Data Analysis Report

Gabriel Arrano | NBA Data Analysis | November 14, 2021

Introduction and Methodology

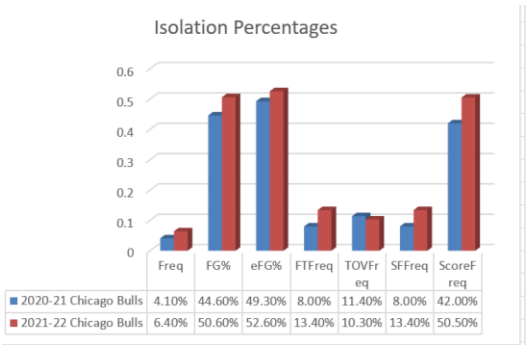
The main objectives of this report were mainly two. First, analyze what team changed its playing style the most and second, what is the Pacers biggest weakness and how to address it with the current players. These objectives were approached by using Python programming language, using mainly three libraries, Selenium, Beautiful Soup and Pandas. Selenium was used to control a web browser and automate browsing through the NBA's stats webpage. Meanwhile, Beautiful Soup pulled data out of the NBA's stats webpage and parsed it (Web Scraping automated). Pandas library was used for data manipulation and analysis, exporting only useful data to Microsoft´s Excel for sorting and filtering and then being able to reach conclusions based on the observation of the obtained statistics.

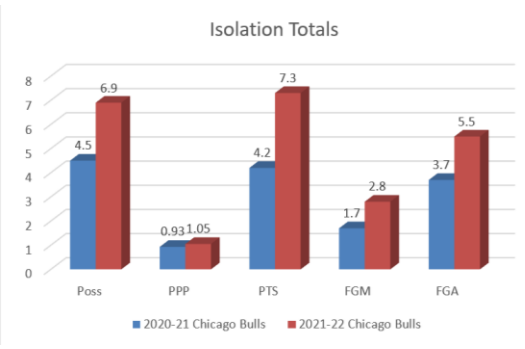
1. Data Collection and Analysis

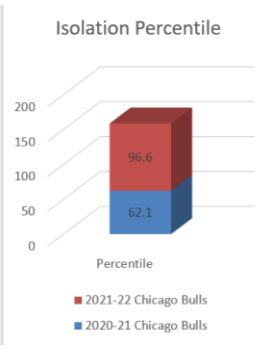
1.1 Team that has changed its playing style the most

Comparing last year standings to this year's, the Chicago Bulls were the most improved team in the NBA. I gathered data from play types from last season and this season and the improvements and changes in different type of plays are vastly different. This variation is directly implicated by the different type of players that they have acquired for this season, mostly guards, with good playmaking, finishing and excellent defending. Lonzo Ball, DeMar DeRozan and Alex Caruso have made an impact in their lineup, especially since they already had All-Stars, Zach LaVine, and Nikola Vucevic in the team. In the following charts the statements made are demonstrated.

