# MLB RFI Model Features

This document outlines the feature set, descriptions, and initial weights for predicting the likelihood of a run in the first inning of an MLB game.

| Feature | Description | Weight |
| --- | --- | --- |
| First-Inning xFIP | Pitcher’s xFIP limited to first-inning exposure (accounts for FB/HR rate, FIP skills) | 0.25 |
| Starting Pitcher First-Frame Barrel % | Rate at which the SP allows “barreled” contact in their first inning | 0.15 |
| Lineup 1–3 wOBA (last 7 days) | Weighted on-base average of your top 3 hitters over their most recent week | 0.20 |
| Team First-Inning Run Frequency (L30) | % of games in last 30 where the team scored in the 1st inning | 0.20 |
| Park-Adjusted Run Factor | Ballpark’s run environment multiplier for early innings (first 3 outs) | 0.10 |
| Weather Wind Impact Score | Quantifies wind direction/speed’s effect on run scoring in the first inning | 0.10 |

## Rationale

1. **Focus on first-inning splits**  
   We narrowed pitcher stats (xFIP and Barrel %) to their first-inning performance so they directly target “start of game” risk.
2. **Lineup recency vs. longevity**  
   A rolling 7-day wOBA for slots 1–3 captures hot/cold streaks more sharply than a broad multi-month average.
3. **Team‐level propensity**  
   Historical first-inning run frequency gives a baseline expectation independent of SP.
4. **Contextual factors**  
   Park factors and weather can swing early-inning run probabilities, so they each get a non-negligible (~10%) weight.