

**Article 1: A National Portrait of STEM Trajectories
Through Two- and Four-Year Hispanic Serving Institutions**

Felisha A. Herrera

Victoria Rodriguez Operana

San Diego State University

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Correspondence concerning this article should be addressed to Felisha Herrera, PhD, Associate Professor of Postsecondary Education, College of Education, 5500 Campanile Dr, San Diego, CA 92182

Contact: Felisha.Herrera@sdsu.edu

A National Portrait of STEM Trajectories Through Two- and Four-Year Hispanic Serving Institutions

Abstract

Hispanic Serving Institutions (HSIs) are critical in advancing postsecondary outcomes for Latinx and other historically underrepresented and racially minoritized students in Science, Technology, Engineering, and Math (STEM) to promote diversity, innovation, and excellence in STEM fields. Despite rich opportunities for improving college access, retention, degree attainment, and representation in STEM fields, the role of two- and four-year HSIs in STEM pathways has been under-emphasized. Utilizing a nationally-representative sample, this article explores the undergraduate profiles and outcomes of STEM majors who begin postsecondary education at two- and four-year HSIs. While there are observable differences in student outcomes across HSIs and non-HSIs at both the two- and four-year levels, we must take a deeper look to better understand how these institutional contexts impact STEM trajectories across two- and four-year HSIs. Ultimately, these outcomes are just one piece of the overall picture toward HSIs intentionally serving Latinx students and advancing STEM pathways.

A National Portrait of STEM Trajectories

Through Two- and Four-Year Hispanic Serving Institutions

The National Academy of Sciences (2019) recently highlighted the contributions of Minority Serving Institutions (MSIs) in creating a diverse science, technology, engineering, and mathematics (STEM) workforce, with more than 700 MSIs enrolling “almost 5 million students, or nearly 30 percent of all undergraduates enrolled in U.S. higher education” (p. 2). Citing implications for a strong STEM workforce on U.S. economic growth, national security, and global prosperity, national organizations point to the need to invest in MSIs, which are uniquely positioned to promote STEM outcomes for African American, American Indian, Alaska Native, Latinx¹, Pacific Islander, and other underrepresented students of color (NAS, 2019). Hispanic Serving Institutions (HSIs) serve as key access points to postsecondary education for Latinx students and provide several pathways for pursuing STEM degrees. Based on the Higher Education Opportunity Act (HEOA), federally designated HSIs are accredited, degree-granting postsecondary education institutions (public or private nonprofit) that have full-time equivalent undergraduate enrollments with at least 25% Latinx students (Contreras & Contreras, 2015; HACU 2019). There are 539 HSIs in the U.S., based on recent reports analyzing the 2018-19 academic year data from the National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS; Excelencia in Education, 2020;

¹ Latinx is used in place of Latino/a. Latinx serves as a gender-neutral term that is not limited by the gender binary (“Latinx,” 2016).

HACU, 2020). Overall, about 54% of HSIs are four-year institutions (140 public, 152 private), and the remaining 46% are two-year institutions (231 public, 16 private).

Given the potential that HSIs provide in terms of retaining Latinx students overall, it is important to consider how these institutions can better support Latinx students pursuing STEM degrees. This paper provides a summary of current literature and empirical research on Latinx students entering STEM fields through diverse college pathways. Additionally, this paper highlights national postsecondary trends in STEM at two- and four-year HSIs and specifically focuses on role of these institutions for Latinx and other historically underrepresented and racially minoritized students. The article presents an exploratory descriptive analysis of the most recently available longitudinal nationally representative data available through the National Center for Education Statistics (NCES) for first time beginning postsecondary students.

Hispanic Serving Institution (HSI) Pathways

With the number of HSIs more than doubling in the past 25 years and a Latinx population in the U.S. that is currently 60.6 million and counting, experts predict continued increases in federally-designated HSIs across the nation (Excelencia in Education, 2020; HACU, 2019; Pew Research Report, 2020). Substantial enrollment of Latinx undergraduate students at HSIs is partly due to their geographic location and proximity to their families and communities (Cuellar, 2019; Nuñez & Bowers, 2011). While the current 539 HSIs span across 27 states, District of Columbia, and Puerto Rico, these institutions remain concentrated in specific regions, including California, Texas, Florida, New York, Illinois, New Mexico and Puerto Rico (HACU, 2019). A growing number of institutions are becoming HSIs or Emerging HSIs (E-HSIs), defined as non-profit, degree-granting

institutions with Latinx full-time equivalent (FTE) undergraduate enrollments between 15-24.9% (Excelencia in Education, 2020, HACU 2019). There are currently 352 e-HSIs that span 35 states and one territory (Puerto Rico) in the U.S., including 105 two-year HSIs (95 public, 10 private) and 247 four-year HSIs (93 public, 154 private; HACU, 2019).

