The Fast Track or the Long Game?

Capturing the Efficiency of Minor League Progression per Path

By Josh Davis, Brady Stephens, Ava Gard, Cole Thomas, and Noah Pashman

Our Tasks

Path Comparison

How do the developmental outcomes of players differ between those who sign out of high school and those who attend college?

Player Archetypes

What types of players benefit most from each path, and what performance indicators support these distinctions?

2025 Draft Case

Which player drafted in 2025 may have chosen the wrong path, and what data-driven evidence supports that conclusion?

Analysis based on post-COVID pitch-by-pitch data across professional levels (MLB, AAA, AA, A, JC) and draft information from 2021-2025, collected using the provided R script

Lit Review

- After the 2020 5 round COVID draft, the MLB changed the draft to 20 rounds
- Players eligible for the draft:
  - American and Canadian high schoolers (including territories like Puerto Rico)
  - 4-year college players that have completed at least 3 years of school
  - Any junior college players
- For our model, we are only looking at players drafted after 2021 draft changes
- Since the implementation of bonus pools in 2012, teams have started drafting based on bonus demands rather than pure talent
  - For this reason we decided to no look at draft position when analyzing prospects

"The real mockery of the draft is no longer are the top-10-round picks the best-talented players… clubs were choosing players with less ability so they could sign them at well below slot."
- Scott Boras

Path Comparison

Minor League Progression Efficiency

Our Model

3 Components using PCA

- Max Level Reached
- Years until MLB Debut
- PA's / IP's in Minor Leagues

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Minor League Progression Efficiency

Age Adjusted Progression Efficiency

Additional Insight

Standardized Minor League Progression + **Standardized Draft Age** = **Minor League Progression Efficiency With Age**

Roman Anthony

- Draft Age: 18 (High School)
- Maximum Level: MLB
- Years To Debut: 3 (+1.5 over Avg.)
- Minor League PA’s: 1133
- Highest Age Adjusted Efficiency

Dylan Crews

- Draft Age: 21 (College Senior)
- Maximum Level: MLB
- Debut Age: 22
- Years To Debut: 1
- 2nd Highest Raw Efficiency

Path Comparison Methodology

XGBoost for Hitters and Pitchers

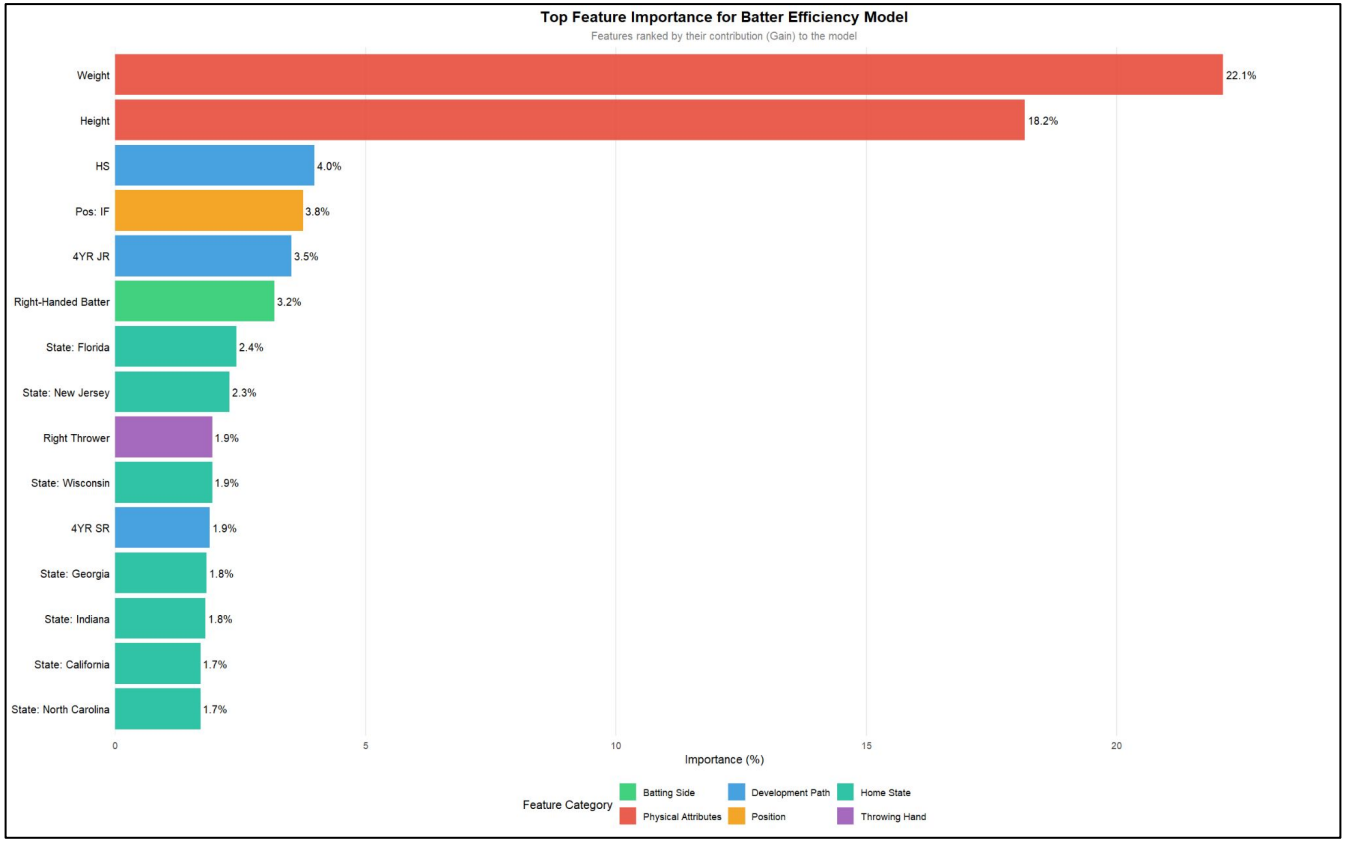
Hitters

- Path
- Height
- Weight
- Bat Side
- Throw Arm
- Position (C/IF/OF)
- Home State

