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HANK AARON'S HOME COOKING

# Top Sluggers and Their Home Run Breakdowns

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**One of the qualities that makes baseball unique is its embrace of non-standard playing surfaces. Football fields and basketball courts are always the same length, but no two outfields are created equal. As Jay Jaffe explains via a look at Barry Bonds and the all-time home run leaderboard, a player's home park can have a significant effect on how often he goes yard.**

It's been a couple of weeks since the 30th anniversary of Hank Aaron's historic 715th home run and the accompanying tributes, but Barry Bonds' exploits tend to keep the top of the all-time chart in the news. With homers in seven straight games and counting at this writing, Bonds has blown past Willie Mays at number three like the Say Hey Kid was standing still, which—congratulatory road trip aside—he has been, come to think of it.

Baseball Prospectus' Dayn Perry penned an affectionate tribute to Aaron last week. In reviewing Hammerin' Hank's history, he notes that Aaron's superficially declining stats in 1968 (the Year of the Pitcher, not coincidentally) led him to consider retirement, but that historian Lee Allen reminded him of the milestones which lay ahead. Two years later, Aaron became the first black player to cross the 3,000 hit threshold, two months ahead of Mays. By then he was chasing 600 homers and climbing into some rarefied air among the top power hitters of all time.

Aaron produced plenty of late-career homer heroics after 1968. From ages 35 (1969) through 39, he smacked 203 dingers, and he added another 42 in his 40s, meaning that nearly a third of his homers (32.4 percent) came after age 35. The only batters other than Aaron to top 200 homers after 35 are Bonds and Rafael Palmeiro.

As amazing as that late kick is, one thing neither Perry, nor any of the other writers whose Aaron tributes I came across, mentioned is the influence his ballpark may have played on those totals. When examining the effect of parks on any player's career, one should bear in mind the sheer contrast between the comforts of home and the drudgery of travel, as well as the venue's specifications and the sample sizes which may affect a single season. Playing at home means getting to sleep in your own bed, and who among us doesn't prefer that to living out of a suitcase?

Nonetheless, the pattern for Aaron is rather convincing. The Braves moved from Milwaukee to Atlanta in 1966. According to Ballparks.com, Milwaukee County Stadium's fences at the time they left were (left to right) 320'-362'-402'-362'-315', ranging from 8'4" to 10' tall. Atlanta-Fulton County Stadium's fences were further back to begin with (325'-385'-402'-385'-325') but they stood only 6' tall. The park underwent some rejiggering in the team's first few years and stood at 330'-375'-400'-375'-330' by 1969. While those dimensions made the field larger than Milwaukee's, the Atlanta stadium's altitude of 1,000 feet above sea level placed it as the highest park in the majors until the Colorado Rockies came along, and its impact on homer totals gave it the nickname "The Launching Pad."

In his nine years in Atlanta, Aaron hit 192 homers at home versus 145 on the road. But besides the home runs, the park wasn't especially a hitter's park, at least until a few new NL ballparks came into play midway through that string. Here are Aaron's home-road breakdowns, as taken from the *Bill James Historical Abstract* (the 1987 version), along with the Batters' Park Factors from Baseball-Reference.com. Remember that the BPFs are for runs and not homers, an important distinction which Perry recently discussed in the context of Dodger Stadium. I've split Aaron's Atlanta period into two eras, one in which his park played as essentially neutral on scoring and the other when it became a hitter's park; the average Park Factors for those eras are weighted by Aaron's plate appearances:

| Year | PF | HHR | RHR | PA | PA/HR | Notes |
|---|---|---|---|---|---|---|
| 1966 | 102 | 21 | 23 | 688 | 15.6 | fences 325-385-402-385-325 |
| 1967 | 99 | 23 | 16 | 669 | 17.2 | |
| 1968 | 100 | 17 | 12 | 676 | 23.3 | |
| 1969 | 100 | 23 | 23 | 639 | 13.9 | fences 330-375-400-375-330; add Jarry (MON), Murphy (SD) |
| **TOT** | **100.3** | **84** | **74** | **2672** | **16.9** | |

