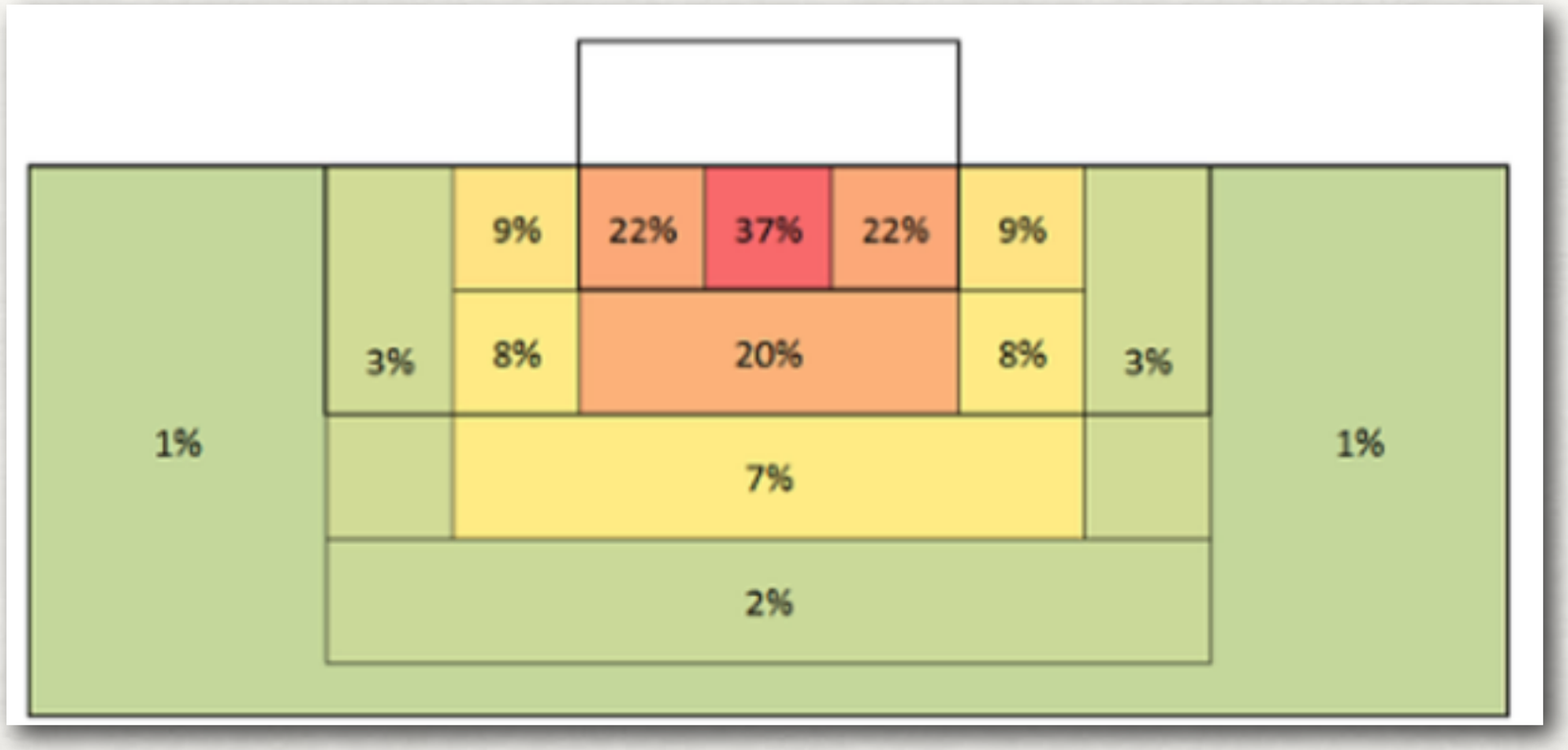
EXPECTED GOALS ANALYSIS IN FOOTBALL

EXPECTED GOALS

Expected Goals (xG) is the probability of whether a given a shot will result in a goal. It is a number between 0 and 1.

The closer the shot, the more likely it is to convert the shot to a goal. An xG of 1 is the highest value a single shot can be, which implies the player has 100% chance of scoring.



