




Year to Year Statistical Correlation in the NFL

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Problem

Figure out which statistic allows for the most predictability year-to-year for each offensive category

Quarterbacks:

Passing Touchdowns

Passing Yards

Yards Per Attempt

Completion Percentage

Running Backs:

Rushing Touchdowns

Rushing Yards

Yards Per Carry

Wide Receivers:

Receiving Touchdowns

Receiving Yards

Yards Per Reception

Receptions

Methodology

Every individual player season from 2005 to 2015

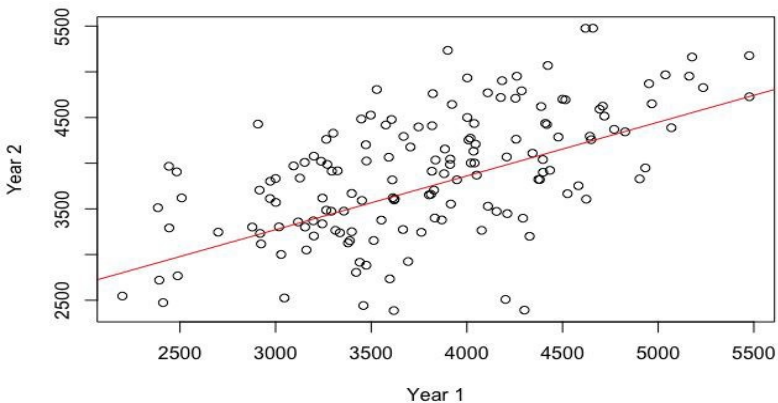
Group back-to-back players seasons to create correlation between seasons

Graph correlation from back-to-back years for each statistic

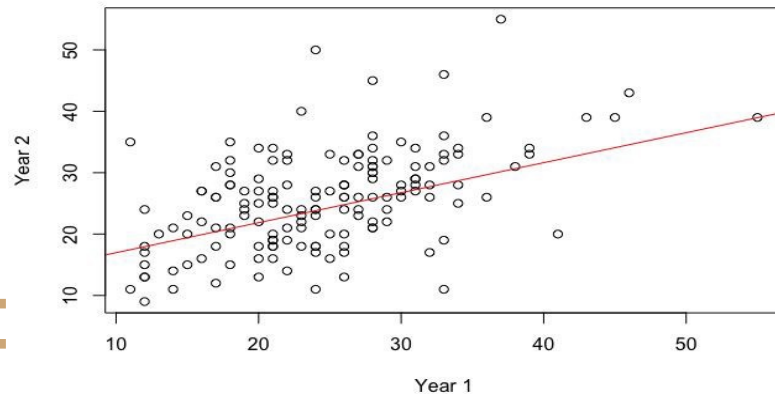
Find R value and line of best fit

Take the statistic with the greatest R value for each position

Passing Yards (R-Value: 0.575)

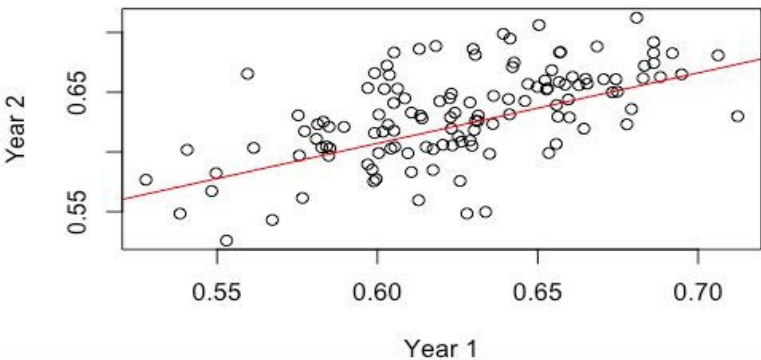


Passing Touchdowns (R-Value: 0.517)

