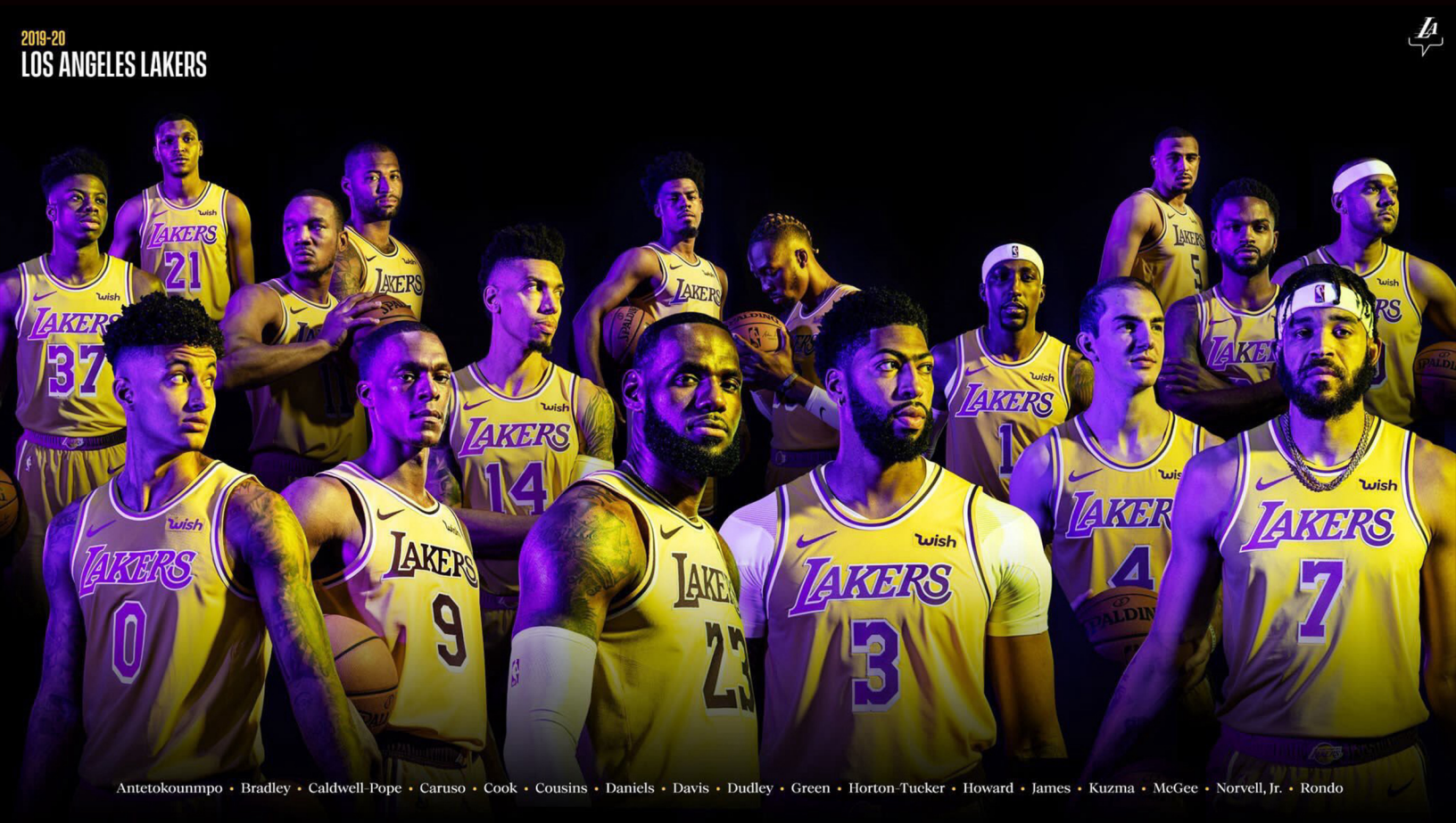
OPMT 7750 - FINAL PROJECT

REVAMPED LAKERS



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Executive Summary

The Los Angeles Lakers were the best team in the National Basketball Association in the 2019-2020 season which was noted when they won the championship game. Unfortunately for the Los Angeles Lakers Organization, they may not be able to hold the Best Team title for long with their aging players (most notably Lebron James) and weak performances from a few. The Lakers are facing a significant age and weakness problem, one that will only get worse as players get older and become more prone to injuries. To combat this problem, the Lakers need to identify the weaker team statistics, determine which players are the weakest in those areas and replace them. This begs the question, how can the Lakers, once again, be the best team and win the 2020-2021 season's NBA Finals to remain as the Champion?

