

Baseball Sabermetrics Guide

Sources: *FanGraphs.com*, *Baseball-Reference.com*, *MLB.com Official Statistics*

OPS (On-base Plus Slugging)

Definition: The sum of a player's On-Base Percentage (OBP) and Slugging Percentage (SLG).

Formula: $OPS = OBP + SLG$

Interpretation:

- Below .700: Below Average
- .700 - .800: Average
- .800 - .900: Above Average
- .900+: All-Star Level
- 1.000+: MVP Level

Note: OPS has limitations as it assumes OBP and SLUG are equals, though OBP is actually about twice as valuable as SLUG. (Source: FanGraphs)

OPS is a quick and easy way to measure a hitter's overall offensive production.

ERA (Earned Run Average)

Definition: The average number of earned runs a pitcher gives up for every 9 innings pitched.

Formula: $ERA = (Earned\ Runs / Innings\ Pitched) * 9$

Interpretation:

- Under 3.00: Excellent
- 3.00 - 4.00: Good to Average
- 4.00 - 5.00: Below Average
- Over 5.00: Poor

Limitations: ERA can be influenced by factors outside a pitcher's control, particularly defense quality. (Source: FanGraphs)

ERA is the traditional measure of pitcher effectiveness.

FIP (Fielding Independent Pitching)

Definition: Estimates a pitcher's ERA based only on events they control: strikeouts, walks, hit-by-pitches, and home runs. (Source: FanGraphs)

Formula: $FIP = ((13*HR + 3*(BB+HBP) - 2*K) / IP) + Constant$

Interpretation: FIP is scaled the same way as ERA.

- If $FIP < ERA$: Pitcher has been unlucky or has poor defense
- If $FIP > ERA$: Pitcher has been lucky or has excellent defense

FIP removes defense altogether and is considered a better predictor of future performance than ERA. (Source: FanGraphs)

wRC+ (Weighted Runs Created Plus)

Definition: Comprehensive offensive statistic measuring runs created, adjusted for park and league effects. (Source: FanGraphs)

Formula: $wRC+ = (((wRAA/PA + League R/PA) + (League R/PA - Park Factor * League R/PA)) / (AL or NL wRC/PA excluding pitchers)) * 100$

Scale: 100 is always league average.

Interpretation:

- 100: League Average
- 80: 20% worse than average
- 120: 20% better than average
- 150: All-Star / MVP Candidate

Context-neutral and allows comparison across eras. (Source: FanGraphs)

WAR (Wins Above Replacement)

Definition: Measures a player's total value compared to a 'replacement level' player. A concept rather than one individual statistic. (Source: FanGraphs)

Versions: fWAR (FanGraphs), rWAR (Baseball-Reference), WARP (Baseball Prospectus)

Key Differences:

- fWAR uses FIP for pitchers, UZR for fielding
- rWAR uses runs allowed, DRS for fielding

Interpretation (for a full season):

- 0-2 WAR: Reserve / Bench player
- 2-4 WAR: Solid Starter
- 4-6 WAR: All-Star
- 6+ WAR: MVP Candidate

Note: Different WAR calculations provide complementary views. (Source: FanGraphs)