Portland Trail Blazers Roster Construction Cluster Analysis

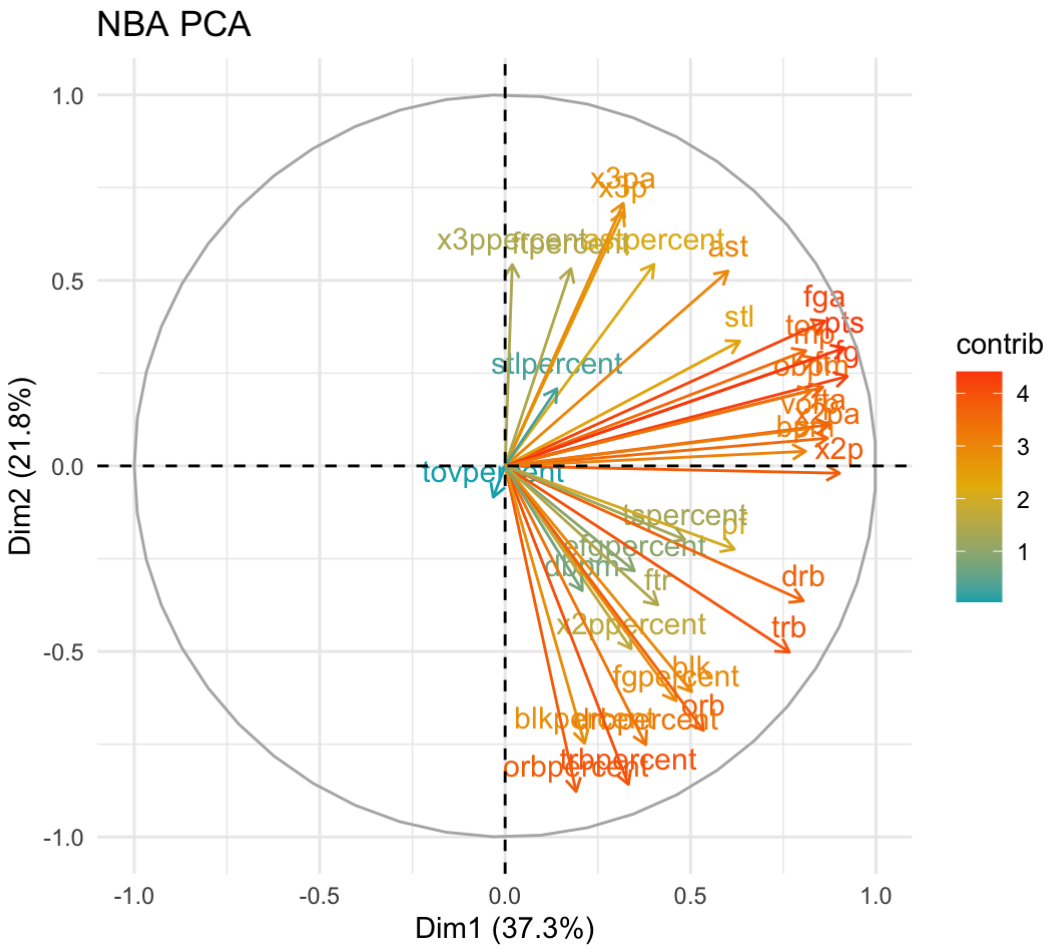
Introduction

The objective of this analysis is to cluster players in the NBA by their “true position” rather than the traditional PG/SG/SF/PF/C. The modern NBA has become “positionless” and players have been designated specific “roles” on the squad based on their performance. For example, Some athletic centers can now play point guard or in some cases an offense is designed around a specific player. We will seek to find what those “true positions” or clusters are and do some learning as to how those positions look like on different rosters. The key questions we hope to answer are the following:

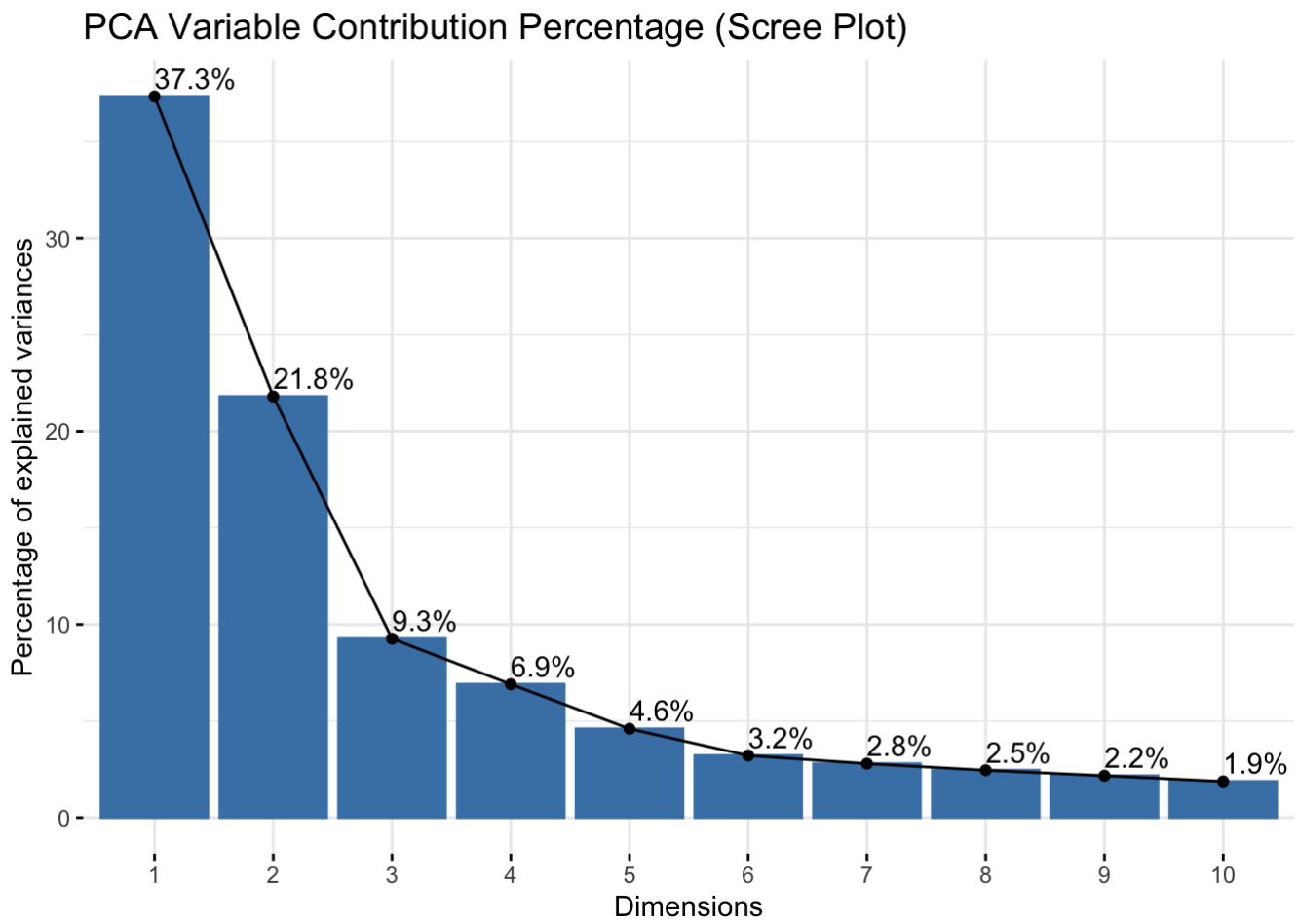
1. What player types or “true positions” exist in the NBA and skills do they encompass?
2. How are winning teams constructed with these “true positions”?
3. Where on the floor are these clusters more efficient in terms of shooting?
4. How do these players effect "Win Probability intra-game?
5. How do we value these “true positions” in the NBA?

All of these questions, we will be comparing the Portland Trail Blazers to other teams in the NBA. Portland has a long standing history of making the playoffs. Since the inception of the franchise in 1970, the organization has made the playoffs 37 times including a 21 straight appearance streak from 1983 to 2003. Since 2010-11 season, The Portland Trail Blazers only missed the playoffs during the 2011-12 & 2012-13 season. They currently only the league’s longest consecutive playoff streak. Given all of that, other teams have eclipsed the Blazers in terms of championship success. The Blazers only conference titles were in 1977, 1990, and 1992. We will be examining where some of the shortcomings may have come from as a way to compare the Blazers to other comparable teams.

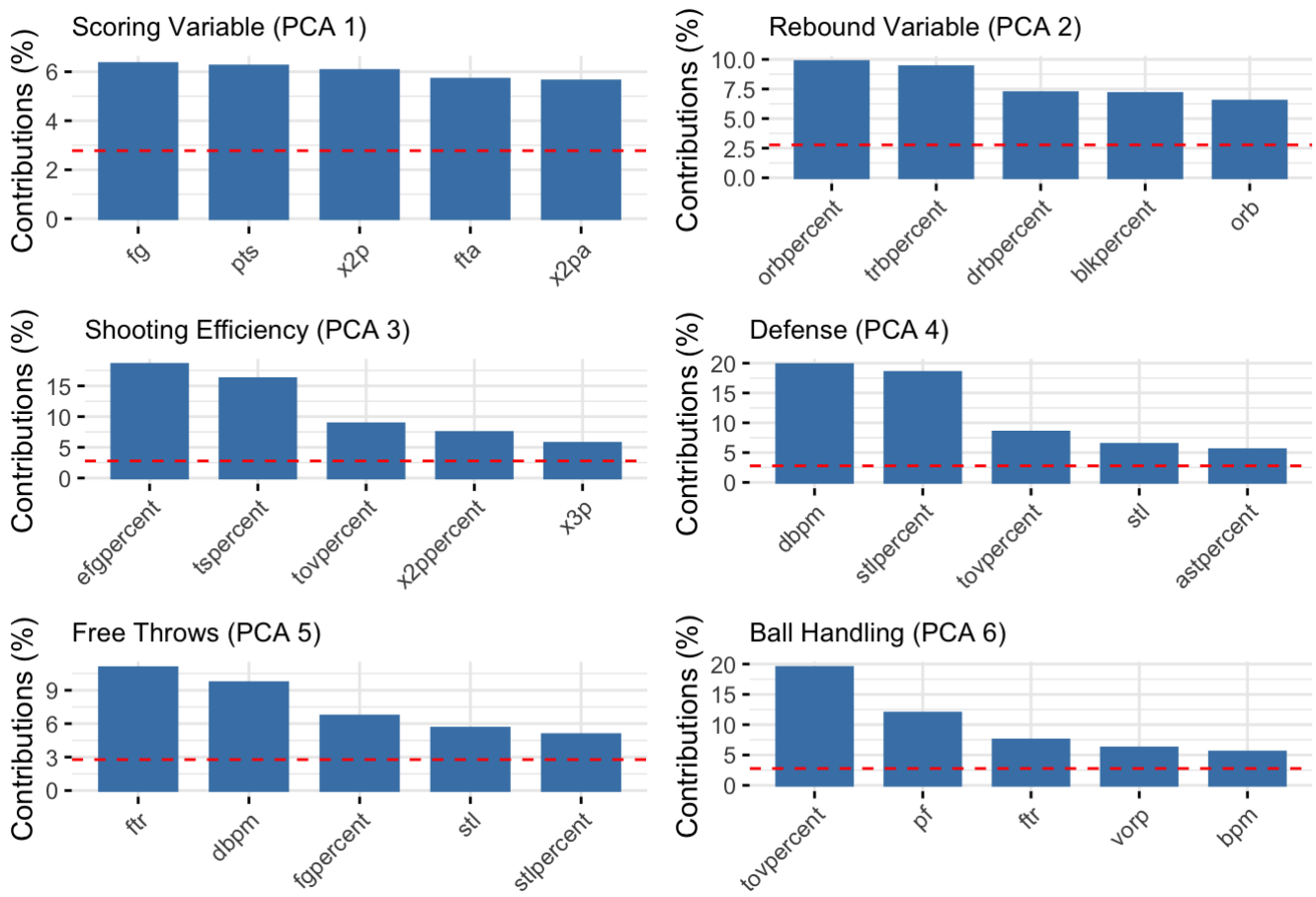
To identify “true positions”, we will first do a Principle Components Analysis from 36 variables that encompass a lot of common player statistics such as shooting (FG %, 3P %, etc), Assists, Steals, Blocks, Rebounding, and a number of efficiency metrics (VORP, EFG %). All of these stats are per game statistics. In order to prep the statistics, we need to “scale” the variables as to transform the variables to be all on the same scale. This is important so that not one variable is weighted more than the other just given that it would have a higher overall number. A Principle Components Analysis looks for variables that are highly correlated with each other and combines them into a new variable. This analysis will reduce the 36 variables to a few, highly correlated variables. This is helpful to identify clusters of “skillsets”. We can see the PCA Plot below how some of the variables start to cluster together.



The “Scree Plot” is a useful visualization to show how much variance is explained in each newly constructed “PCA” variables. We can see the 1st dimension combined 37% of the variables into 1 dimension, the 2nd dimension is comprised of the 21.8% of the variables and so on. For our analysis, we will be using the first 6 dimensions as that encompasses 83.1% of the original variables. This is a sufficiently high percentage for us.



The following 6 charts help to explain what each of those newly constructed PCA variables are comprised of from the original variables. Our first (37.3% variance explained) is made up of “Scoring” variables. The 2nd (21.8% variance explained) is made up of “Rebounding” variables. As we notice from the “Scree Plot” from here the variables start to drop off in secondary variables and loose formations from the original variables. Our 3rd variable is comprised of Effective Field Goal Percentage (EFG %) and True Shooting Pct % (TSPercent). Our 4th variable is made up of “Defensive” metrics of Defensive Box Plus/Minus (DBPM) and “Steal Percentage”. The 5th and 6th variables are very specific with the 5th only really accounting for Free Throw Rate and the 6th being just Turnover Over Percent (TOV%) or Ball Handling. The combined variables can be thought of a “skillset” comprised of each true position.