The Los Angeles Lakers is a professional NBA basketball team that has been one of the most prominent sports teams since it moved to Los Angeles (formerly in Minnesota) in 1960. Throughout the past six decades, the Lakers have won multiple Championships of the NBA Finals, most recently in the 2019-2020 season, ending their losing drought since the last time Kobe Bryant led the team to victory in 2012.

The purpose of this report is to assess how the Lakers team is compared to other teams in the NBA and figure out the weaknesses and strengths of the current lineup. After such weaknesses and strengths have been discovered, the analysis then takes a deeper dive identifying the lowest-performing players in those categories and eliminates their contracts to free up salary space to recruit better candidates for those categories. Once the previous steps are finished, the report will compare the new Lakers, with the newly implemented players' stats, against the rest of the league including the old Lakers of the 2019-2020 season.

Using the 2019-2020 season statistics, this report has two sets of recommended players. After comparing the two results of improved performance, we concluded that Recruitment Option 1 is the best choice as not only did the weaknesses improve by a significant increment, but the strengths of the current Lakers also bettered by a fair margin. Furthermore, the sum of salaries for Recruitment Option 1 is less than Recruitment Option 2 by $347,716, making the first recruitment strategy more cost-effective.

This report aims to provide the Los Angeles Lakers Organization with the best recommended team by replacing their under-performing players from the pool of available players in the NBA league based on their 2019-2020 season performance while not exceeding the salary cap of $117 million for the team.

Data Analysis

In the NBA, there are three ways to score points, from outside of the three-point line for three points, inside the three-point line for two points, or from the free-throw line after a foul for one or two free-throw points. However, it is just as important to keep the opposing team from scoring points as to score points for your own team. Two of the most important defense statistics to an NBA team are the block ratios and turnover ratios, which show how many times a player successfully blocks an opposing player from scoring and how many times a player accidentally fumbles the ball to the opposing team, respectively.

The goal of this project is to create the best Los Angeles Lakers team possible. To do so, the Lakers need to be among the highest-ranking for those five most important categories, three-point (3P), free throw (FT), two-point (2P), block (BLK), and turnover (TOV). These performance statistics are the most important to the lakers as they are below average in 3P and FT while above average for TOV. These are the weaknesses we have identified that need to be changed. However, while these said weaknesses need to be changed, they cannot compromise the Lakers' current strengths, their BLK and 2P, which are among the best in the league. Refer to pages titled "Weakness by Team Rank" and "Strengths by Team Rank" in the Power BI report to see the Lakers ranking for the above-mentioned statistics.

To identify which players were the lowest performing in the team's weakest areas we used a similar column chart in the Power BI report on the page titled "Weaknesses by Player". We used the same method to identify the weakest players in the team's strongest ranking seen in the Power BI report on the page titled "Strengths by Player". Using these statistics, we removed the players who were either causing the most harm to the team or not providing enough points, this was judged against the player average for each of these categories for the entire team. The player salary supplemented these statistics, if the player was not at or above player average for the majority of the categories we were judging on with an unreasonable salary for their contribution to the team they were selected to be traded (removed).

We decided on trading six players. When combining the average statistics that were being used to judge the players and adding the total salary of the traded players, we had the data that needed to be improved by the replacement players. These statistics needed to be improved while hiring these players within the total salary that was left vacant by the removal of those traded players. The total dollar amount from the traded players to stay within when hiring new players was $35,083,775.

To improve on the areas of performance of the traded players, we had to select new players from across the league who, under our assumptions for this project, are all available, willing to trade teams at the same salary they are currently being paid, and do not have any pre-existing negative relationships with current Lakers players. The Lakers, like many NBA teams, have players with Two-Way contracts. These contracts allow the teams to "call up" players from the minor league without having to pay for their salary as the minor league is responsible for Two-

Way contract salaries. For the purpose of this report, and because the use of Two-Way contract players is rare, we are assuming that the Lakers will have little to no need for them so they will not be included in our recommendations. In the event that the Lakers do need a Two-Way contract player, their pay will not affect the salary cap so it will not have any effect on the recommendations.