HSI designation offers institutions the potential to receive federal funding to support Latinx and other underserved, low-income students, including Title V: Developing Hispanic-Serving Institutions Program, and Title III: HSI STEM and Articulation Program grants (HACU, 2020). With increasing numbers of Latinxs pursuing postsecondary education (Pew Research Report, 2020), HSIs provide critical access to higher education, enrolling 67% of all Latinx undergraduate students, despite making up only 17% of all postsecondary institutions (Excelencia in Education, 2020). Furthermore, HSIs provide pathways for not only Latinx students, but American Indian, Asian American, and Black students (Nuñez, Hurtado, & Galdeano, 2015), particularly within STEM at the two-year level (Herrera, Kovats Sánchez, Navarro Martell, & Zeledon-Pérez, 2018). The overlapping institutional contexts of community colleges and HSIs are particularly important environments for diversifying STEM fields.

Underrepresented STEM Student Two-Year Pathways

Similar to HSIs and e-HSIs, community colleges also provide pathways to postsecondary educational degree attainment for students of color, including Latinx students (Martinez & Santiago, 2017; Provasnik & Planty, 2008). With Latinx undergraduate enrollments on the rise, Latinx students also represent a growing segment of the community college population (HACU, 2019; Pew Research Report, 2015; 2016). About half of Latinx undergraduates attend community

colleges (HACU, 2019, 2020), and according to the American Association of Community Colleges (2020), Latinxs comprise 26% of all students enrolled at community colleges. Researchers highlight several factors that may contribute to Latinx students' considerable enrollment at community colleges, including: (1) the flexibility of open-enrollment, (2) the affordability of attending a two-year, public institution in comparison to four-year public and private institutions, which often entail expensive tuition rates, and (3) the convenience of being in places like California and Texas which are home to vast community college systems (HACU, 2020; Pew Research Center, 2015). The STEM pathways of Latinx undergraduate students are also closely tied to their enrollment at community colleges, with two-year, community college HSIs serving as critical access points to STEM higher education for Latinx students (Herrera, et al., 2018). Still, few researchers have examined the STEM pathways of Latinx and other underrepresented students of color who started at two-year HSIs and we have much to learn about the role of community college in STEM degree attainment (Bahr, Jackson, McNaughtan, Oster, & Gross, 2017; Hagedorn & Purnamasari, 2012; Zhang, Adamuti-Trache, & Connolly, 2019).

Understanding the Complexities of Underrepresented STEM Student Pathways

The STEM pathways of Latinx and other underrepresented students in STEM are complex. Although HSIs and community colleges offer Latinx students promising opportunities to enter STEM higher education, previous research indicates that Latinx and other students of color continue to be underrepresented in STEM at four-year institutions, and experience inequitable outcomes in postsecondary educational attainment overall (Herrera et al., 2018; Martinez & Santiago, 2017; Wang, 2015). Several studies have shown that Latinx and other underrepresented students of color are not completing STEM degrees at the same rate as their white and Asian

peers, despite entering college with comparable levels of interest in STEM (Estrada Burnett et al., 2016; Malcom, 2010; Martinez & Santiago, 2017). Research examining community college STEM pathways found that while substantial numbers of historically underrepresented students were enrolling in STEM courses, they seldom continued on to more advanced courses in STEM (Bahr et al., 2017). Within the Latinx undergraduate population in particular, despite Latinx students' interest in STEM continues to increase, rates of STEM transfer and degree completion have stayed stagnant (Martinez & Santiago, 2017). For example, a previous study found that Latinx undergraduates at two-year HSIs nationally are retained in the STEM disciplines at rates 9% lower than their Latinx peers at two-year non-HSIs, and 23% lower than their non-Latinx peers at two-year HSIs (Herrera et al., 2018). Low rates of STEM retention and STEM transfer among Latinx and other underrepresented students of color are attributed to a myriad of factors, including limited forms of institutionalized support, barriers to accurate STEM advising, and inequitable placement into and overrepresentation in developmental courses that often hinder students' enrollment in more advanced STEM courses (Crisp, Nora, & Taggart, 2009; Hagedorn & Purnamasari, 2012; Lee Flores, Navarro, & Kanagui-Muñoz, 2015; Martinez & Santiago, 2017). Thus, there is a need to better articulate STEM degree pathways and improve collaborations in STEM across two and four-year institutions (Wang, 2015; HACU, 2020).

