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.