Is “Moreyball” “Moneyball”?

A linear regression analysis on the most effective tactic available of the NBA basketball

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Metis
2/22/2022

Backstory

Daryl Morey

- Former Houston Rockets General Manager
- First to apply advanced analytics to NBA scouting and training
- Second most wins in the NBA during his tenure (2007-2020)

Moreyball:

- Take more Layups, 3-pointers and free throw, less mid-range 2-pointers

Image: https://houseofhouston.com/

Backstory

01

CLIENT

The Houston Rockets front office

02

QUESTION

Does “Moreyball” lead to higher point differentials?

03

PURPOSE

Revise coaching strategy and get more wins

04

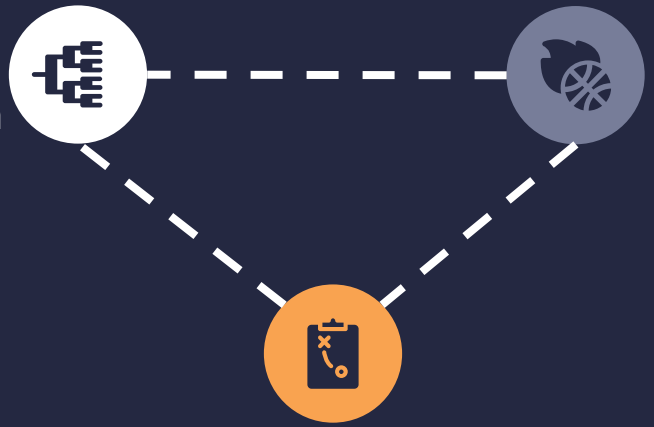
DELIVERABLES

A linear regression model to predict season net rating

Data Used

NBA Season Advanced Stats (2002-2022)

basketball-reference.com



NBA Shot Location Data (2011-2022)

basketball-reference.com

NBA Playtype Data (2015-2022)

