Voting for the Baseball Hall of Fame: The Effect of Race on Election Date

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This article examines whether a player's race affects his date of election to the National Baseball Hall of Fame. If the election process exhibits biases against minority-race players, then they may be required to wait longer to be elected. The results show no evidence of racial discrimination in the timing of election. Moreover, the results validate past research indicating that discrimination does not negatively affect a minority player's ability to enter the Hall of Fame.

The Baseball Writers Association of America (Writers Association) votes on the most significant performance-related award in Major League Baseball (MLB), induction into the National Baseball Hall of Fame (the Hall). This article examines whether a retired player's race affects his probability of entering the Hall. Specifically, this study tests for the effect of a player's race on the number of years it takes to be elected. The availability of detailed measures of player performance in MLB allows for the isolation of an effect of a player's race on the time he must wait to enter the Hall. If the Writers Association has biases against minority-race players, then these players may be less likely to receive the required number of votes in any given year; thus racial bias may necessitate a player waiting longer to enter the Hall. Since induction into the Hall may provide a retired player greater recognition and possibly greater earning power, racial bias in voting can significantly affect the postcareer lives of these players.

Unlike many other industries, available data on player productivity in the sports industry have allowed researchers to investigate the effect of race on labor market outcomes such as salaries and hiring. Kahn and Sherer (1988) and Koch and Vander Hill (1988) find that white players in the National Basketball Association (NBA) are paid significantly more than equally

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skilled black players. Using more recent data, Hamilton (1997) finds that the premium paid to white NBA players is most notable at the upper end of the salary distribution. Using National Football League (NFL) data, Kahn (1992) finds no evidence of statistically significant salary discrimination. Several studies also have investigated race-based salary differentials in MLB. Kahn (1991) reviews these studies and finds little evidence of significant salary discrimination. Singell (1991) shows that black ex-players are less likely to be hired as coaches in MLB than their white counterparts. Brown, Spiro, and Keenan (1991) and Burdekin and Idson (1991) show that players are sorted to NBA teams partially based on their race.[1]

Race-based discrimination in voting on performance-related awards has received relatively little attention from researchers. Hanssen and Anderson (1999) study the behavior of fan voting on the starters for the MLB All-Star Game each year. If fans are willing to pay more to see players of their own race, then they also may be more likely to vote for players of their own race as All-Stars. The authors find that white players tend to receive more votes than equally qualified black players, although the vote differential has narrowed over time. This result is important to player compensation because many baseball players have incentive clauses in their contracts tied to performance-related awards. In addition, performance-related awards give a player national recognition, which can lead to greater compensation through endorsements.

Findlay and Reid (1997) are the first to examine whether the Writers Association exhibits racial bias in voting for the National Baseball Hall of Fame. The authors find limited evidence that black and Latin American players are treated differently than white players in voting. In particular, there is some evidence that Latin American players receive fewer votes than white players, although this voting discrimination seems to have diminished over time. Alternatively, black players are shown to receive favorable treatment in voting, but this result is inconsistent across specifications. Desser, Monks, and Robinson (1999) also study the effect of race on voting for the Hall. The authors find that both Latin American and black players receive fewer votes than equally qualified white players. However, these results are

[1] Following Becker (1971), economists generally think of discrimination as emanating from one of three sources: employers, employees, or customers. Most evidence points to customers as the primary source of any salary and hiring discrimination in the sports industry. Results using NFL data imply that white players earn higher salaries in largely white metropolitan areas, whereas nonwhite players earn higher salaries in largely nonwhite areas (Kahn 1992). Evidence from MLB suggests that teams with more black players have lower attendance and revenue (Gwartney and Haworth 1974; Scully 1973; Sommers and Quinton 1982). Anderson and La Croix (1991), Gabriel et al. (1995, 1999), and Nardinelli and Simon (1990) examine the market for baseball cards and find evidence that baseball card purchasers discriminate against both Latin American and black players in favor of Anglo players. Kahn and Sherer (1988) show that NBA teams with more black players have lower attendance. Furthermore, Brown and Jewell (1994, 1995) show that fans of college basketball teams pay a premium to see white players.

only marginally significant and of relatively small magnitude. According to the authors, the estimated effect of discrimination is too small to significantly alter the racial composition of the Hall.

