

Status of Underrepresented Minorities in Science, Technology, Engineering, and Mathematics (STEM)

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One of the most frequently discussed topics in academic and governmental circles today is what should be the role of colleges and universities and governmental agencies at the Federal, State, and Local level in increasing the number of underrepresented minorities¹ in the professional ranks of mainstream America, the creation and maintenance of effective, systemic programs that improve: the racial and ethnic climate in academe; the promotion of understanding and sensitivity on the various campuses; and the recruitment, retention, and graduation of these underrepresented minority students. This topic of discussion—especially for science, technology, engineering, and mathematics (STEM) fields—is extant at the undergraduate as well as at the graduate level. In this document (“White Paper”), we provide a historical overview of the extraordinarily long–yet still present–persistent–essentially unabated–underrepresentation problem. We also provide current data (current and spanning the past decade) and reports with sources. Using student graduation rates (a major measure indicator of university progress or lack of progress), we provide—for selected universities—the latest data available from the National Center for Education Statistics and other organizations. Finally, we present a sample University Organizational Unit Plan outline that we have found to be functionally effective in partially alleviating some of the nexus-like problems associated with underrepresented minority success in academic programs.

¹We define underrepresented minorities as African-American (Black), Hispanic (Latino), or Native Americans.

EXECUTIVE SUMMARY

Purpose of this Document

The primary objective of this “White Paper” is to suggest solutions which address this chronic and acute problem of identifying, attracting, motivating, retaining, and then preparing talented underrepresented minority undergraduate students for graduation with STEM baccalaureate degrees, for further STEM graduate studies—especially at the doctorate level, and for productive careers in science, technology, engineering, mathematics and associated disciplines.

Specifically, suggested solution components should be as comprehensive, multi-disciplinary, and as collaborative as possible. The mission goals of a really good solution should include the capability: (1) To increase significantly the number and quality of underrepresented minority students receiving STEM baccalaureate degrees; (2) To increase the size of the pool of interested and academically qualified underrepresented minorities eligible for STEM graduate study; and (3) To increase the number of underrepresented minority students entering graduate schools who ultimately attain the doctorate in STEM fields.

Solution Components

- Seminal solution components of a topical nature include ion beam and accelerator physics theory and applications, materials science and condensed matter physics, chemistry, plasma and fluid dynamics science, environmental science theory and applications, quantum and nuclear physics theory and applications, computational science, mathematical modeling theory and applications, computer sciences, nanoscience theory and applications and associated nanotechnology, medical physics, and engineering associated with the aforementioned topics.
- Another seminal component (and a critical one) is the creation and administration of effective programs designed to identify, attract, motivate, retain, and prepare talented minority undergraduate students engaged in the topical components mentioned above for graduation with STEM baccalaureate and graduate degrees.
- Many information-rich, non-profit, non-partisan, government, and discipline-oriented society websites exist from which one can derive the following conclusion: ***Universities which have the most success in recruiting, retention, and graduation of underrepresented minorities generally have programs and resources of a systemic nature and which have a critical mass of motivated and appropriately rewarded faculty and staff personnel.***
- The lack of sufficient numbers of underrepresented minorities in science, technology, engineering, and mathematics fields is a problem of serious national concern and a solution should entertain the development and implementation of an *alliance* or *consortium* arrangement with universities, national laboratories, foundations, governmental units, and industry. It is mandatory that such an arrangement must span all or almost all federally funded agencies that have some role in education and research!
- ***A solution plan should also provide early research experience and bridge programs to participating students, strengthen the academic environment at all participating universities; provide mentoring, counseling, and role models for participants; and further promote the partnerships among alliance or consortium partners. Furthermore, solution plan faculty and staff personnel must be able to have designated “ombudsmen” with authority to solve expeditiously problems encountered by the students they serve. That implies that university administrative superiors must be very sincerely involved in solution plans at a root level—we have found that quite often program–student problems are readily solved by plan–participating professors when they have access to pertinent university infrastructural administrators who know they have implicit instructions to facilitate solvability of problems brought to their attention. Succinctly put, university offices at the presidential and provost level must let it be known to all faculty and staff that they fully support solution plans!***

Overview and Some Historical Background

Upon reviewing data from 1972-2006, the U.S. Department of Education, National Center for Education Statistics (NCES)² found that although the college enrollment participation rate³ has improved for both Whites and African-Americans, the gap between the two groups has fluctuated resulting in no essential change over that period. In 2006, the gap was 13% [69% (White) versus 55% (Black)]. For Hispanics, a very similar situation obtains with a gap of 13% [69% (White) versus 58% (Hispanics)]. *Income is a factor in the above-mentioned data*⁴: The college enrollment rate was higher for high-income family students and lower for those students whose parents had less education or were low-income⁵. *Students whose parents had less education* also had lower rates of college enrollment in the period 1992–2006 when compared with students whose parents had a bachelor degree or higher.

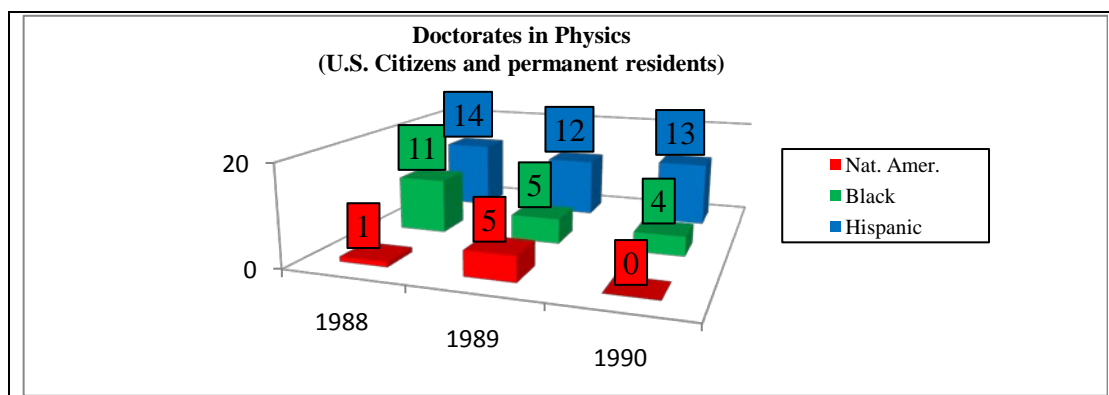


Figure 1. Black, Hispanic, and Native American doctoral recipients in Physics (Source: NSF detailed statistical tables and Department of Education/National Center for Education Statistics). (Prepared by M. D. Slaughter)

In 2007, African-Americans comprised roughly 4 percent of all employed doctorate scientists and engineers in this country even though they were about 12 percent of the general population while Hispanics comprised roughly 3% of all employed doctorate scientists and engineers in this country but constituted about 15 percent of the general population. In 1988 only 47 African-Americans earned science Ph.D.s and only 15 in engineering. While a few more Hispanics went into hard science fields, their numbers were quite small. According to AIP⁶, “An additional obstacle facing Hispanic students is a significant age difference between them and other race-ethnic groups.” In 1980, about 9.5% of high school seniors 19 years of age and older were Hispanic, whereas 8% were Black. The national average at the time was only 4%. In 1980, Hispanics earned 69 doctorates in the physical sciences and 43 in engineering, or only 2.3% of all doctorates awarded to U.S. citizens in those areas, whereas American Indians earned 0.3% (11 doctorates in the physical sciences and 4 in engineering) of all doctorates awarded to U.S. citizens. In order to illustrate graphically the serious and disturbing nature of the gross underrepresentation of minorities in science, we use the field of Physics as an example discipline (See Figure 1, Figure 1A, Table 1, and Figure 2).

² U.S. Department of Education, National Center for Education Statistics (<http://nces.ed.gov/fastfacts>) (2009).

³ The college enrollment rate is defined as the percentage of all high school completers ages 16–24 that enroll in college (2- or 4-year) in the fall immediately after high school.

⁴ *Paying for College: Students from Middle-Income Backgrounds*, <http://trends.collegeboard.org/sites/default/files/trends-2009-middle-income-students-one-page.pdf>, (2010). See Reference [20] for latest data.

⁵ Low income refers to the bottom 20 percent of all family incomes while high income refers to the top 20 percent of all family incomes. Middle-income refers to the remaining 60%

⁶ *Who Takes Science? A Report on Student coursework in High School Science and Mathematics*, Roman Czujko and David Bernstein. American Institute of Physics (AIP), New York, New York (1989).

DOCTORATES IN SELECTED STEM FIELDS (U. S. CITIZENS AND PERMANENT RESIDENTS)
BY
RACE/ETHNICITY AND DISCIPLINE (1988-1990)

Table 1

Discipline	Year	Black	Hispanic	Nat. Amer.	Asian	Other	White	Total
Chemistry	1988	17	43	5	48	29	1235	1377
	1989	20	40	5	42	24	1167	1276
	1990	12	48	3	53	24	1218	1358
Computer Science	1988	1	2	0	18	6	217	244
	1989	0	3	2	14	15	240	274
	1990	1	3	0	9	8	269	290
Engineering	1988	19	43	4	141	44	1530	1781
	1989	24	34	7	173	43	1583	1864
	1990	28	39	4	152	35	1669	1927
Mathematics	1988	2	3	2	17	10	308	342
	1989	6	8	0	13	15	351	393
	1990	4	7	1	9	7	341	369
Physics	1988	11	14	1	19	32	646	723
	1989	5	12	5	33	21	599	675
	1990	4	13	0	32	25	645	719

U. S. Citizen doctoral recipients in chemistry, computer science, engineering, mathematics, and physics in 1988, 1989, and 1990. (Source: NSF detailed statistical tables). (Prepared by M. D. Slaughter)

DOCTORATES IN PHYSICS (U. S. CITIZENS AND PERMANENT RESIDENTS)
BY
RACE/ETHNICITY AND DISCIPLINE (1988-1990 and 1997–2001)

Table 1A.

Discipline	Year	Black	Hispanic	Nat. Amer.	Asian	Other	White	Total
Physics	1988	11	14	1	19	32	646	723
	1989	5	12	5	33	21	599	675
	1990	4	13	0	32	25	645	719
	1997	14	22	2	157	29	659	883
	1998	10	18	1	111	32	652	824
	1999	8	16	3	66	19	630	742
	2000	16	23	1	68	13	571	692
	2001	16	15	0	68	25	558	682

The American Council on Education⁷ found that the college participation rate of low-income African-American high school graduates between 18 and 24 years old dropped

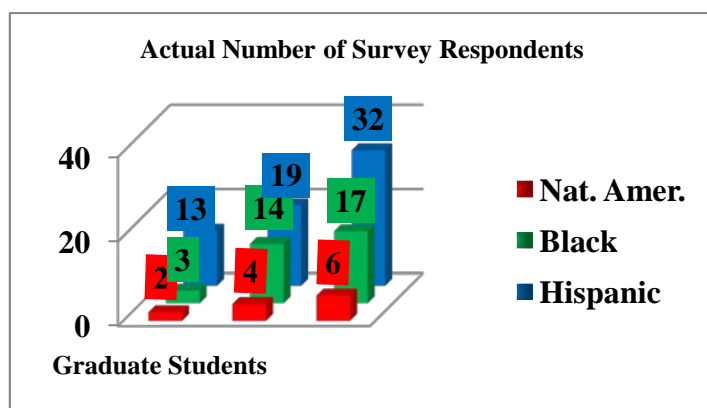


Figure 2. Underrepresented minority graduate student and non-graduate student respondents to an American Physical Society membership survey. (Source: APS 1990 Membership Survey). (Prepared by M. D. Slaughter).

from 40 percent in 1976 to 30 percent in 1988. Low-income black males are participating at a much lower rate than low-income black females. In 1988, only 23 percent of low-income black males were enrolled in college, as compared to 37.2 percent 13 years ago. The college participation rate of low-income black women dropped from 41.7 percent to 35.6 percent during the same period, while the college participation rate for low-income white males dropped from 34.9 percent to 32.1 percent. For middle-income African-Americans, the more severe declines in college participation occurred during the late 1970's and early 1980's. By 1988, the college participation rate of middle-income African-Americans had fallen to 36 percent from 53 percent in 1976, with black males affected most severely.

An American Physical Society (APS) membership survey⁸ indicated that, out of 2771 respondents to the survey, only 0.6% (17) were Black, 1.2% (32) were Hispanic, and 0.2% (6) were Native Americans. The survey also strongly indicated that an already poor production rate for Black physicists would become worse because of the relatively small number of Black graduate students in physics *even when compared to the number of Hispanic graduate students in physics* (See Figure 2). Also, only about 2% of all APS members identified themselves as belonging to a minority group—an *order of magnitude* less than the 20% minority representation then extant in the general population. Those nation-wide data⁹ and APS survey results indicated that the production rate for minority physicists would not significantly increase in the next few years and *an already poor production rate for Black physicists would become worse*¹⁰.

⁷American Council on Education, *Minorities in Higher Education: Eight annual Status Report, 1989* (Washington, D. C.).

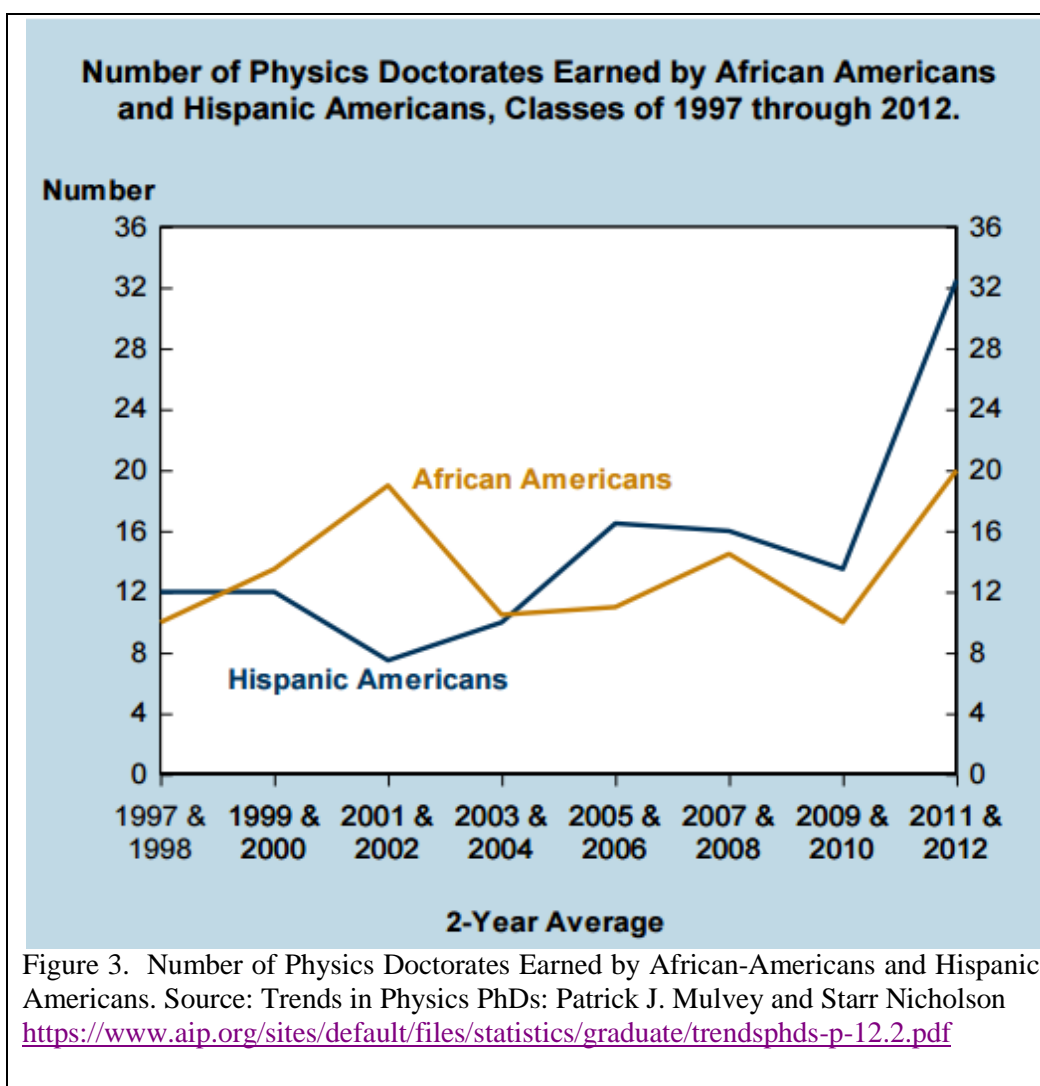
⁸M. A. Forman, *The 1990 APS Membership Survey: Preliminary Report*. American Physical Society, New York, New York (1991).

⁹National Science Foundation, *Science and Engineering Doctorates: 1960-90*, NSF 91-310 final, Detailed Statistical Tables (Washington, D. C., 1991).

¹⁰Milton D. Slaughter, *Status of Minorities in Physics: Findings and Recommendations of the American Physical Society Committee on Minorities in Physics*. Presentation for the National Science Foundation Advisory Committee for Physics, October 18, 1991, Washington, D.C.

It is interesting to compare the 1988-1990 data with data from the period from 1997-2012 (See Figure 3, Figure 4, and Tables 2A and 2B): According to the American Institute of Physics (AIP) (See Figure 4.): “Hispanic Americans and African Americans continue to be under represented among physics PhD recipients when compared to 26 - 35 year olds in the U.S. population. The number of Hispanic Americans and African Americans earning physics PhDs averaged 28 and 17 degrees respectively for the classes of 2010 through 2012. Of the 195 departments that offered a physics PhD in 2012, 4 were located at a Historically Black College and University (HBCU). These 4 departments were responsible for one-third of the PhDs earned by African Americans in the classes of 2010 through 2012.”

From a very interesting article in The Chronicle of Higher Education¹¹, we quote: “Despite efforts to increase the number of doctorates awarded to African-Americans over the last decade, the latest federal data show that progress has been nonexistent.” In addition, from that same article, we quote: “For comparison, slight progress was made for another underrepresented minority group—Hispanics and Latinos—during the past 10 years. They made up 5.8 percent of doctorate recipients in 2014, up from 4.8 percent a decade earlier.”



¹¹ The Chronicle of Higher Education, *Dearth of Black Ph.D. Recipients Will Complicate Efforts to Diversify Faculty*, Vimal Patel, December 4, 2015, which references (also other sources) a report by the [National Science Foundation, National Center for Science and Engineering Statistics, 2015. Doctorate Recipients from U.S. Universities: 2014.](https://www.nsf.gov/statistics/2015/doe)

Race and Ethnicity of Physics PhDs, Classes of 2010 through 2012.			
	3-Year Average Number	Percent of all Physics PhDs	Percent of U.S. Physics PhDs*
White	744	45	88
Asian American	41	2	5
Hispanic American	28	2	3
African American	17	1	2
Other U.S. Citizens	13	1	2
Non-U.S. Citizens	826	49	-
Total	1,669	100%	100%

*Based on a 3-year average of 843 U.S. citizens.

Figure 4. Source: Trends in Physics PhDs: Patrick J. Mulvey and Starr Nicholson <https://www.aip.org/sites/default/files/statistics/graduate/trendspkds-p-12.2.pdf>

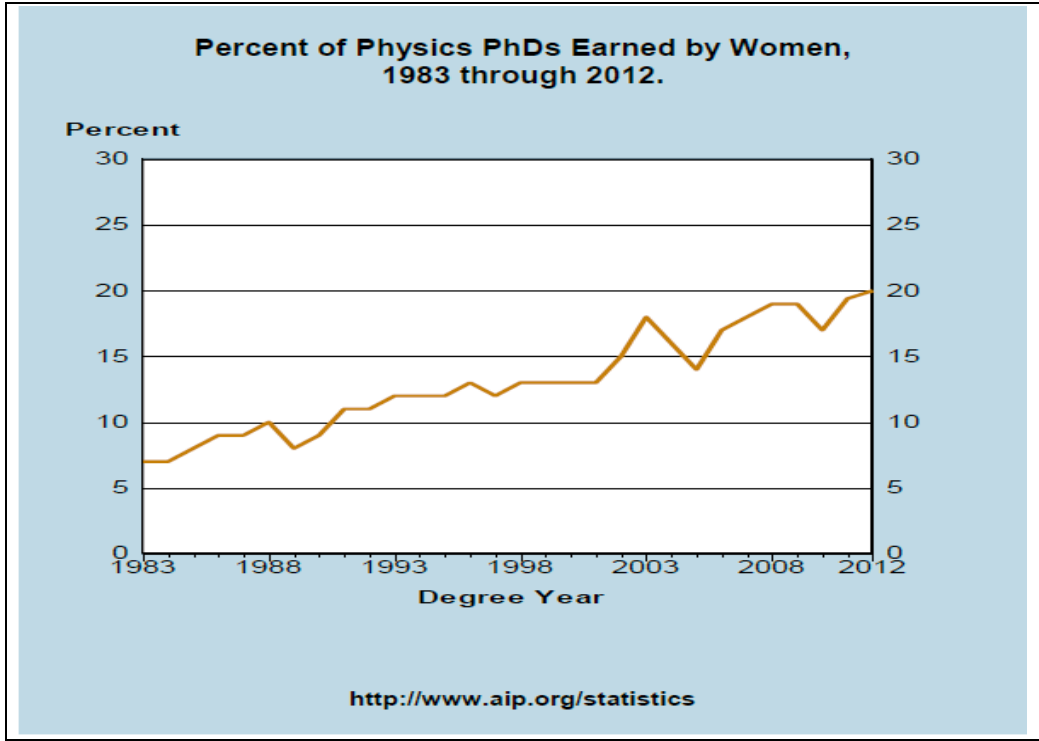


Figure 5. Source: Trends in Physics PhDs: Patrick J. Mulvey and Starr Nicholson <https://www.aip.org/sites/default/files/statistics/graduate/trendspkds-p-12.2.pdf>

Also, according to AIP (see Figure 5.): “The representation of women at the PhD level has reached an all-time high in the class of 2012. In the class of 2012, 20% of the physics PhDs were earned by women, this is up from 13% 11 years earlier. This increase along with a growth in the overall number of physics PhDs awarded has resulted in a sharp increase in the number of women receiving degrees. Women earned 354 of the physics PhDs in the class of 2012, up from only 153 in 2001 (a 131% increase)”.

**DOCTORATES IN SELECTED STEM FIELDS (U. S. CITIZENS AND PERMANENT RESIDENTS)
BY
RACE/ETHNICITY AND DISCIPLINE (2002-2006)**

Table 2A.

Discipline	Year	Black	Hispanic	Nat. Amer.	Asian	Other	White	Total
Chemistry	2002	46	48	7	120	103	1,031	1,355
	2003	47	44	6	111	88	1,078	1,374
	2004	51	58	9	127	90	986	1,321
	2005	37	57	6	139	106	1,021	1,366
	2006	43	70	6	160	102	1,080	1,461
Computer Science	2002	21	19	1	72	33	264	410
	2003	17	11	1	55	47	282	413
	2004	18	18	1	62	47	309	455
	2005	19	17	0	88	68	308	500
	2006	21	6	6	92	70	356	551
Engineering	2002	80	88	6	357	138	1,592	2,261
	2003	94	106	12	292	162	1,571	2,237
	2004	99	101	8	346	160	1,633	2,347
	2005	101	98	6	372	179	1,696	2,452
	2006	110	105	7	470	204	1,818	2,714
Mathematics	2002	21	19	1	72	33	264	410
	2003	17	11	1	55	47	282	413
	2004	18	18	1	62	47	309	455
	2005	19	17	0	88	68	308	500
	2006	21	6	6	92	70	356	551
Physics	2002	22	19	2	45	43	473	604
	2003	17	19	0	53	65	437	591
	2004	11	13	3	37	56	442	562
	2005	15	16	1	62	56	435	585
	2006	11	21	3	54	50	496	635

U. S. Citizen and permanent resident doctoral recipients in chemistry, computer science, engineering, mathematics, and physics in 2002—2006. (SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2002–12). (Prepared by M. D. Slaughter)

**DOCTORATES IN SELECTED STEM FIELDS (U. S. CITIZENS AND PERMANENT RESIDENTS)
BY
RACE/ETHNICITY AND DISCIPLINE (2007-2012)**

Table 2B.

Discipline	Year	Black	Hispanic	Nat. Amer.	Asian	Other	White	Total
Chemistry	2007	64	65	3	155	106	1,071	1,464
	2008	62	89	4	150	116	993	1,414
	2009	66	86	7	148	134	1,145	1,586
	2010	59	72	8	151	157	1,095	1,542
	2011	67	79	7	139	169	1,131	1,592
	2012	58	76	4	169	173	1,104	1,584
Computer Science	2007	30	17	3	111	82	437	680
	2008	24	16	0	87	94	446	667
	2009	30	23	2	116	76	483	730
	2010	33	17	3	124	99	506	782
	2011	31	19	3	130	75	514	772
	2012	39	26	2	129	97	526	819
Engineering	2007	117	138	8	508	250	1,973	2,994
	2008	128	130	15	501	294	2,112	3,180
	2009	139	153	19	504	324	2,235	3,374
	2010	154	196	10	517	344	2,286	3,507
	2011	141	182	15	603	379	2,393	3,713
	2012	175	191	11	575	382	2,592	3,926
Mathematics	2007	30	17	3	111	82	437	680
	2008	24	16	0	87	94	446	667
	2009	30	23	2	116	76	483	730
	2010	33	17	3	124	99	506	782
	2011	31	19	3	130	75	514	772
	2012	39	26	2	129	97	526	819
Physics	2007	20	22	4	60	71	519	696
	2008	15	20	1	57	79	582	754
	2009	11	25	3	53	86	603	781
	2010	18	32	2	60	104	592	808
	2011	17	37	3	65	125	681	928
	2012	21	51	1	65	113	734	985

U. S. Citizen and permanent resident doctoral recipients in chemistry, computer science, engineering, mathematics, and physics in 2007—2012. (SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2002–12). (Prepared by M. D. Slaughter)

From Reference [4], we quote (based on 2008-2010 data. See Reference [21] for the latest 2013 data):

“In 2008, the middle 20% of families in the United States had incomes ranging from \$49,326 to \$75,000. The mean income for this group of families was \$61,582. This is one possible way of defining “middle class.” A broader definition might include all families who are above the lowest quintile and below the highest quintile. This 60% of families had incomes ranging from \$27,801 to \$113,025 in 2008. Over the past decade, average incomes for middle-income families have been stagnant after adjusting for inflation. Families at the upper end of the broad middle-income range have seen their incomes increase slightly, while those at the lower end of this range have seen their incomes decline. Over the past decade, incomes have not risen measurably for anyone. But in the previous two decades, incomes rose rapidly at the upper end of the income distribution, and overall inequality increased significantly. During this time period, middle-income families lost income relative to the wealthy but gained relative to low-income families.” And also:

“In addition to tuition and fees, students’ total cost of attendance includes room and board, and allowances for books and supplies, transportation, and other expenses. The total cost of attendance, used to determine eligibility for need-based aid, varies considerably by institutional sector. In 2009-10, average total expenses at public two-year colleges for students living off campus were \$14,285. At public four-year institutions, in-state students living on campus faced total average expenses of \$19,388; for students enrolled in private not-for-profit four-year institutions who lived on campus, the total cost of attendance was just over \$39,000. According to the federal formula for financial aid eligibility, for families of four with one child in college and no discretionary liquid assets, only those with incomes of about \$95,000 or higher would be able to pay the average published price of tuition and fees and room and board at public four-year colleges without financial aid. About 28% of all families have incomes this high.”

Data is available for 2002–2012 and unfortunately, the production rate for underrepresented minority physicists and other scientists has not qualitatively or quantitatively changed significantly for the better. Indeed, one could make a strong argument that production rates for Black, Hispanic, and Native American physicists, mathematicians, engineers, computer scientists, and chemists has effectively worsened in most STEM disciplines—Just compare the 21st century data with that of the period 1988-1990!

It is crystal-clear from the data in Tables 2A and 2B (these tables and all other tables omit multi-racial data) that the situation for minorities in chemistry, computer science, engineering, and mathematics is not qualitatively different from that in physics¹². *It is also clear that the use of percentage increase or decrease is unwarranted due to the very low absolute number of minority doctoral recipients in any particular category (indeed, that is the prima facie reason for utilizing the term “underrepresented minority”).* Again, one sees that the problem of an extremely low doctoral production rate for Blacks and Hispanics in chemistry, computer sciences, engineering, mathematics, and physics is especially serious. These factors all imply strongly that the *systematic development of effective programs that will increase the pool of minority scientists is imperative and must commence very, very soon.*

We note that that survey data obtained from the U. S. Department of Education, National Center for Education Statistics is completed by institutional academic units that provide counts of the doctorate recipients graduating from their units. Survey data (Survey of Earned Doctorates [SED]—in particular NSF SED Tabulation Engine results are SED based) from the National Science Foundation is self-reported by individual doctorate recipients. We also note that often the NSF and NCES do not count numbers in the same way because their definitions of “research doctorate” differ although this is less a source of statistical divergence for STEM fields. Finally, NCES did not provide 1999 data and the NSF sometimes tabulates data provided to it by NCES. Thus, one must be careful when comparing datasets.

¹² We present a number of charts and tables for various STEM disciplines and sub-disciplines later in this document.

An excerpt from *Symmetry Magazine*¹³ is very relevant in this status report:

- Women and members of underrepresented minorities have gained ground in scientific fields.
- From 1966 through 2006, the percentage of PhDs earned by women in all science and engineering fields increased from 8 percent to 38 percent. But while women were earning 34 percent of all chemistry PhDs by 2006, they were awarded only 17 percent of physics PhDs that year, according to the National Science Foundation.
- As for minorities, their numbers are still so low that Roman Czujko, director of the statistical research center at the American Institute of Physics, does not like to state them in percentages. “To tell you the truth, when I produce reports that say that the numbers have grown by 0.4 percent, people read right past it,” he says. “That’s the kind of thing we’re talking about here.” But when people learn that of the 41,446 PhDs granted in physics from 1973-2005, only 303 went to blacks, 504 to Hispanics and 43 to Native Americans, “it has a startle effect,” Czujko says.
- In addition, large percentages of physics students and researchers in the United States are foreign. American citizens earned 75 percent of physics PhDs in 1973, but only 40 percent in 2006, according to the National Science Foundation.
- As opportunities in their home countries increase, an increasing number of foreign scientists are expected to go back, and not enough Americans are being attracted into the workforce to replace them.
- With the United States on track to become a majority-minority nation by 2042, it needs to attract more American women and minorities into science to ensure a robust scientific workforce in the future and boost the country’s competitiveness, security, and defense, says Ernestine Psalmas, senior program officer for the National Academy of Sciences.
- As Bill Valdez, director of the US Department of Energy’s Office of Workforce Development for Scientists and Teachers, puts it, “We have a stewardship responsibility to ensure that the next generation of physicists exists out there.”

Evidently, while good programs exist in many of the STEM national societies in the United States, the net, overall progress (certainly at the national level) in the STEM doctoral production rate for underrepresented minorities has not been encouraging. The analogous situation for women in STEM is measurably better but could be and should be much better¹⁴.

An informative American Institute of Physics (AIP) report is “*Untapped Talent: The African American Presence in Physics and the Geosciences*”¹⁵, where the University of New Orleans was among the top nine Universities that awarded the largest number of physics masters and geosciences bachelor degrees to African Americans during the period 2000-2004. Another AIP report—“*Minority Issues*”¹⁶ where one finds that Florida International University ranked first¹⁷ among the top universities that awarded physics bachelor degrees to Hispanics during the period 1998–2007. More very informative statistical data (charts, tables, Figures) can be found at the AIP site <http://www.aip.org/statistics/>—*Trends in Physics PhDs*, Patrick J. Mulvey and Starr Nicholson, February 2014, *Trends in Bachelor’s Degrees Earned by Hispanics in Physical Science Fields, 2002-2012*, and *Hispanic Participation among Bachelor’s in Physical Sciences and Engineering*, Laura Merner, (October 2014) are examples.

¹³ Symmetry Magazine (DOE Fermilab/SLAC Publication), Vol. 6, Issue 6, July 9, 2009.

¹⁴ See Figure 5 for women in physics.

¹⁵ [AIP Pub. Number R-444](#), Roman Czujko, Rachel Ivie, and James H. Stith, September, 2008.

¹⁶ <http://www.aip.org/statistics/trends/minoritytrends.html>.

¹⁷ http://www.aip.org/statistics/trends/highlite/minority/hispanicphysics_bach.htm.

Another recent (July 2014) AIP report¹⁸ (The report is entitled *African Americans & Hispanics among Physics & Astronomy Faculty*) contains information **vital** to understanding and solving some of the long-standing problems currently extant in STEM education and job placement for underrepresented minority faculty in the United States workplace is available and in our opinion is required reading for those (faculty, educational leaders, and local, state, and federal leaders) in the US academic, research, and corporate community—especially as the US rapidly becomes more racially and ethnically diverse. Along with other reports at our disposal, this report indicates **a strong correlation between the number of underrepresented faculty and underrepresented doctoral production presence in universities and colleges**. Though the report focuses on physics and astronomy, it is clear to us that it has ramifications for many other disciplines. This is particularly true since mathematics and physics are *backbone STEM* disciplines *fundamental* to almost all others (like engineering for example) and are *prerequisite-unique* disciplines for colleges and universities, which provide the underpinning training for just about all other disciplines. We take the opportunity here to provide a few quotes, graphics, tables, and figures (words in red are colored by us for emphasis) from that report:

“There is significant clustering of African-American faculty members at Historically Black Colleges and Universities (HBCUs). About half (89 of 190) of African-American physics faculty members are employed by physics departments at HBCUs, which account for only 4% (30 of 746) of all physics departments. **Half of all African-American physics faculty members work at just 23 departments, meaning that most physics students will never see a black faculty member.** On the other hand, half of all Hispanic physics faculty members work at 46 departments. Although the departments with the largest number of Hispanic physics faculty members are in Puerto Rico and Texas, we do not see significant clustering of Hispanic faculty members in certain types of departments.”

