

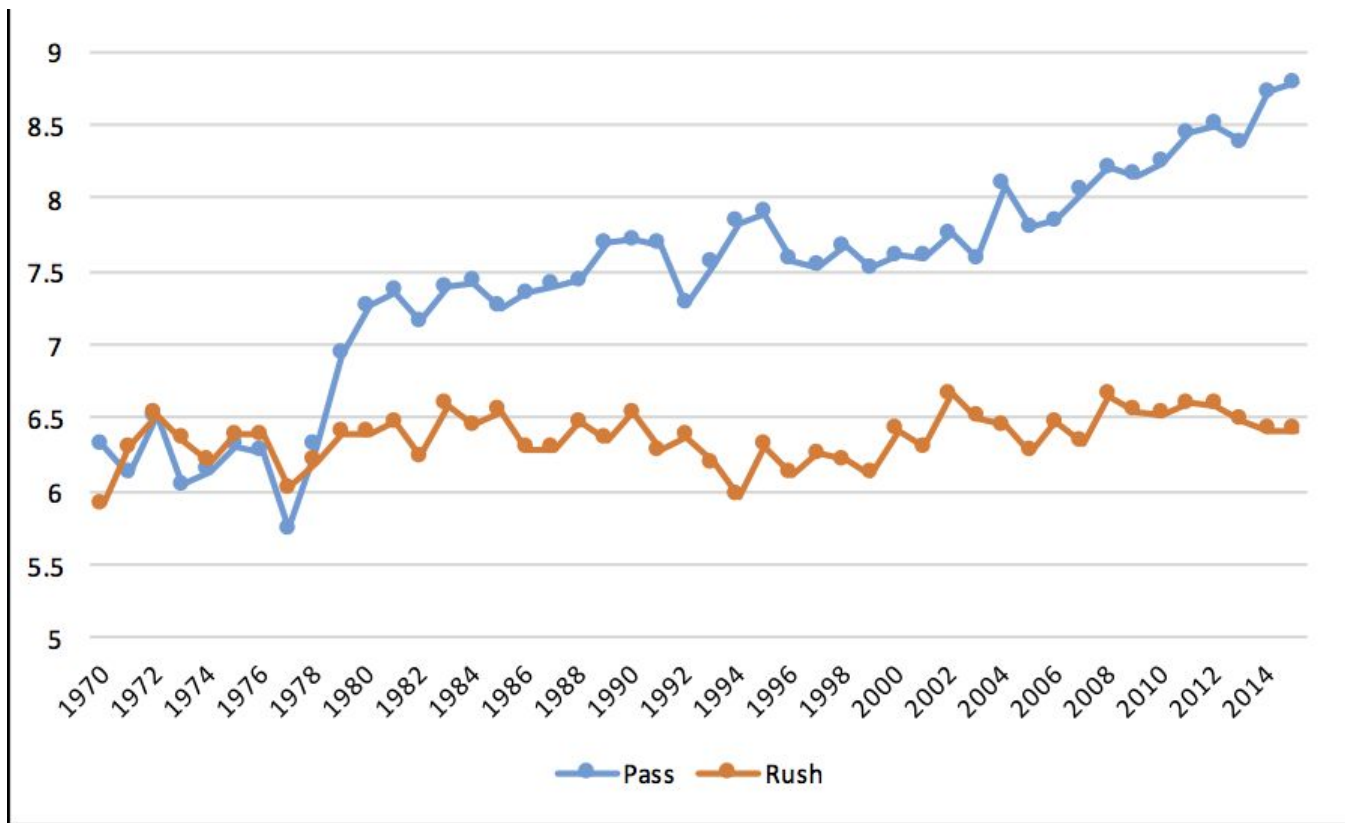
NFL Rushing vs. Passing

Why Don't NFL Teams Pass More Often?

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Historical Pass/Run Efficiency