Jewell, Brown, and Miles (2002) also examine the effects of race on Writers Association voting for the Hall. The authors find limited evidence that retired players who were born in Latin American countries receive fewer votes on their first ballot; however, the results are sensitive to the specification chosen. In addition, their study finds little evidence of bias among voters against black players. However, the authors show that discrimination in voting may exist against players who are both black and Latin American. Furthermore, the results show that race does not seem to affect whether a player actually receives enough votes to get into the Hall on his first ballot. Instead, it appears that any discrimination in voting is concentrated among those players who would not have received enough votes to enter the Hall based solely on their career statistics.

This study continues the economic literature on race and performance-related awards in the sports industry. This article concentrates on the length of time it takes to get into the Hall. The results indicate that minority-race players will not have longer waiting periods than equally qualified white players, which contradicts the hypothesis that race negatively affects entry date. Similar to past research on the effect of race on the number of votes, this study finds that race does not seem to affect the composition of the National Baseball Hall of Fame.

Data and Methodology

The data consist of 309 players who first appeared on the Writers Association ballot over the years 1962 to 2001. The initial year, 1962, is chosen because this is the first year a player of African ancestry, Jackie Robinson, was eligible for election. The data include only nonpitchers because the statistics of field players and pitchers are difficult to compare. The sample includes all field players who were on ballots from 1962 to 2001, with the exception of players who received zero votes for the years 1962, 1964, and 1966, since these names are unavailable.[2] Voting rules and dates of election are collected from the Hall's Web page (*baseballhalloffame.org*). Players who

[2] Pete Rose is excluded from the sample; Rose was on the ballot first in 1992, when he received 42 votes (9.74 percent). He never received votes commensurate with his on-the-field accomplishments, possibly due to his gambling and legal problems. He is currently on MLB's ineligible list and is not eligible for Hall voting. In addition, Roberto Clemente is excluded from the sample because he was elected to the Hall in a 1973 special election, shortly after his death in 1972 while still an active player.

were on each ballot are found in *The Dallas Morning News*, *The New York Times*, *USA Today*, *The Boston Globe*, and the *Total Baseball* Web page (*totalbaseball.com*), an online version of the official encyclopedia of MLB. Player statistics are collected from the *Total Baseball* Web page.

To be eligible for election to the Hall by the Writers Association, a player must have played in MLB for at least 10 seasons, must have been retired for at least 5 years, must have been an active player within 20 years of election, and must be placed on the ballot. According to current election rules, an ex-player can be placed on the ballot in one of two ways: (1) by being nominated by two of the six members of the Writers Association Screening Committee (in the first year he is eligible) or (2) by receiving 5 percent of the vote in the preceding election (in years after his initial year of eligibility). Players who are placed on the ballot each year must be named on 75 percent of the ballots returned by the voters to enter the Hall.[3]

According to Hall election rules, "voting should be based upon the player's record, playing ability, integrity, sportsmanship, character, and contributions to the team(s) on which the player played." In evaluating a player, each voter attaches some subjective importance to these factors and then decides whether a player is worthy of being inducted into the Hall. Since subjective measures such as integrity, sportsmanship, and character are difficult to measure, it is assumed that each voter casts a vote for each player based on that player's career performance statistics and other noteworthy accomplishments. In addition, a voter may be partially influenced by the player's race. Let i represent voters and j represent players. Equation (1) shows voter i's evaluation of player j at time t, $EVALUATION_{ijt}$, as a continuous function of the career statistics and accomplishments of player j ($STATISTICS_j$) and the race of player j ($RACE_j$):

$$EVALUATION_{ijt} = E(RACE_j STATISTICS_j) \tag{1}$$

where E can be additive, multiplicative, etc. A binary response (yes or no) for each voter, $VOTE_{ijt}$, is chosen based on the following rule:

$$\begin{aligned} &VOTE_{ijt} = 1 \text{ if } EVALUATION_{ijt} \geq HOF_{it} \text{ and} \\ &VOTE_{ijt} = 0 \text{ if } EVALUATION_{ijt} < HOF_{it} \end{aligned} \tag{2}$$

