Opportunities and Wins: A Study of Offensive Opportunity Creation and Winning in Major League Baseball

Rodolfo "Rudy" Gomez

Assistant Baseball Coach, University of North Florida

M.S. Analytics, Villanova University

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Abstract

Modern baseball increasingly tolerates strikeouts in exchange for power production. This study explores whether creating additional opportunities for run production is more closely associated with winning than an offensive profile characterized by greater totals of strikeouts and home runs. Using MLB play-by-play data, plate appearances were classified into Opportunity and Non-Opportunity events and compared against actual game outcomes. The objective was not to measure offensive production directly, but rather to determine which offensive profile is more strongly associated with winning baseball games.

Introduction

Baseball's analytical evolution has led organizations to place increasing value on outcomes commonly referred to as the "Three True Outcomes": strikeouts, walks, and home runs.

The underlying premise is that these events are influenced primarily by the interaction between pitcher and hitter while reducing the impact of defensive execution and batted-ball variance.

However, winning baseball games remains the ultimate objective. While strikeouts and home runs may be more stable individual events, it remains unclear whether teams that generate additional opportunities for run production are more strongly associated with winning than teams whose offensive profiles are characterized by greater totals of strikeouts and home runs.

This study attempts to answer a simple question:

Which offensive profile is more closely associated with winning baseball games?

Research Question

Does creating more offensive opportunities predict winning more effectively than an offensive approach characterized by strikeouts and home runs?

Methodology

Data Source

Major League Baseball play-by-play data was retrieved using MLB Stats API and analyzed using R.

Defining Opportunity

For each visiting and home team:

Opportunity = PA – K – HR

Where:

PA = Plate Appearance

K = Strikeouts

HR = Home Runs

This metric represents how frequently an offense creates additional opportunities for run production rather than ending the plate appearance in either a strikeout or homerun. The metric does not attempt to assign value to the resulting event but instead measures the frequency with which opportunities for additional run -producing events are created.

It is important to note that home runs are not excluded from game outcomes. Home runs contribute fully to run scoring and winning. The Opportunity metric simply excludes home runs from its calculation because the event immediately resolves the plate appearance rather than creating an additional opportunity for subsequent run-producing events. Team success is always evaluated against the actual game winner. This is not a balls in play versus home runs. It is opportunities for additional run production versus plate appearances resolved immediately by strikeout or home run.

Defining Non-Opportunity

The inverse metric was defined as:

Non-Opportunity = K + HR

Because:

PA = Opportunity + Non-Opportunity

This metric represents plate appearances that are immediately resolved by either a strikeout or home run, rather than creating additional opportunities for run production.

Prediction Rule

For each game:

Team with greater Opportunity was selected as the predicted winner.

Inverse Prediction Rule

Team with greater Non-Opportunity was selected as the predicted winner.

Predictions were compared to actual game outcomes.

Games with incomplete outcome data were excluded.

Hypothesis

Null Hypothesis

There is no meaningful difference between Opportunity and Non-Opportunity metrics in their association with winning baseball games.

Alternative Hypothesis

Teams generating more offensive opportunities will be associated with winning more frequently than teams generating greater Non-Opportunity totals.

Unit of Analysis

The unit of analysis in this study was the team observation rather than the game. Each game generated one observation for the home team and one observation for the visiting team. After excluding observations associated with incomplete game outcomes, the 500-game sample produced 908 evaluable team observations.

As a result, prediction accuracy was calculated using team observations rather than total games.

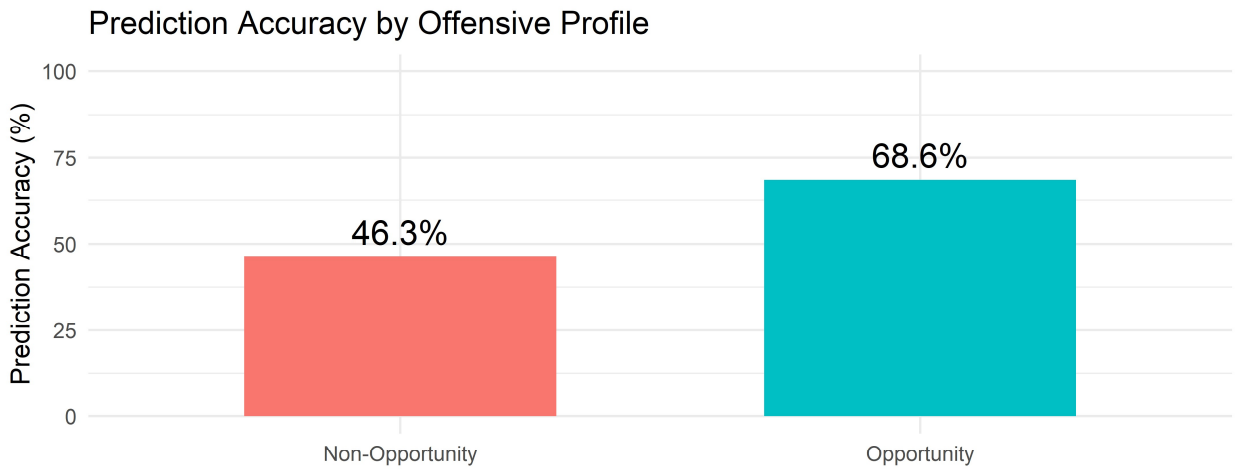
Initial Results

A sample of 500 Major League Baseball games was evaluated using both the Opportunity and Non-Opportunity models.

The Opportunity model correctly identified the winning team in 623 of 908 evaluated observations, producing an accuracy rate of 68.61%.

The Non-Opportunity model correctly identified the winning team in 420 of 908 evaluated observations, producing an accuracy rate of 46.26%.

Metric	**Correct Predictions**	**Incorrect Predictions**	**Prediction Accuracy**
Opportunity (PA - K - HR)	623	285	68.61%
Non-Opportunity (K + HR)	420	488	46.26%



The Opportunity metric substantially outperformed its inverse. While both metrics are derived from the same underlying plate appearances, the offense generating more opportunities for continued run production was associated with winning considerably more often than the offense generating higher totals of strikeouts and home runs.

Conclusion

In a sample of 500 Major League Baseball games, teams generating greater Opportunity totals were correctly identified as the eventual winner 68.61% of the time. In contrast, the inverse Non-Opportunity metric correctly identified the winner only 46.26% of the time.

These findings suggest that the creation of additional opportunities for run production is more strongly associated with winning baseball games than an offensive profile characterized by greater totals of strikeouts and home runs.

The results do not suggest that home runs are detrimental to winning. Home runs remain fully represented in actual game outcomes and contribute directly to run scoring. Rather, the findings suggest that offensive environments generating additional opportunities for run production may have a stronger relationship with winning than plate appearances resolved immediately by strikeout or home run.

Additional research across complete seasons and multiple eras of Major League Baseball is warranted to determine whether this relationship remains stable over time.