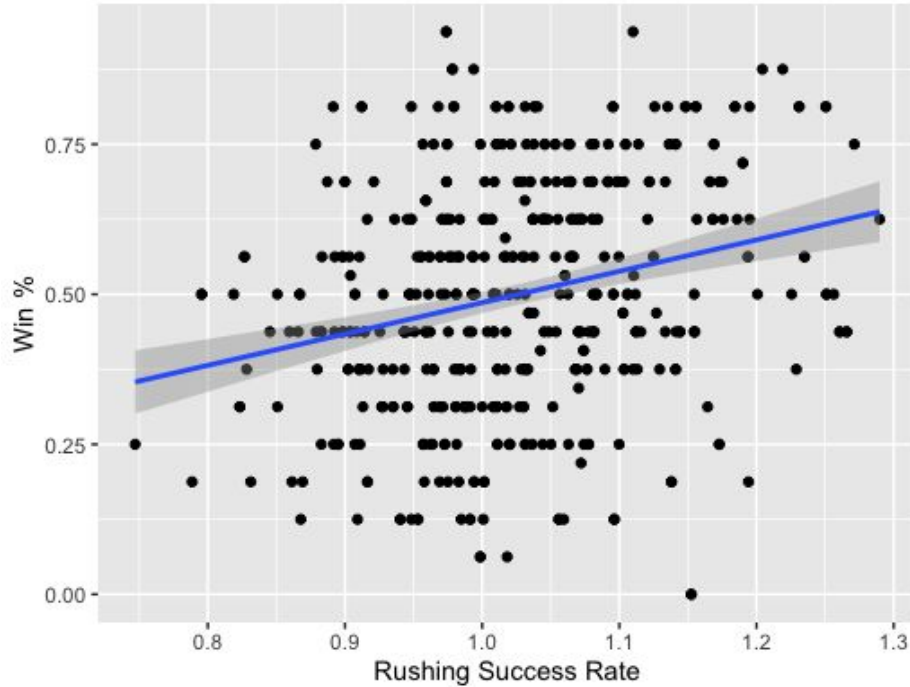
Background



- Yards/Pass Attempt in 2019 - 6.73
- Yards/Carry in 2019 - 4.4
- NFL Teams in 2019 only passed 57% of the time