[3] The rules for voting eligibility have changed periodically since 1962; most changes are designed to streamline the process and reduce the number of players on any ballot. However, note that the 75 percent figure for induction has been consistent from 1962 to 2001. For a complete history of Hall voting rules, see Deane (1996). This study assumes that after a player is first on the ballot, he is eligible for voting for 15 years. Players who are not elected by the Writers Association are eligible for election by the Hall of Fame Committee on Baseball Veterans. Data on voting by the Veterans Committee are not included in this study. There are several years that no hitters were elected into the Hall. The years are 1963 (no election), 1964, 1965 (no election), 1967, 1968, 1970, 1971, 1973, 1976, 1997, and 1998.

where HOF_{it} is voter *i*'s evaluation of the minimum level needed for entry into the Hall at time *t*.

For a player to enter the Hall, he must have 75 percent of the vote. The identities of voters are held secret by the Writers Association; thus no information is available concerning their racial and ethnic composition. In addition, the Hall does not make data available on individual voters, just on the number of votes each player receives. Thus, if N_t equals the number of voters at time *t*, player *j* will enter the Hall at time *t* if and only if

$$\sum_{i=1}^{N_t} VOTE_{ijt} \geq 0.75N_t \tag{3}$$

The probability of player *j* being elected to the Hall at time *t* is

$$P_{jt} = \text{prob}(\sum_{i=1}^{N_t} VOTE_{ijt} \geq 0.75N_t) \tag{4}$$

Notice that P_{jt} is a conditional probability; that is, the probability of player *j* being elected is conditional on him being in the sample at time *t*. If P_{jt} is independent of the time, then one could simply run a probit or logit estimation with the dependent variable equal to 1 if a player ever makes it into the Hall. However, if time were not a factor, we would expect to see most, if not all, future Hall-of-Famers voted in on their first ballot. Of the 33 players in the sample elected to the Hall, 23 (70 percent) were elected in their first year of eligibility.

There may be many reasons why P_{jt} is affected by time. For instance, some voters may believe that entry on the first ballot is a special honor that should only be given to the most exceptional candidates. That is, average Hall-caliber players eventually will get into the Hall but not on the first ballot. Also, the composition of eligible players varies from year to year. Thus the competition for votes is not constant over time. Furthermore, the composition of voters can, and does, change each year. It is also possible that writers communicate with each other. Specifically, writers may be able to convince each other of the merits (or the negative qualities) of players who have not yet been elected, thus changing the probability of election over time. Finally, race-based voting discrimination may result in voters making minority players wait longer to enter the Hall than white players. Assuming that there exists a certain percentage of voters with discriminatory preferences, it may be too costly in terms of reputation effects for the Writers Association to keep someone out of the Hall due to race. However, it is significantly less costly if that player is eventually elected. Thus, making a player wait for entry may be a relatively cheap way for the Writers Association to satisfy their discriminatory preferences. If voters have discriminatory preferences, then race may partially determine how long a player must wait to enter the Hall.

If P_{jt} is influenced by time, then it is necessary to use an estimation methodology that utilizes the time pattern of the data. Essentially, this study attempts to estimate conditional probabilities of exit from the sample of potential Hall inductees (i.e., conditional probabilities of Hall election). Of primary concern is the duration of time between initial eligibility and eventual election. Models using this type of duration data (sometimes called *survival-time data*) are often estimated using the hazard function approach (Kiefer 1988; Greene 2000:937–50). This technique estimates the probability that an event occurs (i.e., election to the Hall) given that the event has not yet occurred. This conditional probability is called the *hazard rate* or *hazard function.* Assume that the probability distribution of Hall voting durations is $F(t)$. Thus $F(t)$ is the probability that a player is elected to the Hall prior to time t. The corresponding density function is $f(t) = dF(t)/dt$. The hazard function λ is given by

$$\lambda = f(t)/[1 - F(t)] \tag{5}$$

Allowing the hazard function to vary over individual players results in equation (6):

$$\lambda_j = P_{jt} = f(t,\ RACE_jSTATISTICS_j)/[1 - F(t,\ RACE_jSTATISTICS_j)] \tag{6}$$

Notice that the hazard function is equal to P_{jt}, the probability of interest in this study.