Along with needed improvements in STEM transfer pathways, campus climate and STEM disciplinary culture at two- and four-year institutions play an important role in the experiences of underrepresented students of color in STEM. Historically dominated by white men, STEM disciplinary culture is often perceived as "chilly" in that it encourages competitiveness and individualism and often contributes to a lack of representation, lower retention rates, and blatant

racial and gender discrimination, especially for women and students of color in STEM (McGee, 2016; Ong, Smith, & Ko, 2018; Salazar, Park, & Parikh, 2019). Such hostile and negative experiences in STEM higher education have consequences for underrepresented students' adjustment and STEM persistence (Hurtado, Han, Sáenz, Espinosa, Cabrera & Cerna, 2017; Hurtado, Newman, Tran, & Chang., 2010; McGee, 2016; Ong et al., 2018; Salazar, Park, & Parikh, 2019). Research overwhelmingly supports the notion that supportive educational spaces and positive campus climates are critical in the STEM persistence of community college and underrepresented students of color (Cole & Espinoza, 2008; Hurtado et al., 2007; Morgan & Gerber, 2016). Fostering supportive relationships between students and institutional agents (e.g., faculty) on campus is an important part of establishing a positive campus climate and promoting STEM persistence (Aguirre et al., 2020; Bensimon et al., 2019; Stanton-Salazar, 2011). Moreover, strong, integrated systems of institutionalized support for STEM students involving faculty, staff, and administrators have positive consequences for STEM student retention, especially when such efforts are centered on serving the holistic needs of students (Kezar & Holcombe, 2017). HSIs, with greater campus diversity and representation of Latinx students, faculty, and administrators, offer the potential for facilitating key interactions between Latinx undergraduates in STEM and institutional agents (Herrera, Hernández Chapar & Kovats Sanchez, 2017; Zeledón-Pérez, 2019), as well as cultivating supportive campus climates among Latinx students (Nunez et al., 2016). Despite the potential for creating positive campus environments for Latinx and other underrepresented students of color, recent research on students' perceptions of campus climate at an emerging HSI demonstrated that students are still subjected to racialized experiences despite positive, affirming interactions with faculty (Cuellar & Johnson-Ahorlu, 2020).

The current study adds to an existing body of literature that aims to understand national trends in the role of HSIs and, specifically, two- and four-year HSIs in the STEM pathways of Latinx. Our research is broadly informed by the multidimensional conceptual framework for HSI servingness, which considers multiple indicators of (i.e., academic and non-academic outcomes; relational experiences) and structures for serving, and emphasizes the need to go beyond enrolling a certain percentage of Latinx students (Garcia, Núñez, and Sansone's, 2019). By providing an overview of national trends in STEM pathways through HSIs, we hope to spark broader conversations about how HSIs are actively and intentionally supporting specifically Latinx and other underrepresented students of color.

HSIs and STEM

Through a brief examination of the most recent nationally representative data, this paper underscores the importance of understanding the role of HSIs in STEM pathways for Latinx students. A descriptive analysis will highlight the role of HSIs in STEM entrance and persistence and provide a national profile of STEM students attending HSIs. The data presented are derived from the 2012-2017 Beginning Postsecondary Students Longitudinal Study (BPS:12/17) available through the National Center for Education Statistics (NCES). This data set is designed to investigate factors relevant to student success in college (e.g., enrollment, persistence, attainment). The BPS:12/17 is a nationally representative sample of approximately 22,500 first-time beginning students, conducted through three waves of data collection. The first wave in the 2011-12 academic year and two follow-up surveys collected additional data in 2014 and 2017 (Bryan, Cooney, & Elliott, 2019). Through descriptive statistics computed using NCES PowerStats, we outline the role of two- and four-year HSIs in STEM access.

STEM Entrance

First, we examine the distribution of students entering STEM fields at two- and four-year colleges (public and private non-profit, excluding for-profit & less than two-year institutions) across HSI status in Table 1. We define STEM students as those that declare a major in mathematics, sciences (including physical sciences and biological/life sciences), engineering/engineering technologies, and/or computer/information sciences during their first academic year in college, 2011-12. Among these beginning postsecondary STEM students, larger proportions of STEM students begin at Emerging HSIs (E-HSIs)/HSIs, with 14% and 29.4% of STEM students starting at two-year E-HSIs and HSIs respectively compared to 12.6% and 9.4% of STEM students starting at four-year E-HSIs and HSIs respectively. Therefore, the proportion of STEM students who start at two-year E-HSIs and HSIs (43.3% combined) is nearly double the proportion of those who start at four-year E-HSIs and HSIs (22.1% combined).

