

The Real Curse of the Bambino

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I had to wonder if I would ever get out
of that man's shadow.

— Hank Aaron
I Had A Hammer [1]

Introduction

George Herman “Babe” Ruth was arguably the greatest pure slugger of his or any era, although he does not rank first in home runs (second), runs (tied for third), extra base hits (third), or runs batted in (second).¹ Ruth’s career began in 1914 as a left-handed pitcher for the Boston Red Sox. In six years on the mound at Fenway, he won 89 regular season games and three World Series games (1-0 in 1916 and 2-0 in 1918). Before he was converted to a full-time outfielder, Ruth had fewer than 150 at bats in each of his first four years with the Red Sox. Apparently, Boston did not begin to recognize his value as a hitter until 1918 when he had 317 appearances. In 1919, Babe’s last year in Boston before that now infamous sale to the New York Yankees, he had 432 at bats and led the majors in slugging average (.657), home runs (29),² runs (103), and runs batted in (114) [3]. In his first season in Yankee pinstripes, Babe Ruth hit 54 home runs,

shattering his own single-season record established the year before.³ George Sisler was a distant runner-up in 1920 with only 19 home runs.

Baseball fans might now wistfully wonder how much higher Babe Ruth's historic standing would have been if he had had more opportunities to swing his 42-ounce bat earlier in his career. Did those five years as a pitcher cost him a realistic chance to establish and keep multiple all-time batting records, including a reasonable shot at 900 career home runs?

The Data and Results

Table 1 summarizes Babe Ruth's career totals in four different batting categories through sixteen full seasons (excluding his first five as a pitcher for the Red Sox and his final season in 1935 with the Boston Braves for whom he played only 28 games). Babe Ruth's career statistics are from *The Baseball Encyclopedia* [3].

Between 1919 and 1934, Babe Ruth hit 688 home runs ($\mu = 43.0$ home runs per season, $\sigma = 11.12$). To jump ahead of Aaron, Ruth would only need an additional 68 (= 756 – 688) home runs over the five seasons he spent pitching. Hence, the statistical question becomes: What is the probability that Ruth's five-season average \bar{x} would be at least as large as 13.6 (= 68/5) if his average (as a non-pitcher) was 43.0 home runs per season with a standard deviation of 11.12? Ruth's averages in all four batting categories over sixteen "full" seasons were much higher than the corresponding five-season averages Babe would need to move to the top of the record lists. As can be seen from the uniformly high probabilities reported in the last column of Table 1, if Ruth had been employed differently early in his career he would most likely *still* be *first* in "Home Runs", *first* in "Runs", *first* in "Extra Base Hits", and *first* in "Runs Batted In".

The ease Ruth would have had at displacing Aaron begs the following question: Could the Babe have hit 900 home runs? Now, the statistical question becomes: What is the probability that Ruth's five-season average \bar{x} would be at least 42.4 [= (900-688)/5] if $\mu = 43$ and $\sigma = 11.12$? Clearly, this probability will be greater than 0.5. How much greater? First, we standardize the value $\bar{x} = 42.4$:

$$z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}} = \frac{42.4 - 43.0}{11.12 / \sqrt{5}} = -.12$$

Thus,

$$\Pr(\bar{x} \geq 42.4) = \Pr(z \geq -.12) = .55$$

Loosely speaking (assuming that the sampling distribution of \bar{x} is roughly normal with mean μ and a standard error of σ / \sqrt{n}), the probability is .55 that Babe Ruth would have hit 900 career home runs. Had Ruth not pitched on a regular basis early in his career, he would still be wearing the home run crown.

Concluding Remarks

Babe Ruth won 94 games in his career as a pitcher (89 with the Red Sox, 5 more with the Yankees). He won a lot more as a hitter. Admittedly, baseball lost a very good pitcher when Babe Ruth became the Sultan of Swat. Yet, if Ruth had not spent the first five years of his career as a pitcher for the Boston Red Sox, he could have easily surpassed Hank Aaron's career marks. Babe Ruth would today still be the all-time leader in home runs, runs, extra base hits, and runs batted in. Perhaps the real "Curse of the Bambino" can be summed up in a single word: pitching.

Table 1. Babe Ruth's Statistics, 1919 – 1934

<i>Category</i>	<i>Major League Record</i>	<i>Ruth's 16-Season Total</i>	<i>Ruth's 16-Season Average</i>	<i>5-Season Average Needed To Break Record</i>	z_{Calc}	$p(z > z_{Calc})$
<i>Home Runs</i>	755	688	43.00	13.60	-5.72	>.999
<i>Runs</i>	2288	2062	128.875	45.40	-5.91	>.999
<i>Extra Base Hits</i>	1477	1264	79.00	42.80	-3.87	>.999
<i>Runs Batted In</i>	2297	2084	130.25	42.80	-6.67	>.999

Note: Through the 2002 regular season, Rickey Henderson held the record in *Runs*; Hank Aaron was the all-time major league leader in *Home Runs*, *Extra Base Hits*, and *Runs Batted In* [2].

References

1. H. Aaron, *I Had a Hammer: The Hank Aaron Story*. HarperCollins, New York, 1991.
2. G. Brown and M. Morrison (eds.), *2003 ESPN Information Please Sports Almanac*. Boston, MA, 2002.
3. *The Baseball Encyclopedia* (ninth edition). Macmillan Publishing Company, New York, 1993.

Footnotes

1. At the time of his retirement in 1935, Ruth led in all four categories but one. Ty Cobb (1905-1928) scored 2246 runs, 72 more than the Babe. Hank Aaron (1954-1976) holds the major league records for home runs, extra base hits, and runs batted in.
2. Babe's 29 home runs in 1919 broke Ned Williamson's single-season home run record of 27 set in 1884.
3. Babe Ruth's 54 home runs in 1920 would have eclipsed the Red Sox' single-season home run record of 50 set by Jimmie Foxx in 1938.