

# Senior Research Paper

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## 1 Abstract

Many people question who is the greatest baseball player of all time. This paper aims to answer this question. We will look at some of the greatest baseball players since 1900 and see who is the best. We will also determine who the best current players are and if they have the potential to become one of the greatest players of all time. Also, since many people say WAR is the most valuable statistic, we will use Principle Component Analysis (PCA) to determine whether that is true.

## 2 Introduction

First, I chose some great baseball players. This was done subjectively and was my own personal opinion. Some of the greatest players of all time include Babe Ruth, Barry Bonds, Ted Williams, Hank Aaron, and many others. Then, I looked at other lists of top baseball players of all time as well as best players from each position. If I was missing any players that were on these lists, then I added them to my list. Then, I collected the data by going to Baseball Reference ([2]). The criteria used is the number of at-bats, walks, runs scored, hits, batting average, on-base percentage, slugging percentage, on-base plus slugging, home runs, RBIs, home run average, WAR, stolen bases, and fielding percentage. These are some of the most commonly used measures of grading baseball performance. We will look at career statistics and yearly statistics. The yearly statistics were calculated by calculating the stat per game, then multiplying by 162. For example  $H/Y = \frac{\text{Number of Career Hits}}{\text{Games Played}}(162)$ . So, we are assuming that a player plays all 162 games per year. There are five tools that a baseball player should have: hitting, hitting with power, fielding, throwing, and running (Rothman). This paper will primarily focus on hitting and hitting with power, but there will be some consideration of each component. WAR is wins above

replacement. This is a relatively new statistic and is very useful since it encompasses all five tools and every aspect of the game. It is also useful for comparing players that played different positions, such as comparing a centerfielder to a shortstop (MLB).

The formula for WAR, according to Baseball Reference, is:

$$\text{WAR} = \frac{\text{Number of Runs above average in batting, baserunning, and fielding} + \text{Adjustment for position} + \text{Adjustment for league} + \text{Number of runs provided by replacement level player}}{\text{Runs per win}}.$$

It is important to note that this is Baseball Reference's WAR formula. Different websites use different methods to calculate WAR. Baseball Reference's WAR is called bWAR and it is calculated differently than Fangraph's WAR, i.e. fWAR. WARP is the name of Baseball Prospectus' WAR calculation.

### 3 Methods

There are 133 candidates for best baseball player of all time, and candidates are sorted by era.

**1900-1919:** Bill Dahlen, Cap Anson, Dan Brouthers, Eddie Collins, George Davis, Honus Wagner, Joe Jackson, Nap Lajoie, Roger Connor, and Sam Crawford.

**1920-1930:** Babe Ruth, Lou Gehrig, Oscar Charleston, Rogers Hornsby, Tris Speaker, and Ty Cobb.

**1931-1945:** Arky Vaughan, Charlie Gehringer, Hank Greenberg, Jimmie Foxx, Joe Dimaggio, Johnny Mize, Josh Gibson. Luke Appling, and Mel Ott.

**1946-1968:** Al Kaline, Brooks Robinson, Eddie Mathews, Ernie Banks, Frank Robinson, Hank Aaron, Jackie Robinson, Mickey Mantle, Roberto Clemente, Ron Santo, Stan Musial, Ted Williams, Willie Mays, and Yogi Berra.

**1969-1993:** Alan Trammell, Cal Ripken Jr, Carl Yastrzemski, Carlton Fisk, Dale Murphy, Dick Allen, Gary Carter, George Brett, Graig Nettles, Joe Morgan, Johnny Bench, Keith Hernandez, Mike Schmidt, Ozzie Smith, Paul Molitor, Pete Rose, Reggie Jackson, Rickey Henderson, Robin Yount, Rod Carew, Ryne Sandberg, Thurman Munson, Tim Lincecum, Wade Boggs, and Willie Stargell.

**1994-2008:** Alex Rodriguez, Barry Bonds, Carlos Beltran, Carlos Delgado, Chipper Jones, David Ortiz, Derek Jeter, Edgar Martinez, Frank Thomas, Gary Sheffield, Ichiro Suzuki, Ivan Rodriguez, Jeff Bagwell, Jeff Kent, Jorge Posada, Jose Reyes, Ken Griffey Jr, Larry Walker, Manny Ramirez, Mike Piazza, Sammy Sosa, Scott Rolen, Todd Helton, Tony Gwynn, and Vlad Guerrero Sr.

**2009-2022:** Aaron Judge, Adrian Beltre, Albert Pujols, Alex Bregman, Andrew Benintendi, Andrew McCutchen, Anthony Rizzo, Bryce Harper, Buster Posey, Carlos Correa, Chase Utley, Christian Yelich, Cody Bellinger, Corey Seager, Dansby Swanson, DJ LeMahieu, Dustin Pedroia, Francisco Lindor, Freddie Freeman, Giancarlo Stanton, Joe Mauer, Joey Gallo, Joey Votto, Jose Altuve, Jose Ramirez, Juan Soto, Kris Bryant, Manny Machado, Mark Teixeira, Matt Chapman, Matt Olson, Miguel Cabrera, Mike Trout, Mookie Betts, Nolan Arenado, Paul Goldschmidt, Pete Alonso, Ronald Acuna Jr, Salvador Perez, Trea Turner, Trey Mancini, Vlad Guerrero Jr, Xander Bogaerts, and Yasmani Grandal.

Most of these players played in MLB, but two players, Josh Gibson and Oscar Charleston, played in the Negro Leagues.

There were many players that played during multiple eras. In that case, I put them into the era that they played during most. If their career was split relatively evenly between two eras, then I put them into the era that they had their best years, also known as, the prime of their career.

To determine the greatest players of all time, I sorted each of the criteria from highest to lowest. The person in first place received 10 points, the person in second place received 9 points, and so on. Then, all points from each category were added giving a list of the top baseball players. We will also look at the top 50 career WAR leaders ([2]). We will also sort the top players by position to see who the best players at each position are. Additionally, since Babe Ruth and Barry Bonds have very similar point scores and career WAR, we will closely compare Ruth and Bonds to see who is the best player of all time. We will also use PCA to determine which statistic primarily differentiates the players. Finally, I will create an all-time all-star lineup consisting of the best players of all time.

## 4 Results

The following table shows the number of points that each player received using the technique explained in Methods. To understand how these points were determined, you should look at the tables in the appendix. There are 4 tables in the appendix: one shows career stats for each player, one shows yearly stats, the third table shows points received from career stats, and the final table shows points received from yearly stats. Also, \* indicates a current player. Additionally, there is a table that shows the top 50 MLB WAR leaders and a table that ranks points received by position.

Total Points Received		
Rank #	Player	Total
1	Babe Ruth (RF)	118
2	Josh Gibson (C)	89
3	Barry Bonds (LF)	84
4	Ty Cobb (CF)	72
5	Ted Williams (LF)	57
6	Oscar Charleston (CF)	55
7	Hank Aaron (RF)	48
8	Lou Gehrig (1B)	45
9	Rickey Henderson (LF)	43
10	Cap Anson (1B)	26
11	Pete Rose (LF)	25
12	Rogers Hornsby (2B)	25
13	Albert Pujols (1B)	22
14	Aaron Judge (RF) *	20
15	Alex Rodriguez (SS)	19
16	Willie Mays (CF)	19
17	Dan Brouthers (1B)	19
18	Tris Speaker (CF)	18
19	Joe Morgan (2B)	17
20	Tim Lincecum (LF)	17
21	Stan Musial (LF)	16
22	Mike Trout (CF) *	15
23	Carl Yastrzemski (LF)	15
24	Jimmie Foxx (1B)	15
25	Honus Wagner (SS)	15

26	Hank Greenberg (1B)	13
27	Eddie Collins (2B)	13
28	Joe Jackson (RF)	12
29	Pete Alonso (1B)*	12
30	Sammy Sosa (RF)	11
31	Joe Dimaggio (CF)	11
32	Mickey Mantle (CF)	10
33	Giancarlo Stanton (RF)*	10
34	Paul Goldschmidt (1B)*	10
35	Mark Teixeira (1B)	9
36	Derek Jeter (SS)	9
37	Todd Helton (1B)	8
38	George Davis (SS)	8
39	Jose Reyes (SS)	8
40	Frank Thomas (1B)	7
41	Cal Ripken Jr (SS)	7
42	Trey Mancini (1B)*	7
43	Juan Soto (LF)*	7
44	Anthony Rizzo (1B)*	6
45	Joey Gallo (LF)*	6
46	Trea Turner (SS)*	6
47	Freddie Freeman (1B) *	5
48	Roger Connor (1B)	5
49	Joe Mauer (C)	4
50	Ken Griffey Jr (CF)	4
51	Nap Lajoie (2B)	4
52	Manny Ramirez (LF)	3
53	Buster Posey (C)	3
54	Ozzie Smith (SS)	3
55	Adrian Beltre (3B)	3
56	Mel Ott (RF)	3
57	Bill Dahlen (SS)	2
58	Frank Robinson (RF)	2
59	Robin Yount (SS)	2
60	Tony Gwynn (RF)	2
61	Matt Olson (1B)*	2

62	Joey Votto (1B)*	1
63	Reggie Jackson (RF)	1
64	Salvador Perez (C)*	1
65	Mookie Betts (RF)*	1
66	Keith Hernandez (1B)	0
67	Ernie Banks (1B)	0
68	Charlie Gehringer (2B)	0
69	Miguel Cabrera (1B) *	0
70	Jeff Bagwell (1B)	0
71	Al Kaline (RF)	0
72	Arky Vaughan (SS)	0
73	Brooks Robinson (3B)	0
74	Bryce Harper (RF) *	0
75	Carlos Beltran (CF)	0
76	Carlos Delgado (1B)	0
77	Chipper Jones (3B)	0
78	Dale Murphy (CF)	0
79	David Ortiz (1B)	0
80	Dick Allen (1B)	0
81	Eddie Mathews (3B)	0
82	Gary Sheffield (RF)	0
83	George Brett (3B)	0
84	Graig Nettles (3B)	0
85	Ichiro Suzuki (RF)	0
86	Jeff Kent (2B)	0
87	Johnny Bench (C)	0
88	Jorge Posada (C)	0
89	Luke Appling (SS)	0
90	Mike Piazza (C)	0
91	Mike Schmidt (3B)	0
92	Nolan Arenado (3B) *	0
93	Paul Molitor (3B)	0
94	Roberto Clemente (RF)	0
95	Rod Carew (1B)	0
96	Sam Crawford (RF)	0
97	Vlad Guerrero Jr (1B) *	0

98	Wade Boggs (3B)	0
99	Yogi Berra (C)	0
100	Alan Trammell (SS)	0
101	Carlton Fisk (C)	0
102	Chase Utley (2B)	0
103	Dustin Pedroia (2B)	0
104	Edgar Martinez (3B)	0
105	Gary Carter (C)	0
106	Ivan Rodriguez (C)	0
107	Jackie Robinson (2B)	0
108	Johnny Mize (1B)	0
109	Larry Walker (RF)	0
110	Ron Santo (3B)	0
111	Ryne Sandberg (2B)	0
112	Scott Rolen (3B)	0
113	Thurman Munson (C)	0
114	Vlad Guerrero Sr (RF)	0
115	Willie Stargell (LF)	0
116	DJ LeMahieu (2B)*	0
117	Matt Chapman (3B)*	0
118	Yasmani Grandal (C)*	0
119	Andrew Benintendi (LF)*	0
120	Jose Ramirez (3B)*	0
121	Carlos Correa (SS)*	0
122	Jose Altuve (2B)*	0
123	Alex Bregman (3B)*	0
124	Corey Seager (SS)*	0
125	Ronald Acuna Jr (RF)*	0
126	Francisco Lindor (SS)*	0
127	Dansby Swanson (SS)*	0
128	Christian Yelich (LF)*	0
129	Cody Bellinger (CF)*	0
130	Andrew McCutchen (CF)*	0
131	Kris Bryant (3B)*	0
132	Manny Machado (3B)*	0
133	Xander Bogaerts (SS)*	0

