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This work was supported in part
by NSF Grant Number
DMS-1752692.

The Changing Criteria in Performance Based Salaries Across Eras of Major League Baseball

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Abstract

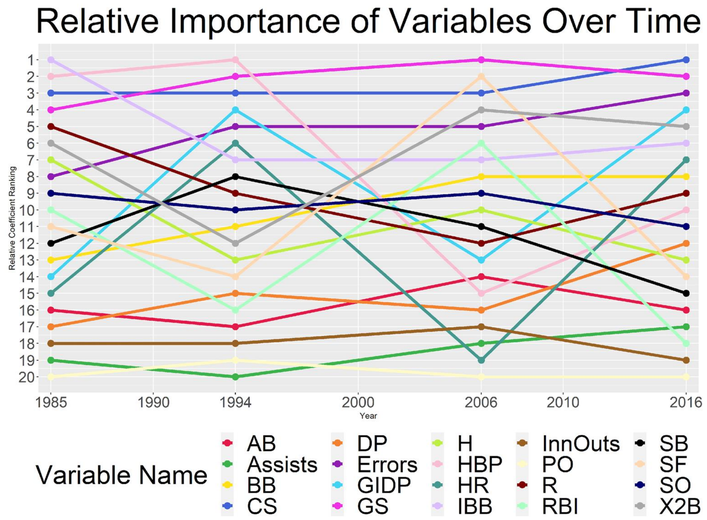
There is a consensus that the past 30 years of Major League Baseball can be split up into 3 major eras: The Free Agency Era (1977-1993), the Long Ball/Steroid Era (1994-2005), and the Post-Steroid Era (2006-present). Each different era defined the worth of non-pitchers to coaches and scouts differently. This worth has affected how managers have paid those players in that time period. Across the eras, the criteria used has changed. Using the Lahman Data Sets, we utilized multiple regression analysis to quantify which aspects of a player's performance affect his salary the most for each of these eras.

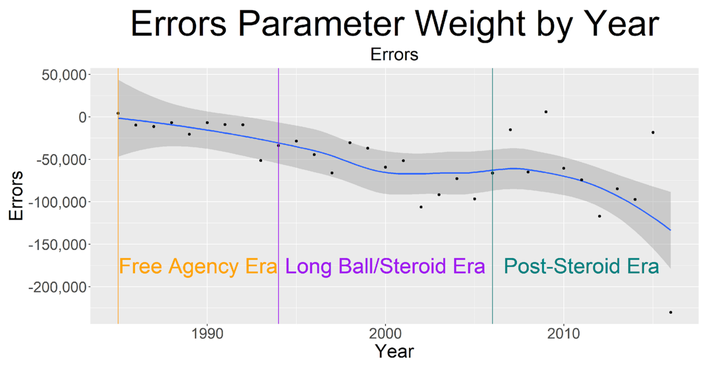
Methodology

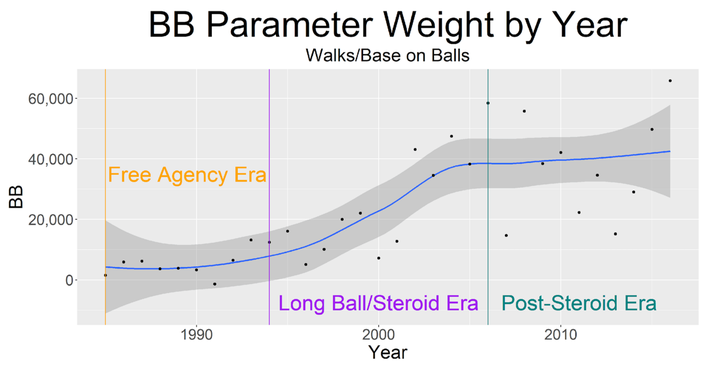
Using data from the Lahman Data Sets, we cleaned the data and then partitioned it by year. Then we performed multiple regression analysis to create models for every year between 1985 and 2016. Finally, visualizations were created to show how the coefficients of these regression models changed over time. All analysis and visualization was performed using R in R Studio

For A More In-Depth Analysis, Scan the QR Code

Visualizations







Findings

Across all 3 eras, one consistent finding was that good offense rewards players with a higher salary than good defense does. This can be found by looking at the top chart and noticing how the statistics such as Hits, Doubles, and Homeruns are of higher relative importance than variables such as Assists and Putouts.

In contrast, poor defense punishes players more severely than poor offense does. Looking at the second graph, the amount of money lost per year due to Fielding Errors has dramatically decreased from 1985 to 2016. During the same time span, the relative importance of the variable rose from 8th to 3rd out of 20 variables.

The final finding is the increased importance of walks (BB), especially during the early 2000s. This rise can be explained by the Oakland Athletics and the Moneyball movement in 2004.

For more information, scan the QR code in the bottom left corner.

Future Work

A natural extension of this project would be to do a similar type of analysis for pitchers. This would allow us to evaluate all players in MLB.

Another extension for this project would be to consider transforming the salary variable and considering other higher order models.