Which NFL Statistics Best Predict Team Wins? A Multi-Year Analysis

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Our Topic, Motivation, and Hypotheses

We are looking to see which stats can predict the wins of different NFL teams over the course of the season. We are comparing matching offensive and defensive statistics.

Our motivation comes from wanting to better understand the ways teams win in football and what winning strategies could be. This could also help coaching and front offices decide what the best priorities should be when creating a roster.

H_0: The {statistic measured} doesn't statistically contribute to the amount points that a team obtains in any given NFL regular season game from 2014 - 2024

H_a: The {statistic measured} statistically contributes to the amount of points that a team obtains in any given NFL regular season game game from 2014 - 2024

The {statistic measured} changes for each statistic we measured. This means there are 6 null hypotheses total.

$\alpha = 0.05$

What We Are Measuring

Pro football reference: Randomly 4 select regular seasons 2014-2024.
    The selected seasons: 2021, 2022, 2024, 2019

The statistics, found r and r^2 when matched with total yards per game for offense and total yards allowed per game were-
   - Passing Yards/Allowed Per Game
   - Rushing Yards/Allowed Per Game
   - Points Scored/Allowed Per Game
   - Turnovers/Takeaways Per game
As well as-
   - P value
   - R value

We used simple linear regressions for each statistic to find the p-values.
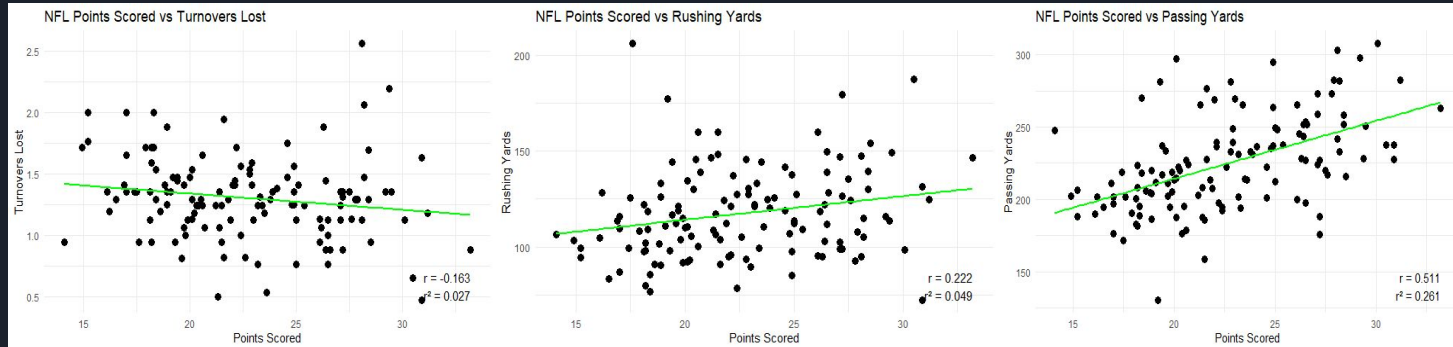
Offense

Turnovers Lost

- R value: -0.16
- P value > 0.05

Rushing Yards
- R value: 0.22
- P value < 0.05

Passing Yards
- R value: 0.511
- P value <0.05

Defense

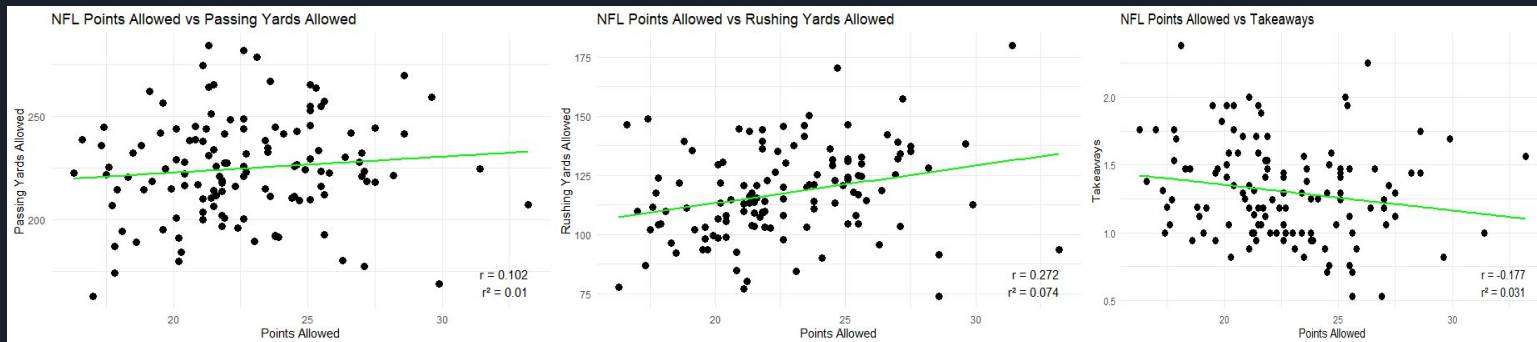Passing Yards Allowed

R value: 0.102
P value > 0.05

Rushing Yards Allowed

R value: 0.272
P value < 0.05

Takeaways

R value: -0.177
P value> 0.05

Conclusions:

Offense:
- Passing Yards Per Game had highest R value and the lowest P value out of all of the data points
- All of the offense values were statistically significant besides takeaways

Defense:
- Rushing Yards Allowed/Game had the lowest P value and the Highest R value
- Takeaways had the second highest R value
- Passing Yards Allowed/Game had almost no correlation with points allowed.