Top 50 MLB WAR		
Rank #	Player	Career WAR
1	Barry Bonds	162.8
2	Babe Ruth	162.7
3	Willie Mays	156.1
4	Ty Cobb	151.4
5	Hank Aaron	143.0
6	Tris Speaker	134.8
7	Honus Wagner	130.8
8	Stan Musial	128.6
9	Rogers Hornsby	127.3
10	Eddie Collins	124.4
11	Ted Williams	122.0
12	Alex Rodriguez	117.6
13	Lou Gehrig	113.6
14	Rickey Henderson	111.1
15	Mel Ott	110.8
16	Mickey Mantle	110.2
17	Frank Robinson	107.2
18	Nap Lajoie	106.9
19	Mike Schmidt	106.8
20	Albert Pujols	101.7
21	Joe Morgan	100.4
22	Carl Yastrzemski	96.5
23	Eddie Mathews	96.1
24	Cal Ripken Jr	95.9
25	Roberto Clemente	94.8
26	Cap Anson	94.4
27	Adrian Beltre	93.5
28	Al Kaline	92.9
29	Jimmie Foxx	92.3
30	Wade Boggs	91.4
31	George Brett	88.6
32	Chipper Jones	85.3
33	George Davis	84.9
34	Charlie Gehringer	84.8
35	Roger Connor	84.3



36	Ken Griffey Jr	83.8
37	Mike Trout*	82.4
38	Rod Carew	81.2
39	Jeff Bagwell	79.9
40	Dan Brouthers	79.8
41	Pete Rose	79.6
42	Joe Dimaggio	79.2
43	Brooks Robinson	78.5
44	Arky Vaughan	78.0
45	Luke Appling	77.6
46	Robin Yount	77.4
47	Ozzie Smith	76.9
48	Paul Molitor	75.6
49	Sam Crawford	75.3
50	Bill Dahlen	75.2

Rank #	Position	Points
	C	
1	Josh Gibson (C)	89
2	Joe Mauer (C)	7
3	Buster Posey (C)	6
4	Salvador Perez (C)*	1
5	Johnny Bench (C)	0
6	Jorge Posada (C)	0
7	Mike Piazza (C)	0
8	Carlton Fisk (C)	0
9	Gary Carter (C)	0
10	Ivan Rodriguez (C)	0
11	Thurman Munson (C)	0
12	Yogi Berra (C)	0
13	Yasmani Grandal (C)*	0
	1B	
1	Lou Gehrig (1B)	46
2	Albert Pujols (1B)	26
3	Cap Anson (1B)	26
4	Dan Brouthers (1B)	19
5	Jimmie Foxx (1B)	15
6	Hank Greenberg (1B)	15
7	Pete Alonso (1B)*	12
8	Mark Teixeira (1B)	10
9	Paul Goldschmidt (1B)*	10
10	Todd Helton (1B)	9
11	Freddie Freeman (1B)*	8
12	Frank Thomas (1B)	8
13	Trey Mancini (1B)*	7
14	Anthony Rizzo (1B)*	6
15	Roger Connor (1B)	5
16	Keith Hernandez (1B)	3
17	Joey Votto (1B)*	2
18	Matt Olson (1B)*	2
19	Ernie Banks (1B)	1

20	Miguel Cabrera (1B)*	0
21	Jeff Bagwell (1B)	0
22	Carlos Delgado (1B)	0
23	David Ortiz (1B)	0
24	Dick Allen (1B)	0
25	Rod Carew (1B)	0
26	Johnny Mize (1B)	0
27	Vlad Guerrero Jr (1B)*	0
	2B	
1	Rogers Hornsby (2B)	25
2	Joe Morgan (2B)	15
3	Eddie Collins (2B)	8
4	Nap Lajoie (2B)	4
5	Charlie Gehringer (2B)	1
6	Chase Utley (2B)	0
7	Dustin Pedroia (2B)	0
8	Jackie Robinson (2B)	0
9	Ryne Sandberg (2B)	0
10	Jeff Kent (2B)	0
11	DJ LeMahieu (2B)*	0
12	Jose Altuve (2B)*	0
	SS	
1	Alex Rodriguez (SS)	22
2	Honus Wagner (SS)	13
3	Derek Jeter (SS)	9
4	Cal Ripken Jr (SS)	7
5	Trea Turner (SS)*	6
6	George Davis (SS)	4
7	Ozzie Smith (SS)	3
8	Bill Dahlen (SS)	2
9	Robin Yount (SS)	2
10	Jose Reyes (SS)	1
11	Arky Vaughan (SS)	0
12	Alan Trammell (SS)	0

13	Luke Appling (SS)	0
14	Carlos Correa (SS)*	0
15	Corey Seager (SS)*	0
16	Francisco Lindor (SS)*	0
17	Dansby Swanson (SS)*	0
18	Xander Bogaerts (SS)*	0
	3B	
1	Adrian Beltre (3B)	3
2	Brooks Robinson (3B)	0
3	Chipper Jones (3B)	0
4	Eddie Mathews (3B)	0
5	George Brett (3B)	0
6	Graig Nettles (3B)	0
7	Mike Schmidt (3B)	0
8	Nolan Arenado (3B)*	0
9	Paul Molitor (3B)	0
10	Edgar Martinez (3B)	0
11	Ron Santo (3B)	0
12	Scott Rolen (3B)	0
13	Wade Boggs (3B)	0
14	Matt Chapman (3B)*	0
15	Jose Ramirez (3B)*	0
16	Alex Bregman (3B)*	0
17	Kris Bryant (3B)*	0
18	Manny Machado (3B)*	0
	LF	
1	Barry Bonds (LF)	86
2	Ted Williams (LF)	60
3	Rickey Henderson (LF)	34
4	Pete Rose (LF)	25
5	Stan Musial (LF)	16
6	Carl Yastrzemski (LF)	15
7	Tim Lincecum (LF)	8
8	Manny Ramirez (LF)	8

9	Juan Soto (LF)*	7
10	Joey Gallo (LF)*	6
11	Willie Stargell (LF)	0
12	Andrew Benintendi (LF)*	0
13	Christian Yelich (LF)*	0
	CF	
1	Ty Cobb (CF)	64
2	Oscar Charleston (CF)	54
3	Mike Trout (CF)*	26
4	Willie Mays (CF)	19
5	Tris Speaker (CF)	18
6	Mickey Mantle (CF)	13
7	Joe Dimaggio (CF)	11
8	Ken Griffey Jr (CF)	5
9	Carlos Beltran (CF)	0
10	Dale Murphy (CF)	0
11	Cody Bellinger (CF)*	0
12	Andrew McCutchen (CF)*	0
	RF	
1	Babe Ruth (RF)	118
2	Hank Aaron (RF)	48
3	Aaron Judge (RF)*	20
4	Sammy Sosa (RF)	16
5	Joe Jackson (RF)	12
6	Giancarlo Stanton (RF)*	10
7	Mel Ott (RF)	3
8	Frank Robinson (RF)	2
9	Tony Gwynn (RF)	2
10	Reggie Jackson (RF)	1
11	Mookie Betts (RF)*	1
12	Al Kaline (RF)	0
13	Bryce Harper (RF)*	0
14	Gary Sheffield (RF)	0
15	Ichiro Suzuki (RF)	0

16	Roberto Clemente (RF)	0
17	Sam Crawford (RF)	0
18	Larry Walker (RF)	0
19	Vlad Guerrero Sr (RF)	0
20	Ronald Acuna Jr (RF)*	0

## Hall of Fame Standards Test

Now we will look at the Hall of Fame Standards Test for the top 10 players in points received. This test was created by Bill James and is used to determine if a player is worthy of being in the Hall of Fame. Career Statistics are used for this test. The average score for a Hall of Famer is 50. Points are received as followed (Rothman):

- One point for each 150 hits above 1500 (limit 10).
- One point for each .005 of batting average above .275 (limit 9).
- One point for batting over .300.
- One point for each 100 runs over 900 (limit 8).
- One point for scoring more than .5 runs per game.
- One point for scoring more than .644 runs per game.
- One point for each 100 RBIs over 800 (limit 8).
- One point for driving in more than .5 runs per game.
- One point for driving in more than .6 runs per game.
- One point for each .025 of slugging percentage above .300 (limit 10).
- One point for each .010 of on-base percentage above .300 (limit 10).
- One point for each 200 home runs.
- One point if home runs are more than 10% of hits.
- One point if home runs are more than 20% of hits.

- One point for each 200 extra-base hits over 300 (limit 5).
- One point for each 200 walks over 300 (limit 5).
- One point for each 100 stolen bases (limit 5).
- Defensive Value: 20 points for catcher, 16–shortstop, 14–second base, 13–third base, 12–center field, 6–right field, 3–left field, 1–first base, 0–designated hitter.

The scores can be found on Baseball Reference, or calculated by hand.

Hall of Fame Standards Test	
Player	Score
Babe Ruth (RF)	79
Josh Gibson (C)	36
Barry Bonds (LF)	77
Ty Cobb (CF)	75
Ted Williams (LF)	73
Oscar Charleston (CF)	37
Hank Aaron (RF)	74
Lou Gehrig (1B)	72
Rickey Henderson (LF)	53
Cap Anson (1B)	64

## Ruth and Bonds Comparison

It seems clear that Ruth and Bonds are the greatest players of all time, since they are in the top 3 in points received and have the two highest career WARs (Baseball Reference). So, I decided to compare the two players to see who is better. That player will be the greatest baseball player of all time. Although Josh Gibson has a lot of points, it is because of his yearly statistics. He did not have a very long career, so he did not have great career statistics. If he had played a longer career, he may have been the greatest player of all time, but I think to be in consideration for that title, he would have to have a longer career and better career statistics. Additionally, I think that the best current players are Aaron Judge and Mike Trout. Judge received the highest amount of points among current players and Mike Trout has the highest WAR among current players (Baseball Reference). If those two players can stay healthy and remain productive, they will definitely become Hall of Famers and

may be considered two of the greatest players of all time.

The first table gives the sorted yearly BA, OBP, SLG, and WAR for Ruth and Bonds. The statistics for each of those four categories from every year were recorded, then sorted from lowest to highest.

The second table gives descriptive statistics such as mean, median, mode, standard deviation, and variance. These descriptive statistics were collected in excel, then verified using R. We can see that Ruth and Bonds have the same mean for OBP and WAR. Ruth has a higher mean BA and SLG. The median for Ruth is higher in all four categories.

The third table gives the five number summary. The five number summary gives the smallest value from the set, the first quartile, median (i.e. second quartile), third quartile, and largest value (Rothman).

The first quartile,  $Q_1$ , divides the data so that 25% of the data is smaller than  $Q_1$  and 75% of the data is larger than  $Q_1$ .

The second quartile,  $Q_2$ , also known as the median, divides the data so that 50% of the data is smaller than  $Q_2$  and 50% of the data is larger than  $Q_2$ .

The third quartile,  $Q_3$ , divides the data so that 25% of the data is smaller than  $Q_3$  and 75% of the data is larger than  $Q_3$  (Rothman).

The time series graphs show how BA, OBP, SLG, and WAR changed over time. The box and whisker plot shows the five number summary by using a graph. Outliers are represented by circles, the left endpoint of the line represents the smallest value, the right endpoint of the line represents the largest value, and the box represents the quartiles. The left edge of the box is  $Q_1$ , the middle of the box is  $Q_2$ , and the right edge of the box is  $Q_3$  (Rothman).