Table 1

STEM1 Entrance by Race/Ethnicity at Emerging Hispanic Serving Institutions2 (E-HSIs) and HSIs3

	2-Year Colleges		4-Year Colleges		Combined	
	E-HSI	HSI	E-HSI	HSI	2-Year E-HIS/HSI	4-Year E-HIS/HSI
White	15.0	15.2	10.1	2.0	30.2	12.2
African American	12.8	12.1	12.2	13.9		
Asian American					24.9	26.1
Latinx	24.9	54.6	19.6	13.1	79.5	32.7
All Students4	11.5	69.7	18.0	39.4	81.2	57.4
	14.0	29.4	12.6	9.4	43.3	22.1

1STEM fields include mathematics, sciences (including physical sciences and biological/life sciences), engineering/engineering technologies, and computer/information sciences

2 Emerging Hispanic Serving Institution at least 15% but less than 25% Hispanic students from IPEDS reported Fall 2011 enrollment data

3 Hispanic Serving Institution 25% or more Hispanic students from IPEDS reported Fall 2011 enrollment data

4 Includes White, African American, Asian, Hispanic, American Indian, Pacific Islander, more than one races

Source: U.S. Department of Education, National Center for Education Statistics, 2012-17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17). Computation by NCES PowerStats

Across racial groups, we see that two- and four-year Emerging HSIs and HSIs are key STEM access points, not only for Latinx students, but for other students of color as well. Among students who begin at two-year institutions, 11.5% of Latinx students enroll in Emerging HSIs and 69.7% in HSIs, meaning the vast majority of Latinx two-year STEM students (81.2%) start at Emerging HSIs and HSIs. Four-year Emerging HSIs and HSIs also comprise the majority of Latinx enrollment in STEM (57.4%). Additionally, these institutions provide STEM access for other students of color, with 79.5% of Asian American two-year students and 32.7% of four-year students starting at Emerging HSIs and HSIs. Furthermore, a large share of African American STEM students are situated within Emerging HSIs and HSIs and account for 24.9% of their enrollment at the two-year level and 26.1% at the

four-year level. Considering that Emerging HSIs and HSIs greatly contribute STEM entrants at both the two- and four-year levels, it is imperative to look toward these institutions as an underemphasized opportunity for addressing underrepresentation in STEM for Latinx and other students of color.

STEM Student Outcomes at Hispanic Serving Institutions

Broadening participation in STEM includes not only access and entrance into STEM fields, but also requires persistence and successful completion to be able to pursue a STEM career. In Table 2, student outcomes are examined over a six-year period for first-time beginning students, who started college and declare a STEM major 2011-12 at two- and four-year HSIs (including public and private non-profit, but excluding for-profit & less than two-year institutions). Our current examination of STEM completion and persistence is limited to the variables available through the publicly released BPS data; therefore, our measurement of persistence and attainment is within any field and not specific to STEM completion/persistence.

Table 2

Six-Year Persistence/Attainment among STEM¹ majors at HSIs² and Non-HSIs

	Attainment		Persistence		Not enrolled/no degree	
	Non-HSI	HSI	Non-HSI	HSI	Non-HSI	HSI
<i>Two-Year Colleges</i>						
Latinx	45.2	32.0	13.7	31.3	41.1	36.7
All Students ³	41.0	35.2	11.7	29.6	47.2	35.2
<i>Four-Year Colleges</i>						
Latinx	74.2	67.6	11.0	14.2!	14.8!	18.0!
All Students ³	73.6	61.9	11.3	15.2	15.0	22.9

¹STEM fields include mathematics, sciences (including physical sciences and biological/life sciences), engineering/engineering technologies, and computer/information sciences

² Hispanic Serving Institution 25% or more Hispanic students from IPEDS reported Fall 2011 enrollment data

³ Includes White, African American, Asian, Hispanic, American Indian, Pacific Islander, more than one races

Source: U.S. Department of Education, National Center for Education Statistics, 2012-17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17). Computation by NCES PowerStats

