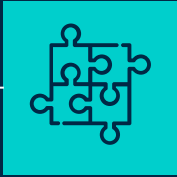


BTMA 431 Final Project: MoneyPuck

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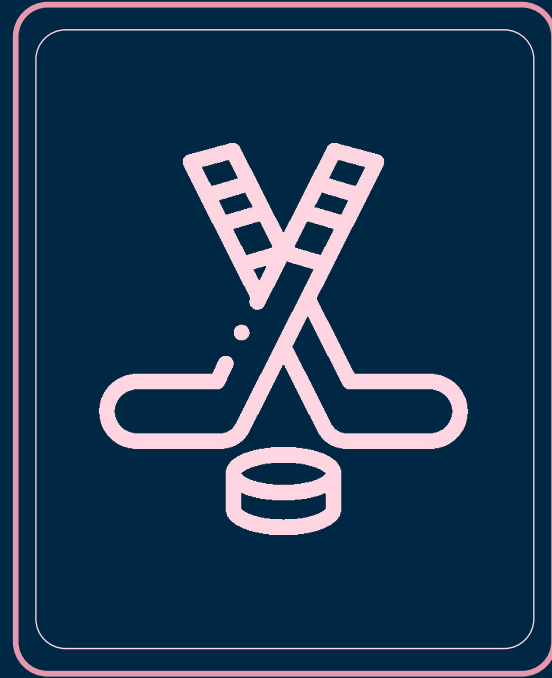
03

OUR FINDINGS

Summary & the
importance/
implications of our
findings

Project Topic & Motivation

- Final project topic: NHL player and team data from the season in 2005-06 to the current season
- As hockey fans, we were curious about what makes an NHL team successful in the regular season and in the playoffs
- Partly inspired by the movie *Moneyball*
- Who benefits?



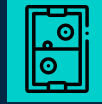
Questions for the Study



What NHL statistics are most relevant to making the playoffs?

What teams **should** make the playoffs?

Who will win the Stanley Cup this year?



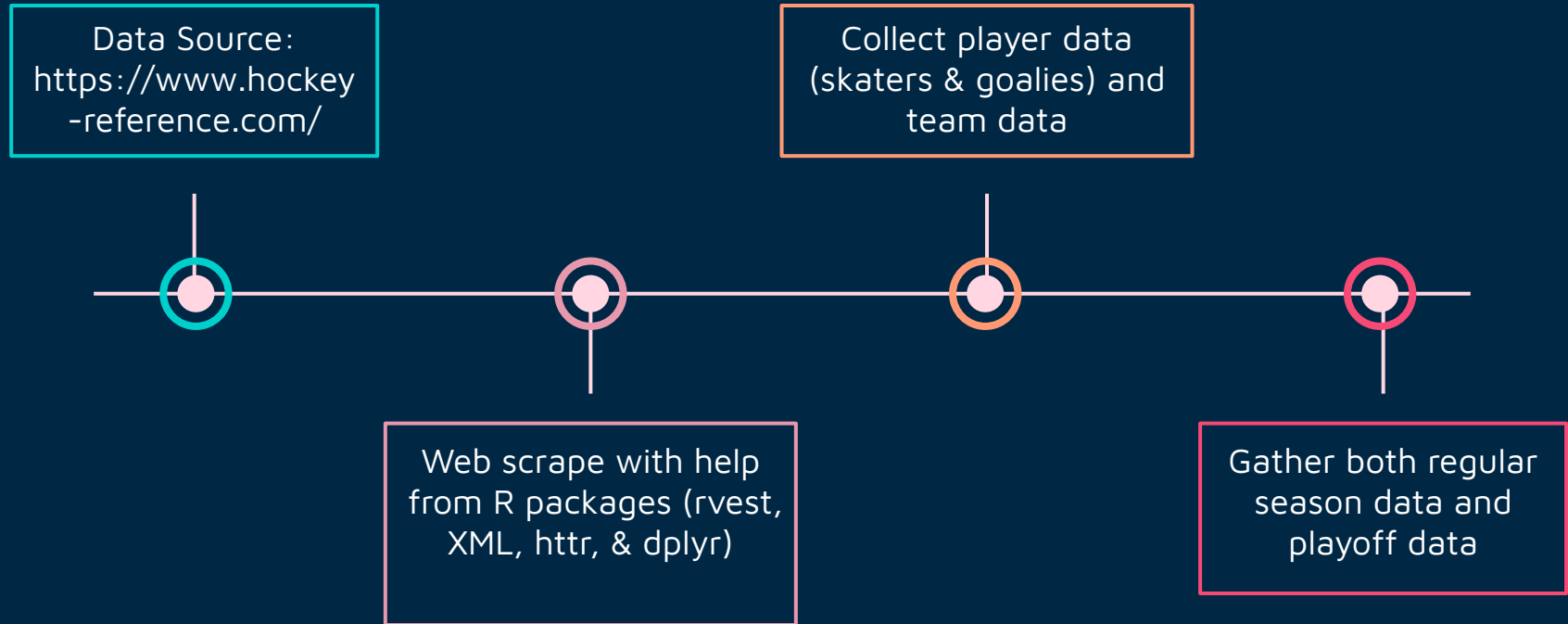
Which NHL team has the most depth in the league during the current season (2022-23)?