	Sorted Yearly BA,OBP,SLG,WAR for Ruth and Bonds							
	BA		OBP		SLG		WAR	
Position	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds
1	0.181	0.223	0.200	0.329	0.300	0.416	0.0	0.6
2	0.200	0.248	0.322	0.330	0.419	0.426	0.1	3.4
3	0.272	0.261	0.359	0.351	0.431	0.491	1.6	3.5
4	0.288	0.262	0.376	0.368	0.472	0.492	1.7	3.8
5	0.290	0.270	0.385	0.389	0.537	0.514	2.1	4.0
6	0.300	0.276	0.393	0.404	0.543	0.545	3.5	5.8
7	0.301	0.283	0.411	0.406	0.555	0.565	4.7	6.2
8	0.315	0.286	0.430	0.410	0.576	0.565	5.0	6.3
9	0.315	0.291	0.434	0.426	0.582	0.577	6.3	7.5

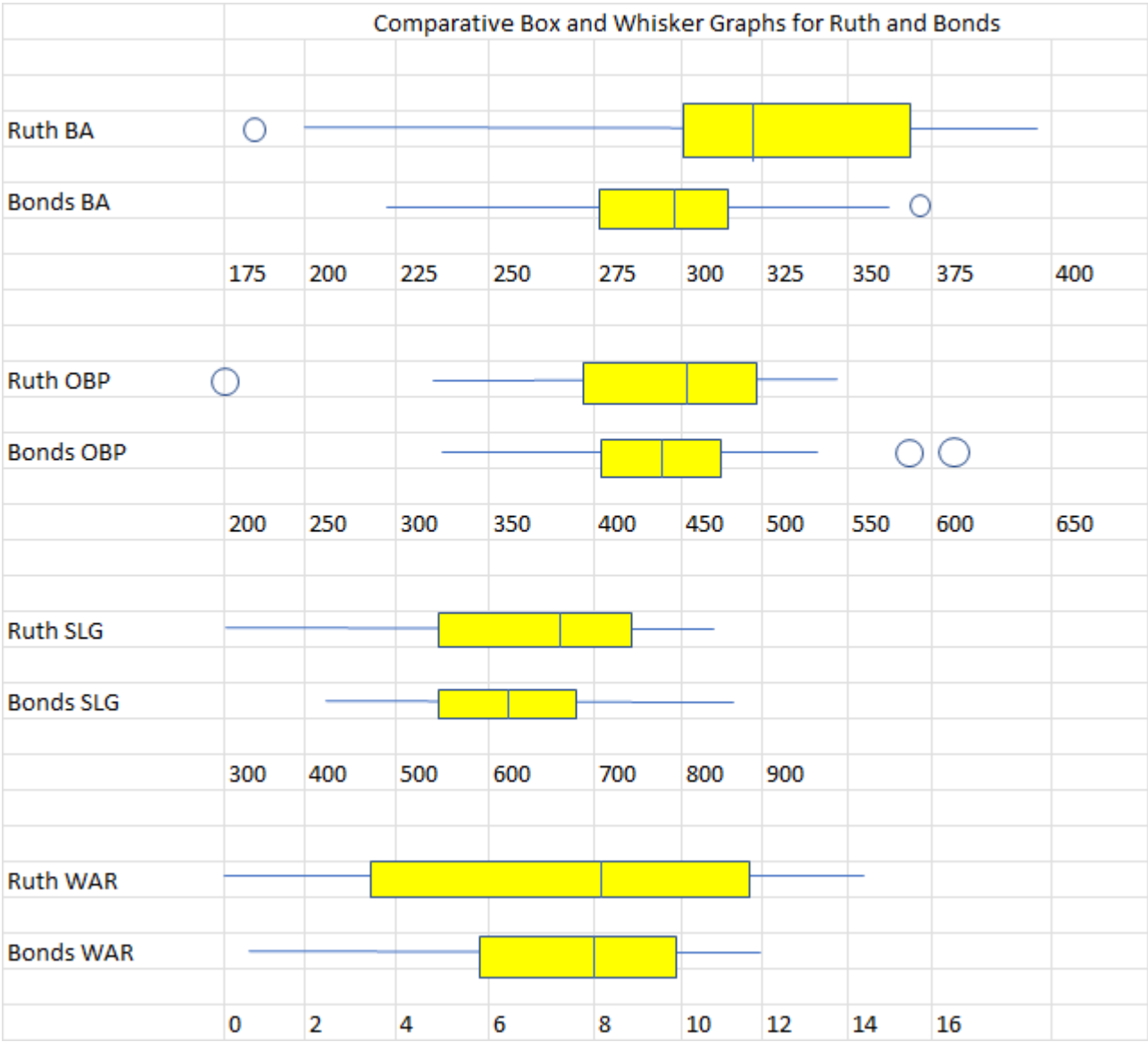


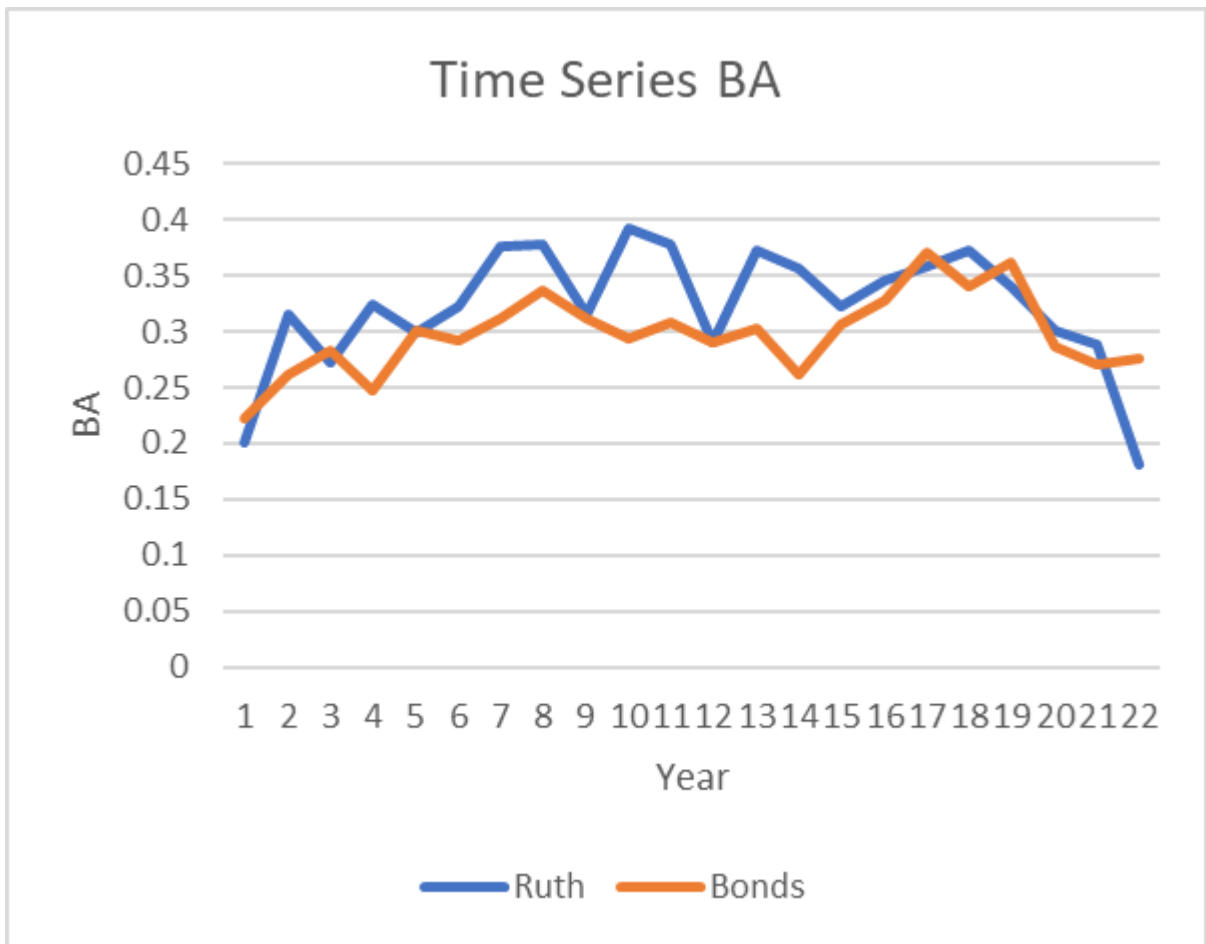
10	0.322	0.292	0.442	0.431	0.657	0.585	6.4	7.7
11	0.323	0.294	0.448	0.438	0.661	0.609	8.1	8.0
12	0.325	0.301	0.456	0.440	0.672	0.615	8.5	8.0
13	0.341	0.303	0.463	0.446	0.697	0.617	9.1	8.1
14	0.345	0.306	0.486	0.454	0.700	0.624	10.2	8.2
15	0.356	0.308	0.489	0.456	0.709	0.647	10.3	9.0
16	0.359	0.311	0.493	0.458	0.732	0.667	10.5	9.2
17	0.372	0.312	0.495	0.461	0.737	0.677	11.6	9.7
18	0.373	0.328	0.512	0.480	0.739	0.688	11.8	9.7
19	0.376	0.336	0.513	0.515	0.764	0.749	11.9	9.9
20	0.378	0.341	0.516	0.529	0.772	0.799	12.6	10.6
21	0.378	0.362	0.532	0.582	0.846	0.812	12.9	11.8
22	0.393	0.370	0.545	0.609	0.847	0.863	14.2	11.9

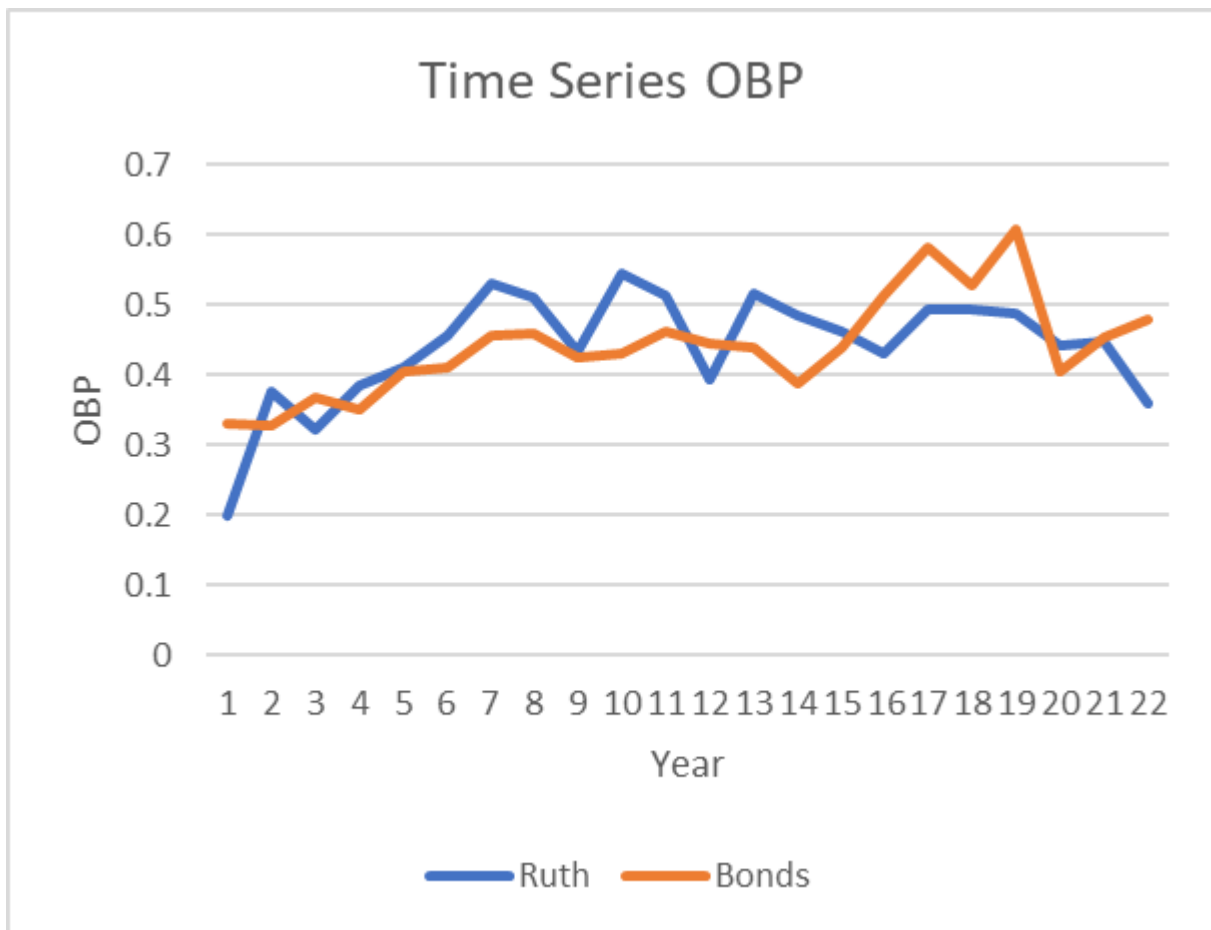
Descriptive Statistics for Yearly BA, OBP, SLG, and WAR for Ruth and Bonds								
Descriptive	BA		OBP		SLG		WAR	
Statistics	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds
Mean	0.323	0.298	0.441	0.441	0.634	0.616	7.4	7.4
Standard Error	0.012	0.008	0.017	0.015	0.030	0.025	1.0	0.6
Median	0.324	0.298	0.452	0.439	0.667	0.612	8.3	8.0
Mode	0.315	#N/A	#N/A	#N/A	#N/A	0.565	#N/A	8.0
Standard Deviation	0.055	0.036	0.080	0.072	0.143	0.118	4.5	2.9
Sample Variance	0.003	0.001	0.006	0.005	0.020	0.014	20.2	8.6
Kurtosis	1.480	0.175	2.537	0.511	-0.099	-0.158	-1.3	-0.1
Skewness	-1.195	0.107	-1.340	0.618	-0.610	0.371	-0.3	-0.6
Range	0.212	0.147	0.345	0.280	0.547	0.447	14.2	11.3
Minimum	0.181	0.223	0.200	0.329	0.300	0.416	0.0	0.6
Maximum	0.393	0.370	0.545	0.609	0.847	0.863	14.2	11.9
Sum	7.103	6.564	9.700	9.712	13.948	13.543	163.1	162.9
Count	22	22	22	22	22	22	22	22

