



# Quantifying the Impact of Current NBA Coaches

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## 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 Reference<sup>2</sup> for the 2015-16 to 2024-25 seasons. Data collection for this season was stopped in March due to time constraints. 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 solely on the box score that estimates a player's contribution to the team when that player is on the court<sup>3</sup>.
- 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<sub>n</sub>**: 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.

- **BPM Over Expected (BOE) = BPM - EBPM**
- **BOE<sub>before</sub>** = Mean BOE for players who played for a coach in season N and a different coach in the season N-1 (includes rookies).
- **BOE<sub>after</sub>** = 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.

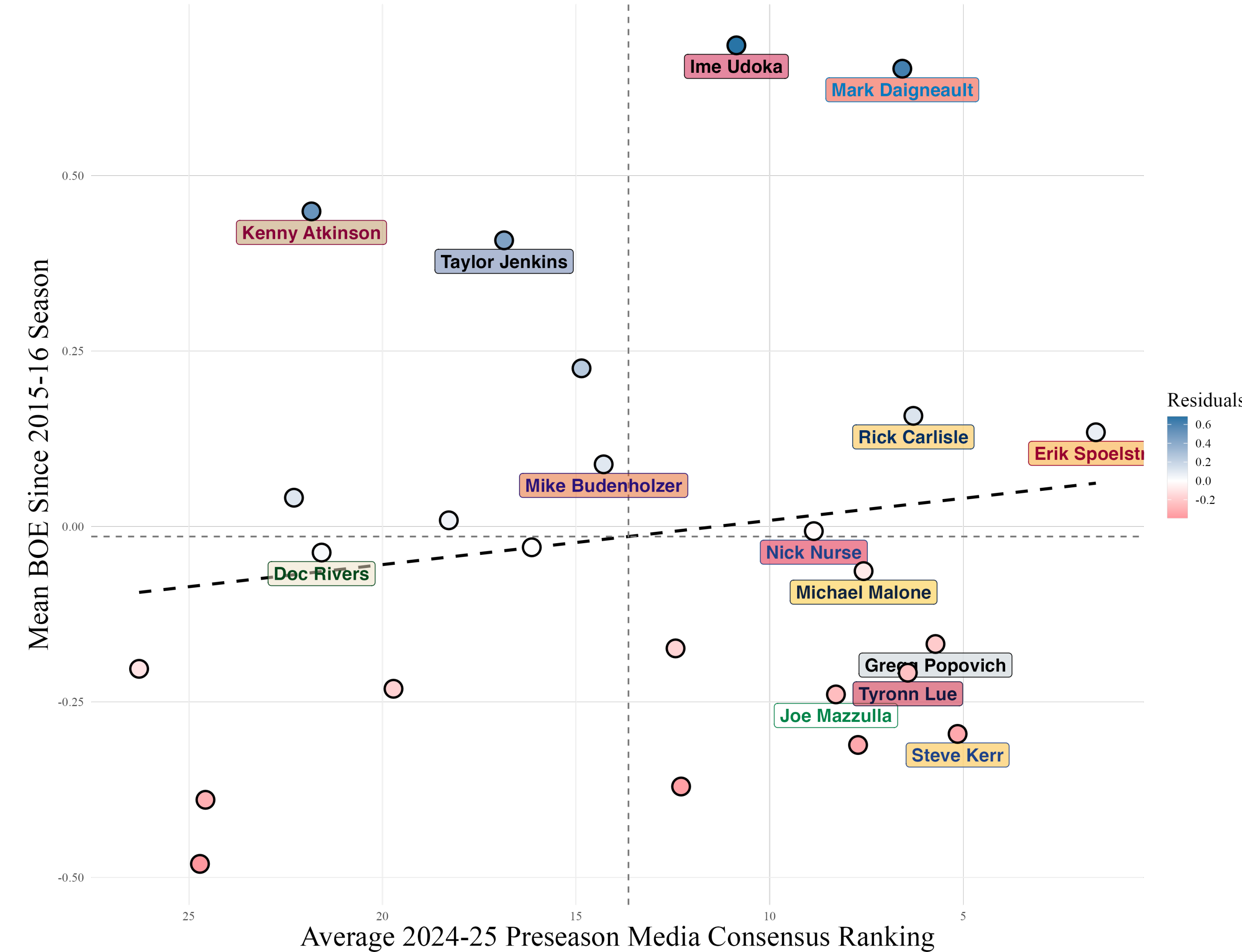


Figure 1: Comparing active coaches' media ranking<sup>4</sup> from this preseason to their overall BOE. Coaches with only one season of experience excluded.

