Building the Perfect Soccer Player

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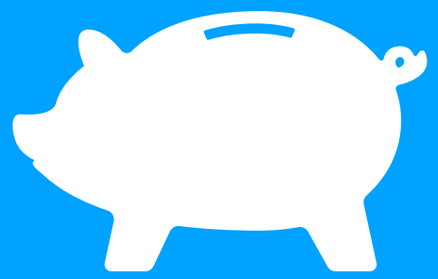
Fast Facts

3.2 Billion

People watched at least a part of the
2018 FIFA World Cup



€100 Million

To transfer Cristiano Ronaldo from Real Madrid
to Juventus F. C.

Cristiano Ronaldo

#7 / Forward
Juventus F. C.
5-time winner of Ballon d'Or
Born February 5, 1985

The Dataset

- Data retrieved from transfermarkt.com on Nov 27, 2018
- 500 top valued players so far in the 2018-2019 season
- European Leagues:

  Majorly Premier League, La Liga, Bundesliga, Serie A, France Ligue 1

The Variables

- **Market Value:**

  The estimated monetary amount for a player to transfer

- **Position:**

  The player’s position on the field

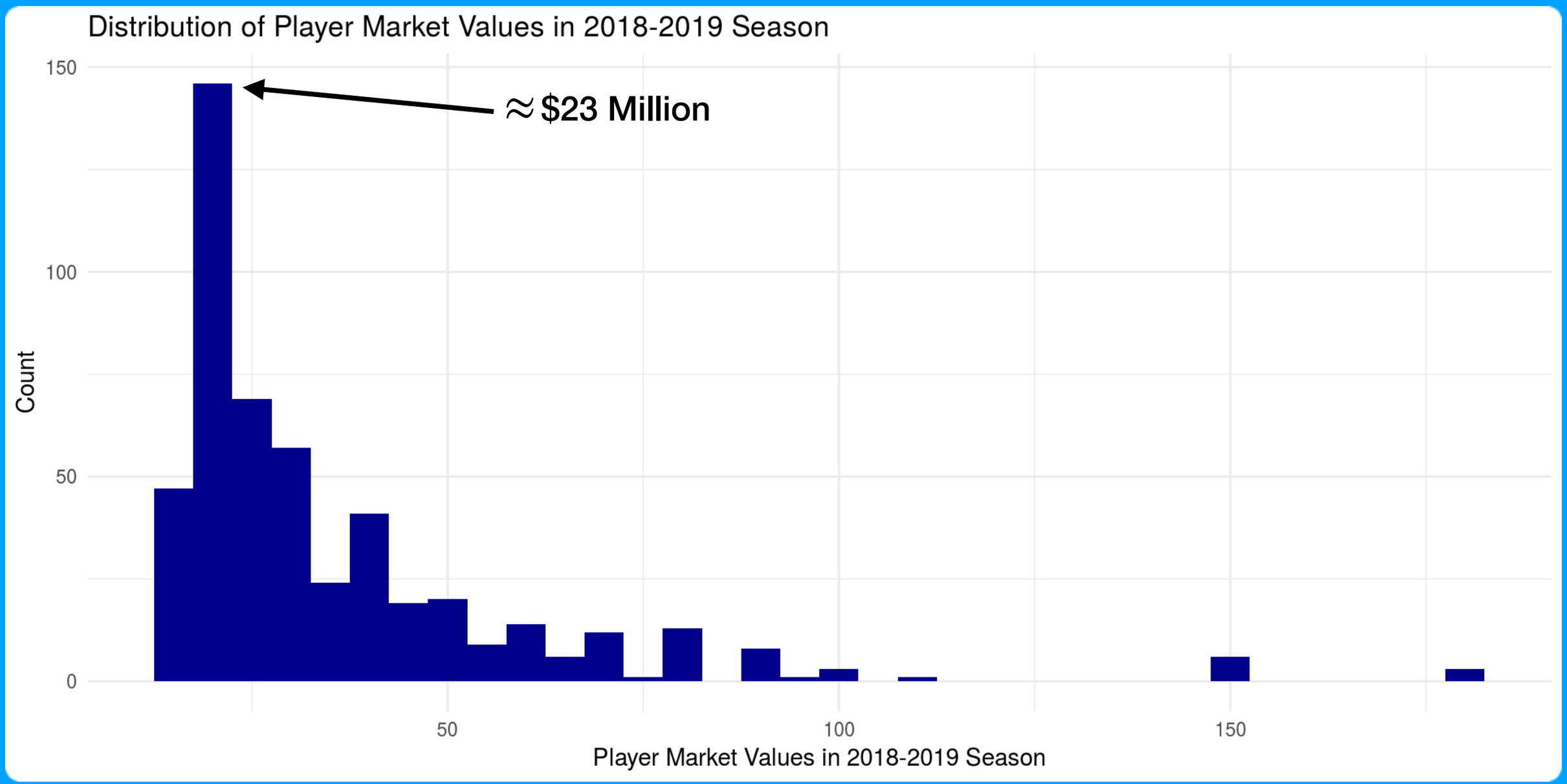
- Goals and assists

- Yellow/red cards

- Other variables: age range, matches, substituted on/off

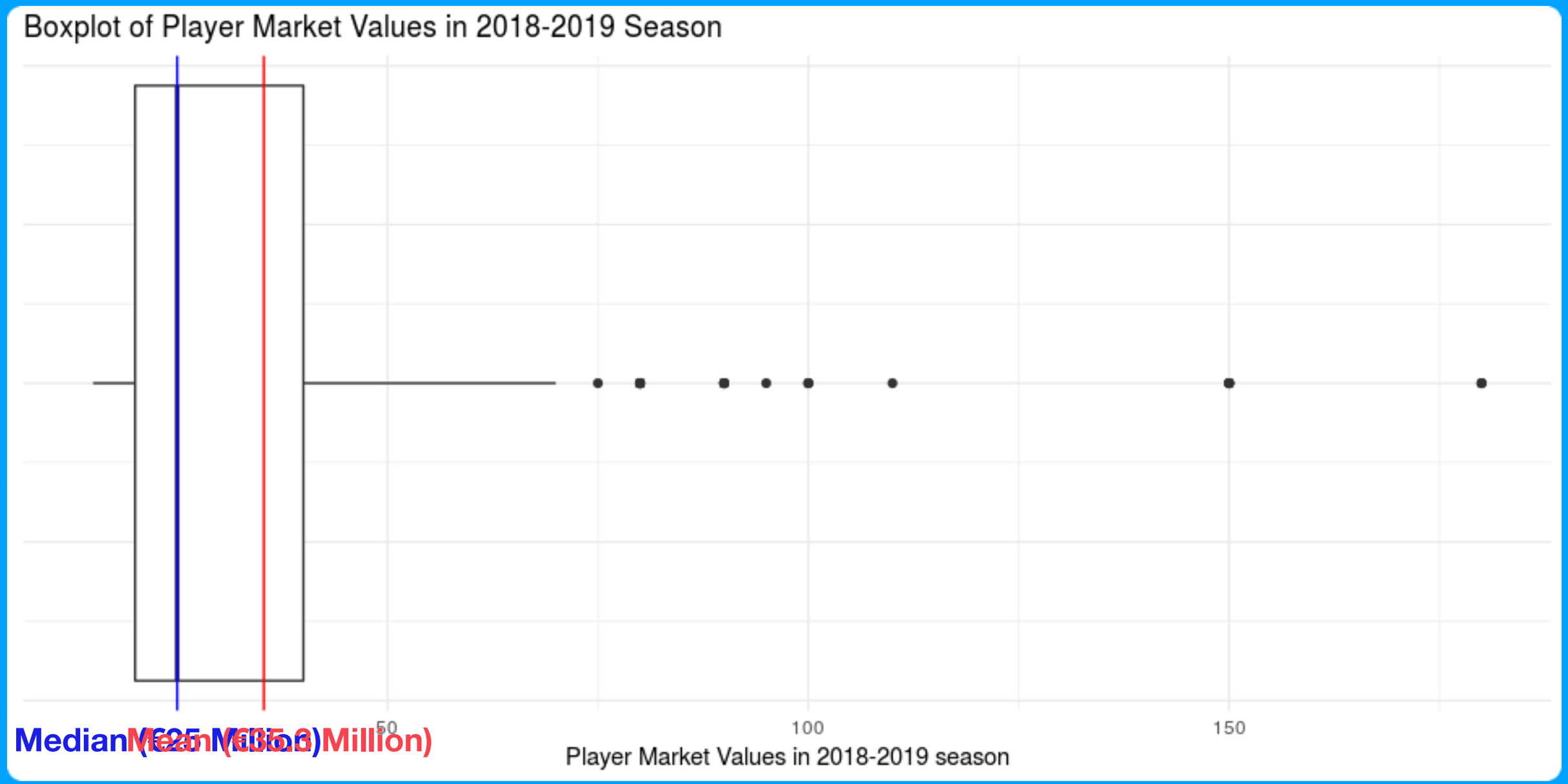
Data Analysis

The Distribution



Data Analysis

The Distribution



Median (€25 Million)

