

Valuing NBA Draft Picks

Insight F25 - Dream Team



Meet the Dream Team



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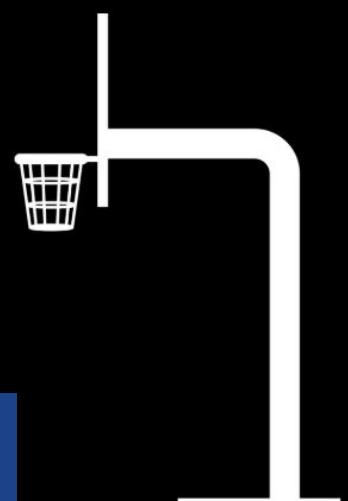
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Starting Question

Which **NBA draft picks** tend to
outperform their relative position?



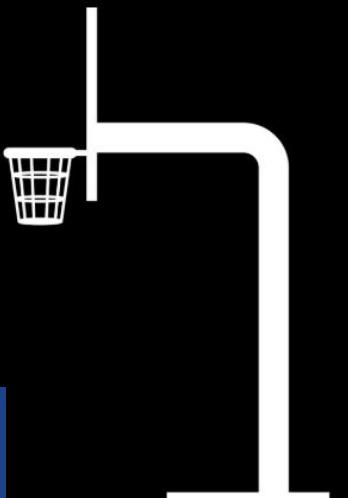
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NBA Draft Structure

- 30 Teams
- 2 rounds with 30 picks each (**60 total**)
- First 14 picks are **lottery-based** to give weaker teams better odds



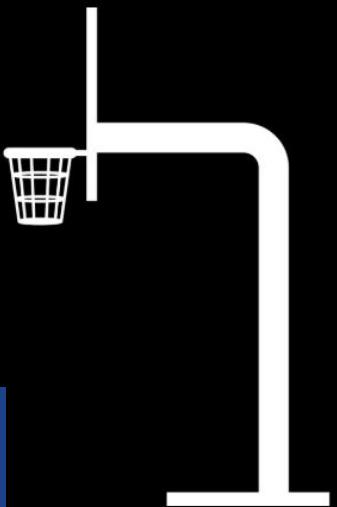
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Key Questions

1

What stats are the largest predictors of performance?

2

Will a player be a bust or a hit?

3

Can we predict which teams are best at drafting?



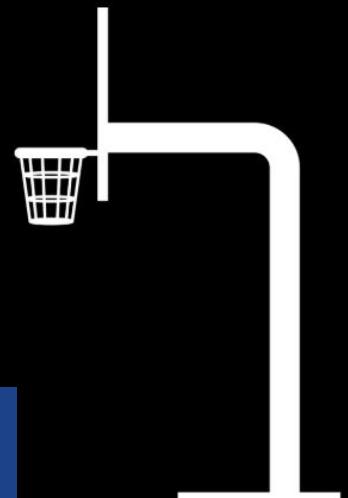
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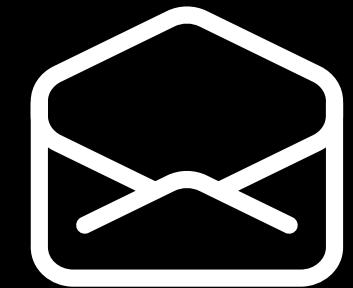
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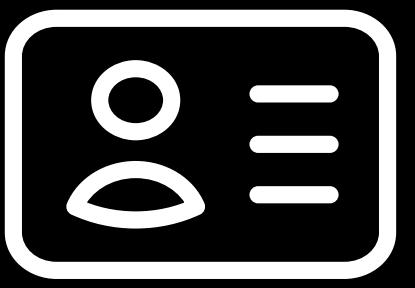
Dataset Overview



NBA Draft Picks
From 1990 to 2021



NBA Career Totals, Averages, &
Advanced Statistics



Player Background
Information



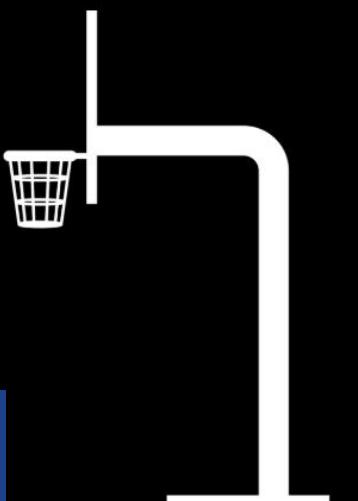
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Scoring Breakdown

- **Composite Score** = $(0.5 \cdot \text{VORP}) + (0.5 \cdot \text{WS}/48)$
 - A single metric combining overall impact (**VORP**) & efficiency (**WS/48**)
- **Hit Vs. Bust**
 - Value over expected (VOE) → Player Comp Score - Avg Comp Score at Draft Position
 - Value > 0 is a Hit
 - Value < 0 is a Bust

VORP - How much *value* (based on +/-) a player contributes compared to a replacement-level player

WS/48 - How much a player contributes to team wins per 48 minutes for actions like efficient scoring, extra possessions, defensive stops, etc.