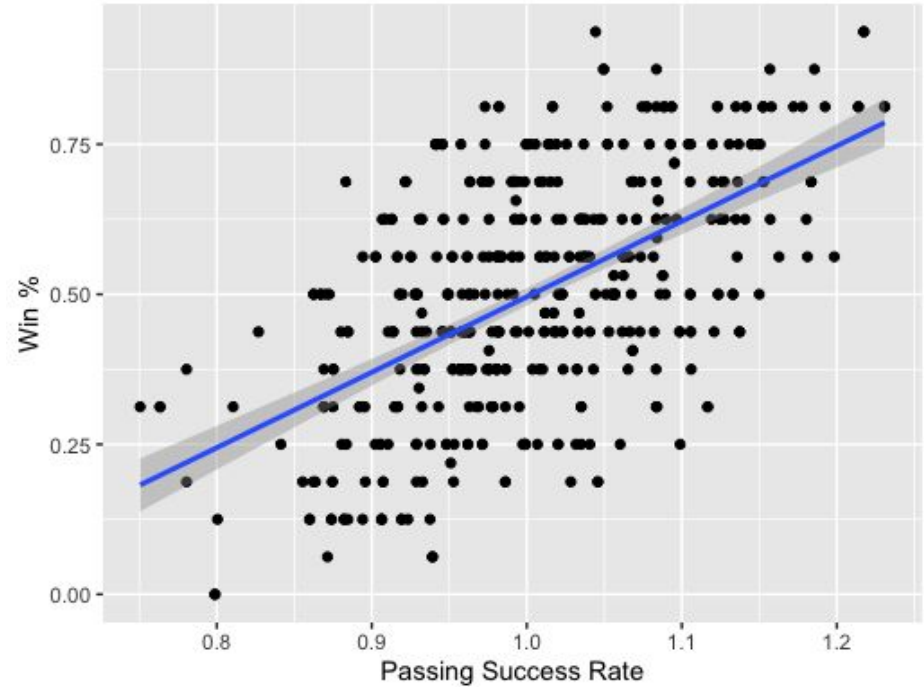
Graphing Success Rate vs Win %

Rushing Success Rate vs Win %



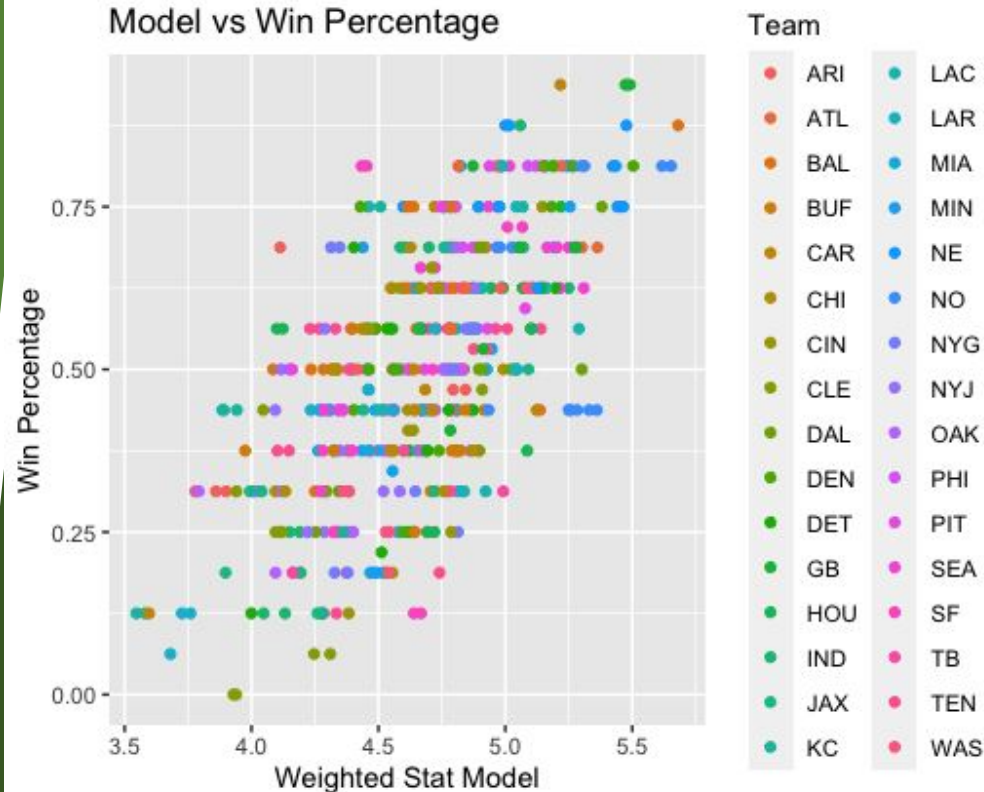
Correlation = 0.291

Passing Success Rate vs Win %



Correlation = 0.553

Graphing Predictive Models



Metrics Used

- Passing Success Rate
- Adjusted Sack Rate on passing plays
- Pass TD
- Rushing Success Rate
- Adjusted Line Yards on rushing plays
- Rush TD

Passing stats had an effect 1.5 x greater than rushing stats

So we asked...

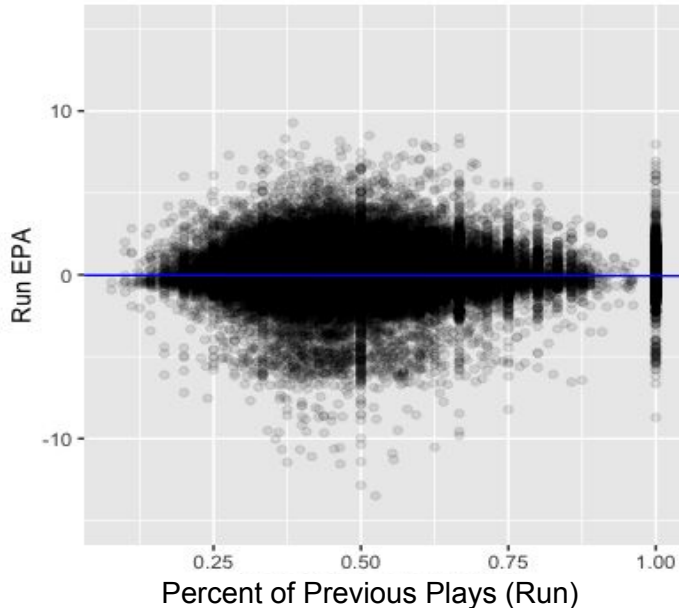
- *Why don't teams pass more?*
- *Does the value of passing diminish as you throw more often?*
- *Also, does passing efficiency increase if you have a more even play distribution?*



Playcalling Variation vs EPA



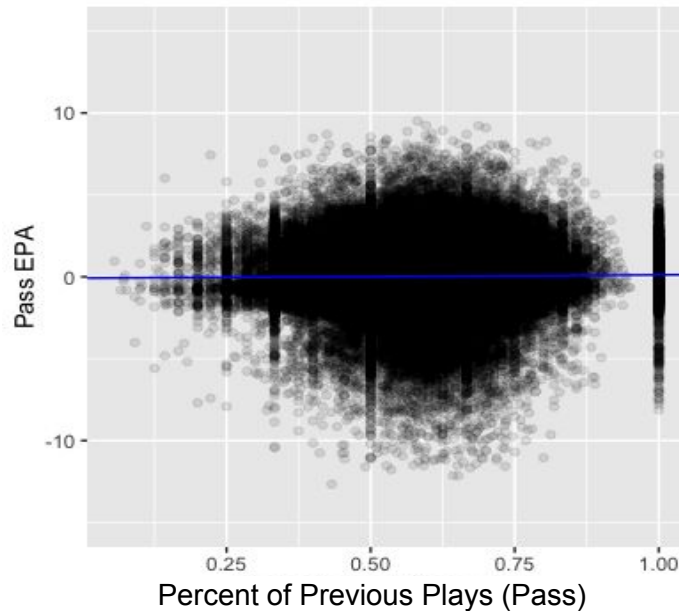
Run Ratio vs Run EPA



Rushing

The percentage of prior rushing plays called has no effect on the EPA of rushing plays