Now with the ability to select new players to replace the traded players, we created a pivot table within our data model that highlighted the 3P, FT, and TOV of all the players in the league. From this pivot table we selected the players that had above average (below average for TOV) across the league for these three statistics. Using this method, we selected the best and most affordable eight players who when put together in two different recommendation options, had a better score in each area of concern than the traded players. We compared these two options by evaluating their differences in each of the five statistics of concern. Refer to Visual 1 and Visual 2 below to see the differences in the matrices.

Player	Sum of 3P	Sum of FT	Sum of TOV	Sum of BLK	Sum of 2P
Austin Rivers	1.40	1.10	0.70	0.10	1.70
Danuel House	2.00	1.20	0.90	0.50	1.60
Eric Gordon	2.70	2.30	1.20	0.40	2.10
Eric Paschall	0.60	2.70	1.60	0.20	4.70
Glenn Robinson III	1.20	1.20	0.90	0.30	3.40
Patty Mills	2.30	1.50	0.80	0.10	1.60
Total	**10.20**	**10.00**	**6.10**	**1.60**	**15.10**

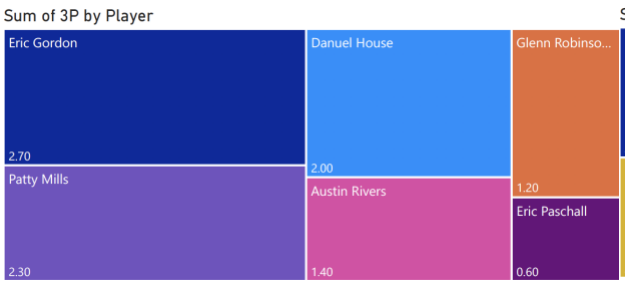
Visual 1

Player	Sum of 3P	Sum of FT	Sum of TOV	Sum of BLK	Sum of 2P
Ben McLemore	2.50	0.70	0.70	0.20	0.90
Cameron Johnson	1.90	0.80	0.60	0.40	1.20
Eric Gordon	2.70	2.30	1.20	0.40	2.10
Eric Paschall	0.60	2.70	1.60	0.20	4.70
Glenn Robinson III	1.20	1.20	0.90	0.30	3.40
Patty Mills	2.30	1.50	0.80	0.10	1.60
Total	**11.20**	**9.20**	**5.80**	**1.60**	**13.90**

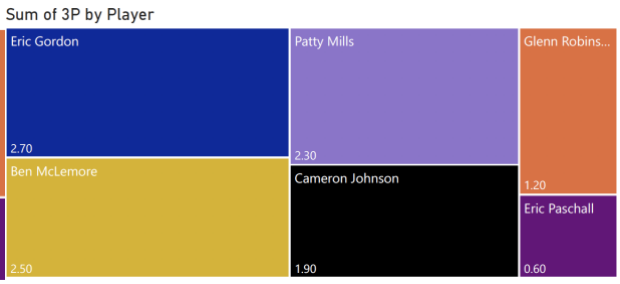
Visual 2

As seen in Visual 1 and Visual 2, the significant difference between these two options is that Visual 1 (Recruitment Option 1) has a higher scoring FT and 2P. The other noticeable difference between these visuals is that the 3P is an entire point higher in Visual 2 (Recruitment Option 2). These numbers although seem small are significant as they represent the number of points that only these six players score per game.

We scrutinized each players from each recruitment options in the data model with exact numbers and again with visuals from Power BI. Because the 3P was the lowest ranking statistic, it was the first we used to judge the players. This was easily done using Power BI's treemap. Refer to Visual 3 and Visual 4 below to see the players in each recruitment option who score the most 3P.



Visual 3



Visual 4

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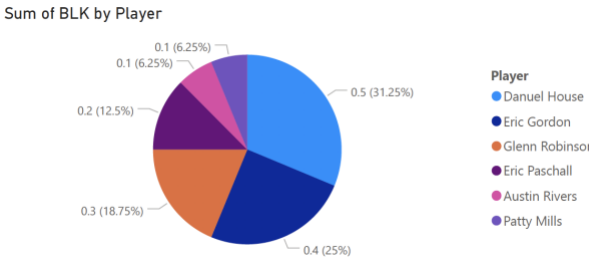
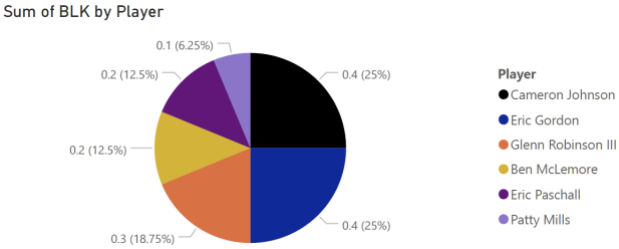
While improving the weaknesses of the team were paramount in our approach to handling this data, we recognized that ensuring the strength of the teams BLK and 2P were just as important. In the case of the Lakers, the BLK was particularly important as the Lakers were ranked best in the league for this statistic. Because the Lakers are not the highest-scoring team in the league with a suffering 3P and FT, the BLK rank is important to maintain to ensure the Lakers can reduce the number of points scored against them. When identifying and selecting players to replace the traded Lakers players, we selected not only well-rounded players but also players who were significantly stronger in their defense than offense. Refer to Visual 5 and Visual 6 below to see the players who have the most BLKs out of the recruitment options.



