



NBA Synergy Play-type Analysis

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Motivation

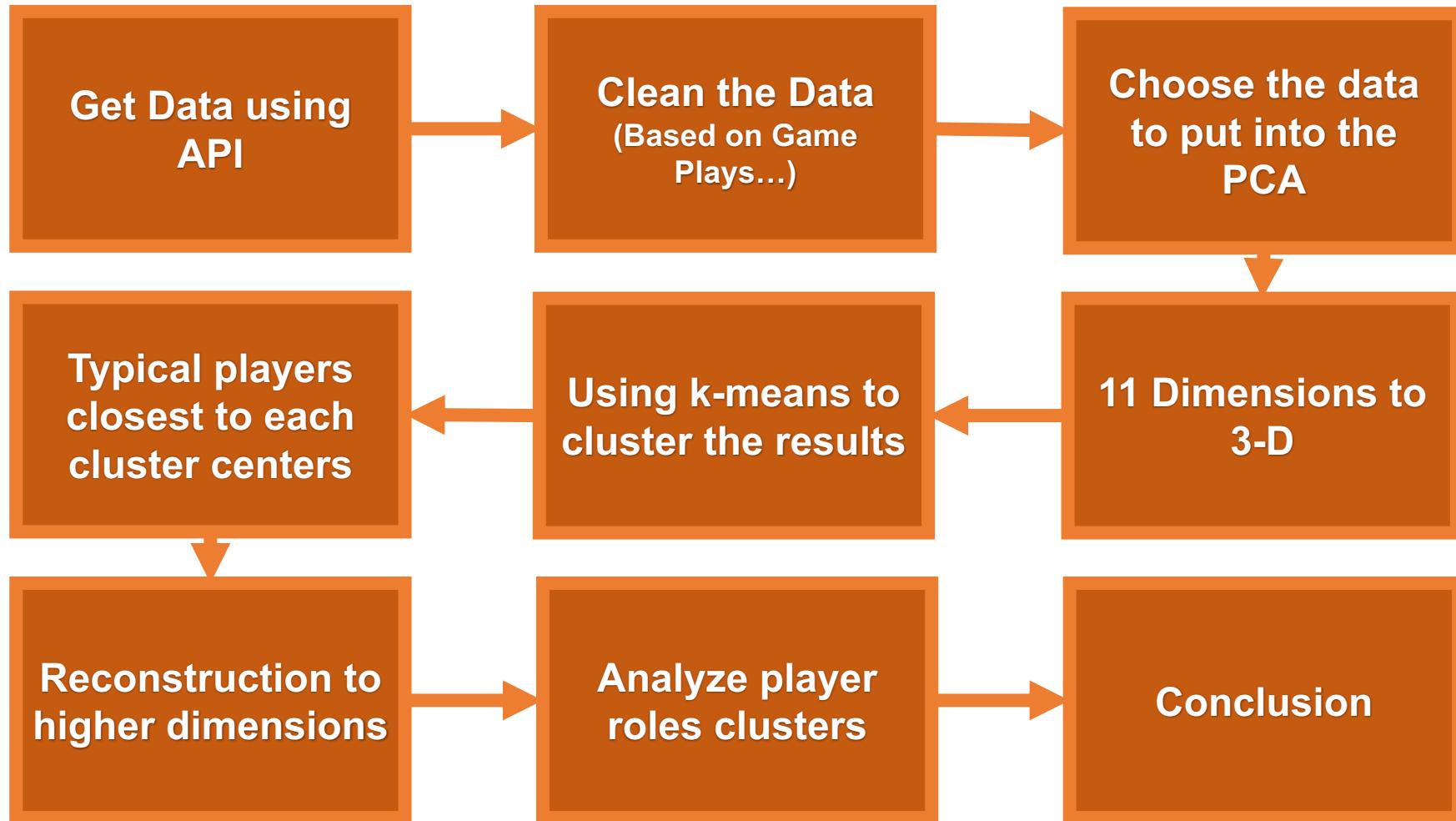
- Traditional 5 team roles have started to blur and change.
- Players score in a higher variety of ways now
- Need a new evaluation of types of players to determine balanced team compositions.