nba.com

Methods

DATA ACQUISITION

BeautifulSoup and Selenium

DATA CLEANING AND MANIPULATION

Pandas

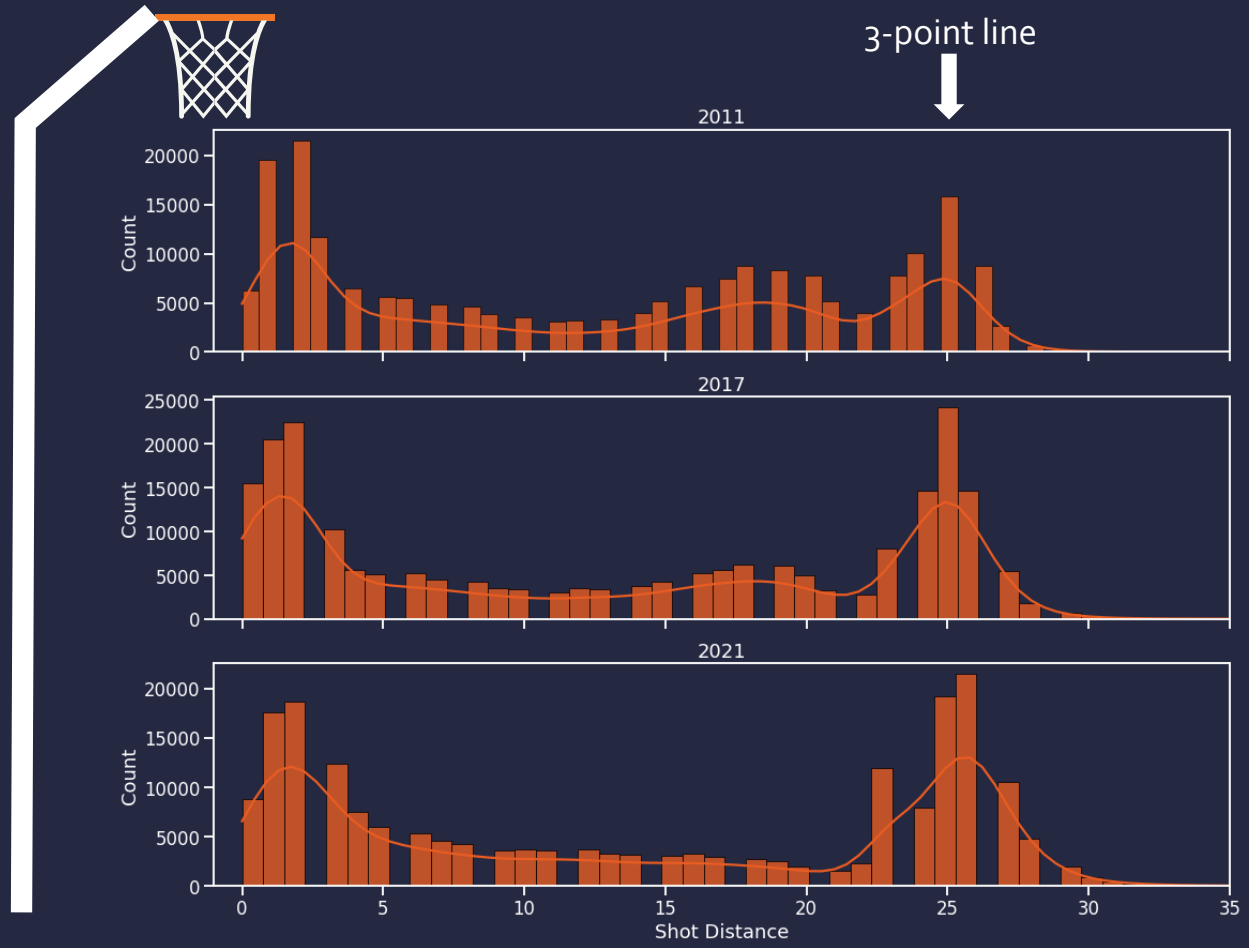
MODELING

Scikitlearn

Visualization

Matplotlib, Seaborn

EDA:Shot Location Trend of the Past Decade



Takeaway: the league has adopted “MoreyBall” in the last decade

Feature Examples

SHOT DISTANCE

Layup, midrange, 3-pointer

REBOUNDS

Defensive, offensive

DEFENSE

Steals, blocks

MOVEMENT

Distance travelled, speed

TEAMWORK

Passes, assists

PLAYTYPE

Postups, drives, etc.

Output Variable

NET RATING

an estimate of point differential
per 100 possessions

To simplify the model: obtained feature differential if available.

e.g. rebound differential = team rebound – opponent rebound

Linear Regression Pipeline

Train/test split and scaled
(train=old seasons, test=new seasons)

↓

Cross Validation (5 fold)

↓

Regularization (Elastic Net)

