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DSC 680

# Milestone 3 – Final White Paper

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## Regular vs. Postseason: How Do NBA Teams' Performances Change in the Playoffs?

### Business Problem

Regular-season success only partially foretells postseason outcomes. Coaching staffs and front offices need a clear, evidence-based view of how regular-season performance travels to playoff series and how big the typical shift is. This paper quantifies the gap between regular-season and playoff win percentage at the team-season level and assesses how that translation varies by team strength.

### Methods

We created five descriptive visuals: regular vs playoff win% with a 45° reference; histogram of  $\Delta$ ; league-median  $\Delta$  trend;  $\Delta$  vs regular-season win%; and playoff win% vs regular-season win% with a linear fit. These highlight translation and variability without imposing strong causal structure.

### Analysis

Playoff win% is positively related to regular-season win%, but there is visible spread around the identity line.  $\Delta$  concentrates near zero with balanced tails. Median  $\Delta$  varies across seasons.  $\Delta$  vs regular-season strength suggests stronger teams tend toward small negative-to-neutral  $\Delta$ , while mid-tier teams show wider dispersion.

### Conclusion

Regular-season strength matters but does not fully determine playoff outcomes. Planning should assume partial translation with uncertainty bands, not a guaranteed carryover. The practical takeaway for coaches and front offices is to build *matchup-resilient* profiles—creation, spacing, turnover control, defensive scheme flexibility—rather than relying on regular-season dominance alone.

### Assumptions

- The Kaggle exports correctly reflect team wins/losses.

- Standardizing seasons to the end year is appropriate for alignment.
- Win percentages are comparable across seasons of varying length after normalization.

## Limitations/Challenges

- No possession-adjusted efficiency (e.g., net rating, four factors), lineup data, opponent quality, injuries, or coaching changes.
- Some playoff fields differ by season; teams without playoff games are absent from playoff-dependent charts.
- Small playoff sample sizes increase variance;  $\Delta$  approximates “translation,” not causation.
- Harmonizing column names across files; standardizing franchise names across relocations/renames.
- Ensuring  $\Delta$  is computed only when valid playoff data exist and avoiding double counting across seasons.

## Future Uses / Additional Applications

- Add opponent-adjusted models (e.g., playoff SRS or opponent seed), net rating, and four factors to explain more variance.
- Analyze  $\Delta$  at the series level and by round; decompose translation for specific profiles (elite offense vs. elite defense).
- Extend the framework to WNBA, EuroLeague, or NCAA tournaments.

## Recommendations

- Treat regular-season win% as a baseline expectation for the playoffs, but explicitly budget for translation variance.
- Prioritize skills that travel—shot creation, spacing, decision-making under pressure, and turnover suppression—over superficial regular-season margins.
- Retain cohesive cores to stabilize rotations, and build matchup-specific contingency lineups.

## Ethical Assessment

All computations are at the **team** level and use public historical data. Results are descriptive; they should not be used to justify individual employment decisions. Communication will avoid causal claims and emphasize uncertainty.

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## Q&A — 10 Questions with Short Answers

How much variance remains after conditioning on regular-season strength?

A lot—translation is noisy. The linear relation is positive but far from perfect; expect wide residuals.

Do elite regular-season teams translate better?

On average yes, but the slope  $< 1$  and tails still exist. Elite teams face harder opponents and regression to the mean.

Could opponent quality or seeding explain  $\Delta$ ?

Likely. Adding opponent-adjusted variables should shrink residual variance and clarify over/under-performance.

Any franchises systematically over/underperform?

This analysis is league-level; a franchise fixed-effects add-on could test that in future work.

How sensitive to shortened seasons?

Shortened seasons increase variance and can skew  $\Delta$ . Era/season dummies can help control for this.

What if we analyze by round rather than aggregate?

Round-level  $\Delta$  would reveal where translation breaks down most (e.g., Conference Semifinals vs. Finals).

Which efficiency factors would help predict  $\Delta$ ?

Likely eFG% and turnover rate (both ways), plus lineup continuity and shot creation under pressure.

Conference or travel effects?

Possible; not tested here. Add conference/travel indicators to evaluate.

How would injuries change conclusions?

Materially—injuries can dominate  $\Delta$ . Integrating injury and availability data is a key future step.

What's the practical magnitude of  $\Delta$ ?