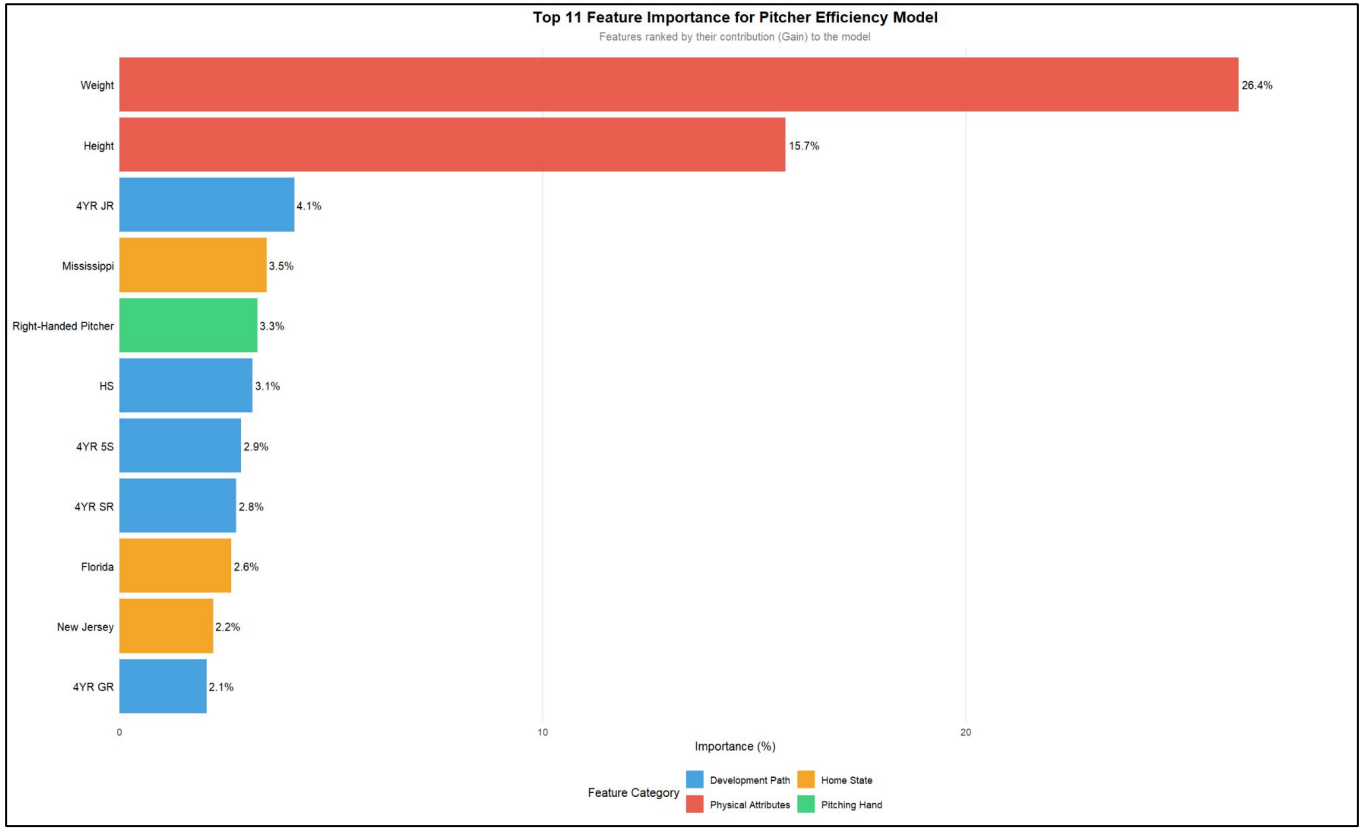
Pitchers

- Path
- Height
- Weight
- Throw Arm
- Home State

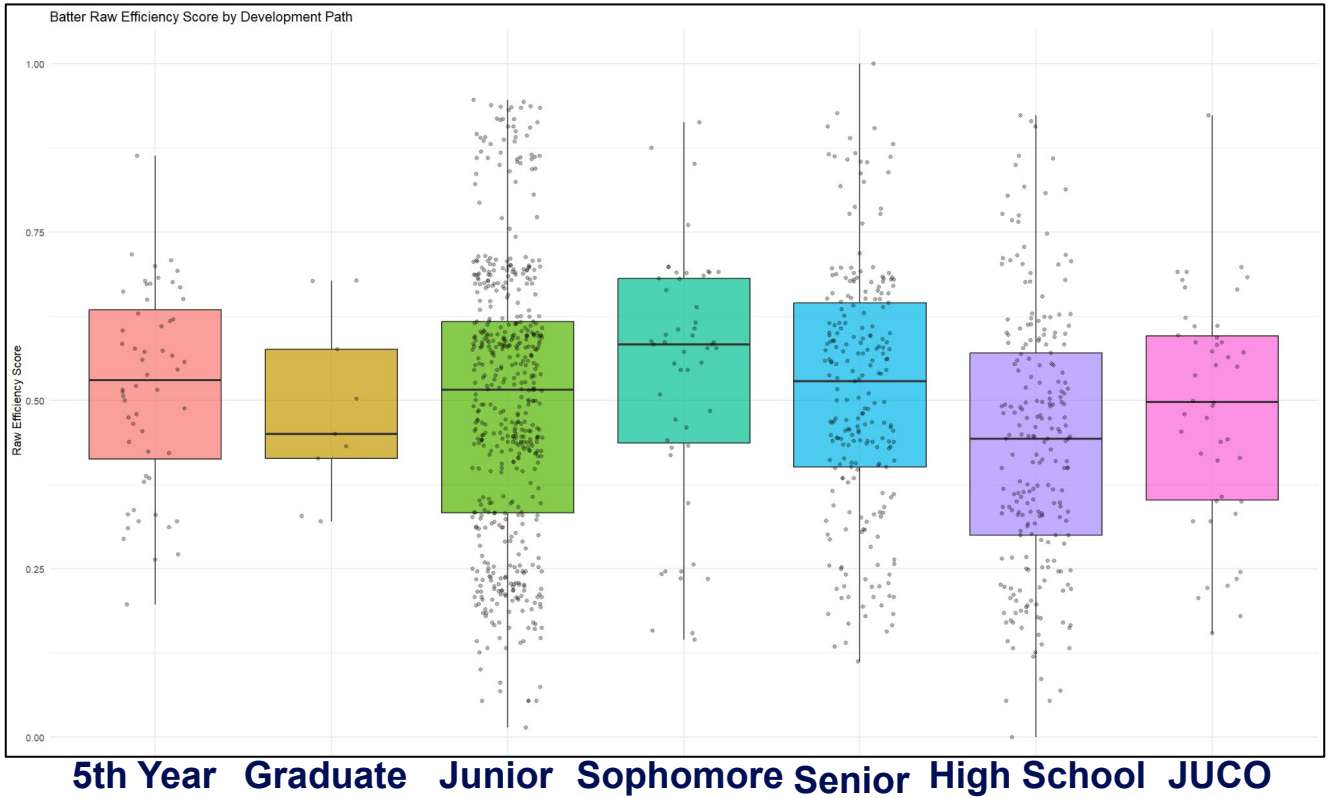
Batter Efficiency Predictability



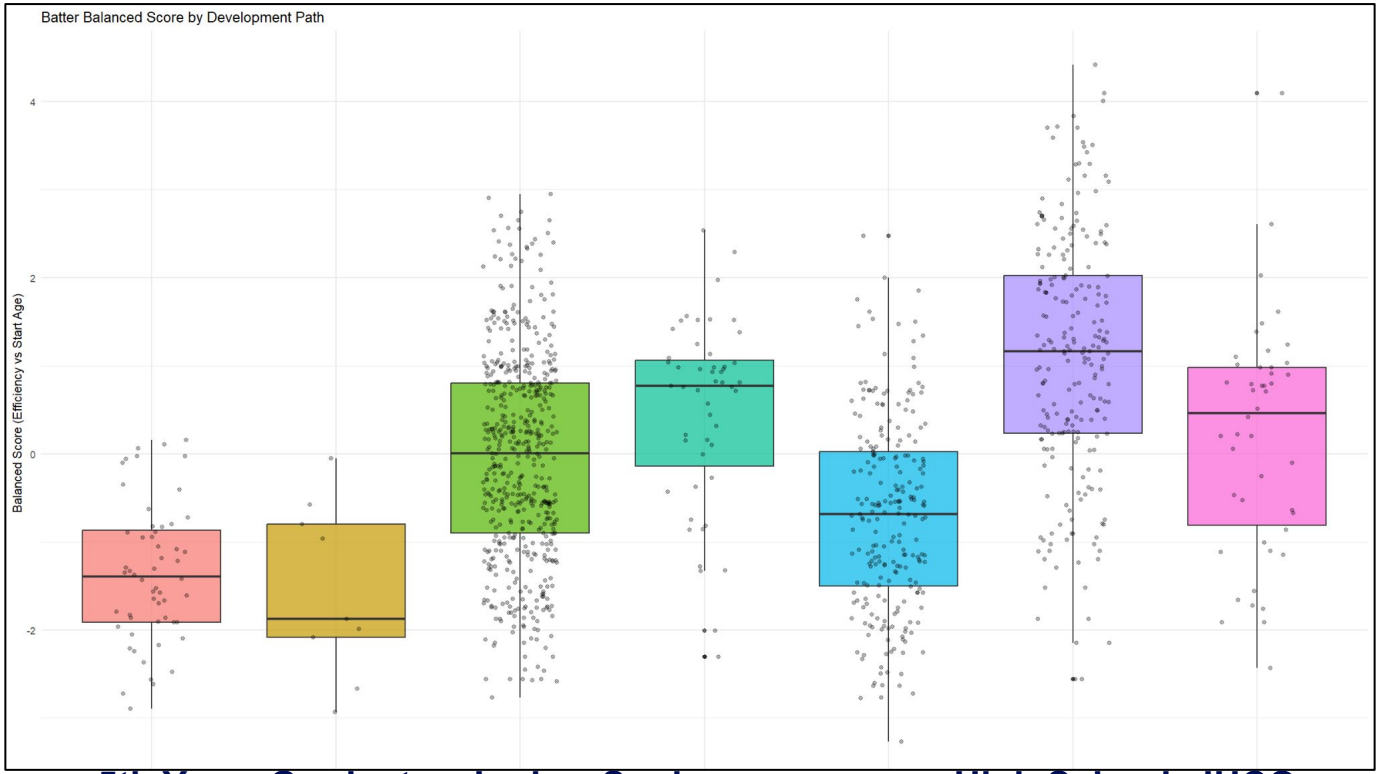
Pitcher Efficiency Predictability



