



# NBA PREDICTION

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# PROJECT OVERVIEW

Created a machine learning model to predict the outcome of individual NBA games with 83 percent accuracy.



# PRODUCT OVERVIEW

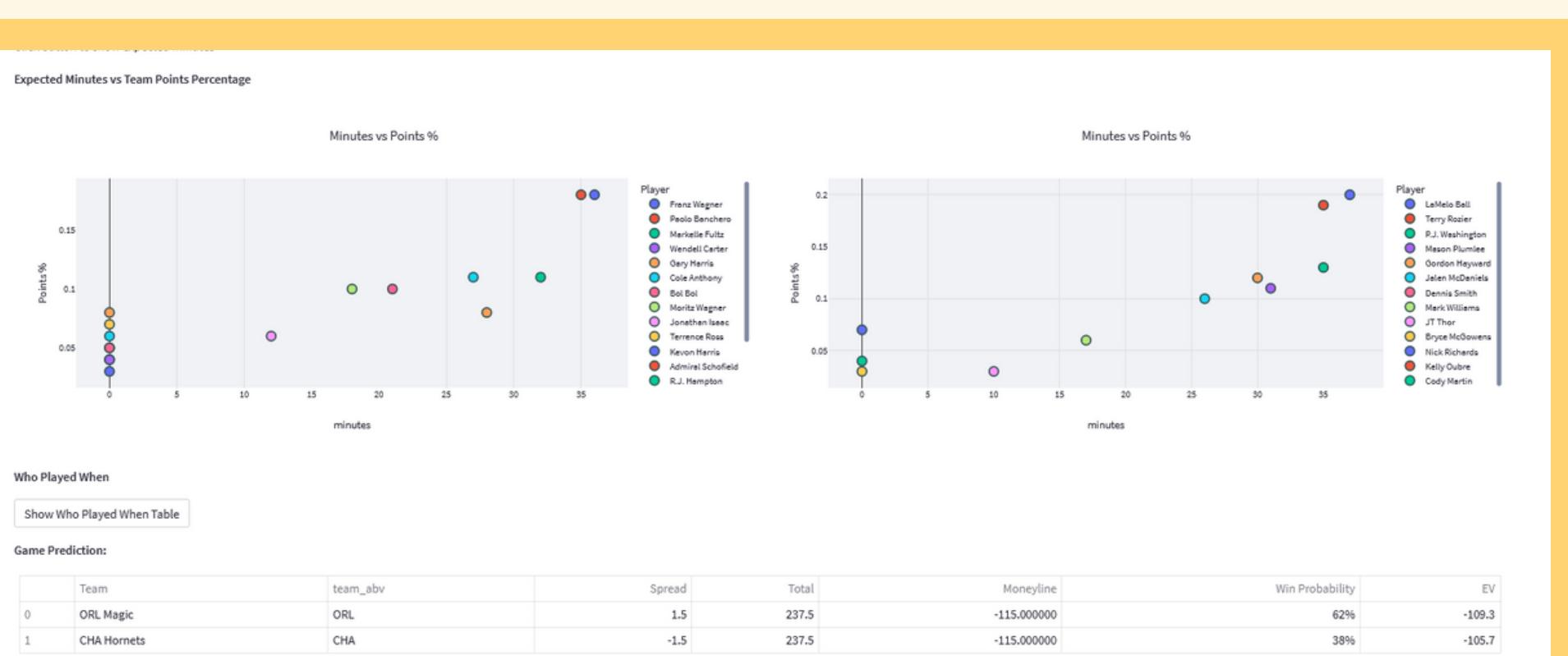
## NBA Predictions

Version 3.1

This app predicts the winner of NBA games using data from the current season and previous seasons.

These predictions are based on probable lineups and can change if a player is ruled out or in.

