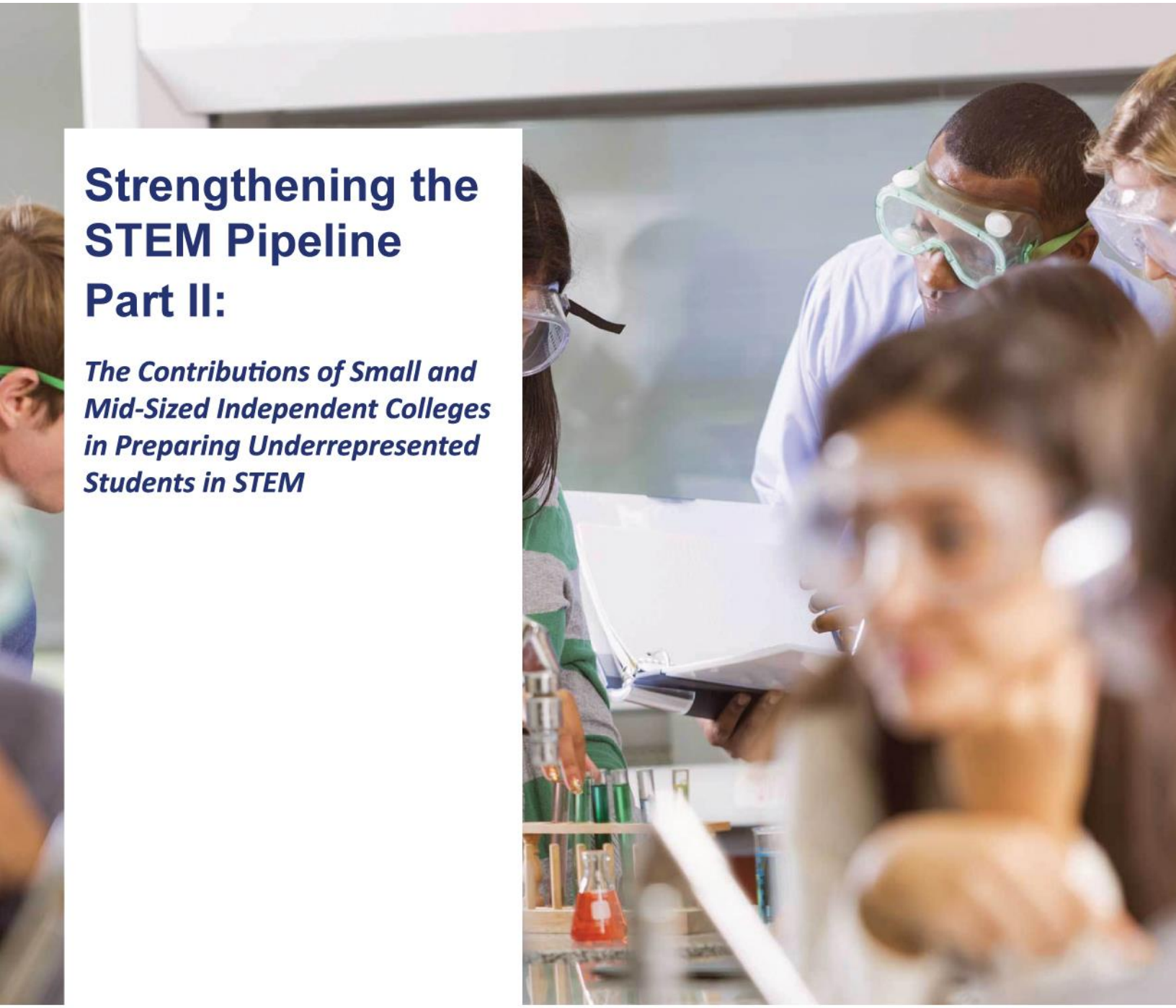

Strengthening the STEM Pipeline Part II:

The Contributions of Small and Mid-Sized Independent Colleges in Preparing Underrepresented Students in STEM

2019

Authored by NORC at the University of Chicago

The Council of Independent Colleges

NORC at the University of Chicago

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The Council of Independent Colleges (CIC) is an association of 768 nonprofit independent colleges and universities, state-based councils of independent colleges, and other higher education affiliates, that works to support college and university leadership, advance institutional excellence, and enhance public understanding of private higher education's contributions to society. CIC is the major national organization that focuses on providing services to leaders of independent colleges and universities. CIC offers conferences, seminars, and other programs that help institutions improve educational quality, administrative and financial performance, student outcomes, and institutional visibility. CIC conducts the largest annual conferences of college and university presidents and of chief academic officers in the United States. Founded in 1956, CIC is headquartered at One Dupont Circle in Washington, DC. For more information, visit *www.cic.edu*.

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Executive Summary

The 2014 Council of Independent Colleges (CIC) report *Strengthening the STEM Pipeline: The Contributions of Small and Mid-Sized Independent Colleges* demonstrated the critical role this sector of higher education institutions plays in preparing its students for success in obtaining undergraduate and graduate degrees in science, technology, engineering, and mathematics (STEM) fields. This report takes the research one step further to explore the role of small and mid-sized institutions in preparing individuals historically underrepresented in STEM fields—specifically, women, blacks or African Americans, and Latino/Latina graduates—for further study and research.

To address the research questions, bachelor's degree recipients from four major types of institutions—public nondoctoral, public doctoral, private nonprofit nondoctoral, and private nonprofit doctoral—were compared on several postsecondary education outcome indicators: persistence in undergraduate STEM programs, time-to-degree, post-baccalaureate employment and education outcomes, and earning a doctoral degree in a STEM field. The analysis was conducted using National Center for Education Statistics and National Science Foundation datasets that are nationally representative.

Private nonprofit nondoctoral colleges—the ones most closely representative of CIC—show the highest persistence rates among women, blacks, and Latinos/Latinas in STEM fields within five years of first baccalaureate enrollment when compared to similar students at other types of institutions. Almost eight of 10 women who obtain STEM bachelor's degrees from private nonprofit nondoctoral institutions graduate within four years, a rate that exceeds all other groups of students at all other types of institutions. The data show highly positive assessments of interactions with faculty at private nonprofit nondoctoral institutions among historically underrepresented groups. And graduates from these institutions express levels of satisfaction with their undergraduate educations second only to bachelor's degree recipients from private doctoral institutions.

Around 41 percent of graduates from private nonprofit nondoctoral institutions obtained graduate degrees, a higher rate of graduate degree attainment than from public institutions. Similar proportions of underrepresented minority STEM bachelor's recipients from private nondoctoral and public doctoral institutions held a graduate degree. In the realm of post-baccalaureate employment, approximately seven of 10 STEM bachelor's degree recipients from private nonprofit nondoctoral institutions were working in STEM or STEM-related occupations in 2015 (the most recent year for which data were available). This number is very similar to the 67 percent of STEM bachelor's holders from other types of institutions who were working in STEM or STEM-related fields.

Finally, the analysis explored the role of private nonprofit nondoctoral institutions in preparing their graduates to obtain research doctorate degrees in STEM fields. The analysis demonstrates the critical importance of the private nonprofit nondoctoral sector in preparing its graduates for STEM doctoral study, especially for women STEM graduates in chemistry, biology, life sciences, and physical sciences), fields in which the private nondoctoral sector excels as the training ground for future STEM doctorates granted to women.

Introduction

BACKGROUND

Over the last several decades, numerous reports have made the case for cultivating a strong science, technology, engineering, and mathematics (STEM) workforce to meet the challenges of economic competitiveness (National Science Foundation 1982; National Science Board 1986; National Academy of Sciences 2007, 2010; National Economic Council 2011). For the nation, STEM fields are widely considered the primary drivers of economic growth through innovation; for workers, STEM fields are the gateway to high-paying jobs of the future. The U.S. Department of Commerce reported that employment in STEM occupations grew much faster than employment in non-STEM occupations over the last decade (24 percent versus 4 percent, respectively), and the growth of STEM occupations is projected to continue to outpace non-STEM occupations in the decade to come (Noonan 2017). Thus, developing a "STEM-capable" workforce is critical to sustaining the nation's competitive advantage in an increasingly tech-driven global economy (National Science Board 2018). Efforts abound to support research, policy, education, and training toward strengthening the nation's STEM capacity.

In 2014, CIC released the report *Strengthening the STEM Pipeline: The Contributions of Small and Mid-Sized Independent Colleges*. This investigation offered important insights about pathways to success in STEM higher education by examining national data to uncover contributions across sectors of four-year institutions. CIC researchers found that relative to other sectors, small and mid-sized independent colleges make substantial contributions in preparing students in STEM fields, particularly as indicated by such measures as:

- Persistence and undergraduate degree completion rates in STEM fields
- Time-to-bachelor's degree in STEM fields
- Enrollment in graduate school following STEM bachelor's degree completion
- Production of baccalaureates who go on to earn STEM doctorate degrees

Underrepresented Groups in STEM

A crucial feature of a strong U.S. STEM workforce is that it fully leverages the nation's innovative capacity by engaging all segments of the population, including groups that have traditionally been underrepresented in STEM fields (National Science Board 2018). The National Academies of Sciences, Engineering, and Medicine (2011) outlined several reasons why a strategy for increasing participation of underrepresented groups in STEM fields is fundamental to sustaining U.S. economic competitiveness. Other reports insist that an excellent and effective STEM education system must serve all students well (e.g., National Academies of Sciences, Engineering, and Medicine 2011).

Yet scholars at the University of California, Los Angeles (UCLA) examined the STEM pathways of students who start their postsecondary education in four-year institutions and found that while interest in majoring in STEM fields has increased to the highest levels in more than 40 years, STEM bachelor's degree completion rates have stagnated and racial disparities persist (Eagan et al. 2014). Specifically, 52 percent of Asian American and 43 percent of white STEM aspirants complete a STEM

bachelor's degree in six years, compared to only 29 percent of Latino/Latina and 22 percent of black STEM aspirants (Eagan et al. 2014). The National Science Board (2018) reported that Latinos/Latinas, blacks, and American Indians or Alaska Natives together make up 27 percent of the age 21 and older U.S. population, but only 15 percent of those whose highest degree is in STEM and only 11 percent of STEM workers.

Along the same lines, women earn about half of all STEM degrees, but their participation varies across fields. It is particularly low in high-demand fields such as computer science and engineering. Moreover, though women hold about half of all jobs in the U.S. workforce, they hold fewer than 28 percent of STEM jobs (National Science Board 2018). Thus, the persistent underrepresentation of women, African Americans, Latinos/Latinas, and other groups in STEM education and the workforce calls for robust efforts to support and expand viable pathways for increasing participation.

APPROACH

Building upon CIC's earlier findings about the contributions of small and mid-sized colleges and universities in preparing students in STEM, this investigation incorporates new data and disaggregates analyses to more deeply examine outcomes for women and underrepresented minorities. In particular, this study examines national data collected by the U.S. Department of Education and the National Science Foundation to offer insights about key transitions along students' STEM trajectories by addressing the following research questions:

1. How do small and mid-sized independent colleges and universities compare with other types of institutions in terms of students' persistence to an undergraduate STEM degree after entrance into a STEM field of study?
2. How do bachelor's degree recipients from small and mid-sized independent colleges and universities compare with graduates from other types of institutions in their time-to-degree in the STEM fields?
3. How do bachelor's degree recipients from small and mid-sized independent colleges and universities fare in terms of post-baccalaureate employment and education outcomes?
4. How do small and mid-sized independent colleges and universities fare in preparing undergraduates who later earn doctoral degrees in STEM fields?

Our research relies on descriptive analyses to address each research question and compare results for private nonprofit nondoctoral institutions (i.e., small and mid-sized independent colleges and universities) with three other types of four-year institutions: public nondoctoral, public doctoral, and private nonprofit doctoral institutions. All of the analyses are weighted so that the findings represent the population of interest[1].

[1] For the purposes of this research, the authors selected the data in the exhibits, which display a subset of the information presented in the Appendices, to specifically highlight outcomes for women, blacks, and Latinos/Latinas.

Undergraduate STEM Degree Production

PERSISTENCE IN STEM AND INTERACTIONS WITH FACULTY

Following CIC's approach in 2014, researchers for the current study addressed the first research question by analyzing the persistence patterns of undergraduate STEM students using data from the National Center for Education Statistics' (NCES) Beginning Postsecondary Students Longitudinal Study (BPS). BPS follows nationally representative cohorts of students enrolled in their first year of postsecondary education and collects data on course-taking, persistence and completion, transition to employment, demographic characteristics, and other indicators (Hill et al. 2016). The most recently completed BPS cohort, BPS: 04/09, consisted of 16,700 sample members who were originally surveyed at the end of their first academic year (2003–2004) and were invited to participate in follow-up surveys at the end of their third (2005–2006) and sixth (2008–2009) years after starting postsecondary education. The current BPS cohort, BPS: 12/17, consists of 37,170 sample members who were initially surveyed in 2011–2012, with follow-ups in 2013–2014 and 2016–2017 (Hill et al. 2016).

Researchers used data from both BPS cohorts to examine persistence of underrepresented students in STEM fields. However, due to differences in the survey questionnaire administered to the BPS 04/09 and BPS 12/17 cohorts, researchers used slightly different analytic approaches[2] for each cohort. Drawing on BPS 04/09, researchers examined the extent to which students who had enrolled in a STEM field between 2003 and 2009 persisted in STEM as of spring 2009, disaggregating the results by institution type in 2003–2004 and by selected demographic characteristics.

Table 1 shows that students who started in public nondoctoral institutions had the lowest rates of persistence in STEM overall (43 percent), compared to public doctoral institutions (52 percent), private nondoctoral (56 percent), and private doctoral institutions (58 percent). Disaggregating the distribution shows that 61 percent of women who started in private nondoctoral four-year institutions persisted in STEM fields as of 2009, the highest rate for women across the institutional sectors. Fifty-eight percent of Latino/Latina undergraduates who started in private nondoctoral institutions persisted in STEM, compared to 40 percent of those who started at public nondoctoral institutions and 52 percent of those starting in public doctoral institutions. Table 1 also shows that among black undergraduates, the percentage who persisted in STEM fields after starting their education at private nondoctoral institutions was higher than those who enrolled at public nondoctoral and public doctoral institutions (45, 16, and 35 percent, respectively). Moreover, 17 percent of black STEM students who started at private nondoctoral institutions left postsecondary education without a degree, compared to 40 percent of those at public nondoctoral institutions, 26 percent of those at public doctoral institutions, and 31 percent of those at private doctoral institutions (Table 1).

[2] The approach examining STEM persistence with BPS 04/09 used the variable STEMCHG, which is derived from 11 other BPS variables and indicates whether a respondent who entered a STEM field between 2003 and 2009 persisted in or left STEM as of spring 2009. This variable was not available in BPS 12/17.

Table 1. Persistence in STEM field of first-time 2003–2004 postsecondary students as of 2009, by sector of first institution and selected demographic characteristics

Institutional sector and demographic characteristic	Left postsecondary education with no degree (%)	Changed to non-STEM field (%)	Stayed in STEM field (%)
All public nondoctoral	**27.9**	**29.6**	**42.5**
Male	30.7	26.0	43.3
Female	22.0	37.1	40.9
Latino/Latina	21.6	38.7	39.7
Black or African American	39.9	44.1	16.1
All public doctoral	**17.0**	**30.7**	**52.4**
Male	20.5	26.4	53.1
Female	11.0	37.9	51.1
Latino/Latina	16.8	30.9	52.2
Black or African American	26.1	38.7	35.2
All private nonprofit nondoctoral	**18.6**	**25.5**	**55.9**
Male	21.6	26.2	52.2
Female	14.4	24.3	61.3
Latino/Latina	27.8	14.3	57.9
Black or African American	16.8	38.6	44.6
All private nonprofit doctoral	**15.6**	**26.0**	**58.3**
Male	17.9	23.6	58.5
Female	11.9	30.0	58.1
Latino/Latina	‡	‡	‡
Black or African American	30.6	23.6	45.8

‡Reporting standards not met

Source: U.S. Department of Education, National Center for Education Statistics, 2003–04 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS: 04/09).

Drawing on the more recent cohort, BPS 12/17, researchers examined the enrollment status of students who had declared STEM majors during their first year (2011–2012), considering their last field of study three years after starting their postsecondary education. Table 2 shows that at this point, roughly 70 percent of students from private institutions (both nondoctoral and doctoral) and public doctoral institutions reported being enrolled in a STEM field, compared to 65 percent of those from public nondoctoral institutions. Breaking these results out by gender, 67 percent of women enrolled in private nondoctoral institutions were still in STEM fields, roughly the same percentage that persisted from private doctoral institutions. By comparison, 61 and 60 percent of women from public nondoctoral and public doctoral colleges and universities remained in STEM majors at this point (Table 2).

Table 2. Persistence in STEM of first-time postsecondary students with a STEM major in 2011–2012 after three years, by sector of first institution and selected demographics

Bachelor's degree institutional sector and demographic characteristic	Field of Study Last Enrolled (June 2014)		
	Undeclared	STEM	Other field
All public nondoctoral (%)	**7.5**	**64.7**	**27.8**
Male	7.8	66.6	25.6
Female	6.7	60.5	32.8
Latino/Latina	4.8	84.7	10.5
Black or African American	‡	54.2	39.8
All public doctoral (%)	**2.0**	**71.2**	**26.8**
Male	2.2	77.1	20.7
Female	1.7	60.4	37.9
Latino/Latina	‡	64.7	34.8
Black or African American	‡	66.1	31.8
All private nonprofit nondoctoral (%)	**7.2**	**69.7**	**23.1**
Male	9.1	71.7	19.2
Female	4.0	66.5	29.5
Latino/Latina	‡	‡	‡
Black or African American	30.7	52.0	17.2
All private nonprofit doctoral (%)	**2.5**	**70.3**	**27.2**
Male	3.9	74.6	21.5
Female	1.2	66.6	32.2
Latino/Latina	‡	68.6	24.8
Black or African American	‡	55.7	44.3

‡Reporting standards not met.
Source: U.S. Department of Education, National Center for Education Statistics, 2011–12 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS: 12/17).

Table 3[3] also presents persistence patterns for STEM majors in BPS: 12/17. In contrast to Table 2 that focused on persistence in STEM fields, the table shows the extent to which students who had declared STEM majors in their first year were still enrolled in their first postsecondary institution at the end of their third year. Data for private nonprofit nondoctoral institutions reveal that while six of 10 students remain enrolled at same institutions, about 17 percent opt to transfer to other institutions. This transfer rate exceeds that of all other institution types. Another finding worthy of more detailed research is the estimate that 62 percent of African American undergraduates left

[3] In this table, data reported on ethnic and racial minority students should be interpreted with caution as coefficients of variation are more than 30 percent in some cases.

private nonprofit nondoctoral institutions without a degree. However, this finding should be interpreted with caution given the large coefficient of variation associated with it.

Table 3. Persistence in first institution through June 2014 for students who declared a STEM major by 2011–2012

Institutional sector and demographic characteristic	Summer 2014 Status		
	No degree, still enrolled (%)	No degree, transferred (%)	No degree, left without return (%)
All public nondoctoral (%)	**42.9**	**13.4**	**42.6**
Male	41.6	10.5	46.7
Female	45.9	19.7	33.6
Latino/Latina	34.9	‡	61.3
Black or African American	‡	‡	‡
All public doctoral (%)	**78.1**	**12.6**	**7.3**
Male	78.2	12.1	8.2
Female	77.8	13.6	5.7
Latino/Latina	77.4	15.9	5.7
Black or African American	71.0	16.1	12.9
All private nonprofit nondoctoral (%)	**60.0**	**16.8**	**17.6**
Male	55.5	11.8	25.6
Female	67.0	24.9	4.8
Latino/Latina	‡	‡	‡
Black or African American	21.8	16.4	61.8
All private nonprofit doctoral (%)	**78.8**	**11.9**	**7.2**
Male	78.2	11.0	7.7
Female	79.2	12.6	6.7
Latino/Latina	72.5	20.1	7.4
Black or African American	66.2	21.7	11.2

‡Reporting standards not met

Source: U.S. Department of Education, National Center for Education Statistics, 2011–12 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS: 12/17).

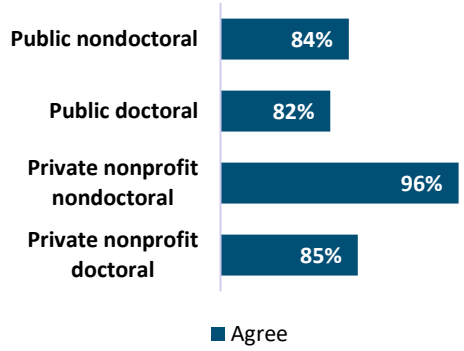
In addition to persistence in STEM fields, researchers used the BPS to examine students' reported interactions with faculty. In particular, researchers summarized students' perceptions of whether their interactions with teachers at their first institution were more positive than negative. Table 4 shows that 94 percent of STEM students enrolled at private nondoctoral institutions agreed that their interactions with faculty at their first institutions were more positive than negative, compared to 81 percent of those in public nondoctoral, 85 percent in public doctoral, and 88 percent in private doctoral institutions. Moreover, female STEM majors at private nondoctoral institutions expressed particularly high agreement that interactions with faculty were more positive than negative. Specifically, 96 percent of women STEM majors at private nondoctoral institutions reported positive interactions with faculty, compared to 84 percent at public nondoctoral, 82 percent at public doctoral, and 85 percent at private doctoral institutions (Table 4, Exhibit 1).