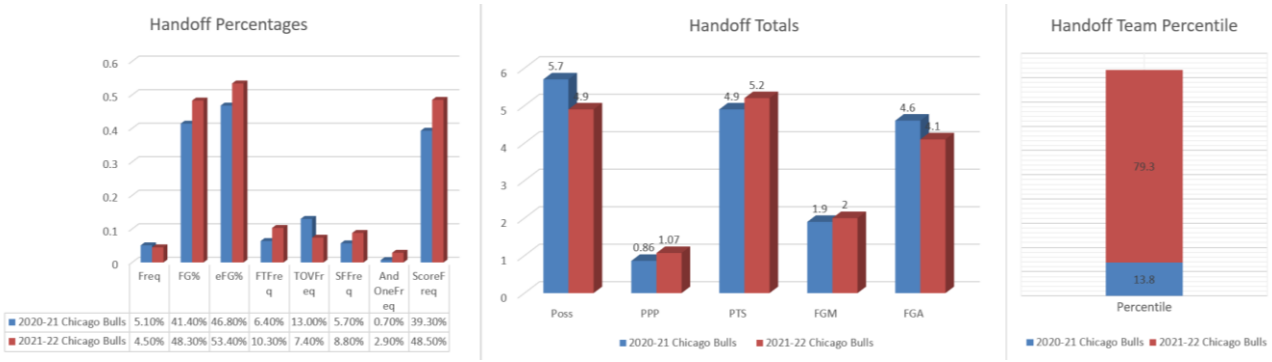
- **Offense:**





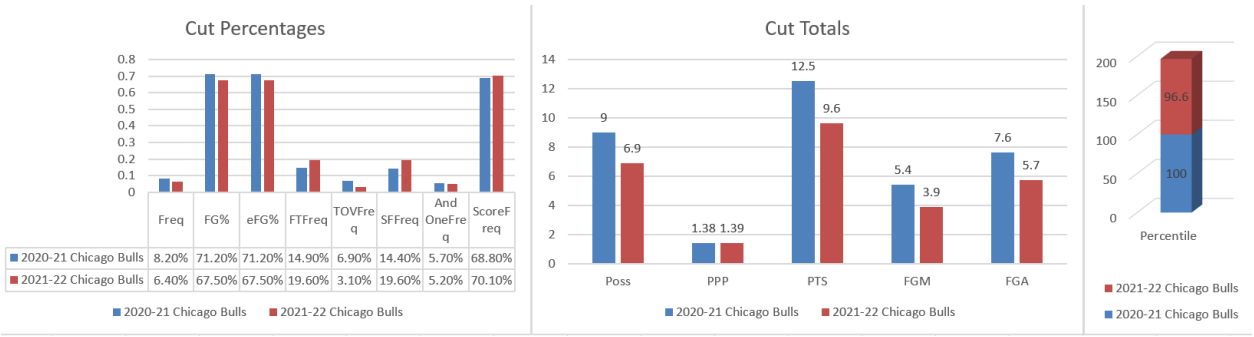


In the chart shown before, we can see how Isolation play type has become more frequent compared to last year. More possessions, almost double the points and the 2nd best team in the NBA with this playing style (96.6 percentile).



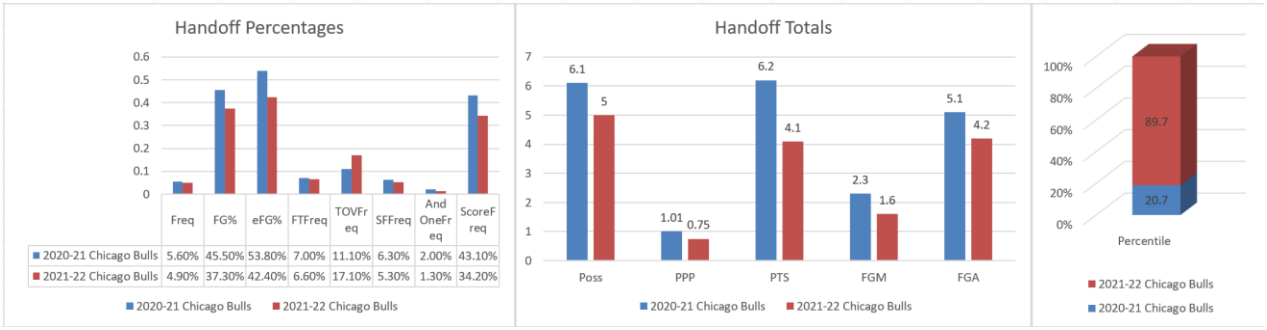
Shown in the chart above, Handoff playing style has also been way better this season, with less possessions, the Bulls have been able to score more points, score frequently and have become on of the best teams in the league in this particular play type, in which last year they were one of the worst at it (79.3 percentile compared to last year's 13.8).

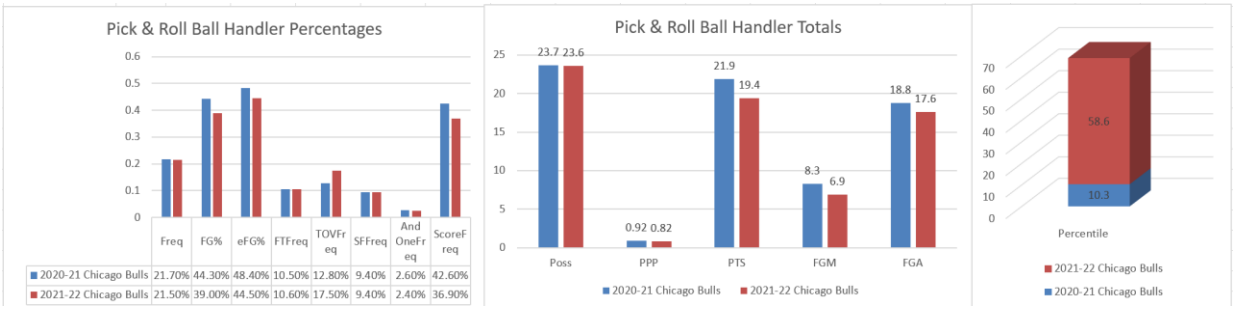
Even though, they still are top 3 in Cut play types in the league, this one area is also one of their strengths this season, but as mentioned before, the addition of shooters/playmakers to the lineup, has implicated in a slight decrease in the frequency in running this type of offense. The chart below has the data that backs this conclusion.

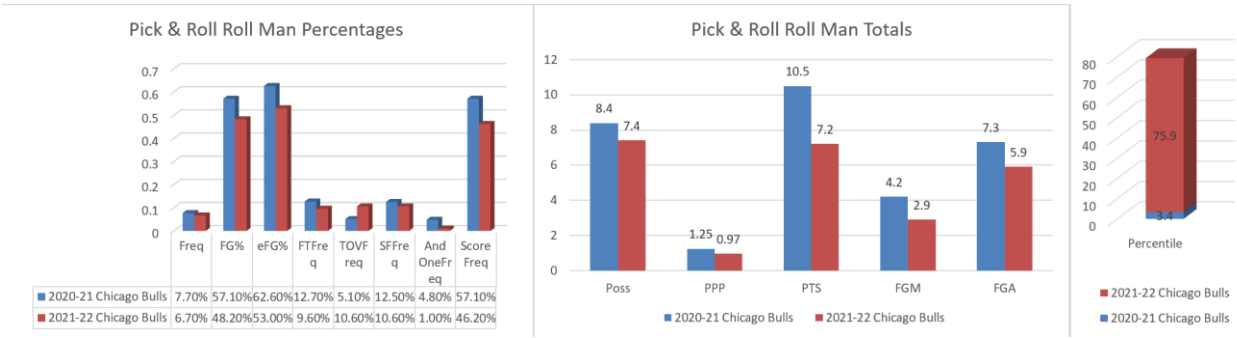


- **Defense:**

Defensive playing has also been a factor for the Bulls 2021-22 season surge, being able to play better against teams with high shooting attempts beyond the arc, mid/close shots and protecting the paint.





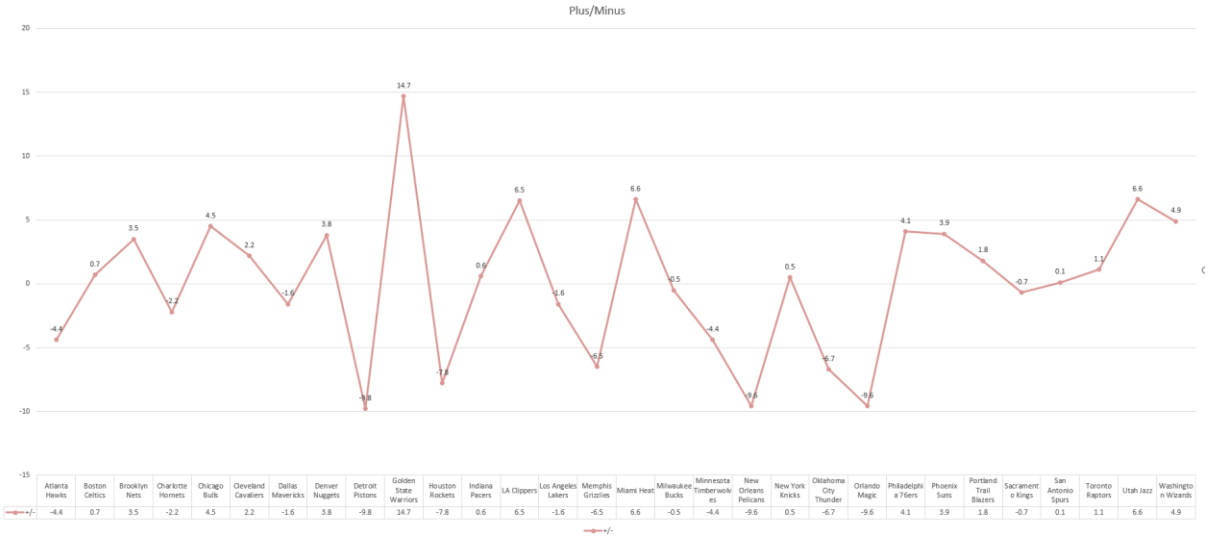


As mentioned before, the addition of key players with high defensive aggressiveness and defensive mindset, have made the Bulls a huge impact, we can see this in the charts above as in how the red bars are all below the blue bars, implicating in the percentile chart directly, demonstrating the big change between last season and this season in defending the Pick & Roll, and the handoff attack, becoming one of the best team in these play types in the NBA.

