Importance of the Correlation between Points and Defensive Rebound*

Zheng(Zeb) Yang

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In the realm of American sports, the NBA (National Basketball Association) stands out as one of the most popular leagues. This study delves into the linear relationship between the average points scored and average defensive rebounds per game among NBA teams over the past four seasons. By analyzing regular season data from the NBA's recent four seasons, this research aims to explore the correlation between team scoring and defensive rebounding. Additionally, a linear regression model will be constructed to predict this relationship. Results show that the playing defence is crucial as the average points per game increases when the defensive rebound increases. The findings will contribute to a deeper understanding of the interplay between team offense and defense in the NBA.

1 Introduction

Among the major sports leagues in the United States, the NBA has secured a prominent position, drawing substantial attention from fans worldwide. In recent years, there has been increasing interest in understanding the dynamics between team scoring and defensive performance within the league. As such, this study focuses on examining the linear relationship between two crucial metrics: average points scored and average defensive rebounds per game by NBA teams over the past four seasons. By investigating these variables, we aim to uncover insights into how offensive productivity relates to defensive resilience in the NBA context. This research is pivotal to uncover the interactions between scoring and defensive strategies employed by NBA teams, ultimately enhancing our comprehension of the league's gameplay dynamics.

In Section Section 2

*Code and data are available at: https://github.com/iloveyz12/NBAdefenceplay.

I used R(R Core Team 2023) and to further enable the analysis, I employed the use of the following packages: dataverse(Kuriwaki, Beasley, and Leeper 2023), ggplot(Wickham 2016), tidyverse(Wickham et al. 2019), arrow(Richardson et al. 2024), rstanarm(Goodrich et al. 2022), modelsummary(Arel-Bundock 2022) and here(Müller 2020).

2 Data

3 Model

3.1 Model set-up

We run the model in R (R Core Team 2023) using the `rstanarm` package of Goodrich et al. (2022), `modelsummary` package of Arel-Bundock (2022) and `here` package of Müller (2020). We use the default priors from `rstanarm`.

3.1.1 Model justification

4 Results

Our results are summarized in

5 Discussion

References

Arel-Bundock, Vincent. 2022. "modelsummary: Data and Model Summaries in R." *Journal of Statistical Software* 103 (1): 1–23. https://doi.org/10.18637/jss.v103.i01.

Goodrich, Ben, Jonah Gabry, Imad Ali, and Sam Brilleman. 2022. "Rstanarm: Bayesian Applied Regression Modeling via Stan." https://mc-stan.org/rstanarm/.

Kuriwaki, Shiro, Will Beasley, and Thomas J. Leeper. 2023. *Dataverse: R Client for Dataverse 4+ Repositories*.

Müller, Kirill. 2020. *Here: A Simpler Way to Find Your Files*. https://CRAN.R-project.org/package=here.

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Richardson, Neal, Ian Cook, Nic Crane, Dewey Dunnington, Romain François, Jonathan Keane, Dragoș Moldovan-Grünfeld, Jeroen Ooms, Jacob Wujciak-Jens, and Apache Arrow. 2024. *Arrow: Integration to 'Apache' 'Arrow'*. https://CRAN.R-project.org/package=arrow.

Wickham, Hadley. 2016. *Ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. https://ggplot2.tidyverse.org.

Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D'Agostino McGowan, Romain François, Garrett Grolemund, et al. 2019. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.