

**FUERZA EN NÚMEROS: LATINO REPRESENTATION ON COLLEGE  
CAMPUSES AND THE EDUCATIONAL OUTCOMES  
OF LATINO STUDENTS**

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by  
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## ABSTRACT

This study uses secondary data to explore the relationship between the percentage of Latinos enrolled in a postsecondary institution and two educational outcomes: graduating within six years and total amount in student loan debt. Research on the concentration of Latino students in higher education have mostly focused on Hispanic Serving Institutions (HSIs). HSIs are accredited postsecondary institutions with a full-time equivalent (FTE) enrollment of at least 25% Latino undergraduate students, of which at least 50% are low-income (Laden, 2001). This study takes a step back from the HSI designation (HSI vs non-HSI) and is instead centered on a prominent characteristic of an HSI: the percentage of Latinos enrolled in an institution. This study utilizes data from three different secondary data sources: the Education Longitudinal Study of 2002 (ELS:2002); the Beginning Postsecondary Students Longitudinal Study (BPS12/17); and the Integrated Postsecondary Education Data System (IPEDS). Both the ELS:2002 and the BPS 12/17 are merged separately with the IPEDS data ultimately producing two student-level datasets, equipped with institution-level information. Using this data, separate sets of regression analyses are conducted for each sample to assess the impact Latino enrollment at a postsecondary institution has on the probability of graduating within six years and the total amount of student loan debt. This study explores these associations with the notion that the mechanism through which an increase in percent Latino would benefit Latino students is through the facilitation of social inclusion and co-ethnic solidarity which may ground the student to the institution. However, it is conceivable that the structure of that solidarity and access to membership is not just a function of the size of the Latino population. This study

finds it is not. We cannot conclusively confirm a positive association between the percentage of Latinos enrolled in a postsecondary institution and its effects on the educational outcomes of Latino students. However, Latinos continue to make up a large share of college students and regardless of recruitment efforts by postsecondary institutions, their participation in higher education is expected to increase. Therefore, attention should continue to be placed on what postsecondary institutions are doing to retain their Latino students.

Para mi mamá, son tus sacrificios los que han hecho posibles mis sueños y éxitos.

To my son, may this work be a reminder that I will strive to provide you with all the support and resources you deserve.

And to all first-generation college students: this is for you. My hope is that you'll see this as a testament to what can be accomplished through hard work and perseverance. You belong and your resilience can change the world.

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# **CHAPTER 1**

## **BACKGROUND**

Latinos constitute nearly 60 million of the total US population, accounting for 52% of the overall US population growth between 2008 and 2018 (Flores, et al., 2019). Reflecting a large subgroup of the US population, Latinos are now enrolling in postsecondary institutions more than ever before, doubling in four-year enrollments since 2000 (NCES Digest of Ed Statistics 2018). In 2019, Latinos made up 21% of all undergraduate students, making them the second-largest racial/ethnic group enrolled in postsecondary education (second to non-Hispanic Whites); and before the COVID-19 pandemic, Latino students were the only racial/ethnic subgroup of students with enrollment increases between 2009-2019 (NCES, 2021).

However, despite Latinos making up an increasingly large share of four-year college students, Latino students are still disadvantaged in degree completion and student loan debt outcomes. Regarding the former, Latino student completion rates at four-year institutions lag behind those of Asian and White students (NCES Digest of Ed Statistics, 2018). Specifically, for the 2010 cohort, the 6-year completion rate of Latino students was twenty percentage points lower than Asian students and ten percentage points lower than non-Hispanic White students. Regarding the latter, 72% of Latino students also use student loans to finance their postsecondary education, in contrast to 66% of non-Hispanic White students (Student Borrower Protection Center, 2020). This unequal burden continues to later years where Latino borrowers owe a larger proportion of their initial debt than White students (83% vs 65% respectively) twelve years after beginning

college (Student Borrower Protection Center, 2020) and are more likely to default on their student loans (Scott-Clayton & Li, 2016).

The position of Latino students in both of the above outcomes is unfavorable. Higher education has often been credited with the ability to “weaken the relationship between social class origin and social class destination” (Armstrong & Hamilton, 2013, p. 227), and if students who enroll are not graduating, they are leaving the institution in a worse position than when they first enrolled: indebted and without a viable option to pay their debt back. Correspondingly, studies find that students who withdraw from college are three times more likely to default on their student loans than college graduates (Council of Economic Advisers, 2016). Adverse loan outcomes such as defaulting severely impacts a borrower’s credit and can result in other unfavorable outcomes such as lawsuits and wage garnishment (“Student Loan Delinquency and Default”, n.d.). If Latino students have lower completion rates but are more likely to finance their education with loans, then it is possible they are more susceptible to these adverse outcomes. To improve Latino college students’ outcomes, we need to understand the conditions that contribute to these disparities and those that counteract them.

This study uses secondary data to explore the influence percentage of Latino students enrolled in a postsecondary institution has on such disparities. The interest in the percentage of Latinos student stems from the belief there is significance in numbers. Sociologist Georg Simmel suggests changes in the number of participants in a group transform the social interactions within that group (Simmel, 1950). Later studies, such as Kanter (1977), expand on Simmel’s work by discussing the impact of proportional representation within a group, suggesting once a specific percentage is reached by a

minority group, changes in the social space occur. Under the context of postsecondary education, this study quantitatively explores the impact changes in the percentage of Latinos enrolled in a postsecondary institution can have on Latino students. Utilizing Vincent Tinto's theory of student departure and Tara Yosso's concept of navigational capital, theoretical motivation for this study is further grounded on the argument that a) establishing a critical mass of Latino students would allow subcommunities to form and b) membership to these subgroups would allow Latino students to acquire certain capital that is advantageous to their completion rates. This study recognizes the percentage of Latino students enrolled as a way of increasing the possibility of Latino students finding membership within a Latino community subgroup.

Research on the effects of proportional representation of Latino students in institutions of higher education have mostly focused on Hispanic Serving Institutions (HSIs). HSIs are federally defined by the percent of the student body that is Hispanic and the income characteristics of their student body. Recognized under the Title V program of the Higher Education Act (HEA), HSIs are accredited postsecondary institutions with a full-time equivalent (FTE) enrollment of at least 25% Latino undergraduate students, of which at least 50% are low-income (Laden, 2001)<sup>1</sup>. In contrast to their minority-serving counterparts, Historically Black Colleges and Universities (HBCUs) and Tribal Colleges and Universities (TCUs), HSIs were not created with the intent of serving a specific population. Therefore, HSIs are not required to have a declared mission of serving such students as other minority serving institutions (MSIs) do (Laden, 2001, p.76). While the

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<sup>1</sup> I elaborate on the definition of HSIs and how this definition is used in academic research in a later section of this proposal.

U.S. Department of Education uses the statutory definition of HSIs to determine what institutions are eligible for grant funding, the HSI designation in academic research is mostly explored using the percentage requirement and the institution's non-profit status<sup>2</sup>.

### **Gaps in Literature**

While prior studies have examined the effects of attending HSIs, the number of empirical studies dedicated to the influence of HSI designation on degree completion and student loan debt is relatively limited (Garcia et al., 2019). As a result, there are significant gaps in the HSI literature. First, most research examines the 25% FTE<sup>3</sup> enrollment Latino threshold in single states, often categorized as traditional Hispanic states (Fry, 2006), like California and Texas (Contreras & Contreras, 2015; Flores & Park, 2015). Yet, the growth rates of the Latino population are now increasing outside of traditional Hispanic states (Fischer & Tienda, 2006; Brown & Lopez, 2013; Krogstad, 2020), making it necessary to expand the location of HSI studies to other regions of the U.S.

Second, studies that do focus on HSIs nationally, do so at the institutional level. This fails to capture differences in the effect of the 25% FTE Latino threshold based on student-level characteristics. Capturing these differences is important because it allows the data to show how the HSI effect may vary for different kinds of students. Using

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<sup>2</sup> The Higher Education Act of 1965 and its amendments does not explicitly include in its legislation the requirement of non-profit status for HSI status. However, organizations such as the Hispanic Association of Colleges and Universities (HACU), Excelencia in Education (EdExcelencia), the Rutgers Graduate School of Education Center for Minority Serving Institution, and academic articles centered on HSIs have included non-profit status when discussing the federal definition of an HSI. Therefore, this study recognizes non-profit status as a de facto requirement of HSI status.

<sup>3</sup> FTE stands for full-time equivalent.

student level data also allows for the use of pre-college variables for isolating the treatment effect and allows me to explore the determinants of going into colleges with varying thresholds of Latino students.

Third, the focus on HSI designation is limiting. Using the HSI designation limits the researcher to focus only on postsecondary institutions that are non-profit institutions. This ignores for-profit institutions and prevents us from exploring the effects of Latino concentration across all institutions, regardless of sector. Yet, Latinos currently make up 15% of students who attend for-profit institutions (Deming, et al., 2012). Similarly, while the legal definition of HSIs is associated with a minimum 25% of FTE enrollment of Hispanic students (Laden, 2001), and the HSI designation is often used as a binary indicator (HSI vs non-HSI). As a result, there is a great deal of variation in the proportion of Latino students at different HSIs. Across four-year HSIs, this proportion ranged from 25% - 92% for the 2019-2020 academic school year (HACU), with HSIs in traditional Hispanic states having the highest FTE of Latino students.

Lastly, there is no literature that explores the impact of percentage of Latinos enrolled or HSIs on student loan debt outcomes. In this study, we hypothesize an indirect relationship between the percentage of Latino students enrolled and student loan debt. The mechanism through which the percentage of Latino students enrolled may affect student loan debt is through the unobserved mechanism of navigating the institution to graduate in a timely matter, which is facilitated by a larger presence of Latino students. Graduating in a timely manner in turn influences student loan debt. This is discussed further in the theoretical framework section of this study.

This study seeks to contribute to the literature in four ways: First, I use an institution level data source that allows me to include post-secondary institutions located outside of traditionally Hispanic states. Second, I merge this institution level data with two individual level datasets allowing me to keep students as the unit of analysis. This allows the incorporation of pre-college variables of Latino students which provides a foundation for causal inference. Third, I take a step back from using HSI designation (HSI vs non-HSI) as a binary indicator for the percentage of Latinos enrolled in an institution. Instead, I seek to broaden this area of inquiry by keeping the percentage of Latino students a continuous measure in my study which allows me to incorporate for-profit postsecondary institutions and account for any variation in the percentage of Latinos enrolled. Lastly, I incorporate student loan debt as an outcome of interest.

### **Aim of Study**

To explore the role Latino presence at institutions of higher education plays on the educational outcomes of Latino students, this study employs a comparative design. The main comparisons employed focuses on outcome differences based on the percentage of Latino students enrolled in a postsecondary institution (as a continuous indicator) and race/ethnicity (Latino vs non-Hispanic White and non-Hispanic Black college students). The population of interest in my study is the Latino student subgroup because of their disadvantaged position within both educational outcomes of interest. Latinos are less likely to graduate from four-year institutions within six-years when compared to other racial/ethnic groups and are a group more likely to finance their postsecondary education with student loans. Additionally, the independent variable I'm studying: the percentage of Latinos on a college campus, is directly associated with the

HSI designation used by the federal government. Under the Title V program of HEA, the U.S. Department of Education provides the opportunity of grant funding to assist HSIs in expanding “educational opportunities for, and improv[ing] the attainment of, Hispanic students” (Developing Hispanic-Serving Institutions Program - Title V). In alignment with this objective and the educational disparities faced by this subgroup of students, the main sample of interest in my study is Latino students.

In addition to having the Latino student subgroup as the population of interest, this study also includes two comparison groups: Non-Hispanic White students and non-Hispanic Black students. The non-Hispanic White comparison group is selected due to their advantaged position in graduation rates and student loan debt. The non-Hispanic Black comparison group is selected due to their similarities in educational outcomes to Latino students. Like Latino students, non-Hispanic Black students have student completion rates at four-year institutions lower than non-Hispanic White students. As illustrated in **Table 1**, for the 2013 entry cohort, the 6-year completion rate of non-Hispanic Black students was roughly 22 percentage points lower than non-Hispanic White students (NCES, 2021, Table 326.15). Non-Hispanic Black students also have higher student loan rates than non-Hispanic White students. Specifically, ninety percent of Black students use student loans to finance their postsecondary education (Student Borrower Protection Center, 2020). This is 24 percentage points greater than the rate of non-Hispanic White students.

<b>Table 1.</b> Percentage distribution of completion status at first institution attended by level of institution and race/ethnicity.		
Race/ethnicity	6-year graduation rate at 4-year institution <sup>1</sup> (2013 entry cohort)	3-year graduation rate at 2-year institution <sup>2</sup> (2017 entry cohort)
White	66.6	36.5
Black	44.3	25.0
Hispanic	57.8	32.3
Asian	76.1	42.0

**Notes:** <sup>1</sup>Includes first-time, full-time bachelor's degree-seeking students.  
<sup>2</sup>Includes first-time, full-time degree/certificate-seeking students  
**Source:** U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Graduation Rates component, Table 326.15 (2020) and Table 326.25 (2021)

### Latino Students at Two-year Institutions

In addition to their increase in four-year enrollments, Latino students also enroll in large numbers in two-year institutions. In fall 2019, the last enrollment term before the start of the COVID-19 pandemic, the proportion of Latino students that enrolled in two-year institutions, regardless of sector, was higher than any other racial ethnic group (NCES, 2021, Table 306.20). As illustrated in **Figure 1**, 41% of Latino students in higher education were enrolled in two-year institutions in contrast to 25% of non-Hispanic White students, 26% of Asian/Pacific Islander, and 31% of non-Hispanic Black students. It is also worth acknowledging that the completion gap between Latino students and White students is smaller at two-year institutions than at four-year institutions. In 2019, the three-year completion rates at two-year institutions for Latino students was 32% (NCES, 2021, Table 326.25). This was roughly four-percentage points less than the three-year completion rates for non-Hispanic White students. **Table 1** presents the three-year graduation rates for two-year institutions and six-year graduation rates at four-year institutions by race/ethnicity.

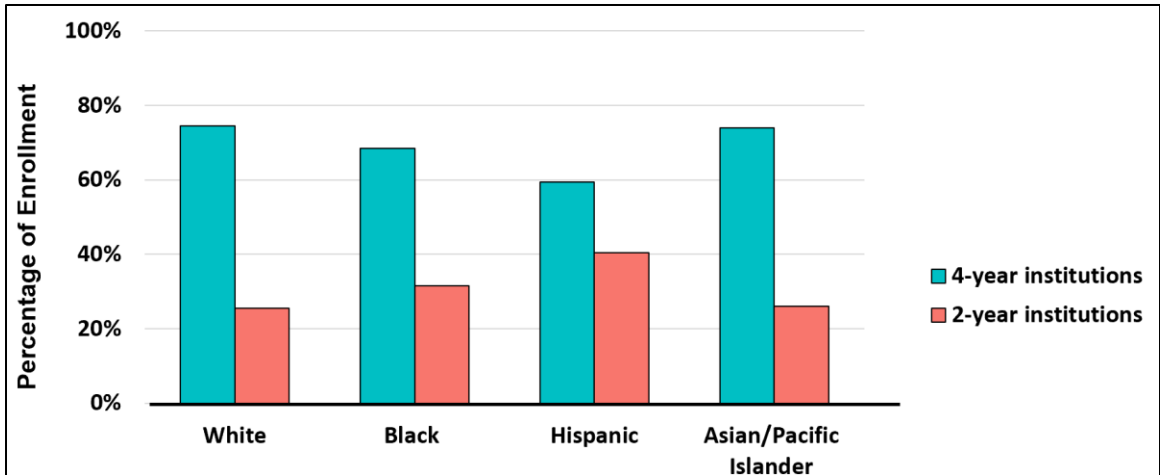


Figure 1. Total fall 2019 enrollment in degree-granting postsecondary institutions, by level and race/ethnicity. Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) Graduation Rates component, Table 306.20 (2021).

To account for their presence at two-year institutions, this study also separately analyzes students who A) start their postsecondary education at a two-year institution, and B) immediately begin their postsecondary education at a four-year institution. While Latino students perform closer to their peers in two-year institutions, the outcome of interest in this proposal remains whether or not the student received their BA within six years; an outcome that consists of larger gaps by race/ethnicity.

Altogether, this study explores the following research questions:

- A. How does the percentage of Latino students enrolled in a postsecondary institution influence the graduation status (graduating within 6 years) of Latino students in contrast to non-Latino students?
- B. How does the percentage of Latino students enrolled in a postsecondary institution influence the student loan debt amount of Latino college students in contrast to non-Latino students?

C. Is this effect of Latino presence in turn moderated by institutional characteristics (sector/control and selectivity) and personal characteristics (parental education, academic preparation, racially identifying as black)?

To answer these research questions, I analyze three secondary datasets, the Education Longitudinal Study of 2002 (ELS:2002); the Beginning Postsecondary Students Longitudinal Study (BPS12/17); and the Integrated Postsecondary Education Data System (IPEDS). The ELS:2002, which follows a cohort of high school sophomores for ten years, is a source of useful pre-college variables that will be leveraged for causal identification. The BPS12/17, following a cohort of first-time college students for six years, provides a substantially larger sample of Latino students and information on student debt and allows me to test for institutional heterogeneity in the effect of Latino representation on campus. IPEDS provides useful information on the colleges in which students enroll. I conduct regression analyses to estimate the causal effects of percent Latino on graduating within 6 years and student loan debt.

## **CHAPTER 2**

### **HISPANIC SERVING INSTITUTIONS**

The literature on the direct relationship between percentage of Latinos enrolled in a postsecondary institution and academic college outcomes is scarce. Instead, most of the engagement in the literature has been centered on HSIs, which serve as a proxy for a specific percentage of Latinos enrolled. Due to its prominence in the literature, this chapter provides an overview of HSIs.

#### **Federal Definition of HSIs**

The HSI designation was first made possible by the Higher Education Act of 1965 (HEA). The Higher Education Act of 1965 (HEA) was passed in response to demands from low-income communities and communities of color, for increased access to higher education during the Civil Rights movement (Laden, 2001). While the HEA of 1965 did not explicitly focus on the educational attainment of the Hispanic population, it did lay the foundation for future reauthorizations of the act that would eventually lead to the explicit focus on Hispanic students and HSIs (“Reauthorization of the Higher Education Act HEA”). This was done by establishing Minority-Serving Institutions (MSIs). MSIs “are institutions of higher education that serve minority populations” (“Minority Serving Institutions Program”). The first MSIs were Historically Black Colleges and Universities (HBCUs) created with a mission to serve Black college students. Tribal Colleges and Universities (TCUs) were founded a decade later with the intent to serve American Indian students “through programs that are locally and culturally based, holistic, and supportive” (“Minority Serving Institutions Program”). Today, there are seven types of MSIs with HBCUs and TCUs being the only two created with the purpose of serving

their respective populations (Espinosa, et al. 2017). The rest of the MSIs, including HSIs, had their designation established based on the percentage enrolled of a specific racial/ethnic population. Today, HSIs make up the largest proportion of MSIs (Espinosa et al., 2018).

HSIs were formally recognized in the 1992 reauthorization of the HEA. By 1992, HSIs were legally defined as institutions with full-time undergraduate enrollment of 25% Hispanic students, of which at least 50% were low-income first-generation college students, and an additional 25% of Hispanic students were either low-income or first-generation college students (20 U.S.C. 1059c; 106 Stat. 448, 473). By the 1998 reauthorization of the HEA, HSIs were placed under Title V of HEA, placing them alongside HBCUs and Tribal Colleges. Title V institutions have at least 50% of its students receiving need-based assistance or a “substantial percentage” of its students receiving federal Pell Grants (“Title V Program Statute”). Additionally, their federal definition changed to institutions with full-time equivalent (FTE) undergraduate enrollment of 25% Hispanic students, of which at least 50% are low-income (Laden, 2001; Laden, 2004).

The emphasis on the financial requirement of the HSI designation is associated with their eligibility for grant funding. MSIs are typically funded by a formula-based grant or a competitive award process (Hegji, 2017). Those funded by the former, like HBCUs, are awarded grants based on their eligibility. Essentially, these institutions do not have to apply for any grants, they just need to meet their requirements. Hispanic serving institutions obtain funding through a competitive award process. For HSIs, this is a two-step process. First, the institution must be eligible for HSI designation. The HSI

Division within the Department of Education evaluates institutions annually. Institutions who meet the requirements associated with both parts of the federal HSI definition are considered eligible for the HSI designation. If eligible, the institution can then apply to one of three HSI grants available to them. HSIs are able to apply and if awarded, use, more than one HSI grant. Specifically, HSIs are eligible for three types of Title V grant programs including the Developing Hispanic-Serving Institutions (DHSI) Program, the Hispanic-Serving Institutions – Science, Technology, Engineering, or Mathematics (HSI STEM) and Articulation Program, and the Promoting Postbaccalaureate Opportunities for Hispanic Americans (PPOHA) Program (White House Hispanic Prosperity Initiative, n.d.). All three programs have a similar objective of increasing Hispanic educational attainment and providing educational opportunities by enhancing programs and academic offerings at HSIs.

While access to grant funding may seem like a potential mechanism for how HSIs provide better academic outcomes for Latino students, it is important to acknowledge the overall percentage of HSIs that receive grant funding has decreased over time. For example, in the mid-1990s 64% of all HSIs were recipients of Title V funding. By 2010, this percentage decreased to only 25% of all HSIs (Villarreal & Santiago, 2012). This decrease in the percentage of HSIs receiving grant funding is partially attributed to the exponential growth of HSIs. For fiscal year 2019, 436 HSIs were eligible for Title V funding. That same year the Hispanic-Serving Institutions Division reported 223 grant applications. Of those, 43 awards were provided (Anguiano & Alayna Navarro, 2020). Additionally, despite having a large dependency on federal funding, it is estimated that HSIs only receive 68 cents of federal funding for every dollar received by non-HSIs

(HACU). Thus, if HSI designation does have an effect on the educational outcomes of Latino students, the extent to which it is driven by grant funding is most likely low, leaving us to focus on the other aspect of HSI designation, the FTE undergraduate enrollment of Latino students.

### **Defining HSIs in Academic Research**

It is also important to acknowledge that while the federal definition of HSIs is used for eligibility of funding, the Department of Education does not certify nor develop lists of HSIs. Therefore, the designation of HSIs in academic research relies strongly on the discretion of the researcher and often uses institutional data to determine whether an institution meets the 25% threshold. Less attention is given to the financial component of the HSI designation. An observation I made from reviewing the current literature on HSIs is that this decision often varies by the number institutions included in the study and whether the study is quantitative or qualitative. When a study is strictly quantitative and focuses on large numbers of HSIs, HSIs are often defined solely by the 25% threshold, regardless of federal designation. In Garcia (2012), HSIs are defined strictly by the FTE population of Latino students, regardless of having been granted eligibility as an HSI by the Department of Education. Flores and Park (2005) also use the 25% threshold for identifying HSIs in Texas. There is no mention of the percentage of students who identify as low-income in either study. Rodríguez & Calderón Galdeano (2015) use a list provided by the Hispanic Association of Colleges and Universities (HACU)<sup>4</sup>.

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<sup>4</sup> HACU is an advocacy organization with a mission to “increase Hispanic educational attainment rates” (Laden, 2001; Laden, 2004).

In qualitative studies or case studies, some researchers select institutions that are federally designated as HSIs. In Garcia et al. (2019), the authors used data from the Midwest HSI Study. The Midwest HSI Study consists of three HSIs, all of which were federally recognized as HSIs at the time of the study. In Garcia and Dwyer (2018) the authors compare an HSI with an emerging HSI. The HSI chosen here was federally recognized as an HSI institution. Meaning, the institution also met the financial criteria.

