

Searching for Fan Discrimination in Football Championship Subdivision

Games: Findings and Implications

James T. Allen
Department of Economics and Business Administration
Presbyterian College
Clinton, SC 29325

Jody W. Lipford
School of Business
Francis Marion University
Florence, SC 29505

Dr. James T. Allen is an Associate Professor of Business Administration at Presbyterian College. Prior to arriving at Presbyterian College, he was an Associate Professor of Sport Management at Queens University of Charlotte. His research has appeared in *Sport Management Review*, the *International Journal of Sport Management* and the *Journal of Amateur Sport*.

Dr. Jody W. Lipford is an Associate Professor of Economics at Francis Marion University. Prior to arriving at Francis Marion, he was a Professor of Economics at Presbyterian College. His research has appeared in *Education Economics*, *Environment and Development Economics* and the *Journal of Socio-Economics*.

Abstract

Discrimination can take many forms, including customer discrimination. In athletic contests, fans are the customers. Using data from Football Championship Subdivision (FCS) games, this study tests for fan discrimination against Historically Black College and University (HBCU) teams by examining attendance in games hosted by predominately white institutions (PWIs). The statistical analysis shows no significant difference in fan attendance in games in which PWI teams host HBCU teams as compared to when they host teams that are not HBCUs. Moreover, the percentage of white students enrolled in PWIs has no effect on attendance when a PWI team hosts a HBCU team. Implications and suggestions for future research are discussed.

Introduction

The economics of discrimination has a long history, dating back to Gary Becker's (1971) seminal work on the topic. As Becker acknowledged, discrimination can have many sources, including customers who do not want to be served by a particular class of people who have an attribute that they are prejudiced against. Racial and ethnic prejudices have long beleaguered the sport industry, as demonstrated by numerous examples of discrimination and exclusion (Armstrong, 2011).

Sports economists have applied Becker's ideas to athletic contests in which fans are the customers who may discriminate against certain classes of athletes. In this study, the researchers extend this literature by examining attendance at Football Championship Subdivision (FCS) games in which predominately white institutions (PWIs) host Historically Black College and University (HBCU) teams. In the following section, the researchers review literature on the economics of discrimination and its application to other empirical studies of fan discrimination. This is followed by an empirical analysis in the next section, where the methodology, data, and results of the tests of fan discrimination are presented. Because the findings have practical business value to those who administer and manage college football teams, the researchers then discuss the implications of the analysis. Finally, suggestions for future studies are discussed.

Literature Review

In Becker's (1971) pathbreaking contribution to the economic analysis of discrimination, he identified three sources: the employer, the employee, and the consumer. Becker hypothesized that over time and in competitive markets, employer discrimination will be reduced because it is costly to the employer to pay higher wages to favored employees when unfavored workers of equal productivity can be hired for lower wages. Similarly, employee discrimination will be reduced over time as the workers discriminated against shift to locales and occupations with less discrimination.

Nonetheless, Becker argued that a reduction in consumer discrimination in which "the marketability of output depends on the whole system of consumer preferences" (p. 76) is more problematic. When consumers consider attributes of those providing a service that are unrelated to their productivity, such as race or sex, they, in effect, consider the provision of a service by those with an unfavored attribute as equivalent to being charged a higher net price. Since higher prices reduce quantity demanded, employers, even if personally unbiased, may be forced to avoid hiring employees with undesired attributes to appease and retain their customers.¹

In a similar vein, Kahn (2012) suggests that markets typically reward organizations that promote workers, or in the sport context, athletes that the customer wishes to be served by. Numerous studies have examined potential discrimination against African American athletes in professional sports. In two early papers, Kahn and Sherer (1988) and Brown et al. (1991) examined wage discrimination in professional basketball. Following Becker's lead, Kahn and Sherer acknowledged that "customer discrimination can persist under competition" (p. 41). In

¹ For an excellent review of the first edition of Becker's work, see Reder (1958).

their empirical work, they found that black players earned approximately 20 percent less than white players, holding constant performance and market-related variables and that a larger proportion of white players on a team raised attendance. They concluded that these findings were consistent with profit-maximizing team owners and discriminating fans.

