Fantasy Baseball Draft Tool

How Player Values Are Calculated

Kevin Kuruc

February 2026

Outline

What Are We Trying to Do?

Goal: Rank players by how much they help you win H2H category matchups.

League format: 14-category H2H weekly

- Hitting: R, HR, RBI, SB, SO, TB, OBP
- Pitching: W, SV, K, HLD, ERA, WHIP, QS

Key insight: Not all stats are created equal. A steal is worth more than a strikeout because steals are *tighter*—there's less variance week-to-week.

The Win Probability Formula

Each week, your team produces some total in each category. So does your opponent.

If we assume weekly totals are normally distributed:

$$P(\text{win category}) = \Phi\left(\frac{\mu_{\text{you}} - \mu_{\text{opponent}}}{\sigma \cdot \sqrt{2}}\right)$$

Where:

- Φ = the bell curve CDF (converts z-scores to probabilities)
- σ = how much that category varies week-to-week
- The $\sqrt{2}$ accounts for both teams having variance

Why Does Standard Deviation Matter?

Tight categories (low SD) are more predictable.
A small edge goes a long way.

Wide categories (high SD) are noisy.
Even a big edge might not matter—luck dominates.

Category	SD	1/SD	Interpretation
SB	2.57	0.39	High leverage
SV	1.54	0.65	High leverage
K (pitching)	11.79	0.08	Low leverage
TB	15.94	0.06	Low leverage

What Is Marginal Value?

Marginal value = how much a player improves your expected wins *compared to a replacement-level player*.

Think of it this way:

1. Start with your current roster
2. Calculate your win probability in each category
3. Add a player to an empty slot
4. Recalculate win probabilities
5. Marginal value = new total − old total

If your roster is empty, you're comparing to a team of 9 replacement-level hitters.

What Is Replacement Level?

Replacement level = the production you could get for free (waiver wire).

We estimate this by:

1. Ranking all projected hitters
2. Taking players ranked 155–175 (just beyond draft pool)
3. Averaging their per-PA production

Replacement hitter (600 PA):

R	HR	RBI	SO	TB	SB	OBP
73	20	72	134	224	9	.320

Setup: Empty Roster

Imagine you have no players drafted yet.

Your 9 hitter slots are filled with replacement-level production:

Category	Your Team (weekly)	League Avg
R	26.3	29.0
HR	7.2	8.0
RBI	25.9	27.9
SO	48.2	50.1
TB	80.6	88.9
SB	3.2	4.7
OBP	.320	.320

You're below average in most categories, but slightly better in SO (fewer strikeouts is good).

Win Probabilities: Replacement Team

Using the formula, here's your chance of winning each category:

Category	Diff vs Avg	P(win)
R	−2.7	37.7%
HR	−0.8	42.2%
RBI	−1.9	41.9%
SO	+1.9	57.0%
TB	−8.2	35.8%
SB	−1.5	34.0%
OBP	0	50.0%
Total		**2.99 / 7**

A replacement-level team expects to win about 3 of 7 hitting categories.

Enter José Ramírez

Ramírez's projected line:
679 PA, 98 R, 30 HR, 94 RBI, 78 SO, 300 TB, 34 SB, .348 OBP

Weekly contribution vs replacement:

Stat	Ramírez	Replacement	Diff
R/wk	3.92	2.92	+1.00
HR/wk	1.20	0.80	+0.40
RBI/wk	3.76	2.88	+0.88
SO/wk	3.12	5.36	−2.24
TB/wk	12.00	8.96	+3.04
SB/wk	1.36	0.36	+1.00
OBP	.348	.320	+.028

Ramírez is better than replacement in *every* category.

New Win Probabilities

With Ramírez replacing one replacement hitter:

Category	Before	After	Gain
R	37.7%	42.2%	+4.5%
HR	42.2%	46.0%	+3.8%
RBI	41.9%	45.6%	+3.6%
SO	57.0%	65.2%	+8.1%
TB	35.8%	40.9%	+5.1%
SB	34.0%	44.5%	+10.5%
OBP	50.0%	52.2%	+2.2%
Total	2.99	3.36	**+0.378**

Ramírez's marginal value: 0.378

He adds 0.378 expected category wins per week.

