

Colby



Colby College
Digital Commons @ Colby

Honors Theses

Student Research

2022

Discrimination Among College Football Head Coaches

Yusuke Fukuda
Colby College

Follow this and additional works at: <https://digitalcommons.colby.edu/honorstheses>



Part of the [Econometrics Commons](#), and the [Labor Economics Commons](#)

Colby College theses are protected by copyright. They may be viewed or downloaded from this site for the purposes of research and scholarship. Reproduction or distribution for commercial purposes is prohibited without written permission of the author.

Recommended Citation

Fukuda, Yusuke, "Discrimination Among College Football Head Coaches" (2022). *Honors Theses*. Paper 1351.

<https://digitalcommons.colby.edu/honorstheses/1351>

This Honors Thesis (Open Access) is brought to you for free and open access by the Student Research at Digital Commons @ Colby. It has been accepted for inclusion in Honors Theses by an authorized administrator of Digital Commons @ Colby.

Discrimination Among College Football Head Coaches

An Honors Thesis

Presented to

The Faculty of the Department of Economics

Colby College

In partial fulfillment of the requirements for the

Degree of Bachelor of Arts

By

Yusuke Fukuda

Waterville, Maine

May 4, 2022

Abstract

Several major sports organizations have come under scrutiny in recent years for alleged discriminatory practices towards minority coaches. In this paper, I analyze whether minority college football head coaches are more likely to be fired and to earn a lower salary. I observe a sample of 300 head coaches from 132 Division-I Football Bowl Subdivision (FBS) schools between the years 2006 to 2021. After controlling for performance and experience variables and holding the time and school or conference variables fixed in a Cox hazard regression model, I find statistically significant evidence that minority coaches face a higher likelihood of being terminated than their white counterparts. Second, by running an ordinary least squares regression, I find no statistically significant evidence that minority coaches are more likely to earn a lower wage than white coaches. These findings highlight the fact that minority coaches face higher levels of scrutiny, and open the door for potential further research to be done on the hiring processes of these programs as well.

Keywords

NCAA football, discrimination, hazard models, wages, retention, head coaches, conferences, race, pandemic, bowl games

Acknowledgements

I would like to thank Professor Robert Lester for inspiring me to write an economics honors thesis, and for his unwavering support of my project throughout the entire year. I cannot thank him enough for taking time out of his busy schedule to meet with me every week to help organize steps that I needed to take to ensure my success in my studies. Much of the credit for the groundwork of this project goes to our conversations brainstorming how to accurately model my research question.

I would also like to thank Professor Dan LaFave for taking the time to meet with me several times over the course of the spring semester to help me understand the Cox hazard regression model, even though I am not his advisee. His kindness and willingness to work with me allowed me to tackle an advanced subject that was previously unfamiliar to me.

I also want to thank Professor Michael Donihue for consistently checking in on all of us honors students over the course of the semester, and for personally meeting with me to help me organize my data and results. His continued faith in me, even when I was having trouble accumulating data at the beginning of the fall semester, gave me motivation to work harder and more determined to complete the study.

I would also like to thank Kara Kugelmeyer for her wizardry with data scraping. Without her expertise, I would not have been able to accumulate the data from several websites. I greatly appreciate her talking to me and asking me what I needed to add to my dataset, and then guiding me through how to scrape data, which could sometimes turn very tedious.

I also want to thank my fellow thesis students for pushing me to be better. And finally, I want to thank my parents for their continued support and pushing me to be the best student I can be. Obviously, without them, I would not be here.

Table of Contents

I.	Introduction	4
II.	Literature Review	7
III.	Data Description & Methodology	11
IV.	Results	18
V.	Conclusion	26
VI.	Works Cited	29

I. Introduction

The lack of minority head coaches and managers in the world of professional and collegiate sports has long been an issue that many have attempted to and failed to address. Especially in professional and collegiate football, baseball, and basketball, where a majority of the players themselves are minorities, it begs the question: why is the demographic makeup of the coaching body overwhelmingly white in all of these sports? This is an extremely important point of conversation to have now and for the future as these sports continue to expand their global brand.

I aim to answer the following question: are minority coaches more likely to get fired and also earn a lower wage? I will specifically be looking to answer these questions through the lens of college football hiring and firing processes. Not only is there extensive salary breakdown for major National Collegiate Athletic Association (NCAA) Division-I coaches available as opposed to professional sports leagues where much of this information is not publicly available, there have also been fewer studies done on the hiring and firing processes of minority coaches for college football teams compared to professional organizations. There have also been some recent controversies regarding minority coaches in the D-I Football Bowl Subdivision (FBS), the most competitive subdivision of college football. In an anonymous survey of FBS head coaches conducted by CBS Sports in 2017 which asked them who they thought were the most “overrated” coaches, three out of the nine coaches who were mentioned were African American. For reference, there are currently 13 African American head coaches out of 132 FBS schools. This list included James Franklin of Penn State, who has made a bowl game in nine out of the ten full seasons he has been head coach thus far, as well as Stanford’s David Shaw, who has made a Bowl game in eight of ten years as head coach. Despite their accomplishments, their peers say

they are “full of it,” and it serves as a hint to underlying racism that exists within the community (Myerberg, 2018).

It is not as if there have been zero conversations around trying to improve diversity in the sports coaching world. The most notable example is the Rooney Rule, which was instituted in 2003, and requires all National Football League (NFL) teams with a head coaching vacancy to interview at least one person of color during their hiring process. The effectiveness of the rule is still being debated by industry experts, with many citing the discouraging trend of decreasing number of minority head coaches in recent years (Paine, 2020). Taking it at face value, there were the same number of African American head coaches in 2021 as there were in 2003; just three out of 32 positions, with two of them losing their jobs prior to the 2022 season. One of those coaches was Brian Flores, who was fired by the Miami Dolphins, and he filed a class action lawsuit against the NFL and its teams in February 2022. The potential flaws of the Rooney Rule are now being brought to light, with Flores accusing the New York Giants of scheduling a “sham interview” with him to fulfill the minority quota after they had already settled on a new, white head coach (Seifert, 2022).

I observe a set of 300 coaches from 132 FBS schools over the years 2006 to 2021. In order to determine the extent of possible discrimination that exists in the world of D-I college football, my research will test two separate models. In the first model, I analyze whether race affects retention rates through a Cox hazard function controlling for characteristics of the coach, and the school or the conference. I hypothesize that being a non-white coach is negatively correlated with retention at a college. Furthermore, I also hypothesize that wins, bowl appearances and wins in bowl games, and years of experience are all positively correlated with retention. The other, an ordinary least squares regression, will test how race affects the annual

salary of a coach, controlling for characteristics of the coach, and the school or the conference. I hypothesize that being a non-white coach is negatively correlated with salary. I also hypothesize that salary is positively correlated with wins, bowl appearances and victories in bowl games, and years of experience. Overall, sports organizations are often studied by economists because there is ample data available, and serves as a microcosm of the overall labor market. It is my hope that my research will shed light on potential wage discrepancies and underlying discrimination that occurs in not only the sports world, but the overall labor force as well.

II. Literature Review

The Racial Wage Gap in the General Labor Force

In order to fully grasp the extent of racial discrimination that exists in the professional and collegiate sports landscape, it is important to first understand what history has said about racial discrimination in the general labor force, and what factors have contributed to this and what could potentially help lessen the wage gap. Chandra (2000) investigates how racial discrimination in the labor force has changed from the years 1940 to 1990. He finds evidence that during the 1960's black males made substantial gains in closing the wage gap relative to their white counterparts, which can be directly attributed to the waves of Civil Rights legislation that were passed during this time. However, he finds that after 1980, the wage gap increased once again because there was a higher premium placed on more skilled jobs, and black males stopped working as much due to a lesser wage offered to more blue collar jobs. O'Neill's (1990) findings corroborate as much, that beginning in the 1980's, there is more weight placed on higher levels of skill that have been learned in schools. Therefore, while African Americans receive education at a higher rate than before, the difference in school quality or family and socioeconomic background are playing a much larger role in the hiring process. Both Chandra and O'Neill advocate for increased investment in schooling as a means to decrease the racial wage gap.

A recent study conducted by Cunningham and Lopez (2021) observing the enforcement of civil rights laws by judges brings up another important factor in racial discrimination: political affiliation. They find that Republican appointed judges are more likely to dismiss cases involving race and gender rights laws. They also find that the racial wage gaps decrease when judges hear out these cases and have a higher likelihood of enforcing civil rights legislation. Discussing further around civil rights, Blair and Chung (2021) suggest that occupational licensing is a valid

solution in working towards closing the racial wage gap. Their study finds that occupational licensing will protect minority races and women from any preconceived notions that employers have about them like they are less intellectually capable than a white male and therefore deserving of a lower wage. Another benefit they find is that occupational licensing will accurately reflect a worker's criminal history, instead of an employer choosing a white name over a black name because of, once again, preconceived notions that black people are more likely to be criminals. They call on government officials to recognize this method as a credible way of helping to level the playing field. However, this result should be taken with a grain of salt, as it is possible that the occupational licensing board themselves discriminate against minorities. Furthermore, people who get released from jail may simply find it harder to get a job.

Discrimination in Sports Coaching Hires

Previous research has looked at coaching hiring practices and then likelihood of job retention depending on race across professional and collegiate sports. There have been studies done on the racial wage gap for players, but not as much at the coaching level. On the college side, Mixon and Treviño (2004) find that while black representation in the D-I college football coaching ranks is disproportionately low, indicating that it is harder for black coaches to get hired. Interestingly, once hired, black coaches face a dismissal probability that is, on average, 9.6 percentage points lower than that of their white counterparts, *ceteris paribus*. Their study concludes that colleges are likely to provide minority coaches with favorable treatment and ample resources to succeed because they do not want to incur the negative media backlash that comes associated with dismissing minority coaches. It may be difficult for black coaches to get their foot in the door, but once they are in, they seem to enjoy more job security. In college

basketball, LaFave, Nelson, and Doherty (2016) highlight the importance of understanding institutional environments when it comes to analyzing racial discrimination in the work force through a Cox hazard regression model. They initially find that black coaches face a higher probability of being fired than their white counterparts, until they control for Historically Black Colleges and Universities, which overturns their result. What this indicates is that while a large percentage of HBCUs hire African American coaches, there is a significantly higher turnover rate at these schools due to a number of factors ranging from worse performances than other non-HBCU D-1 schools, and the lack of available funding for these programs that contribute to the poorer performances.

At the professional level, Volz (2012), in his study of hiring practices in Major League Baseball, finds marginal evidence that former black professional players are 74 percent less likely to become a manager than observationally equivalent white former players. Volz also finds significant evidence that Hispanic former players are 66 to 69 percent less likely to coach for major or minor league teams compared to observationally equivalent white former players. Most notably, Volz controls for position played as a former player, since a former catcher or a shortstop, considered the positions who call the shots on the field, who had an unspectacular career have the highest odds of becoming a manager. Both of those positions have traditionally features white players, so he was interested to find whether there was still evidence of discrimination after controlling for this factor.

Madden and Ruther (2010) investigate whether the Rooney Rule has actually achieved what it was intended to do, to increase the number of minority head coaches in the NFL, and they find that it actually has drastically reduced discrimination in the hiring process and increased job security for black coaches. They note how before the implementation of this rule in 2003, from

1990 to 2002, black coaches significantly outperformed their white counterparts, indicating a higher expectation and a greater chance they would quickly be dismissed if they were not winning. They find that since the Rooney Rule came into play, from 2003 to 2009, this difference in performance has evaporated. Madden and Ruther conclude that black coaches are enjoying greater job security and overall racial discrimination has been reduced in the NFL.

My research will contribute to the existing literature in a few different ways. First, I provide an update on the existing literature through this recent decade which has consisted of more conversations around the topic of race amongst head coaching jobs, and several extenuating circumstances including the COVID-19 pandemic. I also take inspiration from LaFave et al. in their use of the Cox hazard regression model in measuring the survival rates of college coaches, but for football. Second, it incorporates an aspect on salaries of head coaches, which is an issue that has not been explored in-depth very much in literature.

III. Data Description & Methodology

The data I pulled comes from a few different sources. First, data on a coach's exit from a school was determined by cross-checking multiple news sources from the time they left the position between the year 2006 to 2021. Some common sites I relied upon include ESPN, school and local newspapers, and USA Today. If I did not specifically find articles that stated that the coach was fired by the school, I did not qualify them as being terminated. Coaches who were described as having "mutually agreed to part ways," resigned from his position, or left his position for a different school were all counted as an exit from a school without being fired. The exit per year variable is defined as 0 if the coach did not leave his position at the year's end, 1 if he left but was not fired, and 2 if he left and was fired.

Data on total pay, which combines scheduled school pay, bonuses earned, other payments, and possible pandemic pay deductions for 2020 and 2021, was drawn from USA Today, which has been releasing salary information of FBS coaches since 2006, with the most recent edition being released for the 2021 season. Unfortunately, they did not report coaches salaries for 2008 and therefore, the salary information is missing for every coach during that year. I considered taking the average of a coach's salary for the years they were employed by the school and substituting that value in for 2008, but it would have provided a less accurate result as this salary is not accounted for factors such as inflation, and generally, college football has seen a massive increase in revenue and pay for coaches over the past decade. For simplifying purposes, total pay will be presented in log form for the regression model.

I determined whether a coach was white or not based on meticulously observing headshots of each coach, and there were some occasions when it was difficult to determine whether a given coach was white or not. I conducted further studies on the coaches' ethnic

backgrounds if there was information available, and also looked for possible pictures of their parents to determine if they were minorities. Coaches who were a mix of caucasian and a different race were still classified as minorities for the purposes of this study.

Finally, data on coach wins, bowl appearance and bowl win/loss in a given year, and total years of experience were all taken from Sports Reference. Every coach in my dataset has coached at least one season after 2006, but for the purposes of the hazard regression model, I collected data on every single season each coach in my dataset has coached, even before 2006. In order to run the survival model, I required data on how many years at the school it took for the coach to get fired. For example, the longest tenured coach in my dataset, Joe Paterno, who had started coaching at Penn State in 1966, was in his 41st season of coaching in 2006. He was fired after the Jerry Sandusky scandal in 2011, so it took 46 years for him to “fail to survive.” Finally, if a coach is employed at multiple schools between the years 2006 to 2021, I treated that as if he was several different coaches for the purposes of this study. Lane Kiffin is a prime example as someone who was the head coach of Tennessee for one season in 2009 before taking a job at the University of Southern California, where he spent four seasons before being fired. He re-emerges later as a head coach of Florida Atlantic in 2017 where he spent three seasons before taking the job at Ole Miss, where he is still employed. For the survival analysis, Kiffin will be treated as one coach who got fired, two coaches who exited without being fired, and one coach who has yet to exit his school.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Exits per year	1900	.171	.377	0	1
Total pay	1783	1828118	1687613	0	11132000
Non-white coach	1900	.121	.326	0	1
Wins	1898	6.571	3.117	0	15
Bowl appearance	1900	.513	.5	0	1
Bowl win	1900	.258	.438	0	1
Years of experience	1899	11.422	6.756	1	46

Table 1 displays the summary statistics for the key variables I will be testing in my research. I observe that there is a good amount of turnover amongst head coaches, with 17.1% of coaches exiting their current positions, fired or not, on average each year. Another key statistic to be observed here is the low number of non-white head coaches in a given year, about 12.1% of the FBS head coaches are non-white on average. Figure 1 displays the percentage of non-white coaches over time, and while the figure shows an encouraging trend with the number of minority coaches increasing, it also tells me that there is a long way to go for equality in the workforce.

Figure 1:

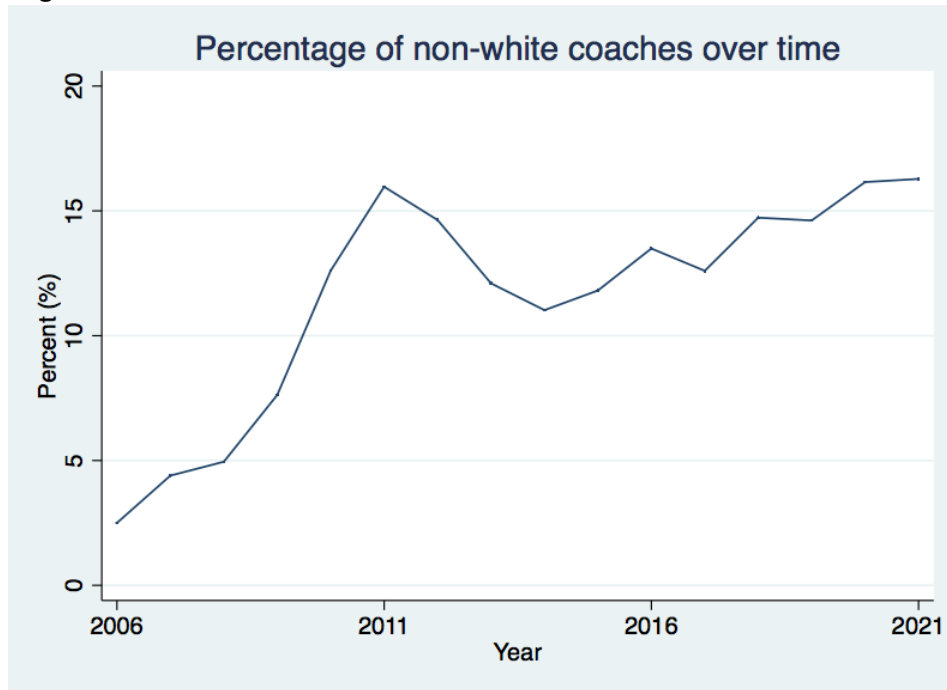


Figure 2 displays the average annual salary of white and non-white coaches between 2006 and 2021. The salary discrepancy had been slowly getting smaller over time, with minority coaches even receiving a higher average total salary than white coaches in 2014. However, the recent 2020 and 2021 trends seem discouraging, as the gap has once again widened between them. A potential explanation for this could be that minority coaches faced harsher pay deductions due to the COVID-19 pandemic and the schools having to cut some funding because of this. This is an idea I will test in the log total pay regression model later on.

Figure 2:

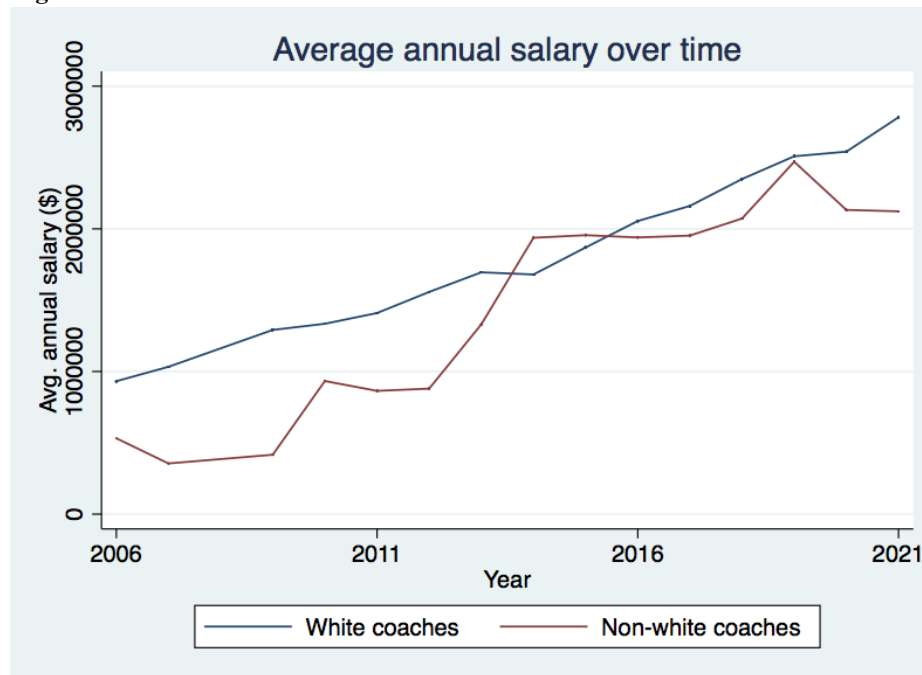
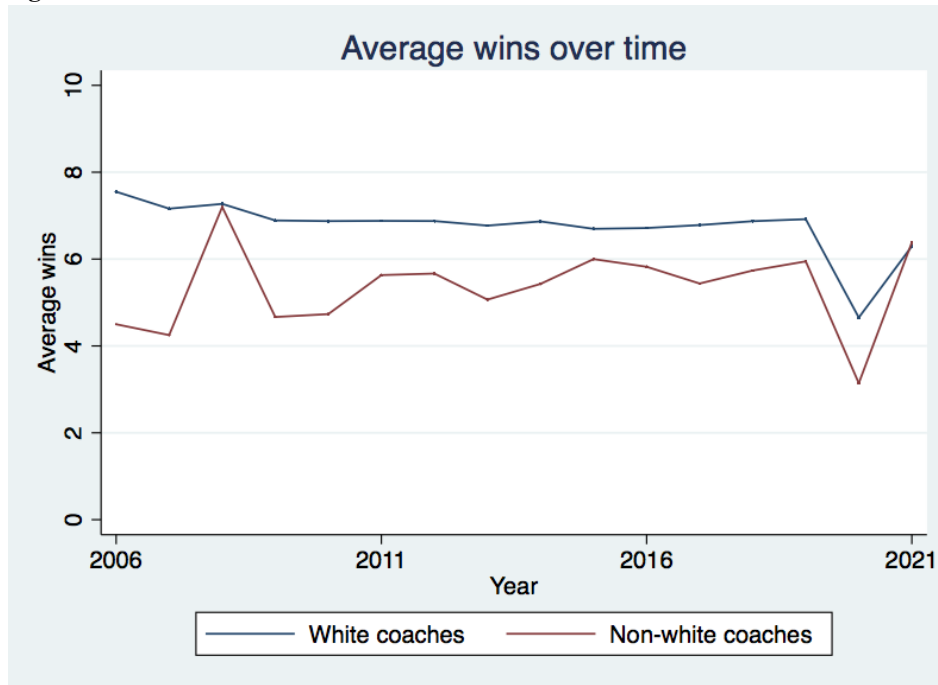


Figure 3 highlights the average wins for white and non-white coaches between 2006 and 2021. White coaches consistently average more wins than minority coaches with the exception of two seasons. There is a drop in wins for both during 2020 because the season was shortened by the pandemic for many schools. Overall, the consistent differences in coach performance based on race could potentially be attributed to the fact that white coaches get hired at better, more established schools.

Figure 3:



In order to test my hypothesis that being a non-white coach is negatively correlated with retention rates, I will employ a survival models estimating the hazard of being fired at a given time t . In order to achieve this I will use a Cox proportional hazard model as outlined below:

$$\log(h_{i,s,c,t}) = \beta_1 \text{non white}_{i,s,c,t} + \beta_2 \text{wins}_{i,s,c,t} + \beta_3 \text{wins}_{i,s,c,t-1} + X_{i,s,c,t} + \alpha_t + \gamma_s + \delta_c + \varepsilon_{i,s,c,t} \quad (1)$$

where $h_{i,s,c,t}$ is the hazard rate for an individual coach i at school s in conference c during year t . I introduce $\beta_3 \text{wins}_{i,s,c,t-1}$ to determine if the prior year's performance of the team is a strong indicator for coaching turnover. $X_{i,s,c,t}$ accounts for the additional control variables in the hazard model, which include bowl appearance, bowl win, and years of experience. α_t indicates time

fixed effects, γ_s for school fixed effects, and δ_c for conference fixed effects. Finally, $\varepsilon_{i,s,c,t}$ corresponds with the error term which includes all the factors of retention which I fail to account for with my explanatory variables.

Second, to test my next hypothesis that being a non-white coach is negatively correlated with salary, I employ the following regression:

$$\begin{aligned} \ln(\text{salary}_{i,s,c,t}) = & \beta_0 + \beta_1 \text{non white}_{i,s,c,t} + \beta_2 \text{wins}_{i,s,c,t} + \beta_3 \text{wins}_{i,s,c,t-1} + \beta_4 \text{pandemic}_{i,s,c,t} \\ & + \beta_5 \text{non white} X \text{pandemic}_{i,s,c,t} + X_{i,s,c,t} + \alpha_t + \gamma_s + \delta_c + \varepsilon_{i,s,c,t} \end{aligned} \quad (2)$$

where $\ln(\text{salary}_{i,s,c,t})$ is the natural log of total pay for an individual coach i at a school s in a conference c over a given year t . The same controls and fixed effects as equation (1) remain in place for this regression model with the exception of the inclusion of a pandemic variable and an interaction between the non-white variable and pandemic variable. The pandemic isolates the years to just 2020 and 2021, and I will be testing for joint significance between the pandemic and the interaction variable to determine if minority coaches faced larger pay disparities during the height of the pandemic.

IV. Results

Retention Rates

Table 2 displays the Cox regression model output in terms of hazard ratios. Numbers above 1 indicate a higher likelihood of being fired, while numbers below 1 indicate a lower likelihood. I also ran a proportional hazard test and the p-values are displayed at the bottom of the table. The purpose of a PH test is to determine the smoothness of the survival curve that is being analyzed to make sure it follows the consistent, declining pattern. If the p-values are greater than 0.1, which is the case with all of our output, we fail to reject the null hypothesis.

Column 1 displays the correlation between non-white coaches and the likelihood of being fired. I observe that being a non-white coach is related to a 73.0% increased chance of being terminated, and that is statistically significant at the 99% level. The immediate point to note is the staggering difference in retention between white and minority coaches. The Kaplan-Meier survival estimates shown in Panel A of Figure 4 is a visual representation of the unadjusted hazard regression. I observe that during the tenures of white and minority coaches, minority coaches get fired at a faster rate on average and therefore have a much steeper hazard curve.

Table 2: Cox Regression Model - Hazard Ratios

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Non-white coach	1.730*** (0.357)	2.452*** (0.544)	1.710** (0.361)	1.918*** (0.416)	1.873*** (0.402)	1.520* (0.329)
Wins				0.778*** (0.022)	0.766*** (0.024)	0.903** (0.039)
Last season's wins				0.964 (0.030)	0.974 (0.032)	0.983 (0.033)
Years of experience						0.943*** (0.017)
Bowl appearance						0.216*** (0.074)
Bowl win/loss						1.176 (0.467)
School FE		Y		Y	Y	Y
Conference FE			Y			
Year FE					Y	Y
Observations	1,900	1,900	1,899	1,851	1,851	1,850
PH test (p-value)	0.645	0.999	0.999	0.999	0.999	0.999

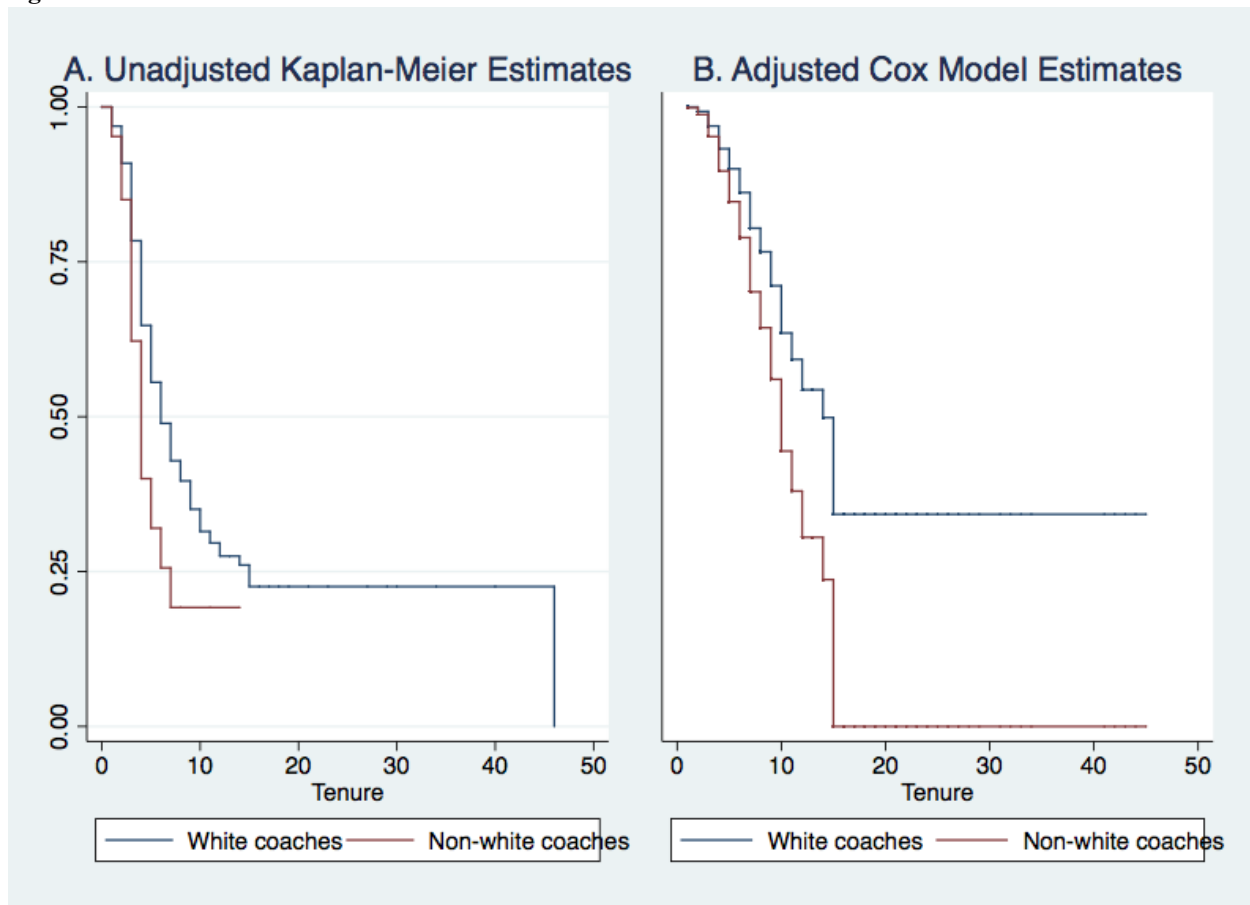
Robust seeform in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Column 2 incorporates school fixed effects into the model, comparing the likelihood of a minority coach to get fired to a white coach within the same school, and there are some staggering results. After controlling for school fixed effects, a non-white coach now has an astronomically high 145.2% higher chance of being fired compared to their white counterparts; statistically significant at the 99% level. For Column 3, I replaced school fixed effects with conference fixed effects in order to determine if effects of discrimination were larger within

conferences, which contains clusters of different schools within a given region of the country, or whether they were very school specific. I find that after controlling for conference fixed effects, being a non-white coach is related to a 71.0% higher chance of being fired, which was statistically significant at the 95% level. Interestingly enough, with conference fixed effects, the likelihood of being fired is extremely close to the raw Cox regression that was run in Column 1. I determined from Columns 2 and 3 that discrimination in head coach retention is much more specific to within individual schools than in conferences.

Figure 4:



In Column 4, I incorporate controls for wins and a win lag as an extension on the regression from Column 2. The number of wins are a direct attribute of a coach's success at a college or university, and presumably has a large impact on whether a coach is retained or not. Furthermore, adding in the prior season's wins for each school before a coach was hired could potentially highlight whether minority coaches are brought into more underachieving programs. I find that being a non-white coach is related to a 91.8% higher chance of being fired, holding all else in the model constant, and that is statistically significant at the 99% level. Furthermore, the hazard ratio of 0.778 demonstrates that a coach is significantly less likely to be fired if they win more games; significant at the 99% level. Column 6 incorporates calendar year fixed effects into the current model, and overall I observe very little changes in the output. Here, being a non-white coach is related to a 87.3% more likelihood of being fired, all else held equal. The significance still holds up at the 99% level. The wins variable has a hazard ratio of 0.766; in other words, winning an extra game is related to a 23.4% less likely chance of being fired. It is still statistically significant at the 99% level. The win lag variable is still insignificant at all levels. The lack of much variation in the output demonstrates how evidence of discrimination persists within each year.

Finally in Column 6, additional controls were incorporated to determine if the effects of race would be mitigated. The control variables added here were: total years of coaching experience, whether a given coach i appeared in a bowl game each season or not, and whether he won that game or not. After adding in these variables, being a non-white coach is related to a 52.0% higher chance of being fired, all else in the model held constant. It is significant at the 90% level, however, I will note that the p-value of this output was 0.054, which indicates just how close to 95% significance this result is. A hazard ratio of 0.943 for years of experience

shows that the longer you have been a coach, the less likely you are to get fired, and is statistically significant at the 99% level. One extra year of experience is related to a 5.7% increase in predicted retention. The astonishing outcome to focus on is the bowl appearance variable, which has a hazard ratio of 0.216, significant at the 99% level, which tells me that a bowl appearance will increase a coach's chance of retention for that season significantly. Whether the coach wins or loses that bowl game seems to matter less, as the value is insignificant. The effect of wins here are also mitigated after these controls are added, as the variable now has a hazard ratio of 0.903, significant at the 95% level. The Panel B graph in Figure 4 is a visual representation of the predicted survival curves for white and minority coaches with all of the controls and fixed effects from Column 6. I observe that white coaches are still consistently more likely to be retained after each given season compared to minority coaches.

Salary

Table 3 captures the regression outputs from equation (2), with non-white coach as the treatment variable and log total pay as the response variable. Column 1 displays the standard OLS regression with no added controls or fixed effects, and I observe a statistically insignificant result which does not point to any particular correlation between race and salary. Column 2 adjusts for calendar year fixed effects, and now observe that being a non-white coach is related to a 12.5% decrease in predicted annual salary.

Table 3: Ordinary Least Squares

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Non-white coach	-0.069 (0.068)	-0.134** (0.062)	0.060 (0.060)	0.160*** (0.058)	-0.005 (0.029)	0.010 (0.029)	-0.004 (0.033)
Wins			0.053*** (0.007)	0.023** (0.010)	0.004 (0.004)	0.020*** (0.004)	0.004 (0.004)
Last season's wins			0.079*** (0.007)	0.065*** (0.007)	0.021*** (0.003)	0.037*** (0.003)	0.021*** (0.003)
Years of experience				0.034*** (0.003)	0.009*** (0.002)	0.011*** (0.002)	0.009*** (0.002)
Bowl appearance				0.134** (0.061)	0.008 (0.023)	-0.018 (0.028)	0.008 (0.023)
Bowl win/loss				0.056 (0.051)	-0.020 (0.020)	-0.022 (0.024)	-0.020 (0.020)
Pandemic							1.237*** (0.052)
Pandemic X non-white coach							-0.004 (0.062)
School FE					Y		Y
Conference FE						Y	
Year FE		Y	Y	Y	Y	Y	Y
Observations	1,651	1,651	1,613	1,612	1,612	1,612	1,612
R-squared	0.001	0.106	0.253	0.310	0.916	0.854	0.916

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, *

p<0.1

Column 3 builds on this by incorporating wins and a win lag as controls. The significance for non-white coach and log total pay once again goes away, while wins and prior season's wins are both statistically significant at the 99% level. An extra win during a given season is related to

a 5.3% increase in predicted wage, while an additional win during the prior season is related to a 7.9% increase in predicted wage. This aspect is simple to comprehend intuitively, as more success will lead to a higher paying contract and opportunities to earn more in bonuses.

In Column 4, I include the control variables: years of experience, bowl appearance, and bowl win. Contrary to my initial hypothesis, Column 4's results show that being a non-white coach is related to a 17.4% increase in predicted total pay, all else in the model held constant. This is statistically significant at the 99% level. The effects of wins and prior season's wins are mitigated from the inclusion of other controls. An additional year of coaching is related to a 3.4% increase in predicted pay, and a bowl appearance within a given year is related to a 13.4% increase in predicted pay. The bowl appearance aspect most likely is related to the potential bonuses and other payments the coach receives from qualifying for a bowl game.

The addition of school fixed effects in Column 5 helps tell an extremely interesting story in conjunction with Column 4. After controlling for school fixed effects, the statistical significance disappears once again, and there seems to be no relationship between race and salary within schools. The results from Column 4 help explain the following idea that bigger, more established programs are more likely to hire minority coaches as they are under a larger spotlight from the general public, which explains why they would theoretically get paid more on average than their white counterparts when comparing across schools. However, once controlling for school fixed effects, I observe that there is no difference in pay between white and minority coaches within schools, thus disproving my initial hypothesis that schools would see an opportunity to undercut minority coaches and pay them less. Furthermore, the bowl appearance and win variables are now no longer statistically significant and seemingly have no relationship to pay within a given school. Years of experience and last season's wins are still significant at the

99% level, but their effects have been mitigated as well, with years of experience being positively correlated with salary at 0.9%, and last season's wins at 2.1%. Another point of note is that the R-squared value in Column 5 is significantly higher than the R-squared value in Column 4, indicating that a majority of the variation in the dataset exists from different schools. I also wanted to observe whether comparing within conferences instead of schools would change the outcome, which Column 6 displays. There is still seemingly no relationship between salary and race, although the coefficient sign of non-white coach flips from negative to positive. Furthermore, wins are related to a 2.0% increase in predicted pay within conferences, significant at the 95% level, which was not the case when I employed school fixed effects.

Finally, as an extension, I was interested to see if there was evidence of minority coaches facing discrimination in pay during the COVID-19 pandemic, as Figure 2 seemed to possibly imply. In order to test this theory, I incorporated the variable pandemic as well as an interaction between pandemic and non-white coach. I then ran a joint significance test between the pandemic and interaction variables to determine if there was evidence of discrimination. The p-value was 0.000, and therefore we reject the null hypothesis and conclude that there is statistically significant evidence that there was discrimination in pay during the pandemic altered seasons of 2020 and 2021.

V. Conclusion

In this study, I find evidence of differences in retention rates across races conditional on several controls. The final adjusted Cox regression model predicted a staggering 52.0% higher likelihood of a minority coach being fired compared to a white coach, thus confirming my initial hypothesis. While there has been slight progress made in terms of more minority representation amongst the college football coaching spheres, getting hired is not enough; the schools and the NCAA need to be held accountable in making sure that the minority coaches are also receiving the same level of support from the program that white coaches receive. While hiring a minority coach may generate positive press for programs, the same minority coach may face higher expectations and more scrutiny, and may not be awarded with a “grace period,” to be able to turn the program around.

Furthermore, in my Cox regression analysis, I found that wins, years of experience, and bowl games were all positively correlated with retention. The lag in wins and bowl wins seemingly had no effect. While wins and years of experience were decent predictors of retention, by far the most telling control was the appearance in a bowl game, or lack thereof, which seemed to truly make or break the likelihood of being fired for many coaches. An appearance in a bowl game is the pinnacle of college football for many programs, and qualifying for one also signifies increased revenue and media attention on the school. There is a great deal riding on a bowl game appearance, and it makes sense that schools will determine a coach’s success or failure based on whether they were able to lead the program to this event.

In the second part of my research, I found no significant evidence that minority coaches face a discrimination in pay within schools or conferences. Moreover, wins, prior season’s wins, and years of experience all affect a coach’s total salary, but the coefficients were all small,

indicating that none of these controls affect pay very highly. It seems the wage a coach earns is very much tied to the institution they are employed at. The study demonstrates that once a coach is hired by the school, they are likely to earn the same amount of money, regardless of their race; contradicting my initial hypothesis that schools would see an opportunity to undercut minority coaches because they may not receive as many opportunities as white coaches for job vacancies. However, instead of focusing on pay discrepancy, this could be more of a barrier to entry issue, that getting hired is the problem, not the pay that comes afterwards. Further research is needed to determine whether a program's hiring process is outright discriminatory towards minority coaches.

Discrimination within professional and collegiate sports has been an issue that has been discussed extensively. Flores's class action suit against the NFL and its owners is a prime example of why many believe these organizations still exhibit rampant discriminatory behavior. My study reveals a few key insights that could be applied to practices in the general labor market as well. While many institutions look to increase their diversity because it will make them look better in the eyes of the public, it is important for us to wonder whether minorities are receiving the same level of support and guidance that their white counterparts are receiving. In the case of college football coaches in the FBS during the years 2006 to 2021, the answer is no, minority coaches do not seem to receive the same level of patience and confidence from the schools that white coaches seem to enjoy. Furthermore, it is also important to wonder if colleges are openly discriminating against minorities during their hiring processes, which could be especially ambiguous as the NCAA has no rules equivalent to the Rooney Rule. In the FBS, only 41.4% of the players are white, and yet a majority of the coaches are still white (NCAA). The discriminatory practices of professional and collegiate level sports teams require more attention,

as these findings could highlight the inequality that exists for not just for different races, but for different genders and ethnicities as well.

Works Cited:

- Blair, Peter Q., and Bobby W. Chung. 2021. "A Model of Occupational Licensing and Statistical Discrimination." *AEA Papers and Proceedings*, 111: 201-05.
DOI: 10.1257/pandp.20211112
- Chandra, Amitabh. 2000. "Labor-Market Dropouts and the Racial Wage Gap: 1940-1990." *American Economic Review*, 90 (2): 333-338.
DOI: 10.1257/aer.90.2.333
- Cunningham, Jamein P., and Jose Joaquin Lopez. 2021. "Civil Rights Enforcement and the Racial Wage Gap." *AEA Papers and Proceedings*, 111: 196-200.
DOI: 10.1257/pandp.20211111
- LaFave, Daniel, Randy Nelson, & Michael Doherty. 2018. "Race and Retention in a Competitive Labor Market: The Role of Historically Black Colleges and Universities in NCAA Basketball." *Journal of Sports Economics*, 19(3): 417–451.
<https://doi.org/10.1177/1527002516637650>
- Madden, Janice F., & Matthew Ruther. 2010. "Has the NFL's Rooney Rule Efforts 'Leveled the Field' for African American Head Coach Candidates?". *Journal of sports economics*, 12(2), 127–142. <https://doi.org/10.1177/1527002510379641>
- Mixon, Franklin G., Len J. Treviño. "How race affects dismissals of college football coaches." *Journal of Labor Research*, 25, 645–656 (2004).
<https://doi.org/10.1007/s12122-004-1015-8>
- Myerberg, Paul. 2018, September 27. "Lack of black head coaches in major college

football still crucial issue for universities.” USA Today. Retrieved December 1, 2021.

<https://www.usatoday.com/story/sports/ncaaf/2018/09/27/black-head-coaches-fbs-adopt-rooney-rule-policy/1437792002/>.

O'Neill, June. 1990. "The Role of Human Capital in Earnings Differences between Black and White Men." *Journal of Economic Perspectives*, 4 (4): 25-45.

DOI: 10.1257/jep.4.4.25

Paine, N. (2020, January 14). *The Rooney Rule Isn't Working Anymore*. FiveThirtyEight.

Retrieved April 30, 2022, from

<https://fivethirtyeight.com/features/the-rooney-rule-isnt-working-anymore/>

Seifert, K. (2022, April 7). *Brian Flores' NFL lawsuit and a 'fake interview process': Everything*

we know about Steve Wilks, Ray Horton additions and what's next. ESPN. Retrieved

April 30, 2022, from

https://www.espn.com/nfl/story/_/id/33690532/brian-flores-nfl-lawsuit-fake-interview-process-everything-know-steve-wilks-ray-horton-additions-next

Volz, Brian D. 2013. "Race and the Likelihood of Managing in Major League Baseball."

Journal of Labor Research, 34, 30–51.

<https://doi.org/10.1007/s12122-012-9153-x>

"College Football Head Coach Salaries." *USA Today*. Accessed December 1, 2021.

<https://sports.usatoday.com/ncaa/salaries/football/coach>

"Coach Index." *Sports Reference College Football*. Accessed December 1, 2021.

<https://www.sports-reference.com/cfb/coaches/>