Methodology

- Analyze each player based on their components of 11 play types.
- Use PCA to project the players into 3D for visualization.
- Use K means method to determine the best way of categorizing the new types of players.

Flow chart of our process





Dataset

- We scrape down the data from <https://stats.nba.com>
 - Yearly game play data for all individual players in different play types

SEASON
2019-20

SEASON TYPE
Regular Season

PER MODE
Per Game

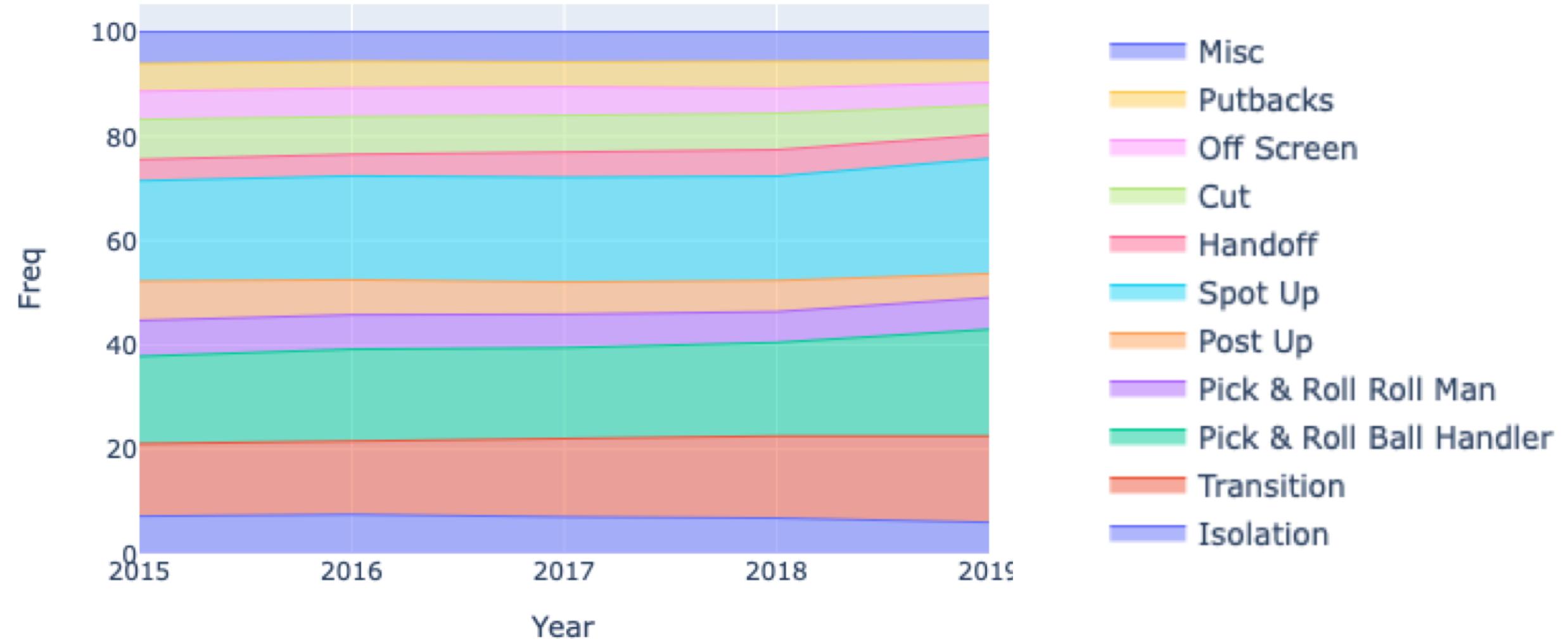
OFFENSIVE OR DEFENSIVE
Offensive

Advanced Filter

RECENT FILTERS GLOSSARY SHARE

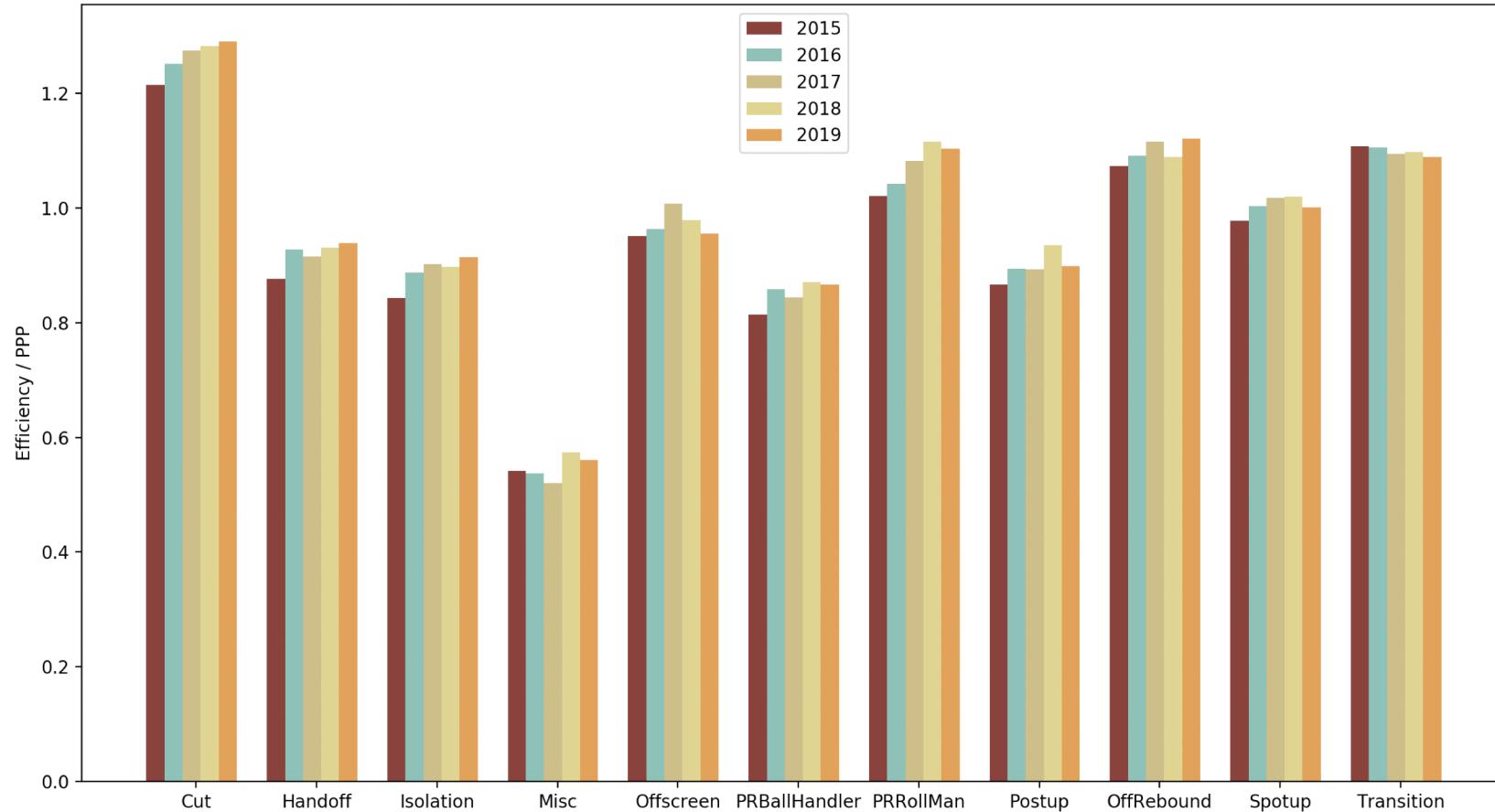
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PLAYER	TEAM	GP	POSS	FREQ	PPP	PTS	FGM	FGA	FG%	EFG%	FT FREQ	TOV FREQ	SF FREQ	AND ONE FREQ	SCORE FREQ	PERCENTILE