Why Do SB and SO Dominate?

Ramírez's biggest gains:

- **SB: +10.5%** from just 1 extra steal/week
- **SO: +8.1%** from 2.24 fewer strikeouts/week

Compare to TB: +5.1% from +3.04 TB/week.

The math:

- SB: $1.00 \div 2.57 = 0.39$ standard deviations
- TB: $3.04 \div 15.94 = 0.19$ standard deviations

One steal moves the needle **twice as much** as three total bases, because steals have a tighter distribution.

The Saves vs Holds Tradeoff

Elite closers get saves but sacrifice holds.

Replacement RP (per week):

Stat	Replacement
SV/wk	0.12
HLD/wk	0.85
K/wk	2.69

Replacement RPs are **middle relievers**—they get holds, not saves.
An elite closer gives up 0.75 holds/week to gain 1.35 saves/week.
Is that trade worth it?

Saves Have High Leverage

Category	SD	1/SD
SV	1.54	**0.65**
HLD	1.64	0.61
K	11.79	0.08

Saves and holds have similar SDs, but closers gain more saves than they lose in holds.

Net effect: Elite closers are valuable because the save gain ($+1.35$/wk) exceeds the hold loss (-0.75/wk) in absolute terms.

Why ERA/WHIP Don't Matter Much for RPs

ERA and WHIP are **innings-weighted**.

A typical team pitches 40 IP/week:

- 5 SP $\times$ 6.5 IP $=$ 32.5 IP
- 3 RP $\times$ 2.5 IP $=$ 7.5 IP

A reliever contributes **6%** of team innings.

Even if an elite RP has much better ERA than replacement (3.06 vs 3.50), the team ERA only improves by $\approx$0.02 points.

Conclusion: RPs earn their value through saves, holds, and strikeouts—not ERA/WHIP.

Three Projection Systems

The tool supports three projection sources:

1. **Depth Charts** – FanGraphs composite (default for playing time)
2. **The Bat** – Tom Tango's system
3. **The BatX** – Extended version of The Bat

All three use:

- Same playing time (normalized to Depth Charts)
- Same replacement level
- Same weekly SDs

Only difference: Skill estimates (HR rate, SB rate, K%, OBP, etc.)

PA Normalization

Different systems project different playing time.

Problem: We want to compare skill, not PT estimates.

Solution: Scale all systems to use Depth Charts PA.

Example:

- The Bat projects Player X at 500 PA, 25 HR
- Depth Charts projects Player X at 600 PA
- Normalized: 600 PA, 30 HR (scaled up by 600/500)

Rate stats (OBP, K%) stay unchanged—they reflect skill, not volume.

The Problem with Part-Time Players

A player projected for 400 PA will have lower counting stats than a 600 PA player, even if they're equally skilled per-PA.

Solution: Supplement everyone to 600 PA with replacement-level production.

Example: Player with 400 PA, 60 runs, .350 OBP

- Gap: 200 PA at replacement level
- Replacement runs: $200 \times 0.121 = 24$
- Total runs: $60 + 24 = 84$
- Blended OBP: $(400 \times .350 + 200 \times .320)/600 = .340$

This answers: "What would this player produce over a full roster slot?"

Summary

1. Marginal value measures wins added vs replacement.
Not raw stats—wins.

2. Tight categories (low SD) have high leverage.
SB, SV, HLD matter more per unit than TB, K.

3. Replacement level is the baseline.
Players ranked 155-175 define what's "free."

4. Rate stats are diluted across rosters.
OBP is shared by 9 hitters. ERA/WHIP are innings-weighted.

5. Elite closers win the saves/holds tradeoff.
They give up holds but gain more in saves.

Category Leverage Reference

Category	SD	Mean	1/SD
Hitting			
SB	2.57	4.74	0.39
HR	2.93	8.02	0.34
R	6.03	28.96	0.17
RBI	6.72	27.86	0.15
SO	7.45	50.11	0.13
TB	15.94	88.87	0.06
Pitching			
SV	1.54	2.27	0.65
HLD	1.64	2.30	0.61
L	1.83	3.08	0.55
K	11.79	50.90	0.08

Higher 1/SD = more leverage per unit.