INSTITUTIONAL CHARACTERISTICS INFLUENCING NONBLACK ENROLLMENT AT HISTORICALLY BLACK COLLEGES AND UNIVERSITIES IN THE TWENTY-FIRST CENTURY

By

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ABSTRACT

INSTITUTIONAL CHARACTERISTICS INFLUENCING NONBLACK ENROLLMENT AT HISTORICALLY BLACK COLLEGES AND UNIVERSITIES IN THE TWENTY-FIRST CENTURY

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In order to better understand diversity on HBCU campuses and broaden the scope of scholarly work on HBCUs, this study attempts to provide a nuanced view of nonblack enrollment at HBCUs from an organizational perspective by pursuing the primary research question: Are there institutional characteristics of HBCUs that influence nonblack enrollment patterns between the years 2000-2010? Perna's (2006) conceptual model of college choice, specifically the higher education context, and the education production function frameworks serve as lenses through which this issue will be viewed. This investigation uses data from the Integrated Postsecondary Education Data System (IPEDS) and employs a fixed effects panel data regression analysis to examine enrollment patterns in hopes of better understanding an element of college choice. The findings from this study suggest that institutional characteristics influence nonblack enrollment differently depending on institutional control. For public HBCUs, spending on academic support per FTE student was found to be a strongly positive predictor of nonblack enrollment, whereas graduation rates had statistically significant negative effects on nonblack enrollment at private HBCUs. Consequently, implications for policy, practice, and future research are discussed.

I dedicate this dissertation to my father, Charles Robert Shorette, and my mother, Karen Rae Shorette, who truly embody selflessness and unconditional love, and who made countless sacrifices with my future in mind so that I may pursue my passions freely.

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First and foremost, my family has been the constant source of stability and love whenever I was in need. My dad was always happy to hear of the progress I was making and was overjoyed at the thought of his son receiving a doctoral degree. My mom has essentially read and provided editorial feedback on every paper I have written since my days as an English Education major at Florida A&M University, so, in my eyes, she has earned honorary bachelor's, master's, and doctoral degrees. On top of her skills as a copy editor, even though she could not always relate to exactly what I was going through, she always knew what I needed to hear to get me through tough times. My brother has always set an example for me to follow and paved the way as a model student, husband, father, and brother. And my wife, April, while simultaneously overcoming her own challenges in becoming a doctor (the Juris Doctor kind), still dedicated every additional moment not being spent on her own pursuits to supporting mine. To my family, I do not have words to express how much I love you and how grateful I am to have you in my life.

I am so lucky to have friends who have such confidence in me and truly believe that I will succeed. Each one served a special role in my life as I have grown intellectually; but more importantly, they have stuck with me as I have attempted to be as good of a friend to them as they are to me. If you are reading this, then you know who you are and I don't have to name each and every one of you. I feel so fortunate to include in that group of friends my 2010 Michigan

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Chapter 1

Introduction

Background

For more than a century, historically black colleges and universities (HBCUs) have been at the center of black intellectual development in the U.S. (Gasman, 2008b; Exkano, 2012). Decades of research has demonstrated that HBCUs have provided opportunities for black students to attend college that would not have otherwise existed but for HBCUs, graduated black students at higher rates than their predominantly white institution (PWI) counterparts, and produced a disproportionately large share of black graduates at both the baccalaureate and post-baccalaureate level (Bennett & Xie, 2003; Ehrenberg & Rothstein, 1993; Fleming, 1984; Kim & Conrad, 2006; Redd, 1998). Beyond their academic achievements, HBCUs have also played a major role in advancing civil rights and serving their communities (Gasman, 2008a; Davis, 2012).

Despite the academic and social accomplishments of HBCUs, their place in the U.S. higher education system is often challenged. It is not uncommon to come across an article, op-ed, or radio segment (e.g., on National Public Radio) asking the question: "Do we still need HBCUs?" (Martin, 2013). These discussions are typically initiated by people who are concerned that HBCUs encourage racial segregation, no longer serve a purpose, and hinder broader diversity efforts taking place in PWIs (Connerly, 2003; Vedder, 2010; Martin, 2013). As a result of the little knowledge most people possess about HBCUs, many have formed misconceptions about these institutions. As well as the challenge HBCUs face educating the general public about their role in society, Sims (1994) suggests that HBCUs also "have continued to maintain their

segregated campuses not necessarily out of choice, but because of their inability to attract white students" and other nonblack students (Sims, 1994, p. ix).

Considering the relatively low nonblack enrollment at HBCUs, some might presume that contemporary HBCUs resemble the HBCUs of old. However, the enrollment patterns of these institutions have undergone major changes since their beginnings. In 1954, *Brown v. Board of Education* ended the legal practice of segregation in public education. This decision was the impetus for a dramatic migration of black students away from HBCUs to PWIs. In fact, it took only 20 years for the shift from black students being almost exclusively enrolled in HBCUs to over three-quarters of all black students in the U.S. higher education system attending PWIs to occur (Allen, 1992). This trend has continued in recent years (Mercer & Stedman, 2008). Between 2000 and 2010, although total black enrollment in all higher education institutions increased by nearly 70% (over 1,000,000 additional black students), the majority of black students chose institutions other than HBCUs (Delta Cost Project, 2014). This continued migration of black students to non-HBCU institutions is evident when considering that the share of African-American students enrolled in PWIs increased from approximately 87% in 2000 to 91% in 2010 (Delta Cost Project, 2014).

Figure 1 and Figure 2 show that, in the aggregate, four-year HBCUs have also experienced stagnant nonblack enrollment over the last decade in terms of total number of nonblack students and a slight decline in percentage of nonblack enrollment at HBCUs (Gasman, 2008b; Delta Cost Project, 2014; Shorette & Arroyo, 2015). The stagnant levels of nonblack enrollment are cause for concern for two reasons. First, not only are HBCUs not keeping pace with non-HBCU higher education institutions when it comes to general enrollment, but they are also losing significant ground when it comes to white and Latino student enrollment.

Considering that Hispanic/Latino students now represent over 11% of the total college-going population nationally (an approximately 3% increase since 2000) and with nearly 70% of 2012 Hispanic/Latino high school graduates attending college, the .5% increase in the share of Hispanic/Latino enrollment at four-year HBCUs between 2000 and 2010 seems to demonstrate a disconnect between HBCU enrollment patterns and the national demographic shifts that are occurring in the U.S. (Delta Cost Project, 2010; Santiago & Reindl, 2009; Roach, 2013). Furthermore, many HBCUs have become highly tuition-dependent due to historical underfunding by state governments and low levels of alumni giving, so even the slightest decline in enrollment has a significant impact on operating budgets (Hernandez, 2010).

Figure 1. Total Nonblack Enrollment at All Four-year HBCUs (2000-2010)

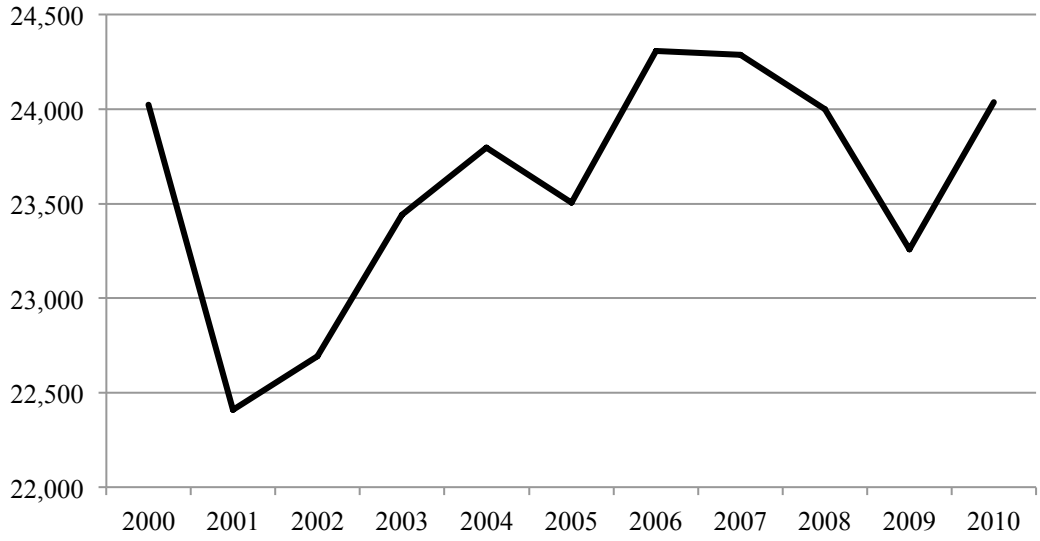
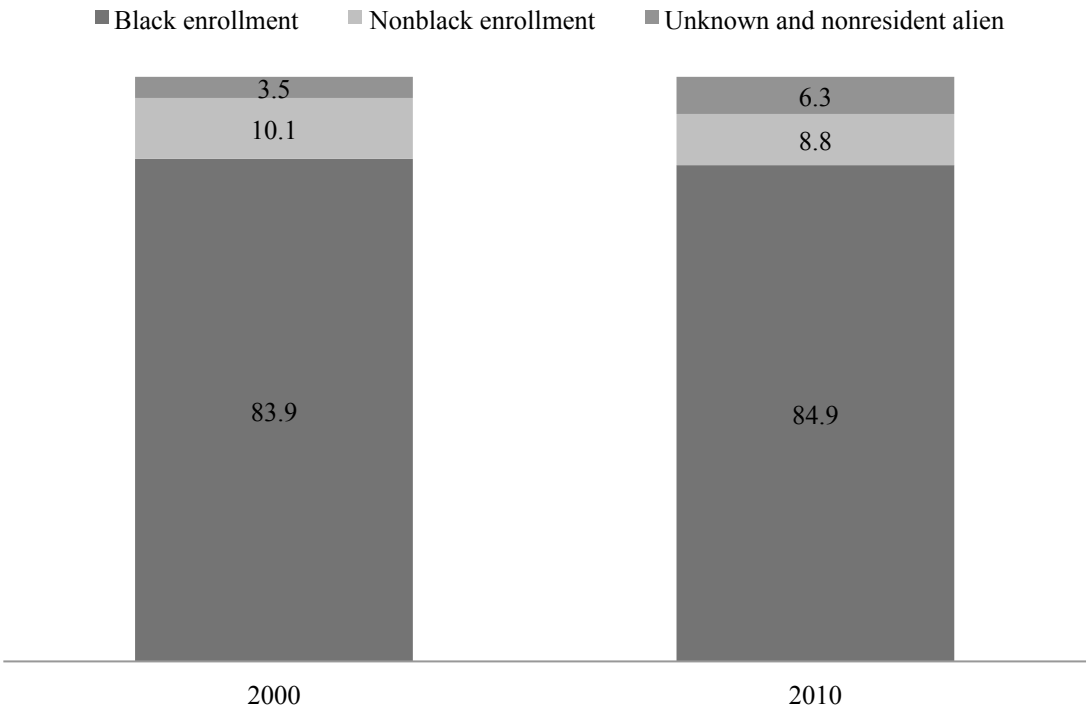


Figure 2. Percentage of Total Enrollment at Four-year HBCUs (2000-2010)



Few institutions of higher education have been immune to the general decline in state support. In fact, many public research institutions experienced an increase in enrollment while receiving significantly less per-student funding from the state (National Science Board, 2012). However, the struggle for HBCUs to secure equitable funding has been an ongoing uphill battle that extends beyond the regular cyclical challenges faced by non-HBCU institutions. Samuels (2004) noted that in 1933, instead of HBCU land-grant institutions receiving the $2,293,573 they deserved according to the federal funding formula, they received "a mere $77,995" (p. 37). HBCUs in the post-civil rights era have seen little improvement. Federal funding for all institutions increased 40 percent between the years of 1993 to 2002, while federal funding for HBCUs increased only 24 percent (Minor, 2008a; White House Report, 2005). Boland and Gasman (2014) recently updated Minor's (2008a) work documenting contemporary inequities at the state level. In North Carolina, for example, Minor (2008a) reported that two predominantly

white universities each were receiving approximately $15,700 per student in state allocations while two HBCUs were each receiving $7,800 per student. Boland and Gasman (2014) found that the trend in inequitable funding in North Carolina is still present, noting that even "the highest per FTE HBCU (Winston-Salem University at $10,618 in 2011), is still nearly half that of UNC Chapel Hill ($17,992) and North Carolina State University ($15,558)" (p. 8).

Considering the cumulative effect of the enrollment and funding challenges presented above, some assert that these institutions can no longer afford to be perceived as places exclusively for black students. Gasman (2012) is explicit in the reason why she believes HBCUs must approach fulfilling their institutional missions differently:

> I no longer think that HBCUs have a choice as to whether or not they should actively reach out to students of all racial and ethnic backgrounds. The numbers are clear. African-Americans have options, and most are choosing to attend majority institutions. If HBCUs are to survive and thrive in the 21st century, they must fully embrace others. (paragraph 7)

Gasman's (2012) assertion underscores how essential it is that HBCUs understand their relationship to nonblack populations and how to utilize that understanding to position themselves for a sustainable future in the U.S. higher education system.

Financial stress associated with low enrollment at HBCUs, particularly any stress directly associated with nonblack enrollment, is not the only cause for concern, however. Nonblack enrollment that contributes to the diversity of HBCUs is also often directly tied to their educational missions; and although much attention has been placed on diversity in higher education, the conversation has been fairly limited to PWIs. The fact that the attention has been placed primarily on PWIs is not surprising when considering the disproportionate percentage of

black students enrolled at PWIs. Research on diversity in higher education has ranged from campus climate assessments for underrepresented students to measures of the educational benefits of diversity programs for all students to challenges students of color face accessing higher education, just to name a few examples (Gurin, Dey, Hurtado, & Gurin, 2002; Gurin, Nagda, & Lopez, 2004; Rankin & Reason, 2005; Roderick, Coca, & Nagoaka, 2011). A common thread among most of the research is that it is focused on these issues of diversity at PWIs.

Jewell (2002) suggests that HBCUs' absence from the diversity discussion is ironic considering their noble history in providing an environment conducive to cross-cultural understanding. Dr. Charlie Nelms (2010), chancellor of North Carolina Central University, similarly notes, "HBCUs have never discriminated and are poised to become the best hope for access and success for all disenfranchised populations, irrespective of race and ethnicity." Arguing for HBCUs' rightful place in the diversity conversation, Jewell (2002) offers the following sentiments:

> By rights, they [HBCUs] should occupy a leading position in such discussions, offering the insight that they have gained from their past and reliving those lessons as they contemplate their present and future—one in which HBCUs should consider themselves uniquely called upon to provide leadership and to make important contributions in the ongoing quest for a truly inclusive society. (p. 8)

Within the scholarly discussion on HBCUs, few have attempted to address issues of diversity or the status of nonblack students. More recently, leaders in the HBCU community have brought issues of diversity at HBCUs to the forefront. Some HBCU presidents, such as former president of Alcorn State University in Mississippi M. Christopher Brown II and

President Michael Sorrell at Paul Quinn College in Texas, have been outspoken in their support of HBCUs embracing diversity. Regarding their own institutions, President Sorrell argues, "If all you see when you look at us is a school for black people, you miss what makes us special" (Sorrell, 2012, paragraph 3) and M. Christopher Brown II expresses his discontent with the diversity efforts at his institution when he says he is not convinced that Alcorn State has "addressed all of the issues of underrepresented groups on campus, not only that those groups begin to appear but that they feel they have community and a voice on our campus" (Stewart, 2012, paragraph 3). Scholars have also urged HBCU leaders, and society more broadly, to view HBCUs as exemplary institutions of higher learning for students from all backgrounds due to their history of successfully providing racially inclusive environments (Gasman, 2012; Gasman & Shorette, 2012).

Exploring why nonblack students enroll at HBCUs is critically important to better understanding the college-choice process for all students. A limited number of peer-reviewed studies that are now outdated found that white students attending HBCUs are generally influenced by unique academic program offerings, student financial aid/lower cost of attendance, and location (Brown & Stein, 1972; Conrad, Brier, & Braxton, 1997; Nixon & Henry, 1990). Aside from the aforementioned studies, little research has been conducted examining the college choice of nonblack students at HBCUs. The literature is particularly scarce as it relates to the higher education institution's role in influencing nonblack enrollment patterns (Daniels, 2008). And because more comprehensive and contextual conceptual models of college choice did not exist until more recently, what we do know about the enrollment of nonblack HBCU students is not expressed in terms that are aligned with more contemporary knowledge of the college-choice process.

In addition to the limited understanding of college choice for nonblack students at HBCUs, little is known about organizational behavior that may influence the college-choice decisions for students at HBCUs. In fact, although Minor (2008b) is referencing governance at HBCUs when he calls governance at HBCUs an "enigma," his comment is indicative of the general lack of understanding about the operation of these institutions and scant research within the field. Bastedo (2012) suggests that while a plethora of higher education research more broadly has focused on organizational issues such as governance and elite leaders, major issues such as understanding who will attend college and why, from an organizational perspective, have been neglected. Additionally, previous research and the frames that we use to view organizational issues have not been geared toward understanding diverse populations or organizations (e.g., HBCUs) (Bastedo, 2012, Minor, 2005). Moreover, there is other research that compels researchers to understand differences in organizational behavior and structure within the context of their public and private control. These differences are created by varying forces, including resource dependence, institutional mission, culture, program offerings, governance and management, and the composition of the student body, just to name a few (Altbach, 1999; Goldrick-Rab, Kelchen, & Houle, 2014; Harris, 2013; Tolbert, 1985). For the reasons mentioned above regarding institutional and organizational uniqueness, this study attempts to employ critical quantitative research strategies that aim to use data "to conduct culturally relevant research by studying institutions and people in context" (Wells & Stage, 2015, p. 104).

Consequently, enhancing our understanding of the relationship between institutional characteristics and nonblack enrollment at HBCUs is critical for the following reasons:

1. Our current knowledge about HBCUs from an organizational perspective is limited.

2. Our current knowledge about nonblack students at HBCUs is limited.
3. The current challenges HBCUs are facing (particularly enrollment) demand new approaches and new ways of thinking about recruitment and enrollment.
4. Evidence suggests that HBCUs are not successfully promoting the value of attending their institutions to nonblack populations, resulting in the perpetuation of misconceptions and negative stereotypes among nonblack populations.
5. HBCUs have the ability to make significant contributions to the discussion on diversity in higher education, but can only do so if they understand the experiences of all students attending their institutions—including nonblack students.
6. Researchers and practitioners alike are calling for increased attention to issues of diversity at HBCUs.

Over 15 years ago, McDonough, Antonio, and Trent (1997) stated their aspiration to "offer insight into the current policy dilemma of attracting other-race students while still ensuring that HBCUs remain attractive to Black students" in their work on HBCU college choice. Similarly, it is my hope that understanding the enrollment patterns of nonblack students will inform policy makers and institutional actors of current trends that will allow them to implement strategies that maintain the integrity of HBCU culture and success, while adapting to contemporary challenges and pursuing a sustainable model for the future.

Description of Study

As stated previously, some leaders within the HBCU community are calling for increased attention to diversity at HBCUs; however, what exactly that call for diversity means when it comes to institutional and scholarly efforts remains somewhat ambiguous. In the context of racial

demographics at HBCUs, only recently have scholars begun to examine the implications of more diverse groups being represented on HBCU campuses (Ozuna, 2012; Palmer et al., 2015; Palmer & Maramba, 2015; Strayhorn, 2010) and no known research has approached the topic from an organizational perspective or using quantitative research methods.

In order to better understand diversity on HBCU campuses and broaden the scope of scholarly work on HBCUs, this study attempts to provide a nuanced view of nonblack enrollment at HBCUs from an organizational perspective. To support and extend these lines of inquiry on organizational behavior and its relationship to diversity at HBCUs, the proposed study seeks to understand which institutional characteristics of HBCUs are most closely associated with different levels of nonblack student enrollment. Perna's (2006) conceptual model of college choice, specifically the higher education context, will serve as a lens through which this issue will be viewed.

Although this particular study is discussed in the context of college choice, it should be noted that individual students are not the unit of analysis. The higher education context of Perna's (2006) college-choice model provides a platform from which the discussion begins; however, the study is more situated within the college-choice framework as opposed to being a study on individual student college-choice decisions. It would be problematic, though, to only view this as a quantitative issue of enrollment patterns and not to acknowledge the ways in which the contextual factors of the model interact. In other words, this study is interested in how institutions may be influencing college-choice decisions; but, conversely, it would be irresponsible to dismiss how a student's race, cultural capital, or social capital may also influence the way he/she interprets the characteristics of an institution in which this study is interested.

