Tech Titans

Running Up The Score

NFL Running Back Salary and Production Forecasting

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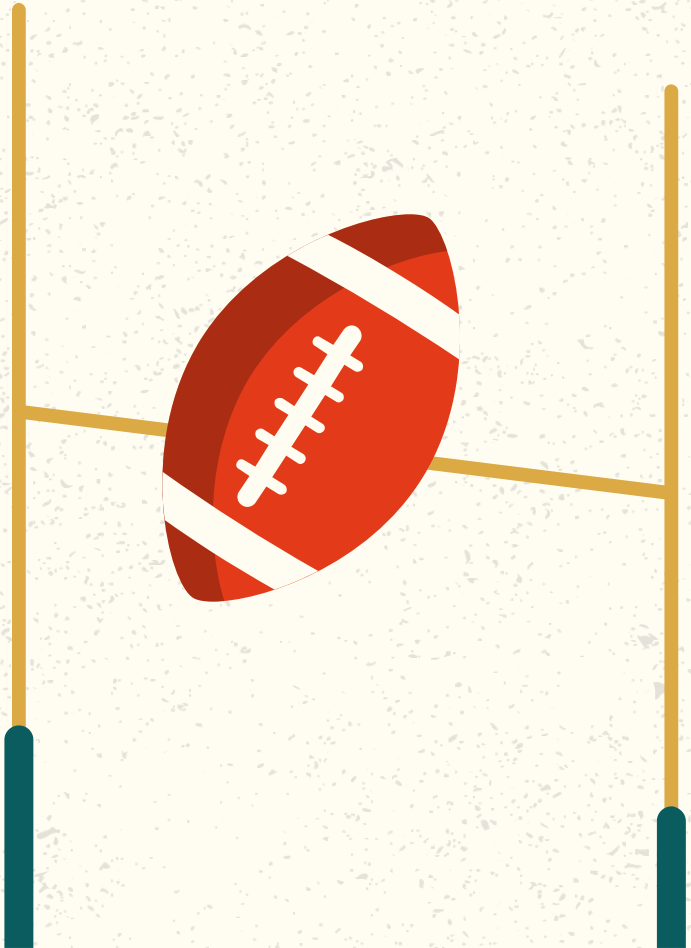
Overview
An Intro to the NFL,
for the uninitiated

National Football League

- NFL has 32 teams of 53 players, 17 games per season
- That's ~30,000 player-games per season
- Data ripe for the analysis!
- Of 19 positions per team, we'll focus on **running backs**



QUICK KEY TERMS

CAP HIT (SALARY CAP)

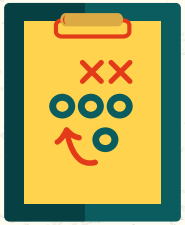
Cap Hit refers to the total salary penalty of a specific player towards their team's yearly total **Salary Cap,** usually equivalent to their total pay

RUNNING BACKS

We took a closer look at one position in particular: **running backs**, those who carry the ball in hand - the bell cows of their teams

PRODUCTION

In this study, we will define a player's **production** as **rushing yards/attempts** per season, a sum of the total yards/attempts by a particular player throughout a single season. We will also use **Touchdowns** as a metric for production in one instance.



What are we trying to learn?

What are the critical factors that most effectively determine running back cap hit?

- What is the correlation between player position and cap hit?
  - Any significant outliers?
- How does a running back's production correlate with their cap hit?
  - Are there any correlations present between cap hit and age/years of experience?

