

# How a MLB Player impacts their Team's Offensive Performance

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## Introduction

How important are MLB players to their specific teams? Traditional statistics like Runs Batted In (RBIs) and Runs are no longer valued as the situation you're in can vary them more than actual ability or skill. However, what if there was a way to scale that? Today, I'll measure how much individual players have contributed to their team's runs over the course of the season and tier them based on integral to unimpactful.

## Key Points to Start

Before we start, there are some assumptions I made with my calculations. To find the percentage runs contributed, I add a player's RBIs and Runs, then subtracted Home Runs. Then, I divided that number by the total runs their team scored. The formula you can see is below:

$$(\text{Runs} + \text{RBIs} - \text{HRs}) / \text{Total Team Runs Scored}$$

Total Team Runs Scored means the runs that the player's team scores. So if the player is on the Orioles and the Orioles score 700 runs over the entire season, the Total Team Runs Scored is 700.

Additional Key Points:

1. A team's total team run percentage will go over 100% as multiple players can contribute to one run. For example, a player hits a home run with a player on first base. The batter gets credit for the run on first base with an RBI while the base runner gets credit for the run.
2. I subtracted HRs as when a player hits a HR it counts as a RBI and a run for them, so it double counts
3. This statistic does leave out runs through non-RBI's methods like errors or double plays. However, those aren't entirely productive ways to drive in runs so I don't mind leaving them out.
4. The minimum games played to qualify with a team was 100, so players injured or traded mid-season (except one) won't make an impact on this list.

This percentage makes it so you can see how impactful Javy Baez was for the Tigers and compare that with Aaron Judge and the Yankees. It isn't a perfect statistic but it can help us see who is contributing to their team's runs.

Additionally, I am aware that where a player hits in the order does have an impact on their runs and RBIs. However, I believe that a player's ability will not skew this too much. Maybe they'll be a tier off but not more than that. A player hitting 9th won't have many RBI opportunities but will have many run opportunities as the top of the order is after him. This is something I'm aware of and just wanted to note.

## Tiers

Now, I will place all the players into tiers based on their percentages. I won't have time to talk about each player, but I will mention the noteworthy inclusions.

Excel data:  Team Run Percentage.xlsx

### Tier 1: Integral to their Team



- Jose Ramirez (26.8%)
- Aaron Judge (25%)
- Shohei Ohtani (24.2%)
- Manny Machado (24.1%)
- Pete Alonso (24.1%)
- Paul Goldschmidt (24.1%)
- Fransisco Lindor (23.2%)
- Freddie Freeman (23.1%)
- Adolis Garcia (22.9%)
- Jake Cronenworth (22.6%)
- Marcus Semien (22.3%)
- Bobby Witt Jr (22.2%)

Count: 12

Unsurprisingly, Tier 1 includes many elite players. Ramirez, Judge and Ohtani appeared to be carrying their teams and were. Machado and Goldschmidt were the frontrunners for NL MVP and that's reflected in contributing to almost a quarter of their team's runs. Along with the Padres, the Mets and Rangers had two entries each (and No Corey Seager), which looks great on the surface but it is risky when 2 players are so integral to an offense. And the most surprising inclusion of all, rookie Bobby Witt Jr. Despite slightly underwhelming statistics, his longevity and base running prowess allowed him to contribute to 22.2% of the Royals' runs.

## Tier 2: Extremely Important



- Alex Bregman (22.1%)
- CJ Cron (21.8%)
- Dansby Swanson (21.5%)
- Trea Turner (21.3%)
- Randy Arozarena (21.2%)
- Jose Abreu (21.1%)
- Yordan Alvarez (21.0%)
- Amed Rosario (20.9%)
- Willy Adames (20.7%)
- Bo Bichette (20.6%)
- Javier Baez (20.5%)
- Cedric Mullins (20.3%)
- Sean Murphy (20.2%)
- Christian Walker (20.2%)
- Kyle Tucker (20.1%)
- Mike Trout (20.1%)
- Vlad Guerrero Jr (20.0%)

Count: 17

This section is fascinating because it includes some of the game's best hitters like Yordan Alvarez, and some extremely under the radar guys like Sean Murphy and Christian Walker. Houston had three guys in this tier, while Toronto had two. For Houston, it's impressive how they can continue to have guys hit at an elite level despite letting talented hitters walk. Christian Walker and Sean Murphy had very good, under-the-radar seasons reflected by their huge contributions to struggling teams.

