



Quantifying Which NBA Coaches Get the Most Out of Their Players

Shane Faberman¹, Kendall Thomas¹, Mario Giacomazzo¹

¹Department of Statistics and Operations Research, Sports Analytics Intelligence Lab, University of North Carolina, Chapel Hill, 27599, USA

Background

In the NBA, coaches play a crucial role for their team through in game strategy, player development, and managing team dynamics. However, very few metrics exist that measure coaching performance. This study creates a metric that measures how well players perform relative to expectation, thereby assessing which coaches get the most out of their players. This approach estimates the impact of a coach's system more objectively than solely focusing on the coach's record, as it is less dependent on non-coaching related variables.

Methods

Data for this study was scraped from Basketball Reference² for the 2015-16 to 2024-25 seasons. A qualifying player played 1000+ minutes in season N and 500+ minutes in season N-1 (besides rookies) to ensure the sample size was large enough to have an accurate Box Plus-Minus (BPM).

- **BPM** is a one-number metric based on the box score that estimates a player's contribution to the team when that player is on the court³.
- For a player P at age n, **EBPM** (Expected BPM) is defined as:

$$EBPM_n(P) = BPM_{n-1}(P) + X_n \cdot Y(P)$$

- **X_n**: percent change in BPM from players in their age n-1 season to their age n season with a loess model (span = 0.7) applied.

- **Y(P)**: adjusting value: $\frac{1}{1 + |z\text{-score of } BPM_{n-1}|}$ which is used because players farther from the mean follow less traditional age curves.

- **Rookie EBPM**: calculated using a logarithmic model on mean rookie-season BPM by draft selection.

$$\bullet \text{BPM Over Expected (BOE)} = BPM - EBPM$$

- **BOE_{before}** = Mean BOE for players who played for a coach in season N and a different coach in the season N-1 (includes rookies).

- **BOE_{after}** = Mean BOE for players who played for a coach in season N and a different coach in the season N+1.

Results

How Well Did Preseason Coaching Rankings Assess Coaching Performance?

Bubble color represents *higher* or *lower* predicted BOE based on media rankings compared to actual BOE.

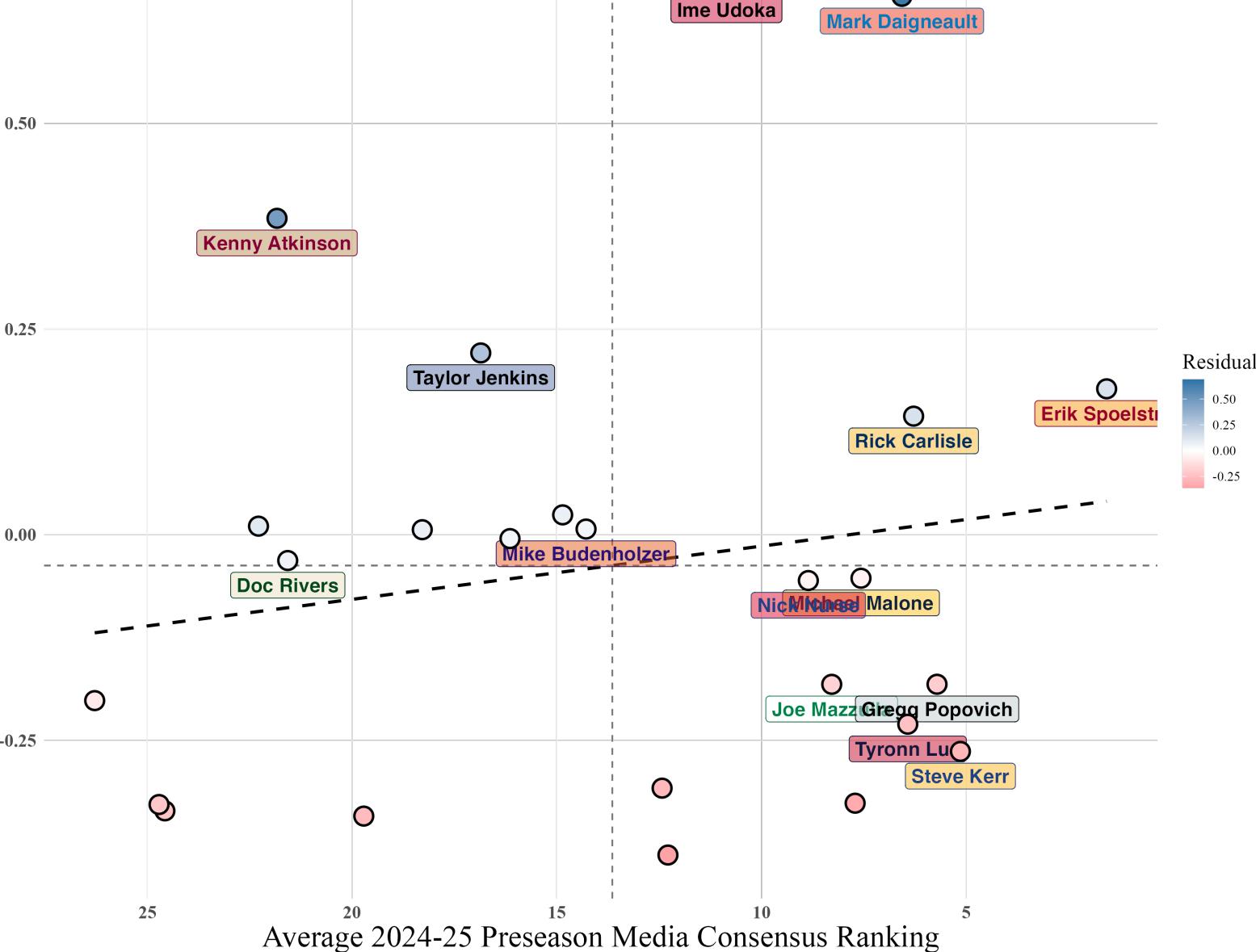


Figure 1: Comparing active coaches' media ranking⁴ from this preseaso to their overall BOE. Coaches with only one season of experience excluded.