Similarly, Brown et al. (1991) acknowledged that customer discrimination can lead to “long-term inequities in the labor market” (p. 333). In their empirical work, they found that black players earned 16 percent less than white players, holding player performance constant and that the “demand for white players is higher in areas where more of the fans are white” (p. 337). On the other hand, they found no evidence of playing time bias or of entry barriers to collegiate blacks wanting to enter the National Basketball Association (NBA), leading them to conclude that white fans may prefer white players but not at the cost of losing. In effect, many white players may spend considerable time warming the bench.

Kanazawa and Funk (2001) also investigated whether consumers of professional basketball discriminate against African American basketball players by researching television ratings provided by Nielsen Media Research for the 1996-1997 NBA season. Results from their study suggested that viewership increased when there was a greater presence of White players (Kanazawa & Funk, 2001). Brown and Jewell (1994) revealed that a higher share of White basketball players increased ticket sales, so that, on average, a White college basketball player generated over \$100,000 more annual gate revenue than an identically productive African American player.

Using a novel approach, Nardinelli and Simon (1990) ask if race affects the prices of cards for Major League Baseball players. Their study is of particular interest because the buyers of playing cards have no personal contact with or view of the players pictured on the cards. For hitters, they found that cards of non-whites (African Americans and Hispanics) sold for approximately 10 percent less than cards of whites, holding performance constant. The selling discount for cards of non-white pitchers was 13 percent, a difference the authors suggested may be attributable to the greater visibility of pitchers.

Numerous researchers have also examined discrimination in the collegiate ranks. The 2018 study conducted by LaFave et al. examined discrimination against NCAA Division I African American head basketball coaches. Their study examined the relationship between race and retention with regards to employment, using data from 298 NCAA Division I institutions over the period of 1994-1995 through 2012-2013. Without controlling for further variables, African American coaches were fired at a rate of 1.5 times higher than their White counterparts. These findings suggested that racial bias could impact retention decisions as a statistically significant difference was present after controlling for the performance of the team (LaFave, Nelson, & Doherty, 2018). However, it is important to note that approximately 25 percent of the African American coaches in their sample were employed by HBCUs and that HBCUs have higher rates of turnover among coaching staffs, irrespective of race (LaFave, Nelson, & Doherty, 2018). After controlling for employment at an HBCU, the researchers found that race had no statistically significant impact on the probability of being terminated. While their study didn't examine discrimination with regards to hiring, their results suggest that there was no discrimination against African American head coaches in the likelihood of being terminated.

Dix (2017) and (2022) has undertaken studies of referee bias against HBCUs. In his 2017 study, Dix examined penalties for HBCUs and predominately white institutions (PWIs) for all FCS schools from 2006 to 2015. He finds that HBCU football teams were penalized at higher rates than PWI football teams and that the 13 most penalized teams are all from HBCUs. In a case study of the only HBCU institution that participates in the Ohio Valley Conference (OVC), Tennessee State University (TSU), Dix (2022) investigated discrimination with regards to officiating calls against TSU's men's and women's basketball teams. The purpose of the study was to determine if referees were displaying racial bias against HBCU athletes competing within a predominately White institution conference. Z-score analyses indicated that referees penalized TSU with personal fouls called at a higher rate than were called against any of the PWI members of the OVC. This was the case for both the men's and women's basketball teams. However, the number of personal foul calls against TSU's women's team were not statistically significantly different than those called against predominately white institutions in the conference. TSU's men's basketball team did experience a statistically significantly higher rate of personal fouls called against them when compared to the predominately white institutions in their conference. This statistically significant difference was the only empirical evidence that suggested that referee bias may explain the difference in personal fouls called against the lone HBCU competing within a predominately white conference. Dix (2022) provides other possible explanations for this observed difference. For example, TSU may have less skilled athletes than their conference peers or they may display a different style of play that embraces taking personal fouls (2022).

