99 Problems But A Pitch Ain’t One: Is there a home-field advantage in baseball?

The Outliers Group



Research Question

In the MLB 2025 season, how do different statistics relate to winning, and how do these relationships differ between home and away games?

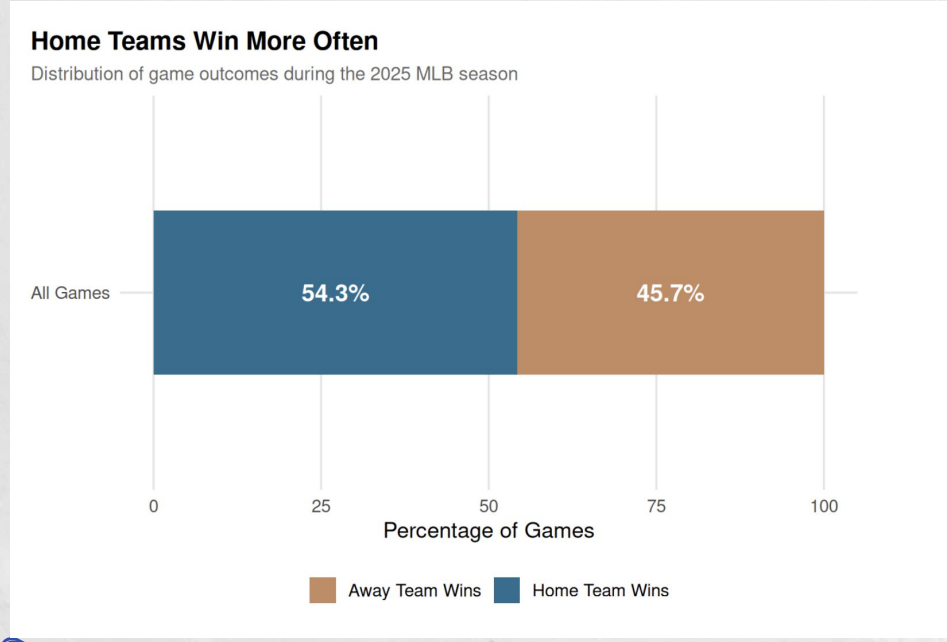


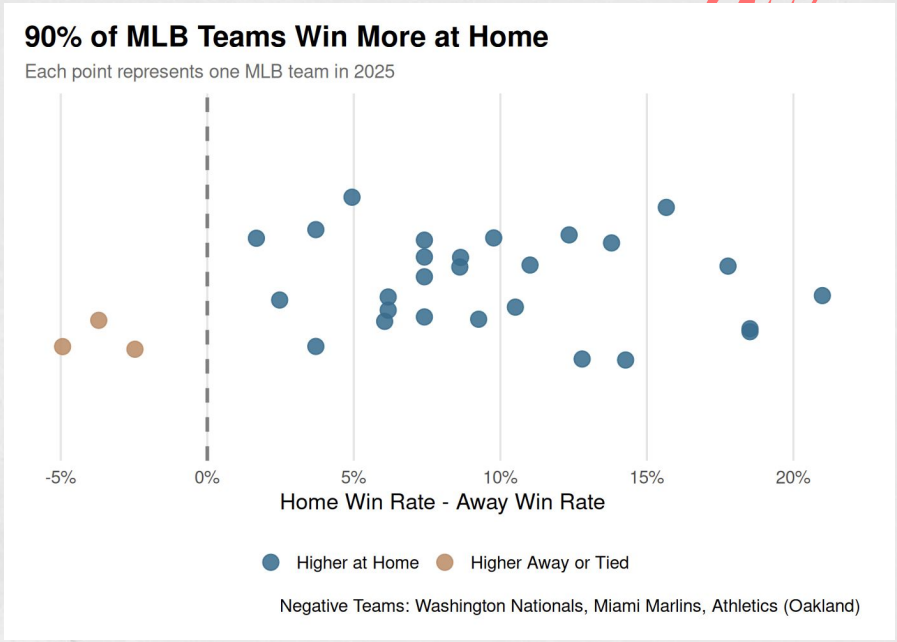


Data Introduction

- 2025 MLB team statistics dataset from Retrosheet
- Each observation = one team’s performance in an individual game
- Cleaned data by selecting relevant variables and excluding All-Star observations
- Analyzed team performance by calculating home and away average statistics and win percentages.

