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# Slugging percentage

In baseball statistics, **slugging percentage** (**SLG**) is a measure of the batting productivity of a hitter. It is calculated as total bases divided by at-bats, through the following formula, where *AB* is the number of at-bats for a given player, and *1B*, *2B*, *3B*, and *HR* are the number of singles, doubles, triples, and home runs, respectively:

$$\mathrm{SLG} = \frac{(1B) + (2 \times 2B) + (3 \times 3B) + (4 \times HR)}{AB}$$

Unlike batting average, slugging percentage gives more weight to extra-base hits such as doubles and home runs, relative to singles. Such batters are usually referred to as **sluggers**. Plate appearances resulting in walks, hit-by-pitches, catcher's interference, and sacrifice bunts or flies are specifically excluded from this calculation, as such an appearance is not counted as an at-bat (these are not factored into batting average either).

Babe Ruth holds the MLB career slugging percentage record (.690).[1]

The name is a misnomer, as the statistic is not a percentage but an average of how many bases a player achieves per at bat. It is a scale of measure whose computed value is a number from 0 to 4. This might not be readily apparent given that a Major League Baseball player's slugging percentage is almost always less than 1 (as a majority of at bats result in either 0 or 1 base). The statistic gives a double twice the value of a single, a triple three times the value, and a home run four times.[2] The slugging percentage would have to be divided by 4 to actually be a percentage (of bases achieved per at bat out of total bases possible). As a result, it is occasionally called **slugging average**, or simply **slugging**, instead.[3]

A slugging percentage is always expressed as a decimal to three decimal places, and is generally spoken as if multiplied by 1000. For example, a slugging percentage of .589 would be spoken as "five eighty nine," and one of 1.127 would be spoken as "eleven twenty seven."

## Facts about slugging percentage

A slugging percentage is not just for the use of measuring the productivity of a hitter. It can be applied as an evaluative tool for pitchers. It is not as common but it is referred to as slugging-percentage against.[4]

In 2019, the mean average SLG among all teams in Major League Baseball was .435.[5]

The maximum slugging percentage has a numerical value of 4.000. However, no player in the history of MLB has ever retired with a 4.000 slugging percentage. Four players tripled in their only at bat and therefore share the Major League record, when calculated without respect to games played or plate appearances, of a career slugging percentage of 3.000. This list includes Eric Cammack (2000 Mets); Scott Munninghoff (1980 Phillies); Eduardo Rodríguez (1973

Brewers); and Charlie Lindstrom (1958 White Sox).[6]

# Example calculation

For example, in 1920, Babe Ruth played his first season for the New York Yankees. In 458 at bats, Ruth had 172 hits, comprising 73 singles, 36 doubles, 9 triples, and 54 home runs, which brings the total base count to (73 × 1) + (36 × 2) + (9 × 3) + (54 × 4) = 388. His total number of bases (388) divided by his total at bats (458) is .847 which constitutes his slugging percentage for the season. This also set a record for Ruth which stood until 2001 when Barry Bonds achieved 411 bases in 476 at bats bringing his slugging percentage to .863, which has been unmatched since.[7]

# Significance

Long after it was first invented, slugging percentage gained new significance when baseball analysts realized that it combined with on-base percentage (OBP) to form a very good measure of a player's overall offensive production (in fact, OBP + SLG was originally referred to as "production" by baseball writer and statistician Bill James). A predecessor metric was developed by Branch Rickey in 1954. Rickey, in *Life* magazine, suggested that combining OBP with what he called "extra base power" (EBP) would give a better indicator of player performance than typical Triple Crown stats. EBP was a predecessor to slugging percentage.[8]

Allen Barra and George Ignatin were early adopters in combining the two modern-day statistics, multiplying them together to form what is now known as "SLOB" (Slugging × On-Base).[9] Bill James applied this principle to his runs created formula several years later (and perhaps independently), essentially multiplying SLOB × at bats to create the formula:

$$\mathrm{RC} = \frac{(\text{hits} + \text{walks}) \times (\text{total bases})}{(\text{at bats}) + (\text{walks})}$$

In 1984, Pete Palmer and John Thorn developed perhaps the most widespread means of combining slugging and on-base percentage: On-base plus slugging (OPS), which is a simple addition of the two values. Because it is easy to calculate, OPS has been used with increased frequency in recent years as a shorthand form to evaluate contributions as a batter.

In a 2015 article, Bryan Grosnick made the point that "on base" and "slugging" may not be comparable enough to be simply added together. "On base" has a theoretical maximum of 1.000 whereas "slugging" has a theoretical maximum of 4.000. The actual numbers do not show as big a difference, with Grosnick listing .350 as a good "on base" and .430 as a good "slugging." He goes on to say that OPS has the advantages of simplicity and availability and further states, "you'll probably get it 75% right, at least."[10]

# Perfect slugging percentage

The maximum numerically possible slugging percentage is 4.000.[2] A number of MLB players (117 through the end of the 2016 season) have momentarily had a 4.000 career slugging percentage by homering in their first major league at bat.

# See also

***Baseball portal***

- List of Major League Baseball career slugging percentage leaders
- *Moneyball*
- Sabermetrics

# References


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4. "What is a Slugging Percentage" (http://m.mlb.com/glossary/standard-stats/slugging-percentage). *MLB.com*.
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10. Separate but not quite equal: Why OPS is a "bad" statistic (https://www.beyondtheboxscore.com/2015/9/18/9329763/separate-but-not-quite-equal-why-ops-is-a-bad-statistic), Bryan Grosnick, Beyond the Box Score, September 18, 2015.


# External links

- Slugging Percentage Calculator (http://www.miniwebtool.com/slugging-percentage-calculator/)

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