When examining whether there is spectator discrimination against sports organizations, one must also consider additional variables that could explain consumer demand. Valenti et al. (2020) investigated determinants of spectator demand for tickets to women's professional soccer matches. Results of their study suggest that fans might be unwilling to follow their team to away matches that are taking place in distant locations as there was a negative relationship displayed. However, this relationship was not statistically significant. Temperature had a significant positive impact on attendance, thus displaying that warmer weather is associated with higher demand. Surprisingly, the recent performances of both the home and the away teams were not statistically significant predictors of attendance. This suggested that the fans of European professional women's soccer were not particularly interested in successful teams.

Donihue, Findlay and Newberry (2007) researched determinants of attendance at Major League Baseball (MLB) Spring Training games in Florida. Results of their study suggested that prior winning percentage had a statistically significant positive impact on attendance. On the other hand, driving distance for the visiting team's fans was insignificant. Jena and Reilly's (2016) study examined the impact of driving distance and prior winning percentage on attendance for Ireland's second tier professional soccer clubs. Their findings suggested that recent home team performance was an important positive predictor of consumer demand for tickets. Additionally, there was an inverse relationship between travel distance and ticket demand. The results indicated that a 10% increase in the distance between the two teams resulted in a 1.4 percent reduction in demand.

Falls and Natke's (2014) study examining demand for NCAA Division I Football Bowl Subdivision (FBS) games indicated that team success had a significant positive impact on attendance. Travel distance had a small negative impact on attendance as did poor weather (rain or cloud cover). Results also indicated that fan interest waned as the season progressed, however this could be offset by the home team winning more games (Falls & Natke, 2014). Falls and Natke (2016) conducted a similar study of NCAA Division I FCS games. Results of the FCS games revealed that poor weather (rain, cloud cover and lower temperatures) significantly decreased demand. Likewise, higher travel distances decreased demand. Additionally, ticket demand declined significantly as the season progressed, but just as with FBS programs, this was offset by winning more games. A higher winning percentage for the home team and contests against conference opponents also raised attendance at FCS games (Falls & Natke, 2016). Falls and Natke (2016) suggest that FCS programs should promote conference rivalries to increase ticket demand.

Returning to the topic of interest in this paper, Jackson, Lyons and Gooden (2001) examined the marketing of sports programs by HBCUs. The researchers surveyed athletic department staff from the South Western Athletic Conference (SWAC), the Mid-Eastern Athletic Conference (MEAC) and the Central Intercollegiate Athletic Association (CIAA). Institutions from the SWAC and MEAC compete in NCAA Division I athletics, and institutions in the CIAA compete in NCAA Division II athletics. The researchers revealed that sport marketing efforts at HBCUs were severely limited by lack of funding and lack of adequately prepared staff. HBCU sport marketing budgets were low in comparison to their PWI Division I and Division II counterparts. Despite this, HBCUs traditionally experience vigorous spectator support amongst the stakeholders from their respective institutions (Jackson, Lyons, & Gooden, 2001). Armstrong (2002) suggests that intensity of ethnic identification and psychosocial involvement with HBCU sports significantly impacts HBCU sports attendance frequency. However, Jackson, Lyons and Gooden (2001) assert that HBCUs have not fully capitalized on stimulating consumer demand for their unique, high-quality products.

Methodology

To test for fan discrimination against HBCU teams, OLS regression analysis on two samples of data was utilized. The first sample contains all games played by any FCS team that played an HBCU team for the 2016 through 2021 seasons, with the exception of the 2020 season, which was omitted because of the covid virus and its impact on the number, timing, and attendance of college football games. For the second sample, the researchers used all HBCU games against PWI opponents for the 2021 season. The sample size is 102 for the first sample and 87 for the second sample.

The regression equation for the first sample is given below. To allow for flexibility of the functional form, all continuous variables are estimated as natural logarithms.

$$\text{Attendance Ratio} = \alpha_0 + \alpha_1 \text{Home Game Number} + \alpha_2 \text{Conference Game} + \alpha_3 \text{Homecoming} + \alpha_4 \text{PWI Team Winning Percentage} + \alpha_5 \text{Temperature} + \alpha_6 \text{Rain} + \alpha_7 \text{Travel Distance} + \alpha_8 \text{HBCU Team} + \varepsilon.$$

The regression equation for the second sample is similar and given as follows.