DATA SET

- The data set contains 9074 football matches from 2011 to 2017.

- Individual ability is not factored in the model.

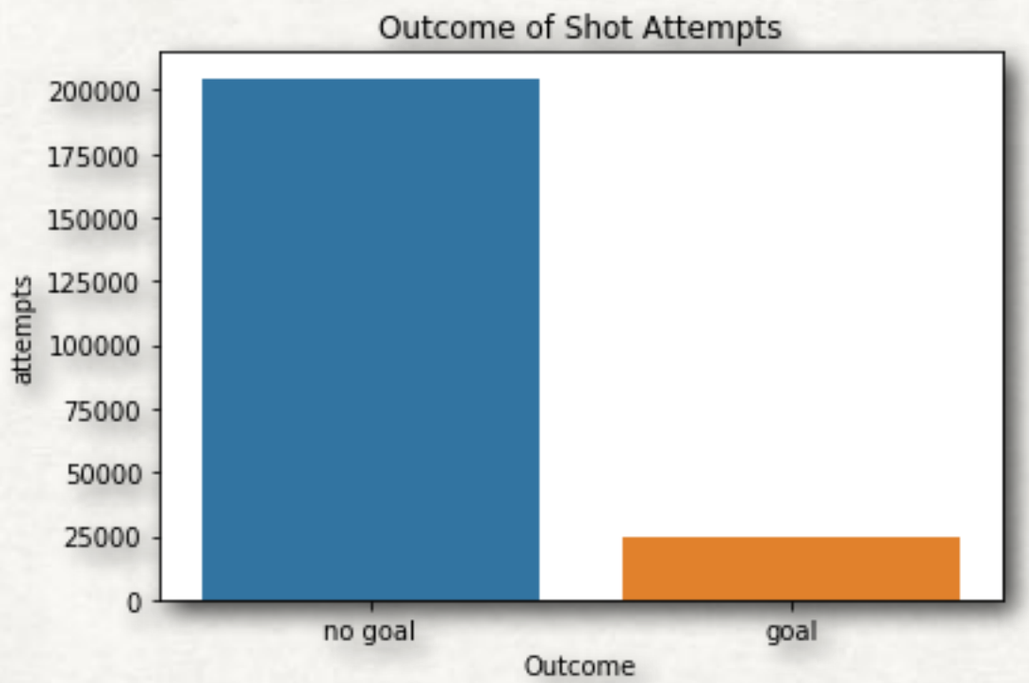
- Teams and players information were removed from the data set, before running any algorithms.

