

**The Value of Talent Recruitment: Analyzing the Impact of Ethnic
Campus Diversity and Social Movements in College Football Recruiting**

by

Antonio Prada Martin

A thesis submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Master of Science

Auburn, Alabama
May 6, 2023

Keywords: Campus Ethnic Diversity, NCAA College Football Recruiting, Rational Choice
Theory, college choice, social movements, BLM

Copyright 2023 by Antonio Prada Martin

Approved by

Dr. Natalia Ruiz-Junco, Chair, Associate Professor in the Department of Sociology,
Anthropology, and Social Work

Dr. Ryan Thomson, Assistant Professor in the Department of Agricultural Economics
and Rural Sociology

Dr. Brian Bourdeau, Associate Professor in the Department of Marketing

ABSTRACT

Many U.S. higher education institutions compete for top talent in academics, administration, and athletics. Particularly college football is a major business and marketing tool for promoting the university to current and prospective stakeholders. Therefore, the recruitment of top athletic talent is crucial and considered to be the “lifeblood” of every college football program. The purpose of this thesis is to quantify the potential underlying effect of campus ethnic diversity (CDI) levels affecting college choice decisions among high school football recruits within an otherwise highly business-focused system. Most recruiting outcomes can be explained using classical rational-choice theory while an extension of this theory (using the concept of value-oriented social action) is required to explain the effect of campus ethnic diversity as another decision factor in the process. This effect could also impact internal university brand identification (UBI) among the student body. Utilizing fixed effects (FE) regression methods, the generated results show that some high school football recruits consider campus ethnic diversity as a college choice decision factor in certain recruiting cycles (2018 and 2021) during the analyzed period of 2017-2021. In a qualitative secondary-analysis study, using available (Berkman Klein Center) Media Cloud platform data, the main study results can be explained by relatively high online media news coverage associated with the global BLM (Black Lives Matter) movement. The analysis results suggest that major public universities (FBS schools) reporting low campus ethnic diversity levels could be disadvantaged when competing for nationally ranked high school football recruits during times of high societal tensions. Since the United States will experience a significant demographic shift in the next decade, some universities should analyze their strategic and geographic positions with respect to their peer institutions and generally boost their ethnic diversity make-ups among student bodies and faculty to attract even more high-quality diverse talent in the future.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my thesis advisor, Dr. Ruiz-Junco, for her guidance, support, and encouragement throughout my research. Her expertise, constructive feedback, and dedication have been invaluable in shaping the direction of this work.

I would also like to thank the members of my thesis committee, Dr. Thomson and Dr. Bourdeau, for their insightful comments, suggestions, and feedback, which helped to refine and improve the quality of my research. Their valuable input and critical evaluation have been instrumental throughout the process.

Finally, I would like to express my gratitude to Auburn University for providing me with the opportunity to pursue my graduate studies and for the resources and facilities that were made available to me during my research.

TABLE OF CONTENTS

Abstract.....	2
Acknowledgements	3
Table of Contents	4
List of Tables.....	5
List of Figures.....	5
List of Abbreviations	6
Chapter 1 Introduction.....	7
Chapter 2 Literature Review	21
Chapter 3 Data Discussion	40
Chapter 4 Methods.....	51
Chapter 5 Results Discussion	74
Chapter 6 Conclusion.....	90
References	98
Appendices	103

LIST OF TABLES

Table 1 Recruiting data and Campus Diversity Index data (CDI), 2017-202046

Table 2 U.S. News & World Report Campus Diversity Index (CDI), 202048

Table 3 Selected Universities’ CDI scores and their respective county DI levels.....50

Table 4 VIF test results (FE model).....76

Table 5 Model output results: OLS and Fixed Effects (FE) models77

Table 6 CDI: Campus Ethnic Diversity Index (Study Area).....87

LIST OF FIGURES

Figure 1 Timeline of Black Lives Matter (BLM) related events.....36

Figure 2 Boxplots of average and total recruiting classes, 2017-2021.....42

Figure 3 Panel data set: Average recruiting classes for five Schools between 2017-2143

Figure 4a Large and equally sized groups with diversity Index of 50%45

Figure 4b Large and equally sized groups with diversity Index of 75%45

Figure 5 Comparison of available U.S. News CDI data (2018 vs 2020) 47

Figure 6 Model Hypothesis: Direct CDI impact on University Brand Identification (UBI).....53

Figure 7 Extended Model: Indirect CDI impact on University Brand Identification (UBI)54

Figure 8 Study Process Flowchart.....73

Figure 9 Ordered word cloud based on “BLM” search term (2020).....80

Figure10 National media coverage (BLM, share) vs modelled CDI beta coefficients (FE).82

Figure11 U.S. Ethnic Diversity Index (county-level) and CDI levels for selected universities.86

LIST OF ABBREVIATIONS

ACC	Atlantic Coast Conference
BLM	Black Livers Matter
CDI	Campus Diversity Index (U.S. News & World Report)
DI	Diversity Index (county-level)
FBS	Football Bowl Subdivision
G5	General-5 schools (NCAA classification)
HBCU	Historically Black Colleges and Universities
NCAA	National Collegiate Athletic Association
P5	Power-5 schools (NCAA classification)
PAC-12	Pacific-12 Conference
PWI	Predominantly White Institutions
RAND	RAND Corporation
RCT	Rational Choice Theory
SEC	Southeastern Conference
UC	University of California system (e.g., University of California, Berkeley)
UCLA	University of California at Los Angeles

1. INTRODUCTION

Generally, the college football recruiting market is being studied from a rational-choice decision making perspective taking mainly economic-driven factors into account, while largely ignoring other possible non-economic driven elements during the recruiting process. However, decision making processes are generally more complex and additional factors should be considered when analyzing college choice decision making outcomes among nationally ranked high school football recruits. These factors could include socio-cultural and individual-level factors such as ethnic diversity levels of college campuses, emotions, interpersonal connections to a school, region, or coaching staff, and even a recruit's legacy status, among other factors. Moreover, mainstream media coverage of national events could also play a role in the recruiting process, especially during times of societal tensions. In this thesis, I will mainly focus on analyzing possible implications of social-cultural factors and how different ethnic diversity levels of major FBS college campuses could potentially impact college choice decision making outcomes among high school football recruits.¹

In December 2021, five-star football recruit Travis Hunter who was the overall top national recruit in the 2022 recruiting class decommitted from powerhouse program Florida State University and signed with a Historically Black College and University (HBCU), Jackson State University and its rising football program led by influential head coach and Pro Football Hall of Famer Deion Sanders. Hunter explained, "I am making this decision so that I can light the way for others to follow" (Henderson, 2022).² In a similar case, five-star Basketball blue chip recruit

¹ FBS - Football Bowl Subdivision (formerly, Division 1A) - represents the highest level of collegiate athletics in the United States.

² In early 2023, Travis Hunter decided to transfer to the University of Colorado following his head coach Deion Sanders, who is now the new head coach at the University of Colorado.

Markus Maker chose HBCU, Howard University, over traditional so-called blue blood programs, UCLA and the University of Kentucky, in 2020. Further, Maker explained his decision as follows: “I need to make the HBCU movement real so that others will follow” and added that “he hopes to inspire other top talents to follow his lead” (Schad, 2020). Similarly, 5-star elite gymnastics prospect Morgan Price made headlines when she de-committed from SEC school Arkansas and signed with Fisk University (HBCU) and its new startup gymnastics program in 2022. In an interview, Price stressed that she “wants other Black gymnasts to not be afraid to take risks and to do what they love” (McFarland, 2022). These are three prominent examples that occurred during the height of the global Black Lives Matter (BLM) movement in recent years. These recruiting outcomes suggest that value-based decision-making outcomes can have a possible effect on college athletic recruiting.

It is possible that these unanticipated recruiting outcomes are merely a few prominent examples of a current trend already occurring across the nation. The National Center for Education Statistics reports that HBCU student enrollment numbers are significantly up when compared to previous years. For instance, premier HBCUs like Morehouse College in Atlanta, Georgia, reported a 60 percent rise in applicant volume from 2019 to 2020 (Miranda, 2016). Despite overall declining college enrollment statistics countrywide, HBCUs now record an increase of up to 30% in application numbers from 2018 to 2021 (Green, 2022). The previously highlighted examples are mainly the most prominent and heavily covered events in college athletics recruiting, while recent HBCU enrollment trends show that a growing number of highly qualified African American applicants turn down opportunities such as attending major national universities for various reasons. However, it is unclear whether this phenomenon also applies to recruiting outcomes when strictly considering only major public universities and state flagship

institutions, directly competing for ethnic diverse athletic talent. In this case, some universities could have structural and socio-cultural recruiting advantages over other schools. More specifically, some schools could benefit from higher campus ethnic diversity levels or simply by being surrounded with counties reporting higher ethnic diversity levels.

In this study, I will mainly focus on high school football recruits and their decision outcomes drawing on classical rational-choice theory (RCT) and then investigate whether value-based rational social actions could lead to college choice decision making outcomes not fully associated with economic-driven motives in specific situations. More clearly, in this thesis, I will study the potential impact of social factors, specifically campus ethnic diversity with respect to student-athletes' college choice decisions and analyze whether universities that report lower levels of ethnic diversity are generally disadvantaged in recruiting top athletic talent. In addition, several other possible economic-driven impact factors will be considered in this analysis in the form of control variables. Specifically, I will use fixed effects (FE) regression methods and a panel data set where the dependent variable is represented by average recruiting points which is used to rate college football team recruiting classes (247sports.com). In addition, I will utilize the U.S. News & World Report campus ethnic diversity index (CDI) as a critical independent variable, among other factors. The main hypothesis is that campus ethnic diversity could generally influence college choice decision making processes among prospective student athletes. This potential effect could be a subtle but structural underlying effect overshadowed by other major effects more prominently associated with successful recruiting outcomes (e.g., quality of coaching staff, brand power, and state-of-the art athletic facilities, among others). Therefore, I will mainly consider the overall quality of college football programs' recruiting classes represented by average recruiting rating points and computed by national recruiting

services such as 247Sports. Most FBS college football programs should not have any issues signing talent and meeting their recruiting numbers. However, the overall quality of a recruiting class should reveal certain differences among programs. The most talented high school football players normally receive dozens of offers from the top college football programs in the nation. The general assumption is, that high school football recruits will prioritize direct and indirect economic-driven factors such as the quality and prestige of a football program, successful coaching staff, state-of-the art facilities, and team roster dynamics, among others when making college choice decisions. In this thesis, I will also consider another potential criterion based on individual preferences (e.g., a socially valued factor such as the campus ethnic diversity level of a school). Several researchers, including Dumond et al. (2008), Harris (2017), Borghesi (2017), Huml et al. (2018) and Chung (2013), show that certain factors are critical in recruiting talented student athletes and are driven by economics factors, such as investing in athletic facilities, hiring high-level coaching staff, expanding recruiting areas, and maintaining large recruiting budgets, etc. However, these studies mainly focus on economic factors privileged by classical rational-choice theory rather than also considering value-based rational social actions and do not account for factors that would go beyond basic economic-driven decision factors.

1.1. Applications of Rational Choice Theory

The idea of rational choice theory (RTC) can be applied to college choice decision making and specifically athletic recruiting. Harris (2017) approaches the recruiting process from a college football program's perspective even though it can be regarded as a 'two-sided matching

market'.³ Furthermore, Harris considers football programs as organizations that produce wins while “[...] student-athlete labor is an input in the wins production technology [...]”, where schools “compete for the best-quality athletes through the use of non-price competition” by offering a limited number of scholarships every year (Harris, 2007, p.270). Harris’ classical microeconomic approach which explains college football programs as rational market players with the objective to maximize output is useful for understanding the market from a “buyer’s perspective”. Dumond et al. (2008) discuss the expected decision-making process with respect to rational choice theory and utility maximization in college athletic recruiting. The authors argue that recruits selecting colleges are interested in maximizing their utilities while minimizing accrued costs. However, Dumond et al. (2008) concede that not all decisions can be fully explained based on rational choice theory and decide to choose a new Bourdieusian approach with a social, organizational, and cultural context to account for college choice decisions. In addition, Green (2002) acknowledges the limitations of rational-choice theory and discusses issues regarding rational choice theory and proposes an extension by introducing topics such as ideology and intransigence. Furthermore, drawing on Roemer (1985), Green suggests that solidarity among coalition-forming groups and class consciousness could play a role in certain decision outcomes. In this case, individuals could make group-based decisions rather than following strictly individual interests. Further, Green explains how rational decision making and emotions (sympathy, anger, and concerns) could decisively influence decision outcomes. As these authors suggest, we need to extend rational choice theory to account for these limitations.

³ In game theory, a two-sided matching market consists of a set of two agents from both sides of a market who can only be matched with an agent from the other side. In this study, the two main agents would be high school football recruits and college football programs. Both agents’ preferences indicate that they prefer this match over other possible matches, given the market situation (Guala, 2016).

Therefore, in order to extend the limiting theory of classical rational choice theory, this thesis introduces the idea of value-based rational social action.

The idea of value-based rational social action is borrowed from renowned sociologist Max Weber. Weber studied and discussed several ideal types of social behavior, including goal-oriented rational activity (means-end rational action) and value-oriented rational action (substantive rational action). Means-end rational action is goal-oriented, while value-oriented rational action is centered on values and involves "subordinating reality to values" (Kalberg, 1980, p.1161). Understanding that value-oriented action is influenced by the actors' beliefs as well as rational cognitive processes are important. According to Weber, behavior is social, subjective, and influenced by the deeds of others. Therefore, actions of agents influencing other agents and subsequent outcomes can be considered by utilizing social media and mainstream media activities. Specifically, media portrayal of social movements such as BLM could play a role in influencing recruits to re-evaluate their priorities with respect to college choice decision making outcomes. This could especially apply to Afro-American recruits and extend to general student applicants. It is noteworthy that, even though mainstream media coverage does not change the pre-existing attitudes of media consumers, it does reach and appeal to Black media consumers who are likely to identify with most BLM core values (Kilgo & Mourao 2018).

1.2. The Role of Black Lives Matter (BLM) and Media Portrayal

This thesis takes the position, that the current Black Lives Matter (BLM) movement might be affecting society on different levels, including the recruitment of diverse (athletic) talent. The BLM movement was founded in 2013 and has developed into a global movement over the years.

Since 2013, several major events have occurred that made national news headlines resulting in nation-wide protests. Most notably, the killing of George Floyd sparked numerous protests worldwide and transformed the Black Lives Matter movement into a global civil rights movement in 2020. In addition, many prominent leaders in sports, business, and entertainment made use of their powerful voices addressing the American people on this issue. Mundt et al. (2018) explore in their study how the BLM movement uses social media to “scale up” in order to build connections, mobilize participants and resources, and manage to build its coalition (Mundt et al., 2018). A PEW Research Center study (2018) analyzed the usage patterns and contents of #BlackLivesMatter hashtag tweets posted on Twitter between 2013 and 2018 (Anderson et al., 2018). The study found that the BLM hashtag was used nearly 30 million times on Twitter during this period. Moreover, the study also analyzes the contents of topics highlighted in the #BLM related tweets and found that the topic of “race” was mentioned in 25 percent of all tweets and more often than other topics. This suggests that the BLM movement is not mainly political in a sense that it cannot be associated with a specific political party and might be used to (partially) connect the topics of “race” to other topics of interest. Even though the BLM movement is not political at its core, it could still affect political discourse and policy making. In this thesis, I will show that data associated with the BLM movement can be helpful to explain changes in societal dynamics affecting outcomes when it comes to career decision making choices. More specifically, I will use an available online platform (Media Cloud) and generate additional data which will allow me to validate and explain some of the study’s main results by directly comparing this generated media data set to produced regression output results in a secondary analysis.⁴

⁴ Media Cloud [is] “a joint project of the Berkman Center for Internet & Society at Harvard University and the Center for Civic Media at MIT, is an open source, open data platform” (Media Cloud, 2021).

Generally, the role of mainstream and social media in mobilization and the portrayals of protest movements (such as BLM) in society is highly complex. The BLM movement has gained support and finally developed into a global movement that has a greater impact on many facets of society, including the media, business, academics, and politics. Umamaheswar (2020) describes this movement as a new kind of modern social protest that is enhanced by social media platforms, particularly Twitter, which foster a sense of community. In contrast, mainstream media coverage is essential for informing the public, mostly focusing on events rather than explaining the protests' goals. In fact, the way that protests are generally portrayed in the media serves to uphold the status quo (McLeod & Detenber, 1999), which is also known as the "protest paradigm" (Chan & Lee, 1984). This could also help explain why social media is so popular and effective among protestors and many young BLM supporters. However, due to limited data availability, I will mainly use mainstream media data rather than social media data in the second secondary analysis part of this study.

1.3. Racial/Ethnic Diversity as a College Choice Decision Factor

Other academic studies already addressed the topic of diversity and college choice making decisions among general student applicants. Braddock and Hua (2006) found that a school's athletic reputation can be a specific factor among other impact factors in the decision process of high school football recruits. In fact, it was the strongest factor within the social considerations category. Asquith (2021) analyzed whether students value campus cultural diversity highly as part of their educational experience. Overall, surveyed students valued campus diversity as

moderately important. Furthermore, Comeaux et al. (2020) analyzed the impact of cultural campus diversity in the University of California system on students' college choice decisions. According to the researchers, many high-achieving Black students were offered admissions to the lower ranked UC campuses, and then decided to accept offers from other highly ranked national public and private universities, including Ivy League schools. Respondents who turned down these UC schools explained that they generally ranked UC universities highly but were concerned with low levels of campus ethnic diversity with respect to Black student population representation. This study shows that the topic of racial diversity can be a factor in college choice decision making among highly talented students. It could be possible that some less prominent high school football recruits make similar decisions based on non-economic factors thus violating classical rational choice theory assumptions. This effect could be partially measured by using campus ethnic diversity as a potential impact factor. I will explore this topic more in detail in the following sections.

1.4. The Role of College Athletics and University Brand Identification (UBI)

Generally, I will explore the role of media coverage and the concepts of rational-/value-based social actions within a more comprehensive theoretical framework introduced by Yao et al. (2019). In their paper, Yao et al. (2019), studied the potential impact of campus diversity (measured by CDI) on internal university brand identification (UBI) and brand citizenship behaviors among college students. The study found that campus diversity does not negatively influence UBI and positively impacts brand diversity awareness. However, the researchers did

not prove a direct positive impact of CDI on UBI. In this study, I will not directly measure the potential impact of CDI on UBI but measure the indirect relationship between CDI and UBI via college athletics, which, combined with mass media is a function of UBI according to Yao et al. (2019)). The hypothesis states that CDI might positively impact college football recruiting classes. Further, it is expected that more talented recruiting classes are more likely to translate into talented teams and potentially generate successful football seasons. Therefore, higher ranked recruiting classes should produce more wins which in turn should positively influence internal UBI among the student body as a side-effect. This framework could help us to understand how elevated campus-diversity levels and high-quality college football recruiting could generally lead to more successful athletic programs and then eventually drive internal university brand identification which should benefit the entire campus community.

1.5. College Athletics as a Business and Marketing Tool

College football does not merely benefit talented recruits who want to improve their careers and lives long-term. Most universities in the United States compete for academic, administrative, and athletic talent. In fact, collegiate athletics - specifically college football - is a crucial marketing tool to promote the university to academic talent including faculty and students. Moreover, college football generates billions of dollars of revenues to athletic departments and creates additional “free advertising” as a by-product. In 2021, College athletic programs (public universities only) generated a combined income of approximately 7.2 billion dollars and reported expenses of 7.6 billion dollars in the Football Bowl Subdivision (FBS).

However, some conferences such as the Southeastern Conference (SEC) and BIG 10 are more profitable generating more revenue (\$1.6bn, \$1.5bn, respectively), when compared to other major conferences such as the ACC (\$0.80bn) and PAC-12 (\$0.86bn) (Knight-Newhouse, 2021). Furthermore, certain events can have an additional effect boosting other outcomes, such as student applications. The so-called “Flutie effect” which refers to the outcome of a 1984 college football game between Boston College and the University of Miami (FL), resulted in college applications to increase by 25% at Boston College in the following years (Braddock & Hua, 2006). Similarly, North Carolina State University (NCSU) reported an increase of 40% in student applications due to winning the NCAA College Basketball Championship in 1983 (Braddock & Hua, 2006). Moreover, in a HBS working paper, Chung (2013) showed that general college football success can increase applications by 18 percent, an increase that could only be achieved by either lowering tuition by roughly four percent or hiring more higher-quality faculty. This study also shows that universities tend to become more academically selective triggered by athletic success over the years. Overall, college athletics is a major priority for many universities because it generates additional revenue and improves their positions in terms of academic and athletic rankings with respect to peer universities.

In the following sub-section, I will propose an approach and use some of main analysis’ key data in a post-analysis study utilizing conventional GIS (Geographic Information System) methods. Technically, this analysis is an independent analysis, but the general main analysis results support this post-analysis in a conceptual way.

1.6. Real-World Application

It is possible to utilize GIS (Geographic Information System) applications in a geographically oriented approach to determine the strategic positionings of major public universities. This allows for spatially displaying data and then comparing universities and determining their geographic strategic positions with respect to each other. Since some universities are located in less favorable recruiting areas than others (considering same adjacent regions), these schools will have to invest more resources to attract qualified diverse student applicants in the future. It is assumed that universities already reporting adequate campus ethnic diversity levels could have a built-in advantage in the future. Therefore, I will map some of the available data (mostly CDI and DI data) and qualitatively examine how large public universities (FBS-P5 schools) are situated geographically in relation to their peer institutions.⁵ This analysis only covers schools in the Southeast and Midwest regions and has no direct bearing on the findings of the primary study analysis (regression results). However, I will generally refer to the main study results as a basic confirmation of the assumption that ethnic diversity plays a role in college choice decision making processes among some high school football recruits in certain recruiting cycles. More clearly, the spatial post-analysis is a “stand-alone” qualitative analysis or visualization of some of the most crucial data (including CDI data) used in the main analysis which displays the geographic positions of selected universities and their strategic positions vis-à-vis other peer institutions when considering campus and county-level ethnic diversity levels.⁶ The objective is to visually display the utilized data and propose potential qualitative analysis

⁵ CDI stands for Campus Index Diversity and DI stands for (county-level) Diversity Index.

⁶ In this GIS-type post-analysis, selected universities are limited to major FBS universities based in the US Southeast and Midwest regions, and are also used in the main analysis.

methods which could inspire university planners and administrators to conduct additional research relevant to regional recruiting areas.⁷

Summarizing, the purpose and objective of this thesis is to identify and quantify the potential underlying effect of campus ethnic diversity affecting college choice decisions (driven by value-based social rational action) among student athletes within a generally highly business-focused and rational-driven two-sided matching market system. This underlying possible phenomenon might be amplified by societal movements and generally triggered by certain events (e.g. BLM-related events). Schools with higher campus ethnic diversity levels could be able to produce higher ranked recruiting classes, which could eventually translate into more successful football seasons. This effect could positively (or at least not negatively) impact internal universal brand identification (UBI) among the general student body as a side effect.

This analysis could also be applied to other NCAA sponsored college sports such as College Baseball, Basketball, and College Gymnastics, but general differences in recruiting philosophies and the wide availability of College Football data allows for a more effective and systematic analysis. Furthermore, this topic might be also relevant to academic and administrative recruiting as well as other industries and organizations reporting low levels of ethnic and racial diversity among their employees. For instance, Franklin (2021) states that “Black workers are the least represented minority group in the Silicon Valley high-tech workforce, constituting only 2% of the workforce at many of the top firms” Franklin (2021, p.69). Microsoft reports that merely 4.9 percent of its 2019 global workforce was African American (McIntyre, 2020), while Google is hiring more Black+ people (who comprise 8.8 percent of the Google workforce as of 2021) but is struggling to retain them according to a recent

⁷ Even though the study mainly analyzes college choice decision making among high school football recruits due to data availability, analysis results could also be applicable to the general recruitment of academic talent.

Bloomberg article (Grant, 2021).⁸ This raises questions about the loss of long-term productivity in less diverse organization, as qualified and talented people of color may tend to leave workplaces that are not ethnically/racially diverse. This situation also reduces employment options for people of color who would be otherwise qualified to accept coveted positions in leading industries. Furthermore, other sectors such as the military are also interested in leveraging diversity advantages to maximize their strategic and operational effectiveness capabilities according to a recent RAND Europe research paper specifically focused on the U.K. and U.S. armed forces (Slapakova et al., 2022). This study analyzes how the armed forces could effectively improve recruitment by employing more recruiters with diverse backgrounds and managing a diverse workforce to address current challenges. Opportunities such as “enhanced group creativity”, “enhanced innovativeness”, “rapid adaptation”, and “contribution of unique skillset” may lead to improvements in the quality of organizational decision-making (Slapakova et al., 2022). However, in this thesis I will exclusively focus on measuring the potential effect of ethnic diversity within the realm of NCAA college football recruiting.

