

Fantasy Football Predictions for DFS

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Content

- What are Daily Fantasy Sports?
- Challenges
- Problem Statement
- Tools Used
- Gathering & Cleaning Data
- Exploring the Data
- Modeling
- Insights & Closing Thoughts



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What are Daily Fantasy Sports?

Traditional Fantasy Sports










- Season-long
- “Manage” a team
 - Draft players
 - Trades
 - Free agents
- Roster
 - QB, 2 RBs, 2 WRs, 1 TE, 1 Flex, 1 Defense/St, 1 Kicker
 - 7 Bench players
- Scoring based on statistics
- One-on-one matchups

STARTERS		
SLOT	PLAYER, TEAM POS	ACTION
QB	Drew Brees , NO QB	LOCKED
RB	Frank Gore , Mia RB	LOCKED
RB	Duke Johnson Jr. , Cle RB	LOCKED
WR	Emmanuel Sanders , Den WR	LOCKED
WR	Tyler Boyd , Cin WR	MOVE
TE	Travis Kelce , KC TE	MOVE
FLEX	Devin Funchess , Car WR	LOCKED
D/ST	Cowboys D/ST D/ST	LOCKED
K	Wil Lutz , NO K	LOCKED
BENCH		
SLOT	PLAYER, TEAM POS	ACTION
Bench	Antonio Brown , Pit WR	MOVE
Bench	Derrick Henry , Ten RB	LOCKED
Bench	Carson Wentz , Phi QB	LOCKED
Bench	Chris Carson , Sea RB	MOVE
Bench	LeGarrette Blount , Det RB	LOCKED
Bench	Giovani Bernard* , Cin RB	MOVE
Bench	Alfred Morris , SF RB	LOCKED
IR	Devonta Freeman* , Atl RB	MOVE

What are Daily Fantasy Sports?

Daily Fantasy Sports

- Single-Day Contests
 - Entry fees (Free to \$50,000)
 - Prizes determined by contest
- Select a team
 - Allocated \$60,000
 - Players assigned a cost (production & prediction)
- Different strategies for different contests
- Incentivizes the ability to identify “sleepers”

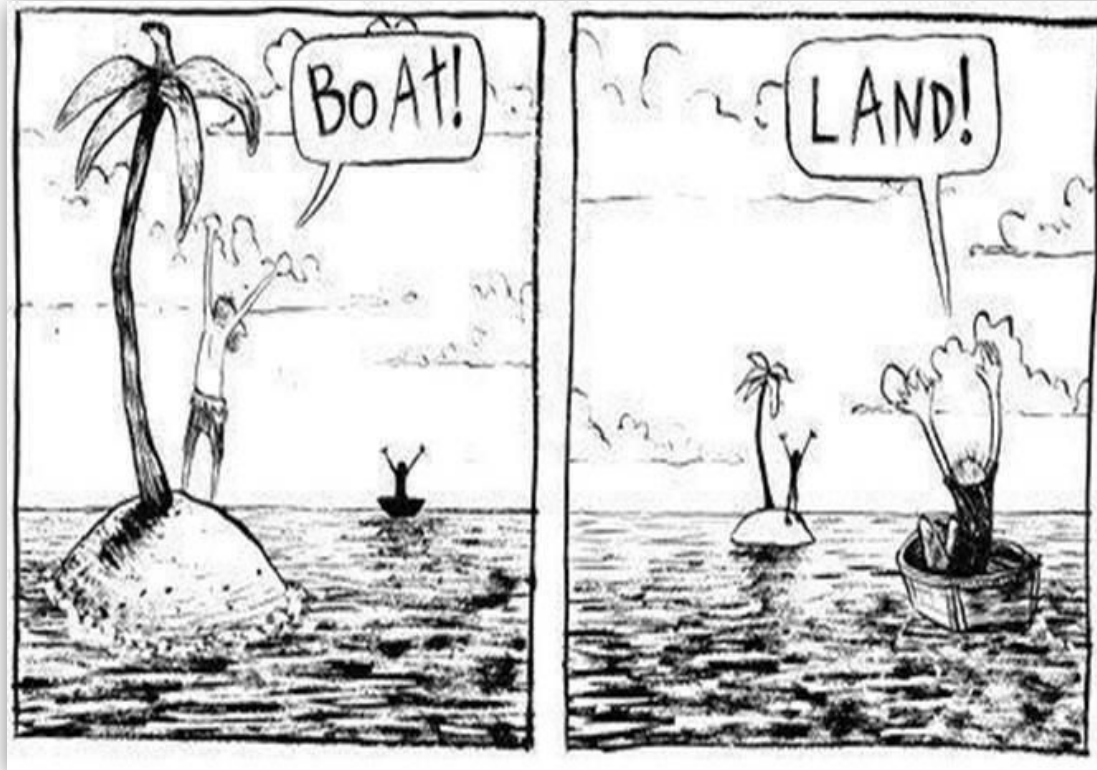
	QB Joe Flacco NO 14 @ BAL 17 4TH 12:22 \$7,500 SALARY	15% OWNED	12.12	▼
	RB Todd Gurley II LAR 25 @ SF 7 3RD 8:06 \$10,200 SALARY	40% OWNED	14	▼
	RB Kenyan Drake DET 32 @ MIA 21 FINAL \$6,300 SALARY	20% OWNED	16.7	▼
	WR Jarvis Landry CLE 23 @ TB 26 FINAL \$6,500 SALARY	20% OWNED	20.7	▼
	WR Stefon Diggs MIN 37 @ NYJ 17 FINAL \$7,600 SALARY	5% OWNED	6.6	▼
	WR Michael Crabtree NO 14 @ BAL 17 4TH 12:22 \$6,600 SALARY	10% OWNED	5.3	▼
	TE David Njoku CLE 23 @ TB 26 FINAL \$5,700 SALARY	20% OWNED	13.2	▼
	FLEX Peyton Barber CLE 23 @ TB 26 FINAL \$6,100 SALARY	10% OWNED	3	▼
	DEF Washington Redskins DAL 7 @ WAS 10 3RD 2:32 \$3,500 SALARY	15% OWNED	8	▼