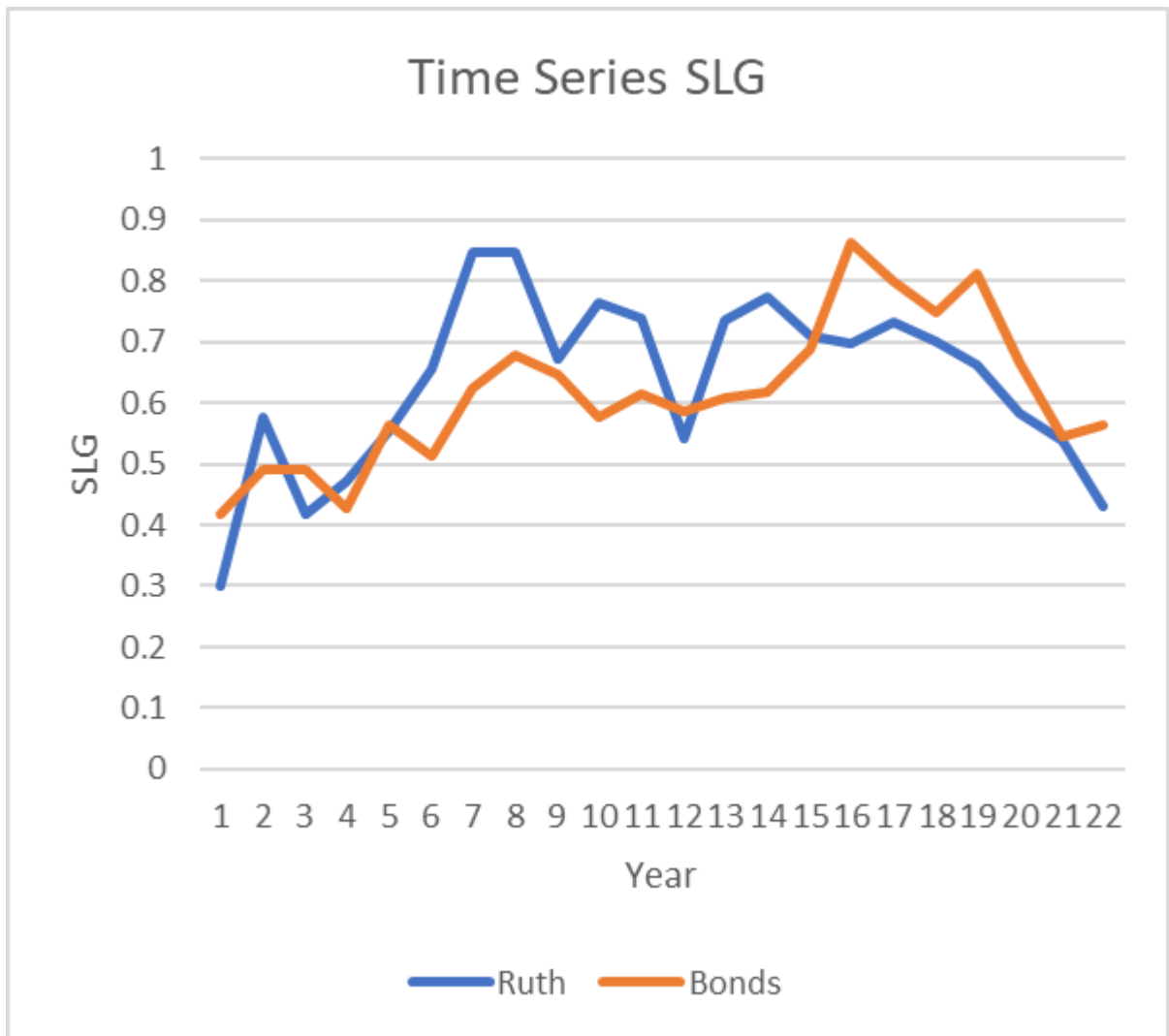
Five Number Summary of BA, OBP, SLG, and WAR for Ruth and Bonds								
	BA		OBP		SLG		WAR	
	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds	Ruth	Bonds
Smallest	0.181	0.223	0.200	0.329	0.300	0.416	0.0	0.6
Q1	0.300	0.276	0.393	0.404	0.543	0.545	3.5	5.8
Q2	0.324	0.298	0.452	0.439	0.667	0.612	8.3	8.0
Q3	0.372	0.312	0.495	0.461	0.737	0.677	11.6	9.7
Largest	0.393	0.370	0.545	0.609	0.847	0.863	14.2	11.9
IQR	0.072	0.036	0.102	0.057	0.194	0.132	8.1	3.9
K For Outlier Fence	0.108	0.054	0.153	0.086	0.291	0.198	12.2	5.9
Lower Value	0.192	0.222	0.240	0.319	0.252	0.347	-8.7	0.0
Upper Value	0.480	0.366	0.648	0.547	1.028	0.875	23.8	15.6
Outliers	0.181	0.370	0.200	.582,.609	None	None	None	None

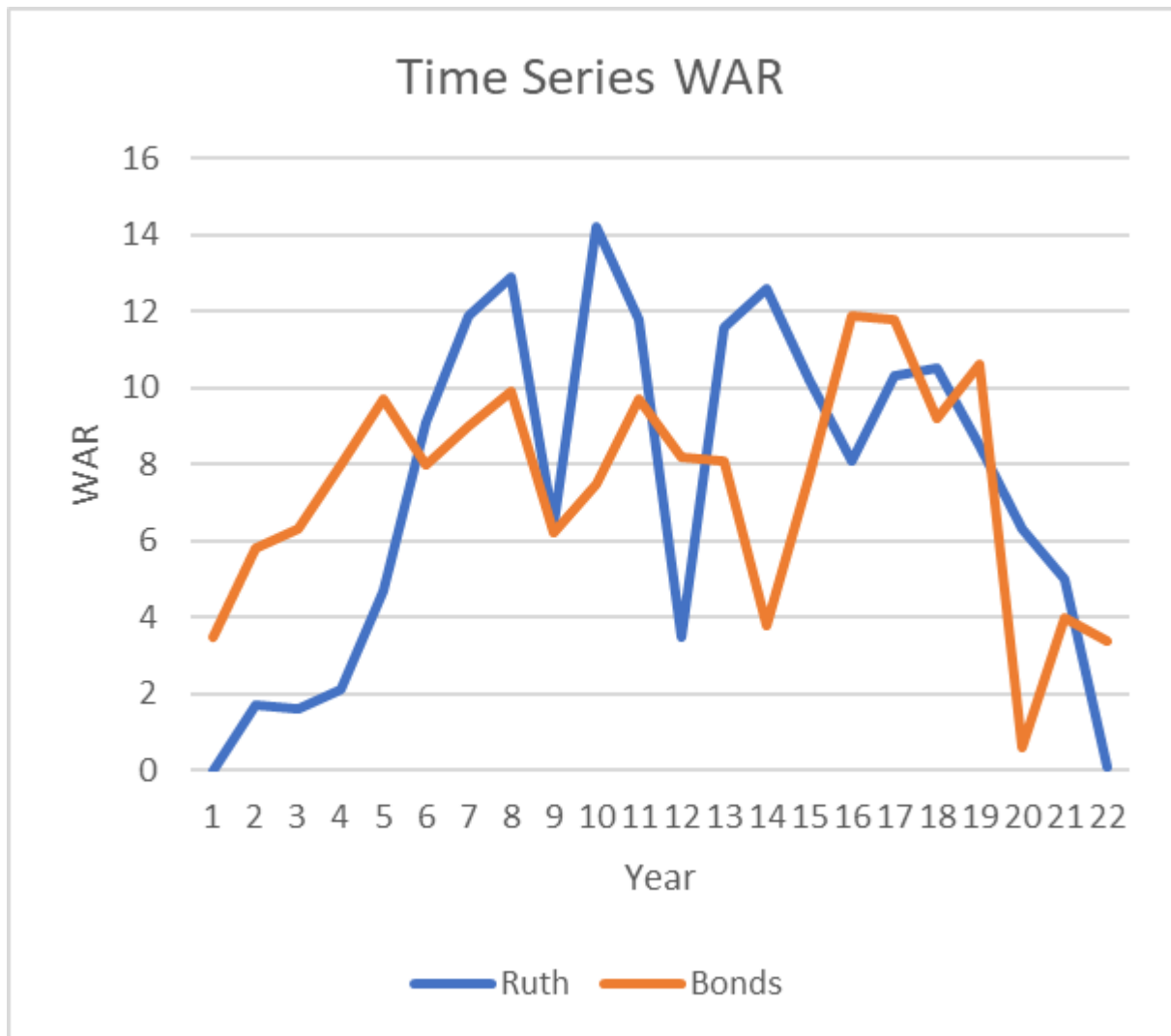














According to this data, Babe Ruth is the greatest baseball player of all time. According to the five number summary and box and whisker graph, Ruth has a higher mean and median in all four categories, except for mean OBP and mean WAR where they are tied. The time series graphs show us that Ruth's BA was better than Bonds' at almost every point in their careers. Ruth's OBP was better in early years, but then Bonds' was better due to the high number of walks. Ruth's SLG was usually better than Bonds' except for the end of their career, such as when Bonds hit 73 home runs in one season. WAR is less consistent, but that is because Ruth was primarily a pitcher in the beginning of his career, so his WAR was lower during the beginning of his career (remember that we are just looking at positional WAR, not pitching WAR). Additionally, Ruth scored slightly better than Bonds on the Hall of Fame Standards Test. Ruth and Bonds are the two greatest players of all time and both had very great careers, but I think that Ruth is slightly better than Bonds.

## Principle Component Analysis

Now we will use PCA to determine which of the criteria primarily differentiates the players. PCA is useful because it makes data with many variables easier to understand. This information was gathered from Penn State University ([7]), and information about how to do PCA in R was gathered from Zoumana Keita ([8]).

The following table gives the standard deviation and variance of each PC. The  $i$ th PC explains the following proportion of the total variance:

$$\frac{\lambda_i}{\lambda_1 + \lambda_2 + \dots + \lambda_p}$$

Where  $p$  is the number of components (Penn State University).

The proportion of variance explained by the first  $k$  PCs is:

$$\frac{\lambda_1 + \lambda_2 + \dots + \lambda_k}{\lambda_1 + \lambda_2 + \dots + \lambda_p}$$

We will retain  $k$  PCs. We want  $k$  to be as small as possible, but we want the proportion of variance explained by the first  $k$  PCs to be large (Penn State University).

