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Enhancing Black Student Success At Hbcus: The Impact Of Black Faculty Representation On Graduation Rates

Brandon A. Purnsley
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ENHANCING BLACK STUDENT SUCCESS AT HBCUS: THE IMPACT OF BLACK FACULTY REPRESENTATION ON GRADUATION RATES

A Dissertation

by

BRANDON A. PURNSLEY

Submitted to the Office of Graduate Studies
of Prairie View A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF BUSINESS ADMINISTRATION

August 2024

Major Subject: Business Administration

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ABSTRACT

ENHANCING BLACK STUDENT SUCCESS AT HBCUS: THE IMPACT OF BLACK FACULTY REPRESENTATION ON GRADUATION RATES

(August 2024)

Brandon Purnsley, B.S., Delaware State University; M.B.A., Wilmington University

Chair of Advisory Committee: Dr. Jaeyoung Cho

This study examined the pivotal role Historically Black Colleges and Universities (HBCUs) play in the United States economy by producing skilled and inventive graduates who contribute significantly to the workforce. Despite representing a small fraction of higher education institutions, HBCUs are instrumental in the educational achievement of Black students. This research specifically investigated the impact of Black faculty representation on the graduation rates of Black students at HBCUs, amidst concerns of lower graduation rates compared to other Title IV institutions. Employing a linear regression model to analyze empirical data, the study found a significant, positive correlation between the presence of Black faculty and the academic success of Black students at HBCUs, contrasting with a negative correlation at non-HBCU institutions.

The dissertation offers strategic and operational recommendations for HBCU administrators and policymakers to improve institutional effectiveness and enhance Black student success. These include comprehensive evaluations of hiring practices, focused recruitment efforts for Black faculty, competitive compensation packages, the implementation of engagement and feedback mechanisms, and the development of community and mentorship

programs. Furthermore, the study underscores the importance of future research on financial challenges facing higher education, the impact of institutional location on graduation rates, and the operational disparities between HBCUs and non-HBCUs.

By providing empirical evidence and data-driven recommendations, this study contributes significantly to the literature on higher education and policy making, emphasizing the critical role of HBCUs in fostering academic excellence and diversity in the U.S. labor market. The findings highlight the need for ongoing support and strategic planning to sustain HBCUs as bastions of Black excellence, ensuring they continue to play a crucial role in the economic success of Black students in the U.S.

Keywords: Historically Black Colleges and Universities (HBCUs), HBCU Graduation Rates, Black students, HBCU Black Faculty

DEDICATION

To my mother, Karen M. Purnsley, whose strength, resilience, sacrifices, and endless support made all my achievements possible. To my family, friends, colleagues, professors, and classmates who have been my sounding boards through my journey over the past three years of my doctoral studies, all the love and support have been extremely helpful to get me to this point and I am truly grateful.

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A special thanks goes out to my classmates Akili, Fred, Tyisha, Damian, Carleton, Millicent, Nicole, and Ernest. Together, we made history as the inaugural cohort of the Doctor of Business Administration (DBA) program at Prairie View A&M University (PVAMU), which is also the first and only Historically Black College and University (HBCU) to offer a DBA program.

The successful completion of my dissertation could not have been achieved without the collective support and guidance of all the individuals involved in this process. Additionally, I am proud to be part of a historic milestone at PVAMU as a member of the first DBA cohort to graduate from this esteemed institution.

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CHAPTER 1

INTRODUCTION

1.1 Purpose Statement and Research Question

Historically Black Colleges and Universities (HBCUs) play an essential role in the United States economy by producing some of the most skilled and inventive individuals who contribute significantly to the workforce. Despite HBCUs comprising a small segment of the higher education system, they have a substantial impact on the production of Black graduates, a term used interchangeably with African American. This emphasizes the vital contribution of HBCUs to enhancing diversity and excellence in the U.S. labor market.

Black colleges, representing three percent of all higher education institutions, enroll 10% of African American undergraduate students. Impressively, they account for 17% of all African American undergraduate degrees and award 24% of African American Science, Technology, Engineering and Math (STEM) undergraduate degrees (LeNoir, 2017), highlighting their disproportionate influence on educational achievement among African American students. There is a pressing need to not only sustain the existing educational pipeline but also to devise strategies that amplify the number of Black students graduating from HBCUs, given their economic significance. The average graduation rate for Black students at HBCUs between 2013 and 2022 was 33%, in contrast to a 57% graduation rate for students of all races/ethnicities at all Title IV four-year institutions reporting to the U.S. Department of Education (National Center for Education Statistics, 2022). This stark disparity underscores an urgent requirement to bolster graduation rates. Currently, there are 101 HBCUs, with 90 four-year institutions and the

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This dissertation follows the *Publication Manual of the American Psychological*

Association (APA), 7th Edition.

remainder two-year colleges (National Center for Education Statistics, 2022), compared to 2,620 non-HBCU Title IV four-year institutions that report data to the U.S Department of Education (National Center for Education Statistics, 2022).

This study aimed to explore the factors influencing Black student graduation rates at HBCUs, with a particular focus on the representation of Black faculty. By considering economic factors, support services, and enrollment management as control variables, the study sought to isolate causal links, enhance precision, and mitigate any biases, thereby lending credibility to its conclusions and recommendations. Specifically, it examined whether the presence of Black faculty impacted Black student graduation rates at HBCUs by asking the research question, *How does the percentage of Black faculty at HBCUs and non-HBCUs affect the graduation rates of Black students,* using empirical data analyzed through a linear regression model. This approach may equip HBCU leaders, stakeholders, and policymakers with insights to improve Black student graduation rates.

The research offers recommendations based on the linear regression findings, aiming to bolster various strategic and operational aspects of HBCUs. These recommendations are grounded in data-driven results, providing a solid basis for decision-making by HBCU administrators and policymakers in financial and operational planning. The research also shares business implications insights that will allow HBCU leadership to consider all aspects in the decision-making process.

1.2 The Significance of HBCUs

The U.S. Supreme Court's decision in *Brown v. Board of Education of Topeka* (1954), which declared racial segregation in public schools unconstitutional, has been instrumental over

the past seven decades in fostering a diverse, equitable, and inclusive environment in higher education. Before this landmark ruling, HBCUs were attended by 90% of Black college students (Albritton, 2012). By 2007, approximately 20% of Black college-bound students chose to attend HBCUs (Fryer & Greenstone, 2007), signifying the continued relevance of these institutions in the post-Civil War era as a means for newly freed Black men and women to pursue higher education. Despite these advancements toward inclusivity, there remains room for improvement in higher education.

HBCUs hold a particularly crucial role within the labor market, demonstrating a positive impact on the potential future earnings of Black college students. While Ehrenberg and Rothstein (1993) presented conflicting findings, research by Mykerezi and Mills (2008) and Constantine (1995) showed positive effects on the future wages of Black students who attended HBCUs. Wilson (2007) highlighted that HBCUs educated a significant portion of African American professionals, including 75% of all African American Ph.D. holders, 46% of business executives, 50% of engineers, 80% of federal judges, and 65% of doctors. Strayhorn (2016) observed that Black graduates from HBCUs often attained higher-status occupations compared to their counterparts from Predominantly White Institutions (PWIs). Moreover, McMahon and Wagner (1981) found that Black students with bachelor's degrees anticipated starting and future salaries comparable to those of their White peers, emphasizing the vital contribution of HBCUs to the labor market.

A study by Andrews et al. (2015) explored the perspectives of HBCU leadership on factors critical to the institutions' survival and sustainability. Conducted online, the survey reached out to 46 HBCU leaders during the 2012-2013 academic year, employing a five-point scale for responses, with 5 indicating strong agreement. Out of the 46 leaders contacted, 32

responded and revealed that graduation rates and the enhancement of student services were viewed as pivotal issues. These findings, although derived from a limited sample, underscore the necessity for broader research to determine consistent trends regarding these factors, which could aid in improving the survival and sustainability of HBCUs.

Constantine (1995) investigated the importance of attending HBCUs. Based on data from the National Longitudinal Survey of 1972, with observations spanning from 1979 to 1986 that included over 3,000 Black students, Constantine found significant effects. The analysis of wages focused on 1,192 Black students, approximately 32 years of age. A striking 90% of those who attended HBCUs were from states that hosted these institutions, underscoring the accessibility and appeal of HBCUs. Notably, the future wages of HBCU attendees were 38% higher than their counterparts from Predominantly White Institutions (PWIs) or mixed institutions. Constantine pointed out that HBCUs, primarily offering four-year degrees, stood in contrast to many non-HBCU, two-year institutions without bachelor's degree programs. The findings suggested increased motivation and higher educational aspirations among Black students when HBCUs were an option, highlighting the significant role of HBCUs in the labor market and the necessity of considering these insights in policymaking regarding HBCUs' future.

Albritton (2012) provided a comprehensive review of the emergence and societal relevance of HBCUs within the U.S. context. The study shed light on the instrumental role of HBCUs, from their inception at institutions like Cheney University, Lincoln University, and Wilberforce University, to the expansion fueled by many churches after the Civil War, opening colleges such as Spelman College, Dillard University, and Tougaloo College. Albritton vividly described education at HBCUs as a means of liberation from a legacy of discrimination and oppression, more than just a pathway to better employment or social status. This highlights

HBCUs as not only educational institutions but sanctuaries of liberation for newly freed slaves.

The challenge of funding HBCUs, primarily supported by Black and White churches initially, is also addressed. The Second Morrill Act of 1890 marked a significant development phase for HBCUs in southern states, though financial support remained inadequate compared to White institutions. Albritton (2012) cited a 1919 Federal Bureau of Education study that revealed a stark disparity in state funding between HBCUs and White institutions during the early 20th century. This financial imbalance persists, with current endowment figures (Table 1 and 2) showing a vast gap between HBCUs and PWIs. For instance, Howard University, the top HBCU in terms of endowment, significantly trails the top PWIs, highlighting the financial challenges HBCUs face and the need for policies to address these disparities to ensure their growth and sustainability.

Table 1

Top 10 HBCUs with the Largest Endowments (The Plug, 2022)

Rank	College or University	Endowment
1	Howard	$806.4 million
2	Spelman	$570.8 million
3	Hampton	$379.9 million
4	Morehouse College	$278 million
5	Meharry Medical College	$199.4 million
6	Xavier University of Louisiana	$191 million

7	North Carolina A&T State University	$174.6 million
8	Tuskegee University	$154.9 million
9	Prairie View A&M University	$148.5 million
10	Alabama State University	$130.5 million

Table 2

Top 10 PWIs with the Largest Endowments (U.S News & World Report, 2023)

Rank	College or University	Endowment
1	Harvard	$51 Billion
2	Yale	$41 Billion
3	Stanford	$36 Billion
4	Princeton	$35 Billion
5	MIT	$25 Billion
6	University of Pennsylvania	$21 Billion
7	Texas A&M University	$17 Billion
8	University of Notre Dame	$17 Billion
9	University of Michigan	$17 Billion

10	Duke University	$13 Billion

Albritton (2012) examined a study of the missions of HBCUs and found that 33 of the mission statements stated the need for HBCUs to be involved in community service. A civil rights report indicated that HBCUs were more likely to have a community service component as a requirement to graduate than a PWI (Albritton, 2012). HBCUs have always been committed to community service. Moreover, many have said that HBCUs have a family-type atmosphere and provide a haven for minority students (Albritton, 2012). HBCUs provide opportunities to Black students to be the first in their families to attend college. "Nearly 50% of all students of color are the first in their families to attend college compared to 35% of students attending mainstream institutions" (Albritton, 2012, p. 325).

HBCUs tend to accept students who need more preparation to obtain a secondary level of education, and they make it their duty to offer more personalized support for their students. These efforts have been long-standing since the inception of HBCUs. Overtime, HBCU leadership and faculty have demonstrated the need to enable Black men and women to advance academically and professionally.

Williams et al. (2021) examined the specific practices that created environments that exude Black culture. That research also examined the "pedagogy and educational practices employed by HBCU administrators and faculty members that build upon the lived experiences of Black communities to help promote Black student success" (p. 733). The data used in the study was sourced from a more extensive study regarding the overall value of HBCUs. The authors leveraged that research, drilling down on the HBCU faculty members and administrators. The researchers concluded by noting that creating "culturally affirming practices" (p. 734) should be

used to create pedagogical environments relating to various cultural backgrounds. The need to make genuine connections with the student population allows for a truly inclusive culture. The techniques used at HBCUs can be leveraged across the higher educational landscape.

There is significant importance in HBCUs. The literature clearly articulates the impact of HBCUs on the labor market and how HBCUs have delivered the best and brightest since the inception of these great institutions. HBCUs deliver the best and the brightest even through financial and historical influences present distinct disadvantages as described in the literature above. This study aimed to answer the central question of how to operationally sustain these prolific institutions by producing more HBCU graduates so that many future generations can reap the benefits.

CHAPTER 2

LITERATURE REVIEW

The literature review provides insights into the key theories and models that guided the overall research design and approach. This overview introduces the concept of higher education as a business model and the critical components that merit consideration. Subsequent sections delve into existing literature around diversity in academia, defining student success, role of student services, economic inequality, and enrollment management. The literature review also includes theories that bolster college student persistence, including Social Identity, Self-Categorization, O-Ring, and Positive Assortative Matching theories. These theoretical frameworks lend support to the research question developed and addressed within the study.