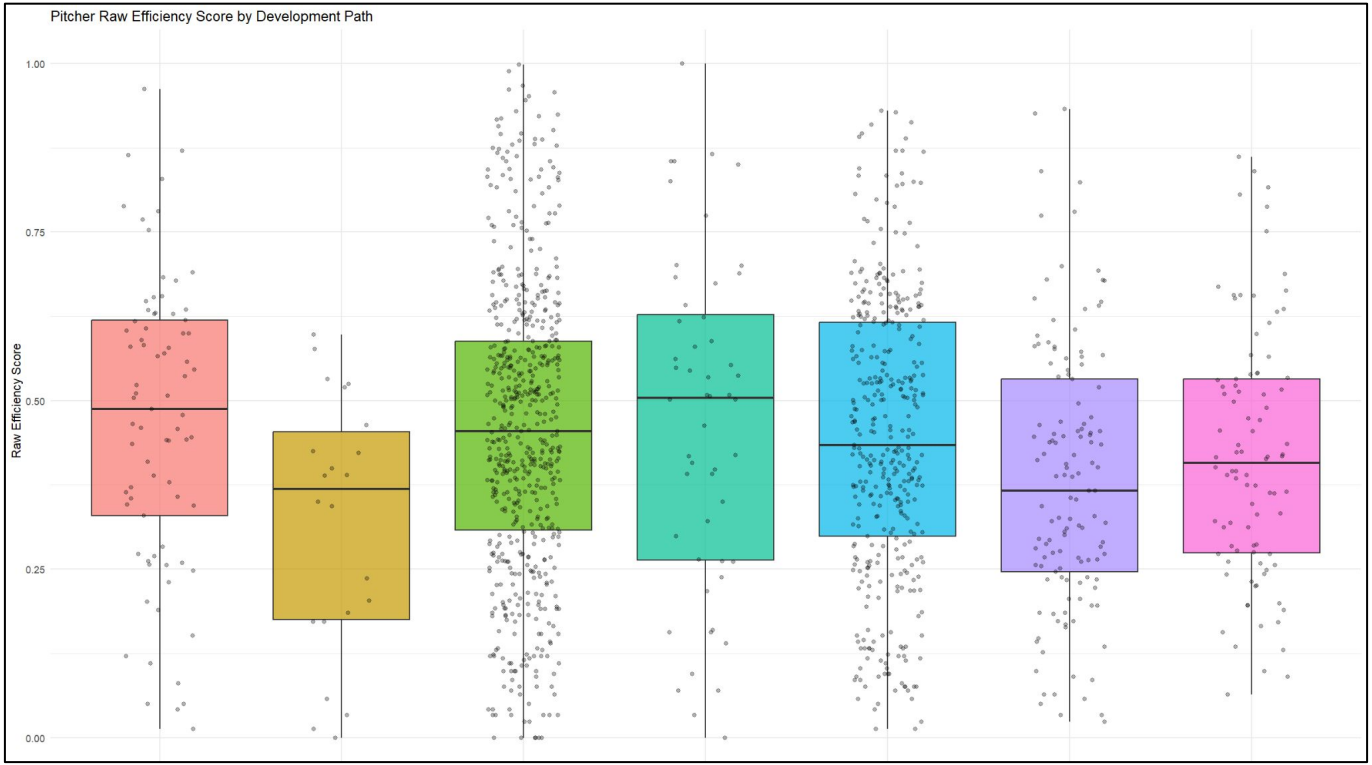
Batter Efficiency



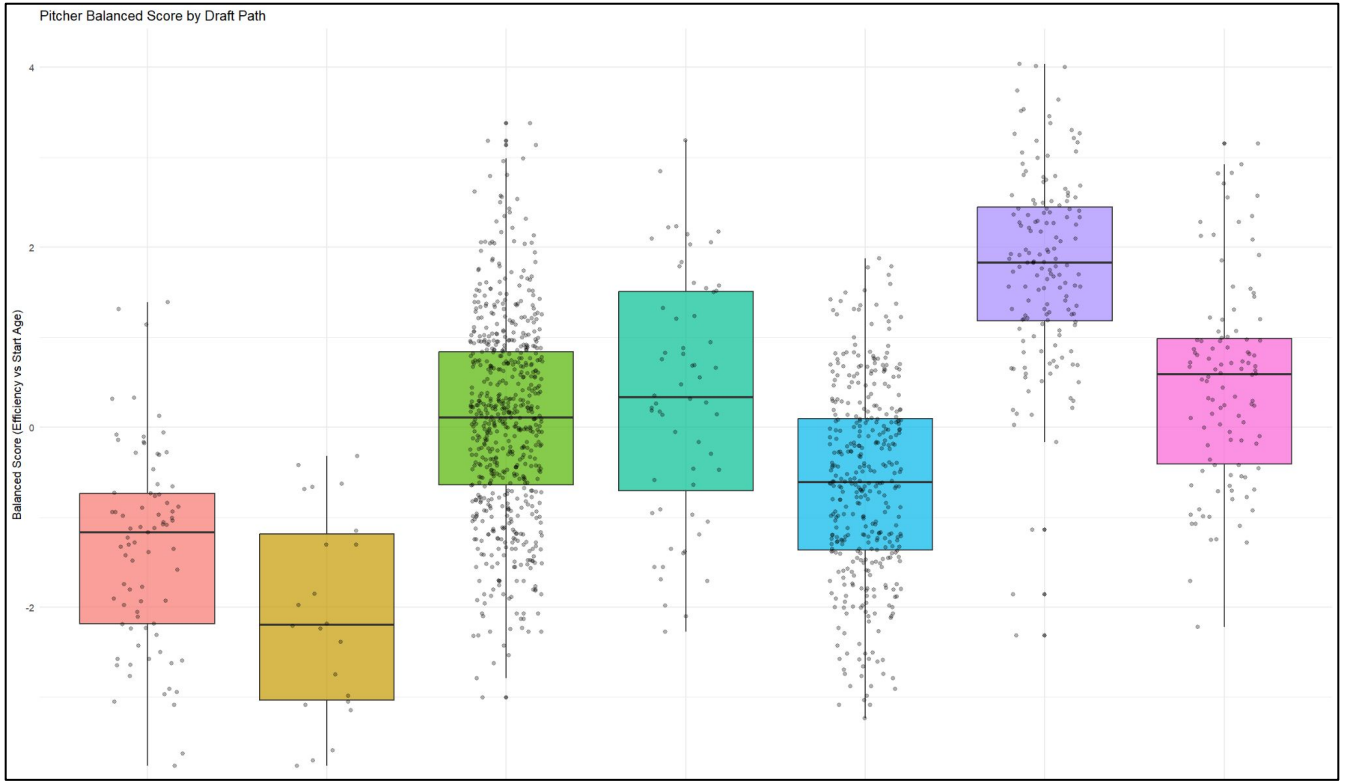
Batter Age Adjusted Efficiency



Pitcher Efficiency



Pitcher Age Adjusted Efficiency

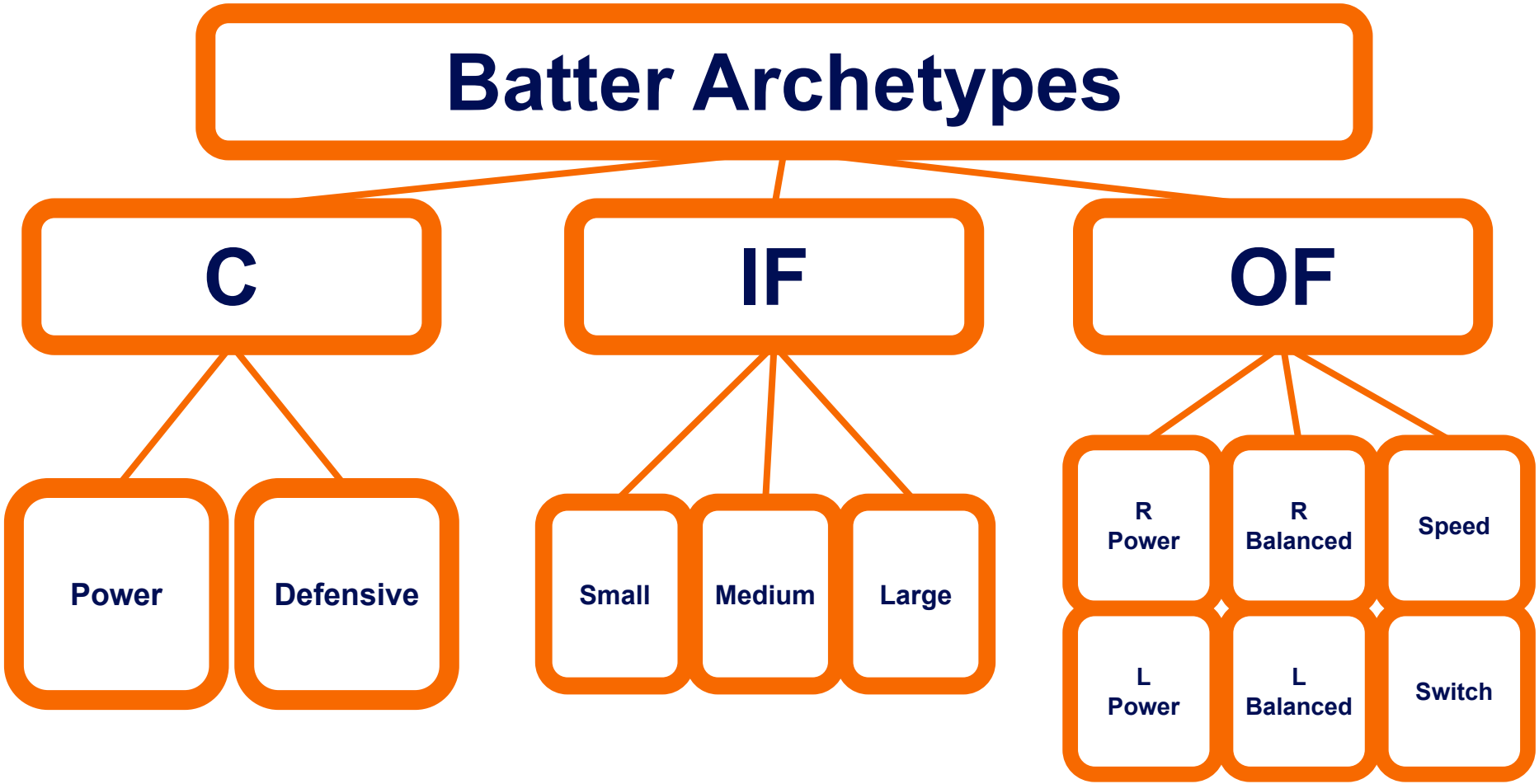


Benefits and Drawbacks of College

College Improves Overall Minor League Progression Efficiency

HS -> Draft is favored when factoring Age

Player Archetypes


Batter Archetypes
C
IF
OF
Power
Defensive
Small
Medium
Large
R Power
R Balanced
Speed
L Power
L Balanced
Switch