### Which Coaches Have the Most Immediate Impact on Players?

Dot size represents total qualifying players

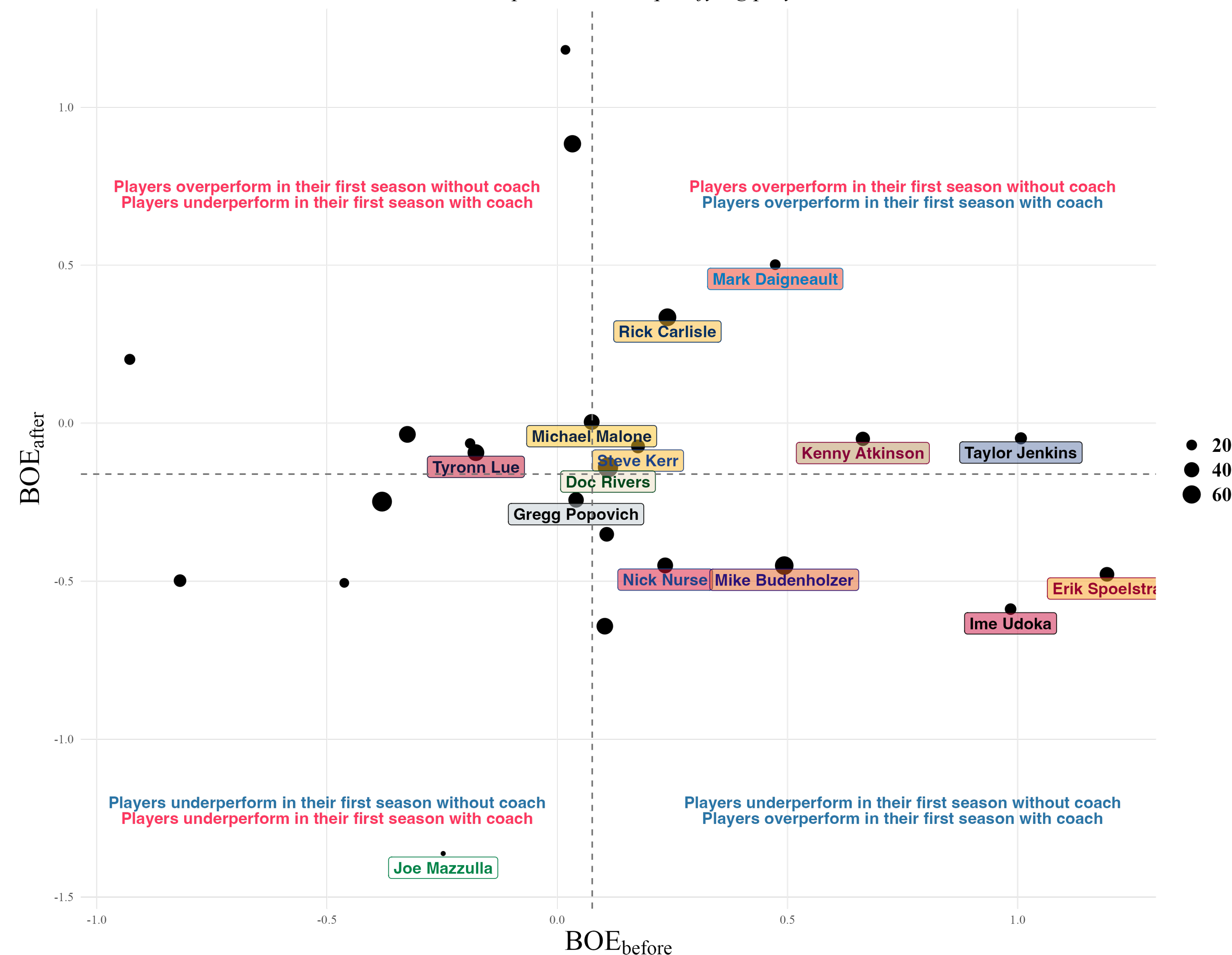


Figure 2: Coaches can only elevate a roster for so long. This figure shows which coaches have the best immediate impact on players. Coaches with only one season of experience excluded.

## 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 is 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.

References/Additional Information:

