University of Northern Iowa

UNI ScholarWorks

2009

Does Race Affect the Salaries of NFL Players?

Joshua Patrick Mahoney
University of Northern Iowa

Let us know how access to this document benefits you

Recommended Citation

DOES RACE AFFECT THE SALARIES OF NFL PLAYERS?

A Thesis

Submitted

in Partial Fulfillment

of the Requirements for the Designation:

University Honors

Joshua Patrick Mahoney

University of Northern Iowa

May 2009

This Study by: Joshua Patrick Mahoney

Entitled: Does Race Affect the Salaries of NFL Players?

has been approved as meeting the thesis requirement for the Designation:

University Honors

4/28/09
_____
Date

_____
Dr. Lisa K. Jepsen, Honors Thesis Advisor

5/08/09
_____
Date

_____
Jessica Moon, Director, University Honors Program

Abstract

Previous studies of the National Football League (NFL) players' salaries have used

different methods to evaluate the compensation of players in the League. Kahn [1991] finds a

significant correlation between the race of an NFL player and the racial makeup of the

metropolitan area in which he plays. In my study, I use a complete data set of players from the

2005 football season to determine whether race has a measurable impact on players' salaries.

My results suggest that race is not a significant factor in determining an NFL player's

compensation. Also, customer discrimination does not appear to affect player compensation.

These results indicate that individual player characteristics likely account for most differences in

player compensation in the NFL.

I. Introduction

Previous studies of the National Football League (NFL) players' salaries have used different methods to evaluate the compensation of players in the League. In my study, I use a complete data set of players from the 2005 football season to determine whether race has a measurable impact on players' salaries. My results suggest that race is not a significant factor in determining an NFL player's compensation. Also, customer discrimination does not appear to affect player compensation. These results indicate that individual player characteristics likely account for most differences in player compensation in the NFL.

Labor market discrimination may exist in several forms. One type is called employer discrimination, which occurs when employers hold a prejudicial bias that prevents them from accurately determining a worker's true productivity [Borjas, 2005, 359]. If employers are racially biased against black workers, they will assign a greater cost to hiring them than to hiring white workers. As a result, fewer black workers may be hired than white workers.

In the NFL, a distinction must be made concerning the employer in different stages of a player's career. When a player first seeks employment in the League, he makes himself available for NFL draft. If he is not selected in the draft, he may be acquired by a franchise through free agent negotiations. Regardless, the front office of a franchise typically makes the initial decisions regarding which players to choose for their team. However, once a player earns a spot on the roster, the coaching staff of a team is mostly responsible for evaluating his production and determining his employment status. If employment discrimination occurs, it may happen at either one of these two stages.

1

Conlin and Emerson [2005] use data collected from the League circa 1990 and find nonwhite players typically have a higher probability of having an active contract and starting more games, *ceteris paribus*. Their results control for draft position and are statistically significant, suggesting employer discrimination may occur at the initial hiring stage of a player. However, they perform similar analysis of coaching staffs in the League and find no evidence consistent with employer discrimination. The finding is consistent with the view that the front office and the coaching staffs may have different incentives concerning selection criteria of individual athletes.

Although in a free market economy employer discrimination is not profit-maximizing and therefore tends to lessen over time [Borjas, 2005, 363], perhaps owners of an NFL franchise are not profit-maximizers. Palmer and King [2006, 286] point out that in the case of Major League Baseball, if owners possess racial prejudices they may have enough wealth to exercise racially-biased front office decisions for an extended period of time.

Another form of discrimination is employee discrimination. Employee discrimination is when a certain group of workers do not wish to associate themselves with another group of workers. For example, black male workers may prefer not to work with white male workers. If so, black males would seek out employers that do not hire white males and essentially isolate themselves from white male interaction [Ehrenberg and Smith, 2006, 412]. Employee discrimination places firms at a competitive disadvantage and therefore tends not to remain a factor in the long run.

