

The Race of Baseball All-Stars

Diana Liberto, Wake Forest University

Level/Course: Algebra I

Social Justice Purpose: Students will examine baseball statistics and decide whether race played a part in All-Star Voting.

Objectives:

- Students will use graphs and data analysis to model real-world problems.
- Students will use logic and deductive reasoning to draw conclusions and solve problems.

Part I. Calculating Baseball Statistics

Students will examine baseball statistics of American League All- Star Baseball Players from 2005 and 1975. They calculate the batting average (BA), extra-base power (EB) and total skill score (TSS) for each reserve player who played in the 1975 and 2005 All- Star Game. Students will enter this data into Tables 1A and 1B. This lesson can be enhanced by using Excel and entering equations in the cells.

Part II. Comparing Scores

Students will then compare the scores of the starting players, chosen by the fans, and reserve players, chosen by the coaches. With the total score computed students will be able to discover whether the fans choose the most skilled player for each position.

Students will use Table 2A and 2B to compare the race of the player in each position where the reserve score was higher then the starters score. Students should also compare the years.

Assessment: Students will write a conclusion about race and the all-star voting, using their data.

History of the Major League Baseball (MLB) All-Star Game

All-Star teams were originally selected by the managers and the fans for the 1933 and 1934 games. From 1935 through 1946, managers selected the entire team for each league. From 1947 to 1957, fans chose the team's starters and the manager chose the pitchers and the remaining players. From 1958 through 1969 managers, players and coaches made the All-Star Team selections. In 1970, the vote again returned to the fans for the selection of the starters for each team and remains there today.

The baseball player at each position who gets the most votes starts the game at that position. The All-Star Manager then picks the reserves for each position in the game. The Manager typically picks one back up for Catcher, Second Baseman, Shortstop and Third Baseman. He picks two back ups for the First Baseman and four backups for Outfield.

Fans can vote for players using any standard they prefer. Fans may vote for players by the team they play for, the amount of runs they score, where they went to college, how physically attractive they are, race and the list could go on. One would hope the fans would base on ability but spectators of the sport know that this is not always true.

Your Mission

Using your math talent you must calculate important baseball statistics for the starting and reserve players of the 2005 and 1975 All-Star games. After you have correctly found important baseball statistics you will then decide if fans could have placed their vote by looking at race over skill.

Part One: Calculating Baseball Statistics

All necessary data has been collected for students and placed in Table 1A and 1B: Baseball Statistics. The data was collected on September 18, 2005 at www.mlb.com. All data on the all-star starters from 2005 and 1975 has been entered. It is your job to fill in the statistics for the reserve players. The information not filled in is the reserve's batting average (BA), extra-base power (EB) and their total skill score (TSS).

The formula used to find a player's batting average (BA) is their total number of hits (H) divided by their total number of at bats (AB).

$$BA = H / AB$$

The formula for extra-base power (EB) is calculated by subtracting a player's total number of hits (H) from their total bases (TB) and dividing that by their at bats (AB).

$$EB = (TB - H) / AB$$

There are many ways one could assign an overall score to a baseball player. The formula we will use considers a player's offensive and defensive skill. Our formula for discovering a player's total skill score (TSS) is the batting average (BA) plus the extra-base power (EB) plus the fielding percentage (FP), divided by three.

$$TSS = (BA + EB + FP) / 3$$

Table 1A: Player Statistics 1975

Starters Bold	Race	Position	BA	TB	H	AB	R	EB	FP	TSS
T. Munson	W	C	0.318	256	190	597	83	0.111	0.972	0.467
B. Freehan	W	C		170	105	427	42		0.991	
Tenace	W	1B	0.255	231	127	498	83	0.209	0.998	0.487
G. Scott	W	1B		318	176	617	86		0.989	
C. Yastrzemski	W	1B		220	146	543	91		0.996	
R. Carew	B	2B	0.359	266	192	535	89	0.138	0.973	0.490
J. Orta	H	2B		244	165	542	64		0.978	
Campaneris	H	SS	0.265	168	135	509	69	0.065	0.962	0.431
B. Dent	W	SS		205	159	602	52		0.981	
T. Harrah	W	SS		239	153	522	81		0.963	
G. Nettles	W	3B	0.260	250	155	597	83	0.159	0.964	0.461
D. Chalk	W	3B		177	140	513	59		0.976	
B. Bonds	B	OF	0.270	271	143	529	93	0.242	0.987	0.500
R. Jackson	B	OF	0.253	303	150	593	91	0.258	0.965	0.492
J. Rudi	W	OF	0.278	231	130	468	66	0.216	1.000	0.498
H. Aaron	B	OF		165	109	465	45		1.000	
M. Hargrove	W	OF		216	157	519	82		0.984	
G. Hendrick	B	OF		242	145	561	82		0.983	
F. Lynn	W	OF		299	175	528	103		0.983	
H. McRae	B	OF		212	147	480	58		0.986	
C. Washington	B	OF		250	182	590	86		0.978	

