FLORIDA

HISPANIC-SERVING COMMUNITY COLLEGES
STEM PIPELINES

Hispanic-Serving Community Colleges and STEM Degree Attainment in Florida

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This research brief focuses on STEM degrees conferred in Florida by race and gender at three institutional types: Hispanic-Serving Community Colleges (HSCCs), which are 2-year institutions with 25% Hispanic student enrollment or more; Emerging HSCCs, which are 2-year institutions with 15% to 24.9% Hispanic student enrollment; and Non-HSCCs, which are institutions with less than 15% Hispanic student enrollment.

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Introduction

The Hispanic-Serving Community Colleges STEM Pipelines (HSCC-STEM) study is a research project that explores the transitions to and through Hispanic-serving two-year institutions for underrepresented minoritized STEM students. The literature largely notes Hispanic-serving institutions (HSIs) as four-year colleges and universities (Garcia, 2018; Núñez, Crisp, & Elizondo, 2016). As the discourse primarily engages four-year-centered and full-time-equivalent student enrollment framing of HSIs, this should not be the default given the critical influence of HSIs that are community colleges. Hence, there is intentionality in this project that explicitly references two-year HSIs due to the nuance of minority-serving institutions (MSIs), particularly in minority-serving community college (MSCC) contexts (Fox, Thrill, & Zamani-Gallaher, 2017). Thus, to better capture STEM pathway of part-time underrepresented minoritized students, HSCCs within the study are any associate degree-granting postsecondary institutions that have at least 25% enrollment of full- and part-time Latinx students.

This brief uncovers the most viable HSCC STEM pathways for Latinx and other underrepresented minoritized students as well as which fields they are more likely to persist in, and the promising practices at HSCCs that provide transfer pathways leading to further education—on ramps to STEM baccalaureates. The following information provides a state profile outlining STEM degrees conferred by race and gender in three types of institutions: HSCCs, which are institutions with 25% or more Latinx student enrollment; emerging HSCCs, which are institutions with 15% to 24% Latinx student enrollment; and non-HSCCs, which are institutions that have a Latinx enrollment rate of less than 15%.

State Demographics

The population in the state of Florida has become more diverse. In fact, if we exclude the 70-year and above population, most of the individuals in Florida are people of color (Taylor, 2019). In 2015 Texas had an estimated population of 19,645,772. Out of that total, 10,045,763 (51.1%) were female and 9,600,009 (48.9%) were male. In 2015 the White population was 11,013,749 (56.1%), followed by Latinx (4,660,733; 23.7%), Black Americans (3,035,646; 15.5%), and Asians (499,958; 2.5%) (U.S. Census Bureau, 2011-2015). Since 2000, Florida has had an 85.6% increase in the Latinx population (Flores, 2017). The growth of the White population has stagnated, while the population of people of color has increased dramatically. This will result in fast-changing demographics in Florida within the next two decades.

Data

This brief drew its 2015 data from the Integrated Postsecondary Education Data System (IPEDS). Two-year institutions were selected by using both the IPEDS and the Carnegie classifications. Three categories were chosen for the selection criteria of IPEDS: Sector, Highest Degree Offered, and Institutional. The subcategories of each section were Two-year Public, Private Not-for-Profit, and Private For-profit; Associate's Degree under the highest degree offered option; Degree-granting, Associate's and Certificates; and Degree-granting, Not Primarily Baccalaureate or Above in the institutional category.

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Based on these criteria, a total of 1,623 institutions were included in the data. In the selection criteria of Carnegie classification 2015 (Basic), one category, Baccalaureate/ Associate's Colleges, was selected. The selected subcategories were Associate's Dominant, Baccalaureate/Associate's Colleges, and Mixed Baccalaureate/Associate's. This drew another 403 institutions from the data.

Lastly, two datasets drawn from IPEDS and Carnegie classifications were merged and four overlapped institutions were deleted. Given the high number of HSCCs in Puerto Rico, 22 institutions in that territory were included in our data while other institutions in the U.S. were excluded. Thus, a total of 2,022 institutions were obtained for this study. For the descriptive analysis, 1,998 institutions were used from the exclusion of 18 invalided institutions. This brief focuses on 127 community colleges in Florida.

Postsecondary Context: Florida HSCC Landscape

Table 1 illustrates the landscape of two-year institutions in Florida. In 2015, 127 two-year institutions were drawn in our data, and 54.3% of them were Hispanic-serving institutions. Specifically, 43 were identified as HSCCs, 26 as emerging HSCCs, and 58 as non-HSCCs. During the past three decades, there has been a significant increase nationally in private for-profit institutions (Deming, Goldin, & Katz, 2012). In our data, a similar proportion of institutional control was shown nationally. A growing number of private for-profit institutions and a similar proportion of institutional control was shown in Florida data as well. Out of the 127 total institutions in Florida, 78 (61.4%) were private for-profit and 21 (16.5%) were private not-for-profit. Out of 43 HSCCs, 32 (74.0%) were private for-profit institutions, six were public, and five were private not-for-profit.

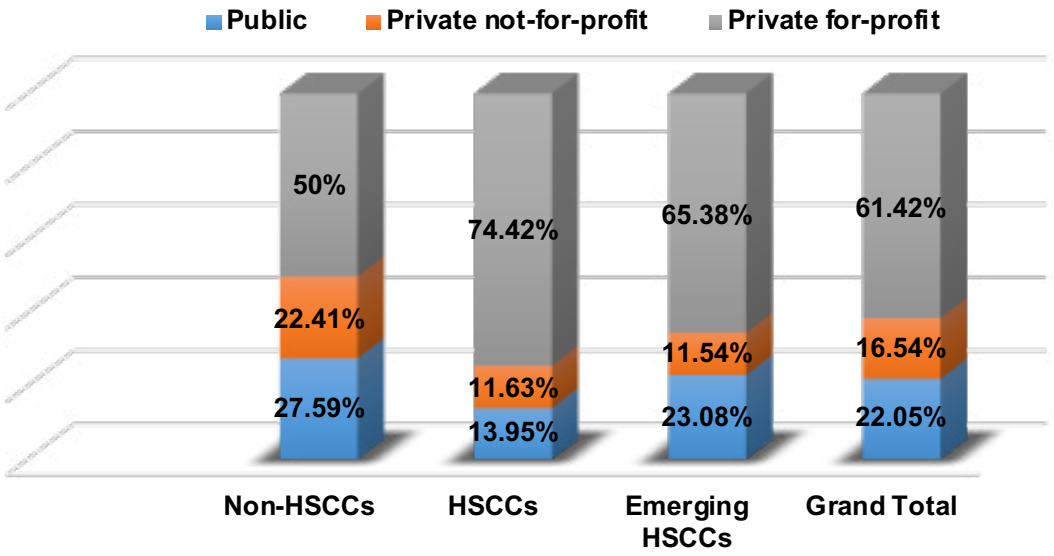
Table 1

Eligibility of HSCCs by Control of the Institution in Florida

Control of institution (# of institutions)	**Eligibility of HSCCs 2015**			
	Non-HSCCs	HSCCs	Emerging HSCCs	Total
	Count	Count	Count	
Public	16	6	6	28
Private not-for-profit	13	5	3	21
Private for-profit	29	32	17	78
Total institutions	58	43	26	127