Customer discrimination, unlike other forms of prejudice, is not as easily forced from the market. If customers prefer white workers, employers will react by either hiring

fewer minority workers or paying minority workers a lower wage [Borjas, 2005, 368-369]. Customers reward the employers who listen to their preferences with greater purchases of tickets and other revenue pertaining to an NFL franchise; therefore, employers have no monetary incentive to discontinue the racist practices demanded by the customers [Kahn, 2000, 83].

For example, Kanazawa and Funk [2001] study Nielsen ratings of television programs and determine that televised National Basketball Association (NBA) games receive higher ratings when more white players participate in the game. Since the number of people who watch a game on television affects revenue, owners have an incentive to listen to customer preferences and put more white players on the court. Foley and Smith [2007] use attendance figures from Major League Baseball to scan for evidence of customer discrimination. Their results find certain teams that have higher numbers of Hispanic players may suffer customer discrimination in the form of decreased attendance.

Unlike other professional sports in the United States, economic studies of wage discrimination in football are scarce. Mogull [1973] shows little evidence consistent with salary discrimination in the NFL using data compiled from questionnaires of players from the 1970 season. To the extent that salary discrimination does occur against nonwhites, he finds that white players with similar experience as black players are better compensated. Mogull's findings, however, are not statistically significant and do not control for individual player characteristics. Also, only three black ball carriers took part in his survey.

In Kahn's study of 1,363 NFL players from the 1989 season, he finds that on average, whites earn only four percent more than blacks, a result that is not statistically significant when interacted with different variables, including position [1991, 308]. However, he does find evidence that white players are compensated more in cities that have higher percentages of white residents [1991, 308]. This finding is consistent with customer discrimination.

The most recent study of wage discrimination in NFL salaries comes from Gius and Johnson [2000], who sample 938 players for the 1995 NFL season and determine that black players earn on average ten percent more than white players [2000, 75]. However, the results of this study are not statistically significant at the five-percent level.

In the NFL, a discussion of wage discrimination must include an analysis of positional segregation. As Kahn [1991] documents, blacks predominantly occupy the defensive back, wide receiver, and running back positions. Whites are most often seen playing quarterback, center, or kicker—the positions on the field generally considered to be leadership roles [407-408]. However, Kahn's analysis uses data of NFL player characteristics from the 1980s. New studies may prove that positional segregation is not as prevalent as it was in the past.

Different theories for disparities in representation at different positions in professional football have been presented, though none entirely explains the situation. For instance, blacks may have fewer opportunities than whites while growing up that make them less able to hone the skills necessary to perform at a leadership position such as quarterback [Kahn, 1991, 407]. Also, negative attitudes toward blacks' capability of

performing in important roles may also account for the positional segregation [Kahn, 1991, 407].

The implications of positional segregation are relevant in a discussion of football salaries because players are judged differently according to their performance at their specific position. For example, running backs generate yards of offense and score touchdowns during a game, creating measurable statistics that can be rewarded accordingly with increases in salary. Offensive linemen who block for the running back, though, do not attain measurable statistics and therefore are compensated differently for their performance [Kahn, 1992, 301]. A study that reflects the stratified nature of football positions therefore is most relevant to a discussion of wage discrimination

II. Data and Descriptive Statistics

I obtain statistical data for 1497 NFL players from the 2005-06 season from the *2006 Sporting News Football Register*. All players listed in this book appear in at least one game during the 2005 season or otherwise occupy a roster spot for the season but do not play because of injury, suspension, or otherwise. The book also contains individual player information, such as position, number of years of experience in the NFL, whether the player was a first round draft pick, the number of game appearances and starts, and a player's number of appearances in the Pro Bowl. Team data such as winning percentage and 2005 playoff appearance come from the *Sporting News Register* as well.

The race of individual players is determined from the League's website, which provides headshots of all current players in the League. If the race of a particular player is not evident from their picture, or the player has since retired (the site only includes active players) and is not featured on the site, alternative websites were used to obtain the

player's race. Using this method I was able to gather, with a reasonable degree of certainty, the race of every player in the data set.

