

Is it time for an NBA expansion?*

My subtitle if needed

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First sentence. Second sentence. Third sentence. Fourth sentence.

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*Code and data are available at: <https://github.com/Mezhi18/NBAExpansion> .

1 Introduction

You can and should cross-reference sections and sub-sections. We use R Core Team (2023) and Wickham et al. (2019).

The remainder of this paper is structured as follows. Section 2....

Gebreu et al. (2021)

2 Data

Talk more about it.

Talk way more about it.

3 Model

The goal of our modelling strategy is twofold. Firstly, I want to analyze what how much other basic statistics such as assists and rebounds have on PPG as well as the affect the number of teams in the league in comparison with the year have on the same points per game. Next, I would like to predict the PPG of the next three seasons depending on the number of teams that are in the league. Considering the NBA would likely expand only one team at a time we will be focusing on the potential PPG over the next three years with 30 teams, 31 teams, and 32 teams.

Here we briefly describe the Bayesian analysis model used to investigate the multiple linear regression model of PPG as described below.

3.1 Model set-up

Define y_i as the average number of points per game scored by a team through out the NBA season. Then α is the average assists per game, ρ the average rebounds per game, β is blocks per game, ψ is steals per game and lastly, τ is turnovers per game, ι is the year, and η is the number of teams.

$$y_i | \mu_i, \sigma \sim \text{Normal}(\mu_i, \sigma) \quad (1)$$

$$\mu_i = \alpha + \rho_i + \beta_i + \xi_i + \tau_i + \iota_i + \eta_i \quad (2)$$

$$\alpha \sim \text{Normal}(0, 2.5) \quad (3)$$

$$\rho \sim \text{Normal}(0, 2.5) \quad (4)$$

$$\beta \sim \text{Normal}(0, 2.5) \quad (5)$$

$$\psi \sim \text{Normal}(0, 2.5) \quad (6)$$

$$\tau \sim \text{Normal}(0, 2.5) \quad (7)$$

$$\iota \sim \text{Normal}(0, 2.5) \quad (8)$$

$$\eta \sim \text{Normal}(0, 2.5) \quad (9)$$

$$\sigma \sim \text{Exponential}(1) \quad (10)$$

$$(11)$$

We run the model in R (R Core Team 2023) using the `rstanarm` package of Goodrich et al. (2022). We use the default priors from `rstanarm`.

3.1.1 Model justification

We expect a positive relationship between the size of the wings and time spent aloft. In particular...

4 Results

5 Discussion

5.1 First discussion point

If my paper were 10 pages, then should be be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

