Examining the Institutional Characteristics Predicting the Six-Year Graduation Rate for Black, Latinx, and Pell Grant Students

by

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Dedication

"…stony the road we trod, bitter the chastening rod, felt in the days when hope unborn had died…We have come over a way that with tears has been watered. We have come, treading our path through the blood of the slaughtered. Out from the gloomy past, 'til now we stand at last…true to our God, true to our native land."

J. Rosamond Johnson & James Weldon Johnson, *Lift Every Voice and Sing*

I dedicate this dissertation to God – thank you for carrying me through life's journey. I also dedicate this dissertation to my ancestors – because of your faith, toil and tenacity, I stand today.

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Abstract

Background: The present mood hovering over the American higher education system now expects post-secondary institutions to show that not only are their admissions policies without prejudice but that their students complete college within six years and that college graduates are ready to meet the labor demand of the country. This addendum to current federal policy seems reasonable given the exorbitant increase in college cost and student loan debt that continues to outpace the U.S. inflation rate (Chakrabarti, Nober, & Van der Klaauw, 2020). Despite the unified efforts by federal and state governments and initiatives by organizations in the not-for-profit sector, however, the national college graduation rates have made only incremental improvements over the last few decades. **Purpose:** This study sought to answer the following research questions: (1) What institutional characteristics predict six-year graduation rates among Black, Latinx, and Pell Grant students; (2) Does the racial composition of faculty have a positive relationship to the graduation rate for Black, Latinx and Pell Grant students; and (3) Which, if any, institutional funding source(s) positively associate with six-year graduation rates among Black, Latinx and Pell Grant students? The study applied Bensimon's Equity Scorecard as the theoretical framework. **Methods:** Using panel data across nine years (2009 to 2018), this study utilized OLS regressions for the analysis. The dependent variables of interest were the six-year graduation rates for Black, Latinx and Pell Grant students, respectively. The key independent variables of interest were MSI designation (e.g., Hispanic Serving Institutions (HSIs), Historical Black Colleges and Universities (HBCUs)), the racial composition of faculty, and federal and state funding levels across various categories. **Results:** HBCUs showed a positive relationship with

the six-year graduation rate for all students, but particularly for Black, Latinx and Pell Grant students. The number of Black faculty showed a positive relationship with the total six-year graduation rate, and specifically for Black, Latinx and Pell Grant students. The number of Latinx faculty showed a positive association with the Black and Latinx graduation rate. Federal funding in the form of Pell and other grants had a negative association to the total graduation. Institutional expenditures towards academic support and student affairs had a positive relationship with the Black graduation rate while private funding and institutional endowment showed a positive association to the Latinx graduation rate. **Conclusion:** Learning from the successes of HBCUs, other institutional types ought to adopt strengths-based approaches found within HBCUs to improve the six-year graduation rates for marginalized communities. Diversifying faculty and appropriating institutional support for marginalized students also ought to be a priority for institutions focused on enhancing six-year graduation rates for all students.

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Chapter I

Introduction

Federal policy holding institutions of higher learning (IHL) accountable for providing equitable opportunities in higher education resulted in the present diversification of student bodies within colleges and universities throughout the United States. The modern Civil Rights Movement during the 1950s and 1960s forced the federal government to evaluate the culture and practices by colleges and universities. Too often, American colleges and universities excluded and denied historically marginalized populations from equitable educational opportunities in America (Harper, 2012). The United States government had to respond by demanding higher accountability for institutions of higher of learning (IHL). Folding to the pressure by Civil Rights activists and supporters of the movement, the federal government instituted policy and increased oversight that required IHLs to demonstrate fairness in the college admissions process (Graham, 1998). Federal monitoring required IHLs to admit diverse freshmen classes as a means to show admissions policies at the post-secondary level were without bias or partiality on the basis of race and gender, among other metrics (Cahalan & Perna, 2015; Wolanin, 2003).

After the federal government increased its oversight in monitoring colleges' admissions practice to ensure equitable opportunities, the United States witnessed a significant increase in minority enrollment in college (Wolanin, 2003). The federal policy also resulted in a higher college attendance among historically underrepresented students. Though IHLs still have opportunities for growth in this area (Harper & Simmons, 2019), federal accountability proved effective in abating the overt

discriminatory practices in college admission policies (Gilbert & Heller, 2011). Federal policy for higher education not only demonstrated its effectiveness, but it also showed that the federal government is impactful in steering higher education towards equitable outcomes through policy initiatives (Gilbert & Heller, 2011).

However, the positive impact of recent federal policy for higher education has not had the same success observed in previous decades. Unfortunately, as the U.S. attempts to move toward a more equitable system of education, the federal government has seemingly lost the zeal to continue to promote the admissions policies necessary to build on prior successes. The present mood hovering over the American higher education system now expects post-secondary institutions to show that not only are their admissions policies without prejudice, but that their students complete college within a reasonable period.[1] Furthermore, federal policy now expects that IHLs prepare their students turn college graduates to meet the labor demand of the country (Cahalan & Perna, 2015). The increased reliance on accountability measures in higher education from the 1960s to the present seems reasonable given that there is an exorbitant increase in college cost and the student loan debt continues to outpace the U.S. inflation rate (Chakrabarti et al., 2020). Moreover, multiple countries within the Organization for Economic Cooperation and Development (OECD) surpassed the United States in the percentage of their citizens between the ages of 25 to 34 for having a post-secondary degree (O.E.C.D. Indicators, 2012). As of 2015, the United States ranked 10th in the world for this category (Fry, 2017), a noticeable fall from the previous standing as number one decades earlier

[1] measured through an institution's four- or six-year graduation rates for baccalaureate programs

(O.E.C.D. Indicators, 2012). To add insult to injury, the number of jobs in the United States requiring only a high school diploma or less have fallen precipitously; conversely, the number of jobs requiring a post-secondary credential increased exponentially (Lumina Foundation, 2017). Nevertheless, racial equality in the American higher education system has yet to manifest.

Even when ignoring the disparate outcomes by race and socio-economic status in the American higher education system, having federal policy to increase the number of college graduates is essential for ensuring the future of the nation. First, it would restore the United States to its former standing as the most educated nation in the world, sequentially ensuring a bright and secure future for the country. Second, it meets the labor demand for the evolving American economy. Last, by shortening the completion time to earn a college degree, graduating students within six years would help lower the growing student loan debt. However, one ingredient absent in the verbiage of recent federal policy to improve the national college completion rates is addressing the gap that persists among minorities and low-income students. The existence of racism and income discrimination, as this research argues, is a plausible explanation for why inequitable outcomes remains among minorities and low-income students inside and outside of education.

The lower graduation rate among minoritized groups is only a manifestation of the societal ills previously mentioned. Moreover, the federal government has actually exacerbated this problem by increasingly acting as if these inequities either do not exist or cannot be confronted through sound public policy. In fact, over the last two to three decades, the federal government has become increasingly hostile to the simple fact that

the legacy of racial discrimination has had continuing deleterious effects. This can be seen in recent court rulings such as Shelby County v. Holder (2013) and the failure of Congress to invalidate the Supreme Court's ahistorical ruling in this very case by amending the Voting Rights Act. As is so often the case in American history, rather than provide a thoroughgoing public policy solution to perpetual problems of equity in higher education, the government has instead resorted to casting aspersions on institutions and personal pathologies outside of its proclaimed loci of control. Unfortunately for IHLs, they happen to be among the institutions so blamed.

Nevertheless, President Obama immediately attempted to address what seemed as an underperformance by IHLs. Shortly after taking office, Obama introduced the federal initiative the *2020 College Completion Goal*, and worked with Congress to pass the Higher Education Opportunity Act – a reauthorization and an amendment to the Higher Education Act of 1965 (Cook & Pullaro, 2010). Efforts by both the Obama administration and Congress aimed to ameliorate the bleak future for higher education and the nation. But Obama's federal initiative and Congress' legislation did not delve into the causes for the consistent disparity affecting the completion rates by historically marginalized students. Yet, to encourage haste among IHLs in meeting the president's expectation, the Higher Educator Opportunity Act required that all IHLs disclose their graduation rates as a method of transparency and accountability (Cook & Pullar, 2010). Cook and Pullar (2010) found that high school seniors choosing to attend college valued graduation rates as the fifth most important consideration when choosing college. Obama's national initiative also set forth strategic goals to increase the educational attainment level in the United States by increasing the national college graduation rate.

The initiative sought support not only from legislators, but from the private sector and citizens at large. National not-for-profit organizations like Complete College America established as a result to the president's charge, partnering with IHLs and state governments to meet this goal. Even states answered the president's call, instituting their own variation of the Obama's initiative. Though some states responded sooner than others, most states now have their own form of higher education attainment goals to increase the education of their citizens (Strategists, 2016).

Yet, in spite of the federal government's policy to increase the post-secondary completion rates, the nation still consistently falls short of this goal (Lumina Foundation, 2017). This may be seemingly alarming given the concerted effort by state governments and not-for-profit organizations that supports this federal policy. The cause for the seemingly lagging performance of IHLs in the United States to increase national graduation rates lends to this research's exploration to whether inequity is a contributing factor to why this aim never fully materialized. If one identifies the factors leading to inequitable outcomes negatively impacting the graduation rates for historically marginalized students (or positively impacting these students), then mitigating the problem becomes achievable.

The College Scorecard, an online tool requiring that all IHLs that receive federal funds release its completion data, provides the best snapshot of IHLs' achievement on their completion metrics – graduation rates, student debt upon degree completion, mean salary for graduates (commonly referred as the wage-premium), along with a litany of other information that gives insight to the *performance* of a school. The College Scorecard, as explained by the Obama administration, forces colleges and universities to

become not only accountable to federal and state policy makers, but also accountable and transparent to the public at-large (Posillico, 2017).

The growing crisis of excessive student loan debt and the pressure to increase the national graduation rate situates many, if not most, IHLs at a precipice, requiring IHLs to quickly respond and address this national emergency. However, this policy presents an unfair advantage, and some may argue an unfair responsibility, for most IHLs. This disadvantage becomes especially true if one acknowledges that racism and income discrimination are the culprits sabotaging the nation's educational attainment goals. Scholarship examining this topic suggests that the nation's most elite institutions are by and large unaffected by this epidemic because of the students in which they enroll (Collins et al., 2014). However, IHLs that serve low-income and minority students are most likely affected. Low-income students often face difficulty in paying for college as result to hailing from family households that are unable to assist with the cost of tuition and fees. Consequently, this requires low-income students to drop-out from college or delay college completion (Gonzalez, 2015). The barriers encountered by this demographic is also one reason why the needle to improve the educational outcomes in the United States has only made incremental improvements.

In prior decades, the federal government mitigated the financial burden for historically underrepresented students by undercutting the cost for college attendance through federal initiatives such as the Pell Grant scholarship and the work-study program. States also aided in assuaging the financial burden for college attendance by creating its own initiatives such as Georgia's Helping Outstanding Pupils Educationally (HOPE) scholarship and New Mexico's Legislative Lottery Scholarship (Tennessee Higher

Education Commission, 2012). However, recent policy at both levels witnessed either drastic funding cuts towards such programs, changes in the program's eligibility or both, thus, forcing many low-income students to fend for themselves in paying for college (Humphreys, 2012). As noted earlier, this group also has a significantly lower graduation rate than their counterparts. As financial support waned and the cost of operations increased, IHLs unfortunately had to respond by shifting the financial burden to students through increased tuition and fees (Perna & Jones (Eds.), 2013). While the United States decreased funding to its most marginalized populations, many OCED nations increased their financial support for these same populations within their countries leading to the improvement of their global standings as having a highly educated citizenry (O.C.E.D Indicators, 2012; O.C.E.D Indicators, 2018) Hence, determining whether there is an association of financial support and college completion is one focus of this research.

Minority students, many who are also low-income, also face the same financial shortfall as low-income students. Amidst the financial challenge, students categorized within either or both groupings usually arrive to college without the necessary academic or social capital to initially perform well in school (Stinebrickner & Stinebrickner, 2012). This is unsurprising given that this same student population usually attend K-12 schools with classifications as performing low academically amidst having lower financial resources than the schools their peers attend with more affluent backgrounds. This disparity in opportunity and resources potentially explains why minority students have a lower graduation rate than their constituents.

Thus, in the era of heightened accountability, admitting students absent of the prerequisites needed to meet the academic rigors of college consequently has led more

IHLs to rely largely on standardized college admission tests to determine a student's qualification for admittance (Umbritch et al., 2017); this trend is most overtly observed through IHLs' admission rates. This is unfortunate. Not only does this practice ignore the disparate opportunity that low-income and minority students receive in high school, it punishes students with certain personal traits. More troubling is that some IHLs are choosing to discontinue serving the mentioned populations that these same IHLs once served to avoid receiving the penalty of a poor institutional evaluation resulting from new federal and state governments' accountability policies (Umbritch et al., 2017). Therefore, the academic preparation of students, measured through an IHL's mean SAT score serves as a key variable for this study.

The knowledge acquired from the mentioned studies implies that there may be an unanticipated consequence for IHLs despite the ostensibly benevolent intent by federal and state policy. This is particularly consequential for institutions that admit and enroll a higher percentage of historically marginalized students (Deming & Figlio, 2016). Even if an IHL enrolls a substantial, though still not the majority, of low-income and minority students, these IHLs are capable of masking the effect of an overall lower graduation rate from the enrollment of other student populations that do not encounter the same obstacles that the said groups encounter. This incentivizes IHLs to lower the admittance rate for student populations less likely to graduate. This is also detrimental if the nation hopes to increase its educated populace.

Furthermore, some IHLs cannot be as particular in their selectivity of the students admitted. These schools historically educate the most marginalized students – first-generation, low-income, minority, and/or less academically prepared students – and

usually grant admission to most of the students that apply. The IHLs within this category, constituting a substantial number of American colleges and universities, often receive poor evaluations for their institutional performance, and consequently, receive a poor school reputation despite aiding in the advancement of creating a more educated American populace. This does not suggest that these IHLs should not have the responsibility to graduate their students, but it does suggest that policy quantifying quality based upon students' completion of college leans towards IHLs that admit the most academically astute and financially affluent students. This finding also suggests that improving the national graduation rate requires addressing the barriers that face marginalized students.

Yet, surprisingly, there are some IHLs falling within the aforementioned category that somehow manage to still proportionally graduate the nation's most historically marginalized students despite the pre-existing qualities that some students have upon arrival to college. A particular institution type that traditionally enrolls historically marginalized students and still yields success proportional to their total student enrollment are Historically Black Colleges and Universities (HBCUs). Not only are these IHLs demonstrating that an IHL can mitigate the factors that predict a lower graduation rate, but it shows that achieving equitable outcomes is possible. This institution type, broadly classified as a Minority Serving Institution (MSI), leads this study to examine whether this federal designation has an association in predicting the six-year graduation rate for Black, Latinx and Pell Grant students. Therefore, this institutional characteristic is another variable of interest.

Understanding the institutional characteristics of American colleges and universities that have success in educating historically marginalized students is the nation's best hope to achieve the goal in creating a more educated citizenry. Analyzing the causes for the persistent achievement gap among particular student groups lends to the theoretical framework by Bensimon's Equity Scorecard. Briefly explained, the Equity Scorecard aims to have IHLs take the onus of addressing students' needs required to complete college. As noted in this research, the causes for an undesirable national graduation rate is not confined to the factors within the higher education sphere. However, if IHLs assume a posture of equity, then IHLs can help combat the racism and income discrimination that perpetuate the consistent societal inequities and outcomes in the United States. Hence, this research intends to also focus its analysis here. If the graduation gap among the most marginalized students and White and Asian students closes, then achieving a more educate populace becomes more obtainable.

When following this logic, there seems to emerge a conceptual problem of incongruence with federal and state policies for higher education; the shortfall by the American higher education system to yield a more educated populace involves societal forces beyond the scope of education. Not acknowledging this fact creates an unrealistic expectancy for colleges and universities to graduate students without having sufficient federal and state support to mitigate the issues that burdens many marginalized students. Also, denying the inequity existing among traditionally marginalized Americans places IHLs that largely enroll these same citizens in a position to falter on the school's completion markers. Failing to adequately serve marginalized students becomes almost certain if colleges and universities do not understand how to support these student

populations. So, stated simply, the likelihood that an IHL will have a high graduation predicates more on the percentage of high achieving students admitted rather than any effort exerted by the school, absent of understanding the factors influencing the graduation for these specific demographics. If this holds true, then the current metrics embedded in federal and state policies and the current completion goals set by the federal and state governments to assess an IHL's performance may be flawed (Collins et al., 2014); thus, reform is necessary.

This is an assumption, an assumption that this research hopes to explore further. Therefore, the study seeks to answer the following research questions: (1) which institutional characteristics predict the six-year graduation rate for Black, Latinx and Pell Grant recipients; (2) does the racial identity of faculty have a positive relationship to the graduation rate for Black, Latinx and Pell Grant students; and last, (3) which institutional funding source predict a positive relationship between the number of graduates among Black, Latinx and Pell Grant students?

IHLs that enroll a larger percentage of historically marginalized students may encounter extreme difficulty in fulfilling the demand by the federal and state governments with regards to demonstrating success for completion metrics. There is also research that concludes that applied majors (e.g. nursing, engineering, etc.) compared to liberal arts and humanities majors take longer to graduate, so, schools that emphasize applied majors, regardless of institution type, may witness a lower graduation rate than other school types. So, degree selection within six years maybe more challenging, thus, this will become another variable of interest.

The research methods for this study employs an OLS regression model using panel data to conduct the propose research. As mentioned, the analysis for this research will occur by applying Bensimon's Equity Scorecard for the propose research's examination. The Equity Scorecard is ideal in analyzing this data because it situates the context for IHLs to identify and address the needs of the most vulnerable students enrolled in any given school. If IHLs identify the factors that affect historically marginalized students most, then improving the United States' educational attainment level becomes more feasible and avoiding penalty from federal and state policy becomes more certain.

Chapter II

Literature Review

Initiatives to increase college access since the mid-1960s have resulted in an increase in college attendance, especially among historically marginalized students (e.g. minorities, women, etc.). Improvement in college access over the last several decades has unfortunately not translated to improve the educational attainment among historically underrepresented students. Initiatives to increase the number of earned post-secondary credentials in the United States set by the federal government, state governments and private foundations demand that there is a higher accountability for institutions of higher learning in demonstrating educational quality and institutional efficacy.

Accountability measures by the federal and state governments targeted towards institutions of higher learning (IHLs) presently aim to assess the quality and performance of post-secondary institutions. Government accountability usually requires that IHLs quantify their completion metrics through retention and graduation rates in addition to job placement, job earnings and student loan debt (Deming & Figlio, 2016; McLendon et al., 2006; Ryan & Shepard, 2010; Santiago, 2012). There is substantial literature in higher education that argues that the completion metrics of a given institution, specifically regarding retention and graduation rates, largely predicates on the demographics of the student enrollment within a school (Astin & Oseguera, 2005; Flores et al., 2017; Horn, 2006). Therefore, this chapter explores literature that discusses whether: (1) the proportion of academically underprepared, minority and low-income students associates with an institution's graduation rate; (2) if there are specific institutional characteristics that are more favorable in graduating marginalized students; and (3) if there is a

relationship between funding sources and the graduation rates for the academically underprepared, minority and low-income students. This chapter discusses these topics by organizing the literature thematically.

Academic Preparation and College Performance

Research examining the cause for the persistent disparity in educational attainment among historically underrepresented groups mostly attributes academic preparation as the culprit. This section in this chapter references contemporary studies that examine academic preparation and its obstruction of degree completion for specific student populations.

College Readiness Astin and Oseguera (2005) conducted a robust study that examines the extent to which students' pre-existing characteristics dictate a school's graduation rate. The study used data from the Cooperative Institutional Research Program's (CIRP) annual survey of first-time in college (FTIC) freshmen from the fall of 1994 and initially considered 145 variables. To determine which independent variables were the greatest predictors for institutional graduation rates, the researchers performed a stepwise regression at $p < .0001$, only keeping those variables that met this threshold of significance; ten variables remained. The independent variables used in their model included the following: high school grades (HSG), standardized test scores (i.e. ACT and SAT), gender, and race (in which race was disaggregated into seven dummy variables). The study found that high school grades and standardized test scores on the ACT or the SAT, the latter serving as proxy for college readiness in this study, accounted for most the of the variance when predicting the graduation rate (Astin and Oseguera, 2005). The study noted that only 36.3 percent of students completed their bachelor's degree within

four-years after starting college. The institutional graduation rate increased to 57.6 percent at the six-year mark, suggesting that nearly 20 percent of college students complete school in six years rather than four.

Bound et al. (2010) found that despite an increase in college attendance since the 1970s by historically marginalized students, the national degree attainment rate declined since then. Their data sample included the National Longitudinal Study of two cohorts – the class of 1972 and the class of 1988. Their findings showed that the mean graduation rate lowered by nearly five points to 45.9 percent when looking at the performance of the 1988 cohort. The conclusion yielded by Bound et al. (2010) suggests the cause in the dip in graduation rates is potentially attributed to the larger quantity of students that are not college ready, but still pursue a post-secondary degree in higher numbers than witnessed in previous decades. The increased college enrollment by students with weaker academics shows the positive effect of policies and initiatives aimed to increase college access (Page & Scott-Clayton, 2016). Yet, their research denoted that college readiness measured in high school math performance constitutes to one-third of variance for degree completion while the decrease in institutional resources constitutes one-fourth of the variance. Eagan et al. (2014) also found that academic preparation from high school, particularly in mathematics, led to a greater probability of students graduating, regardless of academic major. DeAngelo et al. (2011) concluded in their study that academic performance in high school largely accounts for much of the determinants for college completion (DeAngelo et al., 2011).

A study by Flores et al. (2017) found that academic preparation in high school is a major determinant in understanding the college completion rates, especially when

examining this effect between racial groups. Using a combined dataset from two Texas educational agencies along with various sources of federal data, Flores et al. sought to analyze that factors attributing to the continued disparity among minorities and Whites when it comes to degree attainment.

College Readiness by Race When comparing African Americans to White Americans and Latinx Americans to White Americans, Flores et al. saw that there was a difference in the academic opportunities, and thus, a difference in academic preparation by race. African Americans and Latinx students had a lower enrollment in advanced math courses, Advanced Placement(AP)/International Baccalaureate (IB) courses, and dual-enrollment courses. Latinx students took AP courses at a comparable rate to White students, but not in the other categories. Latinx students also fared better than African Americans as Latinx students enrolled in all the mentioned courses at a high rate (Flores et al., 2017). Academic preparation for African Americans, at approximately 31 percent, had the highest variance for this racial group's college graduation rate. Flores et al. asserted that if African American high school students received similar academic opportunities afforded to White high school students, the achievement gap for African Americans would diminish significantly at the post-secondary level.

Jackson and Kurlaender (2014) also affirmed that college readiness relates to college completion, but it also correlated to the overall success of students while in college. Not only does college readiness lead to a higher probability of students persisting into their second year, but their study also shows that college ready students earn a higher GPA by 0.2 points. The study also noted that college ready students had an 8.7 percentage likelihood to earn a degree within six years, but that margin diminished

when GPA factored in the model. Jackson and Kurlaender concluded that while college readiness serves as a strong predictor for college completion, high school GPA also had a relationship to this outcome. Even after including student demographics and institutional characteristics to the model, the research found that the effect was minimal towards persistence, although there was a change regarding completion. Hence, Jackson and Kurlaender argued that high school GPA may provide additional information about students' likelihood to complete school beyond some metrics used to determine college readiness.

Lascher (2018) wrote a report that did an extensive literature review on studies that examined the similarities and differences between the factors that affect the Latinx college retention rate. Lacscher yielded several conclusions from his examination of the literature. First, his research affirms that there is a disparity in academic preparation between Latinx students and other racial groups, one he contributes to socioeconomics. Lascher (2018) also asserts that because many Latinx students hail from families with lower incomes, he contends that socioeconomics has an adverse impact on the Latinx persistence rate. His second conclusion suggested that research models used in prior studies discussing college retention more broadly is applicable to Latinx students as it is for other racial groups. This finding challenged research that uses separate persistence paradigms specific for Latinx students since few studies, as Lascher argues, attempt to evaluate if these same models are applicable to other racial groups as well (Lascher, 2018).

Race, Socioeconomic Status and College Persistence

Gershenfield et al. (2016) affirmed the findings about the importance of college readiness, but in the context of degree completion. By conducting a case study at a major university in the Midwest, Gershenfield et al. (2016) found that historically underrepresented students that earn a low-grade point average (GPA) during their first year in college are less likely to finish school within six-years. Students also placed on academic probation, earning below a 2.33 GPA, were also less likely to finish school.

Race and socioeconomics remain a significant predictor for degree attainment among IHLs. Astin and Oseguera (2005) showed that Whites and Asian Americans had the highest rate for completion with a significant gap between underrepresented racial groups – African Americans, Mexican/Chicano Americans, Puerto Ricans, American Indians and persons that identified as Other Race. American Indian students had the lowest completion rate. The race disparity also held true regardless of when the research examined the four-year or six-year graduation rate. Astin and Oseguera (2005) proposed that the same reason for low attendance and retention rates among specific racial groups in college could also suggest the longer time shown for these same demographics not to graduate.

Horn (2006) builds upon Astin and Oseguera's 2005 study by comparing the graduation rates among 4-year IHLs that were comparable to one another in terms of selectivity and low-income enrollment. Her study utilized data from the 2004 Graduation Rate Survey obtained through the Integrated Postsecondary Education Data System (IPEDS). Other data sources in the study included the IPEDS Institutional Characteristics (IC) and Student Financial Aid (SFA) data. Horn noted that in addition to

the high school academic preparation of first-time-in-college students, socioeconomic status was another major determinant for college degree attainment (Horn, 2006).

With the exception of American Indian students, African-American and Latinx students, two of the fastest growing populations within IHLs, encounter significant difficulty in the college environment. Flores et al. (2017) asserted that the factors that attributed to the lower completion rates among African American and Latinx students compared to White students were associated with characteristics that both minority groups had before ever enrolling in college. This variance explained approximately 60 percent of the effect on the outcome. The remaining 35 percent of the variance occurred from factors associated at the post-secondary level. Flores et al. discovered that there was major difference by socioeconomics when African Americans compared to Whites and when Latinx compared to Whites. Socioeconomics alone had an association of 11.9 percent on the African American graduation rate and a 17.1 percent association on the Hispanic graduation rate. Particularly for Latinx students, Flores et al. asserted that if given the similar economic opportunity, the completion rate for this racial group would increase by nearly 20 percent.

Hutt et al. (2018, March) examined four-year graduation rates by using data from the *Common App*. Hutt et al. noted that the interest to evaluate the four-year graduation rate was intentional given the growing debt accrued by students when remaining in school longer than required. Unfortunately, students entering college that identify as minority (Kim et al., 2017) and hail from low-income households are more likely to accrue an exorbitant amount of student loan debt as a result from attending college (Lyons, 2004). Too often, these same student populations pursue careers associated with

salaries that are not commensurate to the cost to pay for their education (Begun & Carter, 2017; Carnevale et al., 2016). Each year a student remains in college when enrolled at a public institution, the student pays an additional mean of $22,826 and sacrifices a mean income of $45,327 (Hutt et al., 2018, March). Hutt et al. (2018, March) also mentioned the importance of considering noncognitive predictors (e.g. school involvement, work experience, etc.) along with the cognitive predictors when considering college completion. Hutt et al. (2018, March) demonstrated that not only does race and SES have an association to low completion rates, but these two characteristics also show that there is an association to a lower salary that both groups receive upon graduation. Furthermore, Hutt et al.'s (2018, March) study illuminated that non-cognitive factors have an association with the graduation rates for both groups – requiring further exploration to this phenomenon.