Figure 1

Community colleges by Control of Institution in Florida



Minority-Serving Institution Status

In our project, the MSI status was used to see whether there were other federal designations cross-listed with the HSCC designation. We used the federal government designations for Asian American and Native American Pacific Islander-serving institutions (AANAPISIs) and predominantly Black institutions (PBIs). AANAPISIs have an enrollment of at least 10% Asian American and Native American Pacific Islander students, while PBIs have an enrollment of at least 40% African American or Black students (U.S. Department of Education, 2017). Table 2 shows the numbers of cross-listed minority-serving institutions in Florida.

Table 2

Numbers of Minority-Serving Institutions Cross-listed with HSCCs in Florida in 2015

	HSCCs Eligibility	AANAPISIs Eligibility	PBIs Eligibility		Total
			Non-PBIs	PBIs	
Florida	Non-HSCCs	Non-AANAPISIs	37	21	58
		Total	37	21	58
	HSCCs	Non-AANAPISIs	35	8	43
		Total	35	8	43
	Emerging HSCCs	Non-AANAPISIs	14	11	25
		AANAPISIs	1	0	1
		Total	15	11	26
	FL Total	Non-AANAPISIs	86	40	126
		AANAPISIs	1	0	1
		Total	87	40	127

In our Florida data, HSCCs are cross-listed with other minority-serving destinations such as AANAPISIs and PBIs. There was one AANAPISI, Aviator College of Aeronautical Science and Technology, and 40 PBIs in 2015. There were no institutions cross-listed with HSCCs, ANNAPISIs, and PBIs at the same time. Interestingly, institutions that were designated as AANAPISI and PBIs were all private for-profit except Everest University-North Orlando and City College-Fort Lauderdale, which are private not-for-profit schools. Table 3 shows the MSI status of HSCCs and emerging HSCCs in Florida. There are no tribal colleges in the state.

Table 3

Minority-Serving Institutions in Florida

HSCC's Eligibility	#	Institution name	Sector of institution	Degree of urbanization	AANAPISIs	PBIs
HSCCs	1	Concorde Career Institute-Miramar	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	2	Fortis Institute	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	3	Southern Technical College	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	4	Brown Mackie College-Miami	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	5	Dade Medical College-Hollywood	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	6	City College-Hollywood	Private not-profit	Suburb: Large	Non-AANAPISIs	PBIs
	7	Dade Medical College-West Palm Beach	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	8	Florida Career College	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs

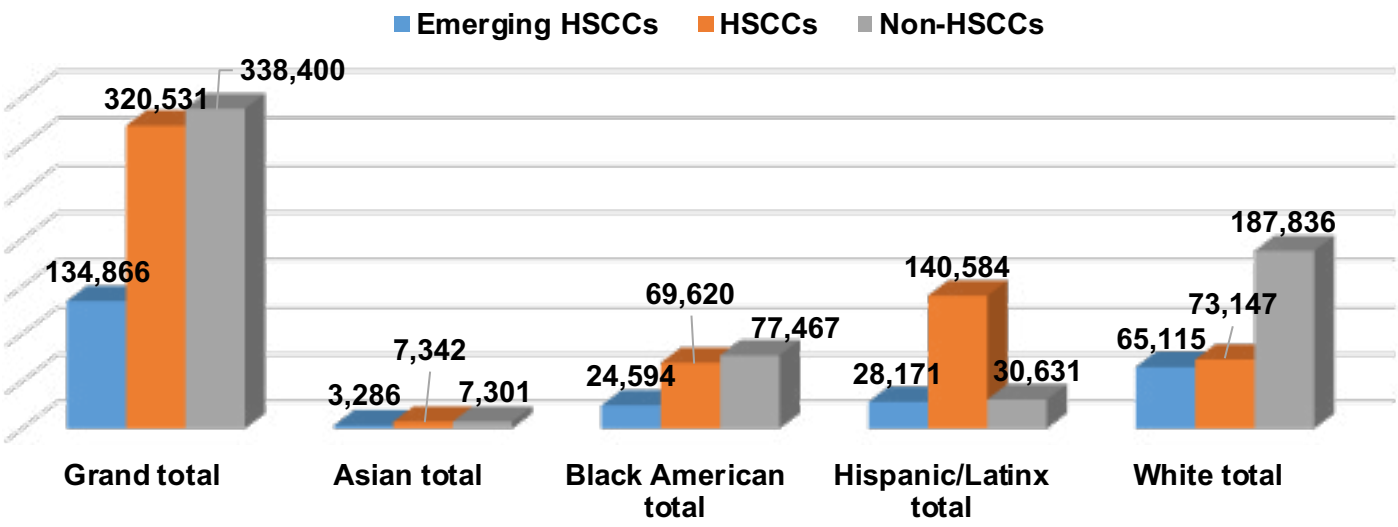
Emerging HSCCs	1	Aviator College of Aeronautical Science and Technology	Private for-profit	Rural: Fringe	AANAPISIs	Non-PBIs
	2	Lincoln College of Technology-West Palm Beach	Private for-profit	City: Small	Non-AANAPISIs	Non-PBIs
	3	Everest University-North Orlando	Private not-for-profit	Suburb: Large	Non-AANAPISIs	Non-PBIs
	4	City College-Fort Lauderdale	Private not-for-profit	City: Midsize	Non-AANAPISIs	PBIs
	5	Fortis Institute-Fort Lauderdale	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	6	Fortis Institute-Port Saint Lucie	Private for-profit	City: Midsize	Non-AANAPISIs	PBIs
	7	Cambridge Institute of Allied Health & Technology	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	8	ITT Technical Institute-West Palm Beach	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	9	MedTech Institute-Orlando Campus	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	10	Florida Career College-West Palm Beach	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	11	Florida Career College-Boynton Beach	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs
	12	Florida Career College-Margate	Private for-profit	Suburb: Large	Non-AANAPISIs	PBIs

HSCC Student Demographics

In this section, the student demographics are based on 12-month enrollment with an unduplicated headcount and degrees/awards conferred, information that was drawn from IPEDS. Figure 2-1 depicts the student enrollment by race and institutional type in Florida. In 2015 there were a total of 793,797 students enrolled in two-year institutions in Florida, with approximately 57% of students enrolled in Hispanic-serving community colleges. Specifically, 40.3% (320,531) were enrolled in HSCCs and 17.0% (134,866) were enrolled in emerging HSCCs. Whites made up 326,098 (41.1%) of the total enrollment, followed by Hispanic/Latinx (199,386; 25.1%), Black American (171,681; 21.6%), and Asian (17,929; 2.3%).

