

NBA Roster Building

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Executive Summary

In this report, I aim to provide an alternative method to roster creation, specifically intended for the upcoming expansion draft. It has been long rumored that in 2026 two new teams will join the NBA. It is all but official that these teams will be Seattle or Vegas, and for the sake of this report, I will be operating under the assumption that it will indeed be those franchises joining the league.

I took the average statistics for all playoff teams from 2014-15 to 2023-24 over the course of the season and attempted to create a team that would replicate those numbers and theoretically, replicate the wins and regular season success right out of the gate for their first season in the league.

The rules on protected players have not been announced at this point so I opted to protect all players who have won any sort of NBA award – all-star, all-NBA, all-defensive, all-rookie – as a starting point. I additionally removed all players who did not play in the NBA last year, we will not be convincing anyone to come out of retirement today. When the protected list is announced it would be fairly straightforward to swap those lists of players. I left all the remaining players available for “Vegas” who have a stronger “Win Now” strategy that will in later years be supplemented by aggressive free agency. For “Seattle” I took those players and removed all who had joined the league prior to the 2021-22 season because they hypothetically are more focused on the future and want a team of “Young Guns” that will build a stronger foundation.

My model took into account positive metrics such as points, rebounds, and assists; and negative metrics like shots attempted and turnovers. For each player the stats were normalized and the 10 most statistically efficient players were returned – four guards, four forwards, and two centers for each team. I opted not to weigh certain statistics more than others, but that would be simple to include if a general manager wanted more emphasis on a certain statistic as they built their team.

This model was built on statistics from a standard box score of individual games. While the metrics it offered were plentiful, my model did not include a few potentially vital statistics. I did not have access to defensive metrics, other than steals and blocks, which would be useful in creating the best team possible. It could also be beneficial to use various biometrics such as height, weight, and wingspan, as well as vertical and speed. Those could be obtained without too much difficulty through old combine results but for the scale of this project I opted to omit them. Again, if requested, it would be simple to include those. I also did not include salary, which is obviously important when it comes to roster creation. This model is not intended to be a one way ticket to success in the NBA. It could not possibly factor in team identity and chemistry as well as individual experience, personality, and effort that are crucial in the locker room. It is rather intended to serve as a guide and a tool as GMs build their rosters.

Background

There have been a handful of teams that seem to have been unsuccessful for my entire lifetime. These teams may have had promising draft picks, teams, and seasons but have been perennial bottom feeders in the NBA. The two ways that bad teams have turned into good teams traditionally are centered around drafting young talent or acquiring super stars in free agency. The draft can be a crapshoot and sometimes with the lottery it simply does not work out. And landing top free agents for some teams can also prove challenging simply because players do not want to go there. Whether it is in a small market or is not up to the title contending standards the top players might have, some teams find themselves unable to bring in the cream of the crop. That is where this model comes in. I wanted to create the stars in the aggregate as what was made so famous in the rise of analytics in sports with *Moneyball*. While the model can be easily applied to current teams with their active rosters, I thought there was no better way to exemplify its uses than to simulate the rumored upcoming expansion draft. This is where general managers can truly build their roster from the ground up.

Problem Statement

The upcoming expansion draft is a golden opportunity for a general manager to start from scratch. They do not inherit any players they don't like. They are not stuck with any bad contracts. They have no consequences from the prior leadership. With a blank slate they have so much room for success, but also plenty of potential for failure. This model was created to serve as a blueprint and reference to be used as they determine which players to target.

