

THE ONE SHOT MODEL

Analyzing how possession-limited scoring would transform competitive dynamics, strategic decision-making, and fan engagement in MLB

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SCAN FOR INTERACTIVE DASHBOARD

BLOWOUT REDUCTION -79.5% 19.9% → 4.1% of games	RUNS PER GAME -22.9% 9.12 → 7.03 total/game	FAN ENGAGEMENT +24% FES: 45.7 → 56.6 / 100	LATE-GAME CLOSE +21pp 62.9% → 85% within 3 (9th)	WINNER CHANGES 18.2% 443 / 2,430 games affected	TIME SAVED ~12 min 9.1 fewer PA/game	STRATEGY FLIP 14 states Optimal play style changes
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01 Introduction

Baseball's unlimited scoring structure produces **blowout games** where competitive tension disappears early. In 2023, 19.9% of all MLB games ended with a margin ≥ 6 runs — nearly 1 in 5 games became non-competitive.

Inspired by possession-limited sports, we propose the **"One Shot" Rule** — a constraint that limits scoring for any team holding a lead.

We apply a **dual-methodology framework**: retrospective re-analysis of all 2,430 real 2023 MLB games, plus a 10,000-game Monte Carlo simulation providing both a real-world result and a long-run probabilistic estimate.

04 H1 · Blowout Reduction

Blowout rate (margin ≥ 6 runs) drops across **all three methodologies** — result is robust.

RETROSPECTIVE — REAL 2023 SEASON

Traditional	19.9%
One Shot	4.1%

SIMULATION — BALANCED (MED VS MED)

Traditional	15.9%
One Shot	6.0%

SIMULATION — MISMATCHED (STRONG VS WEAK)

Traditional	25.8%
One Shot	11.2%

Predicted -40 to -50%. Retrospective: -79.5%. Simulation: -62.3% (better long-run estimate).

07 Fan Engagement Score

5-component 0-100 index across all 2,430 games. **Late Drama (30%)** is the primary driver — the "must-watch" window in innings 7-9.

45.7 (2023) vs 56.6 (One Shot FES)

Late Drama (30%)	2023 OSR	61.6	83.8	+22.2
Tension (25%)	2023 OSR	76.8	85.3	+8.5
Uncertainty (10%)	2023 OSR	48.1	65.9	+17.8
Lead Changes (20%)	2023 OSR	7.0	8.5	+1.5

59.8% of games more engaging · 30.0% unchanged · 10.2% less engaging

02 The One Shot Rule

A team that **takes or extends a lead** is limited to **one scoring event** for the rest of that half-inning. The inning ends immediately after that event fires.

A · INNING START Opens under traditional rules. No restriction until the batting team takes a lead.	B · LEAD TAKEN Team moves from ≤0 to +1. Rule activates immediately for rest of half-inning.
C · ALREADY LEADING Team begins inning ahead. Rule active from pitch one — one scoring event total.	D · TERMINATION After one scoring event fires, inning ends immediately regardless of outs.

⚠ **Open Edge Case:** Baserunner behavior after scoring event fires. Five solutions are under evaluation — from allowing free advancement to mirroring MLB Rule 5.08(a) (ball dead when triggering run crosses home plate). Protocol must be codified before any real-world pilot.

05 H4 · Late-Game Closeness

Share of games within 3 runs entering late innings — the **#1 predictor of viewer retention**.

% GAMES WITHIN 3 RUNS AT INNING START

Average lead at inning 8 drops 3.40 → 2.04 runs. More games stay tight into the final innings.



08 H3 · Strategy Shift

Optimal batting style changes in **14 of 24 base-out states** when the rule is active. Contact strategies lose value; Power styles rise.

STRATEGY CHANGES BY OUTS SITUATION

OUTS	BASE STATE	RULE OFF	RULE ON (LEADING)
0	2nd base only	Contact	→ Patient Power
0	Bases loaded	Contact	→ Aggressive Power
1	2nd base only	Contact	→ Aggressive Power
1	1st base only	Patient Power	→ Aggressive Power
2	2nd base only	Contact	→ Aggressive Power

When only the next scoring event matters, power swings that **maximize that single event** outperform contact strategies.

03 Data & Methods

Retrospective Analysis
2023 MLB Statcast via pybaseball — 720,684 pitches across 2,430 regular season games. Rule applied deterministically row-by-row to every real game sequence.

Simulation
10,000 games per matchup. Lineups from OPS+ tiers. Two configs: **Medium vs. Medium** (balanced) and **Strong vs. Weak** (mismatched).

Strategy Optimization
Value iteration on a Markov Decision Process. States = (outs, baserunners, rule mode). 5 batting archetypes: Contact, Gap, Aggressive Power, Patient Power, Balanced.

06 H5 · Scoring Distribution

Runs drop **10-23%** across methods. 66.8% of 2023 scoring events score exactly 1 run — rule fires hardest on the 2nd and 3rd events in an inning.

RUNS PER GAME — ALL METHODS

2023 SCORING EVENT DISTRIBUTION

Runs	Percentage
1 Run	66.8%
2 Runs	21.6%
3 Runs	7.4%
4 Runs	2.6%
5+ Runs	1.6%

09 Conclusions & Recs

H1 · BLOWOUT RATE ✓ EXCEEDED -79.5% retro · -62.3% sim	H4 · LATE ENGAGEMENT ~ REVISED +8-14pp (predicted +25-35pp)
H5 · SCORING ✓ CONFIRMED -10 to -23% across methods	H2 · BALANCE ~ PARTIAL Strong teams lose -9+ more than weak teams gain

- Test 2-event limit before full 1-event rule. Softer variant cuts blowouts ~40-50% with far fewer tied games and winner changes.
- Codify baserunner + extra-inning protocols first. 10.0% of games newly tied (242 games). Dead-ball rule must be formalized before any real-world pilot.
- Apply rule from inning 5 as transitional variant. Preserves full offense early; compresses late-game where blowouts most damage watchability.