

Mini Assignment - Modelling

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This dataset comes from <https://www.ers.usda.gov/data-products/state-export-data.aspx>

This dataset refers to the agricultural exports from the USA from 2000 to 2018. For more info, visit the website. You are hired to offer insight into the country's agricultural exports and the possible variables that impact or has an effect on the exports.

```
library(readr)
library(reshape2)
library(dplyr)
#install.packages("varhandle")
library(varhandle)
Export <- read_csv("ExportsData.csv")
Exports<-melt(Export, variable.name="Year", value.name="Exports", id.vars=c("Type","Commodity"))
Exports<-Exports%>%mutate(Year=unfactor(Year)) #unfactor() is from {varhandle} package
```

1. You are interested in seeing the effect of Year and Type on Exports. Fit the appropriate Model and answer the following questions:
 - a. Is there a relationship between the predictors and the response?
 - b. How strong is the relationship between the predictors and the response?
 - c. What is the effect of the predictors on the response?
 - d. Are the predictors good predictors of the response?
 - e. How accurate are the predictions based on your model?
 - f. Use a model/variable selection algorithm to select the best model to predict Exports. You may include Cross Validation, but it is not necessary.

In the following code, I create a new variable called ExportsCategory, where AboveAverage refers to the exports more than average and BelowAverage refers to those export below the average.

```
Exports<-Exports%>%mutate(ExportsCategory=ifelse(Exports>mean(Exports),"AboveAverage","BelowAverage"),
  ExportsCategory=factor(ExportsCategory))
```

2. Now, fit the appropriate model to discuss the effect of Year and Type on ExportsCategory. Answer the following questions.
 - a. Is there a relationship between the predictors and the response?
 - b. How strong is the relationship between the predictors and the response?
 - c. What is the effect of the predictors on the response?
 - d. Are the predictors good predictors of the response?
 - e. How accurate are the predictions based on your model?
 - f. Use a model/variable selection algorithm to select the best model to predict ExportsCategory. You may include Cross Validation, but it is not necessary.