How does our measure of depth compare to the league standings of the current season (2022-23)?



What did previous Stanley Cup winning teams do that made them successful?

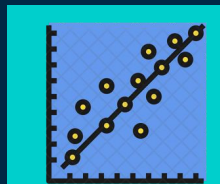
Data Source & Data Collection Process



Who Makes It? And Who Will Win?

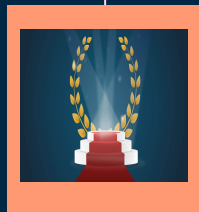
Linear regression

Trained using the data from 2006-2022



What are the Standings

The top 16 team will make the playoffs in this model



What factors we most important

The most significant stats should be a team main focus

Who Will Win the Cup

When running a simulation who will in the cup?

What Stats are most significant to making the playoffs

Removed Variables

Too obvious

W, L, OT, PT%, etc.

Changed

GF/G, GA/G, SV%,

PK%, and PP%

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	547.8290	495.9348	1.105	0.26981	
AvAge	1.1976	0.4651	2.575	0.01029	*
PIM.G	0.3576	0.5392	0.663	0.50751	
oPIM.G	0.5280	0.5617	0.940	0.34758	
SV.	-460.6209	495.0773	-0.930	0.35258	
GD.G	44.7546	16.3032	2.745	0.00625	**
SD.G	-1.7357	1.5374	-1.129	0.25941	
S.	-672.7012	498.1979	-1.350	0.17750	
PK.	-31.0659	20.4732	-1.517	0.12976	
PP.	7.7861	20.2788	0.384	0.70117	