Which Coaches Have the Most Immediate Impact on Players?

Dot size represents total qualifying players

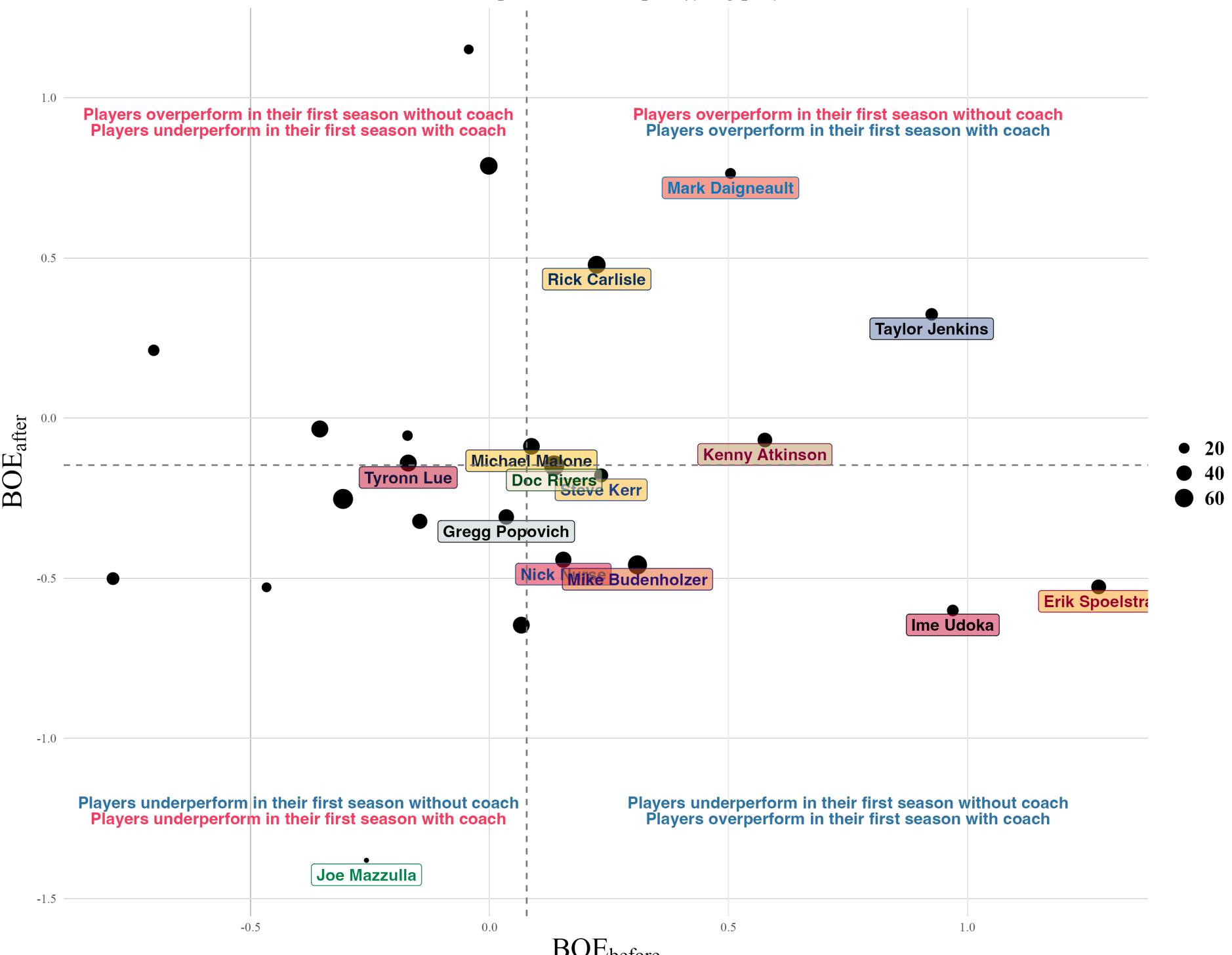


Figure 2: Coaches can only elevate a roster for so long. This figure shows which coaches have the best immediate impact on players. Coaches with only one season of experience excluded.

Conclusions

- Fans and media likely give too much credit to coaches for championship-winning teams.
- Coaches for teams in smaller markets tend to be underrated.
- Erik Spoelstra is the consensus best coach in the NBA due to how consistently players immediately improve when they first get to Miami.
- Despite success with both Boston and Houston, Ime Udoka has remained underrated and deserves to be associated with elite coaches.
- The Grizzlies decision to fire Taylor Jenkins three weeks before the playoffs was extremely puzzling.

Future Directions

- BOE is only a regular season metric, and a championship can only be won in the postseason. To fully evaluate coaches, regular season and postseason performance both must be considered.
- BPM is not as highly regarded as other all-in-one impact metrics and was used because it's free and readily available.
- Coaches are given all the credit for the performance of rookies, but in practice some of this credit should be given to front offices for drafting these players.

Potential Impact

- Front offices could use BOE as a tool to evaluate their coach with regards to extending their contract or firing them.
- Looking at BOE for inactive coaches could help determine the top candidates with head-coaching experience.
- A coach's BOE could be used as an input for a larger model to predict player improvement for an upcoming season.

Full Paper/References:

