size 400×7 . Directly compute the estimate $\hat{\beta}$ for the regression of `Sales` on these seven continuous variables. (There is no need to add a column for the intercept.) (Hint: the functions `data.matrix` and `crossprod` may be helpful here.)

Please properly comment your code so that the purpose of each block of code is clear.