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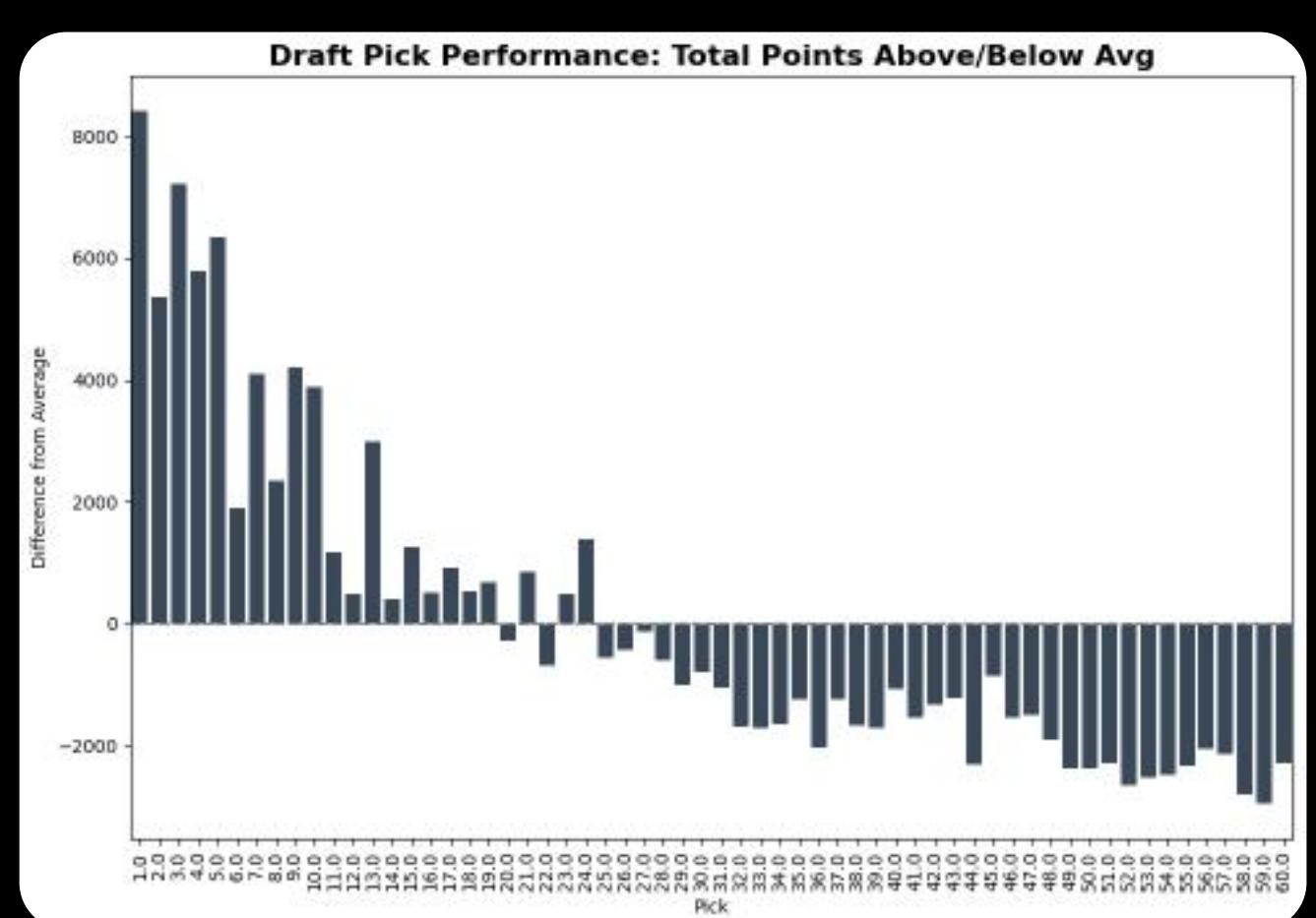
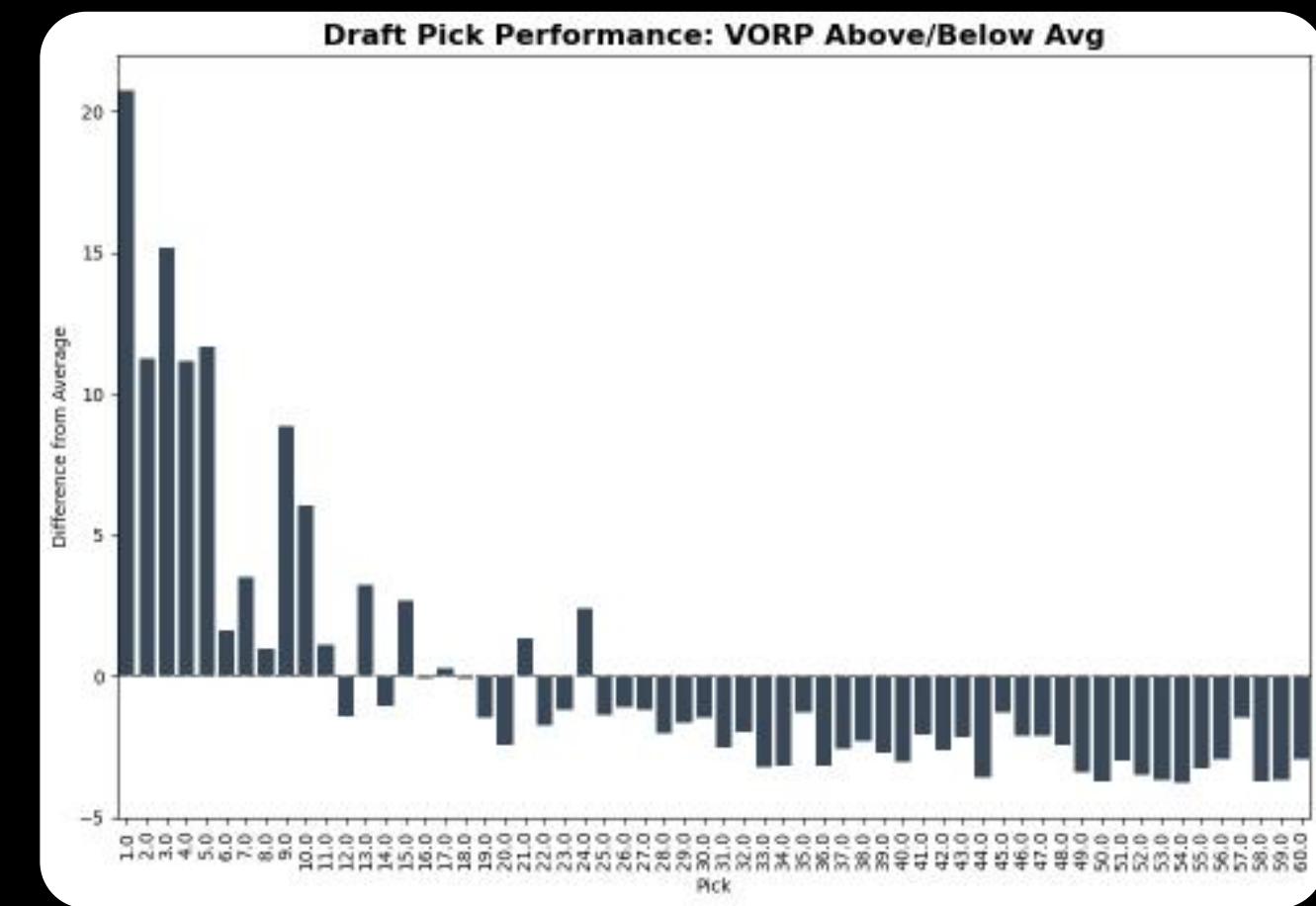
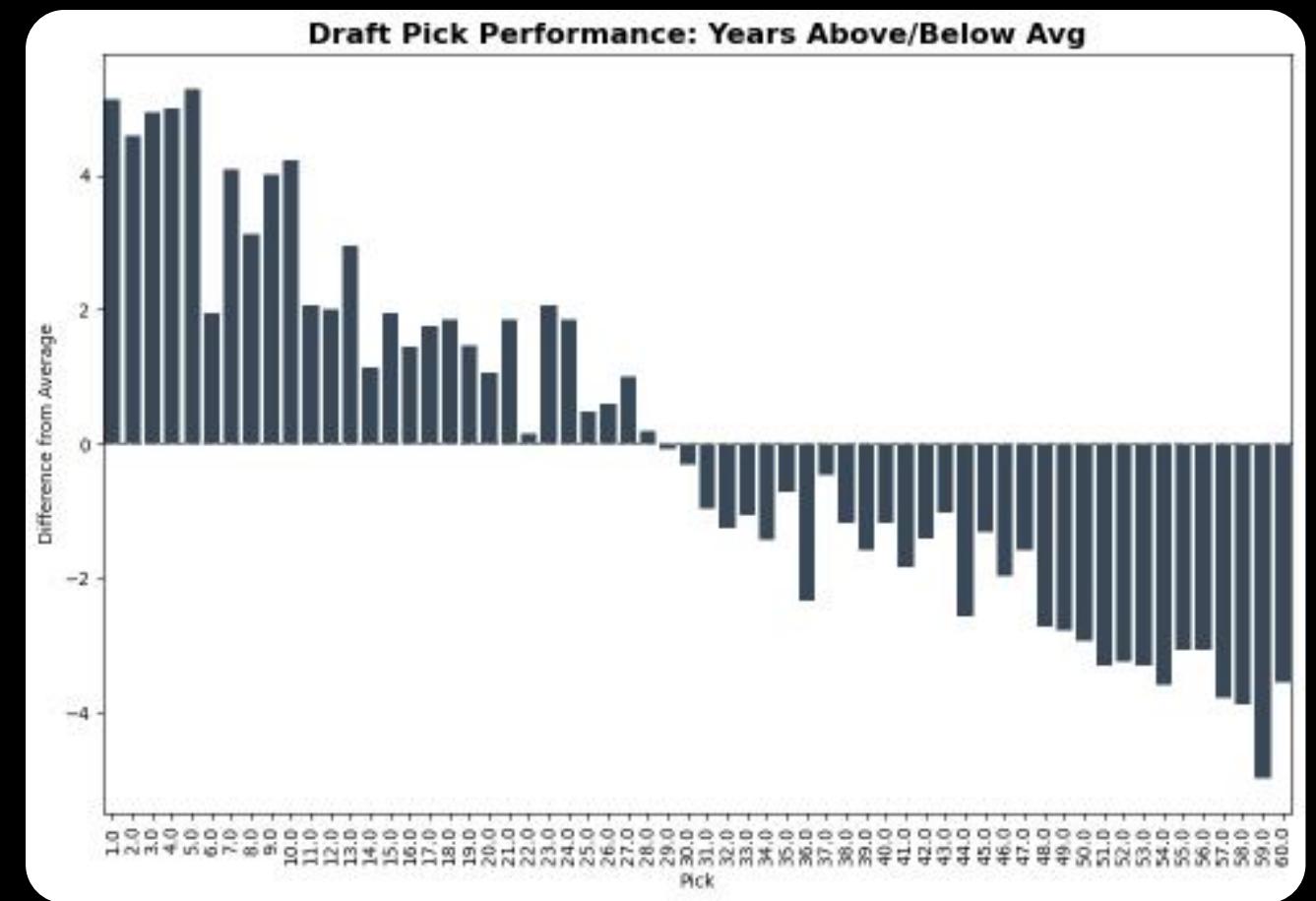
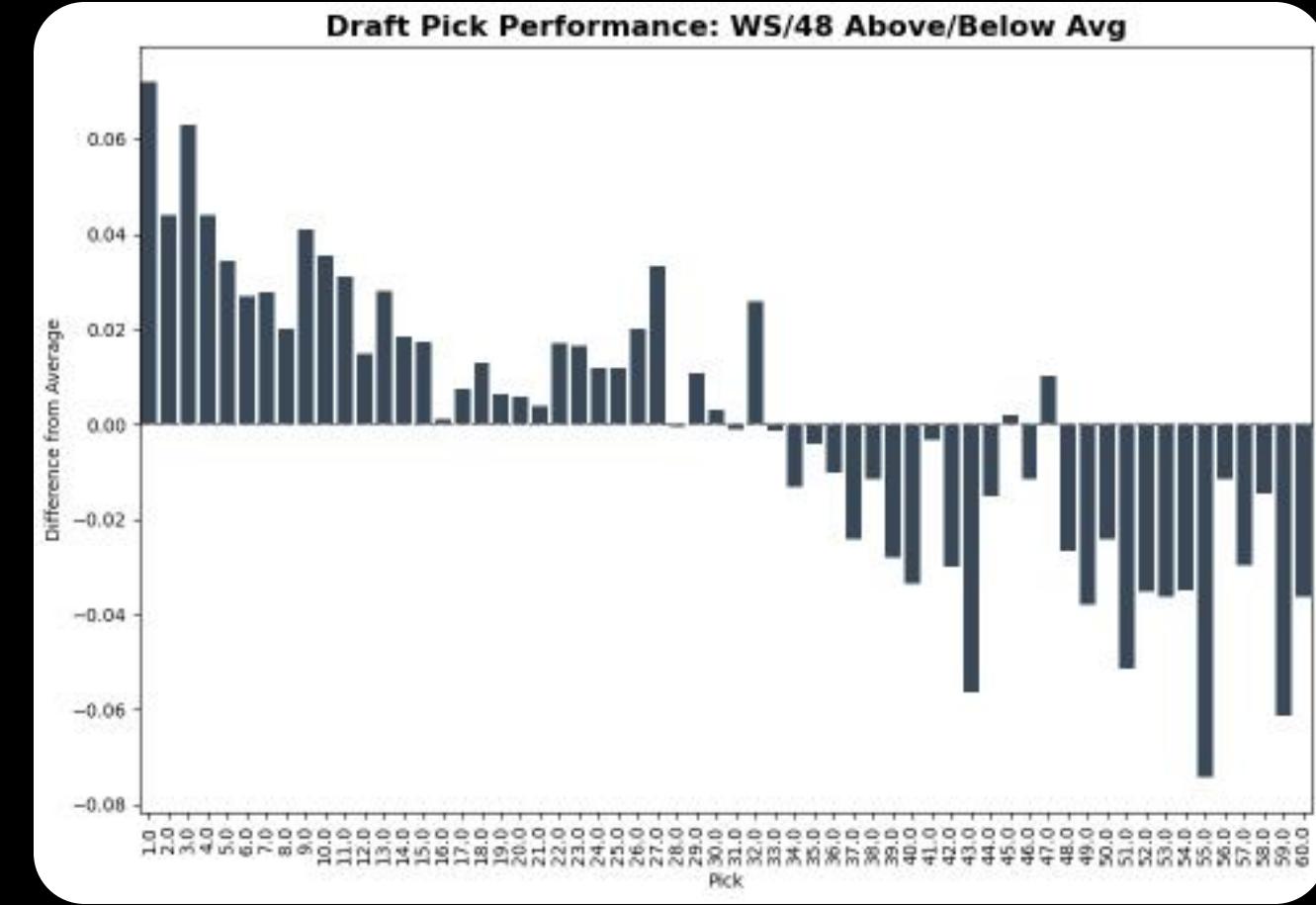
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Draft Slots vs Performance against League Average