James Harden	HOU	17	13.6	38.6%	1.08	14.6	6.9	11.4	38.9%	49.7%	15.6%	4.8%	14.3%	4.3%	43.7%	81.4
LeBron James	LAL	17	5.9	23.0%	0.97	5.8	3.1	5.1	39.5%	46.5%	13.9%	5.0%	12.9%	4.0%	41.6%	67.6
Damian Lillard	POR	16	4.4	17.7%	1.21	5.4	1.9	3.7	47.5%	54.2%	16.9%	2.8%	12.7%	2.8%	53.5%	92.2
Luka Doncic	DAL	16	4.3	15.0%	1.06	4.5	1.8	3.1	40.8%	50.0%	19.1%	14.7%	16.2%	5.9%	42.6%	79.2
Spencer Dinwiddie	BKN	17	4.2	21.1%	1.00	4.2	2.1	3.3	35.7%	40.2%	20.8%	2.8%	20.8%	1.4%	47.2%	73.2
Pascal Siakam	TOR	16	4.7	18.9%	0.92	4.3	2.4	3.8	37.7%	41.8%	17.3%	8.0%	13.3%	6.7%	41.3%	62.7
Giannis Antetokounmpo	MIL	17	4.6	15.8%	0.87	4.1	1.9	3.3	42.9%	50.0%	13.9%	16.5%	10.1%	1.2%	40.5%	51.0