The hazard function can be estimated using parametric, semiparametric, or nonparametric methods. This study estimates the probability of Hall election using a semiparametric model, the Cox proportional hazard model, which uses a parametric specification for the effect of the regressors on a nonparametric baseline hazard. In Cox's model, the baseline hazard function is allowed to take any form, which is extremely appealing when using the Hall voting data. For instance, one might assume that the baseline hazard of Hall election increases but then decreases in later elections.[4] Using Cox's model, the hazard function becomes (Amemiya 1985:449)

$$\lambda_j = \lambda_0 \exp(\beta' RACE_j + \gamma' STATISTICS_j) \tag{7}$$

where β and γ are parameters to be estimated, and γ_0 is the baseline hazard function.

A player's race is categorized as "black" if a player's skin tone is perceived as black regardless of country of birth. Players who were born in

[4] The estimated baseline hazard function is available from the author. It shows that the baseline hazard decreases dramatically after a player's first vote, increases dramatically in the sixth through the ninth votes, and is decreasing for all future votes.

Latin American countries are categorized as "Latin." Baseball cards pictured in Slocum and Foley (1990) are used to categorize the black players. Place of birth is from *Total Baseball*.[5] The vector $STATISTICS_j$ contains player j's annual performance measures: number of walks, number of singles, number of doubles, number of triples, number of home runs, and number of stolen bases.[6] Annual performance measures are used instead of career performance measures to avoid a potential bias. Specifically, the use of career statistics can "inflate" the performance numbers for players who are able to remain employed as marginal players in their later years. In addition, if racial bias is present that forces minority players to retire earlier, then career statistics overstate the skill levels of nonminority players. The annual performance measures are expected to positively affect a voter's evaluation of each player, with an increase in any of these measures raising the probability of any writer voting for a player.

The composition of eligible players is not constant over time. To control for potential peer effects on voting, the vector $STATISTICS_j$ also contains information on a players relative performance ranking in his initial year on the ballot. "Deviation from Average Total Bases" measures the degree to which a player is better or worse than the average player in his initial election. A player who is much better than the average player in terms of total bases should have a higher probability of Hall election.[7] Other information about player j's career is also included in the vector $STATISTICS_j$. World Series championship appearances are included to measure the effect of team quality on voting. A dummy variable is included for players who spent at

[5] Two players born in the Virgin Islands (Jose Morales and Horace Clark) are categorized as Latin; categorizing these two players as non-Latin does not significantly change the results presented in this article. Rod Carew is categorized as non-Latin since he was born in the Panama Canal Zone, which was an American Protectorate at the time of his birth. Changing Carew's categorization does not significantly change the results. Several other models are estimated with some players categorized differently than reported in this article. The coefficients on race do not change significantly in any reestimation. Moreover, the implications of the results do not change. A complete listing of the racial categorization of players is available from the author. There are only two Latin players (Luis Aparicio and Tony Perez) who were elected by the Writers Association. This brings into question the importance of using a dummy for Latin-born players. The results presented in Table 2 indicate that Latin is insignificant, and removing Latin from the estimates does not significantly change the results.

[6] There are some advantages to using a single measure of player productivity. A common single measure is total bases, where total bases = singles + 2 × doubles + 3 × triples + 4 × home runs. Notice that this equation implies that the impact of a home run on Hall election is always four times the effect of a single, etc. Results using both total bases and the components of total bases are reported in Table 2. The measure of relative productivity used in this study (discussed below) employs total bases to conserve degrees of freedom.