SD	VAR
----	-----

2.847637084	8.109037
2.430258644	5.906157
1.864437386	3.476127
1.266042135	1.602863
0.975552301	0.951702
0.926065638	0.857598
0.6484265	0.420457
0.480836621	0.231204
0.44546709	0.198441
0.269397716	0.072575
0.224820041	0.050544
0.210293836	0.044223
0.171358279	0.029364
0.145120208	0.02106
0.109987193	0.012097
0.085951628	0.007388
0.063301571	0.004007
0.053323777	0.002843
0.034272137	0.001175
0.030094471	0.000906
0.014680342	0.000216
0.004193287	1.76E-05
Total	22

The first 6 PCs explain  $\frac{20.9}{22} = .95 = 95\%$  of the variation. So, we will retain the first 6 PCs. That makes  $k$  relatively small, while also explaining a large amount of the variation.

$$e_1 = \begin{bmatrix} .250 \\ .243 \\ .286 \\ .157 \\ .313 \\ .203 \\ .272 \\ .177 \\ .236 \\ .260 \\ .172 \\ .224 \\ .193 \\ 0 \\ .298 \\ .154 \\ 0 \\ .316 \\ .217 \\ .129 \\ 0 \\ 0 \end{bmatrix}$$

$$e_2 = \begin{bmatrix} .221 \\ .239 \\ 0 \\ -.204 \\ .149 \\ -.166 \\ .225 \\ 0 \\ 0 \\ -.136 \\ -.345 \\ -.299 \\ -.153 \\ -.356 \\ 0 \\ -.303 \\ -.356 \\ 0 \\ -.136 \\ .250 \\ .200 \\ -.133 \end{bmatrix}$$

$$e_3 = \begin{bmatrix} .233 \\ .207 \\ .186 \\ 0 \\ .117 \\ -.306 \\ .122 \\ -.350 \\ -.321 \\ -.223 \\ 0 \\ -.108 \\ .372 \\ .213 \\ .225 \\ 0 \\ .225 \\ 0 \\ -.225 \\ -.145 \\ -.262 \\ .118 \end{bmatrix}$$

$$\begin{array}{ccc}
e_4 = \begin{bmatrix} 0 \\ 0 \\ -.265 \\ -.465 \\ 0 \\ -.113 \\ .147 \\ .368 \\ .281 \\ -.108 \\ 0 \\ 0 \\ 0 \\ 0 \\ .168 \\ .223 \\ -.107 \\ 0 \\ 0 \\ -.403 \\ -.417 \\ 0 \end{bmatrix} & e_5 = \begin{bmatrix} 0 \\ 0 \\ .211 \\ .323 \\ 0 \\ -.104 \\ 0 \\ 0 \\ .177 \\ .315 \\ 0 \\ 0 \\ -.126 \\ -.192 \\ 0 \\ -.223 \\ -.166 \\ 0 \\ -.165 \\ -.197 \\ -.248 \\ .646 \end{bmatrix} & e_6 = \begin{bmatrix} 0 \\ 0 \\ -.171 \\ -.316 \\ 0 \\ .152 \\ 0 \\ .175 \\ 0 \\ -.191 \\ .112 \\ 0 \\ .137 \\ .170 \\ 0 \\ 0 \\ .121 \\ 0 \\ -.150 \\ .320 \\ .374 \\ .643 \end{bmatrix}
\end{array}$$

The first PC explains the most variation. It most heavily weights the variable WAR, since .316 is the greatest component of  $e_1$ . That means that WAR primarily differentiates the players. This supports my previous belief that WAR is the most valuable statistic for baseball players.

## 5 Conclusion

I believe that Babe Ruth is the greatest player of all time. However, there are nine players in a lineup, so I will create what I believe is the all time all star baseball lineup.

- **C** Gibson
- **1B** Gehrig
- **2B** Hornsby

- **SS** Rodriguez
- **3B** Beltre
- **LF** Bonds
- **CF** Cobb
- **RF** Ruth
- **DH** Williams

### **Bench**

- Aaron
- Charleston
- Trout
- Judge

The bench consists of players that were not the best at their position, but were very close. I feel that although they are not the best, they still deserve recognition, so that is why I put them on the bench.

This is, in my opinion, the greatest lineup of all time.

This paper only focused on statistics. Many people say that Barry Bonds does not deserve to be considered a great player since he is believed to have used performance-enhancing drugs. However, I did not take that into consideration.

Future research could involve different statistics. For example, you may choose to focus more on defense and speed by using stats such as CS, DRS, and RF. Additionally, you may choose to include pitchers. You can determine the best position player as well as the best pitcher of all time. I think that Randy Johnson, Nolan Ryan, and Sandy Koufax are some of the best players of all time, but they are not on my list, since I only focused on position players. It may also be interesting to include multiple WAR calculations, such as bWAR, fWAR, and WARP, and use PCA to determine which calculation method is the most valuable.

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## Appendix

## Best Baseball Players of All-Time (Career Totals)

Player	G	AB	BB	R	H	BA	OBP	SLG	OPS	HR	RBI	WAR	SB	FLD%
Aaron Judge (RF)*	729	2638	472	535	748	0.284	0.394	0.583	0.977	220	497	37.0	40	0.989
Adrian Beltre (3B)	2933	11068	848	1524	3166	0.286	0.339	0.480	0.819	477	1707	93.5	121	0.960
Al Kaline (RF)	2834	10116	1277	1622	3007	0.297	0.376	0.480	0.855	399	1582	92.9	137	0.985
Alan Trammell (SS)	2293	8288	850	1231	2365	0.285	0.352	0.415	0.767	185	1003	70.7	236	0.977
Albert Pujols (1B)	3080	11421	1373	1914	3384	0.296	0.374	0.544	0.918	703	2218	101.7	117	0.994
Alex Bregman (3B)*	805	2954	440	512	818	0.277	0.375	0.497	0.873	140	490	30.5	36	0.969
Alex Rodriguez (SS)	2784	10566	1338	2021	3115	0.295	0.380	0.550	0.930	696	2086	117.6	329	0.977
Andrew Benintendi (LF)*	745	2791	309	396	778	0.279	0.351	0.431	0.782	73	384	15.8	69	0.988
Andrew McCutchen (CF)*	1895	7035	983	1118	1948	0.277	0.369	0.469	0.838	287	1002	47.1	205	0.988
Anthony Rizzo (1B)*	1536	5578	719	839	1476	0.265	0.366	0.481	0.847	283	889	39.2	72	0.995
Arky Vaughan (SS)	1817	6622	937	1173	2103	0.318	0.406	0.453	0.859	96	926	78.0	118	0.951
Babe Ruth (RF)	2503	8399	2062	2174	2873	0.342	0.471	0.690	1.161	714	2214	162.7	123	0.964
Barry Bonds (LF)	2986	9847	2558	2227	2935	0.298	0.444	0.607	1.051	762	1996	162.8	514	0.984
Bill Dahlen (SS)	2444	9036	1064	1590	2461	0.272	0.358	0.382	0.740	84	1234	75.2	548	0.927
Brooks Robinson (3B)	2896	10654	860	1232	2848	0.267	0.322	0.401	0.723	268	1357	78.5	28	0.971
Bryce Harper (RF)*	1382	4927	879	913	1379	0.280	0.390	0.523	0.913	285	817	42.5	122	0.986
Buster Posey (C)	1371	4970	540	663	1500	0.302	0.372	0.460	0.831	158	729	44.8	23	0.995
Cal Ripken Jr (SS)	3001	11551	1129	1647	3184	0.276	0.340	0.447	0.788	431	1695	95.9	36	0.979
Cap Anson (1B)	2524	10281	984	1999	3435	0.334	0.394	0.447	0.841	97	2075	94.4	277	0.972
Carl Yastrzemski (LF)	3308	11988	1845	1816	3419	0.285	0.379	0.462	0.841	452	1844	96.5	168	0.982
Carlos Beltran (CF)	2586	9768	1084	1582	2725	0.279	0.350	0.486	0.837	435	1587	70.1	312	0.986
Carlos Correa (SS)*	888	3346	408	508	933	0.279	0.358	0.479	0.836	155	553	39.5	33	0.981
Carlos Delgado (1B)	2035	7283	1109	1241	2038	0.280	0.383	0.546	0.929	473	1512	44.4	14	0.992
Carlton Fisk (C)	2499	8756	849	1276	2356	0.269	0.341	0.457	0.797	376	1330	68.5	128	0.988
Charlie Gehringer (2B)	2323	8860	1186	1775	2839	0.320	0.404	0.480	0.884	184	1427	84.8	181	0.976
Chase Utley (2B)	1937	6857	724	1103	1885	0.275	0.358	0.464	0.823	259	1025	64.5	154	0.982
Chipper Jones (3B)	2499	8984	1512	1619	2726	0.303	0.401	0.529	0.930	468	1623	85.3	150	0.954
Christian Yelich (LF)*	1249	4715	652	795	1352	0.287	0.376	0.466	0.842	174	630	36.2	156	0.993
Cody Bellinger (CF)*	745	2627	327	434	652	0.248	0.332	0.487	0.819	152	422	17.7	62	0.989
Corey Seager (SS)*	787	3012	313	485	863	0.287	0.357	0.494	0.851	137	447	25.1	15	0.970



Dale Murphy (CF)	2180	7960	986	1197	2111	0.265	0.346	0.469	0.815	398	1266	46.5	161	0.983
Dan Brouthers (1B)	1676	6726	840	1529	2303	0.342	0.423	0.520	0.943	107	1301	79.8	257	0.971
Dansby Swanson (SS)*	827	3043	290	433	775	0.255	0.321	0.417	0.738	102	411	14.7	58	0.978
David Ortiz (1B)	2408	8640	1319	1419	2472	0.286	0.380	0.552	0.931	541	1768	55.3	17	0.990
Derek Jeter (SS)	2747	11195	1082	1923	3465	0.310	0.377	0.440	0.817	260	1311	71.3	358	0.976
Dick Allen (1B)	1749	6332	894	1099	1848	0.292	0.378	0.534	0.912	351	1119	58.7	133	0.989
DJ LeMahieu (2B)*	1425	5306	482	809	1576	0.297	0.356	0.418	0.774	107	581	30.2	91	0.991
Dustin Pedroia (2B)	1512	6031	624	922	1805	0.299	0.365	0.439	0.805	140	725	51.9	138	0.991
Eddie Collins (2B)	2826	9949	1499	1821	3315	0.333	0.424	0.429	0.853	47	1299	124.4	741	0.970
Eddie Mathews (3B)	2391	8537	1444	1509	2315	0.271	0.376	0.509	0.885	512	1453	96.1	68	0.956
Edgar Martinez (3B)	2055	7213	1283	1219	2247	0.312	0.418	0.515	0.933	309	1261	68.4	49	0.946
Ernie Banks (1B)	2528	9421	763	1305	2583	0.274	0.330	0.500	0.830	512	1636	67.7	50	0.994
Francisco Lindor (SS)*	1063	4222	401	679	1170	0.277	0.342	0.474	0.816	184	581	36.7	125	0.981
Frank Robinson (RF)	2808	10006	1420	1829	2943	0.294	0.389	0.537	0.926	586	1812	107.2	204	0.984
Frank Thomas (1B)	2322	8199	1667	1494	2468	0.301	0.419	0.555	0.974	521	1704	73.8	32	0.991
Freddie Freeman (1B)*	1724	6379	860	1086	1903	0.298	0.386	0.509	0.895	292	1041	49.0	66	0.995
Gary Carter (C)	2296	7971	848	1025	2092	0.262	0.335	0.439	0.773	324	1225	70.2	39	0.991
Gary Sheffield (RF)	2576	9217	1475	1636	2689	0.292	0.393	0.514	0.907	509	1676	60.5	253	0.981
George Brett (3B)	2707	10349	1096	1583	3154	0.305	0.369	0.487	0.857	317	1596	88.6	201	0.951
George Davis (SS)	2372	9045	874	1545	2665	0.295	0.362	0.405	0.767	73	1440	84.9	619	0.940
Giancarlo Stanton (RF)*	1434	5237	697	815	1383	0.264	0.354	0.537	0.891	378	971	44.7	42	0.980
Graig Nettles (3B)	2700	8986	1088	1193	2225	0.248	0.329	0.421	0.750	390	1314	68.0	32	0.961
Hank Aaron (RF)	3298	12364	1402	2174	3771	0.305	0.374	0.555	0.928	755	2297	143.0	240	0.980
Hank Greenberg (1B)	1394	5193	852	1046	1628	0.313	0.412	0.605	1.017	331	1274	55.5	58	0.991
Honus Wagner (SS)	2794	10439	963	1739	3420	0.328	0.391	0.467	0.858	101	1732	130.8	723	0.940
Ichiro Suzuki (RF)	2653	9934	647	1420	3089	0.311	0.355	0.402	0.757	117	780	60.0	509	0.992
Ivan Rodriguez (C)	2543	9592	513	1354	2844	0.296	0.334	0.464	0.798	311	1332	68.7	127	0.991
Jackie Robinson (2B)	1416	4997	756	972	1563	0.313	0.410	0.477	0.887	141	761	63.8	200	0.983
Jeff Bagwell (1B)	2150	7797	1401	1517	2314	0.297	0.408	0.540	0.948	449	1529	79.9	202	0.993
Jeff Kent (2B)	2298	8498	801	1320	2461	0.290	0.356	0.500	0.855	377	1518	55.4	94	0.980
Jimmie Foxx (1B)	2317	8134	1452	1751	2646	0.325	0.426	0.609	1.035	534	1922	92.3	87	0.992
Joe Dimaggio (CF)	1736	6821	790	1390	2214	0.325	0.398	0.579	0.977	361	1537	79.2	30	0.977