With our variables cleaned up and combined, we will now perform a K-means cluster analysis, a form of Unsupervised Machine Learning to reduce the rows of data into grouped clusters. This will help us identify how many “true positions” exist amongst all the players statistics. Essentially, the K-means iterates through to figure out the average of all PCA variables and helps to assign a cluster variable to players with similar average values across all inputted variables. In order to determine how many clusters exist, we can several different methods. We will be using a Sum of Square method to identify appropriate number of clusters amongst the data points. The goal of this percentage is to to say how much total variance of the data set can be explained by clustering. The overall goal of K-means is to minimize the within group dispersion and maximize the between-group dispersion. More simply put, it’s better to find a few broad clusters that can encompass many players than very specific clusters that would over-generalize their group fit.

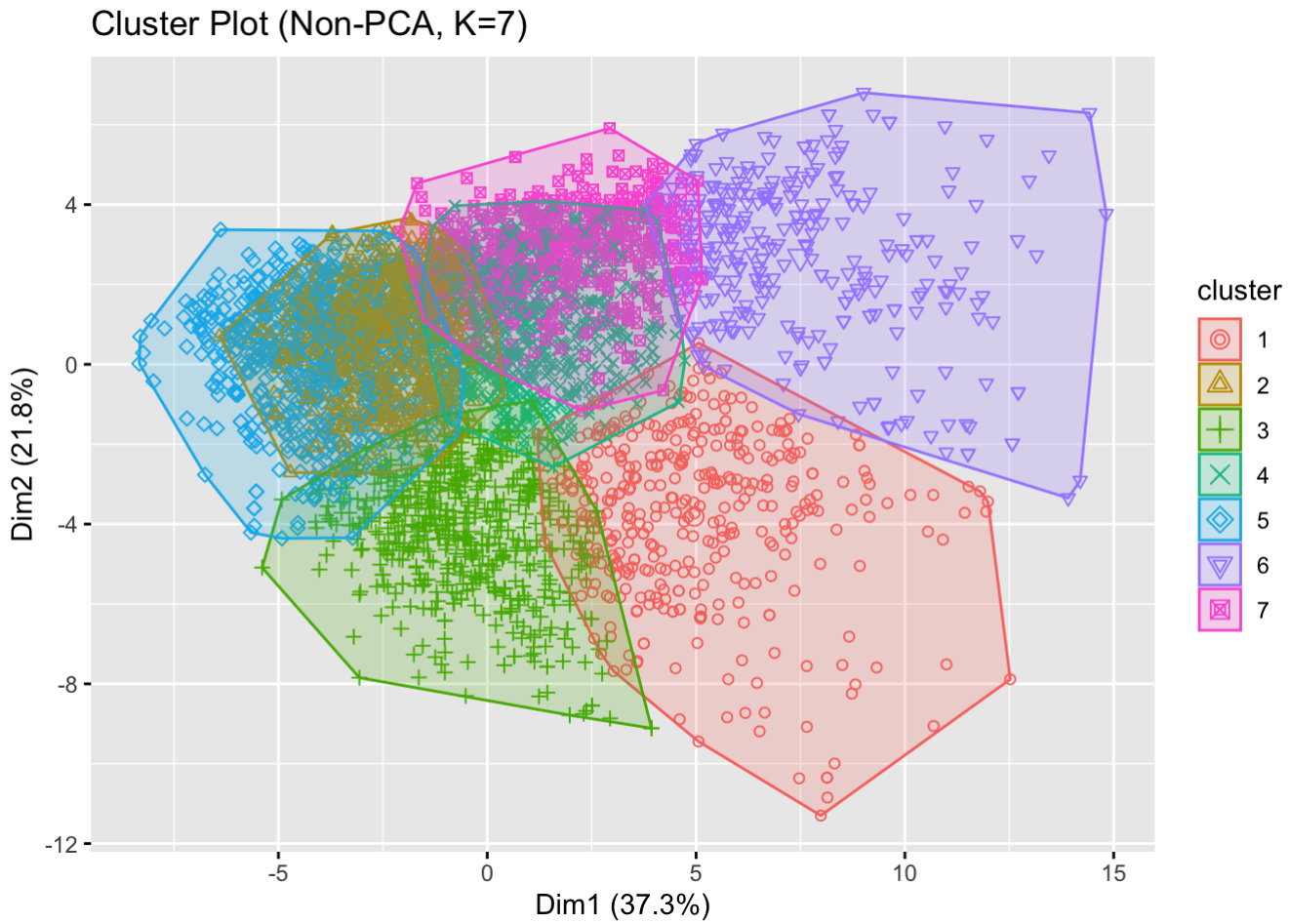
The table below shows that at 7 clusters, we can account for a majority of the variance at 52% of the dataset. This figure is without the inputted PCA variables. 52% is a low enough number to account for the generality. These numbers also tell us that there a lot of players with very specific player profiles.

Cluster K Between SS Percentage % (Non-PCA)

k	between_ss_per
3	0.3628221
4	0.4322870
5	0.4735695
6	0.5017592

k	between_ss_per
7	0.5217006
8	0.5397135
9	0.5528497
10	0.5664978

This chart below shows the overlapping of some of the 7 clusters in overall similarity. If we had a higher “K” cluster, we would have more overlap.



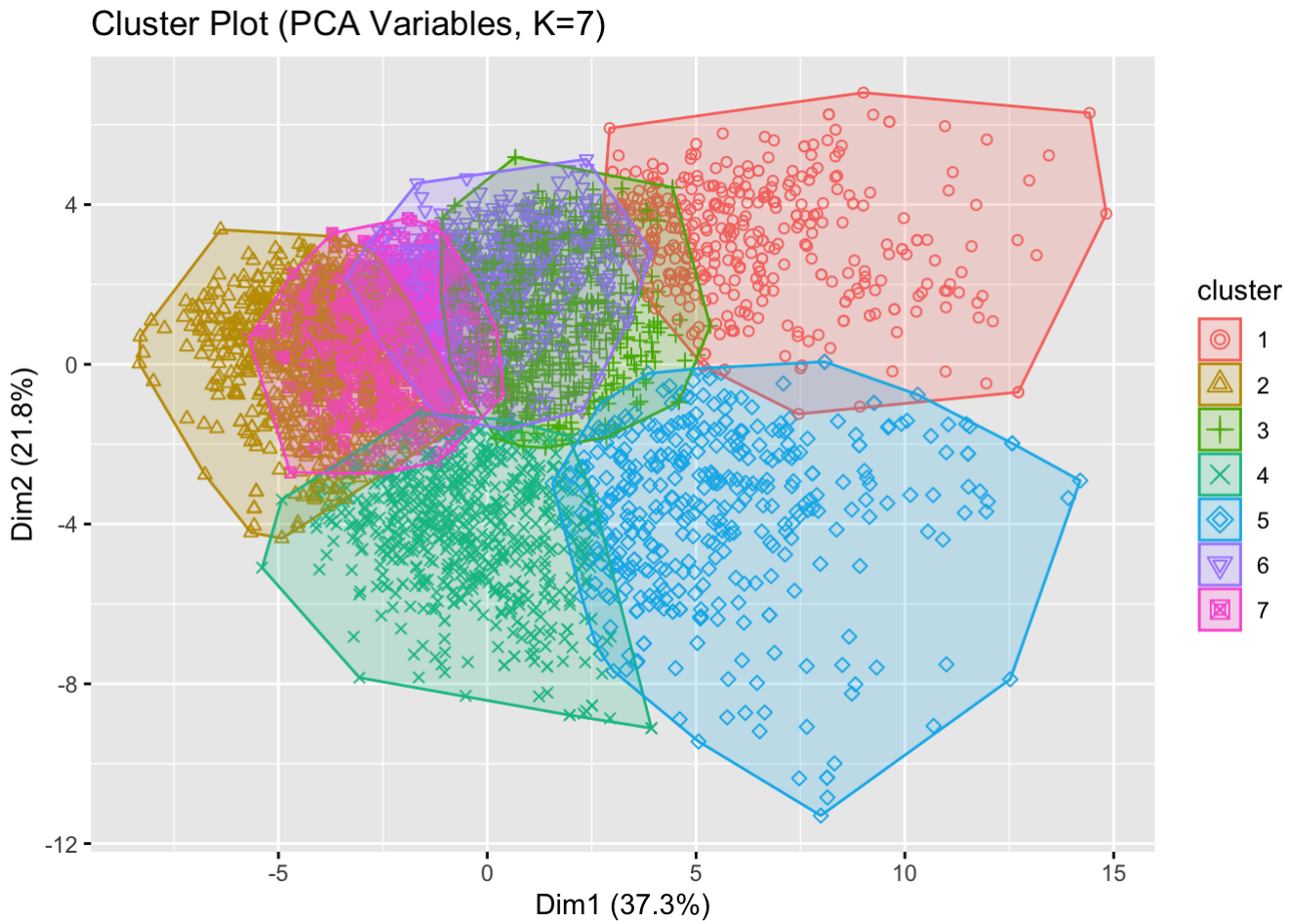
Next, we input our K-means with our newly constructed PCA variables. As we can see, we get a 61% Sum of Square Percentage at 7 clusters, which tells us that the indiviudal statistics were causing too much variation. By combining some highly correlated statitics, we were able to reduce overall variance.

Cluster K Between SS Percentage (PCA Variables) %

k	between_ss_per
3	0.4329150
4	0.5114912
5	0.5596262

k	between_ss_per
6	0.5804838
7	0.6133119
8	0.6336246
9	0.6487817
10	0.6597330

We still have some overall overlap with the PCA variables inputted but that may be expected.



With 7 clusters determined from our dataset, we've renamed the clusters with more common names that we can interpret from. The following table shows how the PCA variables align in terms cluster fits. More simply put, what skillsets each "true positions" are made up off. In terms of the 7 clusters, we have identified the following names from the clusters: "Superstars", "Scoring Big Men", "Perimeter Wing/Defenders", "Floor Generals", "Defensive Big Men", "Perimeter Shooter" and "Role Players". "Superstars" are your all-around players and have the highest value on the team in terms of scoring, some defense, and shooting efficiency. They lack in terms of rebounding and defense, which the Scoring Big Men are better at. These are the primary "All-stars" on the roster. Perimeter Wings/Defenders are your secondary superstar scorers and have an all-around game. Defense Big Men are secondary Scoring Big Man with more of a focus on defense and rebounding. Floor Generals are efficient scorers, passers and ball handling. They likely don't show up too much in the box score. Perimeter Shooters are your sparks off the bench but are one-way offense backups and don't really provide much value in terms of defense.

Lastly, Role Players are your scrubs and rotation players that don't have much value all around in terms of game statistics. The PCA averages can be a bit difficult to interpret but for "Rebounding" and "Shooting Efficiency", the highest value is negative. For the other variables, the higher the positive value the more that player in the cluster is better at that specific variable.

VORP = Value over replacement player (Box score estimate of estimate points per 100 team possessions that a player contributes over a replacement or average player during that time frame); Kobe Bryant averaged around a 8 in VORP, Lebron James averages a 9 VORP, Michael Jordan averaged a 10 in VORP. Those are top-end numbers.

PCA Value Avgs. Per Cluster

Cluster	Player_Count	VORP	Scoring	Rebounding	ShootingEff	Defense	FreeThrows	BallHandling
Superstar	353	3.46	6.36	3.16	0.57	-0.56	-0.71	-0.54
Scoring Big Man	371	2.24	5.39	-3.71	0.74	0.87	0.41	-0.15
Perimeter Wing/Defender	636	1.08	1.38	1.26	-1.04	0.77	0.75	0.19
Floor General	575	0.60	0.17	2.08	1.29	-0.79	-0.30	0.57
Defensive Big Man	586	0.37	-0.47	-4.15	-0.04	-0.36	-0.49	0.12
Perimeter Shooter	835	0.30	-2.36	0.58	-1.44	-0.13	0.14	-0.18
Role Player	710	-0.27	-4.28	0.28	1.44	0.23	-0.05	-0.35

[a] Rebounding/ShootingEff is the only value where a negative value is highest

Trail Blazers Analysis

Now that we have our clusters built and assigned it's now time to look at how the Trail Blazers roster has been constructed.

In order to do so, we need to establish some context in terms of team's performance. 2018 was likely the biggest underachieving year given they were a 3rd seed and had a first round exit. 2019 was the best final result in a Western Conference Final appearance (CF stands out Conference Final exit). 2020 & 2021 featured two first round exits for the Blazers. The 2019 is likely considered the best team constructed for the Blazers. We will dive into why the team fell so much in terms of performance after the 2019 season.

Portland Trail Blazers Playoff Results by Year

Year	Team	Seed	Result
2010	POR	6	FR

[a] FR = First Round
[b] SEMI = 2nd round exit
[c] CF = Conference Finals exit

Year	Team	Seed	Result
2011	POR	6	FR
2014	POR	5	SEMI
2015	POR	4	FR
2016	POR	5	SEMI
2017	POR	8	FR
2018	**POR**	**3**	**FR**
2019	**POR**	**3**	**CF**
2020	POR	8	FR
2021	POR	6	FR

[a] FR = First Round
[b] SEMI = 2nd round exit
[c] CF = Conference Finals exit

Now that we have an understanding of the clusters in our dataset, it's important to now understand how Portland's roster has been constructed in relation to other Playoff & Championship teams. As we saw earlier we saw earlier Scoring Big Men aren't too far off from Superstars in terms of value added to the roster.

The two charts below show % of Superstars & Scoring Big Men on each roster since 2010. Every Championship team since 2010 has had at least 2 Superstars or Scoring Big Man (or combination of the two) on the team with the exception of 2014 & 2011 teams. Superstars are good on all facets of their games. They are excellent at scoring, defense and elevating others. The difference between them and Scoring Big Men are that Scoring Big Men are better rebounders. If we breakdown the last 10 champions, here are notable players from their roster in terms of being either a Scoring Big Man or Superstar.