Table 4. Interactions with faculty more positive than negative for STEM students, by sector of first institution and selected demographics

Institutional sector and demographic characteristic	Agree	Neither agree nor disagree	Disagree
All public nondoctoral (%)	**81.1**	**10.5**	**8.4**
Male	79.9	10.9	9.2
Female	83.7	9.6	6.7
Latino/Latina	82.8	13.4	‡
Black or African American	83.5	8.9	‡
All public doctoral (%)	**85.1**	**11.1**	**3.8**
Male	86.8	10.2	3.0
Female	82.0	12.8	5.2
Latino/Latina	82.4	13.5	‡
Black or African American	89.1	10.3	‡
All private nonprofit nondoctoral (%)	**94.1**	**4.0**	**1.9**
Male	92.9	6.0	‡
Female	96.1	‡	‡
Latino/Latina	‡	‡	‡
Black or African American	87.7	‡	‡
All private nonprofit doctoral (%)	**87.7**	**8.8**	**3.5**
Male	90.5	6.6	2.9
Female	85.1	10.8	4.1
Latino/Latina	83.8	8.7	‡
Black or African American	89.7	‡	‡

‡Reporting standards not met.
Source: U.S. Department of Education, National Center for Education Statistics, 2011–12 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS: 12/17).

Exhibit 1. Interactions with faculty more positive than negative for women STEM students, by sector of first institution



TIME-TO-BACHELOR'S DEGREE IN STEM FIELDS AND SATISFACTION WITH UNDERGRADUATE EDUCATION

Researchers addressed the second research question by analyzing the time-to-degree patterns of undergraduate STEM students using data from the NCES Baccalaureate and Beyond Longitudinal Study (B&B). B&B follows nationally representative cohorts of bachelor's degree recipients to examine their postbaccalaureate education and work experiences, including such indicators as workforce participation, income and debt repayment, and entry into and persistence through graduate school programs (Cominole, Shepherd, and Siegel 2015). The most recent B&B cohort was drawn from individuals who received bachelor's degrees during the 2007–2008 academic year. The second follow-up study of this cohort, B&B: 08/12, included approximately 17,160 sample members who were surveyed four years after graduation (Cominole, Shepherd, and Siegel 2015).

Similar to CIC's approach in 2014, researchers examined the time (in months) from initial enrollment in higher education to STEM bachelor's degree completion across institutional sectors but disaggregated the results to uncover potential differences in outcomes for women and underrepresented minorities. Table 5 shows that, overall, 64 percent of STEM bachelor's degree recipients who attended private nondoctoral colleges and universities completed their degrees in four years or less, compared to 24 percent of those who attended public nondoctoral, 42 percent who attended public doctoral, and 65 percent who attended private doctoral institutions.

Disaggregating these results by gender, 78 percent of STEM baccalaureate women who attended private nondoctoral colleges and universities completed their bachelor's degrees in four years or less, compared to 23 percent at public nondoctoral, 50 percent at public doctoral, and 67 percent at private doctoral institutions. Among Latino/Latina STEM baccalaureates, 30 percent completed their degree in four years or less at private nondoctoral colleges and universities, compared to 6 percent at public nondoctoral and 33 percent at public doctoral institutions. Thirty-seven percent of black STEM baccalaureates completed their degree in four years or less at private nondoctoral institutions, compared to 6 percent at public nondoctoral, 38 percent at public doctoral, and 64 percent at private doctoral institutions.

Table 5. Time to 2007–2008 bachelor's degree in STEM fields by bachelor's degree institutional sector and demographic characteristic

Institutional sector and demographic characteristic	Number of Months to STEM Bachelor's Degree			
	48 months or less	49-60 months	61-72 months	More than 72 months
All public nondoctoral (%)	**24.0**	**33.3**	**10.7**	**32.0**
Male	24.4	33.8	8.2	33.6
Female	23.4	32.4	15.1	29.2
Latino/Latina	5.8	40.8	12.8	40.6
Black or African American	5.8	29.3	‡	62.4
All public doctoral (%)	**41.7**	**30.1**	**12.1**	**16.2**
Male	38.0	33.5	11.5	17.1
Female	49.9	22.5	13.3	14.2
Latino/Latina	32.6	31.3	15.5	20.6
Black or African American	38.3	18.8	9.3	33.6
All private nonprofit nondoctoral (%)	**63.6**	**18.1**	**2.4**	**16.0**
Male	50.1	24.7	3.3	22.0
Female	77.7	11.2	1.4	9.8
Latino/Latina	30.4	21.6	6.8	41.2
Black or African American	36.7	33.3	‡	30.0
All private nonprofit doctoral (%)	**65.0**	**19.4**	**5.3**	**10.3**
Male	63.6	22.1	3.1	11.2
Female	67.1	15.6	8.4	8.9
Latino/Latina	52.6	30.7	6.7	9.9
Black or African American	63.8	10.0	21.4	4.7

‡Reporting standards not met

Source: U.S. Department of Education, National Center for Education Statistics, 2007–08 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (BPS: 08/12).

In addition to time-to-degree completion, researchers used the B&B to explore STEM graduates' reported satisfaction with the quality of their undergraduate education. Table 6 shows that 94 percent of STEM baccalaureates who attended private nondoctoral colleges and universities were satisfied with the quality of their education, compared to 90 percent who attended public nondoctoral, 92 percent who attended public doctoral, and 95 percent who attended private doctoral institutions. Women STEM baccalaureates who attended private nondoctoral institutions were satisfied with their undergraduate education at a rate of 95 percent, compared to 93 percent of those who attended public nondoctoral, 92 percent from public doctoral, and 97 percent from private doctoral institutions. Nearly all black STEM bachelor's degree recipients and 90 percent of Latino/Latina STEM graduates who attended private nondoctoral institutions were satisfied with their undergraduate education (Table 6, Exhibit 2).

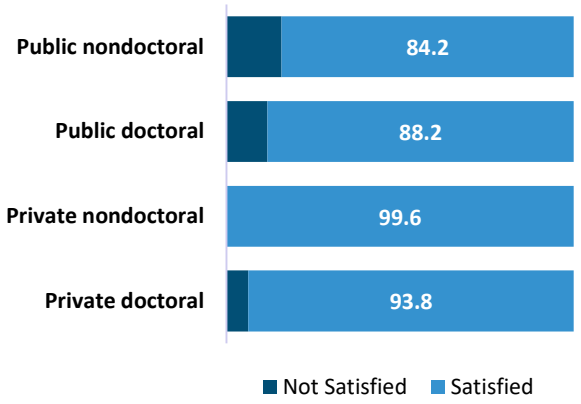
Table 6. 2012 satisfaction with quality of undergraduate education of 2007–2008 bachelor's degree recipients in STEM fields

Institutional sector and demographic characteristic	Not satisfied (%)	Satisfied (%)
All public nondoctoral	**10.1**	**89.9**
Male	12.1	87.9
Female	7.0	93.0
Latino/Latina	21.8	78.2
Black or African American	15.8	84.2
All public doctoral	**7.6**	**92.4**
Male	7.2	92.8
Female	8.5	91.5
Latino/Latina	0.5	99.5
Black or African American	11.8	88.2
All private nonprofit nondoctoral	**6.2**	**93.8**
Male	6.9	93.1
Female	5.4	94.6
Latino/Latina	10.2	89.8
Black or African American	‡	99.6
All private nonprofit doctoral	**4.6**	**95.4**
Male	5.7	94.3
Female	2.7	97.3
Latino/Latina	‡	99.9
Black or African American	6.2	93.8

‡Reporting standards not met

Source: U.S. Department of Education, National Center for Education Statistics, 2007–08 Baccalaureate and Beyond Longitudinal Study, Second Follow-up (BPS: 08/12).

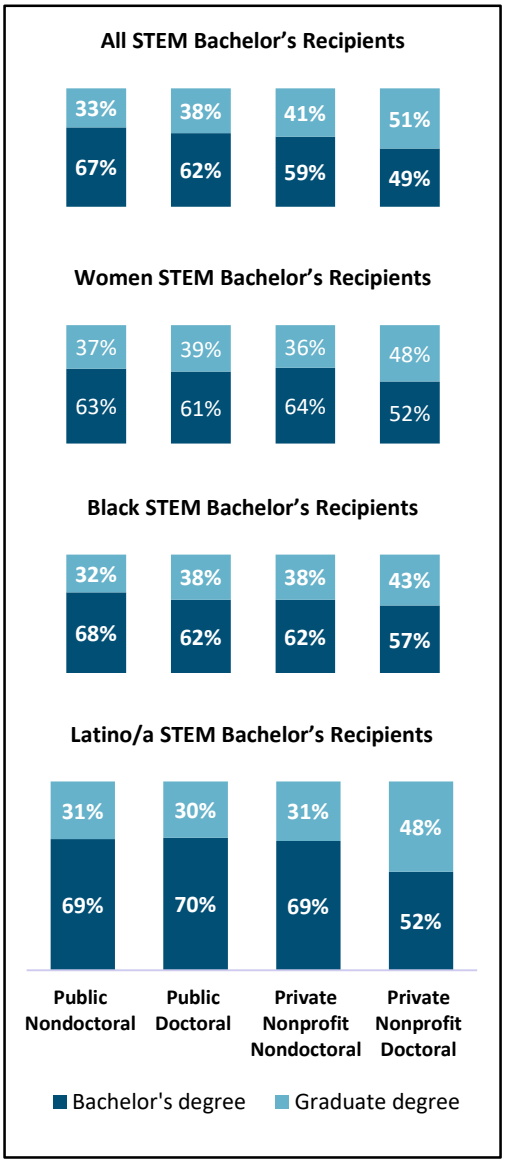
Exhibit 2. Percentage of Black STEM baccalaureates' satisfaction with quality of undergraduate education



Post-baccalaureate Outcomes of STEM Graduates

Our third and fourth research questions addressed the post-baccalaureate outcomes of STEM graduates, both with respect to their employment and with respect to their pursuit for graduate study. Researchers drew data from two surveys conducted by the National Science Foundation's National Center for Science and Engineering Statistics to examine the post-baccalaureate trajectories of STEM graduates who earned bachelor's degrees at small and mid-sized private colleges relative to graduates from other institution types. Researchers used the National Survey of College Graduates to investigate the graduate education and employment outcomes of STEM bachelor's degree recipients, and the Survey of Earned Doctorates to understand the bachelor's degree origins of STEM doctoral degree recipients.

Exhibit 3. Highest degree completed of STEM baccalaureates, by bachelor's degree sector and demographics: 2015



GRADUATE DEGREE COMPLETION AND EMPLOYMENT

Graduate Education

Data from the 2015 National Survey of College Graduates (NSCG) provided insight into STEM bachelor's degree recipients' graduate degree completion and employment characteristics. The NSCG is a biennial longitudinal survey conducted since 1972 that samples college graduates under age 76 living in the United States, with particular attention to those in the science and engineering workforce (National Science Foundation 2019a). The 2015 cycle of NSCG, the most recent available at the time of analysis, includes 135,000 sample cases with a weighted response rate of 70 percent.

The first step considered the highest degree completed among STEM bachelor's degree recipients, irrespective of the field of graduate study. Exhibit 3 shows that 41 percent of STEM graduates from private nondoctoral colleges and universities held a graduate degree (i.e., master's or doctorate) in 2015. By comparison, 33 percent of STEM graduates from public nondoctoral institutions and 38 percent from public doctoral institutions held a graduate degree. Similar proportions of women STEM bachelor's recipients from nondoctoral and public doctoral institutions held graduate degrees. Likewise, similar proportions of underrepresented minority STEM bachelor's recipients from private

nondoctoral and public doctoral institutions held a graduate degree (Exhibit 3, based on data reported in Appendix Table A1). Appendix Table A1 provides more results from the analysis of degree completion by years since STEM bachelor's degree, baccalaureate institution sector, and demographics. For example, 49 percent of mid-career individuals who received their STEM bachelor's degree from private nondoctoral institutions 11-20 years prior to the survey reference date held graduate degrees. Among this same group, 35 percent of those from public nondoctoral institutions, 43 percent from public doctoral institutions, and 53 percent from private doctoral institutions held graduate degrees (Appendix Table A1).

To further unpack graduate education outcomes, analysis focused on the extent to which STEM bachelor's degree recipients completed an advanced degree in a STEM field. Those data are reported in Table 7, which shows that 29 percent of individuals who received their STEM bachelor's degree from a private nondoctoral college or university held an advanced STEM degree in 2015, compared to 23 percent of those from public nondoctoral, 27 percent from public doctoral, and 39 percent from private doctoral institutions.

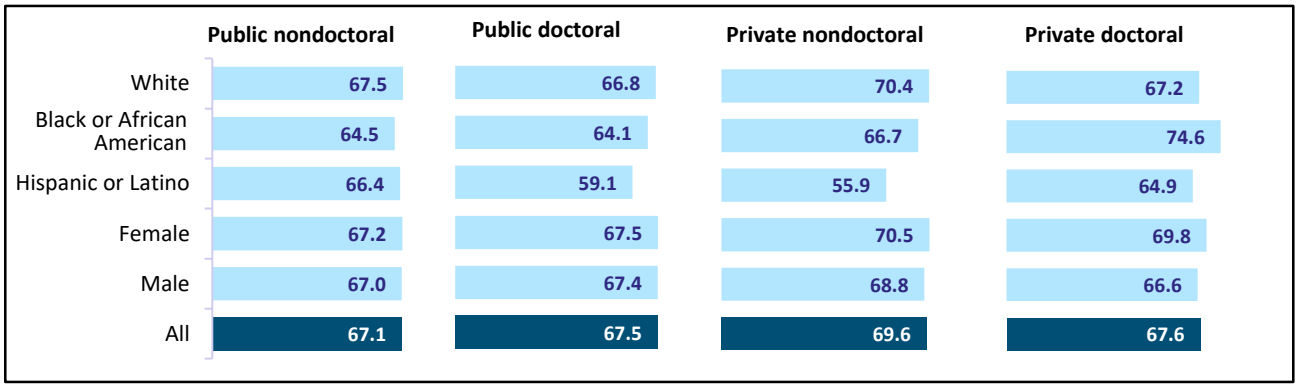
Table 7. Percentage of STEM bachelor's degree recipients with an advanced STEM degree, by years since bachelor's degree, bachelor's degree institution sector, and demographic characteristics: 2015

	Advanced STEM Degree (%)			
Bachelor's Degree Institutional sector and demographic characteristic	All years since bachelor's	10 > years since bachelor's	11-20 years since bachelor's	20 < years since bachelor's
All public nondoctoral (%)	**22.6**	**16.6**	**23.1**	**25.8**
Male	19.8	13.7	19.2	23.0
Female	25.8	19.3	27.2	29.5
Latino/Latina	20.9	13.3	27.6	25.3
Black or African American	20.7	16.5	26.3	19.6
White	23.3	18.0	21.5	26.6
All public doctoral (%)	**26.8**	**20.3**	**31.0**	**28.2**
Male	26.3	19.9	27.2	28.4
Female	27.7	20.7	35.6	27.7
Latino/Latina	22.4	13.0	28.0	32.9
Black or African American	22.5	9.5	30.8	27.8
White	26.9	21.9	30.6	27.5
All private nonprofit nondoctoral (%)	**29.1**	**21.4**	**33.2**	**31.4**
Male	32.7	27.8	31.5	35.3
Female	26.1	16.8	34.3	27.4
Latino/Latina	22.9	17.4	16.1	34.9
Black or African American	24.7	20.9	24.4	27.6
White	29.8	21.9	35.3	31.1
All private nonprofit doctoral (%)	**38.9**	**27.1**	**40.5**	**43.3**
Male	39.9	27.8	39.5	43.9
Female	37.2	26.3	42.1	42.1
Latino/Latina	37.6	27.8	37.2	48.4
Black or African American	33.4	25.8	26.7	39.5
White	38.7	23.7	41.5	42.7

Source: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates.

The employment outcomes of STEM bachelor's degree recipients provide important insights about the contributions of small and mid-sized independent colleges and universities in preparing underrepresented students for STEM careers. Appendix Tables A2 and A3 present a set of employment analyses—including employment status, occupation type and employment sector. Exhibit 4, which displays a subset of the information presented in Appendix Table A2, shows that 70 percent of employed bachelor's degree recipients who had attended private nondoctoral institutions and were working in STEM or STEM-related occupations in 2015. Similar percentages of STEM graduates from other institutional sectors worked in STEM or STEM-related occupations. Seventy-one percent of women and 67 percent of blacks who received STEM bachelor's degrees from private nondoctoral colleges and universities worked in STEM and STEM-related occupations, compared to 68 percent of women and 64 percent of blacks who received bachelor's degrees from public doctoral institutions (Exhibit 4).

Exhibit 4. Percentage of employed STEM bachelor's degree recipients who were working in a STEM or STEM-related occupation by bachelor's degree institution sector and demographics: 2015



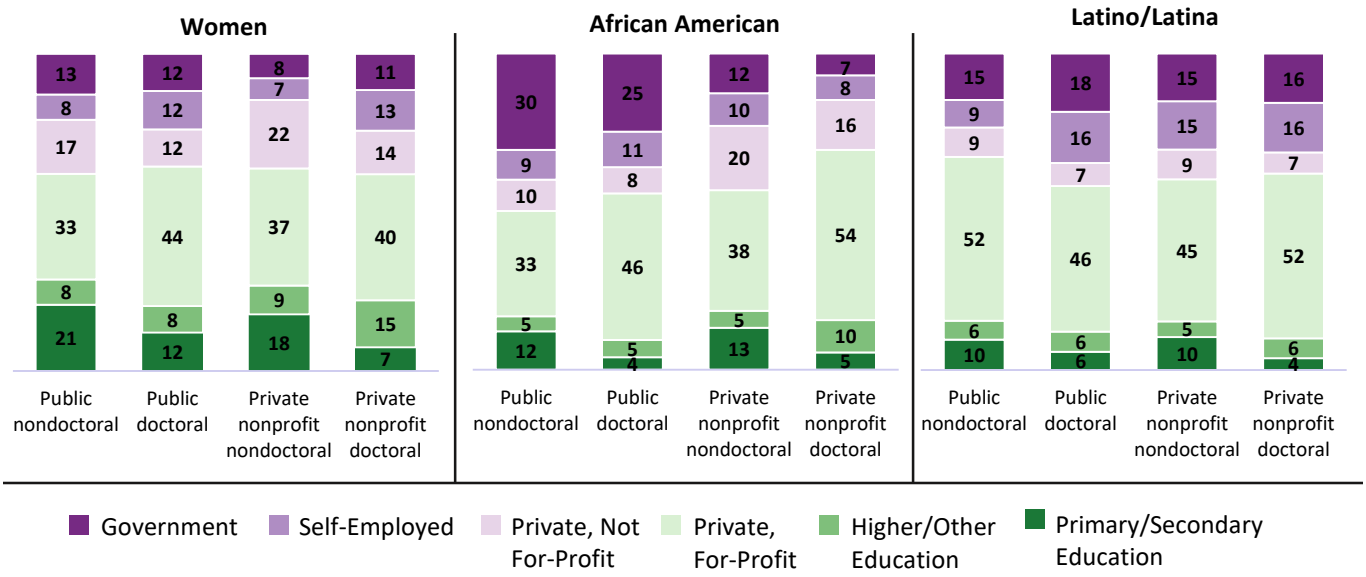
Employment Outcomes

Analyzing the employment sectors of full-time employed STEM bachelor's degree recipients provides additional context for understanding the contributions of small and mid-sized private colleges and universities. Exhibit 5, based on data reported in Appendix Table A3, shows that graduates from private nondoctoral colleges and universities tend to be more highly represented in the non-profit and education sectors than are graduates of other types of institutions. Around one in five female and/or African American STEM bachelors' degree holders from private nonprofit nondoctoral institutions worked in the private non-profit sector in 2015. When compared across institution types, it is clear that while the largest percentage of those employed in higher/other education are graduates of private nonprofit doctoral institutions (11%), a higher proportion of graduates of private nonprofit nondoctoral institutions work in higher/other education as compared to graduates from public nondoctoral and doctoral institutions.

The percentages of female STEM baccalaureates working in the private, for-profit sector are roughly comparable across institution types. Women from public doctoral institutions are more likely to work in the private for-profit sector (44 percent) compared to 37 percent from private nonprofit nondoctoral institutions or 40 percent from private nonprofit doctoral institutions. In contrast, the data show that black graduates of private doctoral institutions work in the private for-profit sector at

higher rates (54 percent) than do graduates from other institution types. Latino/Latina graduates from private nonprofit doctoral institutions and public nondoctoral institutions work in the private for-profit sector at equal rates, 52 percent. Blacks and women from private nonprofit nondoctoral and private nonprofit doctoral institutions are employed at higher rates at private, not-for-profit companies compared to Latinos/Latinas.