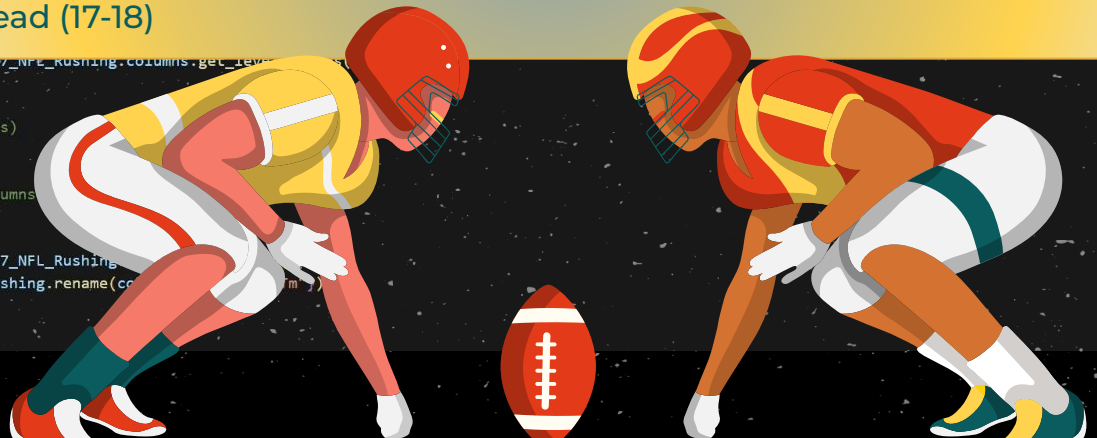
Our Datasets

NFL Player Data

- Basic stats, career stats, and game logs provided by Pro Football Reference (17-18), NFL Stats (17-19), and Stathead (17-18)

NFL Salary Data

- Contextualized salary cap data and cap hit %, both provided by Kaggle.com



The Merge

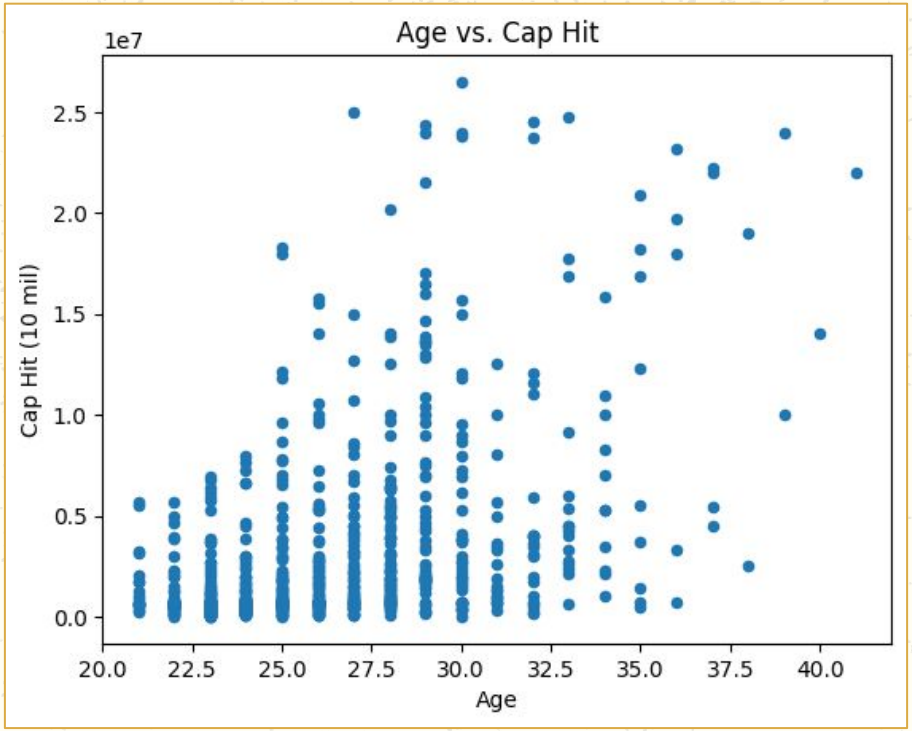
Our Master List

- We took the data from both player data and salary CSVs, scrubbed them, and combined them to make our final dataset