[7] Other attempts at controlling for peer effects were made. For instance, models were estimated using the number of batting titles, home run titles, RBI titles, run titles, and stolen base titles a player won during his career. All these peer-effect measures were insignificant.

least 10 percent of their careers in both the National and American leagues. Spending time in both leagues may increase a player's visibility and thus his number of votes received. Alternatively, writers who value loyalty to a single team may perceive players who play in both leagues negatively. Dummy variables are also included for primary fielding position. Fielding position measures control for visibility effects, with outfield being the excluded category.

$STATISTICS_j$ also includes dummy variables for the decade in which player j was first eligible for election. The standards for entering the Hall may have changed over time. These decade dummies control for the effect of changing standards, with the 1960s being the excluded category. These dummy variables are also included to control for the change in voter composition over time. Finally, Findlay and Reid (1997) and Desser, Monks, and Robinson (1999) include performance-related awards (i.e., Most Valuable Player Awards won, number of appearances in All-Star Games, etc.) as explanatory variables. A performance-related award normally results from a voting process, which may be affected by discriminatory preferences of voters, and including performance-related awards as explanatory variables may bias the estimation results. Thus no measures of performance-related awards are included in this study.[8] Summary statistics for the entire sample are provided in Table 1, and a correlation table is given in the Appendix.

Results

The sample consists of 309 players, 33 of whom have been elected into the Hall between 1962 and 2001.[9] Of the 309 players in the sample, 197 are white, 105 are black, and 33 are Latin (with 26 being both black and Latin). Of the 33 players elected to the Hall, 16 (nearly half) are black and only 2 were born in a Latin American country. In the sample, 8 percent of white players and 15 percent of black players have been elected, whereas only 6 percent of Latin players have been elected. In terms of time to entry into the Hall, white players wait an average of 3.9 years, black players wait an average of 1.1 years, and Latin players wait an average of 6.5 years. The

[8] Players who play in larger media markets may have more visibility and thus may have a higher probability of being elected. Several estimations were attempted that include dummy variables for players who played in large cities (i.e., New York, Chicago, Philadelphia, Boston, and Los Angeles). These variables were all found to be insignificant.

[9] Censoring is unavoidable in most duration data. The statistical model in this article adjusts for the fact that some duration spells are not completely observed; that is, not all players are elected to the Hall during the observation period.

TABLE 1

SUMMARY STATISTICS ($N = 309$)

Variable	Mean	Std. Dev.	Min	Max
Black	0.340	0.474	0	1
Latin	0.107	0.309	0	1
Total bases*	159.417	50.92	30.1	298.1
Walks*	42.119	18.19	5.4	106.3
Singles*	72.622	22.28	18.3	141.3
Doubles*	17.128	5.745	3.1	34.5
Triples*	2.867	1.565	0.1	8.5
Home runs*	10.984	7.255	0.4	36.9
Stolen bases*	6.401	7.441	0	49.4
Deviation from average total bases*	−11.081	78.08	−284.0	196.1
World Series appearances	1.929	1.994	0	12
Played in both leagues	0.379	0.486	0	1
1970s	0.104	0.305	0	1
1980s	0.372	0.484	0	1
1990s	0.317	0.466	0	1
2000s	0.049	0.215	0	1
First base†	0.139	0.347	0	1
Second base†	0.110	0.313	0	1
Third base†	0.126	0.333	0	1
Shortstop†	0.091	0.288	0	1
Catcher†	0.126	0.333	0	1

*These variables are averaged over the number of seasons played.
†These variables are included in all estimates but are not reported for the sake of brevity.

sample only includes players who were eventually placed on the ballot; therefore, the results are effectively conditional on a player surviving the nomination process. Desser, Monks, and Robinson (1999) examine the effect of race on the nomination process. They find limited evidence that Latin American and black players are less likely to be placed on the ballot in any year. This result is extremely small and sensitive to the chosen specification. Thus it does not appear that race has much effect on ballot composition.