Non-cognitive predictors by race While non-cognitive factors may provide some explanatory powers towards college retention and completion, this study will not delve in this variable as the present study does provide this variable. However, this study felt it necessary to still mention this variable given that multiple recent studies found significance in non-cognition explaining completion. Understanding to this fact suggests that the non-cognitive factors that may be absent in the model may potentially lower the variance for the model because this variable may have a greater association to the graduation rate for Black and Latinx students than previously understood in prior research. So, this chapter not only wants to highlight variables of interest for this study, but a multitude of factors that may provide a broader and more robust understanding for the causes that lead to a persistent disparity in degree attainment.

Hutt et al. (2018, March) argued that adding non-cognitive variables to models that analyze the factors predicting graduation rates can be more telling because the interaction between income status, cognitive ability and noncognitive factors may provide a more accurate model in predicting college graduation rates, the primary goal of the research (Hutt et al., 2018, March). The two secondary goals for the study also sought to examine the incremental predictive reliability when accounting for student activity exogenous of the classroom paired with the smaller determinants that predict college success. The findings from the study found that the models constructed in their research had a 71.4 percent accuracy in predicting the four-year graduation rate when only using pre-existing student characteristics from the *College App*. The most significant conclusion from the study as it relates to this research is that colleges impact a student's outcome despite the effect that a student's input qualities have on the overall outcome in college.

Non-cognitive factors also demonstrated predictability to academic achievement, college retention and college persistence in a separate study that assessed whether non-cognitive variables affected degree attainment. Farruggia et al. (2018) found that students' academic mindsets and individual perseverance explained academic achievement amidst first- and second-year retention. While the explanatory power of non-cognitive determinants was smaller than the previously discussed variables – academic preparation, race and socioeconomics – non-cognitive factors still held significance in predicting college completion (Farruggia et al., 2018). Farrugia et al. (2018) found that when students held a more positive attitude towards learning, students yielded better outcomes. Students that were also more determined and resolute to doing

well in college also showed a positive correlation to first- and second-year persistent rates within the study.

The significance of non-cognitive factors towards retention still held true when disaggregated by race although whites had the highest esteem towards academic performance while Asian Americans showed the lowest attitude. Despite showing no statistical significance between races in non-cognition, Whites and Asian American performed better academically than African American and Latinx students (Farruggia et al., 2018).

Institutional Determinants that Affect College Graduation Rates

The extant literature about the effect that academic preparation, race and socioeconomic status has in determining degree attainment is extensive. This literature is important because it provides understanding about the significance that the students have in impacting the national college graduation rate. However, as this section shows, though the type of enrollment of specific student populations may positively or negatively affect an institution's graduation, there are still institutional characteristics that also have predictive power on college completion. The following studies consider the role of students' involvement in determining degree attainment, but controls for these variables while assessing the institution's role, if any, on this outcome.

Institutional Characteristics The landscape among American colleges and universities is diverse in terms of institution type. Within the United States, institution type for IHLs varies by the following: control (private or public); sectarian status (private and religious affiliated or private without religious affiliation); student composition by race (i.e. Minority Serving Institution), the dominant degrees conferred as classified by

the Carnegie Foundation for the Advancement of Teaching (e.g. baccalaureate, professional only, etc.); enrollment size and geographic region. This study assesses all the mentioned institution types, but the following section only highlights some of these categories that the related literature included in this section of the paper found significant.

In the Astin and Oseguera (2005) study, their research found that the institutional control variable for a school's designation as either a private or public school showed that private colleges and universities outperformed their public institution counterparts. Public universities had the highest graduation rate at 28.1 percent among all public IHLs, respectively. However, public universities' rate of completion was nearly half the rate of the lowest performing private institution, Catholic 4-year colleges, having a graduation rate of 46.4 percent. This finding was shocking as Astin and Oseguera noted that public universities enrolled more students with an "A" average, a variable that accounted for a significant share of the variance for degree attainment. This gap among public and private institutions held steady even when considering the six-year graduation rates despite the gap closing after examining which students graduated at the six-year mark. Astin and Oseguera contended that it is taking students at public institutions far more time to complete college. By employing a growth and multilevel model to analyze the longitudinal data of institutional characteristics from IPEDs data, Ryu (2019) found that public baccalaureate IHLs witnessed a faster growth in graduation rates than private baccalaureate IHLs despite public schools still yielding a lower graduation rate.

The Higher Education Research Institute (HERI) at the University of California – Los Angeles (UCLA) published a report that provided further insight to understanding the graduation rate trends in the United States when observing for the effect of

institutional type. Led by Eagan et al. (2014), the report used the same dataset as Astin and Oseguera. The report noted that 84.3 percent of FTIC students captured in the CIRP Freshmen Survey in 2012 expected to graduate college in four years despite most of the institutions that these students attended had a mean 4-year graduation rate of 40.6 percent (Eagan et al., 2014). Eagan et al. noted this incongruence in student expectation and reality was a mismatch. The findings from the analysis also corroborated the findings of Astin and Oseguera (2005) by noting that private institutions graduate students faster than public institutions (Eagan et al., 2014).

In a separate report, the institute found that the degree attainment gaps in the United States are widening rather than closing. Pressure for improved completion rates from the federal and state governments along with regional accrediting agencies are consequently pushing more IHLs from enrolling historically underrepresented students to avoid penalty – through rankings and/or funding – by not admitting students that are less likely to complete college (DeAngelo et al., 2011). DeAngelo et al. intentionally note that the present environment in higher education created by government and regional accrediting agencies is contrary of their intent to force IHLs to demonstrate quality and performance that aligns with the national interest in increasing the post-secondary credentials among Americans.

The report does note, however, that the degree attainment rate increased slightly from a decade earlier when the HERI performed its analysis. Yet, again, the findings from this study suggested that public colleges and universities have a prolonged completion rate compared to private and other non-sectarian institutions (DeAngelo et al., 2011). Historically Black Colleges and Universities (HBCUs) also performed better than

their anticipated graduation rate for African American students, especially compared to non-HBCUs. Richards and Awokoya (2012) corroborate this finding by suggesting that when studies assess institutional performance by not only comparing like institutions, but specific populations within IHLs to one another, HBCUs perform comparable, if not better in certain instances, to non-HBCUs. This comes as no surprise since eight of the top ten baccalaureate IHLs that send African American to earn Ph.D.s in STEM are all HBCUs (Burreli & Rapoport, 2008). The HERI study asserts that to truly assess the academic performance and quality of institutions, one must account for the students enrolled at each institution and compare the institution's expected graduation rate to the actual graduation rate (DeAngelo et al., 2011). Conversely, this information is useful for institutions that seek to evaluate and improve their quality and performance for servicing its students.

Capers (2019) also found that academic preparation, other student demographics, institutional characteristics, and environmental factors all predict an institution's graduation rates. Yet, an additional variable holding equal predictive power to an institution's graduation rate is a proportionate racial representation of all students enrolled at a school, particularly, among Latinx students (Capers, 2019). Racial representation is not just limited to the student body at a given institution, but also includes the racial representation of the faculty and environment at any given institution in terms of determinants that affect a school's graduation rates (Capers, 2019). Capers asserts that for historically marginalized populations, it is not enough to just enroll a substantial racially diverse student population when considering the factors that affect a school's graduation rates, but to also have representation in other areas of the school

environment; this includes faculty and cultural representation. This is why studies cited in this research show that Historically Black Colleges and Universities perform better overall than their contemporaries that enrolled a significantly large minority, specifically, the Black population, when evaluating these institutions types' anticipated graduation rate for Black students (DeAngelo et al., 2011).

Shockingly, given this fact, Capers found that Hispanic Serving Institutions (HSIs) did not consistently yield a better completion outcome for Latinx students, but rather HBCUs had higher completion rates for Latinx students (Capers, 2019). Capers expected that HSIs ought to yield better graduation rates than all other institutions type given that HSIs best reflect Latinx culture. Yet, when considering the federal government's requirement for classification as an HSI, it becomes immediately apparent that this classification has less to do with the institutional mission of educating Latinx students and more to do with a school's twenty-five percent threshold of minimum enrollment of Latinx students (Lee, 2010). Surprisingly, Capers found that HBCUs had more of an effect on Latinx completion rates than the status of an HSI while the White graduation rate was the strongest predictor for representation and other control variables in the model Capers used (Capers, 2019). Capers suggest that racial representation does not always predict student success, especially for Latinx students. Thus, suggesting that there are environmental variables that non-HSIs can endeavor to improve for the completion rates of this historically marginalized population (Capers, 2019). A poignant note also made in the research suggests that Latinx and other racial groups, specifically Asian- and European-Americans, do well at HBCUs due to a supportive environmental

climate that is student-centered while also being welcoming and offering a comfort to all students regardless of one's racial identity (Capers, 2019).

Ryu (2019) examined the relationship between institutional characteristics and its associated graduation rates. Ryu noted that while earlier studies performed similar analyses to this relationship, few studies considered the effect that growth trajectories had on college completion. After Ryu included the time-varying variables in the growth model, he identified significance to specific institutional characteristics towards the outcome variable (Ryu, 2019). Classification as either a public or private school, the institutional control, demonstrated no effect on the outcome when the IHL had the Carnegie designation as either a doctoral or research university (Ryu, 2019).

Bound et. al.'s (2010) study asserted a different finding from the studies mentioned earlier by noting that not all public institutions performed lower than their private institution counterparts. The top fifty public universities ranked by *U.S. News and World Report's* 2005 college rankings publication showed a comparable increase in graduation rates to that of private IHLs (Bound et al., 2010). Another variance for the graduation outcomes includes the institutional type that students initially attend, accounting for nearly 75 percent of variance. Academic performance in high school had little effect on the degree attainment for less selective schools. Regardless of the selectivity of the school, the research found that an increase in the student-faculty ratio amassed to a 75 percent drop in the national completion rate (Bound et al., 2010). The findings from this study points this research to consider the effect that faculty have on degree attainment. Although the function of student characteristics among specific

populations on the institutional graduation rate is important, the effect that faculty have may mask effect that student characteristics have on the degree attainment.

Accessibility and Graduation Rates Brock (2010) examines student retention and college completion with heavy consideration to the efforts over the past five decades to make college more accessible. Brock finds that although college access initiatives and policies widened the door for historically underrepresented students in terms of entry, improvement of the completion rate among these populations is nonexistent (Brock, 2010). Brock also notes that historically underrepresented populations more often than not attend two-year IHL that are less selective. He argues that more must happen by legislators, governing boards, practitioners and scholars if there is any hope to mitigate the stagnant performance of degree attainment – especially among historically marginalized students.

Another study using IPEDs data examined the factors affecting graduation rates at more accessible post-secondary institutions, but at four-year schools across two periods. Crisp et al. (2018) found that institutional characteristics such as religious affiliation, the number of full-time students enrolled, income status, institution size, revenue and expenditures were all determinants for completion rates. A significant finding in this study suggest that variables that predict graduation rates more broadly mask the effect of various institutional characteristics that determine the graduation rate at more accessible IHLs when including more selective IHLs in the research model (Crisp et al., 2018). Thus, Crisp et al. further corroborates the findings in other studies that emphasize the importance of analyzing graduation rates with liked institutions.

The Faculty Effect The importance of faculty with regards to student academic achievement and graduation rates has been of interest by K-12 researchers for decades (Abdul-Raheem, 2016; Dynarski et al., 2013; Gershenson et al., 2018; Krueger & Whitmore, 2001; McFarland et al., 2019; U.S. Department of Education, 2019; Word et al., 2001). In the scholarly realm of higher education, there is also research that examines the connection between faculty and student academic achievement and completion.

The Effect of Student-Faculty Interaction Anaya (2001) conducted a study that sought to understand the effect that faculty interactions had on academic achievement for Latinx students. Using a national sample from the College Student Experience Questionnaire (CSEQ) for over 800 students, Anaya used a regression to examine the effect that student grades had based upon institutional and student characteristics amidst the interaction students had with faculty. Anaya learned that there existed a positive relationship with students interacting with their professors. One variable in particular, frequent interactions with professors, yielded a positive effect on student grades (Anaya, 2001). Yet, Anaya noted that overall, most of the participants in the study held a favorable, or at least neutral, views of their professors. Despite this seemingly positive view, Anaya found that Latinx students had low interactions with their faculty.

Bettinger and Long (2005) sought to understand the role that female faculty had in influencing its female students to pursue majors and courses in STEM. Noting the low representation of women in STEM fields, Bettinger and Long performed an analysis to determine if the presence of women faculty teaching lower level STEM courses could potentially mitigate the low pursuits of female students taking additional STEM courses and even opting to major in the field. Using an OLS regression, Bettinger and Long

controlled for faculty rank, employment status (i.e. part-time or full-time), and other characteristics. There were mixed findings from the study varying by major. Courses in the sciences showed no significance while courses in geology, mathematics and statistics showed a positive relationship. Though not the focus of the study, women faculty did yield a positive effect for women students in courses in the humanities and social sciences (Bettinger & Long, 2005). Though the results yielded a mix conclusion, Bettinger and Long (2005) noted that the evidence from their study did suggest that there is sufficient evidence to assert that there a positive association that exists for same gender faculty-student interactions in specific fields, implicating that faculty representation matters for fields and majors where there is low representation by gender.

The Effect of Faculty Race Hickson (2002) performed a study that surveyed 250 students attending a Texas HBCU to identify whether students valued having a faculty mentor and if the race of their faculty mattered. Hickson found that students valued faculty mentorship regardless of the faculty's race, but expressed a greater concern about their faculty caring for their personal, academic and professional welfare than anything. The study concluded that having faculty care for their students is important, particularly for the most vulnerable student populations (Hickson, 2002). Hickson noted that although the students did not acknowledge the race of faculty as mattering, the results from the survey, and the positive experiences the students communicated about their faculty, showed that the race of the faculty influenced the students' positive response students expressed. The study attributed this response to the fact that given the setting to where the survey occurred, most of the faculty were minority (Hickson, 2002).

In a separate study, Price (2010) yielded consistent results to Bettinger and Long (2005), also examining whether the effect of a faculty's gender leads students to pursue STEM majors. After completing an introductory course in the field, the study added the race of the faculty in the equation, Price derived to an interesting conclusion. Price (2010), using data collected from public universities in Ohio, found that an association does exist between instructors and students when a shared identity is present, but only for Black students. This effect of a faculty's gender did not show significant among female students. Price (2010) concluded that implications of his study require that institutions pursue diversification of their faculty by race in pursuits to close the low representation of minority students in STEM fields. Though the effect of a faculty's gender showed no significance, representation of more females in the field is also necessary. Yet, the approach to close this disparity may require another approach (Price, 2010).

In a study by Llama et al. (2019), they found that the faculty racial composition that mirrors the racial composition of its students with a positive racial campus climate predicted students' GPA. The researchers argue that this information is not only useful for improving students' GPA, but it potentially could lead to a higher retention and graduation rate (Llama et al., 2019). Hence, Llama et al. (2019) argued that greater efforts must occur to recruit and retain minority faculty given that such efforts may potentially mitigate the academic disparity among historically marginalized populations.

Faculty Belief about Student Learning The effect that faculty has on student achievement extends beyond the faculty's race and the interaction students have with their faculty. Another study examining the effect of faculty on students' entry into STEM majors approached the topic from another angle. Canning et al. (2019) analyzed if

the mindset of faculty served as a determinant on students' academic achievement in STEM courses. Canning et al. (2019) defined mindset, or an individual's implicit theory, as the belief by the faculty of a student's capability to perform well in the discipline with consideration to a student's race. Surveying 150 STEM faculty across 13 departments within a selective public university coupled with the students' grades from the courses of the faculty surveyed resulted in a sample of over 15,000 students. Canning et al. (2019) employed a multilevel regression model to execute the analysis.

In their findings, Canning et al. found faculty that held the belief of a fixed mindset, or a bias about students' academic capability, resulted in Black, Latinx and Native American students performing lower in the course. This starkly contrasted the results from faculty that believed all students had the potential to master the content yielded better outcomes among the same student groups (Canning et al., 2019). Though Canning et al. (2019) reported that the characteristics of faculty with fixed mindsets had no particular trait (e.g. male, White, etc.), there was an identifiable difference with faculty tenured that taught longer versus faculty not tenured and taught for a shorter period.

Canning et. al. (2019) noted that a professor's fixed mindset often reflects how the courses were structured and how the said faculty communicated with students, thus, potentially demotivating students within these historically marginalized groups to perform worse. Further, the study contented that the fixed mindset by faculty in STEM potentially deters historically marginalized students from pursuing an advance degree in the field, suggesting that the fixed mindset of faculty may be an under investigated determinant in the poor representation of women and minority with advance degrees in

STEM (Canning et al., 2019). The findings from Canning et al's (2019) study is why some scholars argue that there needs to be stronger efforts by IHLs to diversify the racial composition that matches its student body racial makeup (Llama, Nguyen and Tran, 2019).

Degree Selection When considering degree selection and its impact on graduation rates, Willis (2016) conducted a study that looked at IHLs with a programmatic focus in the fields of science, technology, engineering and mathematics (STEM). The impetus that drove Willis to analyze this topic stems from the methodology that *U.S. News and World Report* use in its annual college ranking publication that rates schools for its academic performance. The predicted and actual completion rates is a major marker used in the ranking metric by *U.S. News and World Report*. Essentially, through predictive modeling, the calculation for IHLs' predicted graduation uses the student characteristics within each IHL to determine that school's percentage of students to graduate annually. Willis performs this analysis by using data from the College Scorecard to determine whether having a STEM focus affects an IHL completion rate, and ultimately IHLs rankings. Willis found that STEM schools – IHLs that confer more degrees in science, technology, engineering and mathematics – consistently yielded a lower graduation rate than predicted. When comparing STEM focus schools to all other institutions types, especially IHLs that are less STEM focused (e.g. liberal arts colleges), Willis saw that non-STEM institutions yielded a higher graduation rate than predicted – signifying that non-STEM focused IHLs are overperforming compared to their STEM focus counterparts that seem to consistently underperform (Willis, 2016). Simply stated, IHLs that conferred more degrees in STEM consistently had a lower actual graduation rate than

they should when factoring the students these schools enrolled compared to non-STEM IHLs that conferred more degrees in other academic disciplines (i.e. humanities, natural sciences, etc.). Willis contended that this finding is highly unlikely. The study's findings are useful to this research as it denotes the importance of considering the discipline composition and focus of IHLs as Willis' research shows that certain disciplines, specifically, STEM, requires a longer time for completion compared to more traditional disciplines (i.e. liberal arts, humanities, etc.).

Ishitani and Kamer (2019) conducted a study that examined institutional characteristics and its effect on graduation rates. To perform the analysis, Ishitani and Kamer used data from IPEDs. The study centered on two-year colleges, but the study's findings has implications towards four-year colleges and universities. Ishitani and Kamer (2019) noted that many studies surveying the factors that affect graduation rates often ignore the difference in institution type on the outcome, particularly with regards to disciplinary focus. Ishitani and Kamer noted this consideration is important because institutional characteristics are determinants that affect degree attainment.

Campus Climate and Safety A similar, but separate, study performed by Young (2019) evaluated the African-American graduation rate at specific institution types and cross compared the performance of 49 schools to determine the institutional factors that yielded the greatest predictors for completion of this specific demographic. Retrieving data from the Center of Education Statistics, Young (2019) evaluated a multitude of variables that potentially affected the outcome variable. Many of the variables analyzed in this study were consistent with variables that other researchers used to evaluate the factors that predict institutional graduation rates. Income status and academic

preparation, two variables of interest for this study, were included in this research's model. Through a path analysis, Young found that institutional safety – defined in the study as reviews and reports for the local and campus crime rate – and the first-year retention rate constituted 65 percent of the variance that predict the Black graduation rate.

To Young's surprise, and even to the surprise of this research, institutional safety was more predictive than socioeconomic status, regardless if the student enrolled at an HBCU or an Historically White Institutions (HWI). This finding was not only baffling, but affirms Young's conclusion that campus climate and culture maybe a variable not considered enough when considering the determinants that affect graduation rates. Citing Strange and Banning (2001), Young points to their research's conclusion that learning becomes difficult when safety is a concern. This note may explain why Young found that when students return to a school after the first year, presuming these students feel their college environment is safe, students are more likely to persist to graduation.

Institutional Characteristics There are a multitude of studies that seek to assess that varying institutional characteristics associated with IHLs that enroll significant populations not college ready or low-income (Boatman & Long, 2018; Brock, 2010; Lascher, 2018). Pertinent institutional characteristics that positively could affect student completion rates include funding for students that hail from low-income households (Bell et al., 2018) or organizations that provide a sense of belonging for historically marginalized students (Strayhorn, 2018). For students that are not academically ready for college, some studies found that some institutions attempt to mitigate the lack of academic preparation for this large, and growing, demographic by placing their students into remedial courses. Other institutions take a more holistic approach, and instead, put

funds, manpower or both, into student support services. There is another camp of IHLs, usually having smaller enrollment, assert that by their sheer institutional size, and at times, mission, make their schools best equipped to support low academically performing students given their low student-faculty ratio. As it pertains to low-income students, IHLs, and even many researchers, argue that increasing financial assistance and institutional expenditures for low-income students assuages the financial burden that prohibits this population from persisting. A consensus on the efficacy of these interventions has yet been reached. However, there are studies that explored these interventions and yielded some conclusions that is useful in informing this research.

Brock examines various IHLs that offer remedial education, student support services and student financial aid. With regards to remedial education, the results from research surveying remedial courses is indifferent. Boatman and Long (2018) found that remedial courses do not fare well for students on the fringe of college readiness. Students on the fringe of college readiness have a negative impact on academic achievement and college completion while students not college ready fare well with regards to remedial courses, especially at two-year IHL (Boatman & Long, 2018).

Brock (2010) acknowledged the positive effect that some of interventions such as remedial courses have on degree attainment (e.g. learning communities, performance-based scholarships), but Brock asserts that a more thorough and rigorous evaluation needs to occur in higher education to determine the efficacy of different interventions employed by various institutions that yield success. The next logical step, from Brock's perspective at least, is to codify those positive institutional initiatives – or specific institutional characteristics found to be successful at some IHLs – into policy and best-

practice and provide these same initiatives to historically marginalized students at other IHLs. As it relates to this study, Brock yields an important conclusion, policy has potential to address the factors adversely affecting degree attainment when it is intentional, understands the specific causes obstructing college completion, and executed properly.

Lascher (2018) found that Latinx students experience a greater financial need than other racial groups while attending college, denoting that increased financial assistance may mitigate the financial burden Latinx students endure. Furthermore, Latinx students lack the social capital necessary to navigate the college environment. Yet, Lascher suggests that the relationship of social capital and college persistence is unclear. The report also acknowledges multiple studies that identify the impact that the family unit has on Latinx students and college persistence. Because there are few studies that perform a comparative analysis by race on the effect of family and student persistence, it becomes uncertain if whether family may also play a role for other racial groups. Finally, Lascher asserts that there is need for further investigation about the effects of campus climate towards Latinx students and whether there is a difference for other racial groups. Yet, again, the implication to Lascher's study shows that specific institutional characteristics negatively impacting certain populations more than others within a single school (e.g. finances, social capital, campus climate) requires that IHLs respond and amend those areas to guarantee that the IHL serves all students equitably.

Bound et al.'s (2010) discussion about the higher enrollment of non-college ready students and its effect in the declined of graduation rate between the 1972 and 1988 cohorts speaks to why open access and less selective institutions experience the lowest

graduation rates among all institution types. Compounded with the shifting demographic of higher education enrollment (showing an increase percentage of historically marginalized students between cohorts), funding per student also decreased across the same time indicating a correlation to the shifting enrollment trends and the dip in the national graduation rate (Bound et al., 2010). Bound et al. points the reader to the student-funding ratio that existed with the 1972 cohort, explaining that rendering the same funding to the 1988 cohort may be inadequate for student success given that the latter class constitutes more students needing institutional services (Bound et al., 2010). The decrease in funding per student, derived from either a cut in state funding or an increase in student need (i.e. an increase in demand for institutional support services associated with the changing student demographics) – or a combination of both occurrences – indicates that resources affect degree attainment. The study presently discussed does not suggest that input qualities by students have no effect on graduation rates, but rather that institutional characteristics also predicate degree attainment, especially at baccalaureate institutions.

Millea et al. (2018) did a case study using longitudinal, individual-level data that considered specific institutional characteristics that may affect retention and graduation rates – living on-campus, class attendance, student demographics, class size and academic preparation. Using a probit regression model, Millea et al. identified that academic preparation, receipt of sufficient financial aid and enrollment in a smaller class size were the biggest predictors for higher retention and graduation rates.

Ishitani and Kamer (2019) found that institutional expenditures had an effect on the graduation rate. Thus, Ishitani and Kamer (2019) used the study by Powell et al.

(2012) to construct their conceptual framework. In this particular study, Powell et al. (2012) identified four constructs to examine the relationship between expenditures and educational outputs: institutional characteristics (school size, Carnegie Classification and percent of students receiving federal aid); expenditures and revenues; efficiency (student-faculty ratio, etc.); and effectiveness (retention and graduation rates). Ishitani and Kamer (2019) found that there was a relationship with institutional characteristics and degree attainment among different institution types. When institutions had a larger number of non-traditional students, graduation rates increased, but only for one institution type. Yet, when there existed a higher number of low-income students, there was a decrease in degree attainment, but only for the other two institution types. This study relates to the current study as it shows that the institution can have an effect on graduation rates. As Horn noted, paring liked institutions is important as certain variables associated with particular institution types may have a different effect on graduation rates than other variables.

Theoretical Framework

Improving the national graduation rate across IHLs requires that more attention is given to historically marginalized college students and the challenges that obstruct their progress from earning their degree. As the literature in this chapter suggests, lack of academic preparation, race and economic inequity often positions historically marginalized college students at a disadvantage towards the path of degree completion. Unfortunately, post-secondary institutions that enroll a higher percentage of students that classify as underprepared for the academic rigors of college, minority, and economically disadvantaged or all three, usually leads to a lower graduation rate. This knowledge has

consequently led some IHLs to lower their admittance of these student populations (Umbricht et al., 2017). While that may provide immediate reward to IHLs that choose this path, it does not address the enduring inequity that exists for these populations and it fails to propel the national goal and state initiatives to create a more educated populace. The responsibility to the address the inequity of college completion among marginalized students is a shared responsibility that extends beyond the sphere of the higher education community. But for the sake of this study, the focus confines the examination to how IHLs can abate the completion gap among its most vulnerable students. Thus, this research employs the Equity Scorecard as the theoretical framework to perform the analysis.

The Equity Scorecard is an assessment paradigm proposed for post-secondary institutions to conduct a rigorous self-evaluation of how each respective IHL perform in achieving equity (Bensimon, 2004). The thought process driving this this framework argues that IHLs must be accountable for abating the challenges that historically marginalized students encounter in pursuit of earning a college degree. The Equity Scorecard does not suggest, or relinquish rather, the responsibility or self-efficacy of students in dictating their own destiny (Bensimon, 2004). Instead, the Equity Scorecard asserts that individual students' outcomes (e.g. graduation rates), particularly for historically marginalized students, largely predicates on the actions, or inactions, taken by IHLs (Harris & Bensimon, 2007). Stated more directly, IHLs must explore how to respond to student needs. It is easier to adopt the position that it is not the IHL's responsibility (or personnel within the IHL) to address academic un-readiness of students, or more, strive to rectify the society ills that position historically marginalized students at

a disadvantage compared to their White, Asian and more affluent counterparts. So, the Equity Scorecard prioritizes attaining equitable educational outcomes for underrepresented students (Bensimon, 2004), but that requires additional steps by IHLs, and the personnel employed by these institutions. This framework suggests that to achieve equitable educational outcomes, IHLs must become aware of their equity performance (or inequity), must have the capability to interpret the data about their performance, and must act upon this knowledge to institute organizational change (Bensimon, 2004).

The Equity Scorecard uses four benchmarks to measure how IHLs can effort to achieve equitable educational outcomes: access, retention, institutional receptivity and excellence. Within each benchmark, there are three sub-categories. The first, the baseline, indicates the current status of measure – this research simplifies this as the actual educational outcome, or the performance, of an institution (e.g. current graduation rate disaggregated by race and socioeconomics). The second, the improvement target, is the periodic marker of progress towards equity. Defined in this research, the improvement target shows a growth over time in the graduation rates by race among low academic and low SES students. The last subgrouping, equity, is the point in which equity is achieved by an IHL. While self-explanatory, this study operationalizes equity as the point when educational outcomes are on par with non-marginalized groups.

The present study does not construct equity scorecards for each IHL based upon their respective institutional characteristics. Instead, this research uses the theoretical frame that undergirds the formation of the Equity Scorecard to analyze the data from this theoretical lens. As numerous studies in this chapter noted, a true comparison of

educational outcomes across IHLs requires that comparable schools be paired with one another. Thus, when performing the analysis for this research, this research does assess which institution type (e.g. across regions, among small liberal arts colleges, etc.) demonstrates equity best. Traditionally, if one uses the Equity Scorecard, one would build a scorecard. Yet, again, this research does not build an equity scorecard. However, this research does follow the steps in constructing an equity scorecard as it allows for an appropriate analysis from an equity lens. So, traditionally, building an equity scorecard requires three steps, but the last step, reporting the findings to the campus president, is not applicable in this study.

The first step, disaggregating the basic data by race and ethnicity, occurs in this study. This study also disaggregates the data by SES and academic preparation as the selected literature in this chapter shows that both variables have a negative effect on achieving equitable educational outcomes. The "vital signs" that informs this research about the student performance of the aforementioned groups within the examined IHLs includes the following: major selection, persistence rate, SAT or GPA distribution, institutional expenditures, enrollment in developmental study courses, and actual graduation versus predicted graduation rate. The second step in constructing an equity scorecard is identifying goals to improve the disparity between marginalized and non-marginalized students. For this study, step two more so constitutes various goals that IHLs may want to consider based upon institutional interventions found significant by the research models in this analysis that mask the negative effects that having a higher proportion of minority, low academic and low SES students have on graduation rates.

The institutional characteristics found significant in this study are discussed more in-depth in chapter three. These characteristics (e.g. race of faculty) are added to the research models for this study as this research seeks to better understand which institution types need to pursue specific institutional characteristics to achieve equity in mitigating the disparity in the national graduation rate among historically underrepresented students compared to their peers. This research proposes that if policies and initiatives by the federal and state governments, private foundations, stakeholders, and IHLs approach improving the educational attainment level among Americans from an equity perspective, then achieving the goal becomes possible. Otherwise, refusing to acknowledge the inequities that marginalized students face while attending college, and making no effort to address these inequities, will only further perpetuate the disparity in college completion and lead to the futility in striving to create a more educated American populace.

Chapter III

Methodology

The present chapter details the methodology used to perform the analysis for this study. The chapter commences by describing the data sources and the data sample for the present research. Next, the chapter transitions to discuss the data sources more in-depth, particularly describing the data from the College Scorecard and additional data collected to address the gaps from the main data source. Third, the chapter describes the study's dependent variables. Fourth, the chapter describes the independent variables for this study by providing the rationale and more insight to the variables of interest and its significance to the present study. Last, the chapter explains the quantitative techniques this study employs to perform the analysis. The chapter ends by discussing potential limitations to the study and how these limitations lends to the interpretation and implications of the study's results.

Data Sources and Sample

The data gathered for this study largely derived from the College Scorecard available through the United States Department of Education. The U.S. Department of Education originally started compiling this data in 2015, gathering data from multiple sources – the Integrated Postsecondary Education Data System (IPEDS) made available by the National Center of Education Statistics (NCES); the National Student Loan Data System; the Internal Revenue Service (IRS) data made available by the Department of Treasury; the Bureau of Labor Statistics (BLS); the Office of Federal Student Aid (FSA); the Carnegie Foundation; and the U.S. Census Bureau – the primary data source comes from NCES. While the data are robust in nature, there were specific data points in which

the College Scorecard rendered incomplete, missing a litany of data observations. The researcher had to obtain the missing data from its original source when there were missing cases for observations. This occurred particularly with data originating from the National Center of Education Statistics and the Carnegie Foundation. After retrieving the missing data from both sources and collecting additional data not available in the College Scorecard to answer this study's research questions, the research generated several new data sets and merged these external data sets with the primary data set. The data collected from the College Scorecard spanned from 2009 to 2018. The criteria for inclusion of the data collected involved IHLs classified as primarily baccalaureate degree granting institutions. Other requirements for data inclusion in this study involved IHLs having an undergraduate enrollment of 100 students minimum, but not exceeding an enrollment of 75,000 students.

The College Scorecard

The College Scorecard data offered several benefits to this study. First, the College Scorecard data are novel and the data also provide snapshot of institutional data for the majority, if not all, American IHLs. Next, the College Scorecard has the ability to provide deeper insight into the internal data of the institution it samples. As noted, most of the data within the College Scorecard originated from the Integrated Postsecondary Education Data System (IPEDS) made available through the National Center for Education Statistics (NCES). The diversity and robustness of this data makes the College Scorecard ideal to examine a myriad of research questions for educational researchers and researchers in other disciplines. However, one major limitation to the College

Scorecard data is that there are several observations missing and the data codebook is not always explicit in explaining the meaning of all the variables included.

Because the research questions for this study examine the relationship of institutional characteristics and interventions with graduation rates over time, merging each College Scorecard data set across years became necessary. The researcher used the IPEDS identification code to identify each institution as a unique observation. Multiple institutions were sampled with the information in the IPEDS database to ensure accuracy. Since the researcher seeks only to examine four-year IHLs, all other institution-types were dropped using the variable *preddeg* – the variable identifying an institution's predominant degree offering.

This study includes the following the variables for this analysis: degrees; regional accreditation agencies; states; mean admission rates; mean SAT scores; an institution's status as a Minority Serving Institution (MSI); net dollar amount for students after receiving financial aid; the number of Title IV students; in-state and out-of-state tuition cost; average faculty salary; percent of full-time faculty; and the percent of undergraduate students receiving the Pell Grant.

The observations for degrees, regional accreditation agencies, and states required all these observations to be encoded into numbers into numerical values to appropriately evaluate these variables in this study's regression analysis. The mean admission rates, the mean SAT scores, the MSI status, the percent of full-time faculty, and the percent of undergraduate students receiving the Pell Grant remained in their original form in the sample from the College Scorecard. The net dollar amount for students receiving aid, in-state and out-of-state tuition cost, and average faculty salary were all scaled to a value of

every $1000 for each observation. Simply stated, all variables related to a monetary value were transformed into the same dollar amount to measure equally the effect of each monetary variable on the outcome variable.

NCES IPEDS

The variables unclear in the College Scorecard data that demanded retrieving data from its original source included graduation rates and enrollment data. The researcher scaled graduation rates to percent from 0 to 100, but kept enrollment data the same. Other variables retrieved from IPEDS included the following: the faculty demographic data; the student-faculty ratio; and the finances received by each institution. For consistency, the research scaled institutions' finance data to a value of every $1000 so that all monetary variables were transformed into the same unit to accurately capture the effect of each monetary variable. This step performed was similar to the transformation that occurred for the variables mentioned earlier that also represented monetary variables. But prior to scaling these variables to a consistent monetary unit for this study's analysis, funding variables from the same funding source were combined into a single variable. Simply put, all federal funding variables (e.g. Pell Grant, G.I. Bill, work study, etc.), state funding variables and institutional variables were combined. This occurred for all other funding variables. Private funding made available from either fundraising, grants or donations was combined and included into a single observation.

Carnegie Classification

The College Scorecard data did not yield clear observations for data related to an institution's Carnegie classification. Therefore, the research collected this data from its original source, the Carnegie Classification website. The variables from the Carnegie

classification included the following: institutional control (i.e. private or public); undergraduate program offerings (e.g. arts and sciences focus only, balanced arts and sciences with professional degrees); an institution's transfer status (e.g. high transfer into the institution); the research status of an IHL (e.g. doctoral university with high research activity); and the institution's residential status (e.g. highly residential). To complete the sample for this study, the research merged the Carnegie Classification data with the College Scorecard data.

Dependent Variables

The independent variables for this study's research questions include the total graduation rate, the Black graduation rate, the Hispanic graduation rate and the graduation rate of Pell Grant recipients. Each dependent variable is measured in a separate regression model, but each dependent variable provides insight into not only the total graduation, but the graduation of the sub-populations of each student group examined in in this study.

Independent Variables

The independent variables for this study fall into several broad categories: student enrollment; institutional characteristics; and institutional interventions (e.g. faculty demographic and composition; and funding sources for students and students net funds). Student enrollment data are variables used to answer research question one. Institutional characteristics, institutional types and admission standards are variables used to answer the second research question. The remaining independent variable categories are variables used to answer the third research question. These categories all serve to estimate the effect that each variable has towards the six-year graduation rates.

Variables of Interest The variables of interest for this study are applicable to each research question in this study. The factor variables in this study seek to examine the effect that these predictors have on the six-year graduation rate; this includes the faculty racial demographic and composition within IHLs and an institution's MSI status (or the lack thereof). The racial and socioeconomic composition of the student body at IHLs are also variables of interest. These variables are important to this study because the literature suggests as the population of minority and low-income students increases, the graduation rate of a given IHL decreases. If this holds true, then it becomes worthwhile in determining whether having same race faculty of these populations will have a similar positive effect as some studies have shown in K-12 education. Research examining graduation rates also shows a positive effect when students connect with their professors and peers in an educational environment, therefore, it seems that having faculty with the same racial identity in a smaller class environment (i.e. the student-faculty ratio) might create a positive learning environment for these historically marginalized populations to thrive.

The last variable of interest is the MSI status of institutions. This variable is of interest because many MSIs receive this designation for the racial makeup of the student body rather than being missioned or founded to serve a specific racial demographic. Research also notes that most, if not all, MSIs also have a substantial population of low-income students. Therefore, MSIs serve as a great indicator to measure whether minority and low-income students thrive when there are students who share their racial and/or socioeconomic identity. One would be remised to mention that the federal government's criterion for most MSI designations solely involve the racially makeup of the student

population; the racial diversity among students unfortunately does not take the same consideration to the racial composition of the faculty. Hence, this is why this research captures the racial demographic of faculty in a separate variable.

Student Enrollment The variables within the student enrollment category that aimed to answer the first research question include the racial demographic of institutions divvied into multiple dummy variables – undergraduate enrollment total; undergraduate enrollment total for American Indian/Alaskan Native students; undergraduate total enrollment for Asian students; undergraduate total enrollment for Black students; undergraduate total enrollment for Hispanic students; undergraduate total enrollment for Native Hawaiian/Pacific Islander students; undergraduate total enrollment for White students; and undergraduate total enrollment for international students. The last variable for this category of independent variables is the total students enrolled who are Pell Grants recipients.

Institutional Characteristics The variables included for institutional characteristics are as follows: admissions standards; institutional control (i.e. public or private); undergraduate program offering; the Carnegie Classification of Institutions of Higher Education denoting an institution's research status (e.g. doctoral research university with very high research activity); institutional residential status (e.g. primarily residential); whether an institution has a designation as a Minority Serving Institution (MSI); degrees conferred (or major selection); faculty demographics and the faculty composition; and finally, institutional resources. The culmination of institutional characteristics all serve to answer research questions two and three.

Control Variables The control variables among the independent variables used for the regression models in this study are consistent for each research question. The control variables constitute the enrollment of Black and Hispanic students, the percent of students receiving the federal Pell Grant, institutional control, undergraduate program offering, the Carnegie Classification of Institutions of Higher education, the institutional residential status, the degrees conferred and the institutional resources for IHLs. The literature discussing the graduation rates for post-secondary students mentions these factors as determinants in the college graduation rates.

Data Analysis

Methods employed to answer all the research questions for this study includes both descriptive and inferential statistics. Specifically, this research applies a Pooled OLS regression to answer each research question. This quantitative technique will be employed as similar studies also use this method to answer similar research questions.

Research Question One The first research questions ask about the various institutional characteristics that predict the graduation rate for the three dependent variables – Black, Latinx and Pell Grant students. As noted in the previous chapter, the greatest predictors for the college graduation rates predicates on students' academic preparation, race and socioeconomic status. Because this study employs the Equity Scorecard as its theoretical framework, this study repositions the onus from students' effect on their outcome to the institutions in which students enroll. Doing so allows the research to measure if there is a differential in certain institutional qualities. Therefore, several institutional characteristics are included in the Pooled OLS Regression model and

measured to determine which qualities have the greatest effect on all three outcome variables. The researcher presents the following OLS regression for question one:

$$\boldsymbol{GradRate} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 MSI} + \boldsymbol{\alpha_2 AcadPrep} + \boldsymbol{\alpha_3 Income} + \boldsymbol{\alpha_4 StudRace_i} + \sum \boldsymbol{\beta_i x_i} + \boldsymbol{\epsilon},$$

Where *GradRate* is the six-year graduation rate and *MSI* is IHLs designated as Minority Serving Institutions. Three control variables are included in the model. Where *AcadPrep* is the mean SAT score for IHLs, *Income* is each IHL's Pell Grant student enrollment, $StudRace_i$ represents IHLs' student enrollment by race.

Research Question Two The next research question seeks to determine whether the racial identity of faculty affect the six-year graduation rate for all three dependent variables. Since academic preparation is a significant predictor for the college graduation rate, measuring whether faculty mitigate this outcome is the intent. This study does not seek to measure teacher quality, but rather seeks to understand if literature in K-12 suggesting that having a same-race teacher yields a similar positive outcome for student achievement – in this scenario, student achievement is graduating in six-years. In this research model, the research will look at the log value of minority faculty at institutions rather than the sheer number of faculty at an institution since ten Latinx professors at a small institution of 100 faculty starkly differs from ten Latinx professors at a large university where there are 1000 faculty. Because the variable of interest is scaled to log, a control variable for this model, student enrollment, is also scaled to log. The researcher also applies OLS regression modeling to examine the second research question. If IHLs

increase the log value of minority faculty with the intent to have a racially diverse representation that reflects their racially diverse student body as either a means to achieve institutional equity in all aspects of their school or to better serve the historically underrepresented students within their school, capturing this difference, particularly if this difference is significant in improving the Black, Latinx and Pell Grant graduation rates, then understanding this association is necessary due to its broader policy implication. The researcher presents the following OLS regression for question two:

$$\boldsymbol{GradRate} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 FacRace_i} + \boldsymbol{\alpha_2 AcadPrep} + \boldsymbol{\alpha_3 Income} + \boldsymbol{\alpha_4 StudRace_i} + \sum \boldsymbol{\beta_i x_i} + \boldsymbol{\epsilon},$$

Where *GradRate* is the six-year graduation rate and $FacRace_i$ is IHLs faculty by race. Three control variables are included in this model. Where *AcadPrep* is the mean SAT score for IHLs, *Income* is each IHL's Pell Grant student enrollment, $StudRace_i$ represents IHLs' student enrollment by race.

Research Question Three The third and final research question measures whether particular institutional funding sources predict a positive relationship between the number of graduates among Black, Latinx and Pell Grant students. As the research noted in the previous chapter, many students encounter grave difficulty with meeting the financial burden to persist to graduation. Therefore, this study intends to examine whether funding certain aspects of a college or university related to Black, Latinx and Pell Grant students graduating in six years. Similar to the second research question, difference-in-differences regression modeling is also applicable here to measure if

decreased funding has an association with the Black, Latinx and Pell Grant graduation rates. Again, this finding if significant, extends the policy conversation about funding practices in higher education as it relates to student outcomes. The first OLS regression for question is as follows:

$$\boldsymbol{GradRate} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 PublicSupp} + \boldsymbol{\alpha_2 InstExp} + \boldsymbol{\alpha_3 AcadPrep} + \boldsymbol{\alpha_4 Income} + \boldsymbol{\alpha_5 StudRace} + \sum \boldsymbol{\beta_i x_i} + \boldsymbol{\epsilon},$$

Where *GradRate* is the six-year graduation rate, *PublicSupp* is the amount of external revenue IHLs receive, and *InstExp* is the amount IHLs appropriate to either academic or student affairs support. Three control variables are included in this model. Where *AcadPrep* is the mean SAT score for IHLs, *Income* is each IHL's Pell Grant student enrollment, $StudRace_i$ represents IHLs' student enrollment by race. The second OLS regression for question three is as follows:

$$\boldsymbol{GradRate} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 PublicSupp} + \boldsymbol{\alpha_2 InstExp} + \boldsymbol{\alpha_3 Endow} + \boldsymbol{\alpha_4 AcadPrep} + \boldsymbol{\alpha_5 Income} + \boldsymbol{\alpha_6 StudRace} + \sum \boldsymbol{\beta_i x_i} + \boldsymbol{\epsilon},$$

Where *GradRate* is the six-year graduation rate, *PublicSupp* is the amount of external revenue IHLs receive, *InstExp* is the amount IHLs appropriate to either academic or student affairs support, and *Endow* is endowment for IHLs. Three control variables are included in this model. Where *AcadPrep* is the mean SAT score for IHLs, *Income* is

each IHL's Pell Grant student enrollment, $StudRace_i$ represents IHLs' student enrollment by race.

Limitations

One limitation to this study involves missing a variable that captures the mean GPA for IHLs. As the literature suggests, standardized test scores such as the SAT or ACT are great predictors for college readiness, however, for minority and low-income students, high school GPAs are also a major predictor for college persistence and graduation rates. Because this study captures the mean SAT as a variable in this study, the research feels confident in using this variable as a means to determine the college readiness of students admitted into the IHLs in this sample.

Another limitation in this study relates to limited years some variables were collected. For instance, the graduation rate of Pell Grant recipients only exists in IPEDS since the 2016-2017 school year. Thus, an analysis of the independent variables on this outcome variable is limited to only two years compared to the other variables. This knowledge forces this research to avoid any generalizations for the findings from this aspect of the analysis. Data collection over a shorter span than all the years in which this study analyzes the determinants for the graduation rates consequently drops some of the observations, lessening the robustness of the findings. This particularly occurs with the variables related to funding sources for IHLs.

Chapter IV

Results

The current chapter presents the descriptive statistics for all variables included in the regression models followed by the results from the analysis for this research. This study posited three questions: (1) What institutional characteristics predict the six-year graduation rates among Black, Latinx, and Pell Grant students; (2) Does the racial composition of faculty have a positive relationship to the graduation rate for Black, Latinx and Pell Grant students; and (3) Which, if any, institutional funding source(s) positively associate with six-year graduation rates among Black, Latinx and Pell Grant students? All questions relate to understanding the institutional characteristics that predict the six-year graduation rates for Black, Latinx and Pell Grant students. As the literature suggests, college readiness, or academic preparation, is the greatest predictor for college completion. The second greatest predictor influencing graduation rates, according to the literature, is financial support. Hence, each question presented in this study aligns with prior studies related to this subject.

The present study seeks to determine if predictors of interest show a positive relationship to all four graduation rates despite the influence that college readiness (observed through an IHL's mean SAT score) has on college graduation rates. Although financial support is the second greatest predictor associated with the college graduation rate, this variable is not part of the model since there were no data available to this research. The regression models in the present study also include and report the student enrollment at IHLs by Pell Grant status and racial demographics. Higher educational research suggests that certain pre-existing traits associated with certain student

populations influences the college graduation rate. Thus, this study considered it important to include and report these variables in the regression models. The following are the predictors of interest for the first two research questions: (1) Minority Serving Institutions (MSI) designation for question one; and (2) faculty representation by race for question two. The next three groups are all variables of interest for question three: (3a) external funding from public support (i.e. funding from the federal and state governments plus private support through fundraising and other initiatives); (3b) institutional expenditures supporting students (e.g. scholarships of all kinds, academic funding sources and student affairs funding sources); and (3c) institutional wealth measured through an IHL's endowment. To examine whether the variables of interest showed a positive relationship to all four outcome variables when controlling for the influence of college readiness, the other institutional characteristics noted by studies cited in chapter two were included in the model.

Descriptive Statistics

The study's inclusion criteria enabled this research to analyze the determinants predicting the six-year graduation rates for most colleges and universities in the United States. There are 2,204 institutions of higher learning (IHL) in the nation that primarily confer baccalaureate degrees and higher, and approximately 90% of these schools (N = 1,816) were included in this study's sample. The present research used the IPEDS identification number to distinguish each IHL as a unique observation. Table one provides detail to the variables included in each regression model in this study along with the research definition, number of observations, mean, data range and standard deviation. Table two provides the same information, but show the variables in log value. The

information in table one is the original values for all the variables used in the study's regression models.

Dependent Variables

There are four dependent variables (DVs) for this study: (1) the graduation rate for all students; (2) the Black graduation rate; (3) the Latinx graduation rate; and (4) the Pell Grant Graduation rate. Each DV is the mean graduation rate from the 2011-2012 school year to the 2017-2018 school year. The only exception to this timeframe is for the mean graduation rate for Pell Grant recipients. As noted in the previous chapter, data collection for the Pell Grant graduation rate only started in the 2016-2017 school year. Thus, the Pell Grant graduation rate only accounts for two school years. The mean graduation rate for all other DVs – all students, Black students and Latinx students – is measured across seven years among the IHLs sampled in this study. All DVs are scaled from 0 to 100 to reflect the total percent of students that earned a degree in six-years from each IHL.

Given that there are 1,812 IHLs in the sample, there were 17,791 observations for the first DV. The variable, the mean graduation rate for all students (regardless of race and income) was 52.84 with a standard deviation of 20.05. The Black graduation rate had the second highest number of observations (N = 16,653), but had the lowest mean graduation rate (M = 41.19%, SD = 24.76) among all four groups within this study. The Latinx graduation rate constituted 16,429 observations and yielded the second lowest mean graduation rate (M = 48.22%, SD = 25.63) among the four DVs across seven years. The graduation rate among Pell Grants students had the lowest number of observations

(N= 4,954), but the second highest mean graduation rate at 49.06 percent, with a standard deviation of 21.20 percent across the last two years analyzed in this study.

Independent Variables

Faculty Representation by Gender The study controlled for the full-time faculty representation by gender. Faculty classified as men had 15,464 observations. The mean number of faculty classified as men was 202.07 and there was a standard deviation of 366.42. The number of faculty classified as women had 15,464 observations with a mean of 148.92 per institution. The standard deviation for faculty classified as women was 234.80.

Faculty Representation by Race Full-time faculty representation by race served as a variable of interest for research question one. White faculty classified as full-time had the highest number of observations (N = 15,464) and had the highest mean in terms of full-time faculty representation by race (M = 258.52, SD = 419.55). Black faculty classified as full-time also had 15,464 observations. The mean number of black faculty employed by American IHLs (M = 17.37, SD = 36.43) was the second lowest among all five racial categories captured in this sample. Latinx faculty (N = 15,464) classified as full-time had a mean of 13.64 (SD = 30.47) when considering the racial representation of full-time faculty, suggesting that Latinx faculty have lowest racial representation among all college faculty.

Asian-American faculty classified as full-time had 12,929 observations in the sample. Although this racial group had the lowest number of observations, the mean value for this variable (M = 34.53, SD = 81.56) indicates that Asian-American full-time faculty have the second highest representation among college faculty in the United States.

The last faculty group – full-time faculty classified as either multiracial, American Indian or international – had the second lowest number of observations (N = 15,464), but the fourth highest mean at 16.69 with a standard deviation of 54.63.[2]

Student Enrollment There were 18,947 observations for the total student enrollment. This variable had a mean of 5622.60 and a standard deviation of 8037.17. When considering only students classified as a full Pell Grant recipient, there were also 18,947 observations, but this variable's mean was 398.04, having a standard deviation of 562.84. This indicates that, on average, there are approximately 398.04 Pell Grant students enrolled in American IHLs. White students had 18,894 observations and the highest mean (M = 3294.43, SD = 4938.67) among all five racial categories for student enrollment indicating that there are more White students in American colleges and universities than any other racial group. Latinx students had a slightly lower number of observations than the earlier groups mention (N = 18,522), but had the third highest mean (M = 605.97, SD = 1,721.59). This suggest that across all baccalaureate institutions, Latinx students are third highest racial group represented.

The Black student enrollment had 18,947 observations with a mean of 644.39 (SD = 1,246.59); this places the African-American student enrollment as the second highest racial group represented at IHLs. The Asian-American student enrollment had the lowest number of observations (N = 14,009) and the second lowest mean across all racial

[2] This researcher found that the mean number of faculty representation by race seemed rather low despite directly extracting this data from the College Scorecard and then corroborating this data with that available in IPEDs. Hence, the researcher sampled multiple schools and pulled their published institutional data available online and found that the data were accurate. Yet, still not convinced given the low mean yielded for the Black and Latinx faculty representation among IHLs, the researcher computed the descriptive statistics for IHLs that had full-time faculty classified as both Black and Latinx below the mean. Shocking to the researcher, 75 percent of IHLs employed full-time faculty classified as Black below the mean and 77 percent of IHLs employed full-time faculty classified as Latinx below the mean.

categories (M = 361.70, SD = 1,055.04), suggesting Asian-American students are the second lowest racial group represented among all American IHLs. The number of students classified as multiracial, American Indian or international yielded 18,947 observations. The mean value for this group was 264.57 (SD = 562.85), indicating these students have the second lowest representation by race or international status across all IHLs.

Faculty-Student Ratio The faculty-student ratio was another variable controlled in the regression models for this study. This variable showed that there were 18,923 observations. This data point also had a mean of 14.3781 with a standard deviation of 5.124264. On average, IHLs have one full-time faculty for every 14 students.

Institutional Admission Variables The institutional admission variables for this study included a school's admissions rate and the mean SAT scores. The researcher scaled the admission rate for IHLs from one to 100 to capture the percent of students admitted to a college or university versus the number of students that applied. This variable had 16,362 observations. The mean proportion of students IHLs admit to their school was 65.13 with a standard deviation of 19.40. The College Scorecard defines the mean SAT scores as the average score earned on the SAT for students admitted into an institution. The mean SAT score had 13,980 observations with a mean SAT score of 1070.83 and a standard deviation of 131.12 points.

Tuition and Fees There were two variables that captured the cost of attendance for students, tuition and fees in-state and tuition and fees out-of-state. The researcher scaled both variables to $1 for every $1,000 (Denning, 2017). Both variables had 18,172 observations. The mean value for tuition and fees in-state was 19.78 with a standard

deviation of 12.15. This suggests that the mean cost of college tuition and fees for students charged at an in-state rate is $19,780.00 with a standard deviation of $12,150. The second variable, tuition and fees out-of-state had a mean 23.05 and a standard deviation of 10.14. IHLs that charge students at an out-of-state rate pays a mean cost of tuition and fees of $23,050.00 with a standard deviation of $10,140.00.

Institutional Profile There were several variables included in the regression models that captured the institutional profile for all colleges and universities in this data sample. The researcher computed the first variable, institutional control, as binary in which public IHLs were the comparison group and private IHLs were the reference group. This variable had 18,947 observations. The mean for institutional control was 0.31, having a standard deviation of 0.46. The undergraduate program profile was another variable controlled in all the regression models for this analysis. This categorical variable had fifteen sub-categories with 15,700 observations. The mean and standard deviation for each sub-category is reported in table one The Carnegie classification variable, another control variable in all the regression models, had eight sub-categories. There were also 15,700 observations for this variable. The last institutional profile variable included in this analysis was the residential status of students enrolled at each IHL. Computed as a categorical variable, this variable had two comparison groups – primarily residential and highly residential. The reference group for the residential status variable was IHLs that were not residential. The mean for this variable denotes that most IHLs in this grouping had students that commuted.

MSI Designation Colleges and universities designated as a Minority Serving Institution (MSI) is the variable of interest for research question one. This variable had

18,947 observations. The variable MSI designation was also categorical, having the reference group as non-MSI schools compared to schools with the following designations: Historically Black Colleges and Universities (HBCUs); Hispanic Serving Institutions (HSIs); and other (for IHLs with designations as MSI other than HBCU or HSI). HBCUs and HSIs were two MSI designations the researcher opted to focus. Since both MSI types are the largest groups among all MSI schools and enroll Black and Latinx students in large numbers, this approach seemed appropriate. The distribution of IHLs by MSI designation are as follows: 1,1517 non-MSIs; 78 HBCUs; 148 HSIs; and 73 MSIs combined as other.

External Revenue, Expenditures & Endowments The variable groups for research question three included the three different revenue sources IHLs received, the five expenditures types made by IHLs, and the endowment amount of each IHL. Similar to the variables tuition and fees in- and out-of-state, the researcher scaled all variables representing money to $1 for every $1,000 (Denning, 2017). Simply stated, for every $1,000 received, spent or saved reflects as $1 in table one. As an example, IHLs that received $1,000,000 from the federal government would reflect as $1,000 in the table 8.

Scaling these variables to smaller units was essential for the analysis given the sheer size and variance for the observations among external revenue, expenditures and endowments. The variables related to the third research question had 11,833 observations with exception to the endowment variable which had 10,981 observations. The three revenue sources IHLs received to support students cost of attendance derived from either the federal government (M = 19,403.41, SD = 97,276.37), state governments (M = 2566.3, SD = 6,309.726), or private entities (M = 15,785.52, SD = 63,231.86). The

mean amount of money the federal government allocated to IHLs was $19,403,410.00 (SD = $97,276,37.00). On average, state governments allocated $2,566,300.00 with a standard deviation of $6,309,726. Revenue generated from private entities amounted to a mean of $15,785,520 (SD = 63,231,860).

The variables for institutional expenditures to aid students cost of attendance or support students in other capacities (e.g. work study, Post-9/11 G.I. Bill, etc.) included scholarships of all types (M = 85,370.11, SD = 155,349.8), academic support (M = 13,222.1, SD = 49,970.52), or student affairs related support (M = 12,288.37, SD = 22,277.49). From the 2012-2013 school year to the 2017-2018 school year, IHLs allocated a mean of $85,370,110 (SD = $155,349,800) towards scholarships of all types. Funding appropriated to academic support for students amounted to a mean of $13,222,100 with a standard deviation of $49,970,520. Money appropriated by IHLs for student affairs related support amounted to a mean of $12,288,370 (SD = $22,277,490).

The study also included variables for institutional endowments (M = 330,003.9, SD = 1,772,475) and the salaries and wages paid for either instruction (M = 49,300.01, SD = 161,522.7) or research (M = 16,684.14, SD = 104,372.2). The mean endowment for American colleges and universities was $330,003,900 with a standard deviation of $1,772,475. Salaries and wages paid for research at IHLs had a mean of $49,300,010 (SD = $161,522,700). The salaries and wages paid for instruction amounted to a mean of $16,684,140 (SD = $104,372,200). Expenditures for research and instruction are both control variables for this study.

Academic Degrees The last set of variables included in each regression analysis were the academic degrees offered by each IHLs. This variable category was divvied

into three broad categories: business, STEM, and the humanities and social sciences. The total number of observations for academic category was 18,925. Within each of these broad categories there were several sub-categories. For business, there were two sub-categories. Within STEM related fields, there were thirteen sub-categories and among the humanities and social sciences, there were 22 sub-categories.

Observation Year Given that this research is performing an analysis with panel data, it was important to include the observation year within each regression model. Therefore, the variable denoting each school year examined was included in the model. The variable year had a total of 18,925 observations.

Findings

Many of the variables included in the regression models for this analysis demonstrated a major variance in the observations collected. Some observations for an individual variable had small values compared to other observations for the same variable. This consistently occurred for variables representing the value of dollars received, spent, or saved by individual IHLs. Therefore, most monetary variables in the regression models had to be scaled to log to account for this vast variance. Thus, many of the findings for various variables are scaled to log rather than leaving the variables in its original value. When this occurs, the researcher says such and reports the log value of the statistical output for these data points rather than reporting the original number. Table four shows the output for all four baseline regressions, but table three provides an abbreviated snapshot for the output of the study's control variables of interest.

Baseline Regression Models

The first four models tested the variables noted in the literature associated with the total six-year graduation rate for all students, regardless of race and income. There were 9,342 observations in the first baseline regression model. The observations prior to the 2011 – 2012 school were dropped from the model due to the inconsistencies in various data points needed to perform this analysis.[3] Nevertheless, this regression model was statistically significant at $p < .01$ with an R^2 value of .80, indicating that this regression model has high predictive power. The output from this regression model showed that the mean SAT score, a proxy for college readiness, was highly significant at $p < .01$. For each one point increase in the mean SAT scores when all other variables were held constant, the model demonstrated that the institutional graduation rose by .07. The model also showed that the Pell Grant enrollment had a positive relationship to the college graduation rate. For every one unit increase in the log count for the Pell Grant enrollment when all other variables were held constant, there was nearly a four percent increase in the total graduation rate. This finding was somewhat baffling to the researcher given that the literature suggested that Pell Grant students encountered more difficulty than many of their constituents in college, and consequently, had a lower graduation rate. The summary statistics for this study also showed that Pell Grant students had a lower graduation.

A higher enrollment of Black students showed a negative relationship to the six-year graduation rate for all students. This variable was highly significant at $p < .01$. Each one unit increase in log count of the Black student enrollment when all other

[3] The researcher found that there were several missing observations for multiple variables by years beginning in 2009 until 2011. This led STATA to drop these observations.

variables were held constant showed that there was a two percent decrease in the six-year graduation rate. The Latinx student enrollment showed a weak positive association to the total graduation rate but this variable was not statistically significant. The Asian student enrollment was highly significant at $p < .01$. A one unit increase in the log count for the Asian student enrollment when all other variables were held constant showed a 1.7 percent increase in the six-year graduation for all students, regardless of race and income. The white student enrollment had a weak positive association with the six-year graduation rate, but this variable was not statistically significant in this model. Students classified as either American Indian, multiracial or international showed statistical significance at $p < .01$. For this variable, a one unit increase in the aggregation of these student populations when all other variables were held constant lowered the six-year graduation by 1.19 percent.

The second baseline regression model measured the six-year graduation rate for Black students when the variables of interest proposed by this research were absent. The second model had 9,259 observations with an R^2 value of .52. The model was highly significant at $p < .01$. The coefficient for the mean SAT scores was .08 and was also highly significant at the $p < .01$ level. According to the second model, for every one point increase in the mean SAT score for students admitted to a IHL when all other variables were held constant, there was a .08 percent increase in the six-year Black graduation rate. All student enrollment by various sub-groupings was significant in this model. A one unit increase in the log count for the Pell Grant enrollment increased the six-year Black graduation rate by 3.53 percent ($p < .05$) when all other variables were held constant. A one unit increase in the log count for the Black student enrollment

increased the six-year Black graduation rate by .77 percent when all other variables were held constant. A one unit increase in the log count for the Latinx student enrollment increased the six-year Black graduation rate nearly 1 percent ($p < .05$) when all other variables were held constant. Yet, a one unit increase in the log count for the Asian student enrollment increased the six-year graduation rate by nearly two percent at the $p < .01$ level of significance when all other variables were held constant. On the contrary, a one unit increase in the log count for the White student enrollment decreased the six-year Black graduation rate by 2.29 percent ($p < .01$) when all other variables were held constant. Students classified as either American Indian, multiracial or international also decreased the six-year Black graduation rate, but by 1.19 percent ($p < .01$) when all other variables were held constant in the model.

The third baseline regression model measured institutional characteristics' influence on the six-year Latinx graduation rate. This model had 9,205 observations and had a lower R^2 value of .47. Regardless, the model was statistically significant at the $p < .01$ level. As in the other models, the mean SAT score was highly significant at $p < .01$. This indicates that for every one point increase in the mean SAT score when all other variables were held constant, the six-year Latinx graduation rate increased by .08 percent. The only two student populations that were not significant in this model were Black and White students – although both groups showed a negative relationship to the outcome variable. Yet, the Pell Grant student enrollment showed that for each one unit increase in the log count for this demographic when all other variables were held constant, the six-year Latinx graduation rate increased by nearly two percent at the $p < .01$ level of significance. An increase in log count for the Latinx student enrollment showed a 1.66

increase in the six-year Latinx graduation rate when all other variables were held constant. The Asian student enrollment showed for every one unit increase in log count for this population when all other variables were held constant, the six-year Latinx graduation rate increased by 1.11 percent ($p < .01$). Students classified as either American Indian, multiracial, or international showed that for every one unit increase in log count for these populations as a single group, there was a .91 percent decrease in the six-year Latinx graduation rate when all other variables were held constant.

The fourth baseline regression model had 3,407 observations with an R^2 value of .74. Similar to the previous three OLS regression models, this model was highly significant at the $p < .01$ level of significance. The mean SAT score showed statistical significance at $p < .01$. For every one point increase in the mean SAT score when all other variables were held constant, the six-year Pell Grant graduation rate increased by .07 percent. With exception to the Latinx student enrollment, all other student enrollment groups were statistically significant. A one unit increase in the log count for Pell Grant students increased the six-year Pell Grant graduation by 3.56 percent when all other variables were held constant. Conversely, a one unit increase in the log count in the Black student enrollment decreased the six-year Pell Grant graduation rate by 2.16 percent ($p < .01$) when all other variables were held constant. The Asian student enrollment showed a positive relationship with the six-year Pell Grant graduation rate. For every one unit increase in the log count for the Asian student enrollment ($p < .01$), there was a 3.2 percent increase in the Pell Grant graduation rate when all other variables were held constant. However, the White student enrollment in addition to students classified as either American Indian, multiracial or international showed a negative

relationship with the six-year Pell Grant graduation rate. A one unit increase in log count for both variables when all other variables were held constant yielded a decrease in the six-year Pell Grant graduation rate by 1.51 and 1.49 percent, respectively.

What institutional characteristics predict the six-year graduation rates among Black, Latinx, and Pell Grant students?

There were four new OLS regression models performed including MSI designation as an additional predictor. The researcher included this predictor to assess if this variable of interest, as an institutional characteristic, had an association on all four outcome variables. As a reminder, MSI designation in this study is a categorical variable with non-HBCUs as the reference group and the following as the comparison groups: HBCUs, HSIs, and all other MSI designations classified as other. The full output for the four regression models answering the first research question is available in table six. Table five, however, also reflects each regression's output for question one but abbreviates the reporting to only show the output for the dependent variables, the predictor variable of interest and the control variables of interest.

Regression Model One

The first model including MSI designation only measured the total graduation rate. This model had 9,342 variables with a R^2 of .81. The value for this model's R^2 indicates its high predictive power. The mean SAT score of IHLs showed high statistical significance ($p < .01$) within the model when all other variables were held constant. The Pell Grant student enrollment also showed high statistical significance within this model at the $p < .01$ level. So, for every one unit increase in the log count for Pell Grant students enrolled at a IHL showed a 3.22 percent increase in the total graduation rate

when all other variables were held constant. With exception to the Latinx student enrollment, all other student enrollments by race showed statistical significance.

The Black student enrollment showed statistical significance at $p < .01$. For every one unit increase in the log count for the Black student enrollment when all other variables were held constant, the total graduation rate decreased by 2.34 percent. The Asian student enrollment showed statistical significance at the $p < .01$ level. Every one unit increase in the log count for Asian students enrollment, the model demonstrated a 1.77 percent increase in the total graduation rate when all other variables were held constant. The White student enrollment was statistically significant at $p < .05$. Each one unit increase in the log count in the White student enrollment showed nearly a one percent increase in the total graduation rate when all other variables were held constant. Students classified as either multiracial, American Indian or international demonstrated statistical significance at $p < .01$. For every one unit increase in the summation of the aforementioned students groups when all other variables were held constant showed a decrease in the total graduation rate by 1.15 percent.

The variable of interest for this same model showed statistical significance for two of three federal designations as a MSI when evaluating the total graduation rate. The first category, HBCU, showed statistical significance at $p < .01$. According to the model, a designation as an HBCU predicted an 8% increase in graduation rate when all other variables were held constant. The second MSI category, HSI, was not statistically significant in the model. However, the combination of all other MSI designations showed significance at $p < .05$. So, a designation as an HBCU predicted a 2.46 percent decrease in the total graduation rate when all other variables were held constant.

Regression Model Two

The Black graduation rate had similar findings to the first regression model that included MSI designation as a predictor. This second model was statistically significant and had 9,259 observations with a R^2 of .54. The mean SAT score showed statistical significance at the $p < .01$ level. For every one point increase in the mean SAT score, there was a .07 percent increase in the Black graduation rate. The Pell Grant student enrollment showed statistical significance at $p < .01$. Each one unit increase in the log count for the Pell Grant student enrollment when all other variables were held constant had a 2.68 percent increase in the Black graduation rate. All student enrollment groups by the different racial demographics showed high statistical significance at the $p < .01$ level with only the White student enrollment showing statistical significance at the $p < .05$ level. When there was a one unit increase in the log count for the Black Students enrollment when all other variables were held constant, there was a .21 percent in the graduation rate.

The Latinx student enrollment showed statistical significance at $p < .01$. Thus, a one unit increase in the log count for the Latinx student enrollment when all other variables were held constant showed a 1.61 percent increase in the Black graduation rate. The White student enrollment was significant at $p < .05$. In this model, it showed that when all other variables were held constant, the Black graduation rate decreased by 1.17 percent for every one unit increase in the log count for the White student enrollment. When grouped together, students classified as either multiracial, American Indian or international showed statistical significance at $p < .01$. So, every one unit increase in the

log count for all three demographics grouped together showed a 1.2 percent decrease in the Black graduation rate.

The dummy variable MSI designation showed statistical significance for both HBCUs and HSIs at $p < .01$ and $p < .05$, respectively. Institutions with other MSI designations showed no significance in model two, but did have a negative association to the Black graduation rate. HBCUs showed that for every one unit increase in Black students attendance to a HBCU when all other variables were held constant, there was a 9.35 percent increase in the Black graduation rate. However, a one unit increase in Black students attendance to a HSI when all other variables were held constant showed that the Black graduation rate decreased by 2.75 percent.

Regression Model Three

The third regression model for this research question measuring the Latinx graduation rate when MSI designation was included in the model had 9,205 observations with an R^2 value of .47. This model was statistically significant and showed that the mean SAT scores was statistically significant at $p < .01$. For every one point increase in the mean SAT score when all other variables were held constant in the model, there was a .07 percent increase in the Latinx graduation rate. The student enrollment of Pell Grant and White students were not statistically significant though both variables had a positive association with the Latinx graduation rate. The Black student enrollment showed statistical significance at $p < .05$. So, for every one unit increase in the log count for the Black student enrollment when all other variables were held constant, the model showed a .72 percent decrease in the Latinx graduation rate.

On the contrary, the Latinx student enrollment showed statistical significance at $p < .01$ for the Latinx graduation rate. Each one unit increase in the log count of the Latinx student enrollment when all other variables were held constant demonstrated a nearly two percent increase in the Latinx graduation rate. Students classified as either multiracial, American Indian or international as a single group was significant at $p < .01$. A one unit increase in the log count for these populations as a single group showed that there was a .91 percent decrease in the Latinx graduation rate when all other variables were held constant.

The only MSI designation that had significance in the third model was HBCUs at $p < .01$. Each one unit increase in Latinx students' attendance to a HBCU when all other variables were held constant showed that the Latinx graduation rate increased by 6.82 percent. Post-secondary schools categorized as either a HSI or another MSI designated institution had no significance but both showed a negative relationship to the Latinx graduation rate.

Regression Model Four

The last regression model for research question one measured the Pell Graduation rate. In this model, there were 3,048 observations with a R^2 value of .74. The model was also statistically significant at the $p < .01$ level. The mean SAT score was highly significant ($p < .01$) suggesting that for each point increase in the mean SAT score when all other variables were held constant, the graduation rate for Pell Grants students increased by .07 percent. The only racial groups statistically significant by student enrollment were Black, Asian and the summation of multiracial, American Indian and international students as a single group. Although the Latinx and White student

enrollment were not statistically significant, both variables had a positive relationship to the Pell Grant graduation rate.

The Black student enrollment was statistically significant at the $p < .01$ level for this model, but the Black student enrollment showed a 2.65 percent decrease in the Pell Grant graduation when all other variables were held constant. The Asian student enrollment was also statistically significant at $p < .01$, but showed a 3.25 percent increase for the Pell Grant graduation rate when all when all other variables were held constant in the model. The last group – multiracial, American Indian, or international students – was also statistically significant at $p < .01$. This category for student enrollment demonstrated that a one unit increase in log count when all other variables were held constant showed a 1.42 percent decrease in the Pell Grant graduation rate.

Like the third model, HBCUs was the only MSI designated school that showed significance ($p < .01$) for the Pell Grant graduation rate. When there was one unit increase in the Pell Grant students' attendance to a HBCU when all other variables were held constant, the Pell Grant graduation rate increased by 9.51 percent. Schools designated as either a HSI or another MSI designation had no statistical significance but demonstrated a negative relationship to the Pell Grant graduation rate.

Does the racial composition of faculty have a positive relationship to the graduation rate for Black, Latinx and Pell Grant students?

The second research question sought to understand the relationship that the faculty representation by race had on all four outcome variables. As a reminder, the representation of faculty by race only accounts for faculty employed as full-time. The researcher also scaled the variables for faculty representation by race to log although

there were other modes the variables were scaled (e.g. percent, share of minority faculty to white faculty, etc.) before the researcher settled to use log. Attempting to identify the appropriate scaling of these variables was intentional to verify the accuracy of these variables relationship with the DV and to ensure the robustness of any potential findings.

The various means to scale these variables occurred because of the large variance between White faculty representation compared to all other racial groups. Given that the direction of the variables in relation to each outcome variable did not change though the variables' statistical significance changed with different statistical techniques employed, scaling to log seemed most appropriate given this statistical technique occurred in other research and since the other variables in each model for this research were also scaled to log. The researcher also included the faculty representation by gender in this regression model, but as a control variable, since the literature suggest that this variable had a positive relationship to student academic achievement. The researcher included the gender of faculty as there are possible implications to completion rates as there are to academic achievement. Therefore, the researcher included this variable in all the regression models for this research question. When the faculty representation by gender shows statistical significance in the model, the researcher reports its coefficient.

There were four regression models performed to measure faculty representation by race as a predictor for all four outcome variables. The R^2 values for all four regression models answering the second research question were much higher than the regression models that excluded the predictors of interest and the regression models that added MSI designation as a data point. Tables seven and eight reflects the output for the regression models answering this research question. However, table five only reports the

output for the dependent variables, the predictor variables of interest and the control variables of interest.

Regression Model One

In the first regression model measuring the total graduation rate when faculty representation by race was part of the model, there were 5,481 observations with a R^2 value for .86. This model not only demonstrated high predictive power, it was also statistically significant. The mean SAT score had statistical significance at $p < .01$. A one point increase in the mean SAT score denoted a .07 percent increase in the total graduation rate.

The Pell Grant student enrollment had significance at $p < .01$ in this model. So, an increase in the total log count for the Pell Grant student enrollment when holding all other variables constant had a 2.79 percent increase in the total graduation rate. With regards to the student enrollment by racial demographics among IHLs, most of these variables were statistically significant. The Latinx student enrollment was the only variable within this category that was not significant. The Black student enrollment showed significance at $p < .01$. For every one unit increase in the log count for the Black student enrollment when holding all other variables constant, there was a 3.08 percent decrease in the total graduation rate with consideration to faculty representation by race.

The Asian student enrollment also showed statistical significance at $p < .01$. In each increase in the log count for the Asian student enrollment when holding all other variables constant, the total graduation rate also increased by 1.29 percent. The White student enrollment was significant at $p < .05$ and showed a 1.27 percent increase for every one unit increase in the log count for this population when holding all other

variables constant. Students classified as either multiracial, American Indian or international combined as a single group showed significance at the $p < .01$ level. The variable combining these student populations showed that when there was a one unit increase in the log count for this group when holding all other variables constant, the total graduation rate decreased by 1.43 percent.

The faculty representation of men showed no statistical significance despite having a positive association to the total graduation rate. However, the faculty representation by women showed statistical significance at the $p < .01$ level, denoting that each one unit increase in the log count for women faculty showed an increase in the total graduation rate by 4.5 percent when holding all other variables constant. The representation of Black faculty showed statistical significance at $p < .05$. So, a one unit increase in the log count of Black faculty demonstrated nearly a one percent increase in the total graduation rate when holding all other variables constant. Faculty representation by race for faculty classified as either Latinx, Asian or when grouping faculty categorized as either multiracial, American Indian or international had no statistical significance on the total graduation rate. Faculty classified as White showed statistical significance at $p < .05$. Every one unit increase in the log count for White faculty when holding all other variables constant, the total graduation rate lowered by 3.12 percent.

Regression Model Two

The second regression model for the second research question measured the relationship of faculty representation by race for the Black graduation rate. This model had 5,471 observations with a R^2 value of .66. Not only did this model yield statistical significance, the predictive power for this model was twelve percentage points higher

than the model measuring the Black graduation rate that included the predictor MSI designation. The mean SAT score for this model was statistically significant at $p < .01$, and showed that for every one point increase in the mean SAT score when holding all other variables constant, the Black graduation rate increased by .08 percent. The Pell Grant student enrollment was also significant in this model at the $p < .05$ level. For every one unit increase in the log count for the Pell Grant student enrollment when holding all other variables constant, the Black graduation rate increased by 2.11 percent. The only student enrollment group by race that was significant in this model were Black students, Asian students and students classified as either multiracial, American Indian or international as a single group. Though not significant, the Latinx and White student enrollments showed a positive association with the Black graduation rate.

The Black student enrollment showed statistical significance at $p < .05$. Each one unit increase in the log count for Black students when holding all other variables constant showed that the Black graduation rate decreased by 1.09 percent. The Asian student enrollment had statistical significance at $p < .01$. For every one unit increase in the log count for the Asian student enrollment when holding all other variables constant, the Black graduation rate increased by nearly two percent. The last group – students classified as either multiracial, American Indian or international – showed statistical significance at $p < .01$. So, when there is a one unit increase in the log count for the last three student groups as single variable when holding all other variables constant, the Black graduation rate decreased by 1.49 percent.

Faculty representation by gender showed no statistical significance for men in this regression model, but for women, the variable was statistically significant at $p < .01$. For

every one unit increase in the log count for faculty classified as women, there was nearly a six percent increase in the Black graduation rate. When considering the relationship of faculty representation by race on the Black graduation rate, Asian faculty and faculty categorized as either multiracial, American Indian, or international as a single group showed no significance. However, all other faculty groups when disaggregated by race showed statistical significance. Black faculty representation showed statistical significance at $p < .05$. Every one unit increase in the log count for Black faculty when all other variables were held constant had a 1.59 percent increase in the Black graduation rate. The representation of Latinx faculty showed statistical significance at $p < .05$. Each one unit increase in the log count for representation of Latinx faculty when all other variables were held constant showed a 1.36 percent increase in the Black graduation rate. The representation of White faculty had statistical significance at $p < .01$. Thus, a one unit increase in the log count for White faculty when all other variables were held constant showed a decrease in the Black graduation rate by 5.1 percent.

Regression Model Three

The third regression model for the second research question measured the relationship that the faculty representation by race had on the Latinx graduation rate. This model was statistically significant and had 5,450 observations with a R^2 value of .65. Compared to the earlier models that assessed the institutional characteristics that predict the six-year Latinx graduation rate, this model yielded a R^2 value that increased by nearly twenty percentage points. The mean SAT score for this model showed significance at $p < .01$. A one point increase in the mean SAT score had a .07 percent increase in the Latinx graduation rate when all other variables were held constant. Only

the Black, Latinx and singular grouping of multiracial, American Indian and international student enrollments showed statistical significance in this model. The Asian and White student enrollments were not significant but showed a positive relationship to the Latinx graduation rate.

A one unit increase in the log count for the Black student enrollment showed a decrease in the Latinx graduation rate by 1.64 points when all other variables were held constant. On the contrary, showing significance at $p < .05$, a one unit increase in the log count of the Latinx student population when all other variables were held constant increased the Latinx graduation rate by 1.25 percent. The singular enrollment by students considered either multiracial, American Indian or international yielded significance at $p < .01$. Each one unit increase in the log count for all three student populations as a singular group demonstrated a 1.11 percent decrease in the Latinx graduation rate when all other variables were held constant.

Faculty representation by gender showed that women faculty showed a positive relationship to the Latinx graduation rate a $p < .05$. A one unit increase in the log count for women faculty when all other variables were held constant showed nearly a 4.7 percent increase in the Latinx graduation rate. Male faculty had no statistical significance but showed a negative relationship to the Latinx graduation rate. Faculty representation by race yielded statistical significance for Black ($p < .05$), Latinx ($p < .05$) and White faculty ($p < .05$). A one unit increase in the log count for Black faculty when all other variables were held constant showed a 1.33 percent increase in the Latinx graduation rate. Each one unit increase in the log count for Latinx faculty when all other variables were held constant indicated a 1.22 percent increase in the Latinx graduation rate. Conversely,

a one unit increase in the log count for White faculty when all other variables were held constant yielded a 2.55 percent decrease in the Latinx graduation rate. Asian faculty and faculty classified as multiracial, American Indian or international showed no statistical significance in the model, but both variables yielded a positive relationship to the Latinx graduation rate.

Regression Model Four

The last regression model for the second research question measured the relationship of faculty representation by race for the Pell Grant graduation rate. The mean SAT score in this model showed statistical significance at $p < .01$. Each one point increase for this variable showed a .06 percent increase in the Pell Grant graduation rate when all other variables were held constant. The student enrollments for Pell Grant, Latinx and White students did not have significance in this model. Yet, all three variables showed a positive relationship to the outcome variable. The student enrollments for Black, Asian and the summation of the enrollment for students considered either multiracial, American Indian or international all showed significance at the $p < .01$ level. Each one unit increase in the log count for the Black student enrollment yielded a 3.74 percent decrease in the Pell Grant graduation rate when all other variables were held constant. A one unit increase in the log count for the Asian student enrollment showed a 2.89 percent increase in the Pell Grant graduation rate when all other variables were held constant. However, a one unit increase in the log count for the combined student enrollment of multiracial, American Indian or international students when all other variables were held constant showed a decrease in the Pell Grant graduation rate by 1.6 percent.

Faculty representation by gender showed that women faculty had statistical significance at $p < .01$. Although male faculty had no significance in the model, there was a positive association to the Pell Grant graduation rate. Yet, for women faculty, each one unit increase in this group's log count when all other variables were held constant showed a 6.81 percent increase in the Pell Grant graduation rate. In this regression model, Black and White faculty were the only faculty groups by race that yielded statistical significance. Both Black and White faculty showed significance at $p < .05$. Each one unit increase the log count for Black faculty when all other variables were held constant had a 1.34 percent increase in the Pell Grant graduation rate. For every one unit increase in the log count for White faculty when all other variables were held constant showed a 4.68 percent decrease in the Pell Grant graduation rate. While the other faculty racial groups yielded no statistical significance in this model, Latinx faculty was the only variable that showed a positive relationship to the Pell Grant graduation rate. Asian faculty and faculty classified as either multiracial, American Indian or international had a negative relationship to the Pell Grant graduation rate.

Which, if any, institutional funding source(s) positively associate with six-year graduation rates among Black, Latinx and Pell Grant students?

The third and last research question sought to determine whether funding from public entities (e.g. the federal government), institutional expenditures and endowments had an association with graduation rates. For this research question, the researcher performed two separate models per dependent variable. The difference between both models was that the second model included endowment as a predictor potentially influencing graduation rates while the first model excluded this predictor. Reporting the

results for both regression models that included financial predictors for the same outcome variable occurs concurrently to allow comparison between each model. Tables nine, ten and eleven details the output for the eight regression models answering the last research question. Table nine is shorter as it only reports the output for the dependent variables, the predictor variables of interest, and the control variables of interest.

Regression Models One and Two

The first two models analyzed the relationship that public funding support and institutional expenditures had towards the total graduation rate. There were 2,064 observations in model one and 2,046 observations in model two. Both models had a R^2 value of .88 and were statistically significant. The mean SAT score had significance at $p < .01$. This variable showed that each one point increase in the mean SAT score when all other variables were held constant increased the total graduation rate by .06 percent. The second model, only adding the endowment variable as another predictor, showed that the mean SAT score remained significant at $p < .01$. Still, when the mean SAT score increased by one point when all other variables were held constant, the total graduation rate by .06 percent. With regards to the relationship of student enrollment by demographic towards graduation rate, Pell Grant, Black and the sum of multiracial, American Indian and international students all showed significance in both models. The Asian, Latinx and White student enrollment were not significant in either models, but only the Asian student enrollment showed a positive relationship to the outcome variable.

The Pell Grant student enrollment was significant at the $p < .01$ level in both models. Each one unit increase in the log count for Pell Grant students when all other variables were held constant demonstrated a 2.80 percent increase in the total graduation

rate in model one. In model two, the coefficient for this same variable increased to 2.89 percent in the total graduation rate. The Black student enrollment had significance at $p < .01$ in both models, but model one showed that when this population increased by one unit in log count when all other variables were held constant, the total graduation decreased by 1.69 percent. Model two saw that a one unit increase in the log count for the Black student enrollment when all other variables were held constant decreased the total graduation rate by 1.75 percent. The enrollment for multiracial, American Indian and international students as a single group yielded significance at $p < .05$ in model one and two. This student grouping when increased by one unit in log count when all other variables were held constant showed a decrease in the total graduation by 1.02 percent in model one and a decrease by one percent in model two.

The first model only yielded statistical significance among the following financial predictors: federal funding ($p < .01$), private funding ($p < .05$) and student affairs expenditures ($p < .05$). Therefore, for every $1,000 increase in federal funding directly allocated for students when all other variables were held constant, there was a two percent decrease in the total graduation rate. Each $1,000 increase in private funding directed for funding directly allocated for students when all other variables were held constant showed a .87 percent increase in the total graduation rate. A $1,000 increase towards institutional expenditures related to student affairs showed a 1.81 percent in the total graduation rate. Private funding and student affairs expenditures were no longer significant after the endowment variable was added to the model. Federal funding remained significant at $p < .01$, but the coefficient lowered to 1.87. This indicates that for

every $1,000 increase in federal funding directly allocated for students when all other variables were held constant, the total graduation rate decreased by 1.87 percent.

Regression Model Three and Four

The third and fourth regression models analyzed the relationship that financial predictors had on the Black graduation rates. The third regression model had 2,055 observations with a R^2 value of .65 while the fourth regression model had 2,037 observations with a R^2 value of .65; both models were statistically significant. The mean SAT score for the third and fourth regression models yielded statistical significance at $p < .01$ with the coefficient for both models being .06 percent. Simply stated, for each one point increase in the mean SAT score, the Black graduation rate increased by .06 percent. The Pell Grant student enrollment was significant in both models at $p < .05$. The results for this variable in the third regression model suggested that a one unit increase in the log count for the Pell Grant student enrollment when all other variables were held constant yielded a 3.42 percent increase in the Black graduation rate. The results from the fourth regression model indicated that a one unit increase in the log count for the Pell Grant student enrollment when all other variables were held constant yielded a 3.47 percent increase in the Black graduation rate.

When student enrollment was disaggregated by race, only the White student enrollment showed statistical significance ($p < .01$) in both models while the variable that aggregated the student enrollment for multiracial, American Indian and international students showed significance ($p < .05$) in the third regression model. The Black student enrollment had a negative relationship to the Black graduation rate although the other student enrollments had a positive relationship to the Black graduation rate.

Nevertheless, a one unit increase in the log count for the White student enrollment when all other variables were held constant in both models showed a decrease in the Black graduation by 2.18 percent and 2.10 percent, respectively. The combined student enrollment for multiracial, American Indian and international students in model three showed that each one unit increase in the log count for this group when all other variables were held constant demonstrated a 1.36 percent increase in the Black graduation rate. This variable was not significant in the fourth model.

The only financial predictors that showed statistical significance for either the third or fourth models were institutional expenditures for academic support ($p < .05$) and student affairs related support ($p < .05$). Not only were both variables statistically significant in each model at $p < .05$, each variable showed a positive relationship to the Black graduation rate. Academic support showed that for each $1,000 increase in log count allocated to this funding source by an IHL when all other variables were held constant, the Black graduation rate increased by 2.49 percent and 2.23 percent, respectively. Every $1,000 increase in log count allocated towards student affairs related support when all other variables were held constant, the Black graduation increased by 3.46 percent when endowment was absent in the regression (model three), and increased to only 3.08 percent when endowment was included the regression (model four).

Regression Models Five and Six

The fifth and sixth regression models examined the relationship that financial predictors had on the Latinx graduation yielded 2,044 observations for model five and 2,027 observations for model six. Both the fifth and sixth regression models had R^2 values at .59 and both models showed statistical significance ($p < .01$). The mean SAT

score were statistically significant in both models at $p < .01$. The fifth regression model showed that a one point increase in the mean SAT score when all other variables were held constant indicated that the Latinx graduation rate increased by .06 percent. The sixth regression model showed that an increase in the mean SAT scores when all other variables were held constant increased the Latinx graduation rate by .05 percent.

The Latinx student enrollment was the only variable among the student enrollment variables that showed significance ($p < .05$) in both models. With exception to the Black student enrollment and students classified as either multiracial, American Indian or international, the student enrollment for all groups had a positive association with the Latinx graduation rate. The fifth model showed that a one unit increase in the log count for the Latinx student enrollment yielded a 1.86 percent increase in the Latinx graduation rate. The sixth model showed that a one unit increase in the log count for the Latinx student enrollment yielded a 1.78 percent increase in the Latinx graduation rate.

Among the financial predictors, only two variables yielded statistical significance in either models. In the fifth model, private funding showed statistical significance at $p < .05$ while the sixth model showed that endowment was statistically significant at $p < .01$. Regardless the model, federal funding and student affairs expenditures had a negative relationship to the outcome variable. All other financial predictors had a positive relationship to the Latinx graduation rate in models five and six. Private funding, the only financial predictor significant in model five, showed that for every $1,000 increase in log count for private funding – when all other variables were held constant – the Latinx graduation rate increased by 1.68 percent. Endowment, the only financial predictor significant in model six, showed that for every $1,000 increase in log count for

endowment – when all other variables were held constant – the Latinx graduation rate increased by 3.91 percent.

Regression Models Seven and Eight

The last two regression models for the final research question measured the relationship that the financial predictors had on the Pell Grant graduation rate. Model seven had 756 observations and model eight had 754 observations. Both models were statistically significant at $p < .01$, and both models had R^2 values of .82. The mean SAT score for both models were statistically significant at $p < .01$. The coefficient for this variable was the same in both models. Therefore, a one point increase in the mean SAT scores for the Pell Grant graduation when all other variables were held constant regardless if endowment was absent or included in the regression model, there was a .06 percent increase in the Pell Grant graduation rate.

The Black student enrollment ($p < .01$) and the Asian student enrollment ($p < .05$) were the only variables of its kind to show significance in either models. The other student enrollment variables were not significant. Yet, all these variables had a negative relationship with the outcome variable. So, when the Black student enrollment increased by one unit in log count when all other variables were held constant in model seven, the Pell Grant graduation rate decreased by 2.32 percent. When the Black student enrollment increased by one unit in log count when all other variables were held constant in model eight, the Pell Grant graduation rate decreased by 2.34 percent. Conversely, the Asian student enrollment showed that a one unit increase in the log count when all other variables were held constant in either models, there was a 1.58 and a 1.59 percent increase in the Pell Grant graduation rate, respectively. Surprisingly, none of the

financial predictors yielded statistical significance for either model seven or eight. Federal funding, state funding and expenditures for academic support all showed a negative relationship to the Pell Grant graduation rate. The other financial predictors, however, yielded a positive relationship to the outcome variable.

Chapter V

Discussion and Conclusion

The previous chapter reported the summary statistics and the results from this study. As mentioned throughout this research, this study sought to understand which institutional characteristics affect the college graduation rates for Black, Latinx and Pell Grant students. As noted in the literature, college readiness and financial support are the greatest predictors that associate with the persistence and completion rates for college students. Students who are not academically prepared, have insufficient finances, or associated with both traits are less likely to earn a college degree. Unfortunately, the mentioned student qualities disproportionately are associated with Black, Latinx and Pell Grant students. This understanding led this research to model several regressions that included this study's predictors of interest while controlling for college readiness (observed through the mean SAT score) and other institutional traits that the literature found significant.

The depth and magnitude of this data sample allowed the researcher to perform a cross-sectional time series analysis of IHLs in the sample in relationship to institutional characteristics to the six-year college graduation rates. Because the data sample included 90 percent of colleges and universities in the United States, the study yielded robust findings. The breadth of the data sample also minimized some of the limitations that sometimes occur when performing an analysis confined to a case study, a single state or a region. Another unique feature of this research pertains to examining the predictors that influence not only the total graduation rate, but the graduation rate by various student demographics. Analyzing the associations of institutional traits as they relate to the

outcomes for certain student populations illuminates that a standard model assessing the graduation rates is difficult because differentiation by each student demographic is necessary. The results delineated in the previous chapter show that while some predictors demonstrated a positive association for one, or some, of the outcome variables (e.g. academic expenditures with the Black graduation rate), this relationship was not always consistent with other outcome variables. Prior literature informs this research with regard to this observation since there are unique experiences for each student demographic; these diverse experiences by students still occur despite students attending the same school. Further discussion about these differing experiences occurs later in the chapter.

This study makes important contributions to the existing higher education literature when examining the institutional predictors associated with college graduation rates. The data are both cross sectional and time series rather than just one or the other. The data are also more objective than some of the more subjective survey data used in other highly cited studies (Astin & Oseguera, 2005; Bound, 2010; Eagan et al., 2014; Pryor et al., 2012). The included data also afford researchers access to information useful in evaluating a multitude of institutional traits associated with post-secondary success sampled from all American colleges and universities. By capitalizing on the richness of the data set, the researcher performed a thorough analysis using estimation models that yielded broad and robust results illuminating a better understanding of college graduation rates in the United States, but from the lens of equity. Applying the Equity Scorecard to this data sample not only demonstrates this theoretical framework's capability to assess equity from a macro level, but it also highlights the inequity of the American higher

education system in its totality. The latter requires expansion of the Equity Scorecard to other aspects within institutions.

The remainder of the chapter revisits the results from this study, situating the findings in the context of the study's theoretical framework and existing literature. Rather than discussing the results by each research question, the chapter first outlines the discussion by the results from the baseline variables since the direction and significance of these variables as it relates to the dependent variables did not change in each regression model. The chapter then proceeds to the discussion surrounding the predictors for all three research questions. Next, the chapter discusses the implications for policy and practice by practitioners and governing bodies. Last, the chapter offers suggestions for future research.

Discussion of Findings in Context

Descriptive Statistics Two descriptive statistics discussed in this section directly relate to the second research question and the theoretical framework: graduation rates and faculty representation by race. The descriptive statistics for graduation rates affirmed that Black, Latinx and Pell Grant students had among the lowest completion rates for all student demographics; the Black graduation rate was the lowest.[4] Astin and Oseguera (2005) note that the factors influencing the disparate educational outcomes for traditionally underrepresented students must be identified and understood by colleges and universities to diminish the gap. Harris and Bensimon (2007) suggest that assessing performance in terms of equity is the best hope to move institutions toward actualizing equitable outcomes; this impetus drives this research.

[4] The American Indian graduation rate (M = 43.6) was the second lowest

The summary statistics for faculty representation by race showed that the mean number of full-time non-white faculty was abysmally low. In 2018, approximately 75 percent of colleges and universities employed fewer than 17 Black faculty full-time and 77 percent employed fewer than 14 Latinx faculty full-time. These number are not presented in percent but rather in raw total. This researcher found it difficult to grapple with this finding. Therefore, the researcher did additional searches and tests to determine if the findings was in error, or whether a major inequity existed with regard to IHLs employing faculty of color. Unfortunately, the latter became evident. Contemporary studies confirm that the American higher education system still underperforms in employing faculty who have been historically marginalized (Davis et al., 2020). Faculty who defy the odds and obtain employment in higher education often experience negative interactions with colleagues and the work environment. A study by Louis et al. (2016) found that non-White faculty at HWIs encounter daily microaggressions from peers, endure high level of stress in the workplace, and receive limited opportunities for career advancements. The experiences of non-White faculty employed at HBCUs also endured microaggressions from their White colleagues while observing opportunities for advancement for White faculty not afforded to faculty of other races (De-Cuir-Gunby et al., 2019). The only saving grace for non-White faculty employed by HBCUs is the cultural environment existing at these institution types (De-Cuir-Gunby et al., 2019).

This study's finding coupled with the literature broadens the context for the barriers identified in higher education. The negative experiences by marginalized students mirrors the experiences by the few non-White faculty employed by American colleges and universities; this presents a new conceptual problem. The descriptive

statistics for the faculty variables alone may suggests that additional equity work is required in the American higher education system. The application of the Equity Scorecard as a theoretical framework to this finding directs the research back to the four benchmarks – access, retention, institutional receptivity and excellence. The low mean for non-White full-time faculty suggests that equity must center in all matters for IHLs, not just in matters pertaining to students. Institutions of higher learning cannot demonstrate a commitment to equity for traditionally underrepresented students if there is not a concurrent commitment to equity for the faculty that look like them.

This blunt discovery is telling about the American higher education system as it relates to institutional receptivity for schools' baseline performance for equity. If IHLs have little to no commitment towards equity by removing structural barriers for underrepresented faculty at IHLs, envisioning a commitment to remove structural barriers for students seems doubtful. If more institutions move towards an equity framework, they are likely to find that the benefits extend to multiple areas within IHLS (Llama et al., 2019). It is the hope of this author that research such as what appears in the pages above can awaken IHLs to adopt an equity framework of practice, because as a national system, there is a great deal of work to be done.

Baseline Regression To verify the literature findings about college readiness, this study performed a baseline regression for the total graduation rate and then three separate baseline regressions for the student populations of interest. The results from these regressions affirm the significance of academic preparation's effect on the six-year college graduation rate. Regardless of the regression model, the mean SAT score yielded statistically significant results for each college graduation rate examined. The study also

found that increasing the Black student enrollment had a negative relationship to the Latinx, Pell Grant and total graduation rate. The only time there was a positive association of increasing the log count of the Black student enrollment was with the Black graduation rate.

The results from the baseline regression models about the Black student enrollment are not surprising as they are consistent with the literature. Because many Black students arrive to college underprepared with the academic skills needed to meet the demands of the college environment and hail from low-income households, an increase in this population consequently leads to lower graduation rates (Astin & Oseguera, 2005; Flores et al., 2017; Horn, 2006). Though this consequence occurs by virtue of inequitable social structures (Harris & Bension, 2007), it is diminishable if there is action taken by IHLs (Bensimon, 2004).

Yet, the positive association with an increase in the Black student enrollment to the Black graduation rate is very plausible given that Black students, unlike some other racial groups, often retreat to communities and organizations within IHLs that share their same racial identity (Guiffrida & Douthit, 2010). Developing racial communities and organizations is only possible when there is a substantial population existing in that environment. This finding is consistent with findings from a study by Tinto (1993) that contends that all students must become involved in campus life to succeed, but this is especially true for Black students.

This finding becomes more poignant when considering studies that discuss the negative experiences Black students encounter at many American college campuses (Feagin, 1992; Kanter et al., 2017). Harper (2013) found that Black students encounter

similar racial hostility at Historically White Institutions (HWIs) that researchers identified in scholarship from the decades during and immediately following the modern Civil Rights Movement. These experiences noted by Harper are why Smith et al. (2016) asserted that Black students suffer from psychological stress due to the bombardment of racial microaggressions and stereotypes experienced at HWIs. Hence, escaping to people and spaces with a shared racial identity from the racial battles, a Eurocentric curricula, and the culturally void pedagogical techniques situates this finding in the context of the Equity Scorecard.

MSI Designations The findings from this study found that compared to non-MSIs, HBCUs consistently had a positive association with all the graduation rates evaluated. This predictor was consistently significant at $p < .01$, regardless of the model. These results confirmed the findings in other studies about the success that HBCUs have in educating all student populations, especially those that are historically marginalized (Capers, 2019; Richards & Awokoya, 2012). Beyond educating historically marginalized communities, the literature indicates that HBCUs yield success for all students regardless of a student's racial or socioeconomic identities (Capers, 2019).

There are several studies that posit reasoning for the success of HBCUs. Much of the literature contends that HBCUs provides a positive social climate, a welcoming environment, and have faculty that care (Richard & Awokoya, 2012). These institutions also have historical missions to serve underrepresented populations while exercising intentionality to mitigate structural and institutional racial inequalities for their students (Crewe, 2017; Morphew & Hartley, 2006). But unfortunately, too few institutions have amended their institutional culture to replicate these traits that researchers consistently

discuss as part of the environment at HBCUs. More alarming is that despite the longstanding success HBCUs have in successfully educating minority and low-income students, the funding available to these institutions is insufficient to do greater work (Brady & Parker, 2000). Litigation between public HBCUs and the state system in which these schools are members indicates that HBCUs receive inequitable funding and treatment compared to their counterparts within the same system (Coalition for Equity and Excellence in Maryland Higher Education et al. v. Maryland Higher Education Commission, 2017; Lee, 2010; United States v. Fordice, 1992). Again, this research identifies a lack of commitment to equity as the problem.

Faculty Representation by Race The summary statistics discussing faculty representation by race occurred earlier in the chapter. However, the findings for these variables also showed intriguing findings with implications suggesting that greater faculty diversification by race is necessary to address the gap in college graduation rates. Black faculty representation was statistically significant in every model and Latinx faculty in models that measured both the Black and Latinx graduation rates were also significant. These findings suggest that IHLs should do more to hire full-time faculty that share the racial identity of students or at least hire faculty that also come from a common marginalized experience. As this research noted, increasing the educational attainment level cannot occur unless the graduation rates among historically marginalized groups improve.

Contemporary literature and results from this study show that faculty diversity by race has a positive association with the graduation rates for Black, Latinx and Pell Grant students (Llama et al., 2019). This finding corroborates the results that showed by

increasing the log count of White faculty, there is a negative relationship to all graduation rates. This result does not necessarily suggest that hiring more White faculty is detrimental to improving graduation rates, but instead it suggests that a lack of racial diversity may yield a negative consequence for all students, regardless of race or income status. Thus, equity not only benefits historically marginalized students, but all students. This shows that following the approach delineated by Equity Scorecard is not only a benefit to historically marginalized students, but the American higher education system as a whole.

External Funding, Expenditures and Endowments The findings from the last eight regression models were somewhat perplexing at times. Federal funding proved statistically significant in the first two models when the total graduation rate was the dependent variable. Yet, in all of the last eight models, federal funding showed a negative association with all graduation rates, regardless the model. The results from this variable are difficult to explain given the conflicting findings in existing literature. Some studies found that federal funding has a positive association with college graduation rates (Dynarski, 2003; Singell & Stater, 2006). Other studies, however, found a negative relationship between federal aid and graduation rates (Heck et al., 2014; Johnson & Stage, 2018; Ryu, 2019). What the mixed results do suggest is that further research is necessary for this predictor. A plausible explanation for these conflicting findings is that some federal funding sources may have a positive relationship to graduation rates (e.g. Pell Grant) while other federal funding sources may have a negative relationship to graduation rates (e.g. Post-9/11 G.I. Bill). Regardless, this variable consistently had a negative relationship to graduation rates in the regression models for this study.

Private funding showed significance in two of the models that did not include endowment as a predictor, but both models measured this predictor against the total graduation rate and the Latinx graduation rate. The first model for research question three showed that private funding had a positive association to the total graduation rate. The sixth model in which the dependent variable was the Latinx graduation rate showed that there was a positive association to this predictor. A plausible explanation for this finding relates to literature suggesting that Latinx students need financial support above all else to matriculate to graduation (Lascher, 2018). Conversely, the only model that showed the endowment variable as statistically significant was in the model in which the Latinx student graduation rate was the dependent variable. The researcher explains this finding as related to limited restrictions that IHLs have in allocating funds to various discretionary needs deemed important without restrictions set by external entities that provide the money. More discretion is available to institutional leaders in their utility of endowment funds in supporting students with financial needs (Nichols & Santos, 2016). There are some limitations with how IHLs may use endowment funds, but by and large, these restrictions are considerably less compared to other revenue received by other external entities.

In the regression models assessing the financial predictors' relationship to the Black graduation rate, the results showed that academic and student affairs expenditures showed significance to the outcome variable. Student support also showed significance in the regression model that measured the total graduation when the endowment variable was not included. Allocating resources to helping students who are academically underprepared and financially disadvantaged helps raise the Black grad rate (Flores et al.,

2017). The findings from these regression models suggest that when IHLs endeavor to enact equity through financial support for populations from disadvantaged backgrounds, positive outcomes flow from that investment. The findings from these regression models are testaments to the idea that adopting an equity framework works.

Bensimon's Equity Scorecard (2004) suggests that colleges and universities must grapple with the idea that equity is paramount in practice and operations of IHLs. When synthesizing the literature, this research identified inequity permeates in multiple areas of the American higher education system. Though not new information, this study is nuanced in its approach given the sheer magnitude of the data for this analysis. This study also differed from earlier studies by collecting data that is novel to the field, the College Scorecard. Only existing for five years prior to this study, the researcher sought to analyze some highly researched topics but through data recently collected and compiled by the federal government.

The findings from this analysis contribute to the existing literature by conducting a national study of the predictors affecting the graduation rate for all students and by specific populations. The study highlights how the association as a MSI designated institution relates to the college graduation rates. Specifically, the results affirm that HBCUs have a positive relationship to college completion for all student populations. On the other hand, the results indicate that other MSIs are not achieving the success as witnessed at HBCUs. Thus, the study's results suggest that enrolling traditionally underrepresented students is insufficient if the culture and environment of the institution does not adjust to the student populations responsible for the designation.

However, public discourse still challenges the existence of HBCUs and often circulate mistruths about the quality and efficacy of these institutions (Esters & Strayhorn, 2013). Sometimes this is the result of misguided and ill-informed speculation, and at other times, it is the result of malice. Those classified in the former category need research such as the present study for enlightenment about the true performance of HBCUs. Individuals in the latter category may be more difficult to convince since their motive to create false narratives about HBCUs aims to eliminate all reminders of the horrid history of racial segregation and discrimination in the United States.

The results of the regressions of other MSIs allude to another conceptual problem. The negative association that other MSI designations have with the graduation rates evaluated shows that a diversified enrollment does not necessarily predict student success. As all the models show, MSI designations, particularly HSIs, do not have a positive association with the Latinx or Pell Grant graduation rates. This is contrary to the findings for HBCUs. This suggests that an increased enrollment by a traditionally underrepresented group not always denotes a mission and environment tailored to serve and educate the students for which the MSI designation is awarded. Morphew and Hartley (2006) identified that IHLs are intentional about their purpose and goals for students through their mission statements. The study found that the IHLs sampled in the study intentionally used specific verbiage that spoke to their commitment about certain values. Crewe (2017) speaks to this commitment and intentionality by referencing a 1971 report from the Carnegie Commission on Higher Education that noted that HBCUs have always missioned to disparage structural inequality, a commitment that non-HBCUs ought to adopt. Hence, enrolling marginalized students without committing to serve

these populations may be insufficient to these populations' success. Hence, drawing from the Equity Scorecard theoretical framework, there are policy implications to reform how the federal government renders MSIs designations beyond just numerical representation since count does not represent commitment. By also considering the institutional mission when awarding a MSI designation, the federal government may witness improvement for non-HBCU MSIs in graduating traditionally underrepresented students (Teranishi et al., 2014).

This also lends to the other finding pertaining to the need to diversify faculty. As other studies identified, Black and Latinx faculty show a positive relationship to completion rates though IHLs employ both faculty demographics at an abysmally low rate. This finding not only illuminates the need for reform in the faculty hiring process, but it has implications for expanding the Equity Scorecard as a theoretical framework. Achieving equity is not limited to just minimizing the disparate educational outcomes for students, but actualizing equity requires that IHLs give attention to equity in all aspects of an institution; this includes faculty. Last, the findings from this study offers the groundwork to expand upon research in how external funding sources and institutional expenditures affect college completion rates. The culmination of these findings not only aids IHLs to move toward equity, but it also aids in the effort by the federal and state government to create a more educated American populace.

Future Research

Additional research is necessary to understand the specific factors that enable HBCUs to perform well in educating students regardless of their racial identity and socioeconomic status. While the literature suggests that the culture and a supportive

environment are the major components of their success, further investigation is necessary to determine why this is true since the culture, selectivity, and performance of HBCUs differ across this MSI designation. Other MSIs are not performing on par with HBCUs in successfully educating students that were historically marginalized. Additional research is needed to learn more about MSIs designations that are not HBCUs. Future research should analyze whether MSI designations solely represent the student enrollment of a minoritized group or if these IHLs have traits unique to each MSI category. Another future study might usefully engage a qualitative strategy to examine the lived experiences of minoritized students responsible for the IHL receiving that respective MSI designation. This may provide more insight about the environment of MSIs from the student perspective.

The underemployment of non-White faculty indicates that further investigation is necessary to determine why IHLs employ non-White faculty at such a low rate. Given the success of Black and Latinx faculty in multiple models, it seems only advantageous that IHLs hire both groups at a higher rate. A national analysis examining the credentials of faculty hires by race may provide insight to whether there is inequity that exists in the hiring practices by IHLs. Such a study not only enhances the recommendation to expand the Equity Scorecard theoretical framework to consider other aspects of equity within IHLs, it may illuminate if IHLs perform poorly in equitable student outcomes due to a lack of institutional receptivity for committing to equity in general. Future qualitative studies related to this question's results could examine the qualities and traits of applicants that apply for faculty jobs versus those that receive an interview versus those offered employment.

Research to determine why financial aid has a negative relationship to graduation rates despite its intent to mitigate the financial need for students with lower resources is paramount. This research is critical to understanding why this unintended consequence of federal aid programs was found in this study. Future research could disaggregate federal funding by each individual funding source (e.g. Pell Grant aid, post-9/11 G.I. Bill) to determine whether there is a positive relationship for some aid sources and negative relationship for others. Model estimations that assess each federal funding source individually may affirm or refute whether federal funding has an overall negative relationship to graduation rates. Another angle for future research may use a sub-sample of this data, examining a comparison of federal funding's association when looking more specifically at public and the private institutional graduation rates. Other research may also consider whether the relative rates of funding relative to need at the individual student level have influence on its understood utility at the institutional level. Researchers might also seek to explore why state funding, private funding and institutional endowments do not show a consistent statistically significant positive association to graduation rates for all student demographics. Employing the above recommendations to the other financial predictors may show that these variables yield statistical significance. An additional study related to these results from this research question, but using qualitative techniques, could explore how state governments set the criteria for student funding (need versus merit). In the same vein, a similar qualitative study may consider how institutional leaders make decisions in appropriating money to various funding sources and whether student success is taken into consideration with these decisions.

Implications for Practice and Policy

The results from this analysis offer important implications useful to not only researchers, practitioners, and policymakers, but also to the broader public. First, researchers analyzing the determinants associated with graduation rates that do so at a national level may provide more insight to understanding this phenomenon more broadly rather than by a single institution, state or region. Second, the study offers four alternative models to more traditional models measuring college graduation rates. The first alternative model considers MSI designation as a predictor while still controlling for other various institutional characteristics. The current study affirms the literature's findings that HBCUs yield positive educational outcomes for a multitude of student populations, not just a single group. The literature also suggests that HBCUs yield comparable, and sometimes better, educational outcomes for students traditionally in underrepresented fields where there is little diversification. The findings touting the success of HBCUs is consistent across studies – this research even identified positive results. Therefore, additional financial resources allocated by the federal government and state coordinating boards towards HBCUs may not only benefit these institutions, but all students and the aforementioned entities in graduating college students at a higher rate. Conversely, the study highlights that MSIs may only receive this designation due to enumeration of minoritized groups rather than a mission for these institutions to serve that respective student population. Therefore, the federal government should reevaluate how it awards MSI designations to IHLs so that it is not misleading to prospective students who may opt to attend the MSI under the guise that the institution tailors its environment for students from a particular demographic.

The second estimation model added faculty representation by race and gender while controlling for other institutional traits. Researchers have created models with similar compositions, but the difference that this research presents is the number of control variables included in the model and the number of institutions sampled in the model. This model not only has implications for researchers to consider this variable in their analysis given the results from this study, but it also provides IHLs with a charge to create or amend institutional policy that incorporates metrics to improve their hiring practices to diversify their faculty by race. The implications yielded from the results of the second estimation model suggest the federal government extend its monitoring of IHLs as it pertains to their hiring practices. Similar to federal monitoring for IHLs' admissions process and the associated success federal monitoring had in diversifying student bodies across the United States, expanding government involvement and oversight to other aspects within post-secondary institutions may improve the diversification of the racial composition of faculty throughout the nation.

The third and fourth estimation models, similar to the second model, includes three different external sources of funding directed to students cost of attendance. The models include the institutional expenditures appropriated for students to provide academic support, social support, and financial support. At macro level, the results have policy implications suggesting that the federal government evaluate whether the amount of funds allocated per student is sufficient in moderating the cost of college of attendance. If the research finds that the federal funding is not sufficient, increasing the amount of funds to subsidize college attendance becomes compulsory. For state coordinating and governing boards, the results from the third and fourth regression

models indicate that better understanding about whether their state appropriations are actually utilized in ways to ensure that students most in need are supported. As the results suggest, this funding source yielded no statistical significance in any of the regression models performed. When considering the new metrics to receive the Georgia HOPE Scholarship, for example, the shift in requirements from need- to merit-based exclude students that need the most financial support to attend college (Condon et al., 2011). As the literature notes, low-income students often have lower high school GPAs and standardized test scores. Yet, for both the federal and state governments, the findings from this study denote that institutional financial support has the greatest positive impact to improving college graduation rates. Hence, another policy consideration for governments at both state and federal levels may be to allocate funds to institutions instead of directly to students to minimize the consequential, or inconsequential, association that federal and state funding has to graduation rates. The results relating to institutional policy indicate that allocating funding sources for specific groups may yield positive results in improving the graduation rates for historically marginalized students. Though particular institutional expenditures benefit certain student demographics, the findings show that there is a positive relationship for improving the graduation rate at their respective IHL. This maybe consequential for IHLs, but as the Equity Scorecard asserts, it is the onus of colleges and universities to render support to its students, regardless the cost, if it yields equity for students. After all, IHLs must have a mission to serve all their students; this requires that IHLs remove all structural impediments obstructing students' progress to college completion. This may also require IHLs to consider its priorities for research over instruction if ultimate result benefits students.

The results from all four models compared to some traditional models that examine graduation rates show that for different populations, different models are necessary. This overarching finding has institutional and governmental policy implications. Understanding that one size does not fit all is essential for practice and policy of IHLs, the federal government, and state governments. For the public, but applicable to the federal government, this study's results extend the utility of the College Scorecard platform (especially since this study used the College Scorecard data) for evaluating colleges and universities beyond just graduation rates. Because this study analyzed the effect of most institutional traits associated with American colleges and universities, the results for this study allows parents and students as consumers to view certain institutional characteristics present or absent within a given school that may positively or negatively affect a prospective student to earn a bachelor's degree. The latter point is essential information for Black, Latinx and Pell Grant students, but also any individual or entity that advises these students about prospective colleges and universities to attend.

Conclusion

Nearly sixty years after the federal government passed legislation and increased government oversight to eliminate inequitable opportunities in the American higher education system on the basis of color, gender, income status (among other considerations), there is still evidence that equal opportunity is not available to all students. The American higher education has improved in providing college access, but as Harper and Simmons (2019) noted, further progress is necessary. What is most telling from this study's findings is that inequity not only exists by access and completion rates

among college students, but inequity also exists by simply considering the number of full-time faculty employed by post-secondary institutions.

More than ever before, colleges and universities have an increasingly diverse student population than it did prior to the federal government initiating policy and oversight to ensure that college was accessible to all students regardless of race, gender, and income status. However, the success by the federal government unfortunately halts at college accessibility. As the literature, and this present study, demonstrate, the educational outcomes and employment of faculty of color in the United States is still disparate by race and income status. The graduation rates for Black, Latinx and Pell Grant students still remain much lower than the graduation rates of White and Asian students. Although many studies point to college readiness as the culprit, it seems that there is too little acknowledgement that inequitable opportunity is truly the biggest determinant that leads to the unfortunate educational outcomes for minority and low-income students. More troubling, it seems that institutions of higher learning perpetuate these outcomes by not acting more aggressively to remove structural impediments encountered by historically marginalized students. Yet, this is ironic because as this research demonstrates, the antidote resides within most post-secondary institutions. Institutions seeking to mitigate inequitable outcomes encountered by traditionally underrepresented students should consider identifying and adopting the success occurring within HBCUs, diversify the racial composition of faculty, and appropriate money to institutional funds that proved success to address academic readiness and financial support for students.

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Appendix A

Table 1					
Descriptive Summary Table (Original Values)					
Variable Name	**Research Definition**	**N**	**Mean**	**Data Range**	**SD**
unitid	The IPEDS identification number for individual institutions of higher learning (IHLs) that primarily confer baccalaureate degrees	1,888	N/A	N/A	N/A
DEPENDENT VARIABLES					
(Six-year Graduation Rates)					
gradtotal6	The six-year graduation rate for all students by institution	17,791	52.8418	0 – 100	20.0488
gradtotal6_blk	The six-year African-American graduation rate total by institution	16,653	41.1909	0 – 100	24.7586
gradtotal6_hsp	The six-year Latinx-American graduation rate total by institution	16,429	48.2169	0 – 100	25.6269
gradtotal6_pell	The six-year Pell-Grant graduation rate total by institution	4,954	49.0618	0 – 100	21.1970
INDEPNDENT VARIABLES					
(Faculty Representation by Gender)					
factot_men	Total faculty classified as Men	15,464	202.068	0 – 3,985	366.4168
factot_wom	Total faculty classified as Women	15,464	148.9262	0 – 2,21	234.8034
(Faculty Representation by Race)					
factot_blk	Total number of faculty classified as African-American	15,464	17.373	0 – 726	36.4300
factot_hsp	Total number of faculty classified as Latinx-American	15,464	13.6411	0 – 751	30.4666
factot_wht	Total number of faculty classified as White-American	15,464	258.5204	0 – 4,067	419.5508
factot_asnall	Total number of faculty classified as Asian-American	12,929	34.5285	0 – 1,036	81.5563
factot_other	Total number of faculty classified as multiracial, American Indian or international	15,464	16.6882	0 – 1,083	54.6250
ugenroll_totl	Total undergraduate enrollment	18,947	5622.604	100 – 72,585	8037.165
(Undergrad. Enrollment by Pell Grant Status & Race)					
titleivstuds_all	Total number of students classified as a full Pell Grant recipient	18,947	398.0412	0 – 4,165	562.8372
ugenroll_blk	Total number of students that classified as African-American	18,947	644.3929	0 – 19,714	1,246.588

Table 1 (cont.)					
Descriptive Summary Table (Original Values)					
ugenroll_hsp	Total number of students that classified as Latinx-American	18,947	605.9742	0 – 38,875	1,721.592
ugenroll_wht	Total number of students that classified as White-American	18,947		0 – 45,782	4,938.673
ugenroll_asnall	Total number of students that classified as Asian-American	14,009	361.6969	0 – 12,081	1,055.035
ugenroll_other	Total number of students that classified as multiracial, American Indian or is an international student	18,947	264.5685	0 – 12,022	562.8549
StudFacRt	The value for an institution's faculty-student ratio	18,923	14.3781	0 – 152	5.124264
adm_rate	The percent of students admitted into an IHL versus the number of students that apply	16,362	65.1254	0 – 100	19.3982
sat_avg_r	The mean SAT scores students have that enroll in an IHL	13,980	1070.826	564 – 1558	131.1205
tuitionfee_in	The cost for attendance for students charged in-state tuition and fees	18,172	19.7798	0 – 57.208	12.1473
tuitionfee_out	The cost for attendance for students charged out-of-state tuition and fees	18,172	23.0481	0 – 57.208	10.1350
instcontrol	Public IHLs compared to the reference group, Private IHLs	18,947	0.3105	0 – 1	0.4627
undergradPROG	(Categorical variable of undergraduate program profiles)				
	Arts & sciences focus, no graduate programs	15,700	0.0446	0 – 1	0.2065
	Arts & sciences focus, some graduate programs	15,700	0.0173	0 – 1	0.1302
	Arts & sciences focus, high graduate programs	15,700	0.0126	0 – 1	0.1116
	Arts & sciences focus plus professions, no graduate programs	15,700	0.0456	0 – 1	0.2086
	Arts & sciences focus plus professions, some graduate programs	15,700	0.0418	0 – 1	0.2001
	Arts & sciences focus plus professions, high graduate programs	15,700	0.0240	0 – 1	0.1531
	Balanced arts & sciences/professions, no graduate programs	15,700	0.0480	0 – 1	0.2137
	Balanced arts & sciences/professions, some graduate programs	15,700	0.1969	0 – 1	0.3997
	Balanced arts & sciences/professions, high graduate programs	15,700	0.0670	0 – 1	0.2500
	Professions plus arts & sciences, no graduate programs	15,700	0.0439	0 – 1	0.2048
	Professions plus arts & sciences, some graduate programs	15,700	0.3079	0 – 1	0.4616
	Professions plus arts & sciences, high graduate programs	15,700	0.0558	0 – 1	0.2395
	Professions focus, no graduate coexistence	15,700	0.0185	0 – 1	0.1347
	Professions focus, some graduate coexistence	15,700	0.0692	0 – 1	0.2538

	Professions focus, high graduate coexistence	15,700	0.0059	0 – 1	0.0767
carnegie_class	(Categorical variable for Carnegie designation status)				
	Baccalaureate Colleges (arts & sciences): IHLs that primarily focus on undergraduate programs, but mostly in the arts and sciences	15,700	0.1522	0 – 1	0.3593
	Baccalaureate Colleges (diverse fields): IHLs that primarily focus on undergraduate programs, but have programs beyond the arts and sciences	15,700	0.1634	0 – 1	0.3698
	Masters Colleges & Universities (small): IHLs that offers some master degrees, but still confer baccalaureate degrees	15,700	0.0762	0 – 1	0.2653
	Masters Colleges & Universities (medium): IHLs that offers a medium number of master degrees, but still confer baccalaureate degrees	15,700	0.1178	0 – 1	0.3223
	Masters Colleges & Universities (large): IHLs that offers a large number of master degrees, but still confer baccalaureate degrees	15,700	0.2194	0 – 1	0.4138
	Doctoral Universities (high research activity): IHLs that offers some graduate programs at the doctoral level, but still primarily confers baccalaureate degrees yet also emphasizes scholarly research	15,700	0.0891	0 – 1	0.2849
	Doctoral Universities (very high research activity): IHLs that offers a large number of graduate programs at the doctoral level, but still confers baccalaureate degrees yet heavily emphasizes scholarly research	15,700	0.0918	0 – 1	0.2887
	Doctoral/Professional: IHLs that primarily focuses on graduate and professional education	15,700	0.0894	0 – 1	0.2854
residential					
	Primarily residential: IHLs that have most of its students live on campus, at least the first year of college	15,700	0.3197	0 – 1	0.4664
	Highly residential: IHLs that have a significant number of its students live on campus, at least the first year of college	15,700	0.4626	0 – 1	0.4997
MSInew					

HBCU	Historically Black College or University; a federal designation awarded to IHLs founded before 1964	18,947	0.0452	0 – 1	0.2078
HSI	Hispanic Serving Institutions; IHLs with a Latinx population exceeding 25% of its total student enrollment	18,947	0.0821	0 – 1	0.2746
Other	All other MSI designated IHLs (i.e. Predominantly Black Institutions (PBIs), Alaskan Native and Native Hawaiian Institutions (ANNHIs), Tribal Colleges and Universities (TCUs), Asian American and Pacific Islander Serving Institutions (AAPISIs), & Native American Non-Tribal Institutions (NANTIs))	18,947	0.0396	0 – 1	0.1951
(Public Funding Support)					
fedsupp	The monetary value for each $1,000 of funding that IHLs receive from the federal government towards students' tuition and fees including work study	11,833	19,403.41	0 – 2,924,856	97,276.37
statesupp	The monetary value for each $1,000 of funding that IHLs receive from a state government towards students' tuition and fees	11,833	2566.3	0 – 165,056	6,309.726
privsupp	The monetary value for each $1,000 of private donations, including contracts other private funding that IHLs receive; this money could go towards students' tuition and fees	10,585	15,785.52	0 – 1,679,219	63,231.86
(Institutional Expenditures)					
instsupp	The monetary value for each $1,000 of funding that IHLs allocate towards students' tuition and fees and other scholarship types	11,833	85,370.11	0 – 2,073,600	155,349.8
AcadSupp	The monetary value for each $1,000 of funding that IHLs allocate towards offices and initiatives supporting students academically	11,833	13,222.1	0 – 1,297,483	49,970.52
StudSupp	The monetary value for each $1,000 of funding that IHLs allocate towards offices and initiatives supporting students outside the classroom	11,833	12,288.37	0 – 365,988	22,277.49
endowment	The monetary value for each $1,000 of an institution's endowment	10,981	330,003.9	0 – 3 .92e+07	1,772,475
InstrSalWgs	The monetary value for each $1,000 of funding allocated towards the salaries and wages for instruction by an individual IHL	11,833	49,300.01	0 – 2,739,126	161,522.7

RschSalWgs	The monetary value for each $1,000 of funding allocated towards the salaries and wages for research by an individual IHL	11,833	16,684.14	0 – 3016277	104,372.2
cipBus	Degrees conferred in business and related fields				
	Transportation	18,925	0.0066	0 – 1	0.0810
	Business marketing	18,925	0.6863	0 – 1	0.4640
cipSTEM	Degrees conferred in Science, Technology and Engineering and related fields				
	Agriculture	18,925	0.0006	0 – 1	0.0251
	Resources	18,925	0.0042	0 – 1	0.0645
	Computer	18,925	0.0262	0 – 1	0.1596
	Engineering	18,925	0.0049	0 – 1	0.0696
	Engineering Technology	18,925	0.0073	0 – 1	0.0851
	Biological Sciences	18,925	0.0234	0 – 1	0.1510
	Mathematics	18,925	0.0255	0 – 1	0.1575
	Physical Sciences	18,925	0.1979	0 – 1	0.3984
	Science Technology	18,925	0.0029	0 – 1	0.0538
	Construction	18,925	0.0017	0 – 1	.0417
	Mechanic Repair Technology	18,925	0.0029	0 – 1	.0538
	Precision Production	18,925	0.0027	0 – 1	.0518
	Health	18,925	0.5614	0 – 1	.4962
cipHumSS	Degrees conferred in the humanities and social sciences	18,925			
	Architecture	18,925	0.0021	0 – 1	0.0454
	Ethnic, Cultural and Gender Studies	18,925	0.0005	0 – 1	0.0230
	Communications	18,925	0.0045	0 – 1	0.0669
	Communications Tech	18,925	0.0011	0 – 1	0.0333
	Culinary	18,925	0.0003	0 – 1	0.0163
	Education	18,925	0.0058	0 – 1	0.0760
	Language	18,925	0.0009	0 – 1	0.0300
	Family Consumer Science	18,925	0.0005	0 – 1	0.0230
	Legal	18,925	0.0010	0 – 1	0.0308

	English	18,925	0.0036	0 – 1	0.0598
	Humanities	18,925	0.0092	0 – 1	0.0954
	Library	18,925	0.0001	0 – 1	0.0103
	Multidisciplinary	18,925	0.0069	0 – 1	0.0826
	Parks and Recreation Fitness	18,925	0.0038	0 – 1	0.0611
	Philosophy and Religion	18,925	0.0029	0 – 1	0.0538
	Theology and Religious Vocation	18,925	0.0346	0 – 1	0.1827
	Psychology	18,925	0.0168	0 – 1	0.1283
	Security and Law Enforcement	18,925	0.0130	0 – 1	0.1133
	Public Administration and Social Service	18,925	0.0082	0 – 1	0.0904
	Social Science	18,925	0.0218	0 – 1	0.1461
	Visual	18,925	0.1097	0 – 1	0.3126
	History	18,925	0.6817	0 – 1	0.4658
year	Observations by school year				
2012	Observations for the 2011 – 2012 School Year	18,925	0.0897	0 – 1	0.2858
2013	Observations for the 2012 – 2013 School Year	18,925	0.0910	0 – 1	0.2877
2014	Observations for the 2013 – 2014 School Year	18,925	0.0919	0 – 1	0.2890
2015	Observations for the 2014 – 2015 School Year	18,925	0.0924	0 – 1	0.2896
2016	Observations for the 2015 – 2016 School Year	18,925	0.0941	0 – 1	0.2920
2017	Observations for the 2016 – 2017 School Year	18,925	0.0950	0 – 1	0.2932
2018	Observations for the 2017 – 2018 School Year	18,925	0.0959	0 – 1	0.2944

Table 2					
Descriptive Summary Table (Log Values)					
Variable Name	**Research Definition**	**N**	**Mean**	**Data Range**	**SD**
unitid	The IPEDS identification number for individual institutions of higher learning (IHLs) that primarily confer baccalaureate degrees	1,888	N/A	N/A	N/A
DEPENDENT VARIABLES					
(Six-year Graduation Rates)					
gradtotal6	The six-year graduation rate for all students by institution	17,791	52.8418	0 – 100	20.0488
gradtotal6_blk	The six-year African-American graduation rate total by institution	16,653	41.1909	0 – 100	24.7586
gradtotal6_hsp	The six-year Latinx-American graduation rate total by institution	16,429	48.2169	0 – 100	25.6269
gradtotal6_pell	The six-year Pell-Grant graduation rate total by institution	4,954	49.0618	0 – 100	21.1970
INDEPNDENT VARIABLES					
(Faculty Representation by Gender)					
lnfac_men	Log value of faculty classified as Men	15,364	4.3656	0 – 8.2903	1.4097
lnfac_wom	Log value of faculty classified as Women	15,290	4.2128	0 – 7.9088	1.3410
(Faculty Representation by Race)					
lnfac_blk	Log value of faculty classified as African-American	13,149	2.0348	0 – 6.5876	1.3881
lnfac_hsp	Log value of faculty classified as Latinx-American	12,429	1.8661	0 – 6.6214	1.3491
lnfac_wht	Log value of faculty classified as White-American	15,431	4.7126	0 – 8.3107	1.3573
lnfac_asnall	Log value of faculty classified as Asian-American	11,257	2.4136	0 – 6.9431	1.5722
lnfac_other	Log value of faculty classified as multiracial, American Indian or international	9,718	2.0583	0 – 6.9875	1.5068
lnenroll_totl	Log value of undergraduate Enrollment Total	18,947	7.8416	4.6052 – 11.1925	1.3084
(Undergrad. Enrollment by Pell Grant Status & Race)					
lnenroll_pell	Log value of students classified as a Pell Grant recipient	14,859	5.5293	0 – 8.3345	1.4329

lnenroll_blk	Log value of students that classified as African-American	18,507	5.3074	0 – 9.8891	1.6474
lnenroll_hsp	Log value of students that classified as Latinx-American	18,522	4.9563	0 – 10.5681	1.7171
lnenroll_wht	Log value of students that classified as White-American	18,894	7.1356	0 – 10.7317	1.6124
lnenroll_asnall	Log value of students that classified as Asian-American	13,550	4.2320	0 – 9.3994	1.8274
lnenroll_other	Log value of students that classified as multiracial, American Indian or is an international student	18,434	4.2760	0 – 9.3945	1.7547
lnStudFacRt	Log value of faculty-student ratio	18,922	2.6066	0 – 5.0239	0.3530
adm_rate	The percent of students admitted into an IHL versus the number of students that apply	16,362	65.1254	0 – 100	19.3982
sat_avg_r	The mean SAT scores students have that enroll in an IHL	13,980	1070.826	564 – 1558	131.1205
lntuitionfee_in	The log value for the cost for attendance for students charged in-state tuition and fees	18,166	2.7670	0 – 4.0467	0.6960
lntuitionfee_out	The log value for the cost for attendance for students charged out-of-state tuition and fees	18,166	3.0329	0 – 4.0467	0.4809
instcontrol	Public IHLs compared to the reference group, Private IHLs	18,947	0.3105	0 – 1	0.4627
undergradPROG	(Categorical variable of undergraduate program profiles)				
	Arts & sciences focus, no graduate programs	15,700	0.0446	0 – 1	0.2065
	Arts & sciences focus, some graduate programs	15,700	0.0173	0 – 1	0.1302
	Arts & sciences focus, high graduate programs	15,700	0.0126	0 – 1	0.1116
	Arts & sciences focus plus professions, no graduate programs	15,700	0.0456	0 – 1	0.2086
	Arts & sciences focus plus professions, some graduate programs	15,700	0.0418	0 – 1	0.2001
	Arts & sciences focus plus professions, high graduate programs	15,700	0.0240	0 – 1	0.1531
	Balanced arts & sciences/professions, no graduate programs	15,700	0.0480	0 – 1	0.2137
	Balanced arts & sciences/professions, some graduate programs	15,700	0.1969	0 – 1	0.3997
	Balanced arts & sciences/professions, high graduate programs	15,700	0.0670	0 – 1	0.2500
	Professions plus arts & sciences, no graduate programs	15,700	0.0439	0 – 1	0.2048
	Professions plus arts & sciences, some graduate programs	15,700	0.3079	0 – 1	0.4616
	Professions plus arts & sciences, high graduate programs	15,700	0.0558	0 – 1	0.2395
	Professions focus, no graduate coexistence	15,700	0.0185	0 – 1	0.1347
	Professions focus, some graduate coexistence	15,700	0.0692	0 – 1	0.2538

	Professions focus, high graduate coexistence	15,700	0.0059	0 – 1	0.0767
carnegie_class	(Categorical variable for Carnegie designation status)				
	Baccalaureate Colleges (arts & sciences): IHLs that primarily focus on undergraduate programs, but mostly in the arts and sciences	15,700	0.1522	0 – 1	0.3593
	Baccalaureate Colleges (diverse fields): IHLs that primarily focus on undergraduate programs, but have programs beyond the arts and sciences	15,700	0.1634	0 – 1	0.3698
	Masters Colleges & Universities (small): IHLs that offers some master degrees, but still confer baccalaureate degrees	15,700	0.0762	0 – 1	0.2653
	Masters Colleges & Universities (medium): IHLs that offers a medium number of master degrees, but still confer baccalaureate degrees	15,700	0.1178	0 – 1	0.3223
	Masters Colleges & Universities (large): IHLs that offers a large number of master degrees, but still confer baccalaureate degrees	15,700	0.2194	0 – 1	0.4138
	Doctoral Universities (high research activity): IHLs that offers some graduate programs at the doctoral level, but still primarily confers baccalaureate degrees yet also emphasizes scholarly research	15,700	0.0891	0 – 1	0.2849
	Doctoral Universities (very high research activity): IHLs that offers a large number of graduate programs at the doctoral level, but still confers baccalaureate degrees yet heavily emphasizes scholarly research	15,700	0.0918	0 – 1	0.2887
	Doctoral/Professional: IHLs that primarily focuses on graduate and professional education	15,700	0.0894	0 – 1	0.2854
residential					
	Primarily residential: IHLs that have most of its students live on campus, at least the first year of college	15,700	0.3197	0 – 1	0.4664
	Highly residential: IHLs that have a significant number of its students live on campus, at least the first year of college	15,700	0.4626	0 – 1	0.4997

MSInew					
HBCU	Historically Black College or University; a federal designation awarded to IHLs founded before 1964	18,947	0.0452	0 – 1	0.2078
HSI	Hispanic Serving Institutions; IHLs with a Latinx population exceeding 25% of its total student enrollment	18,947	0.0821	0 – 1	0.2746
Other	All other MSI designated IHLs (i.e. Predominantly Black Institutions (PBIs), Alaskan Native and Native Hawaiian Institutions (ANNHIs), Tribal Colleges and Universities (TCUs), Asian American and Pacific Islander Serving Institutions (AAPISIs), & Native American Non-Tribal Institutions (NANTIs))	18,947	0.0396	0 – 1	0.1951
(Public Funding Support)					
lnfedsupp	The log value for the amount of funding that IHLs receive from the federal government towards students' tuition and fees including work study	11,833	8.1477	0.0344 – 14.8888	1.4019
lnstatesupp	The log value for the amount of funding that IHLs receive from a state government towards students' tuition and fees	10,343	6.9149	0 - 165056	1.6881
lnprivsupp	The log value for the amount of private donations, including contracts other private funding that IHLs receive; this money could go towards students' tuition and fees	10,188	8.2884	0 – 14.3339	1.5585
(Institutional Expenditures)					
lninstsupp	The log value for amount of funding that IHLs allocate towards students' tuition and fees and other scholarship types	11,817	10.3685	1.3279 – 14.5448	1.6037
lnAcadSupp	The log value for amount of funding that IHLs allocate towards offices and initiatives supporting students academically	11,637	8.0915	0.7203 – 14.0759	1.5734
lnStudSupp	The log value for amount of funding that IHLs allocate towards offices and initiatives supporting students outside the classroom	11,774	8.6453	0 – 12.8104	1.3924
lnendowment	The log value of an institutional wealth	10,961	10.4962	0 – 17.4851	2.0481
lnInstrSalWgs	The log value for each $1,000 of funding allocated towards the salaries and wages for instruction by an individual IHL	11,832	9.5645	2.579307 – 14.82315	1.4506

lnRschSalWgs	The log value for each $1,000 of funding allocated towards the salaries and wages for research by an individual IHL	4,038	7.3986	0 – 14.9195	2.6616
cipBus	Degrees conferred in business and related fields				
	Transportation	18,925	0.0066	0 – 1	0.0810
	Business marketing	18,925	0.6863	0 – 1	0.4640
cipSTEM	Degrees conferred in Science, Technology and Engineering and related fields				
	Agriculture	18,925	0.0006	0 – 1	0.0251
	Resources	18,925	0.0042	0 – 1	0.0645
	Computer	18,925	0.0262	0 – 1	0.1596
	Engineering	18,925	0.0049	0 – 1	0.0696
	Engineering Technology	18,925	0.0073	0 – 1	0.0851
	Biological Sciences	18,925	0.0234	0 – 1	0.1510
	Mathematics	18,925	0.0255	0 – 1	0.1575
	Physical Sciences	18,925	0.1979	0 – 1	0.3984
	Science Technology	18,925	0.0029	0 – 1	0.0538
	Construction	18,925	0.0017	0 – 1	.0417
	Mechanic Repair Technology	18,925	0.0029	0 – 1	.0538
	Precision Production	18,925	0.0027	0 – 1	.0518
	Health	18,925	0.5614	0 – 1	.4962
cipHumSS	Degrees conferred in the humanities and social sciences	18,925			
	Architecture	18,925	0.0021	0 – 1	0.0454
	Ethnic, Cultural and Gender Studies	18,925	0.0005	0 – 1	0.0230
	Communications	18,925	0.0045	0 – 1	0.0669
	Communications Tech	18,925	0.0011	0 – 1	0.0333
	Culinary	18,925	0.0003	0 – 1	0.0163
	Education	18,925	0.0058	0 – 1	0.0760
	Language	18,925	0.0009	0 – 1	0.0300
	Family Consumer Science	18,925	0.0005	0 – 1	0.0230
	Legal	18,925	0.0010	0 – 1	0.0308

	English	18,925	0.0036	0 – 1	0.0598
	Humanities	18,925	0.0092	0 – 1	0.0954
	Library	18,925	0.0001	0 – 1	0.0103
	Multidisciplinary	18,925	0.0069	0 – 1	0.0826
	Parks and Recreation Fitness	18,925	0.0038	0 – 1	0.0611
	Philosophy and Religion	18,925	0.0029	0 – 1	0.0538
	Theology and Religious Vocation	18,925	0.0346	0 – 1	0.1827
	Psychology	18,925	0.0168	0 – 1	0.1283
	Security and Law Enforcement	18,925	0.0130	0 – 1	0.1133
	Public Administration and Social Service	18,925	0.0082	0 – 1	0.0904
	Social Science	18,925	0.0218	0 – 1	0.1461
	Visual	18,925	0.1097	0 – 1	0.3126
	History	18,925	0.6817	0 – 1	0.4658
year	Observations by school year				
2012	Observations for the 2011 – 2012 School Year	18,925	0.0897	0 – 1	0.2858
2013	Observations for the 2012 – 2013 School Year	18,925	0.0910	0 – 1	0.2877
2014	Observations for the 2013 – 2014 School Year	18,925	0.0919	0 – 1	0.2890
2015	Observations for the 2014 – 2015 School Year	18,925	0.0924	0 – 1	0.2896
2016	Observations for the 2015 – 2016 School Year	18,925	0.0941	0 – 1	0.2920
2017	Observations for the 2016 – 2017 School Year	18,925	0.0950	0 – 1	0.2932
2018	Observations for the 2017 – 2018 School Year	18,925	0.0959	0 – 1	0.2944

Table 3

Multiple Linear Regression – Baseline Regressions for Six-Year Graduation Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad. Rate		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
SAT Mean	0.07	**	0	0.08	**	0	0.08	**	0	0.07	**	0
Pell Enrollment	3.99	**	0.47	3.53	**	0.64	1.96	**	0.69	3.56	**	0.61
Student Enroll. By Race												
Black Enrollment	-1.92	**	0.22	0.77	*	0.33	-0.4		0.33	-2.16	**	0.32
Latinx Enrollment	0.07		0.27	0.9	*	0.37	1.66	**	0.36	0.45		0.37
Asian Enrollment	1.7	**	0.27	1.96	**	0.39	1.11	**	0.38	3.2	**	0.38
White Enrollment	0.03		0.3	-2.29	**	0.35	-0.39		0.45	-1.51	**	0.36
Other Enrollment	-1.19	**	0.21	-1.19	**	0.29	-0.91	**	0.29	-1.49	**	0.29
Intercept	-55.77	**	0.48	-65.78	**	9.28	-65.08	**	9.57	-47.29	**	10.8
Number of Observations	9,342			9,259			9,205			3,407		
R^2	0.8			0.54			0.47			0.74		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 4

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
SAT Mean	0.07	**	0	0.08	**	0	0.08	**	0	0.07	**	0
Pell Enrollment	3.99	**	0.47	3.53	**	0.64	1.96	**	0.69	3.56	**	0.61
Student Enroll. By Race												
Black Enrollment	-1.92	**	0.22	0.77	*	0.33	-0.4		0.33	-2.16	**	0.32
Latinx Enrollment	0.07		0.27	0.90	*	0.37	1.66	**	0.36	0.45		0.37
Asian Enrollment	1.7	**	0.27	1.96	**	0.39	1.11	**	0.38	3.2	**	0.38
White Enrollment	0.03		0.3	-2.29	**	0.35	-0.39		0.45	-1.51	**	0.36
Other Enrollment	-1.19	**	0.21	-1.19	**	0.29	-0.91	**	0.29	-1.49	**	0.29
instcontrol												
Public	4.06	**	1.54	6.78	**	2.14	1.64		2.01	2.36		1.9
undergradPROG												
Arts & sciences, some grad.	-1.82		1.68	-2.52		2.27	-0.63		2.40	-5.93	*	2.83
Arts & sciences, high grad.	-5.29	**	1.87	-6.30	*	2.47	-4.32	*	2.29	-6.73	**	2.13
Arts & sciences/prof., no grad.	-3.47	*	1.37	-4.88	*	1.91	-5.50		1.84	-4.92	**	1.84
Arts & sciences/prof., some grad.	-1.35		1.44	-2.30		1.99	1.03		1.95	-2.97		1.94
Arts & sciences/prof., high grad.	-2.79		1.76	-2.57		2.34	-0.96		2.18	-4.39	*	2.21
Balanced Arts & sciences/prof. no grad.	-3.87	*	1.64	5.14	**	2.13	3.30		2.24	-6.21	**	1.96
Balanced Arts & sciences/prof. some grad.	-2.00		1.41	0.90	**	1.90	1.66		1.84	-4.34	**	1.85
Balanced Arts & sciences/prof. high grad.	-2.40		1.75	3.25	**	2.34	2.01	*	2.15	-4.94	*	2.22
Professions dom./arts & sciences, no grad.	-3.82	*	1.80	0.61	**	2.59	-0.11		2.76	-5.66	*	2.38
Professions dom./arts & sciences, some	-1.79		1.47	-4.01	**	2.03	3.81		1.93	-4.93	*	1.92
Professions dom./arts & sciences, high grad.	-2.57		1.75	-11.68	**	2.48	1.10		2.14	-6.97	**	2.26
Professions focus, no grad.	-3.13		2.43	-4.83		3.14	-5.54		3.36	-6.27	*	2.97
Professions focus, some grad.	-0.20		1.64	12.75	**	2.47	11.96		2.30	-2.76		2.22
Professions focus, high grad.	-3.84		3.10	1.53	*	4.57	-2.84		5.04	-5.02		3.88

Table 4 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
transferstat												
higher transfer-in	-1.98		2.09	-2.91		3.13	-0.79		2.56	-3.68		3.33
lower transfer-in	0.47		2.17	-7.46		3.28	1.15		2.69	-1.16		3.42
Baccalaureate Colleges: Diverse Fields	-3.05	**	1.04	0.35		1.50	0.11	*	1.61	-2.49		1.27
Master's Colleges & Universities: Small Size	-2.13		1.10	-0.74	**	1.66	-0.17		1.75	-0.90		1.45
Master's Colleges & Universities: Med. Size	-0.85		1.07	-1.08		1.53	0.56		1.52	-0.42		1.32
Master's Colleges & Universities: Large Size	-0.01		1.05	-4.01		1.55	3.81		1.49	-0.02		1.39
Doctoral Universities: High Research	-1.95		1.23	-1.79	*	1.72	4.33	*	1.66	-2.19		1.62
Doctoral Universities: Very High Research	1.10		1.48	-11.68		2.10	1.10		1.94	0.53		1.9
Doctoral/Professional	-1.32		1.12	-3.44		1.68	-0.38		1.63	-1.39		1.48
residential												
primarily residential	4.28	**	0.74	-4.83	**	0.96	-5.54	**	0.89	3.51	**	0.9
highly residential	6.08	**	0.89	-8.00	**	1.17	-5.49	**	1.13	6.25	**	1.07
lntuitionfee_in	5.48	**	1.38	-7.46		1.89	1.15		1.74	3.52	*	1.78
lntuitionfee_out	2.58		1.36	-6.41	**	1.88	-2.60	**	1.72	2.94		1.73
lnStudFacRt	-2.23	*	1.05	0.35	*	1.50	0.11		1.59	-0.62		1.57
cipBus												
transportation	-0.02		1.60	-3.80		2.10	13.06		2.12	-0.46		1.95
business marketing	-0.02		0.42	-0.74		0.63	-0.17		0.63	0.21		0.55
cipHumSS												
architecture	11.89	*	5.13	-0.06		7.91	1.31	**	5.23	20.09	**	5.92
ethnic, cultural and gender studies	4.08		2.30	-1.08		4.90	0.56		4.51			
communications	-0.22		2.44	-5.88		4.13	-3.38		4.12	-3.40		6.9
communications tech	2.28		3.42	-4.01		6.08	3.81		4.18			
culinary	-3.15		2.46	-7.24		4.38	4.33		4.74			
education	2.61		2.93	-1.79		4.81	1.10		4.36	5.96		6.39

Table 4 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All		Black Grad. Rate		Latinx Grad. Rate		Pell Grant Grad.	
Variables	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
language	-3.53	3.25	-8.50	4.49	-0.38	4.97	8.10	5.63
family consumer science	-4.84	3.82	-11.68 **	3.79	-5.54	4.61	-4.93	5.43
legal	-6.82 **	2.40	-11.04	3.65	-5.49	3.75	-11.34 *	5.69
English	0.23	2.50	-3.44	4.06	11.96	4.08	-0.41	5.49
humanties	-1.23	3.49	-4.25	4.60	3.10	5.05	1.36	6.35
library	-0.03	2.79	-4.83	4.71	-2.84	4.06		
multidisciplinary	5.28	2.94	-1.53	5.04	1.68	5.72	1.54	6.07
parks and recreation fitness	-3.22	3.22	-8.00	5.09	-0.79	5.19	-16.17 *	8.16
philosophy and religion	4.61	3.04	-0.02	5.60	4.15	4.24	-1.55	9.11
theology and religious vocation	-0.10	2.81	12.75	22.16	1.15	19.99		
psychology	2.40	3.36	1.57	5.75	-2.60	4.44	5.07	7.19
security and law enforcement	3.61	2.78	3.65	4.01	0.11	4.51	2.50	5.91
public administration and social service	0.99	2.95	0.36	4.90	13.06	5.66	-7.18	6.07
social science	2.18	2.79	1.53	4.19	-0.17	4.45	0.53	6.23
visual	2.17	2.45	-0.64	3.63	1.31	3.87	2.89	5.44
history	4.02	2.45	2.01	3.67	0.56	3.82	4.33	5.43
cipSTEM			0.00					
agriculture	4.24	3.46	9.80	11.75	-3.38	5.60		
resources	-3.43	1.89	-2.91	3.32	-0.79	2.51	2.88	4.43
computer	-1.77	1.63	-2.53	2.76	4.15	2.89	-0.92	3.33
engineering	4.28	2.82	4.43	3.65	1.15	4.19	16.87 **	6.1
engineering tech	-1.82	2.03	-1.36	2.93	-2.60	2.97	-2.12	3.78
biological studies	-2.15	2.00	-7.46 *	3.01	0.11	3.11	1.19	2.77
mathematics	-2.41	1.92	-1.58	2.73	13.06	2.77	0.93	2.84
physical science	-3.67 *	1.80	-6.41 *	2.57	-0.17	2.52	-1.59	2.51
science technology	-1.92	2.40	-3.17	4.32	1.31	3.16	-3.27	3.98

Table 4 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
construction	-2.74		2.19	0.35		3.85	0.56		2.91	-5.60		4.18
mechanic repair technology	-7.39	**	2.29	-8.79	*	4.03	-3.38	*	3.89	-2.02		3.65
precision production	1.94		6.65	-3.80		6.88	13.06		9.48	5.99		7.21
health	-3.02		1.82	-5.71	*	2.57	-0.17		2.54	-1.07		2.52
year				0.00								
2012	-0.43	*	0.18	-0.74		0.60	1.31		0.71			
2013	0.16		0.29	-0.19		0.66	0.56		0.79			
2014	-0.08		0.28	-0.06		0.62	-3.38		0.71			
2015	-0.30		0.33	-1.37	*	0.68	0.31		0.77			
2016	-0.11		0.38	-1.08		0.72	0.59		0.81			
2017	0.05		0.42	-1.47	*	0.73	-65.09		0.82	-0.97	**	0.26
2018	-4.19	**	0.48	-5.88	**	0.82	-3.38	**	0.89	-5.31	**	0.44
Intercept	-55.8	**	0.48	-65.78	**	9.28	-65.08	**	9.57	-47.29	**	10.8
Number of Observations	9,342			9,259			9,205			3,407		
R^2	0.8			0.54			0.47			0.74		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 5

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

Variables	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad. Rate		
	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
MSI												
HBCU	7.99	**	1.94	9.35	**	2.15	6.82	**	2.37	9.51	**	2.35
HSI	-1.01		1	-2.75	*	1.31	-0.41		1.17	-0.04		1.27
Other	-2.46	*	0.47	-1.78		1.28	-0.54		0.59	-1.93		1.29
SAT Mean	0.07	**	0	0.07	**	0	0.07	**	0	0.07	**	0
Pell Enrollment	3.22	**	0.51	2.68	**	0.67	1.37		0.71	2.8	**	0.66
Student Enroll. By Race												
Black Enrollment	-2.34	**	0.23	0.21	**	0.35	-0.72	*	0.34	-2.65	**	0.33
Latinx Enrollment	0.43		0.3	1.61	**	0.42	1.94	**	0.42	0.7		0.41
Asian Enrollment	1.77	**	0.27	1.98	**	0.39	1.09	**	0.38	3.25	**	0.39
White Enrollment	1.08	*	0.47	-1.17	*	0.51	0.57		0.59	-0.15		0.56
Other Enrollment	-1.15	**	0.2	-1.2	**	0.29	-0.91	**	0.29	-1.42	**	0.29
Intercept	-58.69	**	7.34	-68.43	**	9.58	-68.56	**	10	-51.36	**	11.4
Number of Observations	9,342			9,259			9,205			3,408		
R^2	0.81			0.54			0.47			0.74		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 6

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
MSI												
HBCU	7.99	**	1.94	9.35	**	2.15	6.82	**	2.37	9.51	**	2.35
HSI	-1.01		1	-2.75	*	1.31	-0.41		1.17	-0.04		1.27
Other	-2.46	*	0.47	-1.78		1.28	-0.54		0.59	-1.93		1.29
SAT Mean	0.07	**	0	0.07	**	0	0.07	**	0	0.07	**	0
Pell Enrollment	3.22	**	0.51	2.68	**	0.67	1.37		0.71	2.8	**	0.66
Student Enroll. By Race												
Black Enrollment	-2.34	**	0.23	0.21	**	0.35	-0.72	*	0.34	-2.65	**	0.33
Latinx Enrollment	0.43		0.3	1.61	**	0.42	1.94	**	0.42	0.7		0.41
Asian Enrollment	1.77	**	0.27	1.98	**	0.39	1.09	**	0.38	3.25	**	0.39
White Enrollment	1.08	*	0.47	-1.17	*	0.51	0.57		0.59	-0.15		0.56
Other Enrollment	-1.15	**	0.2	-1.2	**	0.29	-0.91	**	0.29	-1.42	**	0.29
instcontrol												
Public	3.86	*	1.51	6.50	**	2.10	1.49		2.00	2.13		1.87
undergradPROG												
Arts & sciences, some	-1.98		1.72	-2.65		2.30	-1.82		2.44	-6.22	*	2.88
Arts & sciences, high	-5.06	**	1.89	-5.00	*	2.44	-5.67	*	2.28	-6.58	**	2.15
Arts & sciences/prof.,	-3.25	*	1.38	-4.29	*	1.90	-1.85		1.84	-4.74	**	1.82
Arts & sciences/prof.,	-1.21		1.44	-2.38		1.98	-0.55		1.94	-2.93		1.94
Arts & sciences/prof.,	-2.41		1.77	-3.68		2.33	-3.50		2.17	-3.94		2.22
Balanced Arts &	-3.60	*	1.64	-8.41	**	2.12	-3.43		2.24	-6.00	**	1.95
Balanced Arts &	-2.12		1.41	-5.50	**	1.90	-2.41		1.84	-4.55	*	1.86
Balanced Arts &	-2.34		1.75	-6.29	**	2.32	-4.26	*	2.14	-4.90	*	2.22
Professions dom./arts	-3.90	*	1.81	-7.62	**	2.59	-5.41		2.76	-5.84	*	2.40
Professions dom./arts	-2.03		1.48	-7.55	**	2.03	-3.60		1.93	-5.24	**	1.94
Professions dom./arts	-2.52		1.73	-8.93	**	2.43	-4.04		2.13	-7.02	**	2.24
Professions focus, no	-2.89		2.39	-4.84		3.09	-5.34		3.35	-6.06	*	2.92
Professions focus,	-0.31		1.65	-6.92	**	2.48	-1.63		2.31	-2.85		2.23
Professions focus, high	-3.73		3.14	-10.62	*	4.71	-1.09		5.06	-5.25		3.88

Table 6 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
transferstat												
higher transfer-in	-1.23		2.06	-3.35		3.09	0.24		2.56	-2.88		3.32
lower transfer-in	0.97		2.15	-1.72		3.24	1.42		2.69	-0.71		3.41
carnegie_class												
Baccalaureate	-3.04	**	1.02	-2.69		1.47	-3.55	*	1.59	-2.56	*	1.26
Master's Colleges &	-2.25	*	1.11	-4.57	**	1.68	-2.57		1.77	-1.17		1.48
Master's Colleges &	-1.13		1.06	-2.30		1.51	-1.97		1.52	-0.86		1.31
Master's Colleges &	-0.08		1.04	-2.59		1.54	-1.03		1.49	-0.22		1.38
Doctoral Universities:	-2.63	*	1.21	-4.58	**	1.69	-3.82	*	1.65	-3.06		1.59
Doctoral Universities:	0.45		1.46	-3.76		2.06	-0.86		1.93	-0.30		1.89
Doctoral/Professional	-1.41		1.09	-3.02		1.65	-2.35		1.61	-1.65		1.46
residential												
primarily residential	3.98	**	0.74	4.71	**	0.98	3.11	**	0.90	3.18	**	0.92
highly residential	5.63	**	0.89	7.18	**	1.18	5.46	**	1.14	5.71	**	1.08
lntuitionfee_in	6.32	**	1.36	4.30	*	1.86	2.75		1.75	4.55	**	1.75
lntuitionfee_out	2.42		1.35	6.25	**	1.86	5.97	**	1.72	2.59		1.71
lnStudFacRt	-2.19	*	1.05	-2.87		1.48	-1.95		1.59	-0.87		1.56
cipBus												
transportation	-0.07		1.62	-1.51		2.12	0.38		2.15	-0.56		1.96
business marketing	0.01		0.42	0.63		0.62	-0.09		0.63	0.27		0.54
cipHumSS												
architecture	12.84	*	5.20	2.17		7.96	16.23	**	5.28	21.43	**	6.28
ethnic, cultural and	4.44		2.39	3.86		4.86	-1.28		4.54			
communications	-0.03		2.55	-7.04		4.19	-1.32		4.14	-4.14		6.86
communications tech	2.73		3.53	-3.43		6.17	4.18		4.17			
culinary	-2.94		2.58	-7.21		4.36	-0.69		4.83			
education	2.95		3.07	-1.48		4.93	4.49		4.37	7.27		6.72
language	-2.51		3.51	-7.31		4.74	1.26		5.09	7.95		6.01

Table 6 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
family consumer	-4.60		4.29	-11.30	**	3.96	1.25		4.78	-5.25		5.80
legal	-5.56	*	2.53	-9.98	**	3.72	0.51		3.85	-9.32		6.07
English	0.75		2.69	-2.92		4.17	-0.05		4.13	0.46		5.96
humanties	-0.81		3.66	-3.76		4.66	-0.90		5.12	2.00		6.79
library	0.18		3.00	-4.74		4.45	-5.23		4.14			
multidisciplinary	5.92	*	3.01	-0.91		5.10	5.18		5.71	2.86		6.41
parks and recreation	-2.91		3.28	-7.85		5.14	-5.24		5.26	-15.26		8.72
philosophy and religion	5.00		3.15	0.27		5.68	-2.61		4.25	-1.40		9.13
theology and religious	-0.12		2.98	13.06		22.05	11.88		20.12			
psychology	3.00		3.45	2.38		5.65	0.08		4.46	6.16		7.52
security and law	4.39		2.85	4.46		4.08	3.72		4.58	3.86		6.25
public administration	1.55		3.07	0.86		4.95	-1.89		5.71	-6.32		6.25
social science	2.25		2.90	1.62		4.23	-2.76		4.48	1.14		6.57
visual	2.47		2.58	-0.36		3.69	0.13		3.89	3.53		5.82
history	4.43		2.57	2.49		3.73	2.00		3.85	5.07		5.81
cipSTEM												
agriculture	3.64		3.43	9.06		11.58	-5.18		5.41			
resources	-3.98	*	1.91	-3.61		3.36	-1.21		2.49	2.31		4.28
computer	-1.91		1.68	-2.50		2.78	-3.19		2.91	-0.78		3.22
engineering	4.10		2.95	4.26		3.75	4.08		4.27	17.20	**	6.45
engineering tech	-2.82		2.44	-2.48		3.30	-1.55		3.08	-8.92	*	4.45
biological studies	-2.24		2.01	-7.44	*	3.01	1.07		3.11	1.02		2.83
mathematics	-2.65		1.94	-1.89		2.73	1.19		2.78	0.63		2.93
physical science	-3.92	*	1.84	-6.69	**	2.58	-2.84		2.51	-1.84		2.59
science technology	-2.64		2.39	-4.04		4.20	-3.34		3.19	-4.18		3.93
construction	-2.95		2.22	0.17		3.86	-0.08		2.93	-6.08		4.17
mechanic repair	-7.26	**	2.30	-9.16	*	4.11	-8.38	*	3.95	-2.06		3.40
precision production	0.02		6.23	-6.24		6.39	11.56		9.24	3.80		6.60

Table 6 (cont.)

Multiple Linear Regression – MSI Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
health	-3.23		1.85	-5.95	*	2.59	-1.55		2.54	-1.29		2.60
year												
2012	-0.44	*	0.18	-0.77		0.60	-0.19		0.71			
2013	0.17		0.29	-0.22		0.66	0.78		0.78			
2014	-0.16		0.28	-0.22		0.62	1.25		0.71			
2015	-0.40		0.33	-1.56	*	0.68	0.23		0.77			
2016	-0.21		0.38	-1.28		0.72	0.50		0.81			
2017	-0.09		0.42	-1.73	*	0.73	0.48		0.82	-1.01	**	0.26
2018	-4.16	**	0.48	-5.92	**	0.81	-3.37	**	0.89	-5.18	**	0.44
Intercept	-58.69	**	7.34	-68.4	**	9.59	-68.56	**	10	-51.36	**	11.4
Number of Observations	9,342			9,259			9,205			3,408		
R^2	0.81			0.54			0.47			0.74		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 7

Multiple Linear Regression – Faculty Representation Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
Faculty Representation												
Men	0.66		1.34	-0.03		1.96	-1.55		2.01	0.45		1.74
Women	4.50	**	1.07	5.9	**	1.55	4.71	*	2.01	6.81	**	1.58
Black	0.97	*	0.42	1.59	*	0.65	1.33	*	0.59	1.34	*	0.56
Latinx	0.27		0.4	1.36	*	0.6	1.22	*	0.58	0.73		0.63
Asian	-0.22		0.44	-0.52		0.71	0.06		0.59	-0.31		0.63
White	-3.12	*	1.4	-5.1	**	1.9	-2.55	*	3.04	-4.68	*	2.13
Other	0.02		0.25	0.03		0.36	0		0.31	-0.28		0.37
SAT Mean	0.07	**	0	0.08	**	0.01	0.07	**	0.01	0.06	**	0.01
Pell Enrollment	2.79	**	0.65	2.11	*	0.88	0.12		0.79	1.54		0.86
Student Enroll. By Race												
Black Enrollment	-3.08	**	0.32	-1.09	*	0.54	-1.64	**	0.43	-3.74	**	0.44
Latinx Enrollment	0.02		0.37	0.2		0.53	1.25	*	0.52	0.14		0.54
Asian Enrollment	1.29	**	0.34	1.98	**	0.49	0.51		0.47	2.89	**	0.46
White Enrollment	1.27	*	0.57	0.01		0.72	1.16		0.86	0.4		0.75
Other Enrollment	-1.43	**	0.27	-1.49	**	0.4	-1.11	**	0.35	-1.6	**	0.4
Intercept	-69.62	**	7.76	-74.59	**	10.46	-81.53	**	10.92	-67.92	**	10.67
Number of Observations	5,481			5,471			5,450			2,148		
R^2	0.86			0.66			0.65			0.82		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 8

Multiple Linear Regression – Faculty Representation Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
Faculty Representation												
Men	0.66		1.34	-0.03		1.96	-1.55		2.01	0.45		1.74
Women	4.50	**	1.07	5.9	**	1.55	4.71	*	2.01	6.81	**	1.58
Black	0.97	*	0.42	1.59	*	0.65	1.33	*	0.59	1.34	*	0.56
Latinx	0.27		0.41	1.36	*	0.6	1.22	*	0.58	0.73		0.63
Asian	-0.22		0.44	-0.52		0.71	0.06		0.59	-0.31		0.63
White	-3.12	*	1.4	-5.1	**	1.9	-2.55	*	3.04	-4.68	*	2.13
Other	0.02		0.25	0.03		0.36	0		0.31	-0.28		0.37
SAT Mean	0.07	**	0	0.08	**	0.01	0.07		0.01	0.06	**	0.01
Pell Enrollment	2.79	**	0.65	2.11	*	0.88	0.12		0.79	1.54		0.86
Student Enroll. By Race												
Black Enrollment	-3.08	**	0.32	-1.09	*	0.54	-1.64	**	0.43	-3.74	**	0.44
Latinx Enrollment	0.02		0.37	0.2		0.53	1.25	*	0.52	0.14		0.54
Asian Enrollment	1.29	**	0.34	1.98	**	0.49	0.51		0.47	2.89	**	0.46
White Enrollment	1.27	*	0.57	0.01		0.72	1.16		0.86	0.4		0.75
Other Enrollment	-1.43	**	0.27	-1.49	**	0.4	-1.11	**	0.35	-1.6	**	0.4
instcontrol												
Public	1.74		1.97	-0.28		2.68	-1.57		2.50	-0.02		2.54
undergradPROG												
Arts & sciences, some	-1.00		1.24	-0.08		1.82	0.17		1.95	-1.91		2.21
Arts & sciences, high	-4.15	*	1.90	-3.72		2.86	-3.52		2.41	-3.04		2.46
Arts & sciences/prof.,	-0.99		1.32	0.92		2.18	3.04		2.16	-2.04		1.97
Arts & sciences/prof.,	0.69		1.35	0.19		2.49	1.56		2.18	1.40		2.26
Arts & sciences/prof.,	-1.86		1.78	-1.30		2.78	-1.43		2.35	-0.97		2.46
Balanced Arts &	-3.00		1.79	-4.35		2.55	2.31		2.53	-5.70	*	2.38
Balanced Arts &	-1.63		1.40	-2.18		2.45	-0.64		2.02	-0.80		2.14
Balanced Arts &	-2.02		1.82	-3.14		2.79	-1.94		2.39	-1.93		2.54
Professions dom./arts	-1.28		2.60	-0.32		3.66	2.22		3.27	-1.11		3.06

Table 8 (cont.)