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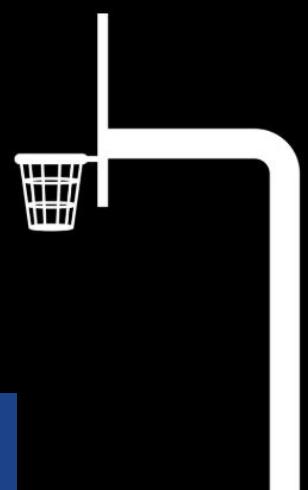
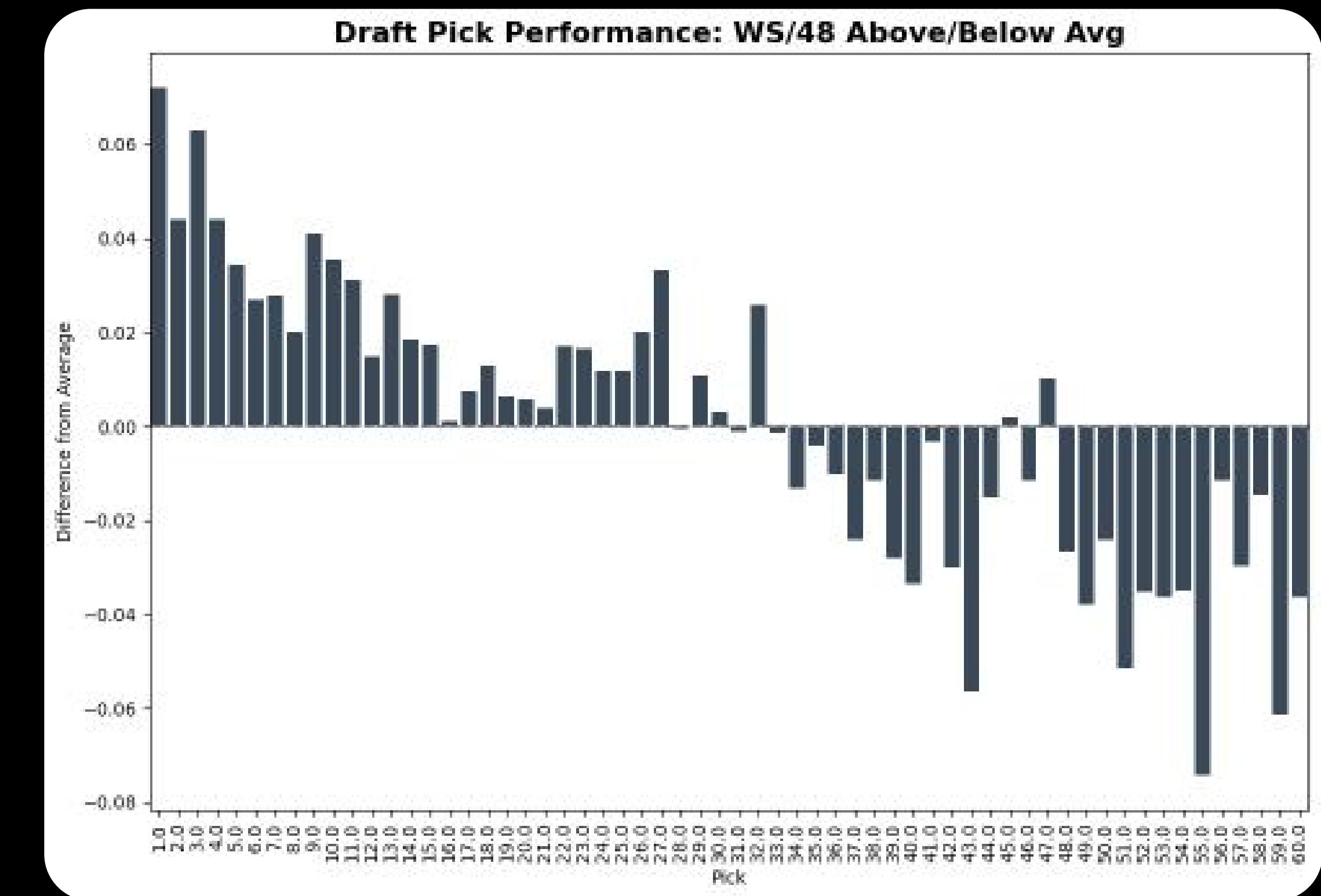
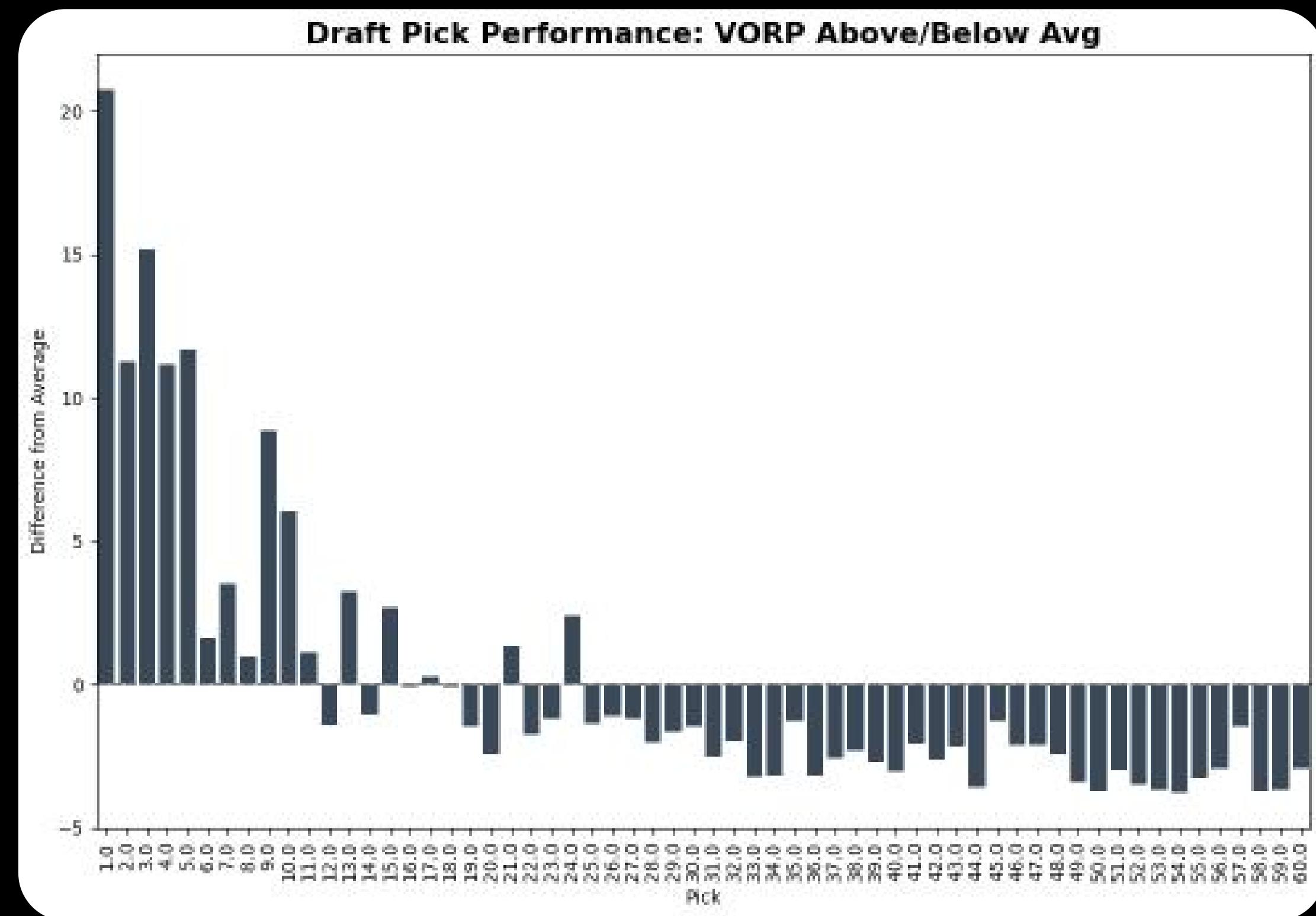
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Draft Slots vs Performance against League Average