⁸ Black+ includes all Googlers who identify as Black, in addition to those who identify as Black and any other race (Google 2021 Diversity Annual Report, 2021).

2. LITERATURE REVIEW

In this thesis, I will investigate how universities attract the best talent in college football based on various impact factors. Since high school football recruiting is a complex process involving various influence factors leading to a decision outcome, I will review four different subject areas of literature that deal with specifics in collegiate recruiting and general decision-making processes, including collegiate athletic recruiting, extended rational choice theory, diversity in higher education, and topics in social movements.

2.1. Collegiate Athletic Recruiting

Several studies show that certain factors are critical in recruiting talented student athletes and are driven by investing in facilities, coaching staff, expanding recruiting areas, and maintaining high recruiting budgets, among others (Dumond et al., 2008; Harris, 2017; Borghesi, 2017; Huml et al., 2018; Chung, 2013). However, these studies mostly focus on factors such as creating infrastructure in athletics and generally increasing athletic budgets but fail to consider socio-cultural aspects such as campus ethnic diversity as another potential impact factor.

Harris (2017) approaches the recruiting process from a college football program's perspective even though it can be regarded as a "two-sided matching market". This market dynamic is comparable to other industries in academia including medical interns and hospitals, and the general academic job market involving Ph.D. candidates and academic employers (Harris, 2007). Furthermore, Harris considers football programs as organizations that produce wins while "student-athlete labor is an input in the wins production technology" where schools

“compete for the best-quality athletes through the use of non-price competition” by offering a limited number of scholarships every year (Harris, 2007, p.270). Harris’ classical microeconomic approach which explains college football programs as rational market players with the objective to maximize output, is useful for understanding the market from a “buyer’s perspective”. However, it is important to understand that this is a monopolistic market situation highly regulated by the NCAA and its members.

Generally, collegiate recruiting is highly regulated by the National Collegiate Athletic Association (NCAA), which is a non-profit organization and the national governing body of collegiate athletics in the United States. According to its website (NCAA.org), the NCAA is a member-led organization and boasts 102 athletic conferences, 1,098 colleges and universities, and nearly half a million college athletes. Further, the NCAA is “dedicated to the well-being and lifelong success of college athletes” and “prioritizes academics, well-being, and fairness so college athletes can succeed on the field, in the classroom and for life” (NCAA.org, 2022). Its members consist of college presidents, athletic directors, sports information directors, compliance officers, conference staff members, faculty athletics representatives, coaches, among others. This organization specifically regulates college sports recruiting. The recruiting process is strictly regulated; for instance - universities can only contact recruits during certain periods. The recruiting calendar can be different for certain sports and consists of specific periods such as evaluation, contact, dead, and quiet periods. College coaches and staff members cannot directly contact recruits during quiet periods and are limited during dead periods. College coaches already start recruiting high school sophomores with the objective to develop meaningful relationships by regularly visiting high schools and inviting prospects to on-campus summer camps and later conducting in-house visits. The relationship between college coaches and

regional high school coaches is considered to be another critical factor in recruiting. It is crucial to understand that the “collegiate recruiting process is a two-sided matching problem” since recruits “select schools, and institution select which players to recruit” (Dumond et al., 2008, p.70). This means that recruiting is a complex process with an original pre-selection phase where schools scout, pre-select, and provide offers to recruits who eventually accept one of these offers. Highly rated recruits can collect dozens of offers during the process but will mostly focus on certain preferred schools later in the process.⁹ Furthermore, recruits are granted a total five official visits (limited to one per school) and the NCAA grants an unlimited number of unofficial visits. Official visits allow schools to formally invite, host and accommodate their preferred recruits. These visits usually occur during home games or close to signing day periods (travel and lodging costs are covered by the respective institutions). Moreover, recruits can always verbally commit to their preferred universities during any period. However, commitments are non-binding and coaches, and school representatives are not permitted to openly discuss “commitments” with the media and boosters.¹⁰ Further, it is not uncommon for committed recruits to de-commit from one school and then commit to another school during the recruiting process before the official signing date. The Football Division 1 signing period consists of two dates, the early signing period in December and the final signing period starting in February. Even though high school football recruits are still allowed to sign with schools by April, most

⁹ Recruits publicize their non-binding verbal commitments by announcing them on social media platforms such as Twitter and Instagram while some high-profile recruits even commit on live national and local tv. Recruiting services then collect this data and update the recruiting status for each rated and ranked prospect in near real-time.

¹⁰ The NCAA defines a booster as a person who is a “representative of the institution’s athletic interests” which includes donors and other persons who are not official institutional staff members (NCAA.org, 2022). Boosters are not allowed to interact with recruits and cannot provide any types of benefits or incentives to recruits. Importantly, the U.S. Supreme Court concluded that the NCAA and its member school violated anti-trust laws and now allows players to financially benefit from its Name, Image, Likeness (NIL) in 2021. This means college athletes are now allowed to accept compensation for certain services such as public speaking, selling autographs and participating in advertising related activities (e.g., endorsing certain products). Currently, it is unclear how this might affect recruiting. U.S. states do have different NIL laws and the new landscape has yet to be fully regulated. However, since this analysis period ends with the 2021 recruiting class, NIL will not impact this study.

recruits tend to sign in December and February since available scholarships are limited. The NCAA historically restricted college football programs to signing 25 recruits for each recruiting class. However, rules change regularly and currently schools can sign high school football players provided the overall roster limit of 85 is not exhausted (NCCA.org, 2022). Other than high school players, college football programs are permitted to recruit and sign JUCO (junior college) players and accept transfers from other institutions. Nevertheless, schools always must meet the 85-roster requirement regardless of player classification. In this analysis, I will only focus on high school and junior college recruits, disregarding transfer players due to the possibility of incomplete data.¹¹

Recruiting student-athletes to athletic programs is considered the ‘lifeblood’ of college athletic programs. Athletic departments invest millions of dollars in recruiting budgets and hundreds of millions of dollars in athletic facilities and coaching staff to attract the best talent available. Top athletes indirectly generate huge amounts of income due to broadcasting rights, post-season payouts, and sponsorship deals, and additionally attract many million dollars of donations from the alumni base, regular fans, and other stakeholders. Borghesi (2017) calculates that the top football athletes (5-star recruits) generate \$1.2 million of revenue per season (on average) plus attract another \$1.3 million in donations amounting to total revenues per 5-star player of roughly \$.2.5 million / year. Similarly, 4-star players generate annual revenue of \$ 0.8 million total, and 3-star players generate almost \$ 0.1 million on average per season. In addition, free PR and media exposure promote the whole university to a national audience potentially

¹¹ The NCAA transfer rules changed decisively with the introduction of the revised transfer portal in April 2021. This means college transfers do not have to sit out for one year anymore and are declared eligible immediately. The new rule has changed college athletic recruiting and institutions have now started to actively recruit transfers from other institutions. This new dynamic is not fully captured in this analysis since the analysis period ends with the 2021 recruiting class (February 2021 signing period). Therefore, we can largely ignore this rule change in this study given that this new effect will not significantly distort the results.

attracting higher quality faculty and student applicants in the long run. Borghesi (2017) also finds that top recruits (5-star and 4-star prospects) tend to sign with larger universities while 4-star players are generally attracted to programs that have higher academic rankings unlike 5-star players who are mostly focused on athletics. In addition, universities with larger student enrollments and metro area populations also attract more talented prospects according to this study (Borghesi, 2017).

Many factors can influence college choice decisions depending on an athlete's individual preferences. However, most of these factors are universal and apply to most recruits. Popp et al. (2010) conducted a study surveying 355 college athletes across all major NCAA sponsored sports (only two respondents were football players, and most respondents were involved in Olympic sports, however). In this survey, the researchers identified 39 attributes that could partially influence a recruit's decision-making process when signing with a major college program. The top self-reported factors for U.S. student-athletes choosing a school were "degree", "overall reputation", "level of competition", "team members", "personality of head coach", "academic reputation of school", and "athletic facilities". Other factors such as "tradition", "chance of conference title", and "attractiveness of campus" still ranked in the top half. Some of these factors might not apply to college football recruits who might have different priority rankings. Nevertheless, it is essential to test most of these factors to avoid the overestimation of certain potential impact factors in the model. In addition, universities normally spend billions of dollars on upgrading athletic facilities to attract the best athletes and coaches. In fact, "Power 5 programs invested \$6 billion dollars on direct and indirect facility improvements between 2003 and 2016" (Huml et al., 2019, p. 7). Huml et al. (2019) analyzed whether investing enormous amounts of dollars in upgrading athletic facilities resulted in a positive ROI with respect to

recruiting athletes. The researchers could only find a marginally significant impact of two years prior to project completion but no other impact on recruiting rankings otherwise. This is mostly due to the ongoing ‘arms race’ in college football which involves most major FBS schools constantly upgrading facilities and thus minimizing any potential competitive advantage, (Huml et al., 2019). However, the researchers did not analyze whether facilities upgrades might help to recruit higher profile coaches; this could eventually lead to higher ranked recruiting classes in the long-term. In another research study, Dumond et al. (2008) focused on geographic location affecting a recruit’s college choice decision. The researchers calculated the distance between the recruits’ locations and the university campus locations and integrated the variable into the model. It was found that location and distance could influence college choice decisions, especially with the Southern United States region standing out. Other impact factors in the model functioning as control variables were academic rankings, conference titles, conference affiliation, and stadium capacity, among others (Dumond et al., 2008).

2.2. Rational Choice Theory (RCT) and Utility Maximation

Since high school recruits have a number of choices and compete against each other for scholarships in an open market, we can utilize rational choice theory when pre-selecting a set of variables for the model. Rational choice theory is a useful framework to understand an agent’s individual behavior with respect to decision-making processes given a set of preferences. However, rational-choice theory can be limiting and requires economic and especially sociological extensions such as Weber’s rational action theory. From an economics perspective,

“Rational Choice Theory: An Overview”, Green (2002) summarizes basic well-known assumptions about rational choice theory and reviews general extensions while discussing perceived irrational behavior of agents during the decision-making process. The basic assumptions are based on economic principles and assume individual decision-makers are representative of a larger group in a market setting. Green lists the relevant axioms of consumer preferences and explains how these are represented with a utility function. The agent is determined to maximize utility by choosing a preferred alternative while acting within the presence of constraints. Green further highlights additional elements of classic rational choice theory (environment and market equilibrium) and then discusses other extensions. The idea of a dynamic model and the concept of discounting (by balancing present consumption versus expected future consumption) is addressed along with elements of uncertainty, incomplete information, and strategic behavior. Green then discusses certain cases involving issues with rational choice theory and its limitations. We will further discuss this limitation more in detail in the methods discussion section. Generally, it is essential to expand these mostly economically focused components of RCT and introduce social theory to the discussion to fully comprehend complex decision-making processes. Sociologist Max Weber addressed many ideal-typical forms of social behavior, such as goal-oriented rational action (also known as practical or means-end rational action) and value-oriented rational action (also labeled substantive rational action). While value-oriented rational action is primarily value-focused and involving the "subordination of realities to values", means-end rational action is goal-oriented and the cornerstone of rational-choice theory (Kalberg, 1980, p.1161). It is crucial to realize that value-oriented behavior is thought to be motivated by logical thought processes, but it is also influenced by the actor's

beliefs. Weber contends that behavior is social, subjective, and influenced and provoked by other people's actions.

Generally, rational choice theory can be applied to college choice decision making and specifically athletic recruiting. Dumond et al. (2008) discuss the expected decision-making process with respect to rational choice theory and utility maximization. The authors argue that recruits selecting a college “do so to maximize their expected discounted lifetime utility” by rationally evaluating the “discounted accrued benefits of attending each school against the discounted accrued costs” (Dumond et al., 2008, p.71). The “major benefit for students and student athletes of attending college” lies in human capital and “its productivity of the recruit in the labor market” according to the researchers (Dumond et al., 2008, p.71). This certainly means that improved productivity would be based on higher levels of skills and would increase compensation in the future. Student athletes might consider academic and athletic factors differently depending on their perceived likelihood of graduating college and/or being able to play football professionally. In order to become a successful and productive NFL player, recruits will most likely focus on colleges with the highest chance of graduating from the college ranks to the professional league. Therefore, recruits most likely value certain factors (e.g. team/school performance, media attention, playing time, and facilities) and then do consider certain costs (e.g. location and distance from home to college), including direct costs (scholarships are provided but recruits could compare different offers and their financial values) and indirect costs (e.g. travel costs for family members to attend games) with the objective to maximize net benefits (Dumond et al., 2008). The researchers considered these factors in their analysis and found that recruits are mostly concerned with immediate playing time, media exposure and stadium capacities, conference affiliation, and geographic distance, and that this is more

important than team success (such as winning games and titles in previous seasons). However, this does not mean that recruits will always automatically select schools with the lowest distance (only 40 percent of recruits decided to prioritize distance and stay close to home) (Dumond et al., 2008). In their paper, McDonough and Antonio (1996) study how students of different ethnic backgrounds make college choice decisions given certain restraints (including capital endowment, past educational and financial attainment of parents, past capital accumulation, and anticipated capital reinvestment). The researchers chose a new Bourdieusian approach which considers the social, organizational, and cultural context to account for college choice decisions. Even though the study is mostly focused on general student applicants, it also references student athletes' experiences. In this thesis, I will address this complex process by introducing and discussing rational choice theory and its potential application to college football recruiting. This theory is covered more in detail in the method discussion section.

2.3. Ethnic Diversity in Higher Education

In this study, I am mostly concerned with determining the potential impact of racial and ethnic diversity on college football recruiting. For the purposes of this thesis, I will completely rely on U.S. News generated "Campus Ethnic Diversity (CDI)" data. Therefore, I will refer to ethnicity as "racial and ethnic diversity" and adopt the original terminology as used by U.S. News & World Report by mostly using the term "ethnic diversity" to generally reflect the idea of "racial/ethnic diversity". Furthermore, I am mostly focused on two racial identifications in this analysis. Since I will analyze the college choice decisions of high school football players with

respect to campus ethnic diversity, it is imperative to focus on the available pool of talent. According to the NCAA demographic database (2021), the racial/ethnic breakdown of student-athletes (of all Division I Football) is mostly characterized by Black (44-45%) and White (40-41%) players (between 2017 and 2021).¹² Therefore, I will mainly focus on Black and White high school football recruits in this study. However, this approach will be applied to the secondary and post-analyses rather than the main analysis, which still relies on the official U.S. News Campus Ethnic Diversity index and reflects the overall diversity on U.S. college campuses. The level of campus ethnic diversity ranges widely among universities and could reveal a relationship between a school's ethnic diversity make-up and athletic recruiting success. In order to measure location-based ethnic diversity, Meyer and MacIntosh (1992) devised the "USA Today Index of Ethnic Diversity" as a tool to compare ethnic diversity distributions within populations with a single number (Morse, 2021). This methodology is used by U.S. News to calculate campus ethnic diversity levels for all major universities across the United States. This measure will function as the key independent variable in this analysis and is explained more in detail in the data discussion section.

As previously discussed, college athletics can be a great factor and marketing tool significantly boosting applications. This impact factor also generally applies to college choice decisions among African American high school students. Braddock and Hua (2006) found that a school's athletic reputation can be a specific factor among other factors in the decision process. In this study, African American high school seniors were surveyed and asked to rank the main factors influencing their college choice decisions: While academic reputation, financial aid and

¹² The numbers are comparable but more skewed towards African American student athletes when considering FBS P-5 schools (45% percent of college football players were Black, 37% of college football players White) and FBS G-5 schools separately (51% of players were Black; 33% of players, White) in 2021 - according to the NCAA demographic database (2021).

costs, job placements, special degree programs, and graduate school placement were the leading factors, it was found that a school's athletic reputation was still a somewhat important factor (31%) among male Afro-American students. In fact, it was the strongest factor within the social considerations category. Further analysis revealed that male African American applicants with higher socio-economic status (SES) attending public high schools placed significant more value on athletic reputation during the college selection phase when compared to their female counterparts or students with lower rated SES backgrounds. This study shows that college athletics can have an impact on college choice decision making among African American applicants (from higher SES backgrounds) which leads to the hypothesis that successful athletic programs could attract higher numbers of minority applicants and thus drive campus ethnic diversity.

In other related studies that mostly focus on studying the impact of campus ethnic diversity on university identity and culture, Asquith (2021) and Comeaux et al. (2020) analyzed the impact of cultural campus diversity in the University of California system on students' college choice decisions. In this study Asquith (2021), analyzed whether students value campus cultural diversity highly as part of their educational experience. Overall, students valued campus diversity as moderately important. Furthermore, female students seem to be more concerned with campus ethnic diversity than male students and students who work full-time are generally less concerned with this matter. These researchers also stressed that improving diversity is not merely a "numbers game" and that the topic of diversity should be genuinely promoted and supported by administrators to achieve an inclusive academic environment. Similarly, Comeaux et al. (2020) conducted a qualitative study interviewing high achieving African American students, who turned down offers from various University of California (UC) schools. Overall, the percentages

of African American students enrolled at the top UC flagship campuses is very low when compared to other racial groups. According to Comeaux et al. (2020), many high-achieving Black students were offered admissions to the lower ranked UC campuses, but finally decided to accept offers from other highly ranked national public and private universities, including Ivy League schools. Most of these students were second and third-generation college students who had attended competitive high schools. In other cases, Black students turned down offers from highly rated schools such as UCLA and UC Berkeley due to lack of relative campus racial diversity, specifically when compared to the relatively low numbers of African American students.¹³ The researchers explain that the topic of racial diversity is mostly important to “first-generation college-going” African American and Latino students when compared to White and Asian students. Respondents who turned down these schools explained that they generally ranked these UC flagship universities highly but were concerned with low levels of campus ethnic diversity and how it “did not reflect the community in terms of compositional diversity”, (Comeaux et al., 2020, p.425). These students stressed the “importance of a critical mass of Black students” as a requirement “to feeling welcome on campus” (Comeaux et al., 2020, p.426). This study shows that the topic of racial diversity can be a decision factor in college choice decision making among highly talented students.

Furthermore, Yao et al. (2019) show that higher levels of campus ethnic diversity do not negatively influence university brand identification and may even improve brand citizenship behaviors among college students. Internal university brand identification is a crucial intangible asset to universities, which can be greatly enhanced by mainstream media coverage, social media usage, and collegiate sports programs (Yao et al., 2019). The study found that campus diversity

¹³ This could raise the question of whether perceived relative campus ethnic diversity might be different from overall campus ethnic diversity. Some schools might still report high levels of campus ethnic diversity even though a certain ethnic group could be clearly under-represented.

positively influences social trust (generalized interpersonal trust) and cultural diversity awareness. However, the study failed to detect a direct positive impact of campus ethnic diversity on university brand identification. In contrast, multigroup ethnic identity has a positive impact on social trust and university brand identification. The study did not investigate possible indirect effects such as campus ethnic diversity potentially affecting athletic recruiting and retention which in turn could still indirectly influence university brand identification. Generally, it is essential to promote and improve campus ethnic diversity among student bodies to enhance social trust and cultural diversity awareness, and eventually improve university brand citizenship behaviors as recommended by the researchers. Since campus ethnic diversity by itself does not directly drive university brand identification but ethnic identity is still positively associated with brand identification, it is essential to provide resources to students to learn more about their own ethnic identities. This could help them to identify more with their respective universities; this in turn could boost retention rates, and long-term alumni involvement and giving, (Yao et al., 2019).

Additionally, Sidanius et al. (2010) reveal in their book “The Diversity Challenge: Social Identity and Intergroup Relations on the College Campus”, how campus diversity affects and enhances social identity and relations among college students. The researchers show that racial prejudice decreases in an environment of high-level campus ethnic diversity. In a similar study conducted in the Southern United States, Walker-DeVose et al. (2019) show that African American and White students have different perceptions of their college experiences with respect to their cross-racial experiences. Since student-athletes belong to a certain exclusive group on campus, it is crucial to understand whether this effect might be either amplified or alleviated. Winkle-Wagner et al. (2018) compare college diversity experiences of STEM students attending

a predominantly White institution (PWI) and a Historically Black College or University (HBCU). The study results show that respondents attending the PWI institution feel more isolated on campus than participants attending the HBCU institution. Participants with diverse backgrounds suggest that large PWI institutions are not supportive of students with diverse backgrounds. Even with a supportive (STEM) department at the analyzed PWI schools, the predominant culture across campus is not welcoming and supportive to STEM students with diverse ethnic backgrounds. Surveyed students describe this experience as feeling “like an alien” and stress “culture-shock” experiences. In this case, the PWI discussed diversity related topics but did not genuinely embrace this matter. This lack of campus-wide inclusion eventually “overshadows” the (STEM) departments’ efforts negatively influencing the overall experience. In contrast, the HBCU experience is more inclusive due to higher campus diversity. In this case, the analyzed HBCU STEM department even reported a greater number of White students when compared to general institutional demographics. Moreover, the institutional policies and its high level of diversity influenced the department culture positively promoting inclusion within the department. Overall, this study analyzed how institutions with high levels of campus ethnic diversity can influence certain departments even if the department lacks high levels of internal diversity (Winkle-Wagner et al., 2018). This could also be the case for athletic departments that might report high levels of diversity within their respective units but might report lower levels of campus ethnic diversity. More clearly, inclusive athletic departments and their genuine efforts to promote diversity to its athletes could be overshadowed by conflicting institutional culture generally neglecting the promotion of campus ethnic diversity. This could negatively affect athletic recruiting and retention numbers over time.

2.4. Black Lives Matter (BLM) Movement and the Role of Mainstream/Social Media

The utilization of campus ethnic diversity (CDI) as an independent variable in this analysis is a technical measure to identify and quantify the impact of social factors on college football recruiting classes. However, it is suspected that this potential effect is driven by other prevalent factors in society. These other factors are most likely communicated and discussed in public via social media and covered by mass media outlets. Therefore, we could use other data sources such as Twitter, Google Trends, Facebook/Instagram, and media coverage tracking services (e.g., Media Cloud) to compare and partially explain the original analysis results. In this analysis, I will mainly use Media Cloud data as a proxy for social media data due to its availability and then qualitatively compare model outputs to relative media coverage over the years. There are numerous topics potentially influencing people's attitudes and decision outcomes every year. However, in this analysis I will focus on major nationwide movements and closely related topics spanning over several years (2017-2021).

The Black Lives Matter (BLM) movement was founded in 2013 and has developed into a national and more recently global de-centralized network "whose mission is to eradicate white supremacy and build local power to intervene in violence inflicted on Black communities by the state and vigilantes" (blacklivesmatter.com, 2022). Since 2013, several events have occurred that made national news headlines resulting in nation-wide protests. Most notably, the killing of George Floyd (2020) sparked numerous protests worldwide and transformed the BLM movement into a global civil rights movement. Even before this major event, some public figures were already able to influence and inspire followers of the BLM movement. For instance, former NFL player Colin Kaepernick protested police brutality and social injustice by kneeling during the national anthem before football games. This nationally publicized story led to then U.S. President Trump getting involved with this matter. The former President publicly called NFL

team owners to fire players who would protest during the national anthem (see *Fig.1.* for a timeline of major events of the Black Lives Matters movement between 2013 and 2022). These dynamics heavily influenced millions of people’s lives across the United States.

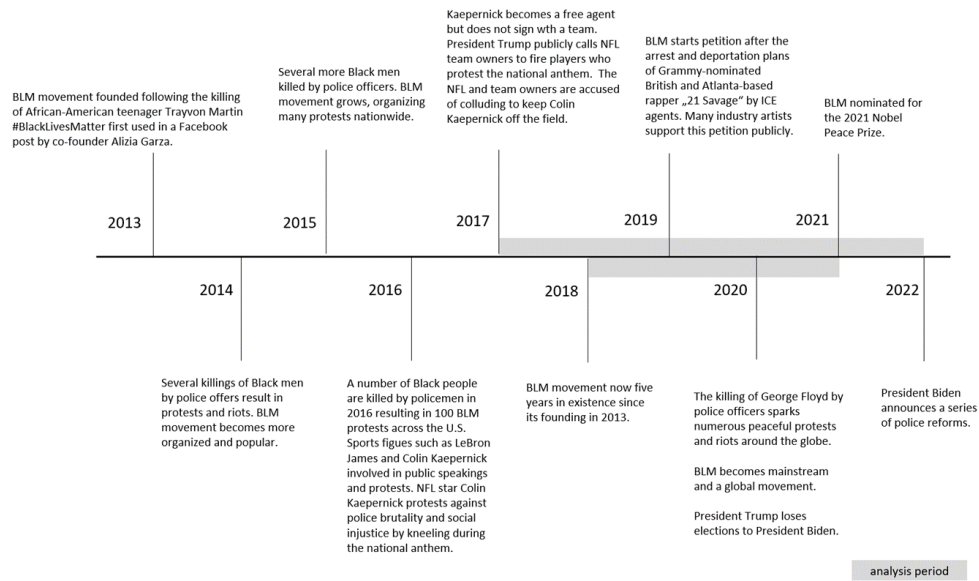


Fig.1. Timeline of Black Lives Matter (BLM) related events

However, BLM and other types of modern movements are not necessarily confined to a certain geographic region as they expand geographically over time relying on word of mouth, and mainstream and social media to spread their ideas and establish networks. In their recent study, Mundt et al. (2018) explore how the BLM movement uses social media to “scale up” in order to build connections, mobilize participants and resources, and build its coalition. The researchers found that BLM-related social media groups grew geographically over time spreading from the U.S. East coast to the Western United States, and eventually to the United Kingdom. Furthermore, the study shows that social media are used as a “tool for mobilizing resources in the form of support networks” and that organizations utilizing social media are capable to gain

(followers by “simply maintaining an online presence”) (Mundt et al., 2018, p. 7). This shows that social media can be a useful measure of the expanding BLM movement over time. More specifically, Twitter is a popular social media platform used by national and local journalists and generally influential young people (especially athletes) who maintain online presences on the platform. A PEW Research Center study (2018) analyzed the usage patterns and contents of #BlackLivesMatter hashtag tweets posted on Twitter between 2013 and 2018 (Anderson et al., 2018). The study found that the BLM hashtag was used nearly 30 million times on Twitter during this period. Further, it shows that certain major news events tend to trigger large number of tweets and identified seven events that created major spikes in the use of #BLM hashtag posts (these events are mostly identical with the listed events in *Fig.1.*). Moreover, the study also analyzes the contents of topics highlighted in the #BLM related tweets and found that the topic of “race” was mentioned in 25 percent of all tweets and more often than other topics such as “Protests (12%)”, “Police, law enforcement (21%)”, and “National politicians / parties (8%)”. This suggests that the BLM movement is not mainly political at its core and can be used to (partially) connect the topics of “race” and “campus ethnic diversity”. However, since specific and historic Twitter and Facebook data is not freely available, I will use publicly available Media Cloud data (online media coverage data) as a proxy to link the topics of awareness for campus ethnic diversity and Black Lives Matter and other related to the regression modeling output results in a secondary analysis.

It should be noted that mainstream media consumption has different impact on views about BLM core ideas. According to a study conducted by Kilgo and Mourao (2018), conservative media use increases negative attitudes towards the BLM movement while liberal media consumption does not positively influence the BLM movement and its core ideas. The

researchers found that the only predictor positively associated with BLM's core ideas is being Black while White and Asian respondents indicate a higher probability of predicting anti-BLM sentiments. Hispanic respondents are less likely to identify with BLM than Black respondents but have less anti-BLM views than other groups. However, it is important that attitudes towards BLM movement's core idea are most strongly correlated with political orientation with liberals less likely to oppose the BLM movement (Kilgo & Mourao, 2018). This study also explains that mainstream media coverage does not change pre-existing attitudes, but it increases media coverage among conservatives who already have negative views of the BLM movement. Increased media interest leads to an increase in sensational media coverage with focus on dramatic events and outcomes mostly reporting about protests and violent actions. This leads to a feedback-loop due to conservative viewers shifting and consuming partisan media outlets (e.g. Fox News) while liberal viewers continue to consume mainstream media outlets. However, journalists mostly fail to adequately cover the movements agenda and background story and liberal viewers are more likely to maintain their respective pre-existing attitudes (Kilgo and Mourao, 2018). Clearly, the BLM movement has grown in popularity and eventually into a global movement, affecting all parts of society including media, business, academia, and politics. According to Umamaheswar (2020), this movement is a "modern form of social protest" fueled and amplified by social media platforms (especially Twitter) providing a sense of community. In addition, mass media coverage is also instrumental in covering protests and providing information to media consumers about the movement. However, based on previous research (McLeod & Detenber, 1999), the media position is to maintain the status quo by focusing on covering actual events and failing to inform on the goals of social movements, thus negatively influencing neutral viewers and readers (Umamaheswar, 2020). This media portrayal is known as

“protest paradigm” (Chan & Lee, 1984) and confirmed by research conducted by Umamaheswar (2020) who analyzed national newspaper articles related to the BLM. In this inductive analysis, the researcher found that mainstream media outlets mostly focused on sensational events and negative effects of social movements, ignoring positive effects and general goals of social movements. This could further explain the popularity of social media among protesters and followers of the BLM movement driving “engagement in social protest movements” and forming a sense of community (Umamaheswar, 2020; van Stekelenburg & Klandermans 2013).

Based on these ongoing dynamics, it is imperative to consider current and future major demographic developments with respect to high school recruiting and related general ethnicity implications. Vespa et al. (2018) conducted demographic population projections for the United States until 2060. In this study, the authors identified a demographic turning point for the U.S. around 2030. This will be influenced by a changing dynamic due to growing net international migration overtaking the natural increase of population growth. Passel et al. (2022) specifically analyze Hispanic growth in the United States which reached 62.1 million in 2020 (+23% increase over the previous decade). The authors found that the relative growth rate of the Hispanic population was largest in counties currently reporting lower levels of Hispanic population, mostly in the Southeastern region. In this study, I will also discuss potential real-world applications by utilizing study results and additional data involving P5 CDI data and current ethnic diversity levels (on county-level) in the Southeast and Midwest. Next, I will then discuss the geographic strategic positionings of universities located in less favorable (low diversity level) recruiting areas when compared to peer schools within their respective regions.

3. DATA DISCUSSION

The full data set consists of 540 observations represented by 108 public FBS universities (FBS status between the 2017 and 2021 recruiting seasons) divided into P5 and G5 subdivisions¹⁴. The data is based on the 2017, 2018, 2019, 2020, and 2021 recruiting classes.¹⁵

3.1. Data: NCAA Recruiting Data (Dependent variable)

The dependent variable is measured by recruiting scores provided by national recruiting services. More clearly, I will analyze publicly available data sets and recruiting ratings for high school football recruits and college football programs provided by national recruiting services such as 247Sports (a subsidiary of ViacomCBS). These services assign a rating score to each available high school recruit and then calculate a respective overall score for each college football program based on their recruiting classes and then rank these programs accordingly. This rating score can be used as a metric and will function as the dependent variable in the analysis. The advantage of using 247Sports data over other recruiting services is that it calculates a composite score taking the ratings of other recruiting services (e.g., rivals.com) into account. Generally, 247Sports relies on NFL front office talent scouts to evaluate prospects and then uses a specific methodology to rate and rank the top players in the nation: “The 247Sports Composite Rating is a proprietary algorithm that compiles prospect "rankings" and "ratings" listed in the public domain by the major media recruiting services. It converts average industry ranks and

¹⁴ FBS (Football Bowl Subdivision) consisted of 127-131 universities during the 2017-2021 seasons. The FBS is further divided into P5 (Power 5) and G5 (General 5) conferences. The complete data set does not include private universities and service academies since these institutions are not required to release any data to the public.

¹⁵ A complete data set for the 2017-2021 recruiting classes can be collected, while other years would only allow for limited data collections due to certain data access limitations. Furthermore, recent significant changes in the landscape of collegiate athletics such as NIL and the transfer portal would make it difficult to statistically isolate certain impact factors on recruiting outcomes using more recent data.

ratings into a linear composite index capping at 1.0000, which indicates a consensus No. 1 prospect across all services” (247Sports, 2012). Specifically, 247Sports rates high school prospects as follows: Each prospect receives a certain rating based on its talent and other factors (ranging from 70 to 110); the highest attainable score range of 98-110 translates into a “5-star player”, while the second highest attainable range of 90-97 constitutes a “4-star player”, and so on down to “3-star” (80-89) and “2-star” players (70-79). Once all players are rated, 247Sports will track the players’ offers and their commitment activities resulting in recruiting classes for all college football teams. Based on this, respective recruiting classes comprising of all college football teams can be nationally ranked based on the recruits’ rating data, which relies on a Gaussian distribution weighting methodology.¹⁶ In this study, I will use the 247Sports “average class rating score” for each school rather than the “total class rating score” since the number of signees varies between schools over the years and could somewhat skew the rankings otherwise. For instance, a school signing 30 players could obtain a higher score than a school signing 25 players in its recruiting class, even though the second school might have signed higher rated recruits overall.¹⁷ This means that signing more players can inflate recruiting team scores and skew analysis results. In this study, we are more concerned with “quality of talent” rather than “quantity of talent”. The main reason for this approach is that most of the schools will always

¹⁶ According to 247Sports.com: “Each recruit is weighted in the rankings according to a Gaussian distribution formula (a bell curve), where a team's best recruit is worth the most points. You can think of a team's point score as being the sum of ratings of all the team's commits where the best recruit is worth 100% of his rating value, the second-best recruit is worth nearly 100% of his rating value, down to the last recruit who is worth a small fraction of his rating value. This formula ensures that all commits contribute at least some value to the team's score without heavily rewarding teams that have several more commitments than others. Readers familiar with the Gaussian distribution formula will note that we use a varying value for σ based on the standard deviation for the total number of commits between schools for the given sport. This standard deviation creates a bell curve with an inflection point near the average number of players recruited per team” (247Sports.com, 2012).

¹⁷ NCAA regulation generally limits college football programs to 85 scholarships players and 25 signees per recruiting cycle. In some cases when schools do not meet their roster allotments, those school might be able to oversign in a certain recruiting cycle, but will have to balance recruiting activities in the following years (NCAA, 2022).

manage to sign recruits since the high school recruiting pool is extremely large.¹⁸ However, the most talented and highest rated recruits have more options than average rated recruits. The following boxplots (*Fig.2.*) show that average recruiting points have a range between 76.46 and 94.98 points and that the mean slightly increases over the years (on average). In contrast, data based on total recruiting points ranges between 48.49 and 323.87 points over the years, which means there is a wide range of dispersion within the data set not accounting for several factors, such as teams only signing a low/high number of recruits resulting in lowly or highly ranked recruiting classes (based on this point rating system). Since we are mainly interested in analyzing quality-based recruiting classes instead of quantity-based recruiting classes, we can account for this issue by using the 247Sports.com generated average recruiting class data set, for each recruiting cycle.

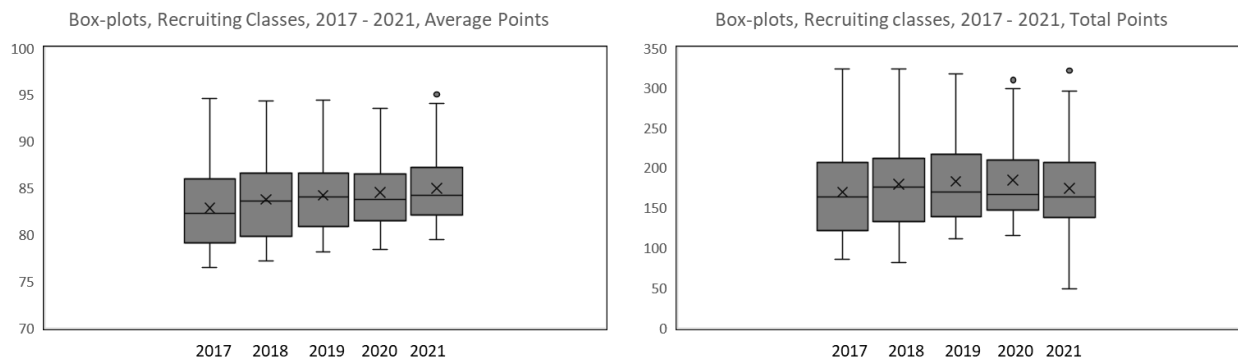


Fig.2. Boxplots of Average and Total Recruiting classes based on 247Sports.com, 2017-2020

Since 247Sports.com recruiting data sets are available for 108 Division I (FBS schools) over 5 years, we will have to use specific statistical analysis methods such as fixed effects (FE)

¹⁸ According to NCAA.com (2020), there are roughly 1 million high school football players in the United States and 73,600 student-athletes get to play college football (in any given year). However, only 600-700 student-athletes get signed by the Top 25 programs in the U.S. each year (this number includes transfer players and Junior College football signees).

regression methods that can handle panel data sets. In *Fig.3.*, this panel data set is simplified and visualized, showing the recruiting classes (based on average points) for 5 schools over the years. This whole data set includes five years of recruiting classes for 108 FBS schools and requires using fixed effects regression methods in order to account for omitted variable bias across the entities (schools).



Fig.3. Panel data set: Average recruiting classes for five schools between 2017 and 2021, based on 247Sports.com, 2017-2021

3.1. Data: Campus Ethnic Diversity Index

The most critical independent variable in this analysis is a score that measures campus ethnic diversity (U.S. News Campus Diversity Index (CDI)). Universities report a wide range of level of campus ethnic diversity. U.S. News & World Report adopted an ethnic diversity index as a measure which can be used in this study. For instance, among national universities, the University of Texas - Austin ranks near the top with respect to campus ethnic diversity (CDI

score = 0.71, 2020) while universities such as the University of Texas – El Paso (0.19, 2020), Utah State University (0.22, 2020), and Auburn University (0.25, 2020) report the lowest scores among all major Division I - FBS nationally ranked universities. The U.S. News CDI - Campus Diversity Index ranges from 0 to 1. It is important to keep in mind that, “the closer a school's diversity index number is to 1, the more diverse the student population. In other words, the closer the number is to 1, the more likely it is for students to run into other students from a different ethnic group. Conversely, the further away from 1 a school's diversity index is, the more likely it is that students will only meet others from the same ethnic group. Schools whose enrollment is made up of mostly one ethnic group will not score highly using this ethnic diversity index measure because students are very unlikely to encounter others from different ethnic backgrounds on campus.” (Morse, 2021). This methodology is originally based on Philip Meyer’s and Shawn McIntosh’s (1992) work; it is widely known as the “USA Today Index of Ethnic Diversity”.¹⁹ It is important to note that in the case of the U.S. News Campus Diversity Index, international students are not included in the calculations.²⁰

In addition, the U.S. Census Bureau introduced the very same DI (ethnic diversity index) approach as a new metric in its 2020 Census. The new metric is a better measure of the national racial and ethnic composition and diversity according to the U.S. Census Bureau (Jensen et al., 2020). Further, the U.S. Census Bureau defines the concept of diversity as the “representation

¹⁹ The USA Today Index of Ethnic Diversity is calculated as follows: “First step in applying the formula is to calculate the probability that the two randomly chosen persons will be members of the same race: $PR = (A^2 + B^2 + C^2 + D^2)$ where A, B, C, D are the proportions in the population of each of the four racial groups. The probability that the two persons are of the same national origin is calculated in the same manner: $PN = (H^2 + N^2)$ where H and N are the proportions of Hispanics and non-Hispanics respectively. The probability that the two random persons are of both the same race and national origin is calculated by multiplying their separate probabilities: $PR * PN$. Subtracting that figure from 1 yields the probability that the two are different on at least one of the two dimensions. Thus, the diversity index is defined as: $1 - (PR * PN)$ ” (Meyer and McIntosh, 1992).

²⁰ Specifically applied to U.S. News’ Campus Diversity Index: “The ethnic categories used in the calculations are: Non-Hispanic African American, Hispanic, American Indian, Pacific Islander/Native Hawaiian, Asian, non-Hispanic white and multiracial (two or more races). Students who did not identify themselves as members of any of these demographic groups were classified by U.S. News as Whites who are non-Hispanic for the purpose of this calculation.” (Morse, 2021).

and relative size of different racial and ethnic groups within a population, where diversity is maximized when all groups are represented in an area and have equal shares of the population” (Jensen et al., 2020, p.1). The following figure (*Fig.4.*) illustrates two hypothetical population groups with different ethnic subgroups and their corresponding DI levels: *Fig.4(a).* shows two large and equally sized groups with a DI of 50%. In contrast, *Fig.4(b).* shows four equally sized groups with a DI of 75% - in this figure the chance that two people coming from different ethnic groups is increased even though the size of the different ethnic sub-groups is smaller (Jensen et al., 2020, p.3).

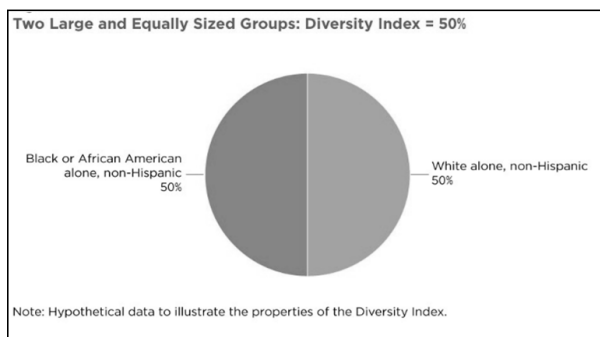


Fig.4(a). Large and equally sized groups with Diversity Index of 50%, Jensen et al. (2020)

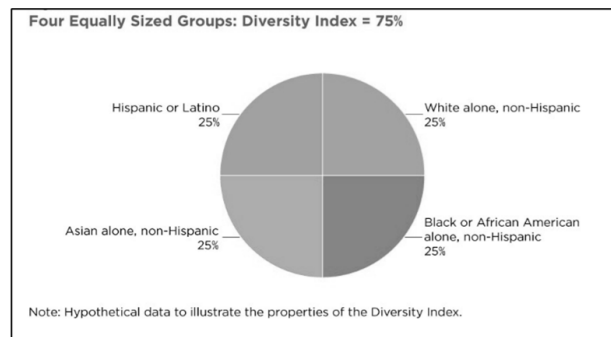


Fig.4(b). Four equally sized groups with Diversity Index of 75%, Jensen et al. (2020)

The following table (*Table 1*) shows the data set characteristics specifically for the dependent variable (recruiting team scores) and the key overlapping independent variable (CDI - Campus Diversity Index).²¹ During the period of the 2017-2021 recruiting cycles, the utilized “total recruiting team scores” have a range of 243 points, ranging from 81 min. to 324 max. (SD

²¹ Recruiting classes or recruiting years do not necessarily align with independent variables. For instance, the recruiting class of 2021 (December and following February signing periods) is matched with the U.S. News CDI of 2020 (Fall 2020) – considering recruits will not place their decisions based on future CDI levels reported later in the calendar year. However, in this table we only consider the actual overlapping years between recruiting scores and CDI since we are merely concerned with the descriptive statistics here. In the actual analysis, I will add the 2021 recruiting class data (and then match it with the 2020 U.S. News CDI data).

= 52.52, SE = 2.53). However, when comparing this to the “average recruiting team score” for the same period, it is obvious that the range (19) is much lower with its minimum of 76 and maximum of 95 points (SD = 4.08, SE = 0.20).

	Sample (=4 years)	Range	Minimum	Maximum	Mean	Std. Deviation	Std. Error
Total recruiting points (team/class)	540	243	81	324	179	52.52	2.53
Average recruiting points (team/class)	540	18	76	95	84	4.08	0.20
Share of in-state signees (team/class)	540	1.00	0.00	1.00	0.33	0.23	0.01
Number of in-state signees (team/class)	540	27	0	27	7.56	5.37	0.26
Number of 5-star signees (team/class)	540	7	0	7	0.27	0.91	0.04
Number of 4-star signees (team/class)	540	23	0	23	2.81	4.75	0.23
Number of 3-star signees (team/class)	540	27	1	28	14.88	6.15	0.30
U.S. News Campus Diversity Index (2020)	104	0.57	0.19	0.76	0.50	0.14	0.01
U.S. News Campus Diversity Index (2018)	75	0.53	0.22	0.75	0.45	0.14	0.02

Table 1. Recruiting data (2017-2020) and Campus Diversity Index data (2018 vs 2020)²²

The U.S. News Campus Diversity Index (CDI) is available for the 2020-2021 academic year (104 schools) and partially available for the 2018-2019 academic year (75 schools); thus, it should be interpolated (2019, 75 schools) and averaged (2016 and 2017 years) to fill some gaps in the data set (*Fig.5.*). Generally, universities’ student bodies and their racial & ethnic make-up do not change dramatically during a period of several years and are expected to be comparable. In fact, comparing the 2020 data (104 schools) with the 2018 U.S. News CDI data (75 schools) reveals that universities normally do not experience significant changes (corr. (2018,2020): 0.978) in campus ethnic diversity within a few years. The 2020 U.S. News Campus Diversity Index (2020) is available for roughly 100 universities (that are relevant to the main data set) and ranges from minimum (0.19) to maximum (0.76); its mean score is 0.50 (SD = 0.14, SE = 0.01). The 2018 and CDI data can be used for interpolation and to deal with missing 2019 data (based on 2018 data (75 schools) and 2020 data (101 schools); further, the missing 2016 and 2017 data

²² Data shown in *Table 1* is specifically for the overlapping 2017-2020 interpolation period. Please, see Appendix 2B for a data overview regarding the entire analysis period (2017-2021).

will be created by averaging, 2018-2020 data. The 2018 CDI data ranges from 0.22 to 0.75, with an average of 0.45 CDI, while the 2020 data ranges from 0.19 to 0.76, with an average of 0.50 in CDI (SD = 0.14 in both cases). Nevertheless, some data gaps for certain schools remain and will be dropped in the process (22 out of 540 data points).

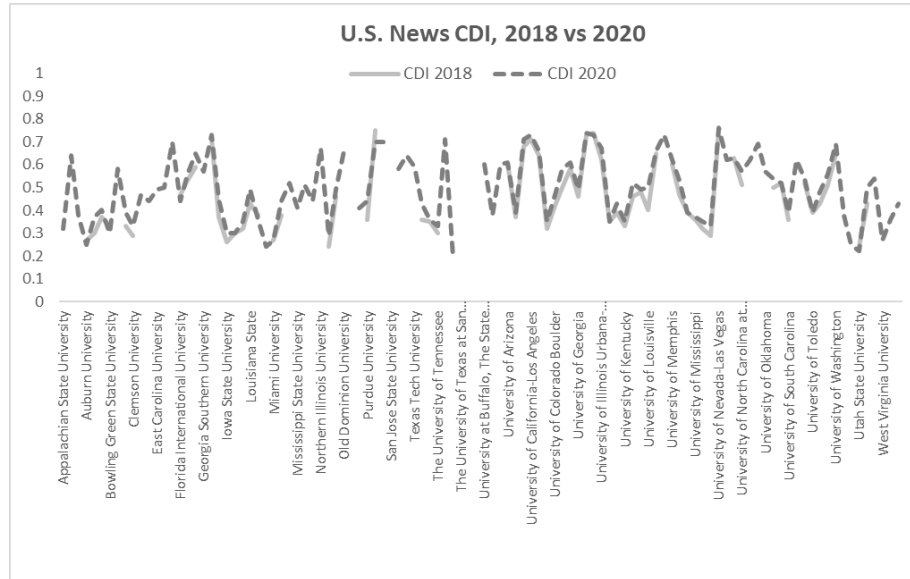


Fig.5. Comparison of available U.S. News CDI data (2018 vs 2020)

The graphs in Fig.5. show that both 2018 and 2020 CDI data are extremely comparable. Since college football recruits can officially sign their paperwork in December and following February, the available U.S. News CDI data will be linked to its corresponding NCAA recruiting class (e.g. 2020 U.S. News CDI and 2021 247sports recruiting class). This U.S. News campus diversity data ranges from its lowest score (0.19) to its highest score (0.76) with some conferences standing out (Table 2). For instance, the SEC scores are on average significantly lower (0.41) than its regional main competitor conferences ACC (0.51) and the BIG12 (0.48). In contrast, the PAC12 overall scores highest among P5 schools, mostly due to its California based

public flagship universities such as UC Berkeley, and UCLA. In contrast, the BIG10 average score is 0.48 slightly lower than the overall average score of 0.50 (across all FBS conferences).

Conference	Class	Schools in data set	CDI		
			MIN	AVG	MAX
ACC	P5	8	0.33	0.51	0.65
BIG10	P5	12	0.33	0.48	0.70
BIG12	P5	7	0.30	0.48	0.71
PAC12	P5	9	0.47	0.60	0.73
SEC	P5	13	0.25	0.41	0.61
AAC	G5	7	0.27	0.54	0.73
CUSA	G5	12	0.19	0.49	0.70
MAC	G5	11	0.27	0.41	0.67
MWC	G5	10	0.22	0.53	0.76
SBC	G5	10	0.32	0.52	0.73
AVG		10	0.30	0.50	0.70

Table 2. U.S. News & World Report Campus Diversity Index (CDI), 2020²³

However, even though the effect of campus ethnic diversity functions as the main independent variable in this study, other variables will function as control variables in this analysis (see appendix for a complete list of variables). These variables can be grouped into categories such as performance-based measures (such as wins per season and bowl game appearances financial based data (e.g., football expenditure, athletic student aid and donor contributions), geographic settings (e.g., region and campus setting), and overall program prestige (e.g., individual program prestige, conference affiliation, and academic rankings). In this study, I will test all the pre-selected variables and possible combinations, however it might be necessary to group some variables, especially financially based variables (all measured in U.S. dollars). These control variables are covered more in detail in the appendix section.

