Cincinnati Reds Hackathon 2024

Pitcher Role Reversal

George Kolks

Alex Rivera

January 26th, 2024

Table of Contents

Background

The Problem:

Over the past ten years in Major League Baseball, the average number of innings a starting pitcher throws has decreased by around 0.8. Along with that, the number of appearances by relievers has grown from 478 to 526. With these developments, concern may be placed in whether pitchers are serving in a role that is suboptimal for maximizing their performance.

Our Solution:

Using the provided data and FanGraphs, we were able to identify a list of pitchers that could be due for a role change that could serve them more optimally. Our main objective with the data was to sort through it by writing a script in python that would highlight the big features. We developed a program that would search through the data titled "savant_pitch_level.csv" and filter out only the pitcher's name, the times faced, and the events that occurred. Although, when filtering the events, we realized that things like "grounded_into_doubleplay" and "field_out" along with many other out plays are included in the events. Therefore, in the list we created of all the events, we isolated the major hits like single, double, and so on. From there we created our own way of calculating a batting average using "cumulative_hits" / "cumulative_pa". Then, we used batting averages for each time the pitcher faced that batter and subtracted the differences to see which pitchers would struggle with consistency through multiple innings.

Our Findings

Starting Pitcher:

- Using the provided data, we define a starting pitcher to be a player who can last through approximately 5 innings with no, or very little, dip in ERA or Batting average.
- The starting Pitcher needs to have a large arsenal of pitches if he is to last through 5 innings or more.
- For example, Gerrit Cole, one of the best starting pitchers in the MLB, had an average of 6.33 innings pitched while still maintaining a season ERA of 2.63.

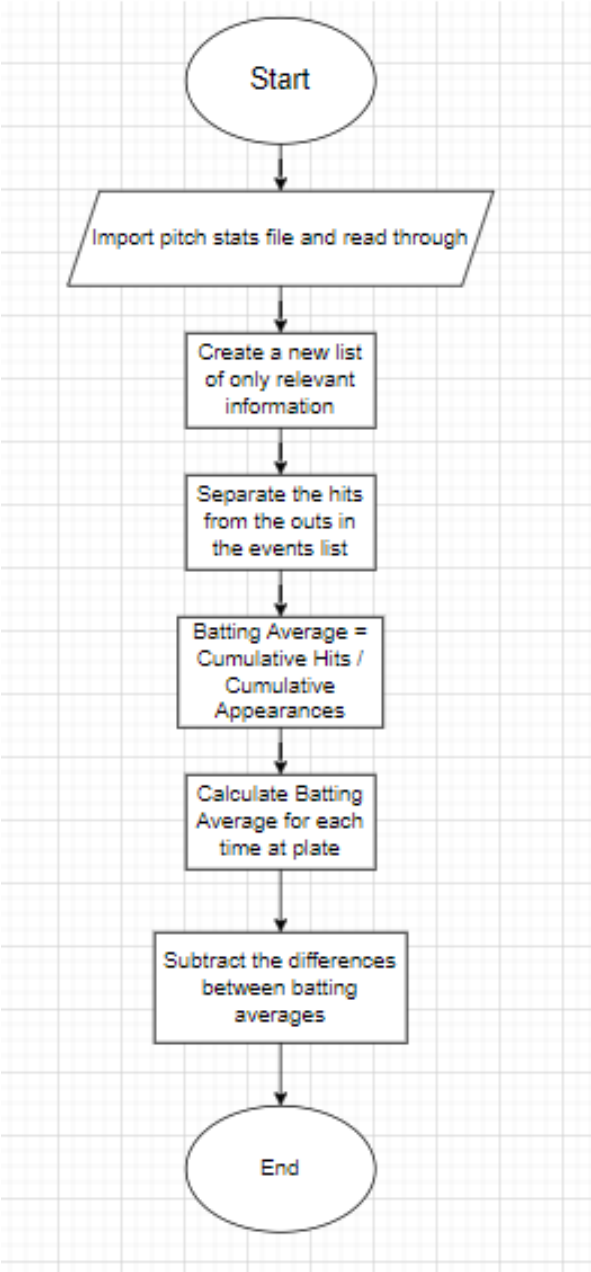
Relief Pitcher

- The relief pitcher is a very important role that can help navigate a team out of a tough situation. Relief pitchers typically only pitch around 1-2 innings but may be called upon in pivotal situations.
- Therefore, with the relief pitcher, we looked at the on base number to determine when they came up into the game vs when they left it. Being able to fight your way out of a tough situation is a very important factor.

Closer

- The closer is the definition of a one inning wonder. The closer needs to have some of the best pitches in the team that are most likely to throw the other team off.
- One big thing to look for in closers is either high velocity fastballs or perfected off-speed pitches. These pitches can lead to high strikeout rates and getting up in the count early.
- For example, Edwin Diaz, with a very high strikeout rate and very low ERA. Within the one inning he plays the game, he can be a gamechanger for the Mets.

Flow Diagram of Code



Players we investigated to make a switch:

Joe Boyle SP-RP

Lyon Richardson SP-RP

Grayson Rodriguez SP-RP

Eury Perez SP-CP

Sam Hentges SP-RP

Mike Minor SP-RP

Max Castillo SP-RP

Justus Sheffield SP-RP

Nick Martinez RP-SP

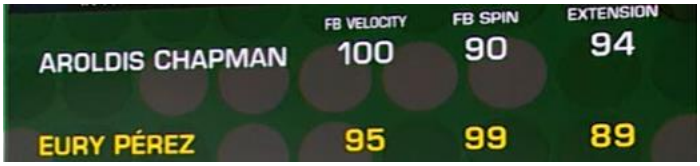
Eury Perez: One of the best closers we will never see

Background:

Eury Perez stands out as one of the more exciting pitching prospects we have witnessed in recent memory, characterized by his towering build and an explosive pitch mix. He can command his fastball well, which allows him to paint corners. He had one of the lowest batting averages after an 0-1 count. He becomes straight dominant when he gets ahead because of the way his fastball can keep hitters on the edge. Making his MLB debut at 20 years old, he looked stellar in the beginning of his outings but showed a lack of command and stuff when it mattered most later in the game. The first time through the order, hitters had a .183 batting average compared to the second time through they hit .261. His stats show that hitters can time him up better and he starts to lose his command late in the game.

	K%	HR/9	FIP	BallsThrown%
First Time Through	37.1%	1.27	3.33	34%
Second Time Through	21.4%	1.70	4.93	39%

Player Comparison: Aroldis Chapman



Eury Perez has a lot of similarities to Aroldis Chapman, from the arm angle to the pitch arsenal. What made Aroldis so scary was the eminent thought-out the game, that if you were losing a close game going into the 9th inning, you knew you were going to have to face the tall left-hander and be able to catch up to his fastball. If Eury were to become a closer, we predict that the same thing would happen due to his stature and his nasty pitches. Both like to throw sliders and a hard fastball with Chapman throwing a little harder, but Eury makes up for it with a better slider. Their throwing angles are very identical with a high leg kick to use their length to be able to extend their arms closer to the plate. They also do an excellent job of hiding the ball for as long as possible before they come to the plate.

The Outcome:

Eury's special arm would be better preserved with less usage as a closer rather than the influx of innings he would face as a starter. With more major league experience with high leverage situations, I could see Eury developing into an unstoppable closer who would become feared.

Nick Martinez

Background

Making his Major League debut in 2014 for the Texas Rangers, where he finished his rookie season as a starting pitcher with a 5-12 record and an ERA of 4.55. Martinez went on to later join the San Diego Padres for two seasons in 2022 and 2023. He would finish these seasons with a 3.47 and a 3.43 ERA respectively. As a formidable relief pitcher this made him of great interest for the Cincinnati Reds. He is a 5-pitch pitcher, that includes a nasty changeup he throws 28% of the time. He's got a very traditional pitching style which allows him to be consistent coming to the plate, which allows him to have a buildup of innings.

Why a switch?

Looking at his numbers from our database, we could see that Nick is very consistent and has little dip in numbers when it comes to the different times, he faced hitters. Last year Nick showed he could be a full-time starter, with an ERA of 2.32 as a starter and 4.12 as a reliever. His stuff is good and consistent enough to allow him to go out and give our favorite team 6 innings of <2 run baseball. In 2023 he got hitters to chase 33.6% of the time, which ranked him in the 92nd percentile of pitchers. Having a starter that can get hitters to chase even when their stuff is off is great. When it came to him being a reliever it just wasn't the same as Nick Martinez.

	BA	HR/9	WHIP
As a Starter	.183	.84	1.08
As a Reliever	.273	1.06	1.37

Player Comparison: Micheal Lorenzen

Micheal Lorenzen matches up with Nick Martinez well. Micheal is used primarily as a starting pitcher that can go out and give you good innings. They both have compact and quick to the plate throwing motions with similar multi pitch arsenals. One of the biggest things that strikes about these two guys is that they are very consistent. Neither of these guys are ace material, but they are solid back of the rotation pieces that when given the ball will go out and give you a quality start.

Outcome

The outcome of Nick switching to a starting pitcher would benefit the Reds organization. Being able to have a guy that you know will go out and give you 5+ innings of quality innings in the back of your rotation is great. When you have consistent guys like him you set yourself apart from other teams and especially in playoff situations, it gives you the upper hand.