Despite our minimum of 100 games needing to be played, only 1 player in either of the top two tiers had under 130 games played and that was Mike Trout (119). This statistic takes into account durability and longevity which might be his only weakness.

### Tier 3: Important Players



- Corey Seager (19.9%)
- Anthony Santander (19.9%)
- Kyle Schwarber (19.8%)
- Rafael Devers (19.7%)
- Matt Olson (19.6%)
- Christian Yelich (19.6%)
- Brandon Nimmo (19.4%)
- Mookie Betts (19.4%)
- Steven Kwan (19.3%)
- Ian Happ (19.3%)
- Xander Bogaerts (19.3%)

- Eugenio Suarez (19.1%)
- Julio Rodriguez (19.0%)
- Nolan Arenado (18.9%)
- Kyle Farmer (18.8%)
- Alex Verdugo (18.8%)
- Ty France (18.7%)
- Ryan Mountcastle (18.5%)
- Luis Arraez (18.5%)
- Alec Bohm (18.5%)
- Taylor Ward (18.5%)
- Bryan Reynolds (18.4%)
- Austin Riley (18.4%)
- J.T Realmuto (18.3%)
- Seth Brown (18.1%)
- George Springer (18.1%)
- Tommy Edman (18.0%)

Count: 27

Moving onto important players, you'll notice that as the talent gets diluted, the tiers get bigger. What I find fascinating about this tier is the number of electric players. Guys like Julio Rodriguez and Mookie Betts are great players, but don't have that top level impact because they hit earlier in the order (limiting their chance at RBIs). Other great players like Seager, Devers, Olson, Arenado and Bogaerts just to name a few were important players in their teams' offense.

This tier seemed to include top options on teams that struggled (Kyle Farmer, Luis Arraez, Ian Happ, Bryan Reynolds) or second options on teams that were successful like Brandon Nimmo, Julio Rodriguez, Austin Riley and George Springer. There were at least 3 Red Sox, Phillies and Mariners players here. While the Mariners and Phillies did finish in wild card spots, it shows that not having a top 2 tier player makes it hard to be an elite regular season team.

Lastly, I have players that I could fit into none of the categories above: Seth Brown and Taylor Ward. Both were not the primary producers on their team yet their team was still awful. They both had very underrated seasons as well. If I were a contender, I'd keep tabs on these guys as a possible trade piece as their production was great on terrible teams.

## **Tier 4: Average Players**



- Daulton Varsho (17.9%)
- Jose Altuve (17.9%)
- Yandy Diaz (17.9%)
- Jurickson Profar (17.7%)
- Tony Kemp (17.6%)
- Brendan Rodgers (17.5%)
- Charlie Blackmon (17.5%)
- Rhys Hoskins (17.4%)
- Nathaniel Lowe (17.4%)
- Andrew Vaughn (17.3%)
- Wilmer Flores (17.3%)
- Nelson Cruz (17.2%)
- Matt Chapman (17.0%)
- Andres Gimenez (16.9%)
- Rowdy Tellez (16.7%)
- Thairo Estrada (16.6%)
- JD Martinez (16.6%)
- Patrick Wisdom (16.4%)
- Ryan McMahon (16.3%)
- Randal Grichuk (16.3%)

- Jeff McNeil (16.3%)
- Austin Hays (16.3%)
- Andrew McCutchen (16.3%)
- Josh Rojas (16.1%)
- Carlos Correa (16.1%)
- Gio Urshela (16.1%)
- Cesar Hernandez (16.1%)
- Lane Thomas (16.1%)
- Nico Hoerner (16.0%)
- Starling Marte (15.9%)
- Teoscar Hernandez (15.9%)
- Mike Yastrzemski (15.8%)
- Salvador Perez (15.8%)
- MJ Melendez (15.8%)
- Josh Bell (15.8%)
- Gleyber Torres (15.5%)
- Will Smith (15.5%)
- Jeimer Candelario (15.4%)
- Mark Cahna (15.4%)
- Ketel Marte (15.4%)
- Jeremy Pena (15.3%)
- Justin Turner (15.2%)
- Michael Harris (15.2%)
- Josh Naylor (15.2%)
- Ke'Bryan Hayes (15.1%)
- Ha-Seong Kim (15.0%)
- AJ Pollock (15.0%)

Count: 47

The most diverse tier: I don't think we can summarize these players into distinct groups. I did notice that some of these players had huge hot streaks for parts of the season (Yandy Diaz, Nathaniel Lowe, Wilmer Flores, Andrew Vaughn) but struggled with consistency.