Multiple Linear Regression – Faculty Representation Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
Professions dom./arts	-1.38		1.55	-3.20		2.61	-0.31		2.19	-1.96		2.33
Professions dom./arts	-1.39		1.85	-4.76		2.92	-1.38		2.42	-2.90		2.57
Professions focus, no	4.22		2.77	12.32	*	5.33	4.56		3.06	0.24		4.03
Professions focus,	-0.04		1.82	-7.56	*	3.52	-0.15		2.85	-0.87		2.66
Professions focus, high	-1.83		3.48	-8.20		5.59	1.75		4.53	-0.11		4.24
transferstat												
higher transfer-in	2.62		2.39	0.55		3.50	4.72		2.67	2.68		3.63
lower transfer-in	5.33	*	2.50	3.21		3.64	7.17	*	2.83	5.07		3.79
carnegie_class												
Baccalaureate	-1.21		1.31	-1.65		2.19	-4.90	*	2.11	-1.85		1.75
Master's Colleges &	-3.12	*	1.29	-4.74	*	2.29	-4.73	*	1.87	-4.66	*	1.99
Master's Colleges &	-1.08		1.21	-1.96		2.15	-1.49		1.70	-1.36		1.69
Master's Colleges &	-0.16		1.13	-2.97		2.18	-0.71		1.55	-2.17		1.68
Doctoral Universities:	-3.56	**	1.24	-5.42	*	2.17	-4.56	**	1.69	-5.80	**	1.77
Doctoral Universities:	-1.01		1.52	-5.08	*	2.49	-1.97		2.01	-4.18	*	2.12
Doctoral/Professional	-2.72	**	1.18	-4.66	*	2.24	-4.22	*	1.67	-5.32	**	1.72
residential												
primarily residential	5.13	**	0.76	6.44	**	1.05	4.63	**	0.84	4.74	**	0.94
highly residential	7.68	**	0.93	9.97	**	1.31	7.18	**	1.08	8.57	**	1.18
lntuitionfee_in	5.18	**	1.51	-0.28		2.04	0.72		1.89	3.01		1.86
lntuitionfee_out	2.97		1.52	7.43	**	2.05	8.03	**	1.88	4.61	**	1.79
lnStudFacRt	3.15	*	1.31	1.63		1.82	3.24		1.74	5.69	**	2.08
cipBus												
transportation	-1.45		1.58	-3.96		2.28	-2.05		2.20	-3.42		1.88
business marketing	0.26		0.48	0.60		0.73	-0.23		0.63	-0.10		0.64
cipHumSS												
architecture	16.86	**	5.52	12.50	*	5.39	25.63	**	6.31	29.12	**	4.31
ethnic, cultural and	3.81		2.01	4.38		4.17	1.15		5.37			

Table 8 (cont.)

Multiple Linear Regression – Faculty Representation Designation Effect on Six-Year Grad. Rate

	Grad. Rate All		Black Grad. Rate		Latinx Grad. Rate		Pell Grant Grad.	
Variables	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
communications	-0.44	2.25	-0.56	4.07	2.67	4.95	-2.41	3.62
communications tech	5.25	3.25	0.82	6.26	11.50 *	5.54		
culinary	-2.03	2.19	0.43	4.85	6.94	5.23		
education	1.67	2.65	-2.64	4.27	11.12 *	5.17		
language	-3.29	2.94	9.65733*	4.74	8.21	5.64	12.85 **	4.05
family consumer	3.93	2.38	-2.89	4.16	17.38 **	5.03		
legal								
English	1.15	2.20	-5.50	3.61	3.32	5.41	8.28	4.31
humanties	1.58	4.54	-7.42	4.18	4.95	5.53	8.87	7.70
library	0.07	2.60	-1.67	5.24	1.14	4.87		
multidisciplinary	3.72	2.27	2.07	5.71	7.57	4.43	9.17 *	4.65
parks and recreation	-0.11	2.33	-2.47	3.89	3.90	7.35	-3.29	5.92
philosophy and religion	3.16	2.65	-1.32	4.76	11.65 *	5.22	10.61 **	4.00
theology and religious	2.42	3.75	-18.32 **	5.11	-2.56	5.76		
psychology	2.49	2.15	2.26	3.51	4.85	4.71	8.64 *	3.77
security and law	5.60 *	2.67	8.44 *	4.05	8.64	5.06	12.94 **	4.66
public administration	1.47	2.61	-0.96	4.36	5.15	4.88	6.30	4.67
social science	4.51	3.54	9.81	5.67	4.34	6.04	6.70	5.49
visual	3.93	2.04	5.11	3.20	8.88	4.55	8.08 *	3.84
history	5.45 **	1.94	6.67 *	3.08	9.98 *	4.41	8.99 *	3.75
cipSTEM								
agriculture	11.50	6.09	12.94	11.41	3.50	5.35		
resources	-6.24 **	2.00	-7.09	4.28	-5.47 *	2.67	-1.45	4.34
computer	-1.88	1.71	-3.18	3.23	-6.59 *	3.34	-2.29	3.00
engineering	0.26	2.37	3.61	4.39	-5.83	4.05	9.90 *	4.77
engineering tech	-1.77	2.09	3.29	3.88	-4.88	4.28	-0.82	5.69
biological studies	-2.56	2.29	-5.30	4.52	-1.79	3.73	2.65	3.01
mathematics	-2.04	2.22	-1.37	3.32	-1.28	3.58	6.36	3.92

Table 8 (cont.)

Multiple Linear Regression – Faculty Representation Designation Effect on Six-Year Grad. Rate

	Grad. Rate All			Black Grad. Rate			Latinx Grad. Rate			Pell Grant Grad.		
Variables	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
physical science	-5.68	**	1.74	-8.46	**	3.07	-7.21	*	2.87	-1.99		2.94
science technology	-3.06		2.38	-4.34		4.58	-6.28		3.22	-0.97		3.81
construction	-3.47		2.83	-1.37		4.26	-2.10		4.09	-3.89		4.85
mechanic repair	-7.05	**	2.13	-4.09		4.00	-7.95	*	3.67	1.96		3.86
precision production	-23.67	**	3.88	-19.09	*	7.95	-12.23	*	4.86	-12.65		6.73
health	-4.84	**	1.74	-7.82	*	3.14	-5.77	*	2.90	-1.06		2.94
year												
2012	-0.18		0.27	-1.01		0.67	0.31		0.72			
2013	0.25		0.35	0.55		0.73	1.57	*	0.77			
2014	0.39		0.39	0.40		0.74	1.65	*	0.72			
2015	0.21		0.44	-0.76		0.80	0.81		0.78			
2016	0.26		0.51	-0.70		0.84	0.78		0.86			
2017	0.28		0.55	-0.77		0.88	-0.30		0.89	-0.84	**	0.28
2018	-3.37	**	0.64	-4.79	**	1.03	-3.07	**	1.02	-4.24	**	0.48
Intercept	-69.62	**	7.76	-74.59	**	10.46	-81.55	**	10.92	-67.92	**	10.67
Number of Observations	5,481			5,471			5,450			2,148		
R^2	0.86			0.66			0.65			0.82		

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 9

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Public Support								
Federal Funding	-2.00 **	0.68	-1.87 **	0.69	-2.18	1.17	-2.05	1.18
State Funding	0.02	0.19	0	0.19	-0.35	0.32	-0.38	0.32
Private Funding	0.87 *	0.39	0.66	0.40	0.38	0.76	0.03	0.75
Institutional Expend.								
Scholarships	1.09	0.77	0.77	0.81	0.82	1.38	0.38	1.50
Academic Support	1.01	0.57	0.83	0.57	2.49 *	1.02	2.23 *	1.03
Student Support	1.81 *	0.84	1.54	0.86	3.46	1.42	3.08 *	1.39
Endowment			0.96	0.50			1.46	1.04
SAT Mean	0.06 **	0.00	0.06 **	0.01	0.06 **	0.01	0.06 **	0.01
Pell Enrollment	2.80 **	0.87	2.89 **	0.86	3.42 *	1.49	3.47 *	1.51
Stud. Enroll. By Race								
Black Enrollment	-1.69 **	0.35	-1.75 **	0.37	-0.58	0.83	-0.68	0.82
Latinx Enrollment	-0.84	0.49	-0.86	0.49	0.32	0.78	0.30	0.77
Asian Enrollment	0.22	0.43	0.31	0.43	0.51	0.83	0.62	0.82
White Enrollment	-0.08	0.54	-0.04	0.54	-2.18 **	0.69	-2.10 **	0.69
Other Enrollment	-1.02 *	0.41	-1 *	0.42	1.36 *	0.68	-1.31	0.70
Intercept	-62.47 **	11.58	-64.63 **	11.80	-87.55 **	20.79	-90.78 **	20.81
Number of Observations	2064		2046		2055		2037	
R^2	0.88		0.88		0.65		0.65	

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 9 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Latinx Grad. Rate				Pell Grant Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Public Support								
Federal Funding	-1.82	1.05	-1.35	1.03	-1.51	1.12	-1.55	1.12
State Funding	-0.03	0.38	-0.10	0.37	-0.28	0.27	-0.29	0.28
Private Funding	1.68 *	0.70	1.02	0.63	0.97	0.60	0.98	0.60
Institutional Expend.								
Scholarships	0.79	1.37	-0.13	1.50	0.51	1.11	0.43	1.12
Academic Support	1.22	0.99	0.68	1.04	-0.16	1.07	-0.15	1.08
Student Support	-0.17	1.32	-0.64	1.39	2.03	1.76	2.01	1.78
Endowment			2.91 **	1.00			0.02	0.77
SAT Mean	0.06 **	0.01	0.05 **	0.01	0.06 **	0.01	0.06 **	0.01
Pell Enrollment	0.26	1.54	0.51	1.53	1.96	1.64	1.98	1.64
Stud. Enroll. By Race								
Black Enrollment	-1.19	0.72	-1.39	0.75	-2.32 **	0.75	-2.34 **	0.75
Latinx Enrollment	1.86 *	0.88	1.78 *	0.87	-1.06	0.94	-1.03	0.95
Asian Enrollment	0.19	0.92	0.48	0.92	1.58 *	0.72	1.59 *	0.73
White Enrollment	0.34	0.80	0.37	0.81	-1.00	0.73	-1.02	0.73
Other Enrollment	-1.39	0.73	-1.27	0.73	-0.63	0.68	-0.63	0.68
Intercept	-67.39 **	22.50	-70.93 **	22.09	-96.22 **	20.41	-93.93 **	22.03
Number of Observations	2044		2027		756		754	
R^2	0.59		0.59		0.82		0.82	

The above regression models have a significance level of p < .05* and p <.01**. In this table, other controlled variables were included. These variables are as follows: (list all the variables)

Table 10

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Public Support								
Federal Funding	-2.00 **	0.68	-1.87 **	0.69	-2.18	1.17	-2.05	1.18
State Funding	0.02	0.19	0	0.19	-0.35	0.32	-0.38	0.32
Private Funding	0.87 *	0.39	0.66	0.40	0.38	0.76	0.03	0.75
Institutional Expend.								
Scholarships	1.09	0.77	0.77	0.81	0.82	1.38	0.38	1.50
Academic Support	1.01	0.57	0.83	0.57	2.49 *	1.02	2.23 *	1.03
Student Support	1.81 *	0.84	1.54	0.86	3.46	1.42	3.08 *	1.39
Endowment			0.96	0.50			1.46	1.04
SAT Mean	0.06 **	0.00	0.06 **	0.01	0.06 **	0.01	0.06 **	0.01
Pell Enrollment	2.80 **	0.87	2.89 **	0.86	3.42 *	1.49	3.47 *	1.51
Stud. Enroll. By Race								
Black Enrollment	-1.69 **	0.35	-1.75 **	0.37	-0.58	0.83	-0.68	0.82
Latinx Enrollment	-0.84	0.49	-0.86	0.49	0.32	0.78	0.30	0.77
Asian Enrollment	0.22	0.43	0.31	0.43	0.51	0.83	0.62	0.82
White Enrollment	-0.08	0.54	-0.04	0.54	-2.18 **	0.69	-2.10 **	0.69
Other Enrollment	-1.02 *	0.41	-1 *	0.42	1.36 *	0.68	-1.31	0.70
instcontrol								
Public	-11.61 *	5.70	-10.92 *	5.12	-16.09 *	7.461	-15.26 *	7.00
undergradPROG								
Arts & sciences, some	-2.13	1.43	-2.07	1.46	-3.32	3.14	-3.39	3.11
Arts & sciences, high	-1.03	2.39	-0.69	2.42	-4.43	4.15	-4.35	4.16
Arts & sciences/prof.,	-0.22	1.16	-0.17	1.16	-2.10	2.49	-2.03	2.45
Arts & sciences/prof.,	1.09	1.48	1.29	1.52	-2.94	3.24	-2.80	3.24
Arts & sciences/prof.,	-0.02	1.89	0.15	1.96	-2.19	3.72	-2.30	3.73
Balanced Arts &	-0.10	2.10	-0.53	2.24	-8.19	4.21	-8.93 *	4.48
Balanced Arts &	1.49	1.53	1.85	1.57	-5.91	3.14	-5.54	3.12

Table 10 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Balanced Arts &	-0.27	1.87	0.05	1.94	-4.82	3.47	-4.66	3.50
Professions dom./arts	-3.68	4.02	-1.97	4.61	1.92	5.79	4.38	6.37
Professions dom./arts	1.25	1.63	1.56	1.67	-7.69 *	3.27	-7.42 *	3.25
Professions dom./arts	1.32	2.19	1.31	2.26	-3.78	4.06	-4.35	4.12
Professions focus, no	0.94	5.10	-0.18	4.61	-21.71 **	7.57	-22.02 **	7.37
Professions focus,	0.94	1.86	1.46	1.88	-7.90	4.08	-7.22	4.04
Professions focus, high	0.94	4.33	1.48	4.36	-6.02	8.54	-5.39	8.53
transferstat								
higher transfer-in	3.54	3.86	3.23	4.49	15.77 **	4.53	17.24 **	4.79
lower transfer-in	4.18	3.91	3.67	4.53	18.10 **	4.87	19.32 **	5.12
carnegie_class								
Master's Colleges &	-3.31	1.86	-3.07	1.90	-6.72	4.53	-6.60	4.45
Master's Colleges &	-1.83	1.62	-1.59	1.66	-0.37	3.29	-0.09	3.29
Master's Colleges &	-0.52	1.70	-0.38	1.72	-2.04	3.26	-1.87	3.27
Doctoral Universities:	-4.37 *	1.73	-4.23 *	1.76	-6.05	3.35	-5.83	3.37
Doctoral Universities:	-3.31	2.46	-3.31	2.49	-7.33	4.76	-7.21	4.73
Doctoral/Professional	-5.13 **	1.75	-5.14 **	1.79	-5.61	3.30	-5.68	3.32
residential								
primarily residential	-1.32	2.08	-1.28	2.09	-0.01	2.47	-0.13	2.54
highly residential	1.71	2.14	1.70	2.15	5.49 *	2.77	5.37	2.84
lntuitionfee_in	-26.75 **	7.51	-25.79 **	6.46	-33.42 **	11.32	-32.46 **	10.48
lntuitionfee_out	29.09 **	7.86	28.86 **	6.85	33.33 **	12.17	33.17 **	11.36
lnStudFacRt	-1.16	1.74	-0.31	1.68	-1.86	2.94	-0.68	2.92
cipBus								
transportation	-2.16	3.16	-2.36	3.14	-5.40	5.91	-5.53	5.79
business marketing	-0.85	0.69	-0.77	0.70	0.60	1.16	0.68	1.16

Table 10 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All						Black Grad. Rate					
	Without Endow.			With Endow.			Without Endow.			With Endow.		
Variables	Coeff.		SE	Coeff.		SE	Coeff.		SE	Coeff.		SE
cipHumSS												
architecture												
ethnic, cultural and	4.87		4.86	5.11		4.92	-3.24		7.95	-2.73		8.14
communications	-0.55		2.48	-0.37		2.51	-7.08	*	3.48	-6.74		3.53
communications tech	-7.29	*	3.43	-7.63	*	3.47	-27.30	**	6.45	-27.85	**	6.47
culinary												
education	10.95		6.13	11.44		6.34	13.25		7.32	13.92		7.50
language	9.10	**	3.46	9.02	**	3.44	11.02	*	5.01	10.93	*	5.02
family consumer												
legal												
English	6.67		3.86	7.48		3.87	11.93		7.25	13.03		7.37
humanties	-1.30		2.88	-0.66		2.89	-6.09		5.42	-5.35		5.52
library												
multidisciplinary	10.08	**	3.15	10.69	**	3.07	-2.07		12.41	-1.09		12.58
parks and recreation	4.06		3.89	4.59		4.06	1.29		7.68	2.09		8.00
philosophy and religion	6.93		4.72	8.29		4.65	-11.33		7.69	-9.55		8.06
theology and religious	5.22		4.37	4.82		4.85	-6.04		8.81	-5.06		9.00
psychology	8.40		4.31	8.75	*	4.07	10.27		5.32	11.58	*	5.24
security and law	9.45	**	3.45	9.67	**	3.51	8.23		5.70	8.96		5.66
public administration	11.51	**	3.51	10.80	**	3.47	8.35		5.46	7.62		5.50
social science	9.75	**	3.26	10.68	**	3.34	12.27		7.17	13.72		7.22
visual	5.44		3.17	6.09		3.23	5.38		4.82	6.45		4.90
history	11.39	**	2.81	11.73	**	2.81	12.92	**	4.08	13.46	**	4.06

Table 10 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
agriculture								
resources	-1.25	4.13	-1.54	4.10	2.82	6.20	2.35	6.15
computer	-5.66	3.89	-6.86	3.92	-14.20 *	6.05	-15.93 **	6.11
engineering	-0.04	4.51	-1.59	4.67	0.46	7.02	-1.68	7.11
engineering tech	-4.98	4.56	-6.10	4.58	-9.40	8.36	-10.96	8.51
biological studies	-11.83 *	5.22	-10.45 *	4.71	-17.70 *	7.75	-17.19 *	7.30
mathematics	-2.40	3.30	-3.75	3.41	-0.56	7.17	-2.54	7.44
physical science	-6.40 *	3.01	-7.21 *	3.04	-11.15 *	5.37	-12.41 *	5.41
science technology	1.33	3.35	0.78	3.39	-9.20	5.33	-10.04	5.35
construction								
mechanic repair	-11.22 *	4.37	-12.00 **	4.37	-16.46	8.96	-18.00 *	8.86
precision production								
health	-6.49 *	2.96	-7.36 *	3.00	-9.50	5.23	-10.76 *	5.27
year								
2012	-0.89 **	0.31	-0.86 **	0.31	-1.99	1.18	-1.94	1.19
2013	-0.43	0.41	-0.55	0.42	-0.26	1.29	-0.43	1.30
2014	-1.24 **	0.46	-1.38 **	0.46	-2.35 *	1.15	-2.42 *	1.17
2015	-1.27 *	0.58	-1.47 *	0.58	-2.69 *	1.36	-3.01 *	1.39
2016	-1.10	0.62	-1.20	0.63	-2.71 *	1.34	-2.90 *	1.34
2017	-1.15	0.67	-1.30	0.68	-1.63	1.27	-1.86	1.29
2018	-5.11 **	0.77	-5.10 **	0.77	-5.86 **	1.32	-5.78 **	1.32
Intercept	-62.92 **	11.63	-65.17 **	11.85	-87.98 **	20.78	-91.25 **	20.81
Number of Observations	2058		2046		2055		2037	
R^2	0.88		0.88		0.65		0.65	

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included.

Table 11

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Latinx Grad. Rate				Pell Grant Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Public Support								
Federal Funding	-1.82	1.05	-1.35	1.03	-1.51	1.12	-1.55	1.12
State Funding	-0.03	0.38	-0.10	0.37	-0.28	0.27	-0.29	0.28
Private Funding	1.68 *	0.70	1.02	0.63	0.97	0.60	0.98	0.60
Institutional Expend.								
Scholarships	0.79	1.37	-0.13	1.50	0.51	1.11	0.43	1.12
Academic Support	1.22	0.99	0.68	1.04	-0.16	1.07	-0.15	1.08
Student Support	-0.17	1.32	-0.64	1.39	2.03	1.76	2.01	1.78
Endowment			2.91 **	1.00			0.02	0.77
SAT Mean	0.06 **	0.01	0.05 **	0.01	0.06 **	0.01	0.06 **	0.01
Pell Enrollment	0.26	1.54	0.51	1.53	1.96	1.64	1.98	1.64
Stud. Enroll. By Race								
Black Enrollment	-1.19	0.72	-1.39	0.75	-2.32 **	0.75	-2.34 **	0.75
Latinx Enrollment	1.86 *	0.88	1.78 *	0.87	-1.06	0.94	-1.03	0.95
Asian Enrollment	0.19	0.92	0.48	0.92	1.58 *	0.72	1.59 *	0.73
White Enrollment	0.34	0.80	0.37	0.81	-1.00	0.73	-1.02	0.73
Other Enrollment	-1.39	0.73	-1.27	0.73	-0.63	0.68	-0.63	0.68
instcontrol								
Public	-2.41	8.37	-0.77	7.16	-18.80 *	8.97	-18.64 *	9.04
undergradPROG								
Arts & sciences, some	-1.47	2.52	-1.31	2.51	-3.37	2.57	-3.38	2.58
Arts & sciences, high	-1.08	3.67	0.24	3.87	-0.38	4.13	-0.29	4.15
Arts & sciences/prof.,	1.40	2.43	1.59	2.46	-1.06	2.24	-1.08	2.25
Arts & sciences/prof.,	2.62	3.10	3.48	3.26	0.07	2.81	0.05	2.80
Arts & sciences/prof.,	0.98	3.37	1.95	3.61	-0.05	3.68	0.03	3.71
Balanced Arts &	-3.11	3.95	-4.07	4.24	-1.84	2.87	-1.87	2.88
Balanced Arts &	2.75	3.01	4.14	3.12	1.34	2.60	1.29	2.63

Table 11 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Balanced Arts &	0.47	3.24	1.91	3.48	-0.11	3.81	-0.04	3.84
Professions dom./arts	-18.74 **	6.63	-13.33	8.88	1.37	3.78	1.38	3.95
Professions dom./arts	1.40	3.16	2.67	3.29	0.62	2.82	0.61	2.87
Professions dom./arts	-1.97	3.70	-1.52	3.86	2.37	3.82	2.59	3.83
Professions focus, no	-40.63 **	11.74	-44.37 **	10.08	-13.66	10.06	-13.79	10.28
Professions focus,	2.35	4.55	4.31	4.49	-1.30	3.33	-1.36	3.37
Professions focus,	-2.81	3.88	-0.51	4.13	2.34	7.24	2.37	7.29
transferstat								
higher transfer-in	9.65	5.23	10.08	6.07	9.16	6.51	7.45	8.84
lower transfer-in	9.03	5.34	8.96	6.21	10.31	6.46	8.61	8.71
carnegie_class								
Master's Colleges &	-2.10	5.45	-2.10	5.26	-5.70 *	2.62	-5.69 *	2.62
Master's Colleges &	-3.58	3.10	-3.30	3.17	-3.14	2.45	-3.11	2.46
Master's Colleges &	-1.79	2.65	-1.70	2.78	-0.53	2.83	-0.52	2.83
Doctoral Universities:	-2.85	3.15	-2.59	3.29	-6.53 *	2.95	-6.52 *	2.96
Doctoral Universities:	-3.94	4.09	-4.22	4.18	-5.75	4.54	-5.70	4.55
Doctoral/Professional	-4.93	3.19	-5.19	3.28	-7.28 *	2.82	-7.25 *	2.83
residential								
primarily residential	-1.08	2.93	-0.85	2.91	-3.96	5.62	-3.58	5.76
highly residential	3.72	3.07	3.83	3.08	-1.25	5.65	-0.90	5.76
lntuitionfee_in	-21.94 *	10.02	-20.33 **	7.07	-29.71 *	12.70	-29.19 *	12.82
lntuitionfee_out	26.68 *	10.68	26.63 **	7.84	34.59 **	13.19	4.03703*	13.34
lnStudFacRt	0.28	2.89	2.28	2.87	2.08	2.84	2.08	2.80
cipBus								
transportation	2.07	5.64	1.19	5.46	-7.66 *	3.23	-7.85 *	3.28
business marketing	0.24	1.19	0.25	1.18	-0.58	1.16	-0.57	1.17

Table 11 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All						Black Grad. Rate					
	Without Endow.			With Endow.			Without Endow.			With Endow.		
Variables	Coeff.		SE	Coeff.		SE	Coeff.		SE	Coeff.		SE
cipHumSS												
architecture												
ethnic, cultural and	13.25	*	5.81	13.44	*	5.82						
communications	2.60		4.55	2.95		4.49	8.20		6.06	7.85		6.13
communications tech	23.77	**	7.86	22.62	**	7.92						
culinary												
education	25.57	*	10.99	25.97	*	11.27						
language	15.18	*	6.27	14.17	*	5.99	18.43	*	7.72	18.08	*	7.73
family consumer												
legal												
English	3.84		7.13	5.70		6.86						
humanties	2.56		7.03	4.59		7.21	14.56	*	7.06	14.22	*	7.21
library												
multidisciplinary	19.21	**	6.74	20.61	**	6.26	14.92	*	6.57	14.58	*	6.64
parks and recreation	15.14		8.67	16.06		8.96						
philosophy and	-2.80		9.95	0.11		10.40						
theology and religious	2.98		9.25	1.44		9.69						
psychology	26.37	*	12.37	26.46	*	11.04	20.04		10.32	19.55		10.42
security and law	12.13		8.02	12.55		7.66	18.89	*	7.55	18.50	*	7.62
public administration	-0.37		8.15	-3.25		8.60	14.06		7.42	12.56		9.01
social science	6.12		7.76	8.23		7.42	10.46		8.19	10.08		8.19
visual	14.67	*	5.67	15.94	**	5.48	10.58		7.61	10.18		7.70
history	18.04	**	5.46	18.36	**	5.15	18.95	**	6.78	18.59	**	6.82

Table 11 (cont.)

Multiple Linear Regression – Funding Sources Effect on Six-Year Grad. Rate

	Grad. Rate All				Black Grad. Rate			
	Without Endow.		With Endow.		Without Endow.		With Endow.	
Variables	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
agriculture resources	-11.46	6.83	-11.79	6.65				
computer	-4.00	9.63	-7.09	9.42				
engineering	-7.48	9.04	-11.30	8.95	5.03	8.40	5.15	8.42
engineering tech	-3.51	9.14	-6.27	8.88				
biological studies	-17.13	13.13	-10.75	11.41	-4.11	9.23	-4.15	9.25
mathematics	-8.83	8.40	-12.05	8.13	5.00 *	2.46	5.01 *	2.50
physical science	-16.31 *	7.70	-17.98 *	7.45	0.41	0.94	0.45	0.94
science technology	-14.75	7.64	-15.75 *	7.46	2.12	2.35	2.12	2.28
construction mechanic repair	-14.57	12.82	-16.19	12.07				
precision production health	-15.83 *	7.64	-17.40 *	7.42				
year								
2012	0.89	1.20	1.55	1.18				
2013	-0.14	1.16	-0.10	1.18				
2014	0.36	1.20	0.35	1.22				
2015	-0.16	1.38	-0.32	1.41				
2016	-0.01	1.40	-0.05	1.42				
2017	-1.08	1.35	-1.26	1.36	-0.79	0.54	-0.77	0.54
2018	-4.73 **	1.53	-4.31 **	1.55	-4.85 **	0.75	-4.83 **	0.76
Intercept	-66.36 **	22.49	-70.02 **	22.10	-96.40 **	20.43	-94.12 **	22.05
Number of Observations	2044		2027		756		754	
R^2	0.59		0.59		0.82		0.82	

The above regression models have a significance level of $p < .05$* and $p < .01$**. In this table, other controlled variables were included.