



# Fantasy Football Capstone

Predicting Player Performance

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# Overview

- Business Problem
- Data
- Methods
- Results
- Conclusions

# Fantasy Sports are BIG

## What Is It?

Participants serve as a virtual owner of a sports team.

## Who Plays?

Nearly 70 Million Americans play fantasy sports.

78% of fantasy participants play fantasy football.

## When?

Seasonal fantasy is over the course of that sports' season.

Daily/Weekly fantasy pertains to 1 game or a small series.

# Example Daily Draft

jduke24

RANK 1

WINNING \$1,025,000

YTP 0

PMR 0

VIEW H2H

POS	PLAYER	DRAFT %	GAME	SCORING	FPTS
QB	<div> <div></div> <div>P. Mahomes</div> <div>\$7,700</div> </div>	13.5%	LV 40 @ KC 32 Final	2 PaTD, 1 RuTD, 340 PaYds, 21 RuYds, 1 INT, 1 300+Pass, 1 2PtPass	<div></div> <div>33.70</div>
RB	<div> <div></div> <div>D. Freeman</div> <div>\$4,600</div> </div>	4.4%	NYG 34 @ DAL 37 Final	1 RuTD, 27 RecYds, 60 RuYds, 2 REC	<div></div> <div>16.70</div>
RB	<div> <div></div> <div>T. Gurley II</div> <div>\$5,700</div> </div>	13.3%	CAR 23 @ ATL 16 Final	1 RuTD, 29 RecYds, 121 RuYds, 4 REC, 1 100+Rush	<div></div> <div>28.00</div>
WR	<div> <div></div> <div>D. Slayton</div> <div>\$4,800</div> </div>	29.9%	NYG 34 @ DAL 37 Final	129 RecYds, 8 REC, 1 100+Rec	<div></div> <div>23.90</div>
WR	<div> <div></div> <div>T. Hill</div> <div>\$6,900</div> </div>	18.0%	LV 40 @ KC 32 Final	1 RuTD, 78 RecYds, 15 RuYds, 3 REC	<div></div> <div>18.30</div>
WR	<div> <div></div> <div>C. Claypool</div> <div>\$4,100</div> </div>	1.2%	PHI 29 @ PIT 38 Final	3 RecTD, 1 RuTD, 110 RecYds, 6 RuYds, 7 REC, 1 100+Rec	<div></div> <div>45.60</div>
TE	<div> <div></div> <div>T. Kelce</div> <div>\$6,400</div> </div>	12.0%	LV 40 @ KC 32 Final	1 RecTD, 108 RecYds, 8 REC, 1 100+Rec	<div></div> <div>27.80</div>
FLEX	<div> <div></div> <div>R. Anderson</div> <div>\$5,900</div> </div>	30.4%	CAR 23 @ ATL 16 Final	112 RecYds, 3 RuYds, 8 REC, 1 100+Rec	<div></div> <div>22.50</div>
DST	<div> <div></div> <div>Ravens</div> <div>\$3,900</div> </div>	6.5%	<div></div> <div>CIN 3 @ BAL 27</div> <div>Final</div>	7 SACK, 1 INT, 2 DFR, 1 DefTD, 1 1-6 PA	<div></div> <div>26.00</div>
FANTASY POINTS					242.50

# Why Care?

## Entertainment

Participants compete against each other for prizes including cash, trophies or to avoid a punishment for finishing in last place.

## Payouts

The weekly payouts for daily fantasy football are in the tens of millions.

**Better predicting = more money**

## Growing Industry

The Fantasy Sports Market is expected to reach \$48.6 Billion by 2027.

# Data

- 739 players
- 6 years of data\*
- 11,000 rows
- 26 features

\*Less for some players

Special thanks to Pro Football Reference for providing the data



So... How Do You Accurately Predict Points?

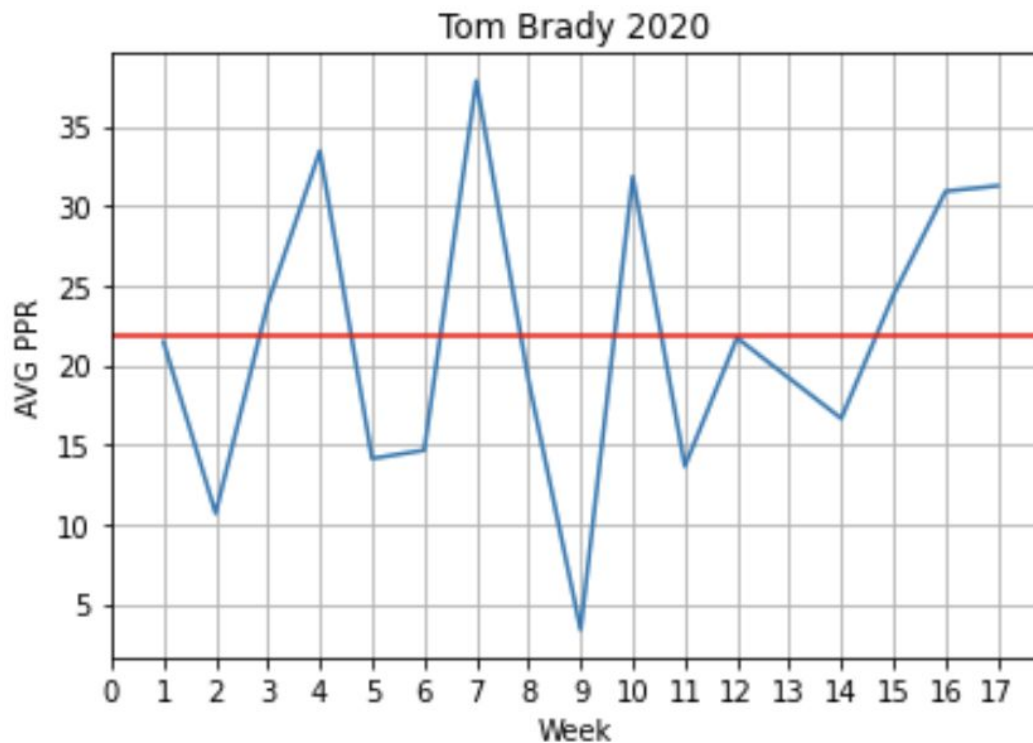
# It's Tough!!!

## Features to Consider

- Recent Performance/Stats
  - Opponent
  - Coaching
  - Match Ups
  - Injuries
  - Playoff Positioning
  - Referees
  - Weather
  - More
-



# Tom Brady 2020 Season PPR





My Model (Historical Data)

# Regression Model Results

## QB Position

Model: XGBoost

Results: 87% accuracy on  
Quarterbacks

## Player

Model: XGBoost or Ridge  
Regression

Results: 17 - 73%  
accuracy on individual  
Quarterbacks

# Week 3 Test Data

# Tom Brady Model Results

## Week 3

DraftKings Projected  
Points: 18.9

Model Predicted Points:  
18.1

Actual Points: 14.7

## Week 4

DraftKings Projected  
Points: 22.1

Model Predicted Points:  
18.8

Actual Points: 25.4

# Conclusion

- There are a seemingly infinite number of variables to consider
- Making accurate predictions consistently on individual players is almost impossible
- People who gamble professionally on Fantasy Sports use a mixture of statistics, eye-test, and luck

# Beyond MVP

- MORE features/data
- Next model will be a MRNN
- Streamlit App



# Questions?



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