Home and Away Differences

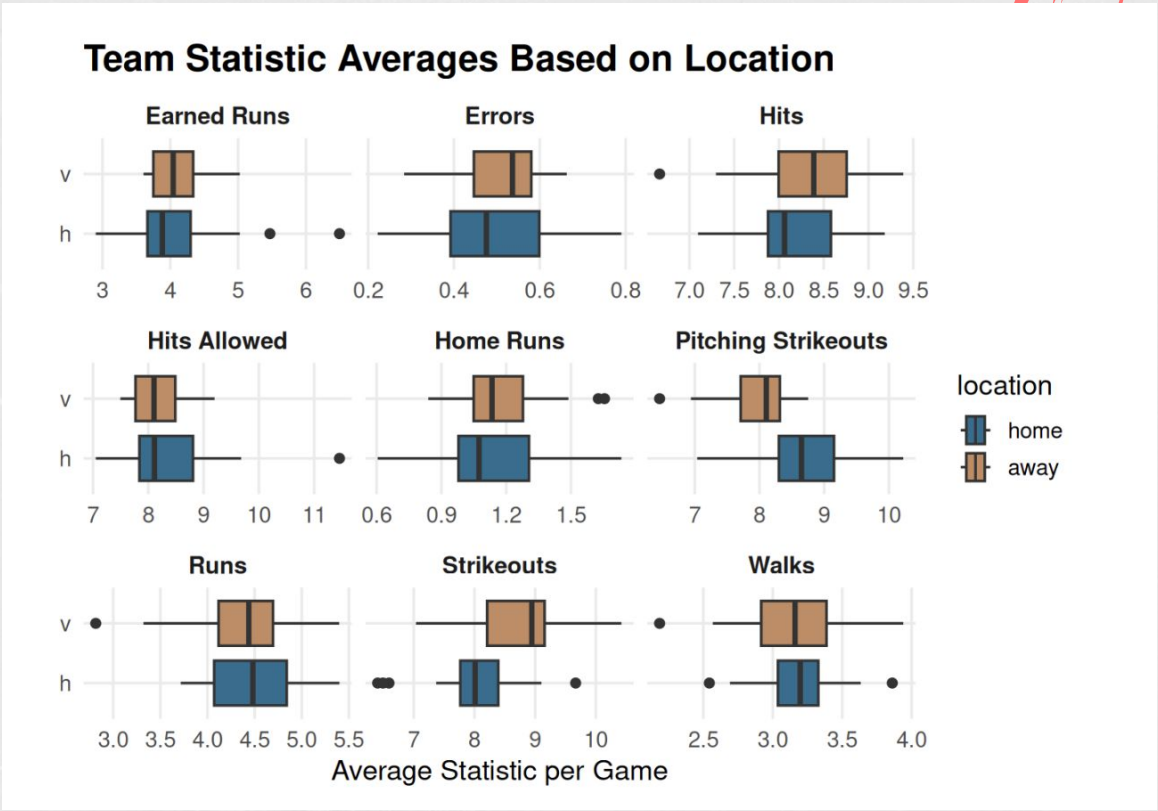




- Home teams won 8.6 percentage points more games than away
- Most teams (90%) showed positive home-away win rate differences

Statistics Differ Based on Location

- Shows that there is variation between home and away stats
- Home teams have more pitching strikeouts and less batting strikeouts