Attendance Ratio = $\beta_0 + \beta_1 \text{Home Game Number} + \beta_2 \text{Conference Game} + \beta_3 \text{Homecoming} + \beta_4 \text{PWI Team Winning Percentage} + \beta_5 \text{Temperature} + \beta_6 \text{Rain} + \beta_7 \text{Travel Distance} + \beta_8 \text{PWI White Percentage} + \varepsilon$.

The dependent variable is the ratio of attendance in the observed game divided by average attendance for that team for the year in question. In the first sample, the divisor is the average attendance of all games, and the divisor in second sample is the average attendance for all PWI games.

The independent variables are drawn from prior literature and the researchers' expectations. To test the hypothesis that fans lose interest as the season progresses, perhaps because of more interesting FBS contests, the researchers include the game number and expect the sign on this variable to be negative. The researchers anticipate that conference and homecoming games will increase attendance and predict the signs on these dummy variables, coded one for conference and homecoming games, will be positive. If winning increases attendance, the sign on the winning percentage variable will be positive. Because weather may affect attendance, variables for the temperature at kickoff and a dummy variable coded one if the game was played in the rain were included. The researchers expect that higher temperatures increases attendance so the sign on this variable will be positive and that rain reduces attendance so that the sign on this variable will be negative.

The key variables of interest are HBCU Team and PWI White Percentage. HBCU Team is a dummy variable taking on a value one if the opponent is from a HBCU. If fans of the home (PWI) team discriminate, the sign on this variable will be negative. Similarly, if the share of undergraduate students who are white at the PWI reduces attendance, the sign on this variable will be negative. The error term is given as sigma.

Data

The vast majority of the data were obtained from the athletic pages of the host (home) institutions' websites. These included data on attendance, the game number, whether or not the game was a conference game, whether or not the game was a homecoming game, and the winning percentage of the home team. The box scores of each game also provided data on weather. Google maps (n.d.) was used to obtain the travel distance between schools, and Niche (2022) provided data on the percent of undergraduate students who are white.

Descriptive statistics for all variables are given in Table 1 and Table 2.

Variable	Mean	Std. Deviation	Minimum	Maximum
Attendance	5,467	3,462	834	25,007
Attendance Ratio	1.00	0.31	0.42	2.16
Home Game Number	3.09	1.52	1	6
Conference Game	0.73	0.45	0	1
Homecoming	0.19	0.39	0	1
PWI Team Winning Percentage	47.24	30.84	0	100
Temperature	66.90	12.50	35	93
Rain	0.07	0.25	0	1
Travel Distance	291	231	47	1,887
HBCU Team	0.22	0.41	0	1

Variable	Mean	Std. Deviation	Minimum	Maximum
Attendance	8,005	5,341	1,074	24,607
Attendance Ratio	1.16	0.53	0.36	3.85
Home Game Number	2.28	1.48	1	7
Conference Game	0.36	0.48	0	1
Homecoming	0.08	0.27	0	1
PWI Team Winning Percentage	44.60	31.35	0	100
Temperature	72.36	13.56	41	100
Rain	0.08	0.27	0	1
Travel Distance	326	370	5	2,253
PWI White Percentage	64.17	15.26	20	89

Empirical Results

The first test of fan discrimination is the regression analysis that includes all home games played by PWIs that played at least one HBCU opponent during the years 2016 to 2021, with the exception of 2020. As stated above, all continuous variables are in natural logarithm form,

meaning that the coefficients are interpreted as elasticities. These results are presented in the second and third columns of Table 3.