Challenges

- “Any Given Sunday”
 - Volatility of week to week performances
 - Yearly stats are usually much more consistent
- Great deal of human error
 - Even the best strategies come down to execution
- Lack of data & published research
 - Average NFL career is 3.3 years
 - 16 games per year
- How to handle injuries, substitutions, backups, etc.



Obstacle or Opportunity?



Problem Statement

Can we predict an NFL player's fantasy football performance to determine if they are a valuable DFS play?

Tools Used

- Data Gathering
 - BeautifulSoup
 - <https://htmlformatter.com/>
- EDA
 - Pandas
 - Tableau
- Modeling
 - Scikit Learn
- Project Management
 - Google Slides
 - Google Sheets



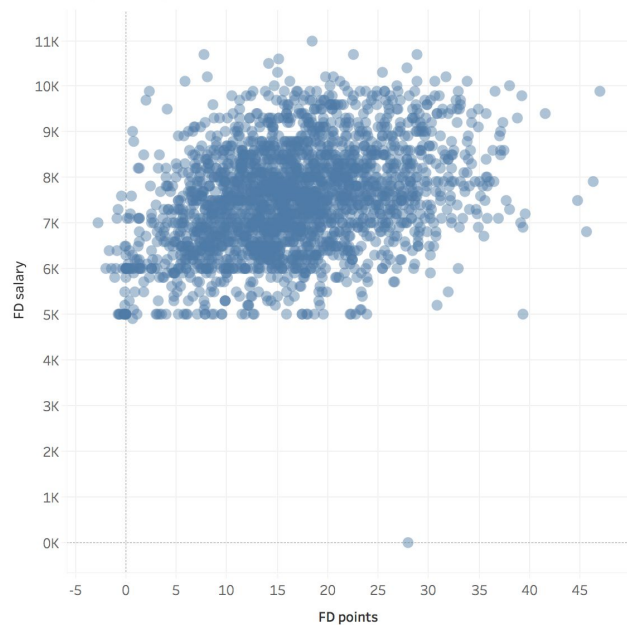
Gathering & Cleaning Data

- Datasets
 - Defense vs. Position
 - FanDuel salaries & points
 - External factors (spreads & weather)
 - Basic player statistics by position
- Gathering Methods
 - Web Scraping
 - [Kaggle Dataset](#)
- Observations from 2011 to 2017
 - Quarterbacks: 2382 games, 36 base features
 - Running Backs: 3703 games, 34 base features
 - Wide Receivers: 6574 games, 32 base features
 - Tight Ends: 3049 games, 32 base features