2021 MIL: Middleton (Superstar), Holiday (Superstar), Antetokounmpo (Scoring Big Man)

2020 LAL: James (Superstar), Davis (Scoring Big Man)

2019 TOR: Leonard (Superstar), Lowry (Superstar), Siakam (Scoring Big Man), Valanciunas (Scoring Big Man), Ibaka (Scoring Big Man)

2018 GSW: Curry (Superstar), Durant (Superstar), Green (Scoring Big Man)

2017 GSW: Curry (Superstar), Durant (Superstar), Green (Scoring Big Man)

2016 CLE: James (Superstar), Irving (Superstar), Love (Scoring Big Man)

2015 GSW: Curry (Superstar), Thompson (Superstar), Green (Scoring Big Man)

2014 SAS: Duncan (Scoring Big Man)

2013 MIA: James (Superstar), Wade (Superstar), Bosh (Scoring Big Man)

2012 MIA: James (Superstar), Wade (Superstar), Bosh (Scoring Big Man)

2011 DAL: Nowitzki (Superstar)

2010 LAL: Bryant (Superstar), Gasol (Scoring Big Man), Odom (Scoring Big Man), Bynum (Scoring Big Man)

In terms of roster, the Blazers have looked like the following over the years:

2021 POR: Lillard (Superstar), Nurkic (Scoring Big Man), Kanter (Scoring Big Man)

2020 POR: Lillard (Superstar), Whiteside (Scoring Big Man)

2019 POR: Lillard (Superstar), Nurkic (Scoring Big Man)

2018 POR: Lillard (Superstar), Nurkic (Scoring Big Man)

2017 POR: Lillard (Superstar), McCollum (Superstar), Plumlee (Scoring Big Man)

2016 POR: Lillard (Superstar), McCollum (Superstar), Plumlee (Scoring Big Man)

2015 POR: Lillard (Superstar), Aldridge (Scoring Big Man)

2014 POR: Lillard (Superstar), Aldridge (Scoring Big Man), Lopez (Scoring Big Man)

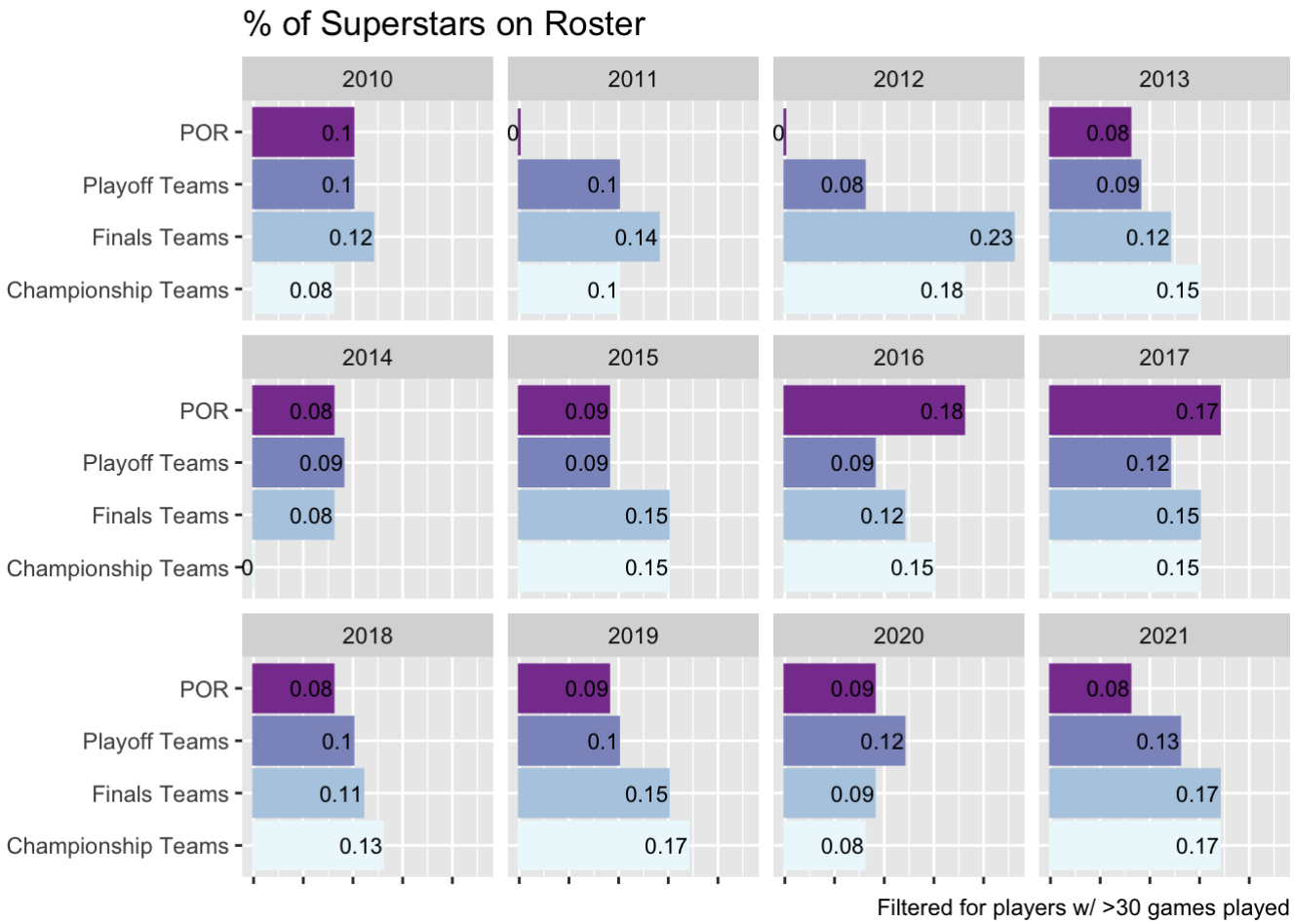
2013 POR: Lillard (Superstar), Aldridge (Scoring Big Man), Hickson (Scoring Big Man)

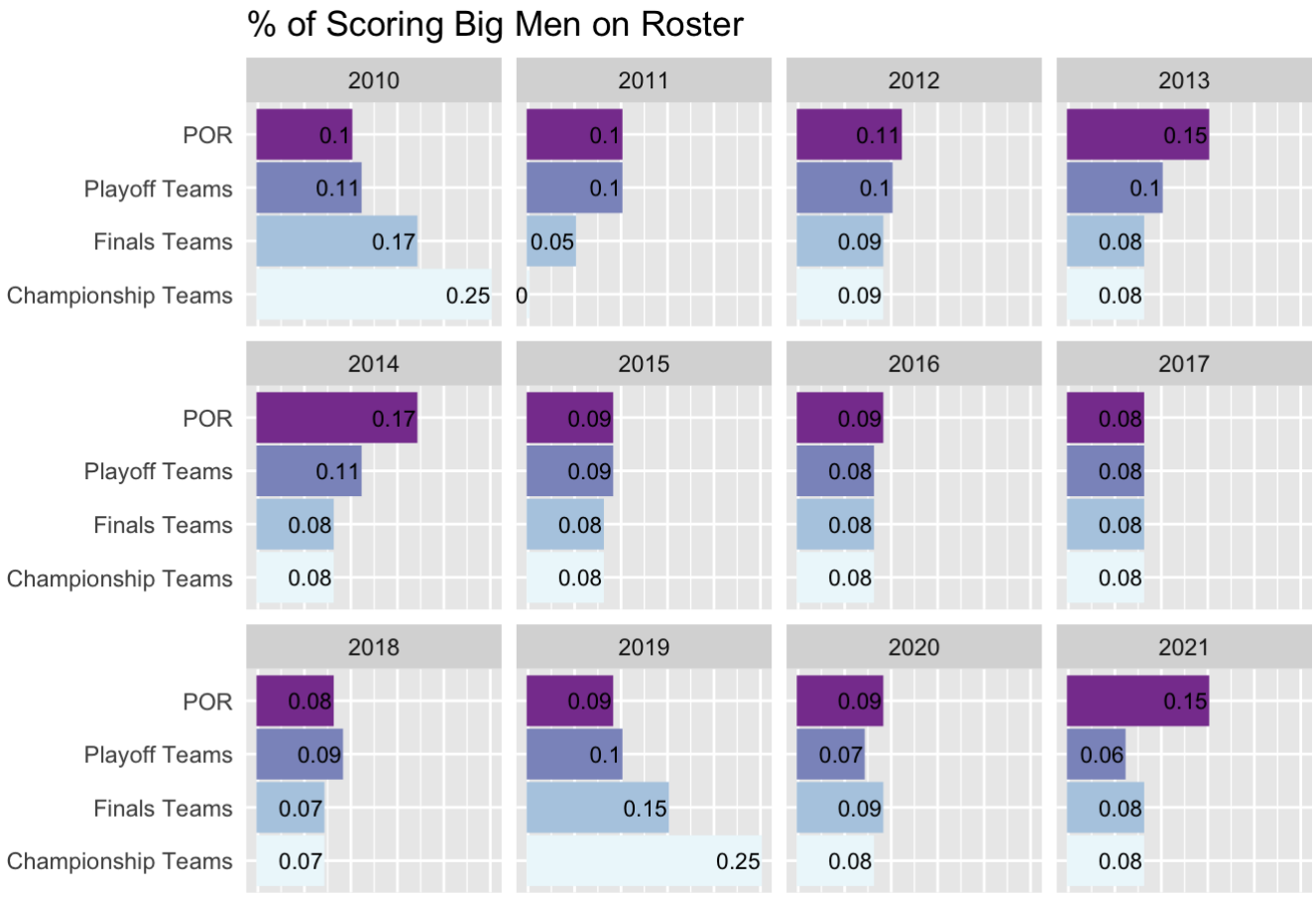
2012 POR: Aldridge (Scoring Big Man)

2011 POR: Aldridge (Scoring Big Man)

2010 POR: Roy (Superstar), Aldridge (Scoring Big Man)

Here are a couple notes regarding Portland's roster: CJ McCollum hasn't been playing at Superstar level since 2017. Damian Lillard has been the only Superstar on the roster since compared to other Championship Level teams. In terms of player Archetype, players have stepped up (sort of) to be that potential sidekick with Damian Lillard but as you can see the person is diferent from year to year. One interesting question here is if McCollum's game was stifled by the addition to Nurkic to the roster.

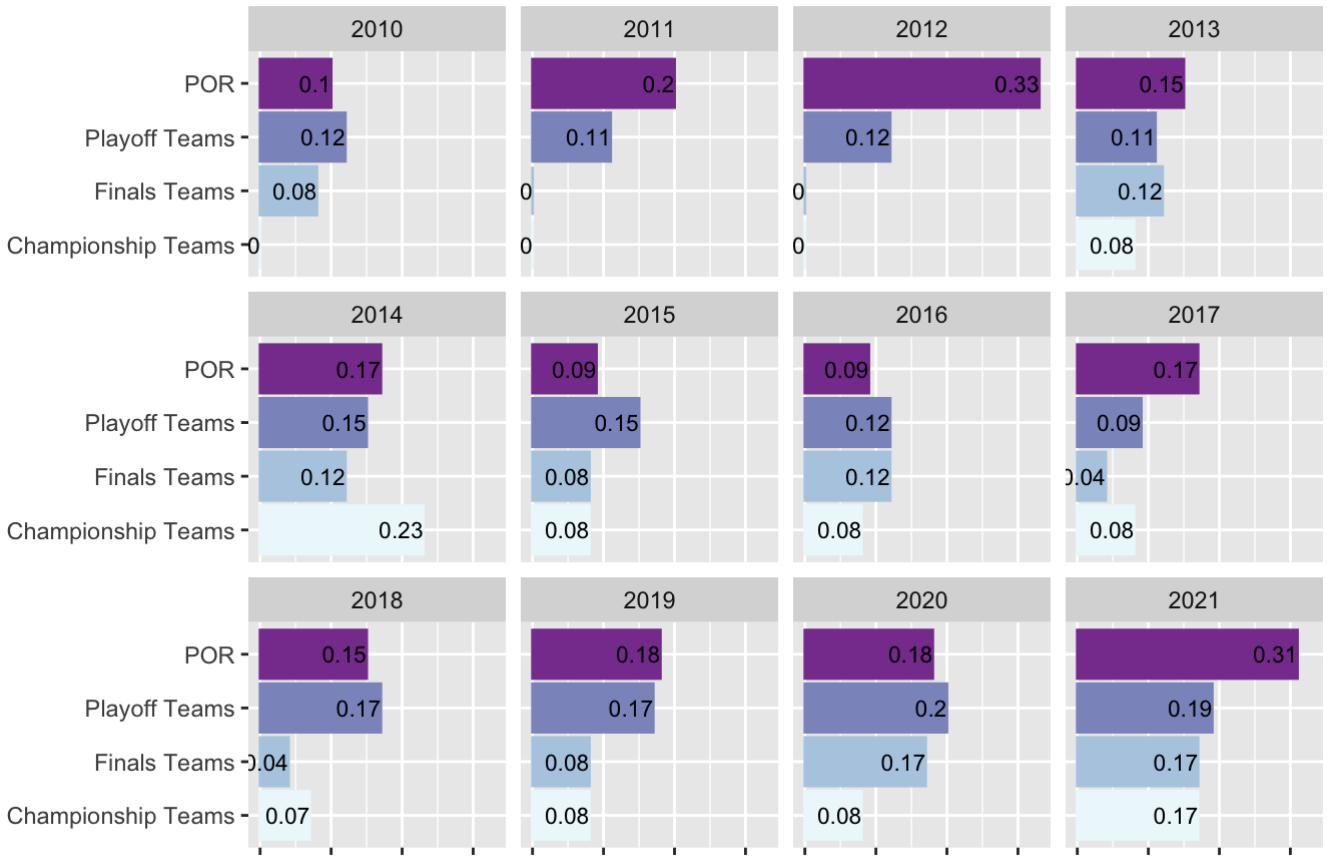




Filtered for players w/ >30 games played

Put simply, Portland has been at its best when its had more Perimeter Shooters on the roster. We can see for 2020 & 2021, there wasn't as much perimeter shooters, which left Damian Lillard/CJ McCollum having to shoulder the load of shooting. Instead the Blazers shifted in roster strategy to opt for more all-around perimeter defenders vs. the fully offensive perimeter shooters. I'm not saying to sacrifice defense but getting players on the roster who are more defensive players didn't work well for the 2020 & 2021 Blazers. The Perimeter Shooters on the Blazers in team in 2018 & 2019 were Seth Curry (2019), Jake Layman (2019), Meyers Leonard (2018/19), Pat Connaughton (2018), Maurice Harkless (2018) and Evan Turner (2018). The only shooters left on the team for 2020/2021 were Anfernee Simons, Gary Trent Jr. (traded in 2021) and Nassir Little (only for 2021). It may be wise for the Blazers to sign a dedicated Perimeter Shooter to jolt the secondary offense as Seth Curry would have for the Blazers in the past. Another concern for the Blazers, is the high % of "Role Players" on the roster compared to other playoff teams in 2020/21. This is due solely to low performance. The 2020 squad had a high % of Role Players in Kent Bazemore, Mario Hezonja, Nassir Little, and Anthony Tolliver. In short, most of the players were purely bad signing for the Blazers. Not surprisingly, the 2019 roster had no "Role Players" as the entire roster had an elevated role with the team. The 2018 role players were Zach Collins and Jake Layman who both developed out of those roles in the 2019 season. It's not uncommon to see young players designated as "Role Players" (i.e. Zach Collins/Jake Layman) but having veterans with the role player designation is just wasted roster capital.