Rule-of-thumb: a  $\pm 0.10$  swing in  $\Delta$  across a 7-game series can swing a series outcome for evenly matched teams; exact impact depends on matchup.

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Figure 5. Playoff win% vs regular-season win% with linear fit.

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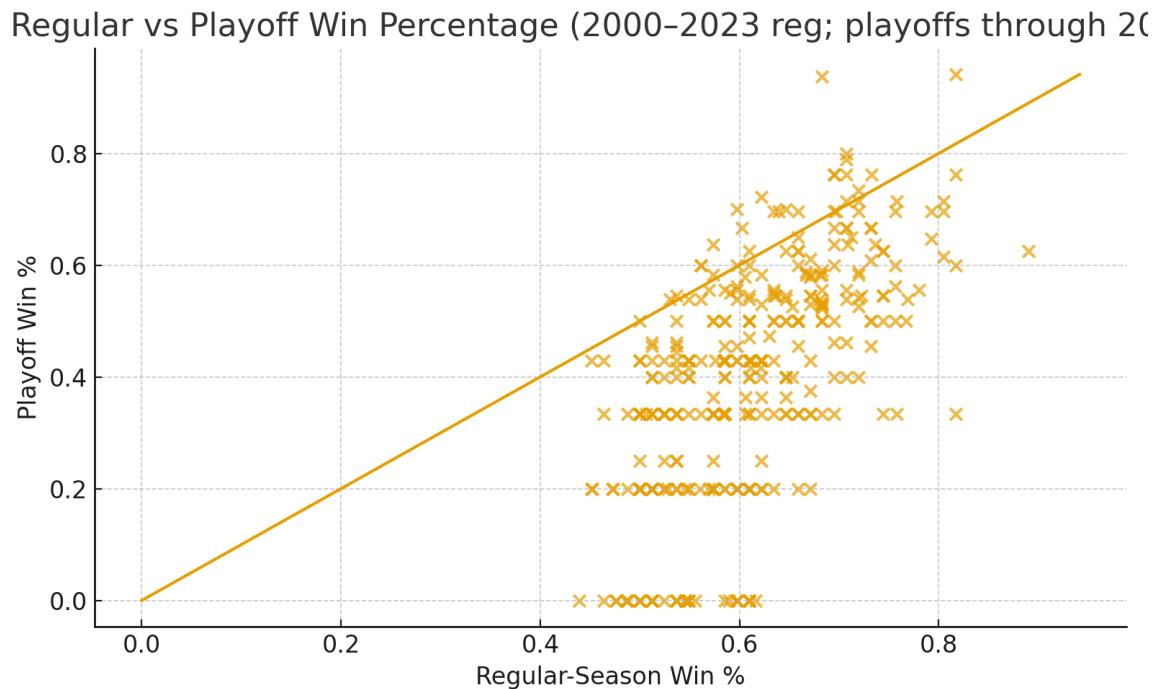


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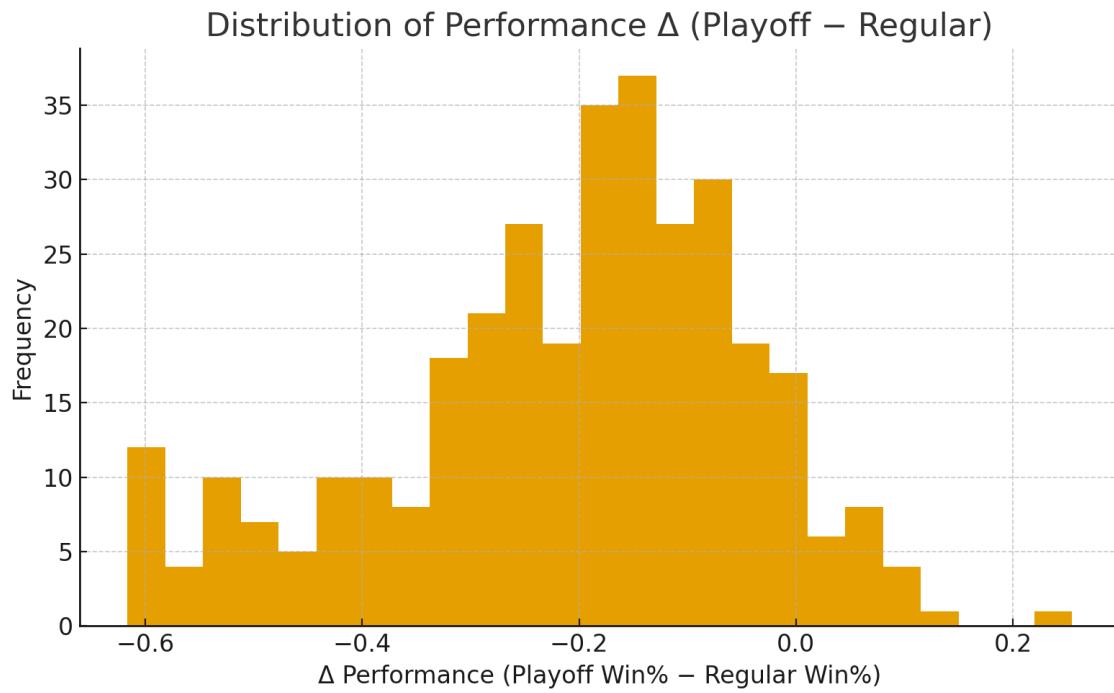