2.1 Diversity in Academia: The representation and impact of Black Faculty in Higher Education

Evans and Leonard (2013) emphasized the importance of recruiting and preparing teachers of color for urban environments, suggesting that teachers who share cultural backgrounds with their students are more adept at fostering positive home-school relationships to enhance student learning. They noted, "teachers of color familiar with students' cultural backgrounds are more likely to build positive relationships between the home and school to enhance student learning" (p. 1). The significance of retaining Black professors is underscored by their representation in the labor force, which is five percent overall and 55% at HBCUs as of Fall 2022 (National Center for Education Statistics, 2022). The number of Black teachers has seen a declining trend since the 20th century, with nearly 40,000 Black teachers losing their jobs after the *Brown v. Board of Education of Topeka* (1954) ruling (Evans & Leonard, 2013). Milner (2006) highlighted the critical role of mentorship and the presence of Black teachers, along with

the need for a shift in the cultural perception of Black students. This viewpoint is supported by Social Identity and Self-Categorizing theories, with the latter emphasizing the power and influence that come from a shared social identity, and the former serving as the foundational theory (Turner, 2005).

The shortage of Black faculty remains a pressing issue for senior leaders in higher education, potentially affecting the persistence and graduation rates of Black students. Stout et al. (2018) explored the correlation between faculty racial/ethnic diversity and the graduation rates of undergraduate students, particularly from underrepresented racial and ethnic groups. Utilizing the Multicontextual Model for Diverse Learning Environments (MMDLE), their study suggested that the campus climate, including the diversity of students and faculty, significantly influenced student success outcomes like graduation rates. The findings called for further research on how faculty diversity impacts student graduation rates.

Additionally, Stout et al. (2018) employed the person-environment fit theory, positing that individual success was closely tied to the congruence between a person's personality and their environment. They argued that a more diverse faculty could create an environment in which minority students felt more at ease, potentially boosting their motivation to complete their college education. The study analyzed data from 63 two- and four-year higher education institutions across the U.S., comprising 41 two-year colleges and 22 four-year universities, including eight minority-serving institutions, with just one identified as an HBCU. The data was sourced from the Integrated Postsecondary Education Data System (IPEDS). Through correlation analyses, the study uncovered a significant positive correlation between the presence of Black faculty and Black student success, highlighting a correlation coefficient of .91 with a p-value less than .01.

Despite this significant finding, Stout et al. (2018) acknowledged several limitations that necessitated further investigation. The analysis was based on data from a single reporting year, raising questions about the results' robustness and validity and the potential for the findings to be anomalies or outliers, leading to misinterpretations. The study's limited scope, potential biases, and uncontrolled variables, such as unobserved heterogeneity, were critical issues. Additionally, the research was restricted to correlation analyses without exploring other statistical models that might confirm the validity of these findings or provide insights into causal relationships between the presence of Black faculty and minority student success. The lack of representation from minority-serving institutions, especially HBCUs, in the sample further limited the study's findings.

The forthcoming study encompassed all 90 four-year HBCUs and 2,620 four-year non-HBCUs, employing both correlation and causal analyses to offer a more comprehensive understanding of the impact of Black faculty representation on the graduation rates of Black students. According to the U.S. Department of Education data from Fall 2022, 70% of staff at HBCUs are Black, but only 55% are in teaching roles (Table 3). Conversely, among a sample of 981 Title IV degree-granting institutions reporting to the U.S. Department of Education, only 10% of all staff were Black, with a mere six percent in teaching positions (Table 4). This disparity highlights the critical influence of Black faculty presence—or absence—on the educational experiences and outcomes of students of color, aligning with the existing body of research on this topic.

Table 3

HBCU Full Time Staff by race/ethnicity and occupation, Fall 2022 (National Center for Education Statistics, 2022)

Occupation	Total	Black or African American	Percentage
All staff (graduate assistants not included)	42,736	29,824	70%
Instruction	13,407	7,334	55%
Research	743	290	39%
Public service	318	252	79%
Librarians, curators, and archivists	540	389	72%
Student and academic affairs and other education services occupations	2,587	2,034	79%
Management occupations	5,567	4,411	79%
Business and financial operations occupations	2,568	2,029	79%
Computer, engineering, and science occupations	1,906	1,132	59%
Community, social service, legal, arts, design, entertainment, sports, and media occupations	3,368	2,554	76%
Healthcare practitioners and technical occupations	622	397	64%
Service occupations	3,650	2,954	81%
Sales and related occupations	68	57	84%
Office and administrative support occupations	6,178	5,119	83%
Natural resources, construction, and maintenance occupations	1,027	711	69%
Production, transportation, and material moving occupations	187	161	86%

Table 4

Title IV non-HBCUs Full Time Staff by race/ethnicity and occupation, Fall 2022 (National Center for Education Statistics, 2022)

Occupation	Total	Black or African American	Percentage
All staff (graduate assistants not included)	2,581,456	270,005	10%
Instruction	728,969	45,190	6%
Research	86,731	2,568	3%
Public service	26,707	1,696	6%
Librarians, curators, and archivists	32,525	2,182	7%
Student and academic affairs and other education services occupations	122,471	16,994	14%
Management occupations	270,280	31,063	11%
Business and financial operations occupations	229,788	26,119	11%
Computer, engineering, and science occupations	229,404	15,008	7%
Community, social service, legal, arts, design, entertainment, sports, and media occupations	173,579	20,840	12%
Healthcare practitioners and technical occupations	98,457	10,363	11%
Service occupations	191,599	42,030	22%
Sales and related occupations	9,149	1,694	19%
Office and administrative support occupations	302,695	45,751	15%

Natural resources, construction, and maintenance occupations	64,486	6,110	9%
Production, transportation, and material moving occupations	14,616	2,397	16%

Leonard et al. (2002) discussed the underrepresentation of faculty of color (FOC) and women of color in higher education. The study was formed after a conversation between faculty members at an educational workshop. The research study examined the autobiographies of three junior faculty members, focusing on their career progression in higher education. It included the stories of a divorced Black woman, a White married woman with children, and a young White male. The different perspectives were to illustrate racial disparities in higher education.

The authors explained that most colleges and universities, except for HBCUs, had a majority of White and male faculty. The statement may be true for HBCUs, however the need for Black teachers at HBCUs should still be a priority. The study discussed that when professors pushed diversity in the classroom and emphasized intersectionality, students of color had a better chance of reporting higher grades. "African Americans comprise 12% of the U.S. population but only 4% of the post-secondary faculty, and an even smaller fraction in four-year colleges and those with predominately White students" (Leonard et al., 2002, p. 5). The lack of representation shows how institutions need help increasing their pipeline for Black teachers in higher education. Mixed research methods were used for conducting the research. A survey was also developed to create a deeper understanding by gathering more background information and experiences from a diverse faculty. The data was collected over 11 months in 2001 at The Fifth Annual Holmes Partnership Conference, The College of Education and Human Resource at Southern University, and the College of Education at Eastern University.

The findings showed that Jackie, Erin, and Chris's narratives were noticeably different

regarding their challenges. Jackie's path to success as a tenured faculty member took much longer than expected. Jackie experienced issues with peers and her department's lack of support. Erin's track to being a tenured faculty member was half the time compared to Jackie's, but she still had pressure from her family and administrative duties. However, Erin had the support of her peers and her department. Chris had the most accessible experiences compared to Jackie and Erin. Descriptive statistics showed that Chris and Erin had more professional years than Jackie, which translated into higher salary possibilities in academia. The result of Chris and Erin having additional professional stamina was a result of the years Jackie lost before receiving her first tenured position. A supportive work environment is essential to success and increasing FOC composition in academia.

DeFour and Hirsch (1990) researched how social integration and social support impacted academic performance and the psychological well-being of 89 Black graduate and terminal students. The frequency of contact with departmental members was defined as social integration. The research noted that graduate enrollment of minority groups, excluding Asians, was less than 10%. The study mentioned the importance of examining the retention rates of minority graduate students and how there was a gap in research regarding this topic.

The study was held at a large Midwestern University. The student population included 7,800 graduate students, of which 174 were Black. The faculty composition consists of 1.4% of the total faculty population. The survey was sent via mail, and the final sample consisted of 89 Black graduates. The results yielded expected results that Black graduates did not feel fully integrated into their departments. The students who did not feel fully integrated with departmental members impacted their psychological well-being and academic experience. DeFour and Hirsch's (1990) exploratory research supported social integrations and social

support. Black Faculty representation and Black students' support amongst each other are crucial as they relate to the well-being and academic achievements of Black students.

Hoston et al. (2019) conducted qualitative research through semi-structured interviews of tenured Black faculty members at Predominantly White Colleges and Universities (PWCUs). The research aimed to provide practical recommendations to individual students based on common themes discovered through the interviews. The enrollments of Black students at these institutions continue to rise, which promotes their accessibility. However, the graduation rates of Black students remain low, and existing literature has not provided practical strategies or recommendations that individual students could utilize.

The interviews were conducted with 16 tenured Black faculty members at multiple colleges and universities in the Southern region of the United States. Hoston et al. (2019) chose to specifically ask Black professors because they have a wealth of knowledge around historical racism, stereotypes, and prejudices that are deeply integrated into the culture of PWIs. The faculty were asked questions about the issues around Black student graduation rates and the strategies they thought were needed to improve these graduation rates. The top 10 practical recommendations included,

> Have a Positive Attitude about Learning; Don’t be Late; Sit in Front of the Class; Pay Attention, Participate in Class Discussions; Don’t be Afraid to Visit Professors’ Offices; Be Sure To Obtain an Effective Advisor, Build Strong Networks on Campus, Get Involved in Student Activities, Dress for Success, Don’t Be Afraid to Show Intelligence and Work Hard to Finish College. (Hoston et al., 2019, pp. 73–75)

The angle to provide recommendations for individual Black students was a new contribution to literature. These recommendations are great for Black students to adapt to

completing their college journey. The source of interviews was from faculty members at PWCUs, but there is also a need to understand the barriers and variables that contribute to Black students graduating from HBCUs. These institutions are also essential institutions that need further investigation.

Overall, the existing literature expressed the importance of Black faculty representation in academia. There is a downward trend of retaining and recruiting Black Faculty. There are career progression roadblocks for FOC. The study aimed to provide empirical evidence that Black faculty representation drives Black students in graduating from HBCUs. Limited studies have shown that Black faculty representation is connected to student outcomes. Stout et al. (2018) investigated these connections but the sample that was surveyed only included one HBCU and was not representative of the population of these specific institutions. This study aimed to include a majority (90 out of 101) of the population to examine determinants of Black students graduating from HBCUs which included the representation of Black Faculty.

2.2 Defining Student Success at Colleges and Universities

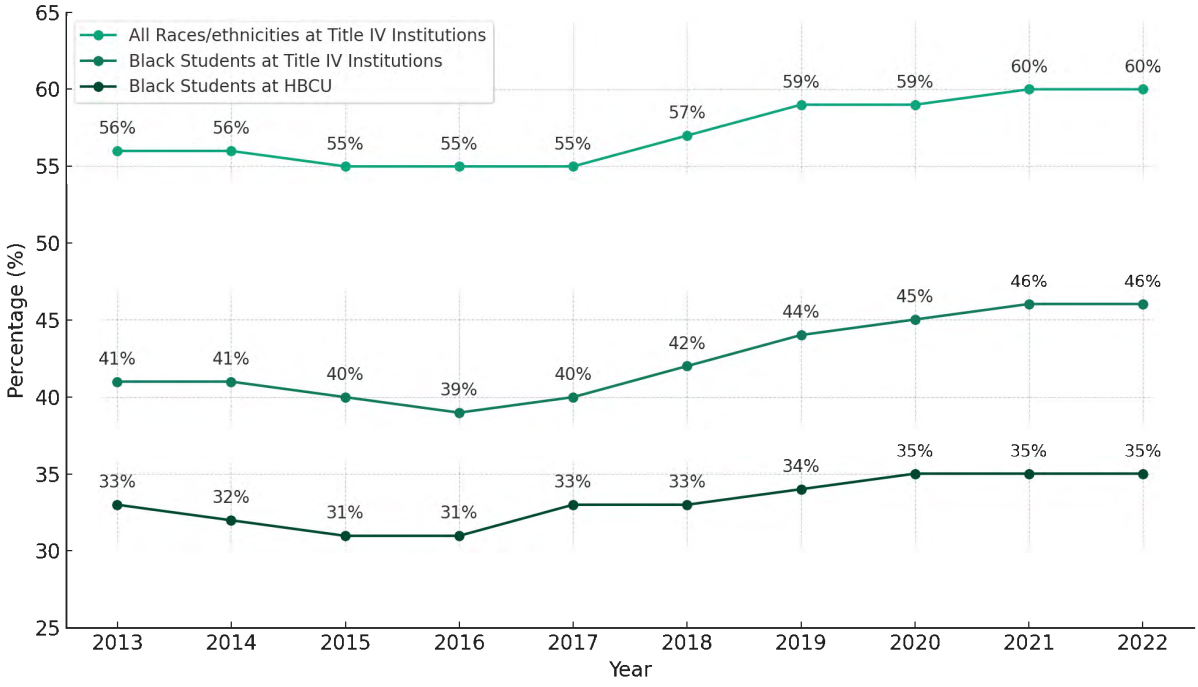
Graduation rates are commonly utilized as indicators of student success in colleges and universities. Notable disparities exist in the graduation rates of Black students at HBCUs compared to those at other institutions. Specifically, Black student graduation rates at HBCUs are lower than at Title IV, four-year institutions that report to the U.S. Department of Education. From 2013-2022, an average of 2,034 institutions reported to the U.S. Department of Education. During this period, the average graduation rate for students of all races/ethnicities was 57%. In contrast, the average graduation rates for Black students were 42% at Title IV, four-year institutions, and 33% at HBCUs (National Center for Education Statistics, 2022).