Other inclusions were solid hitters on dominant teams like Jeff McNeil, Jose Altuve, Gleyber Torres and Will Smith were the first to come to mind. These guys wouldn't cripple teams if they left but were important reasons why their team was successful.

Additionally, players who were thought of to have poor hitting seasons like Jeimer Candelario or AJ Pollock were bigger contributors to their teams than expected.

Lastly, I have to mention Carlos Correa. Being paid north of \$30 million, Correa being in the average tier (in the middle of this tier too) is surprising of a player of his caliber. Despite playing 136 games, he was underwhelming. Will this affect his next contract? Probably not. But, I wouldn't pay up for Correa if I was a smaller team looking for a superstar. Maybe, he's better as a great player in a great team rather than the best on a team trying to improve.

## Tier 5: Expendable Offensive Players



- Willson Contreras (14.9%)
- Myles Straw (14.9%)
- Anthony Rizzo (14.9%)
- Jorge Mateo (14.8%)
- Harlod Ramirez (14.7%)
- Adley Rutschman (14.7%)
- Joc Pederson (14.5%)
- Adam Fraizer (14.5%)
- Hunter Renfroe (14.5%)
- Juan Soto - WSH (14.4%)
- Nick Castellanos (14.1%)
- Cody Bellinger (14.0%)
- Owen Miller (14.0%)
- Alejandro Kirk (13.9%)
- Eduardo Escobar (13.9%)
- Harold Castro (13.8%)
- Max Muncy (13.8%)
- Jose Miranda (13.8%)
- Isiah Kiner-Falefa (13.6%)
- Jorge Polanco (13.5%)

- J.P Crawford (13.5%)
- Brendan Donovan (13.5%)
- Jonathan Schoop (13.5%)
- Ronald Acuna Jr (13.4%)
- DJ LeMahieu (13.4%)
- Kolten Wong (13.4%)
- Ben Gamel (13.4%)
- Trent Grisham (13.3%)
- Garrett Cooper (13.3%)
- Yuli Gurriel (13.3%)
- Gerlaod Perdomo (13.2%)
- Rougned Odor (13.2%)
- Jose Iglesias (13.2%)
- Josh Donaldson (13.1%)
- Christopher Morel (13.1%)
- Seiya Suzuki (13.1%)
- Travis d'Arnaud (13.1%)
- Jesse Winker (13.0%)
- Brandon Crawford (13.0%)
- Bryson Stott (13.0%)
- Michael A.Taylor (13.0%)

Count: 41

I think the title of this tier may lead you to believe that the players here aren't good which is untrue. They just didn't contribute as much to their team's success as you would have liked. Some players have fair excuses as catcher Willson Contreras was hindered by the limited games catchers play. Meanwhile, Adley Rutschman played Catcher and DH but wasn't called up until later in the season. Contreras and Rutschman were 5th and 6th total in Team Run Percentage among catchers, so maybe this statistic isn't good at evaluating catcher offensive performance (Kirk and d'Arnaud can fall into this argument too).

The other main theme of this tier was struggling stars: Nick Castellanos, Cody Bellinger, Max Muncy, Ronald Acuna Jr and Jesse Winker. These guys all had high expectations but didn't provide enough offense for how talented you'd expect them to be.

Lastly, I did want to note that it is extremely impressive that Juan Soto in his stint with the Nationals made his way here with 101 games and contributed 14.4% of total runs. Even with his walk first approach, that is incredible. No one above him had less than 113 games (Adley Rutschman) and the next closest player with 101 games was Joey Wendle (9.6%). Just wanted to point that out.