% of Perimeter Wings/Defenders on Roster



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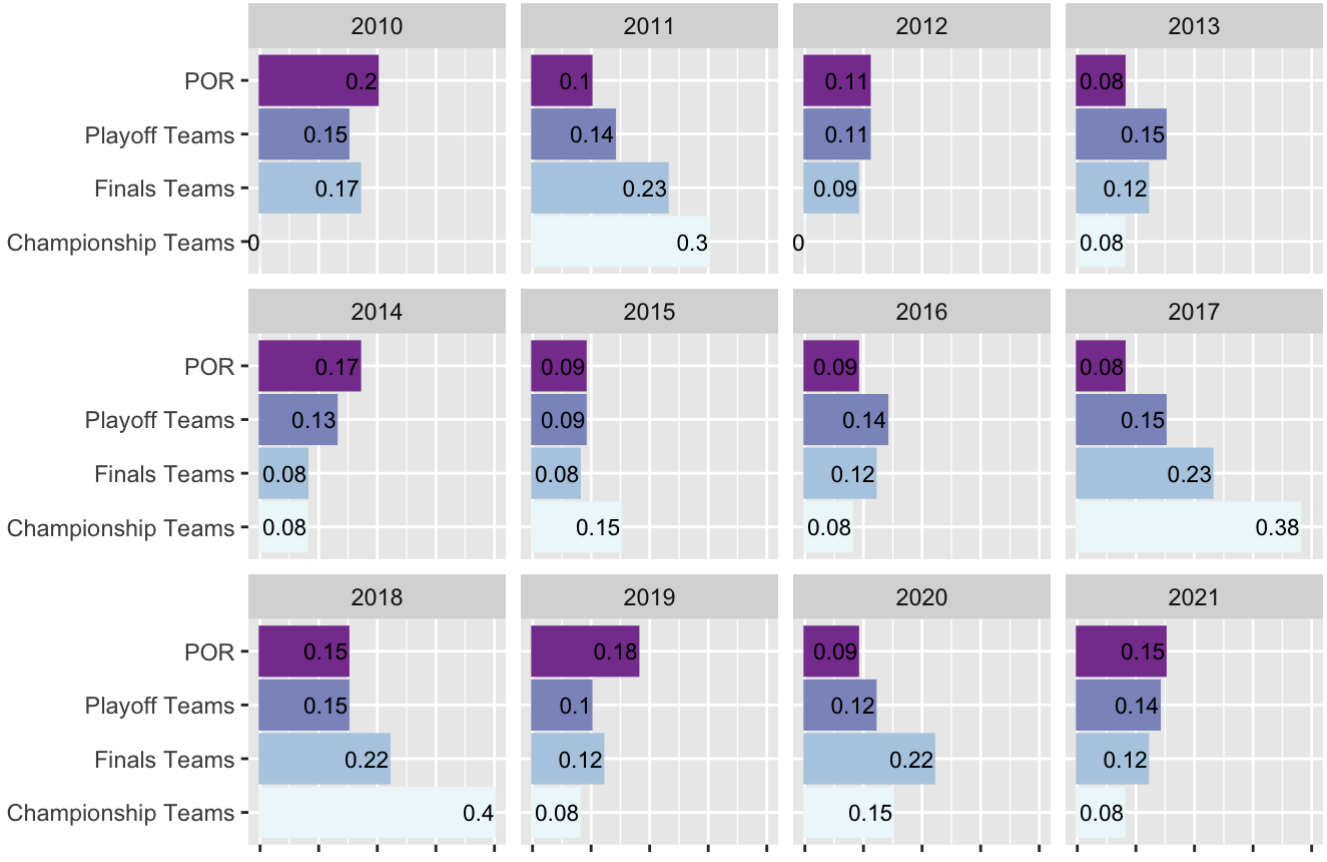
% of Defensive.Big.Man on Roster



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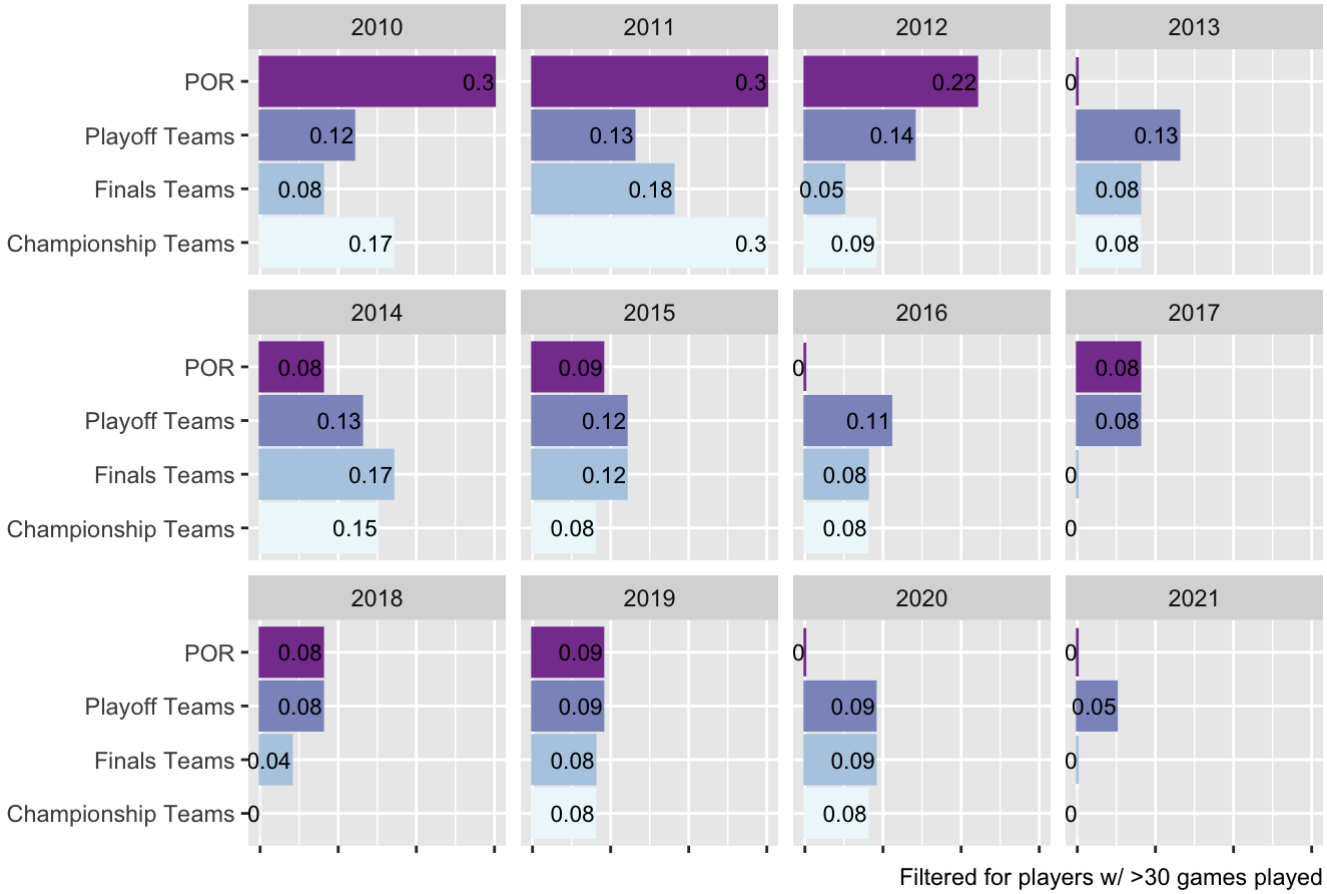
% of Floor Generals on Roster



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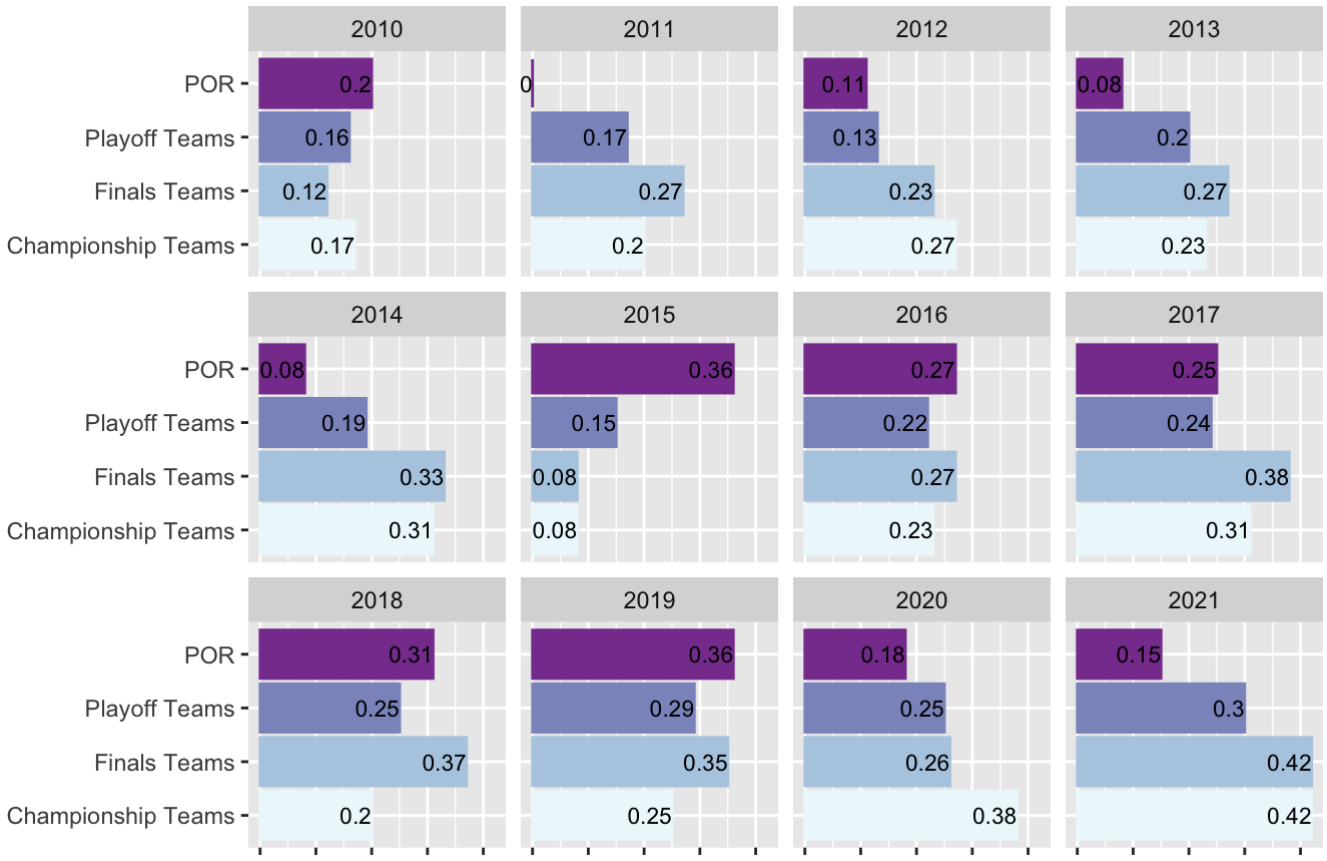
% of Perimeter Shooters on Roster