↓

Remove zero'd features, simple linear regression

Results

0.65
R^2 score on test set

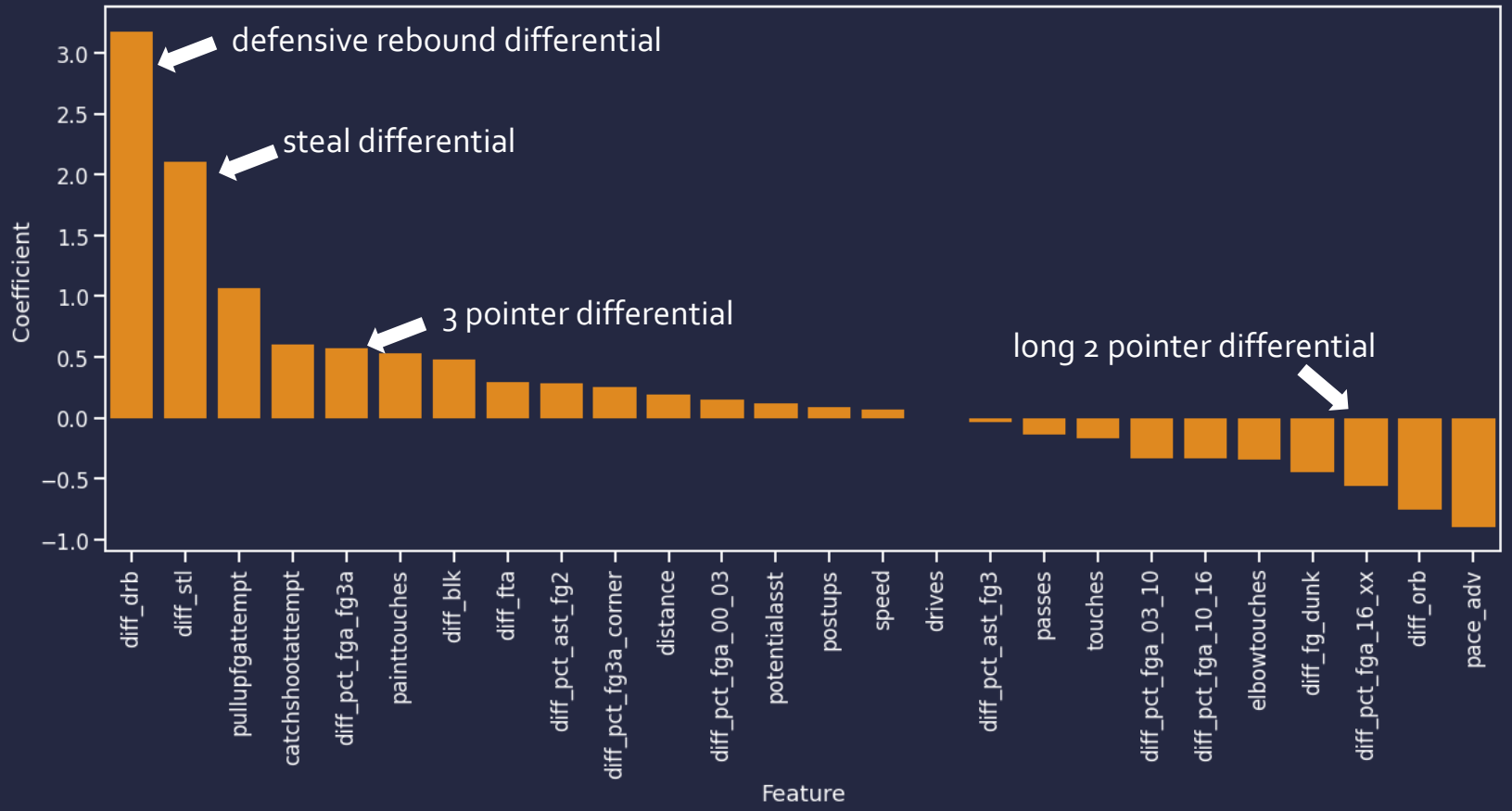
1.65
MAE

Elastic net:
Alpha: 0.02
L1 ratio: 0.09

0.67
R^2 score on test set

1.60
MAE

Coefficients after Regularization



The Importance of the Defensive Rebound (coef=3.17)

2020-21 season's MVP race

PERFORMANCE

2022 Phoenix Suns	2022 LA Lakers	2022 New York Knicks
+7.45 Predicted net rating	**-1.4** Predicted net rating	**-1.5** Predicted net rating
+8.2 Actual net rating	**-1.23** Actual net rating	**+0.65** Actual net rating

Image: Daily Knicks, Getty Images, The Guardian

Conclusions

- My model is able to predict the season net rating of an NBA team with the MAE of 1.60, based on the playstyle of the team.
- "MoreyBall"'s shot selection philosophy is beneficial to the game, but not as important as defense

Image: nba.com