For the purpose of this study, however, the focus is shifted from the individual student's decision-making process to the ways in which the higher education context may influence enrollment decisions for different populations of students. Ultimately, this investigation uses enrollment patterns to better understand an element of college choice. Specifically, this study looks at organizational factors associated with nonblack enrollment at HBCUs. Organizational factors are part of the institutional context identified by Perna in level three of her proposed conceptual model, which also includes the geographic location and marketing and recruitment efforts of higher education institutions. Perna cites previous research that suggests certain institutional characteristics do influence student college choice, particularly characteristics that signal to students that they will be attending an institution aligned with their personal and social identities (Nora, 2004). However, "institutional characteristics" are not well defined in the proposed conceptual model and, thus, will be further investigated and defined in this study.

Therefore, the primary research question that will be explored in this study is:

- Are there institutional characteristics of HBCUs that influenced nonblack enrollment patterns between the years 2000-2010?
    - What organizational characteristics, if any, have the strongest relationship to nonblack enrollment at HBCUs (e.g. tuition, institutional spending, graduation rates, retention rates, etc.)?
    - Furthermore, what, if anything, do those organizational characteristics suggest about how institutional context shapes college choice?

Having established the primary focus of the study, which essentially boils down to determining what would influence a nonblack person to value and participate in a predominantly black space, it is important to acknowledge the inherent interest convergence argument

embedded in the very nature of this study. Interest convergence is a basic tenet of critical race theory, which is not just a theoretical framework that studies the relationship among race, racism, and power, but is a movement that seeks to challenge the very foundations of liberalism (Delgado & Stefancic, 2001). Other basic tenets of critical race theory include the ordinariness/permanence of racism, interest convergence (which will be explained further below), intersectionality of oppressed identities/anti-essentialism, combating revisionist history, and highlighting the unique voices of color (Delgado & Stefancic, 2001; McCoy & Rodricks, 2015). In general, applying this critical framework to the analysis of this study of racial diversity at HBCUs discourages readers from applying Eurocentric standards in assigning value to lower or higher levels of nonblack student enrollment (Shorette & Arroyo, 2015).

More specifically as it relates to this study, interest convergence posits that whites will only advance the interests and issues of people of color if there is an incentive to do so (Delgado & Stefancic, 2001). In other words, whites' self-interests guide their decision-making when it comes to racial justice, not altruism (Delgado & Stefancic, 2001). And in the case of this study, the question of what characteristics of an HBCU are most highly valued by nonblack students is as much about the general attitudes and beliefs of nonblack students regarding historically black institutions as it is about the perceived incentives (economic and otherwise) for a nonblack student to choose what mainstream (i.e., white) society has deemed an inferior education of an HBCU over the "better" education offered by predominantly white institutions. Understanding the issue of nonblack enrollment at HBCUs from this perspective adds more depth to the analysis, acknowledges the historical challenges HBCUs have faced politically, and frames the issue properly in the context of race and racism in the U.S. Therefore, it is with this perspective

in mind that I encourage the reader to view this study through a critical lens and consider its findings in the context of interest convergence.

Chapter 2

Literature Review

Due to the complexities involved with the way historically black colleges and universities (HBCUs) in the U.S. have come to be what they are today, it is essential to have a foundational understanding of the history of these institutions, as well other minority-serving institutions, in order to appropriately assess their current state within the higher education community. With that in mind, this section will provide a general overview of minority-serving institutions, establish the historical context of HBCUs, and discuss racial diversity at HBCUs. Additionally, this chapter will synthesize the literature for the conceptual framework of this study: college choice.

Minority-Serving Institutions (MSIs)

It was not until relatively recently that the higher education community started referring to a collection of specialized institutions as "minority-serving institutions," or MSIs. Other than HBCUs, which will be discussed in depth in the next section, included in this assortment of colleges and universities are Hispanic-serving institutions (HSIs), Asian American and Native American Pacific Islander-serving institutions (AANAPISIs), and tribal colleges and universities (TCUs). Each designation of institutions has its own unique history and role within the U.S. higher education system. Allen (2008) points out that MSIs are a "uniquely American creation" and suggests that these institutions have made considerable contributions in expanding access to higher education for underrepresented racial ethnic minorities, especially considering that they sit at the "intersection where the American Dream of unbridled possibilities meets the American Nightmare of persistent racial-ethnic subordination" (p. xv-xvi).

Aside from HBCUs, tribal colleges and universities have the most formal and oldest connection to the federal government. In response to the civil rights movement and the

commitment from the federal government through the passage of the Tribally Controlled Community College Act of 1978, the number of TCUs grew from single digits in the 1970s to 24 by the 1990s (Guillory & Ward, 2008). Currently, 37 tribally controlled colleges and three federally chartered tribal colleges exist, consisting primarily of two-year institutions (Gasman, 2008; Griffin & Hurtado, 2011). The presidents of the first six TCUs came together to create the American Indian Higher Education Consortium (AIHEC) in 1972, which thereafter has served as the primary professional association, fundraising entity, and advocacy organization for TCUs (Guillory & Ward, 2008).

Hispanic-serving institutions (HSIs) were next in the chronological order of federal recognition of MSIs. The federal government officially recognized HSIs in 1992 and allowed these institutions to apply for federal appropriations geared toward supporting the educational success of their Hispanic students (Griffin & Hurtado, 2011). Unlike TCUs and HBCUs, which maintain contemporary missions that still reflect the historical purpose of educating Native American and African-American students, Gasman (2008) notes that HSIs are more so Hispanic "enrolling" institutions than Hispanic "serving" due to the fact that they are simply defined as "accredited degree-granting colleges and universities with Hispanic students accounting for 25 percent or more of the undergraduate enrollment" (p. 23). Rather, the majority of HSIs began as predominantly white institutions and circumstantially became HSIs when Hispanic populations grew substantially in parts of the U.S. Although most HSIs were not created to serve Hispanic students specifically, the approximately 409 institutions that meet the criteria to be an HSI now enroll over half of the entire Hispanic college student population (HACU, 2015).

The most recently designated category of MSIs is the collection of institutions referred to as Asian American and Native American Pacific Islander Serving Institutions (AANAPISIs).

Like HSIs, AANAPISIs are not institutions created to serve Asian American and Pacific Islander students, but are institutions that have "at least a 10% Asian American and Pacific Islander student population as well as a significant percentage of low income students" (AAPIHERC, 2013). Six institutions were designated to serve as pilots for the AANAPISI program through a component of the Higher Education Opportunity Act in 2008 and as of 2011 there were 11 institutions that met the criteria and were participating in the program (AAPIHERC, 2013).

Historically Black Colleges and Universities (HBCUs)

According to the White House Initiative on Historically Black Colleges and Universities, there are 102 accredited HBCUs, which includes both two-year and four-year institutions (White House, 2015). In total, 52 are public institutions and 50 are private institutions, all of which are located in 19 states primarily in the South and along the East Coast, as well as in the District of Columbia and U.S. Virgin Islands. Of the 52 public institutions, 41 are four-year and 11 are two-year; and of the private institutions, 49 are four-year and 1 is two-year. As of 2011, total enrollment for all HBCUs was 346,338 (Gasman, 2013).

Many HBCUs, which will also be referred to as black colleges throughout this section, emerged in the 1800s mostly through the philanthropic efforts of white missionaries as unofficial (little to no government support) entities to educate freed slaves (Allen & Jewell, 2002; Allen, Jewel, Griffin, & Wolf, 2007). However, the federal government eventually established an official role for HBCUs through the Second Morrill Act of 1890, which financially supported the establishment and operations of these institutions. After passage of the Second Morrill Act, it became almost the sole responsibility of HBCUs to educate African Americans, as evidenced by the almost exclusive enrollment of African Americans in HBCUs prior to the 1950s (Allen et al., 2007).

Due to the "separate but equal" standard of the pre-civil rights era, HBCUs were expected to gear their institutions toward accommodating the needs of African Americans. In order to distance themselves as far from slavery as possible and remove themselves from the subordination to which they had been subjected for too long, HBCUs set out to provide opportunities for intellectual advancement within the African-American community (Allen & Jewell, 2002). Although the primary focus was to contribute to the improvement of the black community through preparing the next generation of black leaders, HBCUs also acknowledged that they had been charged with the lofty task of making the world in which they operate a better place to live and modeling what is best in America when it came to inclusivity and civility (Allen et al., 2007).

For any organization, the aspirational goals of contributing positively to the change of a society rife with government-mandated discriminatory practices and a culture of intolerance would be difficult to achieve; but HBCUs would find that their path to achieving these goals would be riddled with obstacles above and beyond what the typical U.S. higher education institution faced at that time.

Primarily, financial limitations have plagued HBCUs from their very inception. Although *Brown v Board of Education* and other products of the civil rights movement were ostensible wins for people of color in the U.S., historical discrimination in the form of significant underfunding by the government, both before and after *Brown,* put HBCUs at an almost insurmountable disadvantage (Allen et al., 2007). In every way, HBCUs have been educating the most financially and academically needy students. Currently, more than half of all students at HBCUs receive Pell grants and enroll in developmental courses (Gasman & McMickens, 2010; Parker, 2012). Despite the overwhelming proportion of needy students and the end of official

discriminatory practices, recent data still reveal disparities in funding between HBCUs and PWIs. Minor (2008a) and Boland and Gasman (2014) found that although HBCUs in four states enrolled significantly more African Americans than their PWI counterparts, state funding still favored the flagship PWIs by 2-to-1 in per-student spending and hundreds of millions of dollars in overall funding per institution.

Furthermore, *Brown v Board of Education* had other unintended consequences for HBCUs. As mentioned before, HBCUs were at one time educating the majority of African-American students who enrolled in college. Desegregation, however, removed barriers for African-American students desirous of attending PWIs for their prestige and plentiful resources. As a result, enrollment of African-American students shifted dramatically from HBCUs to PWIs. Now, HBCUs educate less than a quarter of the African-American students enrolled in postsecondary institutions (Allen et al., 2007).

Contemporary challenges abound for HBCUs, "with inadequate resources by far the greatest" (Bridges, Cambridge, Kuh, & Leegwater, 2005, p. 29). Essentially, HBCUs were not designed with future success in mind; rather, they were simply designed to satisfy the demands of African Americans to have access to higher education while ensuring their continued exclusion from PWIs (Abelman & Dalessandro, 2007). These challenges are underscored by historical and contemporary accounts of support (or the lack thereof) for public HBCUs, which reveal inequitable funding practices and attempts to weaken the operational effectiveness and competitiveness of HBCUs. The inequitable funding practices include examples such as public HBCUs receiving only 3 percent of the nearly $2.3 million they deserved according to the federal funding formula in 1933 and states underfunding public HBCUs by $57 million between 2010-2012 by not satisfying the one-to-one matching funding requirement (Lee & Keys, 2013;

Samuels, 2004). On top of the funding issues, HBCUs have also been forced to defend themselves from circumstances that threaten their very survival and funnel students to non-HBCUs. Contemporary examples of these circumstances include the legal fight by public HBCUs in the state of Maryland regarding duplicate academic programs in high-demand fields at public PWIs that fail to dismantle "separate but equal" segregation-era practices or the efforts of Florida politicians to end a valuable and successful engineering cooperative program between Florida A&M University and Florida State University through backdoor political amendments guaranteeing additional funds to Florida State but not Florida A&M (Hatter, 2014; Wells, 2013).

The historical mission of HBCUs has proved to be both challenging and beneficial. The fact that HBCUs are, and have always been, committed to providing access to a quality higher education for African-American students, many of whom are academically underprepared, has created additional challenges in a contemporary context. To accommodate the needs of their students, HBCUs have remained true to their mission by keeping tuition at affordable levels and dedicating significant institutional resources to providing developmental education opportunities. However, keeping average in-state tuition lower than the average tuition at all institutions has hindered the ability of HBCUs to generate additional revenue and attract and retain talented faculty (Bridges et al., 2005). Additionally, many states have adopted policies that restrict four-year institutions from offering remedial courses or even allowing students who need developmental education to be admitted to four-year institutions, thereby prohibiting HBCUs from serving the students for which they have geared their institutional practices and policies (Parker, 2012).

Abelman and Dalessandro (2007) argue that the desire to stay true to their institutional mission also inadvertently discouraged leaders from thinking strategically about their future

place in society. Findings of their study suggest that many HBCUs lack the vision necessary to compete in today's challenging economic and social climate (Abelman & Dalessandro, 2007). For the HBCUs that did have vision statements, Abelman and Dalessandro (2007) found that they lacked many of the essential components of a strong vision, such as being easily shared among stakeholders and possessing compelling and innovative ideas. This is particularly problematic considering that HBCUs are heavily dependent on new-found visions and innovative strategies to tell the stories of their successes (Gasman, 2012; Minor, 2005).

Despite the difficult conditions in which HBCUs have been operating, they continue to excel in many areas. A perfect example of their exceptional performance is the fact that although HBCUs represent only 3% of all higher education institutions, they award approximately 16% of all bachelor's degrees obtained by African-American students (NCES, 2014). To go along with the disproportionate percentage of bachelor's degrees that they award considering they enroll less than 10% of all African-American students, they also graduate African-American students at a higher rate than their PWI counterparts, regardless of at-risk factors (Bennet & Xie, 2003, p. 569). Bennett and Xie (2003) also argue that without HBCUs, there would be a net black disadvantage, especially for low-income students. In other words, low-income African-American students are afforded and take advantage of opportunities to pursue higher education at higher rates than they would otherwise because HBCUs provide opportunities and create environments conducive to those students' success that are not being provided by PWIs (Bennett & Xie, 2003).

Over time, HBCUs have benefited from positive portrayals of black colleges through TV shows such as *A Different World* and *The Cosby Show,* and movies such as *School Daze, Stomp the Yard*, and *Drumline* (Allen et al., 2007). The combination of HBCUs being portrayed as "cool" in popular culture and their reputation among the black community that they are

supportive environments for students of color led to sustained enrollment of African Americans throughout the 1990s and an increase in total enrollment during the 2000s. In fact, HBCUs are now once again competing with PWIs for the most talented students the black community has to offer (Allen et al., 2007).

Another unique feature of HBCUs is their mission. The missions of these institutions provide the platform from which institutional policies and practices are shaped. Of particular interest is the focus of these institutions on serving the African-American population. Because of the historical role of HBCUs, their missions go beyond the typical generic concepts found in many institutional mission statements. Due to their commitment to educating underrepresented and marginalized students, HBCUs play important social justice roles and it is reflected in the way they operate and promote themselves (Strayhorn & Hirt, 2008).

This social justice focus may be observed in statements such as Winston Salem State University's motto, "Enter to learn, depart to serve" (Bridges, Kinzie, Laird, & Kuh, 2008). It is more than a statement of purpose–it is an expectation that HBCUs have for their students to serve the broader community. HBCUs have made it a point to not only promote the intellectual development of their students, but to encourage students to take a community-oriented approach to their education and understand how their knowledge is vital to the advancement of their people (Gasman & McMickens, 2010). Throughout their history, HBCUs have always played major roles in civil rights and social justice movements, as exemplified through North Carolina A&T University and Florida A&M University students initiating bus boycotts, Howard University students creating a YouTube video to protest the actions of George Zimmerman and inaction of the Sanford (Florida) police department in the death of Trayvon Martin, and too many others to name. It is clear that HBCUs continue to place major priority on empowering their

students to pursue social justice by providing spaces for students to express themselves and encouraging students to follow their passions and participate in important movements (Allen et al., 2007).

Faculty members are at the very core of carrying out the mission of these institutions and creating the welcoming environment that HBCUs are known for. Research has found that many HBCU faculty view their primary responsibilities as ensuring their students' success, which is achieved through "getting to know students well, interacting with them inside and outside of the classroom, [and] participating in campus and community events" (Beach, Dawkins, Rozman, & Grant, 2008). Studies have shown that faculty at HBCUs have a much stronger connection to the African-American community they are serving and, therefore, place an emphasis on teaching and learning through community service (Beach et al., 2008). Even beyond the undergraduate experience, HBCUs continue their commitment to social justice through their graduate programs and law schools (Oguntoyinbo, 2012).

A major component of the HBCU curriculum that sets it apart from the majority of institutions is the special attention that is paid to African-American culture. The missions of the institutions clearly support the advancement of African-American people, and the curriculum is a testament to this commitment. Black culture is embedded in the curriculum regardless of the academic major or specialty area (Bennett & Xie, 2003). This has major implications for historical and cultural understanding across and within racial groups considering that many students will leave their K-12 experience without sufficient knowledge of African-American history and culture.

Ultimately, the unique mission of HBCUs, the specialized focus of the HBCU curriculum, and the importance faculty place on student success together create a powerful and

nurturing learning environment (Bridges et al., 2008). HBCUs provide a safe haven from racial discrimination, and students consistently report that their interaction with faculty, their opportunities for student involvement, and a curriculum that affirms their identity as African Americans were all very important in establishing their self-worth (Bennett & Xie, 2003; Bridges et al., 2005; Cuyjet, 2006). Others have found that HBCUs' fundamental belief in human potential, ability to remove stigmas, and holistic support of students produce larger gains in intellectual and personal development (Bridges et al., 2008; Parker, 2012).

In spite of all the positive contributions HBCUs have made and of all the research that has found HBCUs to be supportive and nurturing environments, particularly for black students, it is necessary to acknowledge what some consider areas for growth and improvement for HBCUs. For example, HBCUs have been known to promote very conservative and exclusionary forms of masculinity (Harper & Gasman, 2008; Patton, 2011). An unfortunate reality that Kimbrough & Harper (2006) remind us of is that there are too few mentors within the HBCU community who encourage positive forms of masculinity. Harris III, Palmer, & Struve (2011), therefore, believe that "the institutional response should be to challenge and support men in expressing themselves in more appropriate, positive, and less-destructive ways and to address the larger campus and environmental issues" that encourage men to rely on these more productive strategies as their first response (p. 57).

Furthermore, Walters and Hayes (1998) describe the intolerance for LGBT people at HBCUs as "institutional homophobia." Researchers suggest that homophobia is embedded in many aspects of HBCU institutional culture. Harper and Gasman (2008) highlight the "Consequences of Conservatism" and institutional homophobia at HBCUs when they identify specific written sexual misconduct policies that explicitly state that "sodomy and homosexual

acts" are strictly forbidden (p. 343). Building upon this idea of institutional homophobia, many scholars have highlighted other overt messages sent to the LGBT community at HBCUs, such as the near absence of any "student organizations, offices, centers, or other resources devoted to LGBT concerns" (Patton, 2011), the lack of resources on gay and lesbian studies in libraries (Willis, 2004), and the public efforts made by administration to prevent LGBT issues from penetrating the walls of their institutions (Harper & Gasman, 2008; Patton, 2011).

Racial Diversity at HBCUs

Many scholars have concluded that diversity in educational settings produces desirable outcomes for all students, such as higher levels of motivation to understand the perspective of others, less likelihood to view diversity as a divisive issue, enjoyment in learning about others, and higher levels of intellectual development and self-assessed academic skills, among others (Gurin, Dey, Hurtado, & Gurin, 2002; Gurin, Nagda, & Lopez, 2004). In rulings during the 2000s, courts also affirmed the importance of diversity in higher education as a compelling governmental interest *(*e.g. *Grutter v. Bollinger,* 2003).

Alluded to in the introduction of this paper was the belief by some within the HBCU community that HBCUs have been modeling diversity and inclusion from their inception. It should be noted, however, that not everyone agrees that HBCUs are the place to address diversity in higher education. In fact, much of the discussion around diversity at HBCUs is approached from a deficit perspective. Some have expressed concern about the perceived divisiveness that HBCUs cause and the perceived low quality of the educational experience provided there. Vedder (2010) expresses his belief that the idea of race-based institutions that "celebrate homogeneity" is "disturbing" and is an embarrassment to our nation. Often, low graduation rates and low national rankings are used as evidence of HBCUs' poor quality. Vedder

(2010) notes that "the 95 or so four-year domestic HBCUs have typical six-year graduate rates around one-third, compared with well over 50 percent for the general population of schools" and that *U.S. News & World Report* rankings do not recognize any HBCU as "a very fine school of the highest distinction" (paragraph 3).