Figure 2-1

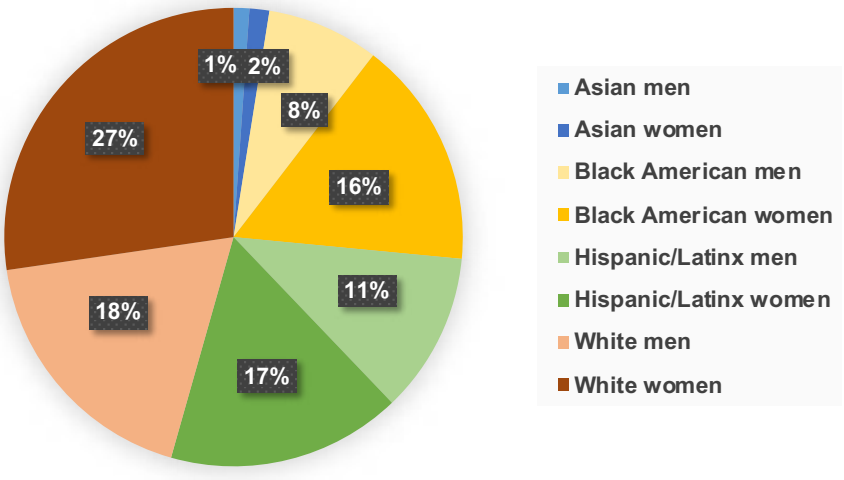
2015 Student Racial Demographics based on 12-month Enrollment by Institutional Type in Florida



Out of the total students enrolled, 307,396 (38.7%) were men and 486,401(61.3%) were women. In general, women's enrollment was higher than that of males across racial groups. See Figure 2-2.

Figure 2-2

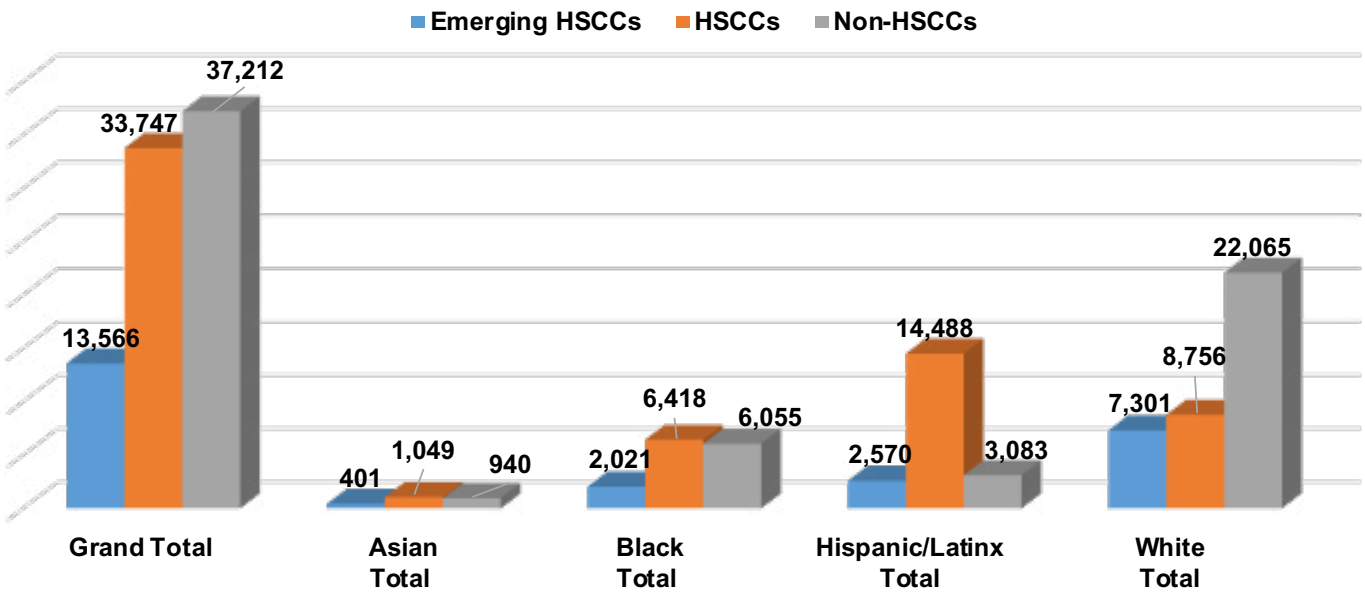
2015 Student Enrollment by Gender and Race in Florida



Florida community colleges awarded a total of 84,525 degrees in 2015. Across institutional types, HSCCs granted 57,021 (73.7%) degrees, followed by emerging HSCCs (16,730; 21.6%), and non-HSCCs (3,655; 4.7%). Whites earned a total of 38,122 (45.1%) degrees in the state, followed by Latinx (20,141; 23.8%), Black Americans (14,494; 17.2%), and Asians (2,390; 2.8%). Of the total degrees conferred in 2015, 53,334 (63.1%) went to women and 31,191 (36.9%) went to men. Regarding gender enrollment and associate degrees conferred, women were generally awarded more degrees than men. When the data segregated into STEM fields, however, the gender demographics looked starkly different. The following section describes the inequities manifested in 2015 STEM degree conferrals by race and ethnicity in Florida.

Figure 3

2015 First Major Total Associate Degrees Conferred by Race and Institutional Type in Florida



Racial/Ethnic and Gender Participation in STEM

Science, technology, engineering and mathematics (STEM) programs were classified using the NSF Classification of Instructional Program (CIP) Code Crosswalk for STEM disciplines (Louis Stokes Alliances for Minority Participation, 2018). By following the NSF LSAMP STEM category, STEM programs were aggregated into 11 STEM fields: agricultural sciences, natural resources and conversation, architecture, computer and information sciences, engineering, engineering technologies, biological sciences, mathematics, interdisciplinary studies, physical sciences, and business and management.

In Florida, community colleges conferred 3,447 STEM degrees in 2015, which accounted for 4% of the total degrees awarded in the state (see Figure 4-1). Among 3,447 STEM degrees, 51.3% (1,768) were awarded at Hispanic-serving community colleges and 1,704 degrees went to students of color (see Figure 4-2). Whites earned a total of 1,743 (50.5%) STEM degrees, followed by Black Americans (675; 19.6%), Latinx (644; 18.7%), and Asians (84; 2.4%). Within the number of STEM degrees conferred, women earned only 883 (25.6%), and men earned 2,564 (74.4%). Women earned approximately 26% more associate degrees than men, but they earned 49% fewer STEM degrees (see Figure 4-3).