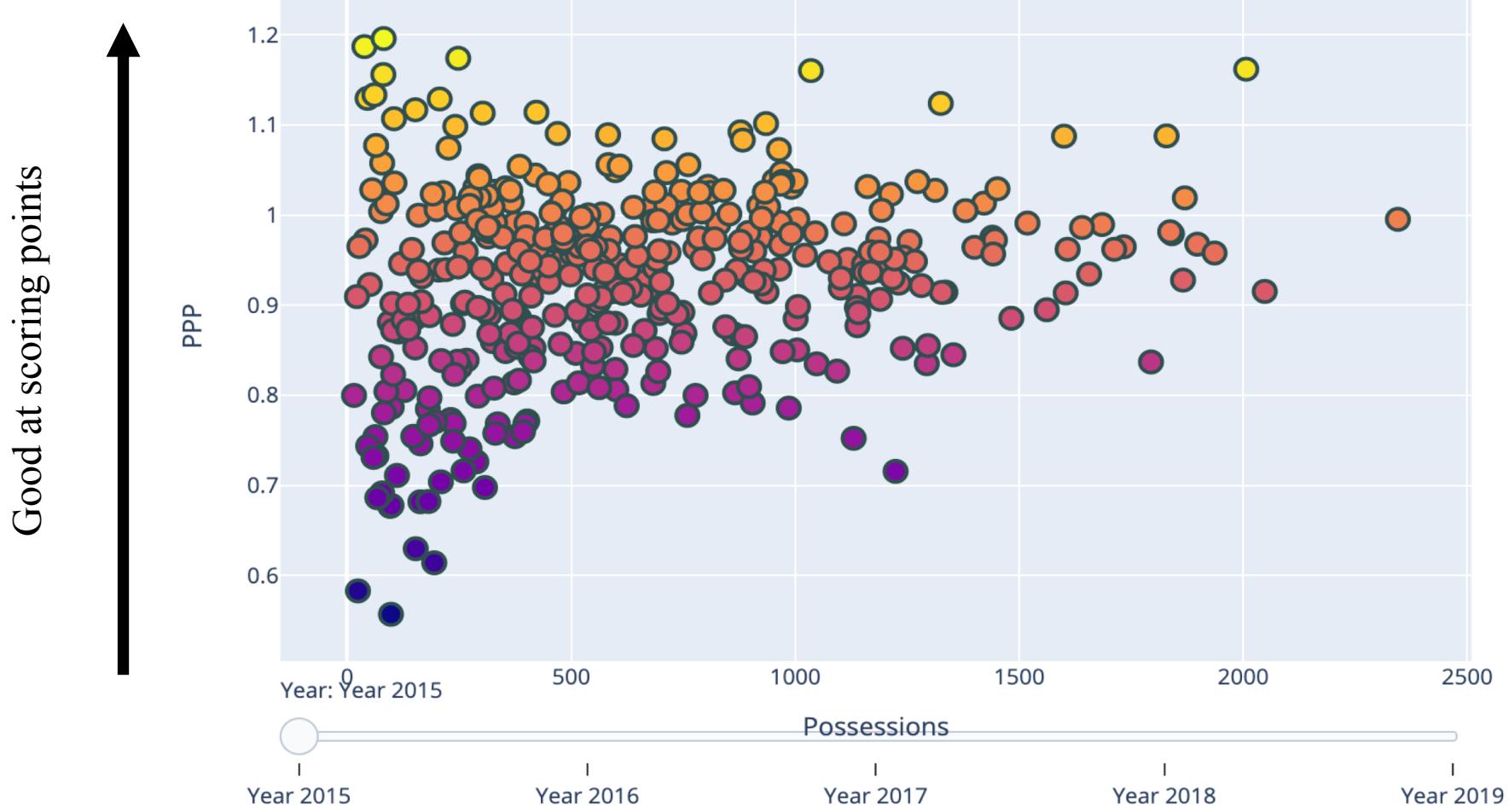


What's the frequency during the past 5 years?

What's the most efficient play type? ---Points per possession



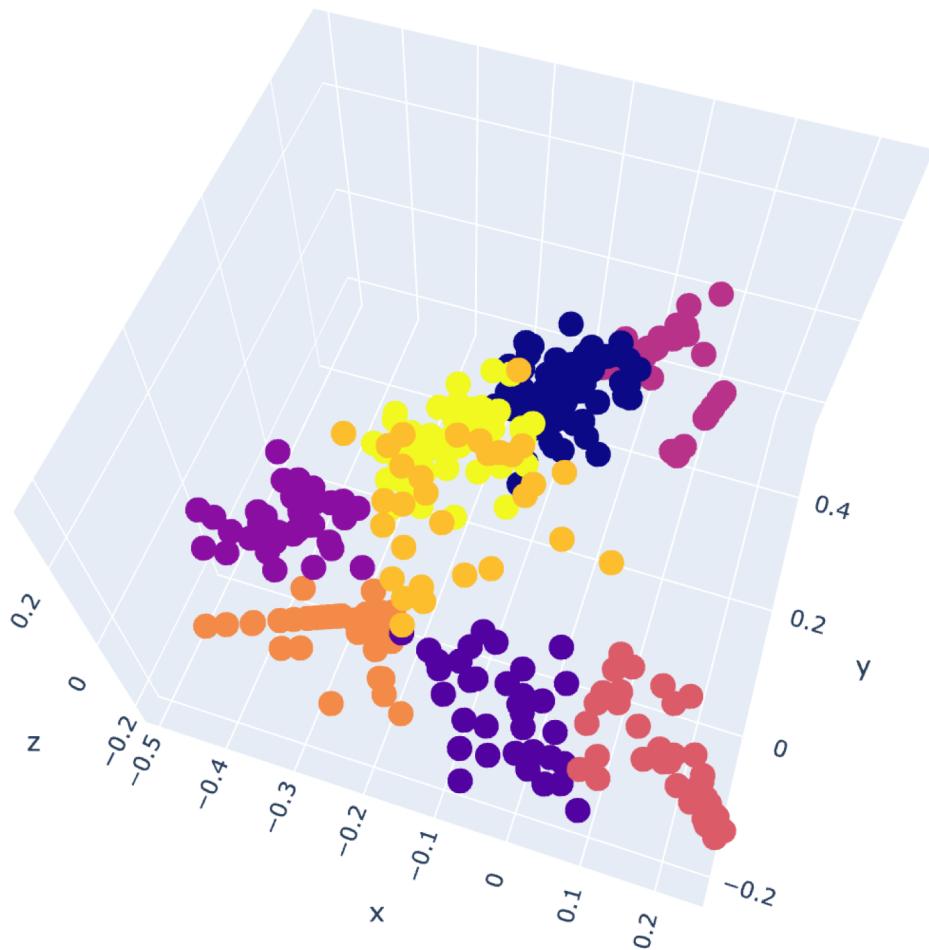
Who are the best scorers in the league?