Table 2 reports estimates of equation (7). In column A, estimates are reported using singles, doubles, triples, and home runs separately. In column B, total bases are employed. Table 2 reports hazard ratios rather than coefficients. A hazard ratio larger than 1 implies that the effect of the variable is positive on the probability of election, and a hazard ratio less than 1 implies a negative effect. Thus a hazard ratio greater than 1 implies an earlier election date, whereas a hazard ratio less than 1 implies a later election date. Using either measure of player skill level, the results indicate that black players have hazard rates at least 50 percent larger than nonblack players; however, this effect is insignificantly different from zero. Latin players, on the other hand, are shown to have hazard rates less than half as large

as non-Latins; again, this effect is shown to be insignificant. These results contradict the hypothesis that race-based discrimination forces minority-race players to wait longer to enter the Hall.[10]

The measures of player skill level are generally positive and significant. The exceptions are walks and singles in column A, which are both insignificant. The hazard ratio reported for the measure of relative performance deviation from average total bases shows that players who are much better than other players in their cohort have greater hazard rates. Players with more World Series appearances have larger hazard rates, but this effect is only significant in column B. Thus there is limited evidence that the quality of the team on which a player performs is important in Hall voting but probably not as important as the performance of the player himself. Players who spent at least 10 percent of their careers in both leagues seem to have much smaller hazard rates, implying that these players are seen by voters as "journeymen" or perhaps even "hired guns." However, this effect is shown to be significant only in column A. The decade dummies generally indicate that players who become eligible for the Hall in later years have greater hazard rates, implying that they will have shorter waiting periods for entry into the Hall.[11] However, past research has indicated that it is getting more difficult to obtain votes over time, which seems at odds with the results presented here.[12] Perhaps the pool of retired players is becoming more skewed over time in terms of talent, implying that high-quality players are getting much better than average players. Thus, on average, it is has become more difficult to obtain votes, but the best players actually find it easier to obtain votes.

Conclusion

This article extends recent research on the effects of race on player induction into the Hall. In the present study, no evidence of racial discrimination

[10] Racial discrimination in voting also may be observed in variations by race in the impacts of explanatory variables. For instance, discriminatory voters may give minority players less credit for each home run, double, etc. To test for such an effect, a model was estimated in which race (black and Latin) is interacted with all the yearly performance variables. Although not reported here, the results indicate that voters do not discriminate against minority players in terms of lowering the value of performance measures. There is one limited exception: Black players are given marginally less credit for stolen bases (10 percent level of significance). However, this effect is too small to significantly reduce a black player's ability to enter the Hall.

[11] Including a time trend instead of the decade dummies results in estimates with similar implications.

[12] Jewell, Brown, and Miles (2002), Desser, Monks, and Robinson (1999), and Findlay and Reid (1997) all find evidence that players who are eligible in later years obtain fewer votes, all else constant.

TABLE 2

HAZARD MODEL RESULTS (*Z*-SCORE IN PARENTHESES)

	A	B
Black	1.856	1.523
	(0.777)	(0.658)
Latin	0.381	0.403
	(–0.736)	(–0.835)
Total bases		1.048***
		(4.101)
Singles	0.959	
	(–1.518)	
Doubles	1.361***	
	(2.722)	
Triples	1.737*	
	(1.917)	
Home runs	1.207***	
	(2.556)	
Walks	1.040	1.045**
	(1.417)	(2.370)
Stolen bases	1.079*	1.055*
	(1.755)	(1.693)
Deviation from average total bases	1.021***	1.016***
	(2.992)	(2.909)
World Series appearances	1.177	1.314**
	(1.173)	(2.148)
Played in both leagues	0.122**	0.351
	(–2.340)	(–1.456)
1970s	9.475*	5.825*
	(1.880)	(1.761)
1980s	2.935	2.740
	(0.888)	(0.942)
1990s	5.668	6.090*
	(1.580)	(1.789)
2000s	6.839	4.406
	(1.301)	(1.063)
Log likelihood	–54.41	–61.74

***Significant at 1% level.
**Significant at 5% level.
*Significant at 10% level.

in the duration of Hall voting is found against minority-race players. This result does not necessarily imply that racially motivated voting does not occur, but it does imply that over the sample period, any discrimination in voting was not large enough to affect a significant number of minority players. Therefore, the results presented in this article agree with past research on voting for the Hall: Race-based voting discrimination has not had a perceptible effect on the composition of the Hall.