Figure 4-1

2015 Total and STEM Degrees Conferred by Race and Institutional Types in Florida

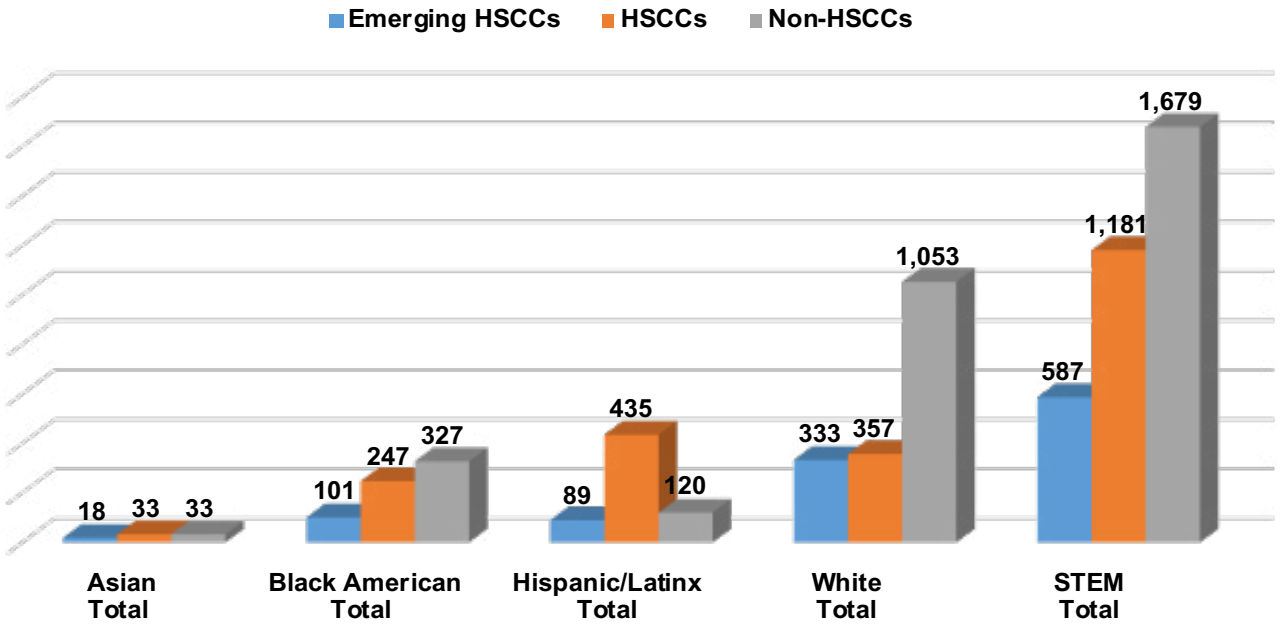


Figure 4-2

2015 STEM Degrees Conferred by Institutional Types in Florida

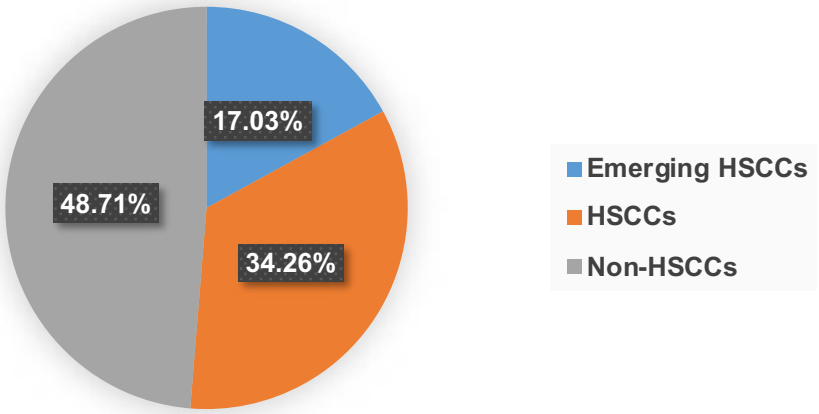
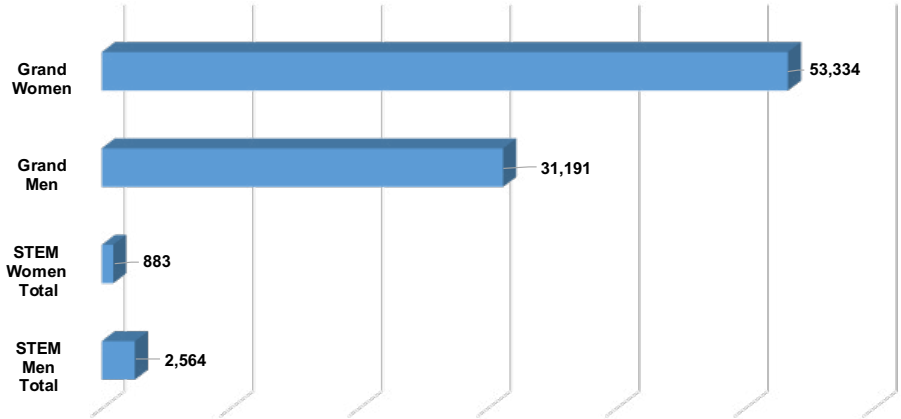


Figure 4-3

2015 STEM Degrees Conferred by Gender in Florida



HSCCs

HSCCs awarded 33,747 (39.9%) of the total degrees conferred in Florida. Latinx students earned a total of 14,488 (42.9%) degrees at HSCCs, followed by Whites (8,756; 25.9%) Blacks (6,418; 19.0%), and Asians (1,049; 3.1%). Of the total degrees awarded at HSCCs, men were conferred 13,270 (39.3%) and women were conferred 20,477 (60.7%). The STEM degrees conferred accounted for 3.5% (1,181) of the total degrees awarded at HSCCs. Of the STEM degrees conferred by HSCCs in 2015, Latinx students earned 435 (36.8%), followed by Whites (357; 30.2%), Black Americans (247; 20.9%), and Asians (33; 2.8%). Of the STEM degrees conferred by HSCCs, men earned 927 (78.5%) and women earned 254 (21.5%).

Emerging HSCCs

Emerging HSCCs awarded 13,566 (16.0%) of the total degrees conferred in Florida. Whites earned a total of 7,301 (53.8%) degrees at emerging HSCCs, followed by Latinx students (2,570; 18.9%), Black Americans (2,021; 14.9%), and Asians (401; 3.0%). Of the total degrees awarded at emerging HSCCs, men earned 459 (78.1%) and women earned 128 (21.8%). Of the STEM degrees conferred, emerging HSCCs awarded 587, which represents 4.33% of the total. Whites earned a total of 333 (56.7%) STEM degrees, followed by Black Americans (101; 17.2%), Latinx (89; 15.2%), and Asians (18; 3.1%). Of the STEM degrees conferred by emerging HSCCs, men earned 459 (78.2%) and women earned 128 (21.8%).