Visual 5



Visual 6

As seen in Visual 5 and Visual 6, Daniel House, Eric Gordon, and Cameron Johnson make up the majority in their respective recruitment options in the BLK. Furthermore, as seen in the data model on sheet “Lakers Per Game Stats”, Daniel House, in particular, is an incredibly strong defensive player with above-average stats for his BLK, steal, and total rebound. For reference, steal is when the ball is stolen from the opposing team to gain possession and total rebound is to gain possession of the ball when it rebounds off the backboard behind the basket.

Our approach to our data analysis was to identify the weak areas of the team, the weak players, and replace them with better players. This proved to be more difficult than first considered since the replacement players had to not only improve on the statistics of concern but also meet the average of the rest of the statistics for the Lakers. The way we approached the opportunity to create a better team for the Lakers by improving their weaknesses and building our data around three main offensive statistics allowed us to observe how quickly the Lakers can be remodeled and improved by replacing nearly a third of the team.

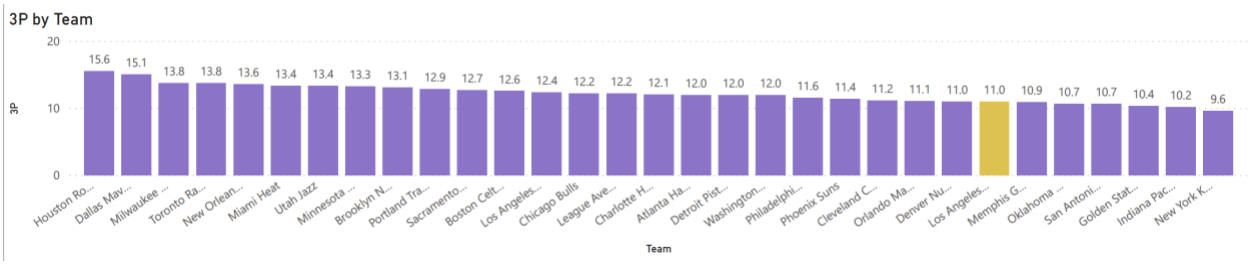
The data used to develop this report is supplied by basketball-reference.com, a subsidiary of sports-reference.com. This site collects and reports sports statistics to provide enthusiasts with information on all teams and players to become educated on their favourite sport.

Observations

To create the best Los Angeles Lakers team, we had to increase their rank in weak areas and play to their strengths. The first business question we had was, what are the weaknesses of the current Lakers lineup of players? To find out, we analyzed the ranking of the Lakers across all NBA teams in all the performance statistics. We then looked within the team to find which players were dragging the team down in those rankings and traded them off the team. The next question was, what are the best players to incorporate into the Lakers? For this, we looked league-wide to find players who would improve on the now-former Lakers players' weak statistics. Once replacements were found, we needed to identify how much the team would improve from the replacement players based on the data. To judge the new replacements against the current team, we created a new Lakers team with the replacement players to show how they would rank against the rest of the league.

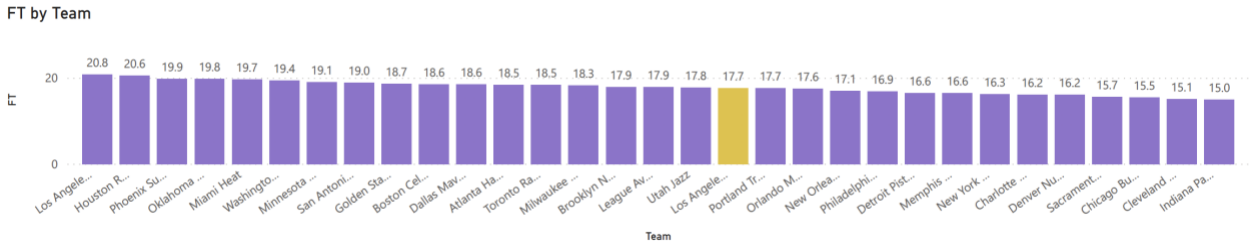
Business Questions

What are the weaknesses of the current Lakers lineup of players?