Table 3. Regression Results of Fan Discrimination Tests				
	Sample: All Games Dependent Variable: In Attendance Ratio		Sample: HBCU-Only Games Dependent Variable: In Attendance Ratio	
(1)	(2)	(3)	(4)	(5)
Variable	Coefficient	t-statistic	Coefficient	t-statistic
In Home Game Number	-0.16	-2.28**	-0.22	-2.80***
Conference Game	0.06	0.78	0.11	1.25
Homecoming Game	0.27	3.76***	0.56	4.55***
In Home (PWI) Team Winning Percentage	-0.01	-0.59	-0.03	-1.57
In Temperature	0.34	1.81*	0.75	3.58***
Rain	0.01	0.09	-0.28	-2.25**
In Travel Distance	-0.04	-1.00	-0.04	-1.32
In Home (PWI) School Percent White			0.10	0.90
HBCU Opponent	-0.01	-0.12		
Constant	-1.17	-1.32	-3.13	-2.84***
F-statistic	6.14***		12.33***	
Adj. R-square	0.29		0.51	
N	102		87	
* Significant at the 10-percent level for a two-tail test				
**Significant at the 5-percent level for a two-tail test				
*** Significant at the 1-percent level for a two-tail test				

The overall explanatory power and fit of the model are satisfactory, and the coefficients that are significant conform to expectations. As the season wears on, attendance as a percent of the average falls. A 20 percent increase in the number of games, say from the fifth to the sixth home game reduces the ratio by 3.2 percent (-0.16×20) . As the season progresses, the opportunity cost of attending games evidently increases, perhaps because other options, such as prime FBS games on television, become more important and of greater interest. The

homecoming game variable is also significant and positive with a coefficient indicating that a homecoming game increases the attendance ratio by 31 percent.² The temperature variable is also significant, albeit at the relatively weak 10-percent level, and indicates that a 10-percent increase in temperature, say from 60 to 66 degrees, increases the attendance ratio by over three percent. The coefficient value is less than one, meaning that a given percentage increase in temperature does not yield a commensurate percentage increase in the attendance ratio.

These results indicate that whether a game is a conference game or not, nor the home team's winning percentage, nor rain, nor travel distance of the opposing team matter as determinants of game attendance. Of particular significance, the coefficient on the HBCU dummy variable is insignificant, with a t-statistic of only -0.12. The attendance ratio does not drop when a home, PWI hosts a HBCU team. This finding provides no support for a hypothesis of fan or customer discrimination in FCS football.^{3 4}

In the second empirical test, the sample includes all contests between HBCU teams and PWI opponents in 2021. Again, all the continuous variables are in natural log form, and the results are presented in the fourth and fifth columns of Table 3.

As shown by the F-statistic and adjusted R-square statistic, the explanatory power and fit of the model are satisfactory and better than those of the estimate from the first sample. The coefficients of the significant variables generally conform to expectations. The coefficient on the home game number is again negative and significant, indicating that a 20-percent increase in the number of home games decreases the attendance ratio by 4.4 percent (0.22×20). Homecoming games are again shown to increase the attendance ratio, this time by a whopping 75 percent. The temperature variable again indicates that fans prefer warm weather games with a 10 percent increase in temperature raising the attendance ratio by 7.5 percent. Unlike the prior sample, in this regression, rain matters, with a rainy day reducing the attendance ratio by 24 percent.

The conference game, home team winning percentage, and travel distance variables are all insignificant in this estimate, just as they were with the estimate for the first sample. Since all of the games are against HBCU opponents, the test for fan discrimination consists of including the percent of white undergraduate students in the institution. The coefficient on this variable is insignificant, with a t-statistic less than one. This second estimate confirms the first in providing no evidence of fan discrimination among FCS schools that host a HBCU football team.⁵

² For dummy variables, the percent increase is calculated as $e^\alpha - 1$. In this case, $e^{0.27} - 1 = 0.31$.

³ In an alternate specification with the natural log of attendance as the dependent variable and the natural log of average home attendance on the right-hand side as an independent variable, the coefficients and significance levels of the other independent variables are comparable.

⁴ Of importance, variance inflation factor (VIF) tests indicate that multicollinearity among the independent variables is not a problem. The VIFs for all variables are less than five, with a highest value of 2.29 for the natural log of the home game number variable. The average for all independent variables is 1.42.