Exhibit 5. Percentage of STEM bachelor's degree recipients with full-time jobs by **employment sector,** bachelor's degree institutional sector, and demographics: 2015



DOCTORAL DEGREE RECIPIENTS IN STEM FIELDS

To answer the fourth research question on the baccalaureate origins of STEM doctorate recipients, the analysis turned to the Survey of Earned Doctorates (SED). SED is an annual census of all individuals who receive a research doctorate from a U.S. institution in a given academic year, conducted since 1957. The SED collects information from doctoral recipients about their educational history, demographic characteristics, and post-graduation plans (National Science Foundation 2019b).

The scatterplots in the exhibits that follow visualize doctorate degree holders in STEM fields from the point of view of their two major degree milestones: first, the number of bachelor's degrees in STEM fields, derived from institution-level data on baccalaureate completions between 1998 and 2007 from the U.S. Department of Education's Integrated Postsecondary Education Data System and second, the number of STEM research doctorates, per baccalaureate institution, from the SED. These statistics combine to create an institutional-yield ratio, which is the number of STEM doctorate recipients per 100 bachelor's degrees awarded in STEM fields nine years earlier. The yield ratio normalizes comparisons across institutions so as to remove the impact of institution size. Only institutions from which 50 or more baccalaureate recipients received STEM doctorate degrees between 2007 and 2016 were included in the analysis. Institutions in the charts that follow, as well as the full tables that are included in the Appendix, are ranked on unrounded ratios. Appendix tables are designed to display the "top 100 institutions" for each combination of STEM baccalaureate and doctorate institutions.

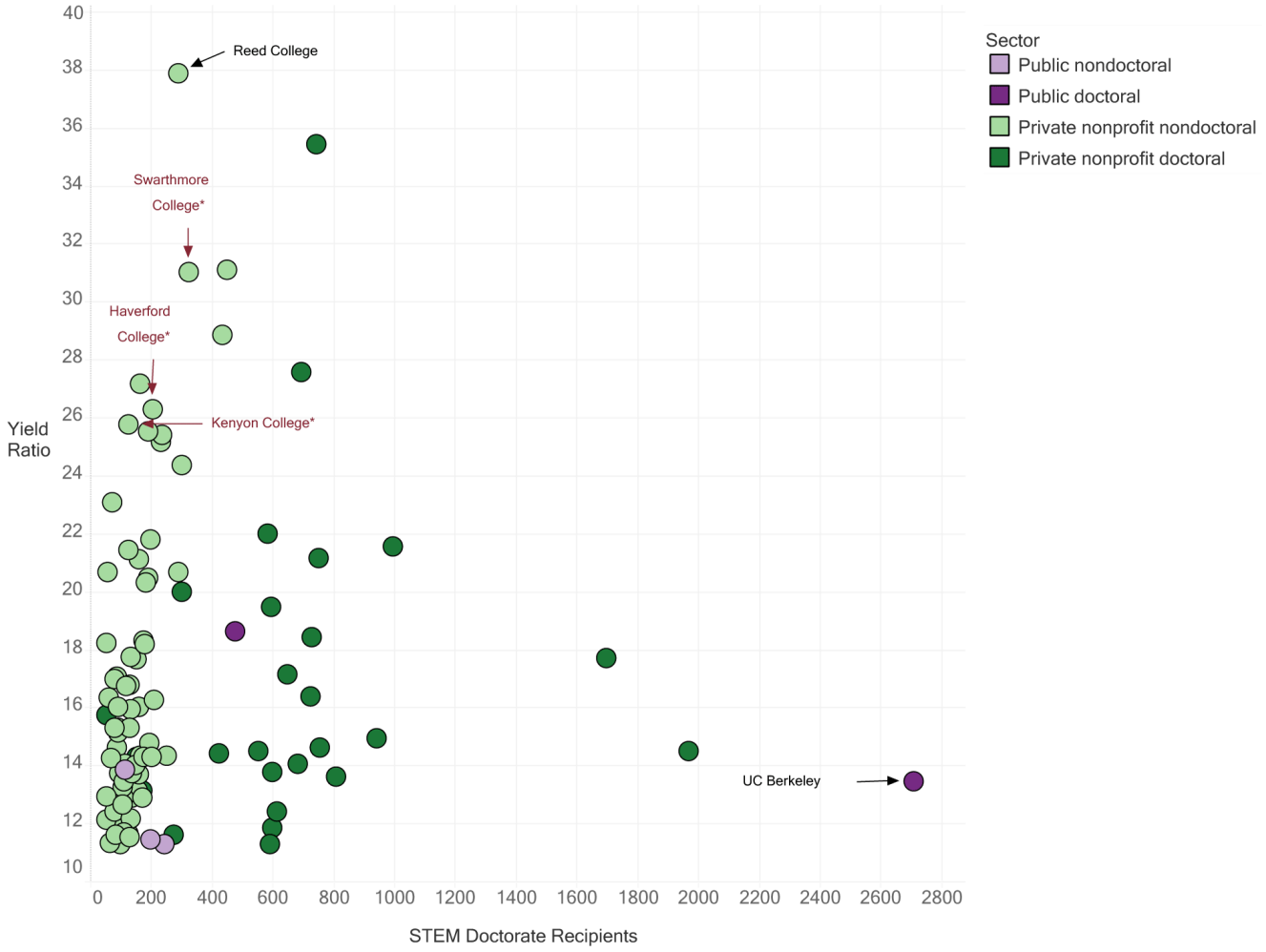
However, in cases where fewer than 100 institutions met the minimum threshold for data display (as reported in each table's notes), only the number of institutions meeting the threshold is listed. In cases where no institution met the threshold for display, asterisks only appear in the tables.

Appendix Table A4 reports the distribution of 2007–2016 STEM research doctorates by the four institution types (public nondoctoral, public doctoral, private nonprofit nondoctoral, private nonprofit doctoral), with counts broken by gender and race/ethnicity.

Exhibits 6-9[4] graphically depict the top 100 U.S. baccalaureate institutions that provide the pipeline for STEM research doctorates, with a special emphasis on the pipeline for women, African Americans, and Latinos/Latinas. The graphs array the baccalaureate institutional-yield rate along the vertical axis, with the 10-year total of research doctorate graduates from the same institutions graphed along the horizontal axis. In this way, the importance of small and mid-sized private nondoctoral institutions in producing STEM doctorates can be observed. Exhibit 6 highlights two outliers—Reed College and the University of California at Berkeley—to demonstrate the relationship between the two variables. Reed, while having many fewer graduates who obtained STEM doctorates than UC Berkeley, has a much higher institutional-yield ratio than the larger institution. Nearly 40 of every 100 Reed graduates in STEM fields went on to obtain a STEM PhD, compared to about 14 of 100 Berkeley graduates. Overall, ranked by yield rate, 69 of the top 100 baccalaureate institutions feeding STEM doctorate programs are from the private nondoctoral sector. Small and mid-sized private colleges and universities represent a similar proportion (75 of 100) of the baccalaureate pipeline for women doctorates in STEM fields (Appendix Table A6). Exhibit 7 points out this phenomenon, with a selection of women's colleges highlighted for their high rate of producing women STEM baccalaureates and doctorates.

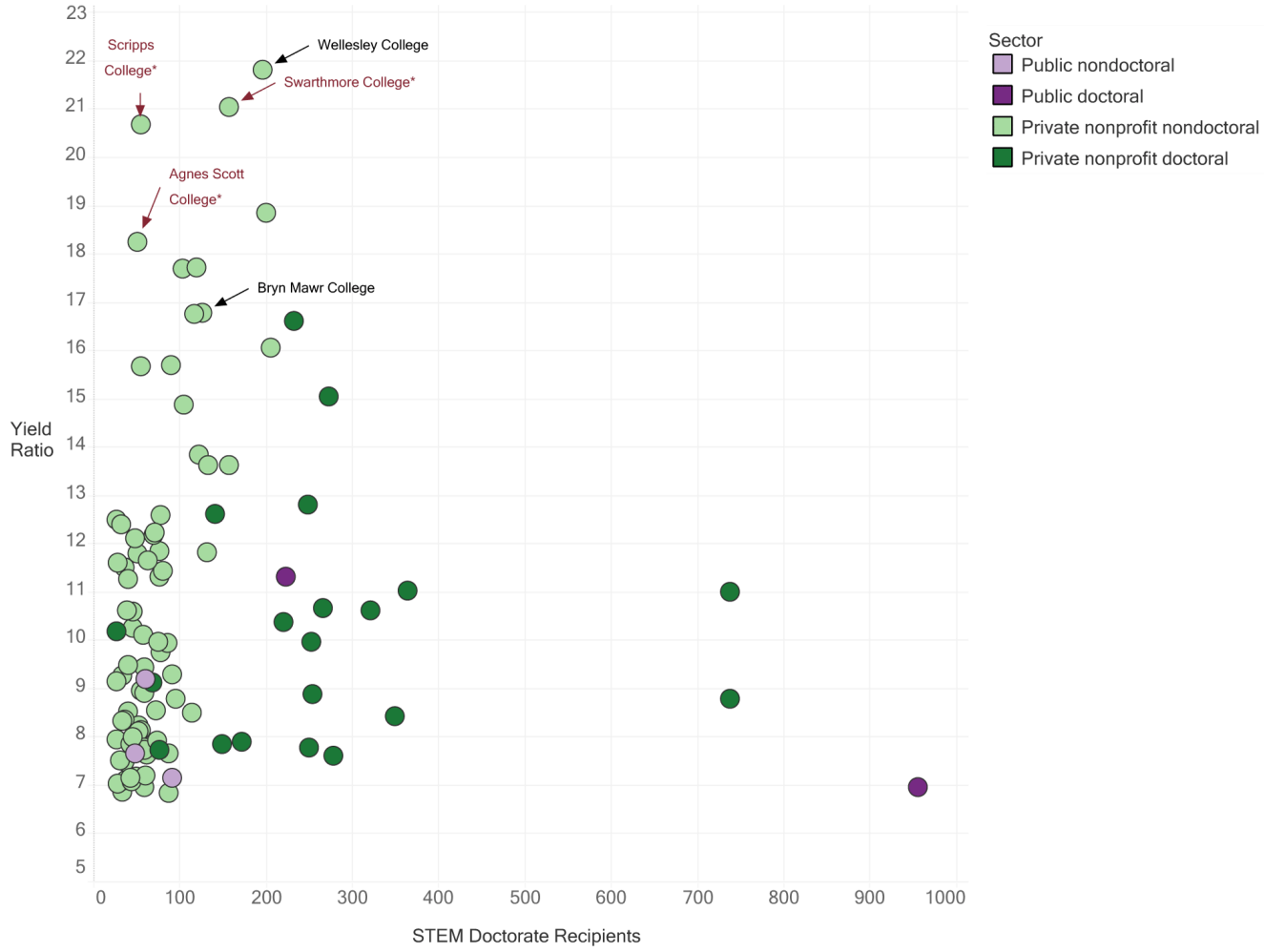
[4] An asterisk (*) is used to denote Council of Independent Colleges member institutions on exhibits 6-9.

Exhibit 6. Top 100 U.S. baccalaureate-origin institutions of 2007–2016 STEM doctorate recipients by institutional-yield ratio



Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey. CIC member institutions are highlighted with red labels and asterisks.

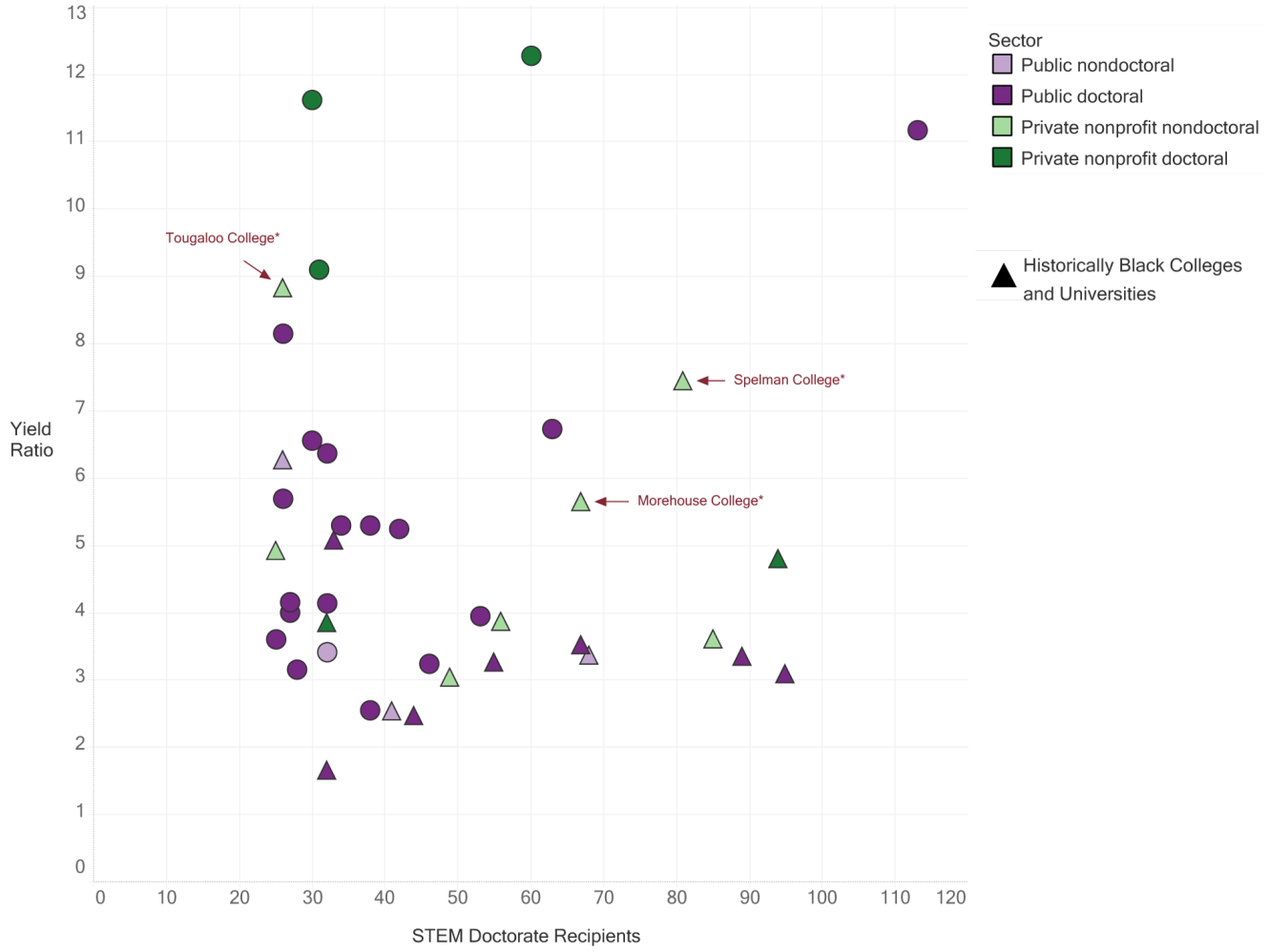
Exhibit 7. Top 100 U.S. baccalaureate-origin institutions of 2007–2016 women STEM doctorate recipients by institutional-yield ratio



Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey. CIC member institutions are highlighted with red labels and asterisks.

Small and mid-sized private colleges' undergraduate preparation figures much less prominently for African American and Latino/Latina doctorate recipients than for women of all races and ethnicities. But at the individual institution level and in the raw number of research doctorates earned, small- and mid-sized colleges and universities stand out in comparison with much larger and more heavily resourced institutions. For example, among well-known Historically Black Colleges and Universities (HBCUs), Morehouse College (with 67 graduates who earned STEM PhDs between 2007 and 2016) and Spelman College (with 81 graduates) outpaced institutions such as Harvard University (30), Cornell University (31), and the University of California at Berkeley (26). Exhibit 8 illustrates the importance of HBCUs in the pipeline for African American STEM doctorates, with HBCUs depicted as triangles rather than circles.

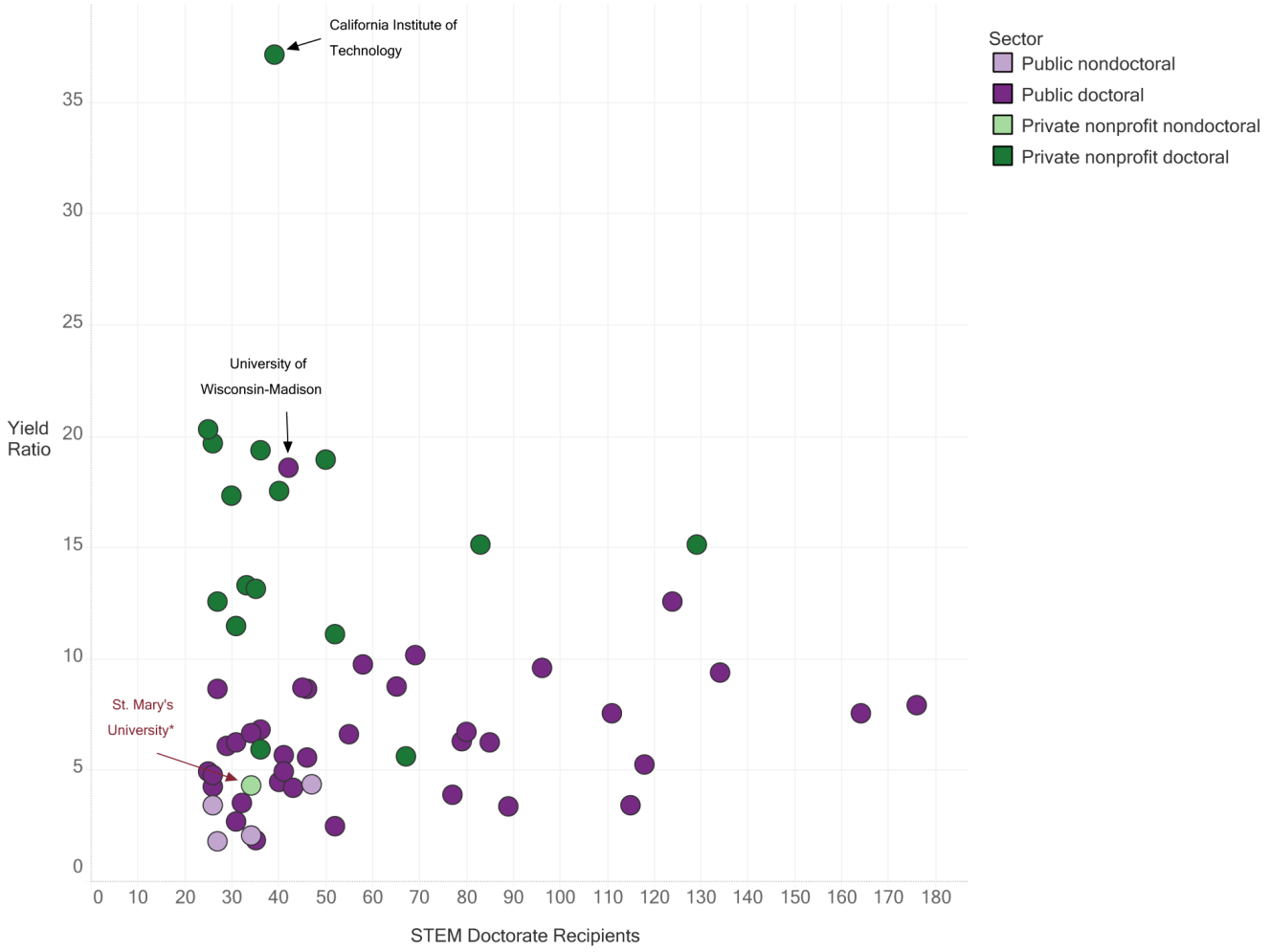
Exhibit 8. Top 100 U.S. baccalaureate-origin institutions of 2007–2016 black STEM doctorate recipients by institutional-yield ratio



Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey. Historically Black Colleges and Universities (HBCUs) are depicted as triangles in this chart. CIC member institutions are highlighted with red labels and asterisks.

For Latino/Latina graduates (Exhibit 9 and Appendix Table A8), the private nonprofit sector is an outlier because the overwhelming majority of Latino/Latina STEM bachelor's degree recipients in 1998 to 2007 who earned STEM doctorates in the following decade completed their undergraduate training at public and private doctoral universities. The graph identifies two large doctoral institutions—California Institute of Technology and the University of Wisconsin-Madison—as exemplifying the private and public doctoral institutions that help to prepare Latino/Latina STEM doctorates. At the same time, it points out one of the few private nonprofit nondoctoral institutions in the top 40 producers of Latino/Latina STEM graduates: St. Mary's University in Texas.

Exhibit 9. Top 100 U.S. baccalaureate-origin institutions of 2007–2016 Latino/Latina STEM doctorate recipients by institutional-yield ratio



Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey. CIC member institutions are highlighted with red labels and asterisks.

The remainder of this section focuses on 10 specific STEM doctorate fields within each demographic group (women, African Americans, and Latinos/Latinas). It refers to data tables found in the Appendix Tables A5 and higher.

Women in STEM

Of the 10 doctoral degree fields analyzed, the largest and most traditional STEM fields (chemistry, biology, life sciences, and physical sciences) are those in which the private nondoctoral sector excels as the training ground for future STEM doctorates granted to women. As measured by institution yield, 80 of the top 100 baccalaureate-granting institutions preparing female STEM doctorates in the life sciences are private nondoctoral institutions. Likewise, among female chemistry doctorates, small and mid-sized private colleges represent the baccalaureate origin of 19 of the top 20 yielding institutions (Appendix Table A10).

