Predicting Fantasy Points using Linear Regression

Utilizing the power of Simple, Lasso, and Ridge Regression to predict the fantasy points of a player's next game

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Project Objective & Target Audience

Develop an optimal Linear Regression model using a simple, Lasso, and Ridge types to predict the future fantasy points' outcome in a subsequent game for a Running Back or Wide Receiver in the National Football League (NFL).

- Fantasy Football players
- NFL statistics enthusiasts

Data

Data Source

2019 Running Back and Wide Receiver Game Data
Source: Pro-Football-Reference

Data Analysis

Organize data based off player stats per game and run different linear regression techniques. The most accurate model will maximize Coefficient of Determination (R^2) and minimize Root Mean Square Error (RMSE).

~500 yards Rushing	~500 yards Receiving	16	1000+
Running Backs	Wide Receivers	Games per Player *Unless injured*	Rows of Data
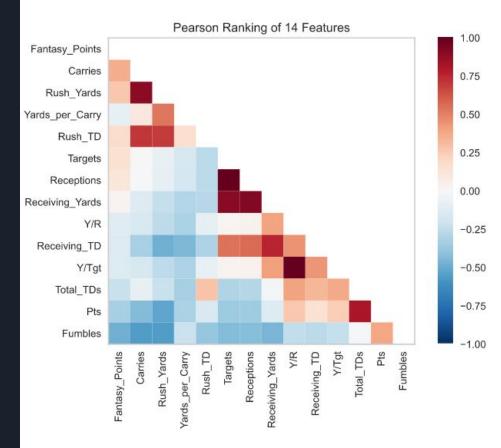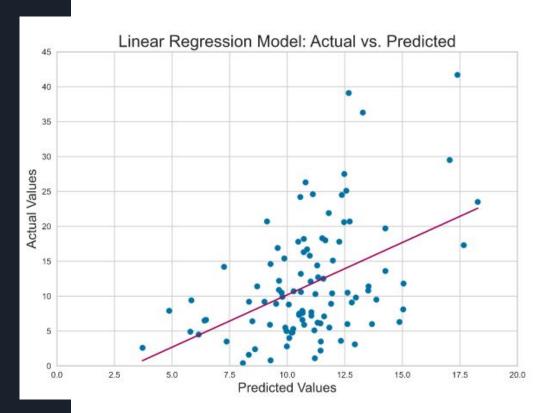
Potential Features and Target Variable

Carries

Rushing Touchdowns

Fantasy Points

Receiving Yards

Yards/Carry WR

Receiving TDs WR

Rushing Touchdowns

Receptions

Fumbles

Rushing Yards

Targets

Receiving Yards/Target
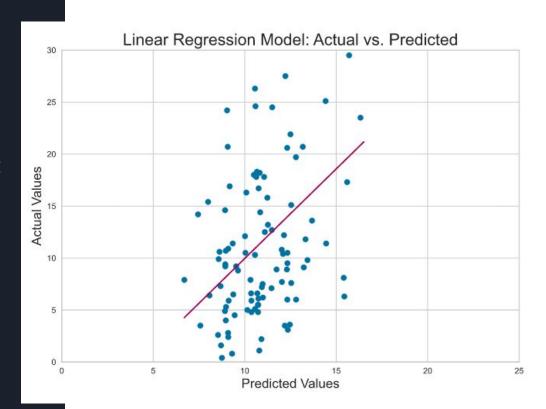
Features Correlation Heatmap

Pearson Ranking of 14 Features

Linear Regression

Linear Regression Model: Actual vs. Predicted
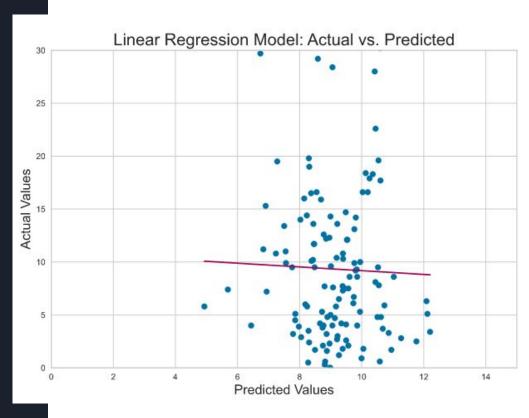
Final Linear Regression Model: Running Backs

Linear Regression Model: Actual vs. Predicted

Final Linear Regression Model: Wide Receivers

Linear Regression Model: Actual vs. Predicted

Predicted vs. Actual Side-by-Side Comparison: Running Backs

Name	Tested Fantasy Points	Predicted Fantasy Points	Delta
Derrick Henry	10.8	15.60	4.80
Derrick Henry	39.1	11.24	27.86
Ezekiel Elliott	18	11.06	6.94
Ezekiel Elliott	10.5	12.15	1.65
Nick Chubb	36.3	11.74	24.56
Nick Chubb	9.8	10.04	0.24
Christian McCaffrey	23.5	10.75	12.75
Christian McCaffrey	29.5	9.35	20.15

Average	
Tested Fantasy Points	19.71
Predicted Fantasy Points	10.78
Delta	8.93

Predicted vs. Actual Side-by-Side Comparison: Wide Receivers

Name	Tested Fantasy Points	Predicted Fantasy Points	Delta
Michael Thomas	30.2	9.27	20.93
Michael Thomas	4.8	10.68	5.88
Keenan Allen	30.6	9.61	20.99
Keenan Allen	8.6	9.06	0.46
DeAndre Hopkins	4	11.76	7.76
DeAndre Hopkins	7.5	8.31	0.81
Julian Edelman	3	10.60	7.60
Julian Edelman	9.9	10.25	0.35

Average	
Tested Fantasy Points	10.57
Predicted Fantasy Points	9.25
Delta	1.32

Final Features

Rushing TDs RB

Carries RB

Receptions WR

Yards/Carry WR

Fantasy Points

Rushing Yards

Receiving TDs WR

Targets

Receiving Yards/Target

Receiving Yards

Conclusion

Future Iterations

4-week running average

Incorporate Defense's statistics

Compare to other linear regression models by Yahoo, ESPN, and etc.

Questions?

Residuals

Residuals for LinearRegression Model

Train $R^2 = 0.099$
Test $R^2 = 0.178$