Free agency status is provided by Scout.com, a partner of *Fox Sports*. The modern free-agency era of the NFL began in 1993 under a new collective bargaining agreement between the owners in the NFL and the NFL Player's Association (Leeds and Kowalewski, 2001, 244). In the NFL, different forms of free agency exist, including restricted and non-restricted status. Since a free-agent has more latitude in negotiating compensation, in my study all forms of free agency are grouped as one variable. However, uncommon performance in a season often finds a player who feels he is relatively underpaid in a strong position to renegotiate his contract, even though he may not be a free agent. Leeds and Kowaleski [2001] note that this phenomenon is more prevalent for players whose incomes are generally at the lower end of the income distribution in the NFL. These players are not accounted for in the data set and may affect the empirical results.

The salary data, including base salary, signing bonuses, total salary, and cap value, come from the *USA Today* website [www.usatoday.com/sports/football/nfl/salaries]. In order for a player to be included in the study, he must have been listed in the *Sporting News Register* for the 2005 season and must have a salary listed on the *USA Today* website for the 2006 season. A consequence of this process is that most players contained in the sample are a part of an NFL team's two-deep roster. Players assigned to practice squads or players who cannot sustain a roster spot for a significant duration are not listed on the website and are therefore not

included in the study. The highest-paid player for each position and their respective
teams are as follows:

Table 1 – Highest Paid Player by Position

Highest Paid-Player	Cap Value	Team	Position	Average Salary by Position
Tom Brady	$13,828,590	New England Patriots	QB	$3,257,406
Steve Hutchinson	$13,338,080	Seattle Seahawks	OL	$2,123,719
Julius Peppers	$11,267,500	Carolina Panthers	DE	$2,238,659
Olin Kreutz	$10,170,516	Chicago Bears	C	$1,900,631
Andre Johnson	$9,786,664	Houston Texans	WR	$2,086,161
Edgerrin James	$9,500,770	Indianapolis Colts	RB	$1,547,892
Champ Bailey	$9,498,100	Denver Broncos	CB	$1,760,481
Dewayne Robertson	$9,417,760	New York Jets	DT	$1,815,903
Kawika Mitchell	$9,110,880	Kansas City Chiefs	LB	$1,660,391
Jay Bellamy	$8,300,000	New Orleans Saints	S	$1,235,727
Tony Gonzalez	$6,530,000	Kansas City Chiefs	TE	$1,228,630
Matt Katula	$2,455,060	Baltimore Ravens	LS	$662,284
Jason Elam	$2,455,000	Denver Broncos	K	$1,262,519
Craig Hentrich	$1,887,380	Tennessee Titans	P	$863,153
Mike Alstott	$1,505,720	Tampa Bay Buccaneers	FB	$767,534

The metropolitan demographic characteristics are retrieved from the Census
website. The Census website provides median household income and percentage of
white residents.

Descriptive statistics for the key variables are shown in Table 2. *Cap Value* is the
dependent variable, as it most closely denotes a player's value to his team in relation to
the team's salary cap. The average cap value for an NFL player is $1,794,089. The
range of the cap value for NFL salaries is from $74,706 to $13,828,590. Tom Brady, a
quarterback for the New England Patriots, is the highest paid athlete in the study.

The *Non-White* variable is a dummy variable that equals one if the player is non-
white and zero if the player is white. 67.5 percent of the players in this study are non-
white.

7

The individual performance statistics reported in Table 2 demonstrate the diverse characteristics of the NFL players in the sample. *Years of NFL Experience* refers to total years of playing experience in the NFL. The average number of years is 4.54, with a range from 0 to 19. Vinny Testaverde, a backup quarterback for the New York Jets, is the most experienced player in the sample. *First-Round Draft Pick* is a dummy variable that equals one if the player is a first-round draft pick and zero if not. *Number of Games Played* is the number of games played by each player in 2005. The average number of games played is 12.86. *Percentage Games Started* is the percentage of games started in 2005, and the average percent of games started is 50.48. *Pro Bowls* is the total number of Pro Bowl appearances by each player. Junior Seau, a linebacker for the Miami Dolphins, has the most Pro Bowl selections with 12.

The position variables are a series of dummy variables separated into ten categories: tight end (*te*), quarterback (*qb*), wide receiver (*wr*), offensive line, center, or long-snapper (*ol*), cornerback or safety (*cb,s*), defensive end (*de*), linebacker (*lb*), running back or fullback (*rb,fb*), punter or kicker (*p,k*), and defensive tackle (*dt*).