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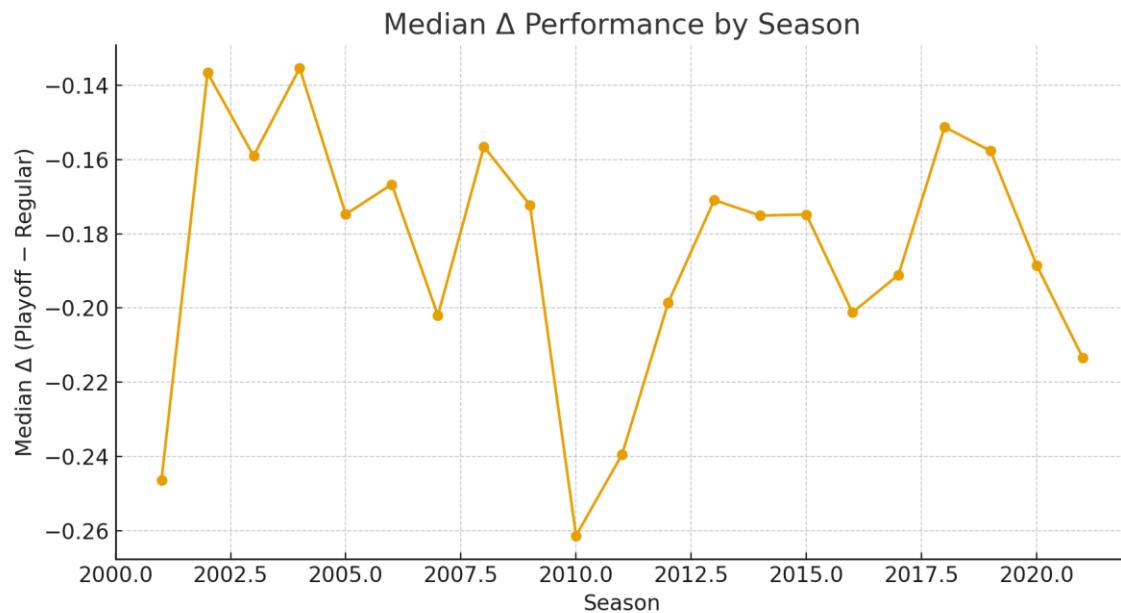