Mean (€35.8 Million)

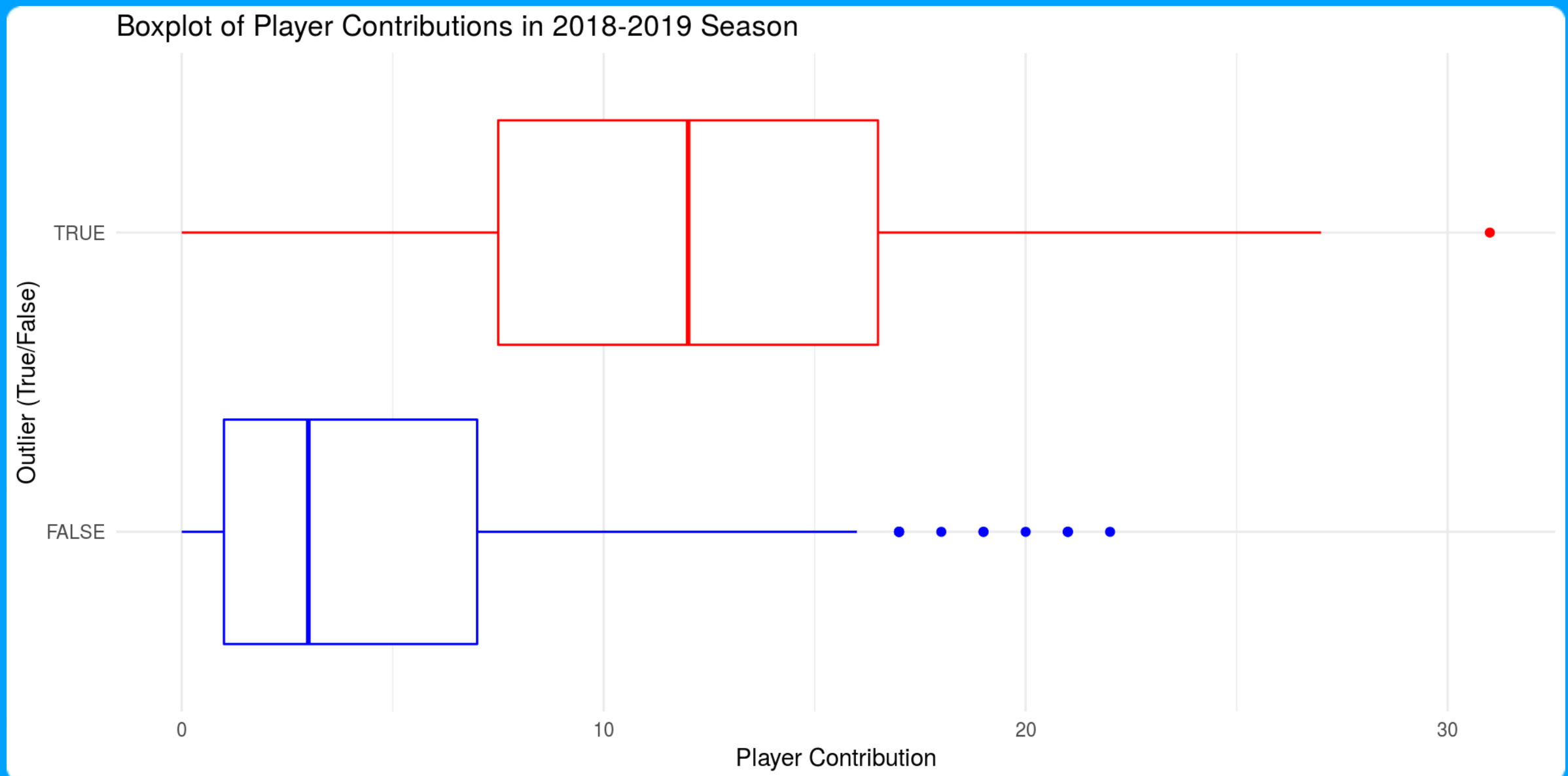
Data Analysis

Do more expensive players contribute more?

Contribution = Goals + Assists

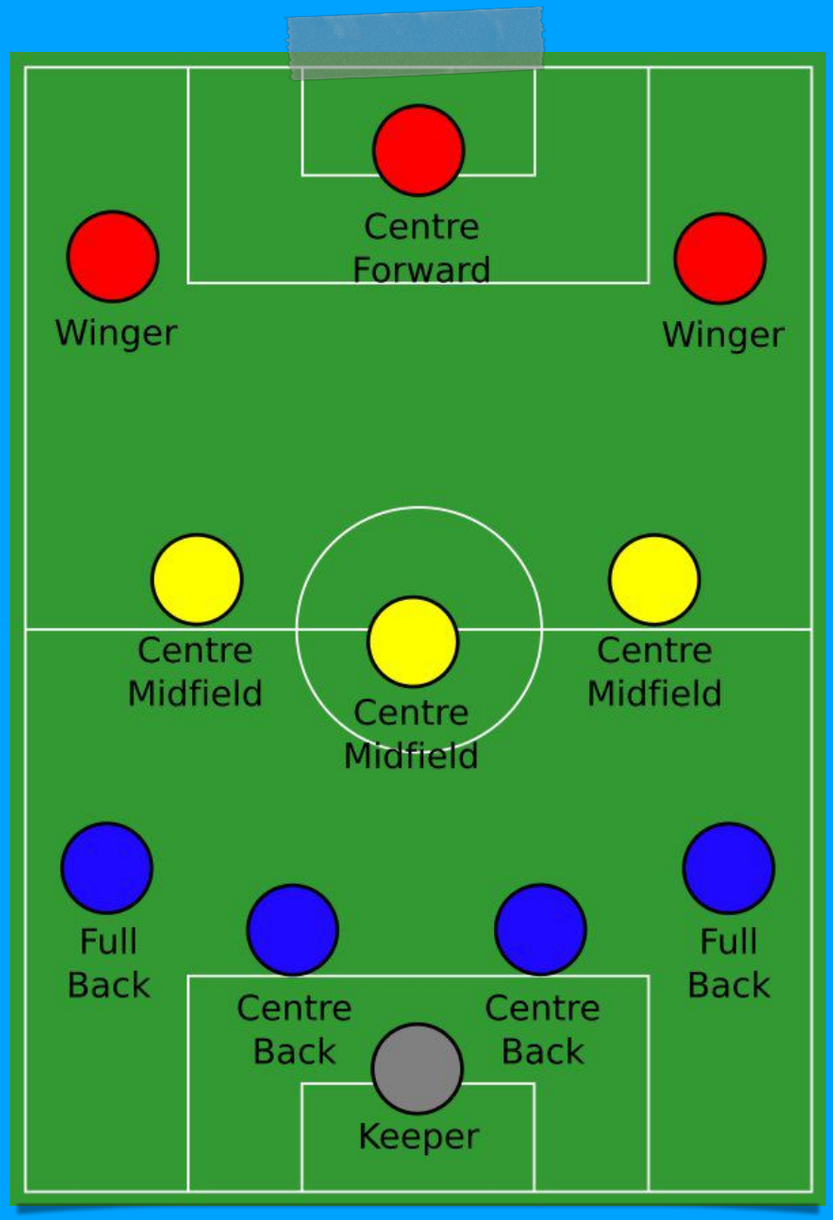
Data Analysis

Do more expensive players contribute more?



Data Analysis

How do player positions affect goals and assists?