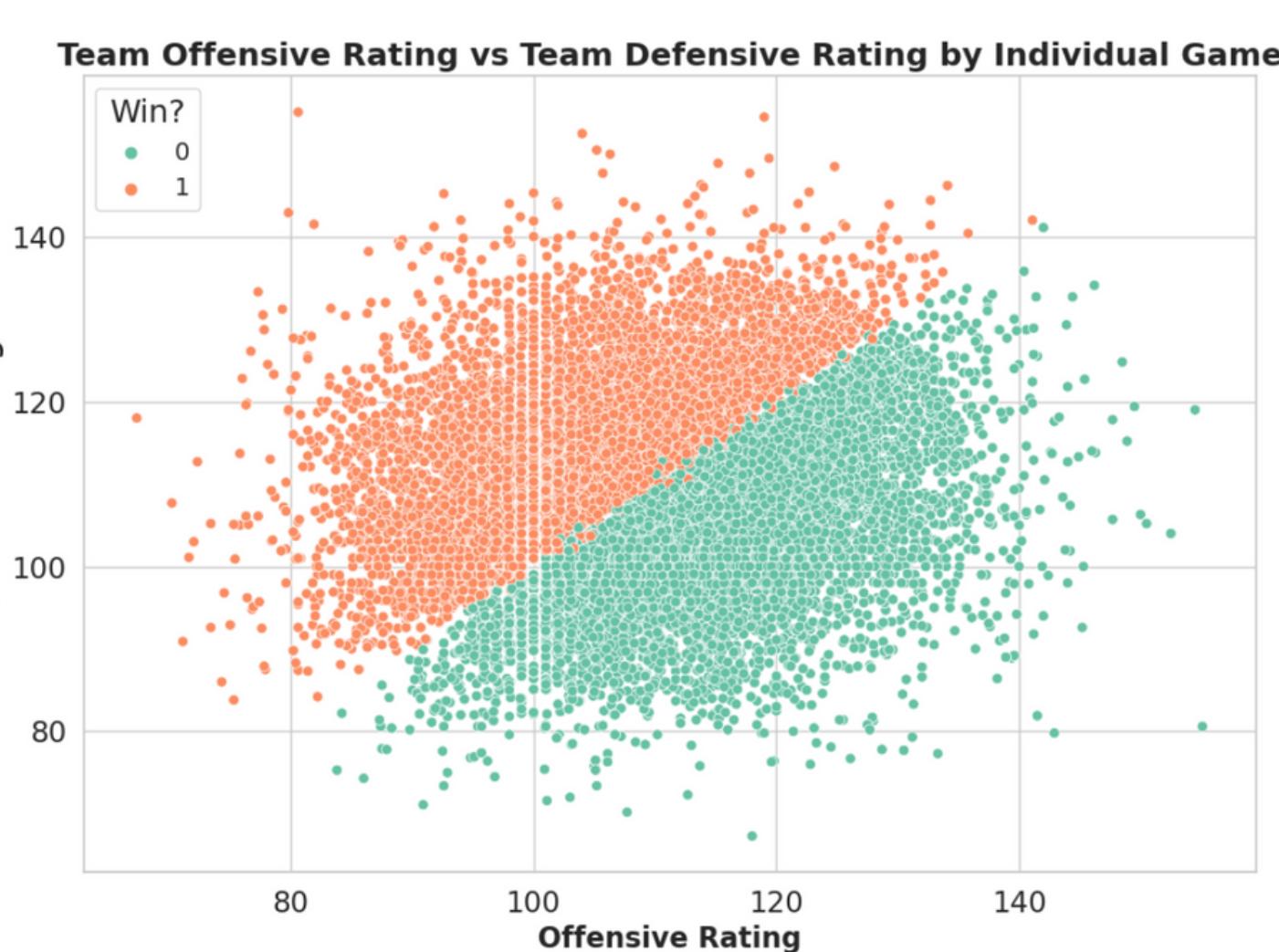
	Team	team_abv	Spread	Total	Moneyline	Win Probability	EV
0	ORL Magic	ORL	1.50	237.50	-115.0	62%	-109.30
1	CHA Hornets	CHA	-1.50	237.50	-115.0	38%	-105.70
2	CLE Cavaliers	CLE	-5.00	226.50	-195.0	59%	-156.05
3	IND Pacers	IND	5.00	226.50	+165.0	41%	8.65
4	PHI 76ers	PHI	-4.00	225.00	-170.0	52%	-136.40
5	NY Knicks	NYK	4.00	225.00	+145.0	48%	17.60
6	TOR Raptors	TOR	2.00	230.00	+110.0	51%	7.10
7	MEM Grizzlies	MEM	-2.00	230.00	-130.0	49%	-114.70
8	SAC Kings	SAC	-1.00	228.00	-115.0	51%	-107.65
9	NO Pelicans	NOP	1.00	228.00	-105.0	49%	-102.45
10	DEN Nuggets	DEN	8.00	227.00	+260.0	47%	69.20
11	MIN Timberwolves	MIN	-8.00	227.00	-315.0	53%	-213.95



The final product is a streamlit application that predicts the winner of a selected NBA Game.

The product further displays team metrics for both teams, as well as players who may or may not play, among other metrics.

