NFL Quarterback Stats

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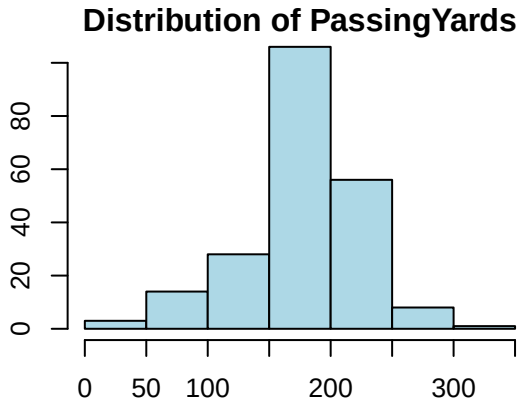
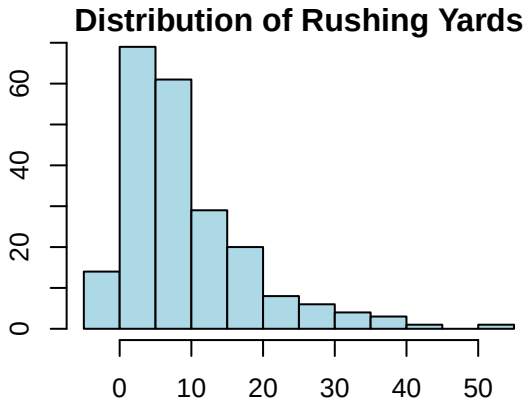
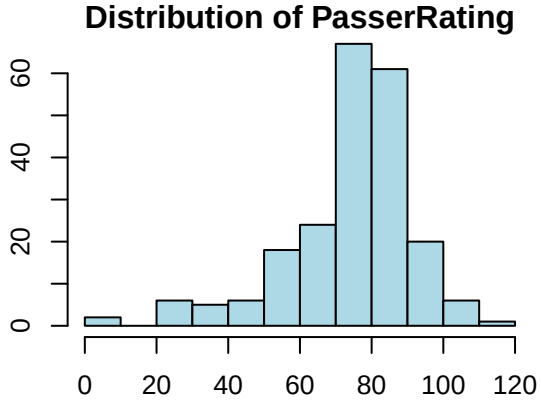
2025-12-05