As a final point, the estimates in Table 2 allow for an analysis of players who have yet to enter the Hall. In particular, it may be interesting to find out if any players who should have been elected to the Hall based on their yearly performance statistics have not yet been elected. Within Cox's model, this can be accomplished by examining the estimated residuals to identify outliers. An examination of the residuals shows that two players are outliers: Orlando Cepeda (who is black and Latin) and Ron Santo (white).[13] While Cepeda was elected by the Hall of Fame Veterans Committee in 1999, Santo has yet to be elected and is no longer eligible for voting by the Writers Association. Although he has probably waited longer than necessary, if form holds true, Ron Santo should be elected by the Veterans Committee in the near future. Also, the residuals show that there are several players elected on their first ballot who were probably elected too soon: Al Kaline (white), Willie McCovey (black), Brooks Robinson (white), Willie Stargell (black), and Dave Winfield (black). Race clearly did not have a significantly negative effect on Hall voting for McCovey, Stargell, or Winfield.

References

Amemiya, Takeshi. 1985. *Advanced Econometrics*. Cambridge, MA: Harvard University Press.

Anderson, Torben, and Sumner J. La Croix. 1991. "Customer Racial Discrimination in Major League Baseball." *Economic Inquiry* 24:665–77.

Becker, Gary. 1971. *The Economics of Discrimination*, 2d ed. Chicago: University of Chicago Press.

Brown, Eleanor, Richard Spiro, and Diane Keenan. 1991. "Wage and Non-Wage Discrimination in Professional Basketball: Do Fans Affect It?" *American Journal of Economics and Sociology* 50:333–45.

Brown, Robert W., and R. Todd Jewell. 1994. "Is There Customer Discrimination in College Basketball? The Premium Fans Pay for White Players." *Social Science Quarterly* 75:401–13.

——— and ———. 1995. "Race, Revenues, and College Basketball." *The Review of Black Political Economy* 23:75–90.

Burdekin, Richard C. K., and Todd L. Idson. 1991. "Customer Preferences, Attendance, and the Structure of Professional Basketball Teams." *Applied Economics* 23:179–86.

Desser, Arna, James Monks, and Michael Robinson. 1999. "Baseball Hall of Fame Voting: A Test of the Customer Discrimination Hypothesis." *Social Science Quarterly* 80:591–603.

Deane, Bill. 1996. "The Hall of Fame." Posted on *totalbaseball.com*.

Findlay, David W., and Clifford E. Reid. 1997. "Voting Behavior, Discrimination, and the National Baseball Hall of Fame." *Economic Inquiry* 35:562–78.

Gabriel, Paul E., Curtis Johnson, and Timothy J. Stanton. 1995. "An Examination of Customer Racial Discrimination in the Market for Baseball Memorabilia." *Journal of Business* 68:215–30.

———, ———, and ———. 1999. "Customer Racial Discrimination for Baseball Memorabilia." *Applied Economics* 31:1331–5.

Greene, William H. 2000. *Econometric Analysis*, 4th ed. Upper Saddle River, NJ: Prentice-Hall.

Gwartney, James, and Charles Haworth. 1974. "Employer Costs and Discrimination: The Case of Baseball." *Journal of Political Economy* 82:873–81.

[13] In this case, an outlier is defined as a residual that is more than 2 standard deviations away from the mean.

Hamilton, Barton Hughes. 1997. "Racial Discrimination and Professional Basketball Salaries in the 1990's." *Applied Economics* 29:287–96.

Hanssen, F. Andrew, and Torben Andersen. 1999. "Has Discrimination Lessened Over Time? A Test Using Baseball's All-Star Vote." *Economic Inquiry* 37:326–52.