Predicted League Standings

Using linear regression we were able to predict the standings

Top 16 team make the playoffs

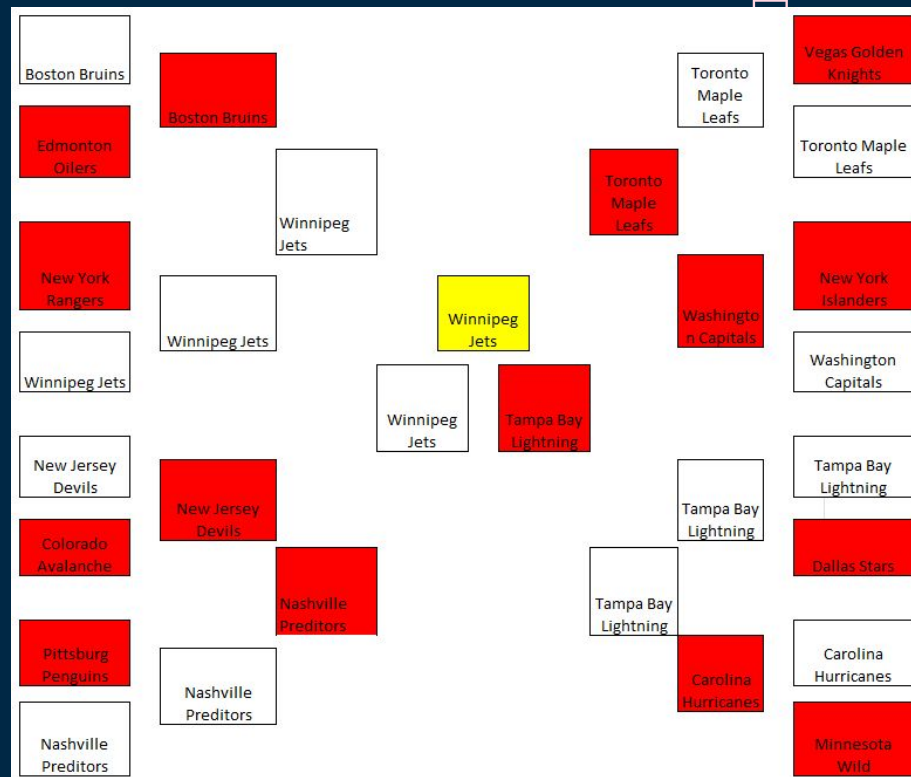
	Team name	Points
1	Boston Bruins	106
2	New York Islanders	94
3	Minnesota Wild	93
4	Nashville Predators	92
5	Colorado Avalanche	92
6	Dallas Stars	91
7	Vegas Golden Knights*	90
8	Winnipeg Jets	89
9	New York Rangers	89
10	Toronto Maple Leafs	87
11	Tampa Bay Lightning	84
12	New Jersey Devils	84
13	Pittsburgh Penguins	84
14	Carolina Hurricanes	83
15	Washington Capitals	80
16	Edmonton Oilers	80
17	Arizona Coyotes	80
18	Florida Panthers	78
19	Anaheim Ducks	78
20	Ottawa Senators	77
21	Philadelphia Flyers	76
22	Detroit Red Wings	75
23	Chicago Blackhawks	75
24	Montreal Canadiens	74
25	Buffalo Sabres	73
26	Los Angeles Kings	72
27	Calgary Flames	71
28	St. Louis Blues	70
29	Columbus Blue Jackets	69
30	Seattle Kraken	69
31	Vancouver Canucks	65
32	San Jose Sharks	65

NHL Playoff bracket

Using
simulation

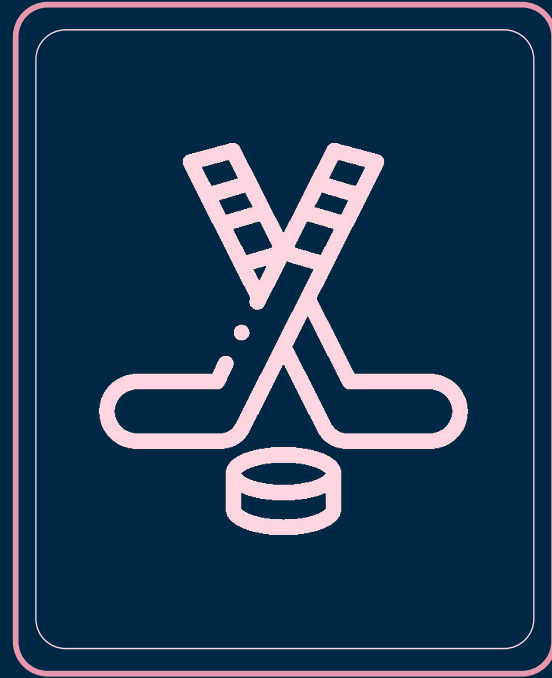
Based on our
Model the
Champs are the
Winnipeg jets