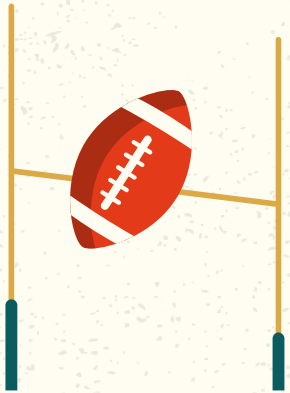
Data on the RUN

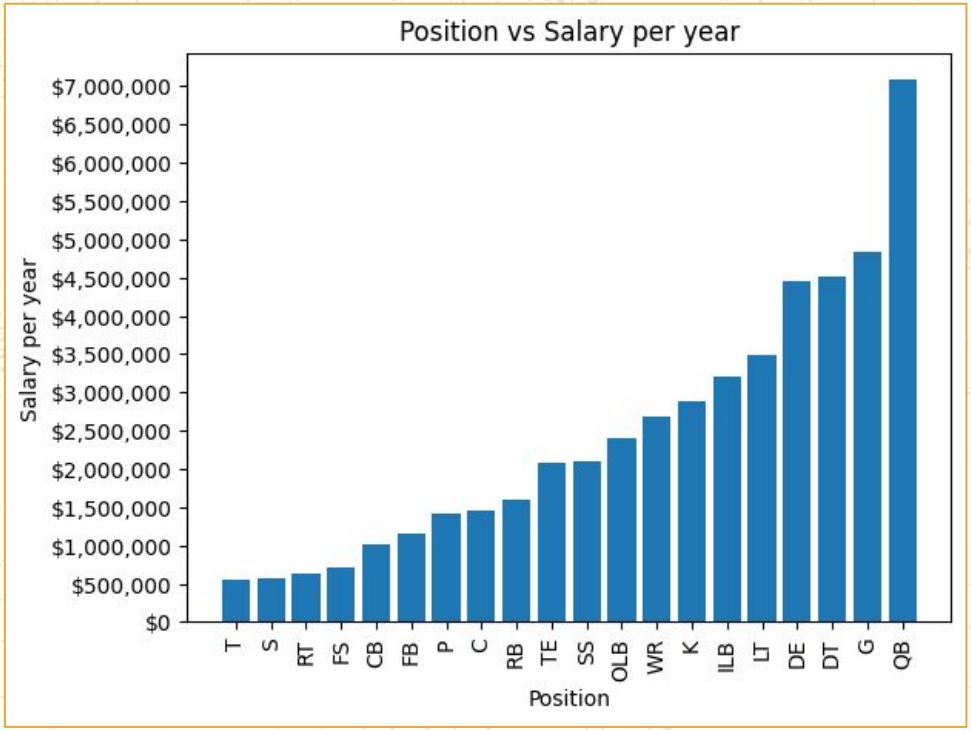
Please hold for a brief demo

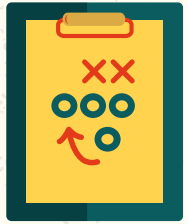
Age v. Salary


Age vs. Cap Hit
1e7
Cap Hit (10 mil)
2.5
2.0
1.5
1.0
0.5
0.0
20.0
22.5
25.0
27.5
30.0
32.5
35.0
37.5
40.0
Age