“The United States is becoming more and more diverse, but the representation of some minority groups in physics and astronomy lags behind. Although 13% of the US population is African American or black, and 17% is Hispanic (US Census), the representation of these two groups in physics and astronomy is much lower.”

“A large proportion of African-American physics faculty members work at HBCUs, and two-thirds of all HBCU physics departments grant bachelors as their highest degree. Consequently, about half of all African-American faculty members work at bachelors departments, compared to 28% of Hispanic-American faculty members. Likewise, a smaller proportion of African Americans work at departments that grant PhDs (36%) than Hispanic Americans (49%). **Compared to the 60% of all physics faculty members that work at PhD-granting departments, both Hispanic- and African-American physics faculty are under-represented among PhD-granting departments.**”

¹⁸ [African Americans & Hispanics among Physics & Astronomy Faculty](#), Rachel Ivie, Garrett Anderson, & Susan White.

**Number of Physics Departments with
African-American and Hispanic Faculty
by Highest Degree Awarded, 2012**

Number of Departments that have ...	Highest Degree Awarded			
	PhD	Master's	Bachelor's	Total
<u>both</u> African-American & Hispanic faculty	16	3	8	27
African-American faculty (and <u>no</u> Hispanic faculty)	18	10	45	73
Hispanic faculty (and <u>no</u> African-American faculty)	76	22	53	151
<u>neither</u> African-American <u>nor</u> Hispanic faculty	82	26	387	495
Total	192	61	493	746

AIP Statistical Research Center (<http://aip.org/sites/default/files/statistics/faculty/africanhisp-fac-pa-122.pdf>)

Program Solution Outline

Sample Proposed, Effective Program at a University Organizational Unit (UOU)

Primary Goal of the UOU Program (UOUP) is to Increase Significantly the Number of Undergraduate and Graduate Degrees in STEM Earned by Underrepresented Minorities.

Question: How to Achieve Effectively and Efficiently UOUP Mission Success?

We expect that proper implementation of the UOUP outlined below to increase the minority pool of STEM doctoral candidates of a typical UOU by approximately 20% on a nation-wide basis and within a time frame of five to six years or less. We have found that use of Vector Analysis courses to be most propitious not only for maximizing ongoing STEM student success but for also for STEM student graduation.

UOUP (Phase One–Freshmen and Sophomores)

- Systemic Recruitment of Targeted Minorities
- Systemic Retention of Targeted Minorities
- Systemic Use of STEM Gateway Courses for Targeted Minorities
 - ✚ Vector Analysis course under the in-place curriculum or the creation of a special topic course. Understanding and utilization of vectors is (generally) a major obstacle for STEM-UOUP participants.
 - ✚ Summer course(s) in STEM subject(s)—Interdisciplinary preferred
 - ✚ Summer “Hands-on” laboratory course involving student presentations
 - ✚ Integration and coordination and interfacing with ongoing UOU educational projects
- Systemic Recruitment of Minorities Who Require Additional Help (academic or financial)
- Provide Access to Visiting Minority Lectureship (VML) Scientists or Engineers or Mathematicians
 - ✚ Two or three day visit by a VML Scientist or Engineer or Mathematician who would give a STEM colloquium and meet with UOUP students and interested faculty and student organizations.

UOUP (Phase Two–Juniors and Seniors)

- Primary Research Experience Phase of UOUP Involves Juniors and Seniors.
- Systemic Use of STEM Gateway Courses.
 - ✚ Vector Analysis (including differential and integral calculus and an introduction to tensors) course under the in-place curriculum or the creation of special topic courses. Understanding and utilization of vectors at this level—stress and strain, deformations, heat transfer, electric and magnetic fields, *etc.*—is (generally) a major obstacle for potential STEM-UOUP participants. Success in this area almost guarantees UOUP mission success at the undergraduate level.
 - ✚ Summer course(s) in STEM subject(s)—Interdisciplinary and “job market aware” preferred.
- Summer Research Internship Placement along with Gateway Course Usage.
- Promote Systemic Change in Curriculum to Create Credit Courses Suitable (general degree credit is acceptable) for UOUP Undergraduate Researchers.
- Provide Access to Visiting Minority Lectureship (VML) Scientists or Engineers or Mathematicians.
 - ✚ Two or three day UOU visit by a VML Scientist or Engineer or Mathematician who would present a STEM colloquium, meet with UOUP students and interested faculty and student organizations, and provide additional services conducive to UOUP mission success.

UOUP (Phase Three–Graduate Students)

- Create an *Undergraduate to Graduate Bridge Phase* of the UOUP. Supply a program of support that will successfully orient students to the demands of graduate level education by providing an academic environment favorable and conducive to the successful transition from undergraduate to graduate study.
 - ✚ This will require close coordination with Colleges, Departments and Schools, and Centers.
 - ✚ Provide STEM RA and TA partial or full assistance as appropriate.
 - ✚ Enrich the undergraduate educational training of participants by involving them in undergraduate research and teaching as an integral part of the program.
- Provide Guidance and Advice to UOUP Graduate Students.
 - ✚ Involve STEM postdoctoral fellows.
 - This will require close coordination with Colleges, Departments and Schools, and Centers already involved in STEM research at the graduate level.
- Provide Access to Visiting Minority Lectureship (VML) Scientists or Engineers or Mathematicians.
 - ✚ Two or three day UOU visit by a VML Scientist or Engineer or Mathematician who would give a STEM colloquium and meet with UOUP students and interested faculty and student organizations.

In Order to Carry Out Effectively the UOUP, It is Very Important to Note the Following:

The Admissions, Bursar, and Financial Aid offices, the Research Office, STEM-related Dean's Offices, and other administrative offices must function in a very synergistic fashion. Stipends or other aid to UOUP participants should not result in replacement of already extant participant resources—quite often such stipulations can be negotiated—a situation which can cause severe financial problems (example: a reduction in an existing student loan corresponding to the UOUP stipend received) for participants. UOUP faculty participants should receive recognition of their involvement at all administrative levels including the departmental and college/school/center level. Such recognition may well require some release time. Existing external funding or new funding sources can often be tailored to supplement in a true fashion UOUP activities. Pertinent statistical data (latest available as of November 2015) are:

- Average Student Debt for the Undergraduate College Class of 2013: \$28,400 (for the Class of 2014, has risen to \$28,950)^{19,20,21};
- Enrollment Decrease Among Families Experiencing Home Equity Decline: ~30%²²;
- Student Loans in Default is 13.7% and Number of Recent College Graduates Who Can't Pay Their Loans (in default) is 371,227 (Federal Fiscal year 2011, 4-year Institutions)²³.
- Median Before-Tax Earnings: High School Graduate \$35,400, Some College but no Degree \$40,400, Bachelor's Degree \$56,500, Master's Degree \$70,000, Doctoral Degree \$91,000, Professional Degree \$102,200¹⁹.

If an UOU is a sponsoring member of an entity such as the Oak Ridge Associated Universities (ORAU) consortium²⁴ which contains a STEM mission component (advancing scientific research and education through partnerships)—then the UOUP should work to develop (or create a consortium) synergistically its relationship with the ORAU or organizations similar to the ORAU that have *operational* HBCU components. For example, a number of Florida universities are ORAU sponsoring members.

¹⁹ Source: The Institute for College Access & Success, [The Project on Student Debt](#).

²⁰ Source: The Institute for College Access & Success, [Student Debt and the Class of 2014](#).

²¹ Source: The College Board, [Education Pays 2013](#), Sandy Baum, Jennifer Ma, Kathleen Payea.

²² Source: The Pew Charitable Trusts, [Executive Summary, Economic Mobility Project](#).

²³ Source: U. S. Department of Education, [The National Center for Education Statistics](#) (NCES).

²⁴ Source: The Oak Ridge Institute for Science and Education ([ORISE](#)).

There are numerous foundations and agencies that possess keen interest in projects that contain strong mission goals in medical research and the application and dissemination of such research at the national and international level. The same situation obtains for work in computational science, materials science, nanotechnology, and nanoscience. These entities could provide funding which would help ensure the long-term sustainability of the UOUP and could aid in the creation and development of fully functional interdisciplinary UOU “Tech Parks” in many instances.

Thus, the UOUP should focus on submission of proposals which tend to emphasize research (for example) on: dielectric wall accelerators (DWA) for use in compact proton therapy and ion beam accelerators (Pelletron) which offer a broad range of nuclear applications in environmental management (ocean engineering, geophysics, *etc.*), cultural heritage (non-destructive dating analysis, anthropological analyses, *etc.*), natural resources, human health (oncological, ophthalmic, epidemiological, *etc.*), and industry.

Ion beam accelerators are also well suited to handle manpower development opportunities in areas such as radiation detection, nuclear instrumentation, high voltage, and vacuum systems; and developing a knowledge base from which UOU faculty could participate more fully in activities at advanced nuclear facilities such as high flux research reactors, synchrotron light sources, spallation neutron sources, and specialized ion beam facilities. A facility at an UOU built around such an accelerator should also be designed to facilitate undergraduate and graduate teaching and research and to serve as a showcase for prospective students (and their parents) and alumni and consortium partners. In most cases, there exist a number of faculty at a typical UOU—Medical School, College of Engineering, College of Arts and Sciences—for whom such an instrument would be invaluable for their basic and applied research and research with technology transfer and collaborative possibilities. At present, there are only a small number of such facilities in the USA.

Selected STEM Charts, Tables, and Other Data

We present a variety of STEM charts, tables, and other data²⁵ (unless otherwise noted, most source data (latest available as of November 2015) is derived from the Department of Education, The National Center for Education Statistics ([NCES](#)) with corresponding charts prepared by Prof. M. D. Slaughter) below. *As is easily ascertained, significant systemic progress over more than two decades for underrepresented minorities has not been achieved in STEM education.*

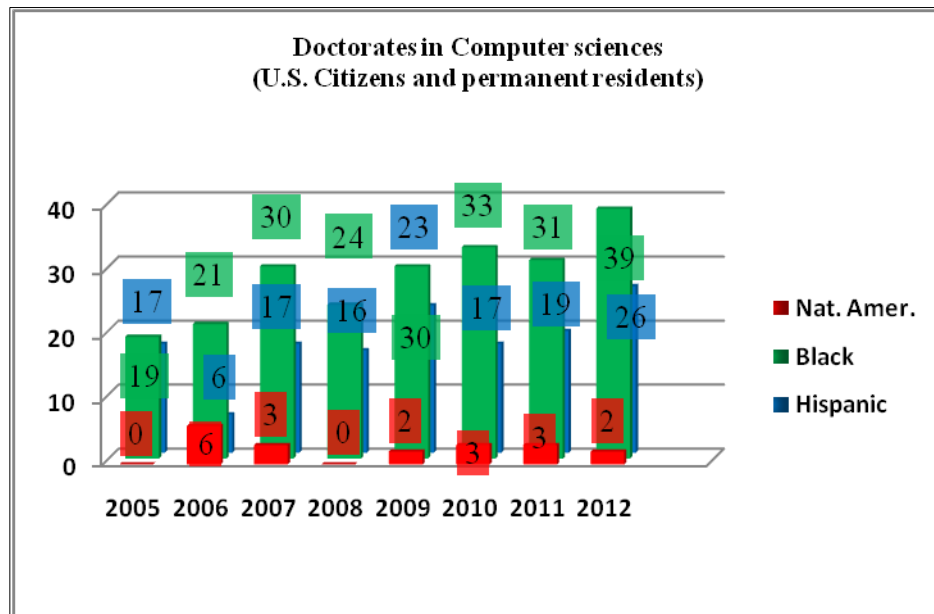
We also present links to interesting and informative websites that contain STEM or other data and reports and articles on underrepresented minorities and women (student and faculty and university at the national and state level). The web sites at <http://collegeresults.org> (contains an interactive search engine) and <http://edtrust.org> and [NCES College Navigator](#) and trends.collegeboard.org and [The Institute for College Access & Success](#) and [The Center for American Progress](#)²⁶ are especially useful. Some of the data from these links can be compared with data from selected STEM charts and data presented in this document which are primarily derived directly from data based provided by two federal surveys: the Integrated Postsecondary Education Data System (IPEDS) Completions Survey, the U.S. Department of Education (ED), the Survey of Earned Doctorates (SED), the National Science Foundation (NSF), and the National Center for Science and Engineering Statistics (NCSES). Bachelors, masters, and doctoral degree data were collected by IPEDS. Data on research doctoral degrees in all fields except engineering technologies were collected by the SED [National Center for Education Statistics](#) of the Department of Education. Dot Com sites we find very useful are [Women in Academia Report](#), [The Chronicle of Higher Education](#), and [The Journal of Blacks in Higher Education](#).

²⁵ The National Opinion Research Center (NORC) at the University of Chicago prepared the comprehensive report (report from which this “White Paper” derived some of its data results) under the direction of Mark K. Fiegener. NORC staff members who worked on this report were Brianna Groenhout, Lino Jimenez, Lindsay Virost, and Vincent Welch, Jr..

²⁶ This site is extremely useful as it contains relevant and current articles on Higher Education and Race and Ethnicity and other societal subjects. An example (interactive) is [The Demographic Evolution of the American Electorate, 1980–2060](#), Rob Griffin, William H. Frey, Ruy Teixeira, (February 24, 2015).

DOCTORATES IN SELECTED FIELDS

Table 3

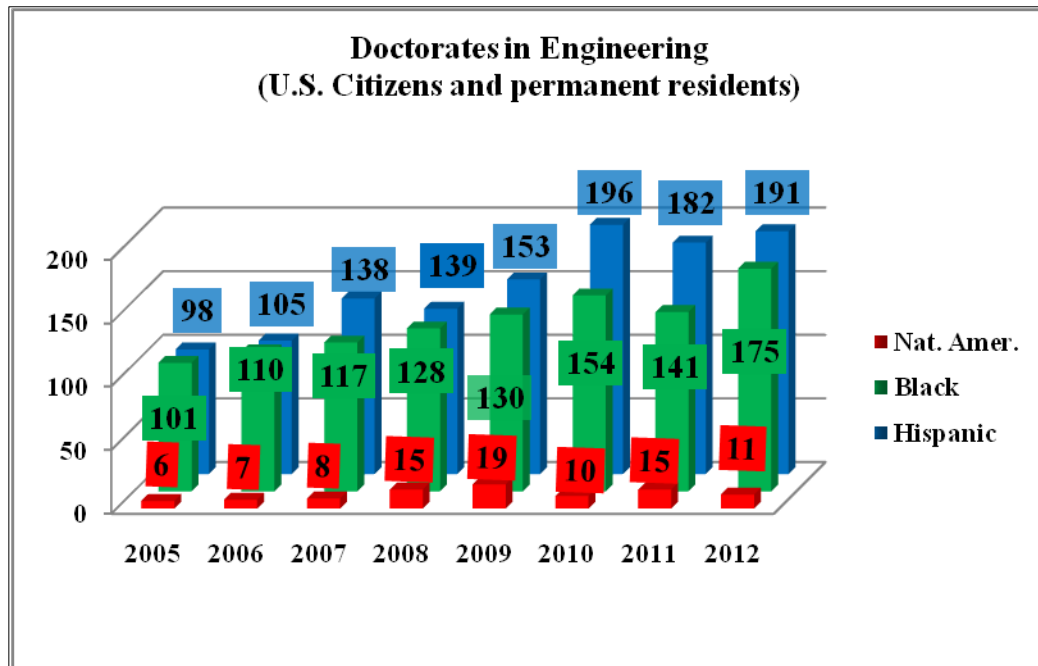


Computer sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	500	308	88	19	17	0	68	621
2006	551	356	92	21	6	6	70	865
2007	680	437	111	30	17	3	82	917
2008	667	446	87	24	16	0	94	1,029
2009	730	483	116	30	23	2	76	844
2010	782	506	124	33	17	3	99	779
2011	772	514	130	31	19	3	75	790
2012	819	526	129	39	26	2	97	871

U. S. Citizen and permanent resident doctoral recipients in Computer sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 4

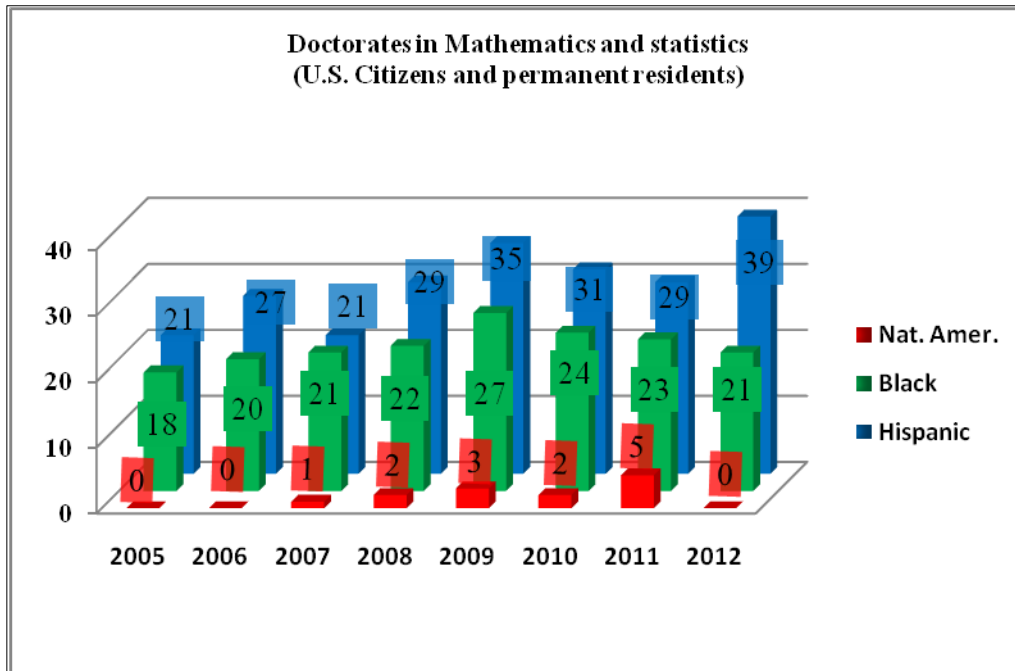


Engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	2,452	1,696	372	101	98	6	179	4,096
2006	2,714	1,818	470	110	105	7	204	4,688
2007	2,994	1,973	508	117	138	8	250	5,072
2008	3,180	2,112	501	128	130	15	294	4,930
2009	3,374	2,235	504	139	153	19	324	4,541
2010	3,507	2,286	517	154	196	10	344	4,305
2011	3,713	2,393	603	141	182	15	379	4,765
2012	3,926	2,592	575	175	191	11	382	4,947

U. S. Citizen and permanent resident doctoral recipients in Engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 5

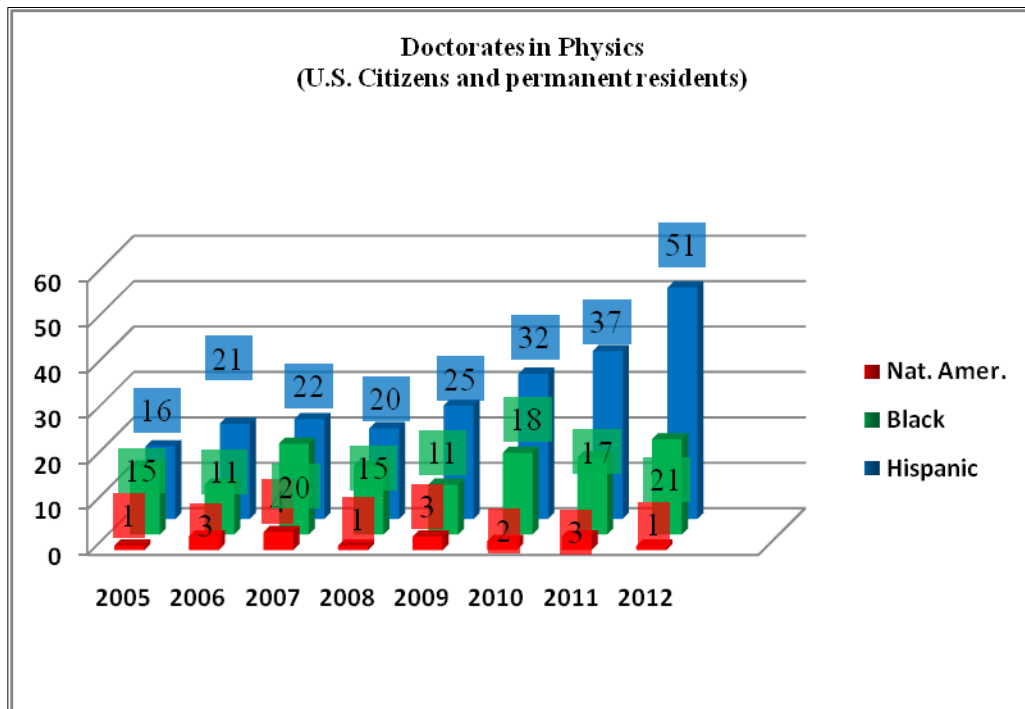


Mathematics and statistics	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	540	398	54	18	21	0	49	640
2006	583	428	63	20	27	0	45	714
2007	645	458	79	21	21	1	65	711
2008	671	490	53	22	29	2	75	691
2009	788	559	78	27	35	3	86	748
2010	863	634	84	24	31	2	88	731
2011	849	627	90	23	29	5	75	741
2012	852	636	72	21	39	0	84	818

U. S. Citizen and permanent resident doctoral recipients in Mathematics and statistics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 6

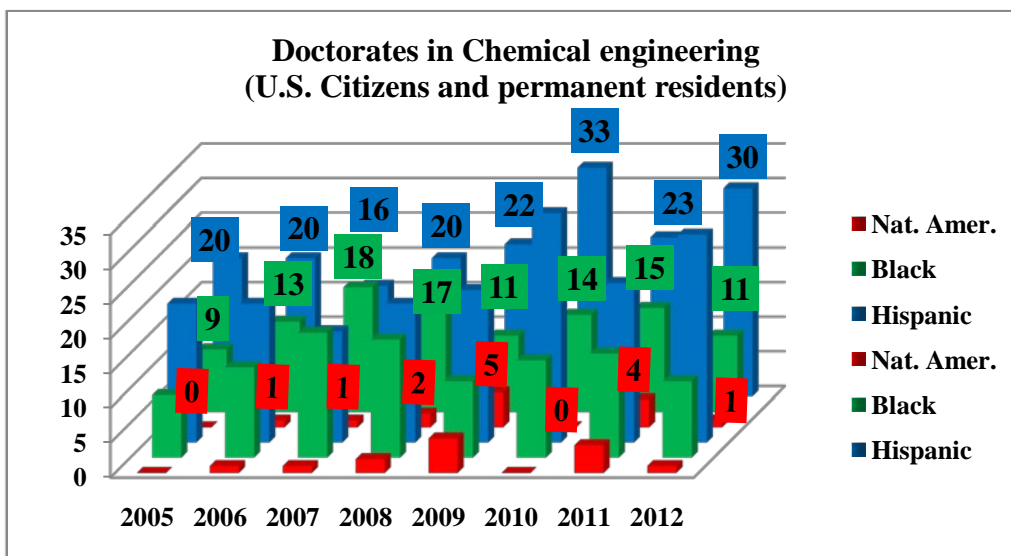


Physics	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	585	435	62	15	16	1	56	669
2006	635	496	54	11	21	3	50	706
2007	696	519	60	20	22	4	71	746
2008	754	582	57	15	20	1	79	753
2009	781	603	53	11	25	3	86	799
2010	808	592	60	18	32	2	104	762
2011	928	681	65	17	37	3	125	742
2012	985	734	65	21	51	1	113	767

U. S. Citizen and permanent resident doctoral recipients in Physics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 7

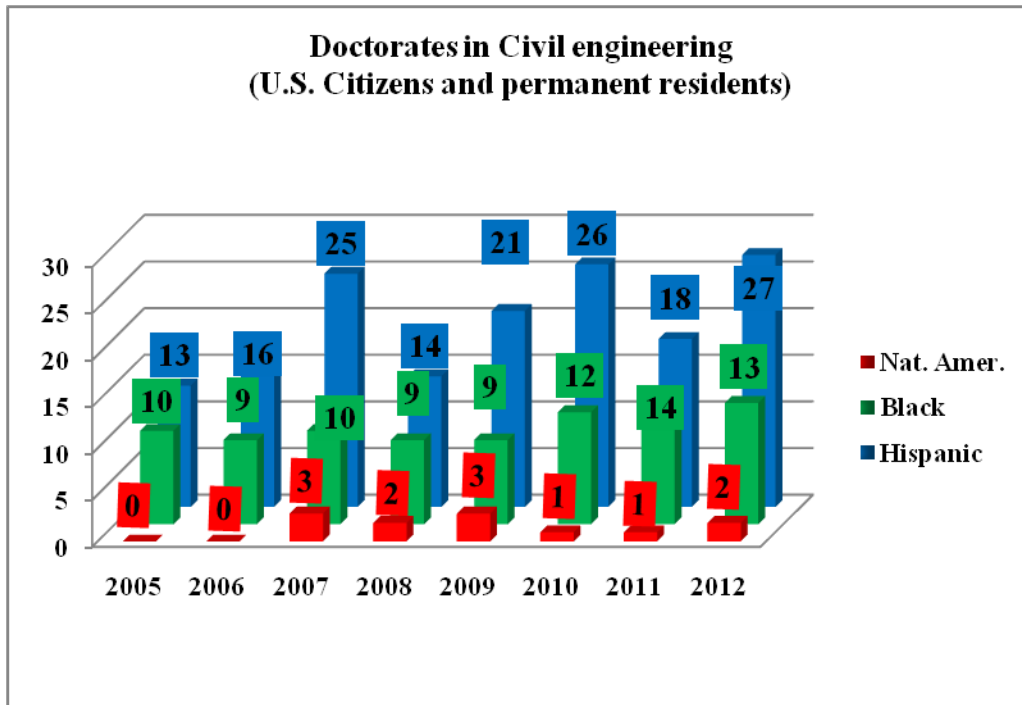


Chemical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	360	275	43	9	20	0	13	512
2006	423	297	70	13	20	1	22	488
2007	373	250	63	18	16	1	25	542
2008	417	296	55	17	20	2	27	533
2009	437	312	56	11	22	5	31	449
2010	469	331	65	14	33	0	26	460
2011	440	307	59	15	23	4	32	511
2012	442	296	66	11	30	1	38	527

U. S. Citizen and permanent resident doctoral recipients in Chemical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 8

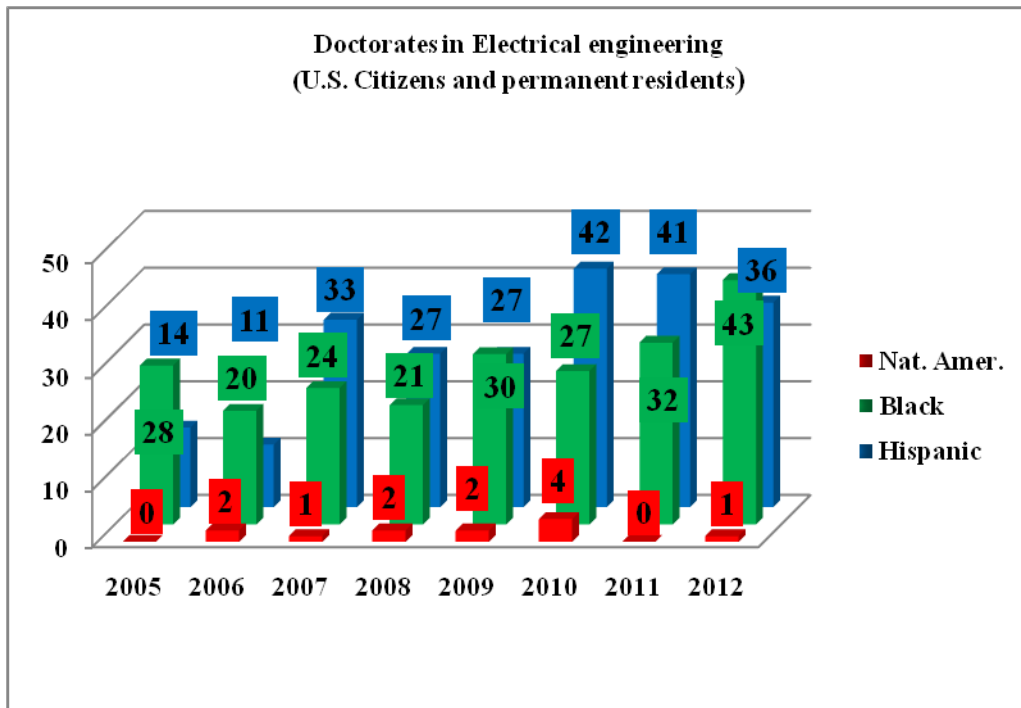


Civil engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	296	209	40	10	13	0	24	534
2006	296	208	44	9	16	0	19	568
2007	359	245	50	10	25	3	26	576
2008	330	231	38	9	14	2	36	579
2009	348	241	35	9	21	3	39	554
2010	347	235	37	12	26	1	36	504
2011	353	228	46	14	18	1	46	541
2012	366	257	35	13	27	2	32	556

U. S. Citizen and permanent resident doctoral recipients in Civil engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 9

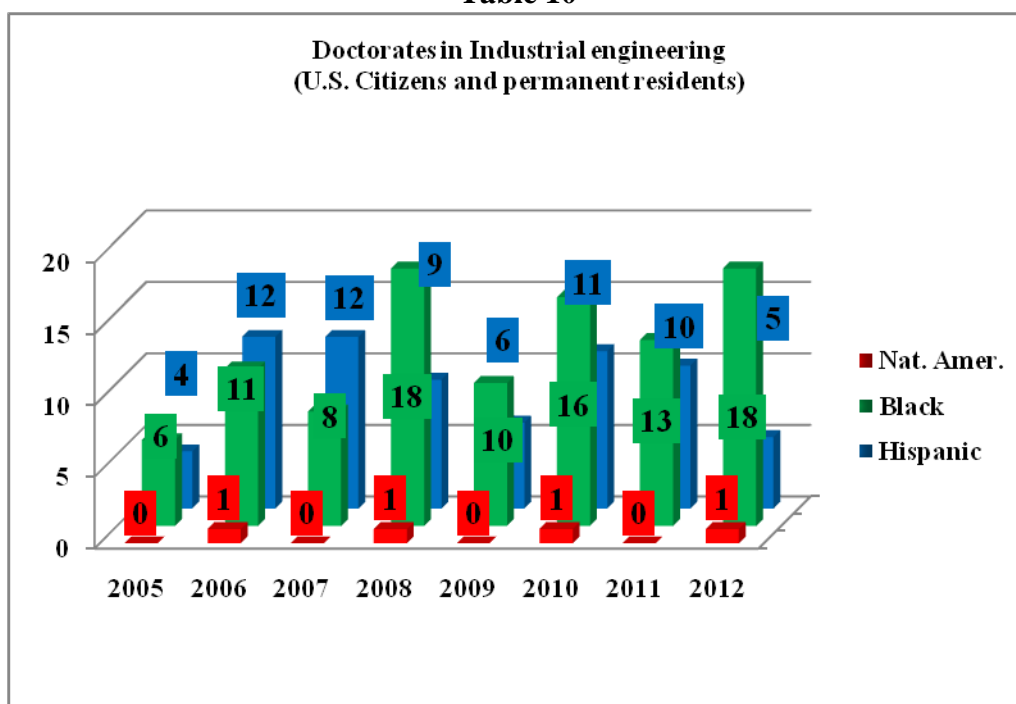


Electrical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	567	346	128	28	14	0	51	1,215
2006	560	346	121	20	11	2	60	1,564
2007	645	367	156	24	33	1	64	1,735
2008	704	397	174	21	27	2	83	1,575
2009	711	415	156	30	27	2	81	1,379
2010	757	426	154	27	42	4	104	1,412
2011	815	468	179	32	41	0	95	1,537
2012	847	486	184	43	36	1	97	1,628

U. S. Citizen and permanent resident doctoral recipients in Electrical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 10