Non-HSCCs

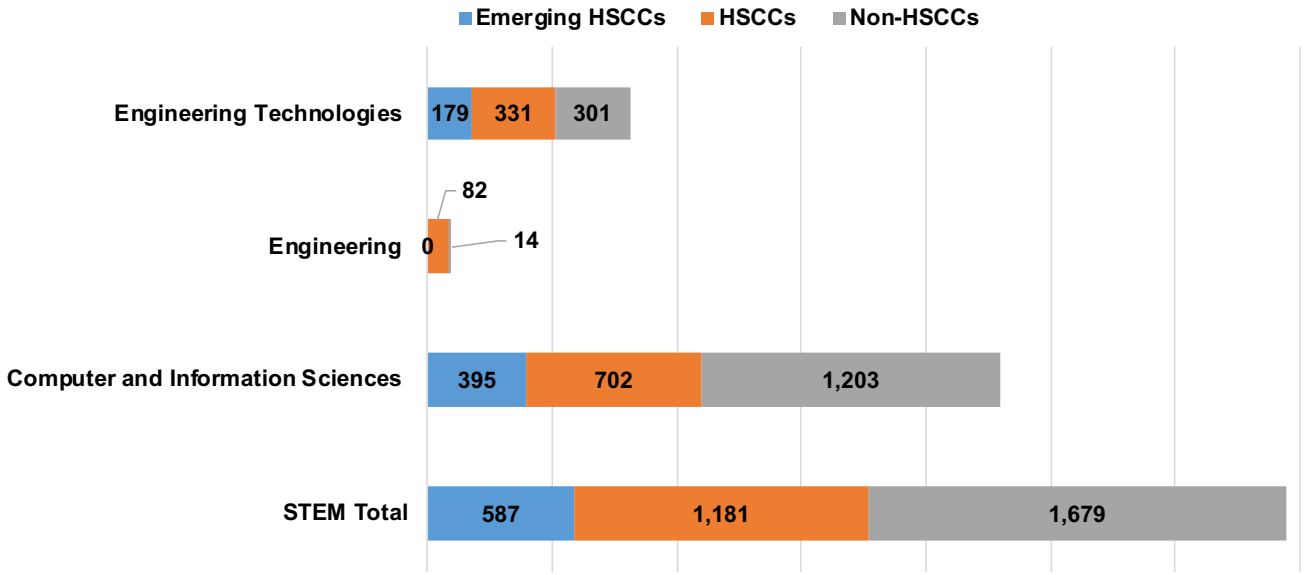
Non-HSCCs awarded 37,212 (44.0%) of the total degrees conferred in Florida. Whites earned a total of 22,065 (59.3%) degrees in non-HSCCs, followed by Black Americans (6,055; 16.2%), Latinx students (3,083; 8.3%), and Asians (940; 2.5%). Of the total degrees awarded at non-HSCCs, men earned 12,681 (34.1%) and women earned 24,531 (65.9%). Of the STEM degrees conferred out of the total degrees, non-HSCCs awarded 1,679, representing 4.5% of the total. Whites earned a total of 1,053 (62.7%) STEM degrees, followed by Black Americans (327; 19.4%), Latinx students (120; 7.2%), and Asians (33; 2%). Of the STEM degrees conferred by non-HSCCs, men earned 1,178 (70.2%) and women earned 501 (29.8%).

Underrepresentation in Top Three STEM Fields

In Florida there was a total of 3,447 STEM associate's degrees awarded in 2015. Within that number, men received 2,564 (74.4%) and women received 501 (25.6%). Overall, the top three STEM fields in Florida were computer and information sciences (2,300; 66.7%), engineering technologies (811; 23.5%), and engineering (96; 2.8%). Combined, these STEM fields accounted for 93% of the STEM degrees conferred in Florida. The number of degrees conferred in agricultural sciences, natural resources and conservation, and biological sciences were low at 39, 33, and 14, respectively. Other STEM fields such as architecture, mathematics, physical sciences, business and management, and interdisciplinary studies were not reported in 2015 Florida data. In general, there were substantial disparities for gender and race in top contributing STEM fields. In addition, the 1,679 degrees awarded at non-HSCCs accounted for 48.7% of STEM degrees. More than half of the degrees in top contributing STEM fields were conferred at non-HSCCs (See Figure 5). The following section has more details.

Figure 5

Top Contributing STEM Fields by Institutional Type in Florida



Computer and Information Sciences

In 2015, 47.6% out of a total of 2,300 degrees in computer and information sciences were awarded by HSCCs. Specifically, HSCCs awarded 702 (30.5%) degrees and emerging HSCCs awarded 395 (17.2%) computer and information sciences degrees. More than 52% of these degrees were awarded at non-HSCCs. The majority of Whites and Black Americans received computer and information sciences degrees at non-HSCCs. Whites earned a total of 1,189 (51.7%), followed by Black Americans (450; 19.6%), Latinx students (385; 16.7%), and Asians (62; 2.7%). Men earned a total of 1,677 (72.9%) of these degrees and women earned 623 (27.1%). The gender gap in computer and information sciences showed across racial groups. Specifically, there were 875