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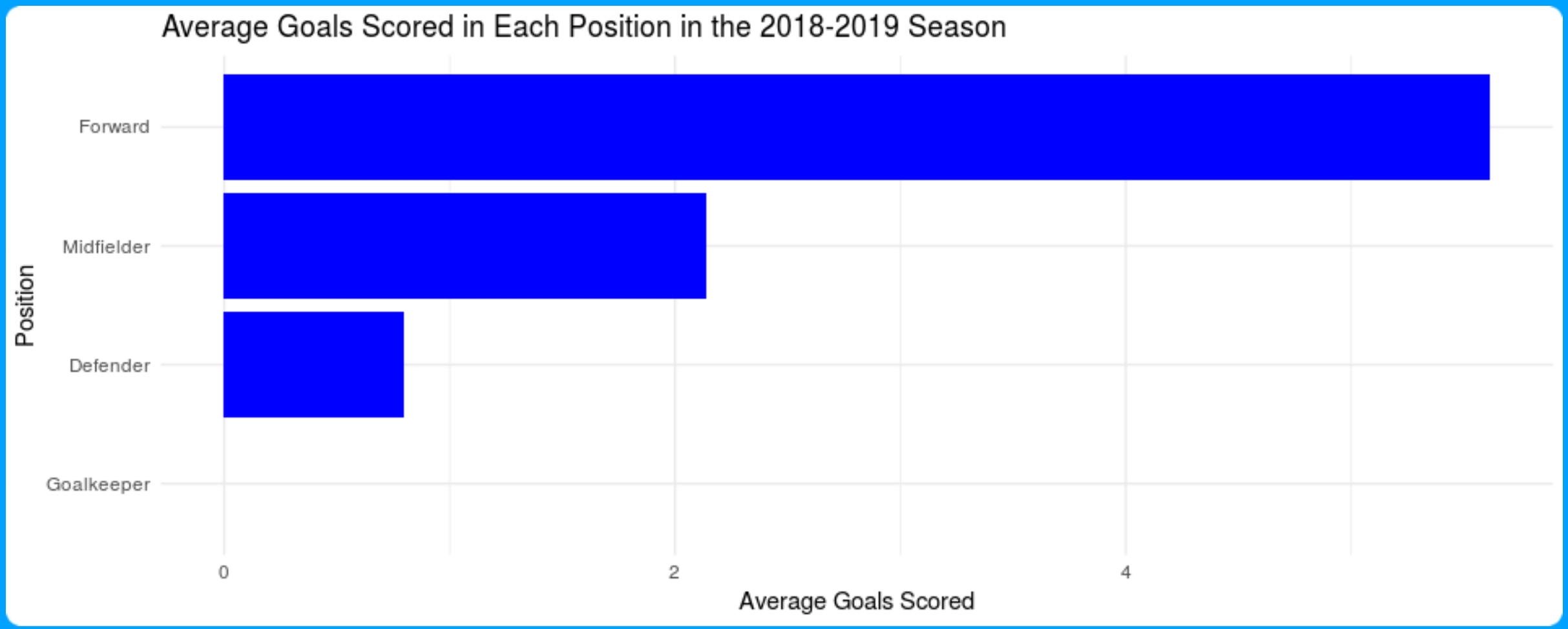

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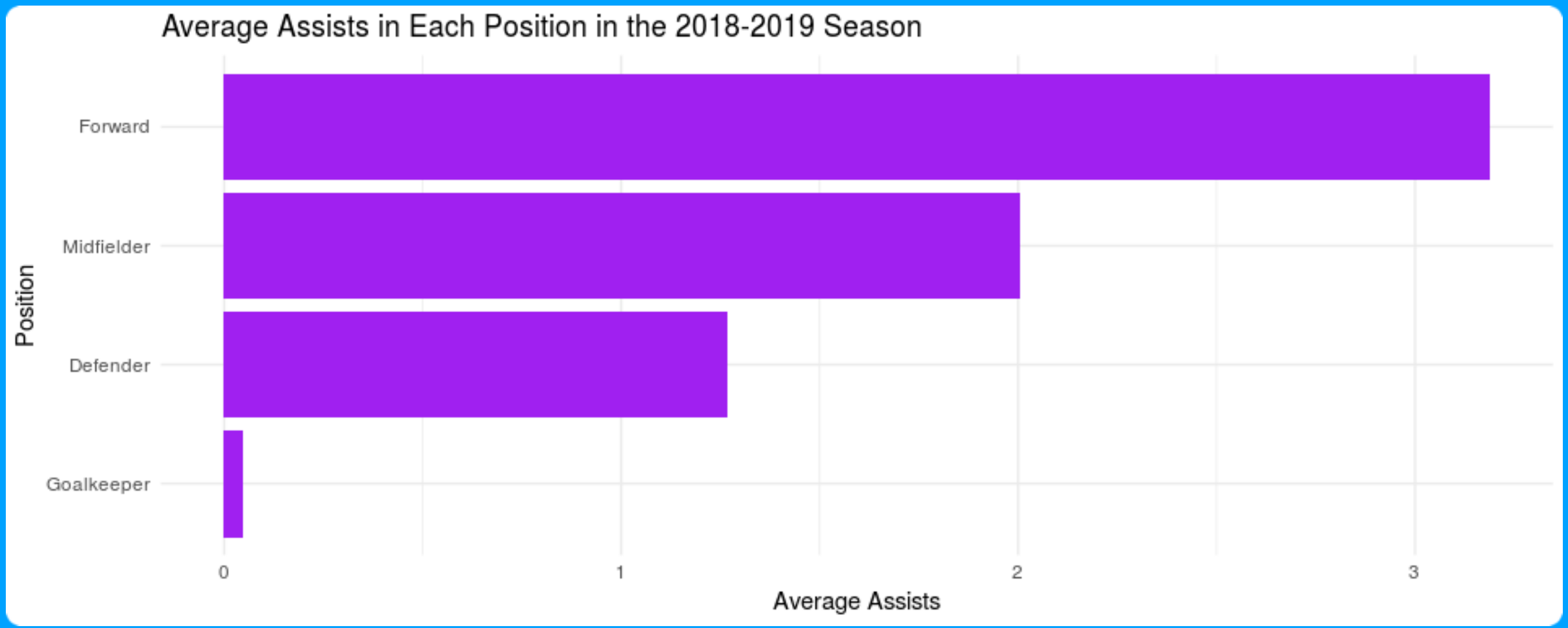