### **HSIs and This Study**

My research differs from studies that engage with HSI designation in two ways. First, the focal predictor of this study is not centered on whether an institution is formally or informally designated as an HSI. Instead, my focal predictor focuses on a prominent characteristic of an HSI: the percentage of Latinos enrolled in an institution. Second, my study does not limit my sample to students who attend non-profit institutions. Because the HSI designation can only be applied to non-profit degree granting institutions, studies that explore the effect of HSIs limit the scope of their treatment and control groups to non-profit institutions. By not making the HSI designation my focal predictor and by not restricting my sample to students who only attend non-profit institutions, I expect to find variation in the effect of proportion of Latinos enrolled by percentage size and type of institution.

## **CHAPTER 3**

### **THEORETICAL FRAMEWORK AND LITERATURE**

The main theoretical framework used in this study is Tinto's theory of student departure. Considering this study is centered on the impact of the percentage of Latino students enrolled in a postsecondary institution on student academic outcomes, Tinto's theory is applied because of the emphasis it places on the relationship between the student and their college environment. This section also includes a brief discussion of Tara Yosso's concept of navigational capital and its conceivable connection to Tinto's belief of membership and my student population of interest.

#### **Tinto's Theory of Student Departure**

Tinto's model begins by acknowledging there is a range of characteristics a student brings with them when entering a postsecondary institution. The first is a set of three pre-entry attributes that have been identified by previous literature on student retention to influence the degree to which students achieve academic or social integration at postsecondary institutions. The three groups include family background, skills and abilities, and prior schooling (Tinto, 1975). These pre-entry attributes are assumed to influence a second set of variables which also develop before entrance to the institution: intention and commitment. The former generally refers to expectations set by the student regarding their postsecondary goals (i.e., obtaining a master's degree). The latter refers to the level of commitment the student has towards the institution of attendance (Tinto, 1975). The higher these levels of expectation and commitment are, the more likely the student is to graduate from the institution.

Once enrolled, Tinto identifies variables that may influence the student's level of academic and social integration. Variables affecting either academic or social integration are further classified as formal or informal factors. For example, a formal measure of academic integration would be academic performance, like GPA, while an informal measure of social integration would be peer group interactions (Tinto, 1975). The higher the integration, academic and social, the higher the commitment the individual will have to their expectations and the institution (Tinto, 1975). It is this interaction between the individual's commitment to their expectations and their institution together that influences the probability of them dropping out of the postsecondary institution. Additionally, different combinations of the level of commitment for each category could develop different outcomes. One example is a higher level of commitment to their educational intentions but lower commitment to the institution they are enrolled in. This may lead to the student transferring to a different institution.

However, it is important to acknowledge that Tinto's theory of student departure has been criticized for its assimilationist assumptions. Often, this was due to the use of the word "integration" which suggests racial minorities need to abandon their former cultures to assimilate to the dominant culture within the college (Tierney, 1999; Kuh & Love, 2000). In later publications, Tinto explained that at the time this theory was developed, the word "integration" was meant to mean the opposite of segregation, a charged word at the time. However, acknowledging its implications today, Tinto has changed this term to membership. Tinto has also expanded his work to discuss the role of subcultures in postsecondary institutions and how membership into those subcultures is especially important for students of color attending predominantly white institutions.

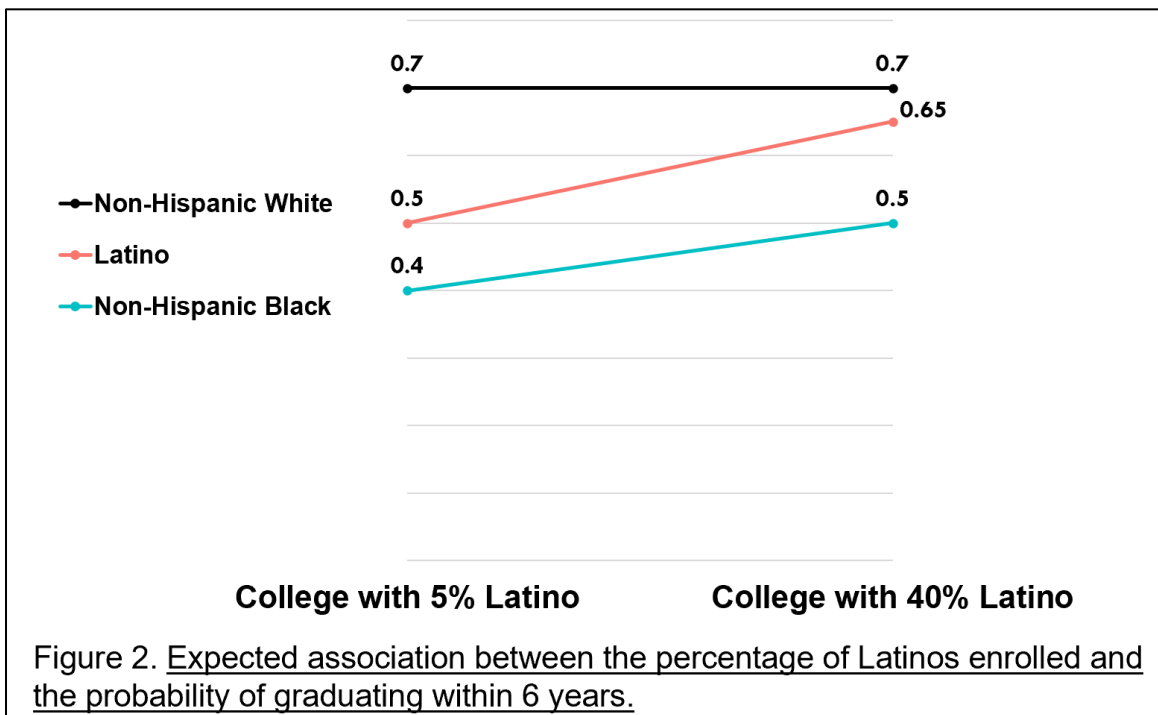
## What is Applied

One of the most critical components of Tinto's model today is the role of communities. Postsecondary institutions are not monolithic; they are made up of multiple communities or subgroups (Tinto, 1993, p. 105). Tinto's model posits students need to find at least one subgroup in which they can seek membership into. It is through membership in those communities that a student becomes committed to the institution and to the members of that community, ultimately influencing the student's decision to remain at the institution.

Tinto finds that subculture is especially important for students of color who may have more difficulty finding a community when attending a predominantly white institution. According to Tinto, there is a transition that takes place when a student moves on to attend college. This transition includes a degree of separation from previous communities which leads to issues of adjustments. Students of color who attend predominantly white institutions may have a harder time finding a basis for membership with others of like backgrounds. Tinto thus highlights the importance of establishing a critical mass of students where "viable communities can be formed" (Tinto, 1993, p.59).

This study recognizes the percentage of Latino students enrolled as an informal institution-level factor, which may facilitate the social inclusion of Latino students, and thus increase the probability of them graduating within six years and decrease their total amount in student loans. Consider **Figure 2** as a means of illustrating this notion for graduating within six years. On average, non-Hispanic white students have a higher chance of graduating within 6 years than Latino students and non-Hispanic Black students, net of control variables. I expect this gap to diminish for Latino students and

non-Hispanic Black students as the number of Latinos enrolled increases. The mechanism through which the percentage of Latino students enrolled may facilitate the social inclusion of a Latino and non-Hispanic Black student, is by increasing the possibility of the student finding membership within a Latino community subgroup. From a social capital perspective, there are situational circumstances that generate group-oriented behavior and influence altruistic behavior among those in that group (Portes, 1998)<sup>5</sup>. In racially or ethnically homophilous relationships, the commonality of racial identity and society's response to that identity may influence membership and formation of social and cultural capital.



<sup>5</sup> While Latino and non-Hispanic Black groups are often separated in racial/ethnic categories, both racial/ethnic groups have shared experiences. In postsecondary education this can take the form of exclusion/barriers and disadvantages. Additionally, the Latino population can be of any race and increase in the enrollment of Latino students can also include students who identify as Afro-Latino.

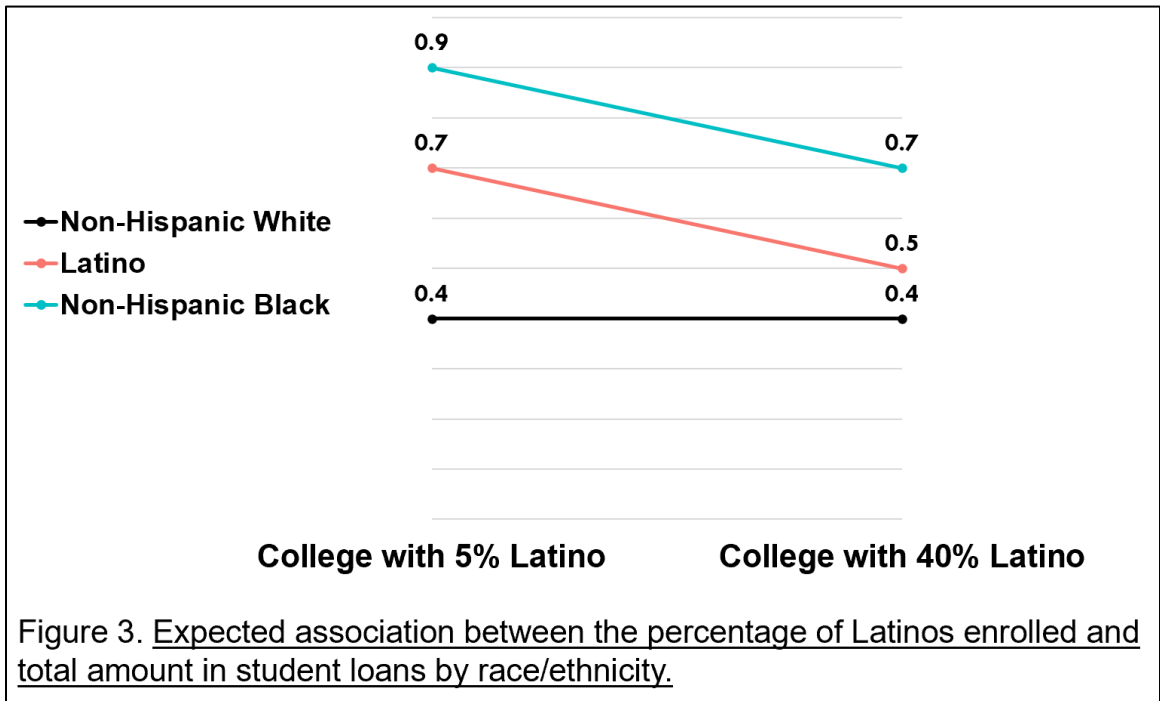
Correspondingly, membership yields information flows that can help students navigate their postsecondary institution. One example is navigational capital. Derived from Tara Yosso's Community Cultural Wealth Framework<sup>6</sup>, navigational capital refers to the skills of "maneuver[ing] through institutions not created with Communities of Color in mind" (Yosso, 2005, p.80). Because providing this resource requires an individual to not only have these skills of maneuvering through the institution, but to also have done so as a student of color, racial and ethnic heterophilous networks cannot provide this form of resource. In the context of this proposal, Yosso (2005)'s concept of community cultural wealth is used to assert that subcommunities of Latino students can provide forms of capital, in particular navigational capital, that can be beneficial to the educational outcomes of its students.

Now consider **Figure 3** as a means of illustrating this notion for the outcome total amount in student loans. On average, Latino students and non-Hispanic Black students are expected to be more indebted than non-Hispanic white students net of control variables. I expect this gap to diminish as the number of Latinos enrolled increases. The mechanism through which the percentage of Latino students enrolled may facilitate a decrease in the total amount in student loans is through the unobserved mechanism of navigating the institution to graduate in a timely matter. Due to the social inclusion and membership information flows discussed earlier, the expectation is if there are more

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<sup>6</sup> Yosso (2005) challenges the deficit perspective used exclusively on the cultural capital fostered in communities of color, also considered nondominant groups. Specifically, Yosso critiques this "deficit theorizing" and acknowledges that existing data supporting this notion may be limited or bias due to the absence of specific perspectives, usually found within nondominant groups. Questioning what is considered cultural capital, Yosso discusses six aspects of capital to explain the different strengths fostered in these communities and refers to these strengths as community cultural wealth.

Latinos enrolled, Latino and non-Hispanic Black students may be able to get through college faster. In contrast, the fewer Latinos enrolled, the longer it might take Latino and non-Hispanic Black students to finish their degree, if at all, which may result in more accumulated debt. The relationship in this case between the percentage of Latinos enrolled and the amount in student loan debt would be considered more indirect in the sense that the mechanism is how much time the student is spending in college.



### Literature Review

The literature review that follows is divided into four sections. It begins with a brief overview on the associations between percent Latino and the academic outcomes of Latino students in high schools. While this literature is still minimal, exploring the effect of percent Latino in secondary schools can help speak to the possible effects of racial composition in institutions of higher education. The second section discusses the research relevant to the percentage of Latino students in postsecondary education. However, most

of the engagement in this literature has been centered on HSIs, which serve as a proxy for a specific percentage of Latinos enrolled. Due to this I also discuss the existing literature on HSIs and graduation rates. The fourth section discusses the effects of co-ethnic racial composition in a postsecondary institution effect on other another racial minority group, African American/Black students. Lastly, according to Tinto's theory of student departure, the educational persistence of students in higher education is a longitudinal process that is influenced by both institution- and individual-level factors (Tinto, 1975). Thus, the final section discusses the role of institution-level and individual-level factors as they are associated with either the Latino population or either of my outcome variables.

### **Percent Latino and High Schools**

Traditionally, studies that explore the impact of racial composition of high schools focus specifically on Black and non-Hispanic White students (Crain & Mahard, 1978; Brown-Jeffy, 2006; Hanushek et al., 2009). Less attention has been given to the effects of the percentage of Latino students enrolled. The literature that does include Latino students suggest a positive effect of percent Latino on educational aspirations but whether percent Latino has a positive effect on academic achievement is mixed.

Lee (2007), a cross-sectional study that attempts to look at the effects of racial composition on academic achievement, uses Add Health data<sup>7</sup> and measures academic

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<sup>7</sup> Add Health refers to the National Longitudinal Study of Adolescent to Adult Health. While this is a longitudinal study with data from 5 waves, the author uses data from Wave 1.

achievement by using the Add Health Picture Vocabulary Test score (AHPVT)<sup>8</sup>. Looking at both school composition and the racial/ethnic makeup of peer groups, Lee finds the percentage of Latino students enrolled in high school has no effect on the AHPVT scores of Latino students; and as the proportion of Latino students within their peer group increases, Latino students' AHPVT scores decrease. Whereas increases in the proportion of peers that are White increases AHPVT scores for Latino students. Thus, Lee (2007)'s findings imply Latino students might benefit from having more non-Hispanic White students enrolled in their schools than Latino students. Conversely, Goldsmith (2004) finds that Latino students do benefit from the concentration of Latino students. In contrast to Lee (2007), Goldsmith uses a nominal approach and categorizes schools as separate-white schools, mixed schools, or separate-minority schools<sup>9</sup>. Using standardized math and reading scores as a way to measure academic achievement, Goldsmith finds that Latino students benefit academically from attending mixed schools and separate-minority schools. In particular, the White-Latino achievement gap decreases the most for students in separate-minority schools.

Whether Latino presence has an effect on the educational aspirations of students is less mixed. Studies that focus on the educational expectations of high school students find a positive effect of percent Latino (Frost, 2007; Goldsmith, 2004)<sup>10</sup>. Frost (2007), a

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<sup>8</sup> AHPVT is a standardized test used to measure verbal ability by the National Longitudinal Surveys.

<sup>9</sup> Both mixed schools and separate-minority schools are defined by having 50% or less non-Hispanic White students with the separate-minority schools also having 50% or less non-Hispanic White teachers.

<sup>10</sup> Goldsmith (2004) explores both academic achievement (standardized math and reading scores) and educational aspirations.

cross-sectional study focused within the state of Texas, finds that after controlling for both individual-level factors and the socioeconomic status of the school, there is a positive association between the percentage of Latino students enrolled and the expectation of students to complete a BA degree. Specifically, a 10 percent increase in Latino students increases the odds of students expecting to complete a BA degree by 13 percent. Frost (2007) also finds evidence of a critical mass suggesting that once the school is 20% Latino there is a continued increase between percent Latino and the expectation to complete a BA degree. Goldsmith (2004) echoes these findings and suggests Latino students have higher educational expectations at schools with more Latino presence. Specifically, Goldsmith finds that Latino students attending both mixed schools and separate-minority schools have higher education expectations than Latinos attending separate-white schools, with those attending separate-minority schools having the greater advantage. Assuming there is a positive association between educational expectations and academic performance (Sewell & Hauser, 1975; Goldsmith, 2004; Bui, 2007), these studies suggest an increase in Latino presence may positively influence academic performance as well.

### **Percent Latino and Postsecondary Education**

Currently, Hagedorn et al. (2007) is the only study that considers the impact of proportional representation of Latino students without constricting this measure to HSI designation. Hagedorn et al. (2007) is a cross-sectional study that explores the relationship between Latino representation on college campuses and the educational outcomes of Latino students. In this study each campus is assigned one of three representational values (RV) indicating Latino enrollment. This includes high RV (50%

or higher), moderate RV (between 30% and 50%), or low RV (between 20% and 30%). Using transcript files, Hagedorn and colleagues find a positive correlation of .675 between increased representation and the cumulative GPA of Latino students. They also found increased representation to have a positive association with course success ratios<sup>11</sup> and a negative association with enrollment into remedial courses. However, this study has some limitations. First, Hagedorn and colleagues explore the effect of Latino representation at only nine community colleges in a Los Angeles District. This prevents their results from being generalizable to Latino students attending four-year institutions. Second, like most HSI studies, Hagedorn et al. (2007) focuses on postsecondary institutions nestled within a traditionally Hispanic state. This prevents it from being generalizable to students in other regions of the United States. Third, the authors do not control for pre-college variables including incoming academic ability. Instead, they attempt to control for college academic integration which is measured by a series of behaviors related to studying and approaching professors. Lastly, it is not clear whether the authors considered changes in the percentage of Latinos enrolled over time when assessing its effects on cumulative GPA, a measure meant to represent academic performance across all semesters and all years of enrollment.

While studies that focus on the proportional representation of Latino students in postsecondary education is limited, literature outside of education, give us reason to believe there can be an influence of proportions. For example, Kanter (1977), an ethnographic study centered on gender in the workplace, finds the existence of a tipping

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<sup>11</sup> Refers to the “ratio of the number of courses successfully completed with an A, B, or C grade divided by the total number of courses attempted” (Hagedorn et al., 2006, p.78)

point for proportional representation of a minority group. Specifically, Kanter finds that when the percentage of women at a male-dominated company reached 15% or less, these women were likely to experience discrimination, stereotypes, isolation, and were taken less seriously. This was considered a skewed group and members of the smaller proportion were considered tokens (Kanter, 1977). However, when this threshold of women reached 35%, these women were able to form coalitions and had more influence over the culture. This was considered a tilted group, and members of the smaller proportion were considered minorities (Kanter, 1977). She referred to this percentage, 35%, as the tipping point to better experiences for the minority group. Assuming the percentage of Latino students enrolled at an institution will have similar effects (better outcomes with an increase in representation), I suspect Latino student presence will have a positive effect on the graduation status of Latino students. Meaning, the higher the percentage of Latino students enrolled, the higher the odds of graduating within 6 years. Similarly, I suspect Latino student presence will have a negative effect on the student loan debt of Latino students. Meaning, the higher the percentage of Latino students enrolled, the lower the amount of student loan debt.<sup>12</sup>

### **Percent Latino and Hispanic Serving Institutions**

Under the umbrella of graduation outcomes, most of the HSI literature are state case studies which focus on the graduation rates of Latino students attending HSIs in traditionally Hispanic states (Contreras & Contreras, 2015; Flores & Park 2015), or are

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<sup>12</sup> Currently there is no research that explores the effects of the percent of Latino students enrolled on student loan outcomes. However, if we assume that a) those who graduate within 6-years will have less loans than those who take longer or do not graduate, and b) percent Latino may increase the odds of graduating within six years, then I predict percent Latino will have a negative effect of student loan debt.

conducted nationally at the institutional level with a focus on Latino graduation rates (Garcia, 2013), or the general graduation rates of all students attending HSIs (Rodríguez & Calderón Galdeano, 2015). Contreras and Contreras (2015), a cross-sectional study, finds that Latino students have lower graduation rates than their non-Hispanic white peers in nearly all of the public two-year and four-year California HSIs. While Contreras and Contreras (2015) attempt to assess the performance of HSIs by exploring the graduation rates of Latino students, it does not speak to the central question of the effect of attending HSIs. Specifically, they are not comparing Latino students who attend HSIs with Latino students who do not attend HSIs. Instead, the authors are comparing Latino students who attend HSIs with non-Latinos who attend HSIs, making this finding less critical. It is possible HSIs may improve graduation rates of Latino students, but still produce graduation rates behind non-Hispanic White students. My study employs a comparable group of Latino and non-Hispanic White students who attend institutions with varying degrees of Latino representation.

Similarly, Flores and Park (2015) focus on HSIs in the state of Texas. Flores and Park (2015) use three cohorts of students who attended college between 1997 and 2008 to explore the effects of attending an HBCU or HSI<sup>13</sup>. Using an unmatched sample, minority students in four-year non-MSIs in Texas were found to have higher graduation rates than those who enrolled in four-year MSIs. However, Flores and Park find that statistically significant differences in graduation rates of the unmatched samples were partly due to Latino HSI students in the sample being more economically disadvantaged

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<sup>13</sup> HBCUs and HSIs collectively are referred to as Minority Serving Institutions (MSIs). While this study looks at both HBCUs and HSIs, the results discussed in this section focus solely on their findings regarding HSIs and Latino students.

and less academically prepared than Latino students who attended non-HSIs. Conducting a subsequent analyses on just HSIs and Latino students, Flores and Park use a matched sample and control for postsecondary characteristics of the institution. Using these methods, the authors find no differences between the completion rates of Latinos attending HSIs and Latinos attending non-HSIs. While this study makes the important contribution of using matched samples when conducting this type of analysis, Flores and Park's findings are limited to the state of Texas, a traditional Hispanic state, and do not isolate the HSI effect at the student level.

Aware of the variation in institutional characteristics, other studies have used propensity score (Rodríguez & Calderón Galdeano, 2015)<sup>14</sup> and other matching techniques (Garcia, 2013) to attempt to assess the effect of attending HSIs at the institution level. Focusing on the specific graduation rates of Latino students attending HSIs, emerging HSIs<sup>15</sup>, and non-HSIs, Garcia (2013) finds the percentage of Latino students enrolled is not a significant predictor of the institutional graduation rates of Latino students. Instead, Garcia finds institutional selectivity and institutional resources to have the most impact. While Garcia (2013) suggests Latino concentration may have no effect on the graduation outcomes of Latino students, it remains subject to the limitations of an institution-level analysis. First, Garcia (2013) is not able to capture differences in

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<sup>14</sup> Rodriguez and Calderon Galdeano's comparison of overall graduation rates between HSIs and non-HSIs warrants brief mention. Similar to Flores and Park (2015), they find that HSIs and non-HSI differences in graduation rates were reducible to other institutional characteristics. However, their research does not speak directly to this study's research questions since they were examining overall graduation rates as opposed to specifically Latino graduation rates.

<sup>15</sup> A federal definition for emerging HSIs currently does not exist. However, in this research it generally refers to institutions with 15%-24% of Latinos enrolled.

the effect of the 25% FTE Latino threshold based on student-level characteristics. Second, this analysis does not include pre-college individual-level variables for isolating the treatment effect of the percentage of Latinos enrolled. This study also does not include students who commenced their postsecondary education at two-year colleges. Yet roughly half of all Latino college students attended a two-year institution in 2013 (Krogstad & Fry, 2015).