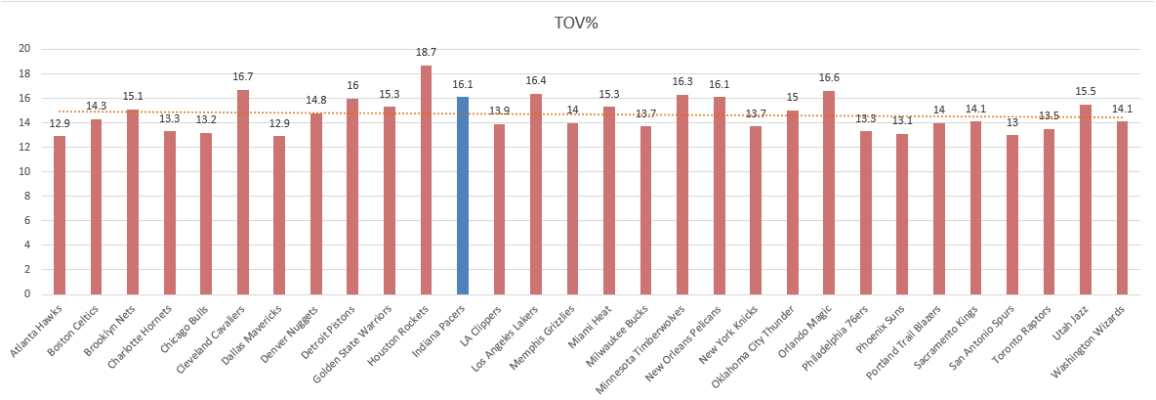
Bearing the data demonstrated before I can conclude that the team that has changed their playing style, implicating in success, the most in the NBA have been the Chicago Bulls.

1.2 Pacers' biggest weakness and how to address it

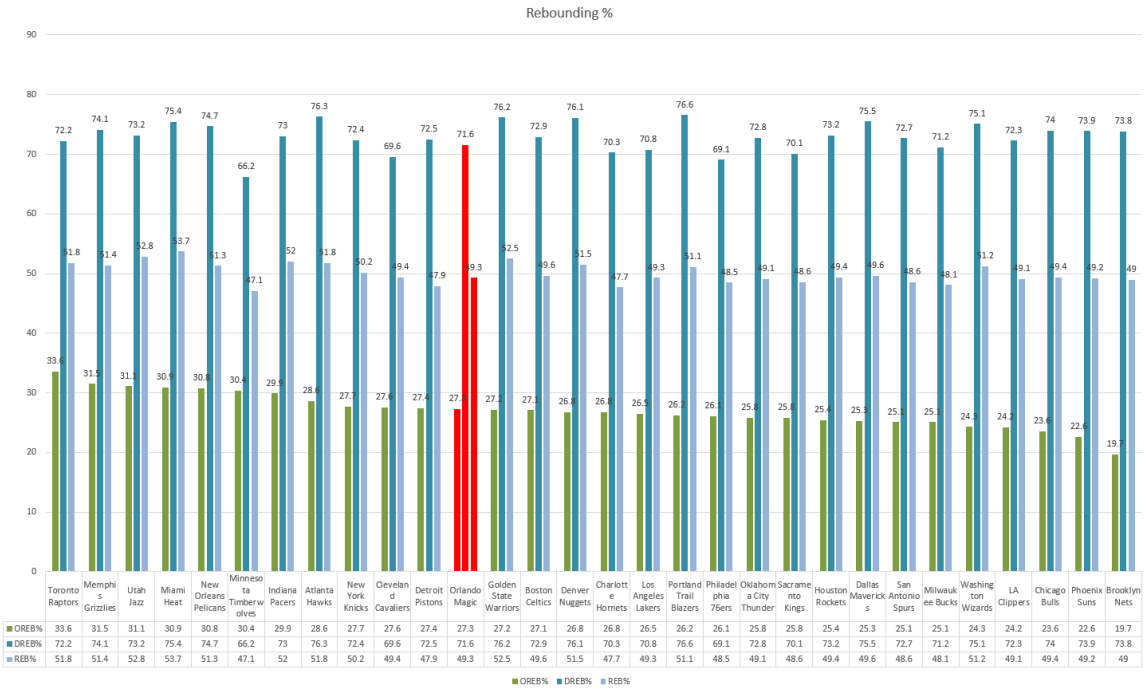
After analyzing Teams Traditional Stats and Advanced Teams Stats I found that Pacers' margin of victory is only 0.6, this is a really closed margin, and based on the team's record (6-8) there has been a lot of games lost by such a small margin.