Data Analysis

How do player positions affect goals and assists?

Ederson: Goalkeeper | 1 assist

What Makes a Valuable Player?

Building a linear model

```
## # A tibble: 21 x 5
##    term                              estimate std.error statistic p.value
##    <chr>                                <dbl>     <dbl>     <dbl>   <dbl>
##  1 factor(position_new)Defender      12.6       15.4       0.818  0.414
##  2 factor(position_new)Forward       -0.965     15.7      -0.0616 0.951
##  3 factor(position_new)Goalkeeper    17.2       16.1       1.07   0.287
##  4 factor(position_new)Midfielder    18.1       15.4       1.17   0.242
##  5 age                                0.112      0.734     0.153  0.879
##  6 matches                            0.579      0.219     2.64   0.00852
##  7 goals                              2.04       1.66      1.23   0.220
##  8 own_goals                         -0.367      5.66     -0.0649 0.948
##  9 assists                            0.789      1.12      0.707  0.480
## 10 yellow_cards                      -0.515      0.599    -0.859  0.391
## # ... with 11 more rows
```

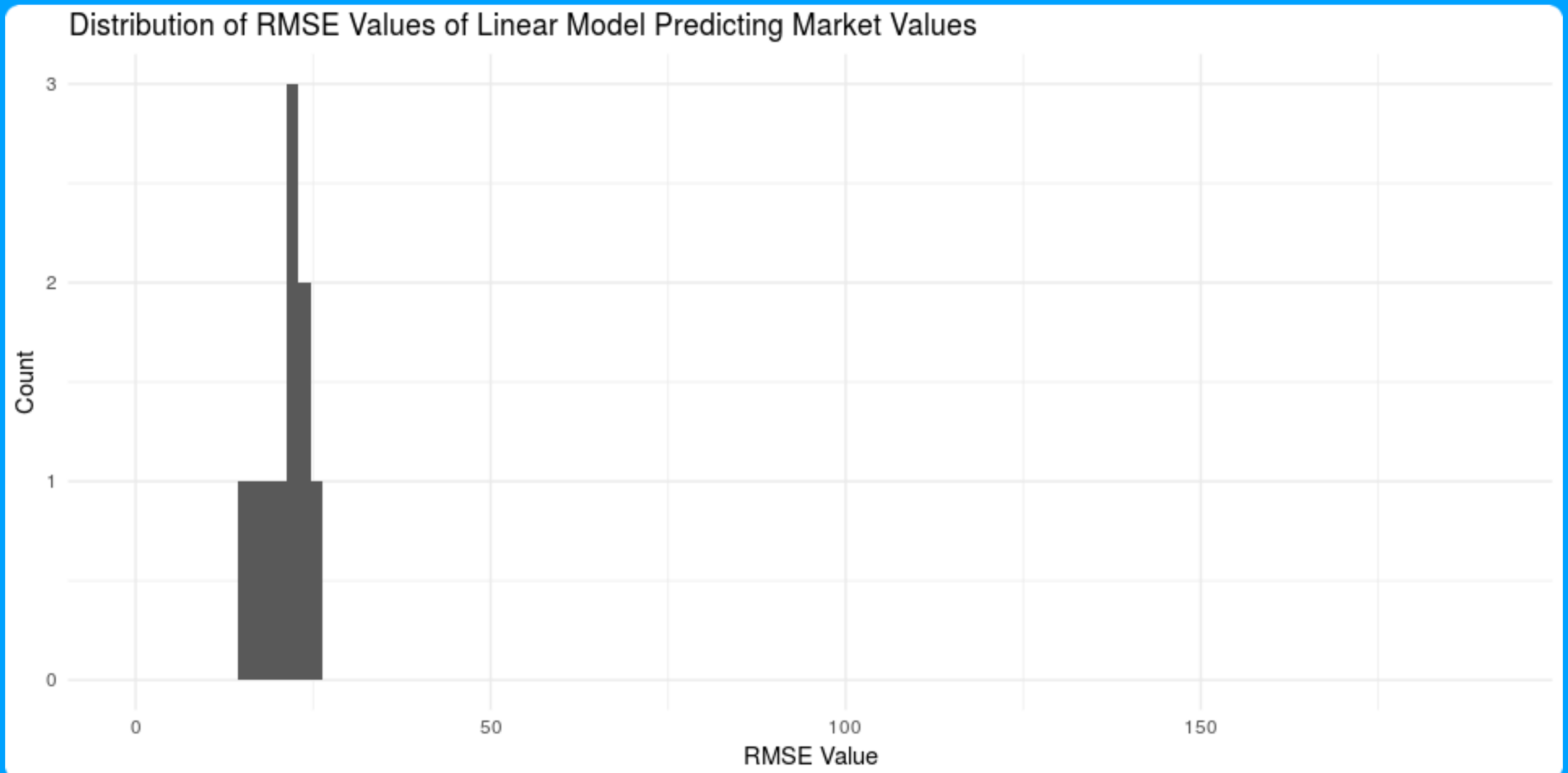
What Makes a Valuable Player?

Building a linear model

```
## # A tibble: 15 x 5
##    term                                estimate std.error statistic p.value
##    <chr>                                  <dbl>     <dbl>     <dbl>   <dbl>
##  1 factor(position_new)Defender          15.9       5.35      2.98  3.04e-3
##  2 factor(position_new)Forward           -0.607     5.57     -0.109 9.13e-1
##  3 factor(position_new)Goalkeeper        22.7       7.05      3.22  1.36e-3
##  4 factor(position_new)Midfielder        19.6       5.43      3.61  3.32e-4
