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**MSDS 6372 Group Project I**

**INTRODUCTION:**

For our group project, we decided to take a look at the professional football team the New England Patriots. Our goal is twofold:

1) To determine which statistics explain the number of regular season wins for the Patriots over the last 18 seasons since Tom Brady has been playing for them.

2) \*\*\*whatever we are doing for our two-way ANOVA\*\*\*

**DATA DESCRIPTION:**

Our dataset includes all offensive and defensive stats for each of the Patriots’ past 18 seasons. Each season is one observation.

**EXPLORATORY ANALYSIS:**

We used SAS to complete our first objective and R to complete our second.

**OBJECTIVE 1:**

**Problem:**

Which variables correlate to regular season wins for Tom Brady’s Patriots?

**Overall Approach:**

First, we created multiple scatterplot matrices to see which if any variables show a correlation with regular season wins. The reason why we created multiple matrices is that there were 70 variables, and nothing would show if we created one matrix.

**Type of Selection:**

LARS

LASSO

stepwise

cross validation leave one out forward selection

**Checking Assumptions:**

multiple regression assumpitons:

resiguals are normally distributed (preidctors and response variables don’t have to be)

constant variance

observations are independent

multicollinearity (check thru VIFs)

outliers and leverage (check thru residual diagnostics)

**Comparing Models:**

LARS

LASSO

stepwise

cross validation leave one out forward selection

**Parameter Interpretation:**

RegSeasonWins = 8.567177 + 0.023588(PointsDifferntial)

**Interpretation:**

If the New England Patriots finish the regular season with a 0 point differential, they will win 8.567177 games. 315.11 PD

**Confidence Intervals:**

95% confidence limits intercept 7.09350 10.04086

95% confidence limits pointsdifferential 0.01498 0.03220

**Final Conclusion from the Analyses of Objective 1:**

Bill Belichick is the real goat, not Tom Brady.

**APPENDIX:**

[1]