Bearing this conclusion in mind, I sorted out which stats where the ones in which the Pacers' have been low on the league and while the team has mainly been mid-table in traditional and advanced stats, I found out that rebounding (particularly on defense) and turnovers are what are affecting the team the most. I generated the following charts related to these weaknesses.

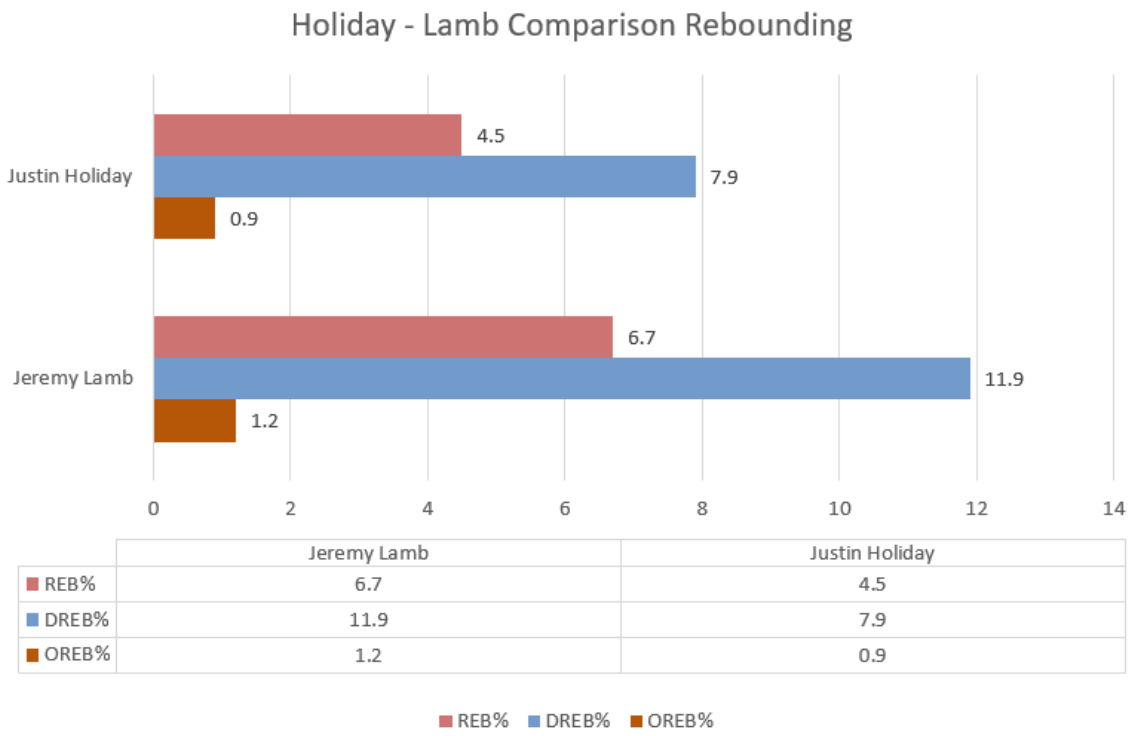


As shown on this chart, the Pacers are the 6th worst team in the NBA in turnover percentage, with a higher average than the rest of the league.

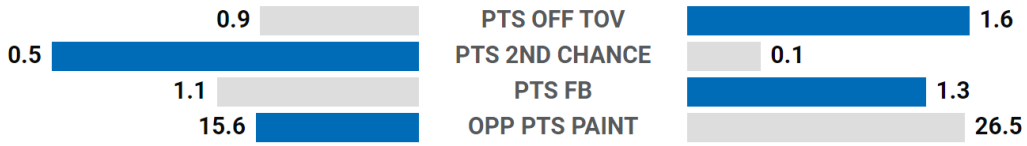


The previous chart shows rebounding percentages, offensive percentage, and defensive percentage. Even though, offensive rebounding has been good, defensive has been average being 15th on the league. Rebounding, of course, is relevant to win games and while, the Pacers have been great offensively (7th best), defensively has been a struggle implicating on losing games by a small margin.