Seven game series
first to four wins
moves on

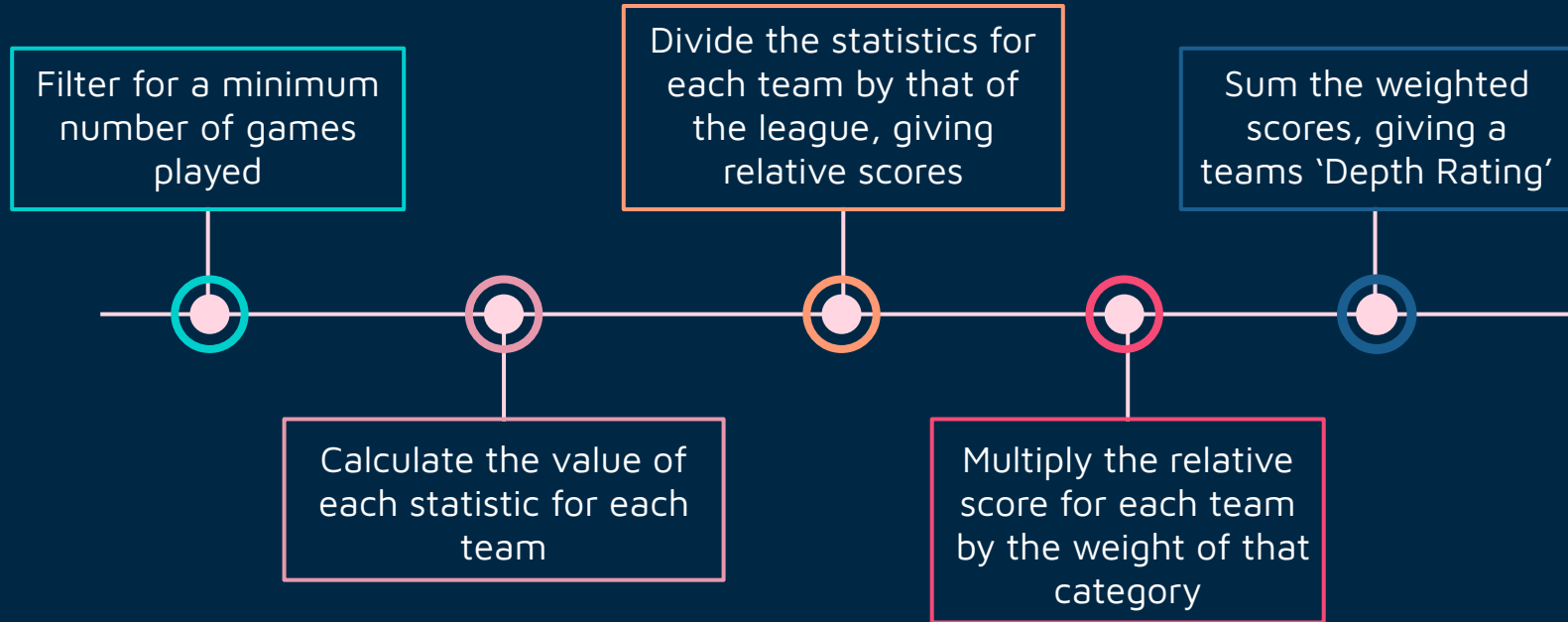


Defining Depth

- High average player
- Low variation
- We defined based on the 6 factors of Goals, Assists, Shots on Goal, Average time on Ice, Hits, and Blocks