At the other end of the spectrum, computer science (Appendix Table A12), computer science/mathematics (Appendix Table A26), engineering (Appendix Table A27), other types of institutions, such as private and public doctorate granting institutions, figure more prominently in the undergraduate preparation of female STEM PhDs. But even within this picture, small and medium-sized institutions perform well. For example, Swarthmore College and Wellesley College are ranked first and second in institutional yield among doctorates in mathematics and statistics; Cooper Union and Harvey Mudd College are similarly ranked among engineering doctorates.

African Americans in STEM

A review of the baccalaureate origins of STEM PhDs granted between 2007 and 2016 demonstrates the continued importance of HBCUs in providing the undergraduate foundation of the nation's African American STEM research doctorates. In fact, all baccalaureate-origin institutions listed in the tables for doctorates in the physical sciences (Appendix Table A29), computer science/mathematics (Appendix Table A30), and chemistry (Appendix Table A15) are HBCUs. While HBCUs are not coterminous with the small and mid-sized college and university sector, well-known institutions such as Morehouse College, Spelman College, and Hampton University rank high across multiple STEM fields of degree. Another important HBCU and private nondoctoral institution, Toogaloo College in Mississippi, produced in raw counts more STEM doctorates in the life sciences (18) than either Yale University and Johns Hopkins (13 each) or Princeton University and Brown University (12 each).

Latinos/Latinas in STEM

In the 2015–2016 school year, Latinos/Latinas earned 13 percent of all of the nation's bachelor's degrees, up from 6 percent of bachelor's degrees in 2000–2001. Today, they place second only to non-Hispanic whites in these degree-earned categories (U.S. Department of Education 2019). This population represents 5.4 percent of STEM research doctorates considered in this analysis (7,044 of a total of 128,533, data tabulated from Appendix Table A4), compared to African Americans, who represent 3.6 percent of 2007–2016 STEM research doctorate recipients. What is notable, however, in the aggregate (Appendix Table A9) and in tabulations on specific disciplines (Appendix Tables A19-23 and Tables A32-35), is the very limited role that private nondoctoral institutions play in preparing Latinos/Latinas for PhD studies in STEM. The pipeline of Latino/Latina doctorates in STEM largely starts and ends in the nation's largest public and private doctorate-granting institutions.

Conclusion and Recommendations

This report demonstrates the continued importance of small and mid-sized institutions in strengthening the STEM pipeline, with a particular significance for women and underrepresented minority STEM baccalaureate graduates. Overall, on most indicators detailed in this report, small and mid-sized private nonprofit nondoctoral institutions outperform public nondoctoral and doctoral institutions, and are competitive with (although usually are second to) private doctoral institutions. Small and mid-sized private colleges and universities appear to play a significant role in producing female STEM baccalaureates and preparing female STEM degree holders for graduate study. For underrepresented minority students, private nonprofit nondoctoral institutions also contribute to STEM higher education, but this contribution varies across the different outcomes this report considered.

Building on recommendations from the 2014 CIC report *Strengthening the STEM Pipeline: The Contributions of Small and Mid-Sized Independent Colleges*, which demonstrated the critical role that this sector of higher education institutions plays in preparing its students for success in obtaining graduate degrees in science, technology, engineering, and mathematics fields, this report explored the role of small and mid-sized institutions in preparing groups that have been historically underrepresented in STEM fields—specifically, women, blacks or African Americans, and Latino/Latina graduates. Following on this research and analysis, we propose several recommendations to consider for future research and work in this space. Specifically, these recommendations might include the following:

- There are almost no private nondoctoral institutions in the Top 100 U.S. baccalaureate-origin institutions of 2007–2016 Latino/Latina doctorate recipients by institutional-yield ratio tables, despite a 90 percent satisfaction rate. Additional research on production levels at private institutions is needed to determine if Latinos/Latinas transfer from these institutions at higher rates than non-Latino/non-Latina students. Reviewing data from the National Student Clearinghouse may provide additional insight.
- Findings on student transfer out of private, nonprofit nondoctoral institutions and African American attrition require additional scrutiny. While the data on African American persistence should be treated with caution, they may suggest the need to pay greater attention to policies to promote retention of African American STEM undergraduates in small and mid-sized colleges and universities.
- More research from an intersectional perspective is needed. For example, do institutions play an even greater role for black women as compared to white women (or vice versa)?
- The role of selectivity of institutions needs more consideration in this type of research. Are private institutions able to attract a more select group of students that come to institutions better academically prepared? This factor was not included in this body of research.

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Appendices

Variable definitions used in tabulations

Construct	Variable(s)	Source	Notes
Working in STEM	N2OCPRMG 1: Computer and mathematical scientists 2: Biological, agricultural and other life scientists 3: Physical and related scientists 5: Engineers	NSCG	
Advanced STEM degree	NDGMEMG (Major field for highest degree (major group)) 1: Computer and mathematical sciences 2: Biological, agricultural and other life sciences 3: Physical and related sciences 5: Engineering 6: S&E related fields	NSCG	
PhD Fields	Life sciences PHDFIELD 000 through 199 Physical sciences and earth sciences PHDFIELD 500 through 599 Mathematics and computer sciences PHDFIELD 400 through 499 Engineering PHDFIELD 300 through 399 All STEM research doctorates PHDFIELD 000 through 199, 300 through 599	SED	
Institution Type	Public Non-doctoral BACARN = 21, 22, 31, 32 BAPBPR = 1 Public Doctoral BACARN 11, 12, 13, 14 BAPBPR = 1 Private Non-doctoral BACARN 21, 22, 31, 32 BAPBPR = 2 Private Doctoral BACARN 11, 12, 13, 14 BAPBPR = 2	NSCG	Carnegie Class Definitions: 11: Research University I 12: Research University II 13: Doctorate Granting I 14: Doctorate Granting II 21: Comprehensive I 22: Comprehensive II 31: Liberal Arts I 32: Liberal Arts II

Table A1. Highest degree of STEM bachelor's degree recipients by years since bachelor's degree, bachelor's degree institutional sector, and demographic characteristics: 2015

Bachelor's degree institutional sector and demographic characteristic	All Years since Bachelor's			10 > Years since Bachelor's			11 - 20 Years since Bachelor's			20 < Years since Bachelor's		
	Bachelor's degree	Master's degree	Doctoral degree	Bachelor's degree	Master's degree	Doctoral degree	Bachelor's degree	Master's degree	Doctoral degree	Bachelor's degree	Master's degree	Doctoral degree
All public nondoctoral (%)	**67.0**	**26.8**	**6.3**	**77.2**	**18.3**	**4.5**	**65.3**	**30.2**	**4.5**	**61.9**	**29.9**	**8.3**
Male	70.2	24.1	5.7	81.7	14.5	3.7	69.1	27.2	3.7	65.2	27.2	7.6
Female	63.3	29.8	7.0	73.1	21.6	5.2	61.4	33.3	5.3	57.3	33.4	9.2
Latino/Latina	69.4	22.5	8.1	72.8	23.4	3.8	66.8	21.4	11.8	67.1	22.3	10.6
Black or African American	67.9	28.6	3.4	81.5	17.9	0.6	54.7	41.9	3.4	67.1	26.7	6.2
White	65.7	27.5	6.8	75.7	18.6	5.7	66.7	29.1	4.2	60.6	30.9	8.5
All public doctoral (%)	**62.0**	**26.4**	**11.6**	**74.9**	**18.9**	**6.2**	**57.2**	**27.8**	**15.0**	**58.0**	**29.4**	**12.6**
Male	62.8	24.9	12.3	75.4	17.1	7.5	62.1	24.7	13.2	58.3	27.9	13.8
Female	60.8	28.7	10.5	74.3	20.9	4.8	51.3	31.4	17.3	57.4	32.2	10.4
Latino/Latina	70.1	21.1	8.7	81.7	14.3	4.0	62.1	27.1	10.8	58.4	27.0	14.6
Black or African American	61.7	25.0	13.3	76.1	22.8	1.1	50.8	26.8	22.4	57.7	25.5	16.9
White	61.5	26.8	11.7	73.8	19.5	6.8	58.0	27.5	14.5	58.2	29.3	12.4
All private nonprofit nondoctoral (%)	**59.3**	**27.0**	**13.7**	**73.8**	**18.7**	**7.5**	**52.2**	**31.7**	**16.1**	**54.7**	**29.3**	**16.0**
Male	53.5	27.7	18.8	66.8	20.3	12.9	50.8	29.2	20.0	48.5	30.5	21.0
Female	64.1	26.3	9.5	78.7	17.5	3.8	53.3	33.4	13.3	61.0	28.0	11.1
Latino/Latina	68.5	19.4	12.1	75.3	19.7	5.0	70.6	23.5	5.9	59.1	15.5	25.5
Black or African American	61.9	29.8	8.3	71.1	27.0	1.9	56.7	37.1	6.2	58.2	28.1	13.8
White	58.6	27.6	13.8	73.9	18.0	8.1	50.7	32.4	16.9	54.7	30.1	15.2
All private nonprofit doctoral (%)	**49.2**	**28.9**	**21.9**	**66.1**	**22.9**	**11.0**	**47.3**	**29.3**	**23.3**	**42.6**	**31.3**	**26.1**
Male	47.2	28.0	24.8	65.4	24.0	10.6	48.7	22.5	28.8	40.8	31.0	28.1
Female	52.3	30.4	17.3	66.8	21.8	11.4	45.2	39.7	15.1	46.1	31.8	22.0
Latino/Latina	52.2	26.4	21.4	58.7	31.9	9.4	55.6	20.3	24.0	41.7	26.8	31.5
Black or African American	56.8	21.1	22.1	70.4	20.5	9.1	58.3	20.1	21.6	51.3	21.7	27.0
White	48.6	29.7	21.7	69.3	21.2	9.6	46.1	30.7	23.2	42.6	32.1	25.2

Source: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates.

Table A2. Employment characteristics of STEM bachelor's degree recipients by bachelor's degree institutional sector and demographic characteristics: 2015

Bachelor's degree institutional sector and demographic characteristic	Employment Status (%)				Occupation Type (%)		
	Full time	Part time	Unemployed	Not in labor force	STEM	STEM-related	Non-STEM
All public nondoctoral (%)	**67.6**	**12.5**	**2.7**	**17.2**	**29.9**	**37.2**	**32.9**
Male	70.6	9.0	3.1	17.3	42.6	24.4	33.0
Female	64.1	16.5	2.2	17.2	13.8	53.3	32.8
Latino/Latina	71.4	11.4	3.7	13.5	28.0	38.4	33.6
Black or African American	72.3	8.4	4.8	14.4	26.8	37.7	35.5
White	66.4	13.0	2.4	18.2	29.9	37.6	32.5
All public doctoral (%)	**70.4**	**11.9**	**2.7**	**14.9**	**33.2**	**34.3**	**32.5**
Male	75.9	7.7	2.9	13.5	41.6	25.9	32.6
Female	62.0	18.3	2.5	17.2	17.7	49.8	32.5
Latino/Latina	75.4	10.2	4.5	9.9	28.0	31.0	40.9
Black or African American	75.6	10.6	4.3	9.5	25.6	38.5	35.9
White	69.0	12.3	2.6	16.1	32.8	34.0	33.2
All private nonprofit nondoctoral (%)	**65.9**	**14.9**	**1.9**	**17.2**	**22.9**	**46.8**	**30.4**
Male	72.9	9.9	1.7	15.5	33.2	35.6	31.2
Female	60.2	19.0	2.2	18.7	12.5	58.0	29.5
Latino/Latina	60.8	20.3	6.2	12.8	21.1	34.8	44.1
Black or African American	77.8	8.7	2.4	11.1	16.2	50.6	33.3
White	65.4	14.7	1.6	18.3	23.3	47.1	29.6
All private nonprofit doctoral (%)	**70.5**	**10.7**	**2.3**	**16.4**	**31.3**	**36.4**	**32.4**
Male	77.6	6.4	2.5	13.5	35.4	31.2	33.4
Female	59.1	17.8	2.0	21.0	22.6	47.2	30.2
Latino/Latina	79.3	7.7	1.0	12.0	25.2	39.7	35.1
Black or African American	70.3	16.3	4.3	9.2	21.9	52.7	25.4
White	68.8	11.0	2.2	18.0	32.7	34.5	32.8

Source: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates.

Table A3. Employment sector of STEM bachelor's degree recipients working full-time, by bachelor's degree institutional sector and demographic characteristics: 2015

Bachelor's degree institutional sector and demographic characteristic	Employment Sector (%)					
	Primary/ Secondary education	Higher/ Other education	Private, for-profit	Private, not for-profit	Self-employed	Government
All public nondoctoral (%)	**13.0**	**6.0**	**44.8**	**11.2**	**12.6**	**12.5**
Male	6.7	4.4	53.9	6.5	16.3	12.2
Female	20.9	7.9	33.3	17.0	8.0	12.9
Latino/Latina	9.6	5.9	51.8	9.3	8.7	14.7
Black or African American	12.2	4.7	33.3	10.0	9.4	30.4
White	13.9	6.4	44.9	11.7	13.1	9.9
All public doctoral (%)	**6.6**	**6.4**	**53.0**	**7.8**	**14.7**	**11.5**
Male	3.6	5.4	57.8	5.7	16.1	11.4
Female	12.2	8.3	44.0	11.7	12.1	11.7
Latino/Latina	5.7	6.4	46.1	7.3	16.2	18.4
Black or African American	3.9	5.5	46.5	8.3	11.2	24.7
White	7.3	6.4	53.8	8.0	14.6	9.9
All private nonprofit nondoctoral (%)	**11.4**	**8.8**	**44.8**	**14.9**	**10.0**	**10.1**
Male	5.1	8.5	52.5	8.3	13.0	12.4
Female	17.8	9.1	36.9	21.5	6.9	7.7
Latino/Latina	10.4	4.9	45.0	9.4	15.3	15.1
Black or African American	13.2	5.4	38.1	20.4	10.3	12.5
White	11.7	9.1	45.5	14.2	9.7	9.8
All private nonprofit doctoral (%)	**4.0**	**10.7**	**49.7**	**7.9**	**17.9**	**9.7**
Male	2.4	8.8	54.4	5.2	20.4	8.9
Female	7.5	14.9	39.7	13.7	12.8	11.4
Latino/Latina	3.7	6.3	52.1	6.6	15.7	15.6
Black or African American	5.5	10.3	53.8	15.7	7.9	6.8
White	4.4	10.0	49.5	7.8	19.1	9.3

Source: National Science Foundation, National Center for Science and Engineering Statistics, National Survey of College Graduates.

Table A4. Distribution of U.S. baccalaureate institutions of 2007–2016 STEM doctorate recipients by broad field of doctorate, institutional sector, and selected demographic characteristics

Bachelor's degree institutional sector and demographic characteristic	Life sciences	Physical sciences and earth sciences	Mathematics and computer sciences	Engineering	All STEM research doctorates
All public nondoctoral					
Male	3,225	2,533	1,106	1,459	8,323
Female	3,353	1,157	426	430	5,366
Latino/Latina	693	264	76	329	1,362
Not Latino/Latina					
Asian	208	80	73	82	443
Black or African American	457	156	109	133	855
White	4,950	3,036	1,189	1,267	10,442
Other race[a]	237	118	69	59	483
All public doctoral					
Male	14,129	8,669	4,660	13,429	40,887
Female	14,039	3,579	1,240	3,926	22,784
Latino/Latina	1,856	683	283	868	3,690
Not Latino/Latina					
Asian	2,486	792	554	1,938	5,770
Black or African American	965	294	178	690	2,127
White	21,576	9,899	4,609	13,051	49,135
Other race[a]	1,118	459	220	646	2,443
All private nonprofit nondoctoral					
Male	4,962	3,921	1,731	1,665	12,279
Female	6,891	2,569	786	667	10,913
Latino/Latina	413	159	51	59	682
Not Latino/Latina					
Asian	496	188	70	129	883
Black or African American	549	173	91	125	938
White	9,971	5,752	2,210	1,911	19,844
Other race[a]	370	170	74	87	701
All private nonprofit doctoral					
Male	5,457	3,815	2,885	5,496	17,653
Female	5,796	1,779	646	2,107	10,328
Latino/Latina	606	231	110	363	1,310
Not Latino/Latina					
Asian	1,567	481	409	1,124	3,581
Black or African American	345	98	90	224	757
White	8,196	4,500	2,733	5,523	20,952
Other race[a]	472	236	143	291	1,142

Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates.

Table A5. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 STEM Doctorate Recipients by Institutional-Yield Ratio

			STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Reed College	Private nondoctoral	288	37.9
2	California Institute of Technology	Private doctoral	742	35.4
3	Carleton College	Private nondoctoral	448	31.1
4	**Swarthmore College**	Private nondoctoral	321	31.0
5	Harvey Mudd College	Private nondoctoral	434	28.9
6	University of Chicago	Private doctoral	694	27.6
7	**Haverford College**	Private nondoctoral	205	26.3
8	**Kenyon College**	Private nondoctoral	124	25.8
9	Amherst College	Private nondoctoral	190	25.5
10	**Grinnell College**	Private nondoctoral	235	25.4
11	Pomona College	Private nondoctoral	231	25.2
12	Williams College	Private nondoctoral	300	24.4
13	**Hampshire College**	Private nondoctoral	69	23.1
14	Yale University	Private doctoral	583	22.0
15	Wellesley College	Private nondoctoral	195	21.8
16	Harvard University	Private doctoral	993	21.5
17	Lawrence University	Private nondoctoral	125	21.4
18	Princeton University	Private doctoral	751	21.2
19	Vassar College	Private nondoctoral	158	21.1
20	**Oberlin College**	Private nondoctoral	288	20.7
21	**Scripps College**	Private nondoctoral	55	20.7
22	**Whitman College**	Private nondoctoral	189	20.5
23	Wesleyan University	Private nondoctoral	181	20.3
24	Brandeis University	Private doctoral	298	20.0
25	Rice University	Private doctoral	595	19.5
26	College of William and Mary	Public doctoral	476	18.6
27	Brown University	Private doctoral	725	18.4
28	Macalester College	Private nondoctoral	175	18.3
29	**Agnes Scott College**	Private nondoctoral	50	18.2
30	Bowdoin College	Private nondoctoral	178	18.2
31	**Kalamazoo College**	Private nondoctoral	131	17.8
32	Massachusetts Institute of Technology	Private doctoral	1,695	17.7
33	**The College of Wooster**	Private nondoctoral	149	17.7
34	University of Rochester	Private doctoral	647	17.2
35	**Drew University**	Private nondoctoral	87	17.1
36	Beloit College	Private nondoctoral	80	17.0
37	Bryn Mawr College	Private nondoctoral	126	16.8
38	Barnard College	Private nondoctoral	116	16.8
39	Johns Hopkins University	Private doctoral	724	16.4
40	**Wabash College**	Private nondoctoral	60	16.3
41	Smith College	Private nondoctoral	208	16.3
42	**University of Puget Sound**	Private nondoctoral	160	16.0
43	**Earlham College**	Private nondoctoral	88	16.0
44	**Franklin and Marshall College**	Private nondoctoral	130	16.0
45	**Pepperdine University**	Private doctoral	51	15.7
46	**Centre College**	Private nondoctoral	78	15.3
47	Davidson College	Private nondoctoral	129	15.3
48	Skidmore College	Private nondoctoral	88	15.3
49	**Hendrix College**	Private nondoctoral	88	15.1
50	Stanford University	Private doctoral	939	15.0
51	Colgate University	Private nondoctoral	191	14.8
52	Duke University	Private doctoral	755	14.6
53	Xavier University	Private nondoctoral	87	14.6
54	University of Notre Dame	Private doctoral	552	14.5
55	Cornell University	Private doctoral	1,968	14.5

			STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	Dartmouth College	Private doctoral	420	14.4
57	**St. Olaf College**	Private nondoctoral	250	14.4
58	**Middlebury College**	Private nondoctoral	162	14.3
59	Georgetown University	Private doctoral	149	14.3
60	Colby College	Private nondoctoral	173	14.3
61	**Allegheny College**	Private nondoctoral	202	14.3
62	**Lebanon Valley College**	Private nondoctoral	66	14.3
63	Occidental College	Private nondoctoral	112	14.1
64	University of Pennsylvania	Private doctoral	681	14.1
65	Cooper Union for the Advancement of Science and Art	Private nondoctoral	147	14.0
66	St Mary's College of Maryland	Public nondoctoral	112	13.9
67	Case Western Reserve University	Private doctoral	597	13.8
68	**Ohio Wesleyan University**	Private nondoctoral	94	13.8
69	**Furman University**	Private nondoctoral	135	13.7
70	Mount Holyoke College	Private nondoctoral	158	13.7
71	**Wheaton College (IL)**	Private nondoctoral	111	13.7
72	Carnegie Mellon University	Private doctoral	808	13.6
73	**Wheaton College (MA)**	Private nondoctoral	51	13.5
74	University of California-Berkeley	Public doctoral	2,709	13.5
75	Hamilton College	Private nondoctoral	110	13.5
76	**Ithaca College**	Private nondoctoral	104	13.2
77	Wake Forest University	Private doctoral	171	13.1
78	**Trinity University**	Private nondoctoral	153	13.1
79	Claremont McKenna College	Private nondoctoral	50	13.0
80	**Ursinus College**	Private nondoctoral	114	12.9
81	**University of Richmond**	Private nondoctoral	137	12.9
82	**Lewis & Clark College**	Private nondoctoral	107	12.9
83	**Colorado College**	Private nondoctoral	171	12.9
84	Alfred University	Private nondoctoral	106	12.7
85	**Knox College**	Private nondoctoral	80	12.4
86	Columbia University in the City of New York	Private doctoral	612	12.4
87	**Wittenberg University**	Private nondoctoral	95	12.2
88	**Hope College**	Private nondoctoral	133	12.2
89	**University of Dallas**	Private nondoctoral	53	12.1
90	Washington University in St Louis	Private doctoral	596	11.9
91	**Gettysburg College**	Private nondoctoral	107	11.7
92	**Juniata College**	Private nondoctoral	123	11.7
93	**Connecticut College**	Private nondoctoral	81	11.6
94	Emory University	Private doctoral	274	11.6
95	Bates College	Private nondoctoral	127	11.6
96	SUNY College at Geneseo	Public nondoctoral	198	11.5
97	**Southwestern University**	Private nondoctoral	62	11.4
98	Truman State University	Public nondoctoral	243	11.3
99	**Willamette University**	Private nondoctoral	99	11.3
100	Northwestern University	Private doctoral	589	11.3