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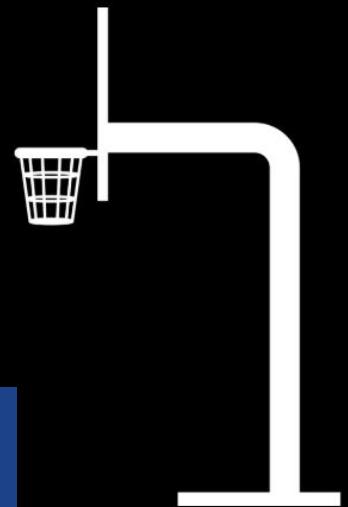
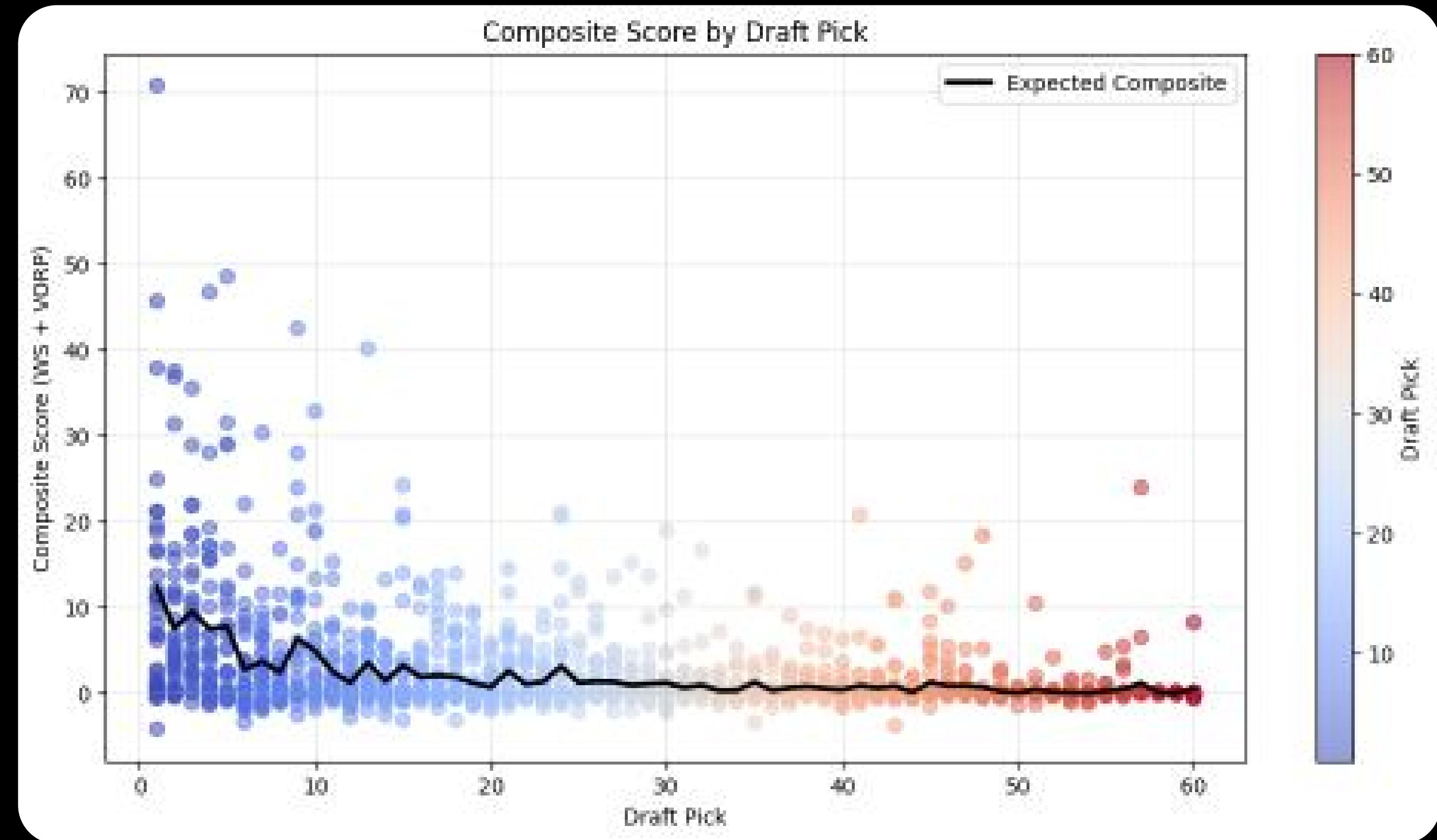
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Composite Score by Draft Pick



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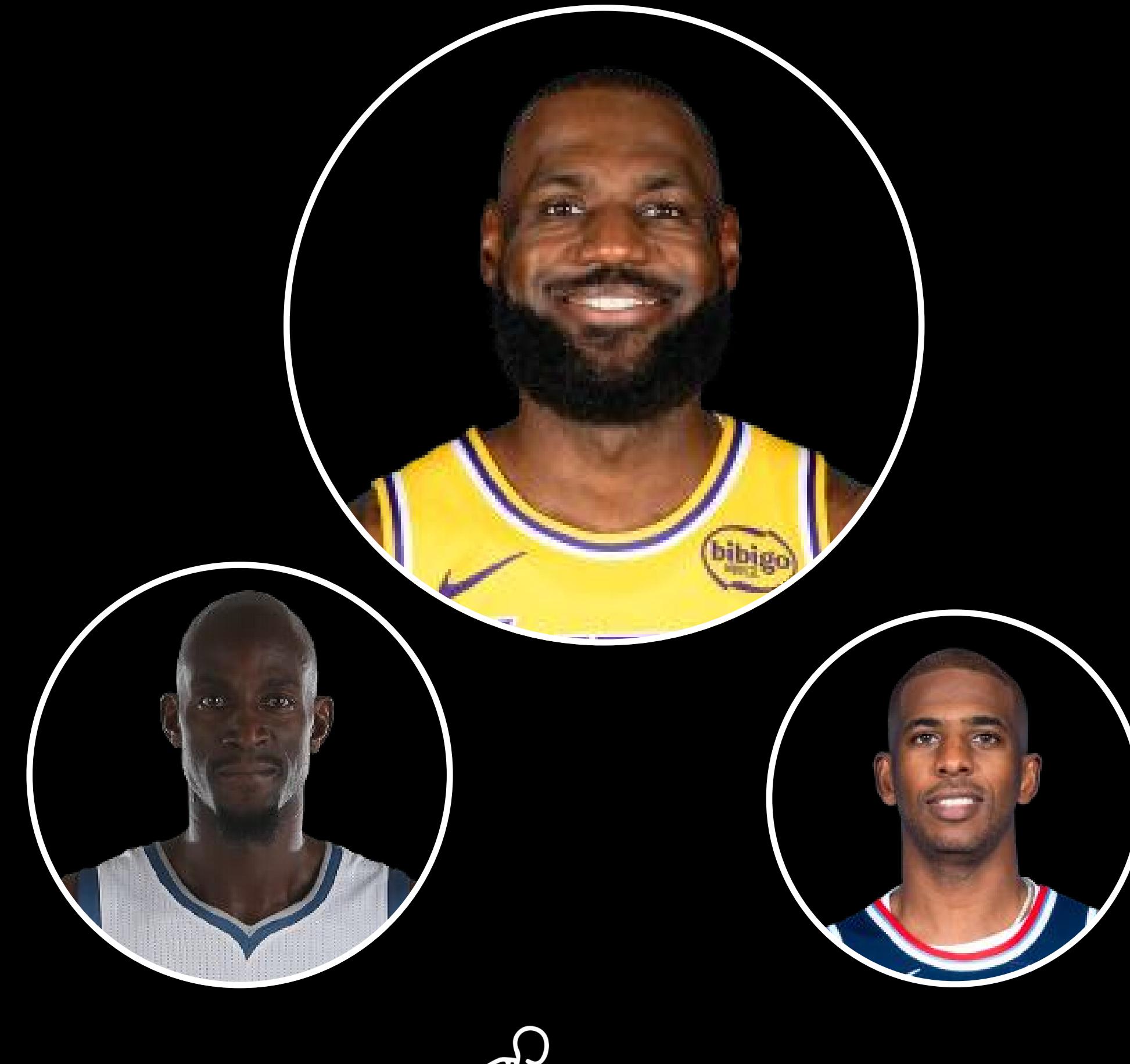
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Value Over Expected by Players