### **Percent of Black Students Enrolled and Postsecondary Education**

When exploring the effects of Latino presence on the educational outcomes of Latino students, it might be useful to look at how the effects of co-ethnic racial composition in a postsecondary institution effect other racial minority groups. This section discusses the literature relevant to the percentage of African American/Black students enrolled in a postsecondary institution and its effects on the graduation and loan outcomes of African American/Black students. Similar to the literature on Latino percentages, all of the research that looks at racial composition with a focus on African American/Black students, are centered on HBCUs<sup>16</sup>.

The bulk of the literature on HBCUs and graduation outcomes focus on postsecondary institutions as the unit of analysis (Richards & Awokoya, 2010; Montgomery & Montgomery, 2012; Nichols & Evans-Bell, 2017; De Zeeuw et al., 2020; Gordon et al., 2021) and have the graduation rate of African American/Black students as

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<sup>16</sup> The reader should keep in mind that these institutions are structurally different from institutions considered Hispanic serving. HBCUs were created with the intent of serving African American/Black students in contrast to HSIs which receive their designation after reaching a specific percentage of Latino students. HBCUs are also funded by formula-based grants, allowing them to receive awards based on their eligibility. In contrast, HSIs are funded through a competitive award process.

the outcome of interest. At the institutional level, the literature is mixed with a slight lean towards the graduation rates at HBCUs being higher than those at non-HBCUs. Studies that report higher graduation rates at HBCUs often use the argument that institutions need to be compared fairly to other institutions of similar characteristics. Richards and Awokoya (2010) match institutions by student composition of the schools, specifically they compared institutions with similar distributions of SAT and Pell Grant recipients. Nichols and Evans-Bell (2017) take a similar approach, only their control is freshman enrollment of low-income students. Specifically, the authors include in their analyses HBCUs and non-HBCUs with low-income freshman enrollments between 40 and 75 percent. The most recent study, Gordon et al. (2021), uses propensity score matching to match HBCUs with non-HBCUs based on both student composition and institution-level factors. This criteria includes characteristics such as undergraduate instructional program, control, and enrollment profile. All three studies find that when HBCUs are compared to non-HBCUs of similar characteristics, the graduation rate of African American/Black students is higher at HBCUs than non-HBCUs. Gordon et al. (2021) further analyzes their data to see what student or institution-level factors influence this positive outcome the most. Racial composition, alone, was not found to explain the HBCU effect.

In contrast, Montgomery and Montgomery (2012) and De Zeeuw et al. (2020) are institutional level studies that do not find strong enough evidence supporting a positive relationship between attending an HBCU and graduation rates of African American/Black students. Montgomery and Montgomery (2012) focus on only 10 HBCUs and 10 predominantly white institutions (PWIs). Using nonrandom matching techniques, they find that there is little difference in the graduation rate of African

American/Black students by institution type (HBCU vs PWI). They also find that the average graduation rate for White students at HBCUs were lower in contrast to the average graduation rate for White students at PWIs<sup>17</sup>. De Zeeuw et al. (2020) find that before using matching techniques, non-HBCUs graduate Black students at higher rates than HBCUs. After matching institutions, this result reverses but loses its statistical significance.

Studies which explore the effects of attending an HBCU on the graduation outcomes of African American/Black students from the student level are scarce and suggest no effect (Kim, & Conrad, 2006; Flores & Park; 2015). While both Kim and Conrad (2006) and Flores and Park (2015) approach their analyses from the student-level, they differ from each other in the way they measure their graduation outcome. Kim and Conrad (2006) do not consider whether the student graduated within 6 years, but if they graduated at all by the final follow up of their data set which was nine years after they enrolled. Controlling for both institution-level factors and student characteristics (including pre-college characteristics), the authors find no direct effect of attending an HBCU on the BA attainment of African American/Black students. However, they also highlight a possible indirect effect. In particular, African American/Black students who attend HBCUs are more likely to participate in faculty research than African American students attending PWIs. Being involved in faculty research was a variable positively associated with BA degree attainment in their study. In contrast, Flores and Park (2015)

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<sup>17</sup> The authors associate this finding to the belief that increased diversity lowers the graduation rates of White students. While this belief can stem from the notion that this decrease in graduation rates is associated with quality of the institution, it can also be argued this decrease is because White students do better in institutions with more representation of their race.

focused on the odds of the student graduating within six years from their four-year postsecondary institution. Similar to their HSI analysis, Flores and Park conducted propensity score matching. When students are matched, the authors find no effect of attending HBCUs. In particular, students of similar background characteristics before enrollment have the same odds of graduating within six years from their four-year postsecondary institution regardless of it being a HBCU or not.

Studies that explore the relationship between attending HBCUs and loans are also limited. These studies are both at the institutional level with only De Zeeuw et al. (2020) using multivariate analyses to explore the HBCU effects on loans<sup>18</sup>. Using the National Postsecondary Student Aid Study of 2012, and the U.S. Department of Education College Scorecard of 2013, Saunders et al. (2016) find that students attending four-year HBCUs not only use loans to finance their postsecondary education at higher rates but borrow larger amounts than those who attend non-HBCU. The percentage of students using student loans to finance their education at HBCUs is 80% in contrast to 55% of students attending non-HBCUs. Of those that borrow, the median loan debt for HBCU students in 2012 was \$26,266 in contrast to \$14,881 for non-HBCU students. Saunders et al. (2016) looks at overall loan rates instead of those specifically by African American/Black students. De Zeeuw et al. (2020)'s analyses echo these findings for African American/Black students. Looking at the median loan debt for both types of institutions, De Zeeuw et al. (2020) find that students who attend HBCUs have larger loan debt than those who attend non-HBCUs. Specifically, the median loan debt amount for African

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<sup>18</sup> Saunders et al. (2016) takes a more descriptive approach.

American/Black students attending HBCUs is “20 and 30 percent higher” than African American/Black students attending non-HBCUs (p.17).

### **The Role of Institution-level and Individual-level Factors**

According to Tinto’s theory of student departure, the educational persistence of students in higher education is a longitudinal process that is influenced by both institution- and individual-level factors (Tinto, 1975). Due to their association with the Latino population or either of my outcome variables, this study considers two institution-level moderators (sector and selectivity) and three individual-level moderators (parental education, pre-academic preparation, and racially identifying as black). In this next section I discuss the disadvantages associated with a facet of each variable and then generate a hypothesis for each. The hypotheses reflect the notion that those who will benefit the most from a greater Latino presence on campus, are students who are disadvantaged on the particular facet referenced. Further, I predict the percentage of Latino students enrolled can offset such disadvantages. Ultimately, less advantaged students benefit the most from co-ethnic networks because they are unable to rely on other sources of support and information that come from the more advantaged category for each respective moderator which may facilitate better educational outcomes. I elaborate for each moderator in the following subsections.

The sector of an institution is considered a moderator in this study because of the fast-paced growth of for-profit postsecondary institutions which recruit a disproportionate number of students of color. Over the last three decades, for-profit institutions have experienced substantial growth (Lynch, et al. 2010) attributed to the “aggressive” recruitment strategies targeted at racial-minorities and low-income students. While Latino

students account for 11.5% of all students in postsecondary education, they make up 15% of all students enrolled in a for-profit institution (Deming, et al., 2012).

In terms of outcomes, the majority of students who attend four-year for-profit institutions do not graduate and this remains true when students in for-profit institutions are compared to students with similar demographic characteristics that attend non-profit institutions (Cottom, 2017, p.30). Deming et al (2012) finds students who attend for-profit institutions are less likely to obtain a BA degree. This difference in completion rates between sectors is also greater at the four-year level than the difference at the two-year level. The literature also suggests students who attend for-profit institutions incur more student debt regardless of the student attending a two-year or four-year institution. Cellini and Darolia (2017) explore borrowing patterns by sector and find that across public and private non-profit institutions, students borrow loans at a lower rate than at for-profit institutions. The most drastic difference in the percentage of students who take out loans is found between for-profit institutions and two-year non-profit schools. The pronounced gap between sectors within two-year institutions is echoed by Belfield (2013) which finds that students who attend for-profit two-year institutions take out four times the loan amount they would've taken out if they attended a non-profit two-year institution. Students who attend for-profit institutions are also more likely to default on their loans (Goodell, 2016). The consensus seems to be that when focusing on graduating from four-year institutions and accumulating student debt, students attending for-profit institutions are at a disadvantage. Therefore, I predict the benefit of Latino student presence will be stronger for students attending for-profit colleges.

Selectivity of the institution of attendance is included as an institution-level moderator for two reasons. First, there is concern regarding the impact of “no-loan” colleges, which are primarily highly selective postsecondary institutions, and how this may muddle the individual-level effects of percentage of Latinos enrolled. The first postsecondary institution to implement this policy was Princeton University in the year 2001. As of 2017 (the last year of data collection), there were roughly 25 postsecondary institutions implementing a no student loan policy (Friedman, 2017). To address this concern, we run a selectivity moderator analyses separating colleges into two groups: more selective and less selective institutions.

Second, selectivity of the institution of attendance is included as an institution-level moderator because of its assumed influence on degree completion. When using average SAT scores as a measure of selectivity in an institution, the literature suggests a strong and positive association between institutional selectivity and the odds of graduation (Bowen & Bok, 1998; Alon & Tienda, 2005; Small & Winship, 2007; Shamsuddin, 2016). This means, a student’s odds of graduating increase with the level of selectivity of the postsecondary institution they attend. Shamsuddin (2016) finds that a “100-point increase in the average SAT score for admitted students is associated with an increase in the probability of completing a bachelor’s degree by 13 percentage points” (p. 796). This is echoed by Small and Winship (2007) who focus on racial differences in their study and find that the graduation prospect for Black students increases by 6 percentage points with every 100-point increase in the average SAT score of the

institution. This positive relationship between level of selectivity and degree completion<sup>19</sup> suggests students attending less selective institutions will be at a disadvantage when compared to students who attend more selective institutions. Therefore, based on the above assumptions, I predict the benefit of Latino student presence will be stronger the less selective the postsecondary institution is.

Parental education is considered an individual-level moderator in this study because of its association with Latino students and degree attainment. Regarding the former, Latino students make up the second largest proportion of first-generation college students, second to non-Hispanic Whites (Redford and Hoyer, 2017). Considering the overrepresentation of Latino students in the first-generation college student group, it is important to consider the moderating effects of this variable.

Regarding the latter, the literature suggests children of less educated parents<sup>20</sup> are less likely to graduate from four-year institutions than children of more educated parents (Ishitani, 2003; Hahs-Vaughn, 2004; Arbona & Nora, 2007; Dumais & Ward, 2010; Redford & Hoyer, 2017; Toutkoushian et al., 2021). One of the more recent empirical studies, Toutkoushian et al. (2021) finds differences in magnitude based on how parental education is measured. Specifically, the odds of students graduating with a four-year degree increases with both “the level of parent education and the number of parents at that level” (p.507), highlighting that students with only one college educated parent may

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<sup>19</sup> Currently there is no research that explores the direct relationship between selectivity and student loan debt.

<sup>20</sup> In this study “children of less educated parents” also refers to first-generation college students. Due to also exploring immigration generation status, “children of less educated parents” is used to avoid any confusion.

still face challenges in degree completion than those with two. Toutkoushian and colleagues also highlight differences between parents who attended college and those who graduated from college, suggesting students with parents who graduated from a college may have more resources than those with parents who just attended but never completed. Within the literature of student loan debt, children of less educated parents are found to not only be more likely to take out loans but also borrow more than children of more educated parents (Hart, & Mustafa, 2008; Javine, 2013; Lee & Mueller, 2014; Furquim et al., 2017). Hart and Mustafa (2008) explored this by contrasting the impact of three parental education categories: no parents with a 4-year college degree, one parent with a 4-year college degree, and two parents with a 4-year college degree. When focusing on the entire sample and controlling for differences in income, they find that students with two parents who have a 4-year degree borrow \$233 less than those with no parents with a 4-year college degree (Hart, & Mustafa, 2008). This finding holds when the authors explore the marginal effects of parental education on different subsamples created based on their income levels. Students with two parents who have a 4-year degree borrow less than those with no parents with a 4-year college degree regardless of their family's income level. Using a binary indicator of first-generation status, defined as no parent has a four-year degree, Furquim et al. (2017) echoes these findings with an increase in magnitude. Specifically, Furquim and colleagues find that students with no parents with a four-year degree have higher odds of borrowing and when they do, borrow \$574 more in loans than continuing-generation students. Thus, when focusing on the attainment of a BA degree and accumulating student debt, children of less educated parents are at a disadvantage when compared to children of more educated parents.

Therefore, I predict the benefit of Latino student presence will be stronger for students with less educated parents.

Considered a big predictor in the college outcomes of students is pre-college academic preparation which generally includes high school grades and standardized test scores<sup>21</sup>. The literature suggests high school grades have a positive relationship with degree attainment at four-year institutions (Waugh et al., 1994; Astin, & Oseguera, 2005; Zwick & Sklar, 2005; French et al., 2015; Allensworth & Clark, 2020). Using a national sample, Astin and Oseguera (2005) explore the relationship between various pre-college characteristics and degree attainment and find that the most influential factor in degree attainment is high school grade average. This positive effect of high school grades is the same for both 4-year and 6-year completion rates. Specifically, for every 1-unit increase in high school GPA, the odds of degree attainment will increase by .15 for four-year graduation rates and .16 for six-year graduation rates (Astin & Oseguera, 2005). Net of control variables, Allensworth and Clark (2020) also conclude the odds of a student graduating (which ranged between 20% and 80% in the study) increases as HS GPA increases. In particular, students with a GPA of less than 1.5 had 20% odds of graduating and students with a GPA of 3.75 or higher had 80% odds of graduating. Thus, when focusing on the attainment of a BA degree<sup>22</sup>, students with lower HS GPAs are at a disadvantage when compared to students with higher HS GPAs. Therefore, I suspect the

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<sup>21</sup> It is worth noting that some research considers standardized test scores not an accurate predictor of college performance (Waugh et al., 1994; Astin & Oseguera, 2005; Allensworth & Clark, 2020), especially for minority students (Fleming & Garcia; 1998; Hamilton & Neilson, 2021).

<sup>22</sup> Currently there is no research that explores the effect of high school academic performance and student loan debt.

benefit of Latino student presence will be stronger for less academically prepared students.

Whether a respondent racially identifies as Black is considered an individual-level moderator in this study because of its association with Latino students. The Latino population is a racially diverse subgroup and in 2020, 12% of the adult Latino population identified as Afro-Latino (Gonzalez-Barrera, 2022). However, the Afro-Latino population is often not included in academic research surrounding educational outcomes. Currently, two empirical studies consider the association between the racial identification of Latino respondents and educational attainment (Arce et al. 1987; Murguia & Telles, 1996). Both studies use the 1979 Chicano Survey, conducted by the University of Michigan<sup>23</sup>. Arce et al. (1987) explores the effects of skin color and physical features on parental education. Creating a five-category composite variable using skin color (measured as an ordinal variable ranging between 1=very light and 5=very dark) and physical feature (measured as an ordinal variable ranging between 1=very European and 5=very Indian), Arce and colleagues find that parents with darker skin complexion and with physical features that were more indigenous have lower averages in years of formal education (1.7 years) than parents who identify with European physical features and whiter skin tones (7.8 and 9.5 respectively). Murguia and Telles (1996) echo these findings. The authors utilize the same skin tone and physical feature variables to create a three-category composite variable which include the categories light, medium, and dark. Finding no difference in the educational attainment between individuals classified with

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<sup>23</sup> The 1979 Chicano Survey is a household survey centered on individuals of Mexican descent.

medium and dark skin tones, the phenotype variable was collapsed further to a binary variable representing light and medium/dark phenotypes. Murguia and Telles (1996) find that having a medium/dark phenotype was negatively associated with educational attainment of individuals aged 25 and over. While the generalizability of Arce et al. (1987) and Murguia and Telles (1996) findings is limited based on their focus on Mexican Americans and their use of older data, in terms of educational attainment, both studies still suggest Latinos with darker skin complexion are at a disadvantage in contrast to Latinos with lighter complexion. Therefore, I suspect the benefit of Latino student presence will be stronger for Latino students who identify racially as Black<sup>24</sup>.

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<sup>24</sup> The moderation analyses for this variable will only be conducted on the Latino subgroup.

## CHAPTER 4

### DATA AND METHODS

#### Analytical Approach

For this study, I conduct separate sets of regression analyses for each sample, the Education Longitudinal Study of 2002 (ELS:2002) and the Beginning Postsecondary Students Longitudinal Study (BPS12/17)<sup>25</sup>, to assess the impact percentage of Latino enrollment at a postsecondary institution has on the probability of graduating within six years and the total amount of student loan debt. As illustrated in **Table 2**, the first four sets of regressions in my study analyze students who start at a two-year postsecondary institution. The second four sets of regressions analyze students who immediately begin their postsecondary education at a four-year institution. For all, I regress graduating within six years and student loan debt, separately, on percent Latino. My regression models include interactions between percent Latino and race/ethnicity. This will allow me to see how racial inequalities (the Latino-White gap) differ based on the percentage of Latinos enrolled, while controlling for individual and institution level factors. Additionally, for each set of regressions I estimate three-way interactions between race/ethnicity, percentage of Latinos enrolled, and each of the moderators listed in my variable section.

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<sup>25</sup> I will discuss these data sources in more detail in the subsequent section.

**Table 2.** Breakdown of the different sets of regressions used in the study.

<b>Number of Regression Set</b>	<b>Sample</b>	<b>Student subgroup</b>	<b>Outcome regressed on percent Latino</b>
1	ELS:2002	Started at a two-year institution	graduating within six years
2	ELS:2002	Started at a two-year institution	student loan debt
3	BPS 12/17	Started at a two-year institution	graduating within six years
4	BPS 12/17	Started at a two-year institution	student loan debt
5	ELS:2002	Started at a four-year institution	graduating within six years
6	ELS:2002	Started at a four-year institution	student loan debt
7	BPS 12/17	Started at a four-year institution	graduating within six years
8	BPS 12/17	Started at a four-year institution	student loan debt

### Scope

Since this study focuses solely on Latino students and uses Non-Hispanic White and non-Hispanic Black students as a comparison group, the two samples in my study are first filtered to only include respondents who identify as either non-Hispanic White, non-Hispanic Black, or Latino. Second, since all of my outcome variables are from the third wave of data collection for both samples, I remove respondents who did not complete a final follow up. Third, since this study explores the effects of a postsecondary characteristic, I remove respondents who do not report attending a postsecondary institution. Lastly, since my study includes both two-year and four-year analyses, respondents who only attended a less than 2-year institution are removed from the samples. All analyses are conducted using STATA.

### Data Source

This study utilizes data from three different data sources. The first individual-level dataset is the Education Longitudinal Study of 2002 (ELS:2002). The ELS:2002 was a study conducted by the National Center for Education Statistics (NCES) that followed a prospective cohort of tenth-grade students from base year 2002 through the third follow up in 2012. ELS:2002 is a nationally representative study that interviewed

over 15,000 students and parents from 750 high schools. Using a stratified two-stage random sample design, high schools were selected first, followed by the random sampling of tenth-grade students within each school. The ELS:2002 is a source of useful pre-college variables leveraged for causal identification for this study.

The second individual-level dataset is the Beginning Postsecondary Students Longitudinal Study (BPS12/17). The BPS 12/17 was also conducted by the NCES. It follows a subset of students from the National Postsecondary Student Aid Study (NPSAS:12) who began their postsecondary education in the 2011–12 academic year. The BPS12/17 sample consists of 35,540 students. BPS12/17 provides a substantially larger sample of Latino students than the ELS:2002 and information on student debt. Causal claims from this data are more tentative<sup>26</sup>, however it allows testing for institutional heterogeneity in the Latino representation effect. I chose to use samples from two different data sets because each provided different strengths that contributed to the examination of Latino representation on college campuses, graduation rates, and student loan debt. One other data source is used to pull institution-level information for the postsecondary institutions attended by the students in the samples.

The main data source of institution-level data for this study is pulled from the Integrated Postsecondary Education Data System (IPEDS). IPEDS is a source of institution-level data for all postsecondary institutions that participate in the federal student financial aid programs. Collected through a set of surveys that are conducted each

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<sup>26</sup> Causal claims for this data source are considered more tentative because it starts following students when they are already enrolled in college. There are no pre-college variables that can be used for causal inference. In contrast, the ELS starts following students before college, so you get better measurements of what these students were like pre-college.

year by the NCES, IPEDS provides a variety of data on topics including but not limited to institutional characteristics, enrollment, student persistence and success, and institutional resources self-reported by institutions.

Both the ELS:2002 and the BPS 12/17 are merged separately with the IPEDS data ultimately producing two student-level datasets, thus two samples, equipped with institution-level information on the postsecondary institution the student attended. Both outcome variables in this study are at the student level.

### Measures

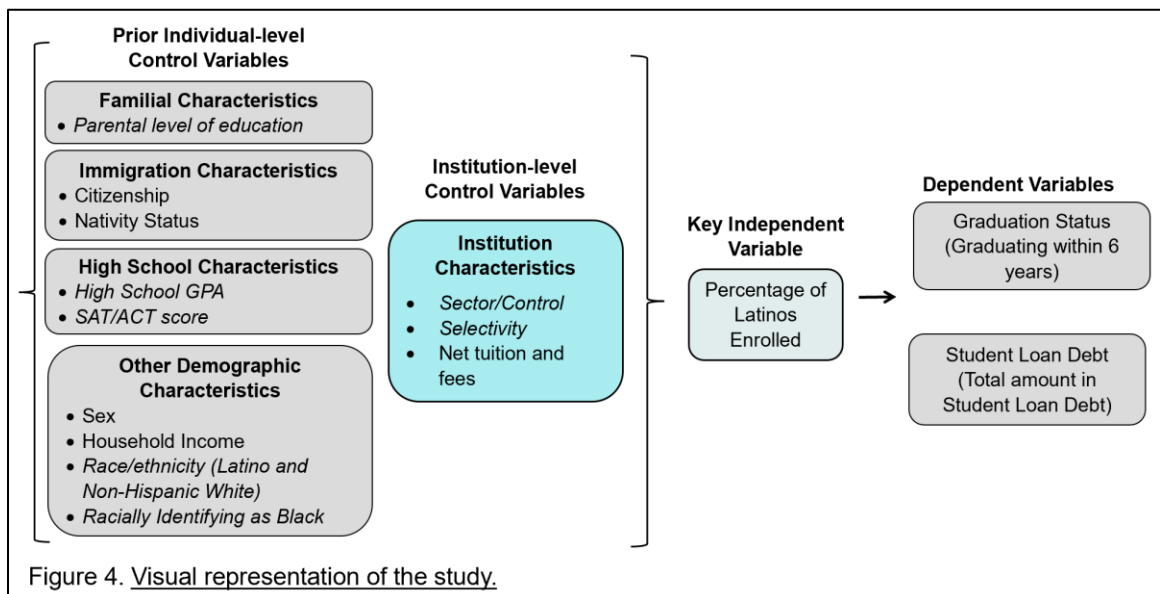


Figure 4. Visual representation of the study.

### Outcome Variables

All outcome variables are drawn directly from the last follow-up interview in ELS:2002 or BPS 12/17. This study has two outcome variables.

The first is graduation status. I specifically use the measure graduating within six years as the indicator because the National Center for Education Statistics often uses 150% of normal time as their indicator for graduation rates (“IPEDS Survey Components”, n.d.). For ELS:2002, I use the variable F3PS2BA which reports the

number of months between postsecondary entry and receipt of a bachelor's (BA) degree. If the respondent reported receipt of multiple BA degrees, then the earliest date for BA attainment is used in the calculation of this variable. Additionally, if the respondent did not earn a BA degree by the time of the third follow-up, the ELS:2002 codes them as -3. For BPS 12/17, I use the variable ATBAEN6Y, which provides the number of months between the student's postsecondary entry and first BA degree as of June 2017. If the respondent did not earn a BA degree by time of data collection, BPS 12/17 also assigns it a -3 value. I construct a binary variable with categories for graduating with a BA degree within six years (within 72 months) and did not obtain a BA degree.

