TACSM Abstract

MLB Statcast Pitch Analysis: the Association between Active Spin and Opponent's Batting Average

ANTONIO ALVARADO, RANDALL SHARP, ASHLYN BROWN, ERIS WHITE, ISABELLE S. KUSTERS, & JULIANNA M. DEAN

Department of Clinical, Health, and Applied Sciences; University of Houston-Clear Lake; Houston, TX

Category: Masters

Advisor / Mentor: Dean, Julianna M. (deanj@uhcl.edu)

ABSTRACT

Baseball has often been described as a game of statistics and strategy, and current technology allows detailed examination of the game. One statistic measured concerning the movement of the ball is spin rate, the rotations per minute created by the pitcher when the ball is released from the hand. However, recent research has not examined the inclusion of pitchers' spin rate in batter strategy. **PURPOSE:** The purpose of this study is to see if there is an association between the movement of breaking balls with the batting average of Major League Baseball batters. **METHODS**: A sample including 76 elite Major League Baseball pitchers, all male (age = 30.12 ± 3.68, mean ± sd), were taken from the 2019 MLB regular season using Statcast, Pitch F/x, and Trackman cameras. Statcast is used in Major League Baseball and collects the pitcher's data revolving around their pitches (e.g., active spin, speed, whiff). Pitchers who had thrown a minimum of 2,500 pitches were included. The outcome was batting average, an aggregate number based on the number of players who faced an individual pitcher during the season. We performed multivariable linear regression models to regress batting average on curveballs and sliders separately. Covariates for assessment included pitcher demographics, active movement of the pitch, spin rate of the pitch, hits, at bats, percent of breaking balls thrown, pitch velocity, and number thrown versus right- and left-handed batters. **RESULTS**: After regression assumptions and steps were satisfied, 43.7% of the variation in batting average could be accounted for by the active spin of the slider, the number of sliders thrown, pitching hand, and the pitcher's height. For every one-unit increase in active spin of the slider, batting average significantly decreased by 0.0013. Concerning curveballs, regression steps yielded a single-variable model, where 13.1% of the variation in batting average could be explained by the number of curveballs thrown. For every one-unit increase in the number of curveballs thrown, batting average significantly decreased by 0.00013. **CONCLUSION**: Variables significantly associated with batting average varied by whether a slider or a curveball was thrown; an increase in spin rate was significantly associated with a decrease in batting average for sliders thrown, but not for curveballs. The results of this study can be used by coaches as they prepare for games to enable the most favorable matchup between batter and pitcher. Future research should expand the timeline to include multiple MLB seasons to further corroborate these findings.