Two-Year STEM Students. First, we concentrate on students who begin at two-year HSIs or two-year non-HSIs, and specifically highlight outcomes for Latinx students. Differences across these institution types were observed. Overall, lower attainment rates were observed across HSIs, with 35.2% of STEM majors who began at HSIs earning a certificate or degree, in comparison 41% of those who started at non-HSIs. In contrast to students who start at non-HSIs (11.7%), a much higher

proportion of HSI students (29.6%) continue to be enrolled after six-years (despite not yet having earned a degree). This suggests that the timeline for students who start college at two-year HSIs may be longer and more longitudinal data may be needed to measure attainment. Similar persistence patterns were noted for Latinx students, with 31.3% of HSI students persisting after six years, in comparison to 13.7% of non-HSI students. When examining attainment for Latinx students who declared a STEM major in their freshman year specifically, Latinx students at non-HSIs have higher attainment rates (45.2%) than their Latinx peers at HSIs (32%) and slightly higher rates in comparison to all students at Non-HSIs (41%) and HSIs (35.2%). Overall, there is a need to better understand how to improve outcomes for STEM students at two-year HSIs, particularly Latinx students for whom two-year pathways are critical.

Four-Year STEM Students. Across four-year HSIs and non-HSIs, we observe some trends that mirrored their two-year counterparts. While attainment rates for four-year students are significantly higher than for those who start at two-year colleges, the proportion of students who began at four-year HSIs and earn degrees in six years (61.9%) is lower in comparison for those who enrolled at Non-HSIs (73.6%). Correspondingly, the proportion of students at HSIs who leave without a degree and are no longer enrolled after six-years is much higher in comparison to non-HSIs, with 22% and 15% respectively. Attainment patterns for Latinx students are similar to all students overall, with 67.6% of Latinx HSI students earning degrees, in comparison to 74.2% of their non-HSI Latinx peers.

STEM Student Profile at Two- and Four-Year HSIs

While we acknowledge that there is considerable heterogeneity among HSIs, the purpose of this next section is to better understand the undergraduate profiles of those who enter STEM fields, specifically across two- and four-year HSIs (including both public and private institutions). Table 3 highlights student characteristics among 2011-12 STEM entrants across two- and four-year HSIs and non-HSIs.

Table 3

Profile of 2011-12 beginning students who entered STEM1 fields through 2017 at 2- & 4-Year HSIs and Non-HSIs, by selected student characteristics

	2 Year		4 Year	
	Non-HSI	HSI	Non-HSI	HSI
Gender				
Male	76.3	67.6	60.8	59.6
Female	23.7	32.4	39.2	40.4
Parents' highest education				
High school diploma or less	34.7	40.3	19.1	44.8
Some college/voc. training but no degree	36.8	26.8	19.2	18.3
College degree	28.4	32.8	61.7	36.9
Income group 2011-12				
Lowest quarter	24.4	36.7	18.6	44.0
Middle two quarters	59.7	45.7	46.3	38.3
Highest quarter	15.9	17.6	35.1	17.7
High school GPA				
Below 3.5 GPA	81.8	83.6	52.4	79.3
3.5 GPA and above	18.2	16.4	47.6	20.7
Remedial Education				
Remedial course 2012: Any	56.6	56.8	22.3	40.5
Remedial course 2012: Math	26.1	25.3	7.2	18.2
Enrollment 2011-12				

Full-time	60.1	45.9	93.9	69.3
Part-time	37.6	49.3	4.6	25.8

1STEM fields include mathematics, sciences (including physical sciences and biological/life sciences), engineering/engineering technologies, and computer/information sciences

2 Hispanic Serving Institution 25% or more Hispanic students from IPEDS reported Fall 2011 enrollment data

Source: U.S. Department of Education, National Center for Education Statistics, 2012-17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17). Computation by NCES PowerStats

While there is generally low representation of women in STEM fields in comparison to other fields, and this was reflected in our data as well, we do see that HSIs (both two- and four year) have a higher proportion of females among HSI STEM entrants, in comparison to non-HSI STEM entrants. While the number of women entering STEM at two-year HSIs does not reach parity with the proportions of men, the proportion of women in STEM at HSIs (32.4%) is nearly nine percentage points higher than the proportion of STEM women at non-HSIs (23.7%). The socioeconomic backgrounds of students are an important consideration as literature has posited that HSIs, particularly community colleges, disproportionately serve first generation, low-income, and non-traditional students (Núñez, Sparks and Hernández, 2011). While the proportion of first-generation college students enrolling in STEM across HSIs and non-HSIs is similar within the two-year sector, we see large contrasts among four-year HSIs and non-HSIs. When examining four-year HSI STEM entrants, only 36.9% of students had parents who had attained a college degree, equating to nearly 15 percentage points less than their STEM counterparts beginning at non-HSI four-year institutions. Similarly, the income distributions of STEM students at four-year HSIs were concentrated in the lowest income bracket with 44% falling within this category and only 17.7% in the highest income

bracket, which compares with 35.1% of students at non-HSIs who fall within the highest income bracket.

