

STT3851 Homework 8

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Due – March 18

Load the **Carseats** data set from the **ISLR** library. Be sure to explore this data set before answering the questions below. When exploring, the R commands such as `?Carseats`, `str()`, `head()` might be helpful.

1. Fit a linear regression to predict the ‘Sales’ using ‘Age’ and ‘Income’.
2. Conduct a hypothesis test to check if there is a relationship between ‘Sales’ and the predictor variables ‘Age’ and ‘Income’.
 - (a) Null and alternative hypothesis:
 - (b) Test statistic
 - (c) p -value
 - (d) Make the decision:
3. Fit a linear regression to predict the ‘Sales’ using ‘Age’, ‘Income’ and the interaction between ‘Age’ and the ‘Income’.
4. Conduct a hypothesis test to check if the interaction term is useful in the model above
 - (a) Null and alternative hypothesis:
 - (b) Test statistic
 - (c) p -value
 - (d) Make the decision: