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The Determinants of NFL Viewership: Evidence from Nielsen Ratings

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THE DETERMINANTS OF NFL VIEWERSHIP: EVIDENCE FROM NIELSEN** RATINGS

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Abstract

Television ratings provide a measure of the number of viewers for every NFL football game, however these ratings do not reveal the viewers' motivation for watching the game. Using Nielsen ratings for locally televised NFL football games, this study investigates the determinants of NFL viewership. Data are compiled for 496 NFL games during the 2000 and 2001 seasons. The results suggest evidence of race, team success, and the closeness of the contest as significant determinants of NFL viewership.

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I. Introduction

Advertisers paid an average of $2.1 million to air a 30-second commercial during the 2003 Superbowl. The Superbowl, with approximately 80 million viewers, is the culmination of the National Football League (NFL) season. This season consists of 248 games played each year. Most of these NFL games are aired on television, either locally or nationally. Therefore, networks as well as advertisers have a vested interest in answering the following questions. Who is watching these games, how many people are watching, and why? Currently, Nielsen Media Research reports how many viewers are tuned in to each game, but these figures can only be ascertained after the fact. Therefore, it is important to investigate the motivation behind the typical football fan's interest in professional football.

This paper will attempt to investigate the determinants of NFL viewership. Section two will begin with a review of the literature as it pertains to television viewership as a whole, sports viewership, and finally, professional football. Section three presents a summary of the data and methods used to explore the determinants of NFL viewership. Among other issues section three will attempt to explain the following questions: Can the determinants of NFL viewership be realized through gathering statistics on specific NFL games? What kind of motivations does a viewer have to tune in to a game? Section four presents the results of regression analysis used to test the theoretical implications developed in section three. Section five presents any conclusions that can be drawn from the research.

II. Previous Research Pertaining to NFL Viewership

Perhaps the most definitive literature found surrounding the topic of sports viewership is the examination of the NBA by Mark Kanazawa and Jonas Funk (2001). This study examines whether patterns of television viewing systematically correlate with the racial composition of the teams in the NBA. Kanazawa and Funk (2001) start by examining the Nielsen ratings for 258 local NBA games in the 1996-1997 season. The Nielsen rating is then regressed against 13 independent variables, including team winning percentage, number of white players on a team, the number of minutes played by white players, the racial composition of the local area, the number of professional teams in the area, and whether or not the game was televised in a prime viewing slot.

Kanazawa and Funk (2001) discover that there is a significant relationship between the number of white players on the team and the Nielsen rating. It seemed that every white player on the local team increases the Nielsen rating by about 0.54 points, *ceteris paribus*. This number translates into anywhere from 3,500 to 36,200 additional households tuning in, depending on the size of the local viewing area. The local team's winning percentage also has a bearing on the number of viewers. An increase of 0.10 in the local team's winning percentage corresponds to a Nielsen rating nearly 1.8 points higher. This higher rating translates into an increase in the number of households, anywhere from 11,600 to 121,000, depending on the viewing area.

Kanazawa and Funk (2001) conclude that these findings could have a large bearing on advertising revenue for each network covering an NBA game. Race based decisions by viewers to watch games may have financial consequences for NBA

franchises if commercial advertisers are willing to pay more for time during a game played by teams fielding more white players. Kanazawa and Funk (2001) then calculate the advertising revenue attributed to a white player to be about $2,600 per game in the small markets (ex. Milwaukee) and about $27,000 per game in the largest markets (ex. New York, Los Angeles). These findings could have significant effects on the NBA as a whole and the networks that cover the games.

Another study done by Scott Atkinson, Linda Stanley, and John Tschirhart (1988) briefly researches the effects of viewership in the NFL in a portion of a larger study on revenue sharing. Atkinson, Stanley, and Tschirhart (1988) obtained ratings from A.C. Nielsen Company for 144 televised time slots during the 1980-1981 seasons. They regressed the ratings using a log model against variables such as natural log of wins, population, number of stars on a team, and whether or not the game was televised in a primetime slot.

The study finds that two of these variables have a significant effect on the rating. The research shows through the correlation coefficient that when the natural log of the number of wins per team increases, the rating increases as well. The other variable of interest is the dummy variable for the prime-time slot. Atkinson, Stanley, and Tschirhart (1988) report that a prime time slot increases the rating by 5.47.

This research by Atkinson, Stanley, and Tschirhart (1988) provides a starting point for further research on NFL viewership. The age of this study provides the opportunity for updating the data as well as extending the list of variables in order to increase accuracy.

III. Data and Methods

The data used in this model are comprised of Nielsen television ratings, team statistics, and demographics for 496 regular season NFL games over two regular seasons (2000-2001). There are a total of 31 teams, which play 16 games during a season. The outcomes and summary statistics of each of these games are recorded in this data set. The unit of observation is a single game with each game recorded twice in order to account for both local viewing markets. Each observation consists of one value of the dependent variable (Nielsen rating in the local area) and one value of each of the 40 independent variables. There are a total of 996 observations in this set. These 996 data points were then reduced to 891 after eliminating missing observations (due to blacked out games). FIGURE 3.1 provides an overview of the empirical model. Many of the variables were collected for both the local (L) and opposing (O) teams. The reader is referred to TABLE 3.1 for a complete list of variables and brief definitions.

FIGURE 3.1

RTINGLPCT= f (YEAR, WEEK, WHTCOCHL, WHTCOCHO, PBOWLL, PBOWLO, WHTPBWLL, WHTPBWLO, PLAYOFFL, PLAYOFFO, WINPL, WINPO, WHTPLAYL, WHTPLAYO, WHTFANL, WHTFANO, INCOML, PROTEAML, GDWPL, GDWPO, DIFSCOR, NWINL, NLOSSL, DIFFSCOR, SMDIV, HHIPO, DIVISION-SPECIFIC DUMMY VARIABLES)

TABLE 3.1

Variable	Definition
RTINGLPCT	Nielsen rating for the local team
YEAR	The year the game was played, either 2000 or 2001
WEEK	The week the game was played 1-17 weeks in a season
INCOML	Average income of the local area
HSHOLDSL	Number of households in the local area
NHSHLDL	Nielsen households for local team
NHSHLDO	Nielsen households for opposing team
PROTEAML	Number of professional teams in the local area
WHTPLAYL	Percentage of white players on the local team
WHTPLAYO	Percentage of white players on the opposing team
WHTCOCHL	Dummy variable for the local coach, white = 1, non-white = 0
WHTCOCHO	Dummy variable, opposing coach is white = 1, coach is non-white = 0
PBOWLL	Number of players in the Probowl the previous year, local team
PBOWLO	Number of players in the Probowl the previous year, opposing team
WHTPBWLL	Number of white players in the Probowl the previous year, local team
WHTPBWLO	Number of white players in the Probowl the previous year, opposing team
PLAYOFFL	Dummy variable for the local team, went to playoffs the previous year = 1, did not go to playoffs = 0
PLAYOFFO	Dummy variable for the opposing team, went to playoffs the previous year = 1, did not go to playoffs = 0
WHTFANL	Percentage of fans from the local area that are white
WHTFANO	Percentage of fans from the opposing area that are white
WINPL	Annual winning percentage of the local team from the previous year

Variable	Definition
WINPO	Annual winning percentage of the opposing team from the previous year
NLOSSL	Number of losses for local team
GDWPO	Game day winning percentage for opposing team
NLOSSO	Number of losses for opposing team
SCOREL	Score for local team
DIFFSCOR	Difference in score for each game
HHIPO	Herfindahl Hirschman Index for offensive points scored
AFCEL	Dummy for division afc east local team
AFCEO	Dummy for division afc east opposing team
AFCCL	Dummy for division afc central local team
AFCCO	Dummy for division afc central opposing team
AFCWL	Dummy for division afc west local team
AFCWO	Dummy for division afc west opposing team
NFCEL	Dummy for division nfc east local team
NFCEO	Dummy for division nfc east opposing team
NFCCL	Dummy for division nfc central local team
NFCCO	Dummy for division nfc central opposing team
NFCWL	Dummy for division nfc west local team
NFCWO	Dummy for division nfc west opposing team
SMDIV	Games played with two teams from the same division

The dependent variable (RTINGLPCT) in this model is the Nielsen rating. Nielsen Media Research defines a Nielsen rating as the number of televisions tuned in to a specific program divided by the number of total televisions in a specific viewing

market.[2] This figure is expressed as a percentage. A household is considered to be tuned in to a game if the Nielsen meter indicates that the television set is tuned in to the game for at least six minutes. Nielsen Media Research collects a representative random sample of the population in 52 of the nation's largest markets. Altogether, they gather information from more than 150,000 households and use it to produce reports during an all-market measurement period. Nielsen ratings were compiled for all NFL games in the 2000 and 2001 regular seasons, a total of 496 games collectively. The local rating for each game is calculated from the local viewing area. For example, the local rating for the Minnesota Vikings is taken from the viewing market including the Minneapolis/St. Paul area.

This study examines the potential determinants of the NFL Nielsen rating, which is a function of other variables pertinent to professional football. The goal is to examine the determinants of viewership for NFL games by using variables that proxy local area demographics, individual team statistics, and race effects, among others.

IV. Empirical Results

TABLE 4.1 summarizes the OLS regression results for the fixed effects models that control for division-specifics effects. The t-statistics are displayed in parenthesis below each coefficient. Models one through three are OLS regressions with various combinations of explanatory variables. Model three uses the logarithm of some variables. A blank cell indicates that the variable was omitted from that particular regression.

TABLE 4.1

Variable	Definition	Model 1	Model 2	Model 3
C		0.2611	0.1967	0.0692
		(5.7110)*	(6.8723)*	(-0.2818)
PROTEAML	Number of professional teams in local area	-0.0037	-0.0028	-
		(-6.3317)*	(-5.0537)*	-
LOG (PROTEAML)	Log of the number of professional teams in local area	-	-	0.0525
		-	-	(2.2469)*
YEAR	Year, 00-01	-0.0034	-	-0.0216
		(-0.7048)	-	(-2.2785)*
WEEK	Week 1-17	0.0011	0.0010	0.0011
		(1.9753)*	(1.9208)	(1.0981)
WHTCOCHL	Dummy for coach's race 1= white coach	-0.0544	-	-0.0404
		(-4.9952)*	-	(-1.3478)
WHTPLAYL	Percent of white players on local team	0.0022	-0.0984	-
		(-0.0481)	(-2.2474)*	-
LOG (WHTPLAYL)	Log of the percent of white players on local team	-	-	-0.3030
		-	-	(-2.2399)*
WHTPBWLL	Number of white players voted to the Probowl for local team	-0.0194	-	-
		(-6.7414)*	-	-
LOG (WHTPBWLL)	Log of the number of white players voted to the Probowl for local team	-	-	0.1206
		-	-	(1.7985)
PLAYOFFL	Local team went to playoffs, dummy variable	-0.0285	-0.0323	-0.0119
		(-4.8781)*	(-5.2682)*	(-0.7414)
WHTFANL	Percent of white fans in local area	0.0810	0.1304	-
		(3.1564)*	(5.2734)*	-
LOG (WHTFANL)	Log of the percent of white fans in local area	-	-	1.0793
		-	-	(4.4675)*
INCOML	Average income of local area	-1.2400E-06	-1.0700E-06	1.2555E-06

Variable	Definition	Model 1	Model 2	Model 3
		(-6.0721)*	(-4.8761)*	(2.1592)*
GDWPL	Game-day winning percentage for local team	0.0660	0.0631	-
		(7.0946)*	(6.7691)*	-
LOG (GDWPL)	Log of the game-day winning percentage for local team	-	-	0.0364
		-	-	(2.5245)*
GDWPO	Game-day winning percentage for opposing team	0.0037	0.0020	-
		(-0.4325)	(-0.2287)	-
LOG (GDWPO)	Log of the game-day winning percentage for opposing team	-	-	-0.0071
		-	-	(-0.6205)
WHTPLAYO	Percent of white players on opposing team	-0.0025	-0.0069	-
		(-0.0674)	(-0.1845)	-
LOG (WHTPLAYO)	Log of the percentage of white players on opposing team	-	-	0.0150
		-	-	(0.7161)
WHTPBWLO	Number of white players voted to the Probowl for opposing team	-0.0002	-	-
		(-0.0895)	-	-
LOG (WHTPBWLO)	Log of the number of white players voted to the Probowl for opposing team	-	-	-0.0092
		-	-	(-0.7907)
PLAYOFFO	Opposing team went to playoffs, dummy variable	-0.0022	-0.0019	-0.0078
		(-0.4280)	(-0.3657)	(-0.9178)
DIFFSCOR	Difference in score for each game	-0.0009	-0.0008	-0.0009
		(-3.2183)*	(-3.0593)*	(-1.9882)*
AFCEL	Dummy for division afc east local	0.0255	0.0132	-0.0735
		(2.5739)*	(1.2776)	(-2.2490)*
AFCCL	Dummy for division afc central local	0.0330	0.0266	0.0515
		(3.7501)*	(2.8580)*	(2.3013)*
AFCWL	Dummy for division afc west local	0.0293	0.0212	0.1441
		(2.4485)*	(1.8186)	(4.4763)*

Variable	Definition	Model 1	Model 2	Model 3
NFCEL	Dummy for division nfc east local	0.0050	0.0122	1.0788
		(0.5404)	(1.2647)	(4.6471)*
NFCCL	Dummy for division nfc central local	0.0835	0.0855	-0.1181
		(6.3583)*	(8.0291)*	(-1.4184)
HHIPO	Herfindahl Hirschman Index for offense	0.3318	-	-
		(-0.4806)	-	-
LOG (HHIPO)	Log of the Herfindahl Hirschman Index for offense	-	-	0.0084
		-	-	(0.167733)
SMDIV	Games played with two teams from the same division	0.0068	0.0069	-0.0015
		(1.3888)	(1.389513)	(-0.1864)
R-squared		0.3327	0.2935	0.7618
Adjusted R-squared		0.3158	0.2797	0.7229
F-statistic		19.6691	21.3339	19.6198

In this initial set of regressions, which control for division-specific effects, the race of the coaches (WHTCOCHL), players (WHTPLAYL), all stars (WHTPBOWLL), and fans (WHTFANL) are examined. Kanazawa and Funk (2001) found in their research that racial demographics of a team and its surrounding area play a part in explaining Nielsen ratings for NBA games.[3]

This study finds the race of the local coach (WHTCOCHL) to have a negative impact on ratings in models one and two. The partial regression coefficient is -0.054, giving a t-statistic of -4.995. This means that whenever there was a white coach, the rating for that game decreases by 0.54 points. Because these findings are inconsistent

with Kanazawa and Funk (2001), the data for the white coach variable was inspected.[4] For the year 2000 there were only two non-white coaches in the league, Dennis Green of the Minnesota Vikings and Tony Dungee of the Tampa Bay Buccaneers. In 2001, Herman Edwards was added to the list of non-white coaches when he became head coach of the New York Jets. Since all of these teams performed well over these two seasons, their ratings were higher than other teams with white coaches. Therefore, the race variable for coaches may be picking up the underlying effects of other variables. Thus, the variable for the coach's race was left out of the second regression. In the third model there was an insignificant t-statistic, therefore deeming the race of the coach insignificant in this model.

The percentage of white players on the local team (WHTPLAYL) is tested in all three regressions. It is insignificant at the 95% confidence level in model one. However, in an attempt to improve the model, some of the insignificant variables were removed from the second regression. The second regression now shows the percentage of white players on the local team with significant t-statistics. The partial regression coefficient is found to be negative, meaning that with every one percent increase of white players on a team, the rating for that team decreases by .098. The third model shows the results of the semi-log regression. In this regression the log of the percentage of white players on the local team (LOG (WHTPLAYL)) is found to be significant. This third model shows that there was a –0.030 change in the rating as the log of the percent of white players on the team increased by one. These findings are inconsistent with those of Kanazawa and Funk (2001). When looking into the percentage of white players for the opposing team (WHTPLAYO), no significance is found in either the first or second regression,

suggesting that fans are solely interested in the race of their local team. The log of the percentage of white players on the opposing team (LOG (WHTPLAYO)) is analyzed in the third model, where the findings are again insignificant.

The racial composition of star players is also examined in this research. The first model shows a large amount of significance between the white players voted into the Probowl from the local team (WHTPBOWLL) and the Nielsen rating. An increase in the number of white Probowlers by one causes a decrease in the Nielsen rating by 0.019, contradicting findings by Kanazawa and Funk (2001). This statistic is thought to be inaccurate because of the nature of the white players voted into the Probowl. According to the data, the majority of the white players voted into the Probowl are kickers. Therefore, players that are considered all-stars because of their appearance in the Probowl may not necessarily be the backbone of their individual team. Thus, the WHTPBOWLL variable is excluded from the second regression. The log of the number of white probowlers on the local team (LOG (WHTPBOWLL)) is used in the third model. However, this variable proved insignificant. Analyzing the results of the race of the all-stars from the opposing team (WHTPBOWLO) shows no significance at the 5% significance level with the Nielsen rating in the first model. Therefore, this variable is not included in the second regression. The log of the number of Probowlers on the opposing team (LOG (WHTPBOWLO)) is again analyzed in the third model. This variable shows insignificant results in the semi-log model as well.

In order to control for the percentage of whites in the local population, a variable is included for the racial demographics of each local area (WHTFANL). This variable proves to be significant in models one and two in TABLE 4.1. The logarithm of the

number of local white fans (LOG (WHTFANL)) is significant in model three. The partial regression coefficient is found to correlate positively with the dependent variable. This means that as the percentage of white fans increases by one unit, the Nielsen rating increases by a finding of 0.08 in the first regression and 0.13 in the second. As the log of the percentage of white fans increases by one, the Nielsen rating increases by 1.079. Therefore, it can be seen that as the percentage of white fans increases, the Nielsen rating increases in all three models.

The income of the local area is found to be significant and negatively related to the Nielsen rating. The partial regression coefficient for income is -0.00000124 for the first regression, and -0.00000107 for the second. These coefficients show that as the income of the local area increases by one dollar, the Nielsen rating decreases by 0.00000124 and 0.00000107 respectively. The t-statistics for this variable are significant in all three models. Therefore, models one and two suggest that NFL viewership is an inferior good. For the Minneapolis/St. Paul area, these results show a decrease in viewership by two households with every one-dollar increase in income. Model three shows that as the income of the local fan increases by one dollar, the Nielsen rating increases by .0000013. It should be mentioned at this point in the study that the number of households is excluded as an independent variable because it is found in the denominator of the dependent variable.

The impact of the number of professional teams in the local area (PROTEAML) on ratings is analyzed as well. The results indicate that with each additional professional team the rating for that area decreases by 0.003 in both the first and second regressions, therefore suggesting a decrease in viewership by 4,443 households with every additional

professional team in the local area, *ceteris paribus*. The third regression, which analyzes the log of the number of professional teams in the local area (LOG (PROTEAML)), suggests that as the log of the number of professional teams increases by one, viewership increases by 0.0524. These findings are supported by significant t-statistics found in each regression. It is apparent that the findings in the first two models contradict the results of model three.

Playoff contention for the local team (PLAYOFFL) is found to be significant in providing ratings as well. The partial regression coefficient for the first regression shows a value of -0.028, while the second regression shows a value of -0.032. These partial regression coefficients mean that as each team participates in the playoffs, the Nielsen rating decreases by 0.028 and 0.032 respectively. The variable measuring playoff participation for the local team is insignificant in the third model. When looking at the playoff contention for the opposing team (PLAYOFFO), the values are insignificant. This finding contradicts the previous hypothesis that teams with playoff survival gain more viewers and will be further explained in the conclusion section.

The variable measuring game-day winning percentages for the local team (GDWPL) is positive and significant as it relates to Nielsen ratings. Game-day winning percentage is measured in both regressions one and two, with significant critical t-values for both. *Ceteris paribus*, the partial regression coefficient is 0.066 for the first regression and 0.063 for the second. These numbers are very consistent and show that as the game-day winning percentage increases by one, the Nielsen rating increases by 0.066 and 0.063 respectively. Therefore, the effect on Minneapolis/St. Paul suggests an increase of anywhere from 93,306 to 97,749 households when the game-day winning

percentage increases by one point, *ceteris paribus*. The log of the game-day winning percentage for the local team (LOG (GDWPL)) is analyzed in the third regression. The model again shows significant results and a positive relationship. These findings are consistent with the hypothesis that successful teams draw larger television audiences. However, the game-day winning percentage for the opposing team (GDWPO) and the log of the game-day winning percentage for the opposing team (LOG (GDWPO)) are shown to be insignificant, demonstrating that fans are more interested in measures of the local team.

Another team effect examined in this set of regressions is the variable used to measure the difference in score (DIFFSCOR). The partial regression coefficient for the first regression was found to be -0.00089 and -0.00084 for the second regression. Again, these numbers indicate that as the difference in score increases by one point, the Nielsen rating decreases by 0.00089 and 0.00084 respectively, *ceteris paribus*. These findings are supported by significant t-statistics in both regressions. The semi-log model also shows significant results for the difference in score. This third regression shows that as the difference in score increases by one, the Nielsen rating decreases by 0.00094. Therefore, these findings support the hypothesis that a closer score attracts more viewers.

The last team effect that is measured in these regressions is the Herfindahl-Hirschman Index for the points scored on offense (HHIPO).[5] The first and second models analyze the Herfindahl-Hirschman Index alone while the third model examines

[5] The Herfindahl- Hirschman Index for points scored on offense is defined as:

$$HHI = \sum_{i=1}^{N} (MS_i)^2 \text{ , where}$$

$$MS_i = \frac{POINTS\ OF\ TEAM_i}{TOTAL\ LEAGUE\ POINTS}$$

the log of the Herfindahl-Hirschman Index (LOG (HHIPO)). This index is statistically insignificant in all models.

