Adjustment Period Analysis

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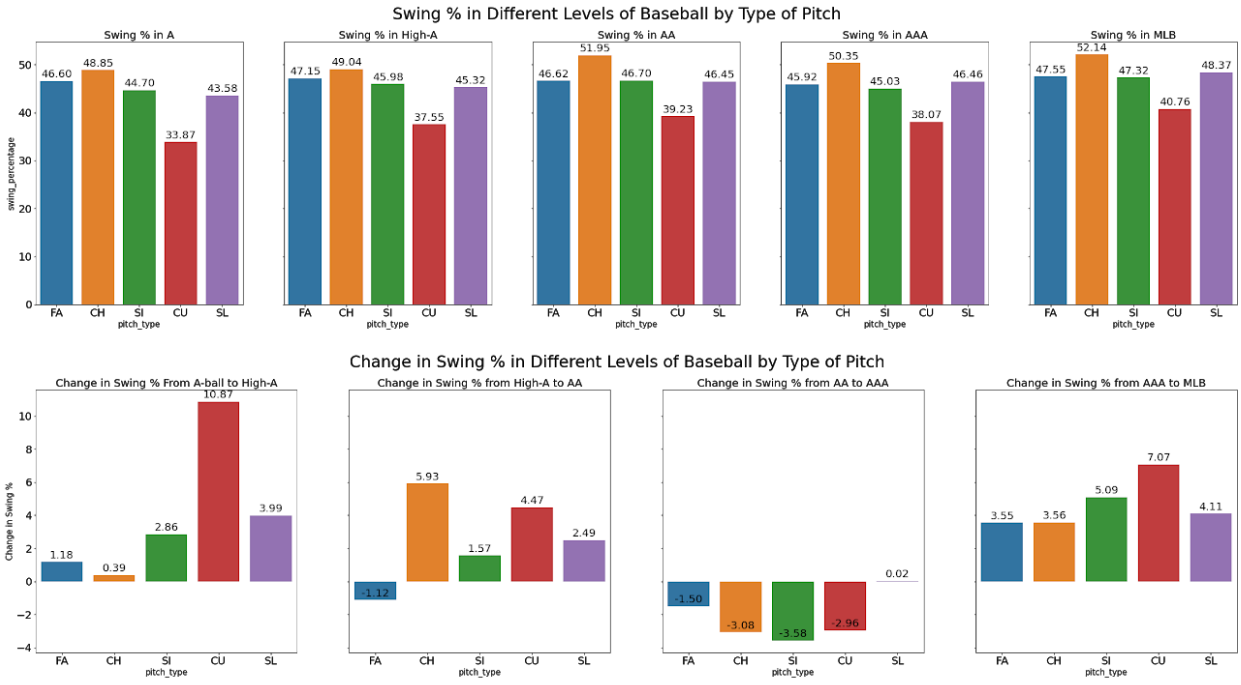
It can be a big step for players when they get called up to a new level in the baseball farm system. There is definitely an adjustment period in the first few games that they are at the new level. Competition is better, they're seeing better pitching, and the pitches they decide to swing at when they just move up may change. In this report, we'll take a look at how players' swing percentages change by level, as well as by the type of pitch they see.

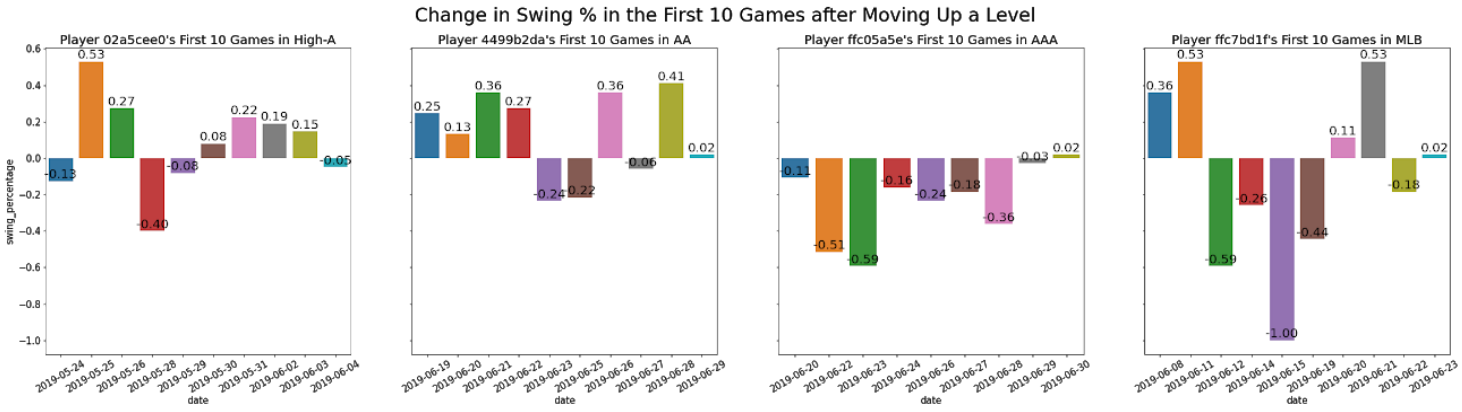
Let's start by taking a look at what a coach should expect when a player is called up at the different levels of the farm system. On an average, Players should get more aggressive as they move up through the levels, swinging at the ball more often, with an obvious adjustment period when they move from AA to AAA Ball. This adjustment could be because players look for more hittable balls the closer they get to the Majors and it also could be they are seeing MLB pitchers that are on rehab assignment.

	A Ball	High A	AA Ball	AAA Ball	MLB
Avg Swing %	46.2%	47.4%	48.0%	46.7%	48.7%
Ball in Play %	38.6%	37.2%	37.3%	36.9%	35.5%
BIP+Foul %	75.7%	74.2%	74.6%	74.8%	73.1%

Now, let's break it down by pitch. We know that fastballs are the best pitch to hit, followed by off-speed pitches (changeup/sinker) then breaking balls (curveball/slider). The following chart shows that a player will swing more often as they move up through the ranks. Their propensity to swing at pitches that aren't fastballs go up as they are seeing more varied pitches as they progress through the levels due to the pitchers being better at locating off speed and breaking balls.



Next we looked at four players in their first 10 games at a new level. We wanted to see how their swing percentages in their first 10 games compared to their average swing percentage in the previous level.



Looking at each player individually, they all took different amounts of time to get adjusted to their new level. The player who went from A to A+ ball took only around 5 games until their swing percentage was back to where it was previously, while the A+ to AA player didn't really get settled until game 10. The AA to AAA player's swing percentages were consistently down, but slowly rising until he got back to where they were in AA by game 9. Similar to the A+ to AA player, the player who went from AAA to the MLB was inconsistent in how much he changed his swing percentage, only coming back down to where they were in AAA at game 10. There could be a variety of reasons for these trends, and these are only four players chosen out of the hundreds in the data set, but this could be repeated for any other player, and overall we would likely see similar graphs for whichever player we decided to look at.

Overall, as players move from one level to the next, it seems like they get more aggressive in their swing selection. Except for AAA where they actually get more picky about the pitches they swing at. When looking at the specific players, their swing percentages varied in their first 10 games, but all of them at game 10 ended up settling on their average swing percentage from their previous level. With the right data, it would be interesting to build a machine learning model where we could plug in one player's stats as they progressed through the system, so we could predict how quickly they would get settled in and if that's the right person to pull up for a playoff series.