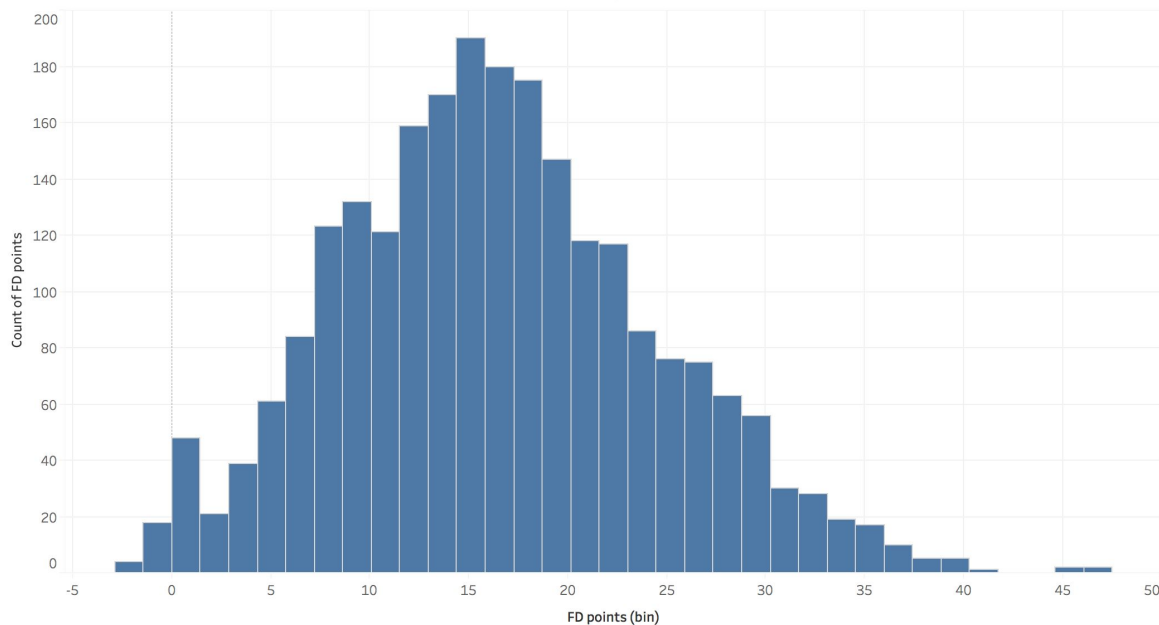


Exploring the Data

Points by Salary for QBs

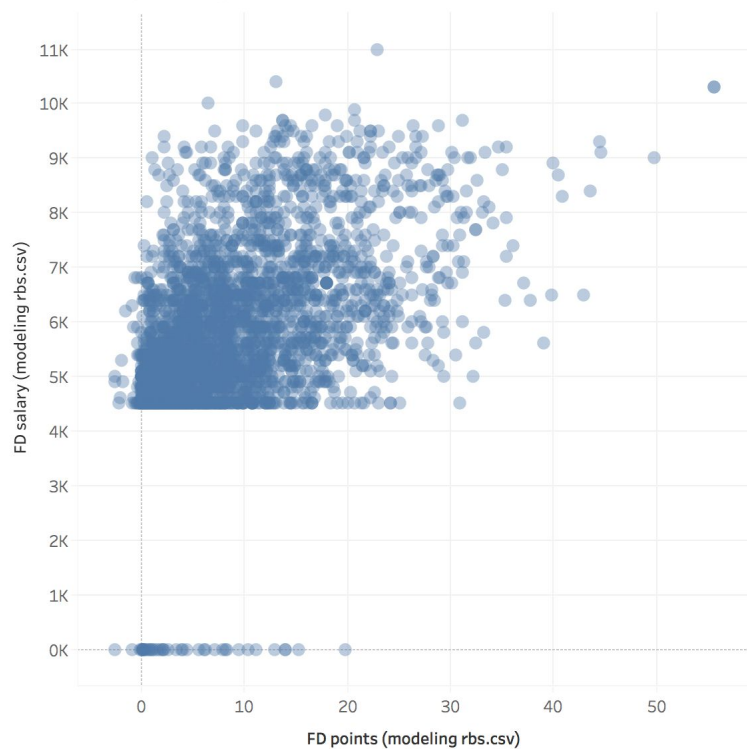


Distribution of Fantasy Points for QBs

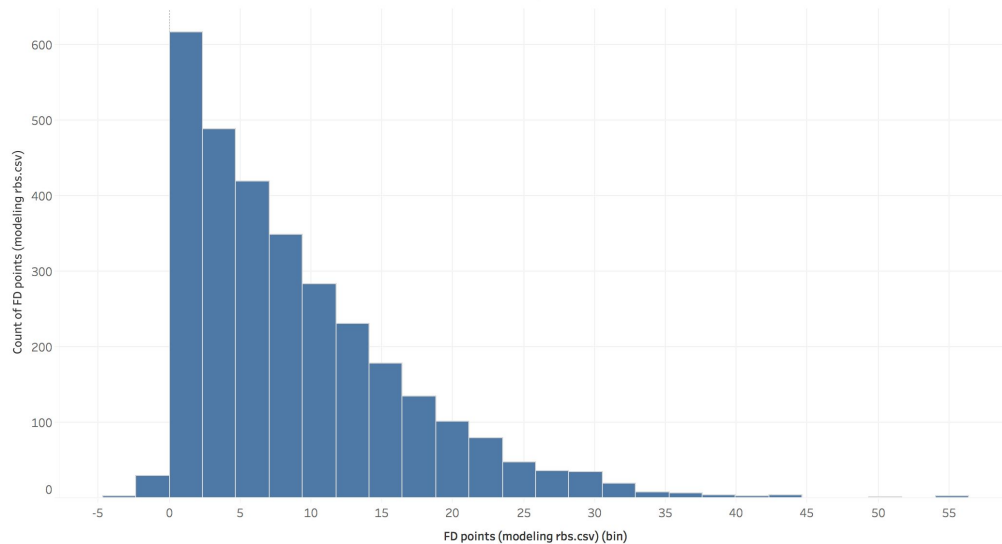


Exploring the Data

RB Point by Salary

