



Kyle Christenberry, Kyle Gedenk, Alex Mesker, Andrew Occhipinti, Valeria Cobos, Matthew. Lanham

Purdue University, Krannert School of Management

 kechrist@purdue.edu; kgedenk@purdue.edu; aocchipi@purdue.edu; amesker@purdue.edu  
 ; vcobos@purdue.edu; lanhamm@purdue.edu


## ABSTRACT

We attempt to predict a Premier League player's average rating over a season given their statistics for the year. We want to understand how certain factors of a player's performance affect their overall rating so that managers and executives can make more informed decisions. By using modeling techniques like linear regression, we can predict what player's ratings are, and depending on their performance, what they are predicted to be.

## INTRODUCTION

Football/Soccer has become a multi-billion-dollar industry with heavy investment. More than ever before, developing and recruiting top-tier talent is essential. Managers and executives need to know what makes great players like Kevin De Bruyne (left), Son Heung-min (middle), and Bruno Fernandes (right) so special and valuable. (Information courtesy of the English Premier League)

**6 Assists      10 Goals      \$65 Million**



### Research Question

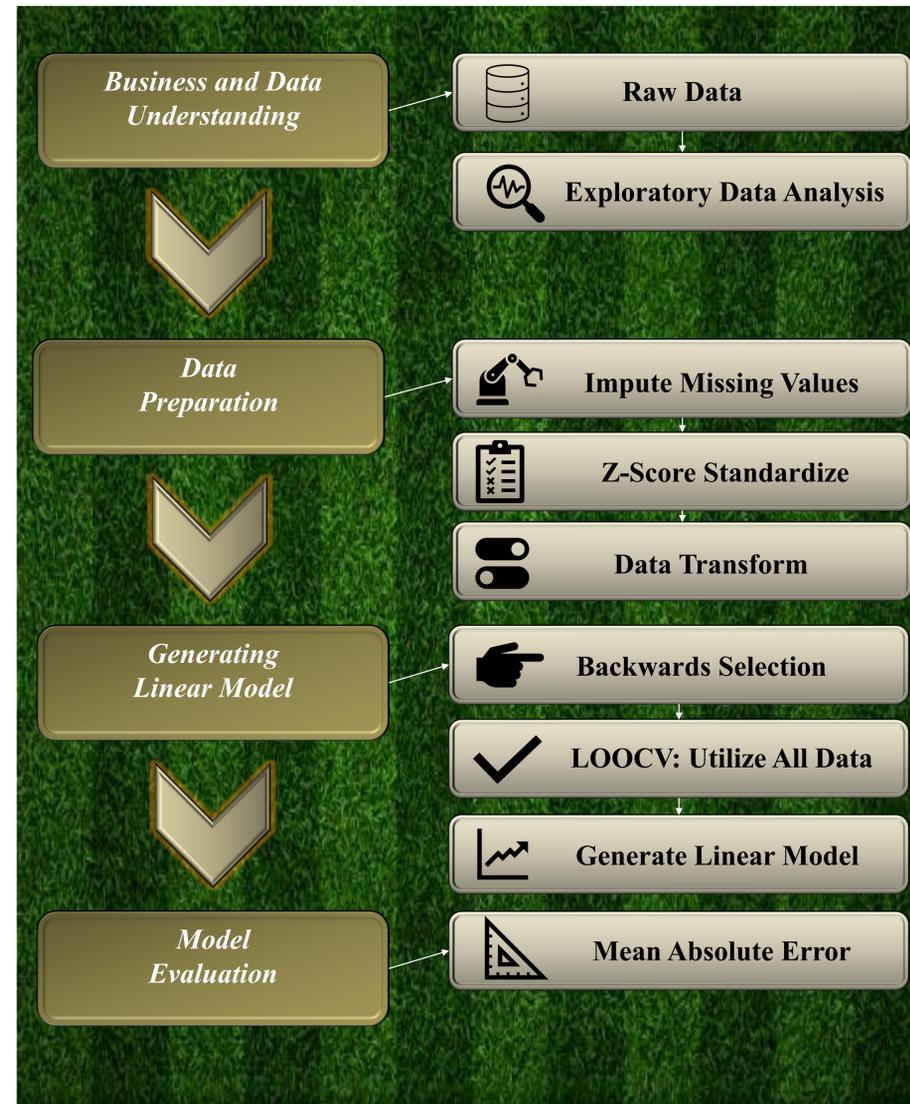
- What are the main drivers of a player's average rating in the Premier League?

## LITERATURE REVIEW

Our research is related to the cited studies but unique in our own way. Some of the studies use predictive analytics, but don't relate it to football, like the McIntosh study. Other studies like the ones by Hvattum study regression and football but do not focus on rating players.

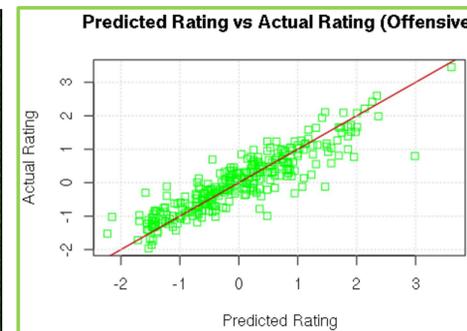
Study	Regression	Football	Transfer Price	Player Rating	Pitch Control
Born (2018)		x			x
Ian G. McHale (2014)		x			
Kharrat (2020)		x		x	
McIntosh (2018)	x			x	
Hvattum (2015)	x	x	x	x	
Our Study	x	x		x	

## METHODOLOGY



## STATISTICAL RESULTS

As we can see from the figure to the right, our model shows a strong correlation with player rating. Approximately 59.5% of variance in player rating is accounted for by our model. Furthermore, our model's predictions are, on average, about 0.35 standard deviations away from the actual rating.

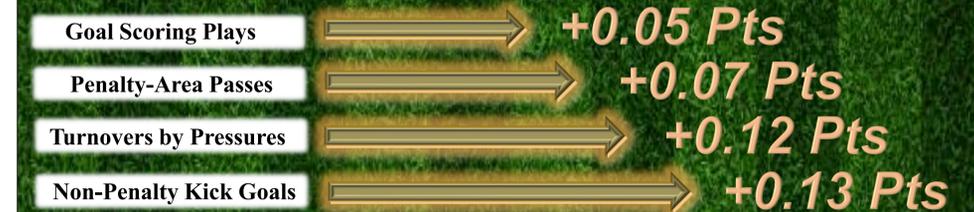


RMSE	Rsquared	MAE
0.4775206	0.7715815	0.354063

## IMPACT ON THE PITCH

We have calculated an MAE value of approximately 0.35, but what does that mean for the manager? This means that the gaffer can rest assured that, on average, our model predicts a player's seasonal rating within about 0.14 points.

### Significant Drivers of Player Rating



### Key Takeaways from the Model

- Goals scored from non-penalty kicks drive ratings
- Turnovers created by pressures have a significant effect
- Successful passes in the penalty-area are influential
- Players performing goal scoring plays boost their rating

Managers and executives, alike, will be able to use this information to better train, develop, and recruit players for their club

## CONCLUSIONS

The Premier League is a multi-billion-dollar industry. With many teams investing billions of dollars, now, more than ever before, managers and executives need to know what makes the top players so great. Our model shows variables like goal scoring plays, successful pressures, goals not from penalty kicks, and penalty area passes contribute to higher player ratings. With this information, managers will be able to focus on specific areas of improvement, and executives can search for players who possess these skills.

## ACKNOWLEDGEMENTS

We would like to thank Professor Matthew Lanham, Xinyu Wang and Theo Ginting for their guidance and support on this project.