| Year | PF | HHR | RHR | PA | PA/HR | Notes |
|---|---|---|---|---|---|---|
| 1970 | 106 | 23 | 15 | 598 | 15.7 | add Three Rivers (Pit), Riverfront (Cin) |
| 1971 | 106 | 31 | 16 | 573 | 12.2 | add Veterans (Phi) |
| 1972 | 109 | 19 | 15 | 544 | 16.0 | |
| 1973 | 108 | 24 | 16 | 465 | 11.6 | fences 330-375-402-375-330 |
| 1974 | 104 | 11 | 9 | 382 | 19.1 | fences 330-385-402-385-330 |
| **TOT** | **106.7** | **108** | **71** | **2562** | **14.3** | |

Aaron's increased homer frequency did coincide with the 1969 change in dimensions; he went from one every 18.2 PA in his first three years in Atlanta to one every 14.2 afterwards. Judging from the BPFs, the stadium's impact on runs was due more to the retirement of Crosley Field (an extreme hitter's park) in favor of Riverfront (a pitcher's park), and the addition of pitcher-friendly Jack Murphy Stadium, the expansion San Diego Padres' park, than to the changed dimensions. A quick scan of various park factors around the league confirms this. Throwing out 1970 because

both new stadiums were added mid-season, we see the following Batter Park Factors among the stadiums listed above (weighted to account for the two expansion franchises' late entry):

| Years | PIT | CIN | PHI | MON | SD | AVG | ATL |
|---|---|---|---|---|---|---|---|
| 1966-69 | 99.5 | 107.8 | 99.5 | 100.0 | 96.0 | 101.6 | **100.3** |
| 1971-74 | 97.8 | 96.5 | 102.5 | 103.0 | 93.5 | 98.7 | **106.8** |

So Aaron's stadium favored offense. How much did it aid homers? Retrosheet's team splits for the era go back only to 1969, but the data quite clearly shows the "Launching Pad" tag was deserved. From 1969-1974, the Braves and their opponents hit 1.35 homers in Atlanta for every one on the road:

| Year | AFCS | Road | Notes |
|---|---|---|---|
| 1969 | 161 | 124 | |
| 1970 | 206 | 134 | |
| 1971 | 186 | 119 | |
| 1972 | 154 | 125 | |
| 1973 | 205 | 145 | Aaron, Evans & Johnson top 40 HR |
| 1974 | 109 | 108 | league HR rate dropped 21% |

| | | |
|---|---|---|
| **TOT** | **1021** | **755** |
| AVG | 170 | 126 |

Aaron's rate for that interval was 1.39 home HR for every road HR, slightly above the Braves and their opponents. But among the great home run hitters, how big a deal is all of this? Using the aforementioned *Historical Abstract*, Retrosheet, and BigLeaguers.com, I compiled the home-road breakdowns of the top 20 home run hitters of all time. Asterisks denote active players, totals are through April 20, and yes, Barry has caused me to update this a few times.

| Rank | Player | HR | HHR | RHR |
|---|---|---|---|---|
| 1 | Hank Aaron | 755 | 385 | 370 |
| 2 | Babe Ruth | 714 | 347 | 367 |
| **3** | **Barry Bonds*** | **667** | **327** | **340** |
| 4 | Willie Mays | 660 | 335 | 325 |
| 5 | Frank Robinson | 586 | 321 | 265 |
| 6 | Mark McGwire | 583 | 285 | 298 |
| 7 | Harmon Killebrew | 573 | 291 | 282 |
| 8 | Reggie Jackson | 563 | 280 | 283 |
| 9 | Mike Schmidt | 548 | 265 | 283 |
| **10** | **Sammy Sosa*** | **543** | **292** | **251** |
| 11 | Mickey Mantle | 536 | 266 | 270 |
| 12 | Jimmie Foxx | 534 | 299 | 235 |
| **13** | **Rafael Palmeiro*** | **529** | **288** | **241** |
| t14 | Willie McCovey | 521 | 264 | 257 |
| t14 | Ted Williams | 521 | 248 | 273 |
| t16 | Ernie Banks | 512 | 290 | 222 |
| t16 | Eddie Mathews | 512 | 237 | 275 |
| 18 | Mel Ott | 511 | 323 | 188 |
| 19 | Eddie Murray | 504 | 248 | 256 |
| 20 | Lou Gehrig | 493 | 251 | 242 |