# DATA OVERVIEW



22,824

Games Trained On

83%

Final Accuracy

900+

Features

543

Important Features  
(in final model)

# STAKEHOLDER METRICS

The appropriate optimization metric for a bookmaker is accuracy

When a bookmaker sets odds on a match, they either pick the favorite (i.e., winner) correctly, or they do not.

A type 1 error (false positive) would be predicting Team A to win, when in reality Team B wins.

A type 2 error (false negative) would be predicting Team B to lose, when in reality Team A loses.

Because there are only two fighters to choose from per match, and there is one row of data per fighter per match, there is no difference in these cases, and accuracy remains the proper metric.





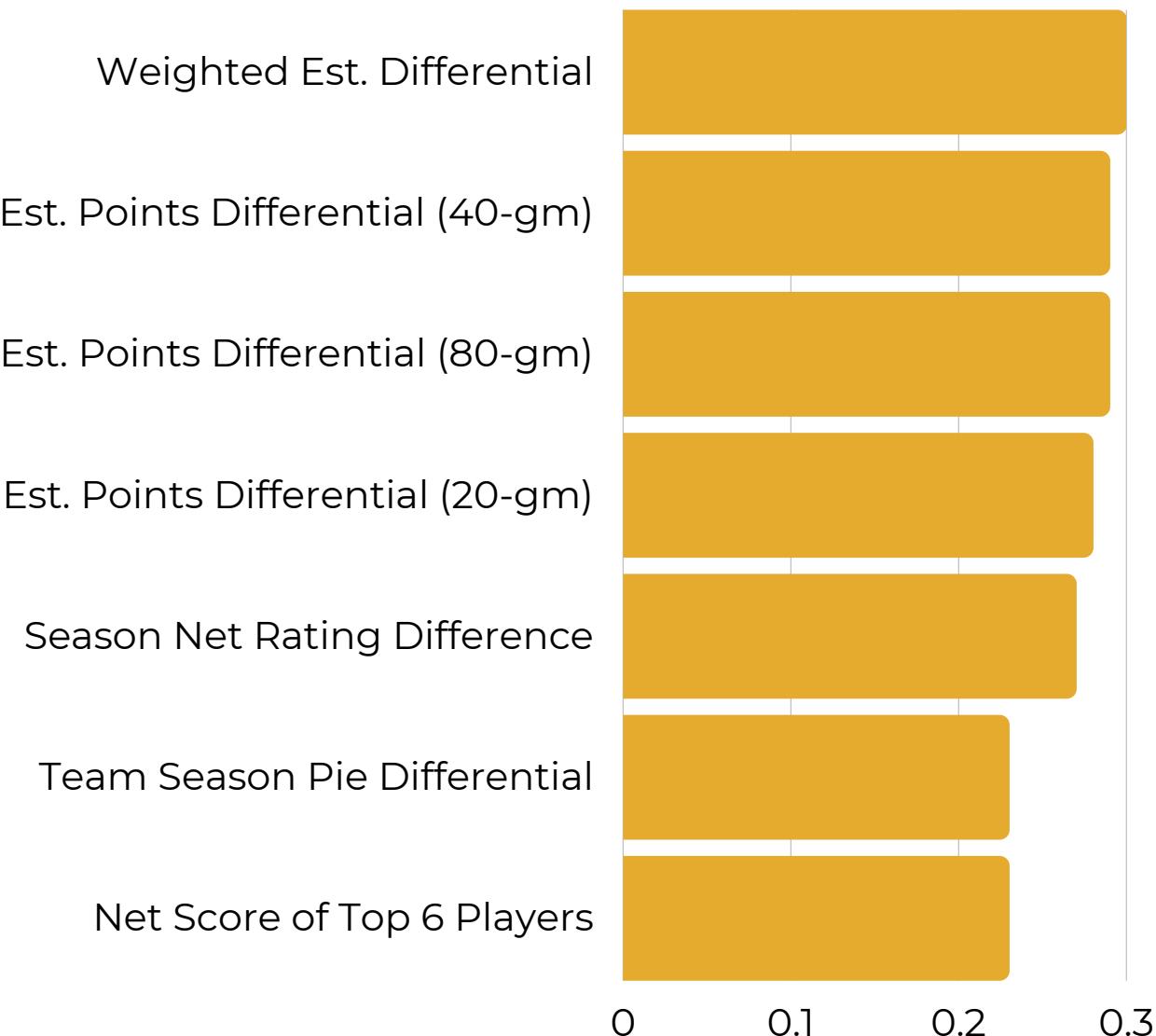
The final model was an extra trees model, which tested at 83% accuracy.