Visual 7

Seen in Visual 7 above, it is evident that the Lakers, with an average of 11 3P shots per game, rank amongst the bottom of the NBA at No. 23.



Visual 8

Another weaker aspect of its players is their FT abilities, as illustrated above by Visual 8. With an average of 17.7 FT shots per game, the Lakers rank No. 18 within the league. Although not as dismal as its 3P statistic, this is still a weakness that needs to be increased.

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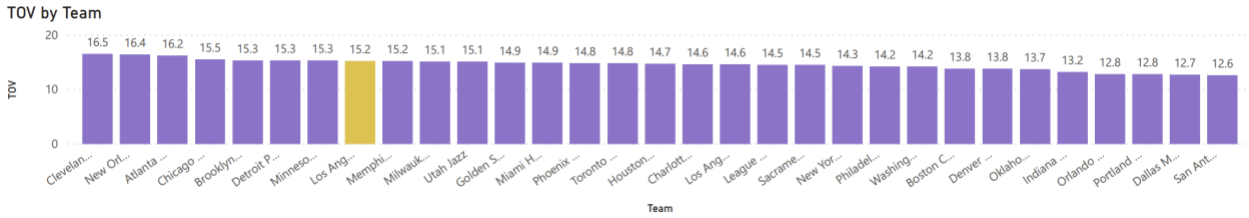
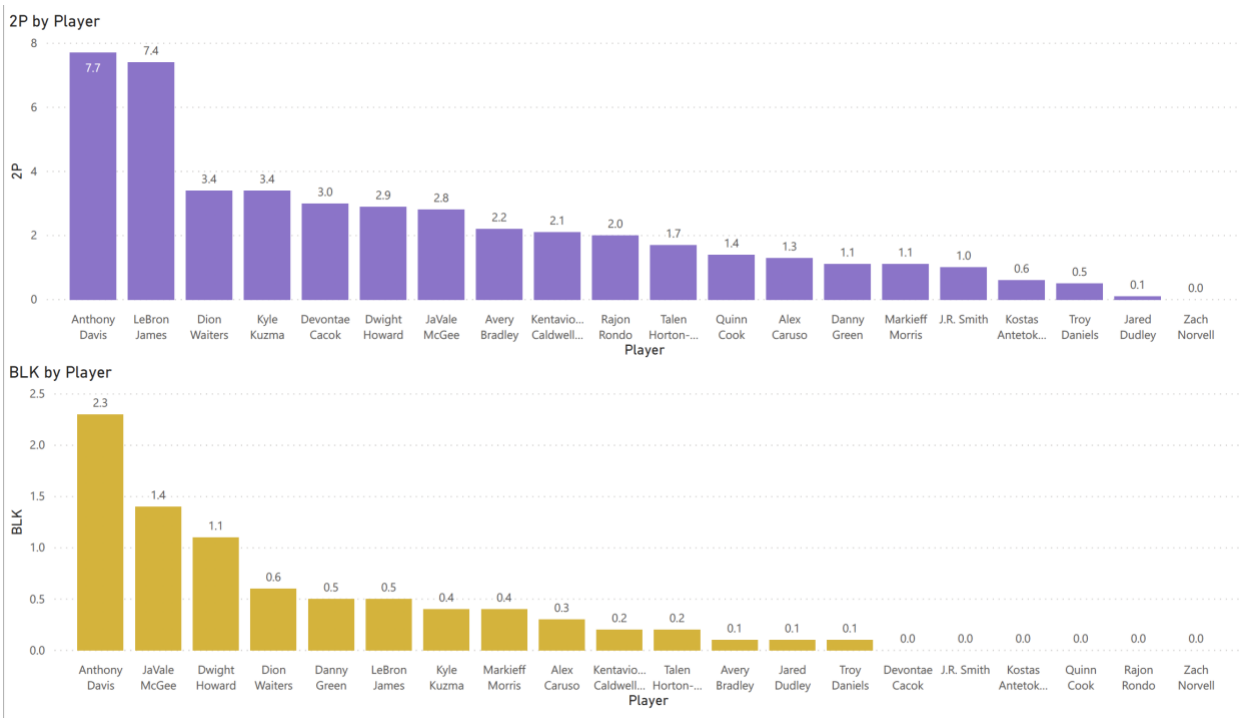