Others also agree that the entire purpose of HBCUs, from their understanding, is to *not* be diverse and that maintaining support (financial and otherwise) is in direct conflict with the government's interest in promoting diversity (Seymore, 2006). Connerly (2003), for example, argues that "it is hypocritical to support the public funding of HBCUs and then turn around and criticize a 'lack of diversity' at other public colleges and universities, since HBCUs, by their very nature, draw away many black students who would otherwise attend racially mixed schools and affect their 'diversity'" (paragraph 3). Essentially, opponents of HBCUs believe that HBCUs and broad diversity efforts are mutually exclusive and cannot coexist in any form.

Scholars have suggested that the aforementioned criticisms fail to acknowledge institutional context. Low graduation rates at HBCUs, for example, must be placed in the proper context. The historical mission of HBCUs has influenced their admissions standards and the academic profiles of the students who enroll at these institutions. Many HBCUs are essentially "open admissions" institutions with a focus on educating African-American students and have much higher percentages of first-generation college students, students from lower-resource high schools, academically underprepared students, federal-aid eligible students, and Pell grant recipients than PWI institutions (Allen, Jewell, Griffin, & Wolf, 2007; Harmon, 2012; IHEP, 2004). Decades of research has found that HBCUs provide opportunities for black students to enroll in college that would otherwise not exist if HBCUs were absent, HBCUs graduate black students at higher rates than their PWI counterparts, and HBCUs produce disproportionate

amounts of black graduates (baccalaureate and post-baccalaureate degrees) considering they make up only 3% of the entire U.S. higher education system (Bennett & Xie, 2003; Ehrenberg & Rothstein, 1993; Kim & Conrad, 2006).

Furthermore, critics often point to HBCUs' low rankings as reason why students should not attend these institutions. However, some within the education community believe the *U.S. News & World Report* rankings' weaknesses overshadow their strengths (IHEP, 2007). Scholars suggest that the search for legitimacy, as defined by many administrators as higher rankings, forces institutions to become more like each other (Toma, 2012). Another unintended result of pursuing higher rankings is that it sometimes causes "college or university personnel to work against their own missions" (IHEP, p. 2, 2007). The consequences of the institutional pursuit of prestige are more selective admissions processes and increases in merit aid, which ultimately produce negative effects for low-income and minority students—the very students that HBCUs have proven to be particularly good at educating (Clarke, 2007). HBCUs are inherently at a disadvantage when considering that "traditional" measures used to rank institutions (academic reputation as reported by "peers," student selectivity, graduation rates, etc.) are not contextualized and do not accurately represent the successes of these institutions.

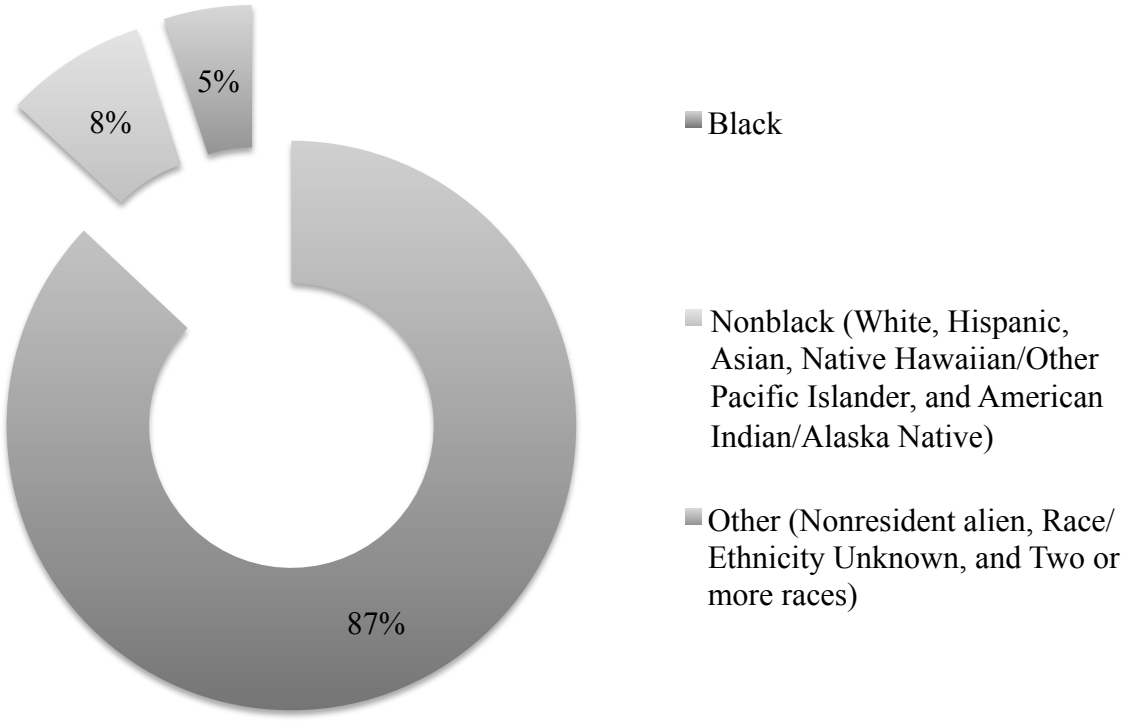
Finally, evidence suggests that the beliefs that "self segregation" in the form of HBCUs produces obstacles to diversity efforts in higher education and that HBCUs are in their very nature not diverse are not supported by scholarly research. From a policy perspective, HBCUs have never had discriminatory policies or excluded anyone from attending, which cannot be said for most PWIs. Since the overwhelming majority—over 85%—of black students attend PWIs, the claim that HBCUs are diverting "many" black students away from PWIs and hindering their diversity efforts is not aligned with the available scholarship (Connerly, 2003; Gasman, 2008b).

Griffin and Hurtado (2011) suggest that HBCUs, their contribution to the heterogeneity of the U.S. higher education system, and the unique ways in which they carry out their mission of educating our young people should be applauded, not criticized. While the relatively low levels of racial diversity at HBCUs are framed negatively by some as an unwillingness of blacks to integrate into PWIs, others view it positively as the willingness and ability of HBCUs to provide nurturing environments for students of color when PWIs fail to do so (Shorette, 2015). To demonstrate this, some would point to the fact that despite being historically and persistently underfunded and educating the students that most PWIs are neglecting (i.e., large percentages of black and low-income students), HBCUs continue to pull their disproportionate weight and remain the top producers of black graduates in many disciplines (Lee & Keys, 2013; Shorette, 2015).

Racial diversity has been evolving on the campuses of HBCUs. In 2008, Gasman (2008b) recognized that white enrollment had declined over the last two decades; however, in a recently released report, Gasman (2013) suggests that HBCUs in the aggregate have experienced a significant demographic shift, with nonblack enrollment now making up a much greater share of the total HBCU population than it had previously at almost 25 percent of total enrollment. In contrast to the statistics presented in Gasman's (2013) comprehensive report of all HBCUs, when excluding extreme statistical outliers such as West Virginia State University and Bluefield State University, two-year institutions, and graduate medical schools such as Morehouse School of Medicine and Meharry Medical College, data for four-year HBCUs paint a very different picture, one which still portrays black enrollment as nearly 90% of total enrollment, with nonblack enrollment at around 8 percent and other (Nonresident alien, race/ethnicity unknown, and two or more races) not far behind at 5 percent (Figure 3). Interestingly, Gasman (2013) and Ozuna

(2012) note that Hispanic/Latino student enrollment at HBCUs has increased over the past 30 years, particularly in states like Texas; however, considering that Hispanic/Latino students now represent over 11% of the total college-going population and with nearly 70% of 2012 Hispanic/Latino high-school graduates attending college, the modest .5% increase in the share of Hispanic/Latino enrollment at four-year HBCUs between 2000 and 2010 seems to demonstrate a disconnect between HBCU enrollment patterns and the national demographic shifts that are occurring in the U.S. (Delta Cost Project, 2009; Roach, 2013; Santiago & Reindl, 2009).

Figure 3. Percent of Undergraduate Enrollment at Four-year Public and Private Not-for-profit HBCUs in 2010



College Choice

Broader enrollment trends in higher education are the cumulative product of individual student choices. Therefore, in order to understand higher education enrollment issues, it is critical to understand how students make the decision to attend a particular institution. Choosing

a college is a multifaceted process shaped by a variety of factors. Although scholars have dedicated significant effort to understanding the college-choice process for students over the last 30 years, questions still remain and some areas have been less explored than others. For example, much of the research focused on the individual student's ability to navigate the college-choice process in the initial models. As a result, our understanding about how broader contextual factors such as state policy or institutional characteristics influence college choice is less developed. Similarly, fewer developments have been made in our understanding of how college choice differs for students of color and even less is understood about the college-choice process for students attending minority-serving institutions (MSIs).

Generally, the college-choice process has been broken down into three stages: predisposition, search, and choice (Hossler & Gallagher, 1987). *Predisposition* is defined as the stage in which students consider pursuing education beyond high school; *search* involves identifying institutions possessing the student's desired attributes; and *choice* is the final stage of choosing the school to attend (Hossler & Gallagher, 1987). Although the model places more of an emphasis on the individual, Hossler and Gallagher (1987) suggest that their model is interactive and accounts for influential aspects of state policy, higher education organizations, etc., at each phase of the college-choice process. However, they are explicit in their belief that those external factors pose a "modest" level of influence at best and have "little direct impact on student college choice" (Hossler & Gallagher, 1987, p. 209).

Bergerson (2009) notes that a major critique of Hossler and Gallagher's model has been its inability to account for variations in the college-choice process across different populations, especially for traditionally underrepresented students. Findings from a seminal college-choice study affirm critiques to Hossler and Gallagher (McDonough, 1997). McDonough (1997) states,

"Not all college-bound students face equal choice if they start out with different family and school resources that enable or constrain their educational and occupational mobility possibilities" (p. 150). Additionally, McDonough (1997) submits that the college-choice process is complicated and not aligned with models that assume rationality, perfect information, and informed consumers. Furthermore, revelations from large-scale studies involving Chicago Public School students continue to underscore the complexities of the college-choice process and the need for increased attention on contextual factors affecting college-choice outcomes (Roderick et al., 2011).

Due to the perceived lack of generalizability of the Hossler and Gallagher (1987) college-choice model to underrepresented populations, many scholars set out to address the gaps left by previous studies. Consequently, researchers found that college choice differed significantly for white and black students. Major findings that emerged included the idea that black students perceived the college-choice process differently, their choices were more strongly influenced by socioeconomic factors, and the school and community context mattered greatly (Freeman, 2005; McDonough, 1997; McDonough, Antonio, & Trent, 1997; Mickelson, 1990; Pitre, 2006). Researchers posit that there is a clear difference between the individual habitus and cultural capital of white students and students of color; that is, students of color generally have less favorable views of the "fit between a student's psychosocial needs and the perception that they can be met on a specific campus" and possess lower levels of "support and encouragement from family and community upon which a student could draw to influence his or her desire to attend college and to formulate a support system" (Nora, 2004, p. 182). Ultimately, Freeman (2005) suggests that "students are influenced by their perceptions which shape their realities," and that discovery has contributed to the harsh truth that "African American students can aspire to

participate in higher education but can believe that actually doing so might not be economically viable" (p. 5).

Interestingly, and of particular importance to this study, researchers have also discovered differences in the reasons students choose to attend HBCUs. Freeman (2005) learned that African-American students in her study were more likely to consider HBCUs if they had attended predominantly white high schools or had opportunities to interact with white students more regularly; conversely, "students who had virtually no contact with other races (cultural isolation)—that is, students attending predominantly African American schools—expressed the need to share their culture" and were more likely to pursue higher education at PWIs. Additionally, McDonough, Antonio, and Trent (1997) found that African-American students choosing HBCUs differed from all students regardless of race, including black students attending PWIs, in their reasons for choosing an HBCU. Particularly significant was the fact that African-American students attending HBCUs believed more strongly than any other group that choosing a college that had a strong academic reputation, produced graduates in high demand by employers, and provided substantial financial aid were the primary reasons one should attend college (McDonough, Antonio, & Trent, 1997).

In the aggregate, some institutional attributes have been found to factor into college-choice decisions for many students. Nora (2004) notes that, over time, certain institutional characteristics have been found to be more influential than others, including: "(a) specific academic programs, (b) affordable tuition costs, (c) financial aid availability, (d) general academic reputation/general quality, (e) location (distance from home), (f) size, and (g) social atmosphere" (p. 181). Conrad et al. (1997) discovered, however, that for white students attending HBCUs, their college-choice criteria were significantly different. For example, four of

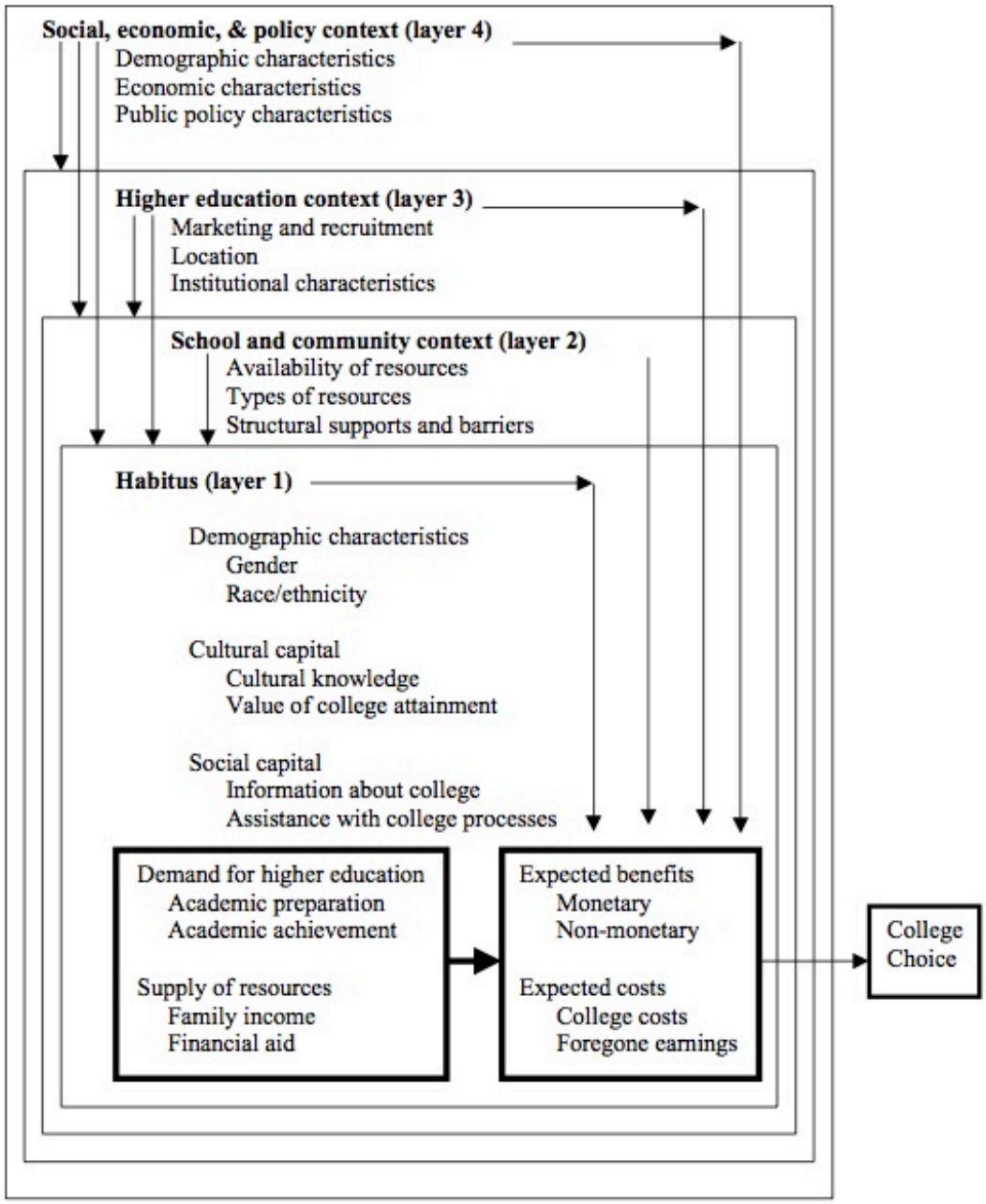
the five factors that Conrad et al. (1997) identify in their study as important to white students choosing HBCUs are not consistent with previous research, such as: "availability of programs in high-demand fields, availability of academic programs unique to the public HBCU's geographic location, availability of graduate (master's) programs in high-demand fields, and the offering of programs through alternative delivery systems" (p. 56). The variation in preferences for different populations of students pursuing different types of higher education institutions adds to the complexities of the college-choice process.

From an organizational perspective, much of the literature about organizations and their role in influencing enrollment focuses on the effect of tuition and financial aid offers on students' choices. For example, Van Der Klaauw (2002) found that financial aid offers significantly influence the college-going decisions of students, particularly for low-income students. Not only have studies shown that students from lower-income families are more susceptible to financial aid offers in the college-choice process (McPherson and Schapiro, 1991; St. John, 1990), but Linsenmeier, Rosen, & Rouse (2006) found that replacing loans with grants at one university also increased the likelihood of low-income minority student matriculation by 8 to 10 percentage points. Aside from financial aid, findings from a study of UK students suggest that the quality of facilities on college campuses played a significant role in the college-choice process (Price, Matzdorf, Smith, & Agahi, 2003).

Paulsen (1990) suggested that the study of college choice could be viewed in two ways: from macro-level and micro-level perspectives. According to his definition, this macro-level insight of college choice provides an indication of "how changes in environmental and institutional characteristics affect an institution's total enrollment," whereas the micro-level speaks to the behaviors of individual students provide an indication of not only how the

environmental and institutional characteristics factor into the equation, but also how student characteristics "affect a student's choices about whether or not to attend college and which college to attend" (Paulsen, 1990, p. 5-6). One of the more recent and noteworthy developments in the literature that includes Paulsen's (1990) micro- and macro-level concepts and addresses the holistic influence that contextual factors exert during the entire college-choice process is Laura Perna's (2006) conceptual model of college choice. Having synthesized the scholarly contributions from the past two decades, Perna (2006) concludes that instead of navigating their way through an uninhibited linear college-choice process, students must interact with a variety of layers that ultimately influence the outcome of attending college. The layers of Perna's conceptual model, from broad external factors to the more narrow individual factors, include: the social, economic, and policy context; the higher education context; the school and community context; and the habitus at the individual level (see Figure 4).

Figure 4.* Laura Perna's Conceptual Model of College Choice



* Perna, L. (2006). Studying college access and choice: A proposed conceptual model. In J. C. Smith (Ed.) *Higher Education: Handbook of Theory and Research*, Volume 21 (pp. 99-157). Netherlands: Springer.

† It is not to say that these findings cannot inform future research about private HBCU nonblack

Within each layer of the conceptual model are specific factors that comprise the layer and influence the college-choice process for students. The social, economic, and policy context includes demographic, economic, and public policy characteristics; the higher education context includes marketing and recruitment, location, and institutional characteristics; the school and community context includes the availability and types of resources and structural supports and barriers; and the individual student's habitus layer includes demographic characteristics (race/ethnicity and gender), cultural capital (cultural knowledge and value of college attainment), and social capital (information about college and assistance with college processes) (Perna, 2006). All of the aforementioned layers ultimately influence the most central factors of a student's college-choice process, which are the demand for higher education (academic preparation and academic achievement), supply of resources (family income and financial aid), expected benefits (monetary and non-monetary), and expected costs (college costs and foregone earnings) (Perna, 2006). This integrated model addresses the reality that "when considered separately, neither rational human capital investment models nor sociological approaches are sufficient for understanding differences across groups in student college choice" (Perna, 2006, p. 114).

Chapter 3

Research Design and Methodology

The following chapter will introduce the conceptual framework, the data source, and quantitative methods that will be used to answer the research questions of interest: Are there institutional characteristics of HBCUs that influenced nonblack enrollment patterns between the years 2000-2010? Furthermore, what organizational characteristics, if any, have the strongest relationship to nonblack enrollment at HBCUs during that time period (e.g. tuition, institutional spending, graduation rates, retention rates, etc.)?

Conceptual Framework

College choice. It is important to note again that this study, although discussed in the context of college choice, is not strictly an individual college-choice study. Drawing from Paulsen (1990) and Perna (2006), this study is viewing the enrollment behavior of students in groups as a macro-level consideration in the overall college-choice process. The higher education context of Perna's (2006) college-choice model will serve as the foundation for the discussion. Although the nature of the data and methodological approach of this study will not afford the researcher insight into individual students' college-choice decisions, the investigation will use enrollment patterns to better understand an *element* of college choice—the institutional element—that interacts with student-level factors.

For this study, the focus will be placed on the higher education context at public and private, not-for-profit, four-year HBCUs. As stated previously, included in this context, according to Perna (2006), are institutional characteristics, location, and marketing and recruitment. Perna (2006) suggests that higher education institutions play a significant role in influencing the college-choice process by actively and passively conveying certain messages

about their institution. From a student's point of view, their choice is largely determined by their belief that the higher education institution will be comfortable, accepting, and a good fit (Nora, 2004).

Findings from Hazzard (1996) and Conrad et al. (1997) suggest that for white students at HBCUs, the influential factors for choosing to attend an HBCU could be placed into four general categories: academic program offerings, student financial support, location, and institutional characteristics. Most relevant to this study, Conrad et al. (1997) advanced some policies and practices they felt could enhance institutional efforts to attract white students to HBCUs. First, they posit that states should provide adequate funding to allow HBCUs to ensure there are meaningful numbers of high-demand academic programs and ample financial support for students. Second, Conrad et al. (1997) urge HBCUs to focus their attention on three major strategies at the institutional level: "program distinctiveness and enhancement, student financial support and recruitment, and institutional enhancement" (p. 57). In short, these strategies essentially translate into developing and maintaining unique programs in high-demand fields—particularly at the graduate level; strengthening scholarships awarded to white students; and increasing institutional quality and reputation through faculty, facilities, and diversity initiatives (Conrad et al., 1997).

Education production function. Many of the organizational characteristics being examined in this study that fall within the higher education context of Perna's (2006) conceptual model manifest themselves through the allocation of resources, such as spending on instructional activities or spending on administrative costs. Investigations into the effect of school resources on educational outcomes have a long history in the K-12 scholarship (Hanushek, 1997); however, little research has been conducted on the relationship between institutional

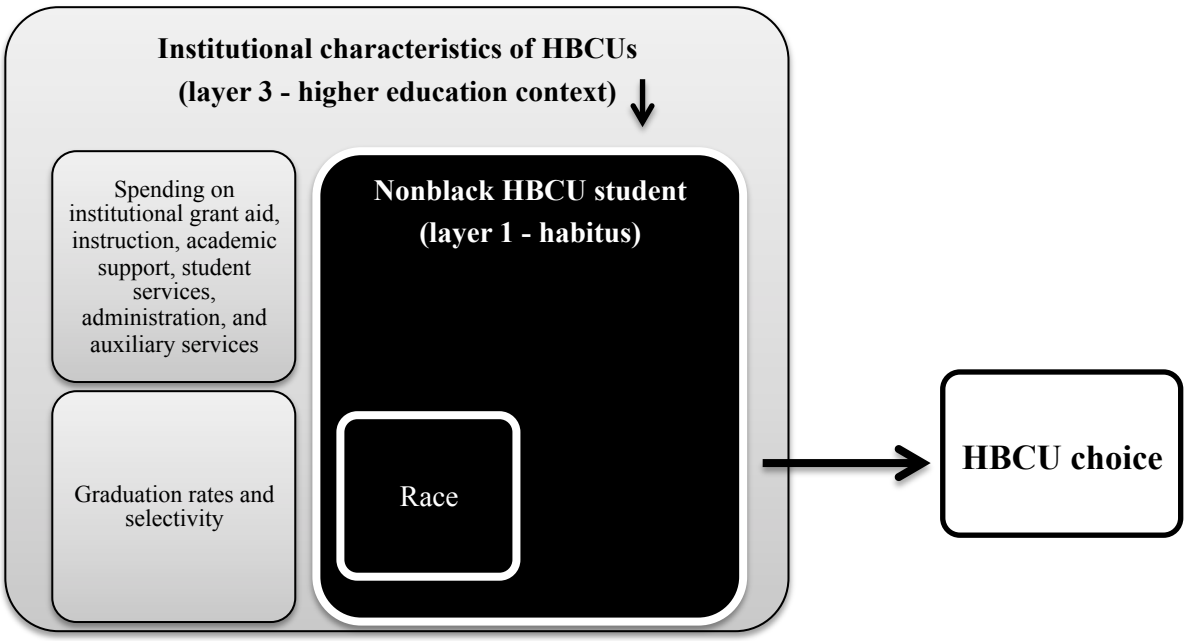
expenditures and student outcomes in postsecondary educational contexts (Ryan, 2005). Recent contributions to the postsecondary education production function research have begun to shed some light on the issue. Although the Delta Cost Project concluded that, in the aggregate, there is no clear correlation between general funding levels and degree production, other scholars have found strong relationships between institutional expenditures and student outcomes (Desrochers, Lenihan, & Wellman, 2010). For example, regarding degree completion, one study found that student services expenditures influence persistence and graduation rates (Webber & Ehrenberg, 2010), while another study suggested that instructional expenditures and various institutional characteristics proved to be positively associated with degree completion (Hamrick, Schuh, & Shelley, 2004). Still another found that tuition revenue and educational and general expenditures were positively associated with degree completion (Titus, 2006). In studies focusing on student outcomes other than degree completion, administrative spending was found to have a negative effect on student engagement (Ryan, 2005) and Toutkoushian and Smart (2001) suggest that targeted institutional expenditures do affect student gains in areas such as interpersonal skills, learning/knowledge, tolerance/awareness, graduate/professional school preparation, and communication skills.

Some of the studies previously mentioned state explicitly that HBCUs are statistically significant outliers in comprehensive models of all postsecondary institutions (Hamrick, Schuh, & Shelley, 2004; Ryan, 2004). As a result, the authors emphasized repeatedly that these institutions introduced much more complexity into the study than was expected and suggested that those findings clearly warranted a "need to conduct more in-depth studies of these [HBCUs] and other institutions with distinctive histories, missions, and identities" (Hamrick, Schuh, & Shelley, 2004; Ryan, 2004, p. 109). In making that suggestion, Ryan (2004), for example,

recognized that a culturally sensitive approach might be more appropriate when examining the effects of institutional expenditures on degree attainment at HBCUs. Ryan's (2004) observation is directly aligned with Minor's (2008) and critical quantitative scholars' (Wells & Stage, 2015) belief that researchers must conduct studies and view issues at HBCUs in their proper cultural and historical context.

Conclusion. Unfortunately, no known research exists that has extended Ryan's (2004) line of inquiry and examined these particular issues at HBCUs, and previous college-choice studies involving institutional characteristics have not focused on institutional expenditures. Since there is evidence that institutional expenditures may be related to student outcomes and that institutional characteristics have been found to be influential factors in the college-choice process, this study attempts to fill the current void in our understanding of how institutional expenditures and other institutional characteristics may influence nonblack enrollment at HBCUs. More specifically, because previous studies of nonblack students attending HBCUs reveal differences in the reasons they chose to attend an HBCU (Conrad et al., 1997; Daniels, 2008; Hazzard, 1996), this study is interested in understanding how institutional characteristics in the form of institutional expenditures and various indicators of institutional performance and reputation (graduation rates, retention rates, selectivity, and 75th percentile ACT scores) may influence the college-choice decisions of nonblack students who may be perceiving investments in different areas of institutional operations as contributing to their success differently than black students. Below is a visual representation of how various concepts of college choice, HBCUs, and education production function will be incorporated to form the conceptual model of this study.

Figure 5. Conceptual model of nonblack HBCU student choice



Data Source

To answer the research questions described previously, the researcher will use data from the Delta Cost Project at American Institutes for Research (AIR) database, which is drawn directly from the Integrated Postsecondary Education Data System (IPEDS) from the years 1987-2010. IPEDS is a comprehensive database of postsecondary education data maintained by the U.S. Department of Education's National Center for Education Statistics (NCES) and collected through a series of surveys. As stipulated in Title IV of the Higher Education Act, all institutions receiving federal financial aid are required to complete the surveys. The data collected through the surveys include information such as basic institutional characteristics (e.g., public or private control) and level of degrees offered; enrollment; tuition and fees; student financial aid (federal,

state, and institutional); student persistence and success (retention and graduation rates); and institutional resources (human resources and institutional finances).

The Delta Cost Project organizes IPEDS data collected by NCES and presents aggregate measures of institutional education and related costs, which are defined by the Delta Cost Project as "all spending for instruction and student services, plus a portion of spending on academic and institutional support and for operations and maintenance of buildings" (Delta Cost Project, 2012). All the financial data is adjusted for inflation according to 2010 dollars.

The IPEDS data made available through the Delta Cost Project is particularly useful for the purposes of this study for three primary reasons: First, the dataset provides measures that serve as proxies for "institutional characteristics" (i.e., the services on which an institution chooses to direct resources, graduation rates, etc.) which are of particular interest for the purpose of this study, as opposed to focusing on individual student perceptions or outcomes; second, the available data allow for analysis over time rather than limiting the researcher to a cross-sectional snapshot of one year; and third, the dataset includes the entire population of HBCUs (rather than a sample of a population), which strengthens the inferences being made.

Measures

Perna's (2006) conceptual model of college choice, specifically the higher education context, the education production function framework, and previous research on institutional characteristics influencing college choice (Conrad et al., 1997; Nora, 2004) guided the selection of independent variables used in this study.

Data collected through the IPEDS surveys include measures that serve as proxies for general academic reputation and quality, such as retention rates, graduation rates, 75th percentile composite ACT scores, and acceptance rates. Unfortunately, many of these variables were poorly

reported, particularly by private HBCUs and at all institutions before the 2003-2004 academic year, and therefore limit the analysis. Of the aforementioned measures, graduation rates was the most consistently reported measure, with less than two percent missing after the 2002-2003 academic year. The 75th percentile composite ACT scores were approximately 40 percent missing among all HBCUs after the 2002-2003 academic year. Because there was a theoretical interest in including a measure of selectivity in the study, an attempt was made to identify a selectivity measure using sources outside of the IPEDS database, including acceptance rates found in the *U.S. News & World Report* rankings and acceptance rates and Admissions Competitiveness Index found in *Barron's Profiles of American Colleges*. Unfortunately, the *U.S. News and World Report* rankings did not provide the additional data that was needed to fill in the gaps in the IPEDS data and the *Barron's Profiles of American Colleges* Admissions Competitiveness Index, although providing an index for nearly every HBCU in the study, was a static variable over time and was therefore omitted in the regression analysis due to colinearity.

Before excluding the selectivity variable entirely due to missing data, a new binary variable was created to capture whether an institution reported 75th percentile composite ACT scores (coded as "0') or whether the data was missing (coded as "1")—the assumption being that institutions may be more likely to report this data if they are a more selective/competitive institution and less likely to report this data if they are less selective/non-competitive. However, a correlation analysis was performed to test this hypothesis by correlating the Barron's Admissions Competitiveness Index (ranging from 0 for noncompetitive to 4 for very competitive) and missing ACT scores. The results to this correlation analysis suggested that there was no significant correlation between the level selectivity and whether or not an institution reported ACT scores. Additionally, in response to the aforementioned issues in the data, separate

models were constructed to account for the inconsistently reported or missing data and to establish the strength of the models with and without the fully reported variables: one model including all years between 2000-2010 and one model using only the years after 2003.

Other variables, such as spending on instruction, student services, academic support, administration, institutional financial aid, and auxiliary services, serve as indicators of how the institution prioritizes the allocation of resources in its effort to promote student success and strengthen the institution's performance, reputation, and appearance. To account and control for the fact that varying levels of total enrollment directly affect total operating budgets, spending variables will be expressed as spending per full-time equivalent (FTE) student rather than total amount spent per category. Ryan (2004) notes that viewing the institutional expenditures as per FTE, as opposed to as a percentage of total expenditures, permits the testing of the unique effect of actual expenditures in the categories included in the study by controlling for the expenditure categories excluded from the study. Similarly, to control for varying levels of the raw number of nonblack students enrolled at each institution, nonblack enrollment will be expressed as a percentage or share of total enrollment.

Table 1. Description of Predictor Variables Included in Study

Variable	**Theoretical Proxy**	**Code**
Graduation Rate	Institutional quality/reputation	0-100%
Tuition and fees (sticker price)	Institutional commitment to affordability	Thousands of dollars
Institutional Financial Aid	Institutional commitment to affordability	Thousands of dollars per full-time equivalent student
Spending on Instruction	Investment in quality classroom experiences	Thousands of dollars per full-time equivalent student
Spending on Academic Support	Investment in quality academic personnel and services	Thousands of dollars per full-time equivalent student
Spending on Student Services	Investment in quality extracurricular activities and support	Thousands of dollars per full-time equivalent student
Spending on Administration	Investment in quality institutional management	Thousands of dollars per full-time equivalent student
Spending on Auxiliary Services	Investment in self-supporting enterprises such as residence halls, intercollegiate athletics, and food services	Thousands of dollars per full-time equivalent student

Sample

This study used the following selection criteria to determine an HBCU's eligibility for inclusion in the sample:

1. Must be an HBCU between the years of 2000-2010 (IPEDS variable code - hbcu)
2. Must be a "four-year or higher" institution (IPEDS variable code - iclevel)
3. Must be a public or private not-for-profit institution (IPEDS variable code - control)
4. Must not be a primarily professional/graduate school (such as medical schools)

According to the IPEDS database and the criteria for the sample used in this study, 85 institutions met the criteria of being either a public or private, not-for-profit, four-year HBCU between the years of 2000-2010. As stated previously, the criteria for determining HBCU status has been established by the U.S. Department of Education in the Higher Education Act of 1965 as a school of higher learning whose principal mission was and is the education of African Americans and was accredited and established before 1964 (UNCF, 2013). Of those 85 HBCUs, 45 (53%) of them are private, 40 (47%) are public, and all of them are concentrated in 19 states, as well as the District of Columbia and the U.S. Virgin Islands. Table 2 presents a general snapshot for each of the 85 HBCUs in this study, including the name, location, institutional control, total enrollment as of 2010, and the varying degrees of nonblack enrollment between 2000 and 2010.

Table 2. Description of Institutions Included in Study

Name of Institution	State	Control	Total Enrollment 2009-2010*	Share of nonblack enrollment 2000-2001	Share of nonblack enrollment 2009-2010	Change in share of nonblack enrollment 2000-2010
Alabama A & M University	AL	Public	5,327	12.86%	5.40%	-7.46%
Alabama State University	AL	Public	5,564	9.39%	3.29%	-6.10%
Albany State University	GA	Public	4,473	7.87%	6.79%	-1.08%
Alcorn State University	MS	Public	3,334	5.38%	6.57%	+1.19%
Allen University	SC	Private	827	0.30%	0.60%	+0.30%
Arkansas Baptist College	AR	Private	640	1.27%	6.56%	+5.29%
Benedict College	SC	Private	2,983	0.11%	0.70%	+0.59%
Bennett College for Women	NC	Private	766	0.0%	0.91%	+0.91%
Bethune-Cookman University	FL	Private	3,637	2.27%	3.51%	+1.24%
Bluefield State College	WV	Public	1,989	91.06%	83.76%	-7.30%
Bowie State University	MD	Public	5,617	20.00%	7.99%	-12.01%
Central State University	OH	Public	2,436	5.31%	2.67%	-2.64%
Cheyney University of Pennsylvania	PA	Public	1,488	9.28%	3.09%	-6.19%
Claflin University	SC	Private	1,860	0.45%	2.04%	+1.59%
Clark Atlanta University	GA	Private	3,873	1.37%	0.82%	-0.55%
Concordia College-Selma	AL	Private	568	8.76%	2.64%	-6.12%

Table 2 (cont'd)

Coppin State University	MD	Public	3,801	5.25%	2.05%	-3.20%
Delaware State University	DE	Public	3,609	21.37%	14.41%	-6.96%
Dillard University	LA	Private	1011	0%	1.68%	+1.68%
Edward Waters College	FL	Private	831	2.21%	3.85%	+1.64%
Elizabeth City State University	NC	Public	3,264	24.31%	16.91%	-7.40%
Fayetteville State University	NC	Public	6,283	28.12%	22.47%	-5.65%
Fisk University	TN	Private	650	0.22%	1.54%	+1.32%
Florida Agricultural and Mechanical University	FL	Public	12,274	7.34%	8.37%	+1.03%
Florida Memorial University	FL	Private	1,923	4.77%	3.95%	-0.82%
Fort Valley State University	GA	Public	3,553	5.94%	3.85%	-2.09%
Grambling State University	LA	Public	4,992	3.9%	3.68%	-0.22%
Hampton University	VA	Private	5,402	12.09%	8.33%	-3.76%
Harris-Stowe State University	MO	Public	1,886	21.52%	8.16%	-13.36%
Howard University	DC	Private	10,573	4.34%	3.85%	-0.49%
Huston-Tillotson University	TX	Private	882	17.73%	19.73%	+2.0%
Interdenominational Theological Center	GA	Private	421	2.98%	1.66%	-1.32%
Jackson State University	MS	Public	8,783	3.37%	6.85%	+3.48%
Jarvis Christian College	TX	Private	628	1.35%	6.05%	+4.70%
Johnson C Smith University	NC	Private	1,466	0.84%	0.75%	-0.09%
Kentucky State University	KY	Public	2,834	38.49%	26.60%	-11.89%
Lane College	TN	Private	2,146	0.0%	0.19%	+0.19%
Langston University	OK	Public	2,749	41.02%	14.26%	-26.76%
Le Moyne-Owen College	TN	Private	890	0.0%	0.45%	+0.45%
Lincoln University	MO	Public	3,314	64.71%	57.33%	-7.38%
Lincoln University of Pennsylvania	PA	Public	2,649	4.93%	2.87%	-2.06%
Livingstone College	NC	Private	1,082	1.83%	1.29%	-0.54%
Miles College	AL	Private	1,791	.20%	1.73%	+1.53%
Mississippi Valley State University	MS	Public	2,850	4.9%	4.77%	-0.13%
Morehouse College	GA	Private	2,689	0%	0.85%	+0.85%
Morgan State University	MD	Public	7,226	2.8%	4.88%	+2.08%
Morris College	SC	Private	966	0.22%	0.31%	+0.09%
Norfolk State University	VA	Public	6,993	12.02%	7.22%	-4.80%
North Carolina A & T State University	NC	Public	10,614	10.17%	10.08%	-0.09%
North Carolina Central University	NC	Public	8,587	16.25%	14.05%	-2.20%
Oakwood University	AL	Private	1,916	2.65%	1.93%	-0.72%
Paine College	GA	Private	907	0%	1.87%	+1.87%
Paul Quinn College	TX	Private	171	8.36%	1.75%	-6.61%
Philander Smith College	AR	Private	668	0%	1.04%	+1.04%
Prairie View A & M University	TX	Public	8,608	9.84%	10.79%	+0.95%

Table 2 (cont'd)

Rust College	MS	Private	1,072	.35%	1.40%	+1.05%
Saint Augustine's College	NC	Private	1,529	1.21%	2.68%	+1.47%
Saint Paul's College	VA	Private	584	2.80%	2.74%	-0.06%
Savannah State University	GA	Public	3,820	8.64%	4.63%	-4.01%
Shaw University	NC	Private	2,538	3.26%	2.52%	-0.74%
South Carolina State University	SC	Public	4,538	5.47%	4.01%	-1.46%
Southern University and A & M College	LA	Public	8,218	4.27%	8.07%	+3.80%
Southern University at New Orleans	LA	Public	3,141	4.64%	3.53%	-1.11%
Southwestern Christian College	TX	Private	201	0.0%	2.98%	+2.98%
Spelman College	GA	Private	2,229	0%	0.31%	+0.31%
Stillman College	AL	Private	1,041	.48%	2.98%	+2.50%
Talladega College	AL	Private	700	2.42%	5.71%	+3.29%
Tennessee State University	TN	Public	8,824	22.36%	23.42%	+1.06%
Texas College	TX	Private	964	2.38%	15.04%	+12.66%
Texas Southern University	TX	Public	9,394	11.36%	11.80%	+0.44%
Tougaloo College	MS	Private	939	0.00%	1.60%	+1.60%
Tuskegee University	AL	Private	2,931	1.33%	2.86%	+1.53%
University of Arkansas at Pine Bluff	AR	Public	3,792	6.08%	4.03%	-2.05%
University of Maryland Eastern Shore	MD	Public	4,433	20.93%	16.35%	-4.58%
University of the District of Columbia	DC	Public	5,253	13.30%	16.26%	+2.96%
University of the Virgin Islands	VI	Public	2,602	7.51%	11.45%	+3.94%
Virginia State University	VA	Public	5,366	8.13%	4.40%	-3.73%
Virginia Union University	VA	Private	1,691	1.66%	1.95%	+0.29%
Virginia University of Lynchburg	VA	Private	327	0.00%	1.22%	+1.22%
Voorhees College	SC	Private	701	4.62%	1.28%	-3.34%
West Virginia State University	WV	Public	6,229	86.59%	69.72%	-16.87%
Wilberforce University	OH	Private	710	5.70%	2.96%	-2.74%
Wiley College	TX	Private	1,237	3.11%	5.50%	+2.39%
Winston-Salem State University	NC	Public	6,427	18.29%	16.99%	-1.30%
Xavier University of Louisiana	LA	Private	3,338	7.7%	17.14%	+9.44%

* Total enrollment is defined by NCES, IPEDS for the academic year 2009-2010 as the number of students enrolled in the fall at postsecondary institutions. Students reported are those enrolled in courses creditable toward a degree or other formal award; students enrolled in courses that are part of a vocational or occupational program, including those enrolled in off-campus centers; and high school students taking regular college courses for credit. Institutions report annually the number of full- and part-time students, by gender, race/ethnicity, and level (undergraduate, graduate, first-professional); the total number of undergraduate entering students (including first-time, transfers-in, part-time students, and non-degree students); and retention rates.

It is important to note that for the purposes of this study, some institutions were excluded from the entire sample of HBCUs. Morehouse School of Medicine and Meharry Medical College

were excluded due to their status as graduate/professional schools. American Baptist College was also excluded from this study since it was not granted the HBCU designation until 2013, therefore not meeting the criteria of being an HBCU between the years of 2000-2010.

Research Method

This research uses IPEDS data to conduct a nonexperimental, observational study using the Ordinary Least Squares (OLS) regression technique. This classic statistical approach is intended to establish a relationship between multiple predictor/independent variables (X) and an outcome/dependent variable (Y) of interest while minimizing the difference between the actual Y scores and the predicted Y scores using the least squares criterion (Hinkle, Wiersma, & Jurs, 2003). The hope is that through the OLS method, the researcher can determine a "best fit" model for predicting the outcome variable of interest.

Basic cross-sectional data analysis allows a researcher to observe differences across units of analysis at one particular point in time. One way to address that inherent limitation of cross-sectional data is to use panel data, which provides a more comprehensive history and can track changes within an institution. Panel data allows researchers to analyze multiple waves of observed data over a period of time within multiple units, which can be organized such that each unit has multiple records to represent the multiple waves of data collected. In this study, the data are organized so each unit (institution) has t_i records, where *t* is the number of waves for individual (institution) i, so the total number of records in the analysis is $\sum t_i$ (Johnson, 1995). The basic equation for the panel data regression is as follows:

$Y = b_0 + b_1X_{1i} + b_2X_{2i} + \cdots + b_kX_{ki} + \mathcal{E}_i$, where:

Y = outcome/dependent variable of interest

b = slope or regression coefficient for the respective predictor/independent variables

X = predictor/independent variables

$\mathcal{E}$ = residual errors of the regression

This study is less concerned about determining effects over time between institutions; instead, the focus is on aggregate effects within institutions during the observed time period. Focusing on aggregate effects will prove beneficial when determining the practical and theoretical significance of the results since the within unit findings will have broader applications. Therefore, the simplest way to focus on effects within institutions over a specified period of time is to conduct a fixed effects OLS panel data regression analysis, which will remove the institutional effect and "ignore the time dimension of the data structure and treat each observation as independently drawn" (Zhang, 2010, p. 316). Although the analysis will be focused on a specific period of time in which the units were observed (between the years 2000-2010), no inference will be made regarding the effect of time on the outcomes of interest since it will not be included as a variable in the equation. Ultimately, a fixed effects approach removes the effects of time-invariant characteristics of institutions and shifts the focus to assessing the net effect of the predictor variables. Therefore, the following OLS model will be used to investigate the effects of institutional characteristics on nonblack enrollment at HBCUs between 2000-2010:

$$y_{it}\,(pct\_nonblack) = \beta_0 + \beta_1\,(pct\_grad\_rate)_{it} + \beta_2\,(tuitionandfee02)_{it}{}^{*}$$
$$+ \beta_3\,(tuitionandfee03)_{it} + \beta_4\,(instaid\_spend\_1000)_{it} + \beta_5\,(instruct\_spend\_1000)_{it}$$
$$+ \beta_6\,(acadsupp\_spend\_1000)_{it} + \beta_7\,(studserv\_spend\_1000)_{it} + \beta_8\,(admin\_spend\_1000)_{it}$$
$$+ \beta_9\,(aux\_spend\_1000)_{it} + \alpha_i + \varepsilon_{it}$$

Where:

- y represents the percentage of nonblack students
- β_o represents the overall intercept
- β_1 *(pct_grad_rate)*$_{it}$ represents the effect of graduation rates for case *i* in the sample at *t* time period
- β_2 *(tuitionandfee02)*$_{it}$ represents the effect of in-state tuition* for case *i* in the sample at *t* time period
- β_3 *(tuitionandfee03)*$_{it}$ represents the effect of out-of-state/private tuition for case *i* in the sample at *t* time period
- β_4 *(instaid_spend_1000)*$_{it}$ represents the effect of institutional grant aid per FTE student for case *i* in the sample at *t* time period
- β_5 *(instruct_spend_1000)*$_{it}$ represents the effect of spending on instruction per FTE student for case *i* in the sample at *t* time period
- β_6 *(acadsupp_spend_1000)*$_{it}$ represents the effect of spending on academic support per FTE student for case *i* in the sample at *t* time period
- β_7 *(studserv_spend_1000)*$_{it}$ represents the effect of spending on student services per FTE student for case *i* in the sample at *t* time period
- β_8 *(admin_spend_1000)*$_{it}$ represents the effect of spending on administration per FTE student for case *i* in the sample at *t* time period
- β_9 *(aux_spend_1000)*$_{it}$ represents the effect of spending on auxiliary services per FTE student for case *i* in the sample at *t* time period
- α_i represents all time-invariant variables that could influence nonblack enrollment but are not included in this study
- ε_{it} represents residual error for case *i* in the sample at *t* time period

* The in-state tuition variable was used exclusively in the public HBCU model.
Note: All spending and tuition variables were transformed by dividing per FTE figures by 1000 for easier interpretation of coefficients.

It is possible that the college-choice decisions of students may be influenced by the result of an institution's decisions/behavior/performance in the years leading up to the point at which a student chooses a college to attend. Applying lags to dependent variables is not uncommon in higher education research and can be observed in recent studies ranging from the study of growth in international doctoral education (Taylor & Cantwell, 2014) to the effect of state financial policies on the production of bachelor's degrees (Titus, 2009). Therefore, lags will be applied to

the dependent variables in this study and the same fixed effects panel data regression approach will be used to conduct two additional analyses for public and private HBCUs between 2003-2010: one analysis with one-year lags for the predictor variables (t-1) and one analysis with two-year lags for the predictor variables (t-2).

$$y_{it}\ (pct\_nonblack) = \beta_0 + \beta_1\ (pct\_grad\_rate)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_2\ (tuitionandfee02)_{i(t\text{-}1)\ or\ (t\text{-}2)} * + \beta_3\ (tuitionandfee03)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_4\ (instaid\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_5\ (instruct\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_6\ (acadsupp\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_7\ (studserv\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_8\ (admin\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_9\ (aux\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \alpha_i + \varepsilon_{it}$$

Finally, in order to gain a deeper understanding of HBCUs in various institutional contexts, two different regression models will be constructed: 1) only public HBCUs and 2) only private HBCUs. Distinguishing between public and private HBCUs is a necessary approach due to the significant differences between these institutional types in almost all regards, including total enrollment, institutional missions, institutional histories, program offerings, and more. Considering HBCUs within their specific institutional control will allow for more precise interpretations of the statistical analysis.

Limitations

First, it is important to acknowledge the limitations of the dataset. Because this is a secondary data analysis, not every theoretical concept was measured directly and formatted according to the objectives of this study. Therefore, certain variables will be serving as proxies for various theoretical constructs. Additionally, the statistical approach being used presents a challenge. Specifically, because the fixed effects OLS panel regression ignores the dimension of time and pools all observations for all units of analysis (institutions) into one model, it produces a greater likelihood of model errors for a given unit being correlated. Researchers may

misinterpret statistically significant results without accounting for within-cluster error correlation. In order to address this potential problem, the researcher will use a cluster-robust standard errors approach, which reduces the usually downward bias in standard errors that occurs. By reducing the aforementioned biases, the researcher can control for unobserved heterogeneity (i.e., omitted information from unobserved variables) and make more conservative assumptions about the findings.

Furthermore, conducting a quantitative study restricts the richness of findings due to its focus on aggregate statistical effects. Particularly for a concept like college choice, numerical representations do not allow for the personal narratives of nonblack students who could directly describe their perceptions of HBCUs in their college-choice decisions. There is also a possibility that findings from a quantitative study may miss relevant and influential factors related to the phenomenon due to a focus on a particular theory or due to the restrictions of the dataset. For example, it is possible that marketing and recruitment could play a role in varying levels of nonblack enrollment at HBCUs; however, the IPEDS dataset does not include information regarding the amount of money spent specifically on marketing and recruitment or how much of that marketing and recruitment is geared toward nonblack students.

Finally, because this is an observational study rather than what many consider the gold standard in research—a randomized experiment—some may express concerns regarding the ability of the researcher to infer causality. Scholars have debated this issue for decades and although there is no absolute solution to the problem of causal inference in observational studies, certain statistical methods and theories have been developed to address many of the limitations of observational studies. Angrist and Pischke (2009) suggest that it is "useful to think of causal relationships in terms of the potential outcomes" that describe what would happen given an

alternative scenario (p. 52). Typically, proving causality is done through conducting randomized experiments. However, in the social sciences in particular, it is difficult to conduct true randomized experiments. In the case of observational, non-experimental studies, not all conditions can be met in order to perfectly infer causality. For one, the counterfactual cannot be provided; that is, data does not exist that provides the outcome for the participant under both the treatment and control conditions (Morgan & Winship, 2007; Murnane & Willett, 2011). Additionally, most datasets have not observed *everything*, so there is a real possibility that there are unobserved dimensions (confounding influences) of an observational study.

In order to address the limitations of observational studies, the researcher has paid careful attention to the method being used and the selection of the variables included in the statistical models. Regression techniques have proven to be useful tools in minimizing bias. In fact, Winship and Morgan (2007) argue that regression models can be used as descriptive tools that serve as "a method for obtaining a best-fitting descriptive model under entailed linearity constraints" (p. 123). Regression techniques are certainly not the solution to solving all causality issues, but by taking steps to reduce observed bias and address confoundedness, one can draw reasonable inferences from an observational study (Murnane & Willett, 2011).

It is possible that critical readers may suggest that the researcher did not control for some unobserved variable, such as individual students' proximity to the institutions included in the study or the socioeconomic status of students. Frank (2000; 2014) and others (Frank et al., 2013; Pan & Frank, 2003) offer a strategy for researchers to determine the strength of their findings from an observational study when all influences cannot be controlled for: the percent of an estimate that must be due to bias to invalidate an inference. The calculation allows the researcher to address the concern of not having controlled for every potential influence by determining how

much bias would have to be due to omitted variables such that it would make the predictor of interest insignificant (Frank, 2000; Frank, 2014; Frank et al., 2013; Pan & Frank, 2003). This technique will be used to test the robustness of the findings from this study.

Conclusion

Ultimately, by viewing the issue of nonblack enrollment at HBCUs through the lens of the higher education context of Perna's (2006) conceptual model of college choice and employing a panel data OLS regression analysis, this study attempts to fill the current gap in understanding about how institutional characteristics—as manifested through signals of institutional priorities that fall within the institution's realm of control, such as graduation rates, spending on various aspects of institutional operations, tuition, and student financial aid—may have influenced nonblack enrollment at HBCUs between the years 2000-2010. Stata © Version 13.1 statistical software was used to conduct the analysis.

Chapter 4

Findings

The preceding chapters established the context and methodological approach for this study, which examines the effect of institutional characteristics on nonblack enrollment at HBCUs between the years 2000-2010. This chapter will present descriptive statistics for the variables in the study, report the results of the fixed-effects panel OLS regression analyses conducted for the two separate models, and provide an interpretation of the results.

Descriptive Statistics

Table 3 provides a statistical description of all variables over the ten-year period included in the quantitative analysis in this study. The statistics are presented according to institutional control (i.e., public versus private). Although there are many similarities between the institutional categories, there are some important distinctions to be made.

To start, some of the non-spending characteristics differed significantly between public and private HBCUs. The average percentage of nonblack enrollment, the dependent variable in this study, varied greatly between the different institutional groupings, with public HBCUs averaging 15.52 percent nonblack enrollment and 19.20 percent variation within the sample, compared to 2.91 percent average nonblack enrollment and 3.77 percent variation within the sample of private HBCUs. Although the mean six-year graduation rates were similar between the samples (public HBCUs = 33.11 percent; private HBCUs = 37.73 percent), the level of variation within each sample differed significantly, with a high level of variation at private HBCUs (20.91 percent) and a relatively moderate level of variation at public HBCUs (10.41 percent). The non-spending characteristics highlight and provide a preview of some of the key differences between public and private HBCUs.

When it comes to spending, similar and sometimes even more significant differences can be observed. For example, the average amount of institutional grant aid per FTE student at public HBCUs was less than half that of privates (public HBCUs = $978.88; private HBCUs = $2,144.84), and the variation was far lower at public HBCUs (public HBCUs = $703.85; private HBCUs = $1,555.79). Average in-state tuition at public HBCUs was $3,850.70 and varied $1,388.66 per standard deviation. No distinction was made in the reporting of in-state and out-of-state tuition by private HBCUs, so only out-of-state tuition was included in the model, in which the average was $9,753.41 with a variance of $3,382.04. Of all the spending categories, only two were higher at public HBCUs: spending on instruction and spending on academic support. Public HBCUs spent $5,950.60 per FTE student on instruction compared to $5,363.94 at private HBCUs, and $1,721.88 on academic support spending per FTE student at public HBCUs compared to $1,546.53 at private HBCUs. Spending on student services per FTE student was lower at public HBCUs compared to private HBCUs, at $1,476.58 and $2,026.92 respectively. Average spending on administration per FTE student at private HBCUs ($5,361.69) was nearly double that of public HBCUs ($3,024.65) and had almost three times the variation per standard deviation (private HBCUs = $3,880.19; public HBCUs = $1,363.93). Public and private HBCUs spent similarly on auxiliary services, with public HBCUs spending $2,611.25 per FTE student and private HBCUs spending $2,838.63 per FTE student. It is important to emphasize that almost every variable for private HBCUs had median values considerably lower than the mean and large standard deviation values, suggesting that there are likely a handful of private HBCUs exerting disproportionate influence on the mean values. In contrast, most of the variables for public HBCUs had similar mean and median values with far lower standard deviation values.

Ultimately, the descriptive statistics for the ten years of data highlight significant variations between public and private HBCUs, as well as within each sample of institutions, that demonstrate the appropriateness of their inclusion in the model beyond their theoretical significance. Furthermore, the significant variations underscore the importance of considering these institutions in the context of their public or private control.

Table 3. Descriptive Statistics for Institutional Characteristics of Four-Year HBCUs Between 2000-2010

	Public HBCUs			***Private HBCUs***		
Variable	**Mean**	**Median**	**Standard Deviation**	**Mean**	**Median**	**Standard Deviation**
Percentage of nonblack students	15.52%	8.74%	19.20%	2.91%	1.79%	3.77%
Six-year graduation rate	33.11%	34.21%	10.41%	37.73%	32.26%	20.91%
In-state tuition	$3,850.70	$3,595.00	$1,388.66	--	--	--
Out-of-state/private tuition	$9,927.32	$9,466.00	$3,082.19	$9,753.41	$9,580.00	$3,382.04
Average institutional grant aid per FTE	$978.88	$832.03	$703.85	$2,144.84	$1,794.28	$1,555.79
Spending on instruction per FTE	$5,950.60	$5,799.17	$1,609.46	$5,363.94	$4,766.22	$3,119.87
Spending on academic support per FTE	$1,721.88	$1,586.70	$782.18	$1,546.63	$1,264.52	$1,206.08
Spending on student services per FTE	$1,476.58	$1,290.16	$755.01	$2,026.92	$1,850.89	$1,059.95
Spending on administration per FTE	$3,024.65	$2,715.74	$1,363.93	$5,361.69	$4,699.64	$3,880.19
Spending on auxiliary services per FTE	$2,611.25	$2,441.27	$1,323.58	$2,838.63	$2,584.85	$1,363.44

Results

This section will present the results of the statistical analysis conducted in this study. In order to examine the influence of institutional characteristics on nonblack enrollment at HBCUs during the years 2000–2010, a fixed-effects panel data regression approach was employed. This

approach was used to control for time-invariant characteristics and to focus on the effect of the institutional characteristics of HBCUs on nonblack enrollment during that ten-year period more broadly as opposed to the effect of those variables between specific institutions. Additionally, due to the significant variations between public and private HBCUs presented in the previous section and the fact that institutional control is a fixed characteristic, the results will reflect the outcomes of two different statistical runs: one for public HBCUs and one for private HBCUs. Therefore, the following OLS model was used to investigate the effects of institutional characteristics on nonblack enrollment at HBCUs between 2000-2010:

$$y_{it}\,(pct\_nonblack) = \beta_0 + \beta_1\,(pct\_grad\_rate)_{it} + \beta_2\,(tuitionandfee02)_{it}{}^{*} + \beta_3\,(tuitionandfee03)_{it} + \beta_4\,(instaid\_spend\_1000)_{it} + \beta_5\,(instruct\_spend\_1000)_{it} + \beta_6\,(acadsupp\_spend\_1000)_{it} + \beta_7\,(studserv\_spend\_1000)_{it} + \beta_8\,(admin\_spend\_1000)_{it} + \beta_9\,(aux\_spend\_1000)_{it} + \alpha_i + \varepsilon_{it}$$

Where:

- y represents the percentage of nonblack students
- β_o represents the overall intercept
- $\beta_1\,(pct\_grad\_rate)_{it}$ represents the effect of graduation rates for case i in the sample at t time period
- $\beta_2\,(tuitionandfee02)_{it}$ represents the effect of in-state tuition* for case i in the sample at t time period
- $\beta_3\,(tuitionandfee03)_{it}$ represents the effect of out-of-state/private tuition for case i in the sample at t time period
- $\beta_4\,(instaid\_spend\_1000)_{it}$ represents the effect of institutional grant aid per FTE student for case i in the sample at t time period
- $\beta_5\,(instruct\_spend\_1000)_{it}$ represents the effect of spending on instruction per FTE student for case i in the sample at t time period
- $\beta_6\,(acadsupp\_spend\_1000)_{it}$ represents the effect of spending on academic support per FTE student for case i in the sample at t time period
- $\beta_7\,(studserv\_spend\_1000)_{it}$ represents the effect of spending on student services per FTE student for case i in the sample at t time period
- $\beta_8\,(admin\_spend\_1000)_{it}$ represents the effect of spending on administration per FTE student for case i in the sample at t time period

- $\beta_9\,(aux\_spend\_1000)_{it}$ represents the effect of spending on auxiliary services per FTE student for case *i* in the sample at *t* time period
- α_i represents all time-invariant variables that could influence nonblack enrollment but are not included in this study
- ε_{it} represents residual error for case *i* in the sample at *t* time period

* The in-state tuition variable was used exclusively in the public HBCU model.
Note: All spending and tuition variables were transformed by dividing per FTE figures by 1000 for easier interpretation of coefficients.

It is important to note that certain variables were excluded from the final model. An attempt was made to include measures of selectivity, such as acceptance rates and 75th percentile composite ACT scores; however, data for these measures were inconsistently reported. Additionally, a variable for average Pell grant per FTE student was included initially as an indicator for the average income level of students, but its inclusion in the model possessed no statistical or explanatory value. Finally, due to missing data for graduation rates prior to the 2003-2004 academic year, two different models for each sample of institutions were produced to test the strength of the models: 1) includes all observations between 2000-2010 and 2) restricts observations to 2003-2010. Additionally, because a fixed-effects approach was used on panel data, there is potential for within-cluster error correlation. Therefore, clustered robust standard errors were used to address the potential issue of correlated standard errors and to produce more conservative estimates.

Table 4 represents the results of the OLS regression analysis using a fixed-effects approach with clustered robust standard errors.

Table 4. Regression Analysis for the Effects of Institutional Characteristics on Nonblack Enrollment at HBCUs Between 2000-2010 (No Lags)

Variable	Public HBCUs 2000-2010	Public HBCUs 2003-2010	Private HBCUs 2000-2010	Private HBCUs 2003-2010
Six-year graduation rate	-.0181997 (.0151393)	-.0252166 (.0134727)	-.0210625* (.0079537)	-.0178574* (.0061545)
In-state tuition and fees	.0461497 (.5375114)	.2093815 (.4882733)	--	--
Out-of-state/private tuition and fees	-.2128044 (.1140625)	-.1425392 (.0857878)	.0954461 (.1066235)	.1190529 (.128104)
Average institutional grant aid per FTE	.1044036 (.0985309)	.1221302 (.0922915)	-.0144039 (.0429366)	-.0400106 (.0455493)
Spending on instruction per FTE	-.2168081 (.1803143)	-.2791163 (.1629154)	.0142608 (.0741923)	-.0096151 (.0914913)
Spending on academic support per FTE	1.968452** (.4836124)	1.938156** (.4307524)	-.1890025 (.1587041)	-.1623406 (.1504499)
Spending on student services per FTE	-.1628289 (.3937928)	.1112896 (.414478)	.1010161 (.1184704)	-.0612087 (.1196233)
Spending on administration per FTE	-.1192686 (.2304753)	-.083315 (.2464594)	-.0247102 (.029452)	-.0429588 (.0245745)
Spending on auxiliary services per FTE	.3021178 (.2117668)	.3076137 (.1845381)	-.0673361 (.1420998)	-.2399925 (.1250437)
Constant	16.21421** (1.836291)	15.14593** (1.750284)	3.171402* (.9877662)	3.686735* (1.217239)
Observations	353 (40/40 institutions)	315 (40/40 institutions)	378 (43/45 institutions)	338 (43/45 institutions)
R-squared (within)	.2910	.3002	.1095	.1237
F-statistic	5.26**	6.95**	1.84	2.09*

Clustered robust standard errors in parentheses.
All spending and tuition variables were transformed by dividing per FTE figures by 1000 for easier interpretation of coefficients.
* significant at $p<.05$ level; ** significant at $p<.001$ level

Although the number of observations and R-squared values were slightly higher for the models including all years, the models restricted to the years between 2003-2010 had higher F-statistics with more statistically significant p-values (both for the F-statistics of the entire model and among the predictors being tested), suggesting that there is stronger evidence that the

restricted models are better fits. As a result, all of the findings in the following sections will be discussed based on the products of the 2003-2010 restricted models.

Public HBCUs (2003-2010). For public HBCUs, the analysis indicates that the only statistically significant predictor of nonblack enrollment is spending on academic support per FTE student. The interpretation of the coefficient in this case suggests that every $1,000 increase in spending on academic support per FTE student corresponds with an almost two percent increase in nonblack enrollment ($t = 4.50$, $p < .001$). Although academic support spending was the only variable that reached statistical significance at 95 percent confidence or above, two variables fell between the 90 – 95 percent confidence interval level (i.e., $.10 > p > .05$): both six-year graduation rates ($t = -1.87$) and spending on instruction ($t = -1.71$) were associated with decreases in nonblack enrollment. However, neither have much tangible value considering that a $1,000 increase in spending on instruction per FTE translated to only a .28 percent decrease in nonblack enrollment and an increase in one percent increase in graduation rates would produce only a .02 percent decrease in nonblack enrollment. The R-squared value for the model suggests that 30 percent of the variance in nonblack enrollment can be explained by the variables included in this model.

Interpretation. Statistically, the strongest model of the two separate models was the public HBCU model. Not only was the R-squared value almost three times higher than the other models (explaining 30 percent of the variance in nonblack enrollment), but the F-statistic was also larger (6.95) with a highly statistically significant p-value ($p < .001$). All of these statistics taken together suggest that the public HBCU model possesses significant explanatory power.

To go along with the strength of the overall model, the public HBCU model also produced the most statistically significant result when it comes to the effect of an institutional

characteristic on nonblack enrollment. The results from the public HBCU analysis reveal that spending on academic support per FTE student possessed both statistical significance and explanatory relevance. In fact, the analysis suggests that every $1,000 increase in spending on academic support per FTE student translates to nearly a two percent increase in nonblack enrollment. With higher numbers of students enrolled on average at public HBCUs, a two percent increase translates to a greater impact on the total number of nonblack students enrolled. For example, using the average enrollment figures for public HBCUs (approximately 4,900 students), a two percent increase in nonblack enrollment would equal nearly 100 additional nonblack students. Or at an institution like Florida A&M University, whose enrollment is closer to 13,000, a two percent increase would equal approximately 260 nonblack students. In both of the aforementioned examples, even a two percent increase in nonblack enrollment could have a significant impact on the demographic makeup and, potentially, the campus climate of a public HBCU.

Private HBCUs (2003-2010). The analysis indicates that graduation rates is the only significant predictor of nonblack enrollment at private HBCUs. The interpretation of the coefficients for that measure suggests that every one percent increase in graduation rates corresponds with an approximately .018 percent decrease in nonblack enrollment (t = -2.90, p < .006).

In addition to the variable that was found significant at the 95 percent confidence interval level, two variables fell between the 90 – 95 percent confidence interval level: spending on administration and spending on auxiliary services. Both variables were found to be negatively associated with nonblack enrollment, with every $1,000 spent on administration corresponding to a -.04 (t = -1.75) percent decrease in nonblack enrollment and every $1,000 increase in

spending on auxiliary services per FTE student corresponding with an approximately .24 percent decrease in nonblack enrollment (t = -1.92). The R-squared value for the model suggests that 12 percent of the variance in nonblack enrollment can be explained by the variables included in this model.

Interpretation. Although the private HBCU model (R-squared = .12) does not possess the same strength as the public HBCU model, it does contain explanatory value in its finding that higher graduation rates predict lower levels of nonblack enrollment. The coefficient for the statistically significant variable in this model suggest that every one percent increase in graduation rates corresponds with a .018 percent decrease in nonblack enrollment. This small decreases in nonblack enrollment may seem inconsequential, but when considered in the context of the extremely low levels and very little variation of nonblack enrollment at private HBCUs, these findings contain more explanatory relevance than one might initially expect.

In more tangible terms, it would take a large change in six-year graduation rates to have an effect on nonblack enrollment, with a 20 percent increase in the graduation rates of private HBCUs translating to only an approximately .35 percent decrease in nonblack enrollment. In the case of the average private HBCU, that .3 percent decrease would translate to a difference of approximately one student. Although the effect of six-year graduation rates has little chance of influencing nonblack enrollment in any meaningful and observable way at private HBCUs, the fact that it is statistically significant at all is in itself significant and will be explained in the following chapter.

The variables that fell between the 90-95 percent confidence interval level have limited tangible value when it comes to their effect on nonblack enrollment. The coefficient for spending on auxiliary services suggests that it would take an additional $4,000 spent per FTE student to

change nonblack enrollment by one percent. Considering the median value for academic support spending is approximately $2,500 with a standard deviation of approximately $1,300, it is unlikely that the average private HBCU would be able to invest the necessary resources to produce any tangible change in nonblack enrollment. The same could be said for spending on administration, which would require an additional $5,000 spent per FTE student to change nonblack enrollment by a quarter of one percent. Although the $5,000 figure is close to the median value for this spending category (median ≈ $4,700), it would take a private HBCU doubling its spending on administration to achieve that quarter of one percent change. Again, although these variables may not seem to have tangible influence over the percentage of nonblack students enrolled at private HBCUs, the fact that they are statistically significant at all is important to acknowledge and discuss further.

Impact of confounding variable threshold (ICVT). As mentioned previously, because this study is not a randomized experiment, a conscious effort must be made to controlling for unobserved influences when inferring causality. Accordingly, efforts were taken to test the robustness of the findings using methods developed by Frank (2000) and Frank et al. (2013) which quantify how much bias there must be in order to invalidate an inference. Stated in statistical terms, Frank's (2000) method answers the question: Given that a variable "x" is statistically significant, how much of an estimate must be due to bias to invalidate an inference?

Specifically, Frank's (2014) KonFound-it!© program, which allows a researcher to input specific data (estimated effect of variable, observed t-critical value, number of covariates, sample size, etc.) from a regression output to determine the percent of cases from a sample that would need to be replaced to invalidate an inference, was used to test the robustness of the findings from the regression analysis for public and private HBCUs between the years 2003-2010.

According to Frank's (2014) KonFound-it!© results, for the finding in the public HBCU model that academic support spending per FTE student (β = 1.94, SE = .431) was statistically significant, over 55 percent of the cases from the sample would need to be replaced in which there is an effect of zero to make academic support spending irrelevant. Similarly, the KonFound-it!© results suggested that approximately 32 percent of the cases would have to be replaced to invalidate the finding that graduation rates at private HBCUs (β = -.018, SE = .006) are a statistically significant negative influence on nonblack enrollment.

The results of these tests are significant for one important reason: In most studies, a sample is drawn from a larger population to test a hypothesis. However, this study did not have to use a sample because every institution in the population was represented in the analysis. In other words, there are no additional sample cases (i.e., institutions) that could replace the cases in this study and, therefore, the robustness of the findings that academic support spending influences nonblack enrollment at public HBCUs is strengthened and the ability to generalize to the population of all public HBCUs is greatly improved.

Lagged variable analysis. The primary model used in this study analyzed the effects of predictor variables that were drawn from the same year as the dependent variable (e.g., the influence of spending variables from 2002 on nonblack enrollment from 2002). However, it is possible that the college-choice decisions of students may be influenced by the result of an institution's decisions/behavior/performance in the years leading up to the point at which a student chooses a college to attend. Therefore, using the same fixed effects panel data regression approach, two additional analyses were conducted for public and private HBCUs between 2003-2010: one analysis with one-year lags for the predictor variables (t-1) and one analysis with two-year lags for the predictor variables (t-2).

$$y_{it}\ (pct\_nonblack) = \beta_0 + \beta_1\ (pct\_grad\_rate)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_2\ (tuitionandfee02)_{i(t\text{-}1)\ or\ (t\text{-}2)}{}^{*}$$
$$+ \beta_3\ (tuitionandfee03)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_4\ (instaid\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} +$$
$$\beta_5\ (instruct\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_6\ (acadsupp\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} +$$
$$\beta_7\ (studserv\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \beta_8\ (admin\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} +$$
$$\beta_9\ (aux\_spend\_1000)_{i(t\text{-}1)\ or\ (t\text{-}2)} + \alpha_i + \varepsilon_{it}$$

Table 5. Regression Analysis for the Effects of Institutional Characteristics on Nonblack Enrollment at HBCUs Between 2003-2010 with One- and Two-Year Lags

Variable	Public HBCUs 2003-2010 w/ One-Year Lag	Public HBCUs 2003-2010 w/ Two-Year Lag	Private HBCUs 2003-2010 w/ One-Year Lag	Private HBCUs 2003-2010 w/ Two-Year Lag
Six-year graduation rate	-.0068955 (.0145413)	.0005725 (.0136481)	-.010433 (.0094767)	-.0150541* (.0071501)
In-state tuition and fees	.0951888 (.5886867)	.1192733 (.515942)	--	--
Out-of-state/private tuition and fees	-.2589376** (.1095921)	-.1728239 (.0889665)	.0684721 (.1110521)	-.003454 (.0959336)
Average institutional grant aid per FTE	.0932757 (.100242)	.0240676 (.080946)	-.0309119 (.042183)	-.003557 (.0450396)
Spending on instruction per FTE	-.0846652 (.1827749)	-.0839849 (.2098588)	-.0115489 (.0764463)	.0443794 (.1111161)
Spending on academic support per FTE	1.731752** (.4700118)	1.176629* (.4396413)	-.1228936 (.1429446)	-.2842294* (.1329587)
Spending on student services per FTE	.1536694 (.4795277)	.4970107 (.5076051)	.147386 (.1166998)	.114481 (.1294597)
Spending on administration per FTE	-.0198428 (.1990045)	.0687136 (.1556758)	.006413 (.0169039)	.0211105 (.0191144)
Spending on auxiliary services per FTE	.3358522* (.1115772)	.3180176* (.1360052)	.0422984 (.0869959)	-.0187938 (.1041414)
Constant	14.81916** (1.837867)	13.92161** (1.999925)	2.482165* (.8716942)	3.337966** (.7547756)
Observations	312 (40/40 institutions)	272 (40/40 institutions)	336 (43/45 institutions)	294 (43/45 institutions)
R-squared (within)	0.2828	.2141	.0679	.0884
F-statistic	4.36**	2.99*	1.19	1.95*

Clustered robust standard errors in parentheses.
All spending and tuition variables were transformed by dividing per FTE figures by 1000 for easier interpretation of coefficients.
* significant at p<.05 level; ** significant at p<.001 level

The regression analyses using lagged predictor variables did not possess the same strength as the initial models as measured by the R-squared values, but did produce statistically significant findings in both the public and private HBCU models. Most notably, the strongest predictors of nonblack enrollment from the initial models remained significant in the models

with lagged variables (public HBCUs = academic support spending per FTE student; private HBCUs = graduation rates). For public HBCUs, academic support spending continued to exert the strongest influence on nonblack enrollment, although its level of influence and statistical significance decreased as the amount of lag increased from one (β = 1.731752, $p < .001$) to two years (β = 1.176629, $p < .05$). In more tangible terms, these coefficients translate to an approximately 1.7 and 1.2 percent increase in nonblack enrollment with every $1,000 increase in academic support spending per FTE student. For private HBCUs, the graduation rates variable lost its statistical significance in the model with a one-year lag, but regained its significance in the model with a two-year lag (β = -.0150541, $p < .05$). In the two-year lag model, the coefficient translates to an approximately .015 percent decrease in nonblack enrollment for every one percent increase in graduation rates at private HBCUs. Since the coefficients for these variables are nearly the same as the initial model, the explanatory significance is therefore similar to the one provided for both of these variables in the discussion of the initial model.

There were also some variables that emerged as statistically significant in the models with lagged variables that were not statistically significant in the initial models. For public HBCUs, two variables were statistically significant: out-of-state tuition and auxiliary spending per FTE student. In both the one- and two-year lag models, auxiliary spending was found to be a positively statistically significant variable (β = .3358522 and .3180176 respectively, $p < .05$), which translates to an approximately .3 percent increase in nonblack enrollment with every $1,000 increase in auxiliary spending per FTE student. Out-of-state tuition was also an extremely statistically significant negative influence in the one-year lag model (β = -.2589376, $p < .001$), but did not maintain its significance in the two-year lag model ($.10 < p < .05$). For every

additional $1,000 in out-of-state tuition, nonblack enrollment decreases by approximately a quarter of one percent.

Conclusion

Interestingly, each model produced findings unique from one another—which supports the need for separate public and private models. However, there were also statistically significant variables common to all models. For public HBCUs, spending on academic support per FTE student was found to be a strongly positive predictor of nonblack enrollment in models with and without the lag, while graduation rates had statistically significant negative effects on nonblack enrollment at private HBCUs with and without the lag. Other variables that emerged as statistically significant in the models with a one- and two-year lag include out-of-state tuition (negative) and auxiliary spending per FTE student (positive) for public HBCUs, and spending on academic support per FTE student (negative) at private HBCUs. Furthermore, a test of the robustness of the findings suggest that over 55 percent of the cases would have to be replaced in which the effect is zero in order for the inference to be invalidated for the finding that academic support spending influences nonblack enrollment at public HBCUs, and approximately 32 percent of the cases would have to be replaced to invalidate the finding that graduation rates at private HBCUs are a statistically significant negative influence on nonblack enrollment.

For the purposes of explaining the results and discussing the implications for research, policy, and practice, the final chapter will focus only on the variables that were statistically significant in two out of three of the models, which were academic support spending and auxiliary services spending for public HBCUs, and graduation rates for private HBCUs. The variables that will be discussed have been highlighted in Table 6, which juxtaposes the models being used for the final analysis.

Table 6. All Models with Emphasis on Variables Found to be Statistically Significant in Two Out of the Three Models Between 2003-2010

Variable	Public HBCUs 2003-2010 w/No Lag	Public HBCUs 2003-2010 w/ One-Year Lag	Public HBCUs 2003-2010 w/ Two-Year Lag	Private HBCUs 2003-2010 w/No Lag	Private HBCUs 2003-2010 w/ One-Year Lag	Private HBCUs 2003-2010 w/ Two-Year Lag
Six-year graduation rate	-.0252166 (.0134727)	-.0068955 (.0145413)	.0005725 (.0136481)	**-.0178574* (.0061545)**	**-.010433 (.0094767)**	**-.0150541* (.0071501)**
In-state tuition and fees	.2093815 (.4882733)	.0951888 (.5886867)	.1192733 (.515942)	--	--	--
Out-of-state/private tuition and fees	-.1425392 (.0857878)	-.2589376** (.1095921)	-.1728239 (.0889665)	.1190529 (.128104)	.0684721 (.1110521)	-.003454 (.0959336)
Average institutional grant aid per FTE	.1221302 (.0922915)	.0932757 (.100242)	.0240676 (.080946)	-.0400106 (.0455493)	-.0309119 (.042183)	-.003557 (.0450396)
Spending on instruction per FTE	-.2791163 (.1629154)	-.0846652 (.1827749)	-.0839849 (.2098588)	-.0096151 (.0914913)	-.0115489 (.0764463)	.0443794 (.1111161)
Spending on academic support per FTE	**1.938156** (.4307524)**	**1.731752** (.4700118)**	**1.176629* (.4396413)**	-.1623406 (.1504499)	-.1228936 (.1429446)	-.2842294* (.1329587)
Spending on student services per FTE	.1112896 (.414478)	.1536694 (.4795277)	.4970107 (.5076051)	-.0612087 (.1196233)	.147386 (.1166998)	.114481 (.1294597)
Spending on administration per FTE	-.083315 (.2464594)	-.0198428 (.1990045)	.0687136 (.1556758)	-.0429588 (.0245745)	.006413 (.0169039)	.0211105 (.0191144)
Spending on auxiliary services per FTE	**.3076137 (.1845381)**	**.3358522* (.1115772)**	**.3180176* (.1360052)**	-.2399925 (.1250437)	.0422984 (.0869959)	-.0187938 (.1041414)
Constant	15.14593** (1.750284)	14.81916** (1.837867)	13.92161** (1.999925)	3.686735* (1.217239)	2.482165* (.8716942)	3.337966** (.7547756)
Observations	315 (40/40 institutions)	312 (40/40 institutions)	272 (40/40 institutions)	338 (43/45 institutions)	336 (43/45 institutions)	294 (43/45 institutions)
R-squared (within)	.3002	0.2828	.2141	.1237	.0679	.0884
F-statistic	6.95**	4.36**	2.99*	2.09*	1.19	1.95*

Clustered robust standard errors in parentheses.
All spending and tuition variables were transformed by dividing per FTE figures by 1000 for easier interpretation of coefficients.
* significant at p<.05 level; ** significant at p<.001 level

Chapter 5

Discussion and Implications

The previous chapter presented the results from the quantitative analysis of the effect of institutional characteristics on nonblack enrollment at HBCUs between the years 2000-2010. Using a fixed-effects panel data regression analysis, two different models were used to test the effect of institutional characteristics on nonblack enrollment: 1) only public HBCUs and 2) only private HBCUs. The two separate regression models produced unique sets of findings. Additionally, further analyses were conducted for public and private HBCUs using one- and two-year lags for the dependent variables. These models produced findings similar to those of the initial models, but also introduced new influential factors. The following sections will summarize the study, connect the findings to previous research, and discuss the implications of the findings for policy, practice, and future research.

Summary of Study

Determining why nonblack students enroll at HBCUs is critically important to better understanding the college-choice process for all students. Aside from a limited number of studies, little research has been conducted examining the college choice of nonblack students at HBCUs. The literature is particularly scarce as it relates to the higher education institution's role in influencing nonblack enrollment patterns (Daniels, 2008). And because more comprehensive and contextual conceptual models of college choice did not exist until more recently, what we do know about the enrollment of nonblack HBCU students is not expressed in terms that are aligned with more contemporary knowledge of the college-choice process.

In addition to the limited understanding of college choice for nonblack students at HBCUs, little is known about organizational behavior that may influence the college-choice

decisions for students at HBCUs. In fact, although Minor (2008b) was referencing governance at HBCUs when he went so far as to call governance at HBCUs an "enigma," his comment is indicative of the general lack of understanding about the operation of these institutions and scant research within the field. Bastedo (2012) suggests that while a plethora of higher education research more broadly has focused on organizational issues such as governance and elite leaders, major issues such as understanding who will attend college and why, from an organizational perspective, have been neglected. Additionally, previous research and the frames that we use to view organizational issues have not been geared toward understanding diverse populations or organizations (e.g., HBCUs) (Bastedo, 2012, Minor, 2005).

In order to better understand racial diversity on HBCU campuses and broaden the scope of scholarly work on HBCUs, this study attempts to provide a nuanced view of nonblack enrollment at HBCUs from an organizational perspective. To support and extend these lines of inquiry on organizational behavior and its relationship to diversity at HBCUs, the study seeks to understand which institutional characteristics of HBCUs are most closely associated with different levels of nonblack student enrollment. Perna's (2006) conceptual model of college choice, specifically the higher education context, served as a lens through which this issue was viewed.

For the purpose of this study, the focus shifted from the individual student's decision-making process to the ways in which the higher education context may influence enrollment decisions for different populations of students. Ultimately, this investigation used enrollment patterns to better understand an element of college choice. Specifically, this study looked at organizational factors associated with nonblack enrollment at HBCUs. Organizational factors are part of the higher education context identified by Perna in level three of her proposed conceptual

model, which also includes the geographic location and marketing and recruitment efforts of higher education institutions.

The primary research questions explored in this study were:

- Are there institutional characteristics of HBCUs that influenced nonblack enrollment patterns between the years 2000-2010?
    - What organizational characteristics, if any, have the strongest relationship to nonblack enrollment at HBCUs (e.g. tuition, institutional spending, graduation rates, retention rates, etc.)?
    - Furthermore, what, if anything, do those organizational characteristics suggest about how institutional context shapes college choice?

In order to examine the influence of institutional characteristics on nonblack enrollment at HBCUs during the years 2000–2010, a fixed-effects panel data regression approach was employed and clustered robust standard errors were used to address the potential issue of correlated standard errors and to produce more conservative estimates. Due to missing data that weakened the statistical significance of models including all years between 2000-2010, the focus of the analysis was restricted to the years 2003-2010. Furthermore, due to the significant variations in the predictor variables between public and private HBCUs, two different statistical models were run: one for public HBCUs and one for private HBCUs. Each model produced distinctly different from one another: For public HBCUs, spending on academic support per FTE student was found to be a strongly positive predictor of nonblack enrollment, whereas graduation rates had a statistically significant negative effect on nonblack enrollment at private HBCUs.

The public HBCU model produced the most statistically significant result when it comes to the effect of an institutional characteristic on nonblack enrollment. The results of the analysis

suggest that every $1,000 increase in spending on academic support per FTE student translates to a nearly two percent increase in nonblack enrollment. Using the average enrollment figures for public HBCUs (approximately 4,900 students), a two percent increase in nonblack enrollment would equal nearly 100 additional nonblack students. Or at an institution like Florida A&M University, whose enrollment is closer to 13,000, a two percent increase would equal approximately 260 nonblack students.

The coefficient for the statistically significant variable in the private HBCU model suggests that every one percent increase in graduation rates corresponds with a .018 percent decrease In more tangible terms, it would take a large change in six-year graduation rates to have an effect on nonblack enrollment, with a 20 percent increase in the graduation rates of private HBCUs translating to only an approximately .35 percent decrease in nonblack enrollment. In the case of the average private HBCU, that .3 percent decrease would translate to a difference of approximately one student.

Furthermore, a test of the robustness of the findings suggest that over 55 percent of the cases would have to be replaced in which the effect is zero in order for the inference to be invalidated for the finding that academic support spending influences nonblack enrollment at public HBCUs, and approximately 32 percent of the cases would have to be replaced to invalidate the finding that graduation rates at private HBCUs are a statistically significant negative influence on nonblack enrollment.

Because it is possible that the college-choice decisions of students may be influenced by the result of an institution's decisions/behavior/performance in the years leading up to the point at which a student chooses a college to attend, two additional analyses were conducted for public and private HBCUs between 2003-2010 using the same fixed effects panel data regression

approach: one analysis with one-year lags for the predictor variables (*t*-1) and one analysis with two-year lags for the predictor variables (*t*-2). Although the regression analyses using lagged predictor variables did not possess the same strength as the initial models as measured by the R-squared values, they did produce statistically significant findings in both the public and private HBCU models. Most notably, the strongest predictors of nonblack enrollment from the initial models remained significant in the models with lagged variables (public HBCUs = academic support spending per FTE student; private HBCUs = graduation rates). Other variables emerged as statistically significant in the models with a one- and two-year lag include out-of-state tuition (negative) and auxiliary spending per FTE student (positive) for public HBCUs, and spending on academic support per FTE student (negative) at private HBCUs.

However, for the purposes of explaining the results and discussing the implications for research, policy, and practice, the final chapter will focus only on the variables that were statistically significant in two out of three of the models, which were academic support spending and auxiliary services spending for public HBCUs, and graduation rates for private HBCUs. The variables that will be discussed were highlighted in Table 6, which juxtaposes the models being used for the final analysis.

Discussion of Findings

There seems to be one overarching and conclusive implication effecting the interpretation of all of the findings from this study: institutional context matters. Just as scholars have stressed the importance of acknowledging the unique characteristics of HBCUs that distinguish them from the broader higher education community (Griffin & Hurtado, 2011; Minor, 2008; Ryan, 2004), the results of this study also reveal the importance of taking the public-private context into consideration when studying HBCUs. Specifically as it relates to this study, distinguishing

between public and private HBCUs seems to be a critical factor in nonblack students choosing to attend an HBCU. From an organizational theory perspective, this is an important distinction to be made when conducting research on public and private institutions since considering them in the aggregate can lead to overgeneralizations and ignore their varying interests, accessibility, and institutional missions (Griffin & Hurtado, 2011; Perry & Rainey, 1988). From a college choice perspective, students would be unable match their educational and social needs to an institution, as Nora (2004) suggests occurs in the college-choice process, without sufficient institutional diversity in program, residential, and other offerings (Harris, 2013).

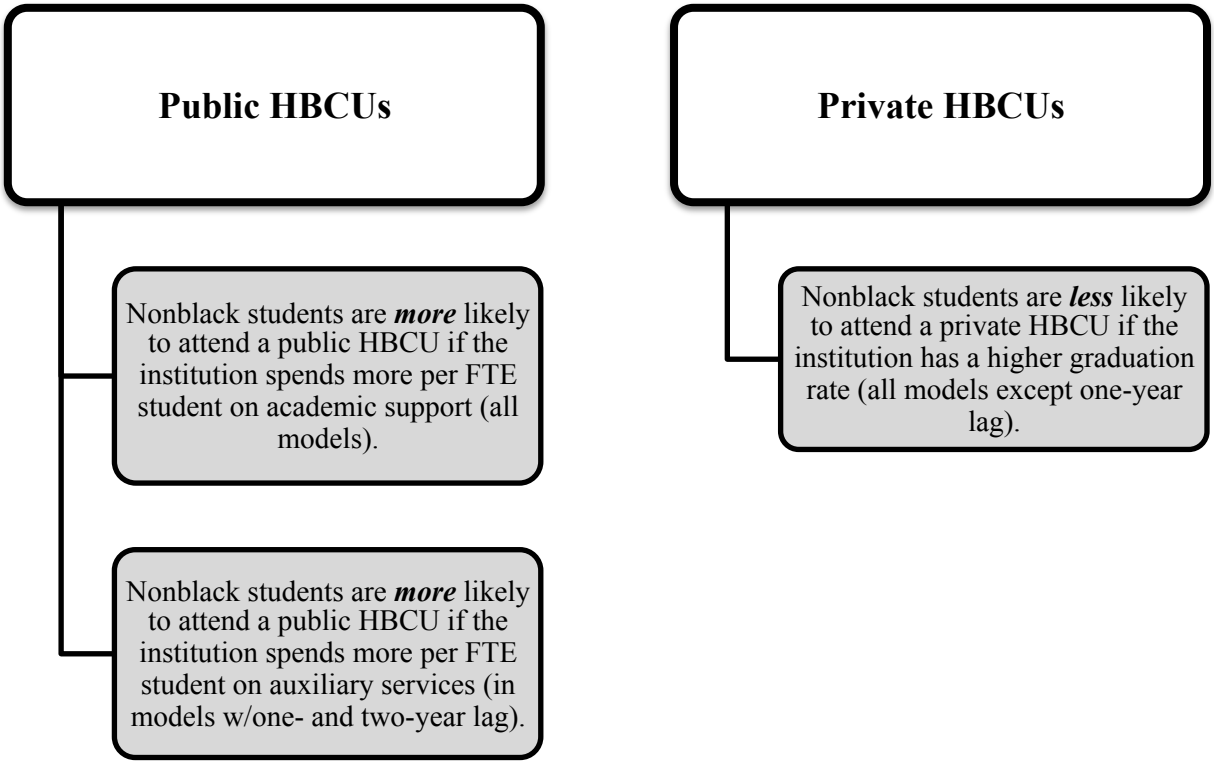
Viewing the effects of institutional characteristics on nonblack enrollment at HBCUs with institutional context in mind is essential. Lee (2015), in his chapter titled "Moving Beyond Racial and Ethnic Diversity at HBCUs," presents compelling data to underscore the necessity of not viewing HBCUs as a monolithic group, but rather a heterogeneous group of institutions with some shared histories and missions. As opposed to the broad stroke that is often used to portray HBCUs, Lee (2015) points to some of the following variations to lay the foundation for a more nuanced understanding of HBCUs:

- **HBCUs are not just four-year institutions.** Approximately 12% of all HBCUs are two-year institutions.
- **Carnegie classifications vary greatly.** 48% baccalaureate universities, 24% master's universities, 12% associates institutions, 10% research universities, 4% seminaries, and 2% medical schools.
- **Percentage of Pell grant recipients differ between institutional type.** Private HBCUs have the highest percentage of Pell grant recipients at 77%, while public HBCUs have the lowest percentage at 66%.

Furthermore, on top of the aforementioned distinctions, the differences in institutional context among HBCUs is demonstrated in this study by the fact that 1) both the institutional characteristics influencing nonblack enrollment and the direction of that influence (positive or negative) differ entirely between public and private HBCUs, 2) the overall statistical strength of the public HBCU model is higher, and 3) the statistically significant institutional characteristics have larger coefficients and smaller p-values at public HBCUs compared to private HBCUs.

Juxtaposing the influential institutional characteristics at public and private HBCUs provides some insight into the way nonblack students may be perceiving investments in various aspects of institutional operations at HBCUs. The results of the analysis revealed that there were three variables that were statistically significant in at least two out of the three models (2003-2010 with no lag, 2003-2010 with one-year lag, and 2003-2010 with two-year lag), which suggest that nonblack students are more likely to enroll at a public HBCU that spends more per FTE student on academic support and auxiliary spending, while nonblack students are less likely to enroll at a private HBCU that graduates students at a higher rate (see Figure 6).

Figure 6. Influential Institutional Characteristics for Nonblack Students Attending HBCUs (Public vs. Private)



Understanding how each of those spending categories is defined provides additional insight into what messages those expenditures may be sending to nonblack students. *Academic support spending* (variable name: acadsupp01) is defined as "expenses of activities and services that support the institution's primary missions of instruction, research, and public service. It includes the retention, preservation, and display of educational materials (for example, libraries, museums, and galleries); organized activities that provide support services to the academic functions of the institution (such as a demonstration school associated with a college of education or veterinary and dental clinics if their primary purpose is to support the instructional program); media such as audiovisual services; academic administration (including academic deans but not department chairpersons); and formally organized and separately budgeted

academic personnel development and course and curriculum development expenses" (Delta Cost Project, 2014). *Auxiliary services spending* (variable name: auxiliary01) is defined as "expenses associated with essentially self-supporting operations of the institution that exist to furnish a service to students, faculty, or staff, and that charge a fee that is directly related to, although not necessarily equal to, the cost of the service. Examples are residence halls, food services, student health services, intercollegiate athletics (only if essentially self-supporting), college unions, college stores, faculty and staff parking, and faculty housing" (Delta Cost Project, 2014).

After establishing the institutional characteristics with the strongest influence on nonblack enrollment at HBCUs, understanding exactly what is included in these respective spending categories, and considering them in the context of their public and private control, some questions still remain unanswered:

- How do these findings relate to prior research?
- Why might these specific institutional characteristics be important to nonblack students attending HBCUs?
    - Further, why might the influential institutional characteristics differ for nonblack students at public versus private HBCUs?
- How do these findings contribute to our understanding of the higher education context in Perna's conceptual model of college choice?
- What implications do the possible explanations for the influence of these institutional characteristics have for policy, practice, and future research on nonblack students at HBCUs?

Previous research on the effect of institutional expenditures on college choice is extremely limited and the findings primarily revolve around the general idea that higher education institutions do respond to market forces, such as increased competition for consumers/students (Epple, Romano, & Sieg, 2006; Hoxby, 1997, 2009). Jacob, McCall, and Stange (2013) point out, however, that these studies primarily investigated the effect of price, geographic location, and academic aspects of colleges on postsecondary enrollment. In response to the void in research examining the effect of institutional expenditures on college choice, Jacob et al. (2013) conducted a study in which the focus was determining the effect of amenity/auxiliary versus academic spending in the college-choice process. The findings from their study suggest that college-choice decisions are, in fact, influenced by these two aforementioned spending categories. Specifically, they found that relatively few students were willing to pay for a postsecondary institution that spends more on instruction, while low-ability, high-income students possessed the greatest willingness to pay for amenities, and high-ability students found greater value in high academic quality institutions. It is important to note, however, that none of the previous research examined these issues in the context of HBCUs.

Because student-level data was not used in this study, no comparison can be made regarding the willingness of nonblack students to pay more for HBCUs with particular characteristics based on student ability or demographics. However, the results from this current study do reveal some interesting findings that relate to the broader discussion around the importance of amenity spending in the college-choice process. For example, although Jacob et al. (2013) suggest that students were generally more willing to pay for an institution with higher amenity/auxiliary spending, the current study found that amenity/auxiliary spending had only a slightly positive effect on nonblack enrollment at public HBCUs in the lagged models and no

effect on nonblack enrollment at private HBCUs. The fact that amenity/auxiliary spending does not exert the same consistent level and direction of influence on the college-choice process for nonblack students at all HBCUs as it does the general population of college-going students suggests that nonblack students at HBCUs likely view the higher education context of the college-choice process significantly different from their non-HBCU peers. Particularly, because nonblack students at public HBCUs seem to be positively influenced by spending on auxiliary services, this may speak to the different expectations nonblack students have of HBCUs depending on the various offerings found at public versus private HBCUs.

In addition to the amenity/auxiliary spending being an inconsistent factor in the college-choice process of nonblack students attending HBCUs, there is much to be said about the consistent and strong positive influence academic support spending has on nonblack enrollment at public HBCUs. From a statistical perspective, the strength of this spending category is difficult to dismiss in light of the fact that it was significant in every model and a test of robustness suggested that over 55 percent of cases in the study would have to be replaced with cases in which the effect was zero in order to make academic support spending insignificant. And considering that academic support spending includes institutional functions such as demonstration schools associated with a college of education or veterinary and dental clinics, this finding seems to align with previous findings from Conrad et al. (1997) and Daniels (2008) that suggest white students at public HBCUs are influenced by program offerings in high-demand professions. Therefore, as an example, an institution like Delaware State University—that not only has a veterinary science program, but also offers opportunities to supplement the academic experience with practical applications on their advanced farms and in their research extension programs—may be able to attract more nonblack students who perceive these offerings as unique

opportunities to develop critical professional skills. This may also explain the insignificance of academic support spending in the private HBCU model, since many private HBCUs are more likely to be smaller institutions with a liberal arts focus (not relating to vocational or technical education), which means that they are less likely to offer similar professionally focused co-curricular services as public HBCUs with missions and funding sources geared more toward serving the needs of the community/state through applied research and vocational preparation.

Although graduation rates are not as easily controlled by an institution as are decisions to allocate money in different areas of institutional operations, the statistically significant negative association of graduation rates to nonblack enrollment does seem to serve as a reflection of the intentions of private HBCUs. Consider that Fisk University, Howard University, Morehouse College, Spelman College, and Claflin University dominate the top of the list when it comes to graduation rates among all HBCUs during the years being observed in this study. Then consider that these same institutions are all privately controlled, are liberal arts institutions, have the highest composite ACT scores for institutions that reported this data, and all have some of the lowest nonblack enrollment—some barely registering one percent nonblack enrollment. Essentially, the combination of these forces leads to the following result: the graduation rates variable is serving as a proxy for "prestige" (i.e., more selective, black liberal arts colleges). Beyond the statistical significance, though, this finding may suggest that three things could be happening:

1. private HBCUs are doing little to attract and recruit nonblack students (whether in order to adhere to their historical mission or otherwise), and/or

2. considering that these institutions are often affectionately referred to as meccas for black education or as the "Black Ivy League," nonblack students may be receiving a message that these institutions are "elite," exclusively black, and not for them.

Furthermore, it is worthy to mention and consider other variables that emerged as statistically significant in the models with one- and two-year lags but did not meet the criteria of being significant in two of the three models. For example, spending on academic support had inverse influences on nonblack enrollment depending on institutional control in the models with lags. As far as academic support spending is concerned, its opposite and negative relationship to nonblack enrollment at private HBCUs may suggest that the products of this spending category differ from the products at public HBCUs that *are* attracting nonblack students. And regarding auxiliary services, the positive relationship to nonblack enrollment at public HBCUs may suggest that nonblack students may be more interested in the amenities this spending category produces than nonblack students at private HBCUs. The negative influence of higher out-of-state tuition almost seems intuitive, but it's worth pointing out that this also alludes to previous research that found low cost and proximity to home to be a key factor in white students choosing to attend an HBCU (Brown & Stein, 1972; Conrad et al., 1997). Regardless of the potential reasons for the statistical significance, the fact that these variables are influential in some of the models suggest that it is worthy of further investigation in future studies.

The findings from this study also seem to suggest that institutional characteristics such as institutional expenditures did in fact exert significant influence in the college-choice process for nonblack students between the years 2003-2010 and should be considered when examining the higher education context of Perna's (2006) conceptual model of college choice. In alignment

with Perna's assertions, the results of this study point to the preference of students (nonblack in this case) to attend higher education institutions (HBCUs in this case) with certain characteristics. The findings also suggest that the lower levels of the model interact with the higher education context, such that the individual habitus influences how messages from the higher education institution are received by the student who is trying to determine how a particular institution can address his/her concerns regarding expected costs and benefits.

In the context of HBCUs, it seems evident that students' race (nonblack in this case) and cultural and social capital do affect the ways they determine the expected benefits of attending an HBCU and if they perceive an HBCU as a good fit socially and academically. For example, considering that academic support spending emerged as a significant factor to nonblack students attending public HBCUs, it is possible that the interactions nonblack students have with individuals in their own social networks (family, high school teachers/counselors, friends, etc.) are influencing them to value certain institutional characteristics (such as vocationally oriented program offerings) over others and, thus, making public HBCUs an option in their college-choice process. On the other hand, there is an implicit assumption that nonblack students were, in fact, considering multiple institutions and *choosing* to attend an HBCU, as opposed to potentially lacking cultural capital or awareness altogether and attending as a product of circumstance or convenience.

Taken a step further, the findings from this study bring into question how college choice for students considering HBCUs may or may not fit into a one-size-fits-all model such as Perna's. At the very least, this study makes a case for layers of Perna's model, such as layer 3 (higher education context), being more nuanced and acknowledging how different variables may be more influential than others depending on the type of institutions students are considering. In

other words, Perna's model may operate very differently and include different variables for students considering HBCUs and other MSIs versus PWIs in their set of schools, or for students primarily considering private institutions versus public institutions. For example, although this study did not investigate layer 4 (the social, economic, and policy context) of Perna's model, federal and state policies that affect HBCUs differently than PWIs (i.e., the Parent PLUS loan crisis from the early 2010s) support the idea of HBCU college-choice existing in a far different dimension than non-HBCUs and, thus, deserving of special consideration.

Implications of Findings

Future research. Because this study was narrowly tailored to quantitatively examine nonblack enrollment at HBCUs during the years 2003-2010 through the lens of Perna's (2006) conceptual model of college choice using IPEDS data exclusively, there are myriad opportunities to extend this line of inquiry. From a theoretical perspective, Perna's conceptual model of college choice is general and inclusive, which allows researchers to fit more specific theoretical constructs into the more broadly defined categories of the model. The variables examined in this study are a perfect example: although institutional expenditures were not specifically included in Perna's model or discussed in her literature, the more broadly defined category of "Institutional Characteristics" allowed me, as the researcher, to justify the inclusion of those variables based on previous scholarship and my interpretation of the category. This is certainly a positive aspect of the model; however, as researchers continue to examine college choice through this framework, it will be important to update the model to include relevant concepts as they emerge. Therefore, the findings of this study, alongside previous research, seem to suggest that two theoretical constructs should be included in any future discussions on college choice, particularly within the

higher education context of Perna's conceptual model: the important variations between public and private institutions and the influence of institutional expenditures.

Specifically related to the study of HBCUs, this study followed the suggestion of scholars to study HBCUs within their unique institutional context that, as described through the literature review, sets them apart from non-HBCU institutions. In doing so, and not surprisingly, this study produced results that lie in contradiction to broader studies (such as Jacob et al., 2013) suggesting that spending on auxiliary services/amenities is influential in the college choice process for (mostly nonblack) students in the aggregate. Furthermore, the quantitative (i.e., amount spent on various institutional functions) and qualitative (i.e., missions and histories) differences between public and private HBCUs supported the importance of conducting organizational studies with public and private control in mind. Taken together, the findings from this study affirm the need to continue researching HBCUs using culturally sensitive approaches that acknowledge the factors that make them distinctive organizations within the U.S. higher education system.

Methodologically, different approaches can add depth to our understanding of the influence of institutional characteristics in the college-choice process for nonblack students at HBCUs. Quantitative approaches may start by identifying what is not being captured through the IPEDS dataset and find ways to measure the effect of those variables. For example, spending on marketing and recruitment efforts is not explicitly gathered through IPEDS. However, marketing and recruitment could be a significant factor in the college-choice process for nonblack HBCU students. And related to the previous point, it may be necessary to identify additional datasets that will allow researchers access important data and to construct multilevel models that will control for variables not included in this study—particularly, variables present in other levels of

Perna's conceptual model, such as student academic background, socioeconomic status, geographic location, cultural and social capital, school and community context, etc.

Furthermore, to the extent possible considering the relatively low number of nonblack students at HBCUs, additional insight would be gained by disaggregating nonblack students to investigate whether differences in the influence of institutional characteristics exist between various demographic groups included in nonblack. Hidden in the statistics regarding nonblack enrollment at four-year HBCUs is the fact that white students comprise nearly 80 percent of nonblack enrollment during the ten-year period in this study. Therefore, the aggregate findings for nonblack student enrollment at HBCUs may be hiding important variations in the college-choice process for different demographic groups. Moreover, scholars have not yet sufficiently investigated the implications of the relatively new IPEDS category "Two or more races" or the previously included "Race/ethnicity unknown" variable in the study of race in higher education, especially as it relates to the study of race and nonblack enrollment at HBCUs. One study examined the rise in the percentage of students in the "Unknown" category and found that a sizeable portion of students in this category are white (Smith, Moreno, Clayton-Pedersen, Parker, & Teraguchi, 2005). The "Two or more races" variable was not available for all of the years between 2000-2010, so it was not necessarily an issue for this study, but the same Smith et al. (2005) study suggested that capturing what is truly reported in "Two or more races" has implications for the accuracy of other racial categories as well. It will be important for researchers using post-2010 data to understand the inclusion of these variables in future studies since recent IPEDS data suggest that, regarding nonblack enrollment at HBCUs, "Two or more races" and "Race/ethnicity unknown" combined are second only to white student enrollment.

Quantitative studies, however, have inherent limitations by reducing data strictly to numbers. Therefore, future qualitative studies will be necessary to develop a more robust understanding of nonblack HBCU student college-choice. In conducting qualitative studies, researchers must acknowledge the agency that institutions have in the college-choice process for nonblack students and include this concept when developing future studies on nonblack students attending HBCUs. Perna's (2006) model clearly demonstrates that a student's college-choice decision is not made in isolation, but that it is ultimately influenced by many other factors. Because the research, including this study, provides evidence that the higher education context does exert influence in the college-choice process, it is critical that future qualitative studies control for that influence and gather data accordingly.

Collecting qualitative data that recognizes the higher education institution's agency in the college-choice process may look different depending on the focus of the line of inquiry. Drawing upon the results of this study, however, institutional expenditures—and the subsequent products of those expenditures—are worthy of inclusion. Therefore, it may be necessary to conceptualize institutional expenditure categories so that they can be investigated in qualitative ways. For example, researchers may ask participants directly how manifestations of academic support spending, such as various co-curricular services tied directly to academic programs like veterinary clinics or developmental research schools (K-12 schools), influenced their decision to attend an HBCU. Furthermore, the results of this study suggest that perceptions may be different for nonblack students attending public versus private HBCUs; therefore, it is essential that future researchers attempt to capture any variation that may exist both between and within these contexts. One way to address some of these suggestions in a more holistic way would be to conduct in-depth case studies using HBCUs with some of the most dramatic changes in nonblack

enrollment over the past decade. HBCUs that have experienced major shifts in nonblack enrollment may provide compelling insight into the issues presented in this study. Methodologically, using a case study method would allow researchers to collect additional data at the institutional level, further test hypotheses surrounding the connection between various institutional characteristics and nonblack enrollment, and interpret findings in their proper institutional context while still creating opportunities for the generalization of commonalities between institutions (Baxter & Jack, 2008).

In addition to investigating the influence of the higher education context on the individual student's college-choice process, it is important that researchers develop studies that include the perspectives of those who control the higher education context: administrators. The results of this study suggest that nonblack students are influenced by institutional expenditures, but these results do not necessarily establish a link between varying levels of institutional expenditures and the conscious decisions of administrators to allocate resources in those areas for the purpose of attracting nonblack students. As a result, future researchers should inquire into how HBCU administrators understand the relationship between institutional spending and diversity efforts. Do administrators make conscious decisions to allocate resources with racial diversity outcomes in mind? Does the desire to maintain a culture supportive of the institution's unique mission to educate African-American students influence their decisions when making spending decisions? Do the perspectives of administrators regarding nonblack enrollment and institutional expenditures vary according to their functional area? These are just a few overarching questions to guide future inquiry in this context.

Policy and practice. With the exception of a select group of public HBCUs (e.g., in Mississippi or Tennessee), the majority of HBCUs have not experienced pressure from the state

to explicitly address nonblack enrollment. What is true regardless of state policies regarding nonblack enrollment, however, is that the pressure to maintain and increase enrollment in response to declining state support and the continued migration of black students to non-HBCU institutions make nonblack enrollment a critical piece of the puzzle to a sustainable future for HBCUs. At the same time, HBCU leaders must deal with the paradox of balancing increases in nonblack enrollment with the desire to maintain the traditional, and still very relevant, mission of educating African-American students. This paradox is the context within which HBCU leaders must make policy decisions about nonblack enrollment, and it is important to acknowledge this paradox as this section attempts to link the findings of the study to policy and practice at HBCUs.

One implication emerges that is more broadly applicable for the state and federal policy context, which is the fact that HBCUs are distinctly different from their PWI counterparts and, therefore, deserve to be given attention in the policy development process accordingly. Goldrick-Rab, Kelchen, and Houle (2014), in a study on federal financial aid, point to myriad differences between HBCUs and non-HBCUs (i.e. higher percentage of students receiving Pell grants, smaller endowments, etc.) that provide justification for federal policymakers more carefully considering HBCUs in broader policy efforts—which certainly aligns with previous research (Bastedo, 2012; Boland & Gasman, 2014; Minor, 2008; Ryan, 2005). This special consideration for HBCUs is particularly important in the context of the growing movement to adopt performance-based funding formulas at the state level. Although this study spoke specifically to racial diversity, which is currently not included as an outcome measure in the performance-funding formula for most participating states, the finding that HBCUs are unique regarding the effect of institutional expenditures in college-choice decisions and other educational outcomes

supports and reinforces the idea that state policies developed as one-size-fits-all may not only prove ineffective in producing certain outcomes at HBCUs, but may be detrimental to HBCUs (Friedel, Thornton, D'Amico, & Katsinas, 2013). Certainly, one way to address this issue is to make genuine efforts to include and value the perspective of HBCU leaders and scholars in the policy development process.

Although there are some implications for state and federal policy, I believe the primary benefits of these findings related to policy and practice lie in the institutional context. Furthermore, because of the statistical and explanatory strength of the model, the implications of the findings primarily apply to public HBCUs[†]. Specifically, I believe the findings of this study have the potential to inform public HBCU leaders in the strategic planning process, particularly members of boards of trustees and regents, and executive-level HBCU administrators. For HBCU leaders and policymakers who seek to address institutional needs and priorities, it is critically important that their decisions are data-driven and focused on investing in areas of the institution that will produce those desired outcomes. For example, in states with growing populations of Hispanic students (i.e., Texas or North Carolina) who are increasingly pursuing higher education, HBCUs may request additional funding or policymakers make focus additional allocations specifically on recruiting and retaining these nonblack students, using the findings of this study as data-driven justification for that decision.

As mentioned previously, institutional context matters and these findings should be considered in the context of an institution's mission and strategic plan. Institutional leaders should view the findings from this study as an impetus to examine their own institution's

[†] It is not to say that these findings cannot inform future research about private HBCU nonblack enrollment, but more so that the findings suggest that there are likely different factors that influence nonblack enrollment at private HBCUs not captured in this study.

expenditures and nonblack enrollment. HBCUs are not homogenous and do not have identical institutional missions and aspirations, especially as it relates to racial diversity (Lee, 2015). As a result, these findings may inform policy and practice in various ways. For example, a public HBCU that *does* want to increase nonblack enrollment may look deeper to determine its level of academic support spending and what the products of that spending may mean for attracting nonblack students—whom the findings of this study suggest are influenced by academic support functions. Certainly, considering what is involved in academic support spending, any additional funding in support of these functions would benefit all students and would not compromise the integrity of the HBCU mission. Just like any organizational change initiative, should institutions decide that additional funding or a reallocation of existing resources in any expenditure category is the proper course of action, the decision should be guided by the stated mission and objectives of the organization (Barr, 2002).

Aside from focusing efforts and relying solely upon institutional characteristics that *do* influence nonblack enrollment, another approach may involve focusing on better promoting the value of other institutional characteristics that appear to be less influential in the college-choice process for nonblack students. It is possible that nonblack students are not necessarily aware of the benefits of attending an HBCU beyond the academic support functions that seem to primarily influence their decision to attend a public HBCU. Therefore, future marketing and recruiting campaigns may focus on other unique aspects of the institution that support student success and promote academic and personal development, such as the quality of student-faculty interactions, community service opportunities, an institution's historical commitment to social justice, or the value of diversity at an HBCU. If HBCUs are to compete with larger, more well-resourced

historically white institutions for nonblack students, they must do so by possessing a more robust value proposition that includes more than just high-quality academic support functions.

As important as it is to point out the agency HBCUs have in doing what is necessary to attract students and serve them well once they are there, it is just as important to acknowledge the responsibility state and federal agencies have to support HBCUs as they attempt to carry out their educational missions. The reality is that many public HBCUs are still inequitably funded and must regularly fight for their survival, despite their proven ability to remain the top producers of bachelor's degree for black students in the U.S. (Shorette, 2015). Politically, HBCUs must constantly justify their very existence and must often defend themselves from the attacks carried out by state politicians. For an example of these political attacks, one must look no further than the recent interactions between the state of South Carolina and its only public HBCU, South Carolina State University (SCSU). In 2015, with SCSU facing significant financial challenges attributed to declining enrollment and changes in funding formulas, the state legislature proposed to temporarily close the public HBCU for at least one year in hopes of getting the institution in better financial and organizational shape—a move that many consider to be a certain nail in the coffin of SCSU. Rather than investing in the institution and providing it with the essential financial and human resources necessary to recover from decades of underfunding at the hands of the state and increase enrollment, the state's solution was to blame SCSU for its unwillingness to cut even *more* from its budget, deem it inoperable, and end its existence. There is little-to-no evidence to suggest that predominantly white public institutions face the same level of scrutiny as HBCUs when it comes to matters of institutional performance and some have been very explicit in pointing out that racism is a driving variable in that

equation, suggesting that "white politicians have viewed S.C. State as 'their' school, and if 'they' can't run it effectively, then that's 'their' problem" (Noble, 2015).

Although this is just one example, it is reflective of the blatant neglect that HBCUs have received in regard to public policy. If states are to hold HBCUs to the same standards as other public institutions in the state and expect HBCUs to attract and serve diverse students from their state, they must take into consideration their achievements, unique contributions, and inequitable treatment from the state and invest accordingly. Without an equitable approach from the state, HBCUs will continue to be forced to do more with less and continue to exist in a "separate but unequal" political context, unable to fully pursue institutional activities that would allow them to thrive. Furthermore, without equitable approaches from policymakers, HBCUs will continue to be forced to deal with issues in the context of interest convergence, whereas only progress will be made if politicians can be convinced that investments in HBCUs benefit everyone else (i.e., mainstream society, the state, white people, etc.).

Conclusion

This study quantitatively examined institutional characteristics—as exemplified primarily through institutional expenditures—that influence nonblack enrollment at public and private four-year HBCUs between the years of 2000-2010. In doing so, the research revealed that nonblack enrollment at public HBCUs is positively influenced by higher levels of academic support spending, while nonblack enrollment at private HBCUs is negatively influenced higher graduation rates. The findings suggest that nonblack students may be attracted to specific academic support functions at public HBCUs, such as demonstration schools associated with a college of education or veterinary and dental clinics. Conversely, the findings suggest that three things may be happening regarding private HBCUs:

1. private HBCUs with the most prestige are doing little to attract and recruit nonblack students, and/or
2. considering that these institutions are often affectionately referred to as meccas for black education or as the "Black Ivy League," nonblack students may be receiving the message that these institutions are "elite," exclusively black, and not for them.

As a scholar who is critical of race and the role it plays in the U.S. higher education system, as well as someone who is very aware of the contemporary relevance of HBCUs and their mission to educate African-American students, I feel it is important to note that this study and its findings are by no means a prescription for how to increase nonblack enrollment at HBCUs or a statement regarding the value of nonblack students when it comes to the quality of the educational experience at HBCUs. Rather, the results of this study are intended to equip institutional actors and policymakers with additional data to inform their approach to managing enrollment as nonblack students become an increasingly important group of students when it comes to the sustainability of HBCUs. Additionally, the findings from this study are intended to equip researchers with a more diverse perspective of nonblack enrollment as they delve deeper into the phenomenon and attempt to develop a more robust understanding of the experiences of nonblack students at HBCUs.

APPENDIX

APPENDIX

Table 7. IPEDS Definitions for Variables Included in Study

Variable	Definition
pct_nonblack *(Outcome variable of interest)*	The percent of nonblack enrollment as derived from the sum of total enrollment for Asian, Hispanic, American Indian, & white students divided by total enrollment for the institution.
pct_grad_rate	Percentage of full-time, first-time, degree/certificate-seeking undergraduate students graduating within 150 percent of normal time.
tuitionfee02_tf (in state) **tuitionfee03_tf** (private and out of state)	Average cost of tuition per FTE, defined as the tuition charged by institutions to those full-time undergraduate students who do or do not meet the state's or institution's residency requirements.
instaid_spend_fte	Average amount of institutional grants (scholarships/fellowships) received by full-time, first-time degree/certificate-seeking undergraduate students. Institutional grants - Scholarships and fellowships granted and funded by the institution and/or individual departments within the institution, (i.e., instruction, research, public service) that may contribute indirectly to the enhancement of these programs. Includes scholarships targeted to certain individuals (e.g., based on state of residence, major field of study, athletic team participation) for which the institution designates the recipient.
instruct_spend_fte	Average spending on instruction per FTE* as derived from total spending in dollars on instruction divided by total FTE count. Instruction is defined as a functional expense category that includes expenses of the colleges, schools, departments, and other instructional divisions of the institution and expenses for departmental research and public service that are not separately budgeted. Includes general academic instruction, occupational and vocational instruction, community education, preparatory and adult basic education, and regular, special, and extension sessions. Also includes expenses for both credit and non-credit activities. Excludes expenses for academic administration where the primary function is administration (e.g., academic deans). Information technology expenses related to instructional activities are included if the institution separately budgets and expenses information technology resources (otherwise these expenses are included in academic support). Operations and maintenance and interest amounts attributed to the instruction function have been subtracted from the total instructional expenditure amount at FASB reporting institutions. Operations and maintenance amounts (and interest in the 2009 aligned form) attributed to the instruction function have been subtracted from the total amount at public aligned form reporting institutions.
acadsupp_spend_fte	Average spending on academic support per FTE as derived from total spending on academic support divided by total FTE count. Academic support is defined as a functional expense category that includes expenses of activities and services that support the institution's primary missions of instruction, research, and public service. It includes the retention, preservation, and display of educational materials (for example, libraries, museums, and galleries); organized activities that provide support services to the academic functions of the institution (such as a demonstration school associated with a college of education or veterinary and dental clinics if their primary purpose is to support the instructional program); media such as audiovisual services; academic administration (including academic deans but not department chairpersons); and formally organized and separately budgeted academic personnel development and course and curriculum development expenses. Also included are information technology expenses related to academic support activities; if an institution does not separately budget and expense information technology resources, the costs associated with the three primary programs will be applied to this function and the remainder to institutional support. Operations and maintenance and interest amounts attributed to the academic support function have been subtracted from the total academic support expenditure amount at FASB reporting institutions. Operations and maintenance amounts (and interest in the 2009 aligned form) attributed to the academic support function have been subtracted from the total academic support expenditure amount at public aligned form reporting institutions.

Table 7 (cont'd)

studserv_spend_fte	Average amount of spending on student services per FTE as derived from the total spending in dollars on student services divided by total FTE count. Student services is defined as a functional expense category that includes expenses for admissions, registrar activities, and activities whose primary purpose is to contribute to students emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program. Examples include student activities, cultural events, student newspapers, intramural athletics, student organizations, supplemental instruction outside the normal administration, and student records. Intercollegiate athletics and student health services may also be included except when operated as self - supporting auxiliary enterprises. Also may include information technology expenses related to student service activities if the institution separately budgets and expenses information technology resources(otherwise these expenses are included in institutional support.) Operations and maintenance and interest amounts attributed to the student services function have been subtracted from the total student services expenditure amount at FASB reporting institutions. Operations and maintenance (and interest in the 2009 aligned form) amounts attributed to the student services function have been subtracted from the total student services expenditure amount at public aligned form reporting institutions.
admin_spend_fte	Average spending on administration per FTE as derived from the total spending in dollars on institutional support divided by total FTE count. Institutional support is defined as a functional expense category that includes expenses for the day-to-day operational support of the institution. Includes expenses for general administrative services, central executive-level activities concerned with management and long-range planning, legal and fiscal operations, space management, employee personnel and records, logistical services such as purchasing and printing, and public relations and development. Also includes information technology expenses related to institutional support activities. Operations and maintenance and interest amounts attributed to the institutional support function have been subtracted from the total institutional support expenditure amount at FASB reporting institutions. Operations and maintenance amounts (and interest in the 2009 aligned form) attributed to the institutional support function have been subtracted from the total institutional support expenditure amount at public aligned form reporting institutions.
aux_spend_fte	Auxiliary enterprises - total expenses is the sum of all operating expenses associated with essentially self-supporting operations of the institution that exist to furnish a service to students, faculty, or staff, and that charge a fee that is directly related to, although not necessarily equal to, the cost of the service. Examples are residence halls, food services, student health services, intercollegiate athletics (only if essentially self-supporting), college unions, college stores, faculty and staff parking, and faculty housing. The amount of interest attributed to the auxiliary enterprise function has been subtracted from the total auxiliary enterprise expenditure amount at institutions reporting on the FASB or 2010 aligned form.

* FTE, or Full-time equivalent enrollments, are derived from the enrollment by race/ethnicity section of the fall enrollment survey. The full-time equivalent of an institution's part-time enrollment is estimated by multiplying part-time enrollment by factors that vary by control and level of institution and level of student; the estimated full-time equivalent of part-time enrollment is then added to the full-time enrollment of the institution. This formula is used by the U.S. Department of Education to produce the full-time equivalent enrollment data published annually in the Digest of Education Statistics.

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