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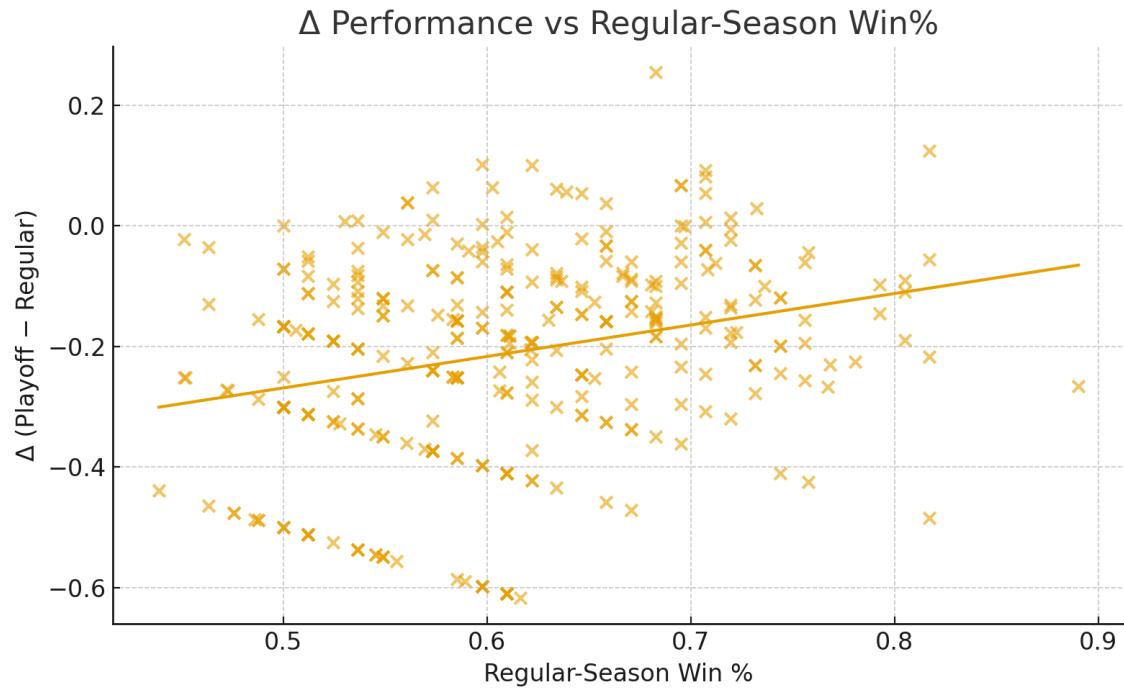


Figure 4.  $\Delta$  Performance vs regular-season win% with linear fit.

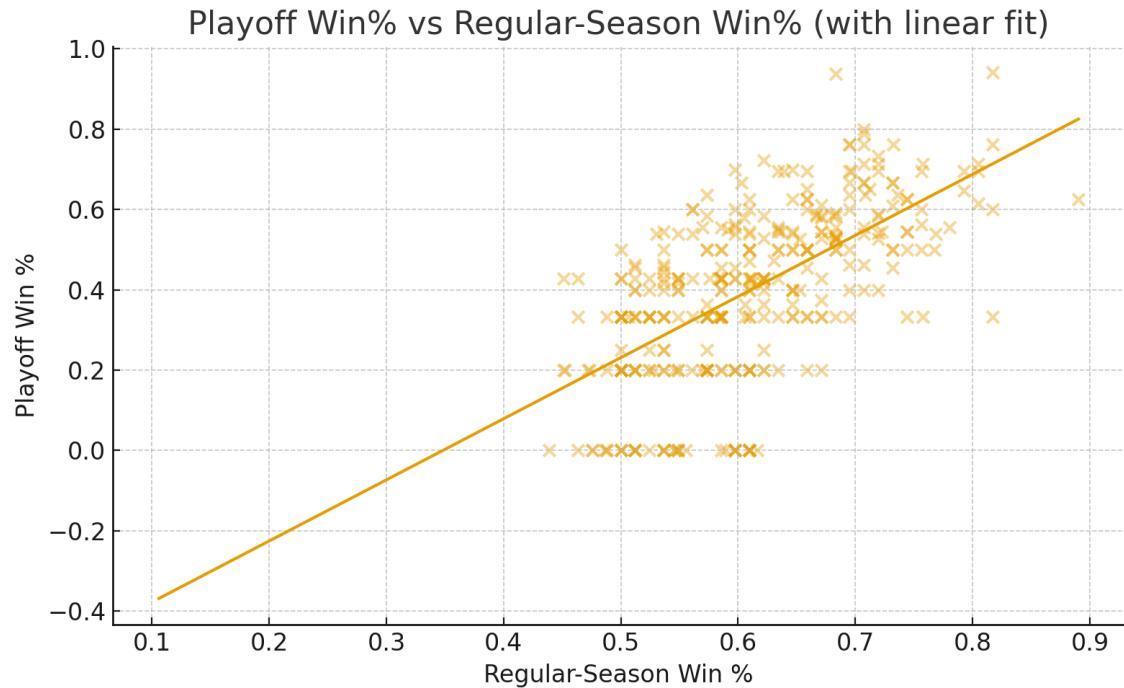


Figure 5. Playoff win% vs regular-season win% with linear fit.

## **References (APA)**

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