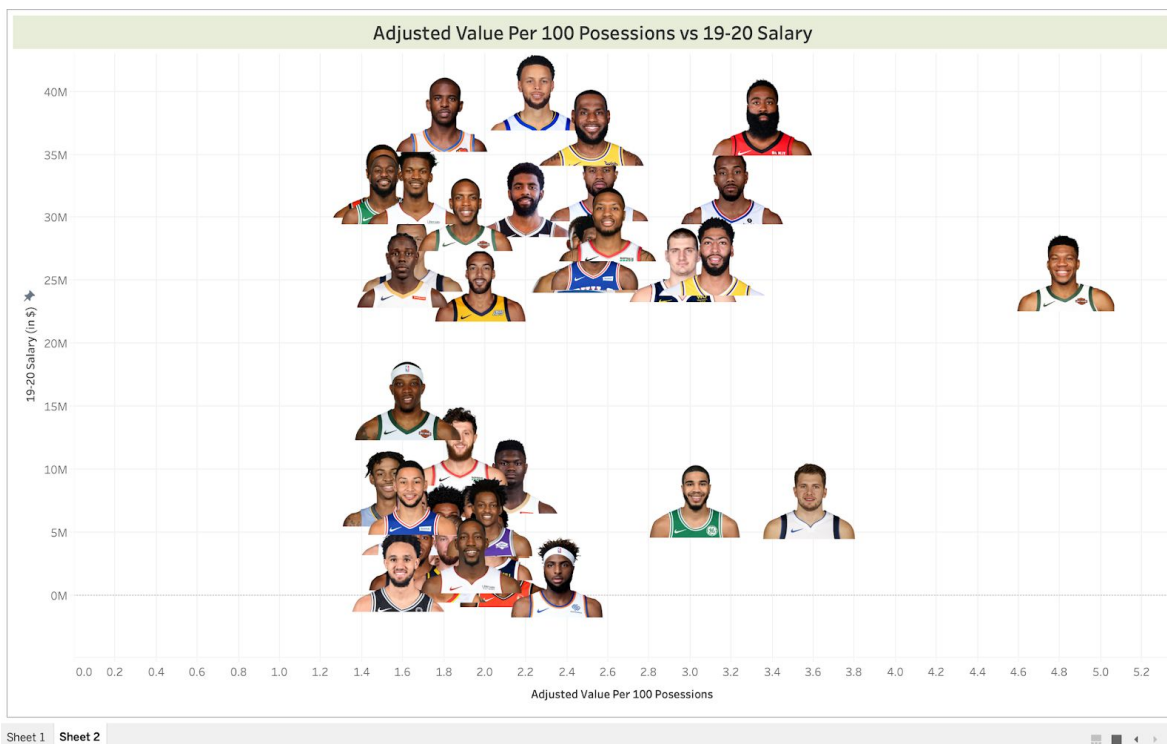


Project Goals and Methodology

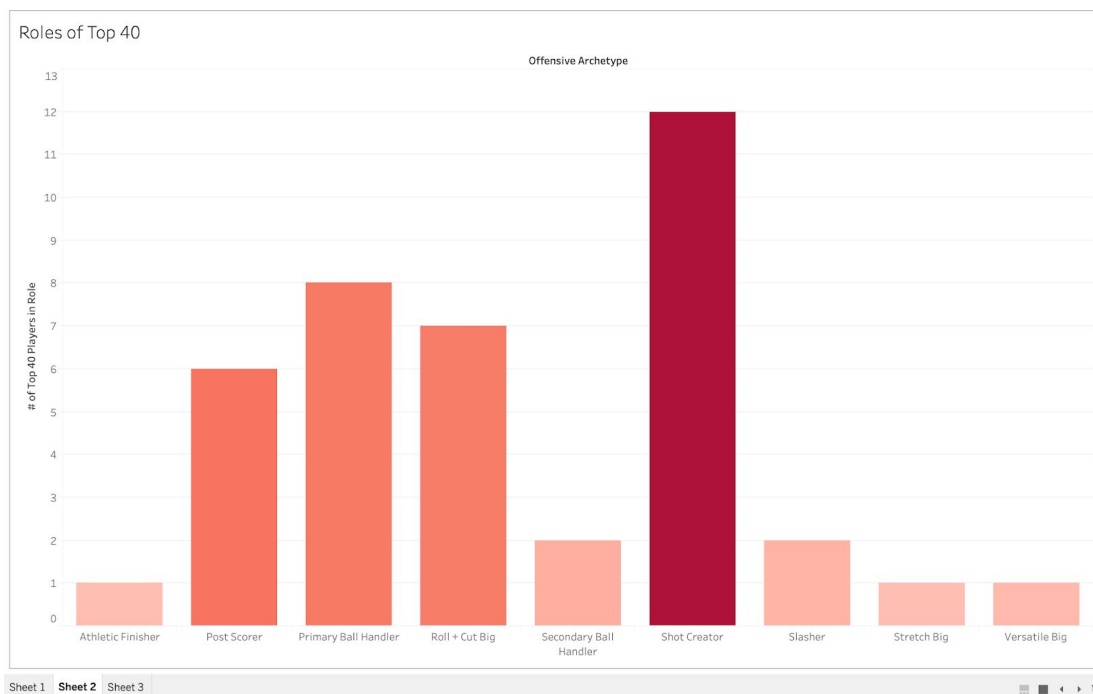
My goal for this project was to generate a measure of “value” for each player in the NBA, to help illustrate that tall playmakers are the most important and in-demand players around the Association. The inspiration for my methodology came from an article by John Hollinger at The Athletic, in which he calculated market values for every free agent in the 2020 class. I started my venture by extracting data from both BBall Index and FiveThirtyEight - the former through web scraping and the latter through the website’s GitHub repositories. These sites provided me the advanced metrics I needed to build my measure of value around; O-PIPM, D-PIPM, O-RAPTOR, and D-RAPTOR. When considering the four metrics, each has its respective strengths and weaknesses. To account for this, my formula for value contained unequal weighting. Furthermore, for players with limited playing time (1,500 combined minutes for rookies and 2,500 for non-rookies) over the past two seasons, I filled in minutes of replacement-level production by position to bring some players back down to Earth. I also adjusted for age by recalculating each player’s value score according to their age as of 11/21/20. Taking the difference between this score and the replacement level value for the player’s position gave me my final measure of value, in units of per 100 possessions. Below are the top five players in terms of “Adjusted Per 100 Value” (or AdjPer100Value for short):

Name	AdjPer100Value
Giannis Antetokounmpo	4.818164
Luka Doncic	3.582606
James Harden	3.353299
Kawhi Leonard	3.195068
Anthony Davis	3.125866

This list contains names we would expect to see when considering the most valuable players in the league, especially when considering age. To visualize the relationship between AdjPer100Value and monetary value, I plotted the top 40 players in AdjPer100Value with their respective salaries for the 2019-20 season in Tableau (contract data web scraped from Basketball-Reference):