Table 1B: Player Statistics 2005

Starters Bold	Race	Position	BA	TB	H	AB	R	EB	FP	TSS
J. Varitek	W	C	0.284	223	128	451	68	0.211	0.991	0.495
I. Rodriguez	H	C		224	139	500	71		0.995	
M. Teixeira	W	1B	0.297	356	185	622	110	0.275	0.999	0.524
P. Konerko	W	1B		297	157	563	95		0.996	
M. Sweeney	W	1B		232	134	454	60		0.998	
B. Roberts	W	2B	0.301	285	169	561	92	0.207	0.988	0.499
A. Soriano	H	2B		316	166	618	99		0.973	
M. Tejada	H	SS	0.307	331	193	628	85	0.220	0.970	0.499
M. Young	W	SS		336	215	645	113		0.973	
A. Rodriguez	H	3B	0.321	284	186	580	118	0.169	1.000	0.497
M. Mora	H	3B		260	160	569	77		0.960	
V. Guerrero	H	OF	0.317	290	162	511	94	0.250	0.988	0.519
J. Damon	H	OF	0.313	264	188	600	110	0.127	0.985	0.475
M. Ramirez	H	OF	0.288	309	154	534	107	0.290	0.973	0.517
G. Anderson	B	OF		337	157	558	64		0.976	
S. Podsednik	W	OF		170	140	486	78		0.989	
G. Sheffield	B	OF		284	164	561	100		0.987	
I. Suzuki	A	OF		285	196	654	108		0.995	
D. Ortiz	H	DH	0.296	350	171	578	115	0.310	0.976	0.527
S. Hillenbrand	W	DH		267	173	590	90		0.954	

Part Two: What Starters do not measure up to the Reserves?

You will now compare the players in which the reserve had a higher score than the starting player. To help compare these players fill in Table 2. Comparison of Stats with the players at each position where the reserve was better then the starter. In this table you will also enter the race of the starter and the reserve. You will use this information to compare the race of players in which the reserve player had a higher total score then the starter.

Table 2A: Comparison of Stats 1975

Fill in this chart with the Back Up Players that had a better score than the Starters.

Back Up Player	TSS Score	Starter	TSS Score	Back-Up's Race	Starter's Race	Therefore.... (Draw conclusion)

Table 2B: Comparison of Stats 2005

Fill in this chart with the Back Up Players that had a better score than the Starters.

Back Up Player	TSS Score	Starter	TSS Score	Back-Up's Race	Starter's Race	Therefore.... (Draw conclusion)

After examining the information in Table 2A and 2B, write a conclusion with the information you have discovered. Your conclusion should include but not be limited to the following questions:

- What race got chosen over another race more frequently?
- Did any race fail to ever be chosen over another?
- Did the error in picking the most qualified player improve over the 30 year span?
- Do you think race could have played a factor in fan voting?

Solutions:

Table 1A

<i>1975 Starters</i>	<i>Race</i>	<i>Position</i>	<i>BA</i>	<i>TB</i>	<i>H</i>	<i>AB</i>	<i>R</i>	<i>EB</i>	<i>FP</i>	<i>TSS</i>
T. Munson	W	C	0.318	256	190	597	83	0.111	0.972	0.467
B. Freehan	W	C	0.246	170	105	427	42	0.152	0.991	0.463
Tenace	W	1B	0.255	231	127	498	83	0.209	0.998	0.487
G. Scott	W	1B	0.285	318	176	617	86	0.230	0.989	0.501
C. Yastrzemeski	W	1B	0.269	220	146	543	91	0.136	0.996	0.467
R. Carew	B	2B	0.359	266	192	535	89	0.138	0.973	0.490
J. Orta	H	2B	0.304	244	165	542	64	0.146	0.978	0.476
Campaneris	H	SS	0.265	168	135	509	69	0.065	0.962	0.431
B. Dent	W	SS	0.264	205	159	602	52	0.076	0.981	0.441
T. Harrah	W	SS	0.293	239	153	522	81	0.165	0.963	0.474
G. Nettles	W	3B	0.260	250	155	597	83	0.159	0.964	0.461
D. Chalk	W	3B	0.273	177	140	513	59	0.072	0.976	0.440
B. Bonds	B	OF	0.270	271	143	529	93	0.242	0.987	0.500
R. Jackson	B	OF	0.253	303	150	593	91	0.258	0.965	0.492
J. Rudi	W	OF	0.278	231	130	468	66	0.216	1.000	0.498
H. Aaron	B	OF	0.234	165	109	465	45	0.120	1.000	0.452
M. Hargrove	W	OF	0.303	216	157	519	82	0.114	0.984	0.467
G. Hendrick	B	OF	0.258	242	145	561	82	0.173	0.983	0.471
F. Lynn	W	OF	0.331	299	175	528	103	0.235	0.983	0.516
H. McRae	B	OF	0.306	212	147	480	58	0.135	0.986	0.476
C. Washington	B	OF	0.308	250	182	590	86	0.115	0.978	0.467

Table 2A

<i>Back Up Player</i>	<i>Score</i>	<i>Starter</i>	<i>Score</i>	<i>Back-Up's Race</i>	<i>Starter's Race</i>	<i>Therefore.... (Draw conclusion)</i>
G. Scott	.501	Tenace	.487	W	W	White got it over White
B. Dent	.441	Campaneris	.431	W	H	Hispanic got it over White
T. Harrah	.474	Campaneris	.431	W	H	Hispanic got it over White
F. Lynn	.516	R. Jackson	.492	W	B	Black got it over White

Solutions (cont.):

Table 1B

2005 Players	Race	Position	BA	TB	H	AB	R	EB	FP	TSS
J. Varitek	W	C	0.284	223	128	451	68	0.211	0.991	0.495
I. Rodriguez	H	C	0.278	224	139	500	71	0.170	0.995	0.481
M. Teixeira	W	1B	0.297	356	185	622	110	0.275	0.999	0.524
P. Konerko	W	1B	0.279	297	157	563	95	0.249	0.996	0.508
M. Sweeney	W	1B	0.295	232	134	454	60	0.216	0.998	0.503
B. Roberts	W	2B	0.301	285	169	561	92	0.207	0.988	0.499
A. Soriano	H	2B	0.265	326	164	618	99	0.262	0.973	0.500
M. Tejada	H	SS	0.307	331	193	628	85	0.220	0.970	0.499
M. Young	W	SS	0.320	338	214	668	113	0.186	0.973	0.493
A. Rodriguez	H	3B	0.321	284	186	580	118	0.169	1.000	0.497
M. Mora	H	3B	0.281	260	160	569	77	0.176	0.960	0.472
V. Guerrero	H	OF	0.317	290	162	511	94	0.250	0.988	0.519
J. Damon	H	OF	0.313	264	188	600	110	0.127	0.985	0.475
M. Ramirez	H	OF	0.288	309	154	534	107	0.290	0.973	0.517
G. Anderson	B	OF	0.281	337	157	558	64	0.323	0.976	0.527
S. Podsednik	W	OF	0.288	170	140	486	78	0.062	0.989	0.446
G. Sheffield	B	OF	0.292	284	164	561	100	0.214	0.987	0.498
I. Suzuki	A	OF	0.300	285	196	654	108	0.136	0.995	0.477
D. Ortiz	H	DH	0.296	350	171	578	115	0.310	0.976	0.527
S. Hillenbrand	W	DH	0.293	267	173	590	90	0.159	0.954	0.469

Table 2B

Back Up Player	Score	Starter	Score	Back-Up's Race	Starter's Race	Therefore.... (Draw conclusion)
A. Soriano	.500	B. Roberts	.499	H	W	White got it over Hispanic
G. Anderson	.527	Damon/Ramirez	.475/.517	B	H/H	Hispanic got it over Black
G. Sheffield	.498	Damon	.475	B	H	Hispanic got it over Black
I. Suzuki	.477	Damon	.475	A	H	Hispanic got it over Asian