Visual 9

Lastly, TOV (Turnovers) is the defensive weakness of the 2019-2020 Lakers. The lower this number is, the better the team is. This chart, Visual 9, must be viewed accordingly in contrast with the previous statistics. The Lakers currently possess a 15.2 average TOV per game, which ranks them at No. 08, highest amongst the league. However, it is important to point out that TOV has a high correlation with any types of scoring statistics, such as 3P and 2P. The longer a player has possession of the ball, the likelihood of their ball being stolen or fumbled increases. This performance category is very difficult to eliminate or lower especially with aggressive offensive players.

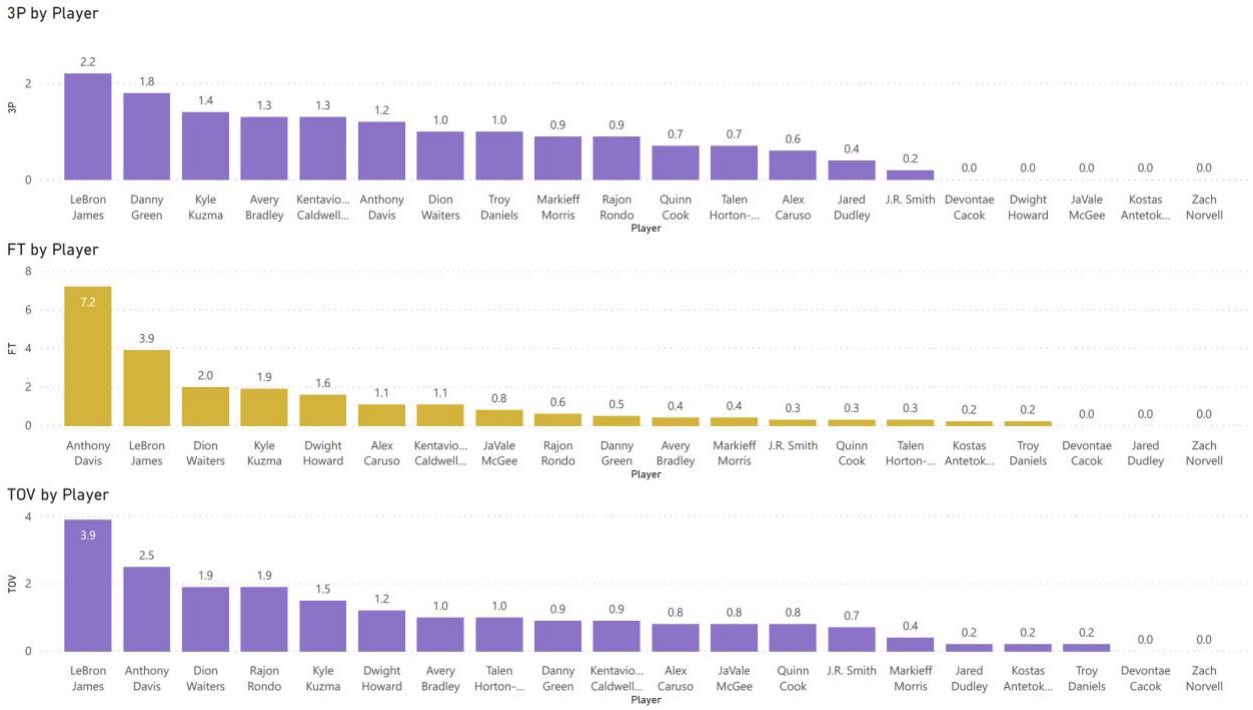
Who are the weakest/lowest-performing players in the weaker areas in the Lakers' current lineup of players?

The Lakers' current lineup of players is judged based on the categories listed above, which are 3P, FT, TOV, BLK and 2P.



Visual 10

Unsurprisingly, Lebron James is still one of the best players on the team and in the league.