SHOT ATTEMPTS

229135 shot attempts

24441 goals

10.67% scoring



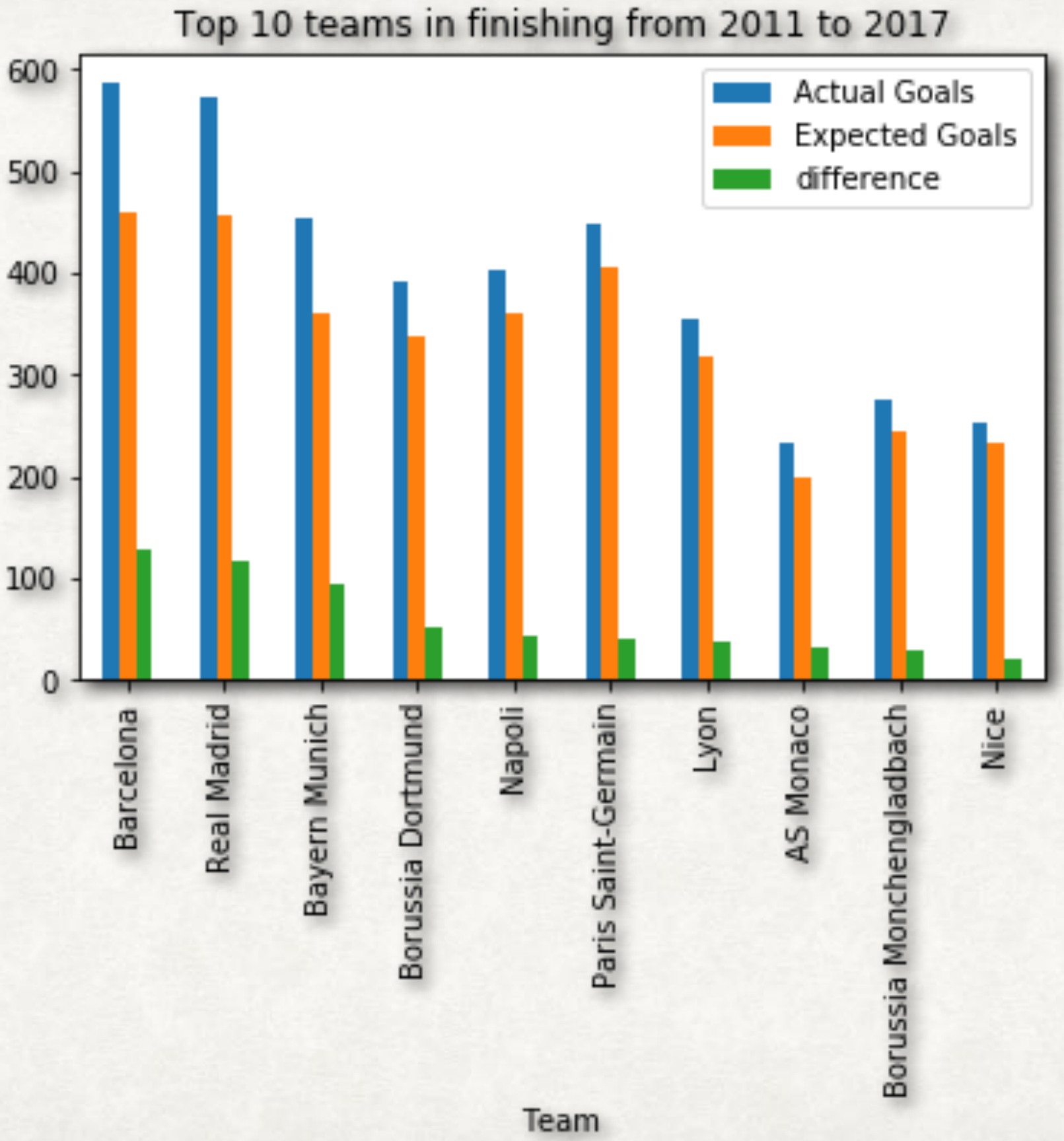
ALGORITHMS

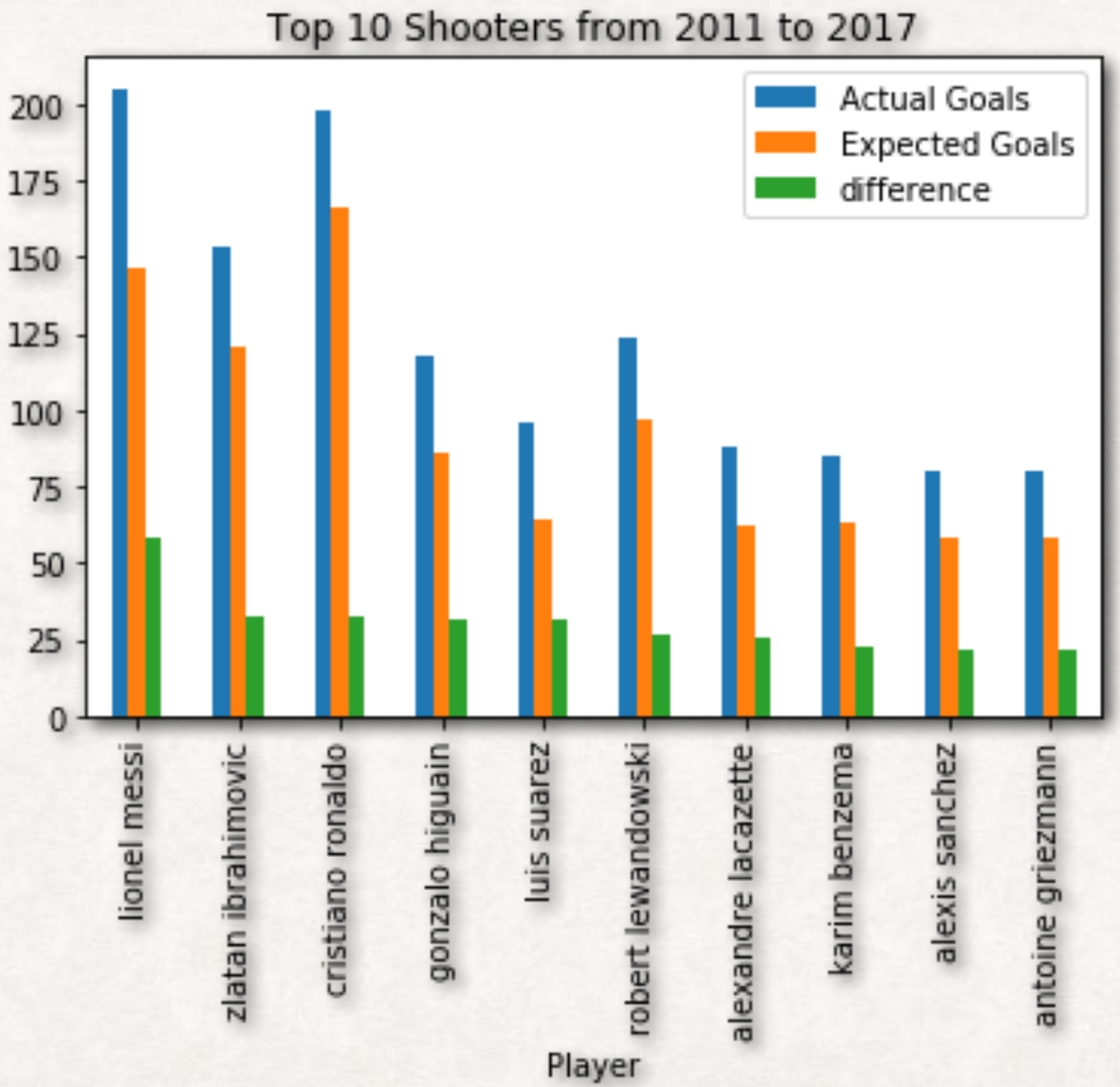
- XGBoost
- Logistic Regression
- Gradient Boosting
- Random Forest
- AdaBoost
- Multi-Layer Perception
- Over 91% accuracy