This was an approximate 21 percent increase over the initial decision tree model.

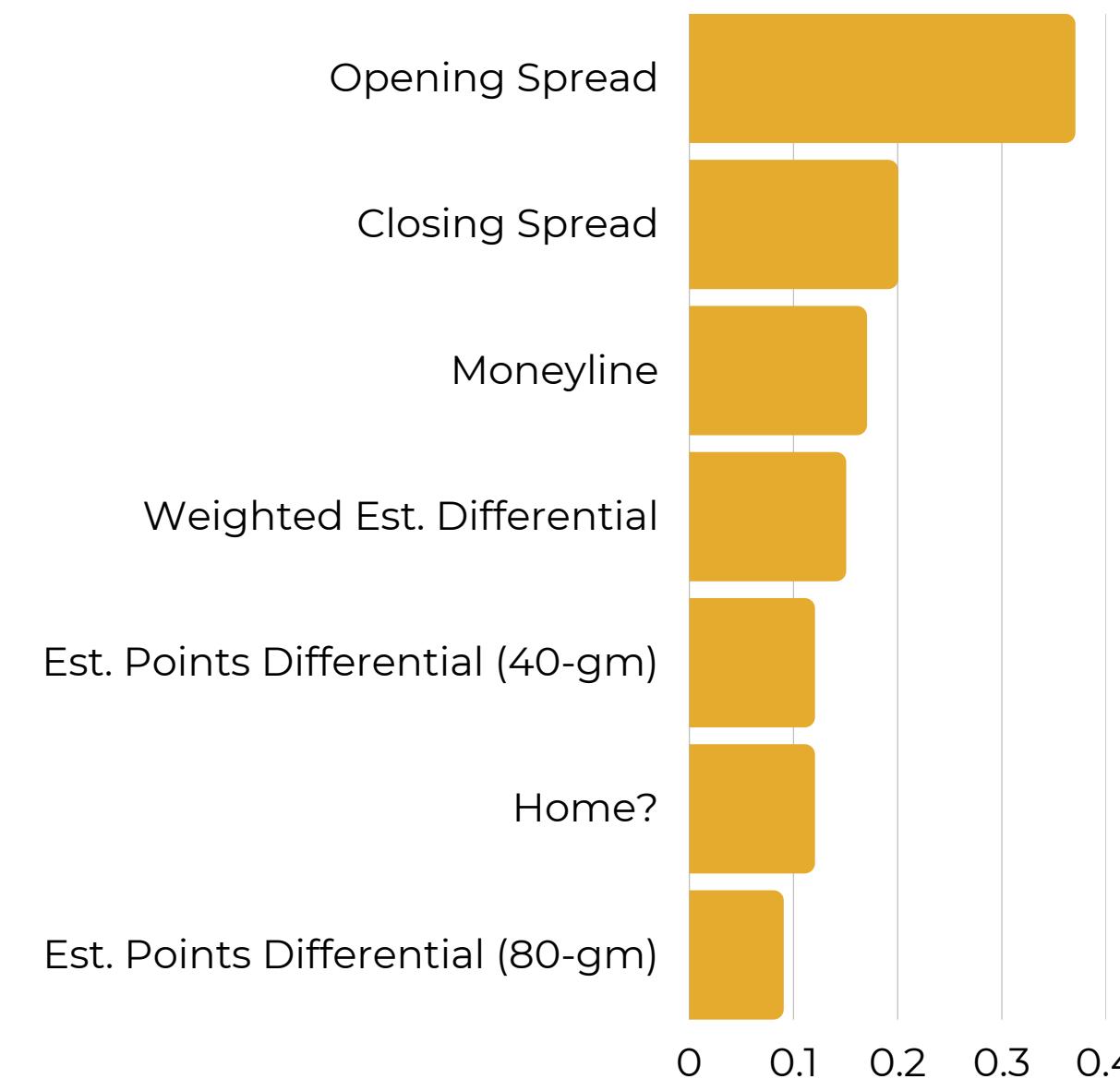
# Model Testing Results

# IMPORTANT FEATURES

## TOP FEATURE CORRELATIONS WITH WINS



## TOP FEATURES OF FINAL MODEL



# CONCLUSION

The final product can be used by bookmakers and speculators alike to increase the accuracy with which they predict winners and make betting lines.

This accuracy would increase profits and give the bookmaker or speculator an informational competitive advantage.

This final application can:

- 1) Predict** the winning team,
- 2) display odds** based on the final machine learning model, and
- 3) depict the primary features** in the data that were most important to the model.





# THANK YOU

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