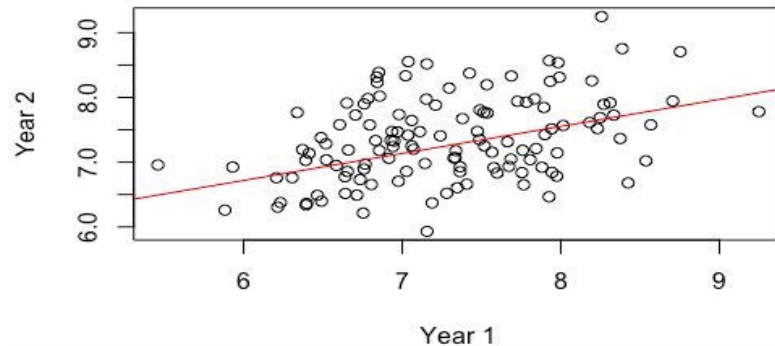


Results: Quarterbacks

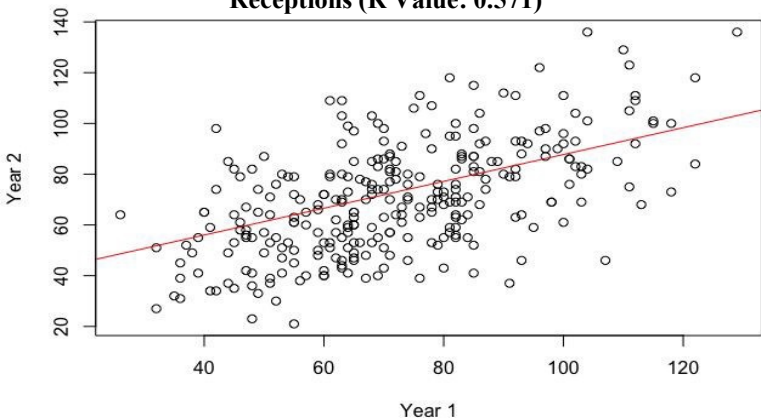
Completion Percentage (R-Value: 0.591)



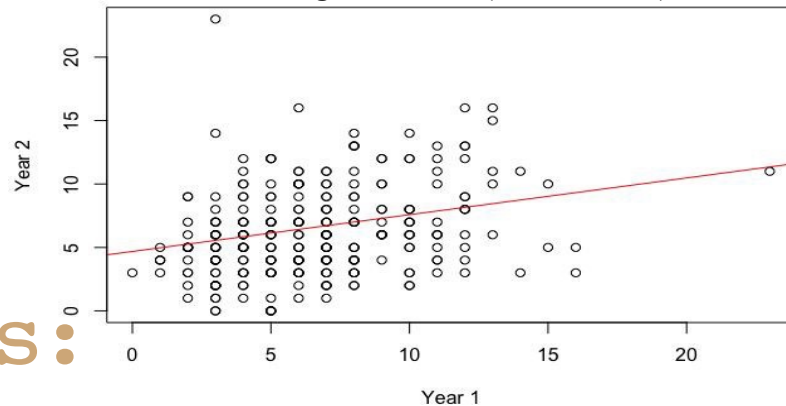
Yards Per Pass Attempt (R-Value: 0.392)



Receptions (R Value: 0.571)



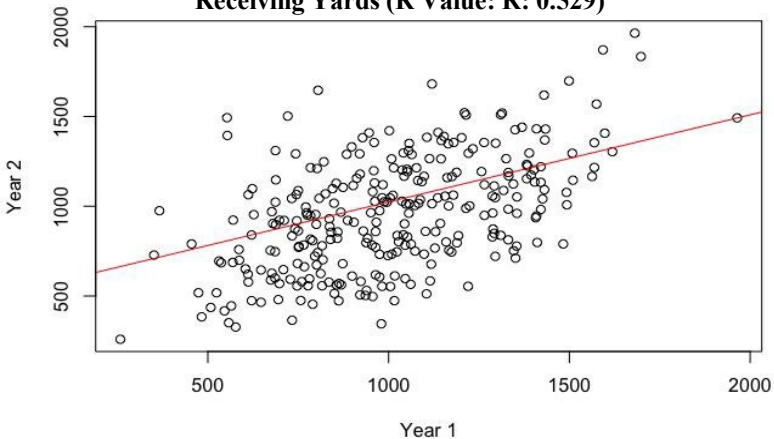
Receiving Touchdowns (R Value: 0.299)



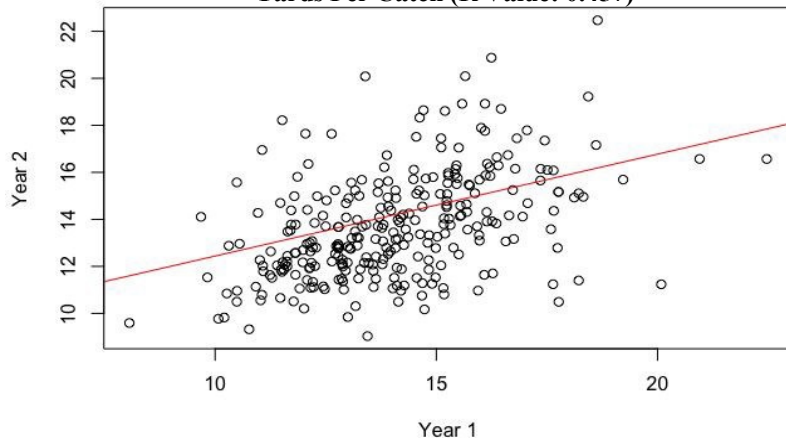
Results:

Wide Receiver

Receiving Yards (R Value: R: 0.529)

