

EDA of NBA Team and Player Performance

This report aims at identifying the most important factor that will affect one team's PCT (percentage of attendance), providing some advice about how one player can develop himself, and measure the relationship between players' performance and social power.

How to improve team's attendance

According to the exploration of relationship between PCT and team's skill rating (ELO) or team's value (value millions), both two factors can impact PCT positively and team's ELO shows a much powerful influence. However, ELO can just explain a very small part of PCT's increasing. Compared to ELO, team's value can provide much powerful evidence to support the PCT's increasing. Therefore, the suggestion for teams' administration should improve their teams' values by using multiple way, such as cooperating with more firms or renovating old court. By doing this, they may attract more audience and promote teams' PCT. (Table1)

PCT and Value/ELO			
	Coefficient	P> t	Adjusted R-squared
Intercept	85.729	0.000	0.199
Value	0.006	0.008	
Intercept	63.451	0.008	0.029
ELO	0.020	0.183	

How to make players better

Under the trend of three-point shooting becoming more and more important, many coaches focus on the strategy of throwing more three-points. They tend to hold the view that the more three-point shooting, the more efficient to score, and the higher possibility they can win the game. However, the regression results of two/three shooting and PIE (a kind of description of players' impact in the game) show that actually two shooting is much more related with PIE. Also, if one player increases 1% two-point shooting, the game will increase 0.24% possibility to win. (Table2, Table3)

Table2: PIE and Shooting			
	Coefficient	P> t	Adjusted R-squared
Intercept	8.050	0.000	0.022
Three_Percent	4.110	0.004	
Intercept	0.180	0.864	0.186
Two_Percent	18.510	0.000	

What's more, for the defense, the analysis indicates that the more steals one player makes in the game, the much more influence he can have on the game. It also means the team can win games with higher probability. This result should be easy to understand. Generally speaking, you can

acquire more opportunities to get a turnover with a number of steals. And for now, turnover has become an important part of a game. (Table4, Table5)

Table3: Win and Shooting			
	Coefficient	P> t	Adjusted R-squared
Intercept	0.460	0.000	0.000
Three_Percent	0.060	0.295	
Intercept	0.360	0.000	0.186
Two_Percent	0.240	0.010	

Table4: PIE and Steel/Block			
	Coefficient	P> t	Adjusted R-squared
Intercept	6.585	0.000	0.191
Steal	3.846	0.000	
Intercept	7.710	0.000	0.169
Block	3.535	0.000	

Table5: Win and Steal/Block			
	Coefficient	P> t	Adjusted R-squared
Intercept	0.430	0.000	0.040
Steal	0.074	0.000	
Intercept	0.464	0.000	0.009
Block	0.038	0.040	

In conclusion, nowadays, players should maintain their three-point ability and promote their two-point shooting ability. Actually, the Stephen Curry can be the model of this. He has the highest ORPM with an almost perfect combination of three-point and two-point shooting ability. NBA players should also cultivate their sense of defense to balance themselves.

The relationship between performance and social power

People tend to think the player with better performance will have bigger social power, which has been proved by the analysis. Based on the linear regression plot of performance and social power, it shows a kind of highly positive relationship. Because of this, the recommendation should be building up many more basketball stars of fans to expand the influence of NBA, which will definitely bring many more profits.

Conclusion

To sum up, NBA teams' administration should find some more ways to promote teams' values. And players should develop their two-point shooting and steal abilities. For the league, it should extend its business by the way of basketball stars.

Kaggle address: <https://www.kaggle.com/zhenyufan/nba-team-and-player-performance>