My second outcome variable is the amount of student loan debt. In this study, amount of student loan debt refers to the dollar amount in loans that a student used to pay for their postsecondary education. For ELS:2002, this variable will be constructed using two variables F3STLOANEVR and F3STLOANAMT. First, the ELS:2002 asks respondents whether they took out any education loans to help pay for their education since high school. The measure for this was a categorical, yes/no variable. Respondents who reported taking out a loan to finance their education were then asked to report the total amount of money they borrowed. Since the original question was only asked to a subgroup of the population (those who reported yes), the analysis requires that the variable be recoded to include the entire analytic sample. If the respondent answers no to the binary loan variable, I recode it to equal zero in the new variable. If the student answers yes, I use the continuous variable to equal the new variable. For BPS12/17, I use the variable CUMULN17 which represents the total amount borrowed through 2017. This

variable applies to all respondents, meaning for those who did not take out a loan, this variable will be 0. This variable does not need to be recoded.

### **Key Predictors**

The key independent variable in my study is the percentage of Latino students enrolled in a postsecondary institution. Information on the demographic composition of the student population for each institution is provided annually by the IPEDS database. I create the proportion of Latinos enrolled using two variables: the total number of Hispanics enrolled in the institution (EFRACE21) and the total number of students enrolled in the institution (EFRACE24). The percentage of Latinos enrolled is EFRACE21 divided by EFRACE24. Because this percentage may change every year, I calculate the average percent of Latino enrollment for the *first valid institution* the student attends. A first valid institution is considered the student's first institution (two-year or four-year) with a non-missing value of percent Latino.

A second key independent variable in my study is race/ethnicity. Race/ethnicity is a composite variable in my study made up of three separate variables: the student's race, the student's nativity status, and the parents' nativity status. In terms of race, for ELS:2002, I use the BYRACE variable which is an eight-category variable including American Indian/Alaska Native (non-Hispanic), Asian (non-Hispanic), Black/African American (non-Hispanic), Hispanic (no race specified), Hispanic (race specified), more than one race (non-Hispanic), Native Hawaiian/Pacific Islander (non-Hispanic), and White (non-Hispanic). For BPS12/17, I use the RACE variable which is a seven-category variable including White, Black or African American, Hispanic or Latino (any race), Asian, American Indian or Alaska Native, Native Hawaiian/other Pacific Islander, and

more than one race. Since Latinos are the group of interest and non-Hispanic White and non-Hispanic Black students are included in the study as comparison groups, for both datasets, this variable is collapsed to three categories consisting of non-Hispanic Black, non-Hispanic White, and Latinos. Subsequently, I use the student's and their parents' nativity status to classify the student as either a child of an immigrant or not a child of an immigrant. If both parents are native born, the student is not considered a child of an immigrant. If the student or at least one of the parent's is foreign born, then the student is considered a child of an immigrant. This is done only for the Latino group, making our final categorical variable Latino COI (child of immigrant), Latino COUS (child of U.S. born parent), non-Hispanic White, and non-Hispanic Black.

### **Moderators**

The sector variable in my study refers to whether the institution is a for-profit or non-profit institution along with the control of the institution (public vs private). Derived from the IPEDS database, the original variable consists of three categories which classify institutions as either public, private not-for-profit, or private for-profit. In my analyses I look at the sector and control status for the first valid institution the student attends.

Selectivity of the institution in this study refers to the level of selectivity for the first valid institution the student attends. This measure is derived from the Barron's Admissions Competitiveness Index. The Barron's Admissions Competitiveness Index uses a six-category indicator consisting of the following categories: most competitive, highly competitive, very competitive, competitive, less competitive, and noncompetitive. For ELS:2002, in instances where a participating institution has a missing value using the Barron's Admissions Competitiveness Index, they are assigned a value derived from the

selectivity variable in the ELS dataset, F3ISELC. F3ISELC is a three-category variable with values highly selective, moderately selective, and inclusive. The ELS:2002 uses the IPEDS variable Carnegie Classification 2010 which uses first-year students test scores to rank the institution. Institutions considered highly selective have test scores placing them in the top fifth of all institutions. Institutions considered moderately selective have test scores placing them in the middle two-fifths of all institutions. Institutions considered inclusive are institutions either did not report test score data or their scores are low enough to “indicate that they extend educational opportunity to a wide range of students with respect to academic preparation and achievement” (“ELS:2002 Online Codebook”, n.d.). The Barron’s selectivity field is then recoded into a binary variable representing more selective and less selective institutions.

In my analyses, pre-college academic preparation is measured separately by high school GPA and SAT Scores. High school GPA is meant to be a continuous indicator of the student’s academic performance in high school. For ELS:2002, I use the variable FIRGP, which reports the GPA for all courses taken by the student between 9<sup>th</sup> and 12<sup>th</sup> grade. The GPA is based on a four-point scale ranging from 0.0 to 4.0. No recodes are done for this variable. For BPS12/17, I use the variable HSGPA, which is a seven-category ordinal variable with the following categories: 0.5-0.9 (D- to D), 1.0-1.4 (D to C-), 1.5-1.9 (C- to C), 2.0-2.4 (C to B-), 2.5-2.9 (B- to B), 3.0-3.4 (B to A-), and 3.5-4.0 (A- to A). I recode this variable to the midpoints of the GPA ranges to create a continuous version of this variable. The continuous variable ranges from 0.7 to 3.75.

SAT scores are a second measure of pre-college academic preparation. For BPS 12/17, I use the variable TESATDER. This variable provides a continuous measure of the

combined verbal and math SAT scores of the student. If the student did not take the SATs, then the BPS provides a composite ACT score that is converted to match an SAT scale. For the ELS:2002, I use the variable TXEESATC. Similar to the TESATDER in BPS 12/17, TXEESATC also provides a continuous measure of the student's highest composite SAT scores. Similarly, if the student did not take the SATs, but instead took the ACT, the ELS provides a composite ACT score that is converted to its SAT equivalent. Subsequently, these continuous measures of SAT scores are recoded into a categorical variable to represent performance categories based on percentiles. The categories includes 85 percentile and higher, 50-84<sup>th</sup> percentile, less than 50<sup>th</sup> percentile, and no score. Students who do not have a score are kept in the sample and placed under "no score".

Parents' highest level of education is defined as the highest level of schooling the respondent's parents completed or the highest degree, they received by the date they were interviewed. For ELS:2002, I use the variable BYPARED which is an ordinal variable consisting of eight categories ranging from less than high school to completed PhD, MD, other advanced degree. For BPS12/17, I use the variable PAREduc, an ordinal variable consisting of ten categories ranging from did not complete high school to doctoral degree - research/scholarship. For both datasets, this variable is turned into a continuous variable indicating the estimated number of years the respondent's parents completed. For instance, the original parental education category of high school degree is converted to the number 12 to represent an estimate of the number of years it takes to obtain a high school diploma. Similarly, the parental education category of bachelor's degree is

converted to the number 16 to represent an estimate of the number of years it takes to complete a bachelor's degree.

The Latino population is a racially diverse subgroup. To account for some of this diversity, I conduct a moderation analysis where I explore variation among Latinos based on whether they racially identify as Black. For the ELS:2002, I use F1RACE and F1RACE\_2. F1RACE is a seven-category race/ethnicity composite variable used to first identify respondents who identify as Hispanic or non-Hispanic Black. F1RACE\_2 is a binary variable used to identify whether the respondents racially identify as Black or African American. For the BPS 12/17, I use the RACE variable for the race/ethnicity composite variable and RABLACK for the racially identify as Black or African American variable. Both variables are used to create a variable with the following categories: Afro Latino, non-Afro Latino, and non-Hispanic Black.

### **Control Variables**

In addition to the variables included in the main analyses and moderating analyses, in both the graduating within six years and student loan debt analyses, I control for another set of institution- and individual-level variables. Net student tuition and fees is a continuous measure provided by IPEDS. Citizenship (BPS 12/17) is a binary variable indicating whether the respondent is a citizen or not. Gender (BPS 12/17, ELS:2002) is a binary variable indicating whether the respondent identifies as female or male. Household income (BPS 12/17, ELS:2002) and age (BPS 12/17, ELS:2002) are measured as continuous variables.

## **Missing Data**

Since the ELS collects data from a total of four different waves, base year and three follow-ups, it is important to note how missing data is handled. First, if respondents who have missing data for the base-year interview return during the first follow-up, they are asked to provide that missing data then. However, non-respondents to both base-year and first follow-up are removed from the original sample by NCES, and thus are not included in the analytical sample for this study. In addition, NCES fills in missing data on individual background variables using logical or statistical imputation. For this study, background variables include race, sex, family income, parental education, and generation status. All other variables used in this study from the ELS:2002 may consist of missing data. Similarly, the BPS12/17 sample was surveyed during the base year in 2012, in 2014, and in 2017. They too used statistical imputations to handle missing data in the restricted data file. I use listwise deletion to deal with any student level variables that still contain missing data for both the ELS:2002 and BPS12/17 samples.

## **CHAPTER 5**

### **DESCRIPTIVES**

This chapter has two primary objectives. The first focuses on providing some context on the member composition of each sample. To facilitate this, we provide a general profile description for each distinct sample that comprises of unweighted descriptive statistics of the variables in our study. Please note that not all variables are described within the sample composition section of the chapter. Instead, the general profile descriptions focus mostly on key variables including those used in the moderation analyses. Therefore, some control variables might not be touched on in this chapter. If the reader is interested in the distribution of all variables for each sample, please see the appendices section of this study. The second focus of the chapter is exploring the distribution of the outcome variables by some key variables in the study. The key variables are level of institution (4-year vs 2-year), race/ethnicity, and sector/control.

#### **Sample Compositions**

To begin, this study analyzes two different datasets, the ELS:2002 and the BPS 12/17, separately focusing on respondents who begin their postsecondary education at a four-year institution, and those who begin at a two-year institution. This results in four distinct samples. Below are the profiles for each.

#### **ELS 4 – Year Students**

For the ELS sample who immediately start their postsecondary education at a four-year institution, the race/ethnic distribution is not very diverse. The majority of respondents (80.2%) identify as non-Hispanic White, leaving the remaining racial/ethnic categories to represent smaller proportions of the sample: Latino children of immigrants

(COI) 5.4%, Latino children of U.S. born parents (COUS) 3.9%, and non-Hispanic Black respondents 10.4%. In terms of socioeconomic status this sample seemed averagely resourced. Household income averaged at nearly \$91k with the larger proportion of sample members (72.1%) having parents with a BA degree or higher. As for academic preparation, the sample averaged a 3.23 HS GPA and was diverse in SAT percentile categories with 44.1% of respondents having an SAT score that fell within the 50<sup>th</sup> and 84<sup>th</sup> percentile, 25.5% having an SAT score that was below the 50<sup>th</sup> percentile, 24.4% having an SAT score that was equal to or above the 85<sup>th</sup> percentile, and 6% not having a reported SAT score. With respect to where sample members went to college, this sample mostly attended public institutions (65.3%) and averaged 5% for the percentage of Latino students enrolled. It should be noted that due to a restricted number of cases of four-year institutions that were also for-profit organizations, I exclude cases in the ELS sample where a student's first valid institution was a 4-year for-profit institution. Regarding selectivity levels, the distribution is not drastically imbalanced with 43.2% of respondents attending a more selective institution and 56.8% of respondents attending less selective institutions.

#### **BPS 4 – Year Students**

BPS students who immediately start their postsecondary education at a four-year institution are slightly less advantaged and more racially diverse than their ELS counterparts. The majority of respondents still identify as non-Hispanic White (68.6%), but the share itself is roughly a 11-percentage point decrease from what we see in the ELS sample. This is coupled with the other racial/ethnic categories representing a slightly larger share of the sample than we see in the ELS data with 12.4% identifying as Latino

COI, 6.7% identifying as Latino COUS, and 12.3% identifying as non-Hispanic Black. With respect to socioeconomic rank, household income averaged at roughly \$76k and although respondents with parents who have a BA degree or higher remains the largest category for parental education (49.9%), the actual share of respondents who fall within this category is roughly 22 percentage points smaller than what we see in the ELS data. In terms of academic preparation, the sample averaged a 3.13 HS GPA and was diverse in SAT percentile categories with 36.9% of respondents having an SAT score that fell within the 50<sup>th</sup> and 84<sup>th</sup> percentile, 32.5% having an SAT score that was below the 50<sup>th</sup> percentile, 21.1% having an SAT score that was equal to or above the 85<sup>th</sup> percentile, and 9.6% not having a reported SAT score. As for institutional characteristics, this sample is more diverse in the kind of institutions they attend, with 38.7% attending a public institution, 37.3% attending a private nonprofit, and 24% attending a private for-profit. On the other hand, when looking at selectivity level, the distribution is more imbalanced with the majority of respondents attending a less selective institution (68%). Regarding Latino representation, the average proportion of Latino students enrolled in these institutions is 8%, a three-percentage point increase from the ELS sample.

### **ELS 2 – Year Students**

For ELS students who begin at a two-year institution, the majority of respondents (65%) identify as non-Hispanic White. This is followed by respondents who identify as Latino COI (13.9%), those who identify as non-Hispanic Black (12.7%), and those who identify as Latino COUS (8.4%). In terms of socioeconomic status, despite being low-resourced when it comes to household income (averaging \$57k), the sample performed better in terms of parental education with most of the respondents having parents with a

BA degree or higher (44.1%). This is followed by respondents with parents who have a high school degree or less (26.6%), those with parents who have an AA degree (15.2%), and those with parents who have some college experience (14.2%). Nonetheless, the sample fared low in academic preparation. Respondents averaged a 2.64 high school GPA and were quite imbalanced in their distribution of SAT percentile categories. Roughly 80% of the sample either fell below the 50<sup>th</sup> percentile in SAT scores or did not have a reported SAT score. In terms of institutional characteristics, the majority of the sample (95%) attended a public institution. Due to a restricted number of cases, I exclude cases in the ELS sample where a student's first valid institution was a 2-year private non-profit. Lastly, all of the institutions attended by this sample were considered less selective (100%) and they averaged 12% in terms of the proportion of Latinos enrolled.

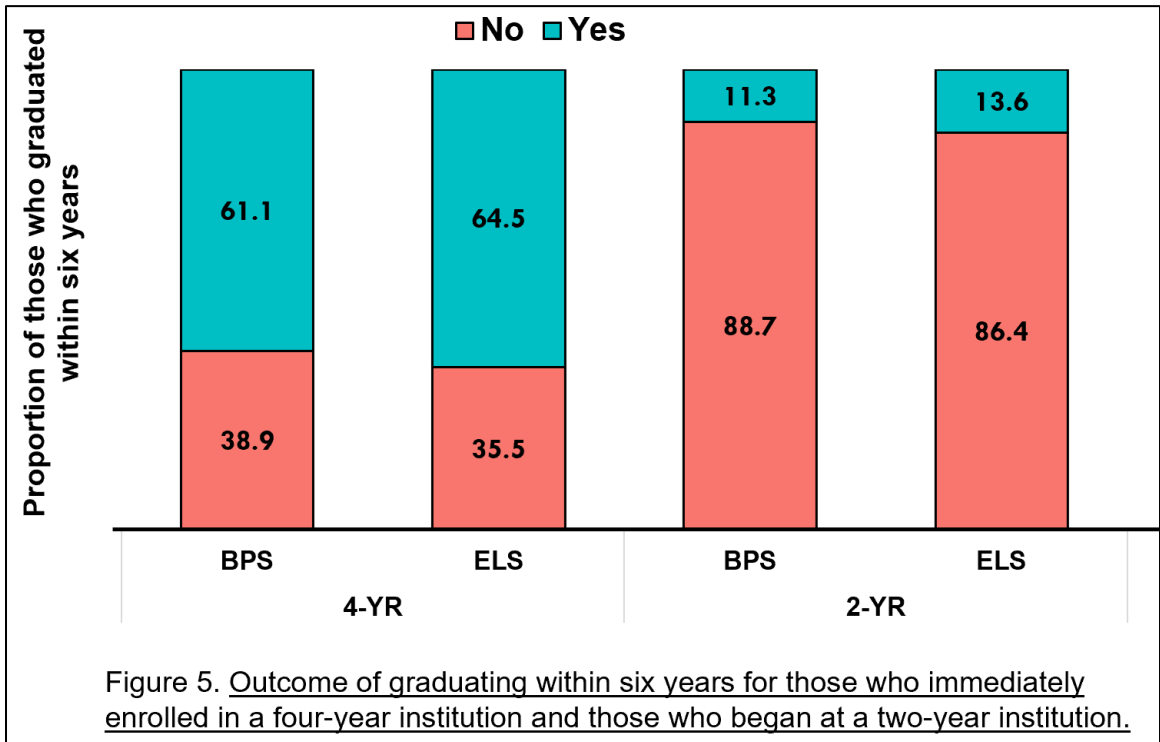
### **BPS 2 – Year Students**

For BPS students who begin at a two-year institution, the racial/ethnic distribution is slightly more diverse than what we see in the comparative ELS sample. While the majority of respondents still identify as non-Hispanic White (57%), this share is the lowest we see across all samples, regardless of institution type or data source. The second largest category represents respondents who identify as Latino COI students (19.3%) and is followed by respondents who identify as non-Hispanic Black (15.7%). Both shares are also the largest for its respective racial/ethnic group across all samples. Latino COUS students represent 8.1% of the sample. In terms of socioeconomic status, this sample seems to represent a slightly lower resourced group than what we see with the ELS data. Household income averaged at nearly \$45k (a 10k difference from the ELS sample) with the larger proportion of sample members (46.9%) having parents with a high school

diploma or less. As for academic preparation, respondents averaged a 2.82 high school GPA and were slightly more diverse in SAT score distribution than the ELS sample. While most respondents fell below the 50<sup>th</sup> percentile in SAT scores (45.1%) or did not report an SAT score (28.9%), 21.3% still fell within the 50<sup>th</sup> and 84<sup>th</sup> percentile. In terms of institutional characteristics, most respondents attended a public institution (85.9%), although some did attend a private for-profit (12.1%), leaving only 2% that attended a private nonprofit. Lastly, similar to the ELS data, all of the institutions attended by this sample were considered less selective (100%) and they averaged 13% in terms of the proportion of Latinos enrolled.

### Outcome Distributions

In terms of outcome distribution, this section begins by exploring the outcome of graduating within six years across the type of institution, race/ethnicity, and sector.



## Graduating within Six Years

To begin, **Figure 5** examines the outcome of graduating with a BA degree within six years among students who immediately enroll in a four-year institution and those who start at a two-year institution for the BPS and ELS samples. An initial observation when looking at **Figure 5** is the stark disparity in the outcome distribution between the two types of institutions. Specifically, of the respondents who begin at a 4-year institution, the majority (61% for the BPS sample, and 65% for the ELS sample), graduated within six years. In contrast, of those who begin at a 2-year institution, the proportion of those who graduated within six years was less than 15 percent (11% for BPS, and 14% for ELS). What we can derive from this data is that the rate of graduation is simply higher for students who begin at a 4-year institution than it is for students who begin at a two-year institution.

<b>Table 3.</b> Distribution of graduating within 6 years by race/ethnicity and sector/control for those who immediately enrolled a four-year institution.					
		<b>BPS</b>		<b>ELS</b>	
		<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>
<b>Race/Ethnicity</b>					
	Latino COI	49.7	50.3	37.2	62.8
	Latino COUS	47.4	52.6	49.7	50.3
	Non-Hispanic	32.1	67.9	32.2	67.9
	Non-Hispanic	61.5	38.5	54.7	45.3
<b>Sector/Control</b>					
	Public	30.9	69.1	39.1	60.9
	Private Non-Profit	21.6	78.4	28.6	71.4
	Private For profit	78.8	21.2	N/A	N/A

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

Next, in **Table 3** we break down the data further and look at the same outcome distribution we explored in **Figure 5** but do so across race/ethnicity and sector/control for students who begin at a four-year institution. We identified a few patterns. First, for most of the Latino groups (Latino COI respondents in the BPS sample and Latino COUS respondents across both samples), **Table 3** suggests somewhat of an even split between the proportion of those who graduate within six years and those who do not. For the ELS sample, Latino COI is a little more skewed, where the majority (63%) graduate within six years in contrast to 37% who do not. Second, non-Hispanic White students fare the best in graduation rates. For both the BPS and the ELS sample, 67.9% of non-Hispanic White respondents graduate within six years and roughly 32% do not. Additionally, non-Hispanic White respondents had the largest share of respondents who graduated within six years across both samples and had the smallest share of respondents who did not graduate within six years. Third, non-Hispanic Black students fare the worst. For non-Hispanic Black students in the BPS sample, the outcome is skewed with 61.5% of respondents not graduating within six years. This distribution is a little less imbalanced in the ELS sample, but still the greater proportion of non-Hispanic Black respondents (54.7%) do not graduate within six years. Additionally, they remain the group with the largest share of those who did not graduate within six years across both samples. These findings are consistent with the documented completion patterns by race/ethnicity discussed in chapter one (NCES Digest of Ed Statistics, 2018).

In terms of sector, respondents who attend private non-profits have the highest graduation rates. With roughly 10 percentage points below private non-profits in both samples, students who attend public institutions also fare well. Of respondents who attend

public institutions, 69% graduate within six years in the BPS sample and 60.9% graduate within six years in the ELS sample. The respondents who do the worst are those who attend private for profits.

**Table 4.** Distribution of graduating within 6 years by race/ethnicity and sector/control for those who started at a two-year institution.

	BPS		ELS	
	No	Yes	No	Yes
<b>Race/Ethnicity</b>				
Latino COI	90.6	9.4	90.8	9.2
Latino COUS	90.9	9.2	92.4	7.6
Non-Hispanic White	86.2	13.9	83.5	16.5
Non-Hispanic Black	94.5	5.5	92.3	7.7
<b>Sector/Control</b>				
Public	87.3	12.7	85.9	14.1
Private Non-Profit	80.9	19.1	N/A	N/A
Private For profit	99.7	0.3	96.1	3.9

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

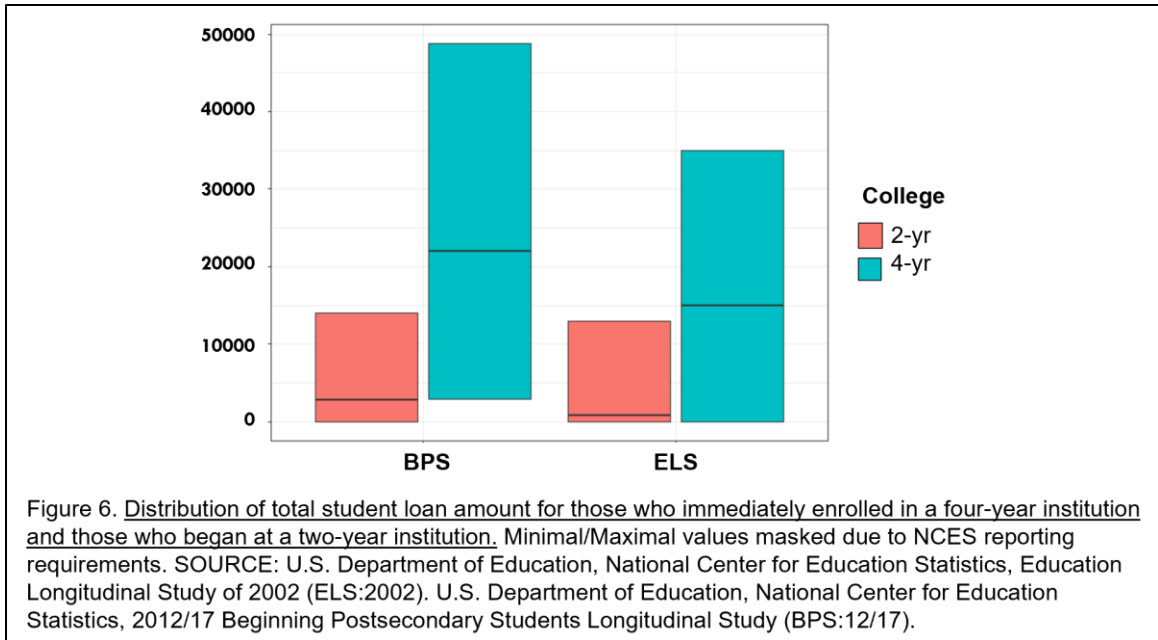
**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

In **Table 4**, we assess the same distribution we do in **Table 3** but do so for students who start their postsecondary education at a two-year institution. Right away readers may notice the disparity between respondents who graduate within six years and those who do not remains extremely high across all race/ethnic groups. However, despite this trend, non-Hispanic White students are the least disadvantaged. Specifically, they have the smallest gap between those who do and do not graduate while also having the larger proportion of students who graduate within six years. Non-Hispanic Black students and Latino students (regardless of nativity status) have similar distributions to each other with non-Hispanic Black respondents in the BPS sample having the smallest proportion of students graduating within six years. Non-Hispanic Black respondents do slightly better in the ELS sample. As for sector/control, similar to what we see in **Table 3**, those

who attend a private non-profit had the larger proportion of students who graduate within six years. This is followed by respondents who attend a public institution. Students who begin at a for-profit two-year, arguably do the worst.

### **Student Loans**

Next, we explore the outcome of student loan debt across the type of institution, race/ethnicity, and sector. Student loan debt is a continuous measure; therefore, we use box plots to document the distribution of total student loan debt across the different fields of interest. When interpreting the box plots, the reader should take into consideration the following notes. First, the lower end of the box represents quartile 1 and the higher end of the box represents quartile 3. Therefore, in its entirety, the box plots provide an idea of the interquartile range for the variable of interest. Second, minimal and maximal values are not displayed in the box plots due to NCES reporting requirements. Lastly, the black line in the boxes represents the median or quartile 2. Due to it being less sensitive to outliers, the median offers a better benchmark for understanding the typical loan amount borrowers. Due to this I focus on patterns surrounding the median the most in my bivariate descriptions.



To begin, **Figure 6** examines the outcome of student loan debt among students who immediately enroll in a four-year institution and those who begin at a two-year institution for the BPS and ELS samples. Immediately, **Figure 6** highlights the dramatic difference in loan amounts between students who attend the two distinct types of institutions. As can be expected, respondents who begin at a four-year institution have greater amounts of student loan debt than those who begin at a two-year institution. Not only are the medians across both samples greater, but the interquartile ranges are too. It is likely this pattern is a result of the open access nature of two-year institutions which results in lower costs to attend in contrast to the more costly four-year institution. If a student spends less time attending an institution that is more costly, they will arguably have less loans than a student who spends more, or the entirety of their time, at a costly institution.

Additionally, **Figure 6** emphasizes the contrasts between the two data sources in terms of student loan debt for respondents who begin at a four-year institution.

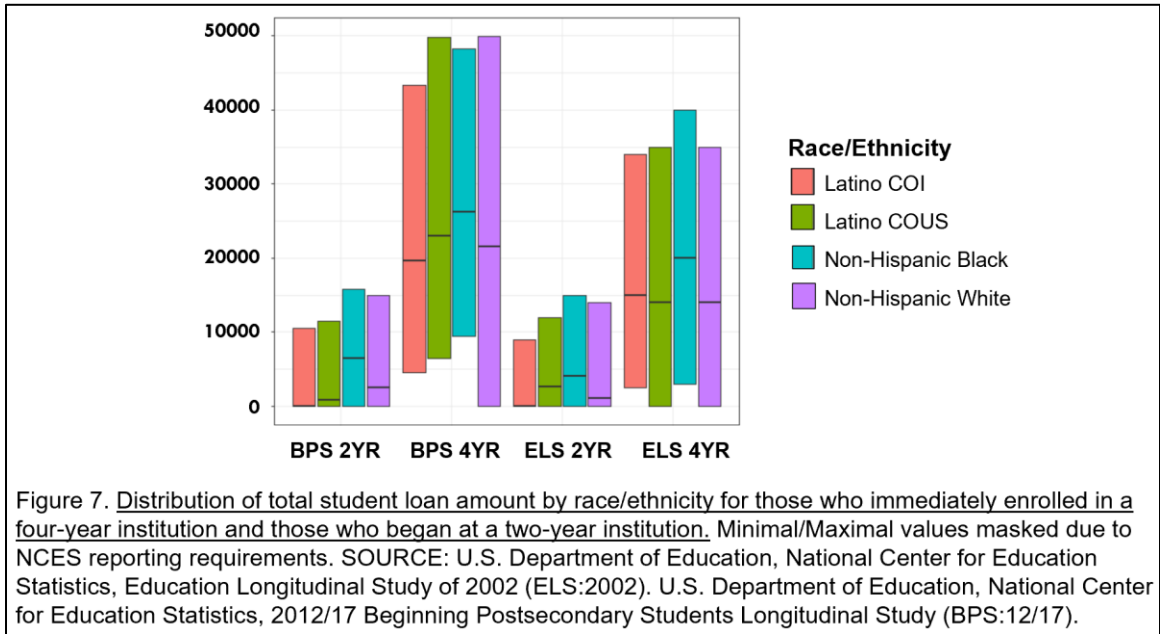
Specifically, BPS respondents have greater loan amounts than ELS respondents. A probable explanation is the time of data collection and its association to cost.

Respondents from the BPS sample attend college nearly a decade later than respondents from the ELS sample. For instance, between 2001 and 2023 the cost of tuition for four-year institutions increased on average 4.05% each year (NCES, 2023, Table 330.10).

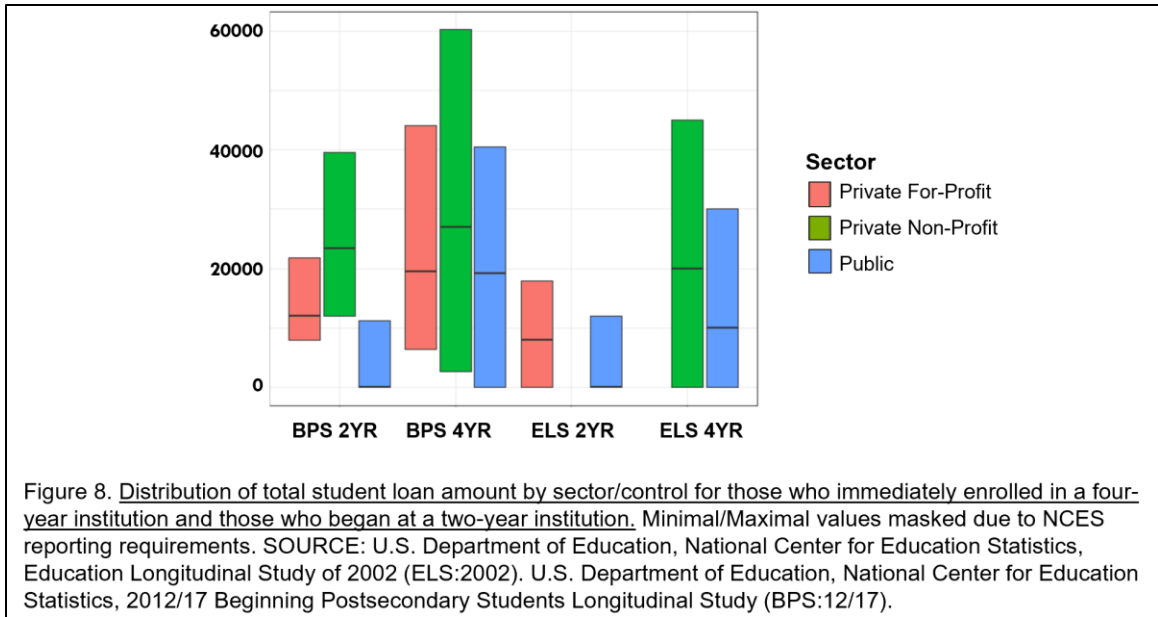
Conversely, the interquartile ranges of student loan debt for BPS and ELS respondents who start at a two-year institution are more comparable to each other. It is reasonable to assume that while the cost of four-year institutions has gone up dramatically, the cost of community colleges may have stayed at a more consistent rate. However, according to data provided by the *Digest of Education Statistics*, between 2001 and 2023 the cost of tuition for two-year institutions increased on average by 3.78% each year (NCES, 2023, Table 330.10). Therefore, while the cost of tuition for two-year institutions did increase at a slower rate than for four-year institutions, it was still not by much.

When we explore the outcome of student loan debt by race/ethnicity in **Figure 7**, a notable observation for respondents who begin at a four-year institution is that non-Hispanic Black respondents still fare the worst in terms of student loan debt, a finding that is consistent with prior research (Addo et al., 2016; Scott-Clayton & Li 2016). At roughly \$26 thousand for the BPS sample and \$20 thousand for the ELS sample, non-Hispanic Black respondents have the largest median across both data sources. Comparatively, they also have the greatest Q1. A second notable observation is that Latino students have a more comparable median loan amount to that of non-Hispanic White students suggesting respondents in these two groups are similar to each other in student loan distribution. Lastly, non-Hispanic White respondents have the largest

interquartile range due to having the lowest Q1. Meaning, on average, respondents who identify as non-Hispanic White have the lowest amounts of student loan debt than the other racial/ethnic groups while still having the most variability.



When we focus on the outcome of student loan debt by race/ethnicity for respondents who begin at a two-year institution, Non-Hispanic Black students still have the greatest median; and in this context, have the greatest interquartile range as well. This is due to all racial/ethnic groups having zero as their lowest Q1, likely due to the open access nature of two-year institutions, paired with non-Hispanic Black students having the greatest upper quartile. Second, Latino COI respondents have the lowest medians and interquartile range. In contrast to their position in **Figure 6**, non-Hispanic Whites have the second greatest Q3 across both samples and have the second largest median for the BPS sample. In the ELS sample, Latino COUS respondents have the second largest median.

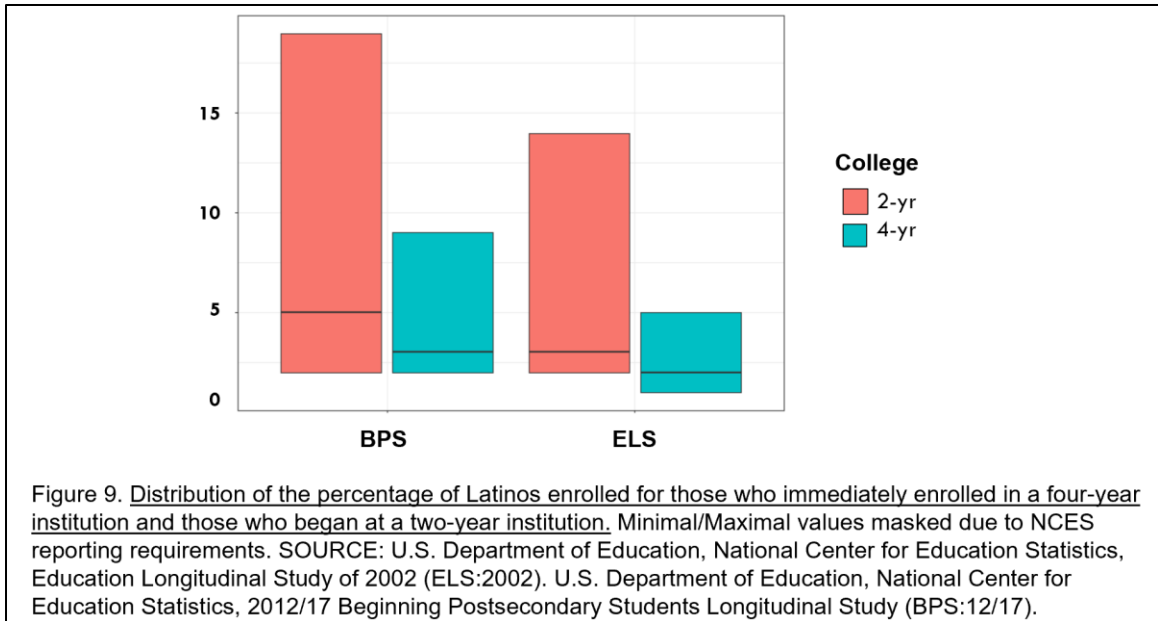


**Figure 8** illustrates the distribution of student loan debt by sector/control for those who immediately start at a four-year institution and those who start at a two-year institution. As a reminder to the reader, I exclude cases in the ELS sample where a student’s first valid institution is a 4-year for-profit institution. Due to this, we do not have a box plot for the private for-profit category in the ELS sample. Nonetheless, with regard to respondents who immediately begin at a four-year institution, a primary assumption derived from **Figure 8** is that private non-profits are costly. Across both samples, students who attend a private non-profit have the highest median loan amount and greatest upper quartile. Additionally, while private for-profits have a greater upper quartile than public institutions in the BPS sample, the medians are more comparable to each other with both being slightly less than \$20 thousand. This suggests that while the typical loan amount between these two groups is similar to each other, there are more private for-profit respondents with higher levels of debt than public institution respondents.

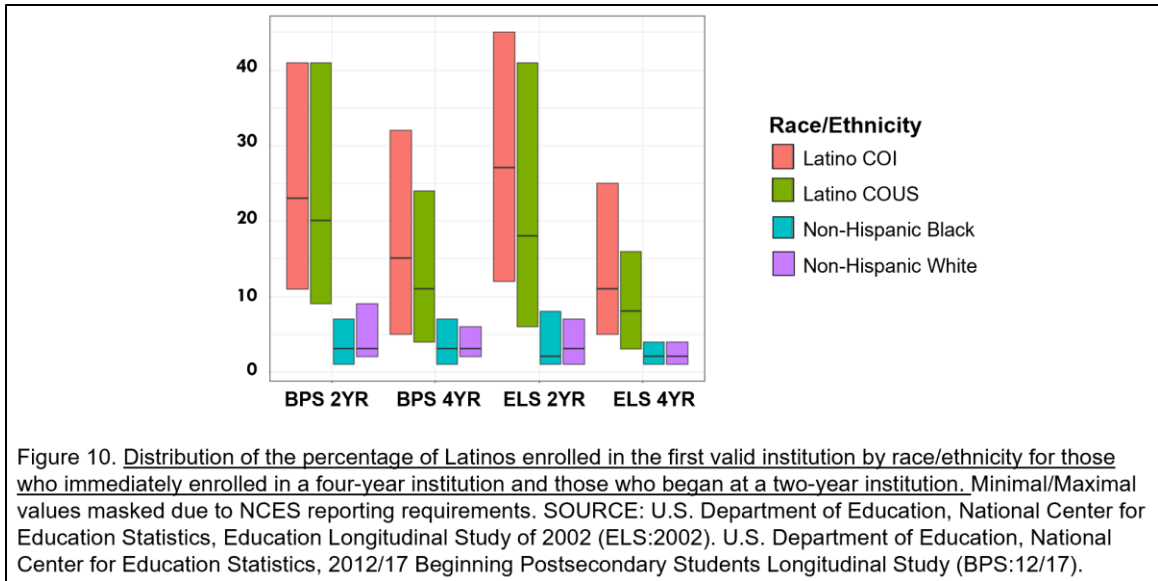
When we shift the focus to respondents who start at a two-year institution, the difference between private for-profits and public institutions is more stark. While the median and upper quartile for private for-profit institutions are higher than those for public institutions, respondents who attend a public institution also have the lowest median and upper quartile across all types of two-year institutions. Specifically, across both samples the median for respondents who begin at a public two-year institution is zero. In contrast, the median for respondents who begin at a private for-profit is \$12 thousand for the BPS sample and \$8 thousand for the ELS sample. Similarly, while the upper quartile for public institutions is roughly \$11 thousand and \$12 thousand for the BPS and ELS sample respectively, the upper quartile amounts for private for profits are roughly \$21 thousand for the BPS sample and \$18 thousand for the ELS sample. Lastly, due to the restricted number of cases of students in two-year institutions that were also private non-profit organizations, we do not have a box plot for the private non-profit category for the ELS sample. However, it is worth noting that where the descriptive could be pulled, private non-profit institutions still had the greatest median and Q3 than any other category.

### **Percentage of Latinos Distribution**

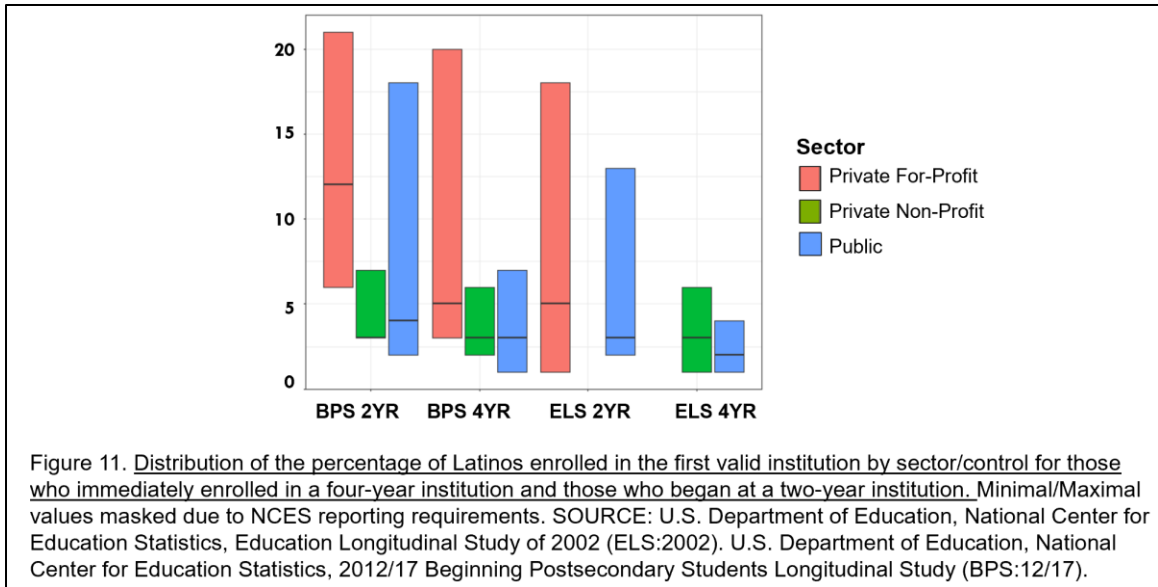
Lastly, we look at the distribution of the key independent variable of this study, the percentage of Latinos enrolled in a postsecondary institution. Since the percentage of Latinos enrolled is a continuous variable, box plots are also used for documenting its distribution across other variables and should be interpreted in the same manner as the previous set of box plots.



The first assessment we make when looking at **Figure 9** is the implied relationship between two-year institutions and Latino students. The Q3 and interquartile range of percent Latino is greatest for students who begin at a two-year institution than those who begin at a four-year institution. Additionally, the median itself is also greater for students who begin at a two-year than those who begin at a four-year in both samples, with the highest median being in the BPS sample. Historically, a greater proportion of Latino students have been known to attend two-year institutions than four-year institutions (NCES, 2021, Table 306.20). The distribution of percentage of Latinos enrolled in **Figure 9** aligns with this trend. Students in the ELS sample who begin at a four-year institution seem to have the smallest median.



**Figure 10** illustrates the distribution of the percentage of Latinos enrolled by race/ethnicity for those who immediately begin at a four-year institution and those who begin a two-year institution. Immediately, the most notable observation is that Latino students attend institutions with greater proportions of Latinos than any other racial/ethnic group. In **Figure 10**, we see both Latino COI and Latino COUS respondents have the greatest lower quartile, upper quartile, median, and interquartile range. This holds true for respondents who begin at a four-year institution and those who begin at a two-year institution across both samples. At a more granular level, across all samples and levels of institution, Latino COIs attend colleges with a larger Latino presence than do Latino COUSes. In particular, the gaps range between 3-4 percentage points for four-year institutions and 3-9 percentage points for two-year institutions. The medians and interquartile range for non-Hispanic White and non-Hispanic Black students are more comparable to each other and their upper quartiles stay below 10 percent.



**Figure 11** illustrates the distribution of the percentage of Latinos enrolled by sector/control for those who immediately begin at a four-year institution and those who begin a two-year institution. Similar to what we discussed in **Figure 8**, due to a limited number of cases, I exclude cases in the ELS sample where a student’s first valid institution is a 4-year institution that is also for-profit. I also exclude cases in the ELS sample where a student’s first valid institution is a 2-year institution that is also a non-profit. Due to this, we do not have a box plot for those sector/control categories in the ELS sample.

Where the data is available, respondents who attend private for-profits have a greater proportion of Latino students enrolled than students who attend other types of institutions. By far, they have the greatest median percentage of Latinos enrolled with a median that is 8 percentage points greater than respondents who begin at a public institution. Their upper quartile and interquartile range of percent Latino are also the greatest across all samples and types of institutions. It is conceivable that the trend we see of respondents who attend private for-profit institutions having a disproportionately

greater number of Latinos enrolled is associated with the documented observations of for-profit institutions aggressively targeting racial and ethnic minorities (Deming, et al., 2012; Lynch, et al. 2010).

## CHAPTER 6

### GRADUATING WITHIN SIX YEARS

A series of regression analyses were conducted to determine whether the proportion of Latinos enrolled in a postsecondary institution is a significant predictor of whether or not respondents graduate within six years as well as its impact on accumulated student loan debt. The tables provided in the next two chapters present findings on two-way and three-way interactions for two separate samples, the BPS: 12/17 and the ELS:2002.

This chapter is divided into six sections. I begin by discussing the results for the main relationship in question, the impact of the percentage of Latinos enrolled in a postsecondary institution on the probability of graduating with a BA degree within six years for Latino students in contrast to non-Latino students. Subsequently, I discuss the findings for each moderation analyses. I begin with the individual-level moderators (parental education and pre-academic preparation) followed by institution-level moderators (sector and selectivity). Within each section I discuss the findings for individuals who immediately begin their postsecondary education at a four-year institution, followed by those who start their postsecondary education at a two-year institution.

#### **Main Relationship**

I begin by assessing two-way interactions between the proportion of Latinos enrolled and race/ethnicity for students who immediately enrolled in a four-year institution. In **Table 5**, I first present Average Marginal Effects (AME). AMEs are used here to predict change in the probability of graduating within six years based on a 1

standard deviation (SD)<sup>27</sup> increase in the proportion of Latinos enrolled in a postsecondary institution conditional on race/ethnicity. For example, let's consider the AME coefficient for Latino children of immigrants (COI). The 0.029 coefficient suggests that when the proportion of Latino student enrollment increases by 1 SD, the probability of Latino children of immigrants graduating within six years increases by 2.9 percentage points. The direction of impact is indicated by the positive value of the coefficient and its statistical significance would be indicated by an asterisk next to the AME. The lack of an asterisk in this scenario indicates its lack of significance. In **Table 5** I also present  $\Delta$  AMEs which are used to represent whether the effect of Latino enrollment conditioned on the different categories of race/ethnicity are significantly different from the reference category, being Latino COI (children of immigrants). For  $\Delta$  AMEs, it is the statistical significance of the coefficient that is of most importance for interpretation. The coefficient itself is the numerical difference between the AME of the reference category and AME of the respective category of interest. To illustrate further, let's consider the  $\Delta$  AME for non-Hispanic White students in **Table 5**. The asterisk next to the  $\Delta$  AME suggests that in terms of graduating within six years, the effect of Latino enrollment on non-Hispanic White students is statistically different from that of the reference category, Latino children of immigrants. The -0.046 coefficient is simply the AME for non-Hispanic White (-0.017) minus the AME for Latino children of immigrants (0.029).

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<sup>27</sup> the SD for Latino enrollment in the BPS sample is .1450199. The SD for Latino enrollment in the ELS sample is .130219.

**Table 5.** Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized), for students immediately enrolled in four-year institutions, conditioned on race/nativity.

	BPS: 12/17		ELS: 2002	
	AME	$\Delta$ AME	AME	$\Delta$ AME
Latino COI	0.029 [-0.001 , 0.059]	Ref cat	0.005 [-0.038 , 0.047]	Ref cat
Latino COUS	-0.004 [-0.027 , 0.019]	-0.033 [-0.069 , 0.003]	-0.038 [-0.099 , 0.023]	-0.043 [-0.125 , 0.039]
Non-Hispanic White	-0.017 [-0.049 , 0.014]	<b>-0.046*</b> <b>[-0.085 , -0.007]</b>	-0.009 [-0.051 , 0.034]	-0.013 [-0.067 , 0.04]
Non-Hispanic Black	-0.031 [-0.12 , 0.058]	-0.06 [-0.148 , 0.028]	0.048 [-0.086 , 0.181]	0.043 [-0.109 , 0.195]

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

The findings in **Table 5** address two hypotheses in this study. The first hypothesis,  $H_{1a}$ , is concerned with the direction of impact for Latino students, is percent Latino beneficial for the Latino population? Specifically, I predict Latino enrollment will have a *positive* effect on the graduation status of Latino students. Meaning, the higher the percentage of Latino students enrolled, the higher the probability of graduating within six years will be for Latino students. The direction of the association alone for Latino children of immigrants suggest this is true with positive AMEs for both samples. With negative coefficients, the direction of the association for Latino children of U.S. born parents suggests the opposite for both samples, contradicting my hypothesis. Nevertheless, these associations remain inconclusive due to the lack of significance across both samples. The second hypothesis addressed by **Table 5**,  $H_2$ , is concerned with differences in the impact of percent Latino based on race and nativity. In other words, is this effect more beneficial for Latino students? Specifically, I predict the benefit of

Latino enrollment will be greater for Latino students, than for non-Latino students, regardless of nativity status. The  $\Delta$  AMEs suggest there is only one significant difference between race/ethnic groups. The  $\Delta$  AME for non-Hispanic White students in the BPS sample indicates a significant difference in the effect of percent Latino between Latino children of immigrants and non-Hispanic White students with the effect of Latino enrollment being significantly more beneficial for Latino children of immigrants than non-Hispanic Whites. This finding supports my hypothesis that the effect of percent Latino will be more beneficial for Latino students than non-Latino students. However, this finding is only considered partial evidence since this significant association is only found in the BPS sample but not in the ELS sample. The  $\Delta$  AME for non-Hispanic Black students in both samples were not statistically significant, indicating no difference between groups.

<b>Table 6.</b> Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized), for students immediately enrolled in two-year institutions, conditioned on race/nativity.				
	<b>BPS: 12/17</b>		<b>ELS: 2002</b>	
	<b>AME</b>	<b><math>\Delta</math> AME</b>	<b>AME</b>	<b><math>\Delta</math> AME</b>
Latino COI	-0.001 [-0.017 , 0.015]	Ref Cat	0.004 [-0.02 , 0.029]	Ref Cat
Latino COUS	-0.005 [-0.035 , 0.025]	-0.004 [-0.038 , 0.03]	0.003 [-0.027 , 0.034]	-0.001 [-0.036 , 0.033]
Non-Hispanic White	-0.001 [-0.033 , 0.03]	-0.0005 [-0.036 , 0.035]	0.008 [-0.016 , 0.032]	0.004 [-0.035 , 0.042]
Non-Hispanic Black	0.002 [-0.038 , 0.042]	0.003 [-0.041 , 0.047]	0.043 [-0.007 , 0.094]	0.039 [-0.02 , 0.098]

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

In **Table 6** I assess the same two-way interactions in **Table 5** but do so for students who start their postsecondary education at a two-year institution. In terms of direction, the effect of percent Latino on graduating within 6 years is not consistent across samples. In the BPS sample, the AMEs for Latino children of immigrants and Latino children of U.S. parents are both negative suggesting a decrease in the probability of graduating within six years for Latino students. However, in the ELS sample, the AMEs for both groups are positive, indicating an increase in the probability of graduating within six years for Latino students. However, the lack of statistical significance for these AMEs suggests there is not enough evidence to conclude any significant association. In contrast to students who immediately begin their postsecondary education at a four-year institution, the lack of significance for  $\Delta$  AMEs across both samples for students who start their postsecondary education at a two-year institution also imply no differences in the impact of percent Latino based on racial/ethnic groups.

#### **Moderation Analyses: Individual-level Moderators**

In addition to the main inquiry of this study, I am also interested in whether the effect of Latino presence is in turn moderated by individual and institution-level characteristics. For each moderation analysis I develop a hypothesis that reflects the notion that the effect of percent Latino will be more beneficial for the more disadvantaged category within each moderator variable. Therefore, I estimate the AME for proportion Latino for each category of the moderator variable and then test for whether or not the effect of proportion Latino is different between such categories. First, I do this for the two-way interaction between the moderator variable and percent Latino (moderator variable X percent Latino). Then, I do this for the three-way interaction

between the moderator variable, percent Latino, and race/ethnicity (moderator variable X percent Latino X race/ethnicity). Subsequently, I discuss the outcome of my hypothesis for each analysis and present the findings derived from the AME results, in a hypotheses table. There are three possible outcomes. If the effect is significantly more positive for the disadvantaged group, this is in line with my theory, and I reject the null hypothesis. If the effect is significantly more positive for the most advantaged group, this is counter to my theory, and I accept the null hypothesis. If the effects are statistically indistinguishable from each other, I retain the null hypothesis. It should be noted that hypotheses testing for each moderator analyses are centered on the significance level of the  $\Delta$  AME coefficient in the AME results table; the significance level of the AME coefficient itself is not the focus in the reporting of our hypotheses testing. However, in instances where both the  $\Delta$  AME and the AMEs are statistically significant, the significant AME will also be discussed in the respective section. To provide further clarity on the translation between the AME results table and the hypotheses table, I include both tables for the moderation analyses between parental education, race/ethnicity, and percent Latino. The rest of the moderation analyses will only refer to the hypotheses table for interpretation of the results.

### **Parental Education**

To begin, **Table 7 and Table 8** present the coefficients for the moderation analysis for parental education for students who begin at a four-year institution and those who begin at a two-year institution. I then use **Table 9** to simplify this information and summarize the results in terms of our hypotheses testing.

**Table 7.** Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized) conditioned on race/nativity and parental education for students who immediately enrolled in four-year institutions.

Race/Ethnicity	Parental Education	BPS: 12/17		ELS:2002	
		AME	Δ AME	AME	Δ AME
All	Less Educated (12 Yrs)	0.005 [-0.023, 0.033]	.	0.004 [-0.036, 0.044]	.
	More Educated (16 Yrs)	0.001 [-0.022, 0.023]	-0.004 [-0.035, 0.026]	-0.012 [-0.036, 0.013]	-0.016 [-0.055, 0.024]
Latino COI <sup>1</sup>	Less Educated (12 Yrs)	0.027 [-0.014, 0.067]	.	0.021 [-0.051, 0.093]	.
	More Educated (16 Yrs)	0.034 [-0.005, 0.073]	0.007 [-0.040, 0.055]	-0.007 [-0.056, 0.042]	-0.028 [-0.111, 0.055]
Latino COUS <sup>2</sup>	Less Educated (12 Yrs)	-0.041 [-0.111, 0.030]	.	-0.096 [-0.233, 0.040]	.
	More Educated (16 Yrs)	0.010 [-0.034, 0.054]	0.051 [-0.048, 0.150]	-0.017 [-0.098, 0.064]	0.080 [-0.076, 0.235]
Non-Hispanic White <sup>3</sup>	Less Educated (12 Yrs)	0.017 [-0.055, 0.089]	.	0.008 [-0.084, 0.100]	.
	More Educated (16 Yrs)	-0.025 [-0.061, 0.011]	-0.043 [-0.109, 0.023]	-0.010 [-0.051, 0.030]	-0.018 [-0.099, 0.063]
Non-Hispanic Black <sup>3</sup>	Less Educated (12 Yrs)	-0.087 [-0.246, 0.073]	.	0.236 [-0.019, 0.491]	.
	More Educated (16 Yrs)	0.012 [-0.100, 0.125]	0.099 [-0.092, 0.291]	0.017 [-0.085, 0.119]	<b>-0.219<sup>c</sup></b> <b>[-0.438, 0.000]</b>

**NOTES:** a=p<0.05; b=p<0.01; c=p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

**Table 8.** Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized) conditioned on race/nativity and parental education for students who began at two-year institutions.

Race/Ethnicity	Parental Education	BPS: 12/17		ELS:2002	
		AME	Δ AME	AME	Δ AME
All	Less Educated (12 Yrs)	-0.003 [-0.018, 0.011]	.	0.006 [-0.010, 0.022]	.
	More Educated (16 Yrs)	0.000 [-0.021, 0.021]	0.003 [-0.018, 0.024]	0.012 [-0.009, 0.032]	0.006 [-0.015, 0.027]
Latino COI <sup>1</sup>	Less Educated (12 Yrs)	0.008 [-0.004, 0.019]	.	0.011 [-0.005, 0.026]	.
	More Educated (16 Yrs)	-0.038 [-0.106, 0.030]	-0.045 [-0.115, 0.024]	-0.002 [-0.048, 0.045]	-0.012 [-0.060, 0.036]
Latino COUS <sup>2</sup>	Less Educated (12 Yrs)	-0.013 [-0.057, 0.031]	.	0.003 [-0.019, 0.024]	.
	More Educated (16 Yrs)	0.000 [-0.030, 0.030]	0.013 [-0.027, 0.052]	0.004 [-0.051, 0.060]	0.002 [-0.051, 0.055]
Non-Hispanic White <sup>3</sup>	Less Educated (12 Yrs)	-0.024 [-0.065, 0.017]	.	0.010 [-0.031, 0.051]	.
	More Educated (16 Yrs)	0.003 [-0.040, 0.046]	0.026 [-0.015, 0.068]	0.008 [-0.019, 0.035]	-0.002 [-0.047, 0.042]
Non-Hispanic Black <sup>3</sup>	Less Educated (12 Yrs)	-0.043 [-0.090, 0.005]	.	0.050 [-0.034, 0.135]	.
	More Educated (16 Yrs)	0.002 [-0.042, 0.046]	0.045 [-0.001, 0.091]	0.048 [-0.002, 0.098]	-0.002 [-0.101, 0.097]

**NOTES:** a=p<0.05; b=p<0.01; c=p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

<b>Table 9.</b> Moderation analysis of parental education for graduating within 6 years				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	Retain H0	Retain H0
Latino COI	Retain H0	Retain H0	Retain H0	Retain H0
Latino COUS	Retain H0	Retain H0	Retain H0	Retain H0
White COUS	Retain H0	Retain H0	Retain H0	Retain H0
Black COUS	Retain H0	<b>Reject H0</b>	Retain H0	Retain H0

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

I begin by exploring whether the effect of percent Latino on graduating within six years is influenced by the individual-level moderator, parental education, for students who immediately enrolled in a four-year institution. In terms of parental education, students with less educated parents would be considered more disadvantaged than those with more educated parents. While parental education is a continuous measure in this study, we compare years 12 and 16 as reference points for the AME analyses. Therefore, I begin by estimating the AME of proportion Latino for children of parents with 12 years of schooling and 16 years of schooling. I then test for whether or not the effect of proportion Latino is different between both levels of parental education. Those with less educated parents are considered the reference group. As illustrated in **Table 7**, before taking race/ethnicity into consideration, the effect of percent Latino on graduating within six years seems to not be influenced by parental education. Specifically, the  $\Delta$  AME for the BPS sample -0.004 and the  $\Delta$  AME for the ELS sample -0.016 are both not

statistically significant. This implies the effects of parental education as a moderator for both samples are statistically indistinguishable from zero. Therefore, in **Table 9** I indicate we retain the null hypothesis for both samples.

Next, I estimate the AME for proportion Latino for children of parents with 12 years of schooling and 16 years of schooling, *specific to each racial/ethnic group*, and draw a comparison. For each race/ethnic group the reference group remains those with less educated parents. **Table 7** suggests the impact of parental education as a moderator in the main relationship between percent Latino and graduating within six years varies depending on race/ethnicity. Specifically, for students who identify as non-Hispanic Black, there is partial evidence of a significant difference in the effect of percentage of Latinos enrolled on graduating within six years based on parental education. The  $\Delta$  AME for this group in **Table 7** suggests that compared to non-Hispanic Black students with less educated parents, non-Hispanic Black students with more educated parents benefit less from higher proportions of Latino students. Since the effect is significantly more positive for the disadvantaged group, **Table 9** indicates this is in line with my theory, and we reject the null hypothesis. The lack of statistical significance for the  $\Delta$  AMEs in the rest of the analyses suggests this moderation effect is not significant for students of other racial/ethnic groups.

When I run the same analyses for students who start their postsecondary education at a two-year institution in **Table 8**, there are no significant associations. The interaction effect does not provide strong enough evidence that the impact of the percentage of Latino students enrolled in a postsecondary institution on the probability of graduating within six years varies based on different parental education levels. This

remains true when I estimate the AME for proportion Latino for children of parents with 12 years and 16 years of schooling, specific to each racial/ethnic group, and test for whether or not the effect of proportion Latino is different.

**Academic Preparation (High School GPA)**

<b>Table 10.</b> Moderation analysis of HS GPA for graduating within 6 years				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	Retain H0	Retain H0
Latino COI	Retain H0	Retain H0	Retain H0	Retain H0
Latino COUS	Retain H0	Retain H0	Retain H0	Retain H0
White COUS	Retain H0	Retain H0	Retain H0	Retain H0
Black COUS	<b>Reject H0</b>	Retain H0	Retain H0	Retain H0

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

The moderation analyses for academic preparation are conducted separately for high school GPA and SAT scores. **Table 10** outlines the results of the moderation analyses for academic preparation measured by high school GPA. Students who are less academically prepared (having a high school GPA that is 1 SD below the average) would be considered the disadvantaged group in contrast to students who are more academically prepared (having a high school GPA that is 1 SD above the average). Before taking race/ethnicity into consideration, the two-way interaction between percent Latino and high school GPA is not statistically significant for students who immediately enrolled in a four-year institution. Consequently, the effect of percent Latino on graduating within six years is not influenced by high school GPA. When I explore the three-way interaction

between the percentage of Latinos enrolled, race/ethnicity, and high school GPA, there is a significant effect but only for the non-Hispanic Black group. For non-Hispanic Black students, those who are less academically prepared benefit the most from percent Latino than those who are more academically prepared, supporting my hypothesis. Moreover, in this same analysis for the same BPS sample, the specific AME for students who are more academically prepared achieved significance; suggesting that as the proportion of Latino students goes up by 1 SD, the probability of non-Hispanic Black students who are more academically prepared graduating within six years decreases by roughly 18 percentage points. However, both findings should be considered only partial evidence because the significant relationships for this group are only present for the BPS sample and not the ELS sample. The  $\Delta$  AMEs for the other groups lack statistical significance, suggesting this moderation effect is not significant for students of other racial/ethnic groups.

When I run the same analyses for students who start their postsecondary education at a two-year institution, there are again, no significant associations. For both two-way and three-way interactions, there is not sufficient evidence to suggest that the impact of the percentage of Latino students enrolled in a postsecondary institution on the probability of graduating within six years varies based on the level of pre-academic preparation when measured by HS GPA.

## Academic Preparation (SAT Scores)

<b>Table 11.</b> Moderation analysis of SAT for graduating within 6 years				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	N/A	N/A
Latino COI	<b>Reject H0</b>	Retain H0	N/A	N/A
Latino COUS	Retain H0	<b>Accept H0</b>	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

**Table 11** outlines the moderation findings for academic preparation measured by SAT scores. Students who are less academically prepared (having an SAT score that is 1 SD below the average) would be considered the disadvantaged group in contrast to students who are more academically prepared (having a SAT score that is 1 SD above the average). Similar to what we find with high school GPA, before taking race/ethnicity into consideration, the two-way interaction between percent Latino and SAT score is not statistically significant. This leads to the assumption that the effect of percent Latino on graduating within six years is not influenced by SAT scores. When assessing a three-way interaction between the percentage of Latinos enrolled, race/ethnicity, and SAT scores, there is a significant effect but only for Latino children of immigrants and Latino children of U.S. parents. For Latino children of immigrants, we find the percentage of Latinos enrolled significantly benefits those with lower SAT scores more than Latino children of immigrants with higher SAT scores, supporting my hypothesis. Similarly, the AME itself

is also statistically significant for this group, suggesting that when the proportion of Latino student enrollment increases by 1 SD, the probability of Latino children of immigrants graduating within six years increases by 7.5 percentage points. This is again only partial evidence with the significant relationship found only in the BPS sample. For Latino children of U.S. parents, we find partial evidence that the percentage of Latinos enrolled is significantly more *harmful* to those with lower SAT scores. Similarly, the AME itself is also significant suggesting that when the proportion of Latino student enrollment increases by 1 SD, the probability of Latino children of U.S. parents graduating within six years decreases by 14.3 percentage points. The lack of statistical significance for the other groups suggests this moderation effect is not significant for students of other racial/ethnic groups.

A moderation analysis using SAT scores was not conducted for students who started their postsecondary education at a two-year institution.

### **Moderation Analyses: Institution-level Moderators**

In addition to individual-level moderators, this study also takes into consideration two institution-level moderators, selectivity and sector. While the moderation analyses for institution level moderators follow the same hypotheses pattern as the individual-level moderators, they were only conducted for students who immediately enrolled into a four-year institution.

**Selectivity**

<b>Table 12.</b> Moderation analysis of selectivity for graduating within 6 years				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	N/A	N/A
Latino COI	<b>Reject H0</b>	Retain H0	N/A	N/A
Latino COUS	Retain H0	Retain H0	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

**Table 12** presents the results of the moderation analyses for selectivity, categorized as a dichotomous variable representing more selective and less selective postsecondary institutions. Students who attend less selective institutions are considered the disadvantaged group and students who attend more selective institutions are considered the advantaged group. Prior to incorporating race/ethnicity, the two-way interaction between selectivity and percent Latino appears to lack statistical significance, suggesting the effect of percent Latino on graduating within six years is not influenced by the level of selectivity of the institution. However, when assessing the impact of selectivity and percent Latino specific to each racial/ethnic group, a significant effect emerges, but only for Latino children of immigrants. Specific to Latino children of immigrants, we find the proportion of Latinos enrolled is significantly more beneficial for those attending less selective institutions, supporting my hypothesis. Notably, the AME itself for this group is also significant suggesting that when the proportion of Latino

student enrollment increases by 1 SD, the probability of Latino children of immigrants graduating within six years increases by 4.5 percentage points.

**Sector**

<b>Table 13.</b> Moderation analysis of sector (public vs private for-profit) for graduating within 6 years				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	N/A	N/A	N/A
Latino COI	Retain H0	N/A	N/A	N/A
Latino COUS	<b>Reject H0</b>	N/A	N/A	N/A
White COUS	Retain H0	N/A	N/A	N/A
Black COUS	Retain H0	N/A	N/A	N/A

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

The variable sector is composed of three categories: 1) public, 2) private non-profit, and 3) private for-profit. For my moderation analyses, I run two separate regressions. The first, displayed in **Table 13**, assesses how the relationship between the percentage of Latinos enrolled in an institution and graduating within six years differs between students who attend a public institution and those who attend a private for-profit institution. Due to the predatory nature of for-profit institutions (Lynch, et al. 2010), the disadvantaged group in this analysis is assumed to be students who attend a private for-profit institution. As illustrated in **Table 13**, prior to incorporating race/ethnicity, the two-way interaction between percent Latino and sector for the BPS sample, show no indication that the effect of percent Latino on graduating within six years is influenced by sector. Once race/ethnicity is introduced, the three-way interaction suggests sector does impact the effect of percent Latino on graduating within six years, but only for Latino

children of U.S. parents. For Latino children of U.S. parents, those who attend a private for-profit institution benefit the most from percent Latino than those who attend a public institution, supporting my hypothesis. Likewise, the AME itself for this group was also significant suggesting that when the proportion of Latino student enrollment increases by 1 SD, the probability of Latino children of immigrants graduating within six years increases by 7.7 percentage points. The lack of significance for the other racial/ethnic groups suggests there are no differences in the effect of percent Latino based on sector for non-Hispanic White students and non-Hispanic Black students. In terms of the ELS sample, the analyses experienced errors stemming from a restricted number of cases of four-year institutions that were also for-profit organizations. As a result of this issue, I had to exclude cases in the ELS sample where a student’s first valid institution was a 4-year institution that was also for-profit.

	4 Year		2 Year	
	BPS	ELS	BPS	ELS
All	Retain H0	Retain H0	N/A	N/A
Latino COI	Retain H0	<b>Reject H0</b>	N/A	N/A
Latino COUS	Retain H0	Retain H0	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

Subsequently, in **Table 14**, I explore how the relationship between the percentage of Latinos enrolled in an institution and graduating within six years differs between students who attend a public institution and those who attend a private non-profit. Due to

the presumed greater resources possessed by private non-profit institutions, the disadvantaged group in this analysis is assumed to be students who attend a public institution. Prior to incorporating race/ethnicity, the two-way interaction between percent Latino and sector shows no indication that the effect of percent Latino on graduating within six years is influenced by sector. Once race/ethnicity is introduced, the three-way interaction suggests sector does impact the effect of percent Latino on graduating within six years, but only for Latino children of immigrants. For Latino children of immigrants, those who attend a public institution benefit the most from percent Latino than those who attend a private non-profit, supporting my hypothesis. This is paired with the AME for Latino children of immigrants who attend private non-profits also being significant, suggesting that when the proportion of Latino student enrollment increases by 1 SD, the probability of Latino children of immigrants graduating within six years decreases by 10.4 percentage points. However, both findings are still considered only partial evidence due to the lack of significance in the BPS sample. The lack of significance for the other racial/ethnic groups suggests there are no differences in the effect of percent Latino based on sector for non-Hispanic White students and non-Hispanic Black students.

### **Latino Racial Identification**

While Latino students are collectively analyzed in this study as one ethnic/racial group, Latinos are a racially diverse group, and many may racially identify as Black. In an attempt to recognize this racial diversity and possible implications on their educational outcomes, this study conducts a separate regression analyses that separates ethnic and racial identification for Latino students. To aid in this analysis, I create a three categorical variable consisting of Afro-Latinos (Latinos who racially identify as Black), non-Afro-

Latinos (Latinos who do not racially identify as Black), and non-Hispanic Black sample members (non-Latinos who racially identify as Black). This analysis follows the same structure of analysis conducted for the original race/ethnic variable in **Table 5**.

<b>Table 15.</b> Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized), for students immediately enrolled in four-year institutions, conditioned on racially identifying as Black for Latino and non-Latino groups.				
	<b>BPS: 12/17</b>		<b>ELS: 2002</b>	
	<b>AME</b>	<b>Δ AME</b>	<b>AME</b>	<b>Δ AME</b>
Afro-Latino	-0.056 [-0.179 , 0.067]	Ref Cat	<b>0.143*</b> <b>[0.022 , 0.263]</b>	Ref Cat
Non Afro-Latino	0.023 [-0.001 , 0.047]	0.079 [-0.047 , 0.205]	-0.016 [-0.078 , 0.046]	<b>-0.159*</b> <b>[-0.292 , -0.025]</b>
Non-Hispanic Black	-0.033 [-0.129 , 0.064]	0.023 [-0.139 , 0.184]	0.049 [-0.033 , 0.131]	-0.094 [-0.241 , 0.053]

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.  
**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002)  
 U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

To begin, I start by assessing two-way interactions between the proportion of Latinos enrolled and the new race/ethnicity variable on the outcome of graduating within 6 years for students who immediately enrolled in a four-year institution. The findings in **Table 15** address two hypotheses in this study. For the first hypothesis, I predict Latino student presence will have a positive relationship with graduating within 6 years for Latino students regardless of racial identification. Meaning, the higher the percentage of Latino students enrolled, the higher the probability of graduating within six years will be for Latino students. Partial evidence of this is found in **Table 15** but only for the Afro-Latino group. In the ELS sample, the AME for Afro-Latinos is positive and statistically significant suggesting that when the proportion of Latino student enrollment increases by 1 SD, the probability of Afro-Latinos graduating within six years increases by 14.3

percentage points, supporting my hypothesis. For the second hypothesis addressed in **Table 15**, I predict the benefit of Latino student presence will be stronger for Latino students who racially identify as Black than Latinos who do not. The statistically significant  $\Delta$  AME in the ELS sample suggests this is true. In terms of graduating within six years, the effect of Latino enrollment on non-Afro-Latinos is statistically different from that of Afro-Latinos, with it being more beneficial for Afro-Latinos. This is also considered partial evidence since the  $\Delta$  AME in the BPS sample is not significant.

**Table 16.** Average Marginal Effects (AME) of graduating within 6 years for proportion Latino (Z-standardized), for students immediately enrolled in two-year institutions, conditioned on racially identifying as Black for Latino and non-Latino groups.

	BPS: 12/17		ELS: 2002	
	AME	$\Delta$ AME	AME	$\Delta$ AME
Afro-Latino	-0.016 [-0.048 , 0.016]	Ref Cat	N/A	N/A
Non Afro-Latino	-0.003 [-0.022 , 0.016]	0.013 [-0.026 , 0.053]	N/A	N/A
Non-Hispanic Blac	0.001 [-0.037 , 0.038]	0.017 [-0.032 , 0.066]	N/A	N/A

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.  
**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002)  
 U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

In **Table 16** I assess the same two-way interactions in **Table 15** but do so for students who start their postsecondary education at a two-year institution. Due to the restricted number of cases, this analysis was only conducted for students in the BPS sample. In terms of whether an increase in the proportion of Latino students will increase the probability of Latino students graduating within 6 years, we find no evidence of this. In fact, the direction of the AMEs for both Latino groups suggest there would be a slight decrease in the probability of graduating within 6 years, opposite of our hypothesis.

However, the lack of significance for both AMEs makes this finding inconclusive. Similarly, in terms of our second hypothesis, **Table 16** suggests no evidence the benefit of Latino student presence will be stronger for Latino students who racially identify as Black.

## CHAPTER 7

### TOTAL AMOUNT IN STUDENT LOANS

Similar to the previous chapter, chapter seven is also divided into six sections. I begin by discussing the results for the main relationship in question, the impact of the percentage of Latinos enrolled in a postsecondary institution on the total amount in student loan debt for Latino students in contrast to non-Latino students. Subsequently, I discuss the findings for each moderation analyses. I begin with the individual-level moderators (parental education and pre-academic preparation) followed by institution-level moderators (sector and selectivity). Within each section I discuss the findings for individuals who immediately begin their postsecondary education at a four-year institution, followed by those who start their postsecondary education at a two-year institution.

#### Main Relationship

I start by assessing two-way interactions between the proportion of Latinos enrolled and race/ethnicity on the outcome of student loan debt for students who immediately enrolled in a four-year institution. For all loan amount analyses I use a log-level regression, which indicates my dependent variable, total amount in student loan debt, is logged but my independent variables are not. Since this analysis is a log-level regression, there is an additional step necessary for interpreting the AME coefficients appropriately. This additional step requires me to plug in the AME coefficient of interest into the following formula:  $(\exp(b)-1)*100$ . For clarity, let's look at the findings in **Table 17** for non-Hispanic White students in the ELS:2002 sample. By plugging in the coefficient -0.801 into the formula:  $(\exp(-0.801)-1)*100$ , the output is -55.11. This

number suggests that when the proportion of Latino students increases by 1 SD, accumulated debt for Non-Hispanic White students is predicted to decrease by roughly 55%. The  $\Delta$  AMEs presented in **Table 17** should be interpreted the same as the  $\Delta$  AMEs in **Table 5**, with the attention centered on its level of significance instead of the coefficient itself. As a reminder,  $\Delta$  AMEs are used to represent whether the effect of Latino enrollment conditioned on the different categories of race/ethnicity are significantly different from the reference category. For  $\Delta$  AMEs, it is the statistical significance of the coefficient that is of most importance for interpretation. The coefficient itself is the numerical difference between the AME of the reference category and AME of the respective category of interest. For example, the  $\Delta$  AME for Non-Hispanic White (-0.782) is simply the AME for non-Hispanic White (-0.801) minus the AME for Latino children of immigrants (-0.019).

**Table 17.** Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized) for students immediately enrolled in four-year institutions conditioned on race/nativity

	BPS: 12/17		ELS: 2002	
	AME	$\Delta$ AME	AME	$\Delta$ AME
Latino COI	-0.202 [-0.547 , 0.143]	Ref cat	-0.019 [-0.349 , 0.31]	Ref cat
Latino COUS	-0.334 [-0.873 , 0.205]	-0.132 [-0.707 , 0.443]	-0.330 [-0.732 , 0.072]	-0.311 [-0.763 , 0.142]
Non-Hispanic Whit	-0.346 [-0.8 , 0.107]	-0.144 [-0.753 , 0.465]	<b>-0.801**</b> [-1.336 , -0.266]	<b>-0.782*</b> [-1.432 , -0.131]
Non-Hispanic Blac	-0.541 [-1.159 , 0.076]	-0.339 [-1.087 , 0.408]	0.694 [-0.029 , 1.417]	0.713 [-0.113 , 1.54]

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

The findings in **Table 17** address two hypotheses in this study. For the first hypothesis,  $H_{1b}$ , I predict Latino student presence will have a *negative* relationship with the total amount of student loan debt of Latino students. Meaning, the higher the percentage of Latino students enrolled, the lower amount in student loan debt will be for Latino students. The direction of the AME coefficients for both the BPS sample and the ELS sample suggest Latino enrollment is predicted to decrease total amount in student loan debt for Latino children of immigrants and Latino children of U.S. parents. However, whether these associations support  $H_{1b}$  remains inconclusive due to the lack of statistical significance. For  $H_2$ , I predict this effect of Latino enrollment will be greater for Latino students, than for non-Latino students. The  $\Delta$  AMEs in **Table 17** suggest there is only one significant difference between race/ethnic groups, and that is of non-Hispanic Whites and the reference category Latino children of immigrants for the ELS sample. Specifically, the  $\Delta$  AME suggests there is a difference in the impact of percent Latino between both groups with this effect being more beneficial for non-Hispanic Whites than Latino children of immigrants. While this is not in support of my hypothesis, I consider this association only partial evidence since it is only found in the ELS sample but not in the BPS sample. All other associations between racial/ethnic groups lack statistical significance.

<b>Table 18.</b> Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized) for students enrolled in two-year institutions conditioned on race/nativity.				
	<b>BPS: 12/17</b>		<b>ELS: 2002</b>	
	<b>AME</b>	<b>Δ AME</b>	<b>AME</b>	<b>Δ AME</b>
Latino COI	-0.131 [-0.419 , 0.157]	Ref Cat	0.033 [-0.274 , 0.34]	Ref Cat
Latino COUS	-0.417 [-0.902 , 0.068]	-0.287 [-0.791 , 0.218]	-0.001 [-0.547 , 0.544]	-0.035 [-0.644 , 0.575]
Non-Hispanic White	<b>-0.736</b> [-1.223 , -0.25]	<b>-0.606</b> [-1.122 , -0.09]	-0.114 [-0.656 , 0.428]	-0.147 [-0.771 , 0.477]
Non-Hispanic Black	-0.039 [-0.796 , 0.719]	0.092 [-0.711 , 0.895]	0.525 [-0.148 , 1.198]	0.492 [-0.238 , 1.221]

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

In **Table 18** I assess the same two-way interactions I do in **Table 17** but do so for students who start their postsecondary education at a two-year institution. In terms of whether Latino student presence will have a negative relationship with the total amount of student loan debt of Latino students,  $H_{1b}$ , there is not enough evidence. While directionally, the AMEs for both Latino groups in the BPS sample are negative, suggesting increased Latino enrollment is predicted to decrease the total amount of student loan debt for Latino children of immigrants and Latino children of U.S. parents, they are not statistically significant. For the ELS sample, we see a similar story with the direction of the AME for Latino children of U.S. parents. However, for Latino children of immigrants, the AME is positive suggesting an increase in the predicted amount of student loan debt. All findings remain inconclusive.

In terms of whether this effect of Latino enrollment will be greater for Latino students,  $H_2$ , we did find one significant difference between race/ethnic groups, and that is of non-Hispanic Whites and the Latino children of immigrants for the BPS sample.

Specifically, the  $\Delta$  AME suggests there is a difference in the impact of percent Latino between both groups with this effect being more beneficial for non-Hispanic Whites than Latino children of immigrants. Correspondingly, the significant AME for non-Hispanic Whites suggests that when the proportion of Latino students increases by 1 SD, accumulated debt for Non-Hispanic White students is predicted to decrease by roughly 52%. The lack of statistical significance of  $\Delta$  AMEs for the rest of the groups suggests there are no significant differences between race/ethnic groups across both samples.

### **Moderator Analyses: Individual-level Moderators**

In addition to the main inquiry of this study, the effect of percentage Latino on the amount of student loan debt of Latino students, I am also interested in whether the effect of Latino presence is in turn moderated by a set of individual- and institution-level moderators. As a reminder to the reader, for all moderation analyses I develop a hypothesis that suggests the effect of percent Latino will be more beneficial for the more disadvantaged category; and I present these findings, derived from the AME results, in a hypotheses table. If the effect is significantly more positive for the more disadvantaged category, this is in line with my theory, and I reject the null hypothesis. If the effect is significantly more positive for the more advantaged category, this is counter to my theory, and I accept the null hypothesis. If the effects are statistically indistinguishable from each other, I retain the null hypothesis. Additionally, the hypotheses testing for the moderators are centered on the significance level of the  $\Delta$  AME coefficient in the AME results table; the AME coefficient itself is not the primary focus of our hypotheses testing. However, in instances where both the  $\Delta$  AME and the AMEs are statistically significant, the AME will also be discussed in the respective section. Lastly, to walk the

reader through the translation between the AME results table and the hypotheses table, I include both tables for the moderation analyses between parental education, race/ethnicity, and percent Latino. The rest of the moderation analyses will only refer to the hypotheses table for interpretation of the results.

### Parental Education

<b>Table 19.</b> Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized) conditioned on race/nativity and parental education for students who immediately enrolled in four-year institutions.					
<b>Race /Ethnicity</b>	<b>Parental Education</b>	<b>BPS: 12/17</b>		<b>ELS:2002</b>	
		<b>AME</b>	<b>Δ AME</b>	<b>AME</b>	<b>Δ AME</b>
All	Less Educated (12 Yrs)	<b>-0.560<sup>a</sup></b> [-0.842, -0.278]	.	-0.237 [-0.518, 0.043]	.
	More Educated (16 Yrs)	-0.177 [-0.442, 0.088]	<b>0.383<sup>c</sup></b> [0.036, 0.730]	<b>-0.427<sup>c</sup></b> [-0.754, -0.101]	-0.190 [-0.514, 0.134]
Latino COI <sup>1</sup>	Less Educated (12 Yrs)	-0.166 [-0.627, 0.295]	.	0.100 [-0.263, 0.462]	.
	More Educated (16 Yrs)	-0.107 [-0.482, 0.267]	0.059 [-0.510, 0.628]	-0.073 [-0.513, 0.368]	-0.173 [-0.691, 0.346]
Latino COUS <sup>2</sup>	Less Educated (12 Yrs)	-0.531 [-1.380, 0.317]	.	-0.261 [-0.879, 0.358]	.
	More Educated (16 Yrs)	-0.087 [-0.582, 0.408]	0.444 [-0.371, 1.258]	-0.314 [-0.822, 0.195]	-0.053 [-0.837, 0.732]
Non-Hispanic White <sup>3</sup>	Less Educated (12 Yrs)	-0.416 [-1.002, 0.171]	.	-0.438 [-1.317, 0.441]	.
	More Educated (16 Yrs)	-0.323 [-0.814, 0.169]	0.093 [-0.556, 0.742]	<b>-0.818<sup>b</sup></b> [-1.369, -0.267]	-0.379 [-1.199, 0.440]
Non-Hispanic Black <sup>3</sup>	Less Educated (12 Yrs)	-0.380 [-1.000, 0.240]	.	<b>2.223<sup>a</sup></b> [1.125, 3.321]	.
	More Educated (16 Yrs)	-0.550 [-1.488, 0.387]	-0.170 [-1.135, 0.795]	0.428 [-0.242, 1.097]	<b>-1.795<sup>b</sup></b> [-2.945, -0.645]

**NOTES:** a=p<0.05; b=p<0.01; c=p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

**Table 20.** Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized) conditioned on race/nativity and parental education for students who began at two-year institutions.

Race/Ethnicity	Parental Education	BPS: 12/17		ELS:2002	
		AME	Δ AME	AME	Δ AME
All	Less Educated (12 Yrs)	-0.303 [-0.658, 0.053]	.	0.055 [-0.220, 0.331]	.
	More Educated (16 Yrs)	<b>-0.445<sup>b</sup></b> [-0.775, -0.115]	-0.142 [-0.556, 0.271]	0.008 [-0.328, 0.345]	-0.047 [-0.395, 0.301]
Latino COI <sup>1</sup>	Less Educated (12 Yrs)	-0.080 [-0.435, 0.276]	.	0.204 [-0.160, 0.568]	.
	More Educated (16 Yrs)	-0.283 [-0.832, 0.267]	-0.203 [-0.883, 0.477]	-0.189 [-0.714, 0.336]	-0.393 [-1.054, 0.268]
Latino COUS <sup>2</sup>	Less Educated (12 Yrs)	-0.278 [-1.021, 0.465]	.	-0.365 [-0.974, 0.244]	.
	More Educated (16 Yrs)	<b>-0.546<sup>c</sup></b> [-1.068, -0.024]	-0.268 [-1.158, 0.623]	0.484 [-0.279, 1.246]	<b>0.849<sup>c</sup></b> [0.041, 1.657]
Non-Hispanic White <sup>3</sup>	Less Educated (12 Yrs)	<b>-0.980<sup>b</sup></b> [-1.627, -0.334]	.	-0.047 [-0.976, 0.882]	.
	More Educated (16 Yrs)	-0.575 [-1.181, 0.031]	0.405 [-0.412, 1.222]	-0.142 [-0.751, 0.467]	-0.095 [-1.129, 0.939]
Non-Hispanic Black <sup>3</sup>	Less Educated (12 Yrs)	0.287 [-0.521, 1.095]	.	0.328 [-0.561, 1.218]	.
	More Educated (16 Yrs)	-0.564 [-1.641, 0.513]	-0.852 [-1.977, 0.274]	0.497 [-0.381, 1.374]	0.168 [-1.019, 1.356]

**NOTES:** a=p<0.05; b=p<0.01; c=p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

<b>Table 21.</b> Moderation analysis of parental education for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	<b>Reject H0</b>	Retain H0	Retain H0	Retain H0
Latino COI	Retain H0	Retain H0	Retain H0	Retain H0
Latino COUS	Retain H0	Retain H0	Retain H0	<b>Reject H0</b>
White COUS	Retain H0	Retain H0	Retain H0	Retain H0
Black COUS	Retain H0	<b>Accept H0</b>	Retain H0	Retain H0
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

To begin, **Table 19 and Table 20** presents the coefficients for the moderation analyses for parental education. I then use **Table 21** to simplify this information and summarize the results in terms of our hypotheses testing. Before taking race/ethnicity into consideration, I first explore whether the effect of percent Latino on student debt is influenced by parental education for students who immediately enrolled in a four-year institution. In terms of parental education, a continuous measure, students with less educated parents would be considered more disadvantaged than those with more educated parents. I begin by estimating the AME of percent Latino for children of parents with 12 years and 16 years of schooling. I then test for whether or not the effect of percent Latino is different between both groups. Those with less educated parents are considered the reference group. As illustrated in **Table 19**, I find this to only be the case with the BPS sample. Specifically, the  $\Delta$  AME for the BPS sample 0.383 is statistically significant. This implies the proportion of Latinos enrolled is significantly more beneficial for students with less educated parents, supporting my hypothesis. Therefore, in **Table 21** I

indicate we reject the null hypothesis. Moreover, in this same analysis for the BPS sample, the specific AME for students with less educated parents -0.560 achieved significance; suggesting that as the proportion of Latino students goes up by 1 SD, accumulated debt for those with less educated parents is predicted to decrease by roughly 43%.

Next, I estimate the AME for proportion Latino for children of parents with 12 years and 16 years of schooling, *specific to each racial/ethnic group* and draw a comparison. For each race/ethnic group the reference group remains those with less educated parents. **Table 19** suggests that for the ELS sample, the impact of parental education as a moderator in the main relationship between percent Latino and student loans varies depending on race. For students who identify as non-Hispanic Black, there is a significant difference in the effect of percentage of Latinos enrolled on student loans based on parental education. Specifically, the  $\Delta$  AME for the ELS sample -1.795 is statistically significant and implies the proportion of Latinos enrolled is significantly more harmful for non-Hispanic Black students with less educated parents, opposite to my hypothesis. Therefore, in **Table 21** I indicate we accept the null hypothesis. The lack of statistical significance for the  $\Delta$  AMEs in the rest of the analyses suggests this moderation effect is not significant for students of other racial/ethnic groups. Additionally, it is worth noting that for non-Hispanic Black students, the specific AME for students with less educated parents 2.223 is also statistically significant. The AME suggests that when the proportion of Latino students increases by 1 SD, accumulated debt for Non-Hispanic Black students with less educated parents is predicted to increase by roughly 824%, a substantial amount.

When I run the same moderation analyses for students who begin their postsecondary journey at a two-year institution, the two-way interaction is not statistically significant for any sample. This suggest there is no evidence parental education moderates the effect of percent Latino on student loan debt. After taking race/ethnicity into consideration, **Table 20** suggest parental education is a significant moderator, but only for the Latino children of U.S. parents. Specifically, the significant  $\Delta$  AME for the ELS sample 0.849 suggests the proportion of Latinos enrolled is significantly more beneficial for those with less educated parents, supporting my hypothesis. Therefore, in **Table 21** I indicate we reject the null hypothesis. However, this is only partial evidence since it is only significant in the ELS sample and not the BPS sample. The AME itself for Latino children of U.S. parents is not significant.

**Academic Preparation (High School GPA)**

<b>Table 22.</b> Moderation analysis of HS GPA for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	Retain H0	Retain H0
Latino COI	Retain H0	Retain H0	Retain H0	Retain H0
Latino COUS	<b>Accept H0</b>	Retain H0	Retain H0	Retain H0
White COUS	Retain H0	Retain H0	Retain H0	Retain H0
Black COUS	Retain H0	Retain H0	Retain H0	Retain H0
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

The moderation analyses for academic preparation are conducted separately for high school GPA and SAT scores. **Table 22** outlines the results of the moderation analyses for academic preparation measured by high school GPA. As a reminder, students who are less academically prepared (having a high school GPA that is 1 SD below the average) would be considered the disadvantaged group in contrast to students who are more academically prepared (having a high school GPA that is 1 SD above the average). Before taking race/ethnicity into consideration, the two-way interaction between percent Latino and high school GPA is not statistically significant for students who immediately enrolled in a four-year institution. When I explore the three-way interaction between the percentage of Latinos enrolled, race/ethnicity, and high school GPA, there is a significant effect but only for the Latino children of U.S. parents. Specific to Latino children of U.S. parents, we find the proportion of Latinos enrolled is significantly more beneficial for those who are more academically prepared, opposite to my hypothesis. Additionally, the AME coefficient for this group is also significant suggesting that as the proportion of Latino students goes up by 1 SD, accumulated debt for those who are more academically prepared is predicted to decrease by roughly 55%. However, this is only partial evidence since it is only significant in the BPS sample and not the ELS sample. The lack of statistical significance for the  $\Delta$  AMEs in the rest of the analyses suggests this moderation effect is not significant for students of other racial/ethnic groups.

For students who begin their postsecondary education at a two-year institution, the two-way interaction between high school GPA and percent Latino remains not significant, suggesting the effect of percent Latino on student loans is not influenced by

high school GPA. This remains true after race/ethnicity is introduced as a three-way interaction.

**Academic Preparation (SAT Scores)**

<b>Table 23.</b> Moderation analysis of SAT for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	N/A	N/A
Latino COI	Retain H0	Retain H0	N/A	N/A
Latino COUS	Retain H0	Retain H0	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

**Table 23** explores the moderation analyses for academic preparation using SAT scores. In terms of SAT scores for students who immediately enrolled in a four-year institution, there is not enough evidence for us to conclude SAT scores is a moderator for the relationship between percent Latino and student loan debt. This remains true after race/ethnicity is introduced as a three-way interaction.

Due to two-year institutions typically prioritizing access and affordability over standardized testing, it is not common for these institutions to require SAT scores for admissions. Consequently, moderation analyses of SAT scores for students who begin their postsecondary education at a two-year institution were not conducted.

**Moderation Analyses: Institution-level Moderators**

In addition to individual-level moderators, this study also takes into consideration two institution-level moderators, selectivity and sector. The moderation analyses for

institution-level moderators follow the same hypotheses pattern as the individual-level moderators.

**Selectivity**

<b>Table 24.</b> Moderation analysis of selectivity for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	N/A	N/A
Latino COI	Retain H0	Retain H0	N/A	N/A
Latino COUS	Retain H0	Retain H0	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

**Table 24** displays the moderation analyses results for selectivity. Selectivity is categorized as a dichotomous variable representing more selective and less selective postsecondary institutions. Students who attend less selective institutions are considered the disadvantaged group and students who attend more selective institutions are considered the advantaged group. As shown in **Table 24**, there is not enough evidence for us to conclude selectivity is a moderator for the relationship between percent Latino and student loan debt. This remains true after race/ethnicity is introduced as a three-way interaction.

The moderation analysis for selectivity is not conducted for students who begin their postsecondary education at a two-year institution. Similar to our justification for excluding them from the SAT score moderation analysis, this is due to two-year institutions typically not operating on the same level of rigor for admission standards we

see at four-year institutions. Prioritizing access and open enrollment policies, a selectivity moderation analysis for two-year institutions is less ideal.

**Sector**

<b>Table 25.</b> Moderation analysis of sector (public vs private for-profit) for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	N/A	<b>Accept H0</b>	Retain H0
Latino COI	Retain H0	N/A	Retain H0	<b>Reject H0</b>
Latino COUS	Retain H0	N/A	Retain H0	Retain H0
White COUS	Retain H0	N/A	Retain H0	Retain H0
Black COUS	Retain H0	N/A	Retain H0	Retain H0
<b>NOTES:</b>				
Retain H0 – no significant findings.				
Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.				
Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.				
Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.				

As a reminder to the reader, the variable sector is composed of three categories: 1) public, 2) private non-profit, and 3) private for-profit. For my moderation analysis, I run two separate regressions. The first, depicted in **Table 25**, assesses how the relationship between the percentage of Latinos enrolled in an institution and total amount in student loans differs between students who attend a public institution and those who attend a private for-profit institution. As noted in chapter 6, the disadvantaged group in this analysis is assumed to be students who attend a private for-profit institution. Prior to taking race/ethnicity into consideration, the two-way interaction between percent Latino and sector is not statistically significant for students who immediately enrolled in a four-year institution. This remains true after I explore the three-way interaction between the percentage of Latinos enrolled, race/ethnicity, and sector. In terms of the ELS sample, the analyses experienced errors stemming from a restricted number of cases of four-year

institutions that were also for-profit organizations. As a result of this issue, I had to exclude cases in the ELS sample where a student's first valid institution was a 4-year institution that was also for-profit.