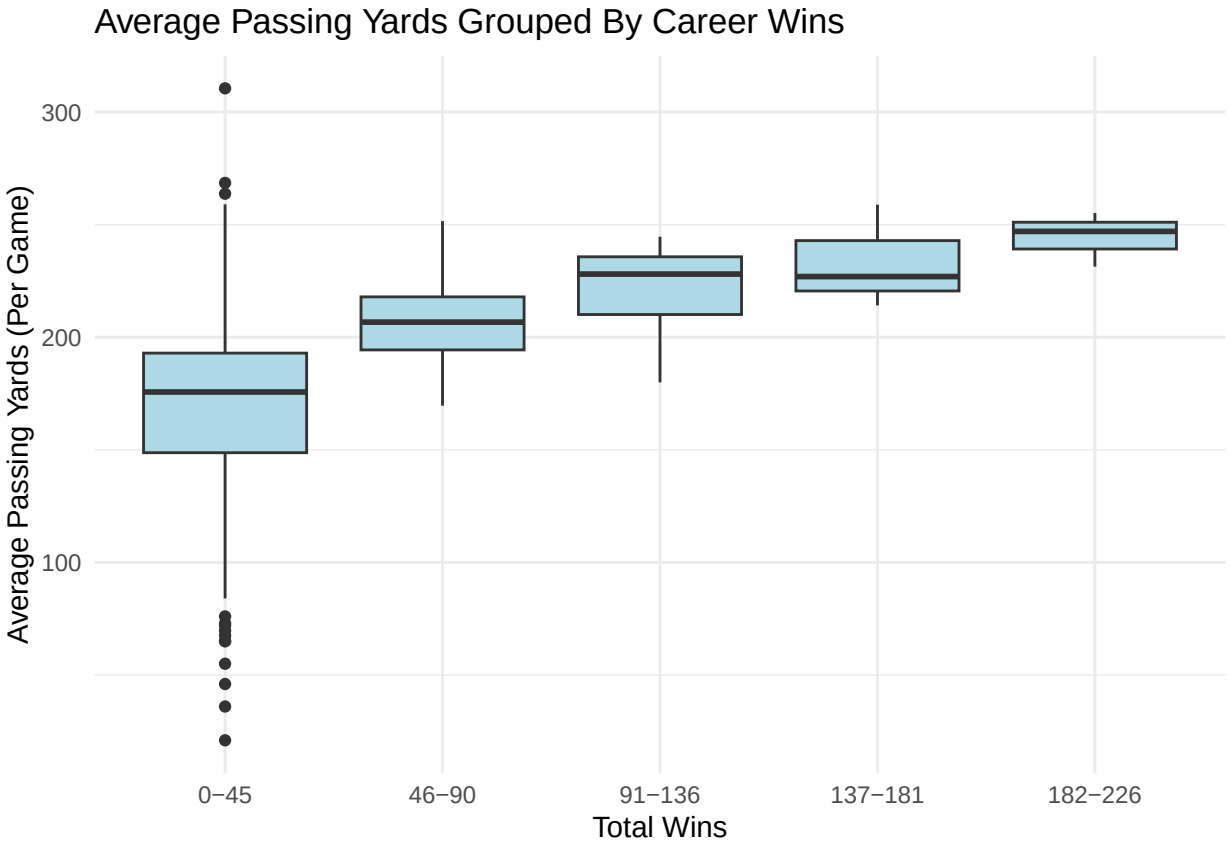
Abstract

This report analyzes historical NFL quarterback game log data to identify statistical performance indicators that correlate with and predict player win percentage. Quarterback performance is widely considered crucial to NFL team success, and understanding the specific metrics that contribute most significantly to winning can provide valuable insights. Key statistics, particularly *Passer Rating, Completion Percentage, and Touchdown Passes*, show strong positive correlations with win percentage, while interceptions show a negative correlation. Statistics like *rushing* show weaker relationships. Predictive models (Lasso and Stepwise Regression) were developed using these stats. The models achieved moderate predictive power (Test R-squared approx. 0.34-0.37), suggesting that while individual quarterback performance stats are important, other factors (team quality, defense, opponent strength) also significantly influence game outcomes. Passer Rating consistently emerges as a highly influential predictor.








Average Passing Yards Grouped By Career Wins
Average Passing Yards (Per Game)
300
200
100
0−45
46−90
91−136
137−181
182−226
Total Wins

