

Raptors Bench

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Dwayne Casey and the Toronto Raptors have been killing the regular season. The work of All-Stars Demar DeRozan and Kyle Lowry has shown that they are among the best backcourt in the NBA. Significant improvement for Jonas Valanciunas and surprise starter OG Annunoby have also given the Raptors power to compete with the best bigs in the league. Almost every NBA personality will tell you is the main reason for the Raptors success is their bench. The fairy tale story of Fred VanVleet, the maturing Poeltl and Siakam, the 3 point shooting of CJ Miles and the confidence Delon Wright have made them unstoppable. They are joined on the bench by what everyone thought was going to be our starting small forward in Norman Powell and his underperforming teammate Lucas Nogueira. Malcom Miller and others have also made appearances though out the season but to no real significant impact.

As the playoffs approach Toronto one of the few playoff team that relies on a 12+ man rotation; most playoff teams simply go for a 8 to 10 man rotation during the regular season and may even shorten it down even more once playoffs come around. We can expect the Raptors to give their starters significant minutes in high 30's to maybe even 40's rather than the low 30's high 20's they are receiving right now. This means that some of the bench players will receive less time and this comes down to who Coach Casey thinks will be the biggest asset to his team.

If we look realistically, Nogueira and Miller will probably not make an appearance in the playoffs due to only making 45 and 15 regular season appearances respectively. This leaves us with Poeltl, Siakam, VanVleet, Wright, Miles, and Powell. Now all of these candidates clearly have the skill to play in the playoffs, the questions is who will be sitting out in order for our starters to play more.

The point difference between the points the Raptors score versus the opposition is highest when the 5 player combination of DeRozan, Poeltl, Siakam, VanVleet, Wright at a whooping +55.1 points which more than doubles the next closes 5 which are our starters and VanVleet replacing OG.

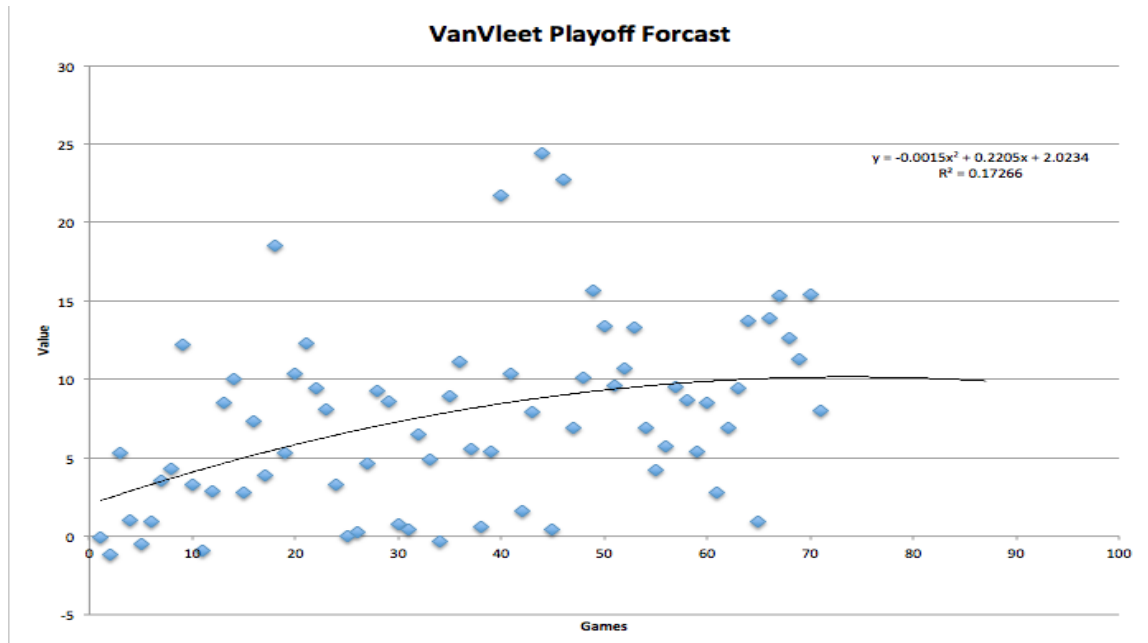
Only one player on the Toronto team is in the top 3 player combinations and that is Fred VanVleet. He leads the Raptors in 4th quarter minutes and is realistically the Raptors 6th

man.