NOTES: Institutional-yield ratio is the number of STEM doctorate recipients per 100 bachelor's degrees awarded in STEM fields 9 years earlier. Only institutions from which 50 or more baccalaureate recipients received STEM doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A6. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women STEM Doctorate Recipients by Institutional-Yield Ratio

			Women STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Wellesley College	Private nondoctoral	195	21.8
2	**Swarthmore College**	Private nondoctoral	156	21.1
3	**Scripps College**	Private nondoctoral	55	20.7
4	Carleton College	Private nondoctoral	200	18.9
5	**Agnes Scott College**	Private nondoctoral	50	18.2
6	**Grinnell College**	Private nondoctoral	119	17.7
7	Reed College	Private nondoctoral	103	17.7
8	Bryn Mawr College	Private nondoctoral	126	16.8
9	Barnard College	Private nondoctoral	116	16.8
10	California Institute of Technology	Private doctoral	232	16.6
11	Smith College	Private nondoctoral	205	16.1
12	Amherst College	Private nondoctoral	89	15.7
13	**Kenyon College**	Private nondoctoral	55	15.7
14	University of Chicago	Private doctoral	272	15.0
15	Pomona College	Private nondoctoral	104	14.9
16	Williams College	Private nondoctoral	122	13.8
17	Mount Holyoke College	Private nondoctoral	157	13.6
18	Harvey Mudd College	Private nondoctoral	133	13.6
19	Yale University	Private doctoral	248	12.8
20	Brandeis University	Private doctoral	141	12.6
21	**The College of Wooster**	Private nondoctoral	77	12.6
22	Nazareth College	Private nondoctoral	26	12.5
23	**Goucher College**	Private nondoctoral	32	12.4
24	**Haverford College**	Private nondoctoral	71	12.2
25	Vassar College	Private nondoctoral	69	12.2
26	**Drew University**	Private nondoctoral	48	12.1
27	Wesleyan University	Private nondoctoral	76	11.8
28	**Oberlin College**	Private nondoctoral	131	11.8
29	Lawrence University	Private nondoctoral	50	11.8
30	**Kalamazoo College**	Private nondoctoral	63	11.6
31	**Randolph-Macon College**	Private nondoctoral	28	11.6
32	**Wheaton College (MA)**	Private nondoctoral	35	11.5
33	Macalester College	Private nondoctoral	80	11.4
34	College of William and Mary	Public doctoral	222	11.3
35	**Whitman College**	Private nondoctoral	76	11.3
36	Beloit College	Private nondoctoral	40	11.3
37	Harvard University	Private doctoral	364	11.0
38	Massachusetts Institute of Technology	Private doctoral	738	11.0
39	Princeton University	Private doctoral	266	10.7
40	Brown University	Private doctoral	321	10.6
41	**Centre College**	Private nondoctoral	38	10.6
42	**Hendrix College**	Private nondoctoral	45	10.6
43	Rice University	Private doctoral	220	10.4
44	Skidmore College	Private nondoctoral	45	10.3
45	**Pepperdine University**	Private doctoral	26	10.2
46	**Ohio Wesleyan University**	Private nondoctoral	57	10.1
47	University of Rochester	Private doctoral	252	10.0
48	Bowdoin College	Private nondoctoral	75	10.0
49	**Middlebury College**	Private nondoctoral	86	9.9
50	**University of Puget Sound**	Private nondoctoral	77	9.7
51	**Earlham College**	Private nondoctoral	40	9.5
52	Occidental College	Private nondoctoral	58	9.4
53	Colgate University	Private nondoctoral	91	9.3
54	**Washington & Jefferson College**	Private nondoctoral	33	9.3
55	St Mary's College of Maryland	Public nondoctoral	60	9.2
56	Claremont McKenna College	Private nondoctoral	26	9.2

			Women STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
57	Georgetown University	Private doctoral	68	9.1
58	**Franklin and Marshall College**	Private nondoctoral	55	9.0
59	Davidson College	Private nondoctoral	58	8.9
60	Johns Hopkins University	Private doctoral	254	8.9
61	Cornell University	Private doctoral	738	8.8
62	**Allegheny College**	Private nondoctoral	95	8.8
63	**Trinity University**	Private nondoctoral	72	8.6
64	Xavier University	Private nondoctoral	39	8.5
65	**St. Olaf College**	Private nondoctoral	114	8.5
66	Stanford University	Private doctoral	349	8.4
67	**Southwestern University**	Private nondoctoral	35	8.4
68	**Saint Mary's College**	Private nondoctoral	33	8.3
69	**Wittenberg University**	Private nondoctoral	52	8.2
70	**Ursinus College**	Private nondoctoral	55	8.1
71	**Lewis & Clark College**	Private nondoctoral	52	8.1
72	**Cedar Crest College**	Private nondoctoral	45	8.0
73	**Hanover College**	Private nondoctoral	26	8.0
74	Colby College	Private nondoctoral	73	7.9
75	Dartmouth College	Private doctoral	171	7.9
76	**Connecticut College**	Private nondoctoral	42	7.9
77	Emory University	Private doctoral	148	7.8
78	University of Pennsylvania	Private doctoral	250	7.8
79	**Juniata College**	Private nondoctoral	59	7.8
80	**Furman University**	Private nondoctoral	58	7.7
81	**Gettysburg College**	Private nondoctoral	53	7.7
82	Wake Forest University	Private doctoral	76	7.7
83	**Spelman College**	Private nondoctoral	87	7.7
84	University of Minnesota-Morris	Public nondoctoral	48	7.7
85	**University of Richmond**	Private nondoctoral	61	7.6
86	Duke University	Private doctoral	278	7.6
87	**Cornell College**	Private nondoctoral	30	7.5
88	**Knox College**	Private nondoctoral	36	7.5
89	Bates College	Private nondoctoral	60	7.2
90	**Willamette University**	Private nondoctoral	49	7.2
91	**Albion College**	Private nondoctoral	42	7.2
92	The College of New Jersey	Public nondoctoral	91	7.1
93	**Ithaca College**	Private nondoctoral	37	7.1
94	**Trinity College**	Private nondoctoral	39	7.1
95	Hamilton College	Private nondoctoral	44	7.1
96	**Hamline University**	Private nondoctoral	27	7.0
97	**Hope College**	Private nondoctoral	58	7.0
98	University of California-Berkeley	Public doctoral	955	7.0
99	**Sewanee: The University of the South**	Private nondoctoral	33	6.9
100	**Lafayette College**	Private nondoctoral	87	6.8

NOTES: Institutional-yield ratio is the number of women STEM doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 25 or more baccalaureate recipients received STEM doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A7. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black STEM Doctorate Recipients by Institutional-Yield Ratio

				Black STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Massachusetts Institute of Technology	Private doctoral		60	12.3
2	Harvard University	Private doctoral		30	11.6
3	University of Maryland-Baltimore County	Public doctoral		113	11.2
4	Cornell University	Private doctoral		31	9.1
5	**Tougaloo College**	Private nondoctoral	X	26	8.8
6	University of California-Berkeley	Public doctoral		26	8.2
7	**Spelman College**	Private nondoctoral	X	81	7.4
8	University of Florida	Public doctoral		63	6.7
9	University of North Carolina at Chapel Hill	Public doctoral		30	6.6
10	University of Virginia-Main Campus	Public doctoral		32	6.4
11	Lincoln University	Public nondoctoral	X	26	6.3
12	University of Pittsburgh-Pittsburgh Campus	Public doctoral		26	5.7
13	**Morehouse College**	Private nondoctoral	X	67	5.6
14	University of Illinois at Urbana-Champaign	Public doctoral		34	5.3
15	Clemson University	Public doctoral		38	5.3
16	University of Michigan-Ann Arbor	Public doctoral		42	5.2
17	University of Maryland Eastern Shore	Public doctoral	X	33	5.1
18	**Oakwood University**	Private nondoctoral	X	25	4.9
19	Howard University	Private doctoral	X	94	4.8
20	Mississippi State University	Public doctoral		27	4.2
21	Florida State University	Public doctoral		32	4.1
22	Texas A & M University-College Station	Public doctoral		27	4.0
23	University of Maryland-College Park	Public doctoral		53	3.9
24	Hampton University	Private nondoctoral	X	56	3.9
25	**Clark Atlanta University**	Private doctoral	X	32	3.8
26	Xavier University of Louisiana	Private nondoctoral	X	85	3.6
27	Louisiana State University and Agricultural & Mechanical College	Public doctoral		25	3.6
28	Morgan State University	Public doctoral	X	67	3.5
29	CUNY City College	Public nondoctoral		32	3.4
30	Southern University and A & M College	Public nondoctoral	X	68	3.4
31	Florida Agricultural and Mechanical University	Public doctoral	X	89	3.3
32	Jackson State University	Public doctoral	X	55	3.3
33	Georgia Institute of Technology-Main Campus	Public doctoral		46	3.2
34	Rutgers University-New Brunswick	Public doctoral		28	3.1
35	North Carolina A & T State University	Public doctoral	X	95	3.1
36	**Tuskegee University**	Private nondoctoral	X	49	3.0
37	North Carolina State University at Raleigh	Public doctoral		38	2.6
38	Alabama A & M University	Public nondoctoral	X	41	2.5
39	Tennessee State University	Public doctoral	X	44	2.5
40	Prairie View A & M University	Public doctoral	X	32	1.7

NOTES: Institutional-yield ratio is the number of Black STEM doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 25 or more baccalaureate recipients received STEM doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A8. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina STEM Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	California Institute of Technology	Private doctoral	39	37.1
2	Johns Hopkins University	Private doctoral	25	20.3
3	Yale University	Private doctoral	26	19.7
4	Duke University	Private doctoral	36	19.4
5	Rice University	Private doctoral	50	18.9
6	University of Wisconsin-Madison	Public doctoral	42	18.6
7	Harvard University	Private doctoral	40	17.5
8	Princeton University	Private doctoral	30	17.3
9	Cornell University	Private doctoral	83	15.1
10	Massachusetts Institute of Technology	Private doctoral	129	15.1
11	Columbia University in the City of New York	Private doctoral	33	13.3
12	Carnegie Mellon University	Private doctoral	35	13.2
13	University of California-Berkeley	Public doctoral	124	12.6
14	Brigham Young University-Provo	Private doctoral	27	12.6
15	Boston University	Private doctoral	31	11.5
16	Stanford University	Private doctoral	52	11.1
17	University of California-Santa Cruz	Public doctoral	69	10.2
18	Florida State University	Public doctoral	58	9.8
19	University of California-Irvine	Public doctoral	96	9.6
20	University of California-Los Angeles	Public doctoral	134	9.4
21	University of California-Riverside	Public doctoral	65	8.7
22	Georgia Institute of Technology-Main Campus	Public doctoral	45	8.7
23	University of Michigan-Ann Arbor	Public doctoral	46	8.7
24	Michigan State University	Public doctoral	27	8.7
25	The University of Texas at El Paso	Public doctoral	176	7.9
26	University of California-Davis	Public doctoral	111	7.6
27	University of Florida	Public doctoral	164	7.6
28	University of Maryland-College Park	Public doctoral	36	6.8
29	University of California-San Diego	Public doctoral	80	6.7
30	Pennsylvania State University-Main Campus	Public doctoral	34	6.7
31	University of California-Santa Barbara	Public doctoral	55	6.6
32	University of New Mexico-Main Campus	Public doctoral	79	6.3
33	University of Arizona	Public doctoral	85	6.3
34	University of Colorado Boulder	Public doctoral	31	6.2
35	University of Washington-Seattle Campus	Public doctoral	29	6.1
36	University of Southern California	Private doctoral	36	5.9
37	University of Illinois at Urbana-Champaign	Public doctoral	41	5.7
38	University of Miami	Private doctoral	67	5.6
39	Arizona State University-Tempe	Public doctoral	46	5.6
40	The University of Texas at Austin	Public doctoral	118	5.2
41	Rutgers University-New Brunswick	Public doctoral	41	4.9
42	Colorado State University-Fort Collins	Public doctoral	25	4.9
43	California State University-Fullerton	Public doctoral	26	4.8
44	University of South Florida-Main Campus	Public doctoral	40	4.5
45	California State University-Los Angeles	Public nondoctoral	47	4.4
46	**St. Mary's University**	Private nondoctoral	34	4.3
47	Texas State University	Public doctoral	26	4.3
48	University of Central Florida	Public doctoral	43	4.2
49	New Mexico State University-Main Campus	Public doctoral	77	3.9
50	San Diego State University	Public doctoral	32	3.5
51	Florida International University	Public doctoral	115	3.4
52	California State University-Northridge	Public nondoctoral	26	3.4
53	Texas A & M University-College Station	Public doctoral	89	3.4
54	University of Houston	Public doctoral	31	2.7

			Latino/Latina STEM Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
55	The University of Texas at San Antonio	Public doctoral	52	2.5
56	California State Polytechnic University-Pomona	Public nondoctoral	34	2.1
57	The University of Texas Rio Grande Valley	Public doctoral	35	1.9
58	California Polytechnic State University-San Luis Obispo	Public nondoctoral	27	1.8

NOTES: Institutional-yield ratio is the number of Latino/a STEM doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 25 or more baccalaureate recipients received S&E doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A9. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Biological Sciences Doctorate Recipients by Institutional-Yield Ratio

			Women Biological Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	**Scripps College**	Private nondoctoral	37	13.9
2	Wellesley College	Private nondoctoral	106	11.9
3	**Swarthmore College**	Private nondoctoral	84	11.3
4	Reed College	Private nondoctoral	65	11.2
5	**Agnes Scott College**	Private nondoctoral	30	10.9
6	**Grinnell College**	Private nondoctoral	70	10.4
7	Barnard College	Private nondoctoral	71	10.3
8	**Kenyon College**	Private nondoctoral	35	10.0
9	Brandeis University	Private doctoral	110	9.8
10	University of Chicago	Private doctoral	177	9.8
11	Pomona College	Private nondoctoral	67	9.6
12	Amherst College	Private nondoctoral	54	9.5
13	Smith College	Private nondoctoral	115	9.0
14	Bryn Mawr College	Private nondoctoral	67	8.9
15	**Drew University**	Private nondoctoral	35	8.8
16	**Haverford College**	Private nondoctoral	51	8.8
17	Carleton College	Private nondoctoral	91	8.6
18	Skidmore College	Private nondoctoral	36	8.2
19	Nazareth College	Private nondoctoral	17	8.2
20	Yale University	Private doctoral	158	8.2
21	**Ohio Wesleyan University**	Private nondoctoral	46	8.2
22	**Oberlin College**	Private nondoctoral	88	7.9
23	Mount Holyoke College	Private nondoctoral	91	7.9
24	Wesleyan University	Private nondoctoral	48	7.5
25	**Hampshire College**	Private nondoctoral	15	7.4
26	Vassar College	Private nondoctoral	41	7.2
27	Williams College	Private nondoctoral	63	7.2
28	Bowdoin College	Private nondoctoral	53	7.0
29	College of William and Mary	Public doctoral	138	7.0
30	**Kalamazoo College**	Private nondoctoral	38	7.0
31	**Ursinus College**	Private nondoctoral	47	7.0
32	Brown University	Private doctoral	208	6.9
33	**Hendrix College**	Private nondoctoral	29	6.8
34	Beloit College	Private nondoctoral	24	6.8
35	**Centre College**	Private nondoctoral	24	6.7
36	**Pepperdine University**	Private doctoral	17	6.7
37	**Goucher College**	Private nondoctoral	17	6.6
38	**Hanover College**	Private nondoctoral	21	6.4
39	**Earlham College**	Private nondoctoral	27	6.4
40	**Erskine College**	Private nondoctoral	12	6.4
41	Emory University	Private doctoral	118	6.3
42	**Centenary College of Louisiana**	Private nondoctoral	17	6.3
43	**Randolph-Macon College**	Private nondoctoral	15	6.2
44	Davidson College	Private nondoctoral	40	6.2
45	St Mary's College of Maryland	Public nondoctoral	40	6.1
46	Harvard University	Private doctoral	202	6.1
47	**The College of Wooster**	Private nondoctoral	37	6.1
48	**Middlebury College**	Private nondoctoral	52	6.0
49	University of Rochester	Private doctoral	151	6.0
50	Colgate University	Private nondoctoral	58	5.9
51	**Wheaton College (MA)**	Private nondoctoral	18	5.9
52	Macalester College	Private nondoctoral	41	5.9
53	Georgetown University	Private doctoral	43	5.8
54	**Cedar Crest College**	Private nondoctoral	32	5.7
55	Lawrence University	Private nondoctoral	24	5.7

			Women Biological Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	**Allegheny College**	Private nondoctoral	61	5.6
57	**Connecticut College**	Private nondoctoral	30	5.6
58	**St. Olaf College**	Private nondoctoral	73	5.4
59	**University of Puget Sound**	Private nondoctoral	43	5.4
60	**Gettysburg College**	Private nondoctoral	37	5.4
61	Wake Forest University	Private doctoral	53	5.4
62	Occidental College	Private nondoctoral	33	5.4
63	**Washington & Jefferson College**	Private nondoctoral	19	5.3
64	Colby College	Private nondoctoral	49	5.3
65	**Tougaloo College**	Private nondoctoral	14	5.3
66	Cornell University	Private doctoral	443	5.3
67	Claremont McKenna College	Private nondoctoral	15	5.3
68	**University of Richmond**	Private nondoctoral	42	5.3
69	**Whitman College**	Private nondoctoral	35	5.2
70	**Stonehill College**	Private nondoctoral	26	5.2
71	**Trinity University**	Private nondoctoral	43	5.1
72	University of Pennsylvania	Private doctoral	164	5.1
73	**Saint Mary's College**	Private nondoctoral	20	5.1
74	Princeton University	Private doctoral	125	5.0
75	California Institute of Technology	Private doctoral	70	5.0
76	**Knox College**	Private nondoctoral	24	5.0
77	**Lewis & Clark College**	Private nondoctoral	32	5.0
78	**Hiram College**	Private nondoctoral	19	5.0
79	**Ithaca College**	Private nondoctoral	25	4.8
80	Xavier University	Private nondoctoral	22	4.8
81	**Southwestern University**	Private nondoctoral	20	4.8
82	**Ripon College**	Private nondoctoral	12	4.8
83	**Alma College**	Private nondoctoral	22	4.7
84	**Spelman College**	Private nondoctoral	53	4.7
85	Clark University	Private doctoral	32	4.7
86	**Sweet Briar College**	Private nondoctoral	11	4.6
87	Duke University	Private doctoral	169	4.6
88	**Juniata College**	Private nondoctoral	35	4.6
89	**Furman University**	Private nondoctoral	34	4.5
90	Johns Hopkins University	Private doctoral	128	4.5
91	**Wittenberg University**	Private nondoctoral	28	4.4
92	**Willamette University**	Private nondoctoral	30	4.4
93	**Muskingum University**	Private nondoctoral	12	4.4
94	**DePauw University**	Private nondoctoral	30	4.3
95	**Elizabethtown College**	Private nondoctoral	17	4.3
96	Rice University	Private doctoral	90	4.2
97	**Mills College**	Private nondoctoral	10	4.2
98	Stanford University	Private doctoral	174	4.2
99	**Trinity College**	Private nondoctoral	23	4.2
100	University of Minnesota-Morris	Public nondoctoral	26	4.1

NOTES: Institutional-yield ratio is the number of women biological sciences doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received biological sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A10. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Chemistry Doctorate Recipients by Institutional-Yield Ratio