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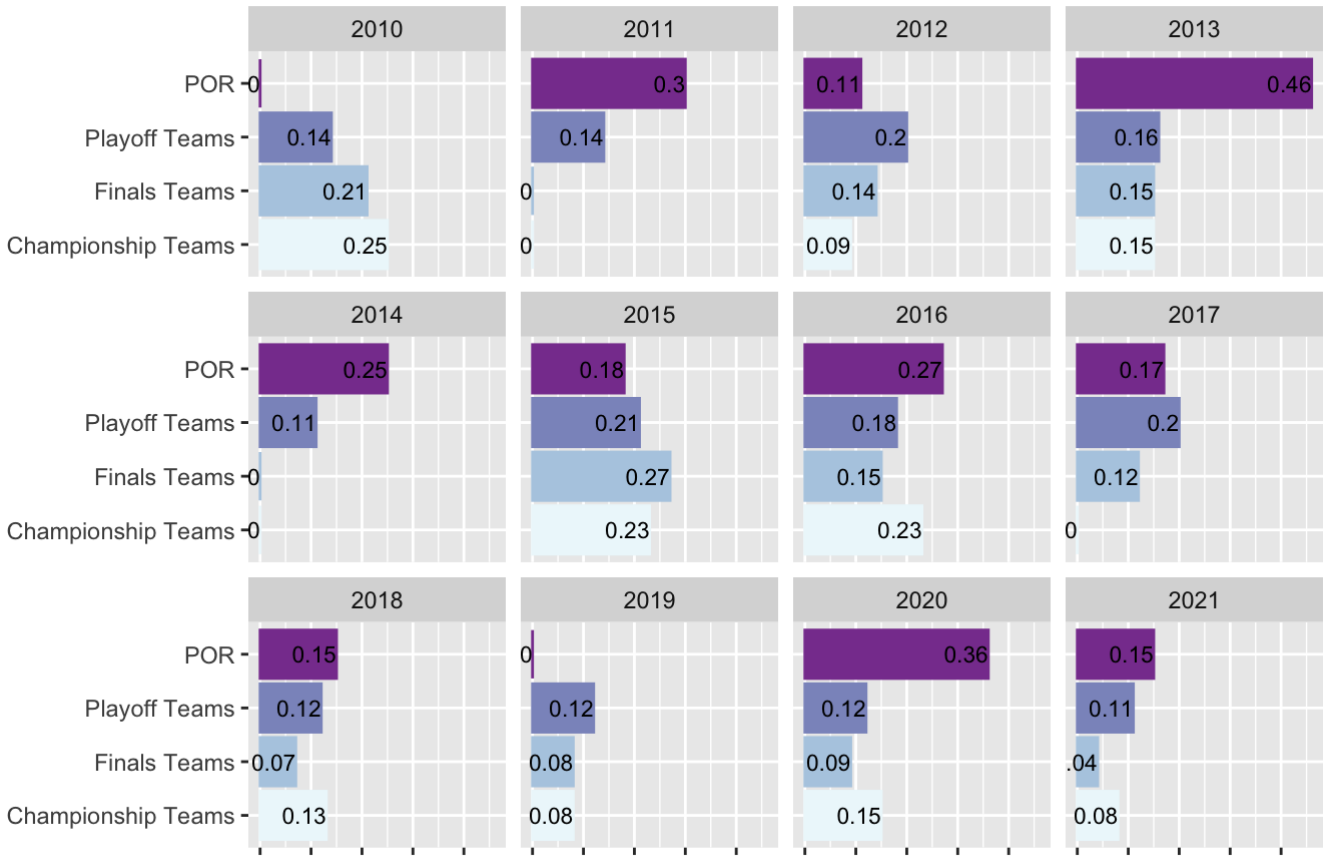
% of Role Player on Roster



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Shooting Tendencies by Cluster

Next we want to look at where on the court different clusters end up shooting effiently from. Obviously, this could change from team to team but know a team's deficiencies and what player types excel in those deficiencies could improve an offense.

Portland usually shoots at a higher level on left/right wing compared to other playoff teams. We can attribute the Wing performance to Dame & CJ's shooting zone. Portland lacks in shooting in the Paint and the Corners compared to other Playoff teams dating back to 2016. Given the change of "Scoring Big Man" YoY, we attribute the volatilty in the paint due to reliability of a scoring big man to play alongside Dame/CJ. What's interesting is the improvement of the Paint FG % amongst Playoff teams over time. The 2020 squad was the best shooting in team in the past 6 seasons for the Blazers albeit a short season.

Link to shooting zones: https://thevi5ion.wordpress.com/2019/03/10/college-basketball-shot-chart-tool/ (https://thevi5ion.wordpress.com/2019/03/10/college-basketball-shot-chart-tool/)

FG Pct by Shooting Zone

Team	Year	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
Portland										
POR	2016	0.39	0.35	0.39	0.37	0.37	0.36	0.41	0.39	0.42
POR	2017	0.44	0.38	0.36	0.34	0.36	0.40	0.42	0.40	0.42
POR	2018	0.50	0.39	0.40	0.37	0.36	0.44	0.45	0.37	0.40
POR	2019	0.51	0.36	0.36	0.36	0.38	0.42	0.42	0.40	0.41
POR	2020	0.53	0.44	0.41	0.35	0.38	0.43	0.41	0.42	0.40
POR	2021	0.51	0.36	0.40	0.40	0.39	0.41	0.45	0.41	0.41
Playoff Teams										
Playoff	2016	0.45	0.38	0.36	0.34	0.34	0.39	0.40	0.38	0.39
Playoff	2017	0.48	0.39	0.39	0.36	0.35	0.40	0.40	0.39	0.39
Playoff	2018	0.56	0.40	0.39	0.36	0.35	0.41	0.40	0.40	0.40
Playoff	2019	0.55	0.39	0.38	0.35	0.35	0.42	0.40	0.40	0.40
Playoff	2020	0.55	0.39	0.39	0.35	0.36	0.41	0.41	0.41	0.40
Playoff	2021	0.55	0.40	0.41	0.37	0.37	0.42	0.42	0.41	0.41
Finals Teams										
Finals	2016	0.46	0.42	0.40	0.40	0.37	0.41	0.41	0.40	0.41
Finals	2017	0.49	0.39	0.47	0.38	0.38	0.44	0.44	0.40	0.41
Finals	2018	0.61	0.39	0.40	0.37	0.36	0.45	0.41	0.45	0.43
Finals	2019	0.58	0.43	0.41	0.37	0.35	0.44	0.46	0.44	0.42

Team	Year	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
Finals	2020	0.59	0.36	0.40	0.35	0.35	0.36	0.38	0.39	0.40
Finals	2021	0.60	0.40	0.43	0.37	0.35	0.43	0.40	0.43	0.43
Championship Teams										
Champs	2016	0.42	0.35	0.37	0.34	0.34	0.40	0.41	0.37	0.39
Champs	2017	0.52	0.41	0.48	0.38	0.40	0.44	0.45	0.39	0.44
Champs	2018	0.61	0.40	0.41	0.37	0.36	0.47	0.42	0.48	0.46
Champs	2019	0.56	0.42	0.38	0.35	0.34	0.39	0.47	0.43	0.41
Champs	2020	0.60	0.37	0.41	0.34	0.32	0.34	0.40	0.38	0.37
Champs	2021	0.60	0.40	0.43	0.37	0.35	0.43	0.40	0.43	0.43

When looking at specific Player cluster shooting performance by Shooting Zone, we can see that Perimeter Shooters are more likely to score higher in the paint. This could be their nature to be both spot up shooters and screening to an open layup given their movement on the floor. The Blazers' Perimeter Wings/Defenders are less efficient in the Paint compared to other playoff team, which may be why more playoff teams have a higher percentage of Perimeter Shooters on the roster. One other interesting insight is that the Blazers' Big Man (Scoring/Defensive) have been less efficient in the paint compared to other playoff teams.

Cluster FG Pct by Shooting Zone

Cluster	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
Portland									
Defensive Big Man	0.52	0.25	0.36	0.29	0.29	0.30	0.31	0.32	0.36
Floor Generals	0.45	0.41	0.23	0.27	0.39	0.42	0.41	0.40	0.40
Perimeter Shooter	0.52	0.37	0.44	0.36	0.39	0.40	0.42	0.41	0.42
Perimeter Wings/Defenders	0.46	0.42	0.38	0.38	0.37	0.45	0.43	0.40	0.42
Role Player	0.44	0.32	0.35	0.30	0.33	0.29	0.31	0.28	0.32
Scoring Big Man	0.52	0.00	0.00	0.25	0.19	0.34	0.42	0.33	0.37
Superstars	0.47	0.37	0.39	0.39	0.38	0.41	0.45	0.42	0.42
Playoff Teams									
Defensive Big Man	0.57	0.34	0.33	0.33	0.31	0.40	0.40	0.39	0.39
Floor Generals	0.48	0.39	0.38	0.35	0.34	0.38	0.40	0.38	0.38
Perimeter Shooter	0.52	0.40	0.39	0.36	0.36	0.41	0.39	0.39	0.38

Cluster	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
Perimeter Wings/Defenders	0.53	0.41	0.40	0.36	0.36	0.42	0.40	0.40	0.40
Role Player	0.45	0.34	0.34	0.30	0.30	0.38	0.34	0.35	0.35
Scoring Big Man	0.57	0.34	0.35	0.33	0.32	0.39	0.40	0.40	0.40
Superstars	0.53	0.40	0.41	0.36	0.36	0.43	0.42	0.41	0.42

In comparing the Perimeter Shooters to Wing/Defenders over time, we can generally see that Perimeter Shooters have been higher performing across each zone compared to Wing/Defenders. The exception mainly being the 2020 season where the Blazers were a better shooting team overall (shortened season could be a reason why).

Portland Perimeter Clusters FG Pct by Shooting Zone by Year

Cluster	season	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
Perimeter Wings/Defenders										
Perimeter Wings/Defenders	2016	0.35	0.40	0.39	0.35	0.33	0.40	0.41	0.35	0.39
Perimeter Wings/Defenders	2017	0.40	0.34	0.28	0.35	0.26	0.30	0.41	0.38	0.40
Perimeter Wings/Defenders	2018	0.47	0.48	0.42	0.37	0.36	0.43	0.45	0.38	0.40
Perimeter Wings/Defenders	2019	0.48	0.39	0.37	0.34	0.39	0.46	0.46	0.39	0.45
Perimeter Wings/Defenders	2020	0.50	0.57	0.43	0.34	0.36	0.46	0.41	0.43	0.43
Perimeter Wings/Defenders	2021	0.46	0.39	0.40	0.42	0.39	0.46	0.44	0.42	0.40
Perimeter Shooter										
Perimeter Shooter	2016	0.50	0.35	0.49	0.36	0.33	0.37	0.43	0.43	0.45
Perimeter Shooter	2017	0.48	0.39	0.41	0.29	0.40	0.48	0.40	0.36	0.42
Perimeter Shooter	2018	0.55	0.32	0.40	0.38	0.39	0.41	0.50	0.44	0.41
Perimeter Shooter	2019	0.60	0.38	0.41	0.40	0.41	0.41	0.32	0.39	0.41
Perimeter Shooter	2020	0.43	0.40	0.46	0.31	0.39	0.33	0.39	0.45	0.43
Perimeter Shooter	2021	0.48	0.51	0.50	0.39	0.40	0.57	0.43	0.41	0.31

One interesting observation when comparing Dame/CJ is that CJ is better in Dame is shooting from any spot on the floor whereas Dame tend to be pretty spotty. It could be that CJ's had to transform his game to complement Dame, which is why he's more versatile shooting on any part of the floor. What's also interesting that although CJ is no longer categorized as a Superstar, it may be due to the fact that his offensive game and shooting efficiency has taken off rather than other parts of his game have suffered as a result.

Dame/CJ FG Pct by Shooting Zone by Year

Player	season	Cluster	Shots	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
2016												
CJ McCollum	2016	Superstars	1441	0.39	0.41	0.32	0.39	0.45	0.40	0.44	0.40	0.47
Damian Lillard	2016	Superstars	1445	0.36	0.33	0.44	0.36	0.37	0.33	0.37	0.38	0.39
2017												
CJ McCollum	2017	Superstars	1407	0.46	0.34	0.48	0.40	0.43	0.42	0.44	0.47	0.47
Damian Lillard	2017	Superstars	1388	0.45	0.60	0.48	0.34	0.34	0.45	0.39	0.45	0.37
2018												
CJ McCollum	2018	Perimeter Wings/Defenders	1523	0.47	0.41	0.37	0.41	0.39	0.46	0.48	0.37	0.44
Damian Lillard	2018	Superstars	1433	0.50	0.32	0.36	0.42	0.34	0.64	0.52	0.33	0.38
2019												
CJ McCollum	2019	Perimeter Wings/Defenders	1525	0.48	0.34	0.47	0.38	0.40	0.47	0.47	0.40	0.47
Damian Lillard	2019	Superstars	1743	0.48	0.31	0.48	0.38	0.37	0.44	0.47	0.43	0.41
2020												
CJ McCollum	2020	Perimeter Wings/Defenders	1408	0.50	0.57	0.50	0.34	0.36	0.51	0.43	0.44	0.48
Damian Lillard	2020	Superstars	1322	0.53	0.55	0.33	0.40	0.40	0.31	0.49	0.45	0.33
2021												
CJ McCollum	2021	Perimeter Wings/Defenders	1000	0.50	0.36	0.35	0.40	0.42	0.55	0.39	0.42	0.50
Damian Lillard	2021	Superstars	1388	0.54	0.17	0.27	0.41	0.41	0.26	0.55	0.42	0.46

[a] Filtered for Dame/CJ

One area of development for Anfernee Simons is hit shooting efficiency in the paint. Other Perimeter Shooters such as Jake Layman, Pat Connaughton, Seth Curry were good spot up shooters like Anfernee but way more efficient in the paint. It could be good to develop Anfernee's pump fake drive to the hoop game that we've come to see with CJ McCollum's game. Another interesting trend here is around Portland's decision to trade away Gary Trent Jr, he somewhat regressed in terms of FG % in his 2nd year. Although he had success with the Raptors, he was not positioned well in the Blazers offense. One concern is Nassir Little, who we'd expect to regress to a Role Player if his offensive game doesn't expand.