Calculating Depth



Different Methods Used

Mean

- Simple
- Does not account for high variance

Mean Minus Standard Deviation

- Heavily accounts for variance
- In practice, very inaccurate

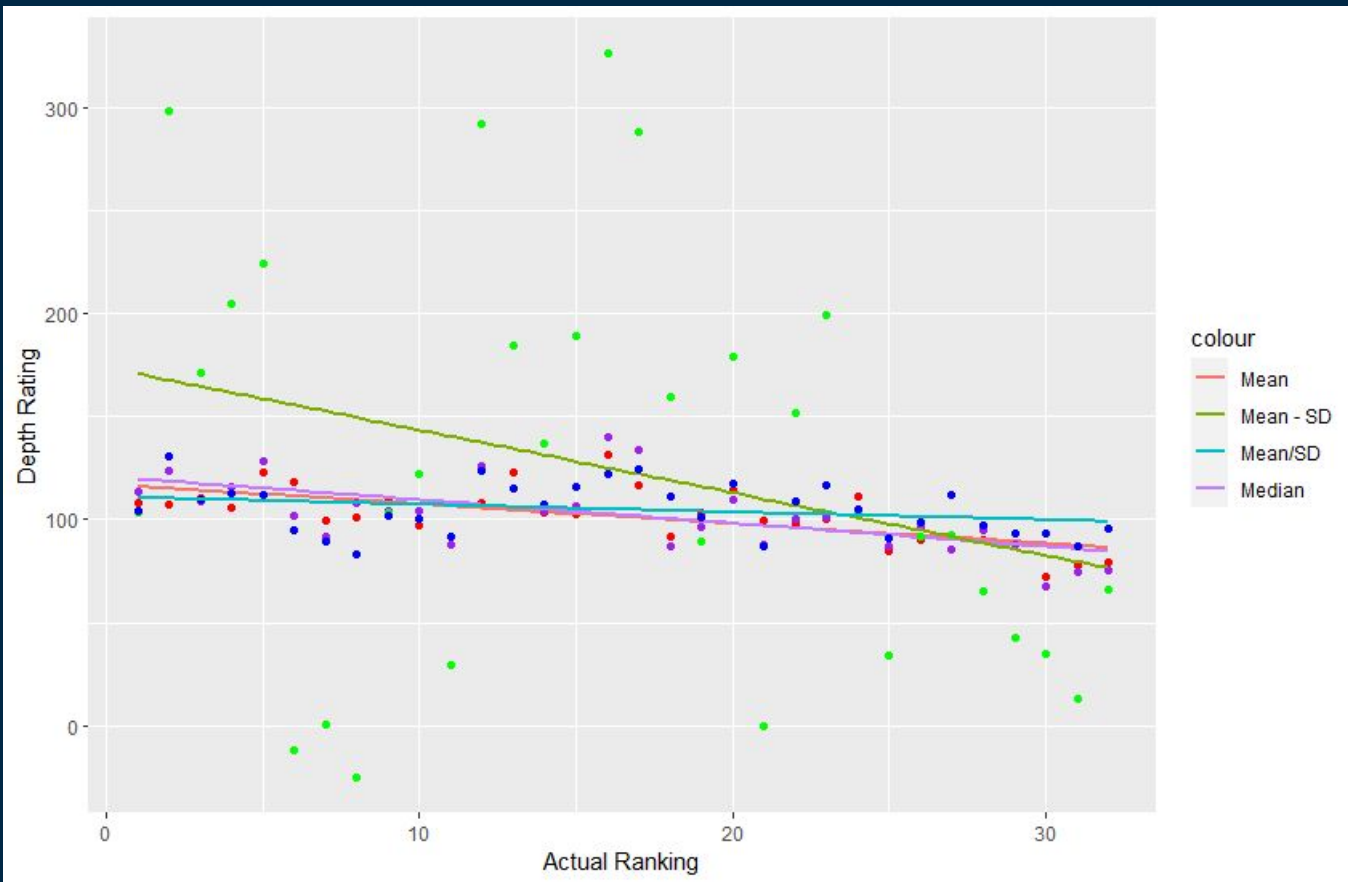
Median

- Less straightforward than mean
- Better at accounting for variance

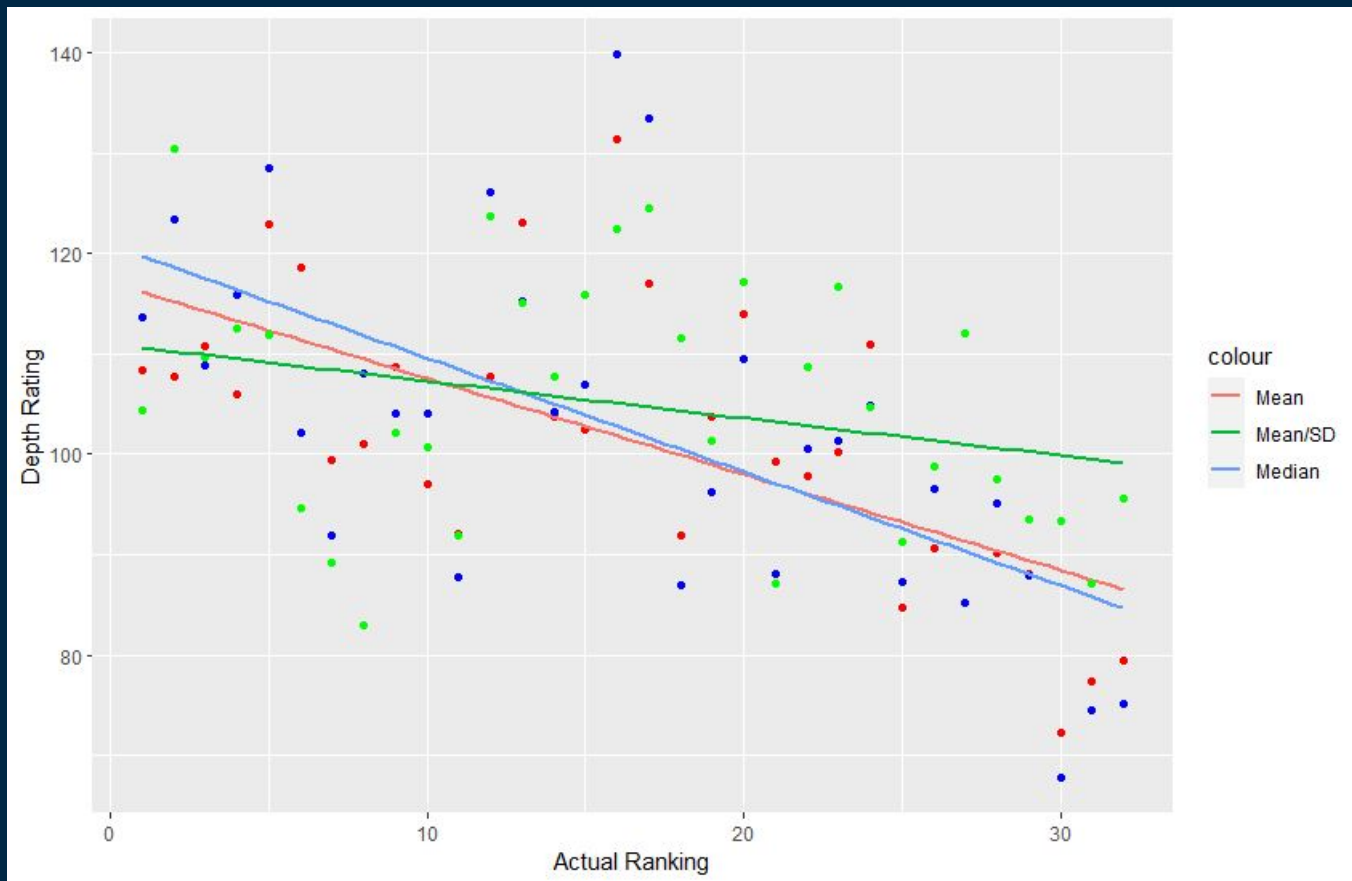
Mean Divided by Standard Deviation

- Heavily accounts for variance
- Much more accurate than Mean Minus SD

Depth Rating vs. Actual Rating Across All Methods