Rank	Player	Pick	VOE
1	LeBron James	1	58.550
2	Kevin Garnett	5	40.839
3	Chris Paul	4	39.274
4	Kobe Bryant	13	36.651
5	Dirk Nowitzki	9	36.192
6	Tim Duncan	1	33.389
7	Kevin Durant	2	30.013
8	Jason Kidd	2	29.322
9	Paul Pierce	10	27.941
10	Stephen Curry	7	26.670
11	James Harden	3	26.050
12	Shaquille O'Neal	1	25.589
13	Gary Payton	2	23.829
14	Dwyane Wade	5	23.779
15	Manu Ginobili	57	22.786



VOE =

Player Composite Score - Avg
Composite per Draft Slot



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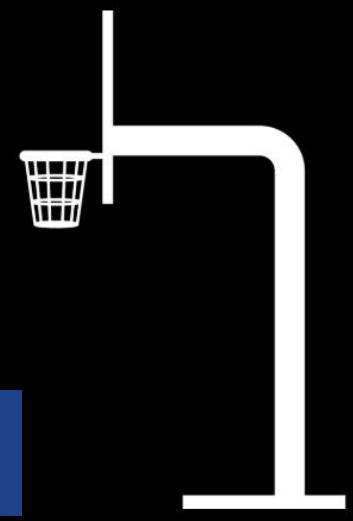
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Average Value Over Expected by Team

Team	Average VOE
OKC	1.227
SAS	1.201
NOP	1.083
CLE	0.778
IND	0.403
GSW	0.370
LAL	0.332
HOU	0.312
DEN	0.266
MIL	0.247



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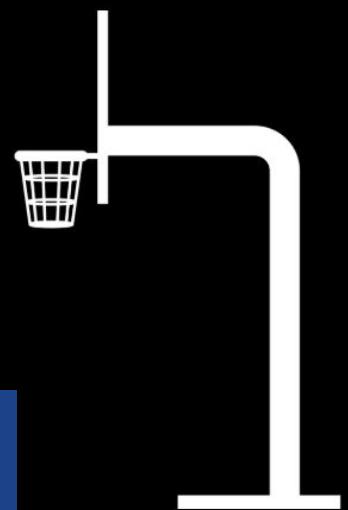
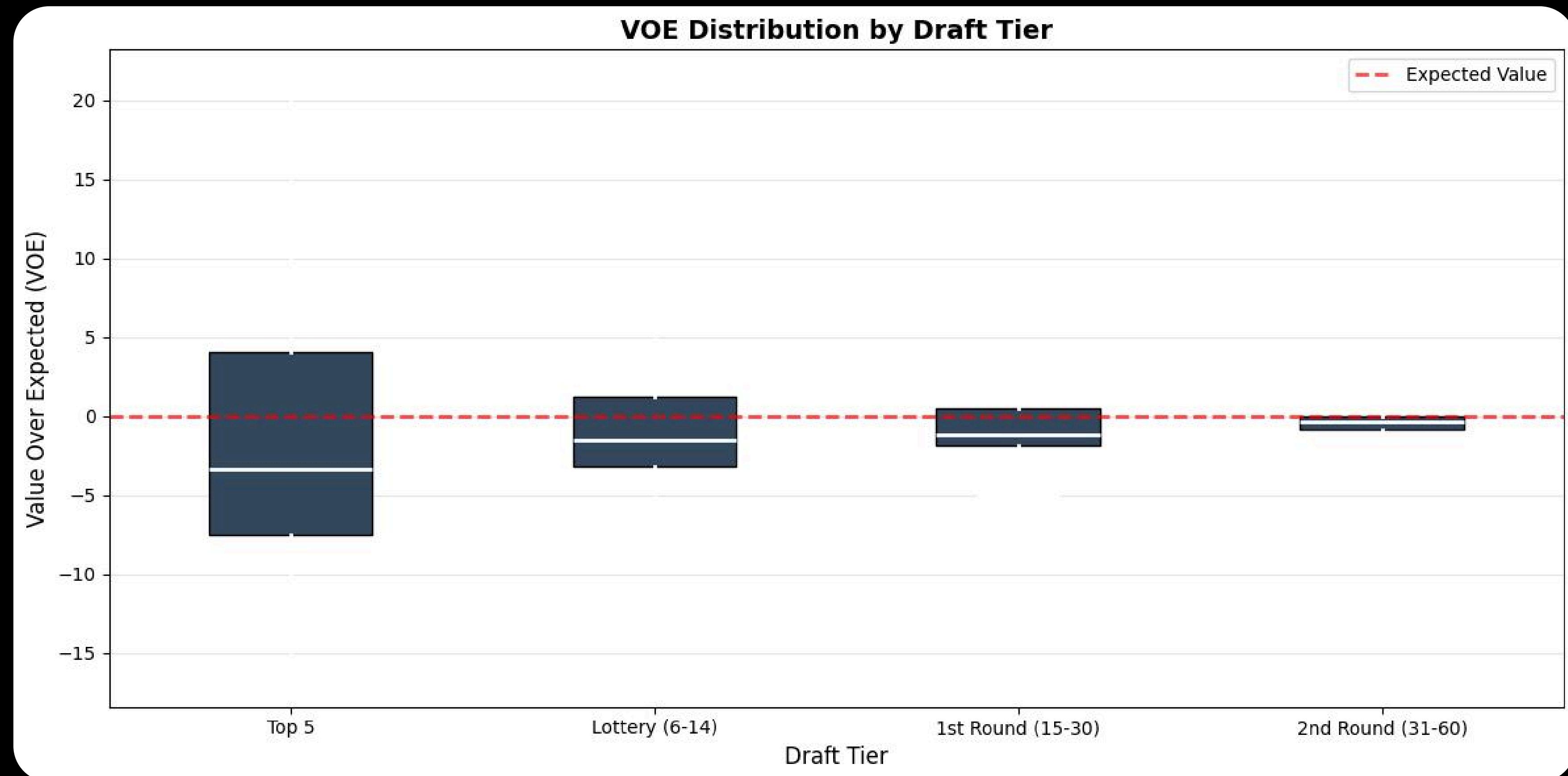
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VOE Distribution by Draft Tier



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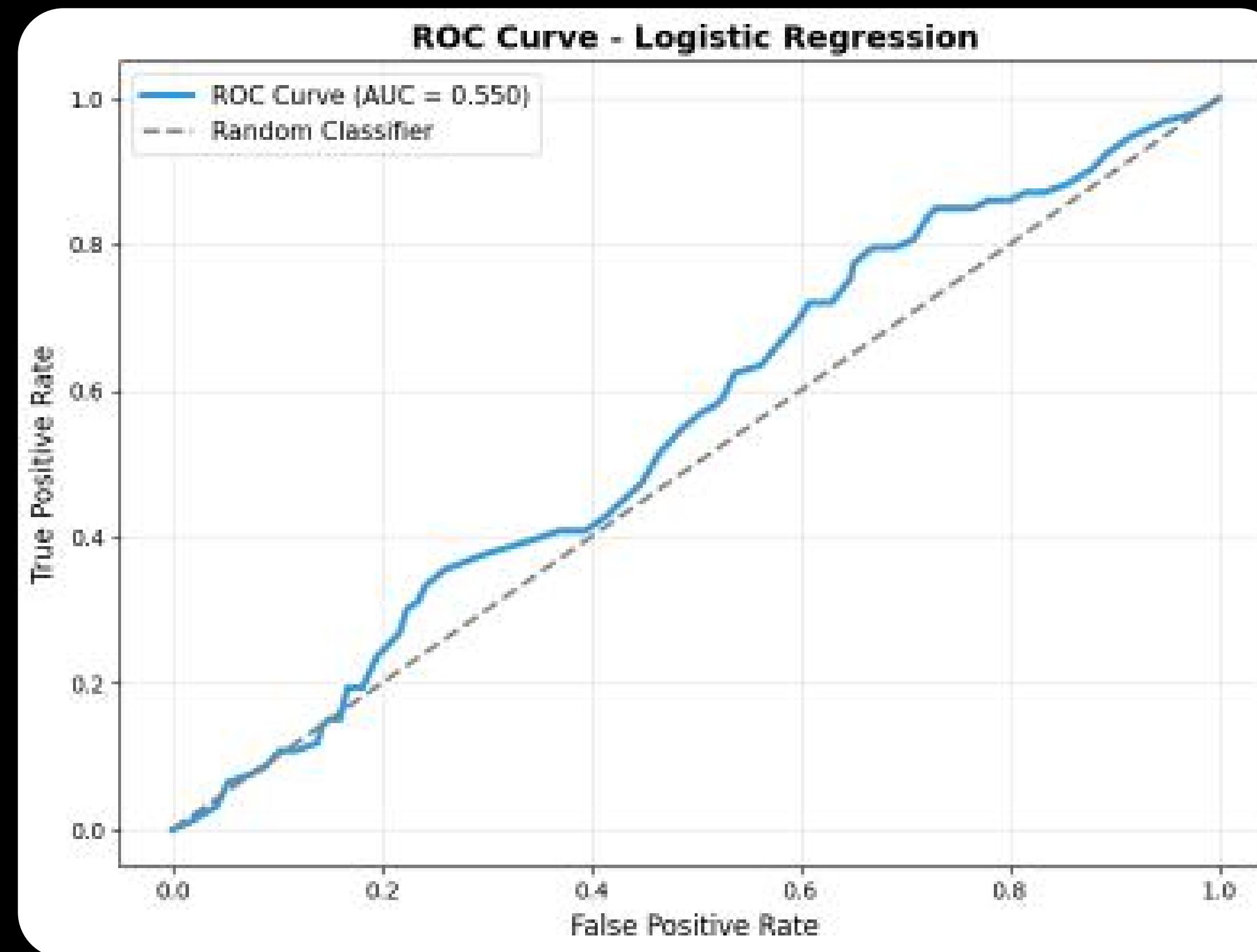
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Logistic Regression on Draft Tiers



