MLB considers the ideal launch angle as the “sweet spot launch angle”, which is between 8-32 degrees.

<https://www.mlb.com/glossary/statcast/launch-angle>

Our data was grouped into 3 ranges:

1. Low launch angle: < 8 degrees
2. Ideal launch angle: 8-32 degrees
3. High launch angle: >32 degrees

There are 3 results of a pitch, being a strike, a hitintoplay, or a ball. Strikes are not desirable to the batter because 3 strikes lead to a strikeout, but hitintoplays and balls are desirable to the batter since four balls allow the batter to walk to first base.

Method:

1. Import JSON files into Excel power query.
2. Parse through JSON, creating columns for pitch results and angle.
   * Since at bats that did not have hits were empty in “Events,” filtered out the rows that were null, then expanded “Events” to angles.
3. Since launch angle is in the second index of the angles list, create a new column indicating the row indices.
4. Filter out the rows with odd indices, leaving only the launch angle behind in the angles column.
5. Determine % of strikes, % of hitintoplays, and % of balls for each launch angle range.

The results from the data are:

A screenshot of a white box

Description automatically generated

Figure 1. Pitch results of low-high launch angles

From Figure 1, the percentage of strikes from low and ideal launch angles were similar, being around 33-36%. However, the percentage of strikes was significantly higher for launch angles >32, being 68%. The percentage of hitintoplays decreased as launch angle increased, and the percentage of balls increased as launch angle increased.

The increase in the percentage of strikes as the launch angles increases, supports the findings from the University of Illinois, where “If the batter aims to get on base and secure as many hits as possible with minimal strikeouts, then he should aim for a lower attack angle (resulting in a low peak launch angle). Conversely, if the batter prioritizes hitting as many home runs as possible and is less concerned about striking out, then he should aim for a higher attack angle (resulting in a high peak launch angle).”

https://baseball.physics.illinois.edu/PeakLaunchAngle.pdf

The hits from the ideal launch angle range show a significantly lower percentage of strikes than the high launch angle range, while also having a significantly larger percentage of hitintoplays than that of the high launch angle range. The high launch angles only had 30% of hitintoplays, while the ideal launch angle range had 62% of hitintoplays. Thus, the “sweet spot launch angle,” defined by the MLB is likely to lead to more hitintoplays while minimizing strikes.