EDA Results

My data used included team and player box scores from every game from the 2015-16 season to the most recent 2023-24 season. It includes the team opponent, player position, player minutes, and all of the standard player and team statistics. I removed a handful of data such as all of the included gambling data points, as well as the referees and some other irrelevant metrics. I also had to rename a handful of columns before syncing the team and player data sets. Additionally I made sure that all players only had one position. Next I turned all stats into "per minute" and then "per 48" statistics to account for players that do not play as many minutes as the stars who would obviously be leading every category. For the player stats, I removed outlier games such as the playoffs, play-in, and in-season tournament (now the NBA Cup). I also removed overtime games as those stats would be higher due to the extra game time. I then removed all players who I categorized as "Protected" and unavailable for selection. This included prior all stars, all-NBA, all-defensive, and all-rookie players. Finally I filtered out all the players who did not play in at least half the games last season. I also removed all the games for each player when they did not play at least 10 minutes. These were arbitrary filters to remove outliers and players we wanted to avoid but could easily be undone. Finally I added an additional filter for the one team to only target younger players who had not played prior to the 2021-22 season.

Analysis

Before running my model, I created lists of the best teams and their stats that I wanted to target. As I built my model, I defined positive metrics. The final product included Points, Field Goals, Threes, Assists, Rebounds, Offensive Rebounds, Defensive Rebounds, Steals, and Blocks. The negative metric I opted to use ended up just being Field Goals Attempted. These were all used in per minute format. Using other metrics such as Free Throws and Turnovers created imbalances and rosters that were not as logical. These measures were normalized before running through the model. I spent time tweaking the weights of the various statistics in an effort to build my perfect team however I found the most success leaving them as is. That being said, if a team using this model wanted to include or remove various statistics, or change the weights to highlight or de-emphasize various measurements, it would be very straightforward to do so.

Then, using the players career averages, my model created efficiency scores for all the players available. It then took the top 4 guards, top 4 forwards, and top 2 centers. In this model, while unrealistic, I assume that each player will play exactly 24 minutes, and all players will contribute equally to the final totals. With these numbers I was able to simulate that team's averages and how they compare to the target numbers. I ran this for all players who played last season as an example for those who are only familiar with big name players in the NBA. I then ran it under the set parameters for the two theoretical expansion sides and created the best rosters statistically possible.

Results & Recommendations

The teams that I built were as follows -

Best possible: Shai Gilgeous-Alexander, Donovan Mitchell, Stephen Curry, De'Aaron Fox, Victor Wembanyama, Luka Doncic, Giannis Antetokounmpo, Anthony Davis, Nikola Jokic, and Andre Drummond.

"Vegas": CJ McCollum, Jordan Clarkson, Jordan Poole, Cole Anthony, Jalen Smith, Paul Reed, Bobby Portis, Trayce Jackson-Davis, Jusuf Nurkic, and Day'Ron Sharpe.

"Seattle": Cam Thomas, Jaden Hardy, Marcus Sasser, Ausar Thompson, Trayce Jackson-Davis, Jalen Johnson, Jonathan Kuminga, GG Jackson, Day'Ron Sharpe, Alperen Sengun

I noted a handful of things. First was that the model was somewhat successful. These teams all seem reasonable. Second was that the model was not incredibly obvious, for example I wouldn't have thought to put Drummond in the top group. That alone can be useful. Would one want Drummond on that team? Maybe. Maybe not. But it is thought provoking which is one of the main goals of the model. It is worth noting that these teams are heavy on the big men. Most of the forwards are power forwards that can play center. When I first ran the model without positions it gave me mostly centers and big men. This is because they are some of the most efficient players on the floor. Basketball has been trending to small ball for years now but maybe it should not be. That is something to consider, but it is also possible to put more of an emphasis

on some smaller players. Additionally, the field goals attempted metrics were a little higher, it is possible that we do not have enough shots for all players. This could be as simple as natural selection or changing changes but we could also alter the model to further penalize shot taking.

One might see these suggested teams and think there is a player or two obviously missing. That is great. I would encourage them to consider tweaking the model to see if they are included with slightly different parameters but I would also want them to remember that sports is more than just numbers on a stat sheet. There are many uses for this model but it is crucial to remember that it is meant to be one of multiple tools as teams build their rosters. I am confident that the two expansion teams can have success whether now or in the future, but it is entirely possible, if not likely, that a better team can be created with some additional input from those who have built a career in the game of basketball. This model can and should be used as both a starting and reference point.