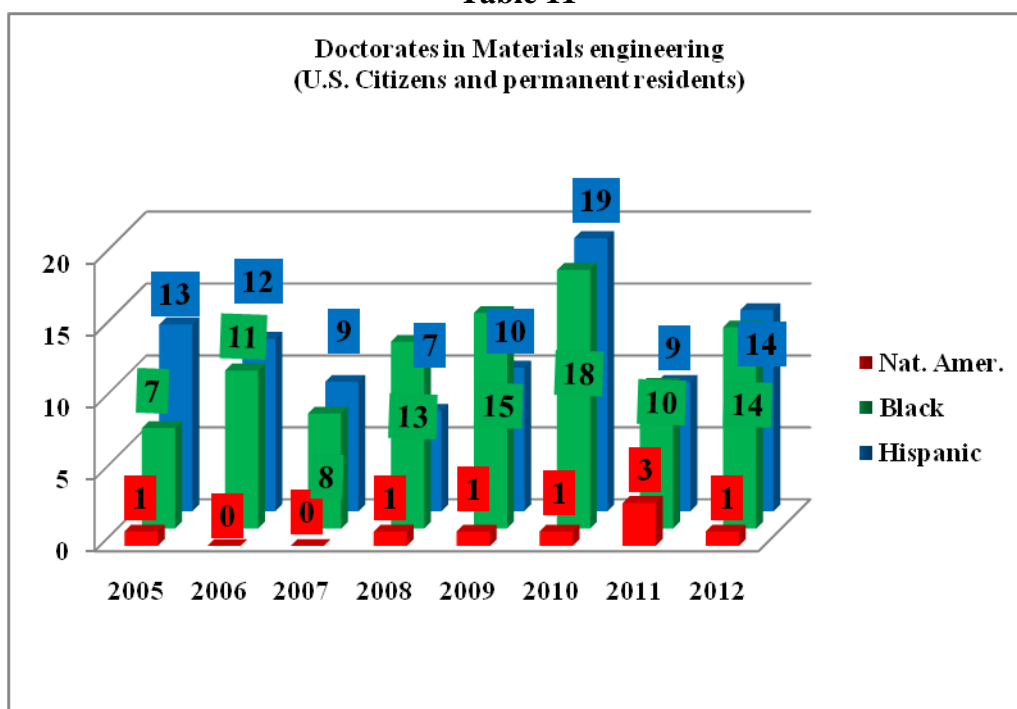


Industrial engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	107	73	17	6	4	0	7	179
2006	117	77	10	11	12	1	6	185
2007	129	82	15	8	12	0	12	235
2008	125	71	17	18	9	1	9	221
2009	112	71	15	10	6	0	10	221
2010	116	66	15	16	11	1	7	174
2011	124	77	14	13	10	0	10	195
2012	124	78	9	18	5	1	13	224

U. S. Citizen and permanent resident doctoral recipients in Industrial engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 11

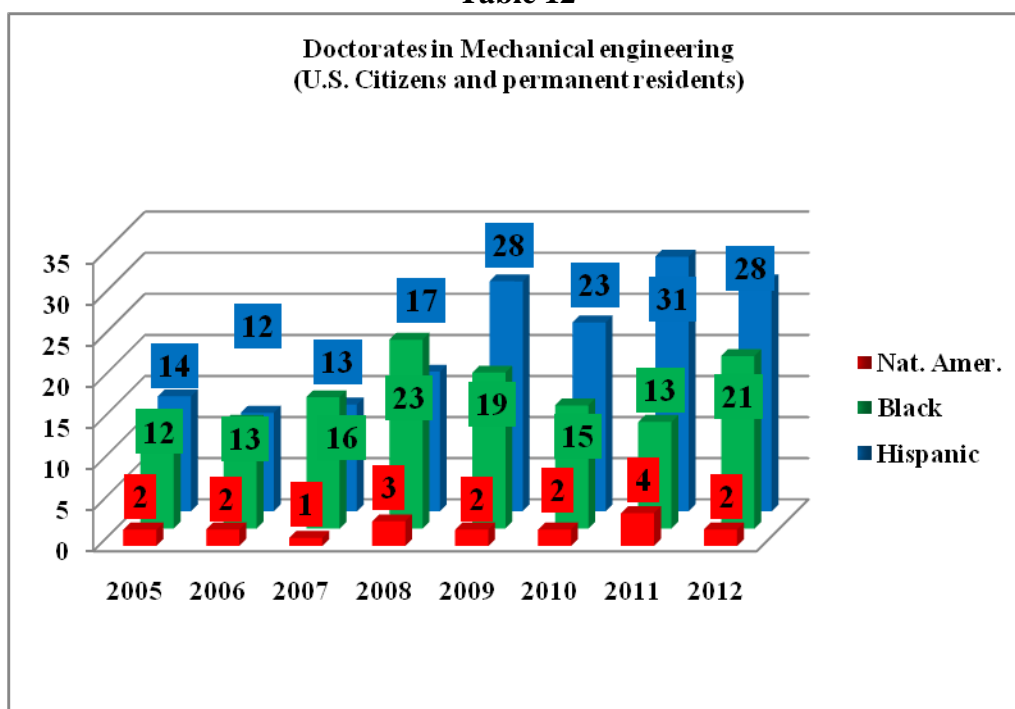


Materials engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	191	136	17	7	13	1	17	323
2006	242	163	38	11	12	0	18	369
2007	286	191	55	8	9	0	23	377
2008	284	209	27	13	7	1	27	381
2009	281	194	32	15	10	1	29	380
2010	316	208	43	18	19	1	27	337
2011	283	183	46	10	9	3	32	368
2012	363	253	56	14	14	1	25	352

U. S. Citizen and permanent resident doctoral recipients in Materials engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 12

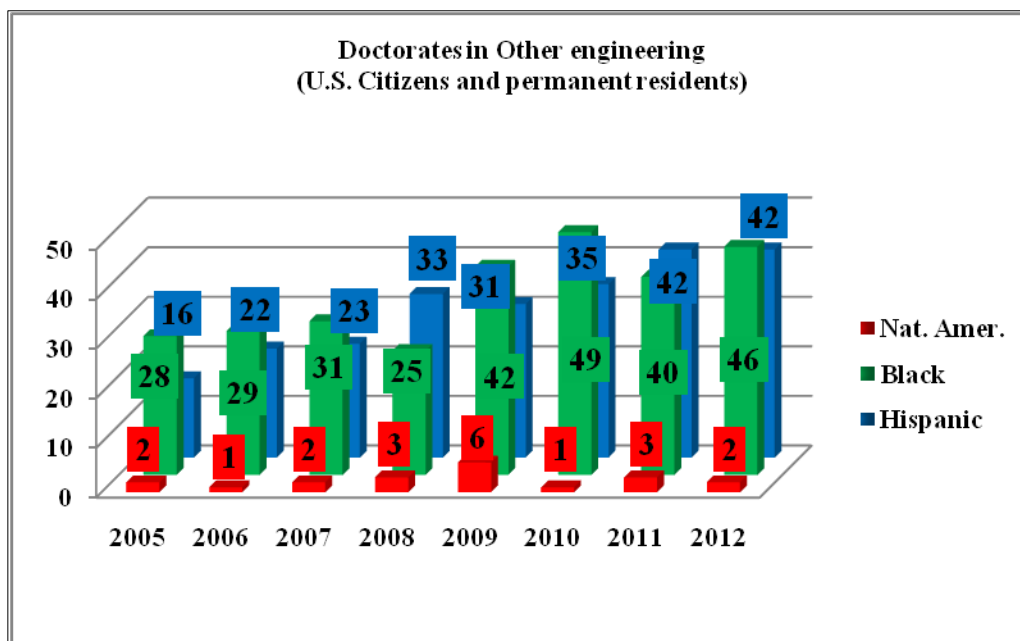


Mechanical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	338	242	42	12	14	2	26	625
2006	388	274	66	13	12	2	21	751
2007	376	265	52	16	13	1	29	762
2008	406	282	45	23	17	3	36	743
2009	472	320	50	19	28	2	53	714
2010	425	310	46	15	23	2	29	597
2011	505	343	59	13	31	4	55	667
2012	556	402	48	21	28	2	55	721

U. S. Citizen and permanent resident doctoral recipients in Mechanical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 13

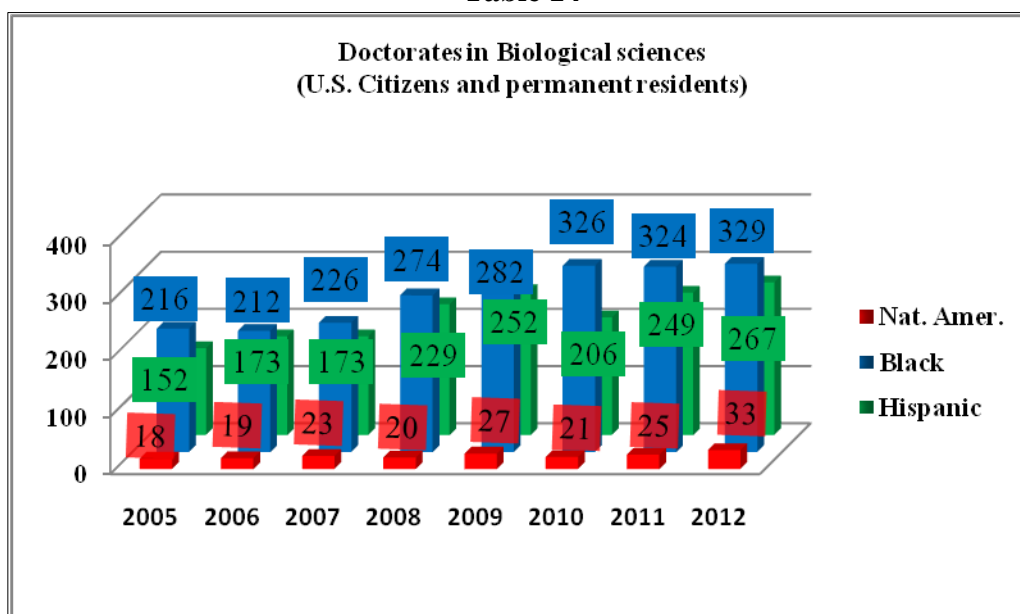


Other engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	502	342	77	28	16	2	37	594
2006	608	393	110	29	22	1	53	634
2007	718	492	109	31	23	2	61	719
2008	811	545	136	25	33	3	69	769
2009	876	583	144	42	31	6	70	724
2010	955	620	145	49	35	1	105	715
2011	1,063	694	184	40	42	3	100	839
2012	1,065	708	162	46	42	2	105	827

U. S. Citizen and permanent resident doctoral recipients in Other engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 14

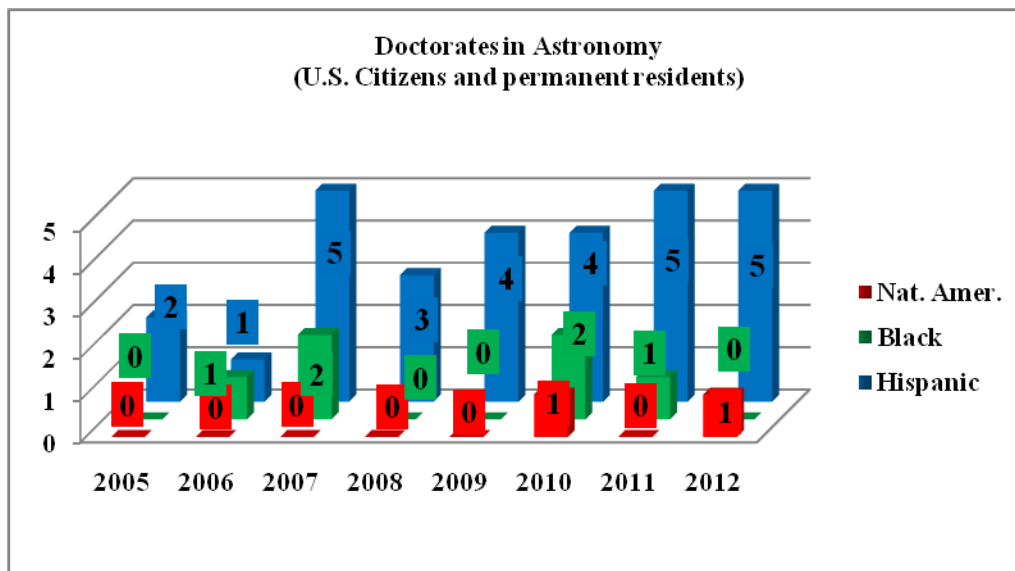


Biological sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	4,118	3,172	489	159	186	16	221	393
2006	4,330	3,206	508	152	216	18	264	397
2007	4,713	3,426	563	173	226	23	302	425
2008	5,091	3,608	575	229	274	20	385	412
2009	5,310	3,782	567	252	282	27	400	428
2010	5,447	3,759	650	206	326	21	485	343
2011	5,513	3,787	608	249	324	25	520	393
2012	5,705	3,859	669	267	329	33	548	450

U. S. Citizen and permanent resident doctoral recipients in Biological sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 15

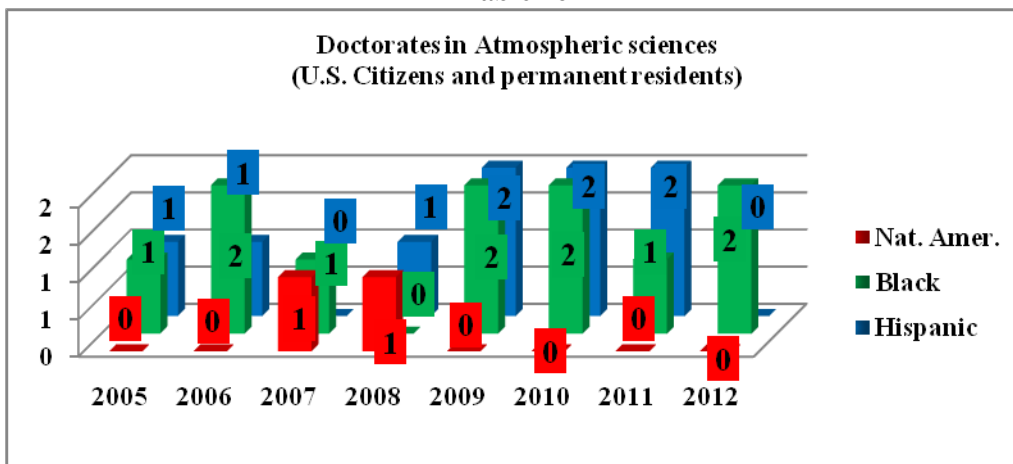


Astronomy	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	73	62	6	0	2	0	3	42
2006	73	57	6	1	1	0	8	41
2007	89	63	6	2	5	0	13	39
2008	117	94	4	0	3	0	16	46
2009	98	85	3	0	4	0	6	45
2010	119	97	4	2	4	1	11	41
2011	108	84	4	1	5	0	14	58
2012	124	105	7	0	5	1	6	46

U. S. Citizen and permanent resident doctoral recipients in Astronomy.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 16

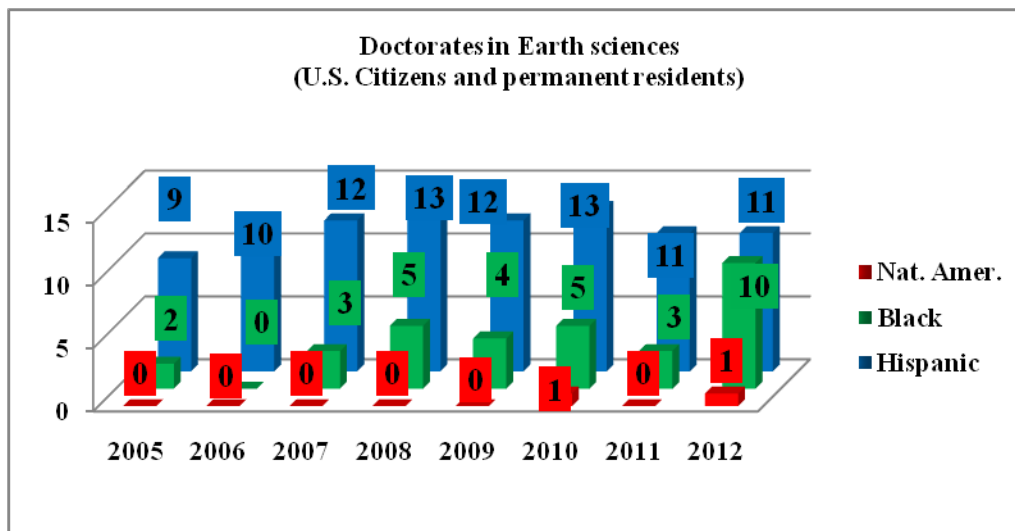


Atmospheric sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	43	40	1	1	1	0	0	25
2006	46	36	6	2	1	0	1	32
2007	45	37	4	1	0	1	2	32
2008	54	43	6	0	1	1	3	42
2009	45	30	6	2	2	0	5	50
2010	48	39	1	2	2	0	4	39
2011	58	49	1	1	2	0	5	48
2012	68	61	1	2	0	0	4	42

U. S. Citizen and permanent resident doctoral recipients in Atmospheric sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter))

Table 17

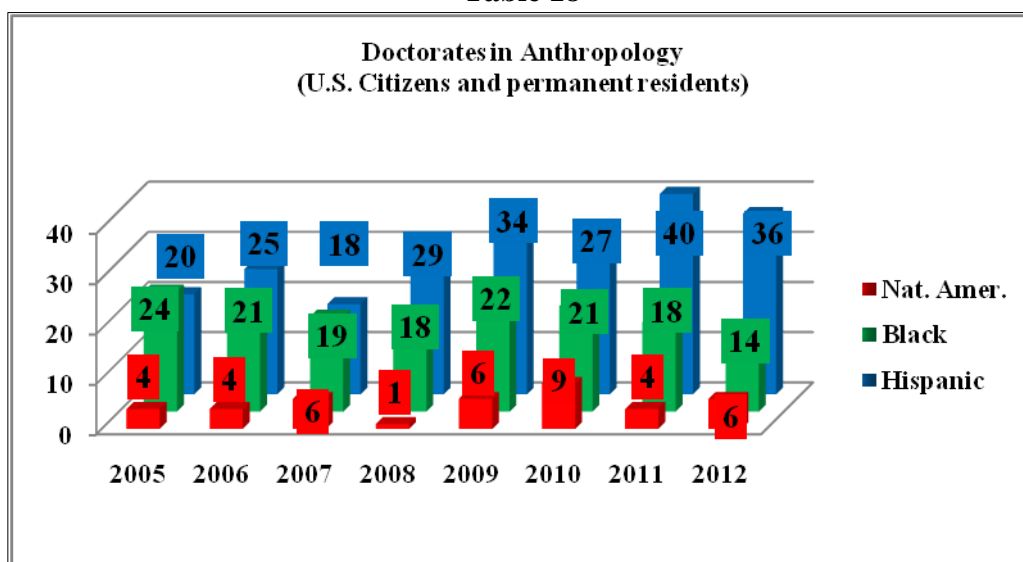


Earth sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	244	204	6	2	9	2	21	135
2006	296	258	16	0	10	0	12	134
2007	347	289	8	3	12	1	34	166
2008	302	235	12	5	13	2	35	167
2009	333	263	10	4	12	1	43	170
2010	350	280	11	5	13	1	40	146
2011	312	258	12	3	11	0	28	155
2012	339	274	13	10	11	1	30	158

U. S. Citizen and permanent resident doctoral recipients in Earth sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 18

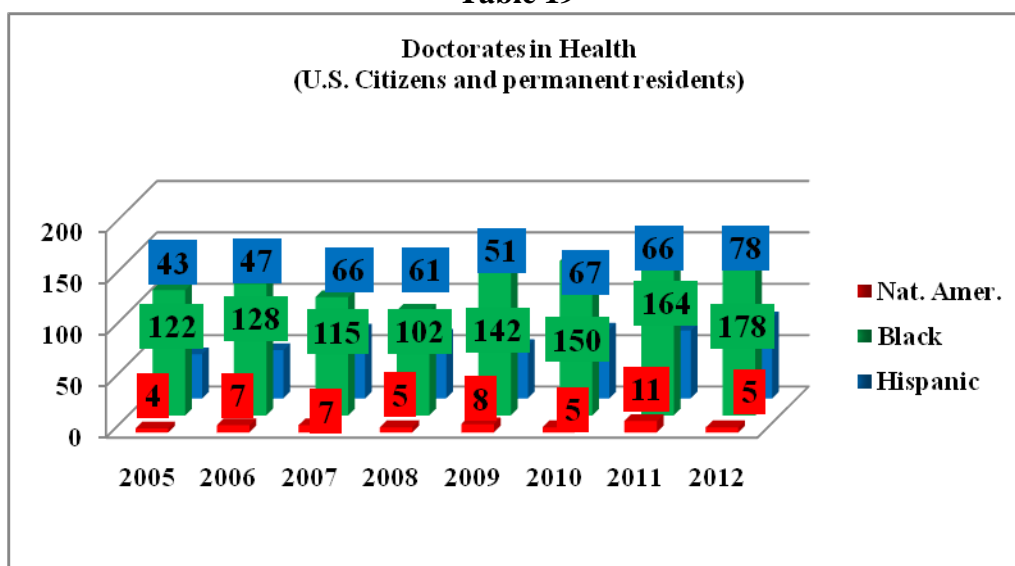


Anthropology	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	392	296	17	24	20	4	31	67
2006	425	325	23	21	25	4	27	55
2007	433	330	23	19	18	6	37	86
2008	416	299	29	18	29	1	40	75
2009	431	308	18	22	34	6	43	96
2010	444	318	19	21	27	9	50	90
2011	505	365	24	18	40	4	54	91
2012	490	359	21	14	36	6	54	95

U. S. Citizen and permanent resident doctoral recipients in Anthropology.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 19



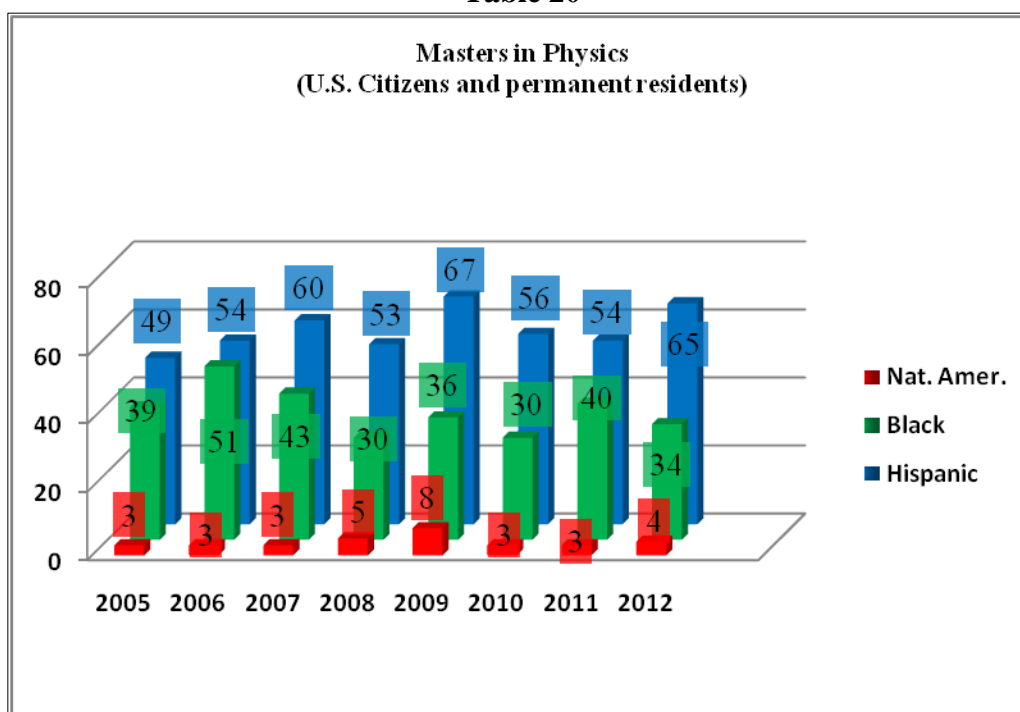
Health	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	1,291	971	115	122	43	4	20	389
2006	1,373	1,034	120	128	47	7	25	404
2007	1,492	1,109	140	115	66	7	33	476
2008	1,498	1,153	140	102	61	5	16	460
2009	1,566	1,175	143	142	51	8	20	399
2010	1,572	1,133	165	150	67	5	20	413
2011	1,536	1,093	148	164	66	11	25	412
2012	1,696	1,203	170	178	78	5	32	479

U. S. Citizen and permanent resident doctoral recipients in Health.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

MASTER'S IN SELECTED FIELDS

Table 20

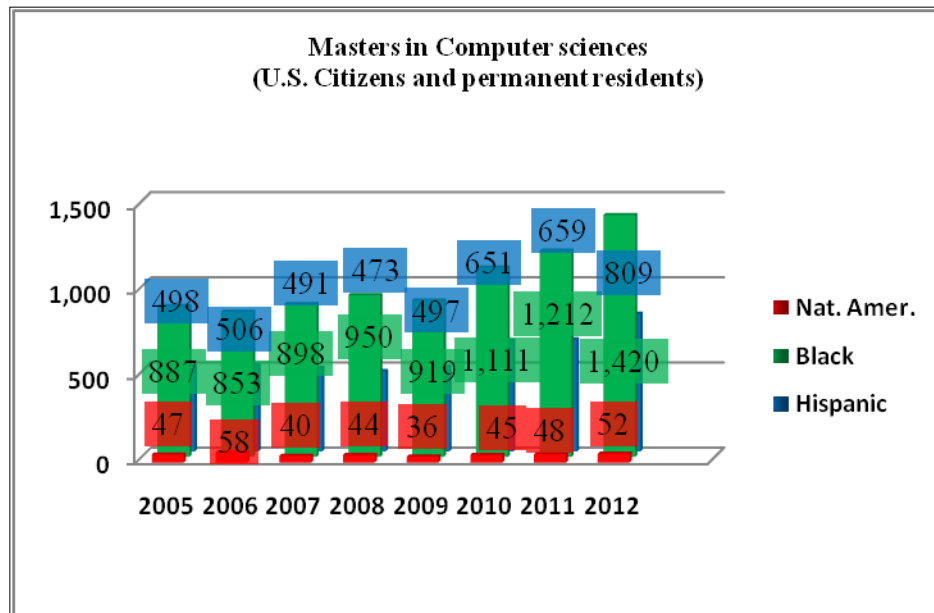


Physics	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	1,121	851	74	39	49	3	105	673
2006	1,175	883	78	51	54	3	105	678
2007	1,148	820	94	43	60	3	105	644
2008	1,138	838	78	30	53	5	105	661
2009	1,064	754	66	36	67	8	105	593
2010	1,184	855	93	30	56	3	105	626
2011	1,159	868	81	40	54	3	105	612
2012	1,191	901	74	34	65	4	105	688

U. S. Citizen and permanent resident Master's degrees recipients in Physics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 21

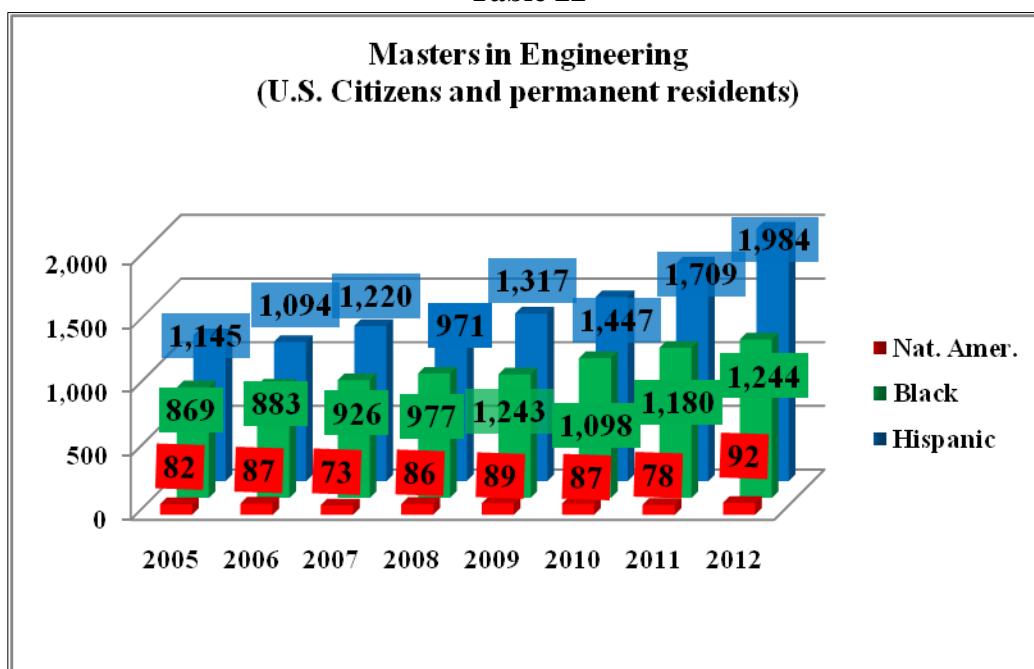


Computer sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	10,975	5,818	2,244	887	498	47	1,481	7,514
2006	10,489	5,715	1,856	853	506	58	1,501	6,649
2007	10,027	5,463	1,754	898	491	40	1,381	6,287
2008	9,746	5,176	1,627	950	473	44	1,476	7,405
2009	9,641	5,080	1,477	919	497	36	1,632	8,347
2010	10,066	5,183	1,470	1,111	651	45	1,606	7,955
2011	10,786	5,553	1,646	1,212	659	48	1,668	8,733
2012	11,636	5,987	1,583	1,420	809	52	1,785	9,365

U. S. Citizen and permanent resident Master's degrees recipients in Computer sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 22

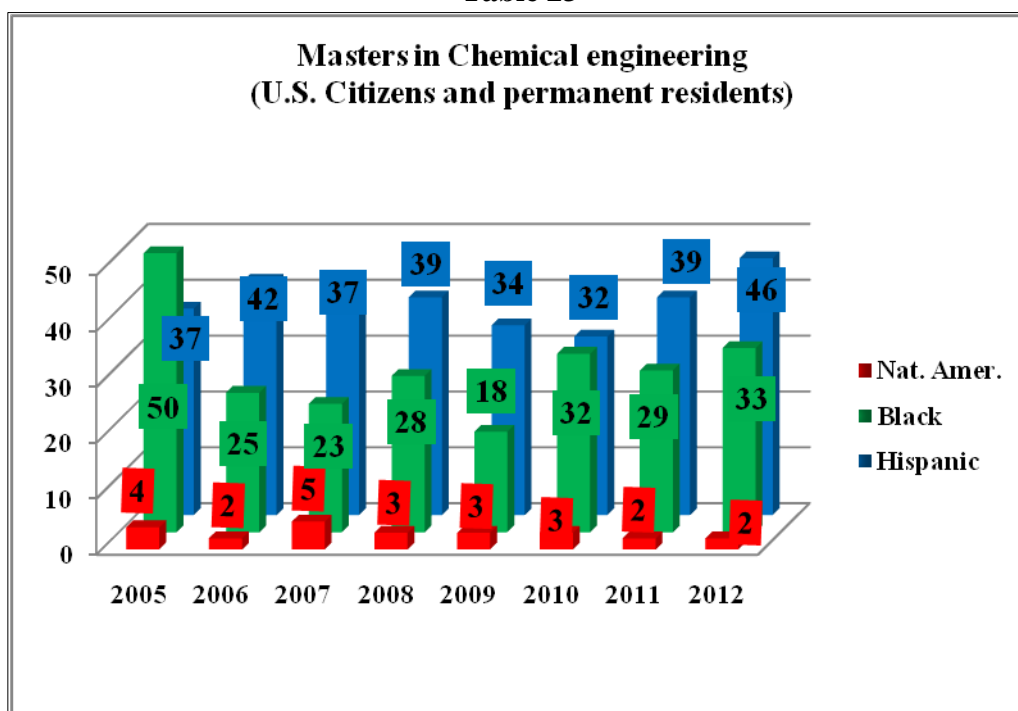


Engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	19,034	12,198	3,094	869	1,145	82	1,646	14,865
2006	18,972	12,084	3,186	883	1,094	87	1,638	13,291
2007	19,276	11,949	3,355	926	1,220	73	1,753	11,660
2008	19,749	12,077	3,494	977	1,243	86	1,872	13,428
2009	20,940	12,428	3,929	971	1,317	89	2,206	15,570
2010	21,685	12,919	3,736	1,098	1,447	87	2,398	15,929
2011	23,895	14,579	3,961	1,180	1,709	78	2,388	17,387
2012	25,567	16,004	3,829	1,244	1,984	92	2,414	17,583

U. S. Citizen and permanent resident Master's degrees recipients in Engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

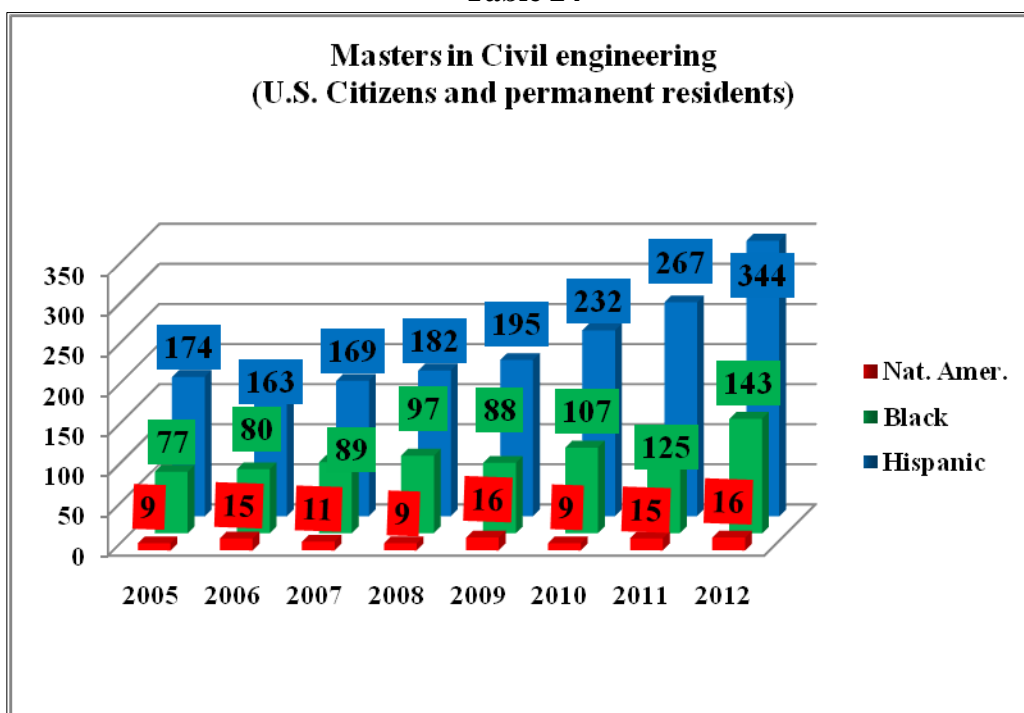
Table 23



Chemical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	633	389	97	50	37	4	56	555
2006	643	426	101	25	42	2	47	481
2007	580	374	97	23	37	5	44	379
2008	504	307	81	28	39	3	46	433
2009	525	326	93	18	34	3	51	471
2010	584	357	101	32	32	3	59	467
2011	682	421	128	29	39	2	63	602
2012	740	452	141	33	46	2	66	655

