

RESEARCH FRAMEWORK / 04

Hitter Risk Assessment

Chase Rate × Whiff Rate

Interpretable evaluation framework | Conceptual work, not a trained model | October 2026

Research question. How can an evaluator distinguish strike-zone decision risk from bat-to-ball risk without treating every high-strikeout hitter as the same type of prospect?

Why separate these behaviors?

Chase rate describes how frequently a hitter offers at pitches outside the strike zone. Whiff rate describes the frequency of misses among swings. They reflect different behaviors: a hitter can be selective but miss when swinging, or make frequent contact while extending the zone. Strikeout rate alone combines several paths to the same outcome.

This framework uses the two measures as screening dimensions, not as a complete measure of hitting ability. Definitions and denominators must remain consistent across tracking vendors, levels, and seasons.

Conceptual 2 × 2 matrix

	Lower whiff rate	Higher whiff rate
Lower chase rate	Selective + contact-oriented Potentially stable swing-decision/contact foundation. Examine impact and zone attackability.	Selective + contact-risk May recognize the zone but miss hittable pitches. Examine pitch-type vulnerabilities and impact.
Higher chase rate	Contact + decision-risk May put the bat on more pitches while expanding the zone. Examine quality of contact and count leverage.	Decision + contact-risk Two potential sources of swing-and-miss exposure. Evaluate compensating power or defensive value.

Matrix quadrants describe potential risk profiles, not fixed scouting grades. “Lower” and “higher” must be defined relative to the population under study.

1 | Evidence needed for interpretation

Measure	What it can indicate	What it cannot establish alone
Chase / O-Swing%	Swing decisions on out-of-zone pitches.	Pitch recognition, intent, or damage potential in isolation.
Whiff%	Swing-and-miss exposure.	Whether the misses occur in-zone or on particular pitch types.
Zone contact	Ability to hit strikes when swinging.	Approach quality or total offensive value.
BB%, K%	Plate-appearance outcomes and trends.	A measured chase rate or pitch-level contact skill.
Exit velocity / contact mix	Present impact and batted-ball distribution.	Consistent future power or complete offensive value.

2 | Follow-up questions by profile

- Lower chase / lower whiff: Is the player aggressive enough on strikes to prevent pitchers from attacking the zone? Does the contact quality meet positional expectations?
- Lower chase / higher whiff: Are misses concentrated against fastballs, breaking balls, or certain pitch locations? Can selection offset the contact risk?
- Higher chase / lower whiff: Does expansion produce productive contact, or mostly weak balls in play? Does the player improve swing decisions against better pitching?
- Higher chase / higher whiff: Is there sufficient impact, speed, defense or development runway to justify the offensive risk?

3 | Important confounders

Sample size, age-relative level, opponent pitch quality, handedness, count, zone definition, and tracking coverage can all shift apparent chase or whiff rates. They should be examined before classifying a player’s underlying skill. A prospect’s rate in Rookie ball is not directly comparable with one in Triple-A.

4 | Proposed quantitative validation

The current matrix is a descriptive framework. A quantitative extension could test whether combining chase and whiff rates helps predict future offensive production beyond simpler indicators such as age, level, walk rate, strikeout rate, and current batted-ball quality.

Step	Planned research operation
Cohort	Choose a historical minor-league hitter sample with sufficient plate appearances and consistent public tracking coverage.
Outcome	Define an out-of-sample future measure, such as subsequent level-adjusted offensive production or probability of reaching MLB.
Baseline	Fit a simple comparison model using age, level, BB%, K% and current production.
Extended model	Add chase, whiff, their interaction, and impact variables; check whether they improve holdout performance.
Evaluation	Use season-based train/test separation and report calibration, error and uncertainty rather than only in-sample fit.

Testable hypothesis

For players with similar age, level and present production, the joint chase/whiff profile may add predictive information about future offensive outcomes. This is a hypothesis to test, not an established finding from this project.

Limitations

This framework has not been fitted to a labeled historical dataset. It has no validated thresholds, error rates, predictive accuracy or causal interpretation. It is useful for organizing scouting follow-up questions and outlining a reproducible test.

Reference material

FanGraphs Library: [Plate Discipline](#) - metric definitions and interpretation.

Baseball Savant: [Swing/Take](#) - pitch-decision context and definitions.