hw08part2

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Contents

Use data from *balldontlie API (NBA stats)* to evaluate a NBA player's performance

This assignment uses NBA stats from balldontlie API to evaluate a former Chinese NBA player, Yao Ming, who played for the Shanghai Sharks of the Chinese Basketball Association (CBA) and the Houston Rockets of the National Basketball Association (NBA).

He is praised by the following statements from hoophall.com, which has the page of basketball Hall of Fame:

- *"Already a legend in his native China, the big center was poised to test his mettle against the best basketball players in the world. In eight NBA seasons, Yao made eight All-Star rosters, averaged 19 points and 9 rebounds, and was named to the All-NBA team five times. He was also a three-time gold medalist and three-time MVP at the FIBA Asia Championships.".* Since Yao is one of the few Chinese players who played for NBA teams, I am interested to explore some of his performance during NBA seasons and make some analyses.

Interestingly, Yao is also famous for his emoji:

Source of Data

The data this assignment uses is accessed from balldontlie API (NBA stats), which offers free API to access NBA related data (No API key required. Amazing isn't it). But in order to retrieve data from the website, it still requires the user to write API queries to access data.

Data selection

The data contains many aspects of the player's related information, such as personal information, his team's information, games he played and etc. For this assignment, to better evaluate the player's performance, I only selected the data related to the games the player played. Notice that I did not use all of the variables I selected either, because Yao's position is center, which I think only a few of variables here can be used to evaluate his performance. But if you want to explore more of other player's performance who has different position, these variables are pretty handy. You can refer to the end of this assignment where I offer a index table of basketball terms. The variables I selected are:

How was Yao's performance?

Since Yao's position was center, I consider Defensive Rebound, Assist, Block, Field goal percentage (FG%), and Free throw percentage (FT%) as four important indicators of a center's performance. Please correct me if I were wrong, since I am not a big fan of NBA. :)
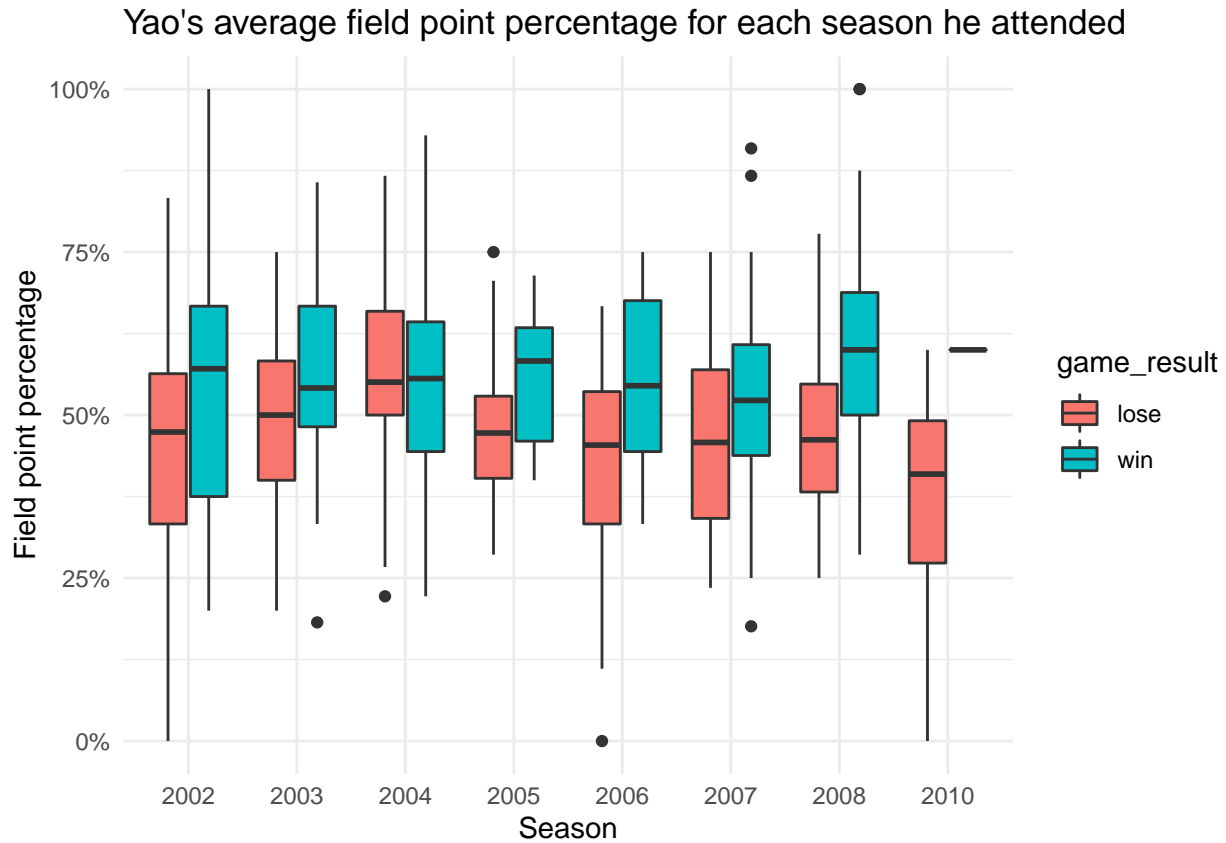The following table shows the average and max value of each indicators, splitted by either winning the game or losing the game (please check previous Index Table for details). From the table we can see that overall Yao has a stable performance in both winned games and lost games, and he contributes more in winned games. Since centers are the big man, Yao get rebounds and play low post and has a higher FG% than all the other positions. According to wikipedia, in basketball, a FG% of .500 (50%) or above is considered a good percentage. Yao here definitely performs well in terms of FG%, which is 56%. The average defensive rebounds for Yao is 7 per winned game, and the max value is 17. This seems not bad to me, but an NBA fan might have more say about this than me. The average assist of Yao is 1.68 per winned game, which is not much. The average block times of Yao is 2.09 per winned game, which is not much as well. But the max of block by Yao is 8 times in that game, which I would consider that as a very good performance. For the free throw stats, the average FT% is 80%, meaning that 8 out of 10 times Yao made a score.