Paths for Batters: Efficiency

Small IF

Switch OF

L Power OF

Defensive C

Power C

R Balanced OF

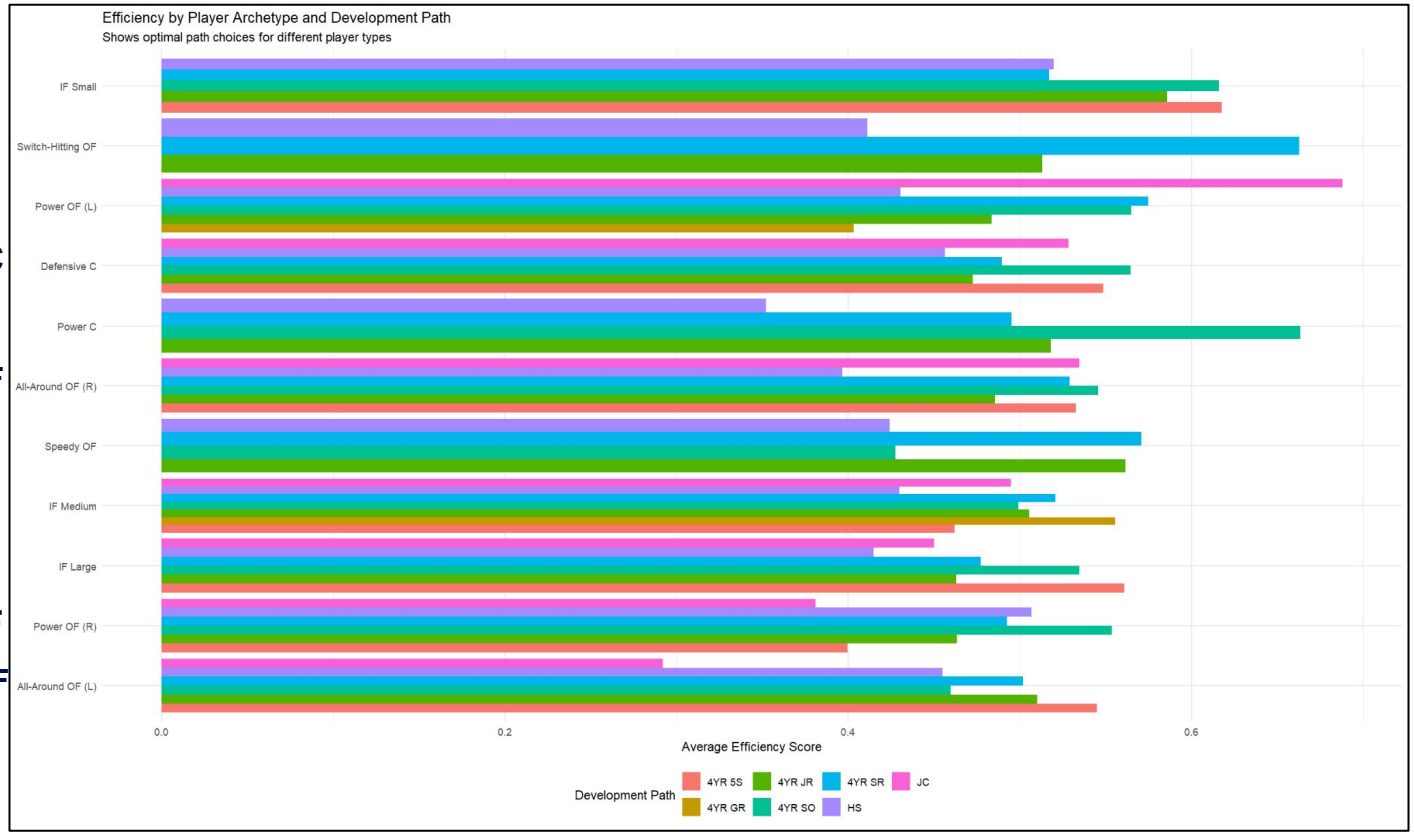
Speed OF

Medium IF

Large IF

R Power OF

L Balanced OF



Paths for Batters: Age Adjusted Efficiency

Switch OF

Power C

Small IF

L Power OF

Speed OF

Defensive C

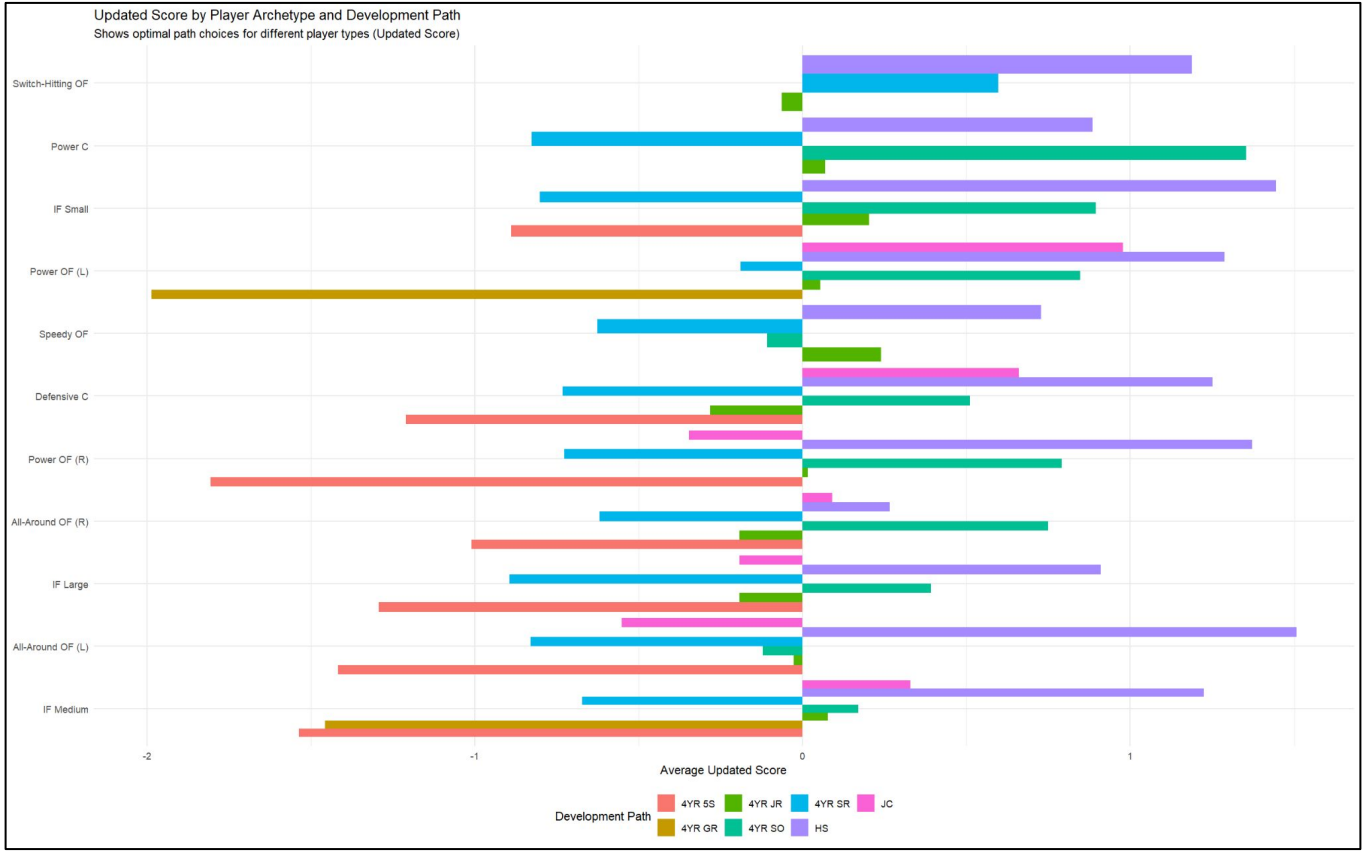