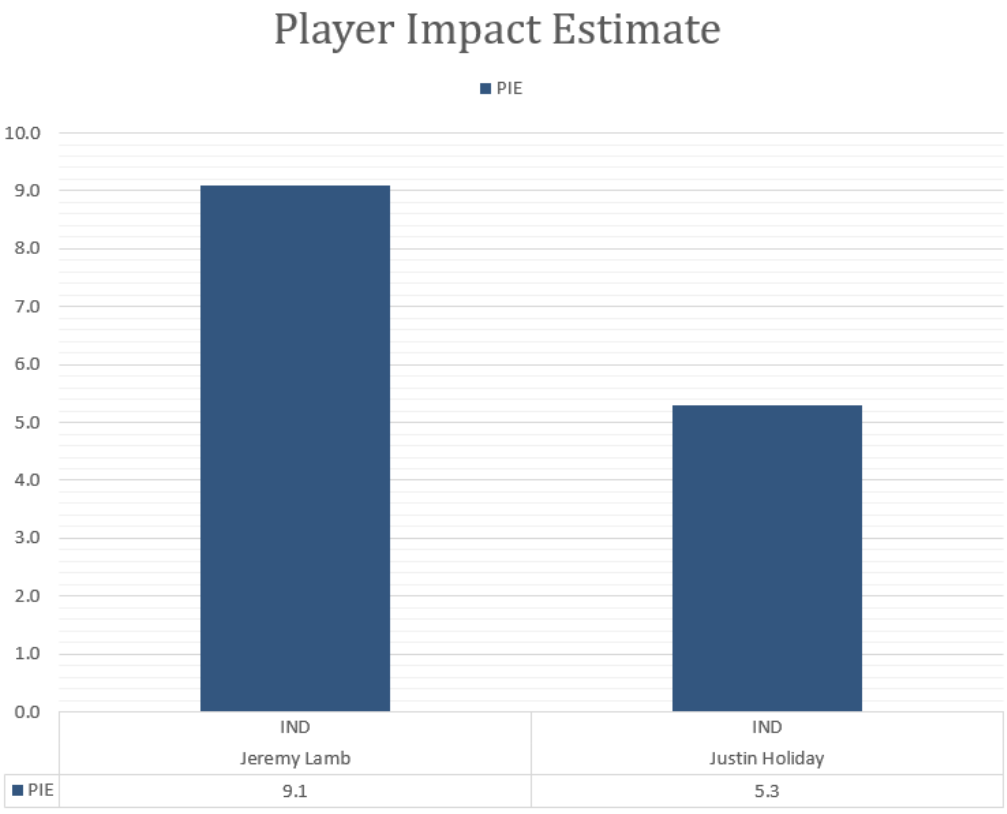
The most repeated lineup this season has been; J. Holiday (SF), M. Turner (C), D. Sabonis (PF), M. Brogdon (PG) and C. Duarte (PG). Two players of this most repeated lineup are directly implicated with the weaknesses I found out before. Justin Holiday and Michael Brogdon. While Brogdon turns over the ball the 2nd most, Holiday has not been able to close out games defensively by deficient rebounding, fouling, and allowing points on the paint implicating on a low 5.3 player impact estimate. While Brogdon does turn over the ball quite often, he has the team's 2nd best player impact estimate so, he is not the main problem. Based on the stats mentioned before as for Holiday, there was a player, who can play in the same position as him, that stood out the most: Jeremy Lamb. Lamb's rebounding average almost doubles Holiday's (see the following chart)



Lamb has better rebounding stats than Holiday, offensively and defensively. Another interesting stat is that Lamb allows way fewer points in the paint than Holiday. Holiday allows 26.5, while Lamb only 15.6. A difference of 10.9 points and based on what I mentioned before on how the Pacers lost close games this could be a huge difference between a win or a loss.



In clutch time, Lamb also has better stats, and almost doubles, Holiday's PIE.



To conclude, what I would do to address the team's biggest weaknesses would be to replace Justin Holiday for Jeremy Lamb in clutch time to secure the victory. To demonstrate this, I optimized the team's best lineup on scoring and defending and the result was to play: J. Lamb, M. Turner, D. Sabonis, M. Brogdon, C. Duarte in terms of better defending and M. Turner, D. Sabonis, C. LeVert, M. Brogdon, C. Duarte in terms of scoring.