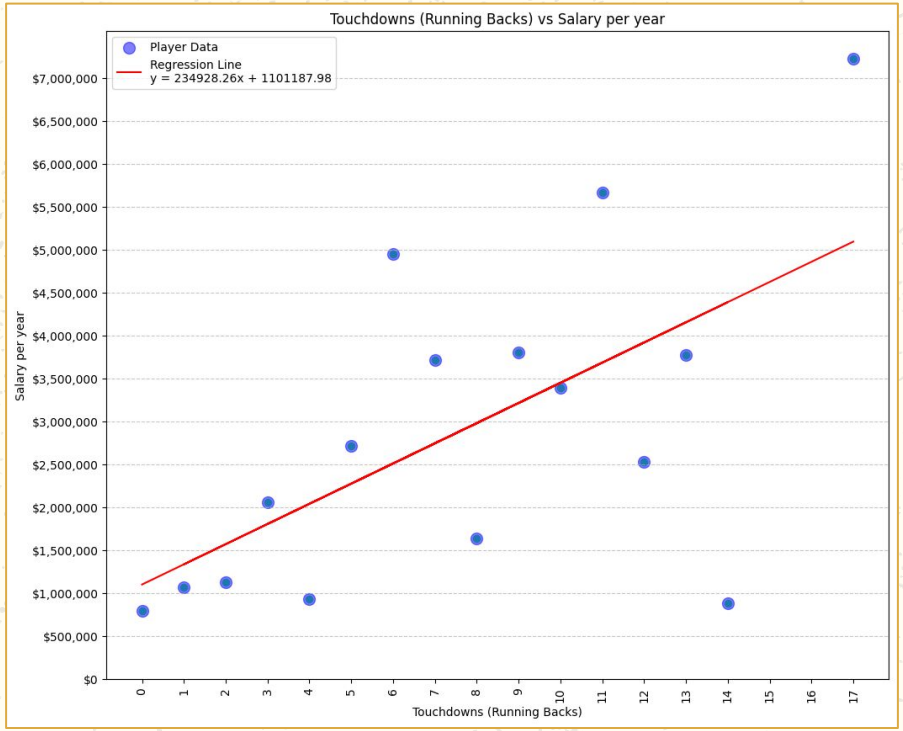
Position v. Salary



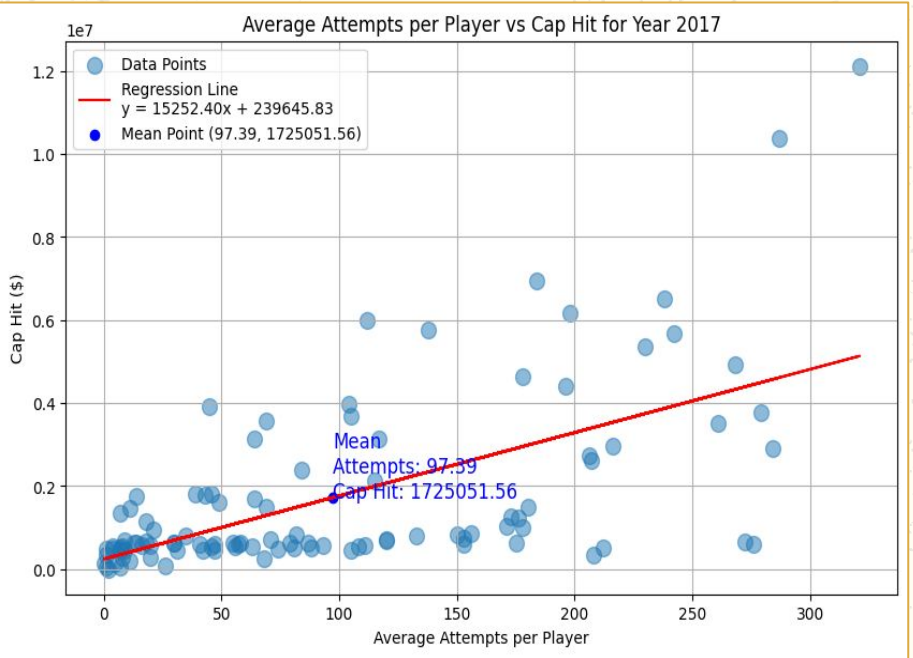


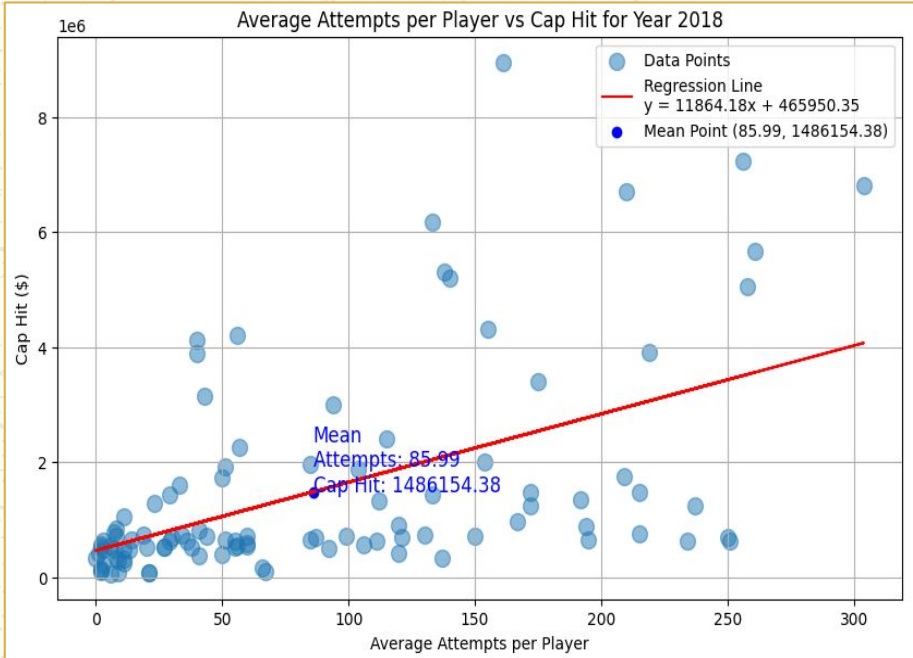


Touchdowns v. Salary

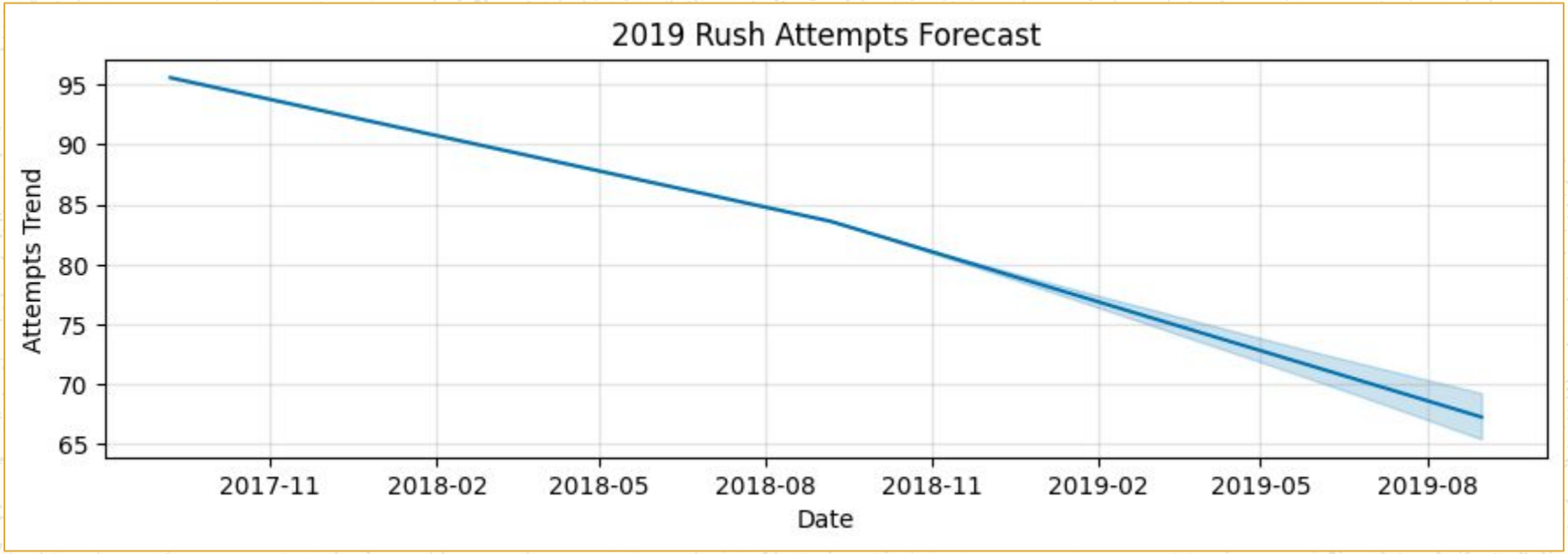


2017/18 Avg. Rush Attempts v. Salary