Figure 5

Top Contributing STEM Fields by Institutional Type in Florida

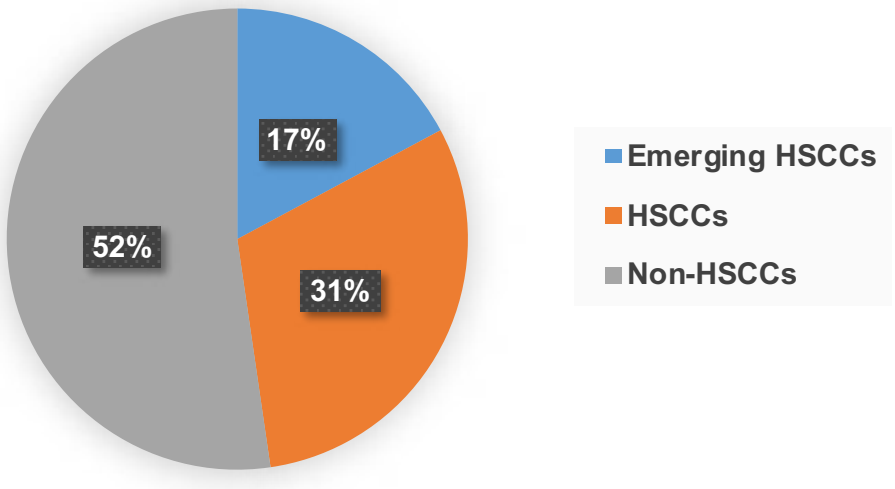
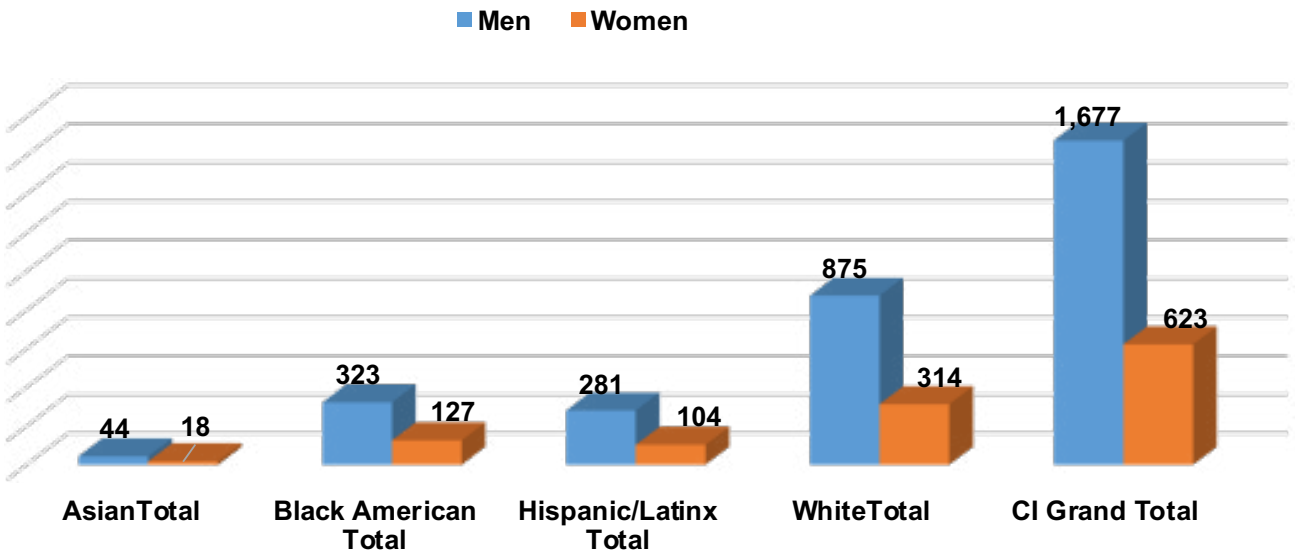


Figure 6-2

Computer and Information Sciences Degrees Conferred by Race and Gender in Florida



Engineering Technologies

HSCCs conferred 62.8% of the degrees in engineering technologies in Florida. Out of the 811 engineering technologies degrees conferred, 331 (40.8%) were awarded at HSCCs, followed by non-HSCCs (301; 37.1%) and emerging HSCCs (179; 22.1%). Whites earned a total of 369 (45.5%) engineering technologies degrees, followed by Latinx students (201; 24.8%), Black Americans (165; 20.4%), and Asians (16; 2%). Men earned 728 (89.8%) of these degrees and women earned 83 (10.2%). The dramatic gender gap in engineering technologies showed across racial groups. Specifically, there were 331 White men and 38 White women who earned these degrees, 181 Hispanic/Latinx men and 20 Hispanic/Latinx women, 148 Black American men and 17 Black American women, and 15 Asian men and one Asian woman.

Figure 7-1

Engineering Technologies Degrees Conferred by Institutional Type in Florida

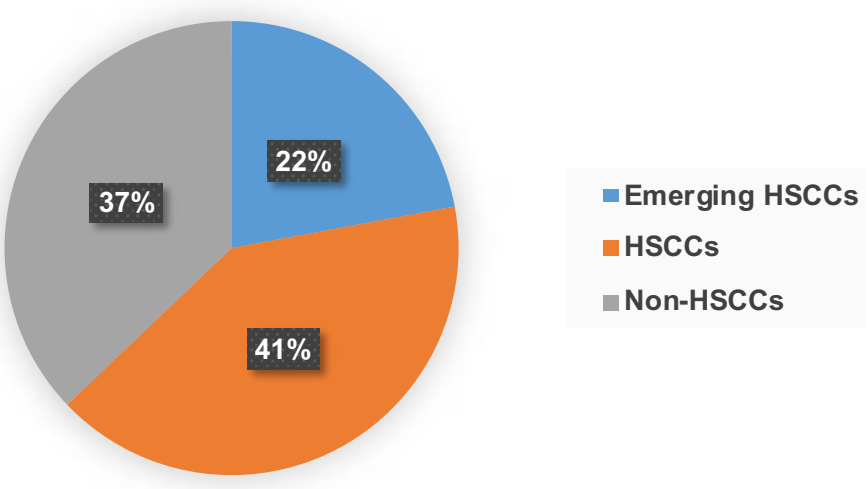
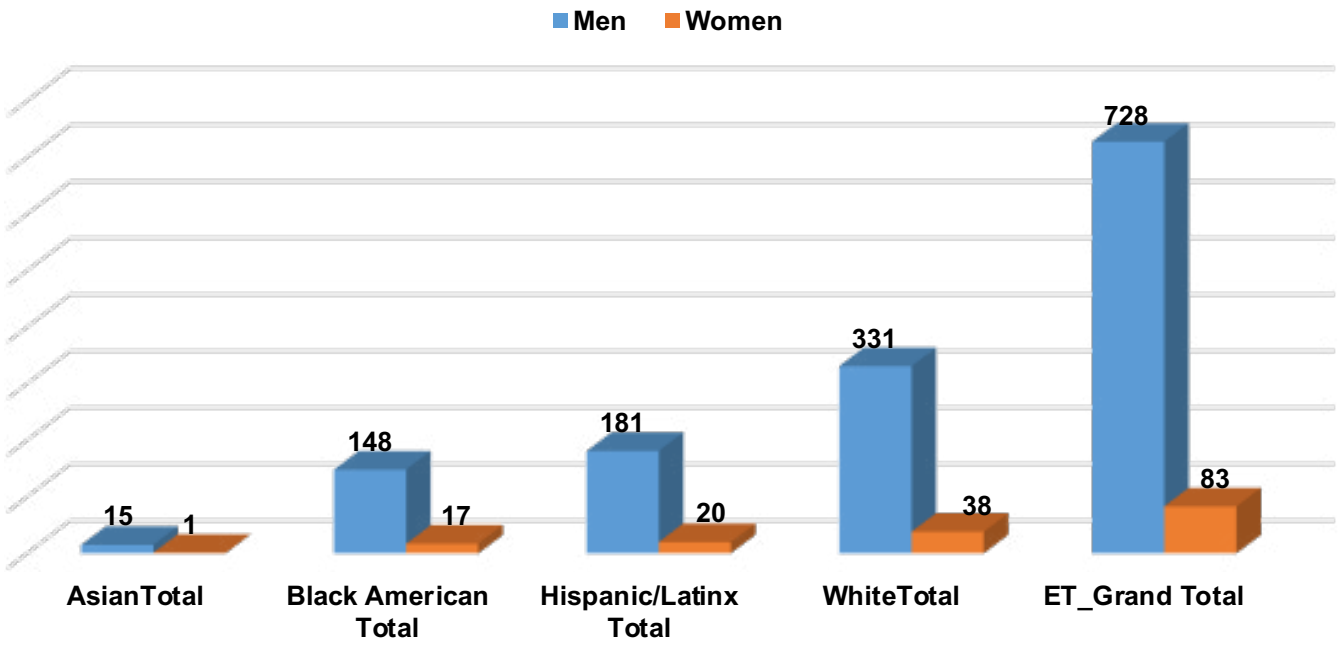