Joe Jackson (RF)	1332	4981	519	873	1772	0.356	0.423	0.517	0.940	54	792	62.2	202	0.962
Joe Mauer (C)	1858	6930	939	1018	2123	0.306	0.388	0.439	0.827	143	923	55.2	52	0.995
Joe Morgan (2B)	2649	9277	1865	1650	2517	0.271	0.392	0.427	0.819	268	1133	100.4	689	0.981
Joey Gallo (LF)*	752	2364	417	400	471	0.199	0.325	0.469	0.794	177	386	14.6	29	0.982
Joey Votto (1B)*	1991	7044	1338	1145	2093	0.297	0.412	0.513	0.926	342	1106	64.3	80	0.994
Johnny Bench (C)	2158	7658	891	1091	2048	0.267	0.342	0.476	0.817	389	1376	75.1	68	0.990
Johnny Mize (1B)	1884	6443	856	1118	2011	0.312	0.397	0.562	0.959	359	1337	70.7	28	0.992
Jorge Posada (C)	1829	6092	936	900	1664	0.273	0.374	0.474	0.848	275	1065	42.7	20	0.992
Jose Altuve (2B)*	1578	6305	509	986	1935	0.307	0.362	0.468	0.830	192	696	46.5	279	0.985
Jose Ramirez (3B)*	1137	4146	473	697	1155	0.279	0.354	0.503	0.857	192	666	40.4	174	0.964
Jose Reyes (SS)	1877	7552	589	1180	2138	0.283	0.334	0.427	0.761	145	719	37.5	517	0.973
Josh Gibson (C)	598	2155	331	610	806	0.374	0.458	0.720	1.178	165	730	38.6	40	0.980
Juan Soto (LF)*	617	2136	508	430	612	0.287	0.424	0.526	0.950	125	374	23.2	38	0.993
Keith Hernandez (1B)	2088	7370	1070	1124	2182	0.296	0.384	0.436	0.821	162	1071	60.3	98	0.994
Ken Griffey Jr (CF)	2671	9801	1312	1662	2781	0.284	0.370	0.538	0.907	630	1836	83.8	184	0.986
Kris Bryant (3B)*	926	3447	460	620	963	0.279	0.376	0.503	0.879	172	501	29.2	44	0.950
Larry Walker (RF)	1988	6907	913	1355	2160	0.313	0.400	0.565	0.965	383	1311	72.7	230	0.986
Lou Gehrig (1B)	2164	8001	1508	1888	2721	0.340	0.444	0.632	1.076	493	1995	113.6	102	0.991
Luke Appling (SS)	2422	8856	1302	1319	2749	0.310	0.399	0.398	0.798	45	1116	77.6	179	0.948
Manny Machado (3B)*	1445	5673	513	839	1597	0.282	0.341	0.493	0.833	283	853	52.0	85	0.968
Manny Ramirez (LF)	2302	8244	1329	1544	2574	0.312	0.411	0.585	0.996	555	1831	69.3	38	0.978
Mark Teixeira (1B)	1862	6936	918	1099	1862	0.268	0.360	0.509	0.869	409	1298	50.6	26	0.997
Matt Chapman (3B)*	728	2629	319	421	632	0.240	0.329	0.469	0.797	138	372	26.8	7	0.974
Matt Olson (1B)*	737	2664	347	409	665	0.250	0.343	0.503	0.846	176	476	21.7	7	0.995
Mel Ott (RF)	2730	9456	1708	1859	2876	0.304	0.414	0.533	0.947	511	1860	110.8	89	0.978
Mickey Mantle (CF)	2401	8102	1733	1676	2415	0.298	0.421	0.557	0.977	536	1509	110.2	153	0.984
Miguel Cabrera (1B)*	2699	10022	1227	1530	3088	0.308	0.384	0.524	0.908	507	1847	67.7	40	0.994
Mike Piazza (C)	1912	6911	759	1048	2127	0.308	0.377	0.545	0.922	427	1335	59.5	17	0.989
Mike Schmidt (3B)	2404	8352	1507	1506	2234	0.267	0.380	0.527	0.908	548	1595	106.8	174	0.955
Mike Trout (CF)*	1407	5094	919	1052	1543	0.303	0.415	0.587	1.002	350	896	82.4	204	0.994
Mookie Betts (RF)*	1113	4460	518	870	1306	0.293	0.368	0.520	0.888	213	649	56.2	158	0.991
Nap Lajoie (2B)	2480	9590	516	1504	3243	0.338	0.380	0.466	0.846	82	1599	106.9	380	0.963

Nolan Arenado (3B)*	1384	5268	464	803	1520	0.289	0.346	0.535	0.881	299	968	52.2	23	0.972
Oscar Charleston (CF)	916	3313	479	855	1207	0.364	0.449	0.615	1.063	143	853	48.6	209	0.966
Ozzie Smith (SS)	2573	9396	1072	1257	2460	0.262	0.337	0.328	0.666	28	793	76.9	580	0.978
Paul Goldschmidt (1B)*	1620	5927	916	1045	1750	0.295	0.391	0.527	0.917	315	1042	58.3	147	0.997
Paul Molitor (3B)	2683	10835	1094	1782	3319	0.306	0.369	0.448	0.817	234	1307	75.6	504	0.950
Pete Alonso (1B)*	530	1963	223	310	512	0.261	0.349	0.535	0.884	146	380	14.1	10	0.991
Pete Rose (LF)	3562	14053	1566	2165	4256	0.303	0.375	0.409	0.784	160	1314	79.6	198	0.991
Reggie Jackson (RF)	2820	9864	1375	1551	2584	0.262	0.356	0.490	0.846	563	1702	74.0	228	0.967
Rickey Henderson (LF)	3081	10961	2190	2295	3055	0.279	0.401	0.419	0.820	297	1115	111.1	1406	0.979
Roberto Clemente (RF)	2433	9454	621	1416	3000	0.317	0.359	0.475	0.834	240	1305	94.8	83	0.973
Robin Yount (SS)	2856	11008	966	1632	3142	0.285	0.342	0.430	0.772	251	1406	77.4	271	0.964
Rod Carew (1B)	2469	9315	1018	1424	3053	0.328	0.393	0.429	0.822	92	1015	81.2	353	0.991
Roger Connor (1B)	1998	7797	1002	1620	2467	0.316	0.397	0.486	0.883	138	1323	84.3	244	0.978
Rogers Hornsby (2B)	2259	8173	1038	1579	2930	0.358	0.434	0.577	1.010	301	1584	127.3	135	0.965
Ron Santo (3B)	2243	8143	1108	1138	2254	0.277	0.362	0.464	0.826	342	1331	70.5	35	0.954
Ronald Acuna Jr (RF)*	514	1983	261	394	550	0.277	0.370	0.517	0.888	120	296	17.7	107	0.985
Ryne Sandberg (2B)	2164	8385	761	1318	2386	0.285	0.344	0.452	0.795	282	1061	68.0	344	0.989
Salvador Perez (C)*	1254	4752	180	539	1274	0.268	0.301	0.463	0.764	223	732	32.4	6	0.995
Sam Crawford (RF)	2517	9570	760	1391	2961	0.309	0.362	0.452	0.814	97	1523	75.3	367	0.965
Sammy Sosa (RF)	2354	8813	929	1475	2408	0.273	0.344	0.534	0.878	609	1667	58.6	234	0.974
Scott Rolen (3B)	2038	7398	899	1211	2077	0.281	0.364	0.490	0.855	316	1287	70.1	118	0.968
Stan Musial (LF)	3026	10972	1599	1949	3630	0.331	0.417	0.559	0.976	475	1951	128.6	78	0.984
Ted Williams (LF)	2292	7706	2021	1798	2654	0.344	0.482	0.634	1.115	521	1839	122.0	24	0.976
Thurman Munson (C)	1423	5344	438	696	1558	0.292	0.346	0.410	0.756	113	701	46.1	48	0.982
Tim Lincecum (LF)	2502	8872	1330	1571	2605	0.294	0.385	0.425	0.810	170	980	69.4	808	0.988
Todd Helton (1B)	2247	7962	1335	1401	2519	0.316	0.414	0.539	0.953	369	1406	61.8	37	0.996
Tony Gwynn (RF)	2440	9288	790	1383	3141	0.338	0.388	0.459	0.847	135	1138	69.2	319	0.987
Trea Turner (SS)*	849	3424	268	586	1033	0.302	0.355	0.487	0.842	124	434	29.6	230	0.972
Trey Mancini (1B)*	752	2816	244	376	746	0.265	0.330	0.457	0.787	125	372	9.6	2	0.996
Tris Speaker (CF)	2789	10195	1381	1882	3514	0.345	0.428	0.500	0.928	117	1531	134.8	436	0.969
Ty Cobb (CF)	3034	11440	1249	2245	4189	0.366	0.432	0.512	0.943	117	1944	151.4	897	0.963
Vlad Guerrero Jr (1B)*	504	1927	210	299	547	0.284	0.358	0.504	0.862	104	310	13.4	13	0.991

Vlad Guerrero Sr (RF)	2147	8155	737	1328	2590	0.318	0.379	0.553	0.931	449	1496	59.5	181	0.963
Wade Boggs (3B)	2439	9180	1412	1513	3010	0.328	0.415	0.443	0.858	118	1014	91.4	24	0.962
Willie Mays (CF)	3005	10924	1468	2068	3293	0.301	0.384	0.557	0.940	660	1909	156.1	338	0.981
Willie Stargell (LF)	2360	7927	937	1194	2232	0.282	0.360	0.529	0.889	475	1540	57.5	17	0.961
Xander Bogaerts (SS)*	1264	4834	461	752	1410	0.292	0.356	0.458	0.815	156	683	35.2	74	0.979
Yasmani Grandal (C) *	1117	3560	619	476	843	0.237	0.351	0.435	0.785	177	532	20.3	12	0.993
Yogi Berra (C)	2120	7555	704	1175	2150	0.285	0.348	0.482	0.830	358	1430	59.4	30	0.989