Visual 11

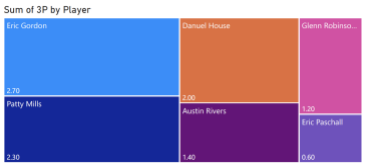
Based on the analyses and visualizations above, the six current Lakers players that will be removed are Danny Green, Avery Bradley, Kentavious Caldwell-Pope, Jared Dudley, Quinn Cook, and Troy Daniels. The decision was made by assessing how ineffective the six players are, when compared to the average Lakers player statistic, and how much more they are being paid when compared to other players who share similar, if not better, performance within the league. Danny Green, for instance, is being paid $14M, however, Daniel House, one of the players listed in Recruitment Option 1 who shares similar, and better performance in certain categories, is paid only $3.54M. Given the 2019-2020 season performance that Danny Green had, it is unreasonable to keep him on the team with his current salary. The same goes with Kentavious-Caldwell Pope, who is paid $8.08M whereas Glenn Robinson III, another player in our recommendations who share similar attributes, is paid a fraction of that at $1.88M.

However, despite the lackluster performances from certain players, it is best to still keep them within our team thanks to their attributions to the team's strengths. Players who are more talented at defense, such as Dwight Howard and JaVale McGee, will remain on the team in spite of their weak offensive abilities. Other players who are considered as Two-Way Players (who travels between the NBA and G/Minor League) are not paid through the Lakers budget, such as Kostas Antetokounmpo, Zach Norvell and Devontae Cacok, thus they will not be removed, regardless of their inability to reach the average standard.

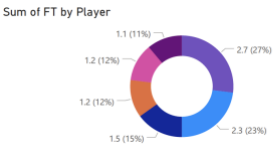
Recommendations

Recruitment Option 1

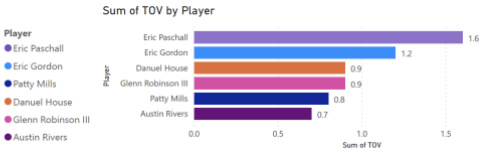
Our first recommendation improves each of the statistics of concern, including other team statistics, and saves the management over $100,000 in salary payments. This recommendation totals 10.2 in 3P compared to the traded players' 6.5, 10 in FT compared to 2.5, and increases the TOV from 4 to the recommended 6.1. Each of the players in this recruitment option provide a significant advantage to the teams offense, defense, or are generally well-rounded. However, none of the players are overly weak in any of the areas of concern. Refer to the visuals below to see how each player in this recruitment option stacks up against each other for each statistic.



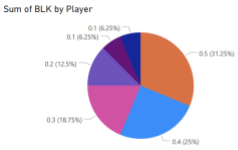
Visual 12



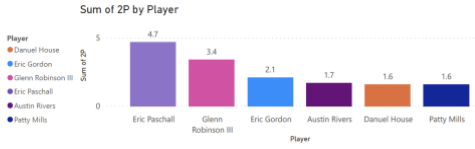
Visual 13



Visual 14



Visual 15



Visual 16

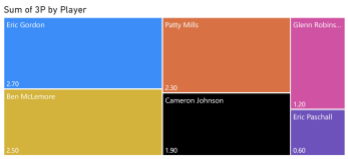
Player	Sum of FT	Sum of 3P	Sum of TOV	Sum of BLK	Sum of 2P
Austin Rivers	1.10	1.40	0.70	0.10	1.70
Danuel House	1.20	2.00	0.90	0.50	1.60
Eric Gordon	2.30	2.70	1.20	0.40	2.10
Eric Paschall	2.70	0.60	1.60	0.20	4.70
Glenn Robinson III	1.20	1.20	0.90	0.30	3.40
Patty Mills	1.50	2.30	0.80	0.10	1.60
Total	**10.00**	**10.20**	**6.10**	**1.60**	**15.10**

Visual 17

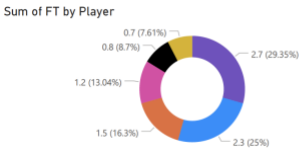
It is clear to see from these visuals that each of these players are much stronger in one or two areas over another. For example, Eric Paschall has the best FT and 2P by player but also has the highest TOV. To supplement Eric's weak defense this recruitment option relies on Daniel House's strong BLK and low TOV, which is not the lowest but is below the team average, to improve overall team defense. The players in this recruitment option provide a well-rounded and drastic improvement to the Lakers in more than just the areas of concern. This recruitment option additionally sees an increase in the total rebound, steal, and assists.

Recruitment Option 2

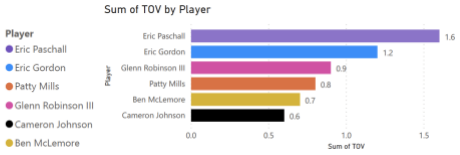
Our second recommendation serves as an alternative to the first one. In this list of players, four of them are the same as our first recommendation, while Daniel House and Austin Rivers are swapped out for Ben McLemore and Cameron Johnson. Refer to the visuals below to see the differences between players in this recruitment option.