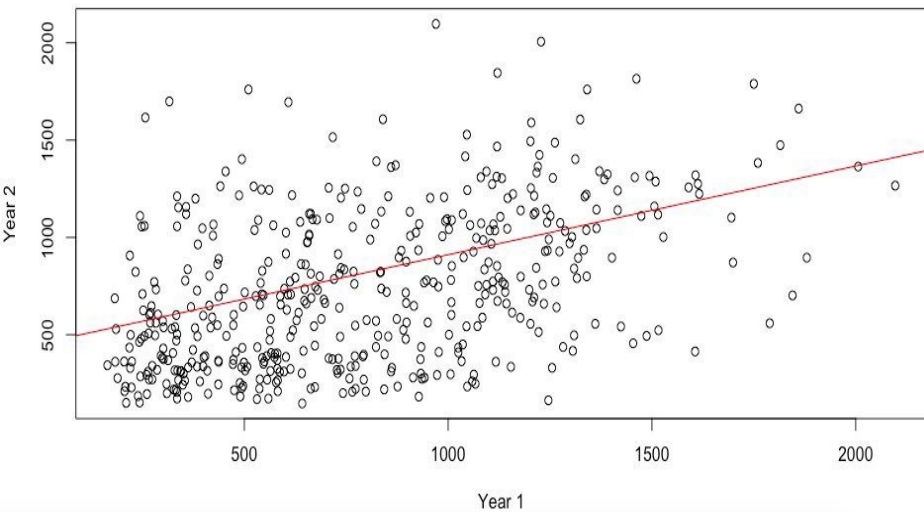


Yards Per Catch (R Value: 0.457)

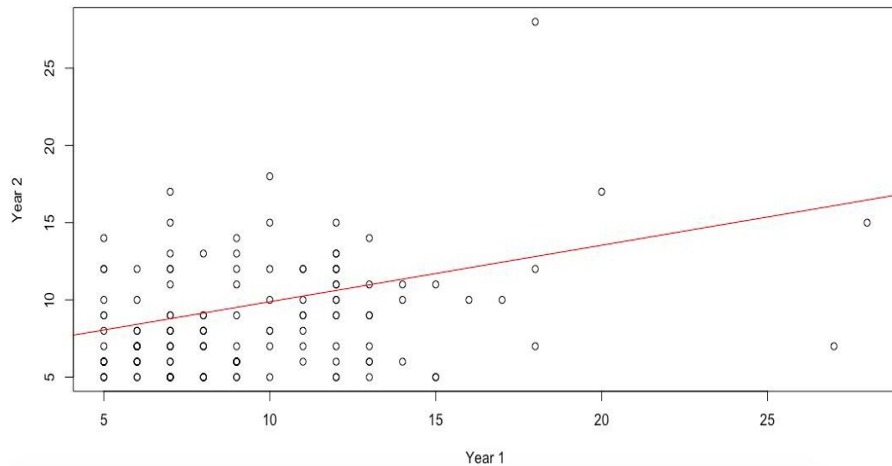


Results: Running Backs

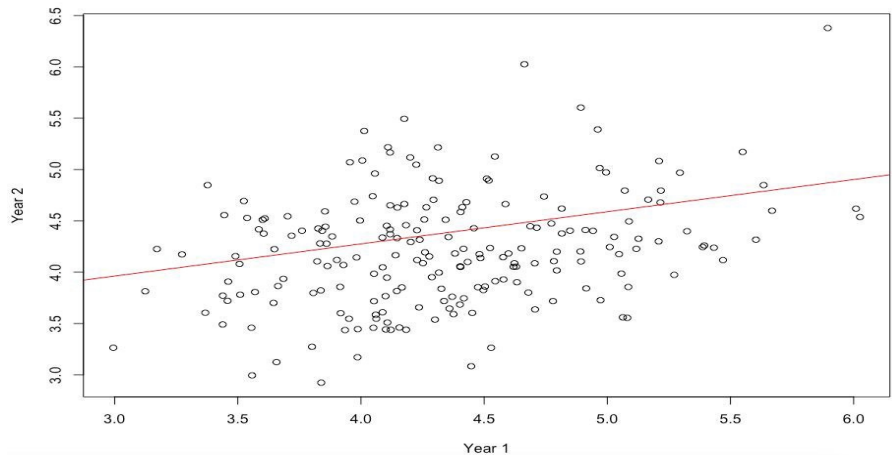
Rushing Yards (R value: 0.454)



Rushing Touchdowns (R value: 0.322)



Yards Per Carry (R Value: 0.296)



Conclusion

Quarterbacks: More year to year correlation than other positions

Touchdowns: Average R value of 0.379 across all three positions

Most Reliable Stat: Completion percentage

Most Volatile Stat: Yards per carry

Per-Attempt Stats: YPA (.392) and YPC (.296) both surprisingly low R values

Overall: The results were better indicators for which statistics should not be relied on, as no statistic was very successful in predicting year to year success

Faults

Limited number of players

More complex statistics exist that we didn't include

Difficult to create an equal index across all positions and players

Different number of games played

Increased and decreased roles from year to year

Limited number of years