## Tier 6: The No-Impact Offensive Players



- Luis Rengifo (12.8%)
- Lourdes Gurriel Jr (12.8%)
- Eric Haase (12.7%)
- Max Kepler (12.6%)
- Roman Urias (12.6%)
- Yonathan Diaz (12.6%)
- Willi Castro (12.6%)
- Michael Chavis (12.5%)
- Gary Sanchez (12.5%)
- Hunter Dozier (12.5%)
- Giancarlo Stanton (12.4%)
- Nick Gordon (12.4%)
- Santiago Espinal (12.3%)
- Jonathan India (12.2%)
- Jesus Aguilar (12.1%)
- Jon Berti (12.1%)
- Gavin Lux (12.0%)
- Chad Pinder (12.0%)
- Cal Raleigh (11.9%)
- Ramiel Tapia (11.9%)
- Jonah Heim (11.7%)
- Luis Urias (11.7%)
- Taylor Walls (11.7%)

- Yoan Moncada (11.7%)
- Dylan Carlson (11.7%)
- Bryan De La Cruz (11.6%)
- Ji-Man Choi (11.6%)
- Tyrone Taylor (11.4%)
- Victor Robles (11.4%)
- Miguel Cabrera (11.3%)
- Marcell Ozuna (11.3%)
- Jared Walsh (11.2%)
- Albert Pujols (11.1%)
- Nicky Lopez (11.1%)
- Elvis Andrus (11.1%)
- Connor Joe (11.0%)
- Isaac Parades (11.0%)
- Miguel Rojas (10.9%)
- Jack Suwinski (10.8%)
- Alek Thomas (10.8%)
- Austin Nola (10.8%)
- Aaron Hicks (10.7%)
- Austin Slater (10.6%)
- Gavin Sheets (10.5%)
- Chas McCormick (10.4%)
- Spencer Torkelson (10.4%)
- Kole Calhoun (10.3%)
- Keibert Ruiz (10.3%)
- Lars Nootbar (10.2%)
- Josh Harrison (10.2%)
- Elias Diaz (10.2%)
- Maikel Franco (10.1%)
- Nick Senzel (10.0%)

Count: 53

The players in this category had pretty much no impact on their teams season as a whole. This doesn't mean they were bad or didn't help in individual moments (Giancarlo Stanton had some huge hits in the ALDS and Cal Raleigh was extremely clutch for the Mariners). But overall, their removal wouldn't change much.

First, I think we should look at some of the notable names who had poor years like Stanton who was affected by injuries, reigning NL Rookie of the Year Jonathan India, and Miguel Cabrera who's winding down his career.

These players aren't as bad as you think. Overall, they sported a .242 BA with a .307 OBP and 98 OPS+ (and remember this is a good sample size). But remember, MLB teams aren't looking for replacement level options.

Gavin Lux and Santiago Espinal surprised me as I chalked it up to good players on high powered offenses. However, team run percentage shows they're expendable as they each played over 128 games (when the average is this tier as 111).

Overall, a lack of games played is somewhat of a reason these guys may be here. But, these guys weren't valuable enough hitters in 2022 to make an impact on their team's season.

## Tier 7: The Worst



- Carson Kelly (9.7%)
- Jace Peterson (9.7%)
- Rafael Ortega (9.6%)
- Joey Wendle (9.6%)
- Martin Maldonado (9.5%)
- Jacob Stallings (9.4%)
- Chris Taylor (9.2%)
- Bobby Dalbec (9.1%)
- Andrew Velazquez (9.0%)
- Matt Vierling (9.0%)
- Abraham Toro (8.8%)
- Jose Trevino (8.8%)
- Kyle Isbel (8.6%)
- Dylan Moore (8.6%)
- Max Stassi (8.5%)
- Gilberto Celestino (7.5%)

- Alfonso Rivas (7.5%)
- Austin Hedges (7.0%)
- Adam Engel (6.9%)
- Luis Guillorme (6.2%)
- Ryan McKenna (4.7%)

Count: 21

Finally, we hit the least impactful players who hit the 100 game mark. It is important to note that only one of these players, Andrew Velazquez, even hit 120 games, so most of these guys weren't impactful but also weren't in the lineup everyday either.

These players averaged an OPS+ of 78 with only two, Guillorme and Moore, above 100 or league average. This doesn't mean these players were useless as we had a plethora of great defense catchers in Stallings, Trevino and Maldonado. Overall, this tier didn't include many surprises. Players who struggled to hit the ball and impact their team offensively.

## **Conclusion:**

This was an intriguing project as it allowed me to see players in comparison with their teams. There are flaws with this statistic, but I believe it should open a debate about why cumulative RBI, Run and other totals aren't comparable across teams.

Overall, Team Run Percentage gives us a basic level idea of how impactful a player is for their team's offense. Hopefully teams take this into account in their baseball operations decisions.

## **Sources:**

All player statistics were taken from the team's main page on Baseball Reference and then combined into one large excel file.