R Power OF

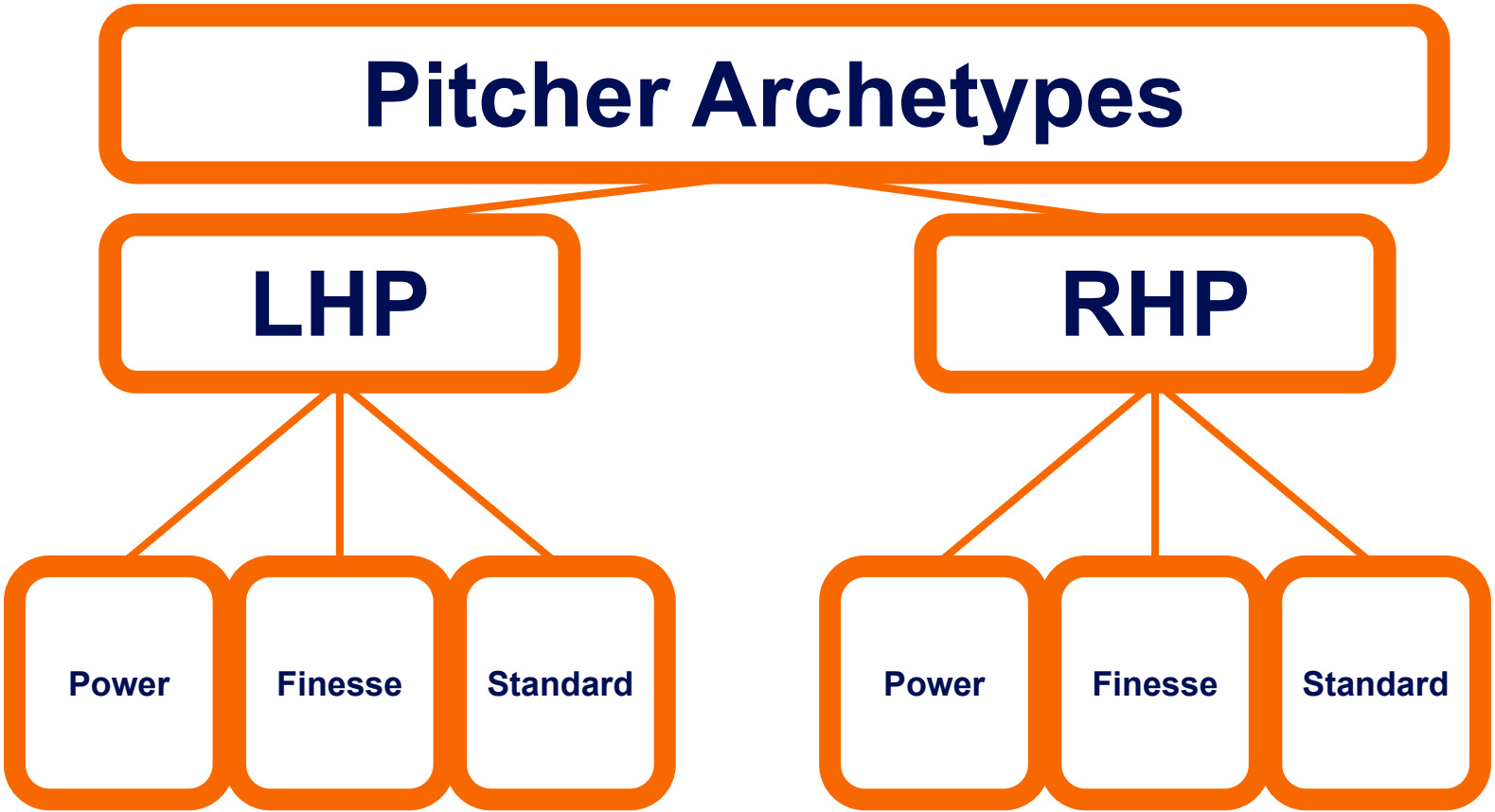
R Balanced OF

Large IF

L Balanced OF

Medium IF




Pitcher Archetypes
LHP
RHP
Power
Finesse
Standard
Power
Finesse
Standard

Paths for Pitchers: Efficiency

Power LHP

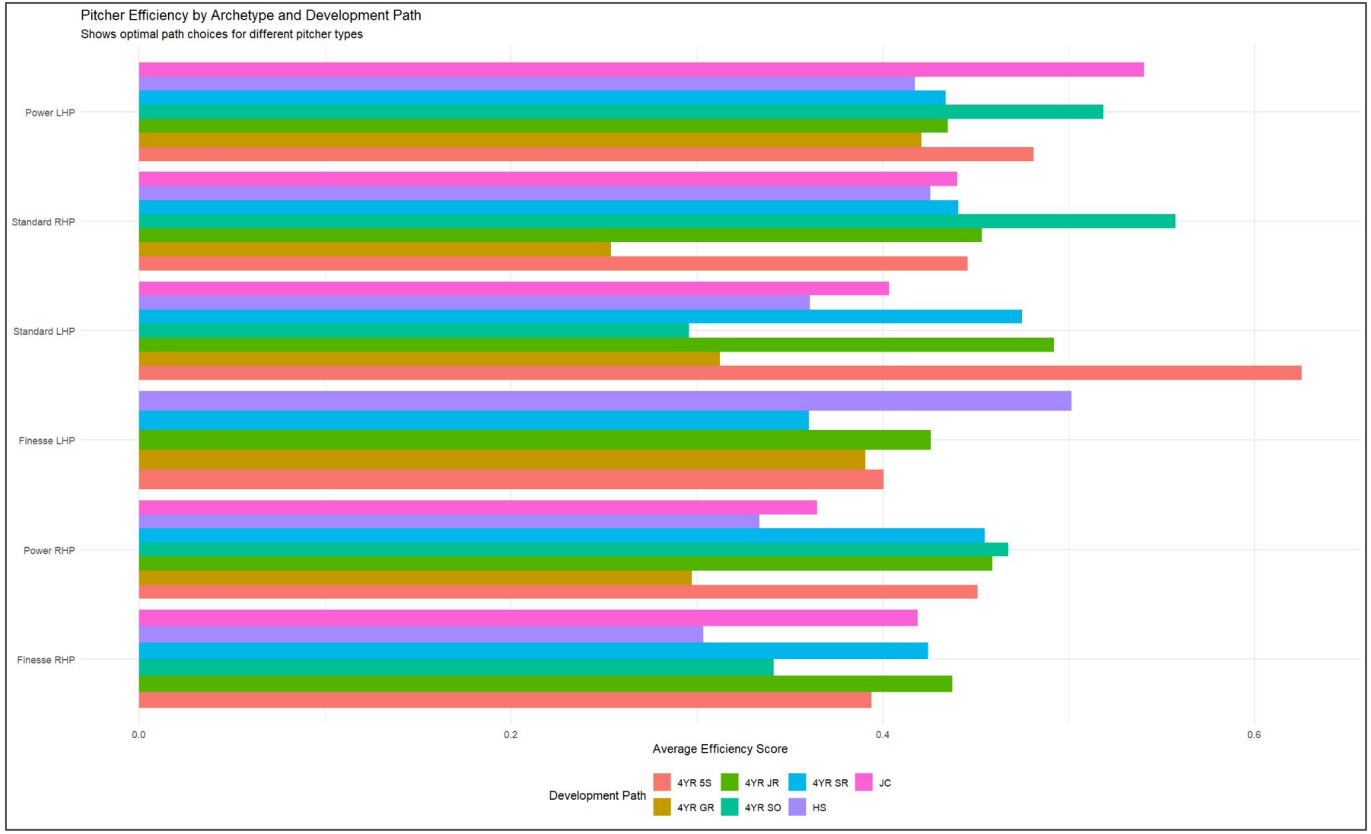
Standard RHP

Standard LHP

Finesse LHP

Power RHP

Finesse RHP