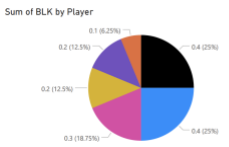
Visual 18



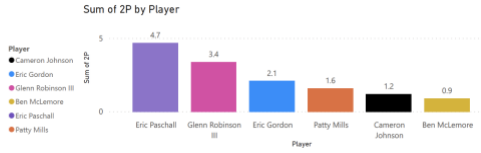
Visual 19



Visual 20



Visual 21



Visual 22

Player	Sum of 3P	Sum of FT	Sum of TOV	Sum of BLK	Sum of 2P
Ben McLemore	2.50	0.70	0.70	0.20	0.90
Cameron Johnson	1.90	0.80	0.60	0.40	1.20
Eric Gordon	2.70	2.30	1.20	0.40	2.10
Eric Paschall	0.60	2.70	1.60	0.20	4.70
Glenn Robinson III	1.20	1.20	0.90	0.30	3.40
Patty Mills	2.30	1.50	0.80	0.10	1.60
Total	**11.20**	**9.20**	**5.80**	**1.60**	**13.90**

Visual 23

These visuals show similar traits to Recruitment Option 1. There are players who are stronger on offense, but their defense suffers. This is supplemented by players who are the opposite. In this recruitment option, this is most evident in the offensive performance of Eric Paschall and the defensive performance of Cameron Johnson who has an incredibly high BLK and the lowest TOV in this option and among the lowest on the Lakers team. This lineup of players consists of a better 3P and TOV statistics, an increase of 1 point and a decrease of 0.3 respectively, but with some sacrifices on other performances, such as a decrease of 0.8 in FT and 1.2 in 2P, as well as a more expensive salary, which is almost $348,000 more than our first recommendation.

Although we have two recommendations for the Los Angeles Lakers management, we more strongly recommend Recruitment Option 1 as it saves more money from the traded players and has better statistics across areas, not just our focused five (3P, FT, TOV, 2P, BLK). To provide an example of how much Recruitment Option 1 improves the team, we replaced the traded players with the players from this recruitment option to identify what the new ranking would be in the entire league with the new Lakers team.

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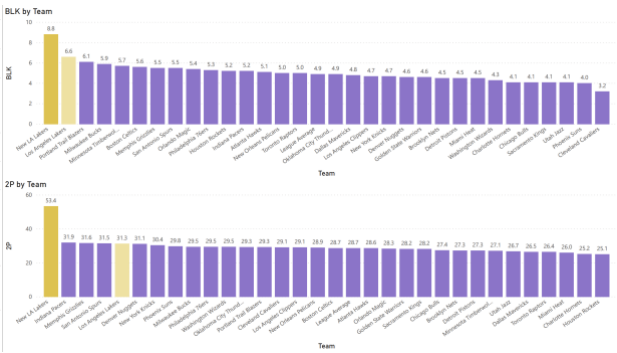
Visual 24



Visual 25

As seen in the visuals above, because of the careful selection and thoughtful process that included selecting well-rounded players, the new Lakers team formed from Recruitment Option 1 ranks the Lakers at the top of the league in 3P, FT, TOV, 2P, and increases BLK which was already at the top of the league putting a bigger margin between the Lakers and the next best team.

Conclusion

Based on our findings and of the Los Angeles Lakers team wide and individual player weaknesses, we have discovered that by implementing the recommended Recruitment Option 1, the Lakers will enter the 2020-2021 season as the best team in the National Basketball Association. Although the data does not account for uncertainty or the unexpected, like injuries, we can confidently say that in the areas of concern (3P, FT, and TOV) the Lakers with implemented Recruitment Option 1 have enough of a lead over the next best team to maintain their standing even if the best Lakers player in that statistic cannot play.

The data that has been collected and analyzed addresses each of the Lakers' weakest areas of plays and turns them into strengths. The data has also turned the Lakers' strengths into greater assets putting them further ahead of their competitors. This sizable improvement should be expected to come at a significant cost but because the analysis replaces players who do not provide their worth to the team, Recruitment Option 1 solution saves the management team a total of $101,979.

Based on the findings from this report, we strongly recommend the Los Angeles Lakers management team should implement Recruitment Option 1 to create the best Lakers team possible.