In order to determine who else should be in the bench rotation, we can create a formula to determine player value based on their offensive and defensive statistics. This shows us what they truly contribute to the team. It could be argued that some parts of defence and even offence are not measurable however I feel as though all the bench options are good defenders and provide great spacing and many of the unmeasurable stats are based more so on match up so we will not worry about them. We defined value as the following:

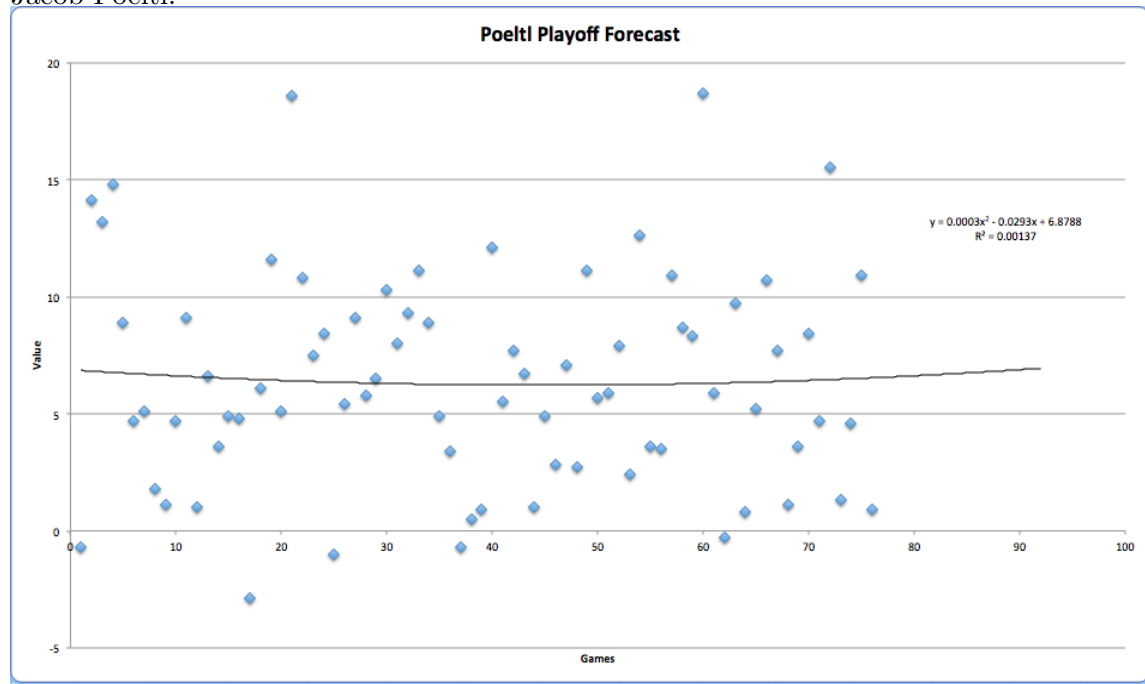
$$Value = points + (FGM * 0.4) + (FGA * -0.7) + ((FTA - FTM) * -0.4) + (OREB * 0.7) + (DREB * 0.3) + STL + (AST * 0.7) + (BLK * 0.7) + (PF * -0.4) - TO$$

Now we can plot all of our points and plot a polynomial forecasting line that will help us predict how the player will do. We will be using a polynomial forecast model rather than a linear one because it has a better R^2 value which means all of the points in the graph are closer to the curved line rather than if we did a straight line going through. We have our polynomial at degree 2 because that way it could either be concave or convex depending on the trend where as if we tried to have a higher degree then our function would be forced to shoot up or shoot down after the last point which basically means it will follow the scattered plots more accurately but it will not predict the future value as accurately. Often times we would get very extreme results with higher polynomials. We can examine VanVleets value forecasting model below.