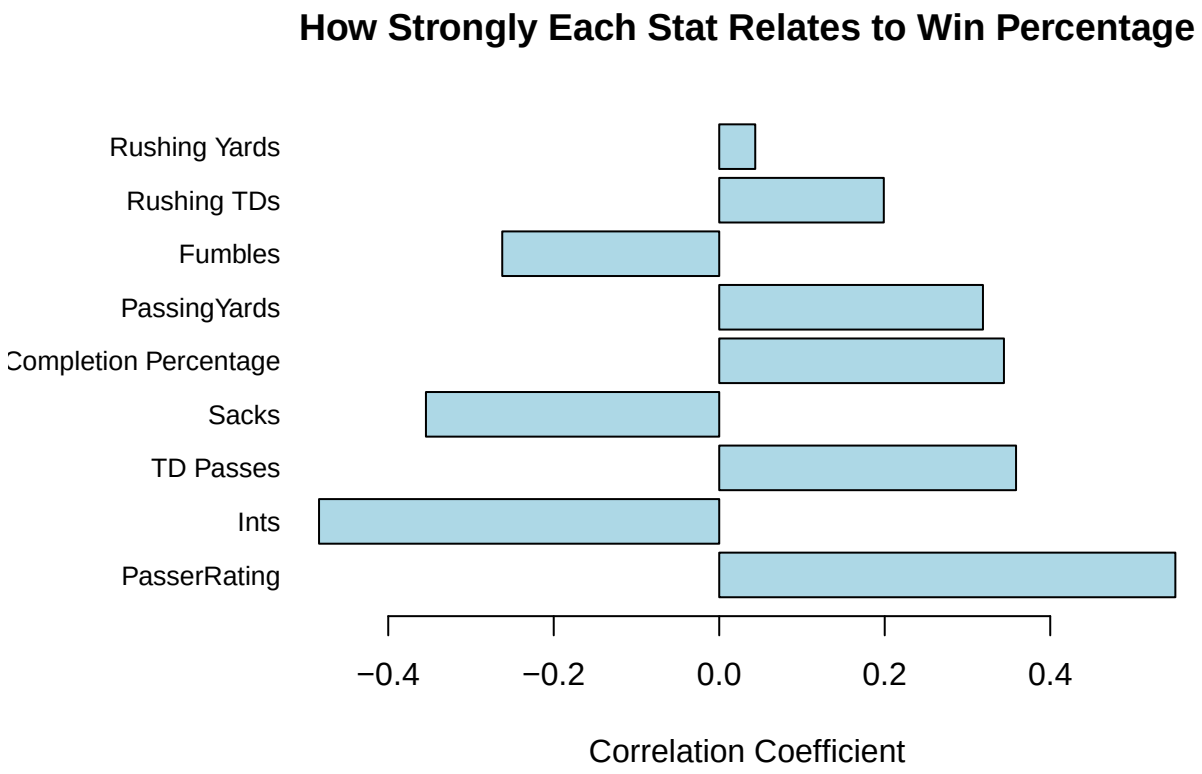


Table 1: Lasso Model Coefficients (Optimal Lambda)

	Coefficient
(Intercept)	0.2067
Completion Percentage	0.0000
PassingYards	0.0013
Rushing Yards	0.0024
PasserRating	0.0020
TD Passes	0.0076
Rushing TDs	0.0000
Ints	-0.1108
Sacks	-0.0240
Fumbles	-0.1294

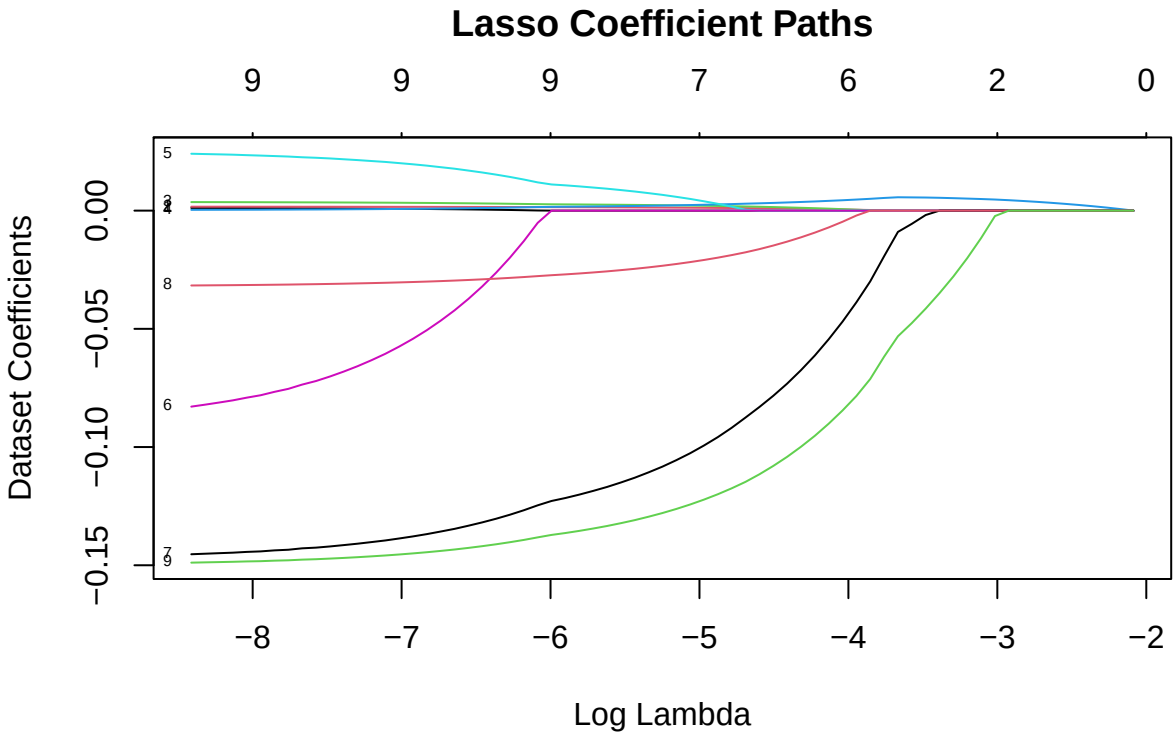


Table 2: Stepwise Regression Model Summary

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	0.3228	0.0677	4.7673	0.0000
PassingYards	0.0020	0.0003	6.6202	0.0000
Rushing.Yards	0.0030	0.0016	1.7982	0.0742
Ints	-0.1583	0.0281	-5.6289	0.0000
Sacks	-0.0323	0.0195	-1.6613	0.0988
Fumbles	-0.1610	0.0408	-3.9506	0.0001

Table 3: Model R-squared Comparison

Model	Data Set	R-squared
Lasso	Train	0.4263
Lasso	Test	0.3667
Stepwise	Train	0.4275
Stepwise	Test	0.3812