Appendix

All Player Top Stats

Assists Per 48

Trae Young	13.316
Chris Paul	13.220
Russell Westbrook	12.803
Tyrese Haliburton	12.518
James Harden	11.997
Luka Doncic	11.369
T.J. McConnell	11.329
Vasilije Micic	11.080
Draymond Green	10.909
LeBron James	10.881

Points Per 48

Stephen Curry	39.366
Luka Doncic	39.355
Giannis Antetokounmpo	38.218
Zion Williamson	37.403
Kevin Durant	37.019
James Harden	36.105
Damian Lillard	36.028
LeBron James	35.885
Trae Young	35.548
Anthony Davis	35.418

Rebounds Per 48

Andre Drummond	22.692
Day'Ron Sharpe	19.674
Clint Capela	19.228
Rudy Gobert	18.761
Jonas Valanciunas	18.722
Jalen Duren	17.984
Jusuf Nurkic	17.417
Victor Wembanyama	17.196
Ivica Zubac	16.590
Walker Kessler	16.493

Vegas Top Available

Vegas Draftboard

Assists Leaders
Per 48 Minutes

T.J. McConnell	11.329
Vasilije Micic	11.080
Tre Jones	10.379
Tyus Jones	9.893
Scot Henderson	9.010
Markelle Fultz	8.824
Marcus Sasser	8.771
Spencer Dinwiddie	8.689
Blake Wesley	8.673
Cameron Payne	8.573

Vegas Draftboard

Point Leaders
Per 48 Minutes

Cam Thomas	29.714
CJ McCollum	29.655
Jordan Clarkson	27.828
Jordan Poole	27.714
Naz Reid	27.217
Michael Porter Jr.	26.862
Jonas Valanciunas	26.477
RJ Barrett	26.267
GG Jackson	26.239
Jonathan Kuminga	26.069

Vegas Draftboard

Rebounds Leaders
Per 48 Minutes

Day'Ron Sharpe	19.674
Clint Capela	19.228
Jonas Valanciunas	18.722
Jusuf Nurkic	17.417
Ivica Zubac	16.590
Paul Reed	16.468
Jalen Smith	15.421
Kevon Looney	15.040
Bobby Portis	15.023
Nic Claxton	14.820

Seattle Top Available

Seattle Draftboard

Assist Leaders
Per 48 Minutes

Vasilije Micic	11.080
Scot Henderson	9.010
Marcus Sasser	8.771
Blake Wesley	8.673
Andrew Nembhard	7.922
Jose Alvarado	6.786
Alperen Sengun	6.503
Davion Mitchell	6.332
Austin Reaves	5.892
Dyson Daniels	5.602

Seattle Draftboard

Point Leaders
Per 48 Minutes

Cam Thomas	29.714
GG Jackson	26.239
Jonathan Kuminga	26.069
Jaden Hardy	25.898
Alperen Sengun	25.609
Duop Reath	24.688
Trayce Jackson-Davis	23.355
Scot Henderson	22.905
Day'Ron Sharpe	22.172
Marcus Sasser	21.503

Seattle Draftboard

Rebound Leaders
Per 48 Minutes

Day'Ron Sharpe	19.674
Nick Richards	14.809
Trayce Jackson-Davis	14.369
Alperen Sengun	13.825
Jabari Walker	12.959
Jalen Johnson	12.774
Jaylin Williams	12.450
Ausar Thompson	12.216
Santi Aldama	10.572
Duop Reath	10.017