Good at gripping balls

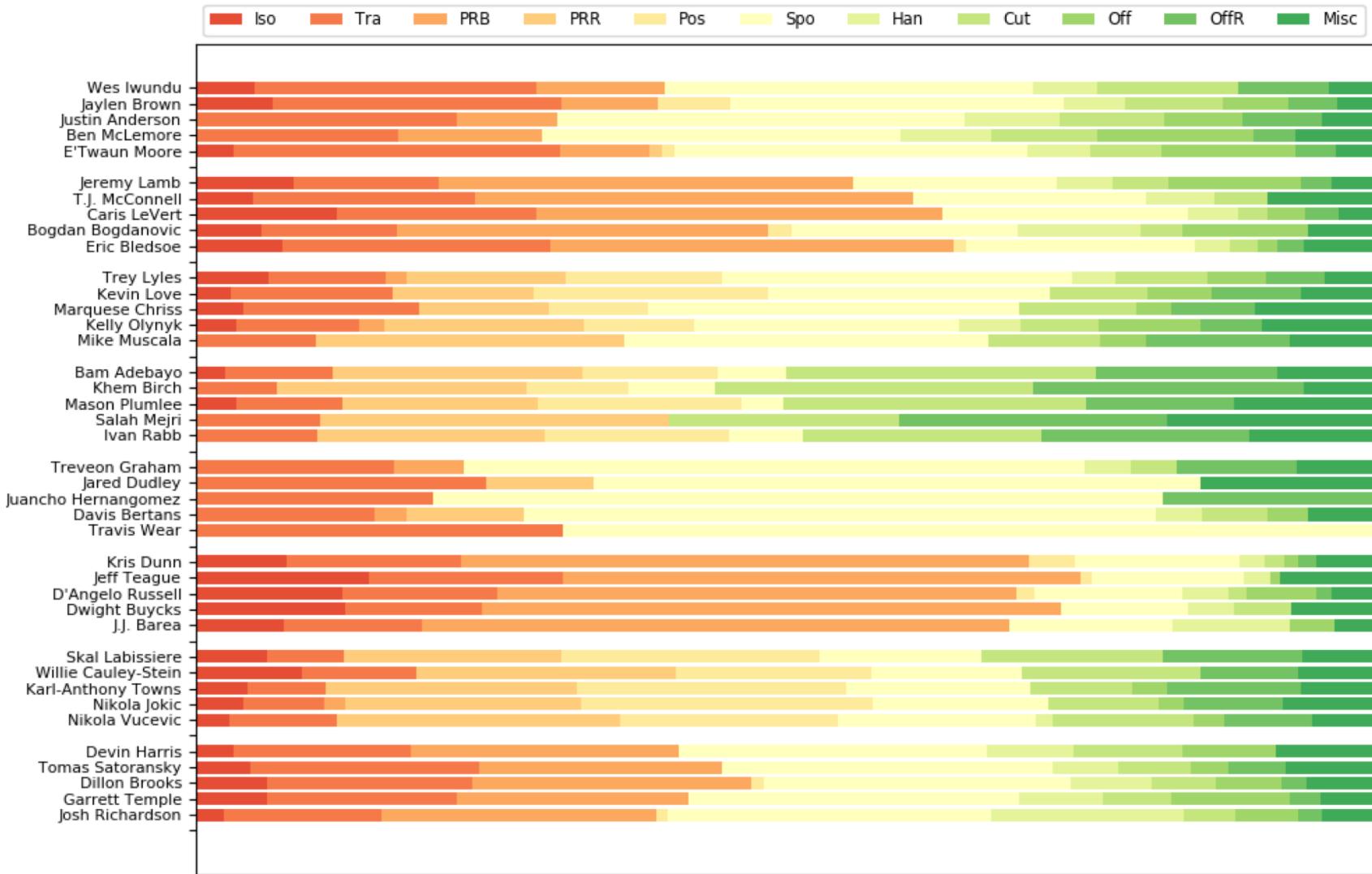
<https://plot.ly/~swishan/18>

How many roles should a team have?

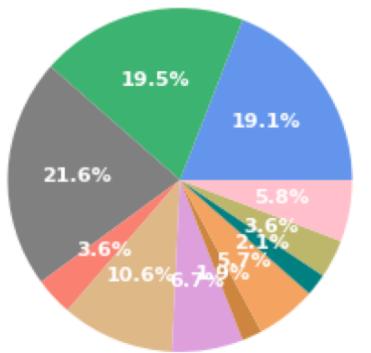


<https://plot.ly/~swishan/16>

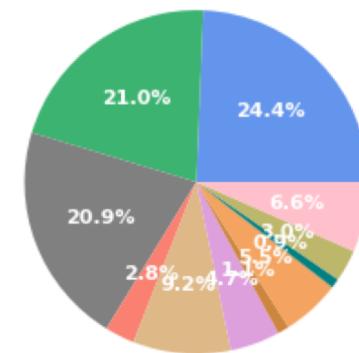
How would typical players behave?