As a whole, these men were aided slightly by their parks, hitting 51.4 percent of their homers at home, an average advantage of 16 homers (292 to 276). Aaron's decisive Atlanta advantage is mostly mitigated by his Milwaukee years, and while he ranks towards the top in his ratio of home HR to road HR, he's still below the group average:

| Player | H/R Ratio |
|---|---|
| Ott | 1.718 |
| Banks | 1.306 |
| Foxx | 1.272 |
| Robinson | 1.211 |
| **Palmeiro*** | **1.195** |
| **Sosa*** | **1.163** |
| Aaron | 1.041 |
| Gehrig | 1.037 |
| Killebrew | 1.032 |
| Mays | 1.031 |
| McCovey | 1.027 |
| Jackson | 0.989 |
| Mantle | 0.985 |
| Murray | 0.969 |
| **Bonds*** | **0.962** |
| McGwire | 0.956 |
| Ruth | 0.946 |
| Schmidt | 0.936 |
| Williams | 0.908 |
| Mathews | 0.862 |
| **AVG** | **1.058** |

Mel Ott took advantage of the Polo Grounds' short foul lines to an almost absurd extreme, while Ernie Banks, Jimmie Foxx, and Frank Robinson also benefited greatly from their home parks. Interestingly enough, lefty-hitting Eddie Mathews, a teammate of Aaron's from 1954-1966, was hurt the most of any of these players; he played only one season in Atlanta and so didn't gain the late-career advantage that Aaron did. One of the bigger surprises on this list was Babe Ruth's home/road breakdown: Despite the "House That Ruth Built" tag applied to Yankee Stadium, he actually had more homers on the road than at home. Here's a quick breakdown of the Bambino's career by phase:

| Years | Park | HHR | RHR |
|---|---|---|---|
| 1914-19 | Fenway | 11 | 38 |
| 1920-22 | Polo | 75 | 73 |
| 1923-34 | Yankee | 259 | 252 |
| 1935 | Braves | 2 | 4 |
| **TOT** | | **347** | **367** |

At the outset, I would have wagered that the extreme split in Fenway had more to do with his career on the mound, with the Sox pitching their sensation at home whenever possible to boost attendance and letting him play outfield on the road. But the data to be gleaned from Retrosheet (which doesn't have splits for that era) doesn't support this. Ruth played the outfield for the Sox only in 1918 and 1919, a time during which his homer split, according to James, was nine in Fenway and 31 on the road. At that point his pitching career was on the wane; he made only 34 starts in those two years, compared to 79 in the previous two. Of those 34 starts, only 19 came at Fenway, a minimal advantage. It's more likely that Fenway's righty-favoring dimensions (initially 321'-388'-488'-550' (deepest right center)-402'-314', according to *Take Me Out to the Ballpark*) really did have an impact on his totals.

In any event, the home/road splits of the top home run hitters make for interesting data. One quick-and-dirty way of looking at this, or rather two ways, is to double the home totals and the road totals to get numbers approaching their true totals, then comparing them to the current list (whose numbers many of us substitute for sheep in our insomnia-addled hours). The former gives us a number which the hitter might have achieved had he enjoyed all of the advantages of home, while the latter gives us an idea of how he would have fared in more neutral surroundings. Leaving their overall rankings alongside their names to emphasize the shifts, we get:

| Rank | Player | 2x HHR | Rank | Player | 2x RHR |
|---|---|---|---|---|---|
| 1 | Aaron | 770 | 1 | Aaron | 740 |
| 2 | Ruth | 694 | 2 | Ruth | 734 |
| 4 | Mays | 670 | **3** | **Bonds*** | **680** |
| **3** | **Bonds*** | **654** | 4 | Mays | 650 |
| 18 | Ott | 646 | 6 | McGwire | 596 |
| 5 | Robinson | 642 | 8 | Jackson | 566 |
| 12 | Foxx | 598 | 9 | Schmidt | 566 |
| **10** | **Sosa*** | **584** | 7 | Killebrew | 564 |
| 7 | Killebrew | 582 | t16 | Mathews | 550 |
| t16 | Banks | 580 | t14 | Williams | 546 |
| **13** | **Palmeiro*** | **576** | 11 | Mantle | 540 |
| 6 | McGwire | 570 | 5 | Robinson | 530 |
| 8 | Jackson | 560 | t14 | McCovey | 514 |
| 11 | Mantle | 532 | 19 | Murray | 512 |
| 9 | Schmidt | 530 | **10** | **Sosa*** | **502** |
| t14 | McCovey | 528 | 20 | Gehrig | 484 |
| 20 | Gehrig | 502 | **13** | **Palmeiro*** | **482** |
| t14 | Williams | 496 | 12 | Foxx | 470 |
| 19 | Murray | 496 | t16 | Banks | 444 |
| t16 | Mathews | 474 | 18 | Ott | 376 |

The "home-doubled" list makes for a few dramatic changes. Aaron's advantage on Ruth is increased, but more notably, Ott zooms into the top five from the lower reaches of the chart, Frank Robinson crosses the 600 threshold, and Jimmie Foxx reclaims the top-10 status he held a quarter-century ago. Two Chicago Cubs, Sammy Sosa and Ernie Banks, move up considerably in their totals, but then so does the majority of this list. In all, three members of the true top 10 fall out of that elite. The "road doubled" list is much more similar to the actual one in the rankings. Aaron holds only a bare six-homer advantage on Ruth, and Bonds vaults way past his godfather Mays. Only two of the true top 10 fall out, and the jockeying at the top of the list is very minor, with Mathews and Ted Williams both joining its lower reaches. At the bottom of the list, the changes are more dramatic; four members of the 500 HR club fall below that mark with their road-doubled totals, with Ott undercutting 400.

The take-home message of all of this is that while Hank Aaron's homer totals, particularly his late-career surge, were helped by his home park, in the context of the game's top home run hitters, the effect was not all that pronounced. For many of the hitters, switching teams or moving into new ballparks tended to balance out their favorable and unfavorable conditions. Taking advantage of one's playing environment isn't a crime, and before we dish out an asterisk for Aaron's tremendous achievement, we ought to consider also that he racked up a good amount of his homer totals in the pitcher-friendly 1960s. Baseball history is full of such fluctuations, and while it's important to consider a player's accomplishments in the context of the terrain, that shouldn't diminish our admiration for Aaron's feat.

That goes for Bonds as well. One fact that's been lost in his homer surge of the past few years is that the Giants' new stadium, SBC Park (formerly Pac Bell) is a terrible home run environment for EBB (Everybody But Barry). Comparing Bonds' home and road HR totals to those of the Giants and their opponents in games at SBC/Pac Bell and elsewhere:

| Year | BBH | BBR | SF | RD |
|---|---|---|---|---|
| 2000 | 25 | 24 | 171 | 206 |
| 2001 | 37 | 36 | 146 | 234 |
| 2002 | 19 | 27 | 114 | 200 |
| 2003 | 23 | 22 | 143 | 173 |
| **TOT** | **104** | **109** | **574** | **813** |

In the park's first four years, Bonds hit 0.954 homers at home for every one on the road. Think about that—as amazing as his feats have been, *his numbers may still be limited by his home park*. The Giants and their opponents have suffered even more, hitting only 0.706 homers there for every homer elsewhere. Some might point to darker explanations for Barry's ability to overcome his park, but his achievements deserve some appreciation as well. If he eventually passes Aaron for the top spot, it won't be because of his environment, it will be in spite of it.