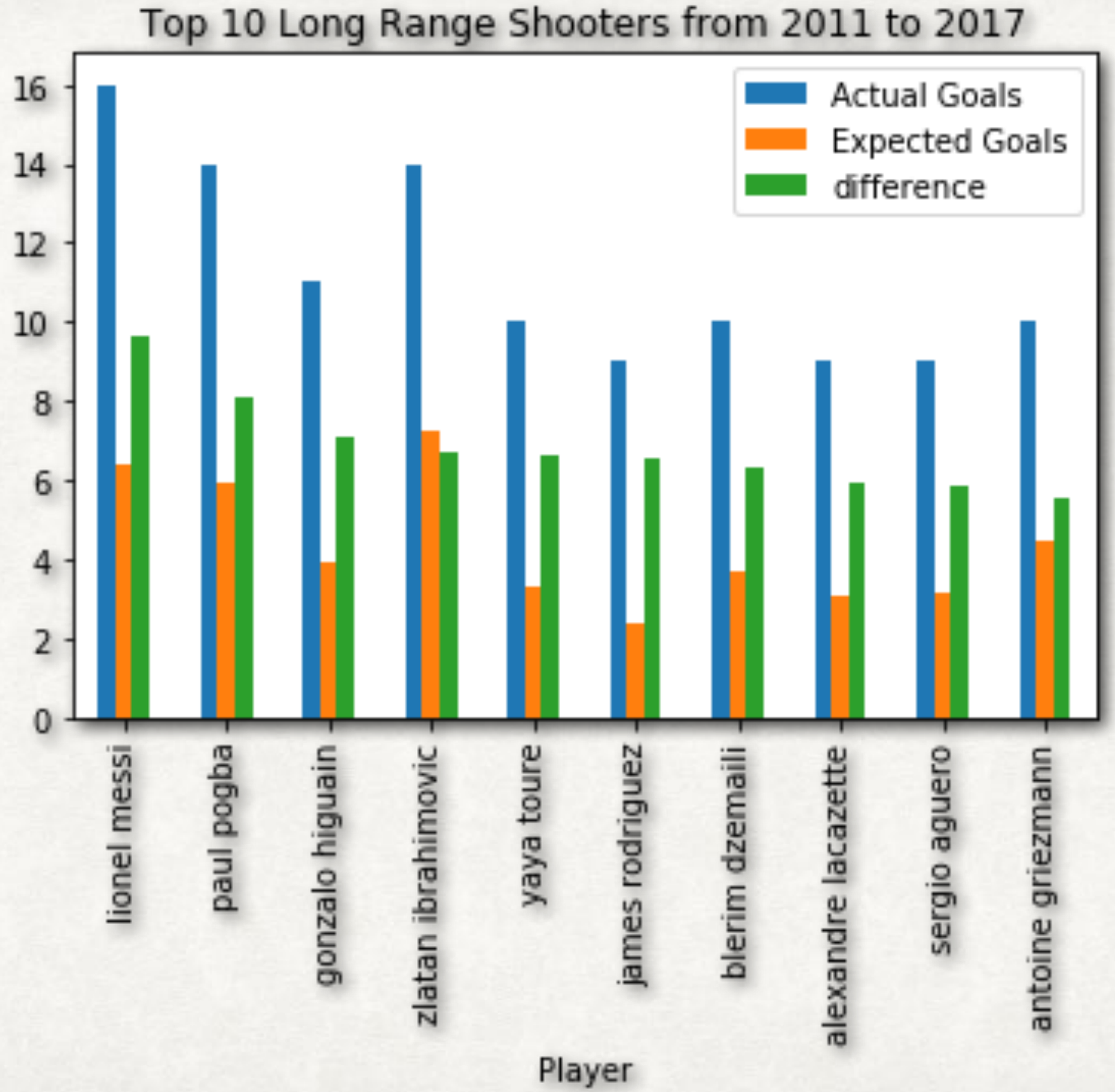
- Teams or Players are ranked by the difference between actual goals and expected goals (xG) from the model