Best Baseball Players of All-Time (Yearly Totals)								
Player	BB/Y	R/Y	H/Y	HR/Y	RBI/Y	HRA	WAR/Y	SB/Y
Aaron Judge (RF)*	104.9	118.9	166.2	48.9	110.4	0.0834	8.2	8.9
Adrian Beltre (3B)	46.8	84.2	174.9	26.3	94.3	0.0431	5.2	6.7
Al Kaline (RF)	73.0	92.7	171.9	22.8	90.4	0.0394	5.3	7.8
Alan Trammell (SS)	60.1	87.0	167.1	13.1	70.9	0.0223	5.0	16.7
Albert Pujols (1B)	72.2	100.7	178.0	37.0	116.7	0.0616	5.3	6.2
Alex Bregman (3B)*	88.5	103.0	164.6	28.2	98.6	0.0474	6.1	7.2
Alex Rodriguez (SS)	77.9	117.6	181.3	40.5	121.4	0.0659	6.8	19.1
Andrew Benintendi (LF)*	67.2	86.1	169.2	15.9	83.5	0.0262	3.4	15.0
Andrew McCutchen (CF)*	84.0	95.6	166.5	24.5	85.7	0.0408	4.0	17.5
Anthony Rizzo (1B)*	75.8	88.5	155.7	29.8	93.8	0.0507	4.1	7.6
Arky Vaughan (SS)	83.5	104.6	187.5	8.6	82.6	0.0145	7.0	10.5
Babe Ruth (RF)	133.5	140.7	185.9	46.2	143.3	0.0850	10.5	8.0
Barry Bonds (LF)	138.8	120.8	159.2	41.3	108.3	0.0774	8.8	27.9
Bill Dahlen (SS)	70.5	105.4	163.1	5.6	81.8	0.0093	5.0	36.3
Brooks Robinson (3B)	48.1	68.9	159.3	15.0	75.9	0.0252	4.4	1.6
Bryce Harper (RF)*	103.0	107.0	161.6	33.4	95.8	0.0578	5.0	14.3
Buster Posey (C)	63.8	78.3	177.2	18.7	86.1	0.0318	5.3	2.7
Cal Ripken Jr (SS)	60.9	88.9	171.9	23.3	91.5	0.0373	5.2	1.9
Cap Anson (1B)	63.2	128.3	220.5	6.2	133.2	0.0094	6.1	17.8
Carl Yastrzemski (LF)	90.4	88.9	167.4	22.1	90.3	0.0377	4.7	8.2
Carlos Beltran (CF)	67.9	99.1	170.7	27.3	99.4	0.0445	4.4	19.5
Carlos Correa (SS)*	74.4	92.7	170.2	28.3	100.9	0.0463	7.2	6.0
Carlos Delgado (1B)	88.3	98.8	162.2	37.7	120.4	0.0649	3.5	1.1
Carlton Fisk (C)	55.0	82.7	152.7	24.4	86.2	0.0429	4.4	8.3
Charlie Gehringer (2B)	82.7	123.8	198.0	12.8	99.5	0.0208	5.9	12.6
Chase Utley (2B)	60.6	92.2	157.7	21.7	85.7	0.0378	5.4	12.9
Chipper Jones (3B)	98.0	105.0	176.7	30.3	105.2	0.0521	5.5	9.7
Christian Yelich (LF)*	84.6	103.1	175.4	22.6	81.7	0.0369	4.7	20.2
Cody Bellinger (CF)*	71.1	94.4	141.8	33.1	91.8	0.0579	3.8	13.5
Corey Seager (SS)*	64.4	99.8	177.6	28.2	92.0	0.0455	5.2	3.1
Dale Murphy (CF)	73.3	89.0	156.9	29.6	94.1	0.0500	3.5	12.0
Dan Brouthers (1B)	81.2	147.8	222.6	10.3	125.8	0.0159	7.7	24.8
Dansby Swanson (SS)*	56.8	84.8	151.8	20.0	80.5	0.0335	2.9	11.4
David Ortiz (1B)	88.7	95.5	166.3	36.4	118.9	0.0626	3.7	1.1
Derek Jeter (SS)	63.8	113.4	204.3	15.3	77.3	0.0232	4.2	21.1
Dick Allen (1B)	82.8	101.8	171.2	32.5	103.6	0.0554	5.4	12.3
DJ LeMahieu (2B)*	54.8	92.0	179.2	12.2	66.1	0.0202	3.4	10.3
Dustin Pedroia (2B)	66.9	98.8	193.4	15.0	77.7	0.0232	5.6	14.8
Eddie Collins (2B)	85.9	104.4	190.0	2.7	74.5	0.0047	7.1	42.5
Eddie Mathews (3B)	97.8	102.2	156.9	34.7	98.4	0.0600	6.5	4.6
Edgar Martinez (3B)	101.1	96.1	177.1	24.4	99.4	0.0428	5.4	3.9
Ernie Banks (1B)	48.9	83.6	165.5	32.8	104.8	0.0543	4.3	3.2

Francisco Lindor (SS)*	61.1	103.5	178.3	28.0	88.5	0.0436	5.6	19.0
Frank Robinson (RF)	81.9	105.5	169.8	33.8	104.5	0.0586	6.2	11.8
Frank Thomas (1B)	116.3	104.2	172.2	36.3	118.9	0.0635	5.1	2.2
Freddie Freeman (1B)*	80.8	102.0	178.8	27.4	97.8	0.0458	4.6	6.2
Gary Carter (C)	59.8	72.3	147.6	22.9	86.4	0.0406	5.0	2.8
Gary Sheffield (RF)	92.8	102.9	169.1	32.0	105.4	0.0552	3.8	15.9
George Brett (3B)	65.6	94.7	188.8	19.0	95.5	0.0306	5.3	12.0
George Davis (SS)	59.7	105.5	182.0	5.0	98.3	0.0081	5.8	42.3
Giancarlo Stanton (RF)*	78.7	92.1	156.2	42.7	109.7	0.0722	5.0	4.7
Graig Nettles (3B)	65.3	71.6	133.5	23.4	78.8	0.0434	4.1	1.9
Hank Aaron (RF)	68.9	106.8	185.2	37.1	112.8	0.0611	7.0	11.8
Hank Greenberg (1B)	99.0	121.6	189.2	38.5	148.1	0.0637	6.4	6.7
Honus Wagner (SS)	55.8	100.8	198.3	5.9	100.4	0.0097	7.6	41.9
Ichiro Suzuki (RF)	39.5	86.7	188.6	7.1	47.6	0.0118	3.7	31.1
Ivan Rodriguez (C)	32.7	86.3	181.2	19.8	84.9	0.0324	4.4	8.1
Jackie Robinson (2B)	86.5	111.2	178.8	16.1	87.1	0.0282	7.3	22.9
Jeff Bagwell (1B)	105.6	114.3	174.4	33.8	115.2	0.0576	6.0	15.2
Jeff Kent (2B)	56.5	93.1	173.5	26.6	107.0	0.0444	3.9	6.6
Jimmie Foxx (1B)	101.5	122.4	185.0	37.3	134.4	0.0657	6.5	6.1
Joe Dimaggio (CF)	73.7	129.7	206.6	33.7	143.4	0.0529	7.4	2.8
Joe Jackson (RF)	63.1	106.2	215.5	6.6	96.3	0.0108	7.6	24.6
Joe Mauer (C)	81.9	88.8	185.1	12.5	80.5	0.0206	4.8	4.5
Joe Morgan (2B)	114.1	100.9	153.9	16.4	69.3	0.0289	6.1	42.1
Joey Gallo (LF)*	89.8	86.2	101.5	38.1	83.2	0.0749	3.1	6.2
Joey Votto (1B)*	108.9	93.2	170.3	27.8	90.0	0.0486	5.2	6.5
Johnny Bench (C)	66.9	81.9	153.7	29.2	103.3	0.0508	5.6	5.1
Johnny Mize (1B)	73.6	96.1	172.9	30.9	115.0	0.0557	6.1	2.4
Jorge Posada (C)	82.9	79.7	147.4	24.4	94.3	0.0451	3.8	1.8
Jose Altuve (2B)*	52.3	101.2	198.7	19.7	71.5	0.0305	4.8	28.6
Jose Ramirez (3B)*	67.4	99.3	164.6	27.4	94.9	0.0463	5.8	24.8
Jose Reyes (SS)	50.8	101.8	184.5	12.5	62.1	0.0192	3.2	44.6
Josh Gibson (C)	89.7	165.3	218.3	44.7	197.8	0.0766	10.5	10.8
Juan Soto (LF)*	133.4	112.9	160.7	32.8	98.2	0.0585	6.1	10.0
Keith Hernandez (1B)	83.0	87.2	169.3	12.6	83.1	0.0220	4.7	7.6
Ken Griffey Jr (CF)	79.6	100.8	168.7	38.2	111.4	0.0643	5.1	11.2
Kris Bryant (3B)*	80.5	108.5	168.5	30.1	87.6	0.0499	5.1	7.7
Larry Walker (RF)	74.4	110.4	176.0	31.2	106.8	0.0555	5.9	18.7
Lou Gehrig (1B)	112.9	141.3	203.7	36.9	149.3	0.0616	8.5	7.6
Luke Appling (SS)	87.1	88.2	183.9	3.0	74.6	0.0051	5.2	12.0
Manny Machado (3B)*	57.5	94.1	179.0	31.7	95.6	0.0499	5.8	9.5
Manny Ramirez (LF)	93.5	108.7	181.1	39.1	128.9	0.0673	4.9	2.7
Mark Teixeira (1B)	79.9	95.6	162.0	35.6	112.9	0.0590	4.4	2.3
Matt Chapman (3B)*	71.0	93.7	140.6	30.7	82.8	0.0525	6.0	1.6

Matt Olson (1B)*	76.3	89.9	146.2	38.7	104.6	0.0661	4.8	1.5
Mel Ott (RF)	101.4	110.3	170.7	30.3	110.4	0.0540	6.6	5.3
Mickey Mantle (CF)	116.9	113.1	162.9	36.2	101.8	0.0662	7.4	10.3
Miguel Cabrera (1B)*	73.6	91.8	185.3	30.4	110.9	0.0506	4.1	2.4
Mike Piazza (C)	64.3	88.8	180.2	36.2	113.1	0.0618	5.0	1.4
Mike Schmidt (3B)	101.6	101.5	150.5	36.9	107.5	0.0656	7.2	11.7
Mike Trout (CF)*	105.8	121.1	177.7	40.3	103.2	0.0687	9.5	23.5
Mookie Betts (RF)*	75.4	126.6	190.1	31.0	94.5	0.0478	8.2	23.0
Nap Lajoie (2B)	33.7	98.2	211.8	5.4	104.5	0.0086	7.0	24.8
Nolan Arenado (3B)*	54.3	94.0	177.9	35.0	113.3	0.0568	6.1	2.7
Oscar Charleston (CF)	84.7	151.2	213.5	25.3	150.9	0.0432	8.6	37.0
Ozzie Smith (SS)	67.5	79.1	154.9	1.8	49.9	0.0030	4.8	36.5
Paul Goldschmidt (1B)*	91.6	104.5	175.0	31.5	104.2	0.0531	5.8	14.7
Paul Molitor (3B)	66.1	107.6	200.4	14.1	78.9	0.0216	4.6	30.4
Pete Alonso (1B)*	68.2	94.8	156.5	44.6	116.2	0.0744	4.3	3.1
Pete Rose (LF)	71.2	98.5	193.6	7.3	59.8	0.0114	3.6	9.0
Reggie Jackson (RF)	79.0	89.1	148.4	32.3	97.8	0.0571	4.3	13.1
Rickey Henderson (LF)	115.2	120.7	160.6	15.6	58.6	0.0271	5.8	73.9
Roberto Clemente (RF)	41.3	94.3	199.8	16.0	86.9	0.0254	6.3	5.5
Robin Yount (SS)	54.8	92.6	178.2	14.2	79.8	0.0228	4.4	15.4
Rod Carew (1B)	66.8	93.4	200.3	6.0	66.6	0.0099	5.3	23.2
Roger Connor (1B)	81.2	131.4	200.0	11.2	107.3	0.0177	6.8	19.8
Rogers Hornsby (2B)	74.4	113.2	210.1	21.6	113.6	0.0368	9.1	9.7
Ron Santo (3B)	80.0	82.2	162.8	24.7	96.1	0.0420	5.1	2.5
Ronald Acuna Jr (RF)*	82.3	124.2	173.3	37.8	93.3	0.0605	5.6	33.7
Ryne Sandberg (2B)	57.0	98.7	178.6	21.1	79.4	0.0336	5.1	25.8
Salvador Perez (C)*	23.3	69.6	164.6	28.8	94.6	0.0469	4.2	0.8
Sam Crawford (RF)	48.9	89.5	190.6	6.2	98.0	0.0101	4.8	23.6
Sammy Sosa (RF)	63.9	101.5	165.7	41.9	114.7	0.0691	4.0	16.1
Scott Rolen (3B)	71.5	96.3	165.1	25.1	102.3	0.0427	5.6	9.4
Stan Musial (LF)	85.6	104.3	194.3	25.4	104.4	0.0433	6.9	4.2
Ted Williams (LF)	142.8	127.1	187.6	36.8	130.0	0.0676	8.6	1.7
Thurman Munson (C)	49.9	79.2	177.4	12.9	79.8	0.0211	5.2	5.5
Tim Lincecum (LF)	86.1	101.7	168.7	11.0	63.5	0.0192	4.5	52.3
Todd Helton (1B)	96.2	101.0	181.6	26.6	101.4	0.0463	4.5	2.7
Tony Gwynn (RF)	52.5	91.8	208.5	9.0	75.6	0.0145	4.6	21.2
Trea Turner (SS)*	51.1	111.8	197.1	23.7	82.8	0.0362	5.6	43.9
Trey Mancini (1B)*	52.6	81.0	160.7	26.9	80.1	0.0444	2.1	0.4
Tris Speaker (CF)	80.2	109.3	204.1	6.8	88.9	0.0115	7.8	25.3
Ty Cobb (CF)	66.7	119.9	223.7	6.2	103.8	0.0102	8.1	47.9
Vlad Guerrero Jr (1B)*	67.5	96.1	175.8	33.4	99.6	0.0540	4.3	4.2
Vlad Guerrero Sr (RF)	55.6	100.2	195.4	33.9	112.9	0.0551	4.5	13.7
Wade Boggs (3B)	93.8	100.5	199.9	7.8	67.4	0.0129	6.1	1.6

