PREDICTING PREMIER LEAGUE PLAYERS' SALARIES

$7,660,000

Average player salary for Manchester United in 2019/20*

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DATA COLLECTION

What kind of information do I need?

9 Player Statistics

4 major categories: standard, shooting, passing, possession*

7 P90 Statistics

Generated to standardize player performance

383 Players

Played in Premier League and salaries were available**

*player statistics from fbref.com
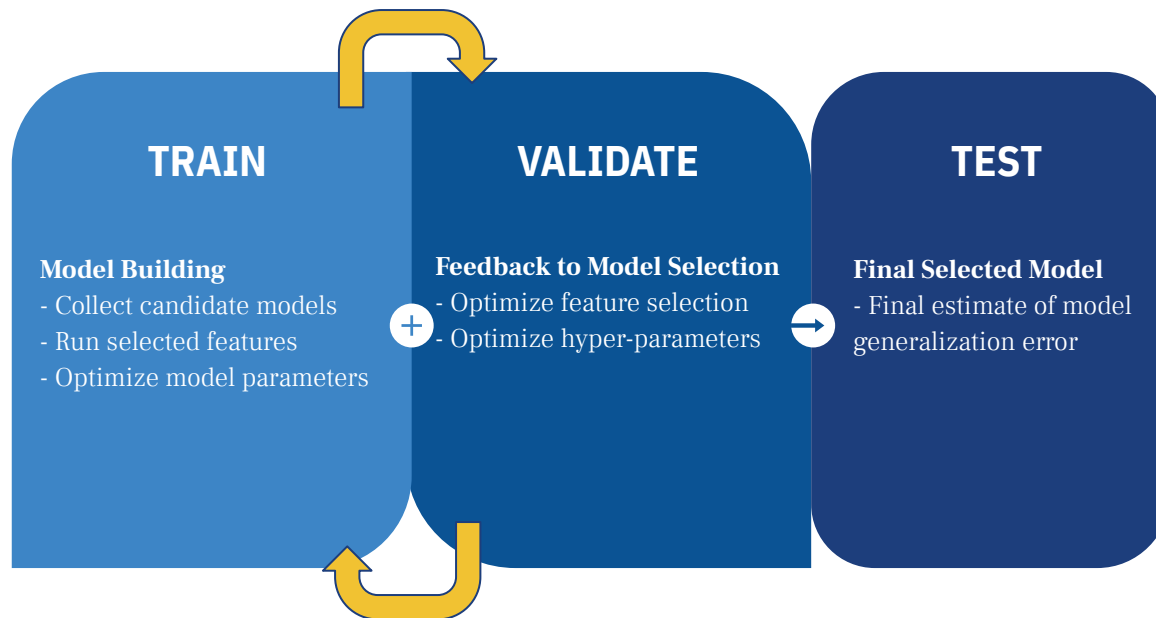**player salaries from spotrac.com

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MODEL CREATION

Can machine learning be used to project player salaries?

LINEAR REGRESSION MODELING

CROSS VALIDATION

RIDGE REGRESSION

TRAIN

Model Building
- Collect candidate models
- Run selected features
- Optimize model parameters

VALIDATE

Feedback to Model Selection
- Optimize feature selection
- Optimize hyper-parameters

TEST

Final Selected Model
- Final estimate of model generalization error

Ridge Regression test R^2 : 0.520
Mean Squared Error (MSE): 0.14

RESULTS

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How does each statistic affect player salary?

FEATURE COEFFICIENT RESULTS

	Coeff
Age	**0.04**
Starts	**0.01**
Total Pass Completion P90	**0.01**
Goals P90	**0.46***
Shots P90	**0.03***

	Coeff
Shots on Target P90	**0.56***
Key Passes P90	**0.05***
Progressive Passes P90	**-0.09***
Dribble Past Players P90	**0.03***

*coeff result is in logarithmic scale

HOW DOES EACH PLAYER STATISTIC AFFECT PLAYER SALARY?

	Salary Effect		Salary Effect
Age	**$41,000**	Shots on Target P90	**$5600 / 1% inc***
Starts	**$10,000**	Key Passes P90	**$500 / 1% inc***
Total Pass Completion P90	**$10,000**	Progressive Passes P90	**-$900 / 1% inc***
Goals P90	**$4600 / 1% inc***	Dribble Past Players P90	**$300 / 1% inc***
Shots P90	**$300 / 1% inc***		

*coeff result is in logarithmic scale

KEY TAKEAWAYS

How can I use this information?

IMPACTS ON A PLAYER'S SALARY

Top Statistics:

1. Shots on Target P90
2. Goals P90
3. Total Pass Completion P90

This Means:

Players directly involved with and influencing a team's likelihood of winning games get paid more.

"

The Big 6 clubs are **destroying** the Premier League with **money**.

- Roger Bell, Director of Vysyble

PLAYERS' SALARIES DEPEND ON MORE THAN JUST STATISTICS

Richer Clubs

In 2017-2018, the Big 6 had increased revenues from $310m - $3.47b while the remaining clubs had a fall in revenue from $12.5m - $2.57b.

Popularity

A player's marketability can vastly influence his salary.

E.g: World Cup

Transfer Market

The volatility of the transfer market can widely affect a player's transfer fee and in turn, his salary.

E.g. Neymar: $53m/yr

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FUTURE WORK

How can the model be improved?

OBTAINING MORE QUANTITATIVE AND QUALITATIVE DATA

◎ Players outside the Premier League

◎ Additional quantitative statistics

◎ Research on player's influence outside the game (i.e. marketability)

THANKS!

Any questions?

You can find me at davideweon@gmail.com