Variables are analyzed for both the year (YEAR) and the week (WEEK) that each game was played. The year was denoted as 00 for the year 2000 and 01 for the year 2001. The numbers one through seventeen portray the weeks, given that there are seventeen weeks in each season. The year proves to be extremely insignificant with a t-value much less than the significant level (1.96). Therefore, the year is dropped from the second regression. In the third regression, however, the year did become significant. This model shows that as the year increases by one, the Nielsen rating decreases by 0.022. This third model shows that the ratings in 2001 were below the ratings from 2000.

The week, however, is significant in the first regression. The partial regression coefficient for the week is 0.001, meaning that as the week increases by one, the Nielsen rating increases by 0.001. This measure is then insignificant in the second and third regressions. This suggests that as the season progresses viewership increases.

Dummy variables were collected in order to account for divisional effects as well. Some prove to be of no consequence, while many show significance. The variable for the AFC Eastern division (AFCEL) demonstrates significance in the first regression with a partial regression coefficient of 0.025, meaning that, *ceteris paribus*, every game played in that division increases Nielsen ratings in the local area by 0.025 above the intercept (0.0261) for model one. This variable, however, is insignificant in the second regression but then is noteworthy again in the semi-log model. This third regression shows that for every game played by a team from the AFC East, the Nielsen rating decreases by 0.074

relative to the intercept (0.0692) for model three. This finding contradicts that of the first model and therefore should be examined further.

The dummy variable for the AFC Central division (AFCCL) demonstrates significant results for both the first and second regressions. The partial regression coefficient for this dummy variable is 0.033 in the first regression and 0.027 in the second. This shows that, *ceteris paribus*, each game played in the AFC Central division increases ratings by 0.033 in the first regression and 0.027 in the second relative to the intercepts of these models. The third regression also shows significance with a t-statistic above the critical value. For each game played in the AFC Central division, the Nielsen rating increases by 0.015.

The next division analyzed is the AFC West (AFCWL). The analysis of this dummy variable demonstrates that there is significance in the first regression. The partial regression coefficient was found to be 0.029 relative to the intercept in the first regression with a significant t-statistic, *ceteris paribus*. Therefore, it can be shown that when any game is played by an AFC West team, the Nielsen rating will increase by 0.029 in that local viewing area. However, the second regression shows an insignificant t-statistic while the third confirms significance again. In this third regression it was found that every game played by a team in the AFC West division increases the Nielsen rating for that game by 0.144.

The NFC Eastern division (NFCEL) is also analyzed but shows no significant results in the first and second models. The t-statistics are well below the critical value for both regressions. However, the third model does demonstrate significance. This model

shows that every game played by a team in the NFC East division increases the Nielsen rating for that game by 1.079 in the local viewing market.

The last division examined is the NFC Central (NFCCL) division. There is a high significance for this division in models one and two. The t-values are significantly higher than the critical value. It is shown that for each game played in the NFC Central, the Nielsen rating increases by 0.083 in the first regression and 0.085 in the second, *ceteris paribus*. The third regression, however, demonstrates insignificant results for the NFC Central division.

V. Conclusions and Final Discussion

In order to determine the potential Nielsen rating for an NFL football game the following need to be examined: the number of whites in the local area, the income of the local area, the number of professional teams in the local area, the winning percentage of the team, the projected outcome of the game, the week the game is played, and the division of each team. If the number of viewers for each game were able to be determined previous to the upcoming game, broadcasters and advertisers would be able to project a more accurate price for NFL airtime.

One of the largest advertisers during NFL football games is the National Football League itself. The NFL would benefit from the information included in this report. They would be able to predict the number of viewers for each game and more accurately negotiate a network price for those games. The NFL would also realize the effects of each season's schedule. The schedule greatly determines the number of viewers. The NFL creates this schedule. Would they be able to increase their profits from the networks if they could predict the number of viewers for each game? Could they draw more

viewers to the less watched games by advertising during the games that they can predict to have more viewers? The regression models from this research may be used to forecast the number of viewers of NFL games.

If potential NFL advertisers could predict how many viewers would be watching a particular game, then the broadcast stations would be able to more accurately determine the cost of that airtime. This would help to determine a market price for advertising time for NFL games.

This study, along with previous research into how many viewers are tuning in, is able to identify NFL viewership patterns. Therefore, this study offers a foundation for further research into specific motivations for NFL viewership. This research will allow broadcasters and advertisers the ability to improve efficiency within the NFL broadcast market.

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