Pass Ratio vs Pass EPA



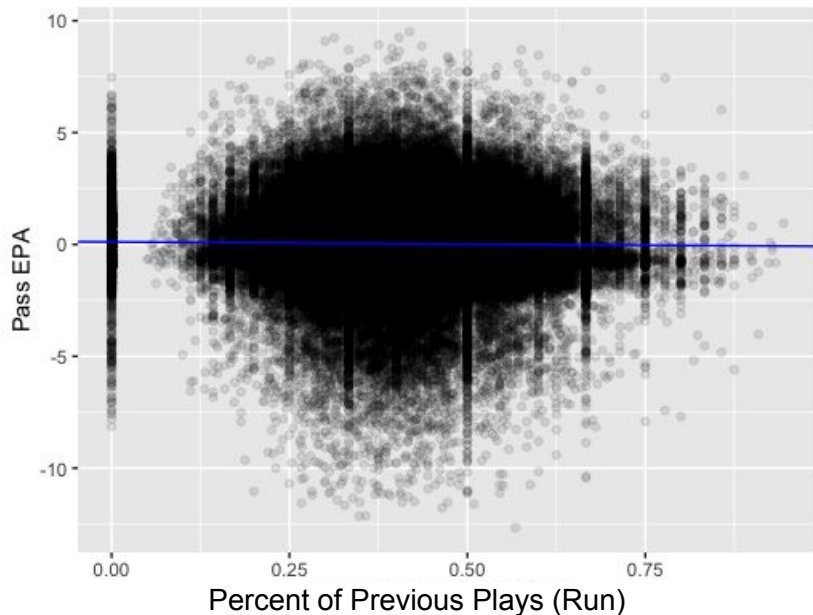
Passing

The percentage of prior passing plays called has no effect on the EPA of passing plays

Playcalling Variation vs EPA (cont'd)



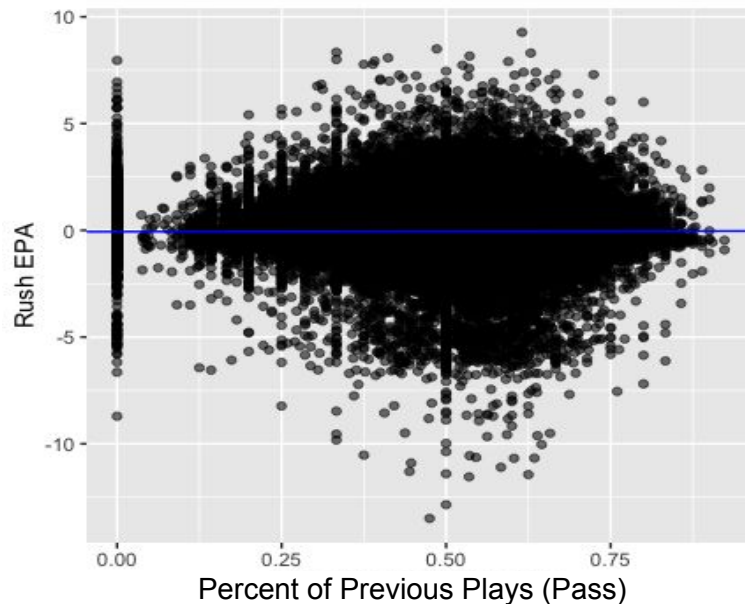
Run Ratio vs Pass EPA



Rushing

The percentage of prior rushing plays called has no effect on the EPA of pass plays