With a large proportion of HSIs that are community colleges or broad access four-year institutions (Núñez, Crisp, & Elizondo, 2016), it is important to consider pre-college preparation as one of the most commonly cited factors influencing the postsecondary attainment and a challenge influencing the preparedness for HSI STEM undergraduate programs (Crisp et al., 2009). The measurable differences between HSIs and non-HSIs are most distinct at the four-year level, with only 20.7% of HSI STEM students who earned at least a 3.5 GPA in high school compared to 47.6% of STEM students attending non-HSI institutions within this grade range. Similarly, there are little to no differences within the two-year sector in the proportion of HSI (versus non-HSI) who require remedial intervention, while STEM students who enter postsecondary education at four-year HSIs require remedial intervention at a much higher rate than their non-HSI STEM peers. The proportion of four-year STEM HSI students requiring at least one remedial course in any subject is over 18 percentage points higher than their non-HSI peers, with 40.5% and 22.3% respectively. Similarly, the proportion of STEM HSI students (18.2%) requiring at least one math remediation course is 11 percentage points higher than that of non-HSI STEM students (7.2%). Lastly, in terms of full-time enrollment, both two- and four-year HSIs have higher proportions of STEM students enrolling part-time during their freshmen year in college. The proportion of two-year HSI STEM students who were enrolled full-time in 2011-12 (45.9%) is over 25 percentage points less than the proportion of STEM students attending full-time at two-year non-HSIs (60.1%). Even within the four-year sector, where part-time enrollment is much less common among freshmen, we see a lower proportion of

full-time STEM students at HSIs in comparison to non-HSIs with 69.3%, compared to 93.9%, respectively.

Discussion

Our findings demonstrate that HSIs provide essential paths in the STEM pipeline for Latinx and other historically underrepresented and racially minoritized students. Similarly, for improving gender representation and equity in STEM, two-year HSIs are vital as key access points for women. In addition, we observed larger proportions of first-generation college students at four-year HSIs in comparison to their non-HSI counterparts. Finally, STEM student populations mirror what we know about HSI students overall, who tend to be low-income and part-time students (Núñez, Crisp, & Elizondo, 2016). Socioeconomic factors are important considerations as they may require students to work full-time, which can inhibit the academic and social adjustment of STEM students (Hurtado et al., 2010). With academic preparation as a critical factor impacting STEM access and retention (Crisp et al., 2009), we found that four-year HSIs admit larger proportions of STEM entrants with lower GPAs and had higher rates of students requiring remedial coursework, particularly in math, in comparison with two-year non-HSIs. The student characteristics that make up the institutional profiles across HSIs and non-HSIs are important contexts for understanding the impact on STEM outcomes across two- and four-year sectors.

Across both the two- and four-year sectors, attainment rates were lower for those who started at HSIs, in comparison to those at non-HSIs. Similarly, larger proportions of Latinx attained degrees among those who started at two-/four-year non-HSIs versus at HSIs. These trends may suggest that outcomes for Latinxs at HSIs are not equitable to non-HSIs (Contreras, Malcom, &

Bensimon, 2008); however, it is complicated, considering the impact of institutional type/characteristics (Núñez, Crisp, & Elizondo, 2016). For example, HSIs are often under-resourced (HACU, 2012) and four-year HSIs tend to be less selective, broad access institutions (Núñez & Bowers, 2011), which impacts the variance in graduation rates and other student outcomes. As Garcia (2017) argues, being a Hispanic “Serving” Institution goes beyond the metrics of Latinx persistence and attainment, but includes providing community engagement opportunities, positive campus climate, and support programs. Furthermore, serving requires understanding the unique student populations, which as our examination of STEM student profiles demonstrated, includes higher proportions of low-income, first generation college students, who are enrolled part-time and enter HSIs less academically prepared in comparison to their non-HSI peers. As HSI leaders express great concern over limited institutional resources to serve their students (de los Santos & Cuamea, 2010), clearly there is a need to further invest in HSIs to realize their full potential in advancing Latinx representation in STEM.

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