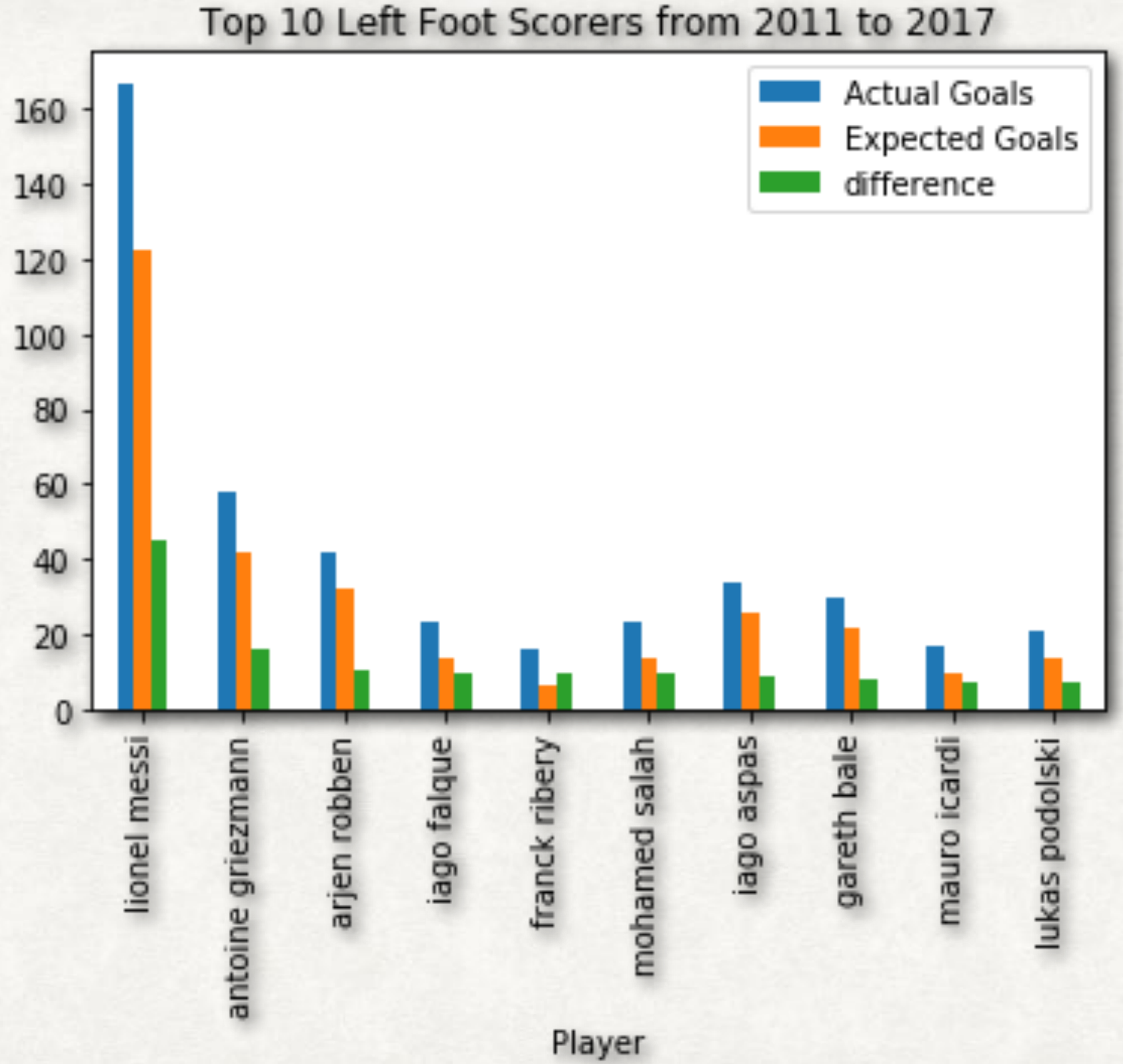
Actual Goals	Expected Goals	Difference
30	8.1	21.9