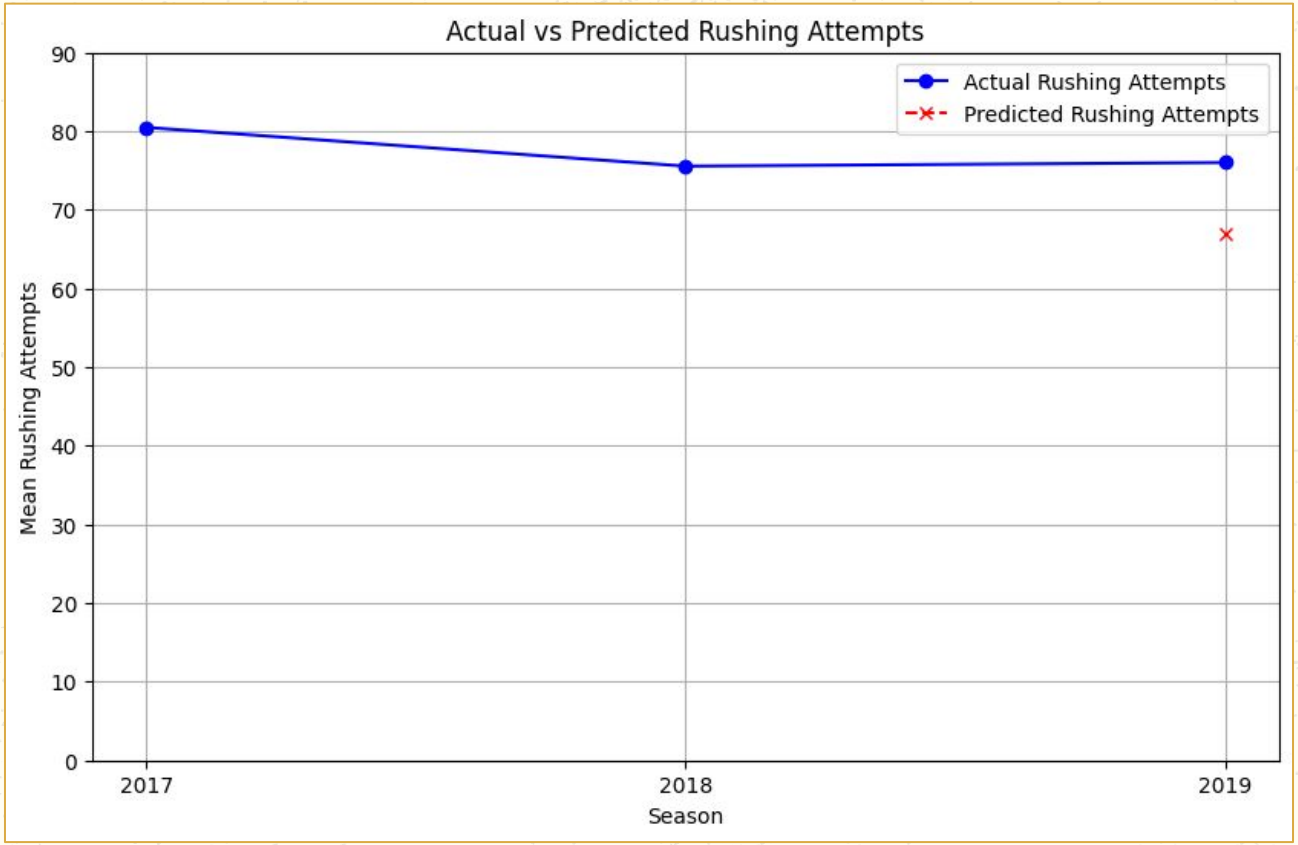




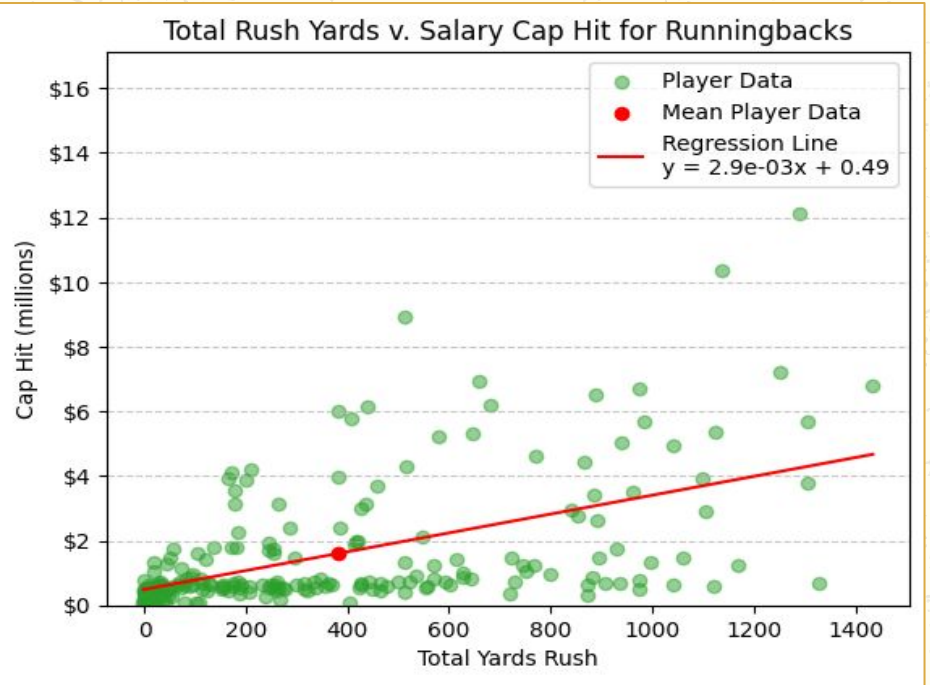
Predicted Rush Attempts over Time

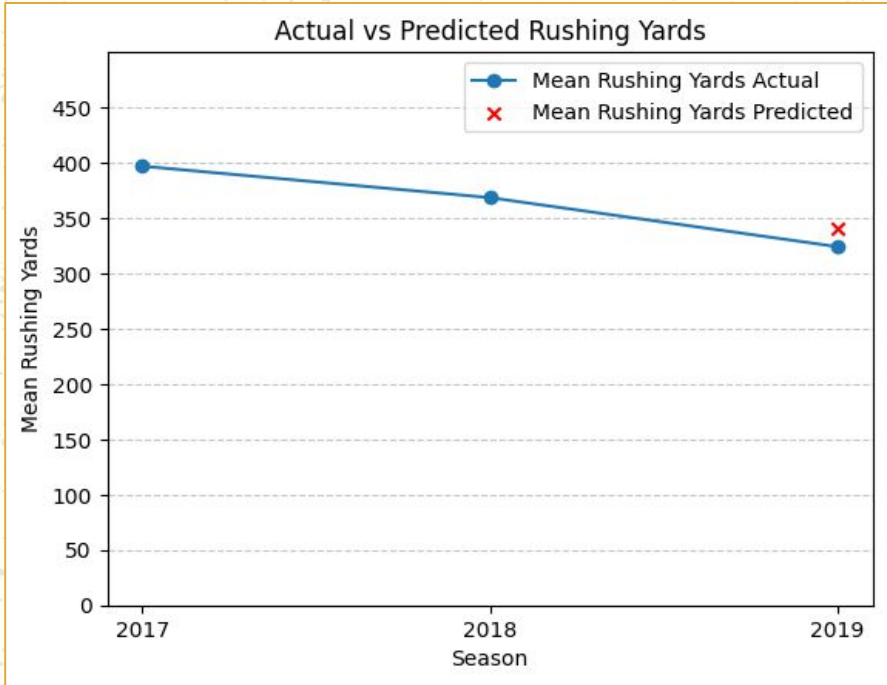


Actual Vs Predicted Rush Attempts

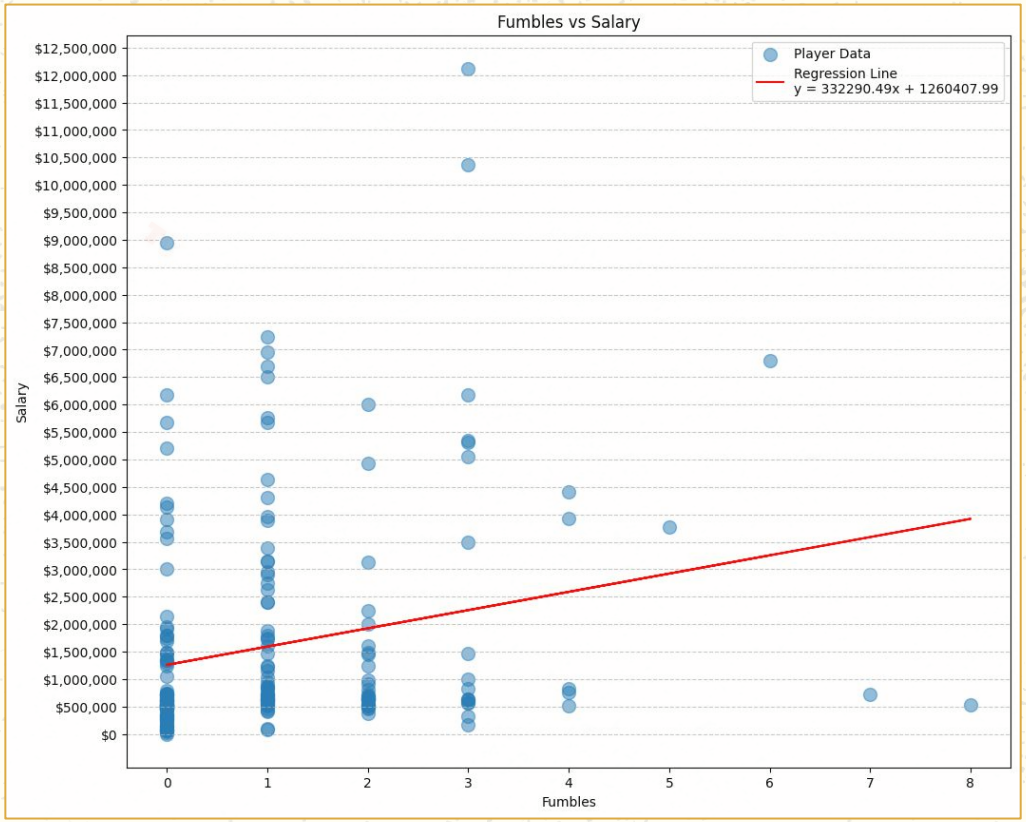


★ Rush Yards over Time ★