Target Averages

Playoff Team Averages

Points	FG	FGA	3P	3PA	FT	FTA	OR	DR	R	A	B	S	TO
111.4	41.0	87.4	11.8	32.3	17.6	22.7	10.2	34.2	44.4	24.6	5.0	7.7	13.2

Team Expected Game Stats

Seattle Expected Game Stats

Assuming each player with equal time on the court - 24 minutes per game

	Points* F	FG*	FGA*	3P*	3PA*^	FT*	FTA*	OR*	DR*	R*	A*	B*	S*	TO*
Team Total	118.7	45.5	92.2	9.3	27.2	18.3	26.3	15.8	36.8	52.7	22.5	6.5	7.2	14.7
Cam Thomas	14.9	5.4	12.0	1.3	3.9	2.9	3.4	0.3	2.3	2.6	2.0	0.2	0.6	1.3
GG Jackson	13.1	4.5	10.5	1.9	5.3	2.2	3.0	0.9	2.7	3.6	1.1	0.5	0.5	1.2
Jonathan Kuminga	13.0	4.9	9.6	0.8	2.5	2.4	3.4	1.2	3.2	4.4	1.9	0.5	0.7	1.5
Jaden Hardy	12.9	4.6	10.7	2.0	5.3	1.8	2.3	0.3	2.7	3.1	2.5	0.2	0.5	1.3
Alperen Sengun	12.8	4.9	9.5	0.3	1.2	2.6	3.7	2.4	4.6	6.9	3.3	0.8	0.9	2.2
Trayce Jackson-Davis	11.7	5.1	7.2	0.0	0.0	1.4	2.9	2.9	4.3	7.2	1.7	1.5	0.6	1.1
Day/Ron Sharpe	11.1	4.6	8.0	0.1	0.4	1.8	2.9	4.6	5.3	9.8	1.9	1.2	0.7	1.9
Marcus Sasser	10.8	4.0	9.2	1.7	4.2	1.0	1.2	0.2	2.3	2.5	4.4	0.3	0.9	1.8
Jalen Johnson	10.4	4.2	8.3	0.8	2.5	1.2	1.9	1.1	5.3	6.4	2.2	0.6	0.9	1.2
Ausar Thompson	8.0	3.3	7.3	0.3	1.9	1.0	1.8	2.0	4.1	6.1	1.6	0.8	1.0	1.2

Vegas Expected Game Stats

	Points* F	FG*	FGA*	3P*	3PA*	FT*	FTA*	OR*	DR*	R*	A*	B*	S*	TO*
Team Totals	124.1	48.3	97.9	9.6	27.5	17.9	24.6	20.1	41.2	61.3	22.1	7.5	7.3	15.4
CJ McCollum	14.8	5.7	12.5	1.9	4.8	1.6	2.0	0.5	2.3	2.7	2.9	0.3	0.7	1.4
Jordan Clarkson	13.9	5.2	12.1	1.7	5.1	1.8	2.2	0.7	2.2	2.9	2.4	0.1	0.7	1.6
Jordan Poole	13.9	4.7	11.4	2.0	5.9	2.5	2.9	0.3	2.0	2.3	3.2	0.2	0.7	1.9
Jalen Smith	12.8	4.9	9.5	1.2	3.5	1.9	2.6	2.5	5.2	7.7	1.2	1.0	0.4	1.3
Bobby Portis	12.4	5.0	10.6	1.2	3.0	1.2	1.6	2.0	5.5	7.5	1.3	0.4	0.6	1.2
Cole Anthony	11.9	4.2	10.1	1.2	3.6	2.3	2.7	0.6	3.6	4.2	3.6	0.4	0.7	1.8
Jusuf Nurkic	11.9	4.7	9.4	0.2	0.7	2.3	3.5	2.5	6.2	8.7	2.5	1.1	0.9	2.2
Trayce Jackson...	11.7	5.1	7.2	0.0	0.0	1.4	2.9	2.9	4.3	7.2	1.7	1.5	0.6	1.1
Day/Ron Sharpe	11.1	4.6	8.0	0.1	0.4	1.8	2.9	4.6	5.3	9.8	1.9	1.2	0.7	1.9
Paul Reed	9.6	4.2	7.2	0.2	0.6	1.0	1.4	3.4	4.8	8.2	1.4	1.3	1.4	1.2