Scheduling Effects in the NBA and NHL

Justin B. Post, Len Stefanski and Jason A. Osborne
Dept. of Statistics, N.C. State University

Introduction

The NBA’s ‘Back-to-Back Problem: ‘Bad? It’s Your Job, Man!’

The previous paragraph illustrates that scheduling has an impact on win probability in NBA games. This is due to various factors, including player fatigue and the adaptation of team strategies. The impact of schedule difficulties, such as back-to-back games, on win probability is not fully understood, and this study aims to address this gap in knowledge.

Data Sources

- pro-basketball-reference.com
- covers.com
- hockey-reference.com

A study was conducted to evaluate the performance of NBA and NHL teams when playing on consecutive days. The results indicated that teams who played yesterday had a lower win probability compared to teams who were idle. This was observed in both the NBA and NHL, with findings suggesting that teams located in the Western conference were more likely to have played yesterday.

Parameter Estimates

The results of the study showed that the scheduled advantage in the NBA was significantly different from the NHL. The advantage of the team rested was 0.5 points, while the advantage of the team not rested was 0.3 points. These findings are consistent with previous studies that have observed a home court advantage for NBA teams.

Overnight effects

- For betting the over/under, including overtime effect debiases estimators of team capacities to score and give up points.
- Forecasting today’s game using data til yesterday with/without OT effect

Findings

- Broad takeaways: (1) Fatigue explains some home court and a lot of home ice advantage in both (NHL/NBA).
- Who’s at home matters—explanations vary more than who’s visiting.

References


Overtime effects

- For betting the over/under, including overtime effect debiases estimators of team capacities to score and give up points.
- Forecasting today’s game using data til yesterday with/without OT effect

Schedule Advantage

- Team rested, Team tired, Opp rested, Opp tired

Regional advantages in the NBA

- Adjusted margin of victory
- Adjusted win probability

Linear and generalized linear models

For a given season, linear models for margin of victory $Y$ with factorial effects for yesterday and team:

$$Y_i = \beta_0 + \sum_1^n \beta_i x_{i1} + \sum_1^n \beta_{1i} x_{i2} + \sum_i x_i \beta_{2i} + \sum_i x_i \beta_{3i} + \epsilon_i \quad x = x_{i1}, x_{i2}, x_{i3}$$

Fatigue effects

- Model then pools over last 4 seasons, with team effects nested in season.
- $\beta_i, \beta_{1i}$ - indicators for which home, visiting team, $x_{i1}, x_{i2}, x_{i3}$ indicators for playing yesterday

Similarly for win probability ($w_i$) models, with $\log \left( \frac{w_i}{1-w_i} \right) = x_i \beta_i$