Figure 7-2

Engineering Technologies Degrees Conferred by Race and Gender in Florida



Engineering

HSCCs awarded 85.4% of the degrees in engineering in Florida. Of the 96 engineering degrees conferred, 82 (85.4%) were awarded at HSCCs, followed by non-HSCCs (14; 14.6%). There was no reported degree attainment of engineering in emerging HSCCs in the 2015 Florida data. Black Americans earned a total of 37 (38.5%) engineering degrees, followed by Whites (29; 30.2%), Latinx students (21; 21.9%), and Asians (one; 1.4%). In terms of gender, 91.7% of these degrees were awarded to men. More specifically, men earned 88 of these degrees and women earned eight. Further, there were 36 Black American men and one Black American woman who received engineering degrees, followed by 26 White men and three White women, 21 Hispanic/Latinx men and zero Hispanic/Latinx women, and one Asian woman and one Asian man.

Figure 8-1

Engineering Degrees Conferred by Institutional Type in Florida

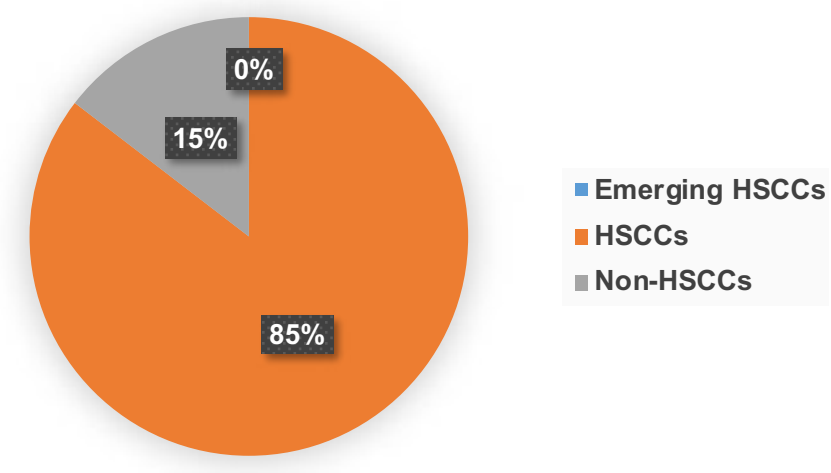
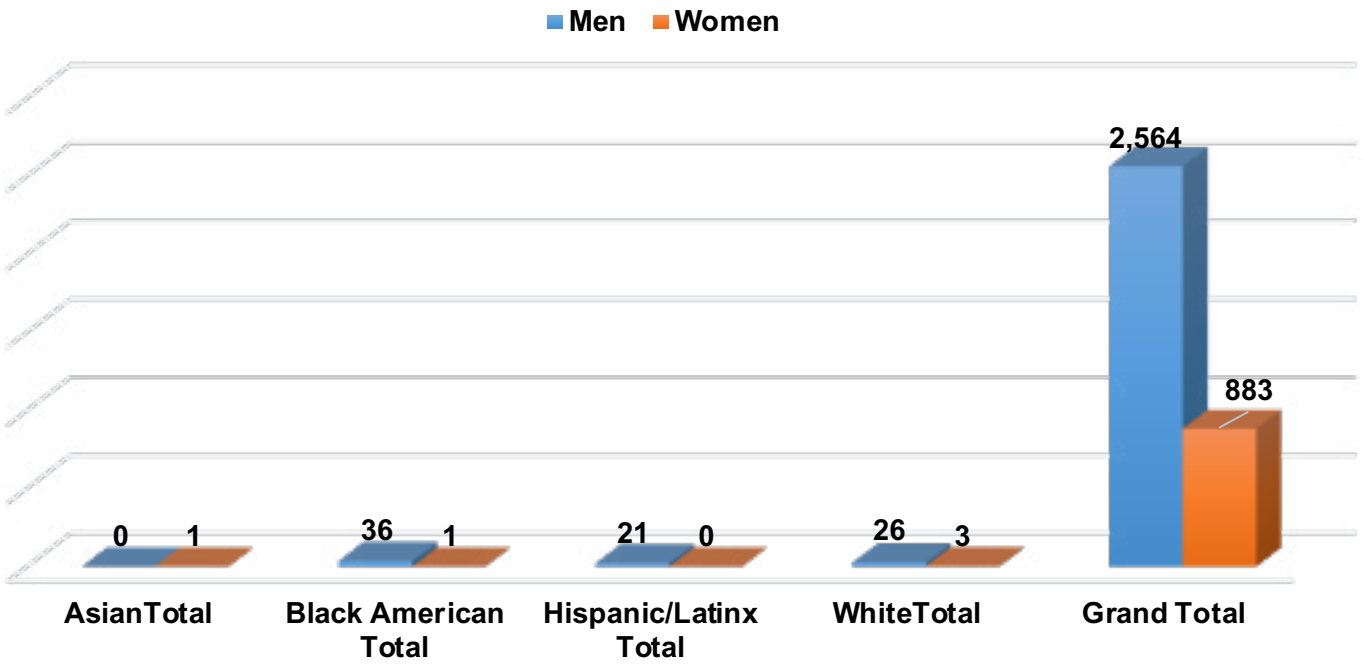


Figure 8-2

Engineering Degrees conferred by Race and Gender in Florida



Summary

In Florida, nearly five out of 10 institutions in 2015 were designated as Hispanic-serving institutions. Compared to other states with high Latinx populations, Florida had a relatively lower HSCC designation rate (33.86%). In a similar trend happening nationally, 74.4% of HSCCs in Florida were private-for-profits (Figure 1). Despite a higher proportion of non-HSCCs, HSCC institutions awarded 74% of the degrees to students of color as well as 70% of the STEM degrees conferred to students of color in Florida. Given these numbers, we can say that HSCCs play a key role in providing educational opportunities and pathways to students of color and women (Figure 9).