²³ Universities that are not affiliated with a Division I conference are considered independent and not included. Furthermore, private universities and service academies are not considered in this analysis. CDI data shown in this table is not interpolated and limited to 2020.

The full data list is available in Appendix 1A; a correlation matrix of the utilized key data is available in Appendix 1B.²⁴ In addition, a geographic visualization (U.S. national scale) depicting 2020 CDI levels for major FBS-P5 schools along with corresponding 2021 county-level DI (ESRI diversity index) data is available in Appendix 2D.²⁵ This geographic visualization of diversity-related data shows that certain universities are located in less favorable (low diversity) areas when compared to their respective peer institutions. Other universities report relatively low CDI scores when compared to their respective peer universities. This data is additionally visualized as a radar chart (Appendix 2C).²⁶ Similarly, *Table 3* lists selected public universities reporting the lowest CDI scores in the study area. These universities are labelled as L1: Auburn University, Auburn, AL; L2: Clemson University, Clemson, SC; L3: University of Tennessee, Knoxville, TN; L4: West Virginia University, Morgantown, WV; L5: Iowa State University, Ames, IA, L6: University of Nebraska, Lincoln, NE; L7: Kansas State University, Manhattan, KS. I will discuss these statistical outliers and their respective geographic disadvantages more in detail in chapter 5.²⁷

²⁴ The correlation matrix (method: Pearson) shows that most of the critical control variables are highly correlated with the response variable (recruiting points, average), including revenue total ($\rho = 0.87$), total football spending ($\rho = 0.88$), and coaches' compensation ($\rho = 0.88$). Other variables such as conference classification P5 ($\rho = 0.79$) and campus diversity index (CDI) show no direct correlation ($\rho = -0.02$).

²⁵ The obtained DI-level data (county-level ethnic diversity index) is available via ESRI Data Development (ArcGIS Online, 2021).

²⁶ In Appendix 2B, the green colored areas show calculated ESRI diversity index (DI) levels for each county in the United States. The Midwest region stands out reporting lower levels (<18.7 to 18.8-32.5 range) when compared to other regions in the U.S. (West, Southeast, parts of Northeast). Even though, the Southeastern region reports higher levels of DI (mostly 32.6-47.2 to 47.3-62.7 range) when compared to the Midwest, it is still well below other regions (e.g. Western United States) and major population centers across the nation. The population ethnic diversity data set is partially based on U.S. Census Bureau data and available via ESRI ArcGIS online. This data set is based on 2021 population data and consists of calculated overall ethnic diversity levels on county level.

²⁷ Data source for CDI: U.S. News & World Report (2020); for DI: ESRI Diversity Index via ArcGIS Online (2021). Since we are only interested in displaying locations and studying the relative positions of universities within regions, we can use a spherical projection method which produces some distortion but is a preferred method when data visualization is the main objective (projection method: WGS 1984 Web Mercator Auxiliary Sphere as provided by ESRI).

Primary recruiting area: 250km/155mi radius							
Area	School	State	CDI, 2020	County DI levels, 2021	Peer school: High CDI	Peer schools : Medium CDI	Peer school : Low CDI
L1	Auburn University	AL	0.25	high (47.3 - 62.7)	Georgia Tech	Florida State, Georgia	
L2	Clemson University	SC	0.33	high (47.3 - 62.7)	Georgia Tech	South Carolina, Georgia	Tennessee
L3	The University of Tennessee	TN	0.33	low (18.8 - 32.5)	Georgia Tech	Kentucky, Georgia	Clemson
L4	West Virginia University	WV	0.27	very low (<18.7)	Virginia	Ohio State, Penn State	
L5	Iowa State University	IA	0.30	low (18.8 - 32.5)		Iowa	
L6	University of Nebraska-Lincoln	NE	0.33	medium (32.6 - 47.2)		Kansas	Kansas State
L7	Kansas State University	KS	0.30	low (18.8 - 32.5)		Kansas	Nebraska

Table 3. Universities reporting low CDI levels with respect to geographic location and peer universities located within 250km/155mi radius, Data: ESRI ArcGIS Online (2021), U.S. Census Bureau (2021), U.S. News & World Report (2020)

In addition, I will also visualize the previously discussed 2020 campus ethnic diversity index (CDI) data obtained from U.S. News & World Report and then use GIS (Geographic Information System) techniques by adding this location-based data to the study area (Midwest and Southeast USA) of the national map projection. This type of analysis allows for effectively visualizing the utilized data set but also might reveal strategic locations and relationships between universities in terms of related ethnic diversity levels in a spatial context. Furthermore, applying qualitative analysis methods by comparing the displayed data set could help to inform potential strategic decisions (see maps in Appendices 2A, 2B and Chapter 5). For instance, university A might report a low level of campus diversity (CDI) but could be in a relatively diverse recruiting area (moderate to high DI-levels), while university B could be located in an adjacent area bordering a significant number of counties reporting low-level of DI-levels. In addition, this university could be surrounded by other major universities characterized by moderately to high-level CDI levels. This could be a strategic disadvantage in terms of recruiting diverse high-level athletic and academic talent in the future.²⁸

²⁸ Some major public universities recruit nationally but still enroll a significant number of regional students. This also applies to athletic recruiting with some exceptions.

4. METHODS

4.1. Research Question and Hypothesis

Since this study considers a wide range of variables (see: Appendix A), I will analyze possible impact factors on recruiting as they pertain to several research questions. The main research questions are:

- What is the impact of campus ethnic diversity on college athletic recruiting (specifically college football recruiting)?
- Are universities reporting lower campus diversity levels generally disadvantaged when recruiting student-athletes to their institutions?

The first research question will be tackled quantitatively with the help of regression analysis methods, which allows for identifying and quantifying impact factors. The second part of the research question can be addressed qualitatively by utilizing GIS (Geographic Information System) methods where data is displayed in a spatial manner.

Currently, there are no studies that consider campus ethnic diversity as an impact factor on college football recruiting outcomes, basically assuming that there is no relationship between these variables (null hypothesis). The alternative hypothesis is that campus ethnic diversity has a positive impact on college football recruiting classes: The higher a school's Campus Diversity Index (CDI), the more likely (on average) that college football recruits will sign with this school.

The null hypothesis and alternative hypothesis expressed in technical forms are:

$$H_0: \beta_{CDI} = 0$$

$$H_A: \beta_{CDI} > 0, \text{ at } \alpha < 0.05$$

4.2. Theoretical Framework and Analysis Method

This study is mostly concerned with identifying the potential positive impact of campus ethnic diversity on college football recruiting classes which in turn should translate into athletic success and eventually even drive general university applications. However, athletic brands can also have a wider impact on various dimensions positively enhancing a university's reputation. For instance, the dimension of university brand identification (UBI) is associated with a university's student body and its internal brand identification.

In their research paper, Yao et al. (2019) studied the potential impact of campus diversity (measured by CDI) on internal university brand identification (UBI) and brand citizenship behaviors. The study found that campus diversity does not negatively influence UBI and positively impacts brand diversity awareness. However, the authors did not prove a direct positive impact of CDI on UBI (*Fig.6., R2*). According to the researchers, college students identify with their respective universities and the university brand image (UBI) "is essentially their cognitive awareness of their membership in the university and their similarities to others in the university" (Yao et al., 2019, p.216). The level of UBI can be generally measured by surveys and then integrated into regression models.



Fig.6. Model Hypothesis: Direct CDI impact on University Brand Identification (UBI), Yao et al. (2019, p.216)

In this study, I will not directly measure the potential direct impact of CDI on UBI but measure the indirect relationship between CDI and UBI via college athletics. This approach is illustrated in Fig.7.: The alternate hypothesis states that CDI might positively impact college athletic recruiting classes. Further, it is expected that more talented recruiting classes are more likely to translate into talented teams and successful seasons when compared to less talented recruiting classes. Therefore, higher ranked recruiting classes should produce more wins, which in turn should influence internal UBI among the student body. According to Yao et al. (2019, p.212), “University image consists of multiple dimensions: quality and levels of education, sports programs, financial reasons, and media coverage of the university”. The extended model (Fig.7.) proposes that both college athletics and general mainstream media coverage can influence UBI. However, I will mainly utilize online mainstream media data (by utilizing the Media Cloud platform) to explain the impact of college football recruiting on UBI. This data will not be integrated into the models but rather used to compare model output results. For instance, yearly splits of CDI data in the models should reveal different impact weights per year (measured by the variables’ beta coefficients) on recruiting classes. In addition, generated online news story counts (the relative number of online news stories covering topics such as “BLM”,

“Trump”, and “Colin Kaepernick” in the United States) can be used to determine whether BLM-related online news coverage intensified over the years. This could partially explain an average increase of the importance of CDI among college football prospects when making college choice decisions. Similarly, Google trends and social media data (Facebook, Twitter, etc.) could be utilized to explain model outputs qualitatively but will not be used in this study due to limited data availability.

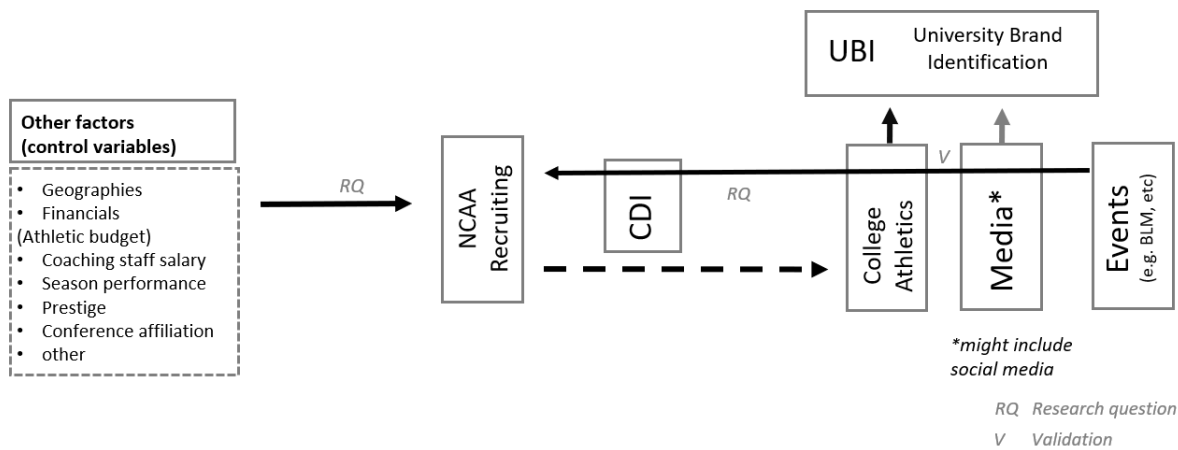


Fig.7. *Extended Model: Indirect CDI impact on University Brand Identification (UBI) through College Athletics, based on Yao et al. (2019)*

The above proposed extended conceptual framework visualizes the technical inter-relationship between potential impact factors but cannot fully conceptualize a recruit’s motivation with respect to decision making outcomes and choice theory. According to McDonough and Antonio (1996), there are three different approaches to study potential influences on college choice decision-making outcomes:

- a social-psychological approach which includes the assessment of college/student “fit” from the student’s perspective.

- an economic approach which deals with the maximization of perceived cost-benefits for attending a certain college (based on rational choice theory). This is mostly covered in econometric driven models.
- a sociological status approach.

These approaches apply mainly to general college applicants and not specifically to athletic recruits. However, it is important to understand that athletic recruits act within a monopolistic environment. Unlike high school basketball and baseball recruits who can opt for accepting offers by professional and even overseas leagues, high school football recruits are limited and can only offer their services to college football programs. Technically, Harris considers football programs as organizations that produce wins while “student-athlete labor is an input in the wins production technology” where schools “compete for the best-quality athletes through the use of non-price competition” by offering a limited number of scholarships every year (Harris, 2007, p.270). Harris’ classical microeconomic-type approach explains college football programs as rational market players (buyers) with the objective to maximize output. This also means that high school football recruits are sellers of labor services (and publicly rated and ranked based on talent level) and thus already somewhat limited in their decision choices. Therefore, I will mostly utilize rational choice theory and consider elements of the first approach (college/student fit) with respect to value-based orientations of individual recruits to guide the pre-selection of possible impact factors, which will be represented by a relevant variable in the model (CDI). In addition, I will use an extension of rational-choice theory to account for other impact factors which cannot be considered as purely economic-driven factors. According to McDonough and Antonio (1996), these factors generally may include “race, socioeconomic status, parents,

students' peers, college size, location, academic program, reputation, selectivity and alumni; guidance counselor" (McDonough & Antonio, 1996, p.6).

Rational choice theory can be a useful theoretical approach whenever agents are involved in decision-making processes. Generally, rational choice theory considers individual action as purely economically driven based on a set of available preferences and respective constraints. However, this approach can be limiting and requires extensions capable of reflecting other sociologically relevant phenomena. First, I will introduce classical rational choice theory, which could be sufficient to explain typical decision outcomes of high school football recruits but might be still limiting when it comes to the whole process involving an entire pool of agents (recruits). In this study, I will focus on value-driven motivation as an extension to rational-choice theory, even though other possible motivation values could also be considered (e.g., emotions). Therefore, I will contrast and discuss Max Weber's ideal types of social actions including goal-oriented rational action ("means-end" rational action) and value-oriented rational action, which will allow me to consider potential influence factors that are beyond purely goal-oriented motivations (e.g., campus ethnic diversity as a decision factor). Moreover, it is important to explore and discuss how this decision process pertains to societal tensions and certain national events as covered by mainstream media outlets and social media activity in the United States. It is expected that mainstream and social media consumption might spread and intensify popular opinion with respect to social movements (in particular, BLM) among media consumers. Finally, I will propose a utility function that takes potential goal-oriented and value-oriented rational action drivers into account. In this technical approach, selected impact factors can be represented as variables in a multivariate regression model allowing for identifying and quantifying potential drivers on aggregated college choice decisions outcomes among high school football recruits.

4.3. Rational choice theory: Classical approach

In his paper “Rational Choice Theory: An Overview”, Green (2002) summarizes basic well-known assumptions about rational choice theory and reviews general extensions while discussing perceived irrational behavior of agents during the decision-making process. The basic assumptions are based on economic principles and assume individual decision-makers are representative of a larger group in a market setting. Since Green (2002) approaches rational choice theory from mainly economic perspective, I will introduce and suggest established sociological concepts which function as an extension of classical rational choice theory as typically utilized by economists. This is a novel approach when analyzing college choice decision outcomes of highly recruited high school football athletes.

According to Green (2002), rational choice theory and rational behavior is based on several axioms of (consumer) preferences:²⁹

- (1) Availability of alternative choices.
- (2) Completeness: The decision maker either prefers A to B, B to A or is indifferent between these choices.
- (3) Preferences are transitive: When the decision maker prefers A to B and B to C, then she also prefers A to C.
- (4) The decision maker will choose the preferred option (alternative).

²⁹ The college athletic market can be either regarded as an employee/employer market (student athletes are employees (but not in a legal sense) and universities are employers (not in a legal sense)) or as a buyer-seller market where student-athletes sell talent and skills, and college football programs are buyers in this market settings. However, student-athletes also buy education and training which is offered or “sold” by universities and their respective athletic departments. Therefore, the actors in this market are both, buyers and sellers at the same time depending on the perspective.

Preferences are generally assigned numerical values and mathematically represented with a utility function ($U = U(x,y)$), where x and y represent values of goods, services or other preferences. Furthermore, the utility function U rises with increases in x and/or y (marginal utility). Another important assumption is another property of the utility function U [...] which deals with diminishing marginal utility and states that “the (positive) marginal utility of each good gets smaller the more that good is being consumed in the first place” (Green, 2002, p.4). In our case, a college football recruit would have a set of several preferences. This set could include regional location, coaching staff, stadium capacity, and campus ethnic diversity. Given the property of diminishing marginal utility a recruit would place less value on preferences with increasing x and/or y . For instance, a recruit might value a stadium capacity of 90,000 seats higher than a capacity of 60,000 seats but would place less preference when deciding between schools with similar sized stadiums (e.g., school A’s stadium capacity of 90,000 vs school C’s stadium capacity of 91,000 seats). Similarly, a prospect with a high preference in campus ethnic diversity (CDI) would probably not value a school with +1 ppt in CDI decisively higher than other schools with marginally lower levels. Moreover, utility functions have constraints since most consumers or decision makers cannot endlessly consume. Therefore, agents must balance consumption within certain constraints. In classical consumer theory, this constraint is represented by a budget constraint (Green, 2002). In this case, such a constraint could be that recruits have different talent levels (i.e., 5-star, 4-star, and 3-star rated recruits) which means that the number of offers will be different and that higher rated recruits will hold more top offers when compared to lower rated recruits. Prospects will then have to make decisions based on their

preferences given their respective (budget or talent) constraints. Furthermore, Green lists several extensions that can further influence decisions in market settings:

- Environmental assumptions: Choices are made in markets and regulated by supply and demand.
- Price equilibrium: Prices adjust to the next equilibrium given supply and demand.

These extensions can be applied to college athletics recruiting in various ways. For instance, certain regions might produce an unusual number of recruits in a certain position resulting in less value placed on these recruits (and a reduced number of high-quality committable offers). On the other hand, a low number of recruits at a specific position would drive up the “value” and intensify recruiting battles for certain players. Lower-rated recruits could benefit from this and receive additional offers from more prestigious universities.

According to Green (2002), other extensions to consider include:

- Dynamic models, which assume that agents will consider present and future utilities and make decisions accordingly. The concept of discounting states that agents will place higher value on present consumption and forgo future consumption. For instance, high school football recruits could value immediate playing time highly and disregard other opportunities with better fitting schools in the long run.
- Uncertainty, which assumes that agents maximize expected utility avoiding high uncertainty in decision making. This could mean that prospects might be reluctant to

commit to schools where coaches face adversity and job insecurity or where schools are under investigation for previous recruiting violations facing possible sanctions by the NCAA.

- Incomplete information, which could limit the agent's ability to make well-informed decisions. For instance, a highly ranked prospect might sign with a school due to the high probability of immediate playing time. However, the school could still sign college transfers for the very same position at a later date, reducing the high school signee's chances of immediate playing time.
- Strategic behavior, which states that agents must take the decisions of other agents into account. This applies perfectly to the recruitment of high school football players. Often, lower rated recruits will accept offers to secure roster spots with certain teams while higher rated recruits will monitor the actions of other highly rated recruits and adjust their decisions accordingly.

All these assumptions assume rational behavior by the participating agents. Most specifically, the elements of incomplete information and strategic behavior play a particularly important role among high school football recruits and their decision-making choices. McDonough and Antonio (1996) studied additional dynamics and various factors influencing students during their college choice decision process between ethnic subgroups. They chose a Bourdieusian-based model of college-choice decision making by integrating a student's cultural capital as another factor influencing decision outcomes. Other relevant factors selected by the researchers include capital endowment (parents' educational level), past capital endowment (different types of cultural capital acquired by students while attending high school), and

anticipated capital reinvestment (which includes amount of financial aid, distance from home to college, and expectation of college experience). The study results found that White college applicants are generally “less likely to view college-going as simply a means to make more money” while a greater proportion of African American college applicants “report attending college for economic mobility” when compared to other ethnic subgroups (McDonough & Antonio, 1996, p.17). Furthermore, the researchers also found that African Americans place more importance on being recruited as athletes and are the most mobile group (along with Asians) while White and Hispanic students tend to stay closer to home. Moreover, McDonough and Antonio (1996) suggest that student athletes being recruited by elite athletic departments require the “possession of specific piece of cultural knowledge” (McDonough & Antonio, 1996, p.27). Even though the researchers mostly studied prestigious private universities recruiting certain types of student athletes, this approach can also be applied to the general college football recruiting process. Recruits from households with higher SES status tend to attend higher ranked high schools and should also have the financial means to pay for unofficial visits, attend summer camps, and generally have access to higher level and well-connected coaching staffs and high school guidance counselors. In addition, recruits who live in certain regions and have older siblings and/or parents (legacy players) who personally experienced the college recruiting process may have easier access to information.

Relatedly, the major research question is closely related to whether some recruits do maximize perceived benefits while others choose principles or seemingly “irrational behavior” over utility maximization such as in the case of 5-star (#1 nationally ranked recruit) Travis Hunter who chose HBCU Jackson State University over major P5 school Florida State University in December 2021 (thus prioritizing other factors). These factors can be of non-

economical nature such as “perceived fit”, “college experience”, and “campus ethnic diversity”. In this case, we would assume that there could be a conflict between a rational choice decision making process and a value-based approach. This idea of a “rational choice/principles-first”-dilemma would then potentially reduce and further (self-) constrain a prospects’ utility function and violate the general rational choice theory assumption in an economic sense.

In other words, classical rational-choice assumptions are limited and do not universally apply to every individual case. Therefore, classical rational-choice theory extensions are required to account for non-economic driven decision factors: Green (2002), for instance, discusses certain cases involving issues with rational choice theory, ideology, and intransigence. Drawing on Roemer (1985), who applied game theory to analyze political revolutions, Green suggests that solidarity among coalition-forming groups and class consciousness could play a role in certain decision outcomes. In this case, individuals could make group-based decisions rather than following strictly individual interests. Further, Green (2002) explains how rational decision making and emotions (sympathy, anger, and concerns) “about relative position” can “modify the conclusions of traditional models in fundamental ways”. These emotional driven behaviors could decisively influence decision outcomes.³⁰ Classical rational choice theory is basically an “instrumental (Humean) rationality” approach and “would seem to view preferences as beyond justification” proposing the element of passion as a seemingly irrational factor in classical rational choice theory” (Green, 2002, p.26). Given the former consideration, this thesis would consider whether the preference of “campus ethnic diversity” would qualify as an “irrational” and emotional based driven behavior in the college choice decision making process or whether it should rather be considered as a value-rational choice.

³⁰ However, the existence of emotions in the decision process would technically violate classical assumptions of rational choice theory.

4.4. Beyond Rational choice theory: A Proposed Sociological Approach

In order to completely understand a decision-making process, it is imperative to extend the economically focused aspects of rational-choice theory and add sociological theory to the discussion. Sociologist Max Weber discussed different ideal types of social actions including goal-oriented rational action (“ means-end” rational action) and value-oriented rational action. Means-end rational action is goal-oriented while value oriented rational action is value focused and in “subordination of realities to values” (Kalberg, 1980, p.1161). It is important to understand that value-oriented action is also considered to be driven by rational mental process and influenced by the actor’s set of beliefs. According to Weber, action is social and subjective considering other people’s behaviors and is influenced and prompted by external factors. While rational goal-oriented action is instrumentally oriented, value-ration action is primarily value driven. Furthermore, Weber argues that “collective entities are not themselves capable of acting”, and that collective decisions are based on decisions made by individual agents (Kalberg, 1980, p.1149). This can be applied to recruiting decision-making analysis since decision makers (high school recruits) will make their own individual decisions based on available information and their respective goals and values. In some cases, high school recruits might place more weight on means-end rational actions while others might put higher weight on value-driven actions. In case of high school recruiting, this could mean that a recruit might opt to stay closer to home (placing higher value on family values) or sign with a school which offers a more balanced cultural experience (higher level of campus ethnic diversity), even though other schools could have offered more immediate playing time, better facilities, and brand recognition.

Even though Weber explained that actions are based on individual decisions, he also argued that decisions are based on other people's behaviors (subjective meaning). In addition, Weber states that charismatic persons in authority could influence individual decisions and bring fundamental change to traditional routines. This can be applied to Weber's theory of ethnicity and social action where Weber argues that ethnic groups and their position in society are based on traditional authority structure beliefs (Jackson, 1983, p.14). Weber defines ethnicity, "as the belief of social actors in common descent based on racial and cultural differences, [...] a group of people who believe they have ancestors in common from the past, (Jackson, 1983, p.5). Therefore, ethnicity is represented by categories of individuals sharing a common identity "among actors which represents a potential for group formation, communal relations, and social action" (Jackson, 1983, p.6). These ethnic groups are part of a larger society and follow larger traditional authority structures until a charismatic authority influences the community and "ethnicity becomes social action" (Jackson, 1983, p.11). Since "communal social action is mostly based on feelings of belongingness" (while associate social action is driven by rational interests), "social change and activities such as hostilities with another society become a matter of concern to the entire society" and could eventually lead to social change (Jackson, 1983, p.6). Since collegiate athletics naturally involves athletes of young ages and college coaches with more experience, coaches are often deemed as mentors to these student athletes. This could be the case when Jackson State University football head coach Deion Sanders who is widely regarded as a charismatic leader influenced Travis Hunter (the #1 2022 recruit in the nation) to decommit from a major Power 5 school and follow him to an HBCU institution. However, the possible impact of charismatic leaders on decision making outcomes is not the central theme of this thesis. This unexpected outcome could be just a prominent example covered by national

media outlets while other less prominent examples could already be taking place across the country. As previously discussed, according to the National Center of Education Statistics, HBCUs report significant higher enrollment numbers since the height of the BLM movement in 2020. Generally, HBCUs report an increase of up to 30% in application numbers from 2018 to 2021 and even report increasing enrollment numbers despite overall decreasing college enrollment numbers nationwide (Green, 2022). Industry experts refer to the Missouri effect (coined after major student protests over racial discriminations at the University of Missouri in 2015), police killings, and general hostility as main reasons for the surge in application numbers (Green, 2022). This renaissance for HBCUs is an indication of societal change and could also affect state-flagship universities and other PWI institutions with respect to academic and athletic recruiting classes. However, in this thesis, I will mainly focus on public universities (FBS-P5 schools) and how different CDI levels might potentially influence these schools' high school football recruiting rankings.

Since media coverage is a key driver of major social movements, I will utilize national online news coverage data to validate and explain the final regression model output results. In a secondary analysis study, I will link awareness of campus ethnic diversity and Black Lives Matter and related topics (selected key words include BLM, Donald Trump, and Colin Kaepernick) to the regression modeling output results. Since specific and multi-year historical Twitter and Facebook data is not publicly available, I will use publicly available Media Cloud data (online media coverage) as a proxy. It should be stressed that viewing mainstream media has varying effects on opinions of BLM. According to a study by Kilgo and Mourao (2018), mainstream media usage has no positive impact on the BLM movement or its central tenets whereas conservative media usage (including usage of partisan media outlets) exacerbates

negative opinions against the movement. The sole factor that is favorably related with BLM's key principles, according to the researchers, is being Black. Even though Hispanics do not largely identify with BLM core ideas, Hispanic respondents are less likely to hold anti-BLM opinions than other racial groups (Kilgo & Mourao, 2018). However, it is crucial to note that political orientation and sentiments regarding the core beliefs of the BLM movement are most closely associated, with liberals being less likely to be against the BLM movement (Kilgo and Mourao, 2018). This indicates that widespread media coverage does not alter people's attitudes; rather, it intensifies those views among conservatives who already have unfavorable opinions of the BLM movement. However, this study is mainly concerned with analyzing the impact of mainstream and partisan media consumption on the sentiment towards the BLM movement and does not directly consider social media consumption, which could amplify the effect.

Nevertheless, Mundt et al. (2018) analyze how the BLM movement "scales up" using social media to create relationships, amass supporters and resources, and broaden its coalition (Mundt et al., 2018). The researchers found that BLM social media organizations spread geographically over time across the United States and then eventually globally. The study also shows that social media may be used to mobilize resources in the form of support networks and to draw BLM supporters by "simply maintaining an online presence" (Mundt et al., 2018, p. 7). Therefore, it is expected that social media at the very least spreads social movements such as the BLM movement and could even amplify pre-existing beliefs of users, similar to mass media coverage and its sensational approach to journalism supporting the pre-existing views of conservative viewers. The main motivation for mainstream media outlets to portray protests and social movements in a way that only focuses on event-centered reporting is based on the idea of impartial news reporting; however, the theory of "protest paradigm" states that the mainstream

media is interested in maintaining the status quo rather than supporting protest movements (Umamaheswar, 2020; Chan & Lee, 1984). This could also further drive people and followers of the BLM movement to social media platforms driving engagement in social protest movements and forming a connected community (Umamaheswar, 2020). Overall, since mainstream media outlets mostly focus on the reporting of events, I will use the available Media cloud data as an indirect quantitative proxy to measure the “increase” and “intensity” of events related to topics associated with the movement. Furthermore, since this thesis does not use social media data to validate the regression model output, I will not delve deeper into the role of social media platforms in the BLM movement. In sum, positive influence of BLM media coverage is mostly limited to Black persons consuming mainstream media outlets (Kilgo & Mourao, 2018; Mundt et al., 2018).

Nevertheless, it is unclear whether values and ideology play a major role in the high school football recruiting process. Placing high value on “campus ethnic diversity” could be a true preference for certain recruits with respect to their individual utility functions. In this case, this effect should be relatively stable over the years. Should this not be the case, we would assume a larger societal ideological-driven effect to be prevalent (rather than the sum of individual choices) by detecting an upward and growing systematic trend in a certain decision outcome or a seemingly random occurrence in different periods clearly favoring non-economic driven decisions (e.g., recruits selecting schools with higher campus ethnic diversity levels). These recruits would then self-constrain their options of possible utility functions (based on rational-choice theory), but be perfectly rational from a value-driven rational choice perspective. Technically, this outcome would reduce market supply from the perspective of schools that do report lower ethnic diversity levels since certain recruits would not consider schools with low

ethnic diversity levels. Based on this, rational choice theory would suggest that universities would adjust and increase their respective campus ethnic diversity levels and remove this barrier (eventually resulting in more options for recruits and schools alike). Of course, this adjustment would depend on the magnitude of the detected effect and could take several years or even more than a decade to play out.

4.5. Rational choice theory: Technical Application (Utility Function)

The idea of rational choice theory can be further applied to college choice decision making and athletic recruiting. Dumond et al. (2008) discuss the expected decision-making process with respect to rational choice theory, and the utility pre-selection process of possible variables within the assumed utility function of high school football recruits. The authors argue that recruits selecting a college “do so to maximize their expected discounted lifetime utility” by rationally evaluating the “discounted accrued benefits of attending each school against the discounted accrued costs” (Dumond et al., 2008, p.71). The “major benefit for students and student athletes of attending college” lies in human capital and “its productivity of the recruit in the labor market” according to the researchers (Dumond et al., 2008, p.71). This certainly means that improved productivity would be based on higher levels of skills and would increase compensation in the future. Student athletes might consider academic and athletic factors differently depending on their perceived likelihood of graduating college and/or being able to play football professionally. In order to become a successful and productive NFL player, recruits would most likely focus on colleges providing the highest chance of reaching the professional

league. Therefore, recruits most likely value certain factors highly including team/school performance, media attention, playing time, and facilities, location, and distance from home to college, and certain direct and indirect costs with the objective to maximize net benefits (Dumond et al., 2008). The researchers consider these factors in their analysis and construct a potential utility function with a general preference set for recruits: school's winning percentage, expected playing time for recruits, facilities and amenities, media exposure, distance factor, graduation probability, academic rankings, and NFL draft probability (Dumond et al., 2008).

I will use a similar approach and consider the basic rational choice-based utility function for high school football recruits and extend it by adding a value-driven rational choice factor as discussed in the previous sub-section (campus ethnic diversity). Based on the assumptions as presented in Dumond et al. (2008), and then extended by an additional factor (CDI – Campus Ethnic Diversity Index), a recruit's utility function could consist of following preferences:

[1] $U = U[\text{geographic region, campus setting}] + U[\text{academic ranking}] + U[\text{conference affiliation, school prestige}] + U[\text{winning percentage, post-season play and AP poll rankings, NFL draft picks}] + U[\text{athletic budget (incl ticket sales), coaching staff salary}] + U[\text{campus ethnic diversity}]$

These potential utility preferences will be used as variables in a regression model and determine an overall model. In this analysis, I will use quantitative methods, mainly multivariate regression analysis methods (OLS and FE regression methods) using a data set of 540 observations covering recruiting classes between 2017 and 2021. The data set will not be analyzed in a traditional time-series format but rather as an unbalanced panel data set. The utilization of regression methods is suitable for this analysis since we are mostly interested in

quantifying the impact of campus diversity on recruiting outcomes on the averaged overall (industry) level rather than identifying the impact on individual school levels.³¹

The multivariate OLS regression equation (2a) is generally specified as (Stock & Watson, 2018, p.203),

$$(2a) \quad y = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k + \varepsilon$$

where the least square assumptions are that

- $E[\varepsilon_i] = 0$
- $\text{Var}(\varepsilon_i) = \sigma^2 < \infty, \forall_i$
- $\text{Cov}(\varepsilon_i, \varepsilon_j) = 0, \forall_i \neq j$
- $\varepsilon_1, \dots, \varepsilon_n \sim \text{Normal}$, are identical and independently distributed (i.i.d)

Since the use of panel data might still require controlling for certain systematic effects, other relevant regression methods will be tested, and output results will be compared, including random effects (RE) model and fixed effects (FE) model methods.

Mathematically, fixed effects (FE) models are defined as follows (Stock & Watson, 2018):

$$(2b) \quad y = \beta_1 X_{1,it} + \dots + \beta_k X_{k,it} + \alpha_i + \varepsilon_{it},$$

where “ $\alpha_1, \dots, \alpha_n$ are entity-specific intercepts”, (Stock & Watson, 2018, p.359).

³¹ Technically, the study data set is based on panel data “in which each observational unit, or entity, is observed at two or more time periods” (Stock & Watson, 2018, p.349). However, sometimes certain effects cannot be controlled in panel data sets causing potential omitted variable bias across each entity (here: each school) but are constant over time (Stock & Watson, 2018). This requires the use of either OLS fixed effects (FE) – or alternatively random effects (RE) methods where time rather than entities would be fixed to account for possible systematic error in the data set. Omitted variable bias in panel data sets can be a major issue causing conventional OLS regressions to be less efficient.

Similarly, the time fixed effects or random effects (RE) model then controls for omitted time bias, assuming that time across entities might have an effect in the model.³²

Additional follow-up tests will be conducted including a test for multi-collinearity (VIF – Variance Inflation Factor test) between the independent variables in a regression model. The VIF test is a widely accepted test in regression analysis.

The VIF test is formally defined as:

$$VIF_i = \frac{1}{1-R^2}$$

Ideally, the VIF values should not exceed a tolerance index level of 10 (rule of thumb) for each variable, which would indicate severe multicollinearity between the independent variables and would cause some concern. In this case, it would be advisable to combine certain independent variables in the model. Tolerance values between 4 and 10 indicate lower to moderate levels of multicollinearity and are of less concern. However, in practice even tolerance levels higher of 10 might not require to significantly adjust the set of variables in the regression model as the application of these techniques could create more serious issues than the actual issue of prevalent multi-collinearity in the model (O'Brien, 2007). However, since this is not the case in this analysis, I will not discuss this topic further.

Furthermore, I will conduct a qualitative secondary analysis using the obtained beta coefficients of the CDI variables from the regression model and then compare the output results to generated secondary data (national media online coverage for topics relevant to this thesis via

³² Further, a third option using a mixed effects approach (for entity and time fixed effects) could be possible depending on the obtained test results. However, the conducted Hausman and LRT test results suggest using a fixed effects method in this case (see the Results and discussion section).

the Media Cloud platform. In this approach, the main objective is to identify possible societal influence drivers covered by national media outlets that could partially explain the rather technical regression model results. In this analysis, the relative volume of national online news coverage for specified topics (e.g., BLM) will be weighed against the full amount of generated online news stories within the analysis period of 2017-2021. We can then further calculate the percentage share of BLM news coverage with respect to total news coverage (for each year) and visually identify increases/decreases in news coverage results over the years. Finally, this news coverage output can be compared to the generated impact value of the obtained beta coefficients for each annual CDI variable. This analysis is a qualitative secondary analysis; the search terms such as “BLM”, “Trump”, and “Kaepernick” are pre-determined. The limitation of this secondary analysis is that it is not based on robust statistical analysis methods and the number of search terms is rather low. Ideally, we would also use additional secondary data sources to complement the data set (e.g., social media data).

Lastly, I will utilize and visualize CDI and county-level DI data in a GIS environment, specifically for FBS P5 schools located in the U.S. South and U.S. Midwest. This qualitative post-analysis should show how practical applications could enable universities to analyze and determine their relative geographic positions with respect to peer institutions in terms of ethnic diversity dimensions.³³

³³ Technically, this post-analysis is a qualitative approach to (a) visualize existing data (CDI and DI data) to gain a better understanding of the utilized data set and its respective spatial relationships within larger regions in the United States, and (b) to propose a basic GIS approach that can be used to generate additional insights for each individual university.

In summary, the following conceptualized analysis flowchart (Fig.8.) shows how the study's various analysis stages can inform and enhance each other. Even though these stages are conceptually interconnected, the different analysis methods are technically independent from each other. In the first phase (primary-analysis), FE regression methods are utilized to obtain the statistically significant beta-coefficient associated with the annual CDI variables in the model. In the second phase (secondary-analysis), the previously generated CDI beta-variables are qualitatively compared to relative online news media coverage of BLM-related data generated within the previously modelled analysis period (only for years with statistically significant results). In the third and final phase (post-Analysis), regionally selected CDI and DI data are spatially visualized in a GIS environment in order to determine geographic strategic positionings of major FBS universities with respect to their peer institutions within their respective geographic regions (U.S. South and U.S. Midwest in this analysis).

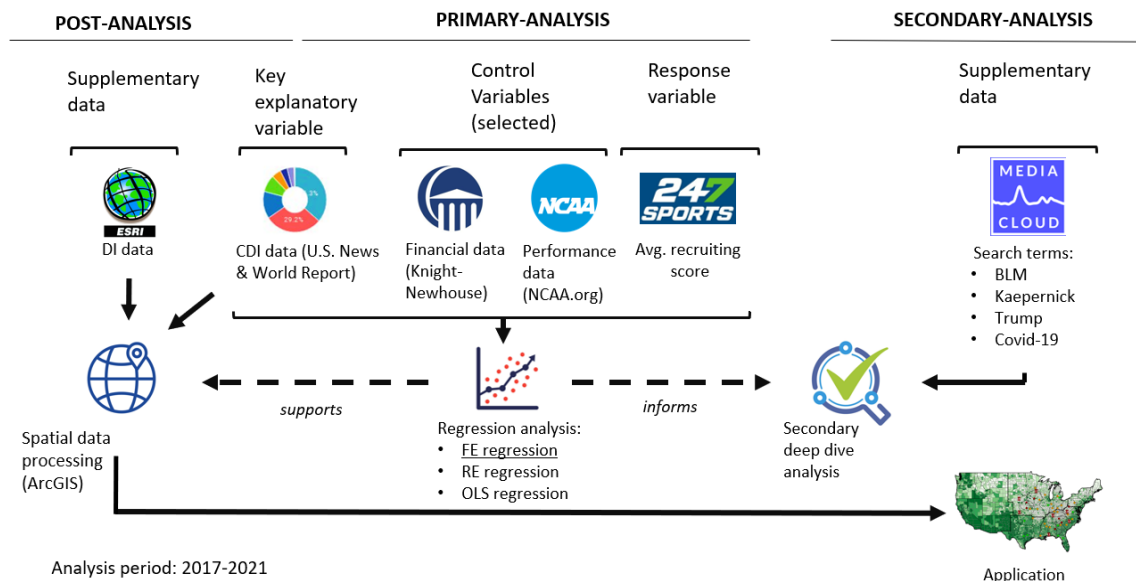


Fig.8. Study Process Flowchart

5. RESULTS DISCUSSION

In this chapter, I will discuss regression output results and conduct a qualitative secondary-analysis comparing BLM-related queried data (via the Media Cloud platform) to the obtained regression analysis results (as discussed in the methods section). This follow-up analysis will function as a type of model validation and help to explain the regression analysis results.

Furthermore, some basic GIS applications will be used to display key data (mainly CDI and DI data) and spatially compare the strategic-geographic positioning of selected P5 universities with respect to (campus and county) ethnic diversity levels. This type of analysis is a separate qualitative post-analysis and not directly related to the regression results. However, I will use the regression results as a basic confirmation of my stated assumptions that campus ethnic diversity levels can have a positive impact on college choice decision making outcomes among high school football recruits.

5.1. Main Analysis Results

The regression output results in Appendix 1C show that random effects (RE), fixed effects (FE), OLS I and OLS II (incl. intercept) models produce mostly comparable results. The FE model accounts for potential variations across entities (schools) and shows partially different results when compared to the OLS model. Furthermore, the RE model is somewhat comparable to the OLS models showing similar results – CDI is highly significant for the 2020 and 2021

years and CDI 2019 is significant in the OLS model and borderline significant in the random effects model.³⁴

Conducting conventional Hausmann and LRT tests will allow us to choose between the random and fixed effects models since the OLS regression model is not efficient due to the unbalanced panel structure in the data set. I conducted the Hausman test for the random effects model and rejected the null hypothesis that time-related effects are prevalent ($H = 73.125$, $p\text{-value} = 0.000$) and concluded that conducting random effects methods is not appropriate in this case. In addition, I conduct the Likelihood-ratio test ($LRT = 1.95$, $p\text{-value} = 0.1013$) and fail to reject the null hypothesis that effects across entities (schools) are not prevalent which means we should run a fixed effects regression approach instead of a random effects regression. The fixed (FE) effects model is generally more efficient than the OLS model when using panel data and controls for potential omitted variable bias across schools. Therefore, I will select the FE model and proceed with the results discussion (the FE model equation is shown in the methods discussion section).

In order to measure the potential impact of multicollinearity in the FE model, we can apply the Variance Inflation Factor (VIF) test. The test result in *Table 4* shows that the tolerance values of “Centered VIF” for each variable are below the critical value of 10. We should use the “Centered VIF” result rather than the “Uncentered VIF” result since the FE model contains an intercept. The VIF test results suggest that multicollinearity is not a major concern in the fixed effects model. However, some of the values are between 4 and 10, which means that some level

³⁴ Even though the original data set contains information for 540 observations (108 universities over a 5-year period), some of the overlapping data is not available for all universities. Therefore, the final model includes 518 observations within the analyzed 5-year period (unbalanced panel).

of multicollinearity might exist in the model. Nevertheless, no correction is needed since the values do not exceed the general critical value of 10.

Variance Inflation Factors Fixed Effects Model	Coefficient Variance	Uncentered VIF	Centered VIF
Intercept	0.10	27.38	NA
Campus setting: City	0.02	2.64	1.50
Campus setting: Urban	0.03	2.11	1.55
FBS Power 5 school	0.07	10.47	5.31
FBS SEC conference	0.05	1.66	1.45
Sports Illustrated Prestige Ranking	0.01	11.60	6.69
FBS Win-Loss Percentage (Current season)	0.13	12.01	1.93
FBS Bowl appearance (Prev. season)	0.02	3.57	1.52
AP Top 10 Final ranking	0.10	2.46	2.25
AP Top 10 Final ranking (Prev. season)	0.09	2.07	1.90
AP Top 25 Final ranking	0.05	2.89	2.33
NFL Draft Picks (Prev. Season)	0.00	3.91	2.40
Total FB Athletic expenditure	0.00	3.85	1.79
Coaches compensation (Football)	0.00	29.56	7.58
Campus Diversity Index (2017)	0.89	3.39	1.04
Campus Diversity Index (2018)	0.89	3.40	1.04
Campus Diversity Index (2019)	0.66	2.70	1.02
Campus Diversity Index (2020)	0.80	3.12	1.04
Campus Diversity Index (2021)	0.62	2.62	1.04

Table 4. VIF test results (FE model)

The specification of the FE model output results in *Table 5* implies an additive function, which means that there is no evidence of measurable interaction effects between variables. The model includes an intercept as specified in the model equation (methods section, 2B). In addition, the model consists of several control variables. The statistically significant variable “FBS SEC Conference” (p-value < 0.01) boosts recruiting impact for conference members. Similarly, Power 5 schools (most major D1/FBS schools in the U.S.) have a recruiting advantage over G5 schools (also known as mid-majors) as indicated by the highly significant variable (FBS Power 5 school, p-value < 0.01). Furthermore, the geographic-specific variables such as “Campus setting: Urban” (significant at the 90% level of confidence) and “Campus setting: City”

(significant at the 95% level of confidence) suggest that some recruits might favor urban life over remote locations.

REGRESSION MODEL RESULTS: OLS VS FIXED EFFECTS (FE) MODEL OUTPUTS

Depend Var: Avg Team Recruiting Pts	OLS Model I		FE Model	
	β Coeff.	S.E.	β Coeff.	S.E.
Intercept			78.484***	0.309
Region Northeast	50.125***	3.519		
Region Midwest	50.550***	3.469		
Region West	50.679***	3.448		
Region South	51.211***	3.444		
Campus setting: City	0.332**	0.140	0.272*	0.146
Campus setting: Urban	0.217	0.164	0.388**	0.167
FBS Power 5 school	0.933***	0.285	1.560***	0.272
FBS SEC conference	0.803***	0.210	1.418***	0.215
Sports Illustrated Prestige Ranking	0.910***	0.112	0.871***	0.110
FBS Win-Loss Percentage (Current season)	1.355***	0.345	1.358***	0.365
FBS Bowl appearance (Prev. season)	0.127	0.130	0.266*	0.138
AP Top 10 Final ranking	0.618**	0.301	0.588*	0.314
AP Top 10 Final ranking (Prev. season)	0.755***	0.279	0.659**	0.295
AP Top 25 Final ranking	0.514**	0.217	0.656***	0.228
NFL Draft Picks (Prev. Season)	0.126***	0.038	0.127***	0.040
Total FB Athletic expenditure	0.001***	0.000	0.001***	0.000
Coaches compensation (Football)	1.810***	0.220	0.001***	0.000
Campus Diversity Index (2017)	-0.405145	0.482	1.206	0.942
Campus Diversity Index (2018)	0.811*	0.473	1.553*	0.942
Campus Diversity Index (2019)	1.197**	0.481	0.456	0.810
Campus Diversity Index (2020)	1.572***	0.475	1.142	0.894
Campus Diversity Index (2021)	2.448***	0.473	1.758***	0.790
R ²	0.901		0.891	
R ² adj.	0.897		0.886	
DW	2.098		1.105	

*significance level at < 0.10
 **significance level at < 0.05
 ***significance level at < 0.01

Table 5. Model output results: OLS and Fixed Effects (FE) models

Another important control variable shows that college athletic program prestige (specifically football in this case) has a positive impact on recruiting classes (Sports Illustrated / The Athletic 5-year Prestige Rankings, p-value < 0.01). Football programs with a successful track record (5- year period) tend to finish higher in recruiting rankings when compared to football programs with multi-years of less success. However, more recent on-field success is also an important and statistically significant driver of recruiting classes as indicated by

corresponding success measures (AP Top 10 and Top 25 final rankings for the previous and current seasons, respectively). The highly significant variable “NFL draft picks of the previous season”, (p-value < 0.01) suggests that recruits tend to prefer teams with NFL draft track records. In addition, the most recent seasonal performance is represented by the highly significant variable “FBS Win-Loss percentage” for each school (p-value < 0.01) and “FBS Bowl appearance, previous season” (p-value < 0.10). Moreover, programs with higher athletic budgets and the capability of hiring expensive coaching staffs (“expensive” being a proxy variable for “successful”) manage to produce highly ranked recruiting classes. These variables are statistically significant at the 99% level of confidence, respectively. This (FE) model shows that recruiting classes are mostly driven by conference affiliation, athletic prestige, recent on-field success, and financials such as football operating expenses and coaching salaries. The FE model limits us in using a general intercept (adding more geographic-specific dummy variables could lead to multicollinearity issues) but the OLS model (which excludes a general intercept also uses geographic-specific dummy variables that function as intercepts in the model) shows that geographies are highly significant. These results are mostly in line with previous studies as discussed in the literature review section (Dumond et al., 2008; Harris, 2017; Borghesi, 2017; Huml et al., 2018; Chung, 2013). Other secondary variables such as academic rankings are not statistically significant and can be dropped from the model.

Now, adding each campus diversity index (CDI) for the recruiting years of 2017, 2018, 2019, 2020, and 2021 shows different levels of significance for this variable. The main CDI variable split by years is statistically significant for the 2021 recruiting class (p-value < 0.01) and only significant at the 10 percent level in 2018 (p-value = 0.10). The highly statistically significant beta coefficient of CDI 2021 indicates that a +1 ppt increase in the CDI would result

in a +1.76 increase of average recruiting points for schools (on average). This would roughly translate to an increase of +0.5 recruits (for each +1 ppt increase of CDI).³⁵

In contrast, the OLS model suggests that CDI coefficients do increase over the years (and are statistically significant for the 2019, 2020, and 2021 recruiting years with p-values < 0.05). This would suggest that campus ethnic diversity as a factor in college choice decision making among student athletes (specifically college football) might be a more recent but growing phenomenon in college football recruiting. However, we cannot fully rely on the OLS model, which is less efficient for measuring these possible effects when using panel data.

Applying rational choice theory would suggest that the calculated CDI impact level (based on its beta coefficient) should be stable over time provided CDI is a basic preferred preference for some recruits. However, we do detect an increased value in the CDI's beta-coefficients in 2018 and another statistically significant increased value in 2021. This seemingly erratic impact of CDI influencing college choice decisions among high school recruits seems to be prevalent in certain years (based on results in the fixed effects model). Therefore, we conclude that the college football recruiting market is generally highly based on rational choice decision outcomes. However, many FBS schools do report somewhat satisfactory CDI levels (the average CDI level equaled 0.49 in 2020) and it is mostly schools that report lower levels that should be concerned with this "erratic effect" of campus ethnic diversity as an impact factor in the decision process. This means that this phenomenon could generally hurt schools that report low CDI-levels over time (specifically in certain years with high societal tensions).³⁶

³⁵ The achievement of an increase in CDI within a single year is rather difficult, but not completely unusual. However, assuming that a school might be able to boost its CDI-level by x ppt within y years could result in z additional recruits interested in committing to the school during this period. For instance, a school reporting +6 ppt of CDI within a period of 6 years could attract roughly an additional 2-3 ranked recruits solely based on this decision factor (on average) during times of high societal tensions. This number could potentially increase depending on the intensity of tensions and associated media coverage.

³⁶ Real-world applications are discussed in the final sub-section of this study.

and February, we can assume that there could be a lagged effect between media coverage and signing day. This would mean that the high-level of 2020 BLM coverage (ratio) should have an impact on the 2021 signing class. This is also the period when the lagged 2020 BLM media coverage and the measured CDI beta coefficient show highest correlation. Similarly, the lagged high ratio of media coverage of “Kaepernick” (*Fig.10. (b)*) and “Trump” (*Fig.10. (c)*) related topics could have somewhat impacted the following college football recruiting classes in 2018 and 2021, respectively. We should keep in mind that the regression analysis results suggest a minor impact based on ethnic diversity (and BLM-related topics) on recruiting classes in the analyzed years. Furthermore, this qualitative analysis can only indicate a possible correlation between recruiting decision outcomes and BLM/mainstream media coverage but does not take other possible effects into account. There is no clear indication that media coverage itself actually changes decision outcomes or whether other effects are required to create and amplify this impact (e.g. social media posts shared by authoritative figures and famous personalities such as athletes and other celebrities sharing comments and news stories).³⁷

In fact, since BLM mainstream media portrayal tends to be sensational and partisan media portrayal is biased, media coverage does not positively change viewer pre-existing attitudes. This is confirmed by a study conducted by Kilgo and Mourao (2018). In addition, the authors found that media consumers who identify with BLM’s core values are more likely to be Black and non-conservative. Conservative viewers tend to increase media consumption but shift

³⁷ Even though BLM-related search terms are largely used in this analysis, the key word “Covid” could be another possible search term, specifically for the 2020 year. It is assumed that some recruits would prefer to stay closer to home during the Covid-19 pandemic which could have affected recruiting classes. Testing for this potential effect by adding “Covid” to the FE regression model shows a negative but non-statistically significant impact (p-value = 0.41) of the “Covid” variable on recruiting classes. This potential Covid-effect is already partially considered in the regression model and somewhat controlled by the model’s geographic/regional variables (OLS model) and intercept (FE model). Therefore, the “Covid” variable was dropped from the model during the modeling process.

to partisan media outlets (e.g., Fox News) while liberal viewers tend to consume mainstream media outlets.

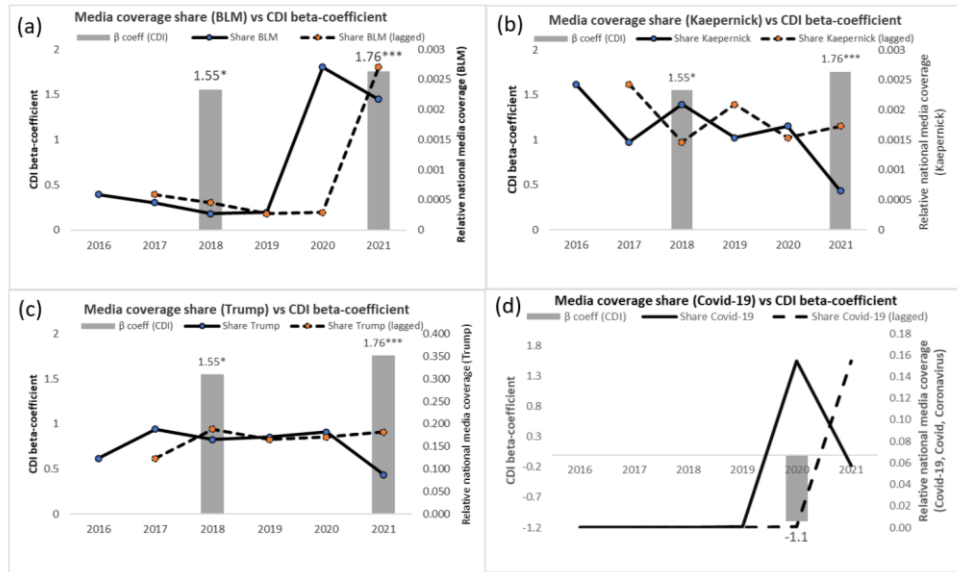


Fig.10. National media coverage (share) vs Modelled CDI beta coefficients (FE) – only statistically significant CDI variables considered; source: mediacloud.org

This study does not specifically investigate how social media usage might affect users and their attitudes towards the BLM movement. Even though it is more likely that social media users follow like-minded people, social media could change pre-existing attitudes positively depending on the source sharing and commenting on news stories. It would be interesting to conduct a study focused on social media activity with respect to valence (positive/negative reactions) rather than the frequency of shared total tweets and posts. It is expected that an increase of mainstream media coverage would lead to an increase in social media activity, which could amplify overall media impact effectiveness. However, since this thesis uses media data (online news stories) as a proxy variable to validate the regression results, I will not further discuss the potential of indirect impact of social media on recruiting decision outcomes.

This analysis result suggests an existing awareness of ethnic identity and an interest in campus ethnic diversity as a decision factor in college decision making processes among certain student-athletes (football players) depending on BLM-related events and corresponding media coverage levels in certain years. This effect is mostly crucial from the perspective of schools reporting relatively low levels of CDI. In this case, universities reporting lower CDI-levels could be disadvantaged when recruiting against universities with higher CDI-levels. This analysis is solely focused on college football recruiting, but it could also extend to other revenue sports (e.g., College Basketball) and even affect the recruitment of general academic and administrative talent. Even though the magnitude of the decision-based outcomes is extremely low from a market perspective, we should assume that market-based decisions can be perceived differently by actors operating in a monopolistic two-sided matching market system. I conclude that the college football recruiting market is mostly based on rational-choice decision making factors (based on most control variables in the regression results which in turn is based on the utility function as discussed in the methods section) while some of these recruits might favor value-based decision factors (especially in years with high levels of societal tensions (lagged impact): 2018 and 2021). This phenomenon can be explained by applying sociological theory (Max Weber's value-rational social action) as discussed in the methods section.

The study results answer the research question whether CDI might positively impact college athletic recruiting classes. These results suggest that CDI could slightly boost college football recruiting class rankings during times of extreme societal tensions and corresponding high-levels of national media coverage (e.g., media coverage of BLM-related events) as proven in the secondary-analysis (taking a short-lagged effect into account). This means that schools reporting higher levels of CDI could be better positioned than peer schools with respect to high

school football recruiting (and potentially general student recruiting). Since higher ranked recruiting classes should lead to more talented teams and produce more wins (overall), CDI should also indirectly influence internal UBI among the student body (based on the theory that UBI is influenced by college athletics and mass media coverage, stated by Yao et al. (2019)). Overall universities should be interested in improving campus ethnic diversity levels to boost college football recruiting classes, as this would have an impact on athletic success and overall branding. As a side effect, it could also increase general application numbers, improve university internal university brand identification (UBI) and brand citizenship behaviors (Chung, 2013; Yao et al., 2019).

In the following sub-section, I will map some of the utilized data (mainly CDI and additional DI data) and qualitatively analyze how major public universities (FBS-P5 schools) are geographically positioned with respect to their peer institutions. This analysis is limited to schools located in the Southeast and Midwest regions and does not directly relate to the main study analysis results (regression results). However, I will refer to the study results to support the assumption that FBS schools with lower CDI levels could be generally disadvantaged when competing for athletic talent during times of societal tensions.

5.2. Applications in a GIS Environment

The generated study findings can be specifically applied to universities that report lower CDI levels. Some colleges may be more impacted by recruiting outcomes when ethnic diversity is a factor because these schools report significantly lower CDI levels than other peer

universities. In times of societal tensions, some high school football recruits will select schools with higher CDI levels which can be shown and measured through the positive link between CDI and college football recruiting class points. This suggests that certain recruits could view campus ethnic diversity as a desirable college selection criterion (see results section). This might also have an impact on the recruitment of general academic students (directly and indirectly). However, additional research is required in this respect.

According to Vespa et al. (2018), the US will experience a demographic turning point around 2030. This will be affected by a shifting dynamic brought on by increasing net international migration overtaking naturally occurring population growth. The number of people under 18 will grow somewhat (from 74 million to 75.7 million), with most of these additions being new Hispanic residents. In this study, I will focus on the current ethnic diversity levels in the Southeast and Midwest (at the county level), and then I will briefly discuss the strategic positions of universities in less advantageous (low diversity level) recruiting areas when compared to peer schools in respective regions.³⁸

In order to discuss university positions with respect to their geographic and academic peer institutions, we have to identify and geographically specify certain locations of university campuses and their overlapping primary recruiting areas by adding buffer zones functioning as primary “recruiting interest areas” (*Appendix 2B*). The selected radius of 250km/155miles is a conservative assumption and does not represent any official university recruiting areas.

However, it is geographically in a close proximity of these schools and aligns with secondary

³⁸ The provided radar chart in *Appendix 2C* provides a visualized representation of all schools considered in the original regression analysis and shows that most schools reporting relatively low CDI-levels are in the Midwest and South regions.

high school football recruiting data.³⁹ We assume that it is a somewhat realistic representation that should universally apply to most selected public universities.

The created output maps (*Fig. 11.*, and *Appendix 2A and 2B*) display selected university campuses of major public universities along with their respective campus ethnic diversity (CDI) levels within their geographic regions. College campuses colored “red” indicate below average CDI levels (range: 0.25 – 0.34), college campuses colored “orange” (range: 0.35 – 0.53) show medium CDI levels, and college campuses colored green (CDI > 0.53) represent high CDI levels.⁴⁰ The county-level DI scores, represented in green color (dark colors representing higher levels of ethnic diversity) can be accessed via ESRI ArcGIS Online. Overall, counties located in the U.S. Western, South, and Northeastern region have the highest levels of ethnic diversity, while counties located in the Midwestern region generally report lower ethnic diversity levels.

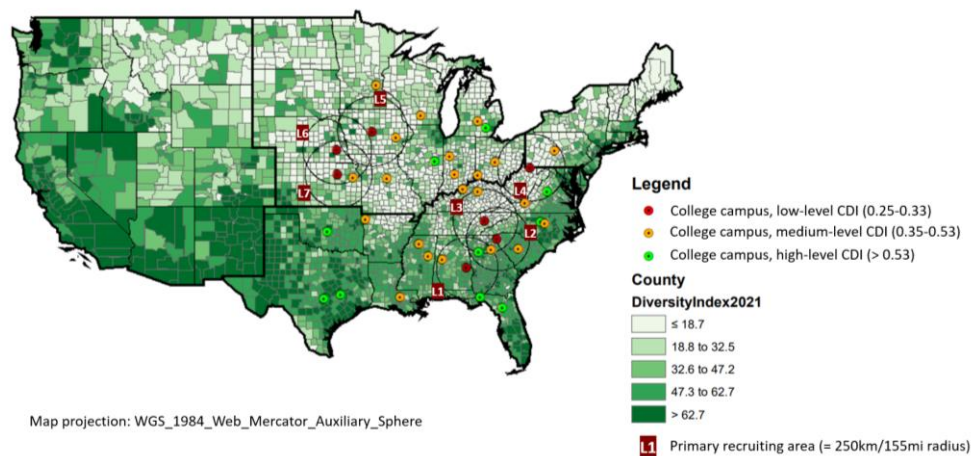


Fig. 11. 2021 U.S. ethnic diversity index (county-level) and CDI levels for selected universities. DI: ESRI ArcGIS Online (2021). CDI: U.S. News World & Report (2020).

³⁹ In fact, the maps shown in Appendix 2D reflect official recruiting areas of selected and analyzed universities with respect to college football prospects which confirms the assumption that many high school football signees generally tend to prefer proximity to their first-choice universities.

⁴⁰ The selected CDI class ranges are somewhat based on the available DI classifications rather than other typical classification methods such as using Jenks natural breaks. The latter classification method would have resulted into too many classes or classes with wide ranges, both not suitable for this type of analysis. The provided DI classifications can be used as a rough reference. In the case of CDI (medium class), the selected class range is wider when compared to the corresponding DI class of [32.6-47.2] due to a more conservative approach in this analysis.

The selected Midwest- and Southern-based schools (major public FBS P5 universities) are listed in *Table 6(B)* and can be compared to the main data set (*Table 6(A)*) used in the original regression analysis.

(A) Original data			CDI		
Conference	Class	Schools	MIN	AVG	MAX
ACC	P5	8	0.33	0.51	0.65
BIG10	P5	12	0.33	0.48	0.70
BIG12	P5	7	0.30	0.48	0.71
PAC12	P5	9	0.47	0.60	0.73
SEC	P5	13	0.25	0.41	0.61
AAC	G5	7	0.27	0.54	0.73
CUSA	G5	12	0.19	0.49	0.70
MAC	G5	11	0.27	0.41	0.67
MWC	G5	10	0.22	0.53	0.76
SBC	G5	10	0.32	0.52	0.73
AVG		10	0.30	0.50	0.70

(B) Study specific data			CDI		
Conference	Class	Schools	MIN	AVG	MAX
ACC	P5	8	0.33	0.51	0.65
BIG10	P5	12	0.33	0.48	0.70
BIG12	P5	5	0.27	0.47	0.71
SEC	P5	13	0.25	0.41	0.61
AAC	G5	1	0.35	0.35	0.35
AVG		10	0.30	0.47	0.67

Table 6. CDI: Campus Ethnic Diversity Index (Study Area), U.S. News & World Report, 2020

We identify seven major FBS P5 public universities reporting below average campus diversity levels within the general study area (*Table 3*).⁴¹

In order to discuss these universities’ positions with respect to their geographic and/or academic peer institutions, we can add aforementioned buffer zones functioning as primary “recruiting interest areas” to these institutions.⁴² In case of major FBS-P5 Midwestern based schools, only two selected major public P5 universities report high CDI levels (University of Michigan and the University of Illinois). These universities are not located within the immediate recruiting areas of other major public peer universities reporting low CDI levels (Appendix 2C). However, these midwestern-based universities are generally surrounded by counties with lower DI levels. In order to increase CDI levels, certain universities (Iowa State, Kansas State, and

⁴¹ In this analysis, “peer school” can be either academic and/or geographic and are situated within or close to the 155 mile buffer zone.

⁴² Buffer zones were created with ArcMap (Field: Radius, Map: Geodesic, Distance/Linear Unit: Meters) and are limited to zones of a 155-miles radius, and centered around a college campus.

Nebraska – L5, L6, L7 respectively; Appendix 2B) would have to increase their efforts to attract more diverse students. Similarly, West Virginia University (L4) reports a CDI level of 0.27 and is located in a relatively low ethnic diversity area. In addition, it is surrounded by other major public universities reporting higher CDI levels (Ohio State, Penn State, and Virginia). West Virginia University would have to strategically coordinate marketing investment and expand recruiting areas to significantly improve ethnic diversity levels over time. In contrast, Auburn University (L1) and Clemson University (L2) are in relatively high-level ethnic diversity region (DI = 32.6-62.7) but both report low levels of CDI levels (0.25 and 0.33, respectively). In case of Auburn University, other peer schools reporting higher CDI levels are located mostly on the periphery of the utilized 155-mile primary recruiting radius (Georgia Tech, Georgia, Florida State, and Alabama). Nonetheless, Auburn and Clemson should be able to capitalize on their respective favorable locations and improve ethnic diversity levels over time. Lastly, the University of Tennessee (L3) is in a mostly low-to-medium ethnic diversity area (DI = 18.8-32.6) with several peer universities located on its periphery (Kentucky, Clemson, Georgia, and Georgia Tech). The University of Tennessee would have to invest more heavily in recruiting efforts although it is located in a somewhat more favorable area when compared to West Virginia University. It is noteworthy that this qualitative analysis is mostly focused on geographic locations and relative positions of universities and does not take other factors into account (academic rankings, athletic conference affiliations, among others). However, the conducted regression analysis does control for some of these factors, and it should be expected that these universities would have a relatively harder time to recruit ethnic diverse talent during times of extreme societal tension. This specific analysis is mainly concerned with universities and their general geographic locations with respect to regional county DI-levels. We assume that

findings can be applied to a generic recruiting pool (academic and athletic) based on the regression results and secondary studies as discussed in the literature review section. However, we cannot be completely certain that general college applicants and high school football recruits follow similar decision-making processes. Additional research is required to be certain. Furthermore, this study only considers major public FBS P5 universities and does not take other institutions into account (HBCUs, private institutions, and service academies).

Finally, several study limitations should be addressed. We can group limitations into different categories including data and technical limitations, structural limitations, and industry-related limitations:

Data and technical limitations:

- There is some limited data availability with respect to the U.S. News Campus Diversity Index (CDI) which is publicly available only for the 2018 (partially) and 2020 academic years. However, since campus ethnic diversity does not change significantly within a few years, this limitation can be mostly addressed by interpolating and averaging data points.

Structural limitations:

- Recruiting ratings and resulting class rankings are based on recruiting services and evaluators. These evaluators rate recruits based on their talent and abilities, but these ratings are subjective. This type of limitation would affect the dependent variable. We assume that this is a structural limitation affecting all schools similarly.

Industry related limitations:

- Recruiting high school athletes is a very complex process and several factors cannot be easily measured and integrated into the model:

- Long-term relationships between college coaches and high school recruits/coaches can affect college choice decisions. In some cases, these relationships can be even inter-regional and are not always obvious.
- Relationships between players. In many cases, players also recruit each other, and it would be hard to identify ties between all players in a recruiting class.
- Recruiting violations can have an impact on recruiting classes. These activities are illegal and cannot be easily measured with data, since many violations are not known, or it normally takes years to find out about major violations.

Generally, unobserved factors across schools might have an impact on the analysis. This can be addressed by using certain methods, mainly fixed effects regression methods. Other limitations such as NIL and the transfer portal do not significantly apply here since the data set is based on the 2017-2021 recruiting cycles.

6. CONCLUSION

In conclusion, the college football recruiting market is largely based on rational-choice decision making outcomes when analyzed from the recruits' perspectives.⁴³ In this study, the conducted main analysis (based on fixed-effects regression methods) reveals that high school football recruits place high value on coaching reputation and relationships, college football brand name,

⁴³ In this study, the analyzed period is limited to Division I (FBS) public universities (including P5 and G5 schools) between the 2017 and 2021 recruiting cycles. The analyzed data set does not include private institutions, service academies, and non-FBS schools due to limited data availability.

and conference affiliation (specifically, SEC schools have a built-in geographic recruiting advantage).⁴⁴ Other impact factors include a school's recent seasonal performance and NFL draft record. These impact factors mostly function as control variables that partially explain nationally ranked college football program recruiting classes (based on average scores). Furthermore, the fixed effects regression model reveals that some high school football recruits also show a tendency to include non-economic decision factors (measured by U.S. News' campus ethnic diversity index (CDI)) in certain years). This impact is statistically significant in 2018 (at the 10 percent level of significance) and 2021 recruiting cycles (at the 1 percent level of significance). The integration of the campus ethnic diversity index into the regression function is a novel approach of extending the utility function of high school football recruits beyond considering mainly economic-driven decision factors. This study shows that socio-cultural decision factors such as CDI can play a role in the decision process of high school football recruits. However, this analysis only technically isolates and quantifies an effect and does not explain the main drivers of this phenomena. Therefore, utilizing secondary Media Cloud data in a secondary analysis suggests that the ongoing social movement BLM has wide implications, even affecting crucial career decisions of high school football recruits. This insight could also apply to recruiting outcomes in other industries and should be researched in the future. When doing this type of analysis, we should be aware that the utilized CDI score is geographically limited to the schools' campus areas and does not take other similar factors into account. For instance, a university's hometown or county (community) and their respective ethnic diversity levels could also affect decision outcomes and in some cases nearby HBCUs could also attract athletic talent to the area. In some cases, various effects could cancel each other out or even have a

⁴⁴ The fixed-effects model has a high-level goodness of fit (R^2 0.89) and the calculated VIF scores are below the required threshold value of 10 indicating low level of multicollinearity.

compounding effect. Future studies could take these additional variables into account and thus add additional social factors to the analysis.

When specifically focusing on the impact factor campus ethnic diversity index (CDI), it is apparent that overall, the recruiting class of 2021 placed higher value on this factor than other recruiting classes.⁴⁵ This phenomenon can be validated in a qualitative secondary-analysis by utilizing secondary data (Media cloud data) and comparing BLM-related national online news-stories to the modelled coefficients of the CDI variable over the years. Since the results suggest that some recruits were influenced by certain BLM-related events covered by news media outlets and opted for colleges with higher CDI levels when compared to peer institutions reporting lower CDI-levels, we conclude that even though the college football recruiting market is mostly based on economic or means-end rational choice-based decision making, this does not necessarily fully apply to years with high levels of societal tensions.

More generally, sociologist Max Weber states that some individual agents will adhere to value-oriented rational actions in certain situations and act differently than predicted by classical rational-choice decision making models. This secondary analysis only considers mainstream media (online news) coverage but does not use social media data as a second validator due to lack of data availability. Future studies could take social media data into account and even integrate topic-specific data directly into the regression analysis. Another way to validate results is to investigate recent national college enrollment trends. National news stories confirm (Miranda, 2016; Green, 2022) that HBCU college enrollment numbers are generally higher during times of social tensions, especially during the height of the BLM-movement. Even though these numbers apply to general student applicants and mainly affect HBCUs, it is plausible that

⁴⁵ The measured impact is extremely low and only applies to a limited number of recruits in the 2021 recruiting class.

some top high school football recruits would still follow a combination of a means-end/value-end decision process and still favor committing to high-level FBS football while opting for major public universities reporting higher CDI-levels. This effect was mostly apparent in 2020 (and affected the 2021 recruiting class) but was also a minor factor in 2018 (affecting the 2019 recruiting class). This effect is extremely low and would not make or break a single recruiting class. However, even small effects compound over the years. In fact, considering future demographic shifts and ongoing societal tensions driven by national events, some universities may experience a decline of quality applications from qualified ethnic diverse talent in the future. This could lead to a slow-down in general quality application numbers and negatively influence athletics recruiting and possibly internal university brand identification (UBI).

This thesis shows that the link between CDI to UBI can be indirectly explained by using athletics recruiting classes as a proxy measure (for college athletics) since UBI is generally a function of mass media and athletics as stated by Yao et al. (2019). Students feel more connected to each other and their universities when media coverage is largely positive and school teams are successful. This could lead to overall positive campus experiences and eventually also translate into higher revenue (donations, merchandise sales, increased student applications, higher ranked collegiate athletics recruiting classes). Since recruiting is the “lifeblood” of every university and college sports program, it is essential for universities to address potential issues that could affect future high-quality recruiting outcomes.

In the future, some institutions of higher education could be under pressure struggling to attract talented and diverse student bodies due to demographic changes. Some major public universities currently reporting low diversity numbers could fall behind and fail to attract high-

quality applicants and diverse talent when compared to peer institutions. According to Vespa et al. (2018), the overall demographic turning point for the United States will occur around 2030. Since the United States consist of many regions, some regions will experience different dynamics, but many universities will have to face this challenge. More specifically, when displaying relevant data spatially and utilizing GIS methods, we can identify some major public universities that could face strategic disadvantages in the future. For instance, some universities such as Auburn University and Clemson University report relatively low CDI levels but are positioned in areas with higher DI levels. Even though it will take some time and effort to catch up, these universities are located in favorable recruiting areas. In contrast, West Virginia University reports a similarly low CDI level but is also located in an area with relatively low DI levels. Further, several major public universities with higher CDI levels are positioned on its periphery (155-miles radius), including Maryland, Ohio State, and Penn State. This could make it harder for West Virginia University to compete for general talent in the future. In this case, more resources and updated strategies would be required to attract quality athletic and academic talent. This qualitative analysis is based on the assumption that most regions will experience significant growth rates of ethnic-diverse populations and that social movements (e.g., BLM) will continue to be relevant and covered by mainstream media outlets in the future. In the main analysis, I calculated a paltry impact of CDI as an impact factor in college choice decision making outcomes among high school football recruits in 2020. This statistically significant impact is associated with a rather low national media coverage of BLM related topics (0.27 percent of all 2020 national online stories mentioned BLM in news stories according to the Media Cloud platform). It is important to understand that mainstream media coverage only functions as a proxy to measure the increase and intensity of events associated with topics of the

BLM movement. Since mainstream media coverage focuses mostly on event-centered reporting and fails to discuss the goals and general background of the movement (Umamaheswar, 2020; Chan & Lee, 1984), it can be used as a general proxy to measure the increase and intensity of events in this secondary analysis. More interestingly, a deep-dive analysis of social media activity data (if available) could be a more effective approach and should be considered in future studies. However, potential future events and a resulting surge in mainstream media coverage (which should further drive social media activity) could lead to an increase in future decision outcomes favoring factors associated with diverse culture and ethnic diversity. This could benefit universities already reporting higher levels of campus ethnic diversity levels with respect to attracting high levels of talent in the future. Therefore, universities should be prepared and have strategies in place to tackle this potential challenge.

However, universities should not merely focus on boosting ethnic campus diverse levels since diversity is not merely a “numbers game”: The topic of diversity should be genuinely promoted and supported by administrators for the purpose of creating an inclusive academic experience (Asquith, 2021). Furthermore, the topic of compositional campus diversity should be approached institution-wide in a concerted effort across departments and colleges. This matter cannot be simply addressed by individual departments and colleges as the overall campus culture would overshadow these efforts (Winkle-Wagner, 2018). Generally, it is essential to promote and improve campus ethnic diversity among student bodies to enhance social trust and cultural diversity awareness, and eventually improve university brand citizenship behaviors (Yao, 2019). Furthermore, this study shows that higher levels of campus ethnic diversity can lead to improved internal university brand identification (UBI) due to the influence of athletics (athletic recruiting functions as a proxy variable in this study) and mainstream media coverage. Since mainstream

and social media is an essential part of this inter-relationship, it is also advisable to take PR and social media factors into account.

This study focuses on the interplay of college athletics within the larger academic environment among major public universities in the United States and studies how highly ranked recruiting classes can indirectly influence internal university brand identification. The resulting effects could possibly elevate a university's brand and affect academic recruiting, long-term. In this study, I acknowledge and reference the possibility of the symbiosis of athletics and academics when applicable but do not conduct specific analyses related to this matter. Future studies could either adopt this study's methods and apply it to non-athletic recruiting (depending on data availability) or conduct research analysis focused on potential halo effects between athletics and academic areas. Furthermore, other industries that compete for top-level regional and national talent could be affected in similar ways. For instance, the workforces of big tech companies with headquarters in Silicon Valley are merely comprised of two percent of minority employees (Franklin, 2021) and many big tech companies struggle to retain ethnic diverse talent (Grant, 2021). It requires significant investment to recruit international talent, and this automatically limits the talent pool and recruiting pipelines for these companies. Organizations with higher levels of employed ethnic diverse talent could have a long-term competitive advantage with regards to recruitment of talent when taking future demographic changes into account. Moreover, many organizations would benefit from more ethnic diverse workforces. According to a recent RAND Europe study paper that was primarily focused on the U.K. and U.S. armed forces, other sectors like the military are also interested in utilizing diversity benefits to "maximize [its] strategic and operational success" (Slapakova et al. , 2022). This RAND study generally examines how the armed forces could boost ethnic diverse recruitment and lists several

possible strategies, including hiring more recruiters from a variety of backgrounds. Overall, different industries face various challenges. Indeed, recruitment of talent might require different strategies and requirements (e.g., the military might require applicants to present certain security clearances). However, most industries and companies will face similar future challenges due to changing demographics and should establish a diverse culture to expand the available talent pool. Therefore, organizations should constantly analyze their strategic positions and study how they compare to direct and indirect competitors when it comes to the recruitment of ethnic-diverse talent.

REFERENCES

- 247Sports Staff. 2012. 247 Sports Rating Explanation. Retrieved April 15, 2022, from 247Sports website: <https://247sports.com/Article/247Sports-Rating-Explanation-81574/>
- Anderson, M., Toor, S., Rainie, L., & Smith, A. 2018. 2. An analysis of #BlackLivesMatter and other Twitter hashtags related to political or social issues. Pew Research Center: Internet, Science & Tech. <https://www.pewresearch.org/internet/2018/07/11/an-analysis-of-blacklivesmatter-and-other-twitter-hashtags-related-to-political-or-social-issues/>
- Asquith Joann, Dennis Bristow, Kenneth Schneider, Afsaneh Nahavandi, and Amyx, Douglas. 2011. Cultural Diversity as an Element of the University Campus Environment: Does It Matter To Today's Students? *Marketing Management Journal* 21(1):214-221.
- Black Lives Matter. About Black Live Matter. [blacklivesmatter.com](https://blacklivesmatter.com/about/). 2022. Retrieved August 21, 2022, from <https://blacklivesmatter.com/about/>
- Borghesi, Richard. 2016. Pay for Play: The Financial Value of NCAA Football Players. *SSRN Electronic Journal*.
- Braddock, J. H., & Hua, L. 2006. Determining the college destination of African American high school seniors: Does college athletic reputation matter? *The Journal of Negro Education*, 75(3), 532–545. <http://www.jstor.org/stable/40026820>
- Chung, Doug. 2013. The Dynamic Advertising Effect of Collegiate Athletics. *SSRN Electronic Journal*.
- Comeaux, E., Chapman, T. K., & Contreras, F. 2020. The college access and choice processes of high-achieving African American students: A critical race theory analysis. *American Educational Research Journal*, 57(1), 411–439. doi:10.3102/0002831219853223
- DataFace. 2018. Where do top NCAA football recruits call home? (2018, August 30). The DataFace. <https://thedataface.com/2018/08/sports/college-football-map>
- Drafthistory.com. 2023. Drafthistory.com. Retrieved March 7, 2023, from <http://www.drafthistory.com/>
- Dumond, J. M., Lynch, A. K., & Platania, J. 2008. An economic model of the college football recruiting process. *Journal of Sports Economics*, 9(1), 67–87. doi:10.1177/1527002506298125
- Esri Data Development. 2020. 2021/2026 ESRI diversity index. Esri. <https://storymaps.arcgis.com/stories/94db3c9e75b54e22a0e99978ad77df54>

- Franklin, R. C. 2021. Black workers in Silicon Valley: macro and micro boundaries. *Ethnic and Racial Studies*, 45(1), 69–89. <https://doi.org/10.1080/01419870.2020.1866208>
- Google. 2021. Diversity Annual Report. Googleusercontent.Com. Retrieved April 9, 2022, from https://static.googleusercontent.com/media/diversity.google/en//annual-report/static/pdfs/google_2021_diversity_annual_report.pdf?cachebust=2e13d07
- Grant, Nico. 2021. Bloomberg. Google is hiring more black people but struggling to retain them. Retrieved April 9, 2022, from <https://www.bloomberg.com/news/articles/2021-07-01/google-is-hiring-more-black-people-but-struggling-to-retain-them>
- Green, E. L. 2022. Why students are choosing H.b.c.u.s: ‘4 years being seen as family.’ *The New York Times*. <https://www.nytimes.com/2022/06/11/us/hbcu-enrollment-black-students.html>
- Green, Steven. 2002. Rational Choice Theory: An Overview. Baylor University Faculty
- Guala, F. (n.d.). Al Roth’s game theory, experimental economics, and market design page. Stanford.edu. Retrieved December 14, 2022, from <https://web.stanford.edu/~alroth/alroth.html>
- Harris, Jill S. 2017. State of Play: How Do College Football Programs Compete for Student Athletes?. *Review of Industrial Organization* 52(2):269–81.
- Huml, Matt Ryan, N. David Pifer, Caitlin Towle, and Cheryl R. Rode. 2018. If We Build It, Will They Come? the Effect of New Athletic Facilities on Recruiting Rankings for Power Five Football and Men's Basketball Programs. *Journal of Marketing for Higher Education* 29(1):1–18.
- Jackson, M. 1982. An analysis of max Weber’s theory of ethnicity. *Humboldt Journal of Social Relations*, 10(1), 4–18. <http://www.jstor.org/stable/23261855>
- Jensen et al. 2020. US Census Bureau. 2022. Measuring racial and ethnic diversity for the 2020 Census. <https://www.census.gov/newsroom/blogs/random-samplings/2021/08/measuring-racial-ethnic-diversity-2020-census.html>
- Kalberg, S. 1980. Max weber’s types of rationality: Cornerstones for the analysis of rationalization processes in history. *American Journal of Sociology*, 85(5), 1145–1179. <https://doi.org/10.1086/227128>
- Kilgo, D., & Mourão, R. R. (2019). Media effects and marginalized ideas: Relationships among media consumption and support for Black Lives Matter. *International Journal of Communication*, 13(0), 19. <https://ijoc.org/index.php/ijoc/article/view/10518>
- Knight - Newhouse. 2022. College Athletics Database. Retrieved April 16, 2022, from Knightnewhousedata.org website: <https://knightnewhousedata.org/>

- Latlong.net. Latitude and longitude finder. 2022. Latlong.net. Retrieved November 10, 2022, from <https://www.latlong.net/>
- McFarland, S. (2022). Why Coppell's Morgan Price, a star gymnast, turned down full SEC ride to make HBCU history. *The Dallas Morning News*. <https://www.dallasnews.com/high-school-sports/2022/06/02/why-coppells-morgan-price-a-star-gymnast-turned-down-full-sec-ride-to-make-hbcu-history/>
- McIntyre, L.-R. 2020. Microsoft's 2020 Diversity & Inclusion report: A commitment to accelerate progress amidst global change. Retrieved April 12, 2022, from The Official Microsoft Blog website: <https://blogs.microsoft.com/blog/2020/10/21/microsofts-2020-diversity-inclusion-report-a-commitment-to-accelerate-progress-amidst-global-change/>
- McIntyre, Patricia, & Antonio, Anthony Lising. 1996. Ethnic and Racial Differences in Selectivity of College Choice. Paper presented at the annual Meeting of the American Educational Research Association (New York, NY, April 8-13, 1996)
- McLeod, D. M., & Detenber, B. H. 1999. Framing effects of television news coverage of social protest. *The Journal of Communication*, 49(3), 3–23. <https://doi.org/10.1111/j.1460-2466.1999.tb02802.x>
- Media Cloud dataverse. (n.d.). Harvard.edu. Retrieved September 26, 2022, from <https://dataverse.harvard.edu/dataverse/mediaCloud>
- Meyer, P., & McIntosh, S. 1992. The USA today index of ethnic diversity. *International Journal of Public Opinion Research*, 4(1), 51–58. doi:10.1093/ijpor/4.1.51
- Miranda, S. 2022. After the rise of BLM, Black students and their families are heading back to HBCUs. (2022, August 16). Georgia Public Broadcasting. <https://www.gpb.org/news/2022/08/16/after-the-rise-of-blm-black-students-and-their-families-are-heading-back-hbcus>
- Morse, R. 2021. Campus Ethnic Diversity Methodology. Retrieved April 14, 2022, from Usnews.com website: <https://www.usnews.com/education/best-colleges/articles/campus-ethnic-diversity-methodology>
- Mundt, M., Ross, K., & Burnett, C. M. 2018. Scaling social movements through social media: The case of Black Lives Matter. *Social Media + Society*, 4(4), 205630511880791. <https://doi.org/10.1177/2056305118807911>
- NCAA. Demographics database. 2022. Ncaa.org. Retrieved August 21, 2022, from <https://www.ncaa.org/sports/2018/12/13/ncaa-demographics-database.aspx>
- NCAA. Recruiting rules. 2012. Retrieved April 17, 2022, from Ncsasports.org website: <https://www.ncsasports.org/ncaa-eligibility-center/recruiting-rules>

- NCAA. What is the NCAA? 2022. Ncaa.org. Retrieved August 30, 2022, from <https://www.ncaa.org/sports/2021/2/10/about-resources-media-center-ncaa-101-what-ncaa.aspx>
- O'Brien, R. M. 2007. A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>
- Popp, N., Pierce, D., & Hums, M. A. 2011. A comparison of the college selection process for international and domestic student-athletes at NCAA Division I universities. *Sport Management Review*, 14(2), 176–187. doi:10.1016/j.smr.2010.08.003
- Sidanius, J., Levin, S., Van Laar, C., & Sears, D. O. 2008. *The diversity challenge: Social identity and intergroup relations on the college campus*. Russell Sage Foundation Publications.
- Slapakova, Linda. 2022. *Leveraging diversity for military effectiveness*. RAND Europe.
- Stock, J. H., & Watson, M. W. 2018. *Introduction to Econometrics* (4th ed.). Pearson.
- Umamaheswar, J. 2020. Policing and racial (in)justice in the media: Newspaper portrayals of the “Black Lives Matter” movement. *Civic Sociology*, 1(1). <https://doi.org/10.1525/001c.12143>
- United States Census Bureau. About the Topic of Race. 2022. Retrieved August 32, 2022, from census.gov website: <https://www.census.gov/topics/population/race/about.html>
- U.S. News & World Report. 2022. Campus Ethnic Diversity. Retrieved April 16, 2022, from Usnews.com website: <https://www.usnews.com/best-colleges/rankings/national-universities/campus-ethnic-diversity>
- Van Stekelenburg, J., & Klandermans, B. 2013. The social psychology of protest. *Current Sociology. La Sociologie Contemporaine*, 61(5–6), 886–905. <https://doi.org/10.1177/0011392113479314>
- Vespa et al. 2018. US Census Bureau. 2020. Demographic turning points for the United States: Population projections for 2020 to 2060. <https://www.census.gov/library/publications/2020/demo/p25-1144.html>
- Walker-DeVose, D. C., Dawson, A., Schueths, A. M., Brimeyer, T., & Freeman, J. Y. 2019. Southern assumptions: normalizing racialized structures at a university in the Deep South. *Race, Ethnicity and Education*, 22(3), 355–373. doi:10.1080/13613324.2017.1417256

Winkle-Wagner, R., & McCoy, D. L. 2018. Feeling like an “Alien” or “Family”? Comparing students and faculty experiences of diversity in STEM disciplines at a PWI and an HBCU. *Race, Ethnicity and Education*, 21(5), 593–606.
doi:10.1080/13613324.2016.1248835

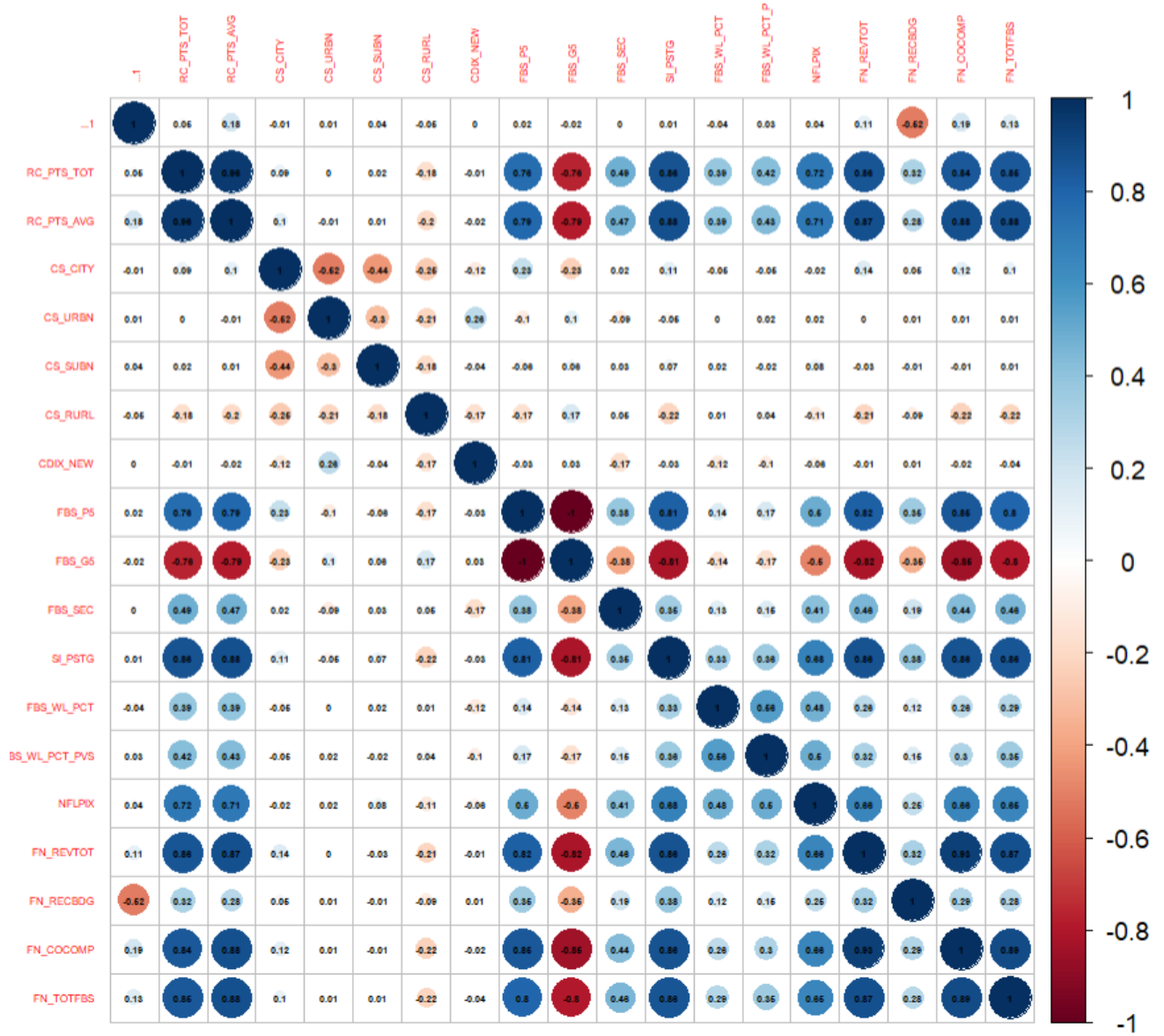
Yao, Qingjiang, Q., Mary C. Martin, Hsin-Yen Yang, and Scott Robson. 2019. Does Diversity Hurt Students’ Feeling of Oneness? A Study of the Relationships among Social Trust, University Internal Brand Identification, and Brand Citizenship Behaviors on Diversifying University Campuses. *Journal of Marketing for Higher Education* 29(2).

APPENDIX 1A: FULL DATA LIST (VARIABLES), 2017-2021

METRIC VARIABLES	CODE/LABEL	SOURCE	UNIT	Min	Mean	Median	Mean Absolute Deviation	Max	Range	SD	SE
RESPONSE VARIABLE											
Recruiting Points, Total	RC_PTS_TOT	247Sports	Points total	48	178	168	52	328	279	52.84	2.27
Recruiting Points, Average	RC_PTS_AVG	247Sports	Points average	76	84	84	4.11	95	19	4.00	0.17
EXPLANATORY VARIABLE (NON-FINANCIAL DATA)											
US News Campus Diversity Index											
	CDIX_NEW	U.S. News	Index	0.19	0.48	0.47	0.18	0.76	0.57	0.15	0.01
EXPLANATORY VARIABLE (FINANCIAL DATA)											
Revenue Total											
Revenue Total	FN_REVTOT	Knight-Newhouse	USD	14,653,575	79,651,202	65,167,264	48,918,440	391,769,609	377,116,034	50,678,048	2,182,858
Other Expenses	FN_OTHRXP	Knight-Newhouse	USD	677,955	8,531,907	7,193,675	6,240,037	44,826,105	44,148,150	6,454,070	277,996
Medical Expenses	FN_MEDICL	Knight-Newhouse	USD	43,817	1,139,136	933,792	614,717	5,092,807	5,048,990	821,731	35,394
Competition Guarantees	FN_COMPGT	Knight-Newhouse	USD	9,838	1,570,855	1,235,022	906,643	9,584,388	9,574,550	1,227,602	52,877
Recruiting Budget	FN_RECBDG	Knight-Newhouse	USD	193,774	2,707,020	1,486,438	1,319,950	31,357,442	31,163,668	3,784,265	163,000
Game Expenses and Travel	FN_GEXPAT	Knight-Newhouse	USD	1,057,063	10,066,914	8,076,389	6,142,926	45,933,168	44,876,105	7,342,852	316,279
Facilities and Equipment	FN_FACEQP	Knight-Newhouse	USD	1,246,017	16,421,837	13,051,450	11,768,406	67,710,775	66,464,758	12,118,145	521,965
Coaches Compensation	FN_COCOMP	Knight-Newhouse	USD	1,769,250	14,227,183	12,847,989	10,010,795	40,841,386	39,072,136	8,616,326	371,131
Support and Admin Compensation w/Severance	FN_SAACWS	Knight-Newhouse	USD	83,596	13,447,919	10,348,304	8,496,351	49,901,820	49,818,224	9,367,186	403,473
Athletic Student Aid	FN_ATHLSA	Knight-Newhouse	USD	0	22,948,801	11,494,932	6,178,864	194,388,450	194,388,450	31,516,795	1,358,786
Corporate Sponsorship, Advertising, Licensing	FN_CSPADL	Knight-Newhouse	USD	22,500	6,732,698	4,440,208	5,214,980	47,184,531	47,162,031	7,323,593	315,449
Donor Contributions	FN_DONCON	Knight-Newhouse	USD	90,653	15,841,388	9,541,269	11,198,176	298,501,081	298,410,428	19,406,295	835,888
NCAA/Conference Distributions, Media Rights, and Post-Season Football	FN_CDMPRS	Knight-Newhouse	USD	1,237,232	22,507,432	9,535,212	11,443,923	70,717,610	69,480,378	20,672,847	890,443
Ticket Sales	FN_TIXSAL	Knight-Newhouse	USD	231,725	13,771,661	8,045,951	10,176,801	72,457,216	72,225,491	14,673,713	632,042
Institutional/Government Support	FN_INSGOV	Knight-Newhouse	USD	0	8,669,339	6,146,555	9,023,926	55,184,732	55,184,732	9,026,967	394,345
Student Fees	FN_STFEES	Knight-Newhouse	USD	0	5,845,484	3,797,247	5,629,798	32,603,660	32,603,660	6,363,097	282,039
Total Academic Spending (University-Wide)	FN_TOTACS	Knight-Newhouse	USD	103,352,852	1,025,001,612	792,527,142	566,958,509	5,506,223,182	5,402,870,330	831,581,852	35,818,766
Total Football Spending	FN_TOTFBS	Knight-Newhouse	USD	5,468,700	21,567,581	18,070,018	13,042,156	69,718,057	64,249,357	13,491,458	581,118
Total Football Coaching Salaries	FN_TOTFCS	Knight-Newhouse	USD	0	6,279,510	5,393,238	4,478,158	20,996,858	20,996,858	4,265,564	183,731

OTHER CONTROL VARIABLES: GEOGRAPHIES	SOURCE	DETAILS	TYPE
Conference Affiliation	NCAA.org	ACC, SEC, PAC12, etc	Binary (Dummy)
Conference Classification	NCAA.org	Classification: P5, G5	Binary (Dummy)
U.S. Region	U.S. News Classification	Southeast, Midwest, etc	Binary (Dummy)
Campus setting	U.S. News	Urban, City, Rural, Suburban	Binary (Dummy)
OTHER CONTROL VARIABLES: PERFORMANCE			
Top 25 ranking (finish), current and previous seasons separately	ESPN.com	AP Poll, Top 25 ranking (finish)	Binary (Dummy)
Top 10 ranking (finish), current and previous seasons separately	ESPN.com	AP Poll, Top 10 ranking (finish)	Binary (Dummy)
Bowl Game Wins	NCAA.org	Post-season bowl game win	Number
Bowl Game Appearance	NCAA.org	Post-season bowl game appearance	Number
Playoff Appearances	NCAA.org	Post-season Play-off appearance	Number
W/L ratio	NCAA.org	Win-Loss ratio (season)	Percentage
NFL Draft pick, current and previous seasons separately	draftstory.com	Number of NFL Draft picks (all rounds)	Number
NFL Draft pick, R1, current and previous seasons separately	draftstory.com	Number of NFL Draft picks (Rd1)	Number
Program/Team Prestige	Sports Illustrated / The Athletic	Number of Sports Illustrated Athletes in Program	Ordinal

APPENDIX 1B: CORRELATION MATRIX (METHOD: PEARSON) OF KEY INPUT VARIABLES



Correlation Matrix (Pearson)

See Appendix A for a code list of all metric variables (Code/Label column).

APPENDIX 1C: REGRESSION MODEL RESULT

Variable	OLS Model I		Random Effects (RE) Model		Fixed Effects (FE) Model		OLS Model II incl intercept	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Intercept			79.51***	0.371	78.48***	0.309	50.13***	3.519
Region: Northeast	50.13***	3.519						
Region: Midwest	50.56***	3.469					0.420	0.309
Region: West	50.68***	3.448					0.55*	0.312
Region: South	51.21***	3.444					1.086**	0.295
Campus Setting: City	0.33**	0.140	0.238	0.217	0.27*	0.146	0.33**	0.140
Campus Setting: Urban	0.217	0.164	0.54*	0.245	0.39**	0.167	0.220	0.164
FBS Power5 schools	0.93***	0.285	1.73***	0.365	1.56***	0.272	0.93***	0.285
FBS SEC	0.80***	0.210	1.73***	0.311	1.42***	0.215	0.80***	0.210
SI/Athletic Prestige Index	0.91***	0.112	1.30***	0.146	0.88***	0.110	0.92***	0.112
FBS W/L pctg	1.36***	0.345	0.81**	0.314	1.36***	0.365	1.36***	0.345
FBS Bowl prev. season	0.13**	0.130	0.19*	0.113	0.27*	0.138	0.128	0.130
AP Top 10 finish	0.62**	0.301	0.342	0.266	0.59*	0.314	0.62**	0.301
AP Top 10 finish prev. season	0.76***	0.279	0.63**	0.245	0.66**	0.295	0.76***	0.279
AP Top 25 finish	0.51**	0.217	0.58***	0.186	0.66***	0.228	0.51**	0.217
NFL Draft picks prev. season	0.13***	0.038	0.070**	0.034	0.13***	0.040	0.13***	0.038
Total FBS expenditure	0.01***	0.000	0.01**	0.000	0.01***	0.000	0.01***	0.000
Coaches comp. (Football)	1.81***	0.220	0.01*	0.000	0.01***	0.000	1.81***	0.220
CDI 2017	-0.405	0.482	-1.417	0.590	1.210	0.942	-0.405	0.482
CDI 2018	0.81*	0.473	0.258	0.584	1.55*	0.942	0.81*	0.473
CDI 2019	1.20**	0.481	0.868	0.593	0.456	0.810	1.20**	0.481
CDI 2020	1.57***	0.475	1.36**	0.587	1.142	0.894	1.57***	0.475
CDI 2021	2.45***	0.473	2.20***	0.583	1.76***	0.790	2.45***	0.473
R ² = 0.90			R ² = 0.88		R ² = 0.89		R ² = 0.91	

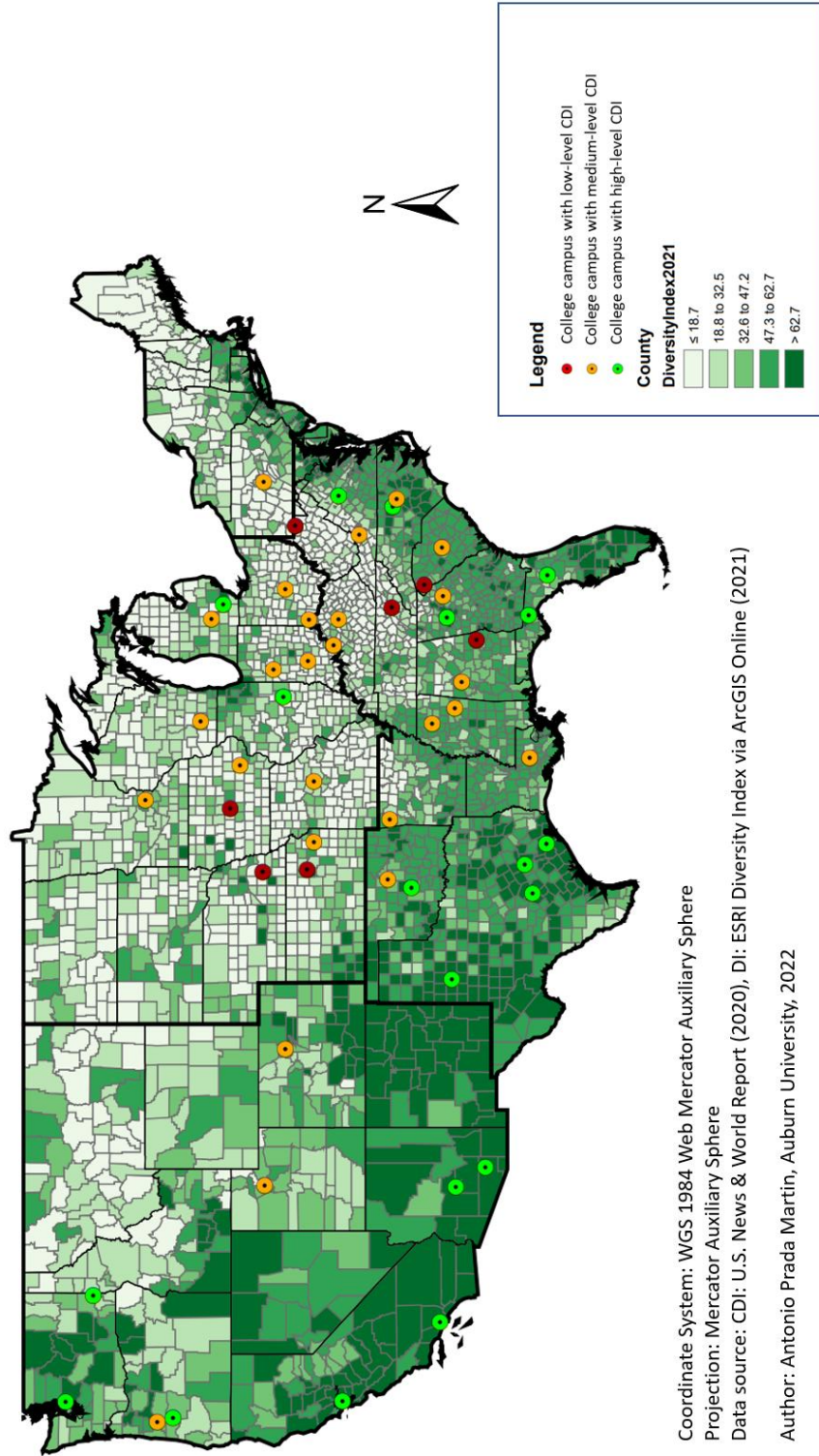
* significance level is < 0.10
 ** significance level is < 0.05
 *** significance level is < 0.01

Hausman:prob Chi² = 0 LRT:prob Chi² = 8.091

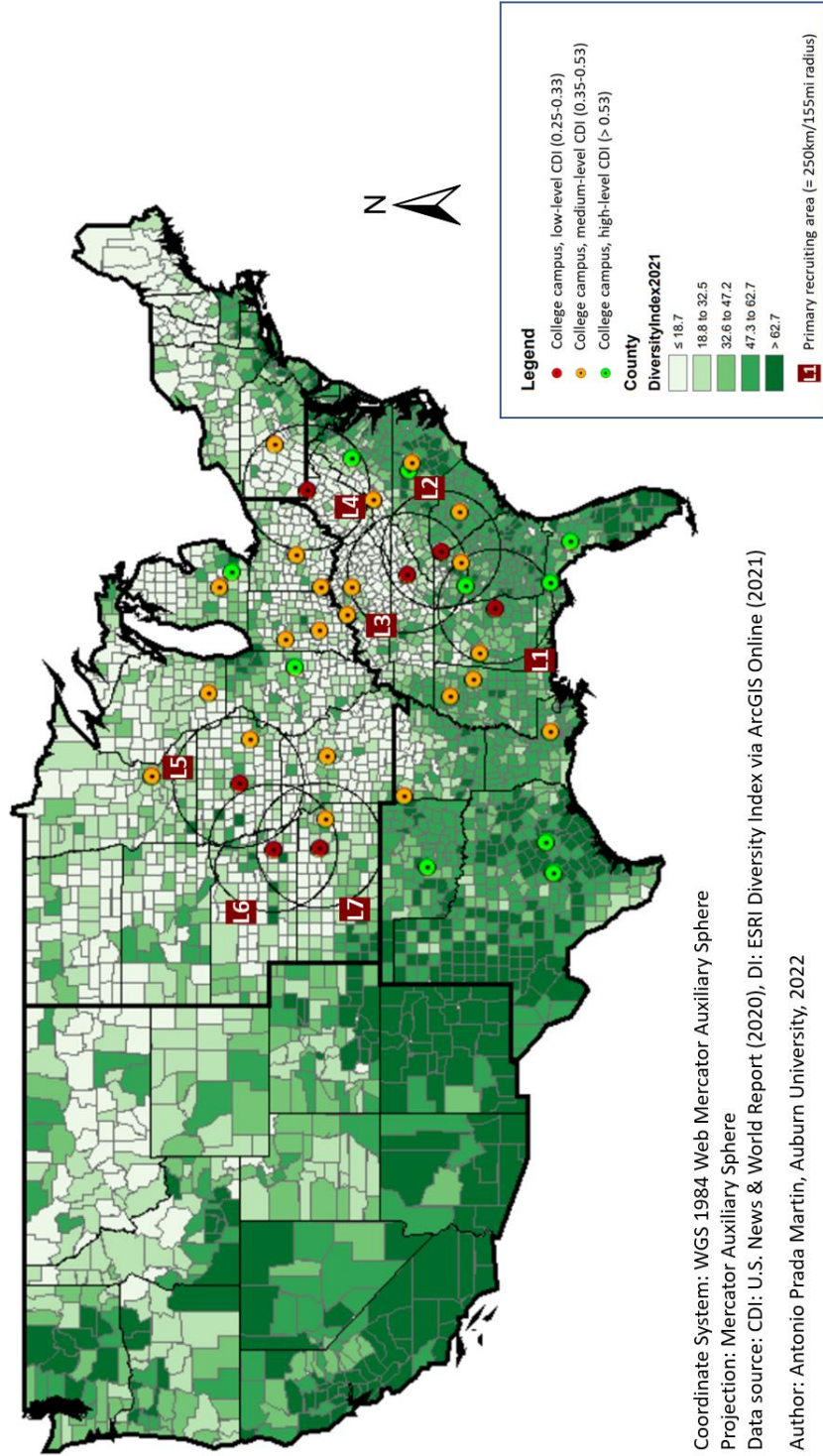
Model output results: OLS vs Random Effects (RE) and Fixed Effects (FE) models

APPENDIX 2A: GEOGRAPHIC MAP OF P5-FBS SCHOOL, DI AND CDI LEVELS

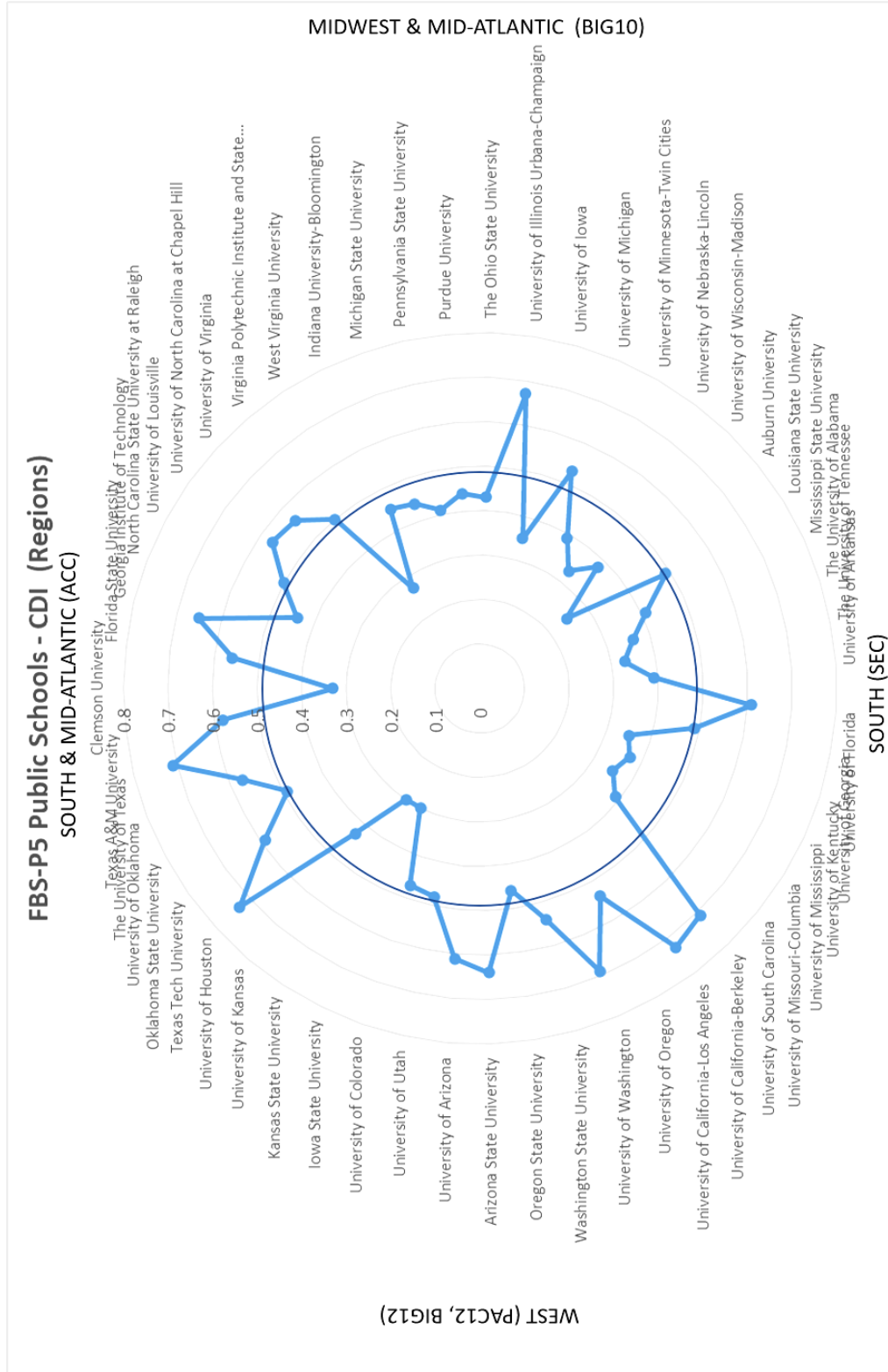
County and Selected Campus Ethnic Diversity Levels (CDI) Among Major FBS P5 Universities



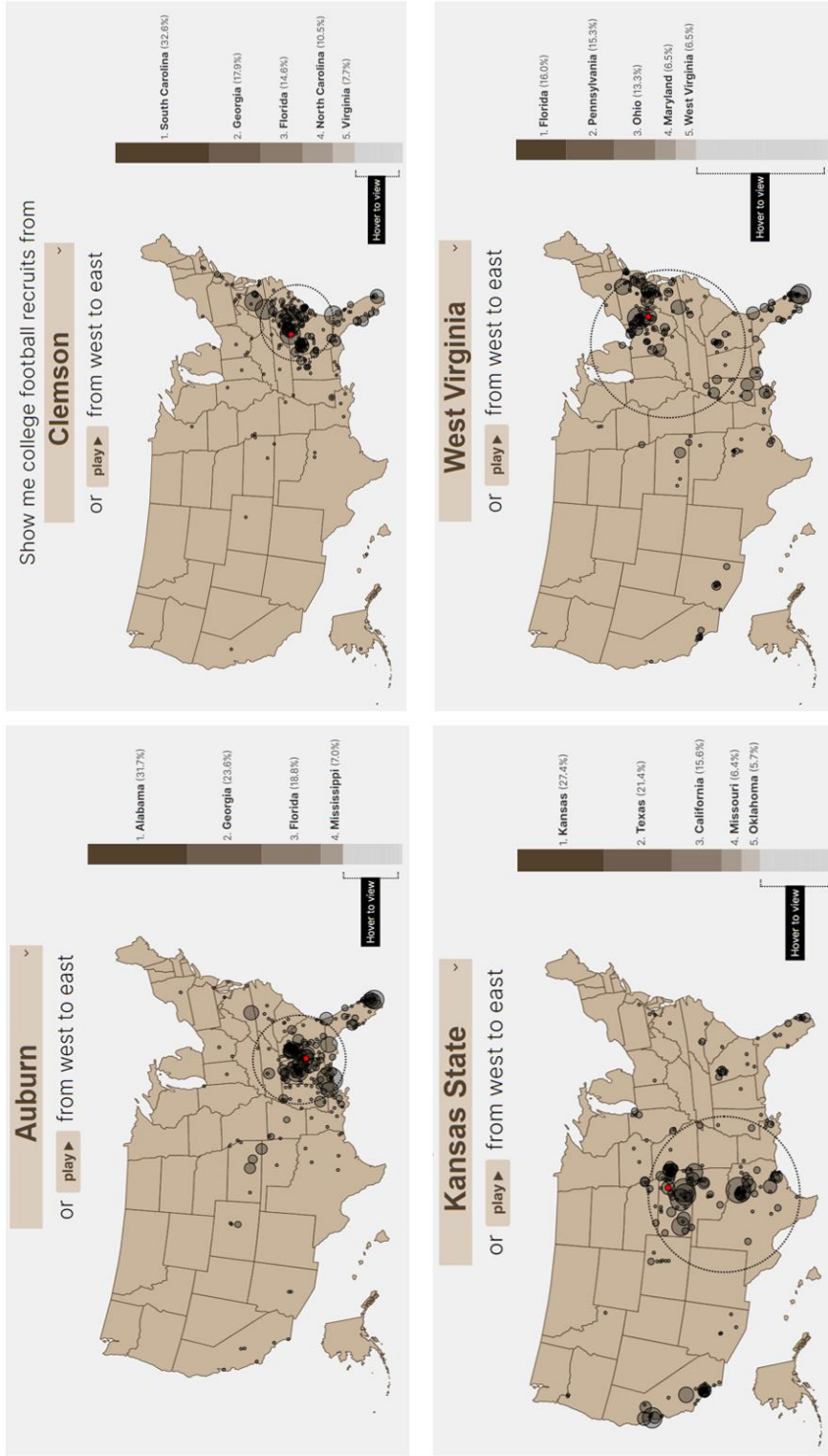
County and Selected Campus Ethnic Diversity Levels (CDI) Among Major FBS P5 Universities



APPENDIX 2C: RADAR CHART OF SCHOOLS AND CDI LEVELS (MAJOR FBS P5 SCHOOLS)



College Football Recruiting Areas of Selected Major Public (FBS-P5) Universities



Source: The DataFace. Where do top NCAA football recruits call home? (2018, August 30).

APPENDIX 3: CONTROL VARIABLES

Please refer to the data discussion section for a detailed discussion on key dependent and independent variables.

CONSIDERED CONTROL VARIABLES⁴⁶

- GEOGRAPHIES:
 - REGIONS (U.S. News & World Report): Major regions include West, Mid-west, South, Northeast - dummy variables.
 - CAMPUS SETTING (U.S. News & World Report): Campus settings include Urban, city, suburban, and rural – dummy variables.

- PERFORMANCE:
 - SEASONAL PERFORMANCE:
 - Wins/Losses (ESPN.com): Calculated Win/Loss ratio (regular season and regular + post-season) – ratio.
 - AP rankings (ESPN.com): AP final rankings, teams ranked in the Top 25 and Top 10 (current season and previous season) – dummy variables.
 - Post-season performance (ESPN.com): Bowl game appearances and wins, play-off appearances and wins, national championship game appearances and wins (current season and previous season) – dummy variables.
 - NFL draft (NFL.com): Number of drafted players by NFL teams (current season and previous season).

⁴⁶ Not all of these variables can be integrated into the regression model. The relevant variable “Total FBS expenditure” which is identical to “Total Football spending” minus “Coaching compensation” contains some of the available information contained in the other variables as long as it pertains to football related spending.

- PRESTIGE AND REPUTATION:
 - ATHLETICS:
 - Prestige ratings (Sports Illustrated (2017), The Athletic (2022)): National sports journalist Stewart Mandel provides a prestige rating & ranking system for all college football programs by dividing “all power conference teams into a four-tiered feudal hierarchy: [Emperor: a special category for the University of Alabama], Kings [e.g. Clemson, Georgia, LSU, USC, etc.], Barons [e.g. Auburn, Florida, Florida State, Penn State, etc.], Knights [e.g. Arkansas, BYU, Baylor, Kentucky, etc.], and Peasants [e.g. Missouri, Oklahoma State, Pittsburgh, UCLA, etc.]”, Mandel (2022). These rankings are published every five years and reflect a team’s accomplishments and overall national exposure (tv appearances, general national media coverage, etc.) over this five-year period – reverse score variable.
 - Conference affiliation (NCAA.org): NCAA FBS conferences are unofficially grouped into Power 5 and General 5 conferences. The Power 5 conference team members gain automatic access to the post-season play-offs depending on seasonal performances. Power 5 conferences: ACC, BIG10, BIG12, PAC12, and SEC. General 5 conferences: AAC, CUSA, MAC, MWC, and SBC: - dummy variables.
 - ACADEMICS (U.S. News & World Report):
 - Based on U.S. News & World Report “Best National University Rankings” for the 2017 – 2021 academic years. The rankings are used to

group universities into “tiers”: Top10, Top25, Top50, Top100, Top150, unranked – this variable is statistically not significant and can be dropped from the model – dummy variables.

- FINANCIALS (The Knight Commission) – football related financial data is grouped into a single variable “TOTAL FBS EXPENDITURE” which equals “TOTAL FOOTBALL SPENDING” except for COACHING COMPENSATION which is represented by its own variable; This data can be grouped into a total financial variable since its only function is to control for the CDI effect in the model. The only exception is data on coaching salaries since coaching is a crucial driver in recruiting. This specific variable will function as a proxy for coaching staff quality.
 - TOTAL ATHLETIC EXPENSES: All expenses for the athletics program plus "Excess Transfers to the Institution, Knight Commission, (2021) – measured in U.S. dollar.
 - RECRUITING (BUDGET): “Spending on transportation, lodging, meals, and other personnel and administrative expenses relating to recruitment of prospective student-athletes. Knight Commission”, (2021) - measured in U.S. dollar
 - TOTAL FOOTBALL SPENDING: “Total football operating expenses, including the cost of athletics student aid”, (Knight Commission, (2021) - measured in U.S. dollar.
 - TOTAL ATHLETIC SPENDING (INCL TOTAL FOOTBALL SPENDING): “Total athletic operating expenses reported on the NCAA financial report form (line 40) divided by the total number of athletes on a headcount basis. All athletic spending data represent spending on intercollegiate athletics only; intramural and

- club sports are not included on institution's NCAA financial reports.”, (From NCAA financial reports). Knight Commission, (2021). - measured in U.S. dollar.
- COACHES COMPENSATION: “Coaches compensation includes bonuses and benefits, but not severance payments. This category includes direct payment and bonuses to coaches from the institution and from a third party.”, Knight Commission, (2021) - measured in U.S. dollar.
 - MEDICAL EXPENSES: “Expenses paid by the institution for student-athletes’ medical expenses and medical insurance premiums (Line 37). This line does not include salaries for medical personnel as those expenses are accounted for in administrative compensation. (From NCAA Financial Reports).“, Knight Commission, (2021) - measured in U.S. dollar.
 - FACILITIES AND EQUIPMENT: “Facility expenses include debt service, leases, and rental fees for athletic facilities. This includes overhead and administrative expenses. Equipment expenses includes spending for items provided to teams, including in-kind equipment.”, Knight Commission, (2021)
 - NCAA CONFERENCE DISTRIBUTION AND MEDIA RIGHTS: “Revenue received from the NCAA (including championships) and athletics conferences, media rights, and post-season football bowl games.”, (Knight Commission, (2021) - measured in U.S. dollar.
 - DONOR CONTRIBUTION: “Funds contributed from individuals, corporations, associations, foundations, clubs or other organizations external to the athletics program above the face value for tickets.”, Knight Commission, (2021) - measured in U.S. dollar.

- ATHLETIC STUDENT AID: “Total expenses for athletic student aid, including tuition and fees, room and board, books, summer school, tuition discounts, waivers, and cost of attendance, including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical reasons.”, Knight Commission”, (2021) - measured in U.S. dollar.
- TOTAL ACADEMIC SPENDING (UNIVERSITY-WIDE): “Total expenditures for the direct role and mission activities of an institution. It includes functional classifications of expenditures for instruction, research, public service, academic support, student services, institutional support, operations and maintenance, and scholarships and fellowships.”, Knight Commission, (2021) - measured in U.S. dollar.
- OTHER EXPENSES: “Expenses related to the following categories: Sports equipment, uniforms and supplies, fundraising, marketing and promotion, sports camps, spirit groups, membership and dues, student-athlete meals, and other operating expenses.”, Knight Commission, (2021) - measured in U.S. dollars.