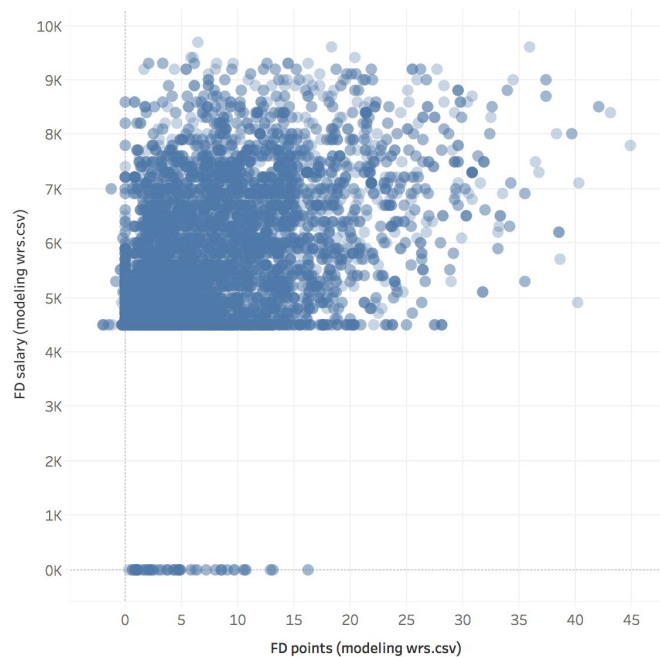


Distribution of Fantasy Points for RBs

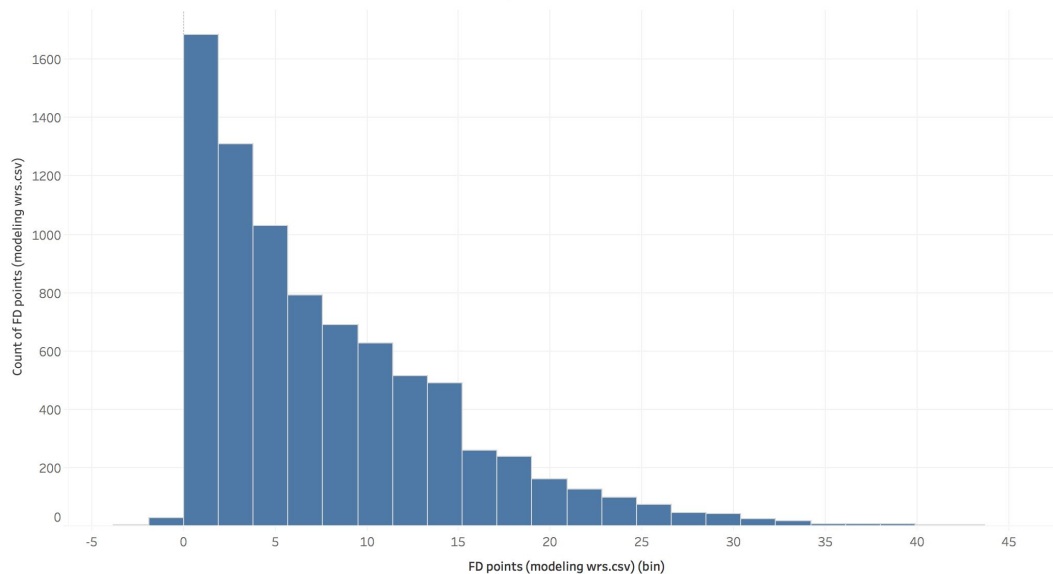


Exploring the Data

WR Point by Salary

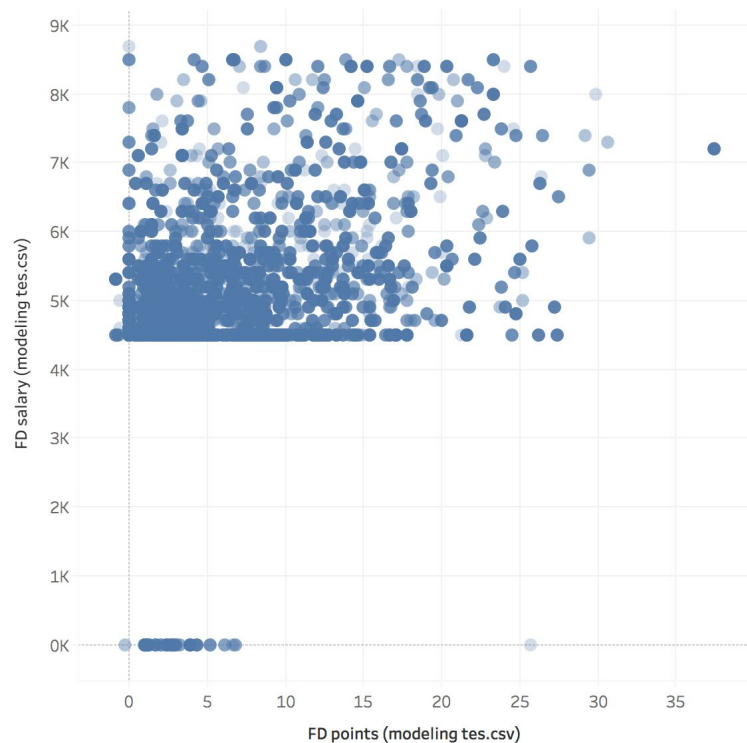


Distribution of Fantasy Points for Wide Receivers