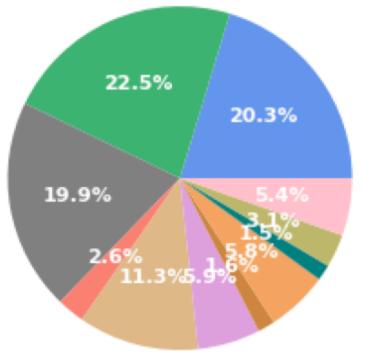
LeBron James 2015



LeBron James 2017



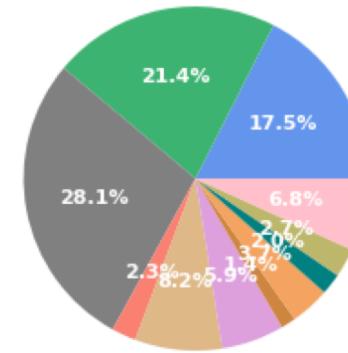
LeBron James 2016



Freq of PlayTypes

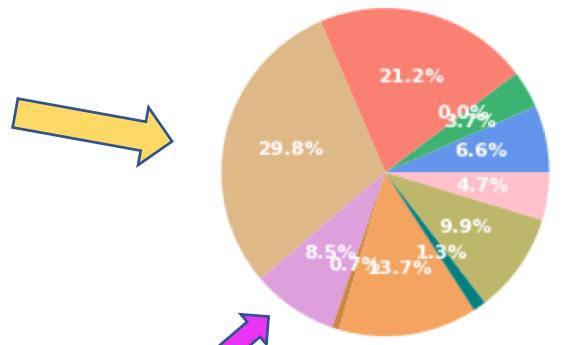
- Isolation
- Transition
- PRBallHandler
- PRRollMan
- Postup
- Spotup
- Handoff
- Cut
- Offscreen
- OffRebound
- Misc