Perimeter FG Pct by Shooting Zone by Year

Player	season	Cluster	Shots	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
2016												
Allen Crabbe	2016	Perimeter Shooter	670	0.56	0.42	0.47	0.35	0.35	0.35	0.42	0.45	0.47
Al-Farouq Aminu	2016	Perimeter Wings/Defenders	636	0.35	0.40	0.39	0.35	0.33	0.40	0.41	0.35	0.39
Gerald Henderson	2016	Perimeter Shooter	455	0.46	0.32	0.54	0.24	0.27	0.36	0.38	0.38	0.38
Meyers Leonard	2016	Perimeter Shooter	427	0.49	0.17	0.50	0.45	0.33	0.43	0.56	0.44	0.48
2017												
Allen Crabbe	2017	Perimeter Shooter	619	0.48	0.37	0.38	0.27	0.46	0.80	0.34	0.38	0.47
Maurice Harkless	2017	Perimeter Wings/Defenders	432	0.41	0.23	0.23	0.38	0.34	0.50	0.57	0.41	0.43
Al-Farouq Aminu	2017	Perimeter Wings/Defenders	411	0.40	0.43	0.33	0.33	0.18	0.17	0.30	0.36	0.38
Meyers Leonard	2017	Perimeter Shooter	362	0.45	0.44	0.46	0.31	0.28	0.11	0.50	0.35	0.39
Pat Connaughton	2017	Perimeter Shooter	78	0.52	0.33	0.67	0.38	0.50	0.50	0.00	0.25	0.14
2018												
CJ McCollum	2018	Perimeter Wings/Defenders	1523	0.47	0.41	0.37	0.41	0.39	0.46	0.48	0.37	0.44
Evan Turner	2018	Perimeter Shooter	568	0.53	0.34	0.35	0.26	0.38	0.39	0.47	0.44	0.42
Al-Farouq Aminu	2018	Perimeter Wings/Defenders	568	0.46	0.53	0.46	0.32	0.29	0.00	0.00	0.43	0.20
Pat Connaughton	2018	Perimeter Shooter	399	0.54	0.25	0.27	0.42	0.34	0.67	0.50	0.32	0.34
Maurice Harkless	2018	Perimeter Shooter	282	0.57	0.32	0.55	0.30	0.58	0.67	1.00	0.50	0.21
Meyers Leonard	2018	Perimeter Shooter	87	0.55	0.50	0.67	0.57	0.30	0.25	0.50	0.60	0.75
2019												
CJ McCollum	2019	Perimeter Wings/Defenders	1525	0.48	0.34	0.47	0.38	0.40	0.47	0.47	0.40	0.47
Al-Farouq Aminu	2019	Perimeter Wings/Defenders	631	0.48	0.41	0.31	0.25	0.35	0.33	0.20	0.37	0.31
Seth Curry	2019	Perimeter Shooter	547	0.46	0.41	0.57	0.44	0.43	0.41	0.50	0.34	0.43
Jake Layman	2019	Perimeter Shooter	419	0.68	0.35	0.24	0.30	0.41	0.50	0.25	0.37	0.35
Meyers Leonard	2019	Perimeter Shooter	292	0.68	0.17	0.50	0.51	0.44	0.00	0.33	0.42	0.49
Nik Stauskas	2019	Perimeter Shooter	239	0.45	0.41	0.42	0.32	0.34	0.44	0.00	0.54	0.37

[a] Filtered for Perimeter Players

Player	season	Cluster	Shots	Paint	Left Corner	Right Corner	Left Wing	Right Wing	Left Baseline	Right Baseline	Left Elbow	Right Elbow
2020												
CJ McCollum	2020	Perimeter Wings/Defenders	1408	0.50	0.57	0.50	0.34	0.36	0.51	0.43	0.44	0.48
Carmelo Anthony	2020	Perimeter Wings/Defenders	778	0.51	0.56	0.29	0.34	0.34	0.43	0.39	0.42	0.32
Anfernee Simons	2020	Perimeter Shooter	591	0.43	0.35	0.42	0.25	0.37	0.35	0.41	0.43	0.44
Gary Trent Jr.	2020	Perimeter Shooter	483	0.43	0.43	0.49	0.38	0.41	0.31	0.38	0.48	0.42
2021												
CJ McCollum	2021	Perimeter Wings/Defenders	1000	0.50	0.36	0.35	0.40	0.42	0.55	0.39	0.42	0.50
Carmelo Anthony	2021	Perimeter Wings/Defenders	836	0.39	0.45	0.48	0.43	0.33	0.46	0.46	0.43	0.38
Gary Trent Jr.	2021	Perimeter Wings/Defenders	553	0.47	0.38	0.45	0.40	0.42	0.21	0.46	0.44	0.31
Robert Covington	2021	Perimeter Wings/Defenders	528	0.42	0.38	0.24	0.44	0.40	0.50	0.25	0.33	0.30
Anfernee Simons	2021	Perimeter Shooter	417	0.35	0.53	0.53	0.39	0.42	0.67	0.33	0.44	0.31
Nassir Little	2021	Perimeter Shooter	157	0.66	0.43	0.33	0.39	0.33	0.00	0.50	0.29	0.30

[a] Filtered for Perimeter Players

Win Probability Added by Cluster (WPA)

WPA or Win Probability Added looks at big time or clutch plays that shift the tide of a specific game. It looks at the win probility delta of previous play to current play for a specified team. WPA is only given to the primary player on a given play. Our WPA model is calculated using the following formula:

possession_win ~ Score Differential + score value of play + Seconds Left in Game

As we can see, Superstars add a mean of 2.95% Win probability per play. What's interesting is that Perimeter Shooters, your offensive spark off the bench, do just that and can add nearly 2% in WPA on avg. We suspect a lot of their WPA comes from clutch 3 point shots in adding to score differential. Perimeter Shooters also are likely to log a lot WPA during garbage time where they get a lot more minutes as seem their 4% WPA in the 4th quarter. Filtering this data for 750 plays helps to reduce some of the garbage time plays in a given season. Another interesting observation is the nearly 5% WPA added by Superstars in the 3rd quarter. That's where they start to close out games and add to their stats.

Suprisingly Floor Generals can lose WPA but that may be due to their inability to provide sufficient amount of scoring.

Avg Win Probability Added by Cluster

Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
Superstars	428886	0.030	0.013	0.024	0.050	0.029

[a] Filtered for plays during first 4 quarters from 2016-2021; Only looking for those w/ at least 750 plays in a season

Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
Perimeter Shooter	407838	0.022	0.006	0.022	0.016	0.040
Scoring Big Man	384011	0.019	0.014	0.014	0.028	0.022
Defensive Big Man	282261	0.008	0.003	0.006	0.003	0.018
Perimeter Wings/Defenders	529119	0.004	0.003	0.005	0.005	0.003
Floor Generals	295881	-0.012	-0.010	-0.012	-0.021	-0.003
Role Player	175991	-0.016	-0.005	-0.007	-0.035	-0.018

[a] Filtered for plays during first 4 quarters from 2016-2021; Only looking for those w/ at least 750 plays in a season

CJ McCollum's WPA in 2019 was the best of his career adding nearly 4.6% in Win probability per play he was primarily apart of. That provide a huge boost to the team. Since then, he's been a detriment to Win percentage for the Blazers. We can see the argument of earlier how Championship teams have more Perimeter Shooters on the roster as they provide the necessary spark to the offense off the bench. Aminu/Crabbe in 2017, Connaughton in 2018, Curry in 2019. Regardless of the WPA in 4th quarter (likely garbage time) a lot of these players were an even spark throughout the game and provided a much needed jolt to the offense for when Dame/CJ were having an off shooting night. Such was the case for Seth Curry whose 14.3% WPA avg in 2019 was critical for the teams run to Western Conference Finals. We can see Simons is the only person currently on the roster, which makes sense for his career development. We would suggest the Blazers to target a Perimeter Shooter to provide a jolt to the secondary units.

Avg Win Probability Added by Cluster

Season	Player	Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
2016								
2016	Gerald Henderson	Perimeter Shooter	1310	0.051	0.029	0.038	0.062	0.074
2016	Noah Vonleh	Role Player	1053	0.042	0.017	0.073	0.055	0.041
2016	Maurice Harkless	Defensive Big Man	1462	0.039	0.039	0.031	0.079	0.009
2016	Al-Farouq Aminu	Perimeter Wings/Defenders	2153	0.027	0.007	0.003	0.053	0.053
2016	CJ McCollum	Superstars	2881	0.025	0.025	0.029	0.014	0.033
2016	Mason Plumlee	Scoring Big Man	2437	0.020	0.015	0.006	0.019	0.045
2016	Damian Lillard	Superstars	3305	0.019	0.007	0.023	0.040	0.008
2016	Allen Crabbe	Perimeter Shooter	1792	0.014	0.003	0.018	0.027	0.008
2016	Meyers Leonard	Perimeter Shooter	1328	-0.002	-0.040	0.063	-0.016	-0.009
2017								
2017	Al-Farouq Aminu	Perimeter Wings/Defenders	1566	0.037	0.023	0.063	0.014	0.046
2017	Allen Crabbe	Perimeter Shooter	1589	0.022	-0.009	0.042	0.038	0.010
2017	Meyers Leonard	Perimeter Shooter	1099	0.009	0.028	0.023	0.000	-0.015
2017	Damian Lillard	Superstars	3165	0.006	0.009	0.014	-0.007	0.010

[a] Filtered for plays during first 4 quarters; Only showing players w/ >750 plays for a given sesason

Season	Player	Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
2017	CJ McCollum	Superstars	2861	0.003	0.015	-0.022	0.012	0.010
2017	Maurice Harkless	Perimeter Wings/Defenders	1705	0.003	0.009	0.013	-0.015	0.007
2017	Evan Turner	Floor Generals	1487	0.003	0.002	0.008	-0.023	0.025
2017	Mason Plumlee	Scoring Big Man	1586	0.001	0.010	-0.023	0.038	-0.026
2017	Noah Vonleh	Defensive Big Man	1282	-0.013	0.031	0.041	0.024	-0.145
2018								
2018	Pat Connaughton	Perimeter Shooter	1104	0.093	0.045	0.117	0.077	0.128
2018	Zach Collins	Role Player	1052	0.081	0.031	0.086	0.014	0.161
2018	Maurice Harkless	Perimeter Shooter	848	0.065	0.029	0.056	0.105	0.069
2018	Ed Davis	Defensive Big Man	1557	0.063	0.014	0.068	0.074	0.101
2018	Evan Turner	Perimeter Shooter	1489	0.059	0.029	0.073	0.070	0.066
2018	Jusuf Nurkic	Scoring Big Man	2768	0.051	0.026	0.048	0.096	0.023
2018	Al-Farouq Aminu	Perimeter Wings/Defenders	1706	0.046	0.025	0.049	0.071	0.034
2018	Damian Lillard	Superstars	2951	0.040	0.030	0.059	0.079	-0.018
2018	CJ McCollum	Perimeter Wings/Defenders	2786	0.035	0.027	0.046	0.031	0.037
2018	Shabazz Napier	Floor Generals	1195	0.032	-0.021	0.041	-0.031	0.075
2019								
2019	Seth Curry	Perimeter Shooter	1202	0.143	0.056	0.146	0.097	0.209
2019	Jake Layman	Perimeter Shooter	1134	0.108	0.089	0.068	0.150	0.122
2019	Zach Collins	Defensive Big Man	1672	0.094	0.047	0.067	0.072	0.167
2019	Evan Turner	Floor Generals	1537	0.079	0.038	0.056	0.091	0.123
2019	Jusuf Nurkic	Scoring Big Man	2632	0.055	0.038	0.044	0.115	0.012
2019	Meyers Leonard	Perimeter Shooter	1034	0.055	0.053	0.076	0.006	0.074
2019	Al-Farouq Aminu	Perimeter Wings/Defenders	2087	0.053	0.028	0.048	0.088	0.041
2019	CJ McCollum	Perimeter Wings/Defenders	2719	0.046	0.032	0.025	0.077	0.049
2019	Damian Lillard	Superstars	3566	0.043	0.035	0.051	0.082	-0.016
2019	Maurice Harkless	Defensive Big Man	1342	0.037	0.012	0.030	0.093	0.000
2020								
2020	Hassan Whiteside	Scoring Big Man	2527	-0.010	0.018	-0.020	-0.010	-0.033
2020	Damian Lillard	Superstars	2792	-0.021	0.012	-0.030	-0.024	-0.046
2020	Gary Trent Jr.	Perimeter Shooter	1010	-0.028	0.025	0.010	-0.083	-0.062
2020	Kent Bazemore	Role Player	934	-0.031	0.025	0.014	-0.064	-0.112

[a] Filtered for plays during first 4 quarters; Only showing players w/ >750 plays for a given sesason

Season	Player	Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
2020	CJ McCollum	Perimeter Wings/Defenders	2557	-0.032	-0.008	-0.009	-0.074	-0.040
2020	Carmelo Anthony	Perimeter Wings/Defenders	1898	-0.034	0.001	-0.029	-0.062	-0.056
2020	Mario Hezonja	Role Player	901	-0.039	0.020	-0.006	-0.050	-0.111
2020	Anfernee Simons	Perimeter Shooter	1333	-0.073	0.028	-0.050	-0.072	-0.163
2021								
2021	Anfernee Simons	Perimeter Shooter	952	0.097	0.071	0.137	0.100	0.073
2021	Derrick Jones Jr.	Defensive Big Man	981	0.030	0.036	0.008	0.045	0.032
2021	Carmelo Anthony	Perimeter Wings/Defenders	1742	0.022	0.019	0.044	-0.002	0.018
2021	Enes Kanter	Scoring Big Man	2100	0.016	-0.012	0.034	0.027	0.017
2021	Jusuf Nurkic	Scoring Big Man	1306	0.007	-0.014	-0.008	0.040	0.011
2021	Damian Lillard	Superstars	2802	0.002	0.014	-0.017	0.038	-0.047
2021	Robert Covington	Perimeter Wings/Defenders	1671	0.002	0.015	0.001	-0.003	-0.001
2021	CJ McCollum	Perimeter Wings/Defenders	1721	-0.012	0.002	-0.031	-0.036	0.022
2021	Gary Trent Jr.	Perimeter Wings/Defenders	971	-0.025	0.013	0.039	-0.034	-0.112

[a] Filtered for plays during first 4 quarters; Only showing players w/ >750 plays for a given sesason

In looking at the top Perimeter Shooters, we can see that Anfernee Simon is the 7th highest in terms of WPA added for those with at least 750 plays in the 2020-21 season. Highlighted in grey are those with positive WPA and are available free agents. Bryn Forbes would be a cheap FA option (2020-21 salary of $2.3MM). He will likely go more than $2.3MM given he was on the Bucks but still a good spark off the bench. JaMychal Green could be another option if Forbes is taken.