			Women Chemistry Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	**Randolph-Macon College**	Private nondoctoral	10	4.1
2	**Goucher College**	Private nondoctoral	10	3.9
3	**The College of Wooster**	Private nondoctoral	19	3.1
4	**Washington & Jefferson College**	Private nondoctoral	11	3.1
5	**Franklin and Marshall College**	Private nondoctoral	17	2.8
6	Reed College	Private nondoctoral	16	2.7
7	Carleton College	Private nondoctoral	28	2.6
8	**Southwestern University**	Private nondoctoral	11	2.6
9	**Hamline University**	Private nondoctoral	10	2.6
10	Barnard College	Private nondoctoral	18	2.6
11	Wellesley College	Private nondoctoral	23	2.6
12	**Kalamazoo College**	Private nondoctoral	13	2.4
13	**Butler University**	Private nondoctoral	14	2.3
14	**Albion College**	Private nondoctoral	12	2.0
15	Bryn Mawr College	Private nondoctoral	15	2.0
16	**Cedar Crest College**	Private nondoctoral	11	2.0
17	**Grinnell College**	Private nondoctoral	13	1.9
18	**Allegheny College**	Private nondoctoral	20	1.8
19	**Whitman College**	Private nondoctoral	12	1.8
20	The College of New Jersey	Public nondoctoral	22	1.7
21	Macalester College	Private nondoctoral	12	1.7
22	**Juniata College**	Private nondoctoral	13	1.7
23	University of Minnesota-Morris	Public nondoctoral	10	1.6
24	**University of Puget Sound**	Private nondoctoral	12	1.5
25	**Furman University**	Private nondoctoral	11	1.5
26	**Willamette University**	Private nondoctoral	10	1.5
27	Brandeis University	Private doctoral	16	1.4
28	College of William and Mary	Public doctoral	28	1.4
29	Mount Holyoke College	Private nondoctoral	16	1.4
30	California Institute of Technology	Private doctoral	19	1.4
31	**Ohio Northern University**	Private nondoctoral	14	1.3
32	Harvey Mudd College	Private nondoctoral	13	1.3
33	**Trinity University**	Private nondoctoral	11	1.3
34	University of Chicago	Private doctoral	23	1.3
35	Smith College	Private nondoctoral	16	1.3
36	**Hope College**	Private nondoctoral	10	1.2
37	Truman State University	Public nondoctoral	19	1.1
38	Santa Clara University	Private nondoctoral	14	1.1
39	Wake Forest University	Private doctoral	10	1.0
40	**St. Olaf College**	Private nondoctoral	13	1.0
41	New York University	Private doctoral	22	0.9
42	Boston College	Private doctoral	17	0.9
43	Harvard University	Private doctoral	27	0.8
44	Hampton University	Private nondoctoral	10	0.8
45	University of North Carolina at Chapel Hill	Public doctoral	34	0.8
46	**Lafayette College**	Private nondoctoral	10	0.8
47	Yale University	Private doctoral	14	0.7
48	The University of Texas at El Paso	Public doctoral	15	0.7
49	University at Buffalo	Public doctoral	27	0.7
50	James Madison University	Public nondoctoral	17	0.7
51	Northwestern University	Private doctoral	22	0.6
52	University of Nevada-Las Vegas	Public doctoral	10	0.6
53	Millersville University of Pennsylvania	Public nondoctoral	11	0.6
54	Western Kentucky University	Public nondoctoral	11	0.6
55	Saint Louis University	Private doctoral	10	0.6

			Women Chemistry Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	Xavier University of Louisiana	Private nondoctoral	13	0.6
57	College of Charleston	Public nondoctoral	13	0.6
58	Rice University	Private doctoral	12	0.6
59	Dartmouth College	Private doctoral	12	0.6
60	Howard University	Private doctoral	11	0.5
61	University of California-Berkeley	Public doctoral	74	0.5
62	Villanova University	Private doctoral	12	0.5
63	University of Michigan-Dearborn	Public nondoctoral	11	0.5
64	University of California-Santa Cruz	Public doctoral	22	0.5
65	University of California-Santa Barbara	Public doctoral	27	0.5
66	Indiana University-Bloomington	Public doctoral	18	0.5
67	Washington University in St Louis	Private doctoral	17	0.5
68	Carnegie Mellon University	Private doctoral	18	0.5
69	Massachusetts Institute of Technology	Private doctoral	33	0.5
70	Northern Arizona University	Public doctoral	14	0.5
71	Western Washington University	Public nondoctoral	14	0.5
72	University of Notre Dame	Private doctoral	12	0.5
73	Clarkson University	Private doctoral	10	0.5
74	University of Pittsburgh-Pittsburgh Campus	Public doctoral	23	0.4
75	Case Western Reserve University	Private doctoral	12	0.4
76	Binghamton University	Public doctoral	16	0.4
77	Wayne State University	Public doctoral	12	0.4
78	Florida International University	Public doctoral	17	0.4
79	University of Utah	Public doctoral	14	0.4
80	University of New Mexico-Main Campus	Public doctoral	12	0.4
81	University of Central Florida	Public doctoral	19	0.4
82	Stanford University	Private doctoral	16	0.4
83	University of Delaware	Public doctoral	16	0.4
84	Florida State University	Public doctoral	14	0.3
85	University of Idaho	Public doctoral	11	0.3
86	University of Massachusetts-Amherst	Public doctoral	19	0.3
87	Columbia University in the City of New York	Private doctoral	11	0.3
88	University of Kansas	Public doctoral	13	0.3
89	Ohio University-Main Campus	Public doctoral	11	0.3
90	University of Illinois at Chicago	Public doctoral	17	0.3
91	Cornell University	Private doctoral	28	0.3
92	Duke University	Private doctoral	12	0.3
93	University of South Carolina-Columbia	Public doctoral	12	0.3
94	University of Pennsylvania	Private doctoral	10	0.3
95	University of North Carolina at Charlotte	Public doctoral	10	0.3
96	The University of Texas at Arlington	Public doctoral	10	0.3
97	University of California-Riverside	Public doctoral	12	0.3
98	University of South Florida-Main Campus	Public doctoral	16	0.3
99	University of Virginia-Main Campus	Public doctoral	16	0.3
100	University of California-Irvine	Public doctoral	25	0.3

NOTES: Institutional-yield ratio is the number of women chemistry doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received chemistry doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A11. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Physics Doctorate Recipients by Institutional-Yield Ratio

			Women Physics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Bryn Mawr College	Private nondoctoral	14	1.9
2	**Grinnell College**	Private nondoctoral	11	1.6
3	California Institute of Technology	Private doctoral	21	1.5
4	**Swarthmore College**	Private nondoctoral	10	1.3
5	Wellesley College	Private nondoctoral	12	1.3
6	Harvey Mudd College	Private nondoctoral	13	1.3
7	Harvard University	Private doctoral	27	0.8
8	Massachusetts Institute of Technology	Private doctoral	52	0.8
9	University of Chicago	Private doctoral	12	0.7
10	College of William and Mary	Public doctoral	12	0.6
11	Princeton University	Private doctoral	15	0.6
12	University of Rochester	Private doctoral	14	0.6
13	Columbia University in the City of New York	Private doctoral	16	0.5
14	Stanford University	Private doctoral	13	0.3
15	University of California-Santa Cruz	Public doctoral	13	0.3
16	University of California-Berkeley	Public doctoral	39	0.3
17	University of California-Los Angeles	Public doctoral	23	0.2
18	University of Pittsburgh-Pittsburgh Campus	Public doctoral	10	0.2
19	Cornell University	Private doctoral	15	0.2
20	University of Arizona	Public doctoral	12	0.1
21	University of Washington-Seattle Campus	Public doctoral	16	0.1
22	University of Colorado Boulder	Public doctoral	10	0.1
23	The University of Texas at Austin	Public doctoral	17	0.1
24	University of Florida	Public doctoral	14	0.1
25	Georgia Institute of Technology-Main Campus	Public doctoral	10	0.1
26	University of Michigan-Ann Arbor	Public doctoral	11	0.1
27	University of Wisconsin-Madison	Public doctoral	10	0.1
28	University of Illinois at Urbana-Champaign	Public doctoral	12	0.1
29	University of California-Davis	Public doctoral	12	0.1
30	North Carolina State University at Raleigh	Public doctoral	11	0.1

NOTES: Institutional-yield ratio is the number of women physics doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received physics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A12. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Computer Sciences Doctorate Recipients by Institutional-Yield Ratio

			Women Computer Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	CUNY Brooklyn College	Public nondoctoral	11	0.7
2	Carnegie Mellon University	Private doctoral	22	0.6
3	Stanford University	Private doctoral	21	0.5
4	Massachusetts Institute of Technology	Private doctoral	31	0.5
5	Harvard University	Private doctoral	15	0.5
6	Brown University	Private doctoral	13	0.4
7	University of Virginia-Main Campus	Public doctoral	13	0.2
8	University of Washington-Seattle Campus	Public doctoral	18	0.2
9	Cornell University	Private doctoral	12	0.1
10	The University of Texas at Austin	Public doctoral	18	0.1
11	University of California-Berkeley	Public doctoral	19	0.1
12	Georgia Institute of Technology-Main Campus	Public doctoral	13	0.1
13	University of Michigan-Ann Arbor	Public doctoral	13	0.1
14	University of California-Los Angeles	Public doctoral	13	0.1
15	University of California-San Diego	Public doctoral	12	0.1
16	University of Maryland-College Park	Public doctoral	10	0.1
17	University of Illinois at Urbana-Champaign	Public doctoral	10	0.1

NOTES: Institutional-yield ratio is the number of computer sciences doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received computer science doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A13. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Mathematics and Statistics Doctorate Recipients by Institutional-Yield Ratio

			Women Mathematics and Statistics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	**Swarthmore College**	Private nondoctoral	10	1.3
2	Wellesley College	Private nondoctoral	11	1.2
3	California Institute of Technology	Private doctoral	16	1.1
4	University of Chicago	Private doctoral	20	1.1
5	Harvey Mudd College	Private nondoctoral	10	1.0
6	**St. Olaf College**	Private nondoctoral	12	0.9
7	Harvard University	Private doctoral	20	0.6
8	**Baylor University**	Private doctoral	11	0.6
9	Rice University	Private doctoral	11	0.5
10	Princeton University	Private doctoral	12	0.5
11	Massachusetts Institute of Technology	Private doctoral	20	0.3
12	Stanford University	Private doctoral	10	0.2
13	University of California-Berkeley	Public doctoral	28	0.2
14	Rutgers University-New Brunswick	Public doctoral	13	0.1
15	University of California-Los Angeles	Public doctoral	13	0.1
16	University of Wisconsin-Madison	Public doctoral	10	0.1
17	University of Michigan-Ann Arbor	Public doctoral	10	0.1
18	Virginia Polytechnic Institute and State University	Public doctoral	10	0.1
19	Texas A & M University-College Station	Public doctoral	12	0.1

NOTES: Institutional-yield ratio is the number of mathematics and statistics doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received mathematics and statistics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A14. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Biological Sciences Doctorate Recipients by Institutional-Yield Ratio

				Black Biological Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Harvard University	Private doctoral		19	7.4
2	CUNY Hunter College	Public nondoctoral		15	7.0
3	University of Maryland-Baltimore County	Public doctoral		70	6.9
4	Johns Hopkins University	Private doctoral		13	6.8
5	Duke University	Private doctoral		17	6.6
6	Brown University	Private doctoral		12	6.1
7	Yale University	Private doctoral		11	5.9
8	**Tougaloo College**	Private nondoctoral	X	16	5.4
9	Princeton University	Private doctoral		12	5.3
10	**Virginia Union University**	Private nondoctoral	X	10	5.2
11	**Spelman College**	Private nondoctoral	X	50	4.6
12	Cornell University	Private doctoral		15	4.4
13	University of North Carolina at Chapel Hill	Public doctoral		19	4.1
14	University of California-Berkeley	Public doctoral		13	4.1
15	University of Maryland Eastern Shore	Public doctoral	X	25	3.8
16	Delaware State University	Public nondoctoral	X	11	3.7
17	**Fisk University**	Private nondoctoral	X	10	3.4
18	University of Virginia-Main Campus	Public doctoral		16	3.2
19	University of Illinois at Urbana-Champaign	Public doctoral		20	3.1
20	**Oakwood University**	Private nondoctoral	X	15	2.9
21	**Dillard University**	Private nondoctoral	X	14	2.9
22	Massachusetts Institute of Technology	Private doctoral		14	2.9
23	University of Georgia	Public doctoral		11	2.8
24	Albany State University	Public nondoctoral	X	10	2.5
25	Stony Brook University	Public doctoral		11	2.5
26	University of Florida	Public doctoral		22	2.3
27	University of Alabama at Birmingham	Public doctoral		10	2.3
28	University of California-Los Angeles	Public doctoral		10	2.2
29	Pennsylvania State University-Main Campus	Public doctoral		12	2.2
30	Hampton University	Private nondoctoral	X	31	2.1
31	Xavier University of Louisiana	Private nondoctoral	X	50	2.1
32	**Morehouse College**	Private nondoctoral	X	25	2.1
33	Howard University	Private doctoral	X	41	2.1
34	University of Michigan-Ann Arbor	Public doctoral		16	2.0
35	Louisiana State University and Agricultural & Mechanical College	Public doctoral		13	1.9
36	Texas A & M University-College Station	Public doctoral		12	1.8
37	North Carolina Central University	Public nondoctoral	X	11	1.7
38	Temple University	Public doctoral		11	1.6
39	Rutgers University-New Brunswick	Public doctoral		14	1.6
40	University of Maryland-College Park	Public doctoral		21	1.6
41	**Clark Atlanta University**	Private doctoral	X	13	1.6
42	Jackson State University	Public doctoral	X	26	1.5
43	Alcorn State University	Public nondoctoral	X	15	1.4
44	Tennessee State University	Public doctoral	X	24	1.3
45	Florida Agricultural and Mechanical University	Public doctoral	X	30	1.1
46	**Tuskegee University**	Private nondoctoral	X	17	1.1
47	Prairie View A & M University	Public doctoral	X	17	0.9
48	North Carolina A & T State University	Public doctoral	X	25	0.8
49	Southern University and A & M College	Public nondoctoral	X	16	0.8
50	Morgan State University	Public doctoral	X	15	0.8
51	South Carolina State University	Public nondoctoral	X	10	0.7

NOTES: Institutional-yield ratio is the number of Black biological sciences doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received biological sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A15. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Chemistry Doctorate Recipients by Institutional-Yield Ratio

				Black Chemistry Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Lincoln University	Public nondoctoral	X	11	2.7
2	**Morehouse College**	Private nondoctoral	X	10	0.8
3	Hampton University	Private nondoctoral	X	10	0.7
4	Xavier University of Louisiana	Private nondoctoral	X	16	0.7
5	Jackson State University	Public doctoral	X	11	0.7
6	Howard University	Private doctoral	X	12	0.6
7	Southern University and A & M College	Public nondoctoral	X	10	0.5

NOTES: Institutional-yield ratio is the number of Black chemistry doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received chemistry doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A16. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Physics Doctorate Recipients by Institutional-Yield Ratio

				Black Physics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Florida Agricultural and Mechanical University	Public doctoral	X	14	0.5

NOTES: Institutional-yield ratio is the number of Black physics doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received physics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. . CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A17. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Computer Sciences Doctorate Recipients by Institutional-Yield Ratio

				Black Computer Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	North Carolina A & T State University	Public doctoral	X	10	0.3

NOTES: Institutional-yield ratio is the number of Black computer sciences doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received computer sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A18. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Mathematics and Statistics Doctorate Recipients by Institutional-Yield Ratio

				Black Mathematics and Statistics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	*****	*****	*	***	***

NOTES: Institutional-yield ratio is the number of Black mathematics and statistics doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received mathematics and statistics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type. Asterisks indicate that no institution met the threshold for display.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A19. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Biological Sciences Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Biological Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Yale University	Private doctoral	18	13.6
2	California State University-San Marcos	Public nondoctoral	11	12.5
3	Indiana University-Bloomington	Public doctoral	11	11.7
4	University of Rochester	Private doctoral	14	11.7
5	Duke University	Private doctoral	21	11.3
6	Johns Hopkins University	Private doctoral	13	10.6
7	University of Chicago	Private doctoral	14	9.9
8	University of Georgia	Public doctoral	11	9.5
9	University of Wisconsin-Madison	Public doctoral	21	9.3
10	Harvard University	Private doctoral	20	8.8
11	Washington University in St Louis	Private doctoral	10	8.3
12	University of Kansas	Public doctoral	12	8.0
13	Rice University	Private doctoral	20	7.6
14	Cornell University	Private doctoral	39	7.1
15	Tufts University	Private doctoral	10	6.9
16	University of Notre Dame	Private doctoral	13	6.8
17	Boston University	Private doctoral	18	6.7
18	Princeton University	Private doctoral	11	6.4
19	Brown University	Private doctoral	10	6.0
20	**Baylor University**	Private doctoral	15	5.9
21	University of California-Los Angeles	Public doctoral	82	5.7
22	University of Massachusetts-Amherst	Public doctoral	12	5.6
23	University of Nevada-Reno	Public doctoral	10	5.5
24	University of California-Santa Cruz	Public doctoral	37	5.4
25	University of California-Irvine	Public doctoral	54	5.4
26	Stanford University	Private doctoral	25	5.3
27	Northwestern University	Private doctoral	10	5.3
28	Florida State University	Public doctoral	29	4.9
29	Michigan State University	Public doctoral	15	4.8
30	Syracuse University	Private doctoral	10	4.8
31	University of California-Davis	Public doctoral	70	4.8
32	University of California-Berkeley	Public doctoral	47	4.8
33	Carnegie Mellon University	Private doctoral	11	4.1
34	Columbia University in the City of New York	Private doctoral	10	4.0
35	Stony Brook University	Public doctoral	13	4.0
36	Massachusetts Institute of Technology	Private doctoral	33	3.9
37	University of Washington-Seattle Campus	Public doctoral	18	3.8
38	University of California-Riverside	Public doctoral	27	3.6
39	University of Arizona	Public doctoral	49	3.6
40	Pennsylvania State University-Main Campus	Public doctoral	18	3.5
41	University of New Mexico-Main Campus	Public doctoral	43	3.4
42	San Francisco State University	Public doctoral	12	3.3
43	Virginia Polytechnic Institute and State University	Public doctoral	10	3.3
44	University of California-San Diego	Public doctoral	38	3.2
45	**St. Mary's University**	Private nondoctoral	24	3.0
46	University of California-Santa Barbara	Public doctoral	25	3.0
47	California State University-Fullerton	Public doctoral	16	2.9
48	The University of Texas at El Paso	Public doctoral	65	2.9

			Latino/Latina Biological Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
49	University of Michigan-Ann Arbor	Public doctoral	15	2.8
50	University of Colorado Boulder	Public doctoral	14	2.8
51	Texas State University	Public doctoral	17	2.8
52	University of Miami	Private doctoral	33	2.8
53	University of Illinois at Urbana-Champaign	Public doctoral	20	2.8
54	Rutgers University-New Brunswick	Public doctoral	21	2.5
55	University of Southern California	Private doctoral	15	2.5
56	Arizona State University-Tempe	Public doctoral	20	2.4
57	California State University-Los Angeles	Public nondoctoral	26	2.4
58	Colorado State University-Fort Collins	Public doctoral	12	2.4
59	The University of Texas at Austin	Public doctoral	50	2.2
60	University of Florida	Public doctoral	47	2.2
61	California State University-Northridge	Public nondoctoral	16	2.1
62	New Mexico State University-Main Campus	Public doctoral	40	2.0
63	University of South Florida-Main Campus	Public doctoral	18	2.0
64	San Jose State University	Public nondoctoral	12	1.9
65	San Diego State University	Public doctoral	17	1.9
66	Texas A & M University-College Station	Public doctoral	44	1.7
67	The University of Texas at San Antonio	Public doctoral	31	1.5
68	California State University-Long Beach	Public nondoctoral	12	1.4
69	Florida International University	Public doctoral	42	1.3
70	California State Polytechnic University-Pomona	Public nondoctoral	20	1.2
71	University of Central Florida	Public doctoral	10	1.0
72	California Polytechnic State University-San Luis Obispo	Public nondoctoral	12	0.8

NOTES: Institutional-yield ratio is the number of Latino/a biological sciences doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received biological sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A20. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Chemistry Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Chemistry Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	California State University-Los Angeles	Public nondoctoral	16	1.5
2	University of California-Santa Cruz	Public doctoral	10	1.5
3	University of California-Berkeley	Public doctoral	12	1.2
4	University of California-Irvine	Public doctoral	11	1.1
5	The University of Texas at El Paso	Public doctoral	23	1.0
6	University of California-Los Angeles	Public doctoral	10	0.7
7	Florida International University	Public doctoral	19	0.6

NOTES: Institutional-yield ratio is the number of Latino/a chemistry doctorate recipients per 100 bachelor's degrees awarded to Hispanics in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received chemistry doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A21. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Physics Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Physics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Massachusetts Institute of Technology	Private doctoral	15	1.8
2	University of California-Berkeley	Public doctoral	11	1.1
3	University of Florida	Public doctoral	11	0.5
4	Florida International University	Public doctoral	14	0.4

NOTES: Institutional-yield ratio is the number of Latino/a physics doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received physics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A22. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Computer Sciences Doctorate Recipients by Institutional-Yield Ratio

Rank	Academic Institution	Institutional Sector	Latino/Latina Computer Sciences Doctorate Recipients	
			Number	Institutional-Yield Ratio
1	*****	*****	*	***

Notes: Institutional-yield ratio is the number of Latino/Latina computer sciences doctorate recipients per 100 bachelor's degrees awarded to Latinos/Latinas in STEM fields nine years earlier. Only institutions from which 10 or more Latino/Latina baccalaureate recipients received computer sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type. Asterisks indicate that no institution met the threshold for display.

Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A23. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Mathematics and Statistics Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Mathematics and Statistics Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	*****	*****	*	***

Notes: Institutional-yield ratio is the number of Latino/Latina mathematics and statistics doctorate recipients per 100 bachelor's degrees awarded to Latinos/Latinas in STEM fields nine years earlier. Only institutions from which 10 or more Latino/Latina baccalaureate recipients received mathematics and statistics doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type. Asterisks indicate that no institution met the threshold for display.

Sources: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A24. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Life Sciences Doctorate Recipients by Institutional-Yield Ratio

			Women Life Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	**Scripps College**	Private nondoctoral	39	14.7
2	**Swarthmore College**	Private nondoctoral	94	12.7
3	Wellesley College	Private nondoctoral	110	12.3
4	Reed College	Private nondoctoral	71	12.2
5	**Kenyon College**	Private nondoctoral	42	12.0
6	**Grinnell College**	Private nondoctoral	76	11.3
7	**Agnes Scott College**	Private nondoctoral	31	11.3
8	Barnard College	Private nondoctoral	76	11.0
9	Brandeis University	Private doctoral	116	10.4
10	University of Chicago	Private doctoral	179	9.9
11	Pomona College	Private nondoctoral	69	9.9
12	Amherst College	Private nondoctoral	55	9.7
13	Smith College	Private nondoctoral	121	9.5
14	Carleton College	Private nondoctoral	97	9.1
15	**Haverford College**	Private nondoctoral	53	9.1
16	**Drew University**	Private nondoctoral	36	9.1
17	Bryn Mawr College	Private nondoctoral	68	9.1
18	Yale University	Private doctoral	167	8.6
19	**Oberlin College**	Private nondoctoral	95	8.6
20	**Earlham College**	Private nondoctoral	36	8.6
21	**Ohio Wesleyan University**	Private nondoctoral	48	8.5
22	Mount Holyoke College	Private nondoctoral	97	8.4
23	Skidmore College	Private nondoctoral	36	8.2
24	Nazareth College	Private nondoctoral	17	8.2
25	Wesleyan University	Private nondoctoral	52	8.1
26	Williams College	Private nondoctoral	70	7.9
27	**Hampshire College**	Private nondoctoral	16	7.8
28	Vassar College	Private nondoctoral	44	7.8
29	**Middlebury College**	Private nondoctoral	67	7.7
30	Beloit College	Private nondoctoral	27	7.6
31	**Kalamazoo College**	Private nondoctoral	41	7.6
32	**Elmira College**	Private nondoctoral	10	7.6
33	College of William and Mary	Public doctoral	146	7.4
34	**Hendrix College**	Private nondoctoral	31	7.3
35	**Ursinus College**	Private nondoctoral	49	7.2
36	St Mary's College of Maryland	Public nondoctoral	47	7.2
37	Bowdoin College	Private nondoctoral	54	7.2
38	Brown University	Private doctoral	216	7.1
39	**Pepperdine University**	Private doctoral	18	7.1
40	**Centenary College of Louisiana**	Private nondoctoral	19	7.0
41	**Erskine College**	Private nondoctoral	13	6.9
42	**The College of Wooster**	Private nondoctoral	41	6.7
43	**Centre College**	Private nondoctoral	24	6.7
44	**Randolph-Macon College**	Private nondoctoral	16	6.6
45	Davidson College	Private nondoctoral	43	6.6
46	**Goucher College**	Private nondoctoral	17	6.6
47	Macalester College	Private nondoctoral	46	6.6
48	**Wheaton College (MA)**	Private nondoctoral	20	6.6
49	Emory University	Private doctoral	123	6.5
50	**Hanover College**	Private nondoctoral	21	6.4
51	Harvard University	Private doctoral	211	6.4
52	**Ripon College**	Private nondoctoral	16	6.3
53	**Whitman College**	Private nondoctoral	42	6.3
54	Colgate University	Private nondoctoral	61	6.2
55	**Allegheny College**	Private nondoctoral	67	6.2

			Women Life Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	Georgetown University	Private doctoral	46	6.2
57	University of Rochester	Private doctoral	156	6.2
58	Lawrence University	Private nondoctoral	26	6.1
59	**Tougaloo College**	Private nondoctoral	16	6.1
60	**University of Puget Sound**	Private nondoctoral	47	5.9
61	Cornell University	Private doctoral	495	5.9
62	Wake Forest University	Private doctoral	58	5.9
63	**University of Richmond**	Private nondoctoral	47	5.9
64	**Cedar Crest College**	Private nondoctoral	33	5.9
65	Colby College	Private nondoctoral	54	5.9
66	Occidental College	Private nondoctoral	36	5.9
67	**St. Olaf College**	Private nondoctoral	78	5.8
68	**Saint Mary's College**	Private nondoctoral	23	5.8
69	**Connecticut College**	Private nondoctoral	31	5.8
70	**Lewis & Clark College**	Private nondoctoral	37	5.8
71	Claremont McKenna College	Private nondoctoral	16	5.6
72	**Gettysburg College**	Private nondoctoral	38	5.5
73	Princeton University	Private doctoral	134	5.4
74	**Trinity University**	Private nondoctoral	45	5.4
75	**Washington & Jefferson College**	Private nondoctoral	19	5.3
76	**Pitzer College**	Private nondoctoral	11	5.3
77	University of Pennsylvania	Private doctoral	170	5.3
78	**Hiram College**	Private nondoctoral	20	5.2
79	**Wittenberg University**	Private nondoctoral	33	5.2
80	**Knox College**	Private nondoctoral	25	5.2
81	**Stonehill College**	Private nondoctoral	26	5.2
82	Clark University	Private doctoral	35	5.1
83	California Institute of Technology	Private doctoral	71	5.1
84	Duke University	Private doctoral	184	5.0
85	Xavier University	Private nondoctoral	23	5.0
86	**Ithaca College**	Private nondoctoral	26	5.0
87	**Willamette University**	Private nondoctoral	34	5.0
88	**Alma College**	Private nondoctoral	23	4.9
89	**Southwestern University**	Private nondoctoral	20	4.8
90	**Muskingum University**	Private nondoctoral	13	4.7
91	**Juniata College**	Private nondoctoral	36	4.7
92	**Spelman College**	Private nondoctoral	53	4.7
93	**Furman University**	Private nondoctoral	35	4.7
94	**Austin College**	Private nondoctoral	21	4.6
95	**Mills College**	Private nondoctoral	11	4.6
96	**Sweet Briar College**	Private nondoctoral	11	4.6
97	Stanford University	Private doctoral	192	4.6
98	**Mary Baldwin University**	Private nondoctoral	10	4.6
99	Johns Hopkins University	Private doctoral	131	4.6
100	**DePauw University**	Private nondoctoral	32	4.6

NOTES: Institutional-yield ratio is the number of women life sciences doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received life sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A25. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Physical Sciences Doctorate Recipients by Institutional-Yield Ratio

			Women Physical Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Carleton College	Private nondoctoral	80	7.5
2	Wellesley College	Private nondoctoral	59	6.6
3	California Institute of Technology	Private doctoral	88	6.3
4	Bryn Mawr College	Private nondoctoral	41	5.5
5	Barnard College	Private nondoctoral	34	4.9
6	**The College of Wooster**	Private nondoctoral	30	4.9
7	Amherst College	Private nondoctoral	27	4.8
8	**Goucher College**	Private nondoctoral	12	4.7
9	**Grinnell College**	Private nondoctoral	31	4.6
10	**Randolph-Macon College**	Private nondoctoral	11	4.6
11	**Franklin and Marshall College**	Private nondoctoral	28	4.6
12	Reed College	Private nondoctoral	26	4.5
13	Lawrence University	Private nondoctoral	17	4.0
14	Macalester College	Private nondoctoral	28	4.0
15	Williams College	Private nondoctoral	35	4.0
16	**Wheaton College (MA)**	Private nondoctoral	12	3.9
17	Vassar College	Private nondoctoral	22	3.9
18	**Swarthmore College**	Private nondoctoral	28	3.8
19	**Whitman College**	Private nondoctoral	25	3.7
20	**Agnes Scott College**	Private nondoctoral	10	3.6
21	Smith College	Private nondoctoral	45	3.5
22	Harvey Mudd College	Private nondoctoral	34	3.5
23	**Washington & Jefferson College**	Private nondoctoral	12	3.4
24	Mount Holyoke College	Private nondoctoral	38	3.3
25	Pomona College	Private nondoctoral	23	3.3
26	**Kalamazoo College**	Private nondoctoral	17	3.1
27	**Albion College**	Private nondoctoral	18	3.1
28	University of Chicago	Private doctoral	55	3.0
29	**Cornell College**	Private nondoctoral	12	3.0
30	**Southwestern University**	Private nondoctoral	12	2.9
31	College of William and Mary	Public doctoral	56	2.9
32	**Hendrix College**	Private nondoctoral	12	2.8
33	Wesleyan University	Private nondoctoral	18	2.8
34	**University of Puget Sound**	Private nondoctoral	22	2.8
35	**Drew University**	Private nondoctoral	11	2.8
36	**Haverford College**	Private nondoctoral	16	2.8
37	**Juniata College**	Private nondoctoral	20	2.6
38	**Hamline University**	Private nondoctoral	10	2.6
39	Colgate University	Private nondoctoral	25	2.6
40	Harvard University	Private doctoral	84	2.5
41	Georgetown University	Private doctoral	18	2.4
42	Xavier University	Private nondoctoral	11	2.4
43	Bates College	Private nondoctoral	20	2.4
44	**Wittenberg University**	Private nondoctoral	15	2.4
45	**Butler University**	Private nondoctoral	14	2.3
46	**Washington and Lee University**	Private nondoctoral	13	2.3
47	Occidental College	Private nondoctoral	14	2.3
48	The College of New Jersey	Public nondoctoral	28	2.2
49	Yale University	Private doctoral	42	2.2
50	**Oberlin College**	Private nondoctoral	24	2.2
51	**Furman University**	Private nondoctoral	16	2.1
52	**Cedar Crest College**	Private nondoctoral	12	2.1
53	**Allegheny College**	Private nondoctoral	23	2.1
54	Dartmouth College	Private doctoral	45	2.1
55	**Colorado College**	Private nondoctoral	21	2.0

			Women Physical Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	Hobart William Smith Colleges	Private nondoctoral	10	2.0
57	Massachusetts Institute of Technology	Private doctoral	130	1.9
58	Hamilton College	Private nondoctoral	12	1.9
59	University of Minnesota-Morris	Public nondoctoral	12	1.9
60	**Trinity University**	Private nondoctoral	16	1.9
61	Rice University	Private doctoral	40	1.9
62	**Eckerd College**	Private nondoctoral	18	1.9
63	Bowdoin College	Private nondoctoral	14	1.9
64	**Middlebury College**	Private nondoctoral	16	1.8
65	**Hope College**	Private nondoctoral	15	1.8
66	Dickinson College	Private nondoctoral	13	1.8
67	**College of Saint Benedict**	Private nondoctoral	10	1.8
68	**Gettysburg College**	Private nondoctoral	12	1.8
69	**Valparaiso University**	Private nondoctoral	16	1.7
70	Fort Lewis College	Public nondoctoral	12	1.7
71	Brandeis University	Private doctoral	19	1.7
72	Princeton University	Private doctoral	41	1.6
73	College of the Holy Cross	Private nondoctoral	12	1.6
74	**Willamette University**	Private nondoctoral	11	1.6
75	**Muhlenberg College**	Private nondoctoral	11	1.6
76	Providence College	Private nondoctoral	11	1.6
77	Columbia University in the City of New York	Private doctoral	50	1.6
78	**St. Olaf College**	Private nondoctoral	21	1.6
79	**Lewis & Clark College**	Private nondoctoral	10	1.6
80	New York University	Private doctoral	37	1.6
81	Brown University	Private doctoral	47	1.6
82	New Mexico Institute of Mining and Technology	Public nondoctoral	15	1.6
83	Davidson College	Private nondoctoral	10	1.5
84	**Ohio Northern University**	Private nondoctoral	16	1.5
85	Wake Forest University	Private doctoral	15	1.5
86	**Luther College**	Private nondoctoral	13	1.5
87	**University of Richmond**	Private nondoctoral	12	1.5
88	Truman State University	Public nondoctoral	24	1.4
89	University of Mary Washington	Public nondoctoral	18	1.4
90	Stanford University	Private doctoral	58	1.4
91	University of North Carolina at Chapel Hill	Public doctoral	58	1.4
92	**Gustavus Adolphus College**	Private nondoctoral	14	1.3
93	University of North Carolina at Asheville	Public nondoctoral	12	1.3
94	University of Rochester	Private doctoral	33	1.3
95	University of California-Santa Cruz	Public doctoral	57	1.3
96	Creighton University	Private nondoctoral	14	1.3
97	The University of Tampa	Private nondoctoral	10	1.3
98	Hampton University	Private nondoctoral	16	1.3
99	Fordham University	Private doctoral	11	1.3
100	University of California-Santa Barbara	Public doctoral	68	1.3

NOTES: Institutional-yield ratio is the number of women physical sciences doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received physical sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A26. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Computer Science/Math Doctorate Recipients by Institutional-Yield Ratio

			Women Computer Science/Math Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	**Swarthmore College**	Private nondoctoral	20	2.7
2	Harvey Mudd College	Private nondoctoral	24	2.5
3	Wellesley College	Private nondoctoral	21	2.3
4	California Institute of Technology	Private doctoral	28	2.0
5	**Wheaton College (IL)**	Private nondoctoral	11	1.9
6	Bryn Mawr College	Private nondoctoral	12	1.6
7	University of Chicago	Private doctoral	26	1.4
8	Pomona College	Private nondoctoral	10	1.4
9	Carleton College	Private nondoctoral	15	1.4
10	Smith College	Private nondoctoral	18	1.4
11	**Spelman College**	Private nondoctoral	15	1.3
12	Williams College	Private nondoctoral	10	1.1
13	Harvard University	Private doctoral	35	1.1
14	CUNY Brooklyn College	Public nondoctoral	15	1.0
15	Rice University	Private doctoral	20	0.9
16	Carnegie Mellon University	Private doctoral	34	0.9
17	**St. Olaf College**	Private nondoctoral	12	0.9
18	Mount Holyoke College	Private nondoctoral	10	0.9
19	Massachusetts Institute of Technology	Private doctoral	52	0.8
20	Princeton University	Private doctoral	19	0.8
21	Stanford University	Private doctoral	31	0.7
22	Yale University	Private doctoral	13	0.7
23	Brown University	Private doctoral	19	0.6
24	**Baylor University**	Private doctoral	12	0.6
25	University of North Texas	Public doctoral	11	0.6
26	Dartmouth College	Private doctoral	12	0.6
27	New York University	Private doctoral	13	0.5
28	University of Notre Dame	Private doctoral	13	0.5
29	College of William and Mary	Public doctoral	10	0.5
30	Columbia University in the City of New York	Private doctoral	16	0.5
31	Rensselaer Polytechnic Institute	Private doctoral	22	0.5
32	University of Rochester	Private doctoral	11	0.4
33	University of California-Berkeley	Public doctoral	58	0.4
34	University of North Carolina at Chapel Hill	Public doctoral	18	0.4
35	Vanderbilt University	Private doctoral	10	0.4
36	Johns Hopkins University	Private doctoral	10	0.3
37	University of Nebraska-Lincoln	Public doctoral	16	0.3
38	University of Virginia-Main Campus	Public doctoral	18	0.3
39	Florida State University	Public doctoral	13	0.3
40	University of Maryland-Baltimore County	Public doctoral	14	0.3
41	University of Michigan-Ann Arbor	Public doctoral	32	0.3
42	University of California-Los Angeles	Public doctoral	33	0.3
43	Cornell University	Private doctoral	23	0.3
44	Boston University	Private doctoral	12	0.3
45	University of Pittsburgh-Pittsburgh Campus	Public doctoral	14	0.3
46	Stony Brook University	Public doctoral	11	0.3
47	University of California-Santa Barbara	Public doctoral	14	0.3
48	Rochester Institute of Technology	Private doctoral	10	0.2
49	University of Central Florida	Public doctoral	12	0.2
50	University of California-San Diego	Public doctoral	27	0.2
51	University of Washington-Seattle Campus	Public doctoral	27	0.2
52	University of California-Irvine	Public doctoral	19	0.2
53	University of Colorado Boulder	Public doctoral	16	0.2
54	University of Houston	Public doctoral	10	0.2
55	University of Georgia	Public doctoral	11	0.2

Rank	Academic Institution	Institutional Sector	Women Computer Science/Math Doctorate Recipients	
			Number	Institutional-Yield Ratio
56	University of South Florida-Main Campus	Public doctoral	11	0.2
57	The University of Texas at Austin	Public doctoral	26	0.2
58	University of Missouri-Columbia	Public doctoral	12	0.2
59	Georgia Institute of Technology-Main Campus	Public doctoral	19	0.2
60	Arizona State University-Tempe	Public doctoral	12	0.2
61	University of Maryland-College Park	Public doctoral	18	0.2
62	University of Wisconsin-Madison	Public doctoral	20	0.2
63	Virginia Polytechnic Institute and State University	Public doctoral	21	0.2
64	Rutgers University-New Brunswick	Public doctoral	19	0.2
65	Ohio State University-Main Campus	Public doctoral	17	0.2
66	University of Illinois at Urbana-Champaign	Public doctoral	21	0.1
67	University of Florida	Public doctoral	19	0.1
68	University of Arizona	Public doctoral	10	0.1
69	California Polytechnic State University-San Luis Obispo	Public nondoctoral	11	0.1
70	Iowa State University	Public doctoral	10	0.1
71	University of Minnesota-Twin Cities	Public doctoral	10	0.1
72	North Carolina State University at Raleigh	Public doctoral	14	0.1
73	Michigan State University	Public doctoral	11	0.1
74	University of California-Davis	Public doctoral	13	0.1
75	Pennsylvania State University-Main Campus	Public doctoral	12	0.1
76	Texas A & M University-College Station	Public doctoral	15	0.1

NOTES: Institutional-yield ratio is the number of women computer science/math doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received computer science/math doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A27. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Women Engineering Doctorate Recipients by Institutional-Yield Ratio

			Women Engineering Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Cooper Union for the Advancement of Science and Art	Private nondoctoral	33	5.2
2	Harvey Mudd College	Private nondoctoral	43	4.4
3	Massachusetts Institute of Technology	Private doctoral	293	4.4
4	California Institute of Technology	Private doctoral	45	3.2
5	Johns Hopkins University	Private doctoral	90	3.1
6	Rice University	Private doctoral	65	3.1
7	Princeton University	Private doctoral	72	2.9
8	Alfred University	Private nondoctoral	13	2.7
9	Tulane University of Louisiana	Private doctoral	50	2.2
10	Carnegie Mellon University	Private doctoral	76	2.1
11	University of Rochester	Private doctoral	52	2.1
12	**Lafayette College**	Private nondoctoral	26	2.0
13	Case Western Reserve University	Private doctoral	53	1.9
14	**Swarthmore College**	Private nondoctoral	14	1.9
15	**Bucknell University**	Private nondoctoral	36	1.7
16	Northwestern University	Private doctoral	59	1.7
17	Smith College	Private nondoctoral	21	1.6
18	Stanford University	Private doctoral	68	1.6
19	Vanderbilt University	Private doctoral	46	1.6
20	Rensselaer Polytechnic Institute	Private doctoral	78	1.6
21	**Valparaiso University**	Private nondoctoral	14	1.5
22	Cornell University	Private doctoral	127	1.5
23	University of Notre Dame	Private doctoral	37	1.5
24	Columbia University in the City of New York	Private doctoral	47	1.5
25	University of Virginia-Main Campus	Public doctoral	81	1.5
26	University of Pennsylvania	Private doctoral	47	1.5
27	Tufts University	Private doctoral	34	1.4
28	Duke University	Private doctoral	51	1.4
29	University of California-Berkeley	Public doctoral	189	1.4
30	Yale University	Private doctoral	26	1.3
31	Illinois Institute of Technology	Private doctoral	21	1.3
32	Washington University in St Louis	Private doctoral	45	1.3
33	Brown University	Private doctoral	39	1.3
34	Lehigh University	Private doctoral	36	1.3
35	Colorado School of Mines	Public doctoral	36	1.3
36	Dartmouth College	Private doctoral	27	1.2
37	University of Iowa	Public doctoral	41	1.2
38	University of Florida	Public doctoral	153	1.1
39	Clemson University	Public doctoral	65	1.1
40	Georgia Institute of Technology-Main Campus	Public doctoral	111	1.1
41	The University of Texas at El Paso	Public doctoral	23	1.1
42	University of Michigan-Ann Arbor	Public doctoral	123	1.1
43	Morgan State University	Public doctoral	18	1.1
44	University of Pittsburgh-Pittsburgh Campus	Public doctoral	56	1.1
45	Saint Louis University	Private doctoral	18	1.1
46	Boston University	Private doctoral	47	1.1
47	Mount Holyoke College	Private nondoctoral	12	1.0
48	New Mexico Institute of Mining and Technology	Public nondoctoral	10	1.0
49	Harvard University	Private doctoral	34	1.0
50	University of New Mexico-Main Campus	Public doctoral	31	1.0
51	University of Dayton	Private doctoral	23	1.0
52	Michigan Technological University	Public doctoral	55	1.0
53	Worcester Polytechnic Institute	Private doctoral	35	1.0
54	**Spelman College**	Private nondoctoral	11	1.0
55	Missouri University of Science and Technology	Public doctoral	40	1.0