When I assess the same moderation analyses for students who begin their postsecondary journey at a two-year institution, the two-way interaction between percent Latino and sector is significant but only for the BPS sample. As illustrated in **Table 25**, the proportion of Latinos enrolled is significantly more beneficial for students attending a public institution than those attending a private for-profit, contradicting my hypothesis. The AME itself for students attending a public institution is also significant suggesting that as the proportion of Latino students goes up by 1 SD, accumulated debt for those at a public institution is predicted to decrease by roughly 34%. While this association is not found in the ELS sample, the three-way interaction between the percentage of Latinos enrolled, race/ethnicity, and sector suggests an opposite effect for one of the racial/ethnic groups for the ELS sample. Specifically, I find the proportion of Latinos enrolled is significantly more beneficial for Latino children of immigrants attending a private for-profit institution than those attending a public institution, supportive of my hypothesis. The AME itself for Latino children of immigrants attending a private for-profit institution is also significant suggesting that as the proportion of Latino students goes up by 1 SD, accumulated debt for those at a private for-profit institution is predicted to decrease by roughly 80%. The lack of statistical significance for the  $\Delta$  AMEs in the rest of the analyses suggests this moderation effect is not significant for students of other racial/ethnic groups.

<b>Table 26.</b> Moderation analysis of sector (public vs private non-profit) for total amount in student loans				
	<b>4 Year</b>		<b>2 Year</b>	
	<b>BPS</b>	<b>ELS</b>	<b>BPS</b>	<b>ELS</b>
All	Retain H0	Retain H0	N/A	N/A
Latino COI	<b>Accept H0</b>	Retain H0	N/A	N/A
Latino COUS	Retain H0	Retain H0	N/A	N/A
White COUS	Retain H0	Retain H0	N/A	N/A
Black COUS	Retain H0	Retain H0	N/A	N/A

**NOTES:**  
 Retain H0 – no significant findings.  
 Reject H0 - significant findings where the proportion of Latinos enrolled is significantly more beneficial for the disadvantaged group.  
 Accept H0 - significant findings where the proportion of Latino enrolled is significantly more harmful for the disadvantaged group.  
 Weakly reject Ho - significant findings where the proportion of Latinos enrolled is significantly less harmful for the disadvantaged group.

Next, in **Table 26** I explore how the relationship between the percentage of Latinos enrolled in an institution and student loan debt differs between students who attend a public institution and those who attend a private non-profit. Due to the presumed greater resources possessed by private non-profit institutions, the disadvantaged group in this analysis is assumed to be students who attend a public institution. Before considering race/ethnicity, the two-way interaction between percent Latino and sector shows no indication that the effect of percent Latino on student loan debt is influenced by sector. Once race/ethnicity is introduced, the three-way interaction suggests sector does impact the effect of percent Latino on student loan debt, but only for Latino children of immigrants. For Latino children of immigrants, the proportion of Latinos enrolled in a postsecondary institution is significantly more beneficial for those who attend a private non-profit institution than those who attend a public institution, contradicting my hypothesis. The AME itself for Latino children of immigrants attending a private non-profit institution is also significant suggesting that as the proportion of Latino students goes up by 1 SD, accumulated debt for those at a private non-profit is predicted to

decrease by roughly 56%. This is considered partial evidence since the significant associations are only found in the BPS sample and not the ELS sample.

Due to the restricted number of cases of students in two-year institutions that were also private non-profit organizations, this moderation analysis was not conducted for students who begin their postsecondary education at a two-year institution.

### Latino Racial Identification

As discussed in chapter 6, Latinos are a racially diverse group, and many may racially identify as Black. In an attempt to recognize this racial diversity and possible implications on their educational outcomes, this study conducts a separate regression analyses that separates ethnic and racial identification for Latino students. The following analysis follows the same structure of analysis conducted for the original race/ethnic variable in **Table 17**.

<b>Table 27.</b> Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized), for students immediately enrolled in four-year institutions, conditioned on racially identifying as Black for Latino and non-Latino groups.				
	<b>BPS: 12/17</b>		<b>ELS: 2002</b>	
	<b>AME</b>	<b>Δ AME</b>	<b>AME</b>	<b>Δ AME</b>
Afro-Latino	-0.387 [-1.624 , 0.849]	Ref Cat	-0.466 [-3.027 , 2.096]	Ref Cat
Non Afro-Latino	-0.102 [-0.463 , 0.26]	0.286 [-0.978 , 1.549]	-0.239 [-0.699 , 0.221]	0.227 [-2.346 , 2.8]
Non-Hispanic Bla	-0.462 [-1.151 , 0.226]	-0.075 [-1.511 , 1.36]	0.619 [-0.24 , 1.479]	1.085 [-1.648 , 3.819]

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.  
**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002)  
 U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

To begin, I start by assessing two-way interactions between the proportion of Latinos enrolled and the new race/ethnicity variable on student loan debt for students who immediately enrolled in a four-year institution. The findings in **Table 27** address two hypotheses in this study. For the first hypothesis, I predict Latino student presence will have a negative relationship with the total amount of student loan debt of Latino students regardless of racial identification. Meaning, the higher the percentage of Latino students enrolled, the lower amount in student loan debt will be for Latino students. While directionally, the AMEs in **Table 27** suggest this is true, the actual AMEs are not statistically significant, making this finding inconclusive. For the second hypothesis addressed in **Table 27**, I predict the benefit of Latino student presence will be stronger for Latino students who racially identify as Black. Magnitude wise, the AMEs in both samples also support this prediction with Afro-Latinos having a greater negative AME than non-Afro-Latinos. Non-Hispanic Black students would experience the greater decrease. However, none of these associations, including the  $\Delta$  AMEs are statistically significant.

**Table 28.** Average Marginal Effects (AME) of total amount in student loans for proportion Latino (Z-standardized), for students immediately enrolled in two-year institutions, conditioned on racially identifying as Black for Latino and non-Latino groups.

	BPS: 12/17		ELS: 2002	
	AME	Δ AME	AME	Δ AME
Afro-Latino	-0.421 [-0.986 , 0.144]	Ref Cat	N/A N/A	N/A N/A
Non Afro-Latino	-0.188 [-0.543 , 0.167]	0.233 [-0.523 , 0.988]	N/A N/A	N/A N/A
Non-Hispanic Bla	-0.023 [-0.82 , 0.775]	0.398 [-0.522 , 1.318]	N/A N/A	N/A N/A

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.  
**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002)  
U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

In **Table 28** I assess the same two-way interactions I do in **Table 27** but do so for students who start their postsecondary education at a two-year institution. In terms of whether Latino student presence will have a negative relationship with the total amount of student loan debt of Latino students, there is not enough evidence. While directionally, the AMEs for both Latino groups in the BPS sample are negative, suggesting increased Latino enrollment is predicted to decrease the total amount of student loan debt for Afro and non-Afro-Latinos, they are not statistically significant. This is the same story when we assess whether the benefit of Latino student presence will be stronger for Latino students who racially identify as Black. Magnitude wise, the AMEs also support this prediction, but the Δ AME itself lacks statistical significance. Due to the restricted number of cases, this analysis was not conducted for students in the ELS sample.

## CHAPTER 8

### CONCLUSIONS AND IMPLICATIONS

Hispanic Serving Institutions (HSIs) are recognized under the Title V program of the Higher Education Act (HEA). The Title V program of HEA provides these postsecondary institutions with the opportunity to receive grant funding to expand “educational opportunities for, and improve the attainment of, Hispanic students” (Developing Hispanic-Serving Institutions Program - Title V). In keeping with the objective of improving the attainment of Latino students, we explore whether the proportion of Latinos enrolled in a postsecondary institution (a direct indicator of whether an institution is an HSI) has a significant effect on A) graduating within six years and B) total amount of student loan debt, for Latino students in contrast to non-Latino students. We explore these associations with the notion that the mechanism through which an increase in percent Latino would benefit these students is through it facilitating social inclusion and co-ethnic solidarity among Latino students which may translate to an increase in the probability of them graduating within six years and decrease their total amount in student loans.

#### **Co-ethnic Benefits Measured by Demographic Composition are Nonremarkable**

In terms of the percentage of Latinos enrolled in a postsecondary institution and its effects on the educational outcomes of Latino students, we cannot conclusively confirm a positive association. While there are some exceptions, the evidence that there are benefits of co-ethnicity for Latino students is very weak. First, it’s nonexistent overall. There are no significant associations for any of the Latino groups in either of the main analyses. Second, the idea that it benefits disadvantaged Latino students is also very

weak. Any significant associations that were found were inconsistent, found only for one sample instead of both, and varied by variable. For instance, in terms of graduating in six years, we find that for Latino children of immigrants, the percentage of Latinos enrolled significantly benefits those with lower SAT scores more than Latino children of immigrants with higher SAT scores and increases their probability of graduating within 6 years by 7.5 percentage points. However, this was specific to the SAT score analysis and was found only in the BPS sample. Similarly, in terms of student loan debt, we find that for Latino children of U.S. parents, the percentage of Latinos enrolled is more beneficial for those who are more academically prepared than those who are less academically prepared with a probability of decreasing their student loans by roughly 55%. However, this was specific to the HS GPA analysis and was found only in the BPS sample.

We also cannot conclusively say much about the effect of percent Latino on the educational outcomes of other racial/ethnic groups. For instance, Non-Hispanic White students were found to benefit from an increase in the percentage of students enrolled in terms of student loan debt in the main analysis. However, this was only for the ELS sample in the four-year analysis and only for the BPS sample in the two-year analysis. In the graduating within six years analysis, they were found to be harmed by an increase in the percentage of Latinos enrolled, but this was only in one sample and only for the four-year analysis. Non-Hispanic White students had no significant association anywhere else in the rest of the analyses for either outcome. Non-Hispanic Black students did not have any significant findings in either of the main analyses. Instead, they were found to be extremely disadvantaged by the percentage of Latino students enrolled in terms of student loan debt, but this was only in one sample, and it was a stray interaction for the parental

education analysis. Non-Hispanic Black students had no significant association anywhere else in the analysis for student loans and had two stray interactions in analyses for graduating within six years.

### **The Role of Sample Composition**

While we can't pinpoint a definitive cause of the inconsistencies between the two data sources in terms of significant effects, we can broadly speculate a few different contributing influences. In addition to the differences observed in the data - BPS students being more racially diverse, less socioeconomically advanced, and attending more for-profit institutions, there are the contextual factors not captured directly by our data fields that may still be present for specific samples based on the cohort's time of enrollment. As a reminder to the reader, those in the ELS sample are estimated to have started college in the 2004/2005 academic year. Those in the BPS sample are estimated to have started college in the 2011/2012 academic year. Only slightly short of a decade apart, these two samples experienced different contextual factors that may have impacted their experiences with higher education.

One kind of contextual factor is the economy. A primary example of this is the Great Recession and its implications on postsecondary institutions. As a result of the financial crisis experienced during the Great Recession, many states implemented budget cuts that impacted funding of public postsecondary institutions (Bar & Turner, 2013; Johnson, 2014). The response to these budget cuts would vary by institution and their resources, but it is not unlikely students attending college after the Great Recession would experience a different postsecondary environment than students who attended college during pre-recession times, whether in terms of residual effects of any budget cuts

faced by the institution or increased enrollment costs due to institutional response to a decline in funding (Bar & Turner, 2013; Johnson, 2014). A second kind of contextual factor is policies. For example, coupled with the Great Recession is the American Recovery and Reinvestment Act of 2009. A federal response to the financial crisis experienced, the American Opportunity Tax Credit (AOTC) was implemented to reduce the cost of attending college (Crandall-Hollick, 2014). The ARRA also provided additional funding to the Federal Pell Grant Program which increased access to financial aid for lower-income students (Skinner et al., 2009). Therefore, whether at the government level or at the institution level, it is probable policy changes that occurred between the 2004/2005 and 2011/2012 academic years may have impacted students and their postsecondary education experiences. Technological advancements represent a third kind of contextual factor. Whether in the realm of later cohorts having access to more resources to aid their education, or in the realm of finding virtual communities to join and gain additional support from, a student's social experience was enhanced in ways earlier cohorts would not have experienced. Lastly, we cannot rule out that any inconsistencies between the samples are products of random variation or chance.

### **Theoretical Reflection**

In terms of our theoretical framework, we approach the role percentage of Latinos enrolled plays in the formation of communities for Latino students using Tinto's theory of student departure and components from Yosso's Community Cultural Wealth theory. Tinto's theory of student departure posits that students, especially those from marginalized backgrounds, need to find at least one subgroup in which they can seek membership into. It is through membership in these communities that a student becomes

committed to the institution and to the members of that community, aiding their level of social integration ultimately influencing the student's decision to remain at the institution. Community Cultural Wealth theory emphasizes the strength and advantages of communities of color. Moving away from a deficit perspective, it consists of six forms of capital that "most often go unacknowledged or unrecognized" (Yosso, 2005, p. 70). The one form of capital that is of most interest in this study is navigational capital. Navigational capital refers to the "skills of maneuvering through social institutions" specifically, those classified as unsupportive to minority groups (p.80). Given the underrepresented status of Latino students in higher education, navigational capital can be of assistance to these students in this particular setting. Therefore, in addition to the membership component from Tinto's theory, grounding these students to the institution, it is Yosso's theory that suggests access to members of these groups equips students with capital that assists them with navigating new and unfamiliar environments.

We draw from both these theories to make sense of the role percentage of Latinos enrolled in an institution plays in improving Latino student outcomes. Our assertion is that these communities are formed on the basis of shared experiences and cultural values derived from racial and ethnic homophily. By having a larger percentage of Latino students enrolled in an institution, the likelihood of Latino students finding a group to join based on racial and ethnic homophily should also increase based on just the sheer size of this pool also increasing. However, our study does not find strong evidence of this. As mentioned earlier, our findings were not significant and inconsistent. Nevertheless, this does not automatically rule out benefits from co-ethnic solidarity in postsecondary institutions. The percentage of Latinos enrolled alone may just not be

enough to accurately represent the interactions and structures Latino students will experience when attending these institutions. Instead, both co-ethnic solidarity and membership may require additional prerequisites that do not stem from the percentage of Latinos enrolled alone. It is likely, more is required from an institutional level for the percentage of Latinos enrolled to have an impact on Latino student outcomes.

Consequently, the lack of significant associations prompts us to revisit our theoretical framework with a new vantage point that places emphasis on institutional responsibility. First, in terms of Tinto's theory of student departure, his earlier work identifies different segments in which membership may develop – peer-group interactions, participation in extracurricular activities, and social interactions with faculty (Tinto, 1975). Peer-group interactions are considered primary avenues of membership with extracurricular activities and faculty interactions considered second avenues of membership. While Tinto acknowledges institutional characteristics such as structural arrangement may place limits on the development of these friendships and interactions, not much else is discussed in the realm of institutional responsibility for social integration. In his later work, Tinto brings forth more on the topic of institutional responsibility with his discussion of first-year experiences including learning communities and their role in social integration (Tinto, 1999). However, this recommendation still limits emphasis on socialization to the classroom environment. With underrepresented students being the minority in academic spaces, more attention should be paid to what institutions can do outside of the classroom.

Second, while Yosso's Community Cultural Wealth theory provides a comprehensive understanding of the unique capital students derive from situations often

looked at from a deficit perspective, more can be discussed in terms of what a student needs to do to gain membership into these communities to reap these benefits. The theory assumes that if a student racially or ethnically belongs to or identifies with a particular group then they are naturally going to reap the co-ethnic benefits in the form of capital that comes along with membership to these groups. However, it is probable that in a new environment such as a postsecondary institution, this membership might not come as naturally or that more is required.

### **Rethinking the Focus on Co-ethnicity and Future Research**

Aligned with the need for more exploration of institutional responsibility, I discuss two overarching approaches that can be incorporated in future studies. One approach is to account for institutional characteristics that provide an environment conducive to this form of integration for Latino students once the student enrolls. One avenue is to explore student support programs on campus. While institutions with large enrollments of Latino students may not have been specifically created to serve Latino students, these institutions may restructure their academic and social programming in direct response to the larger enrollments of Latino students. For example, a public university in the northeast with roughly 30% of Latinos enrolled, embedded a program that allows its Spanish-speaking students to take their course work in Spanish the first two years, while also taking English as a Second Language courses. Another university in the northeast with roughly 40% of Latino students enrolled, established an undocumented student resource centers on campus<sup>28</sup>. Therefore, future studies could benefit from

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<sup>28</sup> Of the estimated 10.5 million undocumented immigrants in the US in 2017, 77% were estimated to be Latino (Passel & Cohn, 2019).

incorporating the number of support programs on college campuses aimed towards underrepresented students as a quantitative variable in their data.

A second institutional characteristic that may provide an environment conducive to this form of integration for Latino students is the number of physical spaces on campus for students to gather and meet. The literature in higher education refers to these as counterspaces, safe spaces on college campuses “outside of mainstream educational spaces” that are utilized by underrepresented students to connect with peers of similar backgrounds (Ong et al., 2018, p.206). The functions of these spaces are described as providing students with a setting for processing and dealing with microaggressions, unpacking their experiences, and finding support and validation within each other (Grier-Reed, 2010). A larger proportion of Latinos on a college campus does not equate them having access to these counterspaces on a college campus which may facilitate the establishment of membership. Future studies could benefit from incorporating whether an institution has counterspaces for their population of interest.

Alternatively, a second approach is to account for institutional characteristics that may be counteracting any benefits of co-ethnic solidarity brought up by an increase in the percentage of Latinos enrolled. One possibility is the problematic structure of new universities and their implementation of austerity measures; a counterproductive situation for institutions serving racially marginalized students. In their recent publication, *Broke: The Racial Consequences of Underfunding Public Universities*, Laura Hamilton and Kelly Nielson focus on “New Universities”. New universities refer to postsecondary research institutions that enroll a larger percentage of underrepresented racial minority students, usually from low-income backgrounds. Hamilton and Nielson refer to this

population as “part of the ‘new majority’ of US postsecondary seekers” (p.4). Despite being characterized by their large enrollment of minority students, including larger percentages of Latino students, these institutions are often underfunded by federal and state dollars and therefore turn to private sources of funding, typically fostering relationships with corporate lenders (Hamilton & Nielson, 2021). However, these relationships do not come without a cost. Hamilton and Neilson find that engagement with corporate funding leads to privatization of higher education and services that were originally created with students in mind. Postsecondary institutions who succumb to these practices, often through necessity, are mostly minority serving institutions. This implies racial minority and low-income students who are underrepresented in postsecondary education to begin with, are also now being disproportionately underserved when they arrive on campus, in contrast to their White and more affluent peers attending well-resourced institutions. Consequently, it is possible that the benefits of Latino presence on campus will be counteracted by the disadvantages of resource-poor institutions. An avenue to explore this in a quantitative study might include accounting for endowment size and budget allocation.

A second institution-level characteristic that may counteract the effect of the percentage of Latinos enrolled is the college being a commuter institution. Tinto often referenced Van Gennep and his work on *The Rites of Passage* to provide a contextual lens for us to interpret the embarkment of postsecondary education as a transitional period. This contextual lens allows us to view institutional persistence as a process that is separated into “three distinct stages: separation, transition, and incorporation” (Tinto, 1988, p.40). According to Tinto, there is a transition that takes place when a student

moves on to attend college. This transition, however, is dependent on a degree of separation from previous communities. Often this transition then leads to issues of adjustment, creating the need for group membership and feeling of incorporation in the new institution. The nature of commuter institutions, often short in their proximity from home and lack of room and board options, does not foster a complete degree of separation for a student from their previous community, diminishing the necessity of group membership for a student's institutional grounding. Future studies could benefit from incorporating a field that categorizes the college as a commuter or residential institution.

Nonetheless, the conversation surrounding postsecondary institutions that enroll large percentages of Latino students are currently focused on the distinction between Hispanic-enrolling and Hispanic-serving. The use of percent Latino allows us to focus on the effects of the former. Does the Latino enrollment play a role on the educational outcomes of Latino college students? Our study does not find conclusive evidence that it does. However, Latinos continue to make up a large share of college students, and their participation in higher education is expected to increase. Therefore, attention should continue to be placed on what postsecondary institutions are doing to retain their Latino students.

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## APPENDIX A

### PERCENTAGE OF DISTRIBUTION OF ANALYTIC SAMPLE: CATEGORICAL VARIABLES

	4 -Year		2 - Year			4 -Year		2 - Year	
	BPS	ELS	BPS	ELS		BPS	ELS	BPS	ELS
<b>Graduated within 6</b>					<b>Sector/Control</b>				
No	38.9	35.5	88.7	86.4	Public	38.7	65.3	85.9	95.0
Yes	61.1	64.5	11.3	13.6	Private nonprofit	37.3	34.7	2.0	0.0
<b>Race/Ethnicity</b>					Private for-profit	24.0	0.0	12.1	5.0
Latino COI	12.4	5.4	19.3	13.9	<b>Selectivity</b>				
Latino COUS	6.7	3.9	8.1	8.4	More Selective	32.0	43.2	0.0	0.0
Non-Hispanic White	68.6	80.2	57.0	65.0	Less Selective	68.0	56.8	100.0	100.0
Non-Hispanic Black	12.3	10.4	15.7	12.7	<b>Sex</b>				
<b>Parental Education</b>					Male	39.9	44.5	44.6	44.0
HS or Less	27.6	11.5	46.9	26.6	Female	60.1	55.6	55.4	56.1
Some college	14.4	7.6	18.7	14.2	<b>Citizenship</b>				
AA Degree	8.1	8.9	9.0	15.2	Not a Citizen	1.3	N/A	2.8	N/A
BA or higher	49.9	72.1	25.4	44.1	Citizen	98.7	N/A	97.2	N/A
<b>SAT</b>									
85th or Greater	21.1	24.4	4.6	3.0					
50th-84th	36.9	44.1	21.3	16.1					
Less than 50th	32.5	25.5	45.1	40.0					
Missing	9.6	6.0	28.9	40.9					

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

## APPENDIX B

### UNIVARIATE STATISTICS FOR THOSE WHO IMMEDIATELY ENROLLED IN A FOUR-YEAR INSTITUTION.

	BPS			ELS		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Total Amount in Student Loans	34,425.3	41,915.5	21,998.0	26,761.7	39,743.8	15,000.0
Proportion of Latinos	0.08	0.13	0.03	0.05	0.09	0.02
Parental Education	15.24	2.54	15.00	15.83	2.37	16
HS GPA	3.13	0.59	3.20	3.23	0.54	3.3
Age	18.90	1.94	18	N/A	N/A	N/A
Net Student Tuition	7,937.9	12,118.3	5,928.3	5,177.1	5,605.1	3,909.3
Household Income	75,903.9	56,929.9	64,999.5	90,886.8	63,959.0	62,500.5

**NOTES:**\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)

## APPENDIX C

### UNIVARIATE STATISTICS FOR THOSE WHO BEGAN AT A TWO-YEAR INSTITUTION.

	BPS			ELS		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Total Amount in Student Loans	9,889.9	16,526.3	2,750.0	10,394.2	20,316.8	750.0
Proportion of Latinos	0.13	0.17	0.05	0.12	0.17	0.03
Parental Education	13.94	2.25	14	14.30	2.17	14
HS GPA	2.82	0.66	3.2	2.64	0.65	2.64
Age	19.51	2.51	19	N/A	N/A	N/A
Net Student Tuition	1,501.5	4,613.5	283.7	373.4	2,732.1	77.8
Household Income	44,848.0	41,654.0	34,999.5	56,907.7	42,472.0	42,500.5

**NOTES:** \*p<0.05; \*\*p<0.01; \*\*\*p<0.001. 1Latino COI refers to participants who identify as Latino and are either foreign born or have at least one foreign born parent. 2Latino COUS refers to participants who identify as Latino and have U.S. born parents. 3Both comparison groups (non-Hispanic Black and non-Hispanic White groups) consist only of respondents with U.S. born parents.

**SOURCE:** U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002). U.S. Department of Education, National Center for Education Statistics, 2012/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17)