LeBron James 2018

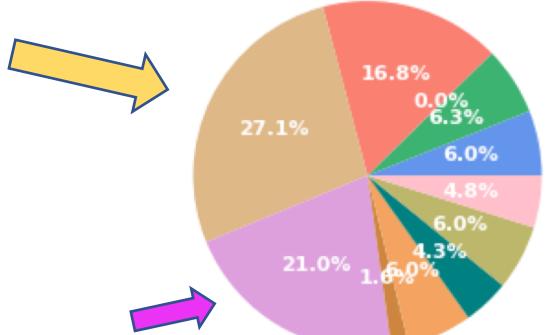


LeBron James

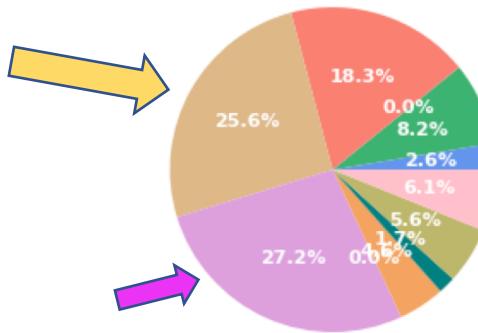
Brook Lopez 2015



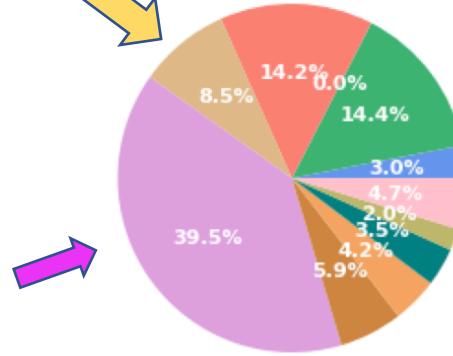
Brook Lopez 2016



Brook Lopez 2017

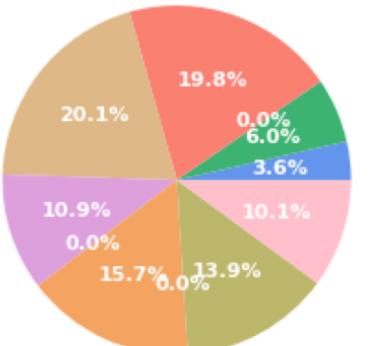


Brook Lopez 2018

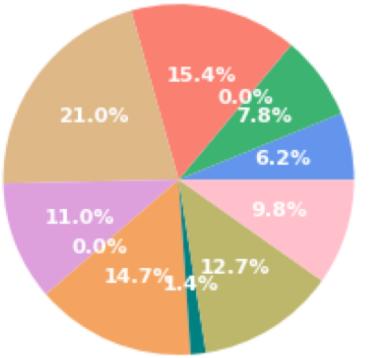


Brook Lopez

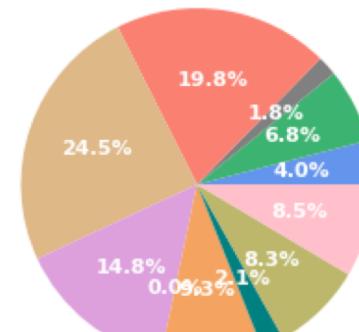
Nikola Jokic 2015



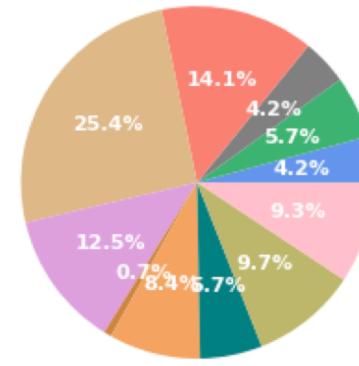
Nikola Jokic 2016



Nikola Jokic 2017



Nikola Jokic 2018



Nikola Jokic



Conclusions

Player roles have broken a lot of pre-conceived notions in the last 5 years.

A tool that allows teams to clearly identify player role paradigms would be very useful for teams in terms of deciding strategy.

The most efficient shots are the hardest ones to create.



STATS

Thanks for listening!