Table 1: Yao's average performance

game_result	mean_dreb	max_dreb	mean_ast	max_ast	mean_blk	max_blk	mean_fg_pct	max_fg_pct	mean_ft_pct	max_ft_pct
lose	6.302752	15	1.371560	6	1.573395	8	0.4767569	0.867	0.7498165	1
win	7.000000	17	1.685811	7	2.091216	7	0.5644358	1.000	0.8027027	1

Plot on Field Goal Percentage

Here I only select the FG% as the indicator to evaluate Yao's performance across seasons, and the following graph shows the result. We can see that Yao has a relatively stable good performance in terms of FG% in both winned and lost games across 8 seasons, and he contributes more to winned games.

Yao's average field point percentage for each season he attended

Conclusion

Overall Yao Ming's performance is reliable and stable. In his career life as a professional NBA player, his best season was in 2008 when he produced 57 wins. As a center, Yao was good at field goal and free throws, but perhaps short on assist.

Index Table

When reading tables in this assignment, you can use this chart as a reference to check basketball terms if you are not familiar with. Notice that I did not use all of the variables I selected either, because Yao's position is center, which I think only a few of variables here can be used to evaluate his performance. But if you want to explore more of other player's performance who has different position, these variables are pretty handy.

Table 2: Index Table

terms	meaning
id_player	Player id in the game
ast	Assist
blk	Blocks
dreb	Defensive Rebounds
fg3_pct	3-Point Field Goal Percentage
fg3a	3-Point Field Goal Attempts
fg3m	3-Point Field Goals Made
fg_pct	Field goal percentage
fga	Field goal attempts
fgm	Field goal made
ft_pct	Free Throw Percentage
fta	Free Throw attempts
ftm	Free Throw made
id	Game id
date	Game date
home_team_id	Home team id
home_team_score	Home team score
period	Game period
postseason	Is postseason or not
season	Season
status	Game status
time	Time
visitor_team_id	Visitor team id
visitor_team_score	Visitor team score

Reference

https://en.wikipedia.org/wiki/Yao_Ming#NBA_statistics