5.2 Second discussion point

5.3 Third discussion point

5.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

NBA Stats Over Years

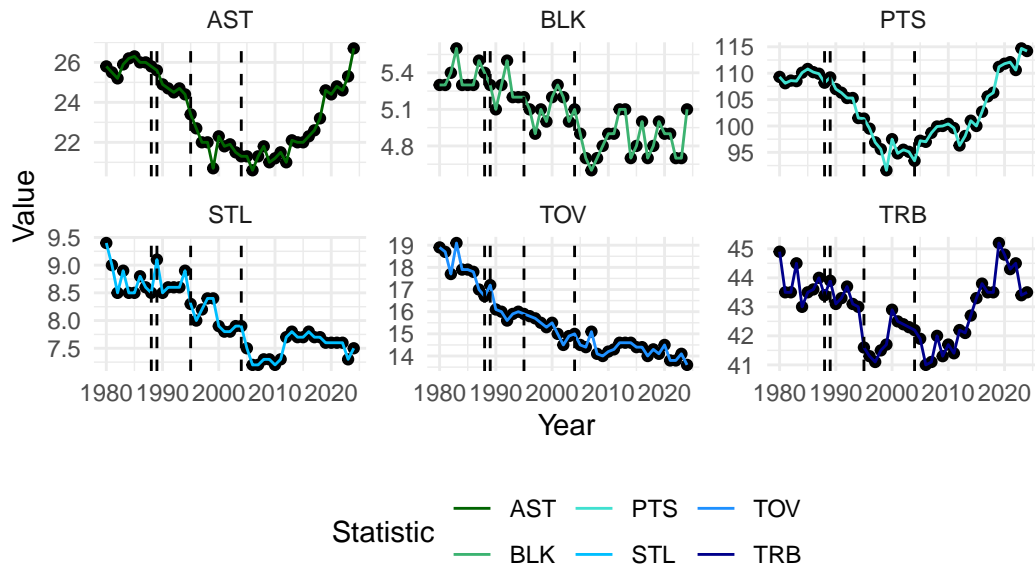


Figure 1: NBA Statistics from 1980

NBA Stats Over Years (Post-2004)