##  5 matches                                0.406     0.179     2.26  2.42e-2
##  6 goals                                  2.02      1.64      1.23  2.21e-1
##  7 assists                                0.885     1.10      0.802 4.23e-1
##  8 factor(age_range)21-25                 3.66      4.49      0.815 4.15e-1
##  9 factor(age_range)26-30                 9.07      4.53      2.00  4.57e-2
## 10 factor(age_range)30 and above         -0.922     5.71     -0.162 8.72e-1
## 11 factor(position_new)Forward:goals      0.937     1.68      0.557 5.78e-1
## 12 factor(position_new)Midfielder:go…    -1.45      1.85     -0.783 4.34e-1
## 13 factor(position_new)Forward:assis…     2.74      1.28      2.14  3.25e-2
## 14 factor(position_new)Goalkeeper:as…    23.4      22.1       1.06  2.90e-1
## 15 factor(position_new)Midfielder:as…    -0.366     1.52     -0.241 8.09e-1
```

What Makes a Valuable Player?

How good is our model?



What Makes a Valuable Player?

How good is our model?

```
## # A tibble: 1 x 5
##       min   max  mean median    sd
##     <dbl> <dbl> <dbl>  <dbl> <dbl>
## 1   15.5   25.3  21.0   21.9  3.12
```

What Makes a Valuable Player?

How good is our model?

We have a good model!

Conclusion

What did we do?

- Visualized distribution of market values
- Identified outliers and explained them using data
- Explored goals and assists by position
- Created linear model
- Validated our model

Conclusion

What did we find?

- Players' baseline market values
- Variables contributing to higher market values
- Interaction effects between variables

Conclusion

How can we improve?

- Verify our sources
- Introduce historical data
- Use larger sample
- Explore trends over time

Thank you!