Avg Win Probability Added by Perimeter Shooters

Player	Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
Georges Niang	Perimeter Shooter	1077	0.167	0.043	0.127	0.183	0.288
Matisse Thybulle	Perimeter Shooter	907	0.148	0.130	0.160	0.076	0.208
Furkan Korkmaz	Perimeter Shooter	1041	0.146	0.121	0.134	0.145	0.181
PJ Dozier	Perimeter Shooter	917	0.146	0.064	0.139	0.173	0.198
Bryn Forbes	Perimeter Shooter	1322	0.134	0.090	0.148	0.131	0.158
Luke Kennard	Perimeter Shooter	1076	0.102	0.061	0.080	0.058	0.183
Anfernee Simons	Perimeter Shooter	952	0.097	0.071	0.137	0.100	0.073
Pat Connaughton	Perimeter Shooter	1599	0.090	0.064	0.095	0.128	0.074
Monte Morris	Perimeter Shooter	972	0.087	0.097	0.131	0.079	0.040
JaMychal Green	Perimeter Shooter	1206	0.084	0.034	0.101	0.036	0.144
Nicolas Batum	Perimeter Shooter	1472	0.074	0.011	0.060	0.105	0.117

[a] Filtered for plays during first 4 quarters; Only showing players w/ >750 plays for a given sesason

Player	Cluster	Plays	WPA	WPA_q1	WPA_q2	WPA_q3	WPA_q4
Patrick Beverley	Perimeter Shooter	860	0.068	0.020	0.034	0.103	0.125
Reggie Jackson	Perimeter Shooter	1692	0.062	0.011	0.101	0.032	0.095
Terance Mann	Perimeter Shooter	1359	0.056	0.019	0.003	0.021	0.139
Tyrese Maxey	Perimeter Shooter	1029	0.056	0.025	0.052	-0.073	0.134
Maxi Kleber	Perimeter Shooter	1003	0.056	0.053	0.031	0.048	0.103
Grayson Allen	Perimeter Shooter	1059	0.047	0.019	0.019	0.076	0.089
Desmond Bane	Perimeter Shooter	1329	0.040	0.018	-0.017	0.027	0.133
Andre Iguodala	Perimeter Shooter	893	0.039	-0.015	0.000	-0.006	0.132
Tyus Jones	Perimeter Shooter	938	0.038	-0.005	0.015	0.114	0.051
Kent Bazemore	Perimeter Shooter	1215	0.022	-0.027	0.028	0.001	0.111
De'Anthony Melton	Perimeter Shooter	1101	0.022	0.036	0.039	-0.014	0.026
Immanuel Quickley	Perimeter Shooter	1305	0.016	0.013	0.068	-0.085	0.012
Kentavious Caldwell-Pope	Perimeter Shooter	1222	0.016	0.039	-0.007	0.040	-0.020
Jordan Poole	Perimeter Shooter	1006	0.015	-0.031	-0.002	0.133	0.007
Trey Burke	Perimeter Shooter	761	0.011	-0.012	0.014	0.029	0.010
Markieff Morris	Perimeter Shooter	1074	-0.003	-0.007	0.011	0.002	-0.021
Damion Lee	Perimeter Shooter	805	-0.004	-0.042	-0.017	0.001	0.023
Patrick Williams	Perimeter Shooter	1493	-0.007	-0.039	-0.012	0.008	0.009
Edmond Sumner	Perimeter Shooter	750	-0.008	0.036	0.025	-0.069	-0.029
Payton Pritchard	Perimeter Shooter	1045	-0.021	-0.018	-0.020	0.003	-0.043
Patty Mills	Perimeter Shooter	1243	-0.025	-0.040	-0.025	-0.040	0.009
Garrett Temple	Perimeter Shooter	922	-0.025	-0.060	-0.052	0.009	0.000
Denzel Valentine	Perimeter Shooter	876	-0.030	-0.031	-0.036	-0.130	0.030
Eric Paschall	Perimeter Shooter	754	-0.034	-0.038	-0.034	-0.135	0.004
Grant Williams	Perimeter Shooter	944	-0.037	-0.036	-0.098	-0.083	0.040
Wesley Matthews	Perimeter Shooter	763	-0.049	-0.087	-0.051	-0.095	0.045
Devin Vassell	Perimeter Shooter	887	-0.078	-0.091	-0.057	-0.096	-0.069
Sterling Brown	Perimeter Shooter	867	-0.081	-0.012	-0.041	-0.130	-0.138
Chuma Okeke	Perimeter Shooter	814	-0.091	-0.033	-0.044	-0.096	-0.189
Kenrich Williams	Perimeter Shooter	1159	-0.121	-0.006	-0.104	-0.176	-0.176
Jaden McDaniels	Perimeter Shooter	1040	-0.122	-0.076	-0.134	-0.126	-0.154
Dean Wade	Perimeter Shooter	879	-0.122	-0.080	-0.097	-0.105	-0.191

[a] Filtered for plays during first 4 quarters; Only showing players w/ >750 plays for a given sesason

Value of Clusters

Not surprisingly, Superstars are valued the highest but have the highest market inefficients in terms of salary (given high standard deviation). This could be due to not all players being paid out yet for their superstar performance. What's interesting is the average values of a Scoring Big Man is $10MM less per year. Another interesting trend is how over values "Floor Generals" are in the NBA given their low VORP avg. in 2020/21 season. This could be due to their ability to orchestrate the offense but still maybe not worth the cost.

Value of Player Cluster

Cluster	VORP AVG	VORP STDV	2020-21 AVG	2020-21 STDV
Superstar	2.60	1.55	25527240	11753101
Scoring Big Man	2.24	1.18	15670392	9989600
Perimeter Wing/Defender	0.77	0.79	9757010	7515574
Defensive Big Man	0.35	0.52	4948332	4660940
Perimeter Shooter	0.13	0.41	3908048	3338896
Floor General	0.08	0.75	8148999	6204521
Role Player	-0.36	0.33	2458514	1511230

CJ McCollum & Derek Jones Jr contract hurt for the Blazers. CJ McCollum is about 3x the value of Perimeter Wing/Defender contract and Derrick Jones is nearly 2x that of a normal defensive big. Norman Powell (not listed because he only played 27 games with the Blazers and threshold below for 30 games) had a VORP of 0.1, which isn't an ideal FA target. Norman Powell's 2020-21 salary was ~$10.5M. Enes Kanter's value is 2x cheaper than a Scoring Big Man.

2021 Clusters & Values of Portland

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21	2021-22	Guaranteed
Damian Lillard	PG	30	2021	POR	35.8	28.8	4.8	Superstar	$31,626,953	$43,750,000	$227,626,953
CJ McCollum	SG	29	2021	POR	34.0	23.1	2.1	Perimeter Wing/Defender	$29,354,152	$30,864,198	$129,354,152
Robert Covington	PF	30	2021	POR	32.0	8.5	1.0	Perimeter Wing/Defender	$12,138,345	$12,975,471	$25,113,816
Enes Kanter	C	28	2021	POR	24.4	11.2	1.0	Scoring Big Man	$5,005,350		$5,005,350
Jusuf Nurkic	C	26	2021	POR	23.8	11.5	0.9	Scoring Big Man	$12,000,000	$12,000,000	$16,000,000
Carmelo Anthony	PF	36	2021	POR	24.5	13.4	0.2	Perimeter Wing/Defender	$2,564,753		$2,564,753
Anfernee Simons	SG	21	2021	POR	17.3	7.8	0.2	Perimeter Shooter	$2,252,040	$3,938,818	$6,190,858
Derrick Jones Jr.	SF	23	2021	POR	22.7	6.8	0.1	Defensive Big Man	$9,268,293	$9,731,707	$19,000,000
Harry Giles	C	22	2021	POR	9.2	2.8	-0.1	Defensive Big Man	$1,678,854		$1,678,854
CJ Elleby	SF	20	2021	POR	6.4	2.3	-0.2	Role Player	$898,310	$1,517,981	$2,416,291
Nassir Little	PF	20	2021	POR	13.3	4.6	-0.2	Perimeter Shooter	$2,210,640	$2,316,240	$4,526,880

2020-21 Free Agent Targets

In terms of possible FA targets, the Blazers need a likely Scoring Big Man (if they can't resign Kanter), a Perimeter Wing/Defender and/or Shooter. We'd opt for a Shooter to add some depth to the roster but getting a younger Perimeter Wing/Defender may be best to backup Carmelo Anthony and Robert Covington who are both 30+. In looking at the available FA list, we've identified a few targets for the Blazers. The options are the following:

1. If the Blazers, can't resign Enes Kanter, The Blazers should sign Richaun Holmes. He's the same price as Kanter, a bit more durable in terms of MP/G and a year younger.
2. Sign and Trade for Lauri Markkanen. Might be worth to move Derrick Jones Jr. for Lauri Markkanen who is young and could be the future wing for the roster. Lauri is similar price to Derrick Jones and likely an odd man out in Chicago. Derrick Jones is a better fit to move into the Chicago rotation.
3. Duncan Robinson could be a good off the bench for the Blazers if the Heat don't put out a viable offer.
4. Cheap bench signings would Bryn Forbes that could be good offensive shooters off the bench.

2021/22 NBA Free Agents

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21	type	rights
Kawhi Leonard	SF	29	2021	LAC	34.1	24.8	3.9	Superstar	$34,379,100	PO	
DeMar DeRozan	PF	31	2021	SAS	33.7	21.6	2.7	Superstar	$27,739,975	UFA	Bird
John Collins	PF	23	2021	ATL	29.3	17.6	1.9	Scoring Big Man	$4,137,302	RFA	Bird
Montrezl Harrell	C	27	2021	LAL	22.9	13.5	1.9	Scoring Big Man	$9,258,000	PO	
Danny Green	SF	33	2021	PHI	28.0	9.5	1.7	Perimeter Wing/Defender	$15,365,854	UFA	Early Bird
Lonzo Ball	PG	23	2021	NOP	31.8	14.6	1.6	Perimeter Wing/Defender	$11,003,782	RFA	Bird
Nicolas Batum	SF	32	2021	LAC	27.4	8.1	1.6	Perimeter Shooter	$11,608,231	UFA	Non-Bird
T.J. McConnell	PG	28	2021	IND	26.0	8.6	1.6	Floor General	$3,500,000	UFA	Early Bird
Kyle Lowry	PG	34	2021	TOR	34.8	17.2	1.3	Superstar	$30,000,000	UFA	Bird
Nerlens Noel	C	26	2021	NYK	24.2	5.1	1.2	Defensive Big Man	$5,000,000	UFA	Non-Bird
Bobby Portis	C	25	2021	MIL	20.8	11.4	1.2	Defensive Big Man	$3,623,000	PO	
Jarrett Allen	C	22	2021	CLE	30.3	13.2	1.1	Scoring Big Man	$3,909,902	RFA	Bird
Tim Hardaway Jr.	SG	28	2021	DAL	28.4	16.6	1.1	Perimeter Wing/Defender	$18,975,000	UFA	Bird
Richaun Holmes	**C**	**27**	**2021**	**SAC**	**29.2**	**14.2**	**1.0**	**Scoring Big Man**	**$5,005,350**	**UFA**	**Early Bird**
Enes Kanter	**C**	**28**	**2021**	**POR**	**24.4**	**11.2**	**1.0**	**Scoring Big Man**	**$5,005,350**	**UFA**	**Early Bird**
Reggie Bullock	SF	29	2021	NYK	30.0	10.9	0.9	Perimeter Wing/Defender	$4,200,000	UFA	Early Bird
Alec Burks	SG	29	2021	NYK	25.6	12.7	0.9	Perimeter Wing/Defender	$6,000,000	UFA	Non-Bird
Derrick Rose	PG	32	2021	NYK	26.8	14.9	0.9	Perimeter Wing/Defender	$7,682,927	UFA	Early Bird
Taj Gibson	PF	35	2021	NYK	20.8	5.4	0.8	Defensive Big Man	$3,283,684	UFA	Non-Bird

[a] NA for salary likely means data couldn't be found

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21	type	rights
Reggie Jackson	SG	30	2021	LAC	23.0	10.7	0.8	Perimeter Shooter	$2,331,593	UFA	Early Bird
Serge Ibaka	C	31	2021	LAC	23.3	11.1	0.7	Defensive Big Man	$9,258,000	PO	
Lauri Markkanen	PF	23	2021	CHI	25.8	13.6	0.7	Perimeter Wing/Defender	$6,731,508	RFA	Bird
Paul Millsap	PF	35	2021	DEN	20.8	9.0	0.7	Defensive Big Man	$10,000,000	UFA	Bird
Alex Caruso	PG	26	2021	LAL	21.0	6.4	0.6	Floor General	$2,750,000	UFA	Bird
Doug McDermott	PF	29	2021	IND	24.5	13.6	0.6	Perimeter Wing/Defender	$7,333,333	UFA	Bird
Kendrick Nunn	PG	25	2021	MIA	29.5	14.6	0.6	Perimeter Wing/Defender	$1,663,861	RFA	Bird
Duncan Robinson	SF	26	2021	MIA	31.4	13.1	0.5	Perimeter Wing/Defender	$1,663,861	RFA	Bird
Wayne Ellington	SG	33	2021	DET	22.0	9.6	0.4	Perimeter Shooter	$3,005,225	UFA	Non-Bird
Willy Hernangomez	C	26	2021	NOP	18.0	7.8	0.4	Defensive Big Man	$1,727,145	UFA	Non-Bird
Andre Iguodala	SF	37	2021	MIA	21.3	4.4	0.4	Perimeter Shooter	$15,000,000	CO	
Alex Len	C	27	2021	WAS	15.8	7.1	0.4	Defensive Big Man	$4,032,648	UFA	Non-Bird
Raul Neto	PG	28	2021	WAS	21.9	8.7	0.4	Perimeter Shooter	$1,882,867	UFA	Non-Bird
Dennis Schroder	SG	27	2021	LAL	32.1	15.4	0.4	Floor General	$15,500,000	UFA	Bird
Jarred Vanderbilt	PF	21	2021	MIN	17.8	5.4	0.4	Defensive Big Man	$1,663,861	RFA	Bird
Josh Hart	SF	25	2021	NOP	28.7	9.2	0.3	Perimeter Wing/Defender	$3,491,159	RFA	Bird
Talen Horton-Tucker	SG	20	2021	LAL	20.1	9.0	0.3	Floor General	$1,517,981	RFA	Early Bird
Robin Lopez	C	32	2021	WAS	19.1	9.0	0.3	Defensive Big Man	$7,300,000	UFA	Non-Bird
David Nwaba	SF	28	2021	HOU	22.6	9.2	0.3	Defensive Big Man	$1,862,250	UFA	Early Bird
Tony Snell	SG	29	2021	ATL	21.1	5.3	0.3	Perimeter Shooter	$12,178,571	UFA	Bird
Carmelo Anthony	PF	36	2021	POR	24.5	13.4	0.2	Perimeter Wing/Defender	$2,564,753	UFA	Early Bird
Trevor Ariza	SF	35	2021	MIA	28.0	9.4	0.2	Perimeter Wing/Defender	$12,800,000	UFA	Early Bird
Bryn Forbes	SG	27	2021	MIL	19.3	10.0	0.2	Perimeter Shooter	$2,337,145	PO	
Skylar Mays	SG	23	2021	ATL	8.2	3.8	0.2	Perimeter Shooter	NA	RFA	Non-Bird
Patrick Patterson	PF	31	2021	LAC	15.3	5.2	0.2	Perimeter Shooter	$3,814,768	UFA	Early Bird
Kent Bazemore	SF	31	2021	GSW	19.9	7.2	0.1	Perimeter Shooter	$2,320,044	UFA	Non-Bird
Sterling Brown	SG	25	2021	HOU	24.1	8.2	0.1	Perimeter Shooter	$1,678,854	UFA	Non-Bird
Willie Cauley-Stein	C	27	2021	DAL	17.1	5.3	0.1	Defensive Big Man	$4,000,000	CO	
Derrick Jones Jr.	SF	23	2021	POR	22.7	6.8	0.1	Defensive Big Man	$9,268,293	PO	
Boban Marjanovic	C	32	2021	DAL	8.2	4.7	0.1	Defensive Big Man	$3,500,000	UFA	Early Bird