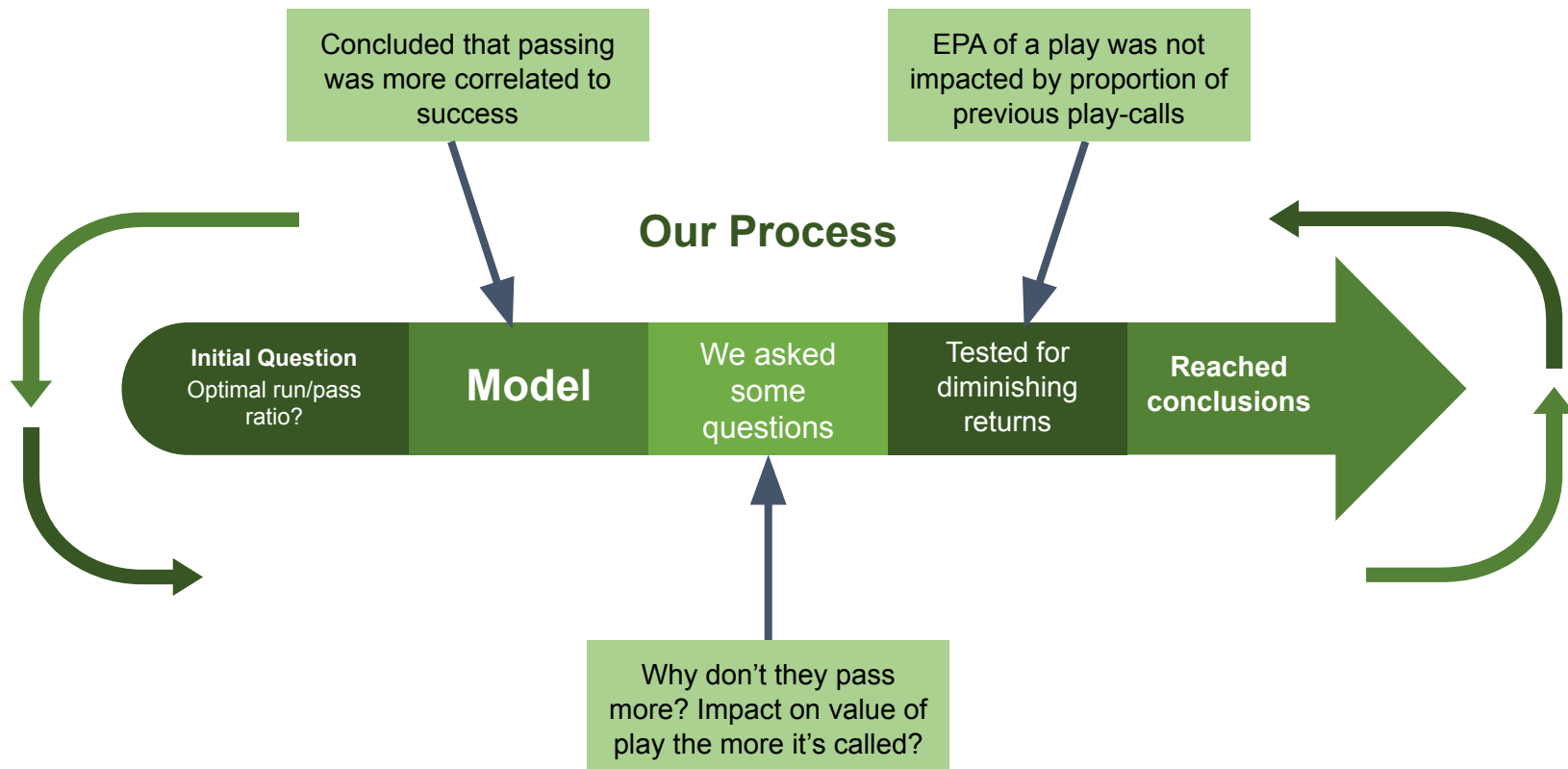
Pass Ratio vs Rush EPA



Passing

The percentage of prior passing plays called has no effect on the EPA of rushing plays

Summary



CONCLUSIONS



- ❖ Passing is far more valuable than rushing
- ❖ More evenly distributed run/pass play-calling does not lead to increased efficiency
- ❖ To the extent that teams increased pass frequency, there's no indication yet of a frequency that leads to diminishing returns
- ❖ We cannot calculate an optimal run/pass ratio until there is data showing that there is such a thing as too much passing

Sources

Data Sources:

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<https://www.footballoutsiders.com/>

<https://www.sharpfootballstats.com/rushing-success-rate-over-average--sroa-.html>

Background Reading:

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<https://fivethirtyeight.com/features/is-running-the-ball-back>

<https://fivethirtyeight.com/features/for-a-passing-league-the-nfl-still-doesnt-pass-enough/>

<https://thepowerrank.com/2018/09/24/the-surprising-truth-about-passing-and-rushing-in-the-nfl/>

<https://www.pro-football-reference.com/years/NFL/index.htm>

https://www.espn.com/nfl/story/_/id/8379024/nfl-explaining-expected-points-metric

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<https://www.footballoutsiders.com/stats/nfl/offensive-line/2019>



Thank you for listening!



Any questions?