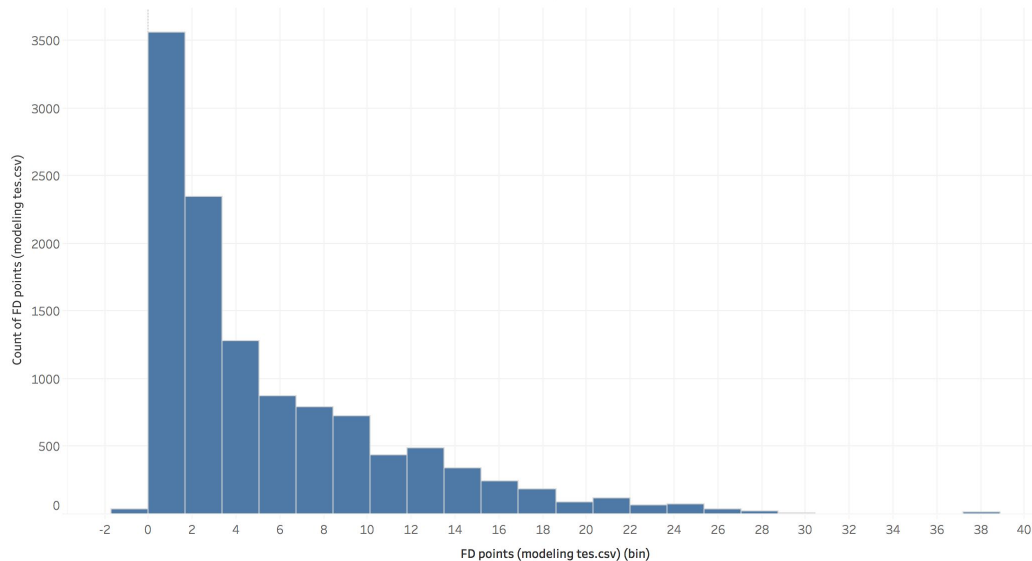


Exploring the Data

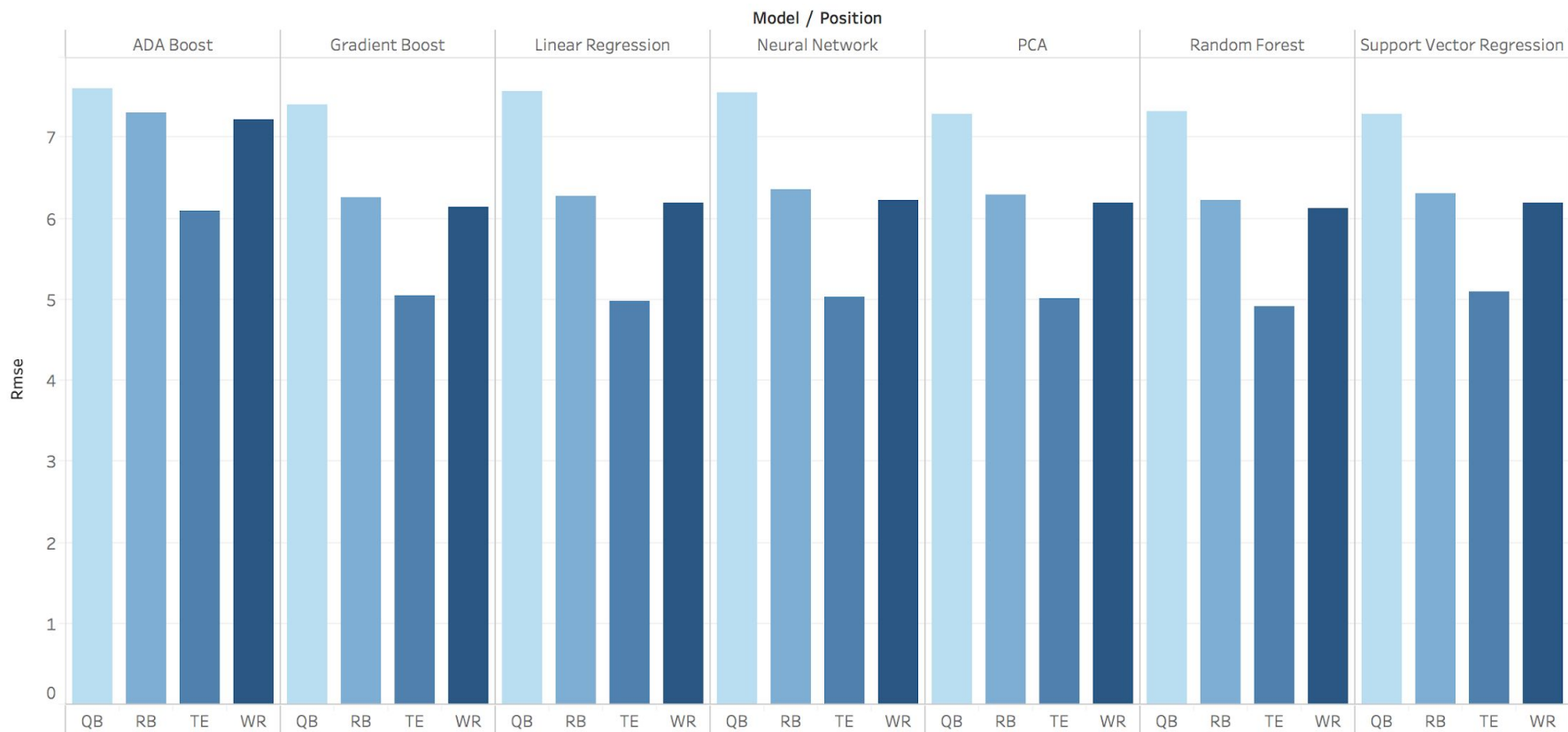
TE Point by Salary



Distribution of Fantasy Points for TEs



Modeling



Insights & Further Questions

1. Predicting human error is hard.
 - a. Multi-class classifier/unsupervised clustering more useful?
2. Need to build a lineup optimizer
3. Including other people's projections could be useful, but hard to find.
4. Would there be a difference to look only at starters?
5. Can we include intangible features about individual players?