Willie Mays (CF)	79.1	111.5	177.5	35.6	102.9	0.0604	8.4	18.2
Willie Stargell (LF)	64.3	82.0	153.2	32.6	105.7	0.0599	3.9	1.2
Xander Bogaerts (SS)*	59.1	96.4	180.7	20.0	87.5	0.0323	4.5	9.5
Yasmani Grandal (C) *	89.8	69.0	122.3	25.7	77.2	0.0497	2.9	1.7
Yogi Berra (C)	53.8	89.8	164.3	27.4	109.3	0.0474	4.5	2.3



[illegible]

29	Trey Mancini (1B)*													7	7
30	Hank Greenberg (1B)							3	3						6
31	Joe Jackson (RF)					6									6
32	Anthony Rizzo (1B)*													6	6
33	Freddie Freeman (1B) *													5	5
34	Mickey Mantle (CF)		4												4
35	George Davis (SS)												4		4
36	Joe Mauer (C)													4	4
37	Ken Griffey Jr (CF)									4					4
38	Mike Trout (CF) *							2	1						3
39	Sammy Sosa (RF)									3					3
40	Buster Posey (C)													3	3
41	Ozzie Smith (SS)												3		3
42	Adrian Beltre (3B)	3													3
43	Mel Ott (RF)		3												3
44	Dan Brouthers (1B)					2									2
45	Frank Thomas (1B)		2												2
46	Bill Dahlen (SS)												2		2
47	Frank Robinson (RF)									2					2
48	Robin Yount (SS)	2													2
49	Matt Olson (1B)*													2	2
50	Jose Reyes (SS)												1		1
51	Manny Ramirez (LF)							1							1
52	Reggie Jackson (RF)									1					1
53	Salvador Perez (C)*													1	1
54	Aaron Judge (RF) *														0
55	Pete Alonso (1B)*														0
56	Joe Dimaggio (CF)														0
57	Giancarlo Stanton (RF)*														0
58	Juan Soto (LF)*														0
59	Joey Gallo (LF)*														0
60	Trea Turner (SS)*														0

61	Roger Connor (1B)														0
62	Nap Lajoie (2B)														0
63	Tony Gwynn (RF)														0
64	Joey Votto (1B)*														0
65	Mookie Betts (RF)*														0
66	Keith Hernandez (1B)														0
67	Ernie Banks (1B)														0
68	Charlie Gehringer (2B)														0
69	Miguel Cabrera (1B) *														0
70	Jeff Bagwell (1B)														0
71	Al Kaline (RF)														0
72	Arky Vaughan (SS)														0
73	Brooks Robinson (3B)														0
74	Bryce Harper (RF) *														0
75	Carlos Beltran (CF)														0
76	Carlos Delgado (1B)														0
77	Chipper Jones (3B)														0
78	Dale Murphy (CF)														0
79	David Ortiz (1B)														0
80	Dick Allen (1B)														0
81	Eddie Mathews (3B)														0
82	Gary Sheffield (RF)														0
83	George Brett (3B)														0
84	Graig Nettles (3B)														0
85	Ichiro Suzuki (RF)														0
86	Jeff Kent (2B)														0
87	Johnny Bench (C)														0
88	Jorge Posada (C)														0
89	Luke Appling (SS)														0
90	Mike Piazza (C)														0
91	Mike Schmidt (3B)														0

92	Nolan Arenado (3B) *														0
93	Paul Molitor (3B)														0
94	Roberto Clemente (RF)														0
95	Rod Carew (1B)														0
96	Sam Crawford (RF)														0
97	Vlad Guerrero Jr (1B) *														0
98	Wade Boggs (3B)														0
99	Yogi Berra (C)														0
100	Alan Trammell (SS)														0
101	Carlton Fisk (C)														0
102	Chase Utley (2B)														0
103	Dustin Pedroia (2B)														0
104	Edgar Martinez (3B)														0
105	Gary Carter (C)														0
106	Ivan Rodriguez (C)														0
107	Jackie Robinson (2B)														0
108	Johnny Mize (1B)														0
109	Larry Walker (RF)														0
110	Ron Santo (3B)														0
111	Ryne Sandberg (2B)														0
112	Scott Rolen (3B)														0
113	Thurman Munson (C)														0
114	Vlad Guerrero Sr (RF)														0
115	Willie Stargell (LF)														0
116	DJ LeMahieu (2B)*														0
117	Matt Chapman (3B)*														0
118	Yasmani Grandal (C)*														0
119	Andrew Benintendi (LF)*														0
120	Jose Ramirez (3B)*														0
121	Carlos Correa (SS)*														0

122	Jose Altuve (2B)*														0
123	Alex Bregman (3B)*														0
124	Corey Seager (SS)*														0
125	Ronald Acuna Jr (RF)*														0
126	Francisco Lindor (SS)*														0
127	Dansby Swanson (SS)*														0
128	Christian Yelich (LF)*														0
129	Cody Bellinger (CF)*														0
130	Andrew McCutchen (CF)*														0
131	Kris Bryant (3B)*														0
132	Manny Machado (3B)*														0
133	Xander Bogaerts (SS)*														0

Points Received (Yearly Stats)										
Rank #	Player	BB/Y	R/Y	H/Y	HR/Y	RBI/Y	HRA	WAR/Y	SB/Y	Total
1	Josh Gibson (C)		10	7	8	10	7	9		51
2	Babe Ruth (RF)	8	6		9	5	10	10		48
3	Oscar Charleston (CF)		9	5		9		4	1	28
4	Barry Bonds (LF)	9			4		8	6		27
5	Ted Williams (LF)	10	2			2	1	5		20
6	Lou Gehrig (1B)	2	7			8		3		20
7	Aaron Judge (RF) *				10		9	1		20
8	Ty Cobb (CF)			10					8	18
9	Dan Brouthers (1B)		8	9						17
10	Rickey Henderson (LF)	4							10	14
11	Cap Anson (1B)		3	8		3				14
12	Mike Trout (CF) *				2		2	8		12
13	Pete Alonso (1B)*				7		5			12
14	Joe Dimaggio (CF)		4	1		6				11
15	Rogers Hornsby (2B)			3				7		10
16	Giancarlo Stanton (RF)*				6		4			10
17	Tim Lincecum (LF)								9	9
18	Sammy Sosa (RF)				5		3			8
19	Hank Greenberg (1B)					7				7
20	Jose Reyes (SS)								7	7
21	Juan Soto (LF)*	7								7
22	Joe Morgan (2B)	3							3	6
23	Joe Jackson (RF)			6						6
24	Mickey Mantle (CF)	6								6
25	Joey Gallo (LF)*						6			6
26	Trea Turner (SS)*								6	6
27	Eddie Collins (2B)								5	5
28	Frank Thomas (1B)	5								5
29	Roger Connor (1B)		5							5
30	Jimmie Foxx (1B)					4				4
31	George Davis (SS)								4	4
32	Nap Lajoie (2B)			4						4
33	Alex Rodriguez (SS)				3					3
34	Willie Mays (CF)							2		2
35	Honus Wagner (SS)								2	2
36	Manny Ramirez (LF)				1	1				2
37	Tony Gwynn (RF)			2						2
38	Joey Votto (1B)*	1								1
39	Mookie Betts (RF)*		1							1
40	Hank Aaron (RF)									0
41	Pete Rose (LF)									0

42	Albert Pujols (1B)									0
43	Tris Speaker (CF)									0
44	Stan Musial (LF)									0
45	Carl Yastrzemski (LF)									0
46	Paul Goldschmidt (1B)*									0
47	Mark Teixeira (1B)									0
48	Derek Jeter (SS)									0
49	Todd Helton (1B)									0
50	Cal Ripken Jr (SS)									0
51	Trey Mancini (1B)*									0
52	Anthony Rizzo (1B)*									0
53	Freddie Freeman (1B) *									0
54	Joe Mauer (C)									0
55	Ken Griffey Jr (CF)									0
56	Buster Posey (C)									0
57	Ozzie Smith (SS)									0
58	Adrian Beltre (3B)									0
59	Mel Ott (RF)									0
60	Bill Dahlen (SS)									0
61	Frank Robinson (RF)									0
62	Robin Yount (SS)									0
63	Matt Olson (1B)*									0
64	Reggie Jackson (RF)									0
65	Salvador Perez (C)*									0
66	Keith Hernandez (1B)									0
67	Ernie Banks (1B)									0
68	Charlie Gehringer (2B)									0
69	Miguel Cabrera (1B) *									0
70	Jeff Bagwell (1B)									0
71	Al Kaline (RF)									0
72	Arky Vaughan (SS)									0
73	Brooks Robinson (3B)									0
74	Bryce Harper (RF) *									0
75	Carlos Beltran (CF)									0
76	Carlos Delgado (1B)									0
77	Chipper Jones (3B)									0
78	Dale Murphy (CF)									0
79	David Ortiz (1B)									0
80	Dick Allen (1B)									0
81	Eddie Mathews (3B)									0
82	Gary Sheffield (RF)									0
83	George Brett (3B)									0
84	Graig Nettles (3B)									0

85	Ichiro Suzuki (RF)									0
86	Jeff Kent (2B)									0
87	Johnny Bench (C)									0
88	Jorge Posada (C)									0
89	Luke Appling (SS)									0
90	Mike Piazza (C)									0
91	Mike Schmidt (3B)									0
92	Nolan Arenado (3B) *									0
93	Paul Molitor (3B)									0
94	Roberto Clemente (RF)									0
95	Rod Carew (1B)									0
96	Sam Crawford (RF)									0
97	Vlad Guerrero Jr (1B) *									0
98	Wade Boggs (3B)									0
99	Yogi Berra (C)									0
100	Alan Trammell (SS)									0
101	Carlton Fisk (C)									0
102	Chase Utley (2B)									0
103	Dustin Pedroia (2B)									0
104	Edgar Martinez (3B)									0
105	Gary Carter (C)									0
106	Ivan Rodriguez (C)									0
107	Jackie Robinson (2B)									0
108	Johnny Mize (1B)									0
109	Larry Walker (RF)									0
110	Ron Santo (3B)									0
111	Ryne Sandberg (2B)									0
112	Scott Rolen (3B)									0
113	Thurman Munson (C)									0
114	Vlad Guerrero Sr (RF)									0
115	Willie Stargell (LF)									0
116	DJ LeMahieu (2B)*									0
117	Matt Chapman (3B)*									0
118	Yasmani Grandal (C)*									0
119	Andrew Benintendi (LF)*									0
120	Jose Ramirez (3B)*									0
121	Carlos Correa (SS)*									0
122	Jose Altuve (2B)*									0
123	Alex Bregman (3B)*									0
124	Corey Seager (SS)*									0
125	Ronald Acuna Jr (RF)*									0
126	Francisco Lindor (SS)*									0



127	Dansby Swanson (SS)*									0
128	Christian Yelich (LF)*									0
129	Cody Bellinger (CF)*									0
130	Andrew McCutchen (CF)*									0
131	Kris Bryant (3B)*									0
132	Manny Machado (3B)*									0
133	Xander Bogaerts (SS)*									0