A quick glance at this chart affirms the notion that (at least according to my metric) tall playmakers do indeed have the biggest impact on the game (Giannis, Harden, Luka, etc.). The fact that Nikola Jokic and Anthony Davis are also high on the spectrum further accentuates the league's direction toward "do-it-all" big men. Moreover, what Jokic lacks in defense, for example, he makes up for with elite passing ability (similarly, what Davis may lack in high volume playmaking, he makes up for with elite defensive versatility). The bottom left cluster is also noteworthy, in that it highlights a significant number of players (most of them young budding stars who have not yet signed a second contract) who measure up well to established stars such as Rudy Gobert and Kemba Walker. Looking ahead to the distribution of offensive roles among the top 40, what we see remains consistent with our findings so far, as the majority of players are defined by BBall Index as "Shot Creators":



Based on the strong emphasis on playmaking ability in today's league, it makes sense that "Primary Ball Handlers" is the second highest ranked role on this chart. As with every model, however, my approach withholds some limitations. Injuries eliminated some players from the ranks of top performers in this metric (e.g. Steph Curry's limited 19-20 season, and the lack thereof for Kevin Durant). Low-minute situations might also skew the data, even after one filters out players with less than 300 combined minutes played (e.g. Naz Reid sneaking into the top 100). Moreover, as is the case with all advanced metric models, measuring players that do "all of the little things" can prove difficult. Even though the included RAPTOR metrics do utilize tracking data, players such as Jimmy Butler (who is extremely valuable to his team) may go underappreciated in this model's numbers, since D-RAPTOR is known to not be an incredibly indicative measure of defensive ability (for this reason, I gave D-RAPTOR the smallest weight when constructing my metric, and leaned more on D-PIPM).