U. S. Citizen and permanent resident Master's degrees recipients in Chemical engineering.
(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 24

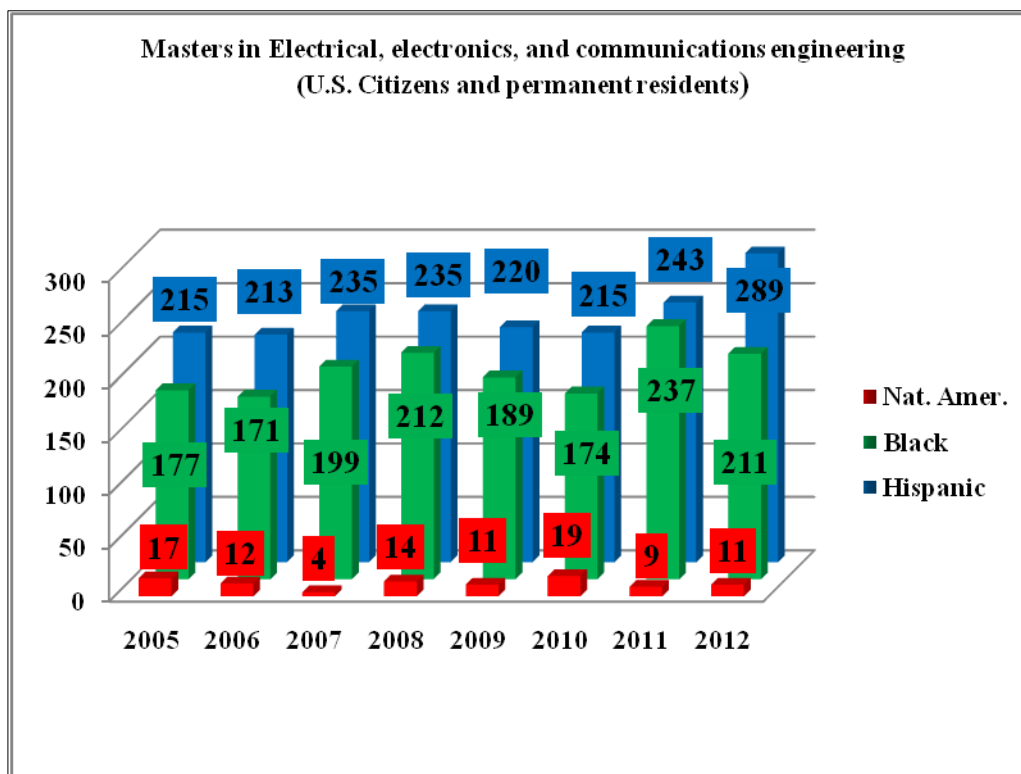


Civil engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	2,542	1,826	267	77	174	9	189	1,321
2006	2,588	1,900	242	80	163	15	188	1,203
2007	2,469	1,733	274	89	169	11	193	1,036
2008	2,520	1,775	273	97	182	9	184	1,094
2009	2,685	1,835	277	88	195	16	274	1,148
2010	2,898	1,947	308	107	232	9	295	1,224
2011	3,529	2,428	430	125	267	15	264	1,363
2012	3,926	2,651	472	143	344	16	300	1,459

U. S. Citizen and permanent resident Master's degrees recipients in Civil engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 25

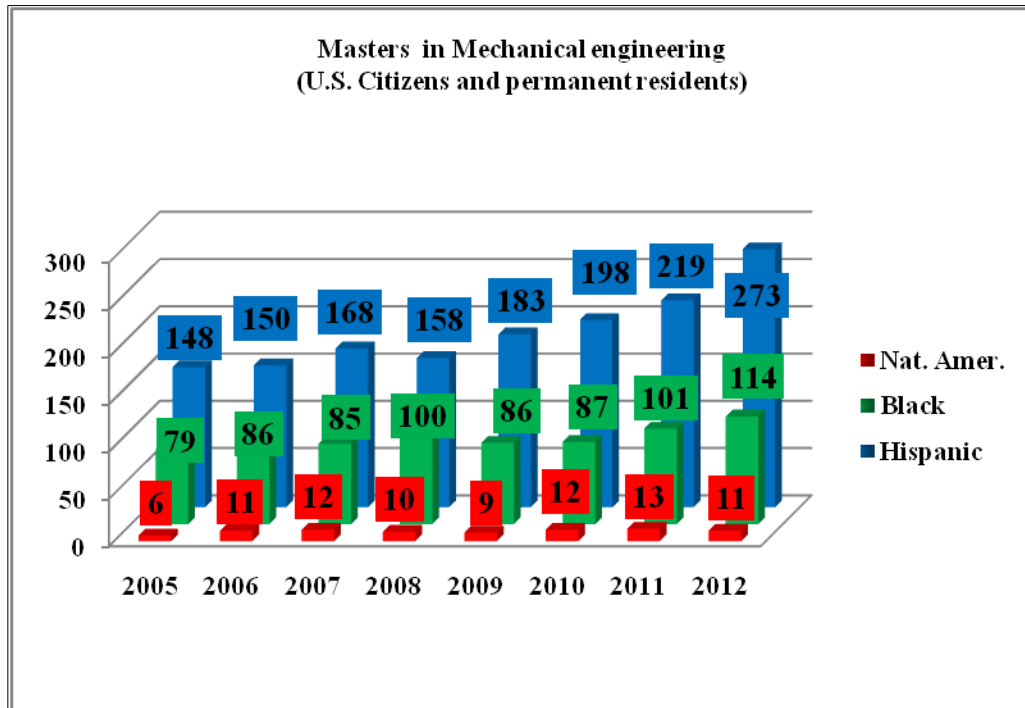


Electrical, electronics, and communications engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	3,813	2,050	974	177	215	17	380	5,258
2006	3,655	1,961	944	171	213	12	354	4,496
2007	3,705	1,885	1,016	199	235	4	366	4,090
2008	3,706	1,904	941	212	235	14	400	4,951
2009	3,498	1,841	794	189	220	11	443	5,706
2010	3,474	1,812	797	174	215	19	457	5,612
2011	3,720	1,915	895	237	243	9	421	5,994
2012	3,675	2,000	807	211	289	11	357	6,052

U. S. Citizen and permanent resident Master's degrees recipients in Electrical, electronics, and communications engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 26

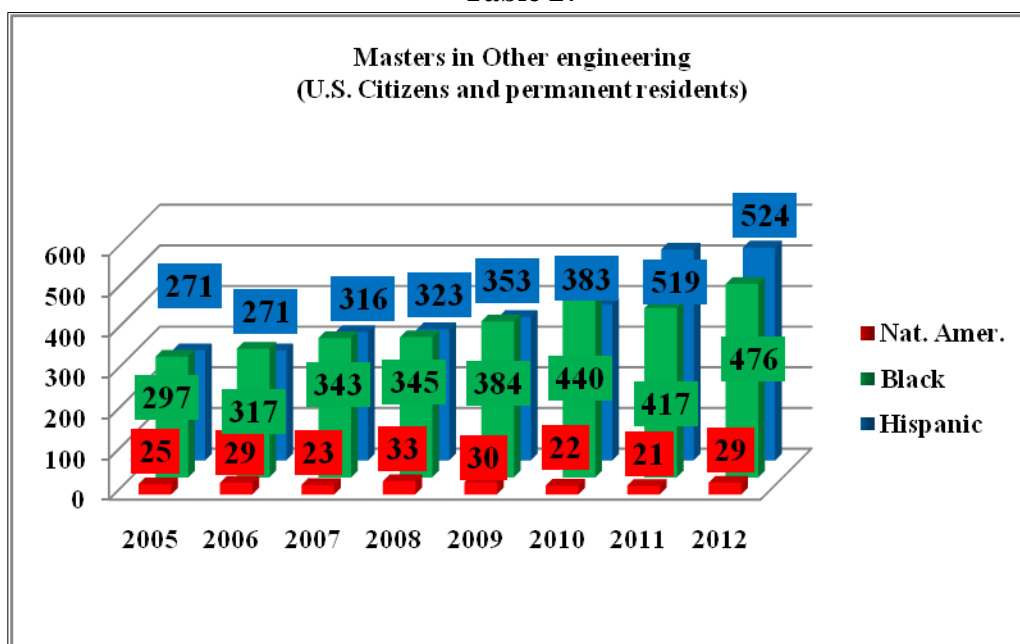


Mechanical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	2,763	1,993	321	79	148	6	216	1,884
2006	2,756	1,919	353	86	150	11	237	1,698
2007	2,798	1,962	339	85	168	12	232	1,505
2008	2,953	2,052	368	100	158	10	265	1,555
2009	2,858	1,977	357	86	183	9	246	1,775
2010	3,098	2,130	384	87	198	12	287	1,739
2011	3,642	2,554	464	101	219	13	291	2,175
2012	3,752	2,636	427	114	273	11	291	2,106

U. S. Citizen and permanent resident Master's degrees recipients in Mechanical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 27

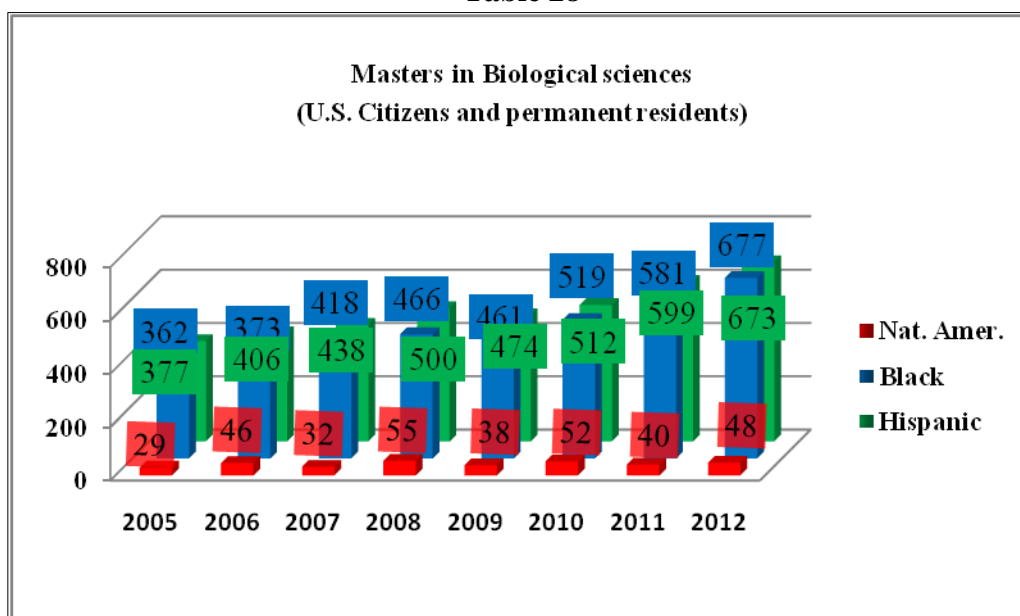


Other engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	6,062	3,953	985	297	271	25	531	3,492
2006	6,156	3,890	1,107	317	271	29	542	3,410
2007	6,427	3,959	1,180	343	316	23	606	2,815
2008	6,799	4,011	1,395	345	323	33	692	3,268
2009	7,855	4,261	1,991	384	353	30	836	3,825
2010	7,656	4,278	1,689	440	383	22	844	4,141
2011	8,056	4,724	1,502	417	519	21	873	4,296
2012	8,776	5,336	1,451	476	524	29	960	4,314

U. S. Citizen and permanent resident Master's degrees recipients in Other engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 28

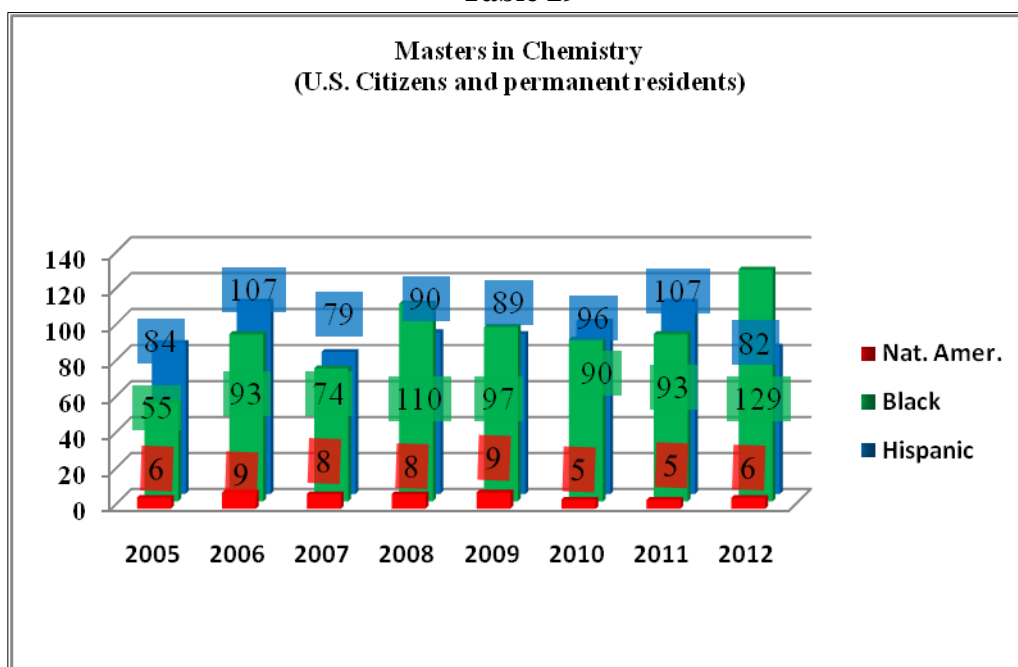


Biological sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	6,910	4,876	795	377	362	29	471	1,210
2006	7,430	5,248	820	406	373	46	537	1,288
2007	7,468	5,073	883	438	418	32	624	1,326
2008	8,100	5,242	977	500	466	55	860	1,465
2009	8,211	5,299	1,037	474	461	38	902	1,710
2010	8,878	5,594	1,245	512	519	52	956	1,790
2011	9,313	5,838	1,267	599	581	40	988	1,901
2012	10,265	6,438	1,442	673	677	48	987	2,048

U. S. Citizen and permanent resident Master's degrees recipients in Biological sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 29

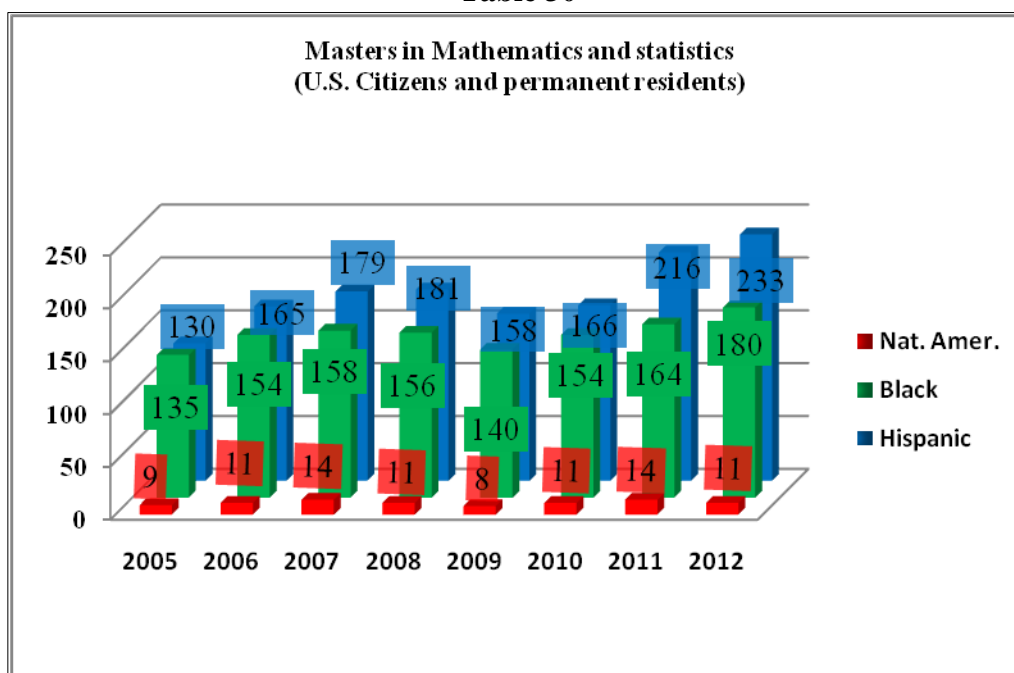


Chemistry	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	1,289	886	154	55	84	6	104	623
2006	1,396	963	137	93	107	9	87	701
2007	1,432	977	177	74	79	8	117	712
2008	1,524	1,032	154	110	90	8	130	712
2009	1,436	941	178	97	89	9	122	695
2010	1,465	926	186	90	96	5	162	710
2011	1,532	964	208	93	107	5	155	792
2012	1,627	1,110	174	129	82	6	126	866

U. S. Citizen and permanent resident Master's degrees recipients in Chemistry.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 30

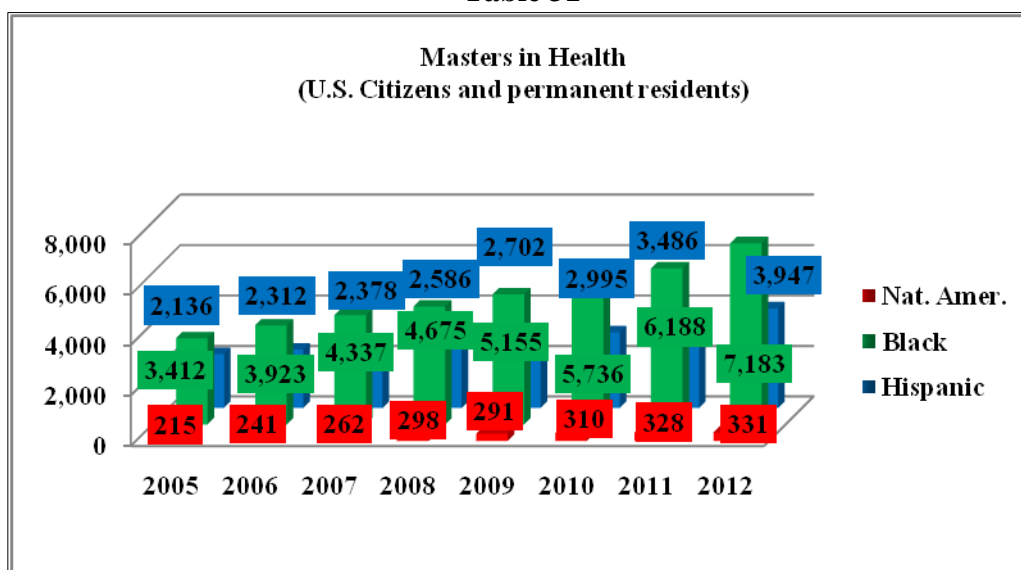


Mathematics and statistics	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	2,820	1,982	324	135	130	9	240	1,777
2006	3,084	2,115	396	154	165	11	243	1,806
2007	3,266	2,187	457	158	179	14	271	1,769
2008	3,268	2,192	416	156	181	11	312	1,884
2009	3,245	2,178	431	140	158	8	330	2,214
2010	3,480	2,322	459	154	166	11	368	2,478
2011	3,765	2,452	515	164	216	14	404	2,438
2012	3,952	2,604	505	180	233	11	419	2,722

U. S. Citizen and permanent resident Master's degrees recipients in Mathematics and statistics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 31



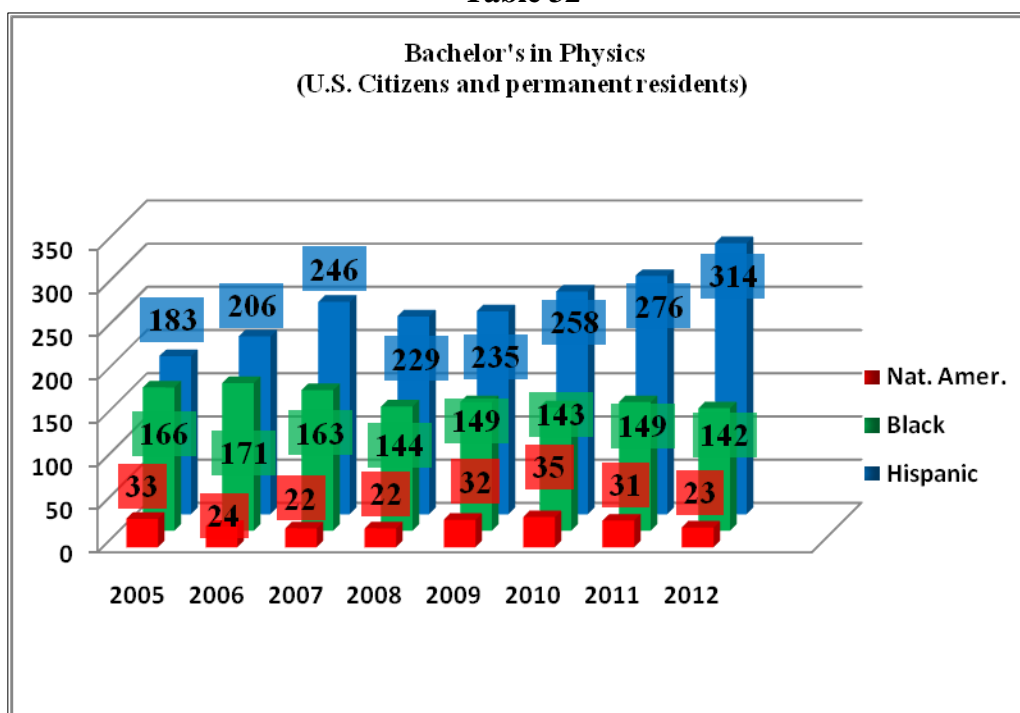
Health	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	38,118	26,763	2,921	3,412	2,136	215	2,671	2,369
2006	41,449	28,491	3,061	3,923	2,312	241	3,421	2,822
2007	44,142	30,212	3,306	4,337	2,378	262	3,647	2,660
2008	46,829	31,804	3,354	4,675	2,586	298	4,112	2,613
2009	50,881	34,148	3,885	5,155	2,702	291	4,700	2,753
2010	54,344	35,846	4,201	5,736	2,995	310	5,256	3,049
2011	59,802	39,198	4,663	6,188	3,486	328	5,939	3,340
2012	66,327	43,084	5,236	7,183	3,947	331	6,546	3,451

U. S. Citizen and permanent resident Master's degrees recipients in Mathematics and statistics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

BACHELOR'S IN SELECTED FIELDS

Table 32

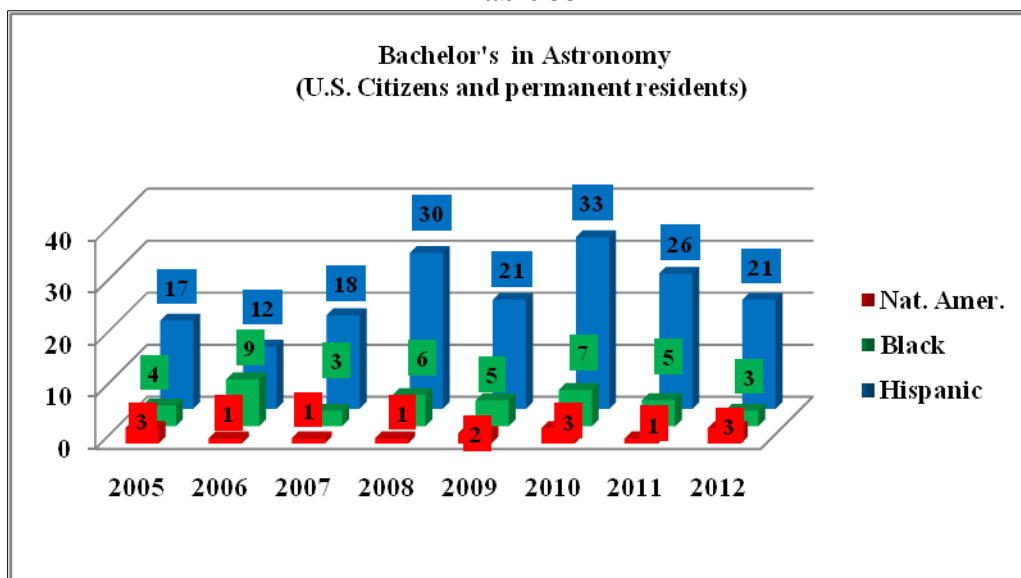


Physics	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	3,999	3,092	236	166	183	33	289	200
2006	4,323	3,333	281	171	206	24	308	243
2007	4,647	3,545	327	163	246	22	344	223
2008	4,647	3,572	307	144	229	22	373	229
2009	4,633	3,599	306	149	235	32	312	209
2010	4,793	3,636	310	143	258	35	411	207
2011	4,966	3,734	347	149	276	31	429	255
2012	5,231	3,917	382	142	314	23	453	326

U. S. Citizen and permanent resident Bachelor's degrees recipients in Physics.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 33

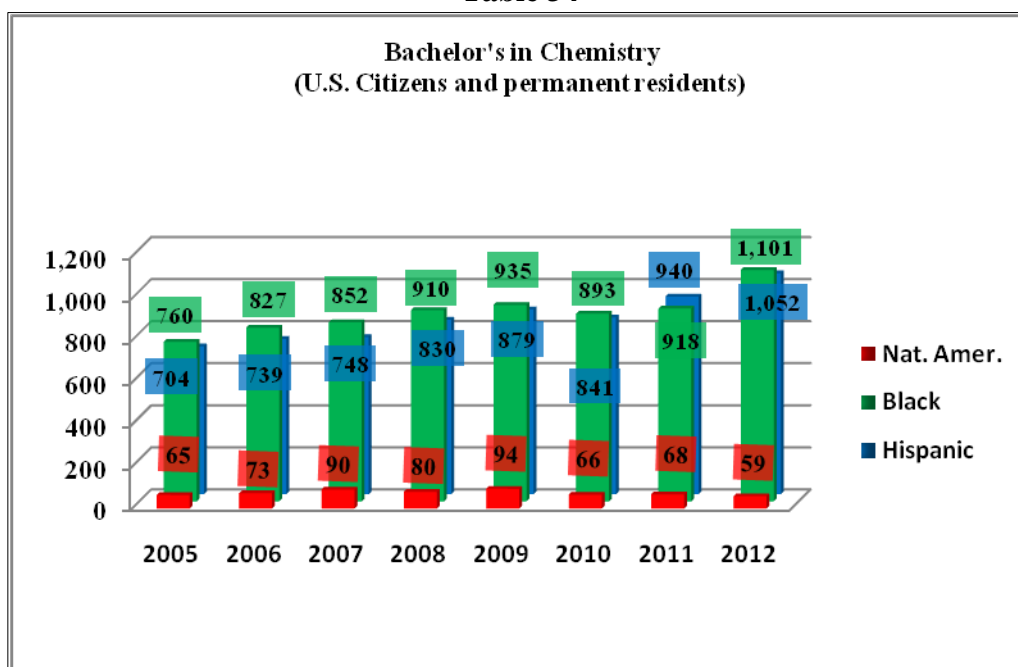


Astronomy	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	311	234	21	4	17	3	32	20
2006	353	269	37	9	12	1	25	13
2007	319	248	16	3	18	1	33	13
2008	330	251	21	6	30	1	21	16
2009	322	233	27	5	21	2	34	13
2010	375	260	36	7	33	3	36	13
2011	348	272	20	5	26	1	24	16
2012	384	291	33	3	21	3	33	8

U. S. Citizen and permanent resident Master's degrees recipients in Astronomy.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 34

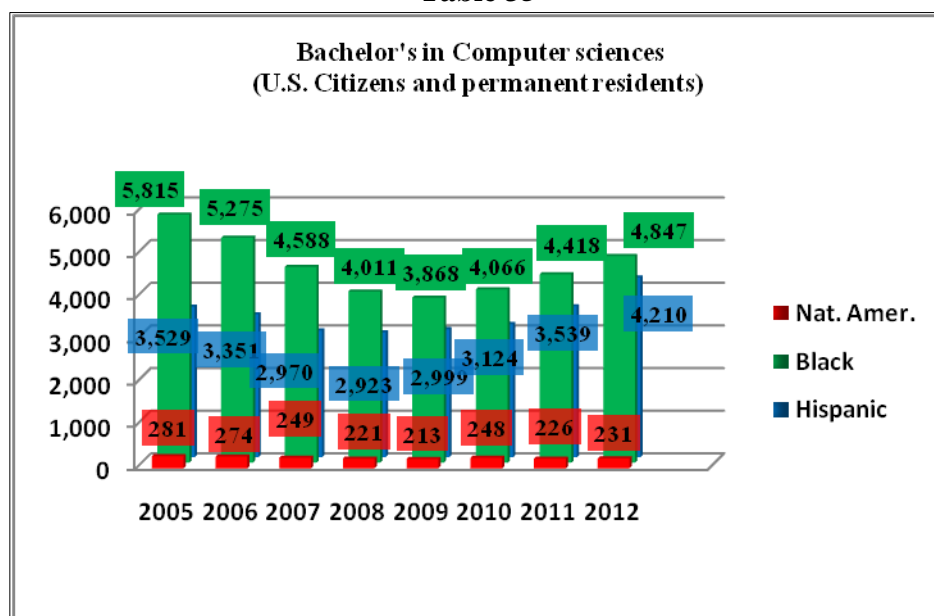


Chemistry	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	9,526	6,586	1,024	760	704	65	387	397
2006	10,421	7,023	1,267	827	739	73	492	466
2007	10,799	7,135	1,420	852	748	90	554	451
2008	11,364	7,322	1,596	910	830	80	626	468
2009	11,615	7,463	1,671	935	879	94	573	529
2010	11,791	7,560	1,726	893	841	66	705	547
2011	12,315	7,821	1,796	918	940	68	772	573
2012	13,115	8,181	1,877	1,101	1,052	59	845	599

U. S. Citizen and permanent resident Bachelor's degrees recipients in Chemistry.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 35

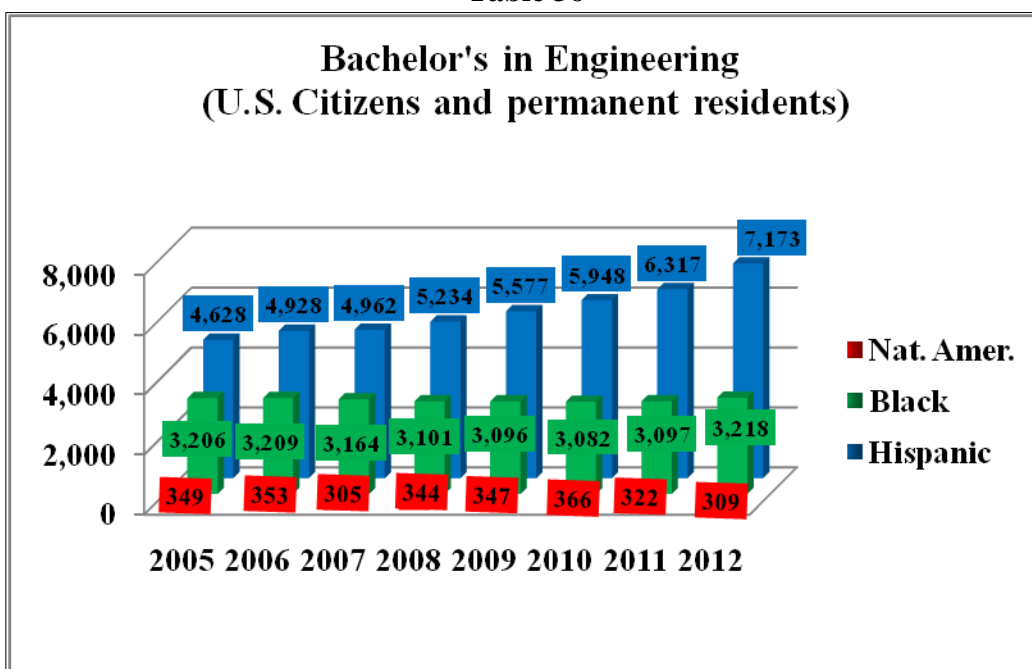


Computer sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	10,975	5,818	2,244	887	498	47	1,481	7,514
2006	10,489	5,715	1,856	853	506	58	1,501	6,649
2007	10,027	5,463	1,754	898	491	40	1,381	6,287
2008	9,746	5,176	1,627	950	473	44	1,476	7,405
2009	9,641	5,080	1,477	919	497	36	1,632	8,347
2010	10,066	5,183	1,470	1,111	651	45	1,606	7,955
2011	10,786	5,553	1,646	1,212	659	48	1,668	8,733
2012	11,636	5,987	1,583	1,420	809	52	1,785	9,365

U. S. Citizen and permanent resident Bachelor's degrees recipients in Computer sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 36