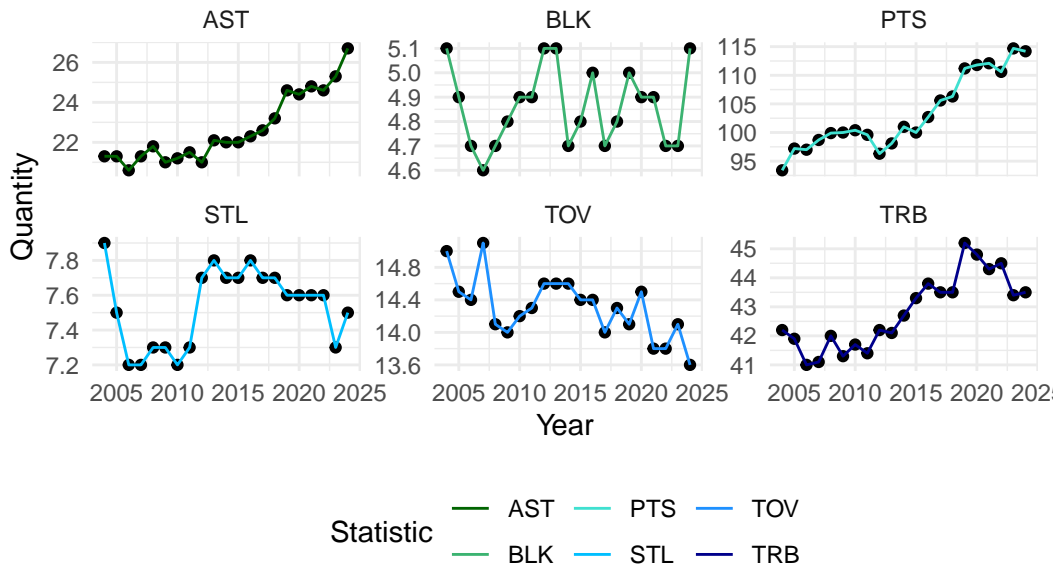


Figure 2: NBA Stats Since 2004

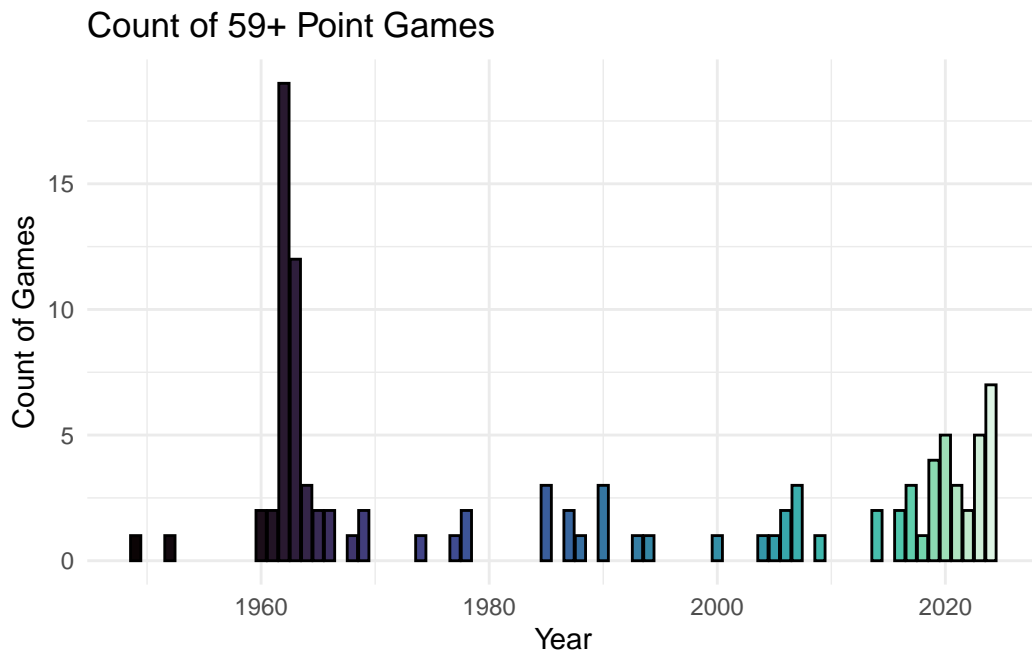


Figure 3: High Scoring games(59+ pts)