			Women Engineering Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
56	University of Louisville	Public doctoral	20	0.9
57	University of Miami	Private doctoral	28	0.9
58	University of Oklahoma-Norman Campus	Public doctoral	34	0.9
59	Drexel University	Private doctoral	35	0.9
60	**Tuskegee University**	Private nondoctoral	12	0.8
61	University of Delaware	Public doctoral	36	0.8
62	Clarkson University	Private doctoral	17	0.8
63	Florida Agricultural and Mechanical University	Public doctoral	17	0.8
64	Virginia Commonwealth University	Public doctoral	20	0.8
65	Mississippi State University	Public doctoral	36	0.8
66	The University of Texas at Austin	Public doctoral	99	0.8
67	Arizona State University-Tempe	Public doctoral	48	0.8
68	CUNY City College	Public nondoctoral	17	0.8
69	Northeastern University	Private doctoral	25	0.8
70	University of Southern California	Private doctoral	27	0.7
71	George Washington University	Private doctoral	12	0.7
72	University of Maryland-College Park	Public doctoral	69	0.7
73	University of Utah	Public doctoral	25	0.7
74	University of Illinois at Urbana-Champaign	Public doctoral	104	0.7
75	Wright State University-Main Campus	Public doctoral	14	0.7
76	University of Arizona	Public doctoral	58	0.7
77	Tennessee Technological University	Public doctoral	18	0.7
78	Syracuse University	Private doctoral	20	0.7
79	North Carolina State University at Raleigh	Public doctoral	96	0.7
80	Virginia Polytechnic Institute and State University	Public doctoral	82	0.7
81	University of Arkansas	Public doctoral	24	0.7
82	University of Chicago	Private doctoral	12	0.7
83	The University of Tennessee-Knoxville	Public doctoral	30	0.7
84	North Carolina A & T State University	Public doctoral	16	0.6
85	University of Wisconsin-Madison	Public doctoral	69	0.6
86	Florida State University	Public doctoral	25	0.6
87	University of Alabama in Huntsville	Public doctoral	11	0.6
88	Iowa State University	Public doctoral	55	0.6
89	University of Nebraska-Lincoln	Public doctoral	30	0.6
90	Stevens Institute of Technology	Private doctoral	11	0.6
91	University of Kansas	Public doctoral	23	0.6
92	University of California-San Diego	Public doctoral	69	0.6
93	University of Minnesota-Twin Cities	Public doctoral	60	0.6
94	University of Cincinnati-Main Campus	Public doctoral	24	0.6
95	The University of Alabama	Public doctoral	13	0.6
96	University of Central Florida	Public doctoral	29	0.6
97	University of Washington-Seattle Campus	Public doctoral	68	0.6
98	Ohio State University-Main Campus	Public doctoral	60	0.6
99	University of California-Los Angeles	Public doctoral	69	0.6
100	Purdue University-Main Campus	Public doctoral	85	0.6

NOTES: Institutional-yield ratio is the number of women engineering doctorate recipients per 100 bachelor's degrees awarded to women in STEM fields 9 years earlier. Only institutions from which 10 or more women baccalaureate recipients received engineering doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A28. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Life Sciences Doctorate Recipients by Institutional-Yield Ratio

				Black Life Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	CUNY Hunter College	Public nondoctoral		16	7.5
2	Harvard University	Private doctoral		19	7.4
3	University of Maryland-Baltimore County	Public doctoral		70	6.9
4	Yale University	Private doctoral		13	6.9
5	Johns Hopkins University	Private doctoral		13	6.8
6	Duke University	Private doctoral		17	6.6
7	**Tougaloo College**	Private nondoctoral	X	18	6.1
8	Brown University	Private doctoral		12	6.1
9	Princeton University	Private doctoral		12	5.3
10	**Virginia Union University**	Private nondoctoral	X	10	5.2
11	Cornell University	Private doctoral		17	5.0
12	Delaware State University	Public nondoctoral	X	14	4.7
13	**Spelman College**	Private nondoctoral	X	50	4.6
14	University of North Carolina at Chapel Hill	Public doctoral		20	4.4
15	University of Maryland Eastern Shore	Public doctoral	X	27	4.1
16	University of California-Berkeley	Public doctoral		13	4.1
17	University of Georgia	Public doctoral		14	3.6
18	**Oakwood University**	Private nondoctoral	X	18	3.5
19	**Fisk University**	Private nondoctoral	X	10	3.4
20	University of Virginia-Main Campus	Public doctoral		17	3.4
21	University of Illinois at Urbana-Champaign	Public doctoral		21	3.3
22	**Dillard University**	Private nondoctoral	X	15	3.1
23	The University of Tennessee-Knoxville	Public doctoral		11	3.1
24	Massachusetts Institute of Technology	Private doctoral		15	3.1
25	University of California-Davis	Public doctoral		10	2.8
26	University of Florida	Public doctoral		24	2.6
27	Albany State University	Public nondoctoral	X	10	2.5
28	Stony Brook University	Public doctoral		11	2.5
29	Lincoln University	Public nondoctoral	X	10	2.4
30	Pennsylvania State University-Main Campus	Public doctoral		13	2.4
31	University of Alabama at Birmingham	Public doctoral		10	2.3
32	University of Illinois at Chicago	Public doctoral		10	2.3
33	Xavier University of Louisiana	Private nondoctoral	X	53	2.3
34	University of Michigan-Ann Arbor	Public doctoral		18	2.2
35	Howard University	Private doctoral	X	44	2.2
36	University of California-Los Angeles	Public doctoral		10	2.2
37	**Morehouse College**	Private nondoctoral	X	26	2.2
38	Hampton University	Private nondoctoral	X	31	2.1
39	Texas A & M University-College Station	Public doctoral		14	2.1
40	North Carolina Central University	Public nondoctoral	X	13	2.0
41	Jackson State University	Public doctoral	X	32	1.9
42	Louisiana State University and Agricultural & Mechanical College	Public doctoral		13	1.9
43	Virginia Polytechnic Institute and State University	Public doctoral		10	1.8
44	University of Maryland-College Park	Public doctoral		23	1.7
45	Fort Valley State University	Public nondoctoral	X	10	1.7
46	Alcorn State University	Public nondoctoral	X	18	1.7
47	Mississippi State University	Public doctoral		11	1.7
48	Rutgers University-New Brunswick	Public doctoral		15	1.7

Rank	Academic Institution	Institutional Sector	HBCU	Black Life Sciences Doctorate Recipients: Number	Black Life Sciences Doctorate Recipients: Institutional-Yield Ratio
49	**Clark Atlanta University**	Private doctoral	X	14	1.7
50	Clemson University	Public doctoral		12	1.7
51	Temple University	Public doctoral		11	1.6
52	**Tuskegee University**	Private nondoctoral	X	26	1.6
53	Tennessee State University	Public doctoral	X	27	1.5
54	Virginia State University	Public nondoctoral	X	11	1.5
55	Southern University and A & M College	Public nondoctoral	X	28	1.4
56	Alabama A & M University	Public nondoctoral	X	22	1.4
57	Florida Agricultural and Mechanical University	Public doctoral	X	35	1.3
58	Savannah State University	Public nondoctoral	X	10	1.2
59	Georgia State University	Public doctoral		10	1.1
60	Prairie View A & M University	Public doctoral	X	20	1.0
61	North Carolina A & T State University	Public doctoral	X	31	1.0
62	North Carolina State University at Raleigh	Public doctoral		14	0.9
63	South Carolina State University	Public nondoctoral	X	12	0.8
64	Morgan State University	Public doctoral	X	15	0.8

NOTES: Institutional-yield ratio is the number of Black life sciences doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received life sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A29. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Physical Sciences Doctorate Recipients by Institutional-Yield Ratio

				Black Physical Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Lincoln University	Public nondoctoral	X	11	2.7
2	**Morehouse College**	Private nondoctoral	X	20	1.7
3	Hampton University	Private nondoctoral	X	18	1.2
4	Howard University	Private doctoral	X	21	1.1
5	Jackson State University	Public doctoral	X	13	0.8
6	Florida Agricultural and Mechanical University	Public doctoral	X	20	0.8
7	Southern University and A & M College	Public nondoctoral	X	15	0.7
8	Xavier University of Louisiana	Private nondoctoral	X	16	0.7
9	North Carolina A & T State University	Public doctoral	X	10	0.3

NOTES: Institutional-yield ratio is the number of Black physical sciences doctorate recipients per 100 bachelor's degrees to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received physical sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A30. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Computer Science/Math Doctorate Recipients by Institutional-Yield Ratio

				Black Computer Science/Math Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	**Spelman College**	Private nondoctoral	X	14	1.3
2	Howard University	Private doctoral	X	10	0.5
3	North Carolina A & T State University	Public doctoral	X	10	0.3

NOTES: Institutional-yield ratio is the number of Black computer science/math doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received computer sciences/math doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A31. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Black Engineering Doctorate Recipients by Institutional-Yield Ratio

				Black Engineering Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	HBCU	Number	Institutional-Yield Ratio
1	Massachusetts Institute of Technology	Private doctoral		31	6.3
2	Vanderbilt University	Private doctoral		10	5.1
3	University of Pittsburgh-Pittsburgh Campus	Public doctoral		16	3.5
4	University of Florida	Public doctoral		29	3.1
5	University of Maryland-Baltimore County	Public doctoral		28	2.8
6	Clemson University	Public doctoral		19	2.6
7	University of Virginia-Main Campus	Public doctoral		12	2.4
8	University of Michigan-Ann Arbor	Public doctoral		19	2.4
9	Morgan State University	Public doctoral	X	42	2.2
10	Mississippi State University	Public doctoral		14	2.2
11	Georgia Institute of Technology-Main Campus	Public doctoral		27	1.9
12	University of Maryland-College Park	Public doctoral		24	1.8
13	Virginia Polytechnic Institute and State University	Public doctoral		10	1.8
14	CUNY City College	Public nondoctoral		16	1.7
15	Florida State University	Public doctoral		13	1.7
16	Ohio State University-Main Campus	Public doctoral		10	1.6
17	**Clark Atlanta University**	Private doctoral	X	13	1.6
18	North Carolina A & T State University	Public doctoral	X	44	1.4
19	Michigan State University	Public doctoral		11	1.2
20	Florida Agricultural and Mechanical University	Public doctoral	X	30	1.1
21	**Morehouse College**	Private nondoctoral	X	12	1.0
22	**Tuskegee University**	Private nondoctoral	X	16	1.0
23	Howard University	Private doctoral	X	19	1.0
24	North Carolina State University at Raleigh	Public doctoral		14	0.9
25	**Spelman College**	Private nondoctoral	X	10	0.9
26	Southern University and A & M College	Public nondoctoral	X	17	0.8
27	Tennessee State University	Public doctoral	X	13	0.7

NOTES: Institutional-yield ratio is the number of Black engineering doctorate recipients per 100 bachelor's degrees awarded to Blacks in STEM fields 9 years earlier. Only institutions from which 10 or more Black baccalaureate recipients received engineering doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A32. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Life Sciences Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Life Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Yale University	Private doctoral	19	14.4
2	California State University-San Marcos	Public nondoctoral	11	12.5
3	University of Wisconsin-Madison	Public doctoral	27	11.9
4	Indiana University-Bloomington	Public doctoral	11	11.7
5	University of Rochester	Private doctoral	14	11.7
6	Duke University	Private doctoral	21	11.3
7	University of Georgia	Public doctoral	13	11.2
8	Johns Hopkins University	Private doctoral	13	10.6
9	University of Chicago	Private doctoral	14	9.9
10	Harvard University	Private doctoral	20	8.8
11	Washington University in St Louis	Private doctoral	10	8.3
12	University of Kansas	Public doctoral	12	8.0
13	Rice University	Private doctoral	20	7.6
14	Cornell University	Private doctoral	41	7.5
15	Tulane University of Louisiana	Private doctoral	10	7.1
16	Binghamton University	Public doctoral	11	7.1
17	Boston University	Private doctoral	19	7.0
18	University of Massachusetts-Amherst	Public doctoral	15	7.0
19	Tufts University	Private doctoral	10	6.9
20	New York University	Private doctoral	10	6.9
21	Princeton University	Private doctoral	12	6.9
22	University of Notre Dame	Private doctoral	13	6.8
23	University of California-Santa Cruz	Public doctoral	42	6.2
24	Brigham Young University-Provo	Private doctoral	13	6.0
25	Brown University	Private doctoral	10	6.0
26	**Baylor University**	Private doctoral	15	5.9
27	University of California-Los Angeles	Public doctoral	83	5.8
28	Stanford University	Private doctoral	27	5.8
29	University of Nevada-Reno	Public doctoral	10	5.5
30	University of California-Irvine	Public doctoral	55	5.5
31	University of California-Davis	Public doctoral	79	5.4
32	Northwestern University	Private doctoral	10	5.3
33	Michigan State University	Public doctoral	16	5.1
34	University of California-Berkeley	Public doctoral	50	5.1
35	Florida State University	Public doctoral	29	4.9
36	Syracuse University	Private doctoral	10	4.8
37	University of Arizona	Public doctoral	58	4.3
38	Carnegie Mellon University	Private doctoral	11	4.1
39	Columbia University in the City of New York	Private doctoral	10	4.0
40	Stony Brook University	Public doctoral	13	4.0
41	Massachusetts Institute of Technology	Private doctoral	33	3.9
42	University of Washington-Seattle Campus	Public doctoral	18	3.8
43	Pennsylvania State University-Main Campus	Public doctoral	19	3.7
44	University of California-Riverside	Public doctoral	27	3.6
45	Virginia Polytechnic Institute and State University	Public doctoral	11	3.6
46	San Francisco State University	Public doctoral	13	3.6
47	Humboldt State University	Public nondoctoral	10	3.6
48	University of New Mexico-Main Campus	Public doctoral	44	3.5
49	The University of Texas at El Paso	Public doctoral	74	3.3
50	University of California-San Diego	Public doctoral	39	3.3
51	University of Michigan-Ann Arbor	Public doctoral	17	3.2
52	Colorado State University-Fort Collins	Public doctoral	16	3.2
53	California State University-Fullerton	Public doctoral	17	3.1
54	University of California-Santa Barbara	Public doctoral	26	3.1

			Latino/Latina Life Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
55	University of Illinois at Urbana-Champaign	Public doctoral	22	3.0
56	**St. Mary's University**	Private nondoctoral	24	3.0
57	University of Colorado Boulder	Public doctoral	15	3.0
58	Texas State University	Public doctoral	17	2.8
59	University of Miami	Private doctoral	33	2.8
60	Rutgers University-New Brunswick	Public doctoral	22	2.7
61	Arizona State University-Tempe	Public doctoral	21	2.5
62	University of Florida	Public doctoral	54	2.5
63	University of Southern California	Private doctoral	15	2.5
64	California State University-Los Angeles	Public nondoctoral	26	2.4
65	The University of Texas at Austin	Public doctoral	52	2.3
66	New Mexico State University-Main Campus	Public doctoral	45	2.3
67	University of South Florida-Main Campus	Public doctoral	20	2.2
68	Texas A & M University-College Station	Public doctoral	56	2.1
69	California State University-Northridge	Public nondoctoral	16	2.1
70	University of Maryland-College Park	Public doctoral	11	2.1
71	San Jose State University	Public nondoctoral	13	2.0
72	San Diego State University	Public doctoral	17	1.9
73	The University of Texas at San Antonio	Public doctoral	33	1.6
74	California State University-Long Beach	Public nondoctoral	13	1.5
75	Florida International University	Public doctoral	44	1.3
76	California State Polytechnic University-Pomona	Public nondoctoral	21	1.3
77	University of Central Florida	Public doctoral	10	1.0
78	California Polytechnic State University-San Luis Obispo	Public nondoctoral	14	0.9
79	Texas A & M University-Kingsville	Public doctoral	11	0.8
80	The University of Texas Rio Grande Valley	Public doctoral	11	0.6

NOTES: Institutional-yield ratio is the number of Latino/a life sciences doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received life sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A33. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Physical Sciences Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Physical Sciences Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	California Institute of Technology	Private doctoral	13	12.4
2	Columbia University in the City of New York	Private doctoral	11	4.4
3	University of California-Berkeley	Public doctoral	34	3.5
4	Cornell University	Private doctoral	18	3.3
5	Massachusetts Institute of Technology	Private doctoral	24	2.8
6	Stanford University	Private doctoral	13	2.8
7	University of California-Santa Cruz	Public doctoral	17	2.5
8	University of Michigan-Ann Arbor	Public doctoral	12	2.3
9	Florida State University	Public doctoral	11	1.9
10	University of California-Santa Barbara	Public doctoral	15	1.8
11	University of California-Riverside	Public doctoral	13	1.7
12	California State University-Los Angeles	Public nondoctoral	17	1.6
13	University of California-Los Angeles	Public doctoral	21	1.5
14	University of California-Irvine	Public doctoral	14	1.4
15	The University of Texas at El Paso	Public doctoral	30	1.4
16	Florida International University	Public doctoral	37	1.1
17	University of Florida	Public doctoral	24	1.1
18	University of California-San Diego	Public doctoral	12	1.0
19	University of Central Florida	Public doctoral	10	1.0
20	University of New Mexico-Main Campus	Public doctoral	10	0.8
21	The University of Texas at Austin	Public doctoral	17	0.8
22	The University of Texas Rio Grande Valley	Public doctoral	11	0.6

NOTES: Institutional-yield ratio is the number of Latino/a physical sciences doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received physical sciences doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A34. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Computer Science/Math Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Computer Science/Math Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	Massachusetts Institute of Technology	Private doctoral	12	1.4
2	University of California-San Diego	Public doctoral	10	0.8
3	The University of Texas at El Paso	Public doctoral	13	0.6
4	The University of Texas at Austin	Public doctoral	10	0.4
5	Florida International University	Public doctoral	11	0.3

NOTES: Institutional-yield ratio is the number of Hispanic computer science/math doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received computer science/math doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Table A35. Top 100 U.S. Baccalaureate-Origin Institutions of 2007–2016 Latino/Latina Engineering Doctorate Recipients by Institutional-Yield Ratio

			Latino/Latina Engineering Doctorate Recipients	
Rank	Academic Institution	Institutional Sector	Number	Institutional-Yield Ratio
1	California Institute of Technology	Private doctoral	12	11.4
2	Massachusetts Institute of Technology	Private doctoral	60	7.0
3	University of Pennsylvania	Private doctoral	10	6.5
4	Rice University	Private doctoral	16	6.1
5	Georgia Institute of Technology-Main Campus	Public doctoral	30	5.8
6	Princeton University	Private doctoral	10	5.8
7	Duke University	Private doctoral	10	5.4
8	University of Wisconsin-Madison	Public doctoral	10	4.4
9	Carnegie Mellon University	Private doctoral	11	4.1
10	Cornell University	Private doctoral	20	3.6
11	University of Florida	Public doctoral	78	3.6
12	Rensselaer Polytechnic Institute	Private doctoral	11	3.3
13	University of California-Berkeley	Public doctoral	31	3.2
14	The University of Texas at El Paso	Public doctoral	59	2.7
15	Purdue University-Main Campus	Public doctoral	10	2.5
16	University of Maryland-College Park	Public doctoral	13	2.5
17	University of Michigan-Ann Arbor	Public doctoral	13	2.4
18	University of California-Riverside	Public doctoral	17	2.3
19	University of Miami	Private doctoral	25	2.1
20	University of Southern California	Private doctoral	12	2.0
21	University of Central Florida	Public doctoral	20	2.0
22	University of New Mexico-Main Campus	Public doctoral	24	1.9
23	University of California-Irvine	Public doctoral	19	1.9
24	Florida State University	Public doctoral	11	1.9
25	The University of Texas at Austin	Public doctoral	39	1.7
26	Arizona State University-Tempe	Public doctoral	14	1.7
27	University of California-San Diego	Public doctoral	19	1.6
28	Rutgers University-New Brunswick	Public doctoral	13	1.6
29	University of California-Los Angeles	Public doctoral	21	1.5
30	University of California-Davis	Public doctoral	20	1.4
31	University of Houston	Public doctoral	15	1.3
32	University of California-Santa Barbara	Public doctoral	10	1.2
33	University of South Florida-Main Campus	Public doctoral	10	1.1
34	New Mexico State University-Main Campus	Public doctoral	21	1.1
35	Texas A & M University-College Station	Public doctoral	25	1.0
36	University of Arizona	Public doctoral	11	0.8
37	Florida International University	Public doctoral	23	0.7

NOTES: Institutional-yield ratio is the number of Latino/a engineering doctorate recipients per 100 bachelor's degrees awarded to Latino/as in STEM fields 9 years earlier. Only institutions from which 10 or more Latino/a baccalaureate recipients received engineering doctorate degrees between 2007 and 2016 were included in the analysis. Institutions are ranked on unrounded ratios. CIC member institutions are indicated with boldface type.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Earned Doctorates; U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.