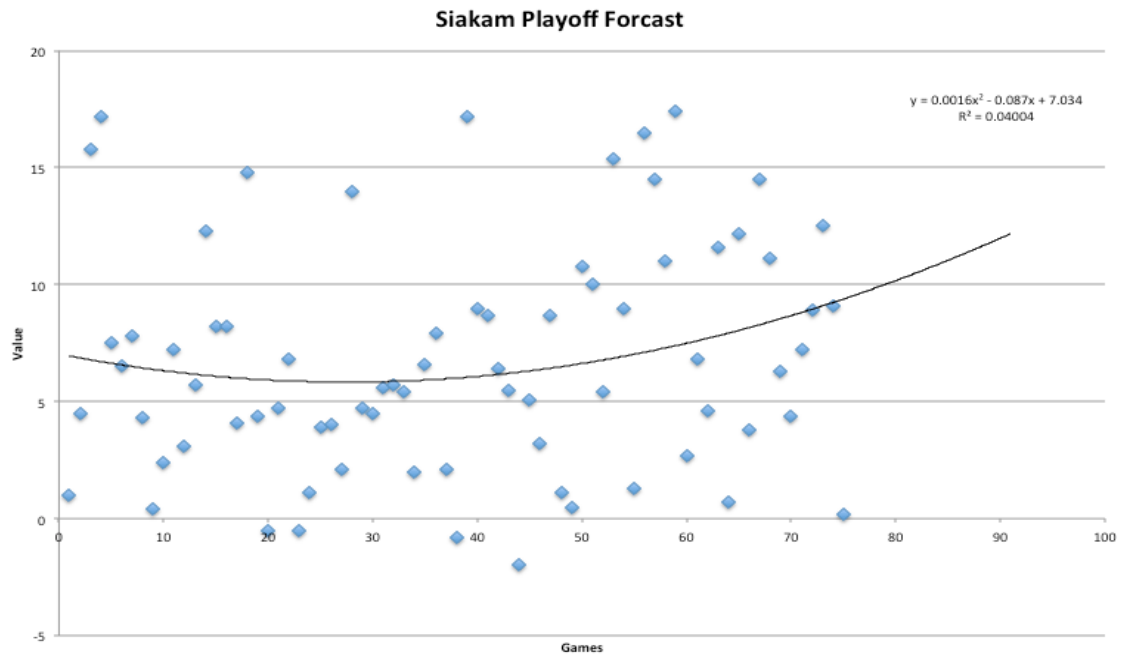


As we can see we have VanVleet putting up excellent numbers and progressing well into the post season very nicely. If we do the same with all the players we will be able to determine which players will give us the best projected value on the court which would give us the best combination of bench players.

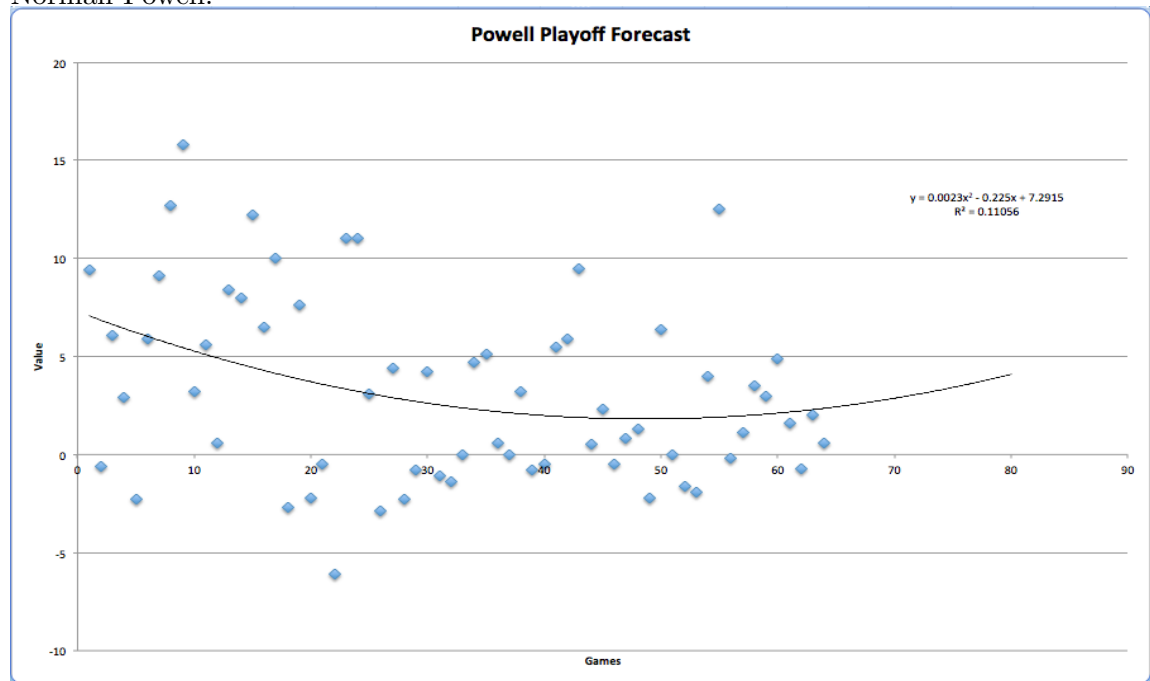
Jacob Poeltl:



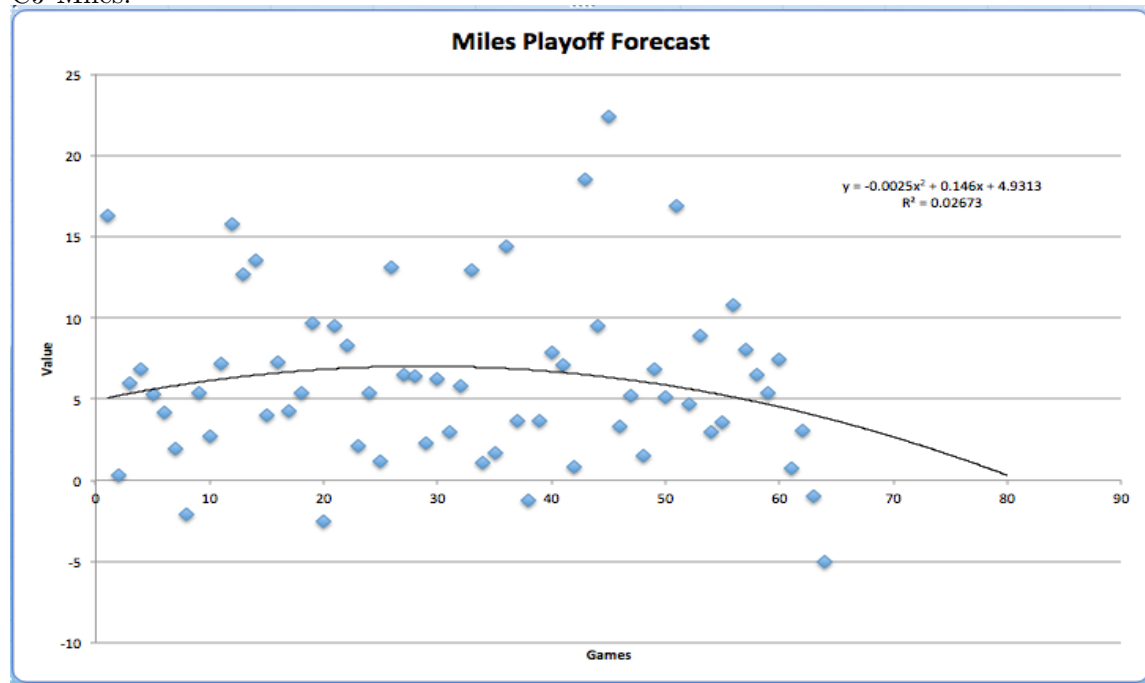
Pascal Siakam:



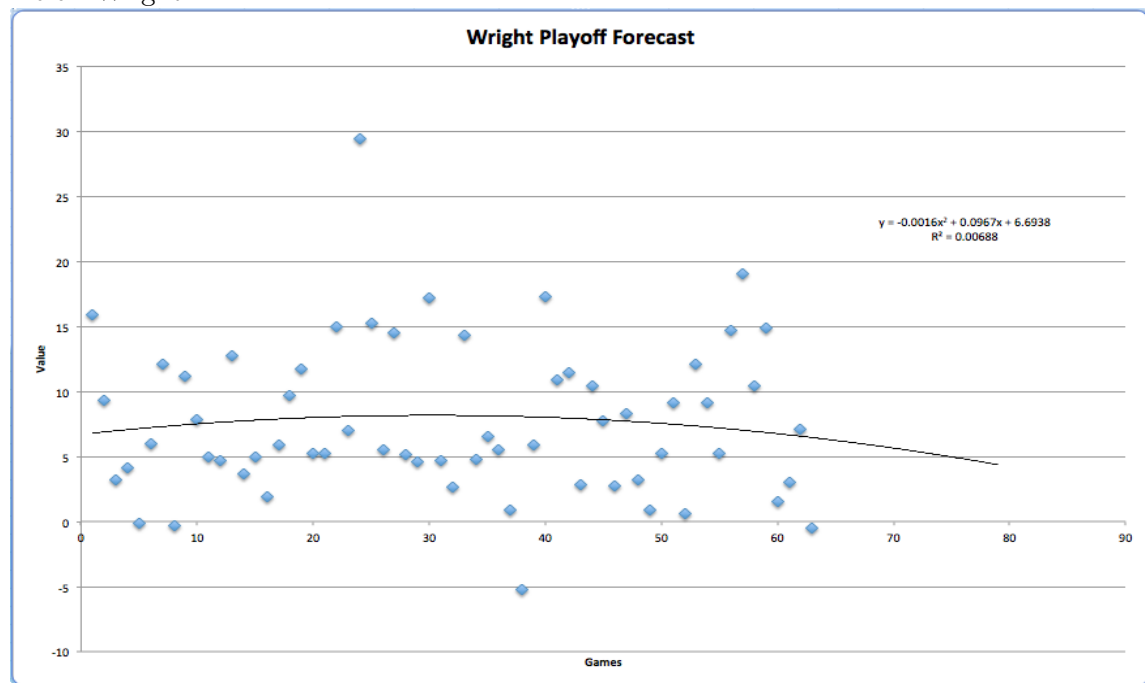
Norman Powell:



CJ Miles:



Delon Wright:



Upon viewing this we can immediately confirm what we must have all been thinking; the duo of Poeltl and Siakam will obviously make the bench rotation. However, now we have 8 player in what we predicted to be a 9 person rotation.

We are left with 3 guards for the final spot. Miles, Wright and Powell. The model examines what each really bring to the table and what other teams will surely recognize. First up, CJ Miles. He is a strong defender and a good player but the model breaks him down to what he can do. Shoot 3's and guard his man. These are very good skills however being only able to bring 3 point shooting to the table will make eliminating him very easy for opposing teams to do. His defensive abilities are just about equal to the other 2 guards so CJ Miles unfortunately does not make the cut as our final bench player. This leaves us with Norman Powell and Delon Wright. Both are excellent players and could both fill in the shoes. The model shows that Delon is convex down (trending downwards). This could be for many reasons but the concern that comes with it is this is his size. In the playoffs when every possession is played at 100%, it can be a lot more difficult for a smaller guard like Wright. Norm is predicted to be on the upswing and although Wright will have a predicted better next 16 games, Norm has playoff experience. This is where the model essentially equates the two guards however with the model only forecasting 16 games (surely a lot less than what the raptors will need to win the championship), anything more than 16 games the advantage is given to Powell. His size, ability to shoot the 3, defensive knowledge, and playoff experience simply put him over the top compared to Wright. Our model shows that the optimal way would be to play Delon Wright for the first 14 games and then Norman Powell for the remainder, however we know that would not make sense from a basketball perspective.

All in all, the final choice of the bench will be crucial and who knows; perhaps Casey keeps a large rotation with everyone getting some time. After all, why change something that has been so successful all season.