[a] NA for salary likely means data couldn't be found

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21	type	rights
Will Barton	SF	30	2021	DEN	31.0	12.7	0.0	Perimeter Wing/Defender	$13,920,000	UFA	Bird
Keita Bates-Diop	SF	25	2021	SAS	8.2	2.6	0.0	Role Player	NA	RFA	Non-Bird
JaMychal Green	PF	30	2021	DEN	19.3	8.1	0.0	Perimeter Shooter	$7,199,760	PO	
Dwight Howard	C	35	2021	PHI	17.3	7.0	0.0	Defensive Big Man	$2,564,753	UFA	Non-Bird
Frank Jackson	PG	22	2021	DET	18.5	9.8	0.0	Perimeter Shooter	NA	UFA	Non-Bird
Saben Lee	PG	21	2021	DET	16.3	5.6	0.0	Floor General	NA	RFA	Non-Bird
Jordan McLaughlin	PG	24	2021	MIN	18.4	5.0	0.0	Role Player	NA	RFA	Early Bird
Frank Ntilikina	PG	22	2021	NYK	9.8	2.7	0.0	Role Player	$6,176,578	RFA	Bird
Josh Richardson	SG	27	2021	DAL	30.3	12.1	0.0	Perimeter Wing/Defender	$10,800,000	PO	
Max Strus	SF	24	2021	MIA	13.0	6.1	0.0	Perimeter Shooter	NA	RFA	Non-Bird
Ryan Arcidiacono	PG	26	2021	CHI	10.2	3.1	-0.1	Perimeter Shooter	$3,000,000	CO	
Amir Coffey	SG	23	2021	LAC	9.0	3.2	-0.1	Perimeter Shooter	NA	RFA	Early Bird
Harry Giles	C	22	2021	POR	9.2	2.8	-0.1	Defensive Big Man	$1,678,854	UFA	Non-Bird
Stanley Johnson	PF	24	2021	TOR	16.5	4.4	-0.1	Role Player	$3,801,000	UFA	Early Bird
Nathan Knight	PF	23	2021	ATL	8.5	3.8	-0.1	Role Player	NA	RFA	Non-Bird
Garrison Mathews	SG	24	2021	WAS	16.2	5.5	-0.1	Perimeter Shooter	NA	RFA	Early Bird
Wesley Matthews	SG	34	2021	LAL	19.5	4.8	-0.1	Perimeter Shooter	$3,623,000	UFA	Non-Bird
Kelly Oubre Jr.	SF	25	2021	GSW	30.7	15.4	-0.1	Perimeter Wing/Defender	$14,375,000	UFA	Bird
Hassan Whiteside	C	31	2021	SAC	15.2	8.1	-0.1	Defensive Big Man	$2,320,044	UFA	Non-Bird
Brandon Goodwin	PG	25	2021	ATL	13.2	4.9	-0.2	Role Player	$1,701,593	RFA	Early Bird
Nico Mannion	PG	19	2021	GSW	12.1	4.1	-0.2	Role Player	NA	RFA	Non-Bird
Semi Ojeleye	PF	26	2021	BOS	17.0	4.6	-0.2	Perimeter Shooter	$1,752,950	UFA	Bird
Mike Scott	PF	32	2021	PHI	16.7	4.2	-0.2	Role Player	$5,005,350	UFA	Early Bird
Edmond Sumner	SG	25	2021	IND	16.2	7.5	-0.2	Perimeter Shooter	$2,160,000	CO	
Thanasis Antetokounmpo	SF	28	2021	MIL	9.7	2.9	-0.3	Role Player	$1,701,593	RFA	Early Bird
Goran Dragic	PG	34	2021	MIA	26.7	13.4	-0.3	Floor General	$18,000,000	CO	
Kyle Guy	PG	23	2021	SAC	7.6	2.8	-0.3	Role Player	NA	RFA	Early Bird
Solomon Hill	PF	29	2021	ATL	21.3	4.5	-0.3	Role Player	$2,174,318	UFA	Non-Bird
Markieff Morris	PF	31	2021	LAL	19.7	6.7	-0.3	Perimeter Shooter	$2,331,593	UFA	Early Bird
Sviatoslav Mykhailiuk	SG	23	2021	OKC	23.0	10.3	-0.3	Perimeter Shooter	$1,663,861	RFA	Bird

[a] NA for salary likely means data couldn't be found

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21	type	rights
Denzel Valentine	SG	27	2021	CHI	16.7	6.5	-0.3	Perimeter Shooter	$4,642,800	UFA	Bird
Markus Howard	SG	21	2021	DEN	5.5	2.8	-0.4	Role Player	NA	RFA	Non-Bird
Isaac Bonga	SF	21	2021	WAS	10.8	2.0	-0.5	Role Player	$1,663,861	RFA	Bird
Elfrid Payton	PG	26	2021	NYK	23.6	10.1	-0.5	Floor General	$5,760,000	UFA	Non-Bird
Garrett Temple	SG	34	2021	CHI	27.3	7.6	-0.6	Perimeter Shooter	$4,767,000	UFA	Non-Bird
Gabe Vincent	PG	24	2021	MIA	13.1	4.8	-0.6	Role Player	NA	RFA	Early Bird
Chasson Randle	PG	27	2021	ORL	20.4	6.5	-0.9	Role Player	NA	UFA	Non-Bird

[a] NA for salary likely means data couldn't be found

This would be hypothetical what the Blazers look like with their FA signings.

2021/22 Portland Trail Blazers

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21
Damian Lillard	PG	30	2021	POR	35.8	28.8	4.8	Superstar	$31,626,953
CJ McCollum	SG	29	2021	POR	34.0	23.1	2.1	Perimeter Wing/Defender	$29,354,152
Robert Covington	PF	30	2021	POR	32.0	8.5	1.0	Perimeter Wing/Defender	$12,138,345
Richaun Holmes	C	27	2021	SAC	29.2	14.2	1.0	Scoring Big Man	$5,005,350
Enes Kanter	C	28	2021	POR	24.4	11.2	1.0	Scoring Big Man	$5,005,350
Jusuf Nurkic	C	26	2021	POR	23.8	11.5	0.9	Scoring Big Man	$12,000,000
Lauri Markkanen	PF	23	2021	CHI	25.8	13.6	0.7	Perimeter Wing/Defender	$6,731,508
Duncan Robinson	SF	26	2021	MIA	31.4	13.1	0.5	Perimeter Wing/Defender	$1,663,861
Bryn Forbes	SG	27	2021	MIL	19.3	10.0	0.2	Perimeter Shooter	$2,337,145
Anfernee Simons	SG	21	2021	POR	17.3	7.8	0.2	Perimeter Shooter	$2,252,040
Derrick Jones Jr.	SF	23	2021	POR	22.7	6.8	0.1	Defensive Big Man	$9,268,293
CJ Elleby	SF	20	2021	POR	6.4	2.3	-0.2	Role Player	$898,310

Superstar Trade Targets

Below are the the players who played in the Superstar range for the 2020-21 season. We can see it is an elite 42 players in the league. In terms of trade targets for the Blazers, the Pascal Siakam makes the most sense to pair Dame with a "true" superstar and have someone with a comparable salary to CJ McCollum at $30MM. A Jaylen Brown could be another nice addition and be a $7MM saving for Boston if swapped with CJ. These two targets are younger than CJ still playing at elite levels.

2021 NBA Superstar Cluster

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21
Nikola Jokic	C	25	2021	DEN	34.6	26.4	8.6	Superstar	$28,542,009
Stephen Curry	PG	32	2021	GSW	34.2	32.0	5.5	Superstar	$43,006,362
Luka Doncic	PG	21	2021	DAL	34.3	27.7	5.0	Superstar	$8,049,360
Damian Lillard	PG	30	2021	POR	35.8	28.8	4.8	Superstar	$31,626,953
Jimmy Butler	SF	31	2021	MIA	33.6	21.5	4.2	Superstar	$34,379,100
Kawhi Leonard	SF	29	2021	LAC	34.1	24.8	3.9	Superstar	$34,379,100
Julius Randle	PF	26	2021	NYK	37.6	24.1	3.8	Superstar	$18,900,000
Chris Paul	PG	35	2021	PHO	31.4	16.4	3.7	Superstar	$41,358,814
LeBron James	PG	36	2021	LAL	33.4	25.0	3.6	Superstar	$39,219,565
Kyrie Irving	PG	28	2021	BRK	34.9	26.9	3.5	Superstar	$33,329,100
Jayson Tatum	SF	22	2021	BOS	35.8	26.4	3.3	Superstar	$9,897,120
Russell Westbrook	PG	32	2021	WAS	36.4	22.2	3.2	Superstar	$41,358,814
James Harden	PG	31	2021	BRK	36.6	24.6	3.0	Superstar	$40,824,000
Trae Young	PG	22	2021	ATL	33.7	25.3	3.0	Superstar	$6,571,800
Zach LaVine	SG	25	2021	CHI	35.1	27.4	2.9	Superstar	$19,500,000
Bradley Beal	SG	27	2021	WAS	35.8	31.3	2.8	Superstar	$28,751,775
DeMar DeRozan	PF	31	2021	SAS	33.7	21.6	2.7	Superstar	$27,739,975
Tobias Harris	PF	28	2021	PHI	32.5	19.5	2.7	Superstar	$33,517,241
Kevin Durant	PF	32	2021	BRK	33.1	26.9	2.6	Superstar	$39,058,950
Paul George	SF	30	2021	LAC	33.7	23.3	2.6	Superstar	$35,450,412
Jrue Holiday	PG	30	2021	MIL	32.3	17.7	2.6	Superstar	$26,131,111
Donovan Mitchell	PG	24	2021	UTA	33.4	26.4	2.5	Superstar	$5,195,501
Mike Conley	PG	33	2021	UTA	29.4	16.2	2.4	Superstar	$34,504,132
Jaylen Brown	SG	24	2021	BOS	34.5	24.7	2.3	Superstar	$22,991,071
Brandon Ingram	SF	23	2021	NOP	34.3	23.8	2.2	Superstar	$27,285,000
Fred VanVleet	SG	26	2021	TOR	36.5	19.6	2.0	Superstar	$21,250,000
Khris Middleton	SF	29	2021	MIL	33.4	20.4	1.9	Superstar	$33,051,724
Malcolm Brogdon	PG	28	2021	IND	34.5	21.2	1.7	Superstar	$20,700,000
De'Aaron Fox	PG	23	2021	SAC	35.1	25.2	1.7	Superstar	$8,099,627
Shai Gilgeous-Alexander	SG	22	2021	OKC	33.7	23.7	1.7	Superstar	$4,141,320

player	pos	age	yr	tm	mp	pts	vorp	cluster	2020-21
Jamal Murray	PG	23	2021	DEN	35.5	21.2	1.6	Superstar	$29,250,000
LaMelo Ball	PG	19	2021	CHO	28.8	15.7	1.4	Superstar	$7,839,960
Jerami Grant	SF	26	2021	DET	33.9	22.3	1.3	Superstar	$19,047,619
Gordon Hayward	SF	30	2021	CHO	34.0	19.6	1.3	Superstar	$28,500,000
Kyle Lowry	PG	34	2021	TOR	34.8	17.2	1.3	Superstar	$30,000,000
Pascal Siakam	**PF**	**26**	**2021**	**TOR**	**35.8**	**21.4**	**1.2**	**Superstar**	**$29,000,000**
Devin Booker	SG	24	2021	PHO	33.9	25.6	1.1	Superstar	$29,430,000
D'Angelo Russell	PG	24	2021	MIN	28.5	19.0	1.0	Superstar	$28,649,250
Collin Sexton	SG	22	2021	CLE	35.3	24.3	1.0	Superstar	$4,991,880
Ja Morant	PG	21	2021	MEM	32.6	19.1	0.6	Superstar	$9,166,800
John Wall	PG	30	2021	HOU	32.2	20.6	0.6	Superstar	$41,254,920
Caris LeVert	SG	26	2021	IND	32.9	20.7	0.5	Superstar	$16,203,704

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