Jewell, R. Todd, Robert W. Brown, and Scott E. Miles. 2002. "Measuring Discrimination in Major League Baseball: Evidence from the Baseball Hall of Fame." *Applied Economics* 34:167–77.

Kahn, Lawrence M. 1991. "Discrimination in Professional Sports: A Survey of the Literature." *Industrial and Labor Relations Review* 44:396–418.

——— 1992. "The Effects of Race on Professional Football Players' Compensation." *Industrial and Labor Relations Review* 45:295–310.

——— and Peter D. Sherer. 1988. "Racial Differences in Professional Basketball Players' Compensation." *Journal of Labor Economics* 6:40–61.

——— 1988. "Economic Duration Data and Hazard Functions." *Journal of Economic Literature* 26:646–79.

Kiefer, Nicholas M. 1988. "Economic Duration Data and Hazard Functions." *Journal of Economic Literature* 26:646–679.

Koch, James V., and C. Warren Vander Hill. 1988. "Is There Discrimination in the 'Black Man's Game'?" *Social Science Quarterly* 69:83–94.

Nardinelli, Clark, and Curtis Simon. 1990. "Customer Racial Discrimination in the Market for Memorabilia: The Case of Baseball." *Quarterly Journal of Economics* 105:575–96.

Scully, Gerald W. 1973. "Economic Discrimination in Professional Sports." *Law and Contemporary Problems* 38:67–84.

Singell, Larry D. 1991. "Baseball-Specific Human Capital: Why Good but Not Great Players Are More Likely to Coach in the Major Leagues." *Southern Economic Journal* 58:77–86.

Slocum, Frank, and Red Foley. 1990. *Topps Baseball Cards, The Complete Picture Collection: A 40-Year History, 1951–1990*. New York: Warner Books.

Sommers, Paul M., and Noel Quinton. 1982. "Pay and Performance in Major League Baseball: The Case of the First Family of Free Agents." *Journal of Human Resources* 17:426–36.

TABLE A-1

CORRELATION TABLE OF INCLUDED VARIABLES

	Black	Latin	Total Bases	Walks	Singles	Doubles	Triples	Home Runs	Stolen Bases	Deviation from Average Total Bases	World Series Appearances	Played in Both Leagues	1970s	1980s	1990s	2000s
Black	1															
Latin	0.33	1														
Total bases	0.15	−0.08	1													
Walks	−0.03	−0.19	0.79	1												
Singles	0.19	0.10	0.67	0.31	1											
Doubles	0.20	0.00	0.84	0.50	0.78	1										
Triples	0.17	−0.01	0.49	0.28	0.63	0.54	1									
Home runs	0.10	−0.15	0.76	0.63	0.12	0.49	0.07	1								
Stolen bases	0.35	0.11	0.22	0.15	0.43	0.25	0.51	−0.09	1							
Deviation from average total bases	0.10	−0.09	0.76	0.65	0.45	0.61	0.35	0.61	0.17	1						
World Series appearances	−0.01	−0.07	0.13	0.13	0.04	0.05	0.10	0.12	0.04	0.14	1					
Played in both leagues	0.10	−0.01	−0.13	−0.07	−0.19	−0.12	−0.11	−0.04	−0.04	−0.03	−0.07	1				
1970s	−0.06	−0.05	0.17	0.05	0.18	0.06	0.20	0.12	−0.02	0.00	0.18	−0.02	1			
1980s	0.14	0.17	−0.20	−0.12	−0.19	−0.28	−0.21	−0.10	−0.08	−0.02	−0.12	0.05	−0.26	1		
1990s	0.05	−0.03	0.05	0.00	0.04	0.16	−0.09	0.01	0.10	0.00	−0.07	0.06	−0.23	−0.53	1	
2000s	0.06	−0.08	0.00	0.01	0.10	0.15	0.07	0.06	0.19	0.01	−0.03	0.04	−0.08	−0.17	−0.15	1