⁵ Again, variance inflation factor (VIF) tests yield no evidence of a multicollinearity problem among the independent variables. The highest VIF value is 2.33 for the home game number variable, and the average for all independent variables is 1.53.

Discussion

The results of the present study offer numerous practical implications for athletic directors and marketing professionals tasked with administering NCAA FCS programs. Considering that the researchers were unable to detect any evidence of spectator discrimination against HBCU opponents, athletic department personnel should feel comfortable scheduling these opponents for home games. Additionally, university board members, presidents and athletic directors should feel comfortable with memberships in athletic conferences that include HBCUs. Developing specifically tailored marketing strategies for stimulating spectator demand when HBCU football programs are the visiting team appears to be unnecessary, and perhaps a waste of limited resources. While one might assume that these results reflect the diversity amongst undergraduate student populations, the percentage of white undergraduate students did not have any impact on the results. Campuses with overwhelming super majorities of white undergraduate students did not display significant differences in attendance at home games against HBCU opponents when compared to campuses where whites are minorities.

As one might expect, homecoming football games feature significantly higher attendance compared to non-homecoming games. Typically, athletic departments allocate higher resources to stimulate demand for homecoming games. The findings suggest that these efforts appear to be fruitful. However, the researchers did not examine return on investment. It is still possible that athletic departments are spending greater resources to promote these homecoming games than the corresponding increase in attendance warrants. While homecoming games feature higher attendance, findings from the present study revealed that attendance declines as the season progresses. Athletic departments could interpret these findings in two different ways. First, they could interpret this as an unavoidable decline associated with the FCS product which receives much lower media exposure than FBS football. Thus, they could avoid overspending on marketing and promotions in the second half of the season in order to avoid wasting precious resources. Another interpretation might be that FCS programs require additional marketing resources to maintain demand throughout the entire season. However, considering that it is highly unlikely for an FCS program to generate more revenue than their associated expenses, the researchers would caution against any interpretation that marketing resources should be increased.

Consistent with the findings from Valenti et al. (2020) as well as Falls and Natke's (2016) study, the researchers of the present study determined that weather does have a significant impact on attendance. More specifically, higher temperatures are associated with higher attendance and rain can significantly reduce attendance. While athletic directors and marketers have no ability to ensure desirable weather conditions for their home games, it is essential that they take weather into consideration when developing budgets and revenue forecasts. Studying longitudinal data to estimate the number of low temperature and heavy precipitation games per season is essential for developing realistic attendance expectations for a football season.

The results of the present study contradict several findings from Falls and Natke's (2016) study. First, travel distance for the visiting team did not impact attendance. While this appears to be counter-intuitive, it may suggest that it is less common for visiting fans of FCS football to travel to away games when compared to FBS games. However, Falls and Natke's (2016) study

examined FCS football specifically, so it is unclear why more recent data contradicts previous findings. Results of the present study suggest that athletic departments do not need to consider travel distances for visiting teams when forecasting attendance which impacts staffing allocations and revenue estimates. Second, results of the present study suggest that home team winning percentage did not significantly impact attendance. Again, this is counter-intuitive. One possibility is that FCS football receives very little media exposure, thus fan support is not as impacted by team success but rather by the social opportunities, school spirit and alumni engagement opportunities associated with home games.

Limitations

A limitation of the present study is that the researchers only examined FCS football games. While every NCAA Division I HBCU football program competes within FCS, many of these FCS HBCU programs play away games against FBS opponents. The researchers' rationale for excluding FBS games from the samples was their assumption that when FBS teams host FCS opponents, demand is typically lower, regardless of whether an HBCU is the visitor. The spectator demand is inherently reduced because FCS opponents have fewer scholarships allotted, typically feature less talented athletes, receive limited media exposure and are not eligible for bowl games. Additionally, the researchers only examined home attendance at PWIs. Future research should examine if fans of PWIs are discriminating against HBCUs by avoiding attending away games on HBCU campuses. If fans of PWIs are attending away games hosted by other PWIs at a higher rate than they attend away games hosted by HBCUs, then this could be an indication that discrimination is taking place.

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