Fumbles v. Salary



Awards Received v. Salary

PB - Pro Bowl

AP - All-Pro

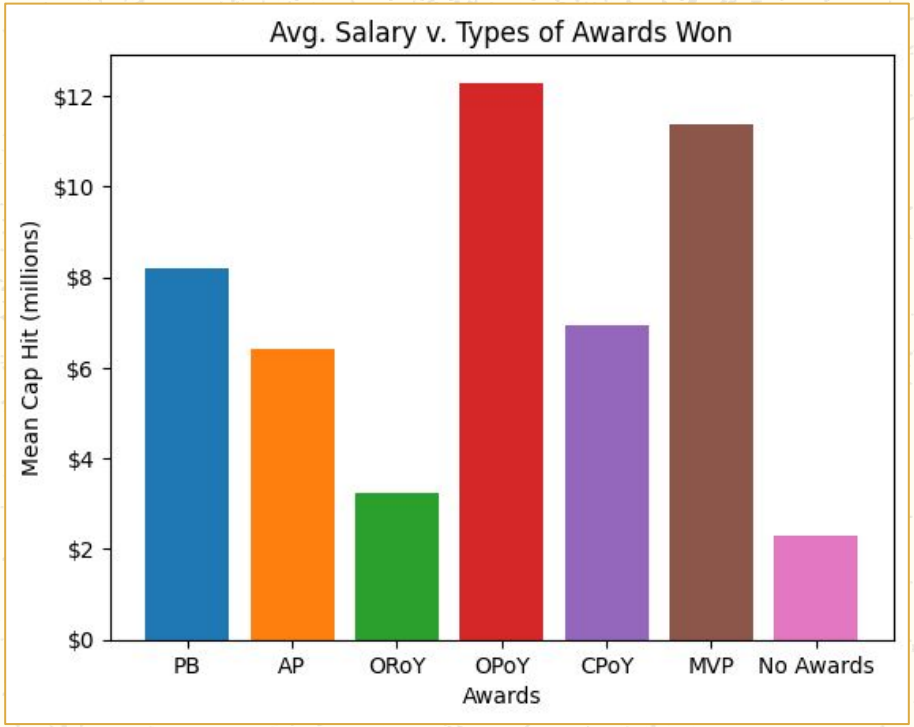
ORoY - Offensive Rookie of the Year

OPoY - Offensive Player of the Year

CPoY - Comeback Player of the Year

MVP - Most Valuable Player

No Awards - No Awards Received



Running the Numbers

Which Factors impact Cap Hit the most...

Fumbles

Position

Touchdowns

Stats

Age

Awards

Where Do We Go From Here?

- Other positions
- Wider range of years

THANKS!

Q&A time!

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Links:

- Github Repo
- Kaggle Salary Data
- 2017 Merged Rushing + Salary Dataset
- 2018 Merged Rushing + Salary Dataset
- 2017 RB positions
- 2018 RB positions
- 2019 RB positions
- 2017 NFL stats
- 2018 NFL stats
- 2019 NFL stats