Depth Rating vs. Actual Rating Across the Top 3 Methods



Defining Data Frames

Championships

Playoffs - Mean per game

Regular Season - Mean of all games

Rest of the League

Playoffs - Mean per game

Regular Season - Mean of all games

Differences Between Champions and Rest of the League

Higher Plus Minus

+0.25 higher per game in the playoffs

More Shots per Game

Average of 6.7 more shots in the regular season

More Efficient Power Plays

Average of 0.16 more powerplay goals in the regular season

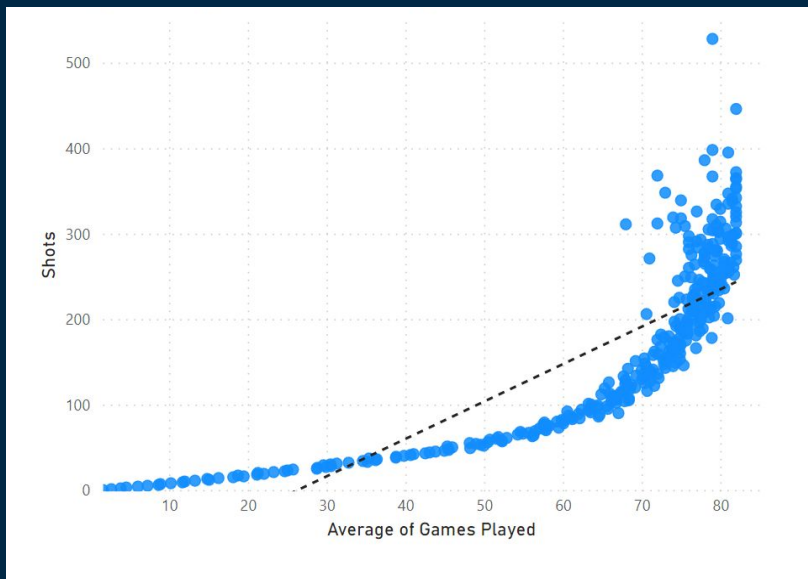
Less Penalty Minutes per Game

0.5 less penalty minutes on average in the regular season

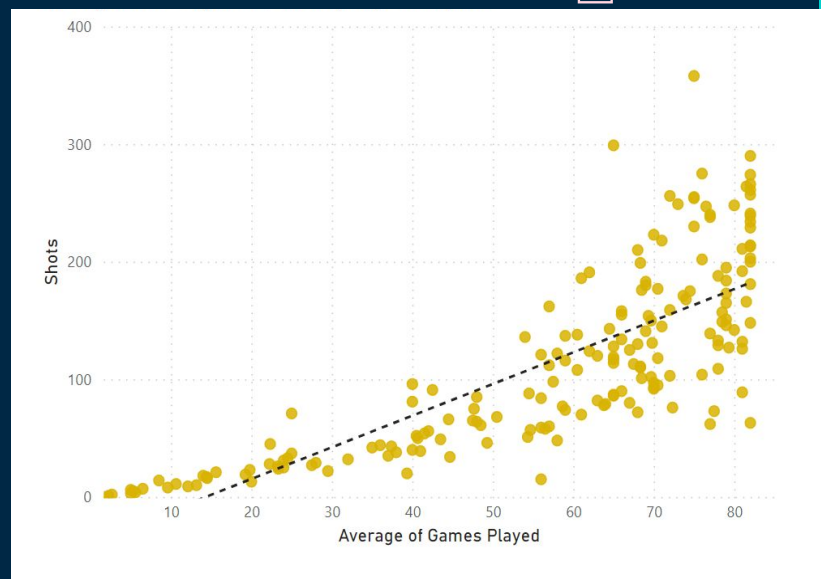


Average Games by Shots

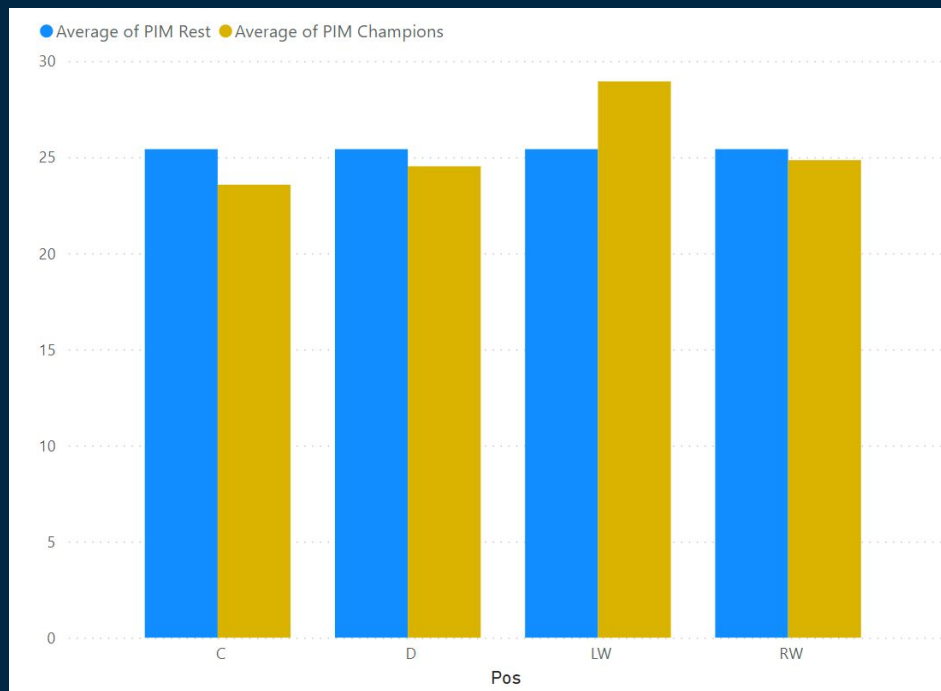
Non-Stanley Cup Champions



Stanley Cup Champions



Average Penalty Minutes by Position





QUESTIONS?

Do you have any questions?

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THANKS



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