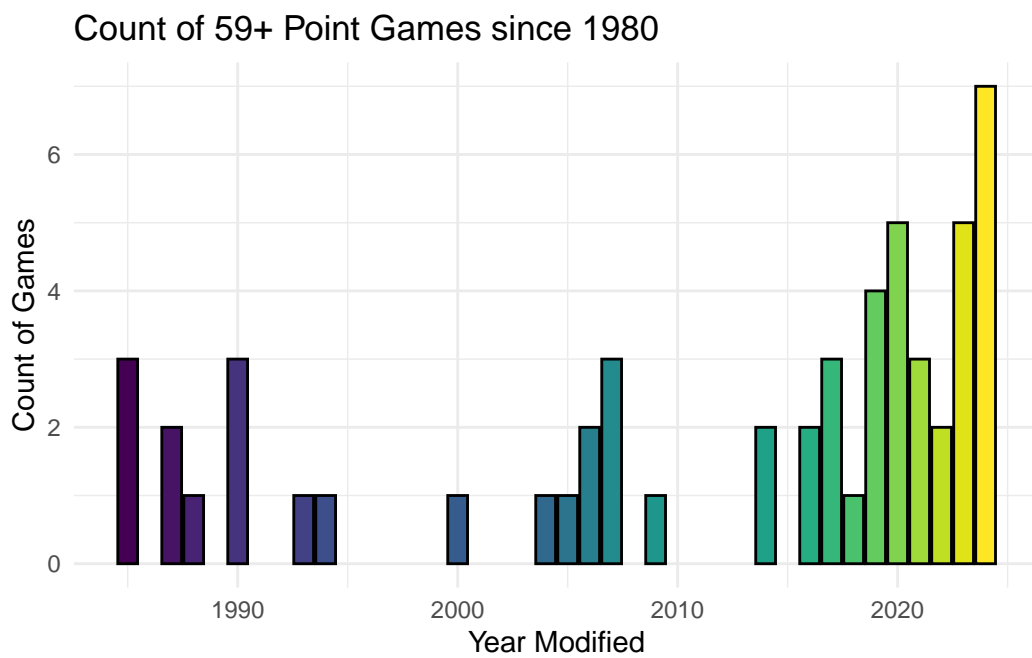


Figure 4: High Scoring games(59+ pts) Since 1980

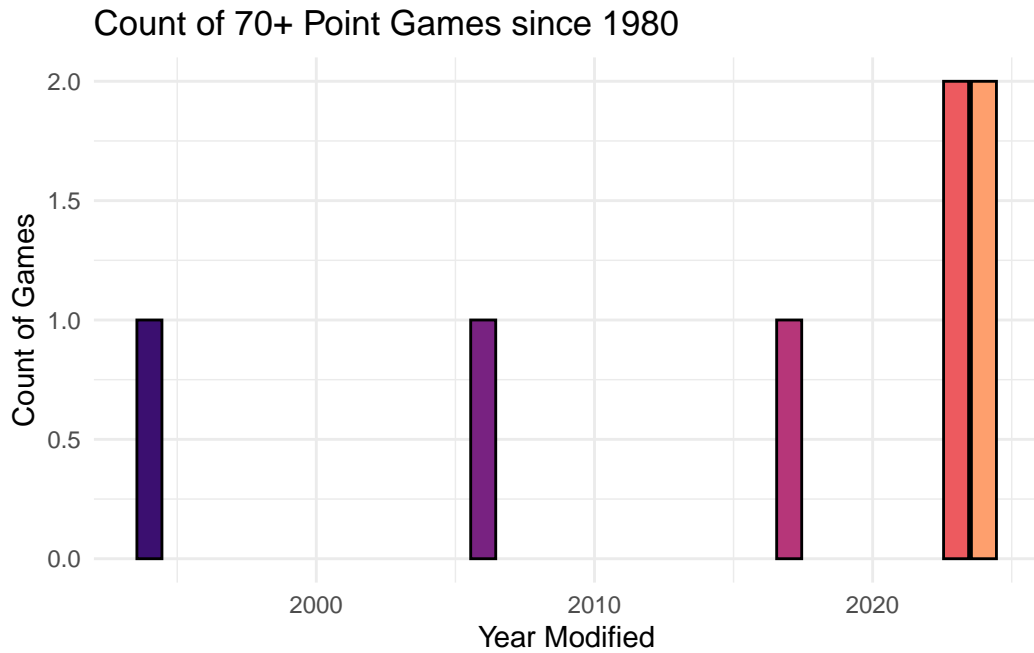


Figure 5: High Scoring games(70+ pts) Since 1980

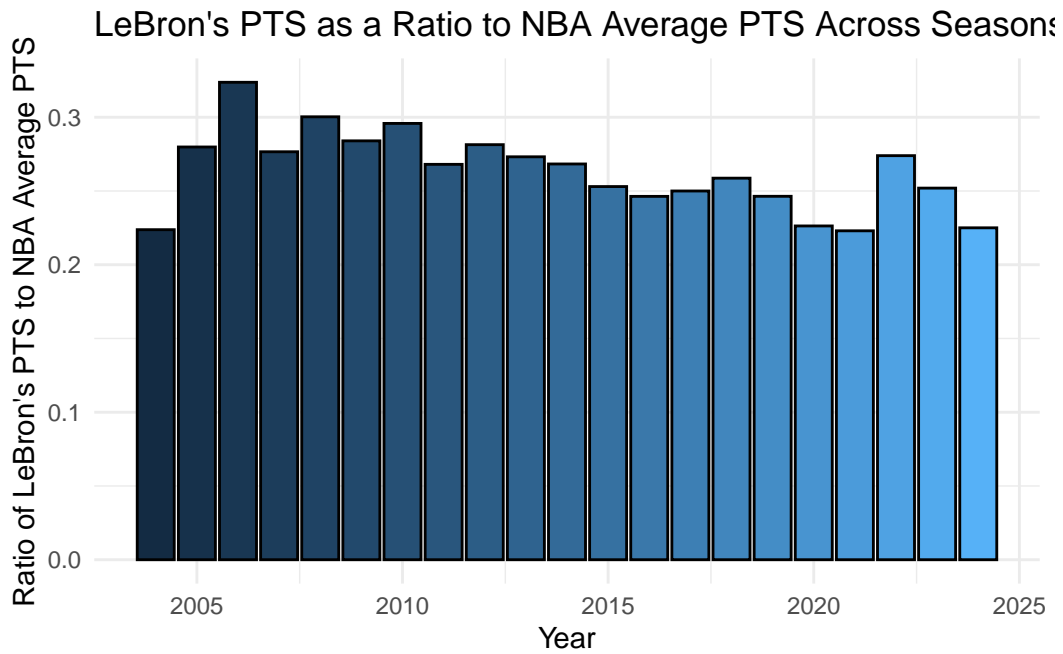


Figure 6: Lebrons PPG as a Ratio of the League Average

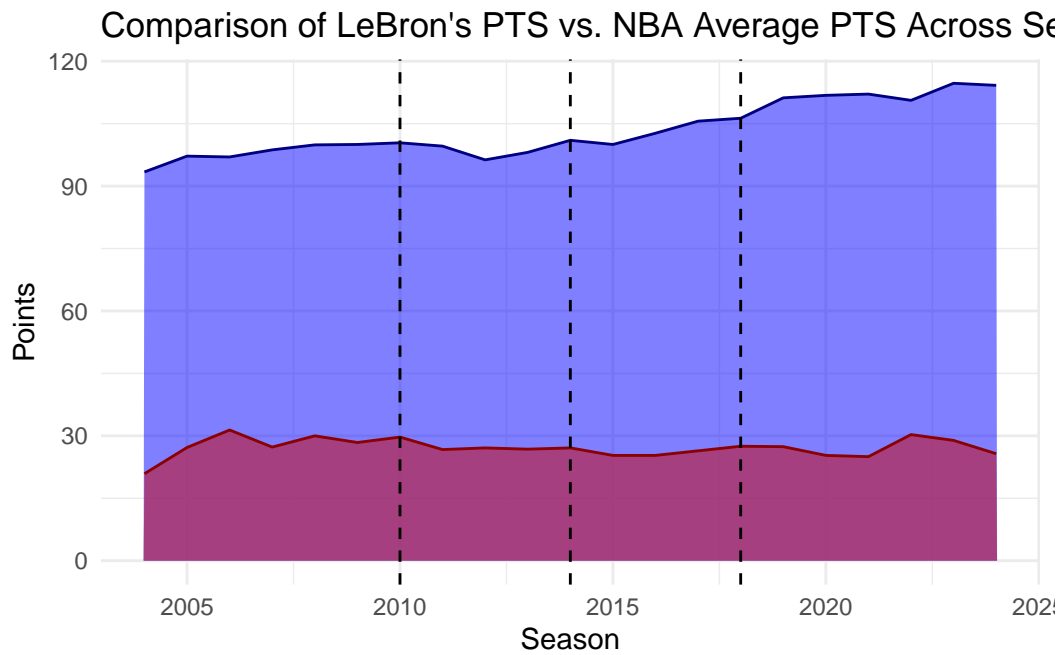


Figure 7: League Average PPG vs Lebrons PPG

Appendix

A Additional data details

B Model details

Linear NBA Model

B.1 Posterior predictive check

B.2 Diagnostics

	Points Model
(Intercept)	4.82 (137.00)
Year	0.02 (0.07)
AST	3.26 (0.24)
TRB	1.09 (0.38)
STL	−3.16 (0.93)
BLK	−6.47 (1.53)
TOV	0.18 (0.56)
Num_Teams	−0.26 (0.35)
Num.Obs.	45
R2	0.961
R2 Adj.	0.953
AIC	164.7
BIC	181.0
Log.Lik.	−73.374
RMSE	1.24

References

- Gebru, Timnit, Jamie Morgenstern, Briana Vecchione, Jennifer Wortman Vaughan, Hanna Wallach, Hal Daumé III, and Kate Crawford. 2021. “Datasheets for Datasets.” *Communications of the ACM* 64 (12): 86–92.
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- Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D’Agostino McGowan, Romain François, Garrett Golemund, et al. 2019. “Welcome to the tidyverse.” *Journal of Open Source Software* 4 (43): 1686. <https://doi.org/10.21105/joss.01686>.