In general, women continue to be disproportionately underrepresented within the STEM fields, only receiving 29.8% of the STEM degrees conferred, despite earning more than 63% of the total degrees awarded in Florida. Of the total STEM degrees conferred to women (29.8%), approximately half of them were conferred to women of color. Specifically, 64% of Hispanic/Latinx women earned their STEM degrees at HSCCs. HSCCs continue to increase access and opportunity to students of colors, especially Latinx students and women of color. In the future, these institutional types will continue to play a significant role in the education of students of color as they work toward attaining STEM degrees.

Figure 9

2015 STEM Degrees Conferred (%) by Institutional Type and Race in Florida

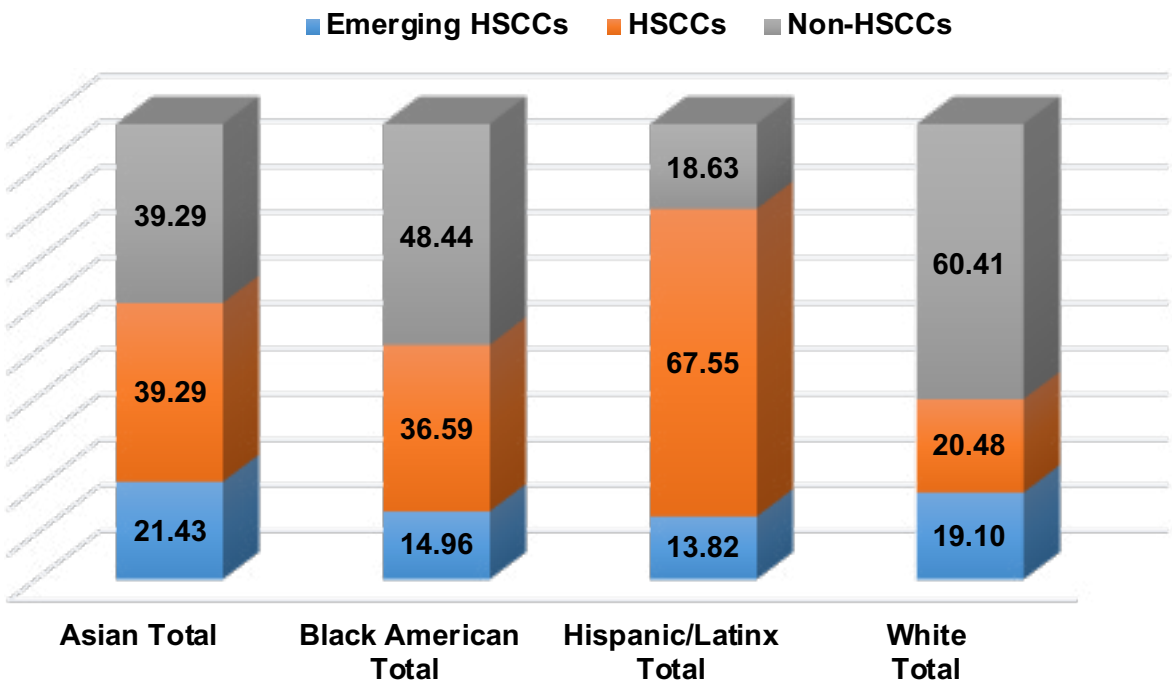
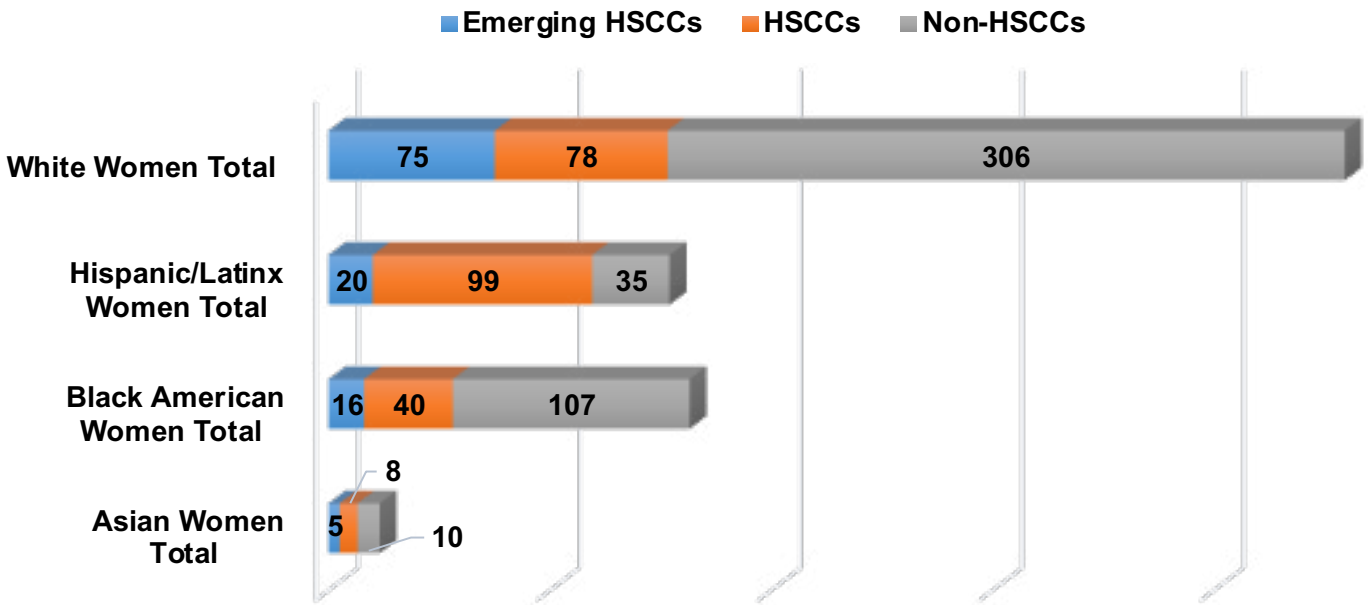


Figure 10

2015 STEM First Major Associate Degrees Conferred by Women and Institutional Type in Florida



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Notes.

1. Racial/ethnic categories in the data followed the IPEDS categories using their data collection and reports. The groups used to categorize are as follows: Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Hispanic, White, two or more races, race/ethnicity unknown, and nonresident alien. Among these, this research focused on four groups: Blacks or African Americans, Asian Americans, Hispanic Americans or Latinx, and White Americans. In addition, this research intentionally identified Black/African American and Hispanic as Latinx (i.e., gender nonconforming), and all groups included in this analysis reflect domestic racial/ethnic diversity, not international student enrollments.

2. The percentage of racial/ethnic groups within the figures and texts do not add up to 100% due to the exclusion of other racial/ethnic groups.

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