Free Agent is a dummy variable that takes a value of one if the player was a free agent after the 2005 season and zero if the player was not. 24.18 percent of the players are free agents in some capacity.

The racial composition of each position varies considerably. The tight end position is the most racially diverse position, with 47.25 percent of the players being non-white. For quarterbacks, 16.90 percent of the sample is non-white. Safeties and cornerbacks are combined since the data set includes no white cornerbacks. Running backs are combined with fullbacks since only two running backs in the study are white.

The offensive line variable includes the offensive line, the center position, and long-snappers, because all but one long-snapper in the study is white.

The average years of NFL experience varies by position, with running backs at the low end with an average of 3.75 years of NFL experience and punters and kickers at the high end with an average of 6.27 years of experience.

The highest-paid kicker, punter, fullback, and long snapper make millions of dollars less than the highest paid quarterback, offensive lineman, center, or defensive end, reflecting the varying levels of contribution, real and perceived, to a team's overall success.

Team variable statistics in Table 2 highlight the competitive balance that the NFL achieves. The *Playoffs* variable is dummy variable that takes the value of one if a player's team made the playoffs in 2005 and zero if the team did not. In the NFL, 12 teams out of 32 make the playoffs each year.

The demographic data show the diverse metropolitan characteristics seen in different NFL franchise locations. The variable *Percentage White Residents* refers to the percentage of white residents located in the city of a particular team. Green Bay has the largest percentage of white residents in the metropolitan area with 80.5 percent, while Detroit has the lowest with 10 percent. *Median Household Income* is the largest for San Francisco and the lowest for Cleveland.

Table 2 – Descriptive Statistics

Variable	Mean	Standard Deviation
Cap Value	1779685.000	1988057.000
log[cap value]	13.888	1.003
Non-White	0.675	0.469
Years of NFL Experience	4.542	3.173
1st Round Draft Pick	0.170	0.375
# Games Played	12.855	4.539

% Games Started	0.005	0.004
Pro Bowls	0.416	1.243
te	0.061	0.239
qb	0.047	0.213
wr	0.094	0.292
de	0.081	0.274
dt	0.078	0.269
lb	0.136	0.343
rb,fb	0.098	0.298
cb,safety	0.179	0.384
offensive line	0.185	0.388
p,k	0.394	0.195
Free Agent	0.242	0.428
Team Winning %	0.503	0.212
Playoffs	0.388	0.487
% White Residents	53.034	15.700
log[Median Household Income]	10.601	0.222

III. Method

A. Model

The empirical model used to determine the effects of certain variables on NFL

players' salaries is as follows:

[1] $$\ln S = B'X + e,$$

where the dependent variable is the natural log of the cap value for each NFL player in

the 2006 season. With a hard-salary cap in the NFL, player contracts are often structured

to minimize any one player's impact on a team's cap for any particular season. Rules

governing contract negotiations in the league allow bonuses to be prorated over the

length of a given contract, even though an entire bonus may be paid to a player at the

beginning of a new contract. Consequently, cap value is not necessarily what a player

actually receives in salary in a given year [Weinbach, 2005]. Instead, it is a numerical

value that captures the amount of value in the salary cap that a franchise is willing to

10

designate to a particular player, constituting a measurement of his value to a team in a given year.

I model the log of a player's cap value as a function of X, a vector of individual, team, and metropolitan area characteristics. Specifically, cap value is a function of individual characteristics including race, years of NFL experience, number of Pro Bowl appearances, number of games played, percentage of games started, whether the player is a first-round draft pick, position, and free agency status. Team characteristics include team winning percentage for the player's team and whether the player was a member of a 2005 playoff team. Metropolitan-area characteristics include the percentage of white residents in the metropolitan area in which the team plays and the median household income of the same metropolitan area.

B. Predicted Signs of Coefficients

Previous studies of NFL salaries find scattered correlation between race and salary when controlling for different variables. Mogull's [1973, 1981] sample of 96 NFL players from the 1970-71 season alluded to one signal consistent with discrimination, namely that experienced white players may be better compensated than similarly experienced black players. Kahn [1992] notes in his study that, *ceteris paribus*, white players earn higher salaries in predominantly white metropolitan areas and nonwhites earned higher salaries in predominately nonwhite metropolitan areas. His results are significant at a five-percent level. Gius and Johnson [2000] find that nonwhite players from the 1995 NFL season earned higher salaries than their white teammates. Thus, the predicted sign of coefficient for race is unclear.

Individual player characteristics likely account for much of the difference in player salary. Years of experience are expected to positively correlate with salary, though the experience variable is more accurate when examined individually by position. For instance, running backs in the NFL typically see rapid declines in their performance after only a few years in the league, while punters and kickers may remain in the league for much longer and maintain a more consistent level of productivity. Therefore, experience should be more closely correlated with higher salary for punters and kickers than for running backs.

Players who demonstrate uncommon ability in the sport before playing in the NFL should have this ability reflected by a first-round draft selection. The expected correlation between first-round draft picks and salary is positive. Players who perform well during the season are selected to play in the Pro Bowl, a variable which is expected to positively impact a player's salary. The percentage of games that a player starts in a season should be positively correlated with a player's salary, given a minimum of at least four games played. Given that free agency in the NFL allows for players to negotiate new contracts, players who were free agents prior to the 2006 season should have a positive association with salary.

The structure of an NFL team is such that its players may affect the success of a season with varying levels of importance. Presumably, a quarterback is seen as paramount to a team's success, and therefore the quarterback position variable is expected to be positively correlated with a player's salary. I also anticipate similar results with the wide receiver position. Since running backs have been grouped with full backs, I do not expect the *rb,fb* variable to positively correlate with salary. No other

12

positions are expected to have a significant positive correlation with salary. Kickers and punters are the omitted category.

The demographic makeup of a team's metropolitan area may influence players' salaries. The percentage of white residents in a city may positively impact a white player's salary if customer discrimination persists [Kahn 1992]. Median household income may be positively correlated with a player's salary if the player plays in a relatively affluent metropolitan area.

Team winning percentage is expected to positively affect a player's salary. If a team played in the 2005 NFL playoffs, this should positively affect a player's salary as well. However, due to the heterogeneity of individual player statistics, the extent to which team variables will have a significant statistical impact on individual player salaries is expected to be small.

IV. Results

Table 3 provides the results from using an ordinary least squares [OLS] regression to estimate the model described in equation [1].

Table 3 – OLS Regression Results

log[cap value]	Coefficient	Standard Error
constant	11.528**	0.915
Non-White	-0.032	0.047
Years of NFL Experience	0.054**	0.007
1st-Round Draft Pick	0.481**	0.052
# Games Played	0.021**	0.004
% Games Started	1.066**	0.051
Pro Bowls	0.108**	0.017
te	-0.391**	0.122
qb	0.051	0.131
wr	-0.082	0.119
de	-0.108	0.119
dt	-0.263*	0.120
lb	-0.292**	0.112
rb,fb	-0.307	0.117

13

cb,safety	-0.351	0.113
offensive line	-0.314	0.107
Free Agent	-0.125**	0.044
Team Winning %	0.190	0.151
Playoffs	-0.030	0.065
% White Residents	-0.002	0.001
log[Median Household Income]	0.141	0.086

**significant at the one-percent level.
*significant at the five-percent level.

The effect of race on an NFL players' compensation is not statistically significant, implying other factors must account for differences in salary. As expected, individual player statistics such as years of NFL experience, number of games played, percentage of games started, and number of Pro Bowls all are statistically significant at greater than the one-percent level. For instance, each year of NFL experiences corresponds with a 5.4 percent salary increase. For every additional game in which a player appears, his salary increases by roughly 2.1 percent. As the percentage of games started increases by one percent, the player's salary increases by 1.2 percent. Each year a player is selected to the Pro Bowl accounts for a 10.8 percent increase in his salary.