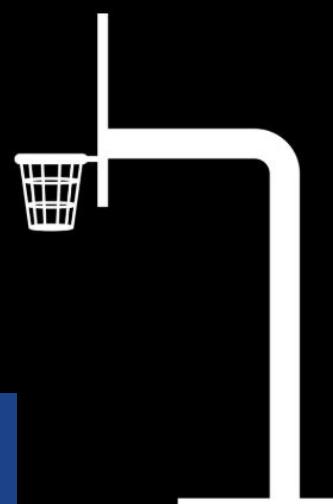
Logistic Regression

Using draft position to predict whether or not a player will be a hit

Key feature: **Pick Squared**

Accounts for exponential fall off as the draft gets longer

1 = Hit, 0 = Bust



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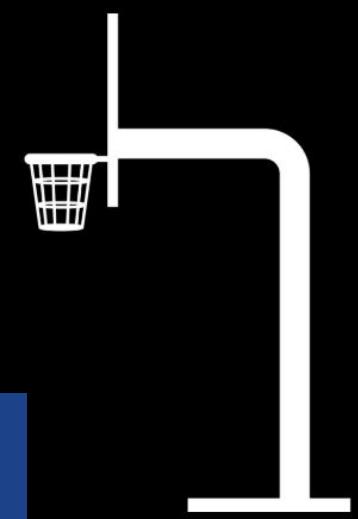
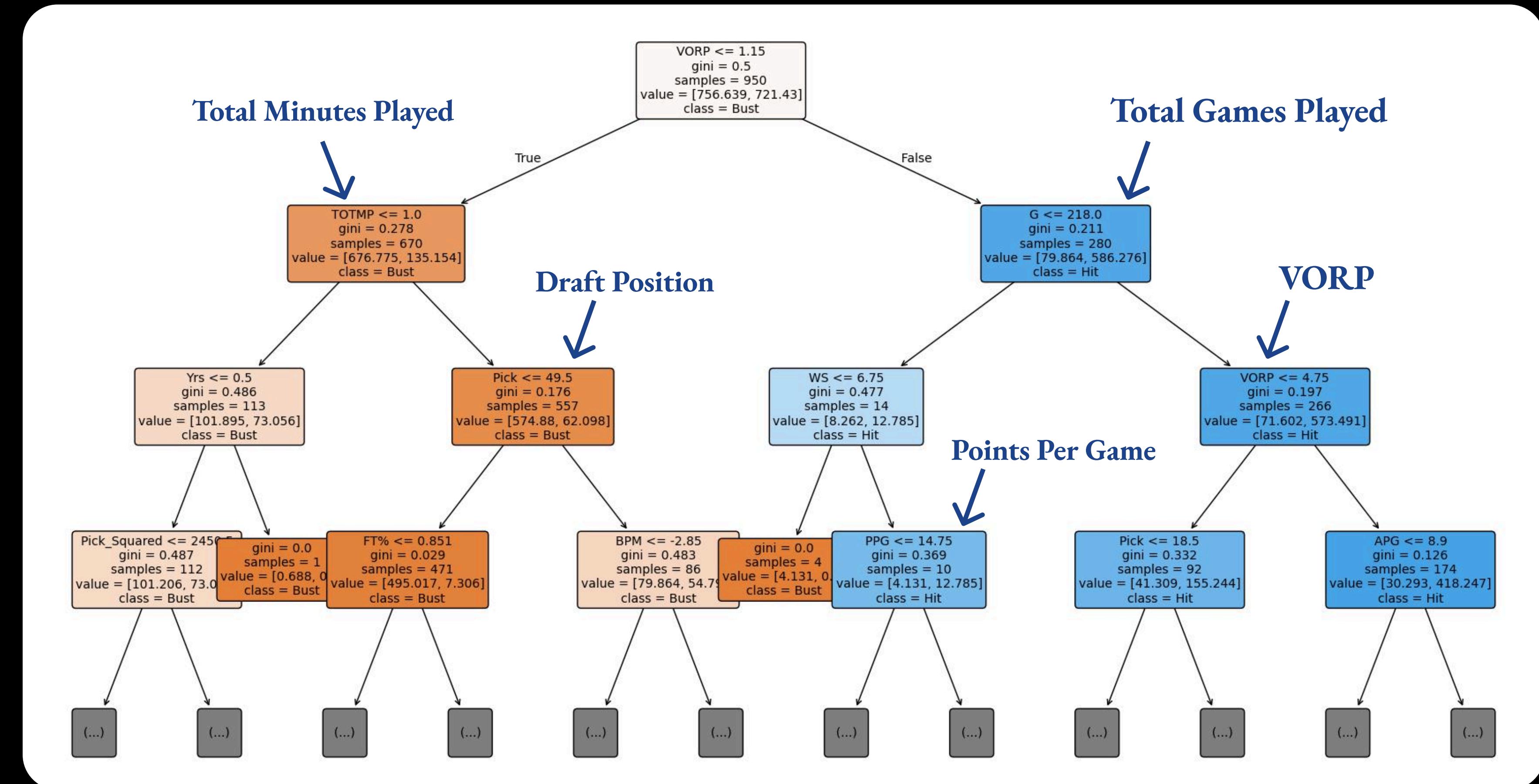
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Decision Tree