Finding Correlations

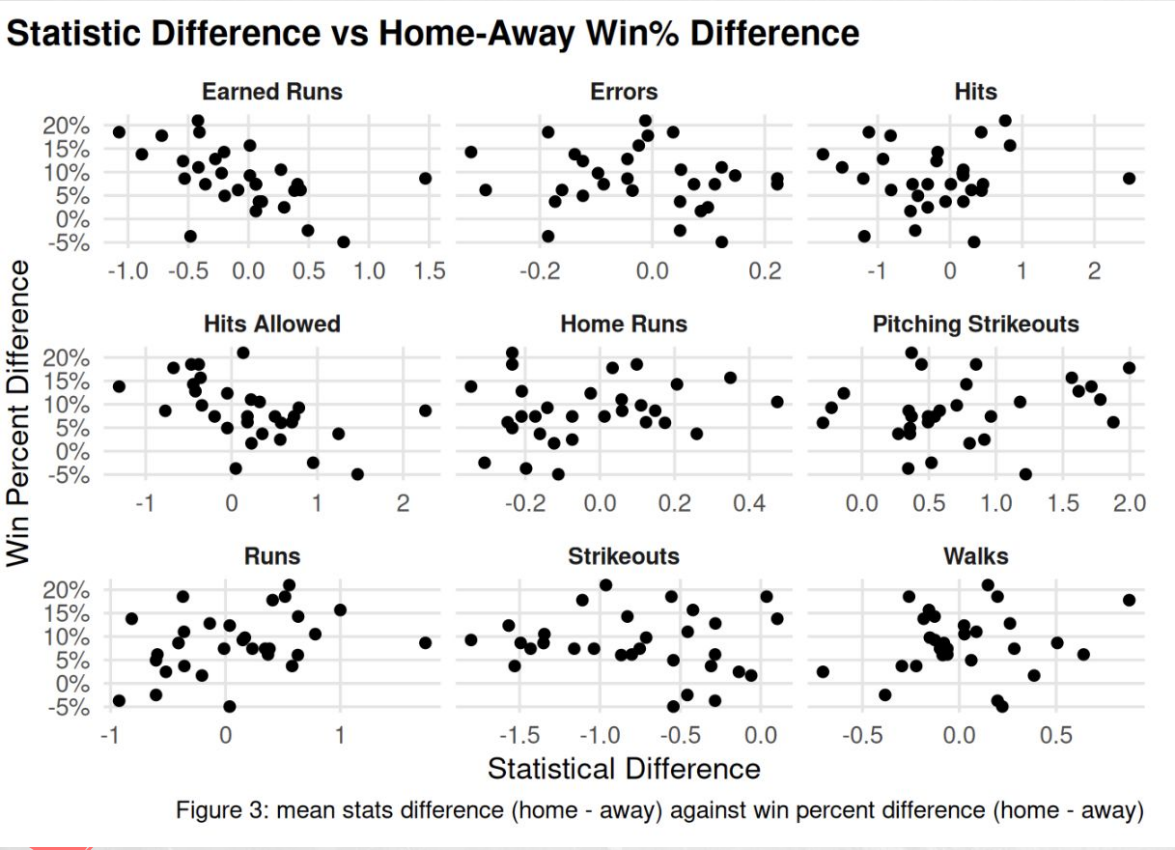
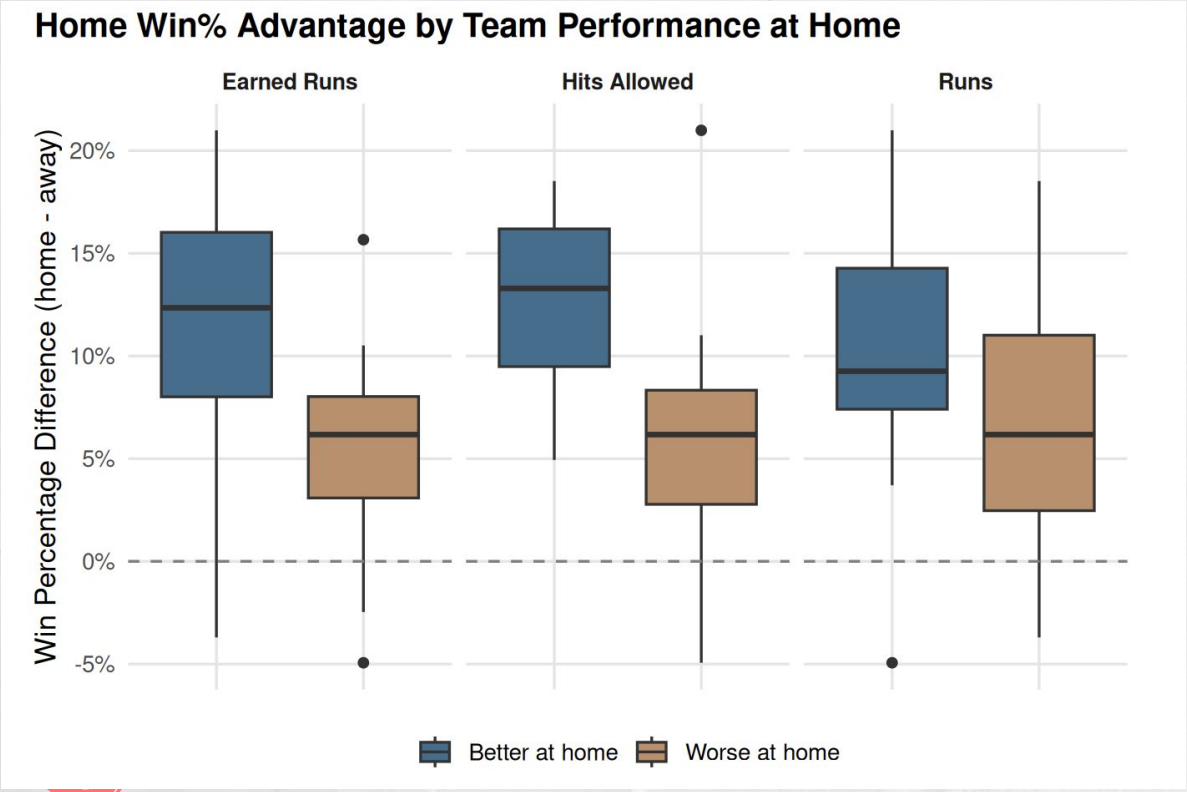


Figure 3: mean stats difference (home - away) against win percent difference (home - away)

- Earned runs, hits allowed seem to have a negative correlation
- Runs has a slight positive correlation
- The stats that had the largest variation from home and away did not correlate
- Outliers

Key Variables Analysis



- Looking at the three variables that showed correlation
- Better at home was determined by <0 for earned runs and hits allowed; > 0 for runs
- Hits allowed middle 50% didn't overlap

Median home – away win %

	Better	Worse
Earned runs	12.3%	6.2%
Hits allowed	13.3%	6.2%
Runs	9.3%	6.2%

Discussion and Limitations

Findings/Main Takeaways:

- Home teams won **54.3% of games**
  - 27 out of the 30 teams showed a higher home win rate
- No single statistic explains the advantage
- Run prevention showed the clearest link; run scoring showed a weaker relationship

Limitations:

- 2025 MLB season and only 30 teams
- Ballpark locations

Future Work:

- Test weather patterns
- Compare seasons and fan conditions to explore crowd effect