Paths for Pitchers: Age Adjusted Efficiency

Standard LHP

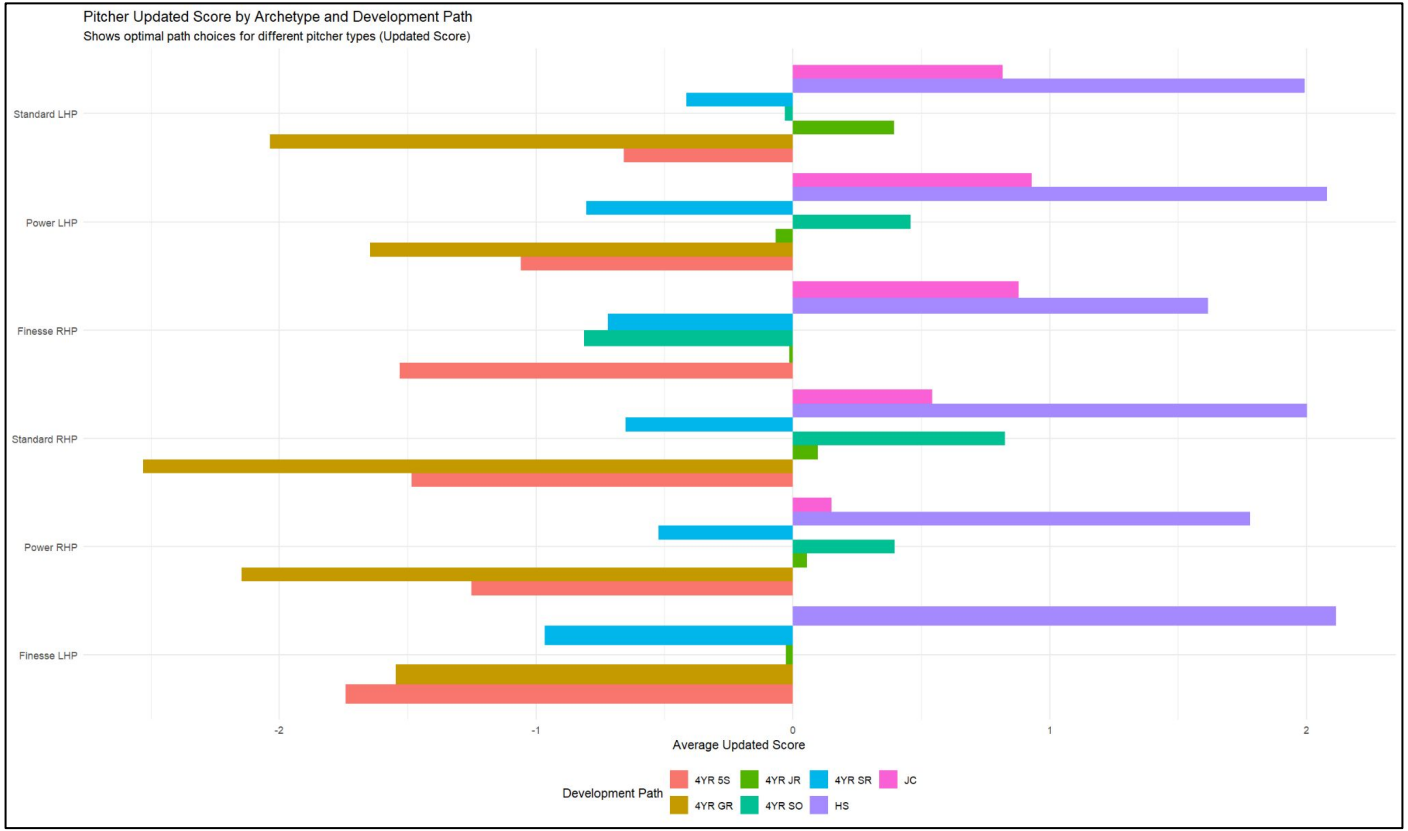
Power LHP

Finesse RHP

Standard RHP

Power RHP

Finesse LHP



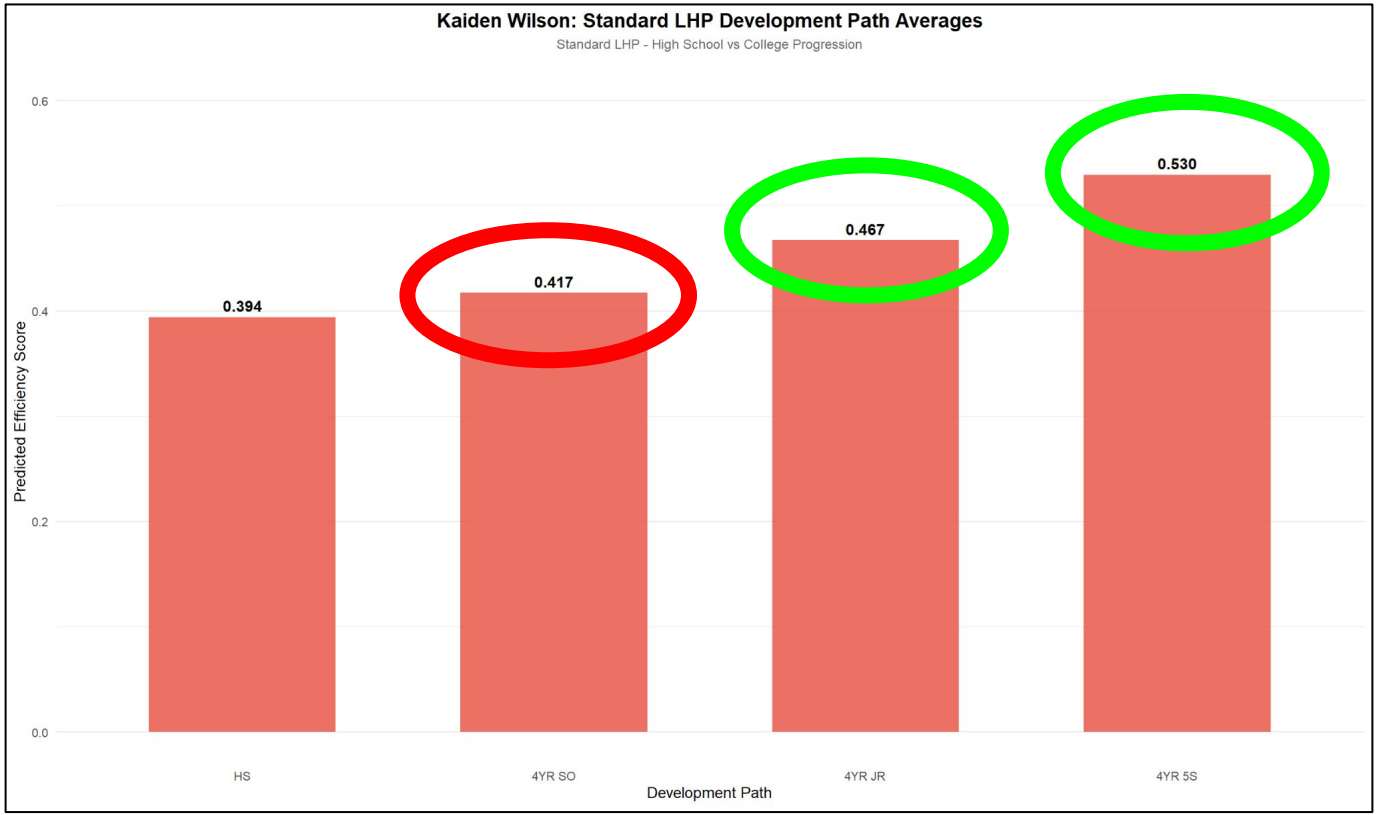
Kaiden Wilson

LHP - Texas A&M

Kaiden Wilson - LHP Texas A&M

Draft Information	258th Overall (9th Round)
Draft Team	Miami Marlins
Draft Path	College Sophomore - Texas A&M
College Stats	32 Appearances, 6.21 ERA, 11.6 K/9

STAY in School Kaiden Wilson



Conclusions

Advancing Through the Pros at a Young Age:

Straight From High School Typically Preferred

Overall Big League Preparation and Minor League Advancement:

Typically College is Preferred, Duration Depends on Archetype

Questions?