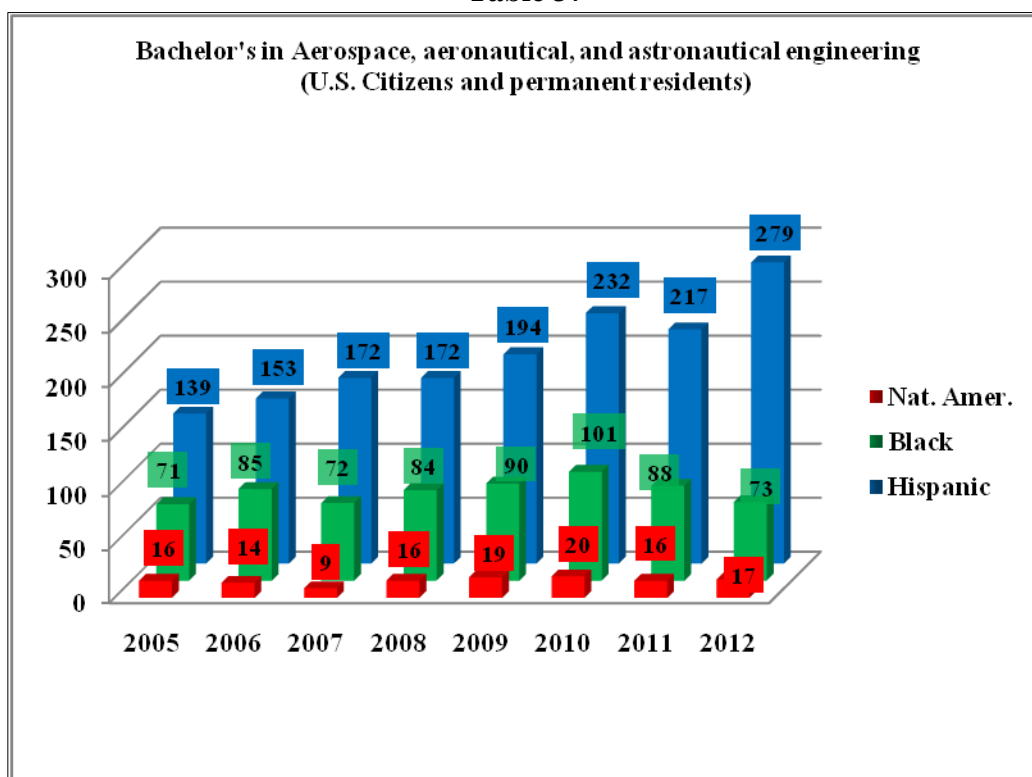


Engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	61,412	42,191	8,211	3,206	4,628	349	2,827	4,740
2006	63,516	43,526	8,551	3,209	4,928	353	2,949	4,711
2007	63,885	43,980	8,466	3,164	4,962	305	3,008	4,389
2008	65,728	45,383	8,343	3,101	5,234	344	3,323	4,180
2009	66,529	45,647	8,266	3,096	5,577	347	3,596	4,071
2010	69,897	47,977	8,405	3,082	5,948	366	4,119	4,502
2011	72,848	49,401	8,775	3,097	6,317	322	4,936	5,251
2012	76,932	52,352	9,243	3,218	7,173	309	4,637	6,331

U. S. Citizen and permanent resident Bachelor's degrees recipients in Engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 37

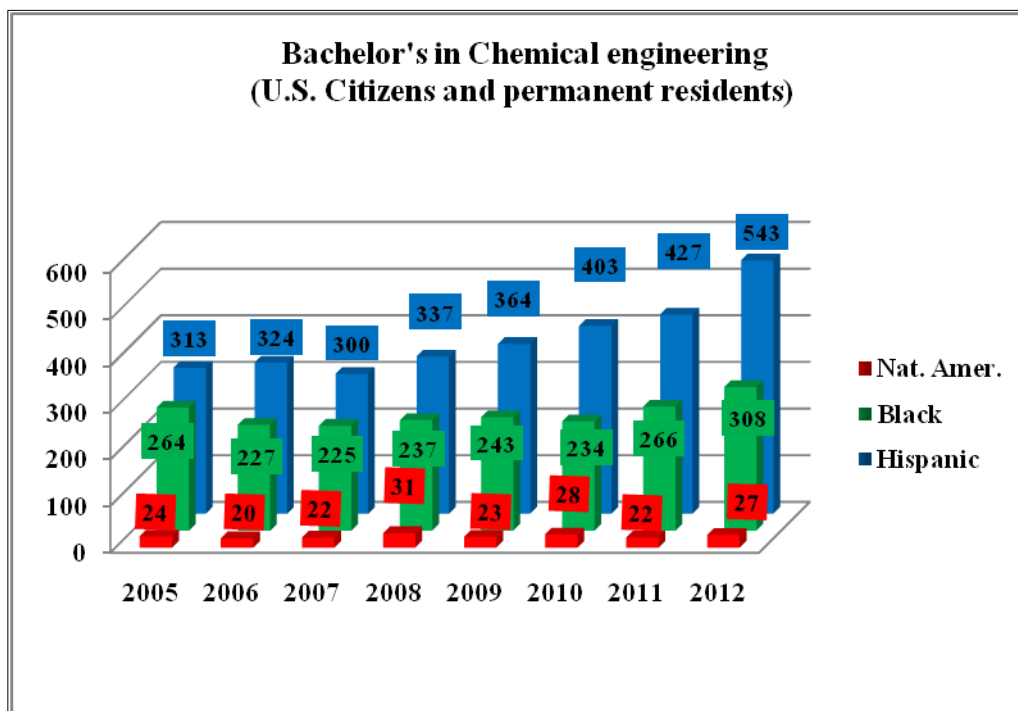


Aerospace, aeronautical, and astronautical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	2,213	1,723	184	71	139	16	80	171
2006	2,606	2,005	223	85	153	14	126	147
2007	2,653	2,017	250	72	172	9	133	175
2008	2,783	2,088	278	84	172	16	145	151
2009	2,859	2,113	294	90	194	19	149	178
2010	2,990	2,155	309	101	232	20	173	217
2011	3,097	2,257	328	88	217	16	191	245
2012	3,278	2,379	348	73	279	17	182	267

U. S. Citizen and permanent resident Bachelor's degrees recipients in Aerospace, aeronautical, and astronautical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 38

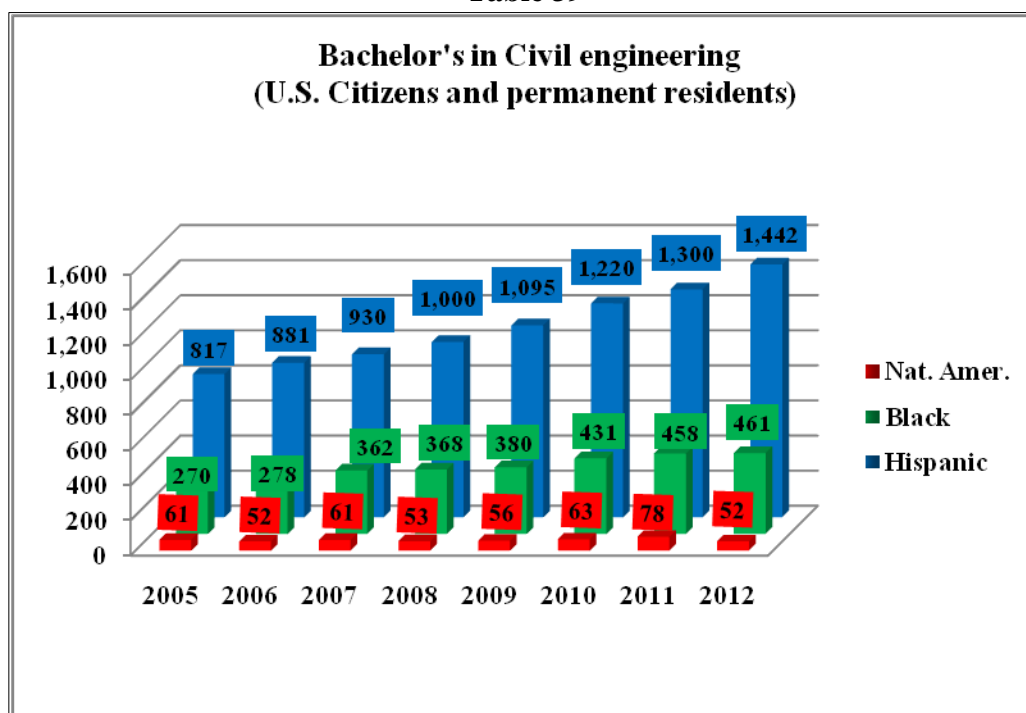


Chemical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	4,186	2,968	471	264	313	24	146	301
2006	4,098	2,824	537	227	324	20	166	357
2007	4,214	2,867	626	225	300	22	174	357
2008	4,544	3,063	661	237	337	31	215	375
2009	4,776	3,219	708	243	364	23	219	361
2010	5,425	3,630	849	234	403	28	281	413
2011	5,947	4,066	839	266	427	22	327	469
2012	6,551	4,313	992	308	543	27	368	625

U. S. Citizen and permanent resident Bachelor's degrees recipients in Chemical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 39

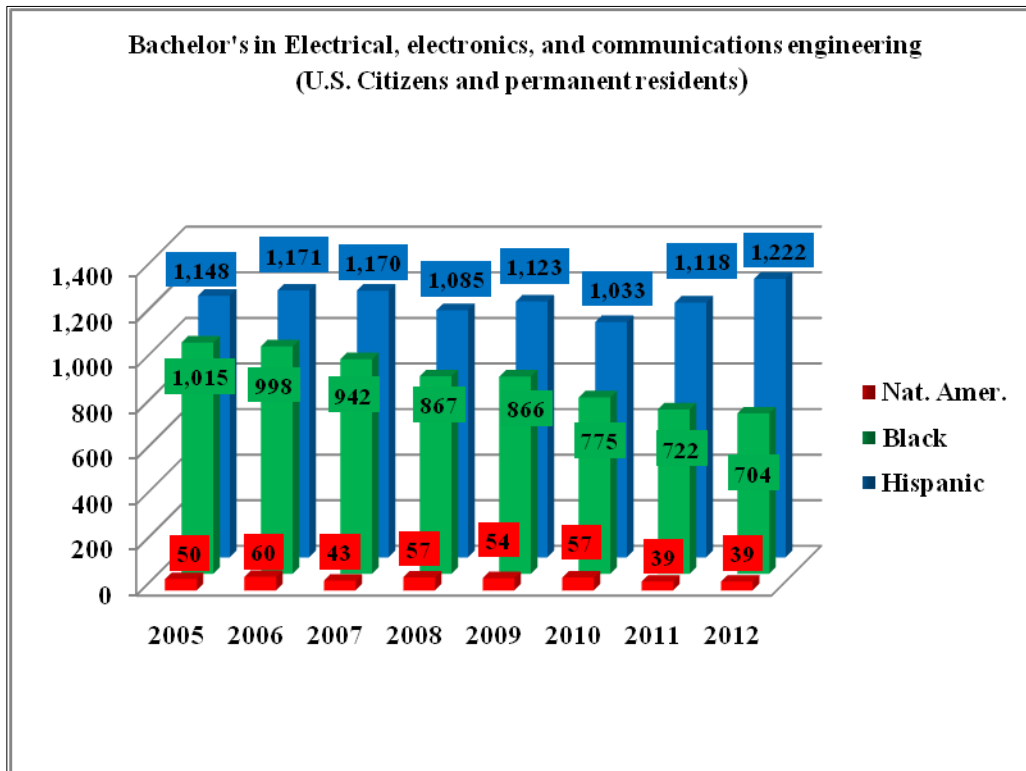


Civil engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	8,162	6,142	537	270	817	61	335	296
2006	9,017	6,714	715	278	881	52	377	307
2007	9,632	7,039	842	362	930	61	398	297
2008	10,331	7,517	903	368	1,000	53	490	344
2009	10,711	7,601	1,002	380	1,095	56	577	330
2010	11,166	7,817	978	431	1,220	63	657	441
2011	12,314	8,505	1,171	458	1,300	78	802	502
2012	12,380	8,646	1,123	461	1,442	52	656	610

U. S. Citizen and permanent resident Bachelor's degrees recipients in Civil engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 40

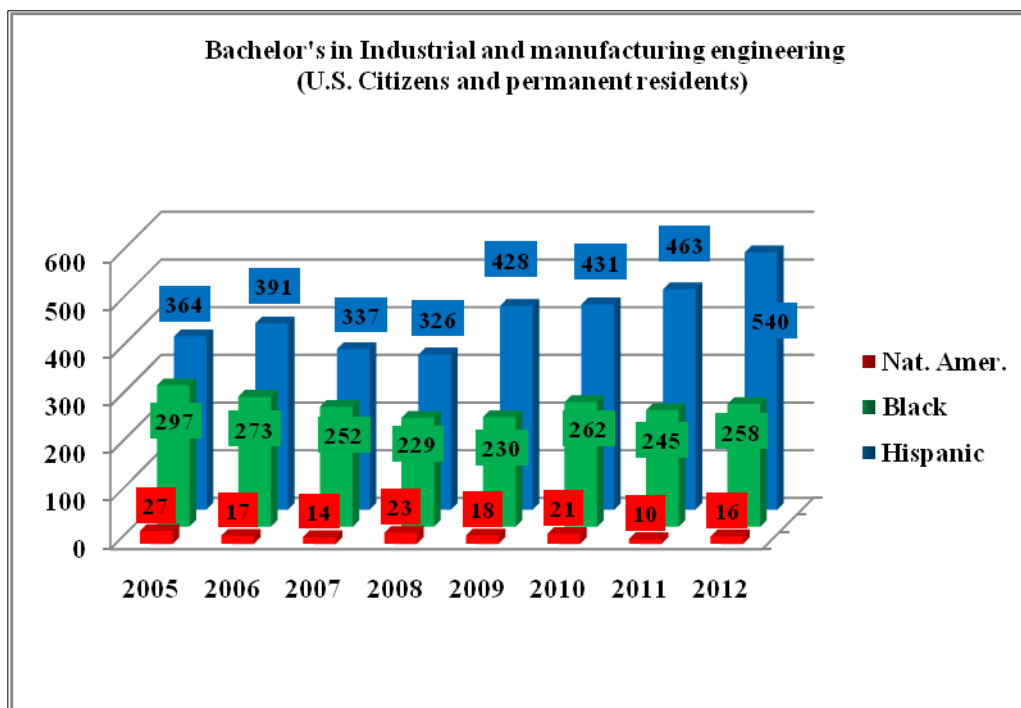


Electrical, electronics, and communications engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	12,917	7,137	2,875	1,015	1,148	50	692	1,525
2006	12,676	6,967	2,790	998	1,171	60	690	1,561
2007	11,998	6,691	2,520	942	1,170	43	632	1,387
2008	11,404	6,474	2,294	867	1,085	57	627	1,230
2009	10,733	6,015	1,980	866	1,123	54	695	1,150
2010	10,551	6,056	1,879	775	1,033	57	751	1,142
2011	10,403	5,850	1,901	722	1,118	39	773	1,376
2012	10,754	6,186	1,908	704	1,222	39	695	1,601

U. S. Citizen and permanent resident Bachelor's degrees recipients in Electrical, electronics, and communications engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 41

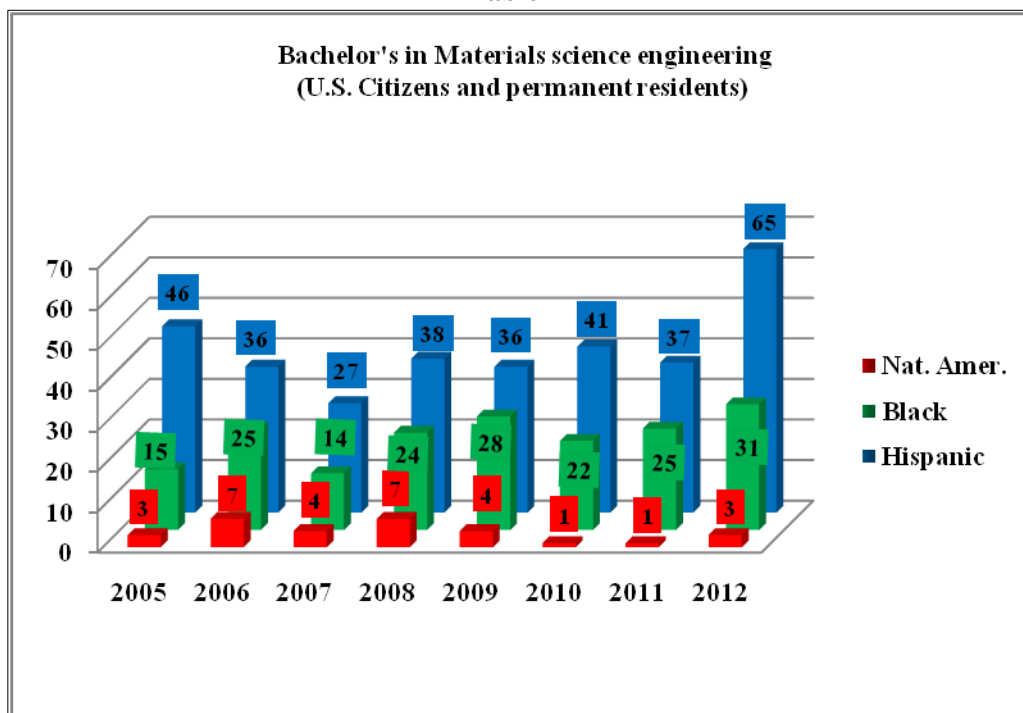


Industrial and manufacturing engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	3,541	2,353	352	297	364	27	148	395
2006	3,462	2,312	362	273	391	17	107	428
2007	3,154	2,107	333	252	337	14	111	375
2008	3,160	2,148	315	229	326	23	119	406
2009	3,510	2,346	360	230	428	18	128	369
2010	3,741	2,491	343	262	431	21	193	433
2011	3,840	2,475	390	245	463	10	257	443
2012	4,094	2,678	395	258	540	16	207	578

U. S. Citizen and permanent resident Bachelor's degrees recipients in Industrial and manufacturing engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

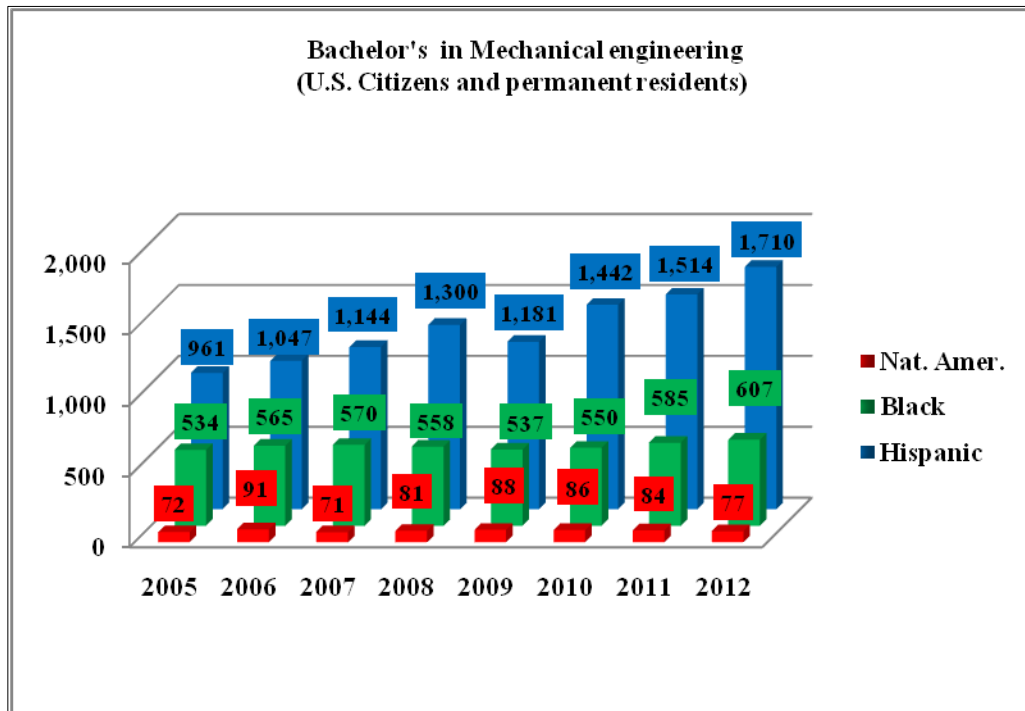
Table 42



Materials science engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	721	521	95	15	46	3	41	37
2006	775	536	144	25	36	7	27	39
2007	758	546	133	14	27	4	34	42
2008	880	632	130	24	38	7	49	36
2009	842	581	131	28	36	4	62	59
2010	925	665	148	22	41	1	48	60
2011	908	651	135	25	37	1	59	65
2012	1,058	721	150	31	65	3	88	74

U. S. Citizen and permanent resident Bachelor's degrees recipients in Materials science engineering.
(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 43

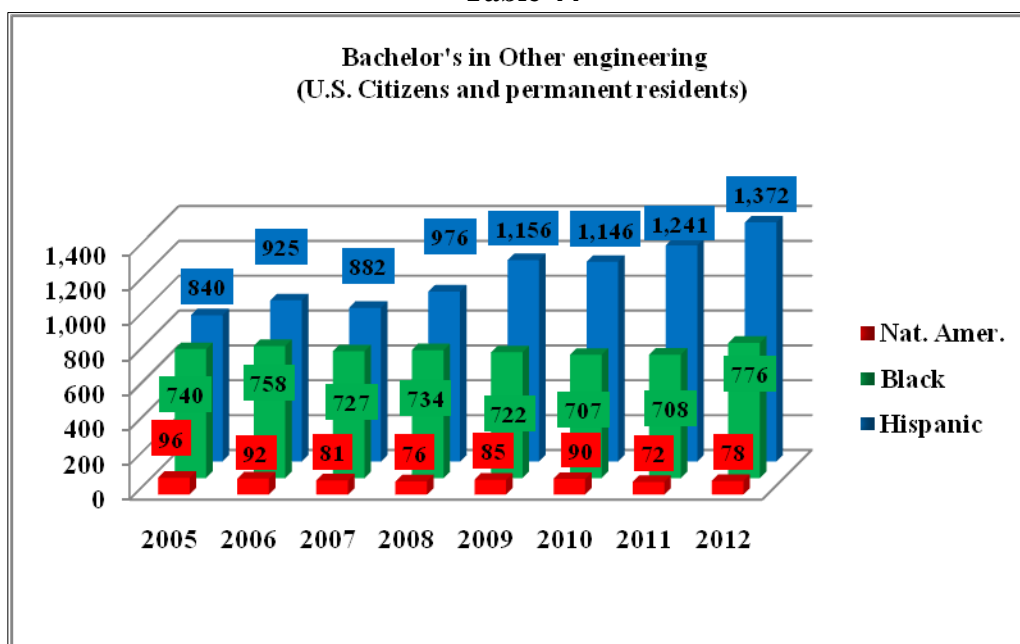


Mechanical engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	14,165	10,875	1,077	534	961	72	646	646
2006	15,399	11,733	1,244	565	1,047	91	719	649
2007	16,098	12,174	1,410	570	1,144	71	729	711
2008	16,872	12,608	1,483	558	1,300	81	842	714
2009	16,838	12,677	1,482	537	1,181	88	873	713
2010	17,980	13,363	1,535	550	1,442	86	1,004	799
2011	18,510	13,503	1,588	585	1,514	84	1,236	878
2012	19,667	14,342	1,707	607	1,710	77	1,224	1,115

U. S. Citizen and permanent resident Bachelor's degrees recipients in Mechanical engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 44

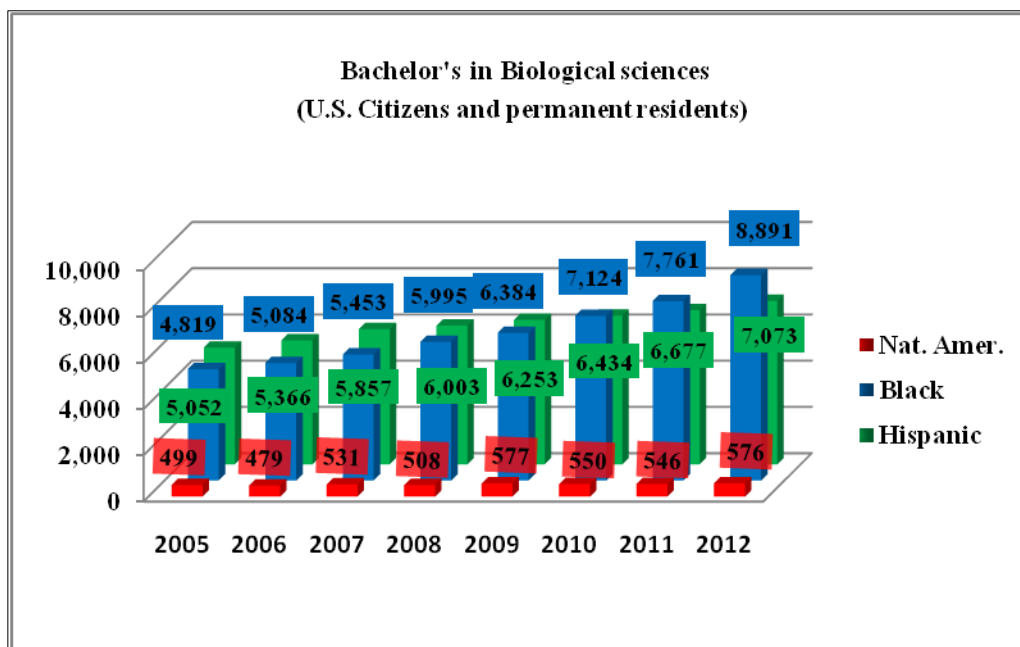


Other engineering	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	15,507	10,472	2,620	740	840	96	739	1,369
2006	15,483	10,435	2,536	758	925	92	737	1,223
2007	15,378	10,539	2,352	727	882	81	797	1,045
2008	15,754	10,853	2,279	734	976	76	836	924
2009	16,260	11,095	2,309	722	1,156	85	893	911
2010	17,119	11,800	2,364	707	1,146	90	1,012	997
2011	17,829	12,094	2,423	708	1,241	72	1,291	1,273
2012	19,150	13,087	2,620	776	1,372	78	1,217	1,461

U. S. Citizen and permanent resident Bachelor's degrees recipients in Other engineering.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 45

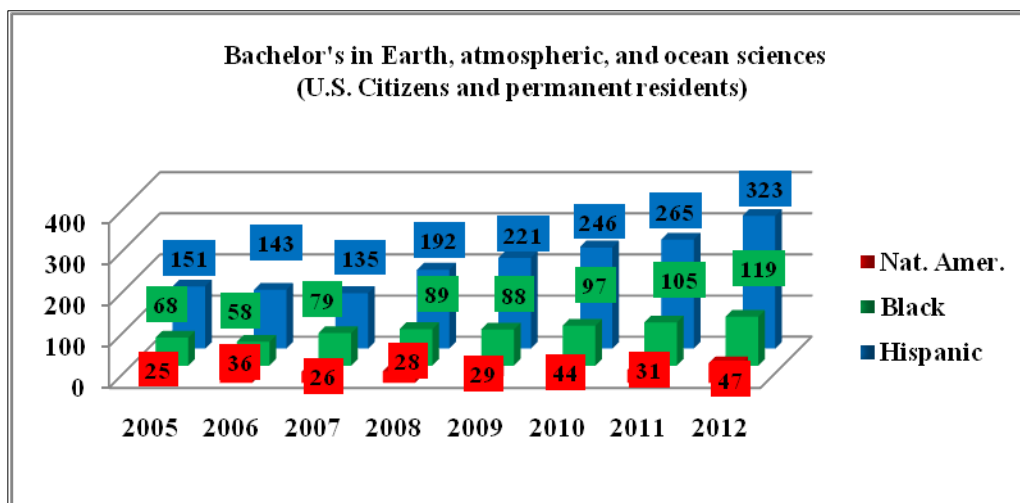


Biological sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	6,910	4,876	795	377	362	29	471	1,210
2006	7,430	5,248	820	406	373	46	537	1,288
2007	7,468	5,073	883	438	418	32	624	1,326
2008	8,100	5,242	977	500	466	55	860	1,465
2009	8,211	5,299	1,037	474	461	38	902	1,710
2010	8,878	5,594	1,245	512	519	52	956	1,790
2011	9,313	5,838	1,267	599	581	40	988	1,901
2012	10,265	6,438	1,442	673	677	48	987	2,048

U. S. Citizen and permanent resident Bachelor's degrees recipients in Biological sciences.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

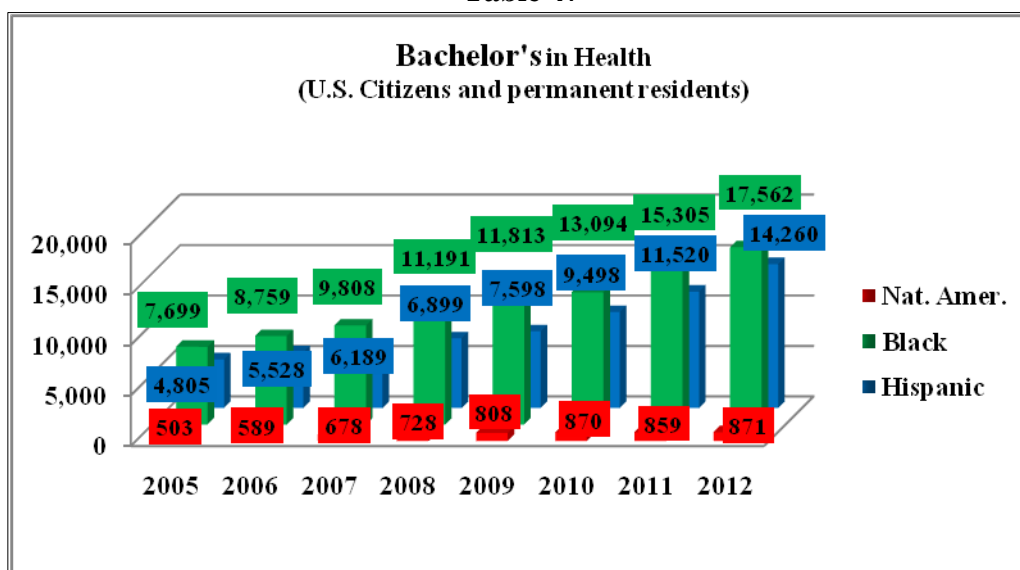
Table 46



Earth, atmospheric, and ocean sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	3,879	3,366	86	68	151	25	183	80
2006	3,911	3,360	92	58	143	36	222	76
2007	4,019	3,474	106	79	135	26	199	58
2008	4,244	3,565	121	89	192	28	249	70
2009	4,460	3,718	143	88	221	29	261	82
2010	4,698	3,879	158	97	246	44	274	104
2011	5,177	4,256	156	105	265	31	364	122
2012	5,749	4,713	193	119	323	47	354	116

U. S. Citizen and permanent resident Bachelor's degrees recipients in Earth, atmospheric, and ocean sciences. (SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 47

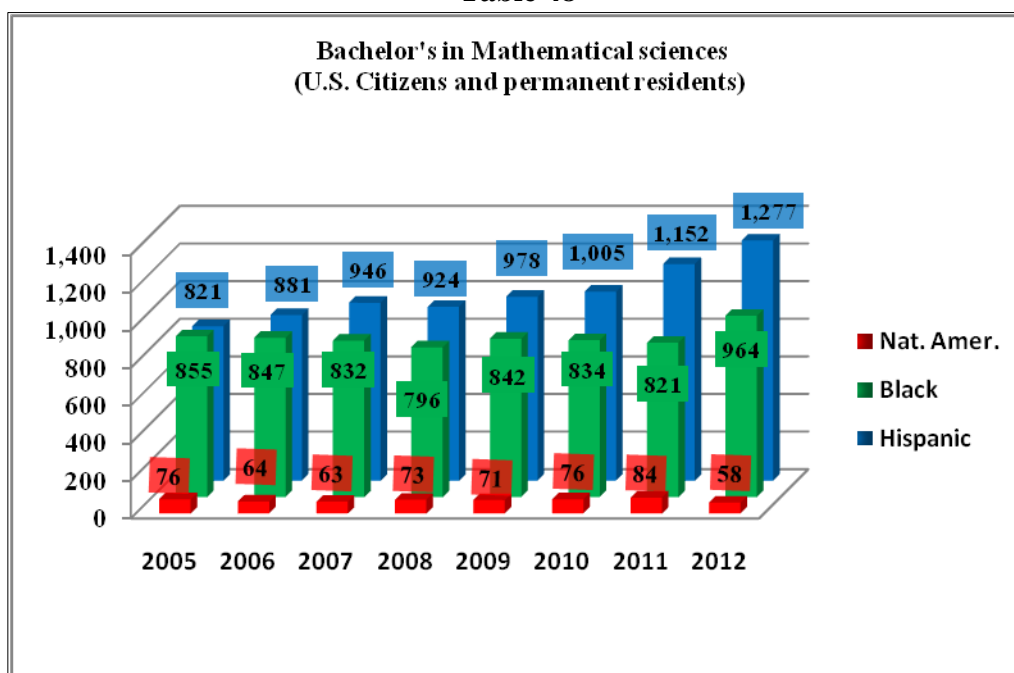


Health	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	73,522	53,244	3,519	7,699	4,805	503	3,752	1,031
2006	84,068	60,333	4,354	8,759	5,528	589	4,505	1,458
2007	93,573	66,300	5,080	9,808	6,189	678	5,518	1,862
2008	103,983	72,556	6,051	11,191	6,899	728	6,558	1,684
2009	112,648	77,740	7,056	11,813	7,598	808	7,633	1,910
2010	124,096	83,669	7,796	13,094	9,498	870	9,169	1,892
2011	140,262	92,730	8,647	15,305	11,520	859	11,201	1,957
2012	160,250	104,044	10,663	17,562	14,260	871	12,850	2,170