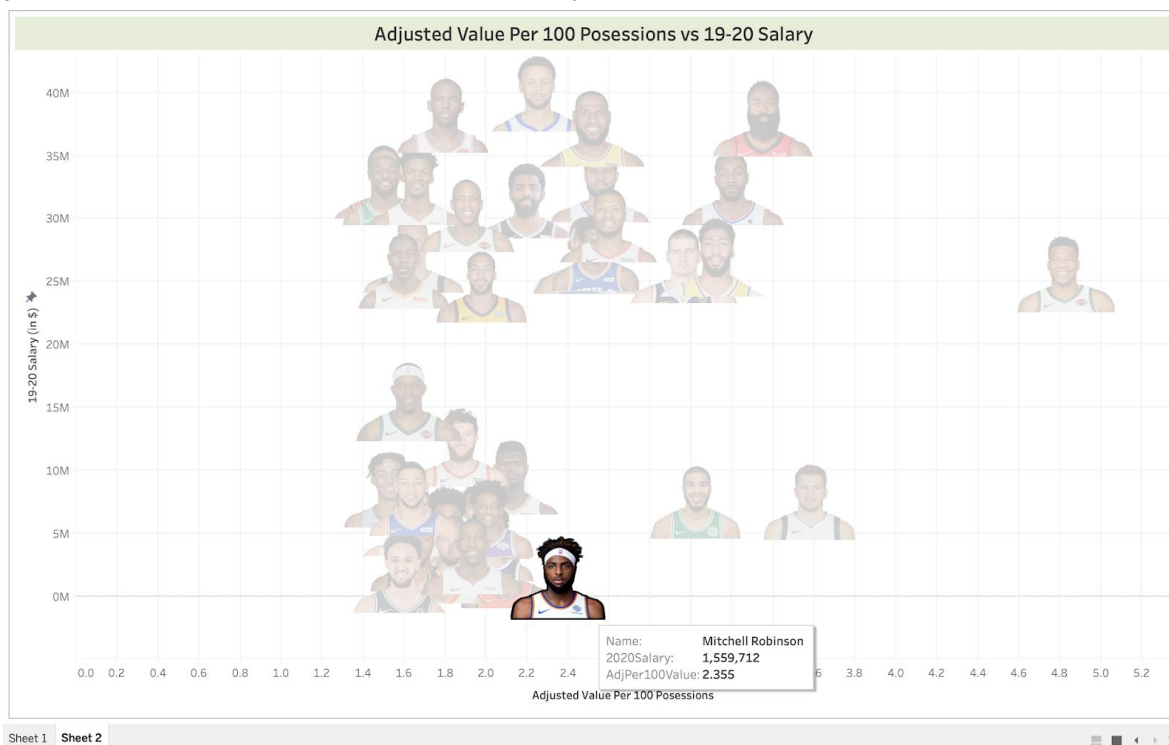
Overall, my project reaffirms the not so subtle idea that 6'6" and above playmakers are quite simply taking over the league. The ability of these stars to provide a significant impact on all facets of the game makes them a seamless fit in the majority of team systems. Based on these results, it is no surprise that the top prospects in the upcoming 2021 draft class fit this archetype (Cade Cunningham and Jalen Green especially) and, as a result, everyone has very high hopes for the '21 Draft.

The Curious Case of Mitchell Robinson

Looking at the top 15 players in AdjPer100Value, one name caught my eye. Located at #13, sandwiched between Karl-Anthony Towns and Steph Curry, was none other than Mitchell Robinson.