Figure 1 illustrates the average graduation rates from 2013-2022 for Title IV students of

all races/ethnicities, Black students at Title IV institutions, and Black students at HBCUs who sought a bachelor's degree and completed their degree within six years. The data revealed a 24% gap between the average graduation rates of Black students at HBCUs and the overall average at Title IV institutions reporting to the U.S. Department of Education. This nine percent difference in Black student graduation rates aligns with the findings of Gordon et al. (2020), who observed that, compared to similar non-HBCU institutions, graduation rates were about 10% higher.

Figure 1

Graduation Rates (National Center for Education Statistics, 2022)



Millea et al. (2018) analyzed the determinants of student success in colleges and universities. The graduation and retention of college students define student success. The goal of the study was to understand the drivers of student success and share them with administrators so they could make informative investments for the institution. The authors developed models

through probit regression, which indicated that college readiness, grants and scholarships, and smaller class sizes were correlated with retention and graduation rates. Economic factors and institutional factors such as financial aid and smaller classes could be attributed to graduation rates but there could be other factors that could influence student graduation rates, particularly Black student graduation rates. One of those factors could be Black faculty representation and how that impacts students from graduating.

Webber et al. (2013) investigated the correlation between student engagement and college success. The goal is to understand whether investment in college activities helped drive college students' success. The authors utilized cumulative Grade Point Averages (GPA) and the perceptions of the academic experiences of the student body as a basis to gauge college student success. The author's findings help support decisions around the reallocation of resources in planning and budget discussions.

Student engagement could also be in the form of student services and how the investment in student services could impact student success by way of graduating from college. The study based their thoughts on conceptual frameworks from two leading researchers: Alexander Astin and C. Robert Pace. Their theories included the theory of involvement Astin (1977) and the theory of quality of effort Pace (1986). The more engaged the student is in academic activities, the more opportunities are available to learn from professors and peers. The authors leveraged their research to measure college student's success by investigating two key areas: academic/classroom activities and co-curricular activities.

A qualitative survey was conducted and sent randomly to over 3,000 first year and senior undergraduate students in 2008. The survey response rate was over 30%. The findings validated existing literature and reaffirmed that higher student engagement led to higher college student

success. Engagement could include the engagement of faculty with students by providing mentorship and being a role model to the student. The more involved a faculty member is with a student could lead to higher engagement from a student and a better probability that the student will graduate. The current study tests this theory by focusing on Black faculty representation and the impact it has on Black student graduation rates.

Townsend (1994) explored the experiences of academic faculty and staff to understand their perspectives on how colleges and universities were retaining and graduating Black students. The study pointed out that only 32% of Black students were graduating from colleges versus White students, who were graduating at a much higher rate, 56%. As a result of these low graduation rates and high dropout rates, colleges and universities subsequently implemented programs to combat these challenges. The findings showed that the programs were unsuccessful in improving these retention rates.

Schools like the University of South Carolina and others took a more holistic approach. The programs were not intended to be isolated instances but rather an integral part of the school's mission. Investments in student services and fostering an inclusive atmosphere were found to be crucial to increasing minority retention. Townsend (1994) mentioned HBCUs as a subgroup of institutions that most struggled with retention and graduation rates that were under 30%.

HBCUs tend to serve a high population of low-income and academically challenged individuals. There are rare instances where certain HBCUs have overcome these challenges. Grambling State University, Xavier University, and Fisk University have broken through these barriers by providing student services that include counseling services, tutoring, faculty mentors, education development/remediation programs, and being highly attentive to student's financial

needs. These findings were from the experiences of various faculty members and staff in the higher education sector. There is a lack of data that supports these experiences at an institutional level. There is an apparent struggle with Black students' graduation rates and a need to understand how to increase these rates through a quantitative research method to see the institutional impact through data-driven results.

Smith (2015) examined Predominantly White Institutions (PWIs) in Indiana with a focus on Black students' retention and graduation rates. The primary research questions the study aimed to answer was whether there were any practices that K-12 and HBCUs could leverage for PWIs located in Indiana that could help increase Black students' retention and graduation rates. The practices from K-12 and HBCUs were derived from reviewing existing literature. These practices were to be compared to the existing practices at PWIs in Indiana. Ten Chief Academic Officers, Academic Deans, and Academic staff members from these PWIs were the source of the interviews.

The standard practices identified included a supportive environment, academic remediation support, committed faculty, and racially diverse staff. These common themes were shared between both PWIs and HBCUs. The research suggested that some universities implemented and executed these strategies differently, which resulted in some schools having better success with Black student graduation rates than other schools. While firsthand accounts from academic leaders are valuable, results and findings supported by historical data can add value to the determinates of Black retention and graduation rates. Overall, the literature above provided a backdrop to the multiple ways existing studies have tried to find ways to understand motivational factors that affect student outcomes in higher education. The data illustrated gaps between Black student graduation rates and other institutions and races.

The study aims to explore and expand on the factors that may contribute to the academic success of Black students at HBCUs. The primary factor the study focused on was Black faculty representation and it included control factors such as student services investment, 12-month enrollment, Black median household income, and Pell Grant investments. Black faculty has been mentioned as a determinant of student success but few studies have investigated this on an institutional level. Student services have been mentioned as a factor but are limited to certain classifications and not examined at an HBCU institutional level. The insights into enrollment and Black economic factors are also limited regarding the HBCU population. These are vital contributions that are needed for stakeholders to have impacts on operational and financial decisions.

2.3 The Role of Student Services Spending in Promoting Higher Education Achievement

Ciobanu (2013) defined student services as various departments that helped support students' academic success. Hutto and Fenwick (2002) examined over 1000 freshmen at three private HBCUs through quantitative studies that showed statistical relationships between the availability of student services and freshman retention rates. The common themes that were revealed from the survey were issues with enrollment management and financial assistance.

Students felt college readiness services needed to be improved, specifically by promptly providing proper financial aid information. Additionally, students felt that their financial aid counselor needed to be more competent and readily available. Students also felt they needed more attention when providing financial assistance. Hutto and Fenwick's (2002) study showed multiple areas to improve freshman retention rates at HBCUs. The study was limited in scope by only focusing on three private HBCUs. Although the data on individual-level details of student

experiences added to existing literature, it might be better to get institutional-level details at all HBCUs and see how the current student investment in student services impacts graduation rates.

Johnson-Bailey et al. (2008) investigated the support experiences of Black graduate students and compared the graduation rates of Black and White students. In 2004, there was a 21% gap in graduation rates, with White students graduating at a rate of 61% and Black students at 40%. The study observed a decline in the graduation rates of Black students in professional and terminal degree programs. A survey was administered to Black graduate students from a prominent southern research university, spanning from the 1960s to the early 2000s, with data sourced from the Alumni Records Office. Initially, contact information for 2,287 Black graduate students from 1962 to 2003 was included. Of the 678 respondents, 92 were disqualified, resulting in a sample size of 586 individuals. The survey featured 72 open-ended, Likert scale questions, the latter ranging from 1 (strongly disagree) to 6 (strongly agree), aiming to explore the experiences of Black students at major universities.

Common themes identified from the survey included perceptions that Black professors provided more support than White professors, Black students supported each other more compared to White students, and White professors were seen as providing more support to Black students than to White students. The study found no difference in support between Black professors and Black students.

Employing Critical Race Theory (CRT) as its framework, which posits that racism is endemic in society, fostering oppression and inequality, the study developed its survey questions and interpreted its findings within this context. This theoretical foundation guided the formulation of five recommendations for graduate and professional programs at Predominantly White Institutions (PWIs), including the encouragement and monitoring of formal and informal

networks among Black students and faculty, the creation of new campus networks with inclusive practices, educating faculty on curriculum impacts, and instituting accountability measures for faculty and administrators regarding the inclusion and support of Black students.

Key terms emerging from the study were feelings of isolation, exclusion, and survivability. The research suggested that similarities between Black faculty and students could warrant further exploration within the landscape of higher education, particularly at HBCUs, where the majority of the student body is Black. Overall, the study concluded that Black students perceived their academic experience as significantly different from that of their White counterparts, noting that support from Black students and professors was crucial in enhancing their university experience. The findings advocated for an increase in Black faculty and peers to improve the academic and social environment for Black students at their institutions.

Williams (2009) investigated the policies, procedures, practices, and student services at PWIs in Georgia through a qualitative research methodology. Five PWIs were identified to gather information through interviews with academic administrators. The purpose was to understand the intricacies of initiatives to increase Black enrollment and retention. The findings suggested that student support programs providing tutoring and mentoring programs were essential to help Black students socially and academically integrate into PWIs.

The limitation of the study related to the sole focus on PWIs and the schools within the State of Georgia. Although the study was limited in scope, the findings provided insightful results. The common theme was that the investment in recruiting and retaining Black students was linked to having diverse student service programs. Black students having role models available was also an important factor in improving graduation rates for Black students. The interviews from academic administrators mentioned that similarities in both faculty and students can influence

their overall commitment to graduating from school. Williams (2009) also provided six recommendations, which included: (1) PWIs could seek to identify and recruit highly qualified Black students, (2) PWIs might consider a minority recruitment program that could create partnerships with the middle schools and high schools located within the areas surrounding the PWI, (3) PWIs could seek assistance from African American alumni to recruit students, (4) PWIs might consider hiring and retaining African American faculty member so that students will have role models with whom to interact, (5) PWIs might consider developing a strategic plan to purposefully address African American student retention rates, and (6) create a multicultural affairs office that advocates for students and provides support for the students' social and academic needs.

Dougé (2020) exposed barriers that prohibited Black students from graduating at the same rate as White students at PWIs. The research focused on the junior and senior classes from four-year PWI institutions. The research questions focused on academic experiences, social experiences, and satisfaction with available student services programs. The research method was a qualitative study that interviewed 10 Black students.

The common themes were derived from using coding and thematic analysis. The themes for the research included diversity awareness, stereotypes, social organizations, family support, and financial aid. Dougé (2020) provided a professional development plan to help combat social change by creating strategies to help support academic and social services for Black students.

The findings indicated that faculty lacked the knowledge of understanding Black students. The professional development plan was developed by leveraging evidence collected from the qualitative research that was conducted. The professional development plan included topics such as The Minority Experience in Higher Education, Creating an Inclusive Learning

Environment, and Role Playing: Walking in Someone Else's Shoes. Overall, the study was designed to enhance graduation rates among Black students at PWIs. It aimed to utilize the research conducted and develop a comprehensive strategic plan to address the factors influencing these outcomes.

Student services investment has an impact on a students' ability to graduate from college as mentioned in the literature. The existing scholarly work is represented as control variable in the current study to provide robustness to the overall goal of the research, to determine whether Black faculty representation is the prominent factor in Black students graduating from college.

2.4 Economic Inequality and Education outcomes

Thorson and Gearhart (2018) examined economic trends and their impacts on educational outcomes. The study leveraged data from the World Bank and the Organization for Economic Co-operation and Development (OCED) from 2000-2015. The researchers stated that one of the key drivers in the economic landscape during the past 30 years, 2018 and prior, was the upward trend of income inequality. Income equality in the U.S. has recently surpassed the peaks set in the early 20th century during the great depression.

A quantitative method was used to study the impact of economic inequality on educational outcomes. The findings showed statistical relationships between financial inequalities and student outcomes. The most significant impact was in the subject of Math. Thorson and Gearhart (2018) suggested that progressive income tax policy decisions were the best way to improve economic inequalities. The reality is that the passage of these progressive policies would be met with significant opposition in this current political landscape. Thorson and Gearhart (2018) mentioned that recent tax policies impacted and benefitted only high-income earners and did not distribute wealth to low-income individuals.

Pruitt et al. (2019) explored the effects of economic inequalities on academic outcomes, specifically the academic experiences of Black males. The literature starts by stating that Black males are already at a disadvantage economically and have limited access to academic resources. The research showed a 20% difference in high school graduation rates of Black students compared to other races and ethnicities and there is a one in six chances of graduating from a college or university.

A quantitative research design used a bivariate analysis to understand the statistical relationship between economic inequalities and student outcomes. The leading independent variables consisted of poverty rates, and the other two were controlled variables such as race/ethnicity and gender. The dependent variable was academic achievement.

The study leveraged historical surveys of national longitudinal studies between 2009-2013 that included 23,000 students from 944 high schools. The findings supported the hypothesis that Black males who resided and derived from low-income families had lower academic achievement compared to their White counterparts. Pruitt et al. (2019) concluded that economic inequalities supported the growth of academic inequalities.

Existing research has established a link between economic inequality and educational outcomes. The variables of average Pell Grant spend, and Black median household income was leveraged in this study as control factors that was analyzed on an institutional level. These factors were proxies to represent the economic inequalities of both the student and the university.

2.5 Impacts of Enrollment Management in Higher Education

Edwards et al. (2023) explored the impact of attending HBCUs on the educational, economic, and financial outcomes of students. Despite HBCUs constituting a small fraction of the higher education landscape, nearly 40% of Black students apply to at least one HBCU, and

10% of all Black students enroll in these institutions. Utilizing a quantitative research approach, the study analyzed individual-level data that provided detailed insights into students' trajectories pre- and post-graduation, assessing the long-term benefits of HBCU enrollment.

The study's initial findings indicated that enrolling in an HBCU was linked to a 12% higher likelihood of graduating with a college degree and a subsequent approximate 30% increase in household income. These insights were derived from a comprehensive dataset, which combined SAT data from 2004 to 2010 across the U.S., with records from the National Student Clearinghouse (NSC) and TransUnion credit bureau, covering millions of Black students. The research offered significant recommendations for Black students contemplating their college choices, as well as for policymakers and potential donors to HBCUs, emphasizing the substantial role HBCUs play in improving the educational and economic prospects of their alumni.

Additionally, the study highlighted the importance of effective enrollment management strategies at HBCUs as a crucial factor for enhancing the graduation rates of Black students. This aspect was integrated into the study as a control variable, reflecting the existing literature's identification of enrollment management as a key determinant of student success. The inclusion of this variable ensures a more nuanced analysis, allowing for a deeper understanding of how various elements of the college experience contribute to educational outcomes.

2.6 Higher Education as a Business Model

There is a growing necessity for higher education institutions to reevaluate their operational strategies as their sustainability heavily relies on their respective business models. This need is particularly acute in the higher education sector facing graduation challenges, with HBCUs no exception. The present study aimed to provide valuable recommendations to HBCU leaders, stakeholders, and policymakers.

A preliminary step for HBCUs involves assessing the current state of their business model and restructuring to delineate their future operational blueprint. Kalman (2014) characterized business models as theoretical frameworks consisting of three pivotal components: the customer value proposition, infrastructure, and financial aspects. Payne et al. (2017) defined the customer value proposition (CVP) as a strategic tool utilized by companies to communicate the value they offer to customers. This element is vital for identifying the organization's needs and setting the goals and objectives required to meet these needs. Kalman (2014) further delineated infrastructure as encompassing both tangible resources, such as an institution's buildings or human capital, and processes, which refer to systematic activities aimed at achieving specific objectives. The financial aspect concerns how an organization manages its finances to accomplish its goals, serving as the cornerstone of any successful business model. For HBCUs, recalibrating their focus on these three principal areas is essential for achieving financial and operational sustainability. In the realm of higher education, the ultimate goal is to support and facilitate student persistence through colleges and universities, making it imperative to examine the theoretical frameworks that exist to bolster student success.

2.7 Student Success

In higher education, students represent the primary clientele, with their progression through college or university serving as a critical measure of institutional success. Faculty members play a vital role in fostering student achievement. Theories that support both students and faculty in this endeavor include Student Persistence Theory, Social Identity Theory, and Self-Categorization theory. Pioneers such as Astin (1975), Cullen and Tinto (1973), and Tinto (1975) have significantly contributed to the development of Student Persistence Theory, highlighting the importance of understanding various factors that influence a student's motivation

to continue their education. Astin (1975) identified financial aid as a key determinant of student persistence. Cullen and Tinto (1973) and Tinto (1975) laid the groundwork for a fundamental theoretical framework extensively cited and expanded upon over the years. Building on this foundation, Reason and Terenzini (2005) introduced a comprehensive framework that extended beyond Cullen and Tinto's initial model by incorporating additional factors affecting student persistence.

Erikson (1946, 1956), a developmental psychologist, significantly influenced the development of Social Identity Theory. The foundations of Social Identity Theory and Self-Categorization theory were laid by Tajfel (1978), Tajfel and Turner (2000), and Hogg and Turner (1987). These theories have become pivotal frameworks within the literature, facilitating ongoing contributions that enhance our understanding of these concepts.

It is imperative for Black high school students, when faced with pivotal educational decisions, to be well-informed. They must consider these factors carefully, understanding how their goals and commitments can influence their likelihood of graduating from college. Effective decision-making in this instance not only affects their educational journey but also sets the foundation for their future career path and professional development.

Student Persistence Theory

Astin (1975) established foundational insights into college student persistence and the factors that positively influenced students' graduation rates. Metz (2004) hailed Astin's work as pioneering, noting it paved the way for subsequent research in the field. Astin's studies were particularly focused on the role of financial aid programs, amidst federal and state concerns about the allocation of these programs and the determination of their primary administrators at the time. His research encompassed all forms of financial assistance—including loans, grants,

work-study programs, as well as support from parents, spouses, and other sources—to assess their impact on student persistence.

The data utilized originated from the 1972 longitudinal follow-up survey, adhering to specific eligibility criteria established by Astin. He articulated the most prevalent objectives of financial aid as follows: to enhance access to higher education for students, ensure completion of studies, motivate academic excellence, acknowledge merit, sway student choices, and redistribute wealth. Astin contended that the prevailing assumptions were that all forms of aid contribute to student persistence and that financial challenges are among the primary obstacles to graduating from college. Table 5 highlights significant determinants of student persistence identified in Astin's (1975) study.

Table 5

Drivers of Student Persistence

Parent Aid	Aid directly from Parents generally enhances the student's ability to complete college.
Scholarships or Grants	Scholarships and Grants are associated with small increases in student persistence rates. Grant support appears to be a major factor in student persistence among Black students.
Loans	Loans are associated with decreased persistence for male students in all parent income groups. For female students, the effects are highly variable depending on parent income levels. Reliance on loans is associated with increased persistence among Black students attending predominately white colleges.
Work-Study	Federal Work-Study programs enhance student persistence among females and Blacks. The most consistent impact is among middle-income families.

The findings discussed highlight the impact of financial aid on student persistence,

suggesting that such aid was most effective when provided individually rather than as part of a package, with the notable exception that a combination of loans and work-study programs positively affects student persistence. Astin's (1975) work is acknowledged as a cornerstone in the theory of student persistence. This underscores the importance of tailoring financial support to meet individual student needs, thereby enhancing their ability to navigate through and successfully complete their academic programs.

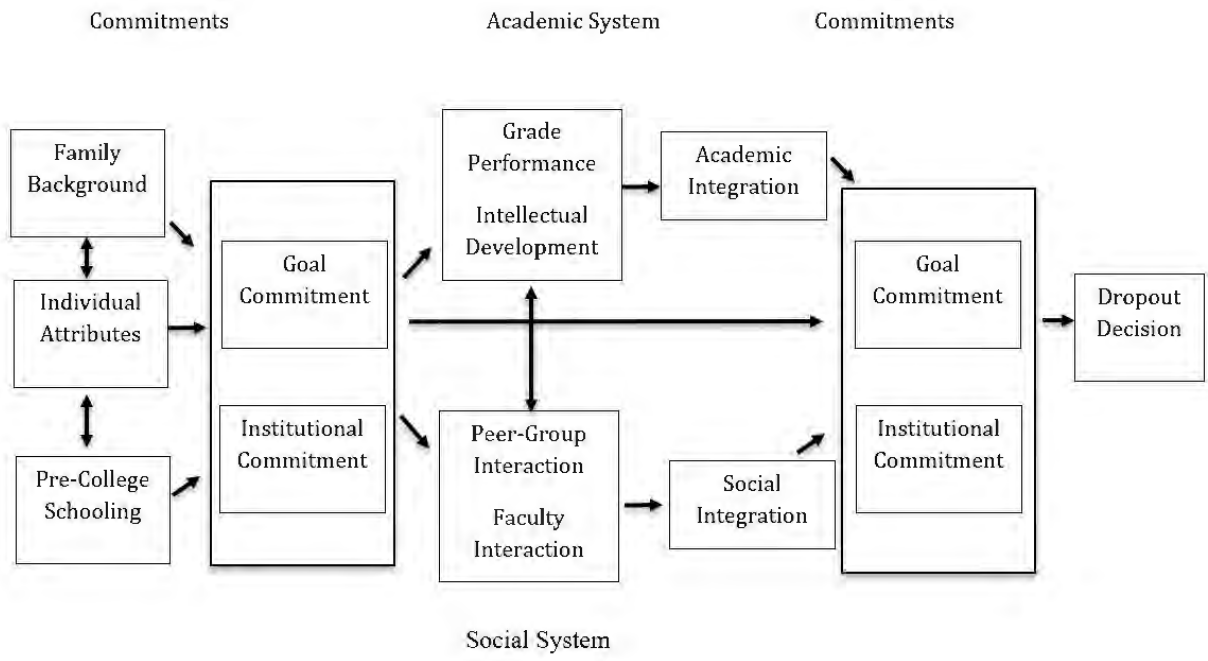
Cullen and Tinto (1973) collaborated to develop a theoretical framework for analyzing the dropout process among college students, drawing heavily on the research by Durkheim (1961) and Spady (1970). Durkheim's perspective on the severance of ties within a social system emphasized the critical role of integration within the societal fabric, a concept Tinto and Cullen adapted to the context of higher education by viewing colleges as social systems with inherent values and structures. They argued that insufficient social interaction and integration within the college environment could diminish a student's commitment, potentially leading to dropout. While the comparison between suicide and dropping out may seem extreme, Durkheim's insights on disengagement from society provide a compelling analogy for understanding withdrawal from an academic institution. Spady (1970) is credited with applying Durkheim's sociological theory of suicide to the study of college student persistence for the first time.

The economic principle of cost-benefit analysis also played a role in shaping Cullen and Tinto's (1973) model. According to Drèze and Stern (1987), cost-benefit analysis aims to systematically evaluate decisions based on their outcomes, incorporating both social and economic considerations into the assessment of whether an activity is likely to maximize the benefit-to-cost ratio. This analytical approach, including factors beyond mere financial calculations, is evident in the framework proposed by Cullen and Tinto. Figure 2 depicts their

theoretical model, influenced by Durkheim's sociological theory and the concept of cost-benefit analysis, where the decision to drop out was the dependent variable, and factors such as family background, pre-college schooling, individual attributes, the academic and social systems, academic and social integration, and commitment were the independent variables. Goal commitment served as a moderator variable, directly influencing a student's decision to persist or drop out. According to this framework, the degree of a student's integration into the college environment significantly impacted their commitment to their goals, thereby affecting their likelihood of graduation.

Figure 2

Student Dropout Framework, Cullen and Tinto (1973), Tinto (1975)



The model aimed to enhance the understanding and strategies that improve student retention, offering a foundational guide for future research on student departure in higher education. John P. Bean, a distinguished professor renowned for his contributions to the study of

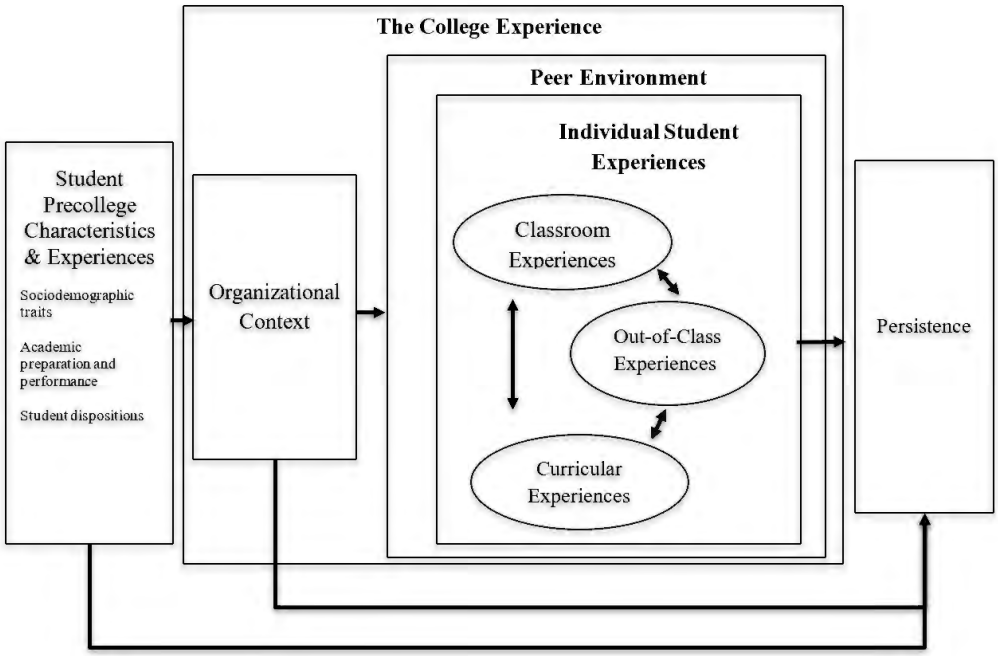
student attrition, with over 20,000 citations, lauded Tinto's research as "Brilliant" and described it as "the best compilation of ideas about understanding student departure" (Bean & Tinto, 1988, p. 708,709). Tinto (2012) expanded upon his initial work with a revised conceptual model that incorporated intentions and external commitments as new elements, alongside a more nuanced discussion on social and academic integration.

Despite several critiques, Tinto's (2012) theory has garnered 24,688 citations on Google Scholar as of 2023, underscoring the enduring significance and impact of his work in the field of student persistence research. As the body of literature around student persistence has grown, ongoing inquiries about enhancing student retention in higher education persist. Tinto (2006) explored further advancements needed to boost student retention and persistence. Despite decades of focused research, significant changes in completion rates remain elusive. Tinto (2006) identified that student environments and institutional factors play a critical role, suggesting that a more encompassing model might be necessary to capture these elements effectively.

Reason and Terenzini (2005) introduced a more comprehensive extended conceptual framework (see Figure 3), incorporating multiple factors influencing student departure. This framework outlines four primary constructs affecting student persistence: pre-college experiences, institutional environment, peer environment, and individual student experiences. Reason (2009) clarified that while these constructs might be depicted linearly, the actual student experience is more dynamic, with considerable overlap among the constructs. "To fully and effectively address student persistence, any intervention must consider the local organizational context and the local student peer environment," (Reason, 2009, p. 678). The framework by Reason and Terenzini (2005) highlighted the significance of both peer experiences and organizational factors in understanding student persistence.

Figure 3

A Comprehensive Model of Influences on Student Learning and Persistence, Reason and Terenzini (2005)



Social Identity Theory

According to Hornsey (2008), Social Identity Theory (SIT) emerged in the aftermath of World War II, a period that prompted psychologists to delve into the social underpinnings of the tragic events of that era. Henri Tajfel was at the forefront of SIT research, notably collaborating with John Turner (Tajfel, 1978; Tajfel & Turner, 1986). They posited that human interactions spanned a spectrum from interpersonal to intergroup interactions, with the latter being more prevalent. Hornsey articulated, "A purely intergroup interaction is one in which people relate entirely as representatives of their group" (p. 206). This theory underscores the tendency of individuals to align with groups, influencing not only self-perception but also perceptions of others.

Gurin et al. (2002) referenced Erik Erikson (1946, 1956), a developmental psychologist,

who emphasized the late teen and early adult years as critical for the development of a college student's social identity. This period allowed students to explore various social ideologies and settings without the pressure of immediate, permanent commitments. Gurin et al. highlighted two crucial aspects of identity: "persistent sameness within oneself and persistent sharing with others" (Gurin et al., 2002, p.12). These formative years are pivotal in shaping a college student's social identity, stressing the importance of institutions committing resources to support students' social exploration and development within the college environment.

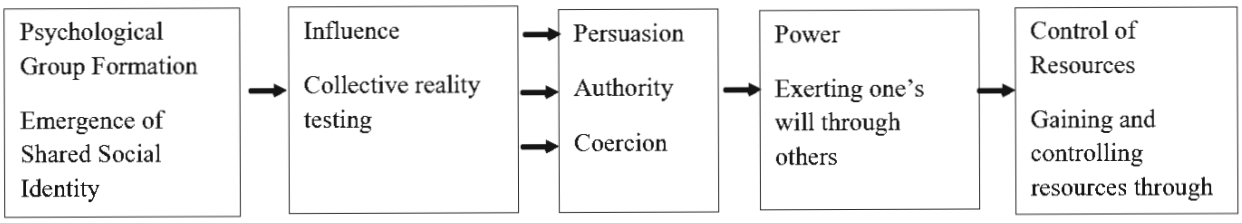
Self-Categorization Theory

Turner, along with his colleagues, expanded on Social Identity Theory (SIT), leading to the development of Self-Categorization Theory (SCT). Turner (2005) regarded SCT as a catalyst for understanding power dynamics and influence. Figure 4 illustrates Turner's (2005) introduction of the three-process model, which elucidates the nature of power and positions shared social identity as a foundational element in the process.

Hornsey (2008) delineated SCT into three distinct levels of identity: human identity, social identity, and personal identity. Human identity encompasses the broad sense of belonging to humanity. Social identity pertains to membership within specific social groups among humans. Personal identity emerges from comparisons made at an interpersonal level (Hornsey, 2008). The concept of an infinite array of social identities that can be organized into categories brings forth the notion of "fit," which Hornsey described as the degree to which social categories were perceived to accurately represent social reality. This concept of "fit" is crucial in determining the alignment of an individual with each category, emphasizing the perceived congruence between social categories and their representation of social dynamics.

Figure 4

The Three-Process Theory, Turner (2005)



These theories elucidate the dynamics of interactions, group categorization, and their impact on individuals' social identities, playing a pivotal role in the college experience. For college students, the influences and processes of social categorization are integral aspects of navigating their academic journey. The potential connection between a Black student and a Black faculty member, particularly within the context of a HBCU, could significantly influence the student's path to graduation. This identification with the cultural background and experiences of Black professors can foster a sense of belonging and comfort among Black students.

As highlighted by Turner (2005), the establishment of a shared social identity can lead to direct influence, endowing individuals or groups with power and the capacity to mobilize resources through others. Within the academic setting, race/ethnicity can serve as a basis for shared social identity, enabling Black faculty members to exert a considerable influence on, and potentially enhance, the persistence and graduation rates of Black students. This phenomenon underscores the importance of institutional factors, as delineated in student persistence theories, in shaping educational outcomes and experiences for students of color.

O-Ring and Positive Assortative Matching Theory

Kremer (1993) introduced the O-Ring Theory, which pertains to the production functions within organizations, emphasizing the critical importance of quality. This theory illustrates that a

mere increase in quantity cannot compensate for a lack of quality. It suggests that resources with similar skills and quality levels are likely to be grouped together. The theory elucidates the variations in wages based on the skill levels of workers, proposing that these skill disparities can lead to differences in wage and productivity outcomes, particularly between countries with varying worker skill sets. According to the theory, such inputs naturally lead to a sorting process where the quality of workers is positively grouped, affecting wage patterns across different roles within the same organization.

This concept is extendable to understanding graduation rates among Black students in higher education, highlighting that each step in the educational process is vital. Compromises in any input quality could jeopardize a Black student's chances of graduation. An example of a critical input for enhancing graduation rates among Black students could be the effort to increase the hiring of Black faculty, which, according to Kremer's O-Ring Theory, could enhance the overall quality of educational outcomes.

Becker (1973) applied statistical analysis to marriage, underpinning his analysis with the assumption that the "marriage market" consisted of individuals seeking their most compatible matches based on shared values and principles. This concept of assortative matching, when applied to the higher education context, can offer insights into the factors driving student outcomes. A relevant factor might be the resemblance between Black faculty in higher education and Black student graduation rates, suggesting that such statistical correlations could support Becker's theoretical framework.

Informed by the frameworks of Reason and Terenzini (2005), Kremer (1993), and Becker (1973), the development of the Black Student Graduation Model identified critical factors influencing Black student graduation rates. Inspired by Kremer's (1993) theory, the model is

arranged in a ring format, underscoring that each variable's quality is as pivotal as in the O-Ring philosophy. The correlation between Black faculty representation and Black student graduation rates, drawing from Kremer (1993) and Becker (1973), suggests that shared characteristics significantly impact positive outcomes, with racial similarities being a key predictor of success for Black students' graduation rates.

This model considered both institutional and economic factors that positively influenced Black student graduation rates, with Black faculty representation highlighted as a primary variable. Control variables included the average Pell Grant expenditure, indicative of the economic backgrounds of students; 12-month enrollment, serving as a proxy for enrollment management; Black median household income, capturing the economic environment of the institution; and student services spending, reflecting the institution's investment in student engagement initiatives. These factors collectively contributed to a comprehensive understanding of how the percentage of Black faculty at HBCUs and non-HBCUs influenced Black student graduation rates. Cullen and Tinto (1973), Tinto (1975), Reason and Terenzini (2005), Kalman (2014), Astin (1975), Erikson (1946, 1956), Hornsey (2008), Kremer (1993), and Becker (1973) all are scholarly works that have influenced this study and are the foundation that guides my research.

CHAPTER 3

METHODOLGY

This chapter outlines the methodology employed in this study, which sought to statistically explore the longitudinal impact of various variables on the graduation rates of Black students. The primary independent variable of interest was the representation of Black faculty. Other variables included as controls were the median household income of Black families, investment in support services, 12-month enrollment, and average Pell Grant expenditure. The study used empirical data to highlight the significance of the relationship between Black faculty representation and the graduation rates of Black students from HBCUs. Employing a linear regression model, this research explored these crucial predictors, providing insights for HBCU leaders, stakeholders, and policymakers aimed at enhancing Black student graduation rates. The dataset included all existing four-year HBCUs and all four-year Title IV institutions that report to the U.S. Department of Education. The following sections detail the research design and approach, data collection methods, data analysis, validation processes, and the linear regression model equation.

3.1 Research Design and Approach

This study utilized a quantitative methodology to investigate the effect of Black faculty representation on the graduation rates of Black students at HBCUs. This design was used to understand the correlation between Black faculty and the graduation of Black students. Senthilnathan (2019) mentions “linear correlation analysis is a tool for representing the closeness of one related variable to another” (p. 2). It also takes a deductive approach, drawing upon a foundation of established theoretical frameworks and scholarly contributions. Influential works by scholars such as Cullen and Tinto (1973), Tinto (1975), Reason and Terenzini (2005), Kalman (2014), Astin (1975), Erikson (1946, 1956), Hornsey (2008), Kremer (1993), and Becker

(1973) significantly guided the formulation of the research question and the selection of variables for analysis.

At the heart of this research is the principle proposed by Cullen and Tinto (1973), which identifies commitment as a critical factor in student retention efforts. This study expands upon their theory to scrutinize the reciprocal commitment required from both students and institutions, underscoring the importance of an institution's mission in reinforcing this commitment. The representation of Black faculty is the focal independent variable, regarded as an indicator of alignment in commitment to academic persistence and success among students and faculty of similar racial backgrounds. This investigation sought to determine how Black faculty representation may encourage a learning environment that is both culturally inclusive and supportive.

The study also incorporated several control variables: the median household income of Black families, average Pell Grant allocations, expenditures on student services, and 12-month enrollment data. These variables were chosen to mitigate potential confounding factors, allowing the research to more accurately attribute any observed effects on graduation rates to Black faculty representation. Specifically, these controls were selected to capture the influence of socioeconomic factors on institutional resources, the accessibility of financial aid, the socio-economic composition of the student body, the level of institutional commitment to supporting economically disadvantaged students, and the efficacy of enrollment management practices.

3.2 Data Collection

Data for this study were sourced from the National Center for Education Statistics (NCES), which provided information on Black student graduation rates, Black Faculty Representation (the ratio of Black faculty to total faculty), and 12-month enrollment figures.

Additionally, Black median household income data by zip code were obtained from the United States Census Bureau. In instances where a zip code was not directly associated with a specific HBCU, state median income data were used. Zip codes for each HBCU were acquired from the NCES. The data collection covered the years 2013 to 2022. The dataset includes 2,710 four-year Title IV institutions, of which 90 are four-year HBCUs, totaling 27,100 potential observations over the 10-year span. This dataset comprised panel data, featuring observations of multiple schools over several time intervals.

Limitation

A notable limitation was the absence of recorded data on Black faculty availability by the U.S. Department of Education prior to 2015. Consequently, the dataset for all other variables encompasses the entire 10-year scope (2013-2022) of the research. The lack of accessible detailed endowment information for most HBCUs required the exclusion of this variable to preserve the dataset's integrity and the feasibility of conducting linear regression analyses. To ensure the accuracy of the regression analysis, measures were implemented to account for unobserved or omitted observations. Additionally, in response to the COVID-19 pandemic, the prevalence of test-optional admissions policies among institutions necessitated the exclusion of SAT scores as a construct, considering their reduced applicability in the contemporary educational context.

3.3 Data Analysis

This study utilized multiple regression analyses to explore the dynamics influencing higher education institutions, focusing on the relationship between Black faculty representation and Black student graduation rates. Through the analysis of longitudinal data collected from both HBCUs and non-HBCUs over a decade, this research sought to identify both correlations and

potential causal links, thereby capturing subtle trends and insights.

Control variables in the data were transformed using natural logarithms to linearize their relationships with the dependent variable, thereby enhancing the interpretability of the regression models. However, the primary independent variable, representing Black faculty, did not undergo logarithmic transformation. This approach was chosen to maintain the integrity of data points indicating zero Black faculty presence, which are critical for a comprehensive analysis.

A sensitivity analysis, which involved the incremental addition of control variables, was performed. This process was essential to ensure the stability of the main independent variable's influence, to guard against omitted variable bias, and to validate the robustness of the observed effects of Black faculty representation on student outcomes. The sensitivity analysis could effectively distinguish the specific contributions of Black faculty representation from other potential influences, thereby magnifying the causal relationships within the study.

Time fixed effects were included to account for the potential impact of time-specific factors on Black student graduation rates. The dataset includes 2,710 institutions, and methodological guidelines recommend a minimum of 10 observations per institution (Riley et al., 2020. Given the dataset's maximum of approximately 12,000 observations, incorporating school fixed effects was deemed impractical due to the risk of incidental parameter bias. The analysis instead captured differences across schools through the independent control variables. Additionally, thorough checks for autocorrelation and overidentification of instruments were conducted. These checks ensured the absence of autocorrelation and endogeneity, confirming the validity and reliability of the chosen instruments for this analysis.

The variables employed in this study are delineated in Table 6 Definition of Variables.

Table 6

Definition of Variables

Variable	Definition
bsgr	Black Student Graduation Rates: The dependent variable.
bf	Black Faculty Representation: The principal independent variable.
lsss	Natural Log of Student Service Spend: Control variable
lme	Natural Log of 12-Month Enrollment: Control variable.
lbmhi	Natural Log of Black Median Household Income: Control variable.
lapgs	Natural Log of Average Pell Grant Spend: Control variable.
inter	Black Faculty Representation x HBCUs
hbcufe	Dummy Variable for HBCUs
L.bf	Lagged Variable of Black Faculty Representation
inter2	Lagged Variable of Black Faculty Representation x HBCUs

3.4 Linear Regression Model

The linear regression model employed in this study is formulated as follows:

$$bsgr_{it}=\beta_0+\beta_1*bf_{it}+\beta_2*lsss_{it}+\beta_3*lme_{it}+\beta_4*lbmhi_{it}+\beta_5*lapgs_{it}+\mu_i+\tau_t+\epsilon_{it}$$

where:

$bsgr_{it}$	Black Student Graduation Rates for school i in year t,
bf_{it}	Black Faculty % for school i in year t,
$lsss_{it}$	Natural Log of Student Services Spend for school i in year t,
lme_{it}	Natural Log of 12 Month Enrollment for school i in year t,
$lbmhi_{it}$	Natural Log of Black Median Household Income for school i in year t,
$lapgs_{it}$	Natural Log of Average Pell Grant Spend for school i in year t,
β_0	Intercept term,
β_1 to β_5	Coefficients for the respective variable noted above which measures the impact of each, one unit change in predictor variable on Black student graduation rates,
μ_i	School-specific effects,
τ_t	Time-specific effect,
ϵ_{it}	Error term for school i in year t.

This model allowed for the assessment of how variations in the representation of Black faculty, among other significant predictors, correlated with Black student graduation rates over time, while controlling for both school-specific and time-specific variations. The inclusion of

natural logarithms for certain predictors aims to linearize their relationships with the dependent variable, thereby enhancing the interpretability and robustness of the regression analysis. This approach not only strengthens the validity of the findings but also provided a clear understanding of the dynamics at play in educational settings, contributing to more informed policy-making decisions that has an impact on both operational financial strategies.

CHAPTER 4

FINDINGS

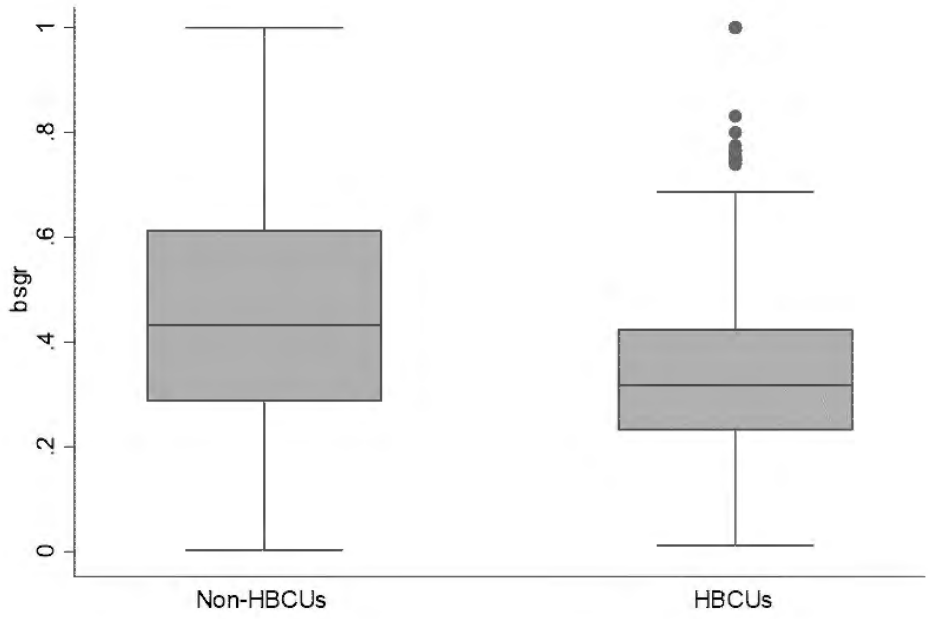
This chapter elucidates the disparities in Black student graduation rates between HBCUs and non-HBCUs, pinpointing one of the pivotal factors influencing Black student graduation rates at HBCUs. The insights derived from multiple linear regression analyses offer valuable data for HBCU leaders, stakeholders, and policymakers. These insights can inform the development of strategies and practices aimed at enhancing Black student graduation rates. The findings are presented through a comprehensive overview that includes descriptive analysis, linear regression results, and validation measures.

4.1 Black Student Graduation Rates

The analysis incorporated a sample average graduation rate of 33% for HBCUs and 46% for non-HBCUs, with sample sizes of 841 and 14,280, respectively. The standard deviation for HBCUs stood at 15%, reflecting low variability relative to the average graduation rates. In contrast, non-HBCUs exhibited a higher standard deviation of 23%, indicating greater variability across these institutions. Figure 5 offers a descriptive summary via a box plot. This plot demonstrates that the median 50% of Black student graduation rates at HBCUs are clustered between 20% and slightly above 40%. The data show outliers, with a few institutions achieving graduation rates between 75% and 100%. The whiskers extend to illustrate the full range of data, from as low as 1% to as high as 70% for HBCUs. For non-HBCUs, the middle 50% of data ranges from 30% to 60%, starting from a minimum of 0% up to 100% Black faculty, without any outliers noted.

Figure 4

Black Student Graduation Rate by Institution Type

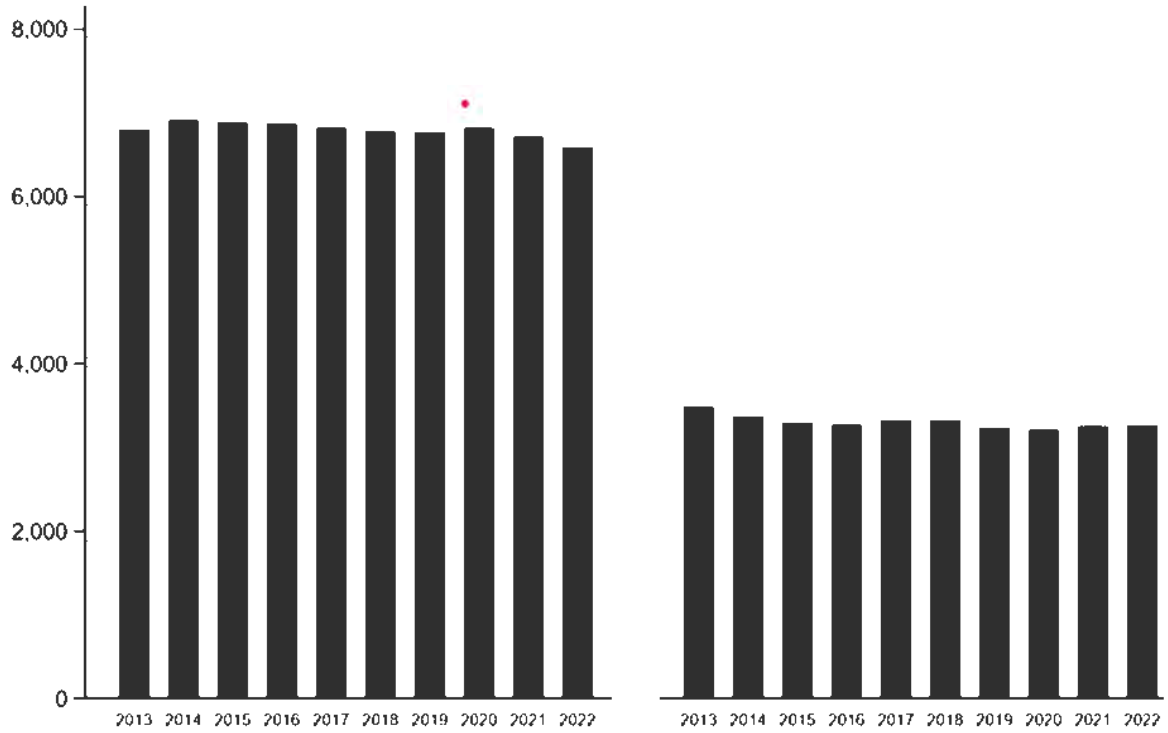


4.2 12-Month Enrollment

The analysis revealed that the average 12-month enrollment at non-HBCUs exceeded 6,000, nearly twice the enrollment figures observed at HBCUs. This significant difference in enrollment size may influence the resources accessible to students, including the faculty-to-student ratio. Despite the disparity in average enrollments between HBCUs and non-HBCUs, the trend analysis depicted in Figure 6 does not reveal any pronounced spikes in enrollment figures over time for either type of institution. Furthermore, the data indicate a broad spectrum in the range of minimum and maximum enrollments observed across both HBCUs and non-HBCUs, suggesting variability in institutional sizes within each category.

Figure 5

Non-HBCUs (left) and HBCUs (right) 12-month graduation rate trend 2012-2022



4.3 Black Faculty Representation

The descriptive analysis, presented in Tables 6 and 7, reveals a stark contrast in Black faculty representation between HBCUs and non-HBCUs. On average, HBCUs boast a Black faculty composition of 60%, in stark contrast to the 5.4% average observed at non-HBCUs. The trend analysis for HBCUs, illustrated in Figure 7, depicts notable fluctuations in Black faculty representation from 2015 to 2022, with a significant upward trend observed from 2020 to 2022. Conversely, Figure 8 illustrates a steady but modest increase in the percentage of Black faculty at non-HBCUs over the same period, though these percentages remain considerably lower than those at HBCUs.

Figure 6

HBCU Average Black faculty trend 2015-2022

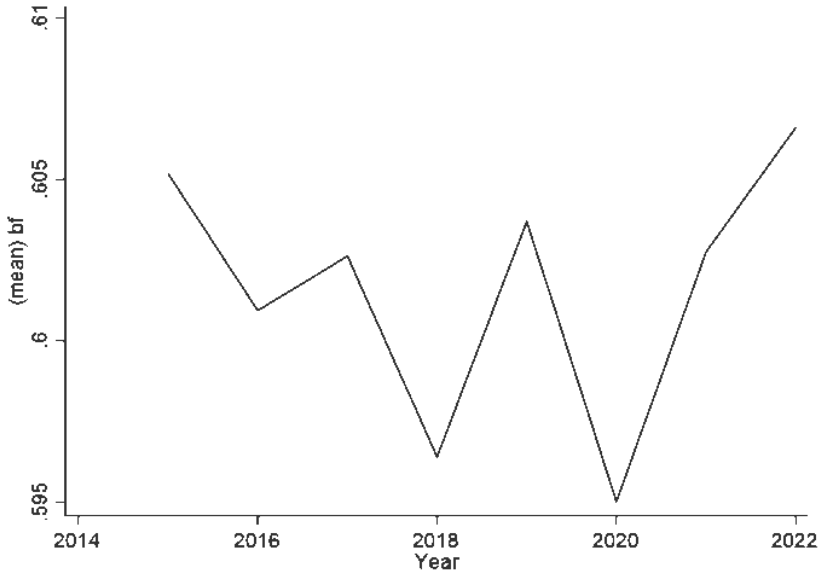
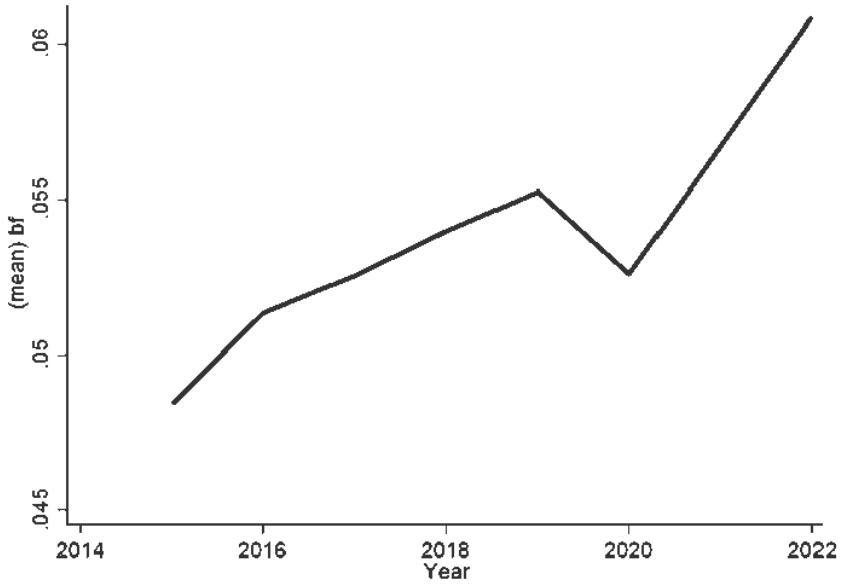


Figure 7

Non-HBCU Average Black Faculty trend 2015-2022

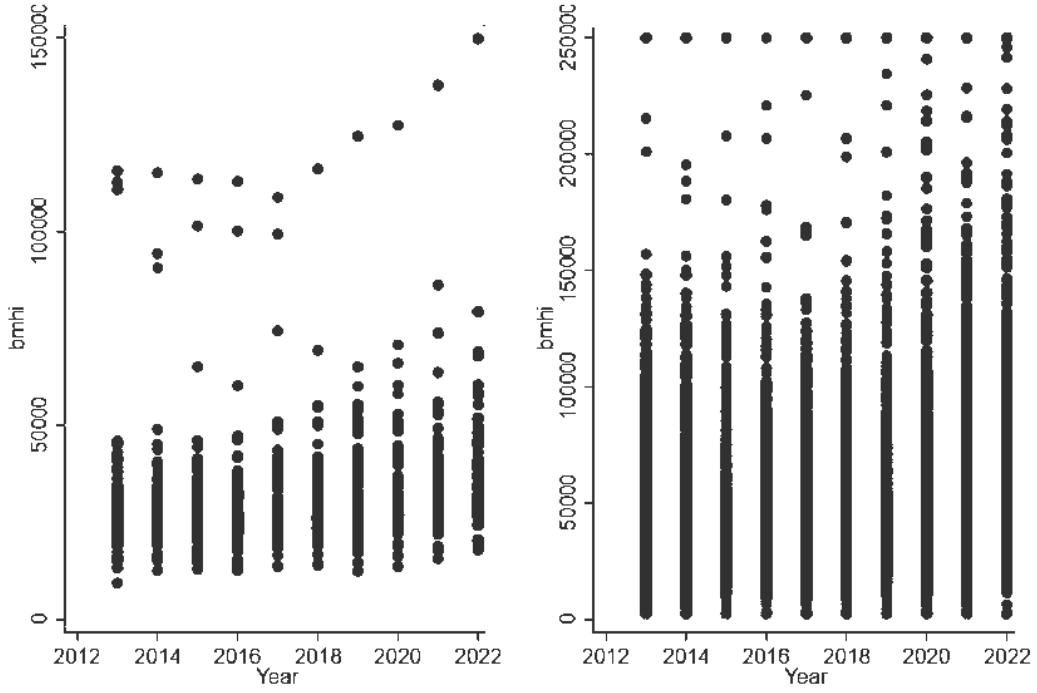


4.4 Black Median Household Income

The median Black household income was $33k and $45k at HBCUs and non-HBCUs respectively. The standard deviation for Black median household income was $16,265 and $27,795 for HBCUs and non-HBCUs, indicating a lower variation of income levels that was closer to average income levels compared to a higher diversity of income levels surrounding non-HBCUs. The trend from 2012-2022 (see Figure 9) shows the range of Black median household income over time. Each year has a wide range of variability within each year for both HBCUs and non-HBCUs. A large concentration of Black households had less than $50,000 median household income, with gradual increases throughout the years compared to a wide range of concentration for non-HBCUs that peaks around $175,000 in 2022.

Figure 8

HBCU (left) and non-HBCU (right) Black Median household income trend 2012-2022



4.5 Student Services Spending

The analysis revealed that the average expenditure on student services at non-HBCUs was twice that of HBCUs. HBCUs exhibited a broad spectrum of spending on student services, with amounts ranging from $13,000 to $55 million. In contrast, non-HBCUs displayed an even wider range in student service expenditures, from as low as $21 to as high as $479 million. The histograms depicted in Figures 10 and 11 show that the distribution of data for both HBCUs and non-HBCUs is right-skewed, indicating a higher concentration of institutions with lower spending on student services towards the lower end of the scale for both types of institutions.

Figure 9

HBCU Frequency of Student Service Spend from 2012-2022

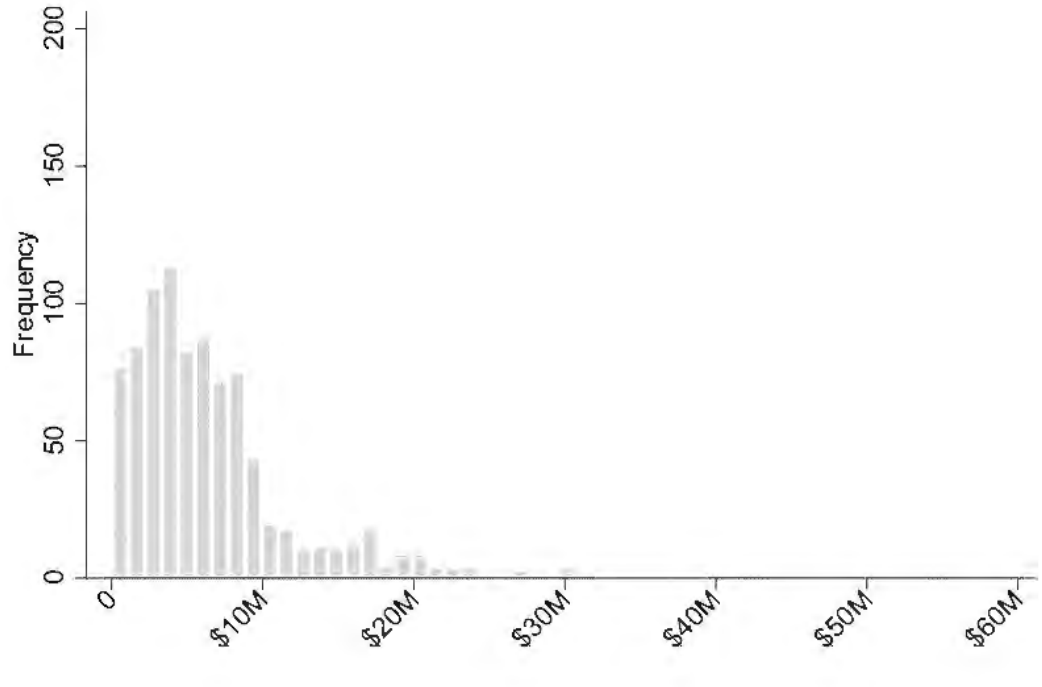


Figure 10

Non-HBCU Frequency of Student Service Spend from 2012-2022

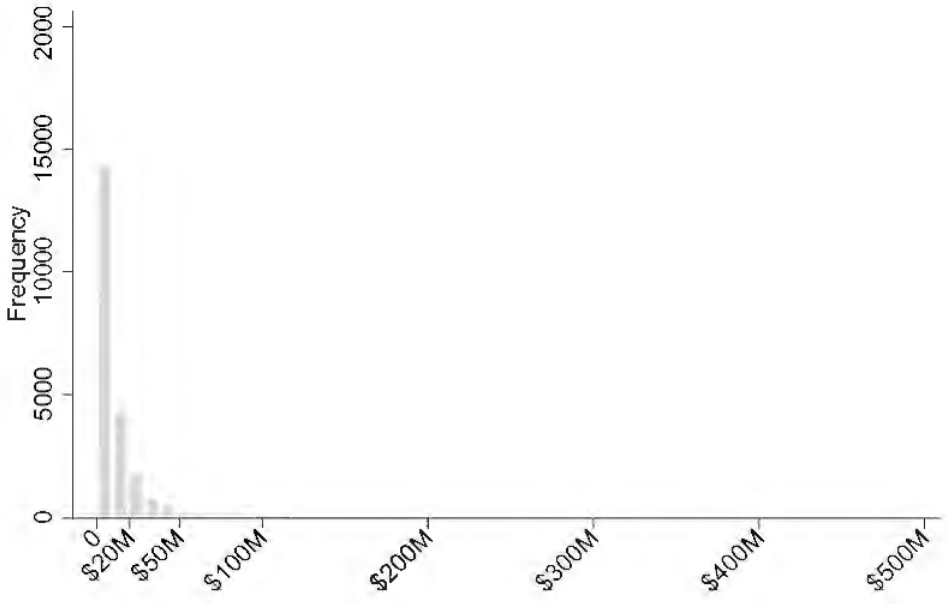


Table 6

Descriptive Statistics of Study Variables (Non-HBCUs)

Variable	*Obs*	*Mean*	*Std. dev.*	*Min*	*Max*
School ID	26,210	237,513	117,588	100,663	498,571
Black Student Graduation Rates	14,280	0.4624688	0.2323348	0.003	1
Black Faculty %	19,656	0.0539922	0.0935378	0	1
Average Pell Grant Spend	21,080	4,599	760	280	10,001
Black Median Household Income	19,782	45,208	27,795	2,500	250,000
Student Service Spend	23,502	14,100,000	26,600,000	21	479,000,000
12-Month Enrollment	25,290	6,796	12,777	5	320,973

Table 7

Descriptive Statistics of Study Variables (HBCUs)

Variable	*Obs*	*Mean*	*Std. dev.*	*Min*	*Max*
School ID	900	185,112	59,210	100,654	461,759
Black Student Graduation Rates	841	0.3322949	0.1492189	0.012	1
Black Faculty %	720	0.6016572	0.1695062	0	1

Average Pell Grant Spend	849	4,898	708	650	7,488
Black Median Household Income	778	32,605	16,265	9,375	149,778
Student Service Spend	898	6,750,234	5,982,590	12,900	55,100,000
12-Month Enrollment	896	3,306	3,073	44	14,642

4.6 Black Faculty Representation

In the multiple regression analysis summarized in Table 8, the dataset ranged from 12,115 observations in Model 1 to 8,164 observations in Model 6, incorporating data from both HBCUs and non-HBCUs. The primary variable of interest, Black faculty representation, is observed to have a statistically significant negative correlation with Black student graduation rates, as depicted in Figure 12.

Subsequent regressions, 2 through 5, incorporated additional control variables, which slightly modified the effect of Black faculty representation. Starting with Regression 2, time fixed effects were applied to account for unobserved variables that changed over time yet remained consistent across institutions. Additional control variables included the natural log of student services investments, Regression 3, which exhibited a positive relationship with Black student graduation rates; the natural log of 12-month enrollment, Regression 4, demonstrating a negative relationship; the natural log of Black median household income, Regression 5, suggesting a positive relationship; and finally, the natural log of average Pell Grant spend, which also indicated a positive relationship with the dependent variable.

As these control variables were integrated into the model, there is an observed increase in the R-squared value. This increment signifies that the control variables contributed to a better

explanation of the variance observed in Black student graduation rates.

Table 8

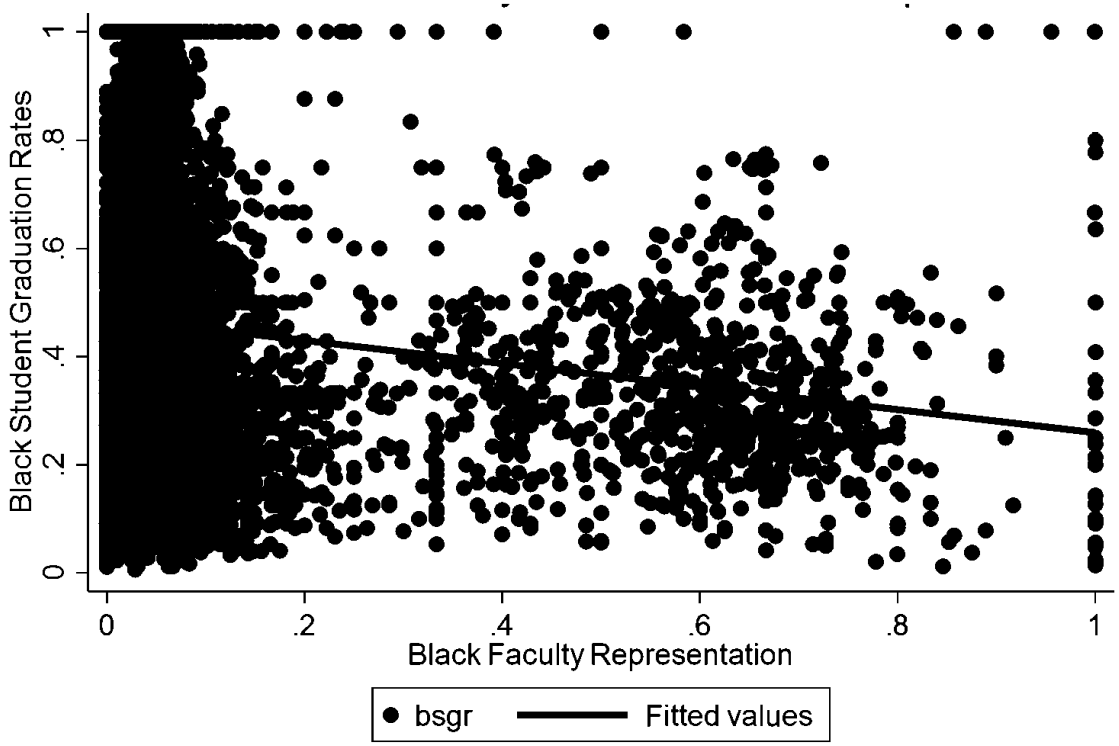
The Impact of Black Representation, Student Services Investments, 12-Month Enrollment, Black Median Household Income, and Average Pell Grant Spend on Black Student Graduation Rates

	Reg 1	***Reg 2***	***Reg 3***	***Reg 4***	***Reg 5***	***Reg 6***
	bsgr	bsgr	bsgr	bsgr	bsgr	bsgr
bf	-0.213***	-0.215***	-0.121***	-0.113***	-0.152***	-0.158***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
lsss			0.056***	0.104***	0.088***	0.091***
			(0.002)	(0.003)	(0.003)	(0.003)
lme				-0.061***	-0.060***	-0.061***
				(0.002)	(0.003)	(0.003)
lbmhi					0.021***	0.019***
					(0.005)	(0.005)
lapgs						0.044**
						(0.021)
_cons	0.473***	0.458***	-0.445***	-0.715***	-0.683***	-1.076***
	(0.002)	(0.006)	(0.028)	(0.029)	(0.056)	(0.177)
Time fixed effects	No	Yes	Yes	Yes	Yes	Yes
Obs.	12,115	12,115	11,893	11,892	8,226	8,164
R^2	0.019	0.021	0.104	0.148	0.13	0.136
R^2_a	0.019	0.021	0.103	0.147	0.129	0.134

Note. Standard errors are reported in parentheses. 1%, 5%, and 10% statistical significance are represented by***, **, and*, respectively.

Figure 11

Black Faculty & bsgr Relationship



The regression analysis presented in Table 9 shows multiple correlation analysis, Regressions 1-6. The key takeaway from the results below is the interaction (*inter*) between HBCUs' Black faculty and Black student graduation rates. The interaction term showed a significant positive relationship between HBCU's Black faculty and the dependent variable, Black student graduation rates. The negative relationship between Black faculty members was similar to the results shown in Table 8. Regression 2 analysis reconfirmed that, on average, HBCUs had lower Black student graduation rates than non-HBCUs based on the *hbcufe* dummy variable. The results of the *inter* term were stable as the control variables were included in each iteration of the regression analysis, Regression 3-6). The impact of Black faculty representation on graduation rates had a different outcome when not accounting for the type of institution.

However, for HBCUs, the positive interaction term suggested that the presence of Black faculty had a different positive effect compared to non-HBCUs. The adjusted effect can be calculated for HBCUs by adding the coefficient for *bf* to the coefficient for the *inter* term. The combined effect indicates how much higher the graduation rate is for Black students at HBCUs for each additional unit of Black faculty representation.

Table 9

Interaction between HBCUs Black Faculty and Black Student Graduation Rates

	Reg 1	***Reg 2***	***Reg 3***	***Reg 4***	***Reg 5***	***Reg 6***
	bsgr	bsgr	bsgr	bsgr	bsgr	bsgr
bf	-0.165***	-0.170***	-0.051**	-0.016	-0.113***	-0.130***
	(0.025)	(0.025)	(0.026)	(0.025)	(0.028)	(0.028)
inter	1.007***	1.001***	0.892***	0.899***	0.920***	0.917***
	(0.058)	(0.058)	(0.055)	(0.054)	(0.057)	(0.058)
hbcufe	-0.375***	-0.370***	-0.354***	-0.377***	-0.335***	-0.327***
	(0.025)	(0.025)	(0.024)	(0.024)	(0.026)	(0.026)
lsss			0.054***	0.103***	0.087***	0.090***
			(0.002)	(0.003)	(0.003)	(0.003)
lme				-0.061***	-0.061***	-0.061***
				(0.002)	(0.003)	(0.003)
lbmhi					0.018***	0.016***
					(0.004)	(0.005)
lapgs						0.053***
						(0.02)
_cons	0.471***	0.458***	-0.424***	-0.701***	-0.639***	-1.106***
	(0.002)	(0.006)	(0.028)	(0.029)	(0.056)	(0.174)
Time fixed effects	No	Yes	Yes	Yes	Yes	Yes
Obs.	12,115	12,115	11,893	11,892	8,226	8,164
R^2	0.044	0.046	0.124	0.169	0.158	0.161
R^2_a	0.043	0.045	0.123	0.168	0.156	0.160

Note. Standard errors are reported in parentheses. 1%, 5%, and 10% statistical significance are represented by***, **, and*, respectively.

Specific issues could arise that lagged variables could address. Such items include endogeneity concerns that cause reverse causality, unobserved variables, and estimation errors.

Tables 8 and 9 showed a positive correlation between Black faculty and student graduation. However, a deeper analysis to show a causal relationship between the two variables is necessary to help mitigate these issues. Some variables, such as academic pre-college characteristics, institutional factors, policy, and cultural factors, could be factored in addition to the factors included in the model that could impact the dependent variable. There could be a cause-and-effect concern (reverse causality): does higher graduation rates attract Black faculty, or does an increase in Black faculty cause higher graduation rates? Table 10 introduces the lagged variable of Black faculty. The data analyses below show the interaction term (*inter2*) that represents the interaction of the lagged variable of Black faculty (*L.bf*hbcufe*) and HBCUs. The lagged variable *L.bf* had consistent results with the Black faculty relationship in Tables 7 and 8. There was also a consistent positive relationship as the analysis accounted for all the control variables mentioned above.

Table 10

The Impact of Lagged Black Faculty Percentage and Its Interaction with HBCUs on Black

Student Graduation Rates

	Reg 1	***Reg 2***	***Reg 3***	***Reg 4***	***Reg 5***	***Reg 6***
	bsgr	bsgr	bsgr	bsgr	bsgr	bsgr
L.bf	-0.224***	-0.230***	-0.101***	-0.028	-0.159***	-0.177***
	(0.032)	(0.032)	(0.033)	(0.032)	(0.035)	(0.035)
inter2	0.265***	0.272***	0.240***	0.099	0.203***	0.239***
	(0.065)	(0.065)	(0.063)	(0.062)	(0.068)	(0.069)
hbcufe	-0.164***	-0.165***	-0.168***	-0.125***	-0.127***	-0.138***
	(0.035)	(0.035)	(0.033)	(0.033)	(0.036)	(0.037)
lsss			0.056***	0.105***	0.088***	0.090***
			(0.002)	(0.003)	(0.003)	(0.003)
lme				-0.059***	-0.058***	-0.058***
				(0.003)	(0.003)	(0.003)
lbmhi					0.018***	0.016***
					(0.005)	(0.005)
lapgs						0.044**
						(0.022)
_cons	0.476***	0.458***	-0.461***	-0.745***	-0.671***	-1.059***
	(0.003)	(0.006)	(0.03)	(0.032)	(0.06)	(0.186)
Lag of bf variable	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	No	Yes	Yes	Yes	Yes	Yes
Obs.	10,613	10,613	10,435	10,434	7,186	7,134
R^2	0.021	0.023	0.108	0.149	0.129	0.133
R^2_a	0.021	0.023	0.107	0.148	0.127	0.131

Note. Standard errors are reported in parentheses. 1%, 5%, and 10% statistical significance are represented by***, **, and*, respectively.

4.7 Validation Measures

To further address concerns about endogeneity and the potential impacts of unobserved heterogeneity and autocorrelation, a statistical technique known as the Generalized Method of Moments (GMM) was leveraged to mitigate these issues further. This method was introduced by Arellano Bond (Arellano & Bond, 1991; Blundell &Bond, 1998) and is a critical tool in econometrics and scholars like Roodman (2009) have expanded these techniques through the use of difference and system GMM, which are now supported by powerful statistical platforms such

as Stata. The results below in Table 11**,** reinforce the correlation between Black faculty and student graduation rates. The extensive, robust checks that include sensitivity analysis of introducing control variables to test the stability of the leading independent variable and the dynamic analysis performed in Table 11 prove a genuine causal relationship between Black faculty and student graduate rates.

The findings support the elements that contribute to the graduation rates of Black students at HBCUs. The findings focus on Black faculty representation and including other influences such as economic factors, support services, and enrollment management as control factors. These control factors isolate causal relationships, improve accuracy, and reduce any potential biases which provide validity to the overall findings and recommendations. The concluding chapter provides recommendations and discussions around these findings. The validation measures provided credibility to the results and justification for my recommendations.

Table 11

Dynamic Panel Analysis of Black Faculty Influences and HBCU Interactions on Black Student Graduation Rates

	Reg 1	***Reg 2***	***Reg 3***	***Reg 4***	***Reg 5***

	bsgr	bsgr	bsgr	bsgr	bsgr
bf	-0.148	-0.122	-0.147	-0.123	-0.113
	(0.147)	(0.133)	(0.147)	(0.133)	(0.131)
inter	1.003***	1.005***	1.003***	1.005***	1.000***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
lbmhi	-0.006	-0.011	-0.006	-0.011	-0.006
	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
lsss		0.019*		0.019*	0.009
		(0.011)		(0.011)	(0.006)
lme			0.008	0	0
			(0.021)	(0.023)	(0.022)
lapgs					0.005
					(0.02)
ar1p (Arellano-Bond test for AR (1) _P	0.000	0.000	0.000	0.000	0.000
ar2p (Arellano-Bond test for AR (2) _P	0.957	0.945	0.961	0.945	0.872
sarganp (Sargan test of overid_P)	0.081	0.098	0.08	0.097	0.259
hansenp (Hansen test of overid_P)	0.176	0.256	0.174	0.243	0.209
Obs.	6,498	6,385	6,498	6,385	6,352
Number of Groups	1,245	1,220	1,245	1,220	1,213
Number of Instruments	78	79	79	80	81

Note: Standard errors are reported in parentheses. 1%, 5%, and 10% statistical significance are represented by***, **, and*, respectively.

CHAPTER 5

CONCLUSION

5.1 Summary

In the landscape of HBCUs, Black students are indispensable to the vitality and success of these institutions. The collective success stories of students create benchmarks that mark the academic triumphs of higher education institutions. One key performance indicator in this context is graduation rates, which reflect the outcome of educational endeavors. Yet, data indicate that Black student graduation rates at HBCUs lag behind those at other Title IV four-year institutions. According to statistics from the period of 2013-2022, the average graduation rate for all races/ethnicities at Title IV institutions was 57%. In contrast, the rate for Black students stood at 42% at these institutions and was further reduced to 33% at HBCUs (National Center for Education Statistics, 2022). Such statistics highlight the particular hurdles Black students face in achieving higher education success.

The longitudinal research conducted in this study delved into the role of Black faculty representation in influencing the graduation rates of Black students. Empirical evidence was utilized to affirm that the presence of Black faculty is significantly and positively related to the academic achievements of Black students at HBCUs. In contrast, a negative correlation was found between Black faculty representation and graduation rates at non-HBCU institutions. The comprehensive dataset included all 90 existing four-year HBCUs and 2,620 four-year non-HBCUs.

This study's findings support the theoretical framework posited by Reason and Terenzini (2005), which details the various elements that facilitate student perseverance in higher education. Cullen and Tinto (1973), as well as Tinto (1975), posited that institutional commitment plays a decisive role in student retention and dropout rates. Their propositions are

consistent with factors like Black faculty composition at a university being particularly influential. Additionally, the O-Ring and Positive Assortative Matching Theories provided a framework suggesting that individuals thrive when aligned with others sharing similar characteristics.

The research question poised at the outset of this study was as follows: How does the percentage of Black faculty at HBCUs and non-HBCUs affect the graduation rates of Black students? Analyses revealed that while Black faculty representation had a statistically significant negative association with Black student graduation rates in general, the impact at HBCUs was distinctly positive. This finding accentuates the need for HBCUs to prioritize the recruitment and retention of Black faculty, promoting a culturally cognizant and inclusive educational environment that fosters engagement, mentorship, and ultimately, student success. Institutional characteristics, such as Black faculty representation, are integral to student persistence, as evidenced by the Organizational Context aspect of Terenzini and Reason's (2005) framework.

Furthermore, Social Identity Theory (SIT) and Self-Categorization Theory (SCT) prove to be crucial in deciphering the relationship between Black faculty and student identification, suggesting that shared characteristics significantly influence student experiences and outcomes. The results affirm a beneficial relationship between Black faculty representation and student graduation rates. However, it is noteworthy that Black student graduation rates are higher by an average of 10% at non-HBCUs compared to HBCUs. The modest six percent representation of Black faculty at non-HBCUs may explain why their influence on Black student graduation rates is not more pronounced.

5.2 Recommendations and Business Implications

The comprehensive analysis of how Black faculty influence Black student graduation

rates underscores significant strategic and operational considerations for decision-makers at HBCUs. This analysis not only sheds light on current realities but also charts a path forward with actionable strategies aimed at enhancing institutional effectiveness and student success.

Recommendations for Strategic Enhancement

1. Comprehensive Evaluations: Initiate thorough evaluations of institutional practices, particularly in hiring and recruitment, by engaging stakeholders, including Black faculty and students. This approach aims to assess and refine processes to foster an inclusive and diverse academic environment.
2. Focused Recruitment Efforts: Strengthen efforts to attract premier Black academic talent. This strategy involves creating appealing opportunities that draw top-tier Black faculty to HBCUs, recognizing the critical role they play in student success.
3. Enhanced Compensation and Support: Develop competitive compensation, retention initiatives, and professional development opportunities. Such measures are essential for nurturing a committed and thriving faculty body and to attract top Black academic faculty, that will be dedicated to long-term institutional and student success.
4. Cultivating Engagement: Launch initiatives aimed at deepening the interaction between Black faculty and students through mentoring, collaborative research, and community engagement projects. These programs are designed to enrich the academic and social fabric of HBCU campuses, fostering a vibrant community of learning and growth.

Business Implications for Sustained Growth:

1. Strategic Advantages: HBCUs can leverage these findings to support policy practices to increase the human capital of Black faculty. The justification for this support is evidenced by the positive impacts of Black faculty and the successful matriculation of Black students at

these legacy institutions. Successful student outcomes will also increase the pipeline of Black students from HBCUs and their impact on the labor force. The representation of HBCUs could improve and help support their marketing strategies. These strategies could help attract Black faculty, students, corporate partners, and private donors. Showcasing the commitment to improving the diversity of Black faculty impacts each institution's operational and financial strategies**.**

2. **Accreditation and Funding:** The commitment to support Black student graduation rates is essential to secure more funding opportunities from government and private sources to help fund Black faculty representation. There may be a significant cost initially, but the return on that investment could lead to long-term benefits that will improve the overall goal of any institution, and that is improving students' academic outcomes. Increasing these graduation rates will help maintain their accreditation and funding opportunities.

5.3 Future Research Directions

Higher education faces significant financial challenges that extend across campuses and universities. In a survey conducted by Jackson (2022), which encompassed over 700 higher education professionals, 74% of the participants cited financial constraints as a predominant challenge facing their campuses. Furthermore, 60% of the respondents expressed concern over the financial stability of their institutions. This concern is particularly acute for HBCUs, who consistently strive to align themselves with PWIs, as highlighted in Chapter 1, regarding the historical financial disparities between these institutions.

With tuition and fees approaching what many Americans perceive as a price ceiling, Dennon (2022) reported that, according to a survey of over 2,500 Americans, 54% believed that rising educational costs were a significant obstacle to pursuing higher education. This suggests

an imperative need for future research to explore new business models that could enhance revenue generation for HBCUs.

The importance of a school's environment or location in the college selection process is well documented, with "location as a primary consideration in the college choice process" (Hourigan, 2011, p. 13). Given that the majority of HBCUs are located in the Southern United States, further research could investigate whether location influences Black student graduation rates and whther there is any correlation between regional accreditations and these rates. Qualitative surveys capturing insights from current students and recent alumni may yield valuable perspectives.

The disparities between HBCUs and non-HBCUs are considerable, encompassing both financial and operational aspects, from endowment sizes to Black student graduation rates. Future studies might employ regression analyses to discern how various factors interact differently with HBCUs versus non-HBCUs. Such research could lead to comprehensive recommendations applicable to all types of higher education institutions.

HBCUs, as legacy institutions, play a critical role in the economic success of Black students in the U.S. This study examined elements that contribute to the graduation rates of Black students at HBCUs, identifying the presence of Black faculty as having a profound influence on student outcomes. Utilizing a quantitative approach through linear regression models, the research adds to existing literature by equipping HBCU leaders, stakeholders, and policymakers with crucial insights to attract and retain Black faculty. The findings underscore the importance of these institutions in fostering future generations of Black leaders, engineers, entrepreneurs, and more, emphasizing the ongoing need to monitor and support the sustainability of HBCUs as bastions of Black excellence.

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