U. S. Citizen and permanent resident Bachelor's degrees recipients in Health.

(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Table 48

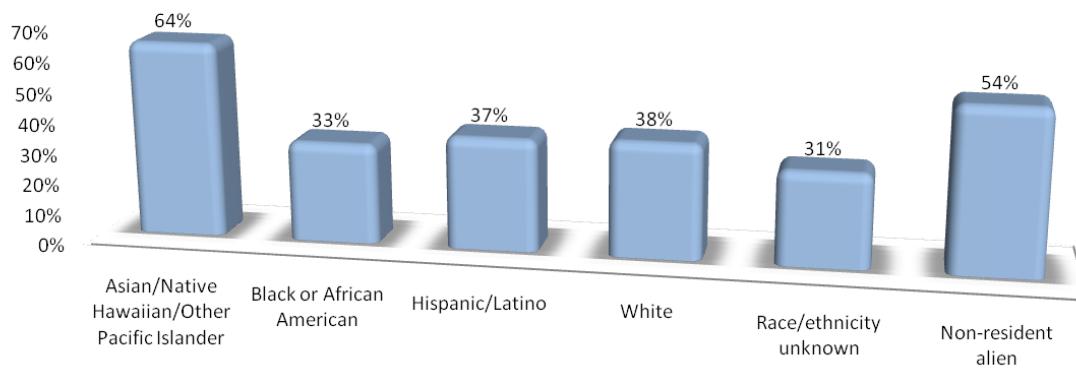


Mathematical sciences	U.S. citizens and permanent residents	White	Asian	Black	Hispanic	Nat. Amer.	Other	Temporary resident
2005	14,055	10,144	1,419	855	821	76	740	761
2006	14,501	10,452	1,447	847	881	64	810	809
2007	14,841	10,731	1,439	832	946	63	830	710
2008	15,079	10,875	1,512	796	924	73	899	762
2009	15,369	10,913	1,565	842	978	71	1,000	839
2010	15,824	11,173	1,630	834	1,005	76	1,106	1,008
2011	16,665	11,628	1,842	821	1,152	84	1,138	1,356
2012	17,929	12,575	1,883	964	1,277	58	1,172	1,890

U. S. Citizen and permanent resident Bachelor's degrees recipients in Mathematical sciences.
(SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2005–12. Prepared by M. D. Slaughter)

Selected 6-Year Bachelor's Degrees Graduation Rate Charts

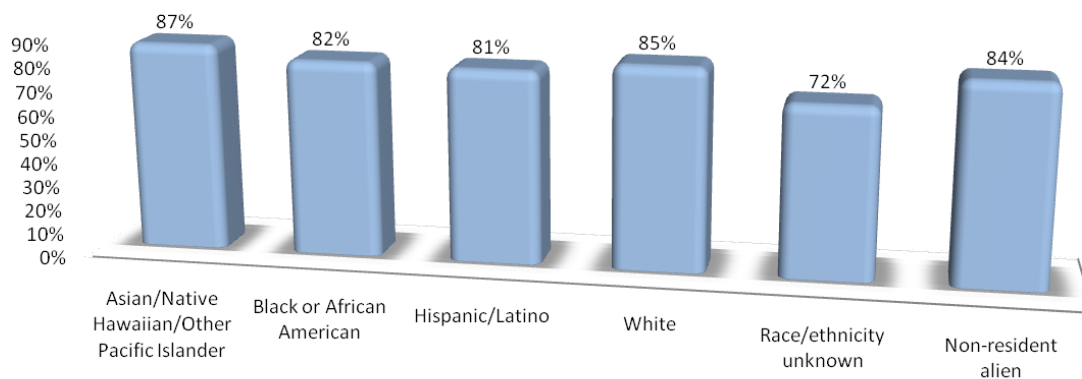
Barry University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 37%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Boston University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

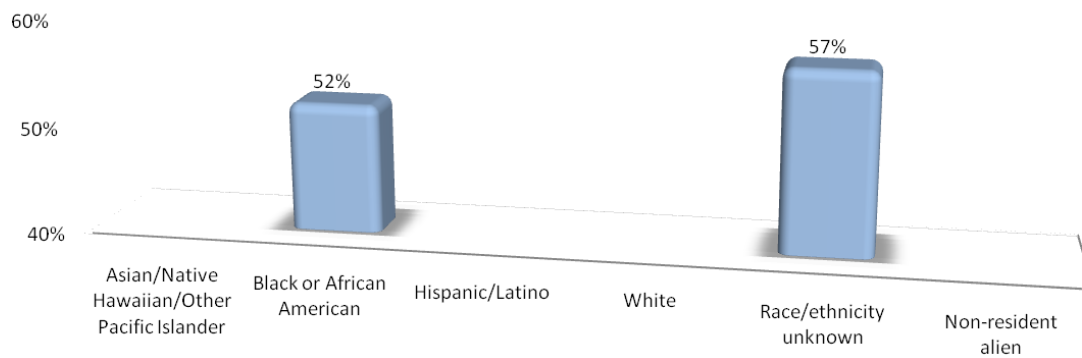


■ Overall Graduation Rate is 84%"

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

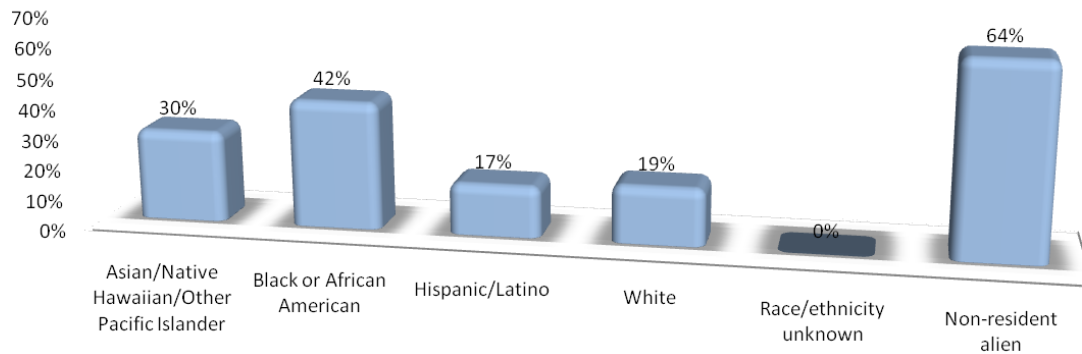
Fisk University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 52%"

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

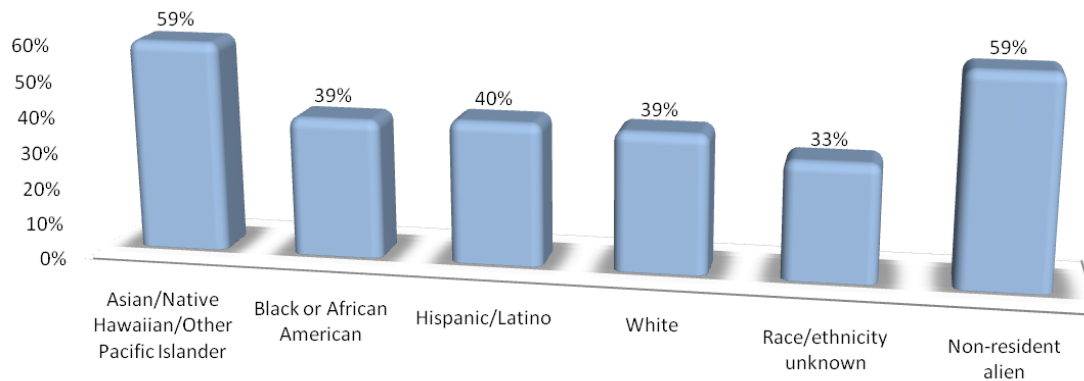
Florida Agricultural and Mechanical University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 41%"

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
 Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

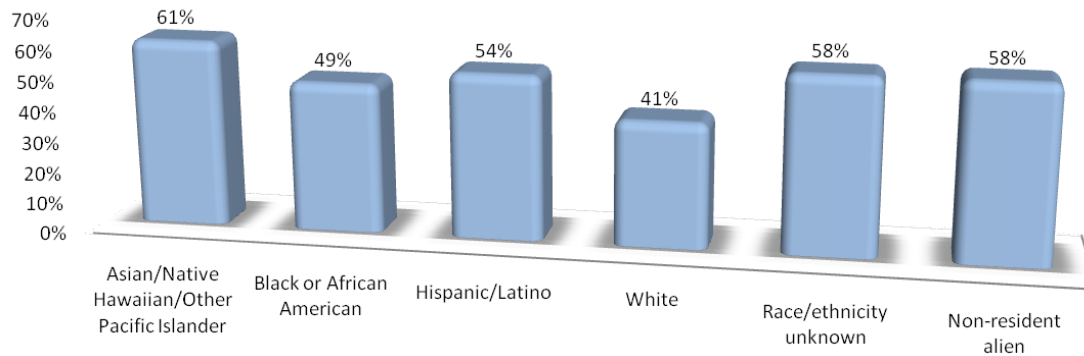
Florida Atlantic University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 41%"

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

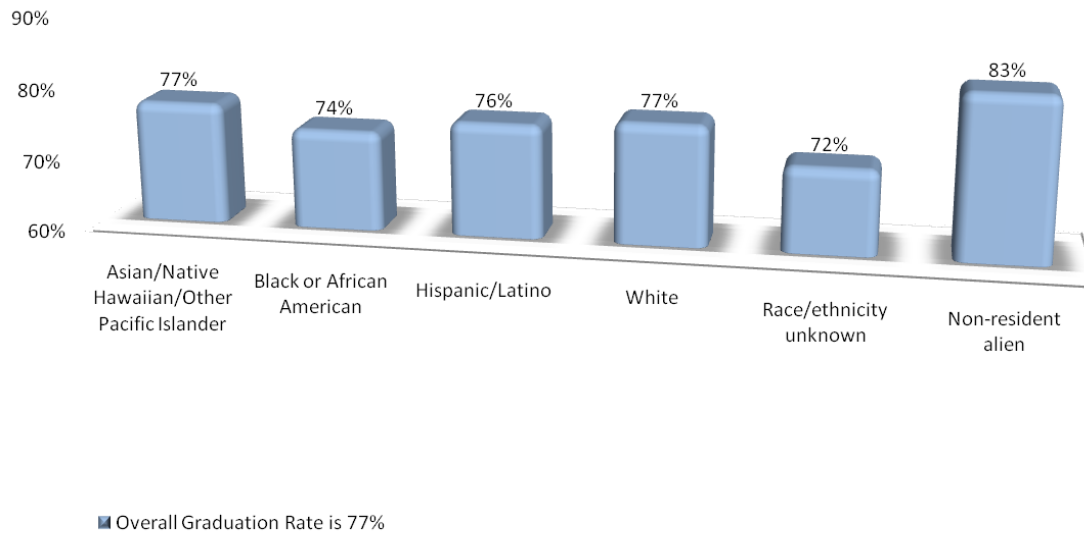
Florida International University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 52%

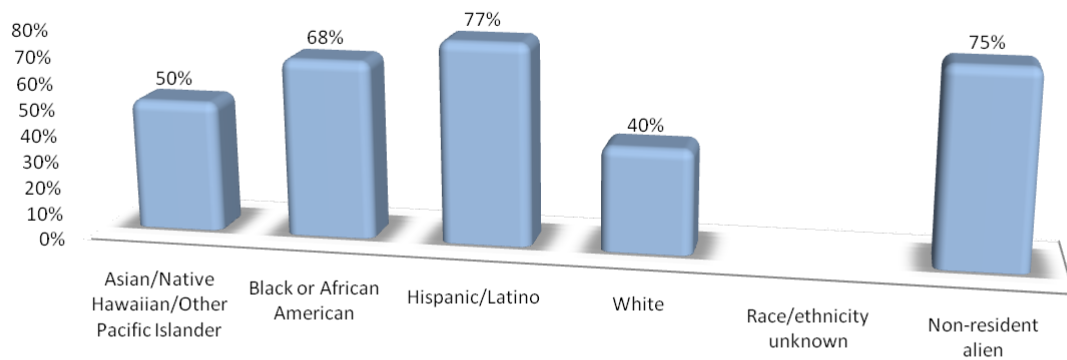
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Florida State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

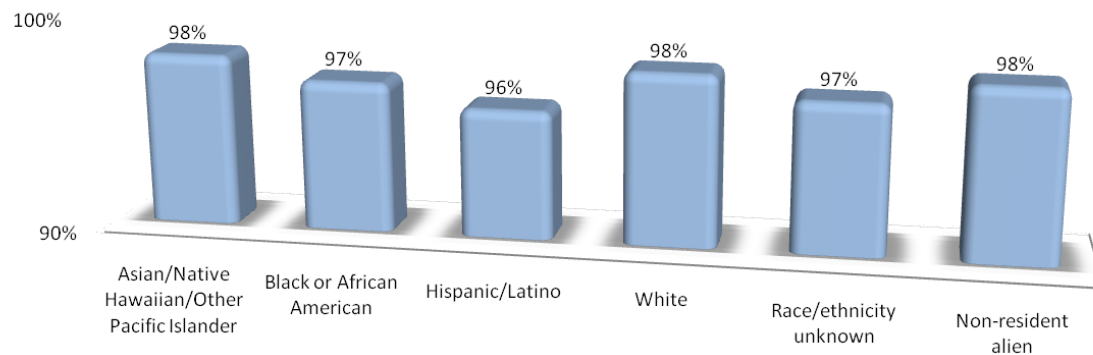
Hampton University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 68%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

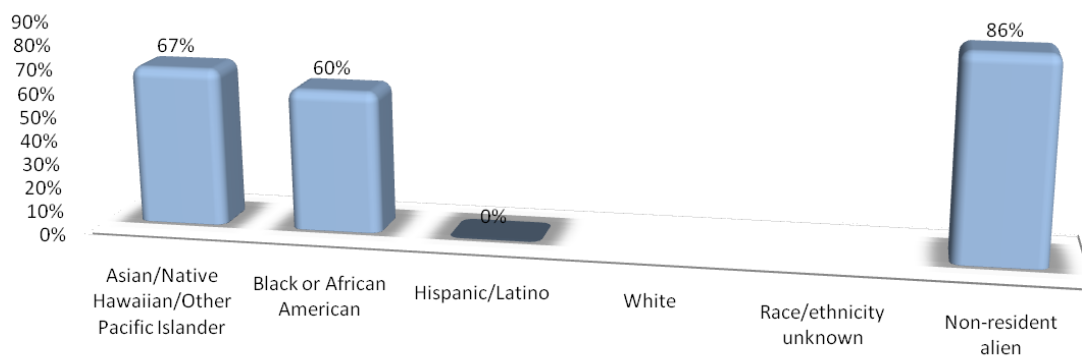
Harvard University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 97%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Howard University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

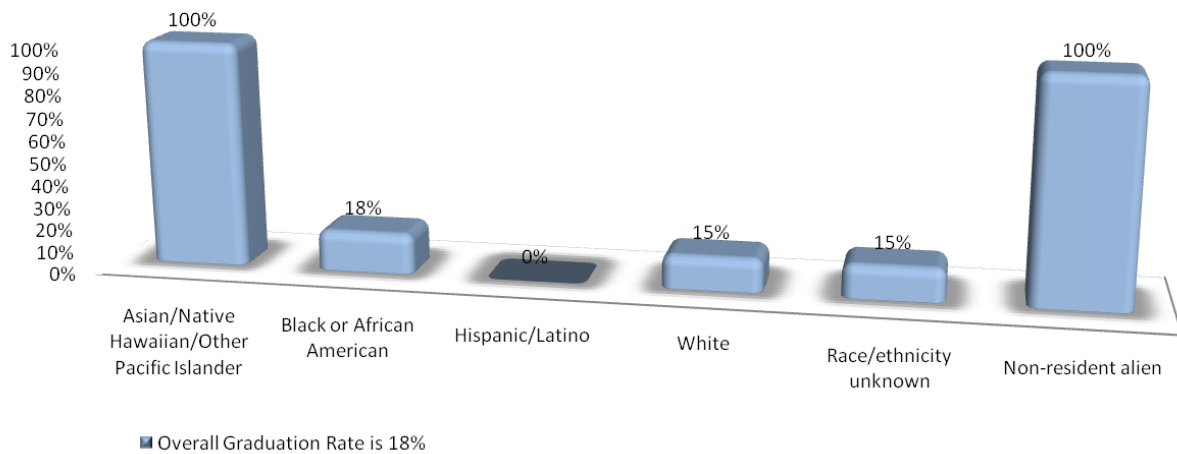


■ Overall Graduation Rate is 61%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

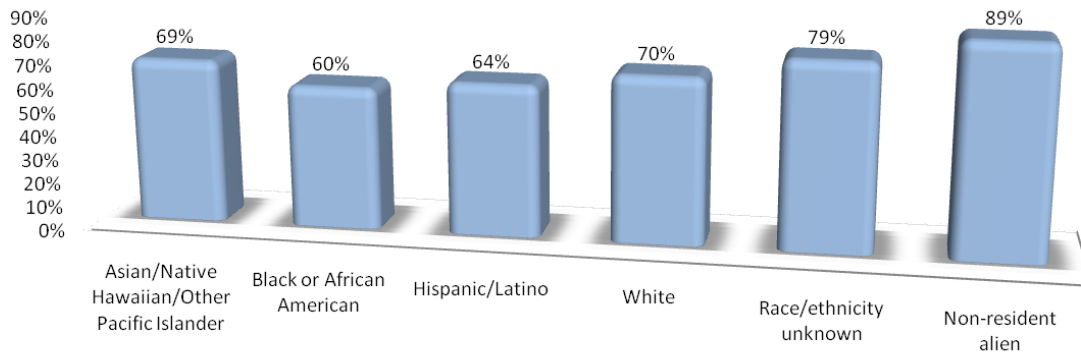
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Kentucky State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
 Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

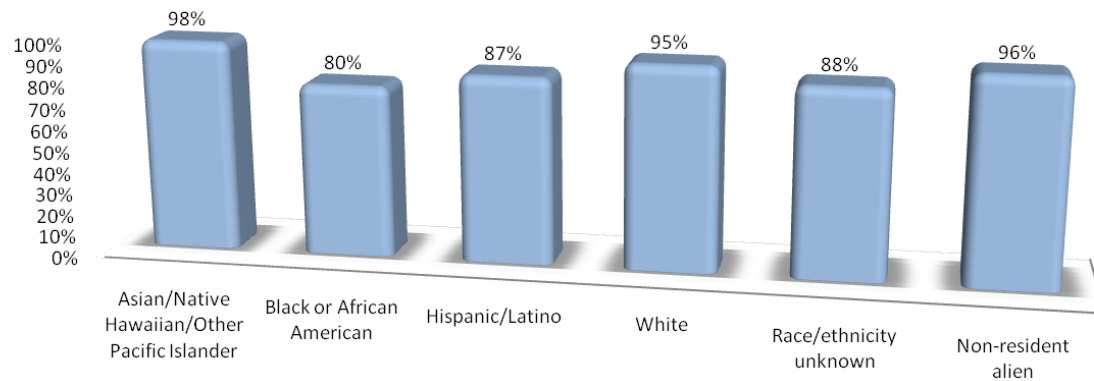
Louisiana State University and Agricultural & Mechanical College 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 69%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

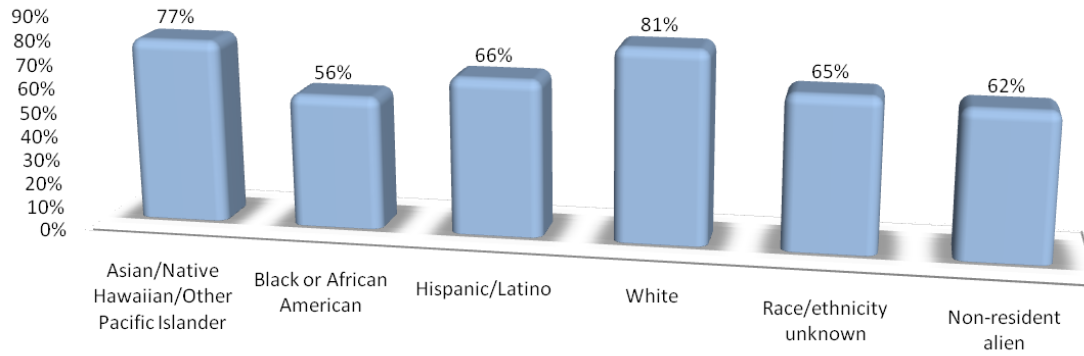
Massachusetts Institute of Technology 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 93%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
 Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

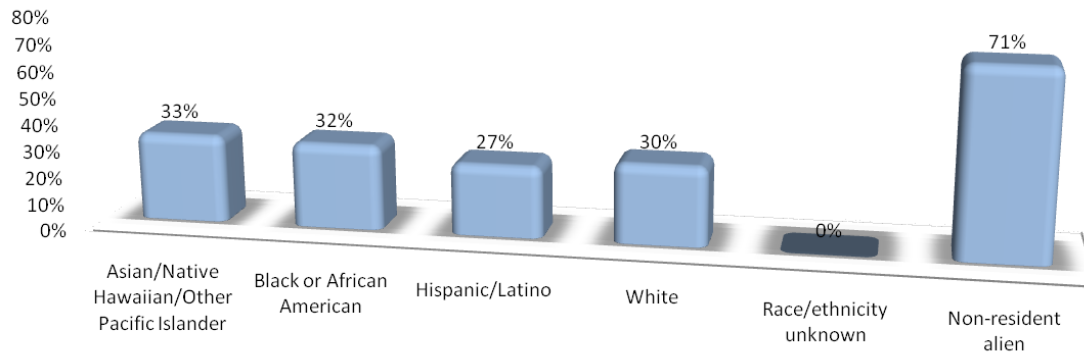
Michigan State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 77%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

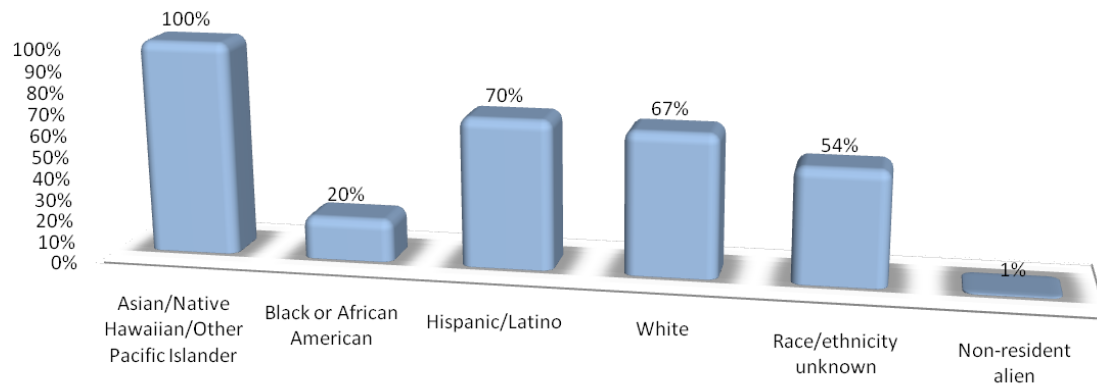
Morgan State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 34%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

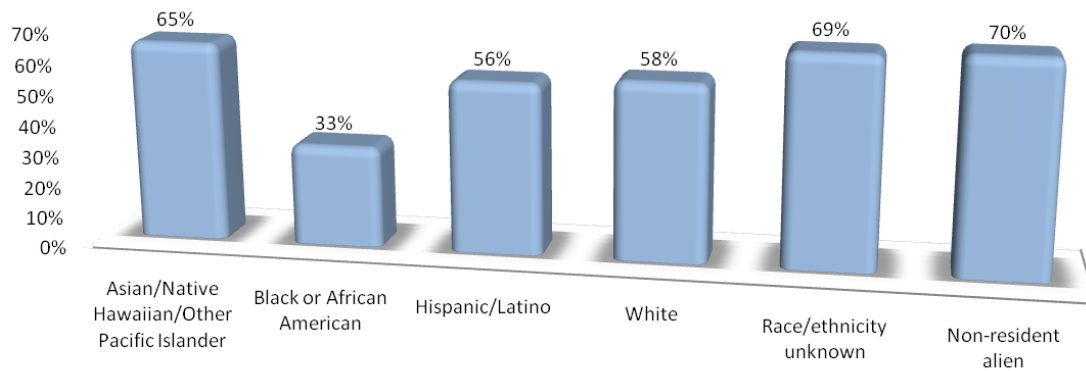
New College of Florida 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 66%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

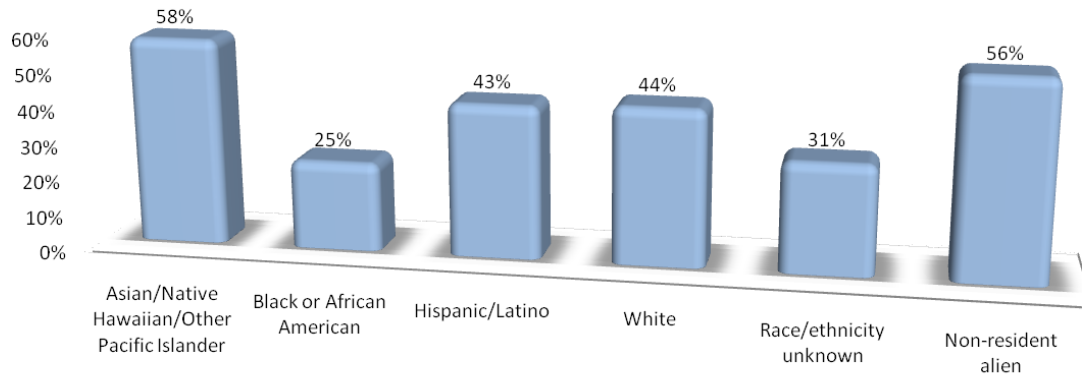
New Jersey Institute of Technology 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 58%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

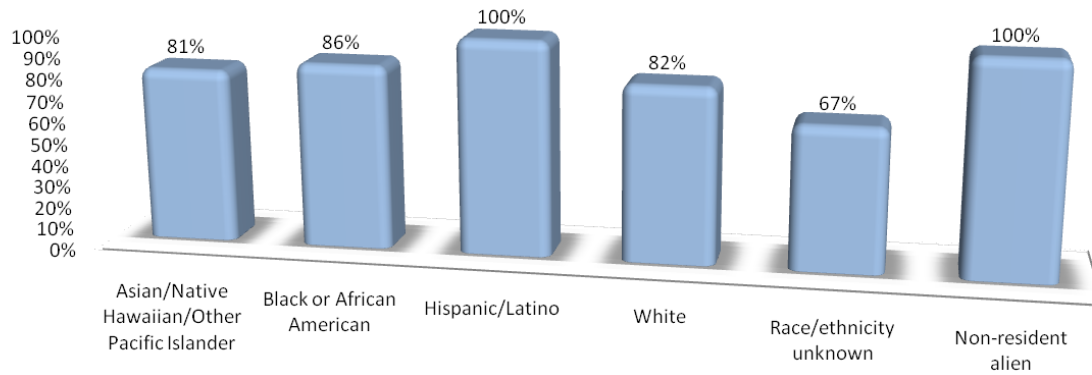
Nova Southeastern University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 40%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

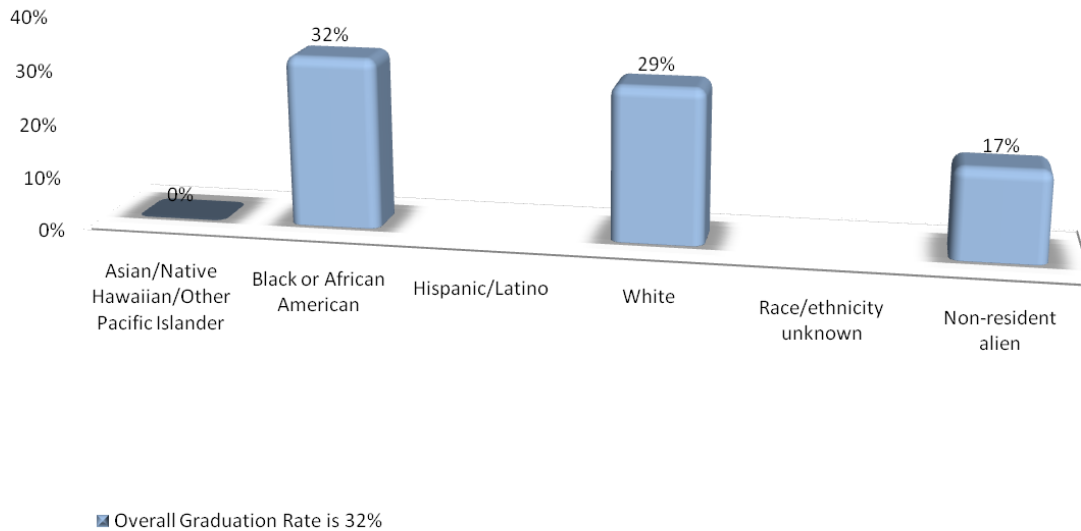
Scripps College 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 84%

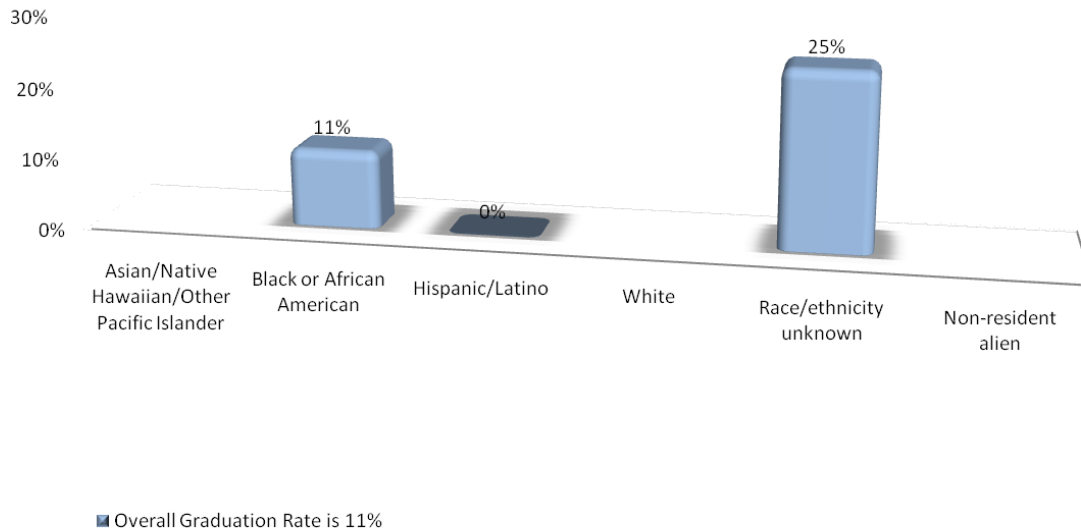
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Southern University and A & M College 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



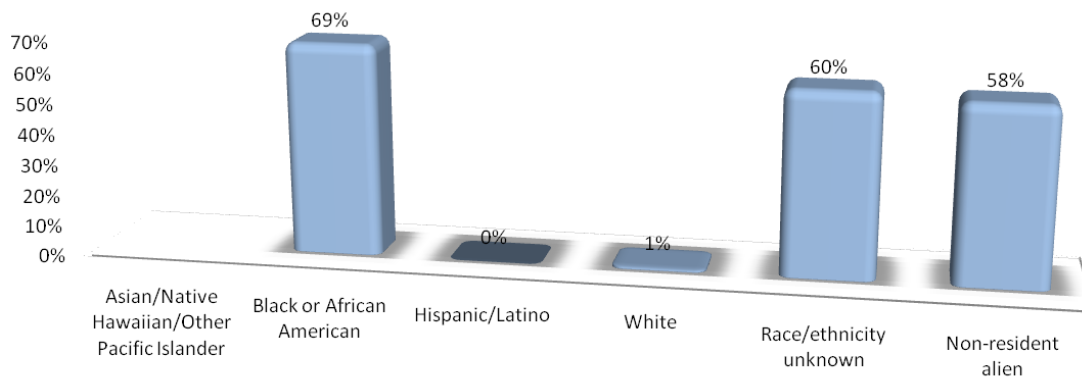
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Southern University at New Orleans 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



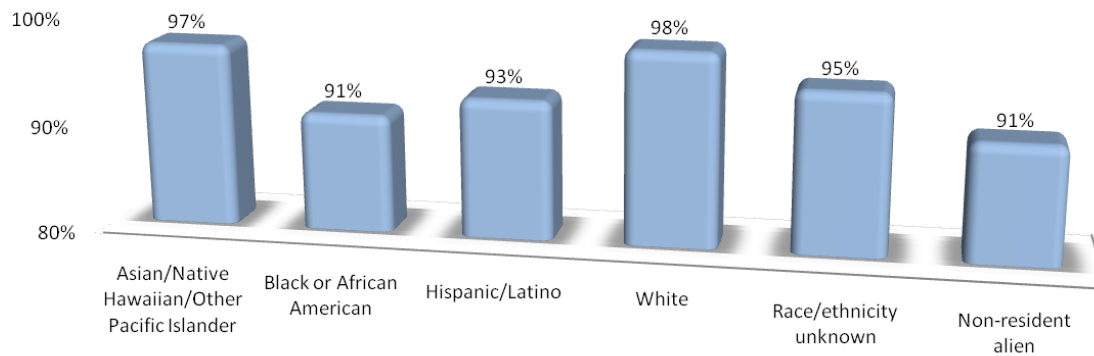
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Spelman College 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

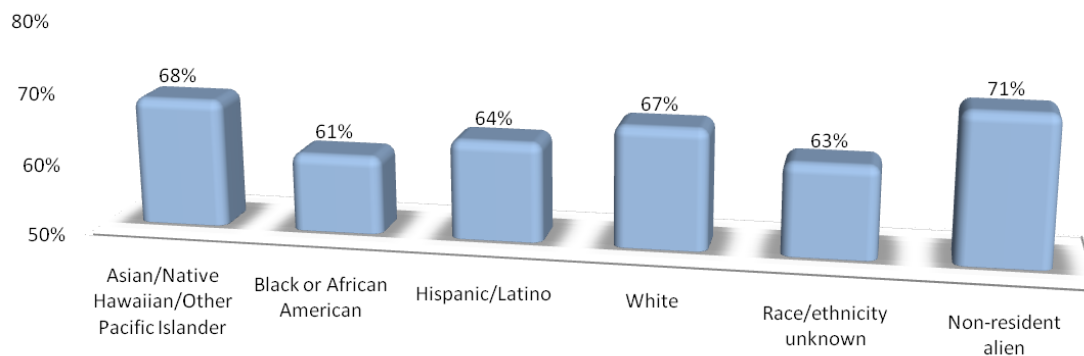
Stanford University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Overall Graduation Rate is 96+Sheet2!