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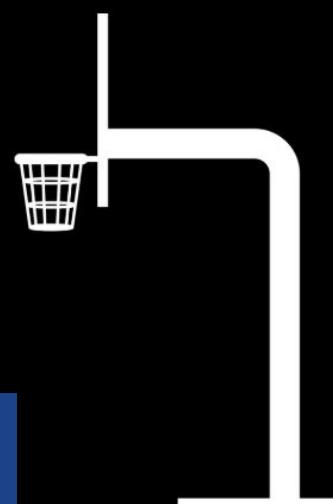
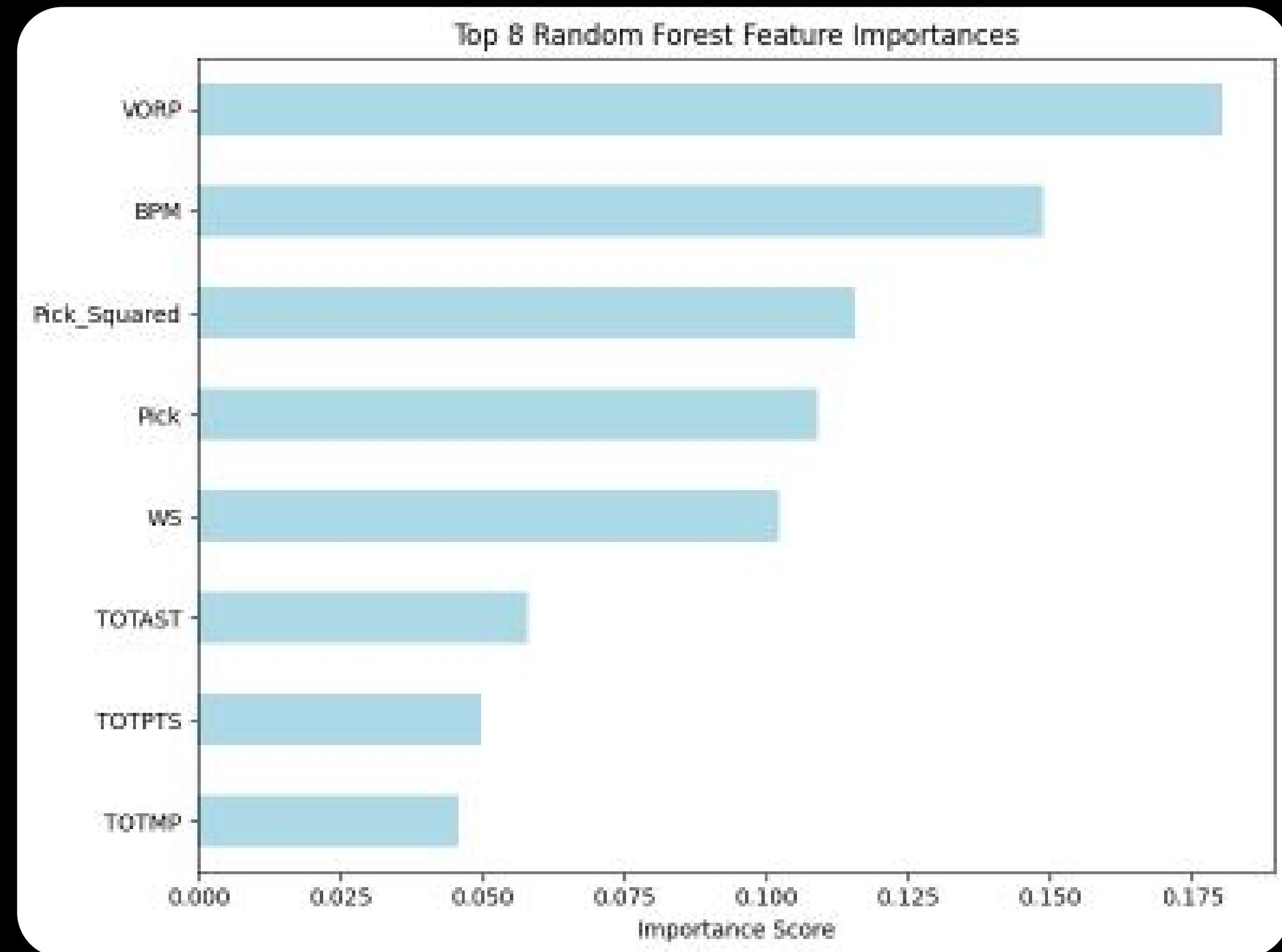
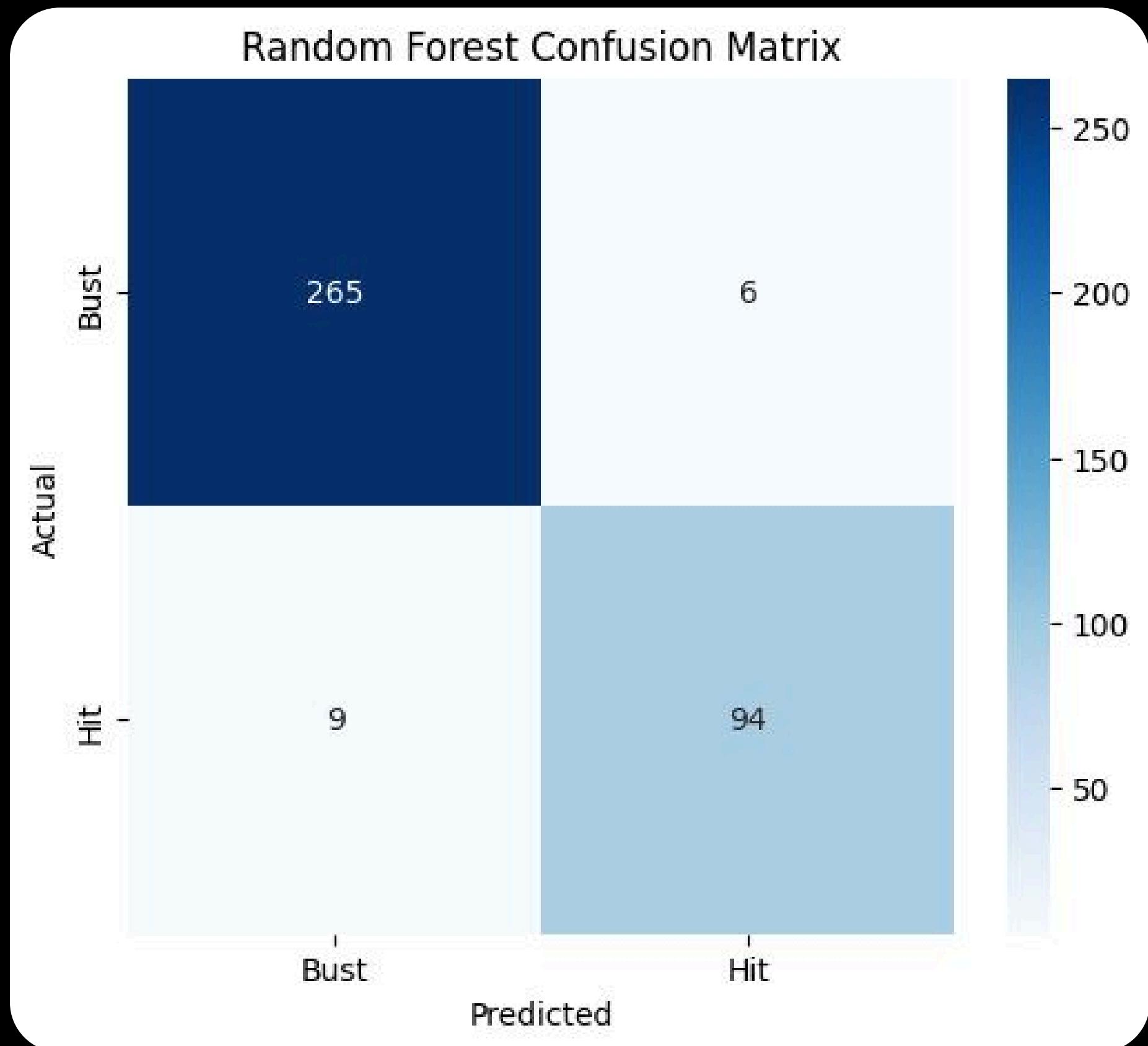
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Will a Player be a Bust or a Hit?



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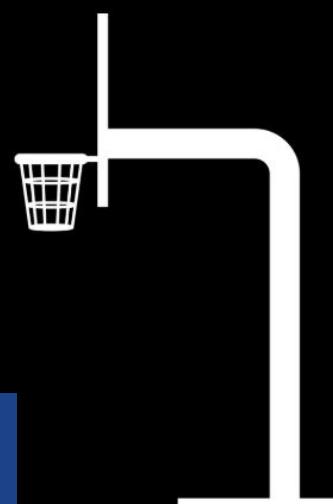
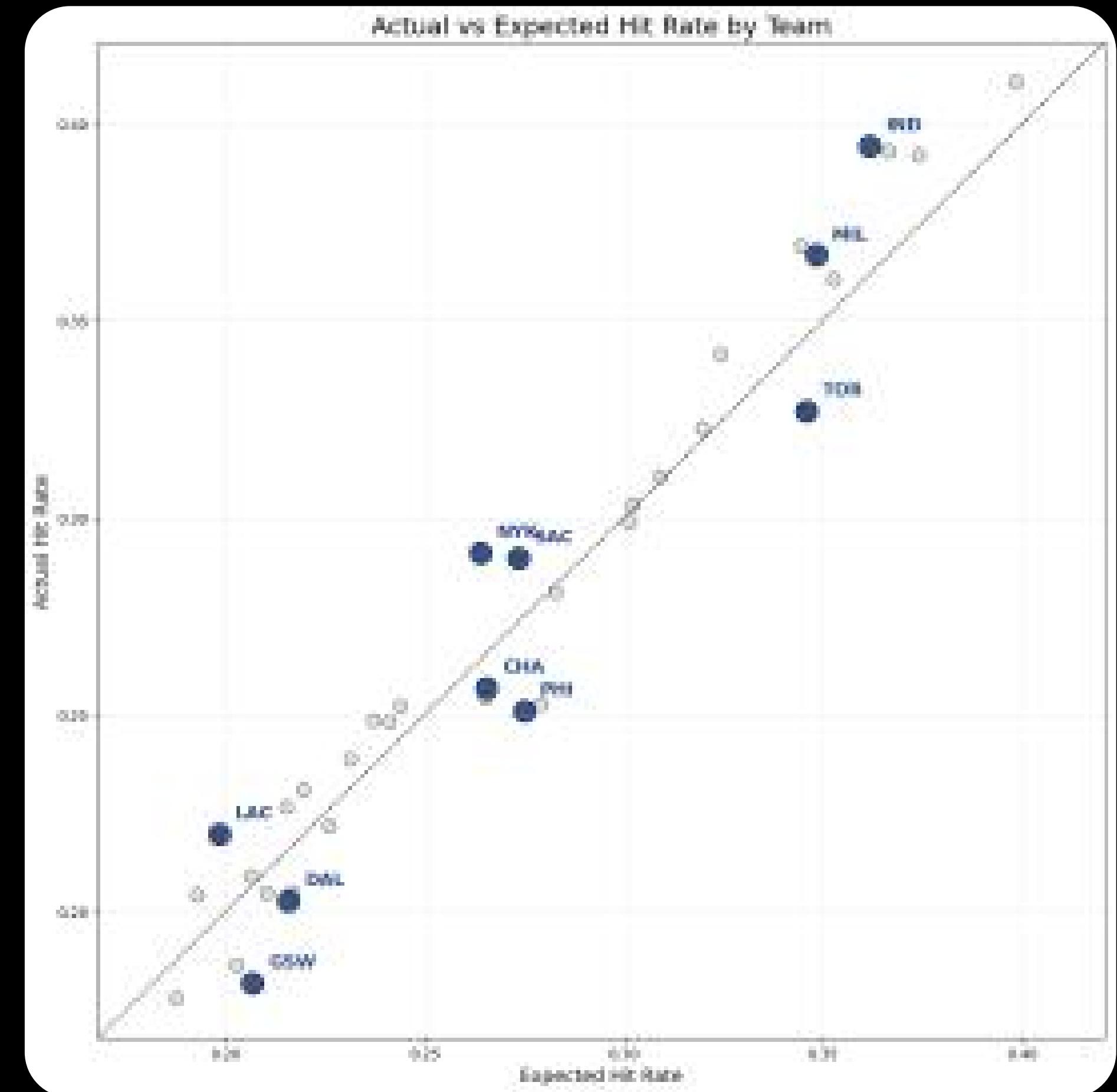
Actual vs Expected Hit Rate