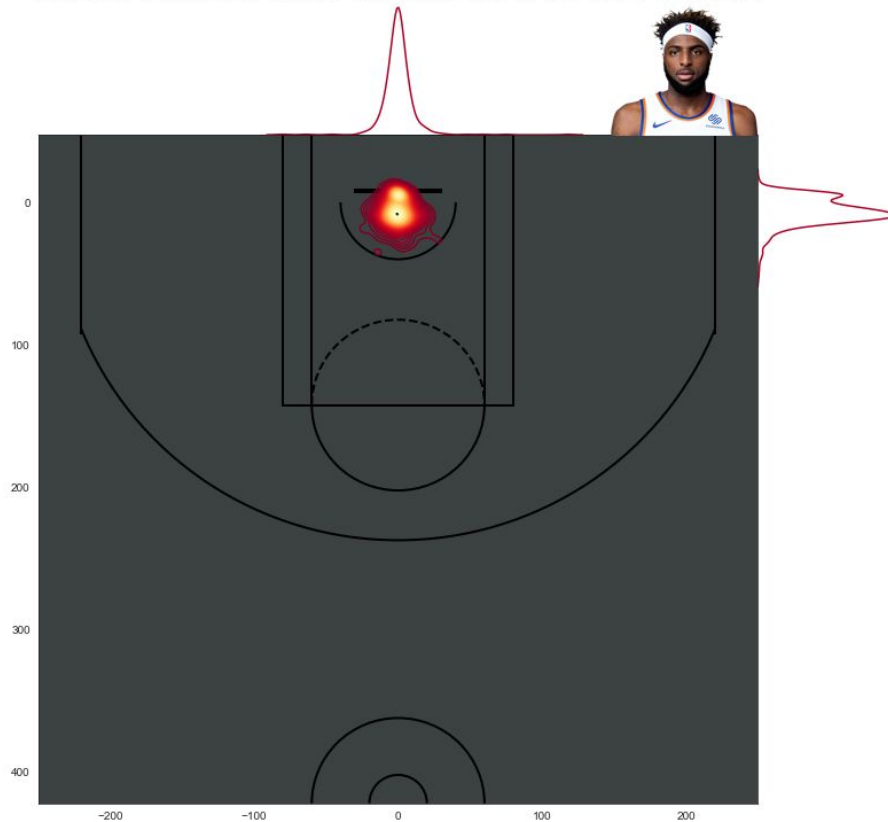
Karl-Anthony Towns	2.488459
Mitchell Robinson	2.354757
Stephen Curry	2.253645

Among the top 15 players from the model, Robinson is the only player without an All-Star selection. Moreover, Robinson has never been considered anything more than a solid rotation player with potential. You may have noticed him from the earlier Tableau dashboard, near the higher end of the AdjPer100Value axis and at the bottom of the salary axis.



According to my model, the Knicks are getting a lot of bang for their buck with Robinson. Why is he so undervalued? For starters, Robinson, although ridiculously efficient (he sports a career 72% FG%), does not necessarily stretch out the defense. I constructed a shot chart with all of his made FG from the past two seasons in Matplotlib, and the results provided a very clear answer regarding just where on the court Robinson's bread is buttered:

Mitchell Robinson Made Shots From 2018-2020 Seasons



Although my model hammered home how important it is in 2020 to have tall playmakers with a respectable jump shot, a long athletic rim-running big man still has a solid place in today's league. Whether it be through providing screens in high pick-and-rolls, or waiting patiently in the dunker's spot, high-efficiency centers like Robinson can still be a key component of a high-powered offense. But Robinson's most valuable skills come on the defensive end. His D-PIPM and D-RAPTOR are both off-the-charts, and are the main reason Robinson finds himself in the company of Steph and KAT on my leaderboard. Though it is important to keep in mind the limitations of this model discussed near the end of question #1, Robinson is still a clearly underappreciated player. I believe it is telling that the Knicks only started him in 7 of their 61 games, as playing him for longer than his average of 23.1 minutes per game may have impeded their desire to tank in the standings. Granted, there is no guarantee that Robinson would retain his absurd level of efficiency with a larger role. Nevertheless, Robinson's body of work (let us not forget his career PER average of 22.8) provides a strong case that he should be utilized more. And based on his rock-bottom contract of \$1.6 million in 20-21, the Knicks may very well have the most undervalued player in the NBA.