Preferences Among MLB fans: What Factors Affect Jersey Sales?

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Abstract

Skin tone has been shown to impact the number of jerseys a player sells in the NBA, so we wanted to determine if the same was true in Major League Baseball. In addition, we also determined what other factors affected a player's jersey sale ranking. Our findings show that unlike in the NBA, MLB jersey sales are unaffected by a player's skin tone. However, certain player statistics do cause a player to move up or down the jersey sale rankings.

Keywords

fan preference, jersey sales, skin tone

Cover Page Footnote

Introduction

Fan preference, both for which team to root for and for deciding which jerseys to purchase, can be determined by many factors. This paper analyzes some of these factors. It reviews other studies conducted, and discusses the overall similarities in the results. It then uses actual MLB jersey sale rankings with each player's individual statistics in the year in which they were ranked. Regression analysis is then used to determine which factors impact jersey sale rankings the most. A prior study by Belasen and Belasen (2017) found that skin tone significantly impacts jersey sales in the NBA, this study expands that research into Major League Baseball.

Lit Review

There have been numerous studies done on what affects fan preference. According to Aiken and Koch (2009), through the use of conjoint analysis, woman choose teams based on the social benefits they receive, while men prefer winning teams and star players. Highly identified fans care most about location, family connections, and tradition. Highly identified fans are those who typically refer to themselves as being part of the team when discussing sports with others. Another study looked at why and how people view sporting events. Cooper and Tang (2012) conducted uses and gratifications research that analyzed the way people watch the Olympics. They found that people were more likely to watch if they had greater access to the sports, such as being able to watch online as well as on television. They also found that if people had a habit of watching television anyway, they were more likely to watch the Olympics if they were on television. Kwak and Kang (2009), based on the self-congruity theory, looked into why fans buy team licensed merchandise. They found that product quality and self-image congruence were two major factors. This makes sense because consumers wouldn't want to purchase poorly made products. Ngan, Prendergrast, and Tsang (2011) tested multiple hypotheses and found that consumers preferred to buy team products when the team was performing well, and even more inclined to make a purchase when that successful team contained a star player. Bush, Martin, and Bush (2004) took a survey and then used exploratory factor analysis, Cronbach's alpha, and confirmatory factor analysis to assess what affects purchase intentions in teenagers. They found that athlete role models influence teenager's positive communications and brand loyalty. This implies that athletes are important to teenagers when they make a brand choice and sticking with that brand.

Larkin, Fink, and Trail (2015) researched what causes fans to watch the games from home rather that attend the event by focusing on constraints and motivators. They found that cost and lack of team success were the biggest factors keeping fans at home. This is important because if fans are attending games less, they are less likely to make a purchase of team apparel. Race can also play a role in determining whether fans like a certain team or player. Burdekin, Hossfeld, and Smith (2005) used surveys and NBA team data to study how race affected fan preference. They found that fans tended to prefer players the same race as them, and that successful white players tended to end up playing in cities with high white populations. However, they also found that NBA revenue increased while the proportion of black players also increased.

Lewis and Weaver (2015) used framing – the way details are presented - to discuss how the media affects how much fans see of players. The media is covering athletes more than ever, making them celebrities as well as athletes. The media can portray a news story any way they want to influence the viewer's perception of the story. Thus, the media plays a major role in determining which athletes become popular. They can provide details to the public that affect their preferences other than on-field performance. The more popular the media makes an athlete to be, the greater the chance that a sports fan will purchase the athlete's jersey. For example, Tim Tebow did not

have the greatest stats in the NFL, but he still was among the best-selling jerseys. This was because the media used his religious views and his character to make him more popular among fans.

Specifically related to race and skin tone, Kahn (1991) looked at many studies that indicated racial discrimination in sports. He then used data to disprove the majority of these claims. He found that black athletes were actually some of the highest paid in professional sports. Players were discriminated in the past, with blacks not being allowed to play professional baseball until 1947 being a prime example. However, this is no longer the case, as teams look beyond race and look for the best talent that will make their team the most successful. Hall (2001) used the bell curve and the ball curve, the fact African American athletes make the performance of whites a glaring spectacle in a society controlled by whites, which looked at racial stereotypes. He found that there is a belief that African Americans are better athletes than whites. While blacks are much more predominant in numbers in professional sports, there is no scientific evidence that they are better athletes. But, when whites believe this, they are less likely to try and reach their full potential.

There are also many negative stereotypes about African Americans unrelated to sports that could harm their productivity in society. The best thing to do as a society is to stop these racial stereotypes so everyone can reach their full potential in everything they do. By using the Multi-City Study of Urban Inequality, a survey that utilizes skin tone in the responses, Goldsmith, Hamilton, and Darrity (2006) found that there is discrimination towards African Americans based on their darker skin tone. Hersch (2006) used data from three separate surveys to conclude that lighter skin tone leads to higher education level, and that there is a difference in wages due to skin tone. Robst, VanGilder, Coates, and Berri (2011) looked at the relationship between skin tone and pay. They compared NBA player salaries with their respective RGB (red, blue, green) scores. They found that skin tone does not affect NBA salaries. This suggests that NBA teams focus on talent when signing players rather than ethnicity. Belasen and Belasen (2017) found that among NBA fans, skin tone plays a factor in player popularity. Burdekin and Idson (1991) used empirical data to show that fans prefer watching players of the same race as them. Adamowicz, Louviere, and Williams (1994) compared a stated preference model (hypothetical choices) with a revealed preference model (actual choices) to show that underlying preferences are similar. End, Dietz-Uhler, Harrick, and Jacquemotte (2002) took a survey and found that fans were more likely to identify with and have preference for successful teams.