Every position except quarterback, wide receiver, and defensive end have negative coefficients that are statistically significant, implying players in those positions all made less than kickers and punters. I might expect quarterbacks, wide receivers, defensive ends, and kickers and punters to be similarly compensated because of the high profiles of these positions. Free agency is a somewhat surprising result in that it is negative and statistically significant at the five-percent level. The free agent variable may not be specific enough to distinguish between players who sign with their current team or sign new contracts with new teams. Players who negotiate contracts with new teams often do so with considerable leverage that may positively impact their salary.

14

Also, there are far greater shares of NFL free agents who are not starters in the League than who are starters, and their contract negotiations are therefore not necessarily the result of quality performance on the field.

Team statistics—team winning percentage or whether a team made the playoffs— has no significant effect on player salaries. Metropolitan-area statistics are not significant at a five-percent level. Thus the current study shows no support for customer discrimination, which is different than previous studies.

V. Conclusion

Recent studies of the NBA suggest that white fans watch NBA games in greater numbers when more white players participate [Kanazawa and Funk, 2001]. Kahn's [1991] study of the NFL extends the notion of fan preferences to suggest white players make more money in metropolitan areas with larger numbers of white residents. In this study, I use current data from the 2005 NFL season to examine the effect that race may have on an NFL player's compensation. The results suggest race is not a significant factor in the determination of salaries. As such, the present study suggests customer discrimination does not significantly alter the compensation of white and nonwhite players. As expected, the majority of differences in NFL salaries can be attributed to individual player characteristics. Team characteristics do not significantly affect a player's salary. These findings suggest past discrepancies found by researchers no longer characterize the current labor market situation in the NFL.

References

Borjas, George J (2005), *Labor Economics, Third Edition*. New York, NY: McGraw-Hill/Irwin.

Conlin, Michael, and Patrick M. Emerson (2005), "Discrimination in Hiring Versus Retention and Promotion: An Empirical Analysis of Within-Firm Treatment of Players in the NFL," *The Journal of Law, Economics, and Organization*, 22: 115-136.

Ehrenberg, Ronald G., and Robert S. Smith (2006), *Modern Labor Economics: Theory and Public Policy*. Boston, Massachusetts: Pearson Education, Inc.

Foley, Mark and Fred H. Smith (2007), "Consumer Discrimination in Professional Sports: New Evidence from Major League Baseball," *Applied Economic Letters*, 14: 951-955

Gius, Mark, and Donn Johnson (2000), "Race and Compensation in Professional Football," *Applied Economic Letters*, 7:73-75.

Kahn, Lawrence M. (1991), "Discrimination in Professional Sports: A Survey of the Literature," *Industrial and Labor Relations Review*, 44: 395-418.

Kahn, Lawrence M. (1992), "The Effects of Race on Professional Football Players' Compensation," *Industrial and Labor Relations Review*, 45: 295-310.

Kahn, Lawrence M. (2000), "The Sports Business as a Labor Market Laboratory," *Journal of Economic Perspectives*, 14:75-94.

Kanazawa, Mark T., and Jonas P. Funk (2001), "Racial Discrimination in Professional Basketball: Evidence from Nielsen Ratings," *Economic Inquiry*, 39: 599-608.

Leeds, Michael A., and Sandra Kowalewski (2001), "Winner Take All in the NFL: The Effect of the Salary Cap and Free Agency on the Compensation of Skill Position Players," *Journal of Sports Economics*, 2: 244-256.

Mogull, Robert G. (1973), "Football Salaries and Race: Some Empirical Evidence," *Industrial Relations*, 12: 109-112.

Mogull, Robert G. (1981), "Salary Discrimination in Professional Sports," *Atlantic Economic Journal*, 9: 106-110.

Palmer, Matthew C., and Randall H. King (2006), "Has Salary Discrimination *Really* Disappeared from Major League Baseball?" *Eastern Economic Journal*, 32: 285-297.

Sports News (2006), "2006 Pro Football Register," Chesterfield, Missouri: Sporting News.

Weinbach, Jon, "Football's All-$tar Team; Petulance Pays as NFL Contracts Grow in Cost and Complexity," *Wall Street Journal*, 9 September 2005.