On-Base Plus Slugging (OPS):

**Definition 1.** \( OPS = OBP + SLG \) (on base percent. + slugging percent.)

This attempts to combine the two ideas into one. But it seems to favor slugging in tests, i.e. those who tend to lead in slugging percentage also tend to lead here.

The next idea was introduced by sportswriter Tom Boswell in 1981. It is an attempt to modify slugging percentage. He called it Total Average and it began as a ratio of total bases to total outs. He used outs instead of at bats since most games require 27 outs, but at bats vary a great deal.

**Definition 2.**

\[
TA = \frac{TB + BB + HBP + SB}{AB - Hits + CS + GIDP}.
\]

Here, HBP = hit by pitch, CS = caught stealing, GIDP = grounded into double play.

Richard Cramer and Pete Palmer developed yet another idea. They sought also to combine OBP and SLG. But their idea was that runs scored was the product of ”getting on base” and also ”advancing runners”. They called their stat Batters Run Average. However, it did not seem to be a good predictor of run production (for either individuals or teams).
Definition 3.

\[ BRAVE = OBP \times SLG. \]

Attention was also paid to trying to model run production. Earnshow Cook (1964) created what he called the Scoring Index (DX).

Definition 4.

\[ DX = \frac{\text{Hits} + \text{BB} + \text{HBP}}{\text{AB} + \text{BB} + \text{HBP}} \times \frac{\text{TB} + \text{SB} - \text{CS}}{\text{AB} + \text{BB} + \text{HBP}} \]

Note this is similar to BRAVE but includes stealing information.

One of the best (in tests) statistic developed along these lines is due to Bill James. In 1985 he announced the stat Runs Created (RC).

Definition 5.

\[ RC = \frac{(\text{Hits} + \text{BB})\text{TB}}{\text{AB} + \text{BB}} \]

Note that since \( SLG = \frac{\text{TB}}{\text{AB}} \), we see this is approximately \( BRAVE \times \frac{1}{AB}. \)

Example: As of Wednesday, Sept. 1, 2004 at 2pm, the Angels had the following team statistics:

\begin{itemize}
  \item Hits = 1335, BB = 348, TB = 2006, AB = 4629 and Runs = 684
\end{itemize}

Using the RC formula, it predicts that they should have scored 678.3 runs! This is an amazingly close estimate, and this was just an arbitrary choice.
Adjustments for Different Conditions:

Clearly, playing for a bad team can change a player’s ability to compile "big numbers". Can we make allowances to see some of the differences?

Wins relative to your team (WRT) is an attempt to do that.

**Definition 6.**

\[ WRT = \left( \frac{\text{wins}}{\text{totaldecisions}} - \frac{\text{teamwins} - \text{yourwins}}{\text{teamlosses} - \text{yourlosses}} \right) \times (\text{totaldecisions}). \]

Example: In 1982 Bobby Castillo had a 13-11 record for the Twins who were 60-102. Clearly a good record for a bad team.

His WRT = \( \left( \frac{13}{24} - \frac{47}{91} \right) \times 24 = 4.824 \).

What this means is that Castillo accounted for almost 5 wins more than the average pitcher on the Twins would have been able to do.

Comparing players in different leagues or different times is the point of the next stat. Relative Batting Average (RBA) compares a hitter to all others in his league.

\[ RBA = \frac{\frac{\text{yourhits}}{\text{yourAB}}}{\frac{\text{leaguehits} - \text{yourhits}}{\text{leagueAB} - \text{yourAB}}} . \]

Example: In 1965 Pete Rose hit .335 to lead the NL. His RBA is 1.38. What does that mean? It means he was 38 percent above average for the league.