Fink, Trail, and Anderson (2002) collected data from questionnaires and found that vicarious achievement is one of the most predominant factors in creating team identity in fans. Team identity causes fans to attend games, buy more team apparel, and stay loyal during team slumps. Earnhardt and Haridakis (2009) used surveys, questionnaires, and uses and gratifications research to find that fans who identified highly with athletes had higher levels of fandom. Higher levels of fandom lead to more parasocial relationships with athletes and higher identity. Mahoney and Moorman (2000) used questionnaires to determine that fans prefer to watch their favorite teams and favorite players, and like to watch disliked teams when their game has an effect on their favorite team.

Overall, it appears that winning teams with star players make fans more inclined to purchase team gear. How popular the media makes certain players out to be can also affect how many jerseys that player is likely to sell. While race once played a role in fan preference, it doesn't seem to be an issue today. Fans are more accepting of different races, and care more about talent, performance, and popularity than race. It also appears that fans prefer teams that are successful and contain their favorite players. Fans are also more likely to make a purchase when it involves

an athlete role model. Feeling a sense of achievement through a team can lead to higher team identity. And, while blacks are discriminated against in society, they are treated fairly when it comes to sports and earning their deserved wages.

Model

The following equation will be regressed using OLS:

$$J=B_0 + B_1*S + B_2*C + B_3*V + B_4*T + B_5*Aw + B_6*As + B_7*P$$

Where J is jersey sale rank, S is a player's skin tone, C = contracted salary in millions, V = team victories, T = team postseason appearance, Aw = individual award, As = all-star appearance, and P = pitcher.

Data

The data was collected from statistics obtained through baseball-reference.com, ESPN.com, and The Major League Baseball Players Association. The MLB and the Major League Baseball Players Association have released the top 20 jersey sale rankings since 2010. To determine fan preference when it comes to buying jerseys, we collected player statistics including runs (R), runs batted in (RBI), stolen bases (SB), on base plus slugging (OPS), wins above replacement (WAR), and salary for offensive players, and wins (W), strikeouts (K), earned run average (ERA), walks plus hits divided by innings pitched (WHIP), wins above replacement (WAR), and salary for pitchers. Team victories, team postseason victories, World Series Championships, individual awards, and all-star appearances were also collected for all players. All statistics were collected for the players in the year they were included in the jersey sale rankings. Then, we compare this to a measure of skin tone that we developed by measuring the level of pigmentation in each player's ESPN player photo, which is a standard face-shot for all players. To determine the skin tone, we used Adobe Photoshop to take a sample from each player's right cheek, in a location that was unaffected by their baseball cap. Skin tone is measure by the level of RGB saturation, which ranges from a score of 0 (completely black) to 255 (completely white). Therefore, lighter-skinned players have a higher RGB score. Our sample ranges from Andrew McCutchen (54) to Freddie Freeman (196). The descriptive statistics for the data we collected is included in Table 1.

Table 1: Descriptive Statistics

	n	Mean	Std Dev	Min	Max
Jersey Sales Ranking	120	9.667	5.73	1	20
Salary In Millions	120	10.71	8.08	.33	33
Team Wins	120	88.3	8.6	63	103
Postseason Appearance	120	.608	.49	0	1
Award Winner	120	.383	.488	0	1
All Star Appearance	120	.708	.456	0	1
Pitcher	120	0.258	0.44	0	1
Total Number of Players	59				
Total Number of Years	7				

Results

After analyzing the data found from the sale of MLB jerseys, some interesting information was discovered about multiple variables. One major discovery was the fact that skin tone had virtually no effect on the player's jersey sale ranking. This means that a player's skin color does not play a role in how many jerseys he sells. This is especially intriguing considering skin tone does play a role in NBA jersey sales (Belasen and Belasen, 2017). Another thing found was that for each million dollar increase in a player's MLB salary, he is expected to move up .113 spots in the rankings. One standard deviation from the mean is $8.08 million, so a player earning an $18.8 million salary, would rank .913 spots better than the average player. These salary numbers are based on the average salary of the top 10 or 20 players in the rankings each year, and some of these players are still playing under very cheap rookie contracts. If these players were getting paid fair market value, this would change the results. Each extra team win moves a player up .158 spots, and one standard deviation above the mean of 8.57 team wins would increase a player's ranking by 1.35 spots. If a player receives an award at the end of the season (MVP, CY Young, Gold Glove, Silver Slugger, Rookie of the Year), he moves up 2.95 spots in the rankings. An all-star appearance gives a player an extra 2.07 spots. Table 2 summarizes the findings:

Table 2: Pooled Cross Section OLS Results for the Impact of Skin Tone on Jersey Sales (2010-2016)

Coefficient:	
Skin Tone	
Coefficient:	-0.004
RSE:	(0.005)
Salary In Millions	
Coefficient:	-0.113*
RSE:	(0.060)
Team Wins	
Coefficient:	-0.158*
RSE:	(0.090)
Team Postseason Appearance	
Coefficient:	2.597*
RSE:	(1.550)
Awards	
Coefficient:	-2.948***
RSE:	(1.046)
All Star Appearance	
Coefficient:	-2.065*
RSE:	(1.147)
Pitcher	
Coefficient:	-1.300
RSE:	(1.098)
R^2	.1788
F	4.80
n	120

Notes: All models run with White's Robust Standard Errors. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level

Conclusion

By using regression to compare a player's statistics with his jersey sale rank, we determined which factors impact jersey sales rankings the most. Overall, we found that winning an award (MVP, CY Young, Gold Glove, Silver Slugger, and/or Rookie of the Year) or making the all-star team moves a player up the most spots in the rankings. Being on a winning team also helps a player sell more jerseys, as well as having a higher salary – which is expected because generally better players get paid more. A player's skin tone was found to play no role in the rankings. This makes sense in the MLB because there is not a great amount of variability in skin tone.

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