Hit Rate

How often a team drafts a player that played above the position's average performance

Above the line --> Team does better than expected

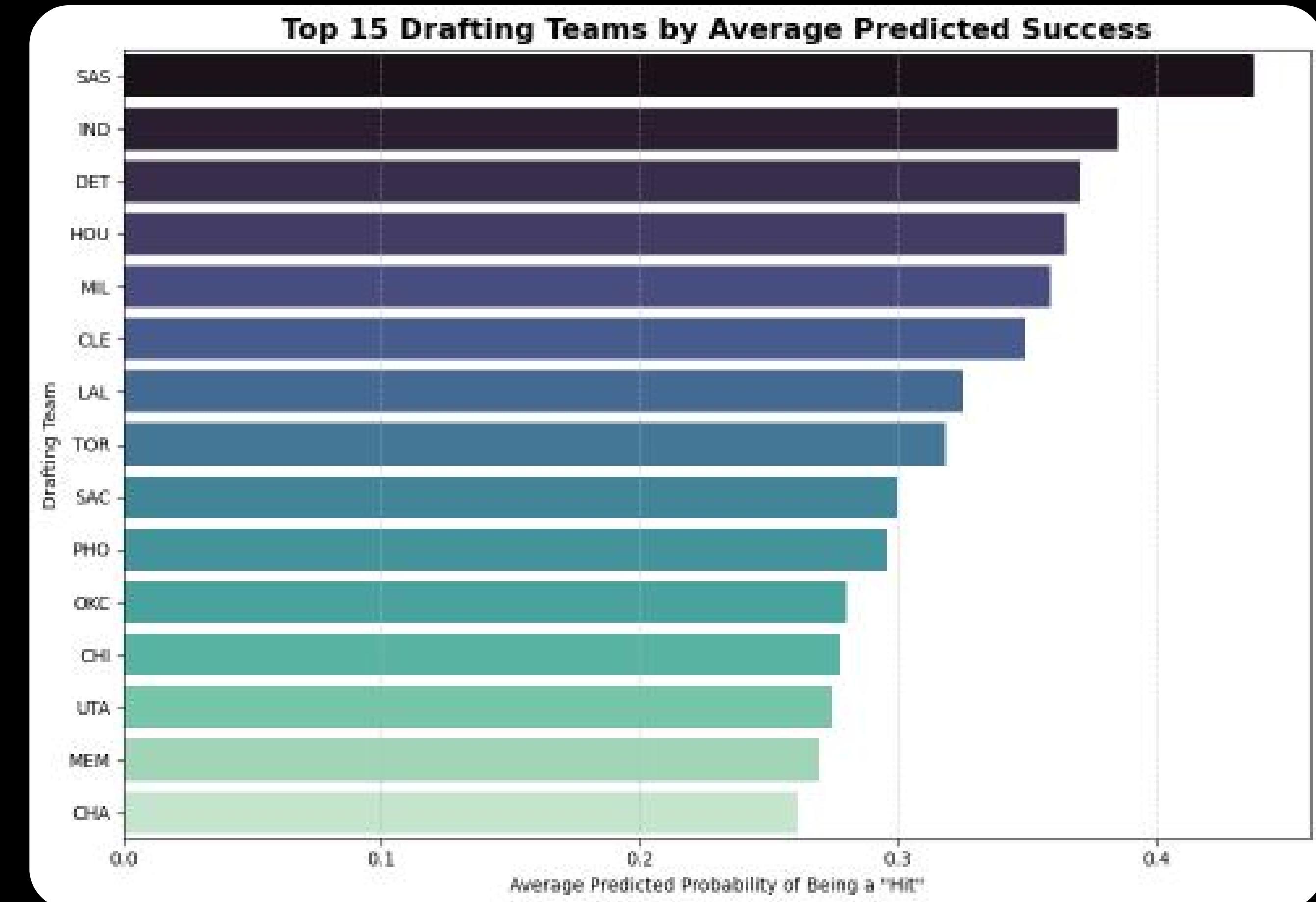
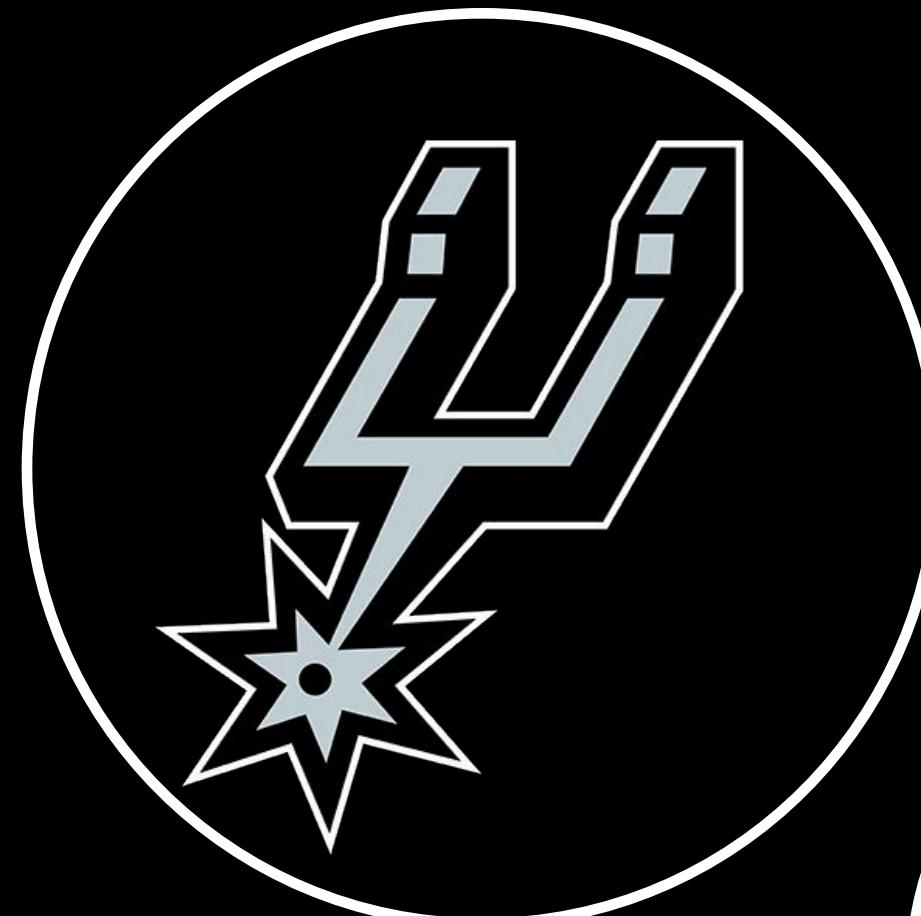
Below the Line --> Team does worse than expected





XGBoost Model

Accuracy: 72.46%



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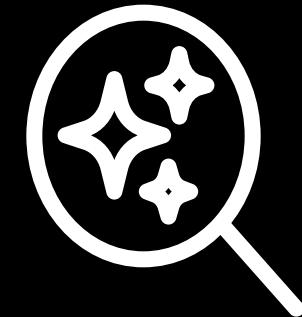
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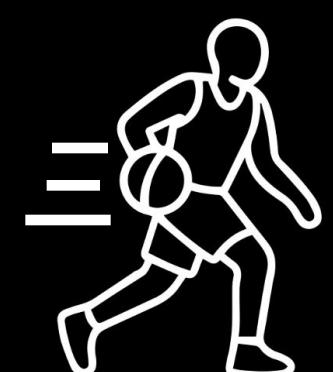
Limitations

- Lack of **pre-professional data** for a more in-depth analysis
- Pro Stats only go up to **2021**
- Other factors can impact **player values** that are out of their control

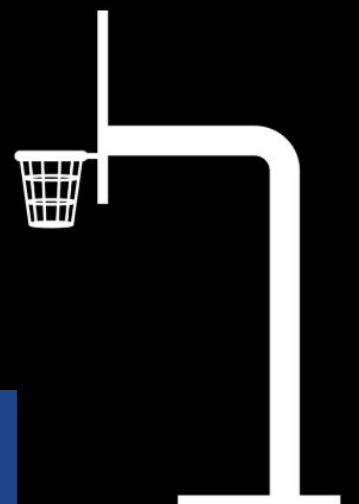


Takeaways

- Hard to predict a player's value **solely on quantitative measures**
- The team that drafts you is **more important** than when you're drafted
- The NBA Draft is generally **an efficient process**



Insights



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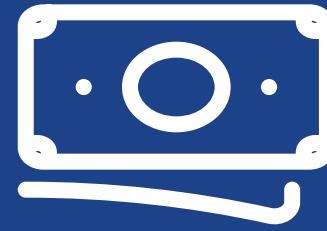
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Draft Pick Valuation

Can decide which teams are maximizing their draft value



Next Steps

Use pre-professional data on NCAA athletes that declare for the draft

Impact

Allows for better evaluation of front office performance and how they can improve when drafting

Comprehensive Analysis

Build forward-thinking models that can predict the success of college athletes

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Thank you for listening!

Questions?