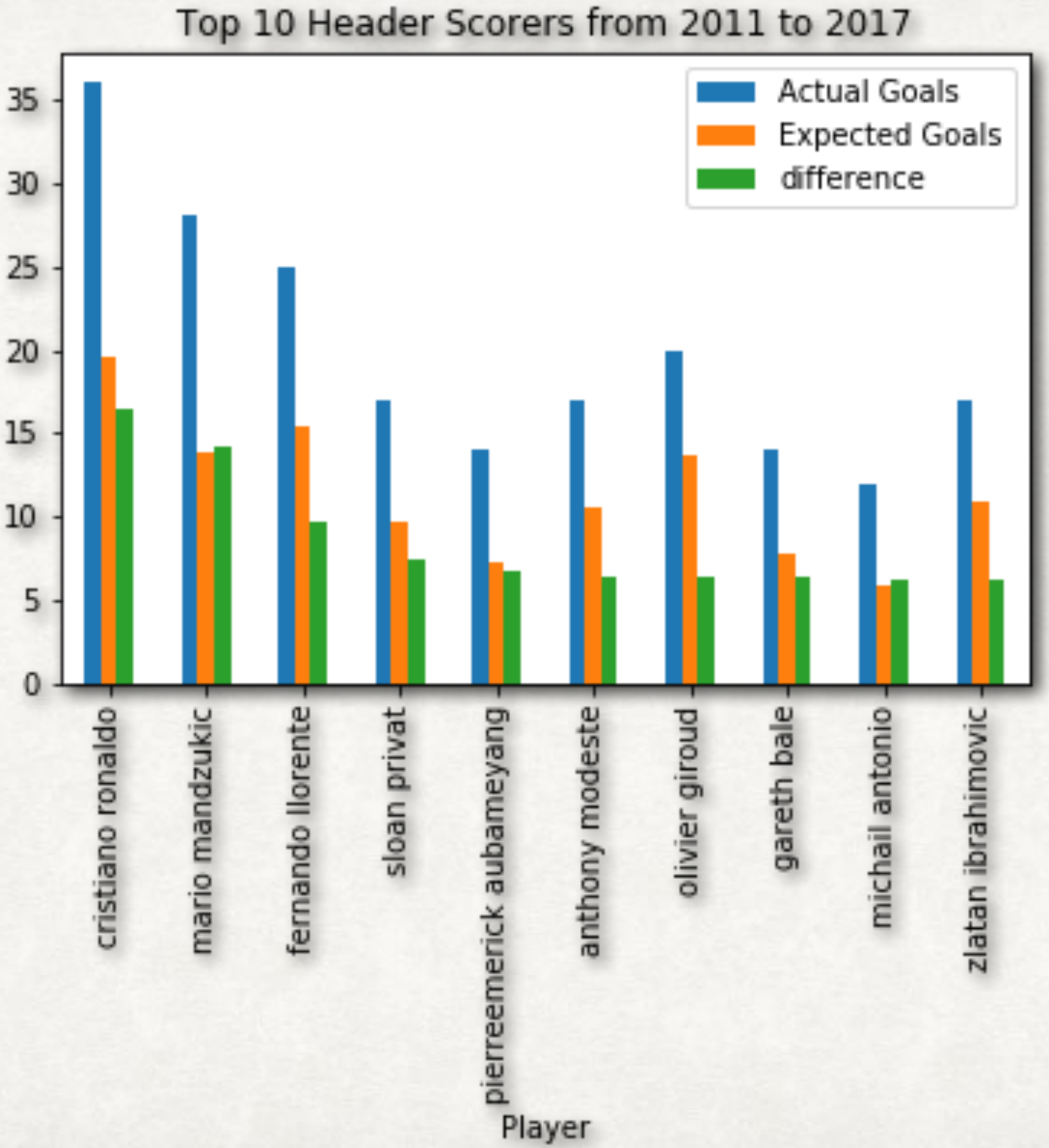
- The higher the difference, the better the team/player is


Top 10 teams in finishing from 2011 to 2017
Actual Goals
Expected Goals
difference
600
500
400
300
200
100
0
Barcelona
Real Madrid
Bayern Munich
Borussia Dortmund
Napoli
Paris Saint-Germain
Lyon
AS Monaco
Borussia Monchengladbach
Nice
Team


Top 10 Shooters from 2011 to 2017
Actual Goals
Expected Goals
difference
200
175
150
125
100
75
50
25
0
lionel messi
zlatan ibrahimovic
cristiano ronaldo
gonzalo higuain
luis suarez
robert lewandowski
alexandre lacazette
karim benzema
alexis sanchez
antoine griezmann
Player


Top 10 Long Range Shooters from 2011 to 2017
Actual Goals
Expected Goals
difference
16
14
12
10
8
6
4
2
0
lionel messi
paul pogba
gonzalo higuain
zlatan ibrahimovic
yaya toure
james rodriguez
blerim dzemaili
alexandre lacazette
sergio aguero
antoine griezmann
Player


Top 10 Left Foot Scorers from 2011 to 2017
Actual Goals
Expected Goals
difference
160
140
120
100
80
60
40
20
0
lionel messi
antoine griezmann
arjen robben
iago falque
franck ribery
mohamed salah
iago aspas
gareth bale
mauro icardi
lukas podolski
Player


Top 10 Header Scorers from 2011 to 2017
Actual Goals
Expected Goals
difference
35
30
25
20
15
10
5
0
cristiano ronaldo
mario mandzukic
fernando llorente
sloan privat
pierreemerick aubameyang
anthony modeste
olivier giroud
gareth bale
michail antonio
zlatan ibrahimovic
Player

FUTURE WORK

- Account for defensive team positioning
- Calculate xG for goalkeepers
- Find out why English Premier League not among the top
- Increase number of layers in neural network
- Calculate expected points for teams