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
 Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

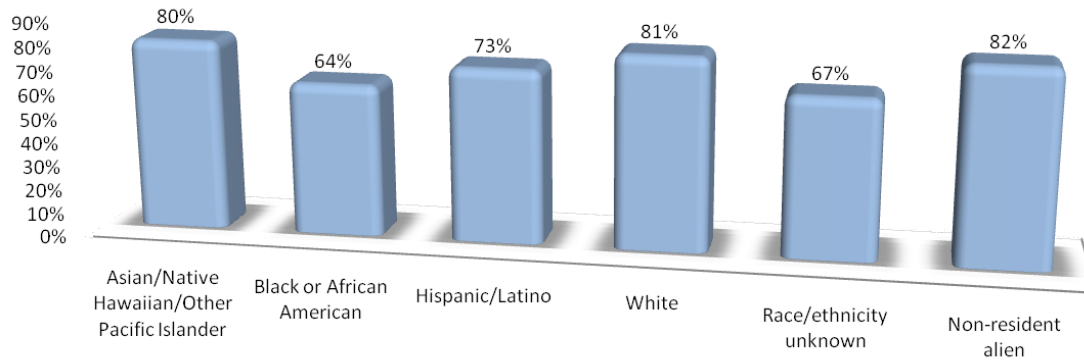
Temple University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 66%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

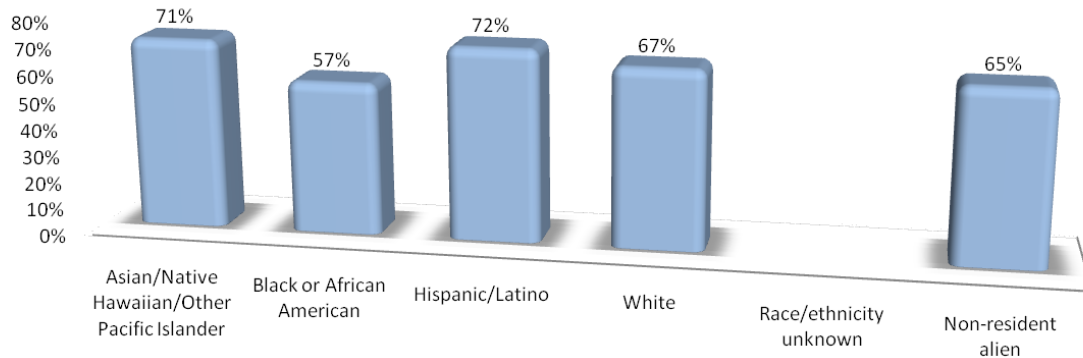
Texas A & M University-College Station 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 79%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

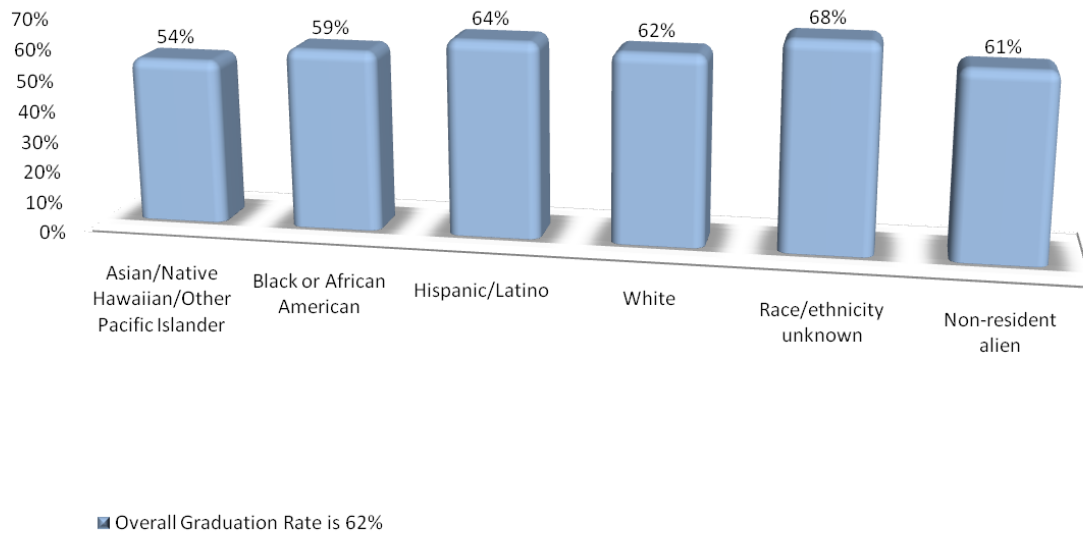
The University of Alabama 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 67%

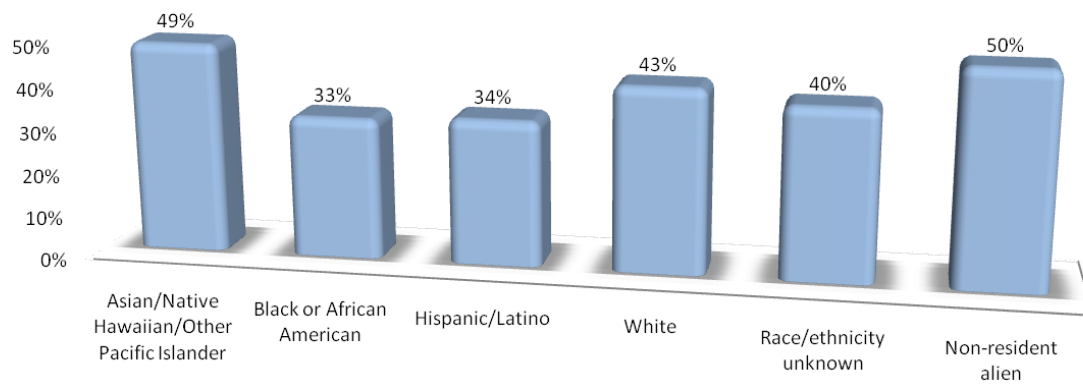
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

The University of Tampa 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

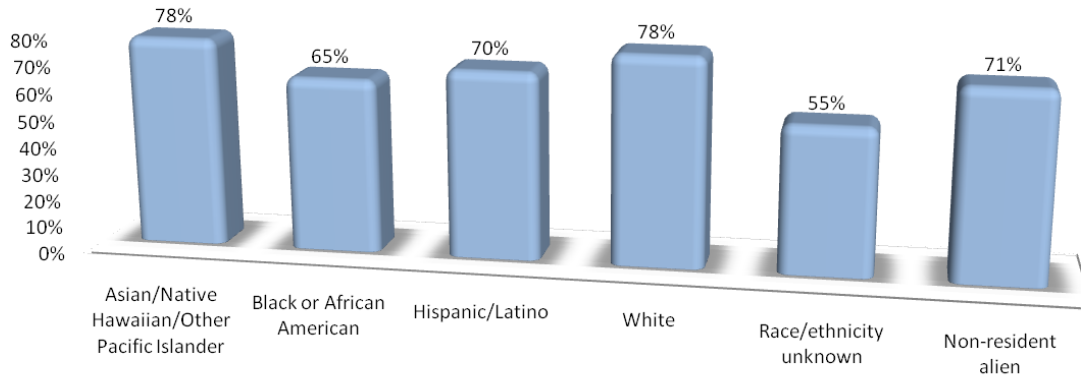
The University of West Florida 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 42%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Tulane University of Louisiana 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

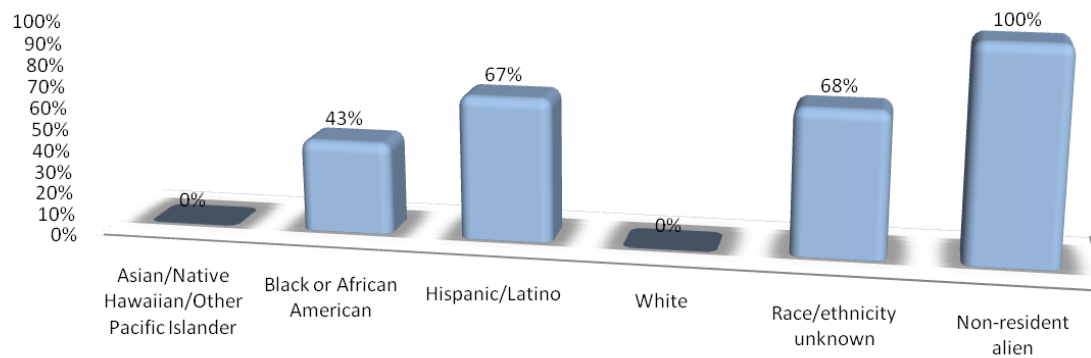


■ Overall Graduation Rate is 76%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

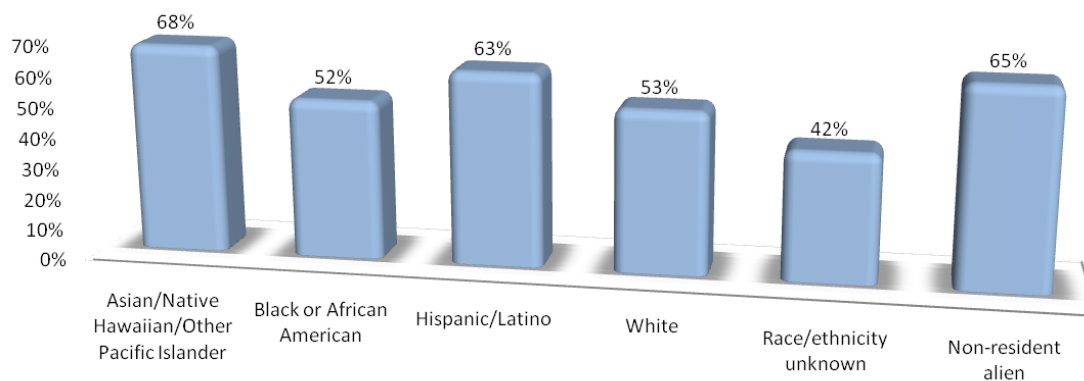
Tuskegee University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 44%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
 Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

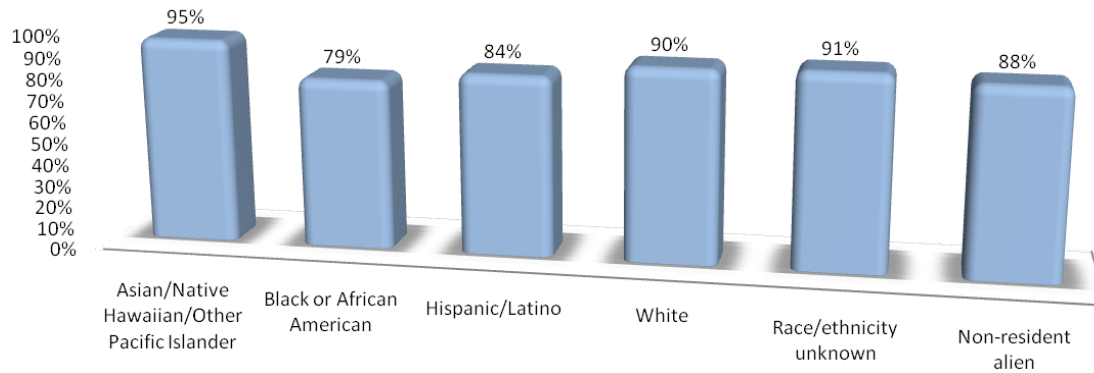
University of Alabama at Birmingham 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 54%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of California-Berkeley 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

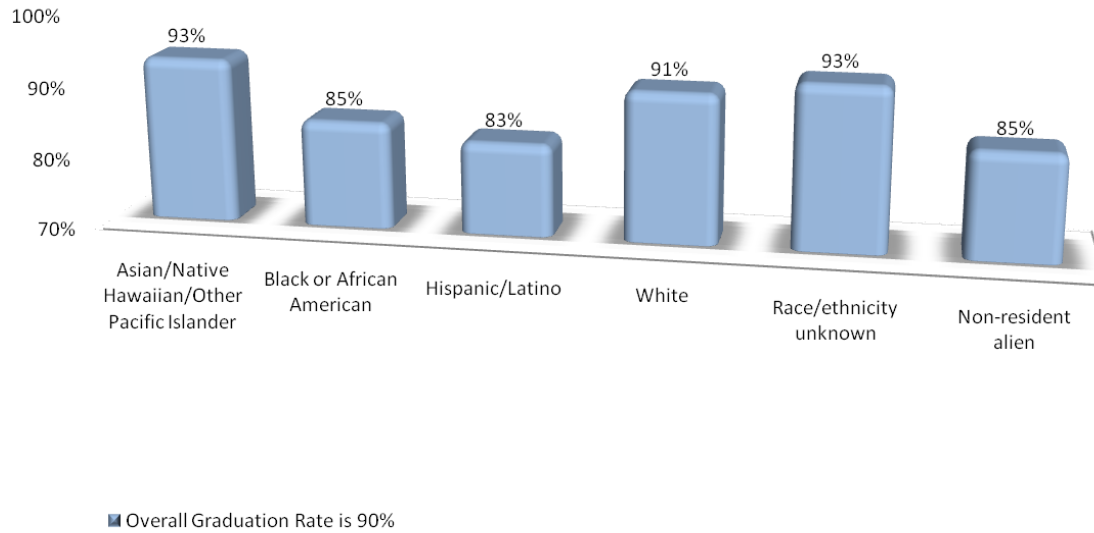


■ Overall Graduation Rate is 91%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

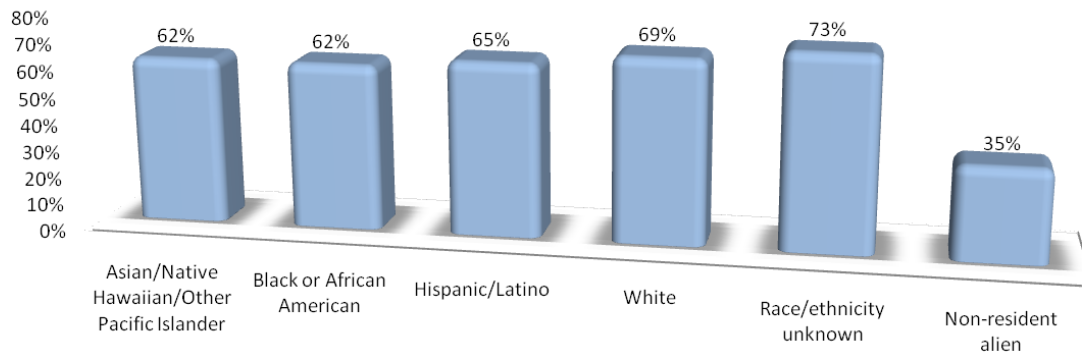
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of California-Los Angeles 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

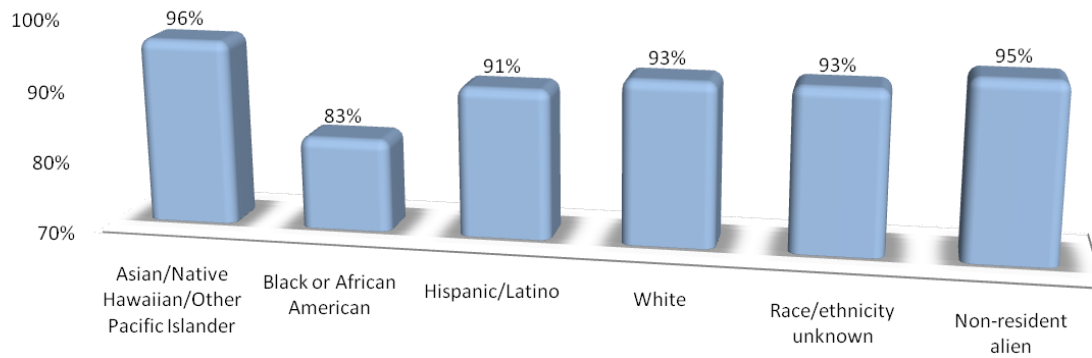
University of Central Florida 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 67%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

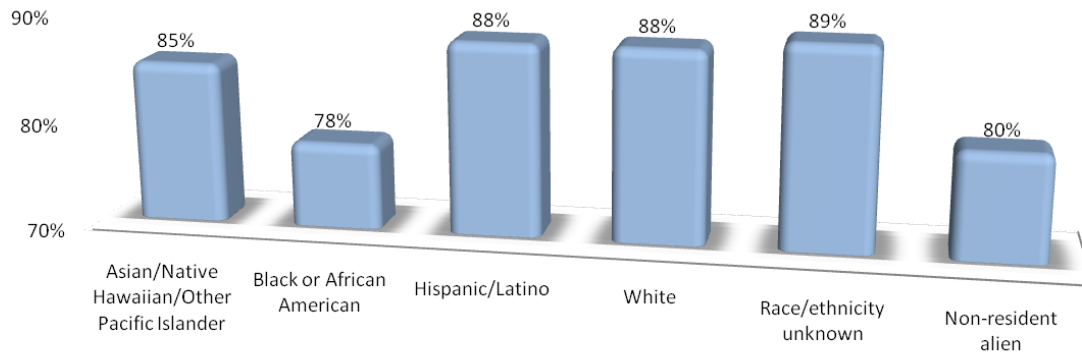
University of Chicago 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 93%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

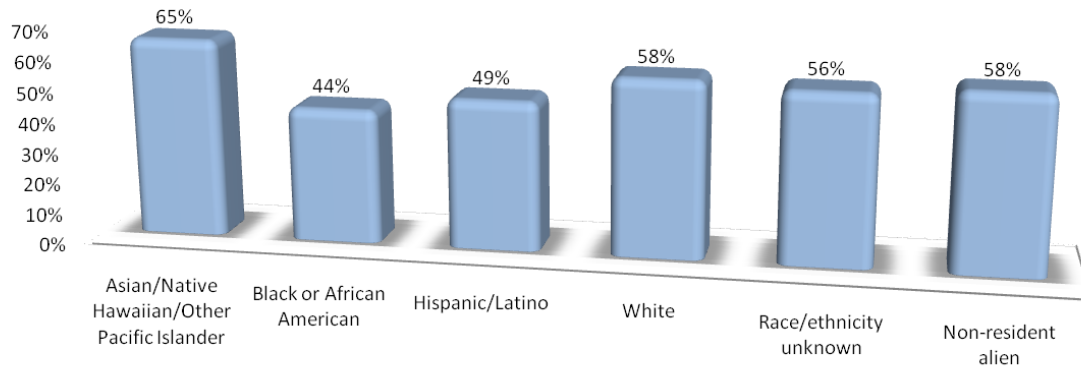
University of Florida 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 87%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

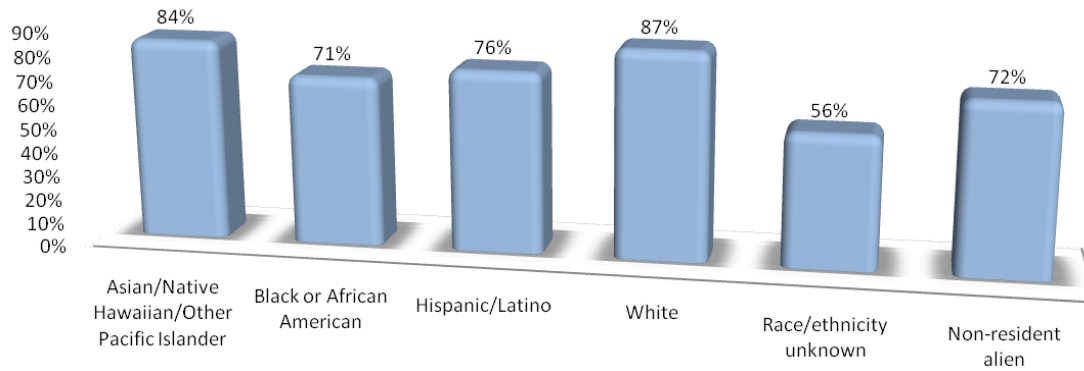
University of Illinois at Chicago 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 57%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

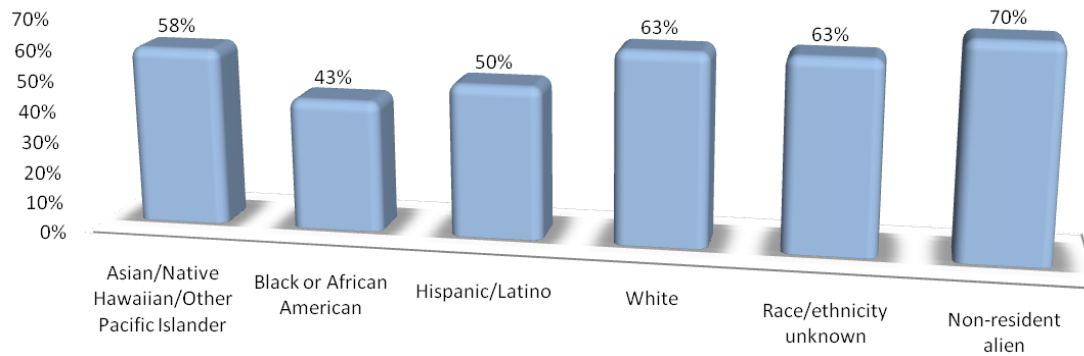
University of Illinois at Urbana-Champaign 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 84%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Kentucky 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

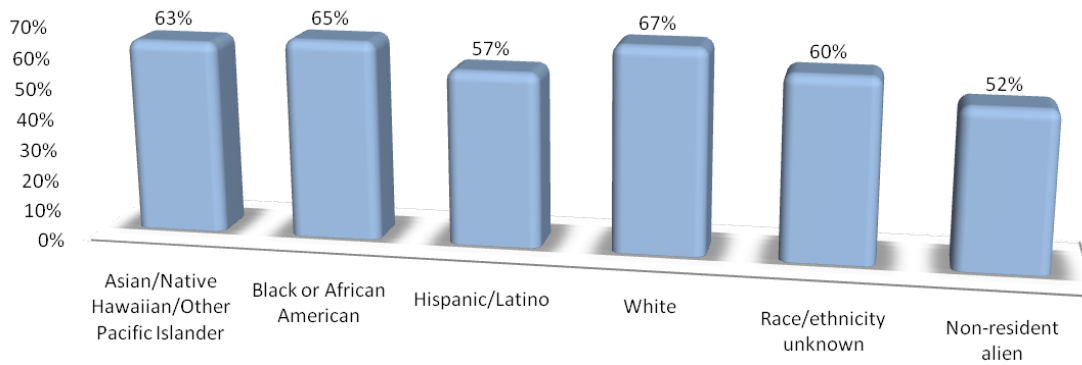


■ Overall Graduation Rate is 62%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

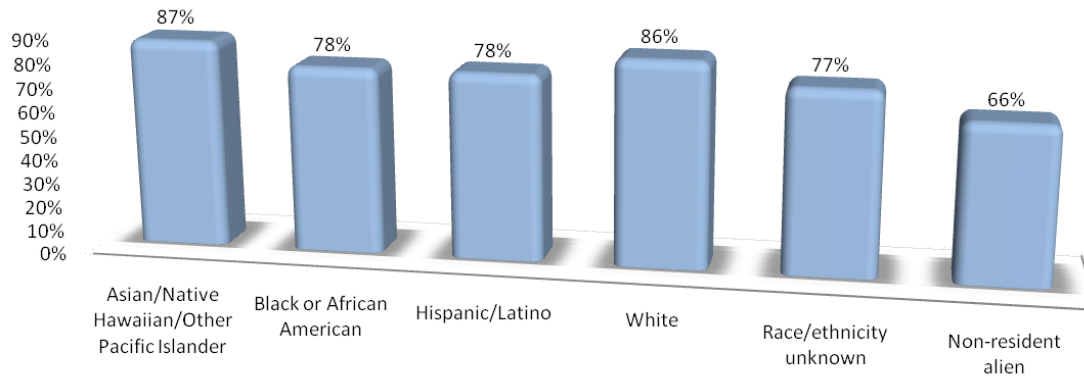
University of Maryland-Baltimore County 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 65%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

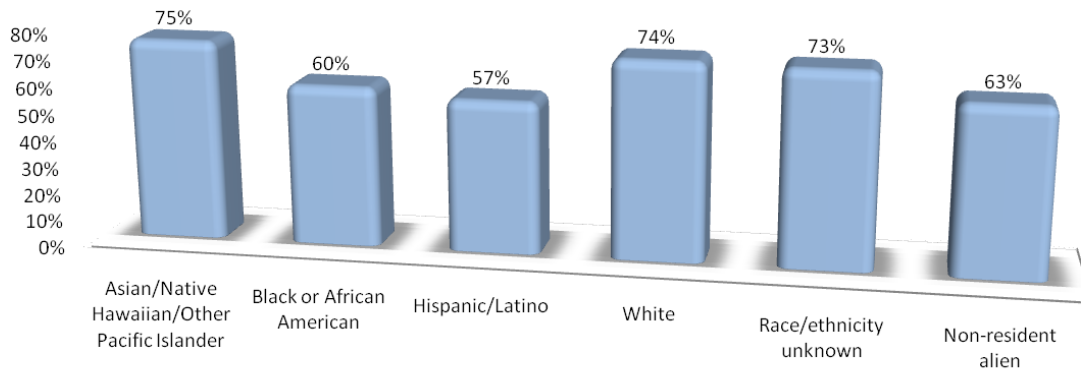
University of Maryland-College Park 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 84%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

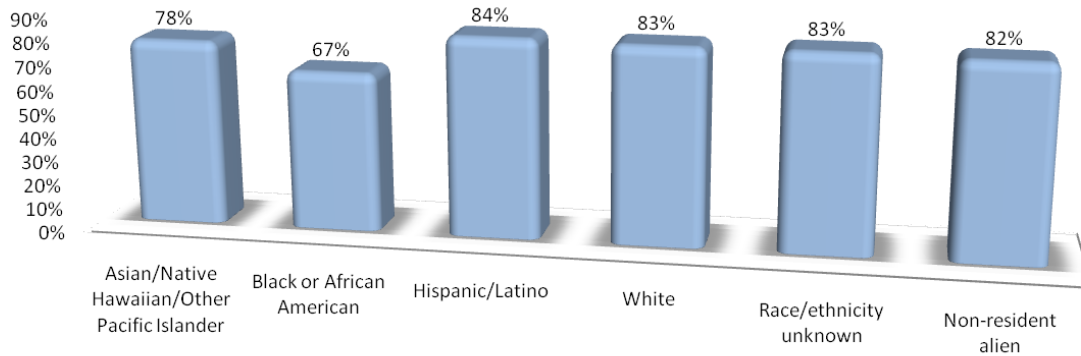
University of Massachusetts-Amherst 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 73%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Miami 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

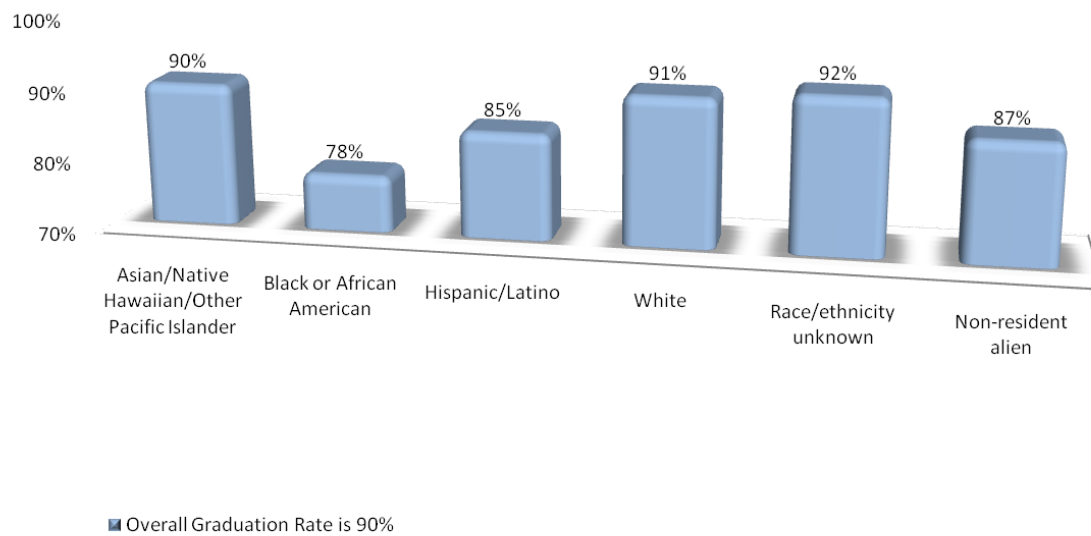


■ Overall Graduation Rate is 82%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

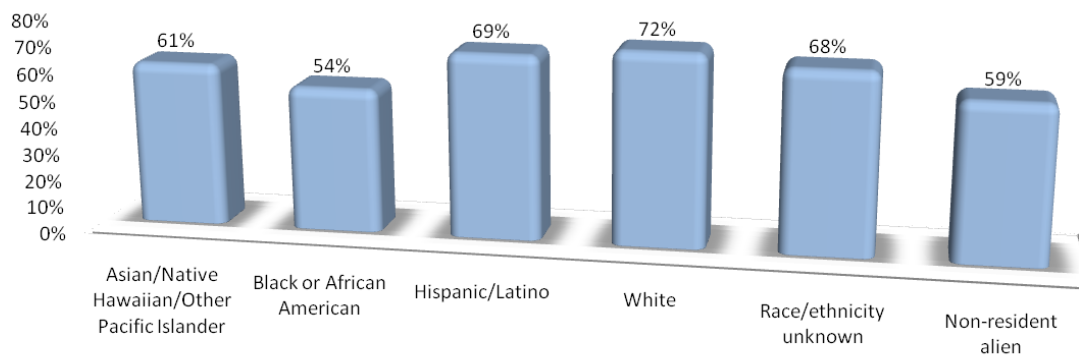
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Michigan-Ann Arbor 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

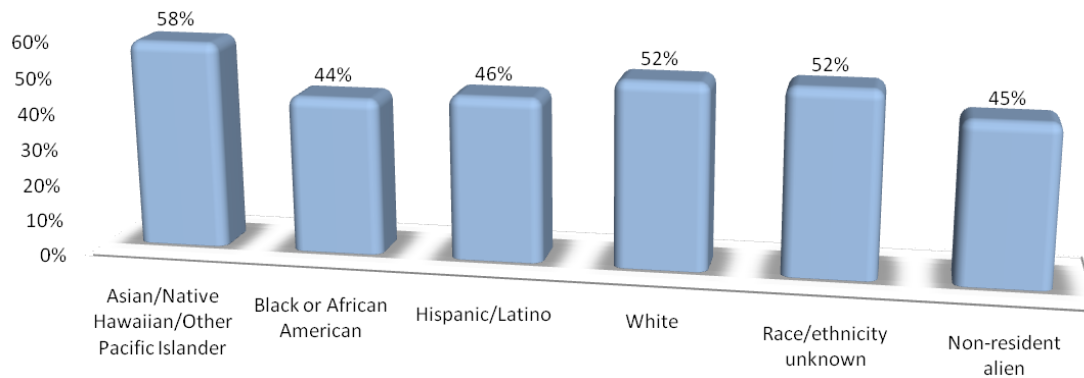
University of Missouri-Columbia 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 70%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

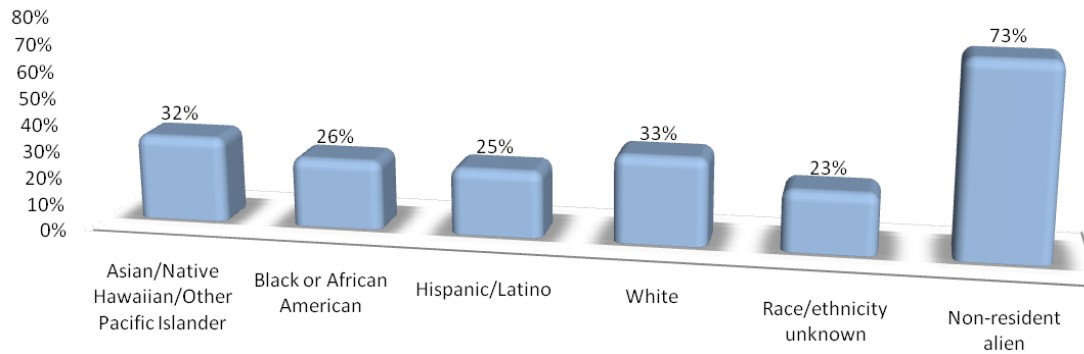
University of New Mexico-Main Campus 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



■ Overall Graduation Rate is 48%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of New Orleans 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees

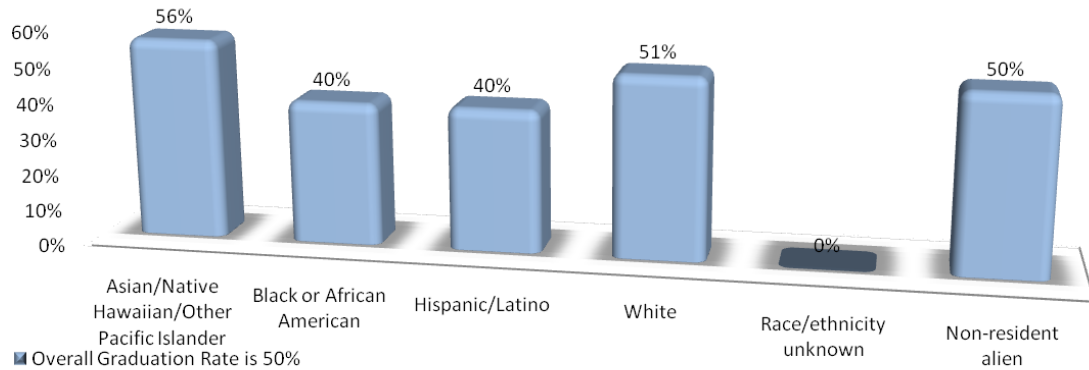


■ Overall Graduation Rate is 32%

Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

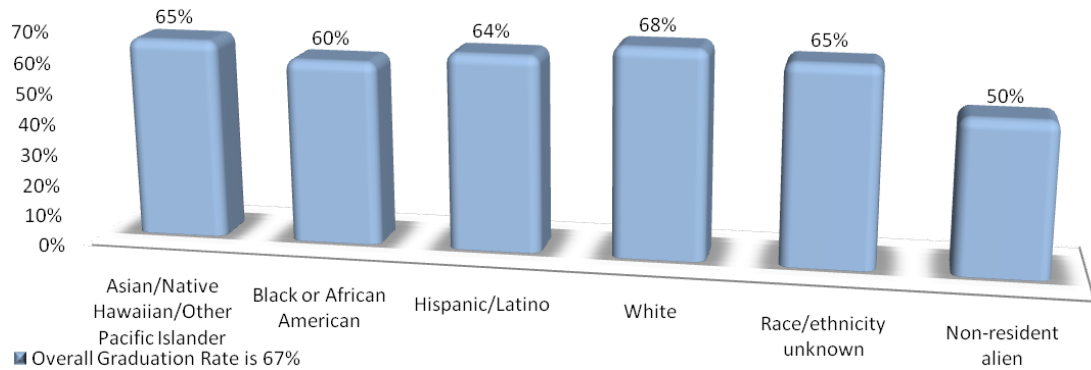
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of North Florida 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



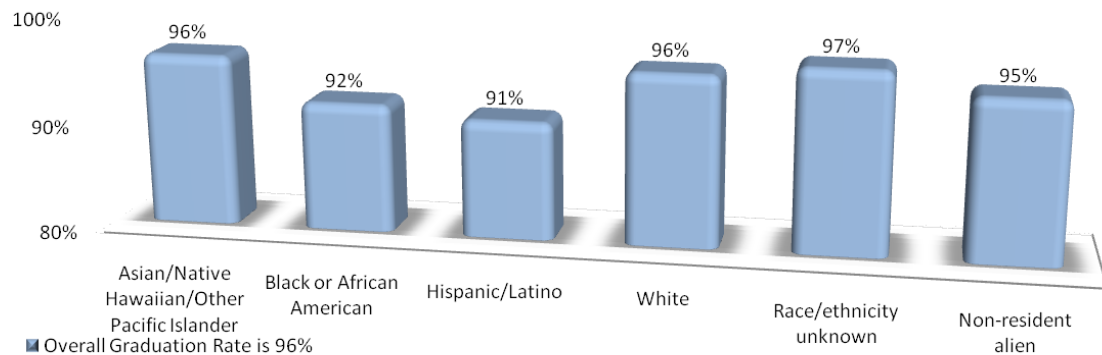
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Oregon 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



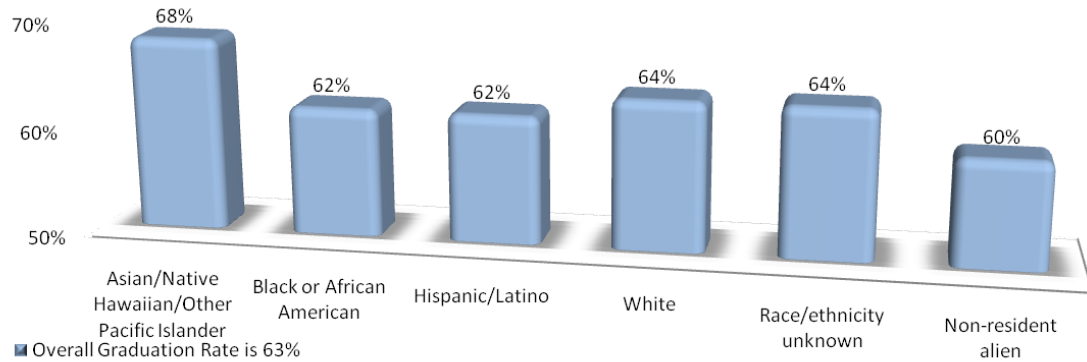
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Pennsylvania 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



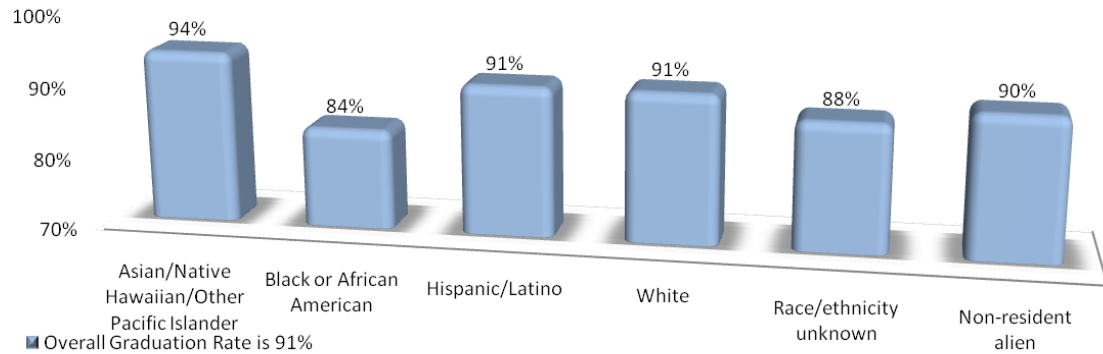
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of South Florida-Main Campus 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



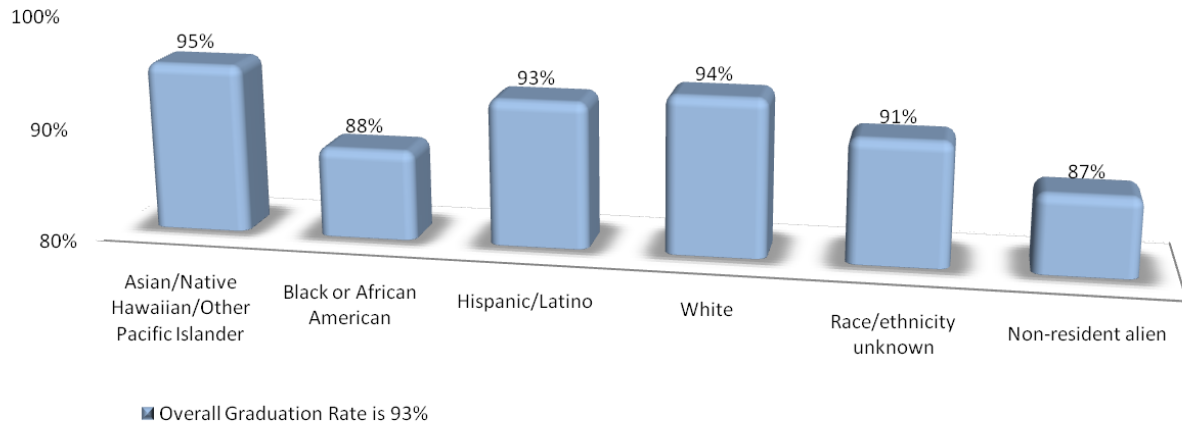
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

University of Southern California 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



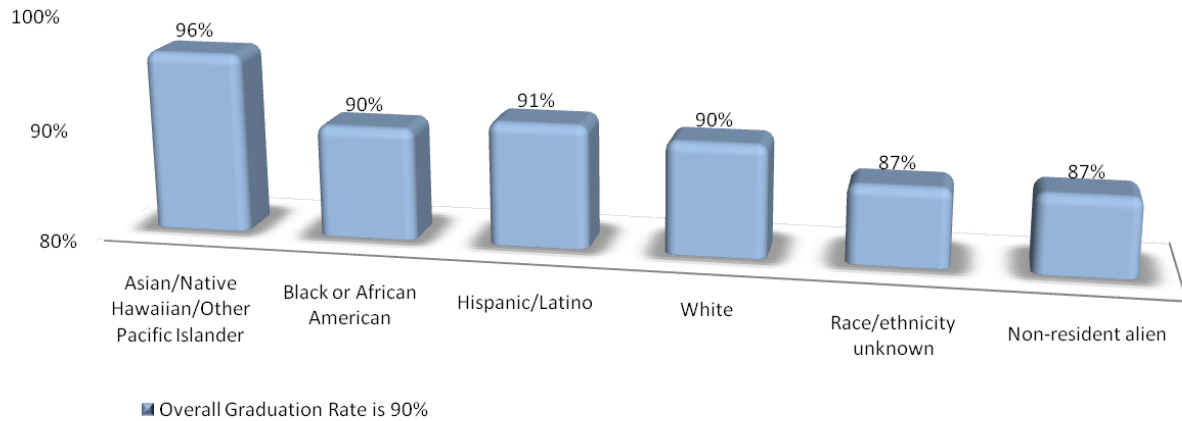
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Vanderbilt University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



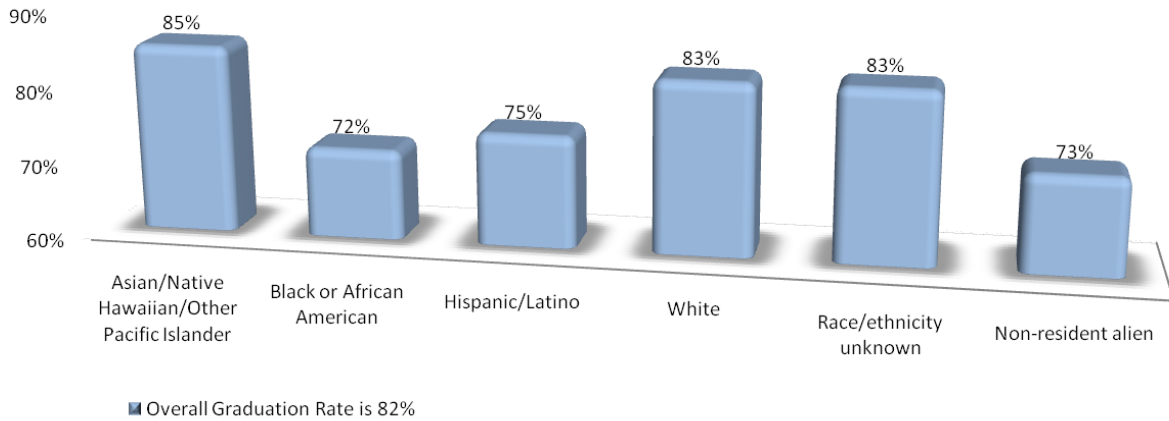
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Villanova University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

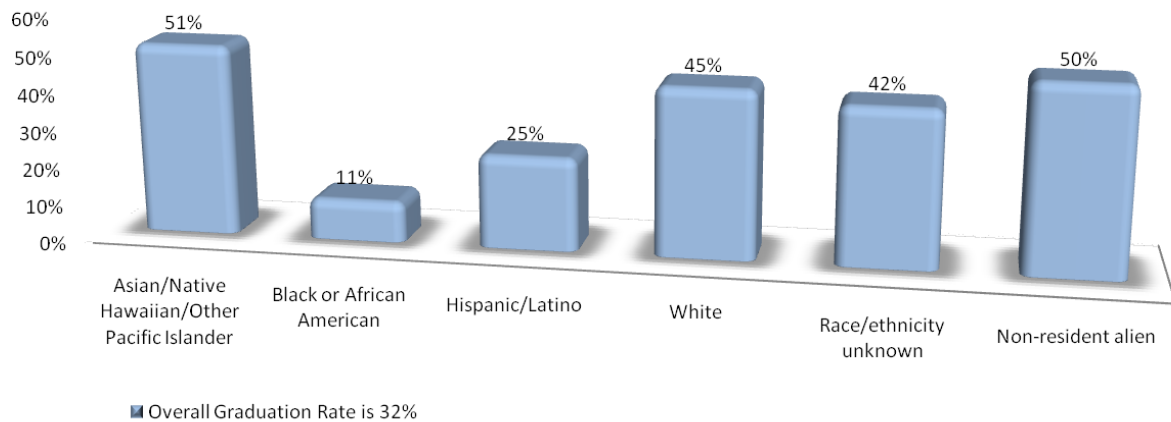
Virginia Polytechnic Institute and State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program

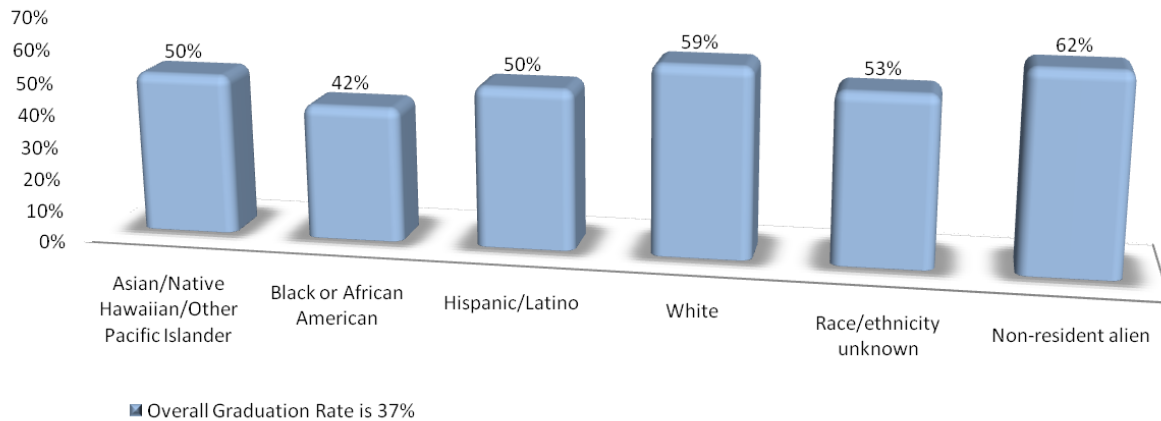
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Wayne State University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



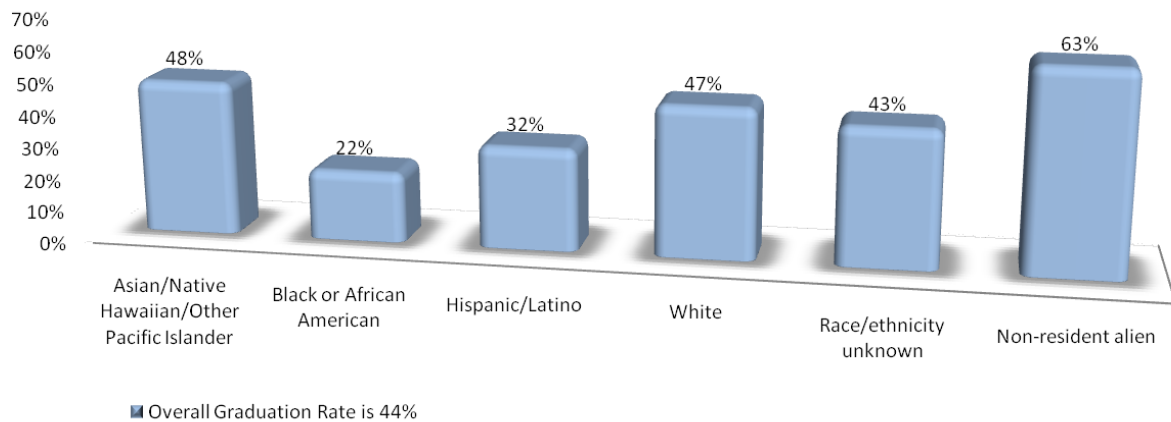
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

West Virginia University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



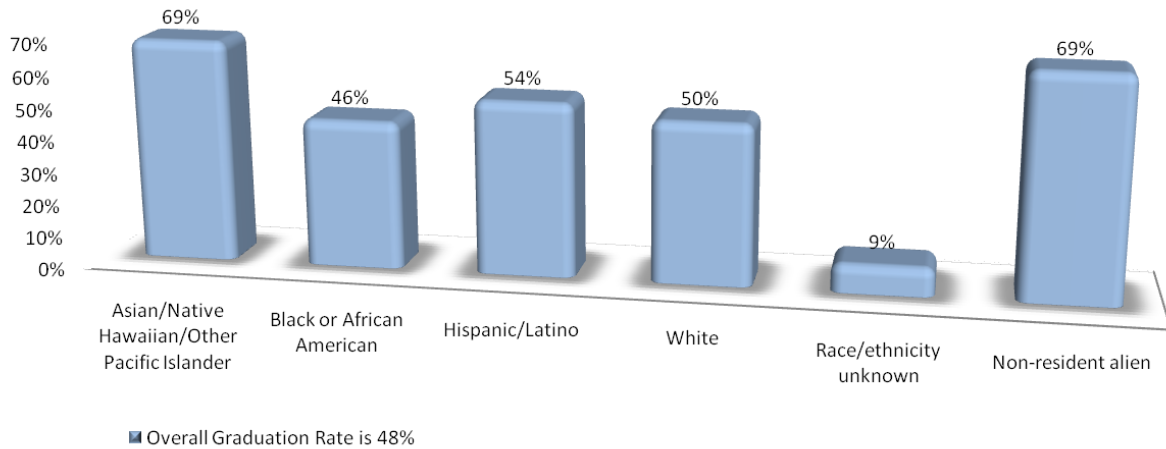
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Western Kentucky University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



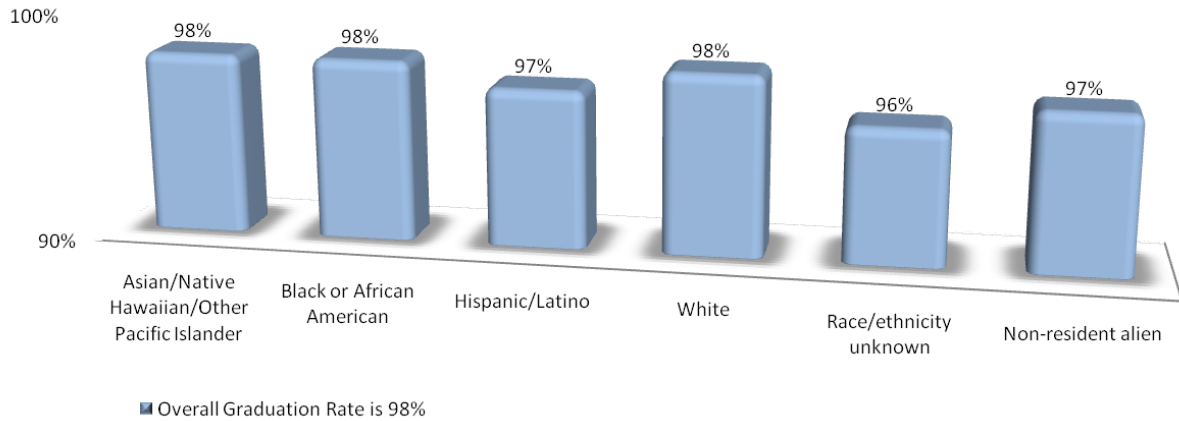
Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Xavier University of Louisiana 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

Yale University 6-Year Graduation Rate by Race/Ethnicity for Students Pursuing Bachelor's Degrees



Percentage of Full-Time, First-Time Students Who Began Their Studies in Fall 2007 and Received a Degree or Award Within 150% of "Normal Time" (Fall 2013) to Completion for Their Program
Source: National Center for Educational Statistics. (Prepared by M. D. Slaughter)

**Status of Underrepresented Minorities in Science, Technology, Engineering,
and Mathematics (STEM)—[UPDATES: November 1, 2017](#)
Collection by Dr. Milton Dean Slaughter
Affiliate Professor of Physics, Florida International University**

The following updates are presented in support of the Executive Summary and the suggested University Organization Unit Program (UOUP) solution to increase significantly the number of STEM undergraduate and graduate degrees earned by underrepresented minorities and women at the nation-wide level.

“Culturally inclusive STEM education”, a Letter published in
Science 20 Oct 2017, Vol. 358, Issue 6361, pp. 312-313, DOI: 10.1126/science.aag0358, by
Amanda J. Zellmer, Department of Biology, Occidental College, Los Angeles, CA 90041, zellmer@oxy.edu and
Aleksandra Sherman, Department of Cognitive Science, Occidental College, Los Angeles, CA 90041, asherman@oxy.edu

Two very relevant quotes from this Letter in Science magazine:

“Fewer National Institutes of Health (NIH) grants are awarded to black scientists (1) and to female scientists (2) relative to their white male counterparts; biomedical research is biased toward diseases afflicting white men (3). The idea that science is separate from social and cultural issues is flawed and alienates women and underrepresented minorities (4). To diversify science, we must systematically incorporate culturally inclusive practices into higher-education science, technology, engineering, and mathematics (STEM) classrooms.”

“Despite the evidence of their success (7), culturally inclusive teaching practices are not systematically used across the STEM curriculum in higher education. We thus recommend a major pedagogical shift in STEM education that will require broad faculty buy-in and institutional support. To facilitate the use of culturally relevant STEM teaching materials at a large scale throughout undergraduate STEM education, such syllabi should be archived in repositories housed by professional societies, and textbook programs should shift STEM teaching beyond the traditional approach. Faculty training is also critical.”

URM PhD Physics Degrees: PhD Degree Institutions 2011-2013

Institution	Average Degrees/Year
Stanford University	4
University of Michigan Ann Arbor	3
Massachusetts Institute of Technology	2
University of California Berkeley	2
California Institute of Technology	2
New Mexico State University Main Campus	2
Rice University	2
Texas A & M University College Station	2

Source: APS/IPEDS

Roster of Physics Departments with Enrollment and Degree Data, 2016

Results from the 2016 Survey of Enrollments and Degrees

Starr Nicholson and Patrick J. Mulvey

The physics bachelor's class of 2016 represents yet another all-time high. There were 8,432 bachelor's degrees conferred, an increase of 4% from the previous year and a 131% increase from the recent low in 1999. First-year graduate physics student enrollments have remained at about 3,200 students for the last 5 years. The number of physics PhDs conferred in the class of 2016 represented a 2% decline from the previous year, but degree production has been increasing in recent years, up 67% from 12 years earlier.

Total Physics Degrees Academic Year 2015-2016	
Bachelors	8,432
Exiting Masters	940
PhDs	1,819

Total Physics Enrollments Fall 2016	
Juniors	11,141
Seniors	14,277
1st Year Grad	3,264
Total Grad	15,849

Number of Departments by Highest Degree Offered Academic Year 2015-2016	
Bachelors	493
Masters	56
PhD	201
Total Departments	750

This roster contains detailed data from the annual Survey of Enrollments and Degrees. The survey was conducted in the fall of 2016 and covers all degree-granting physics departments in the United States.

Of the 750 degree-granting physics departments, 684 (91%) contributed to the data supplied in this year's roster. The totals above include data from responding departments as well as estimated data for the 66 non-responding departments.

Roster of Astronomy Departments with Enrollment and Degree Data, 2016

Results from the 2016 Survey of Enrollments and Degrees

Starr Nicholson and Patrick J. Mulvey

The number of both astronomy bachelor's degrees and PhDs awarded in the class of 2016 represent all-time highs. Astronomy bachelors have been increasing steadily for the last 15 years, with 469 degrees awarded in the class of 2016. With undergraduate astronomy enrollments continuing to grow, the trend is expected to continue for at least the next couple of years. The 41 PhD-granting astronomy departments conferred 170 astronomy PhDs in the class of 2016. There were 250 first-year students enrolling in US astronomy graduate programs in the fall of 2016.

Total Astronomy Degrees Academic Year 2015-2016	
Bachelors	469
Exiting Masters	22
PhDs	170

Total Astronomy Enrollments Fall 2016	
Juniors	721
Seniors	944
1st Year Grad	250
Total Grad	1,154

Number of Departments by Highest Degree Offered Academic Year 2015-2016	
Bachelors	37
Masters	3
PhD	41
Total Departments	81

This roster contains detailed data from the annual Survey of Enrollments and Degrees. The survey was conducted in the fall of 2016 and includes all degree-granting astronomy departments in the United States.

All but 2 of the 81 degree-granting astronomy departments contributed to the data supplied in this year's roster (98%). Thirty-nine are stand-alone astronomy departments and the remaining 42 are combined physics and astronomy departments. The totals above include data from the 79 responding departments as well as estimated data for the 2 non-responding departments.

Trend in astronomy enrollments and degrees, academic years 2005 to 2017.							
Academic Year	Number of astronomy degrees			Undergraduate astronomy major enrollments		Graduate astronomy student enrollments	
	Bachelors	Exiting Masters	PhDs	Juniors	Seniors	1 st -year	Total
2005-06	351	30	119	511	565	188	1,026
2006-07	336	18	125	379	569	206	1,077
2007-08	327	36	161	364	536	193	1,081
2008-09	322	29	141	388	515	215	1,065
2009-10	382	23	156	382	605	193	1,083
2010-11	408	47	160	450	637	202	1,156
2011-12	385	35	152	487	666	224	1,122
2012-13	386	35	155	484	694	233	1,134
2013-14	428	28	147	530	711	183	1,118
2014-15	459	22	130	561	780	187	1,108
2015-16	469	22	170	604	782	198	1,137
2016-17				721	944	250	1,154

Notations used in this roster:

<i>m</i>	Masters is the department's highest astronomy degree (N=3).
<i>p</i>	PhD is the department's highest astronomy degree (N=41).
<i>s</i>	The astronomy department is administered separately from the physics department (N=39).
<i>c</i>	This is a <u>combined</u> department, offering degrees in both astronomy and physics (N=42). Data concerning the physics portion of their program can be found in the "Roster of Physics Departments, 2016".
GRADUATE ONLY	Department has no undergraduate program in astronomy (N=10).
FIRST YEAR	This column includes graduate students who were new to the department in the fall of 2016 as well as students who entered the department in the previous winter, spring and summer.
EXITING MASTER'S	This column reflects the number of students who left the department with a master's degree.
FIRST TERM INTRODUCTORY COURSE ENROLLMENTS	The introductory course enrollment totals listed for each department represent the number of students who took their first term of introductory level astronomy. Departments were instructed not to include enrollments for courses that were a continuation of a sequence.
—	Data for this field were not provided.

		2015-16 FIRST-TERM INTRODUCTORY ASTRO COURSE ENROLLMENTS	FALL 2016 UNDERGRADUATE MAJORS		FALL 2016 GRADUATE STUDENTS			2015-16 ASTRONOMY DEGREES		
INSTITUTION	DEPT TYPE		JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	EXITING MASTERS	PHDS
ARIZONA										
p Arizona State U (Astrophys)	s	2754	21	30	30	9	4	9	2	1
p Arizona-U of	s	1375	41	27	40	13	6	4	0	6
p Arizona-U of (Planetary)	s	GRADUATE ONLY			30	8	6		1	5
Embry-Riddle Aeronautical U	c	24	3	2				0		
Northern Arizona U	c	499	27	20				16		
CALIFORNIA										
p CA Inst of Tech	s	0	6	3	33	—	8	5	0	4
p CA-U of, Berkeley	s	1376	4	53	31	5	6	34	0	2
p CA-U of, Los Angeles	c	1599	25	37	34	7	7	14	0	4
p CA-U of, Santa Cruz	s	1276	GRADUATE ONLY		33	8	14		1	9
m San Diego State U	s	824	7	11	12	1	7	3	2	
Southern CA-U of (USC)	c	535	3	1				1		
COLORADO										
p CO-U of, Boulder	s	1000	77	111	57	—	14	43	0	6
CONNECTICUT										
m Wesleyan U	s	172	5	6	4	2	2	2	0	
p Yale U	s	487	10	4	24	6	6	5	1	4
FLORIDA										
Embry-Riddle Aeronautical U	c	37	2	3				1		
p Florida Inst of Tech	c	61	14	18	22	4	8	13	3	2
p Florida-U of	s	0	9	19	34	18	3	8	1	1
GEORGIA										
Agnes Scott Coll	c	53	3	1				2		
p Georgia State U	c	997	GRADUATE ONLY		28	7	7		0	5
Valdosta State U	c	346	3	3				4		
HAWAII										
Hawaii-U of, Hilo	c	163	9	9				9		
p Hawaii-U of, at Manoa	s	379	5	2	39	9	5	0	0	3
ILLINOIS										
p Chicago-U of	s	GRADUATE ONLY			31	12	7		0	4
p Illinois-U of, Urbana	s	2980	25	21	25	13	3	12	0	3
INDIANA										
p Indiana U-Bloomington	s	1979	7	5	20	2	4	2	0	2
IOWA										
Drake U	c	485	2	0				1		
p Iowa State U	c	431	GRADUATE ONLY		9	0	9		0	2
m Iowa-U of	c	664	4	3	1	0	1	5	0	
KANSAS										
Benedictine Coll	c	DATA NOT PROVIDED								
Kansas-U of	c	203	5	4				2		
MARYLAND										
p Johns Hopkins U	c	6	GRADUATE ONLY		45	14	9		0	11
p MD-U of, College Park	s	49	21	38	35	11	6	11	0	5
MASSACHUSETTS										
p Boston U	s	703	11	12	31	6	6	9	2	4
p Harvard U	s	76	10	10	61	13	11	8	0	12
p MA-U of, Amherst	s	1123	26	24	24	11	2	15	1	2
Mount Holyoke Coll	s	158	6	3				1		
Smith Coll	s	70	5	6				2		
Tufts U	c	409	1	3				2		
Wellesley Coll	s	140	4	4				7		
Williams Coll	s	41	3	0				2		
MICHIGAN										
p Michigan State U	c	1078	22	31	16	0	4	10	0	4
p Michigan-U of	s	2233	13	29	30	5	8	12	0	4
Wayne St U	c	875	5	5				2		

		2015-16 FIRST-TERM INTRODUCTORY ASTRO COURSE ENROLLMENTS	FALL 2016 UNDERGRADUATE MAJORS		FALL 2016 GRADUATE STUDENTS			2015-16 ASTRONOMY DEGREES		
INSTITUTION	DEPT TYPE		JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	EXITING MASTERS	PHDS
MINNESOTA										
p Minnesota-U of	s	1151	7	32	21	3	2	12	2	1
NEW HAMPSHIRE										
Dartmouth Coll	c	406	1	1				2		
NEW JERSEY										
p Princeton U	s	196	9	9	25	10	8	9	0	8
p Princeton U-Forrestal Campus	s	17	GRADUATE ONLY		42	15	9		0	4
NEW MEXICO										
p New Mexico State U	s	1046	GRADUATE ONLY		28	0	5		0	3
NEW YORK										
Barnard Coll	c	124	—	1				0		
Colgate U	c	128	8	6				7		
p Columbia U	s	420	18	15	28	8	3	13	1	7
p Cornell U	s	314	3	2	25	9	—	5	—	2
Rochester-U of	c	217	9	11				1		
SUNY Coll at New Paltz	c		DATA NOT PROVIDED							
SUNY-Stony Brook	c	339	11	17				7		
Union Coll	c	93	0	0				0		
Vassar Coll	c	201	4	4				3		
OHIO										
p Case Western Reserve U	s	144	3	2	3	1	1	6	1	1
p Ohio State U	s	1781	27	35	25	4	4	7	0	3
Ohio Wesleyan U	c	96	1	2				2		
Toledo-U of	c	0	4	8				1		
Youngstown State U	c	520	2	3				1		
OKLAHOMA										
Oklahoma-U of	c	331	7	15				7		
PENNSYLVANIA										
Haverford Coll	c	90	4	8				3		
Lycoming Coll	c	20	2	3				2		
p Pennsylvania St U	s	5023	12	22	45	12	13	16	0	7
p Pittsburgh-U of	c	1097	11	10	*	*	*	3	0	0
Swarthmore Coll	c	110	7	5				1		
Villanova U	s	215	6	6				3		
SOUTH CAROLINA										
Charleston-Coll of	c	548	11	14				5		
TEXAS										
p Rice U	c	203	3	2	2	0	0	1	0	0
p Texas A&M-College Station	c	1428	GRADUATE ONLY		5	1	5		0	0
p Texas Christian U	c	963	GRADUATE ONLY		6	1	2		0	0
p Texas-U of, at Austin	s	2298	22	63	35	8	7	18	0	8
VERMONT										
Marlboro Coll	c	1	0	0				1		
VIRGINIA										
George Mason U	c	1496	5	10				1		
p Virginia-U of	s	1740	15	9	29	7	6	12	2	7
WASHINGTON										
p Washington-U of	s	2415	25	38	28	3	5	18	0	8
Whitman Coll	s	80	8	6				4		
WISCONSIN										
p Wisconsin-U of, Madison	s	1041	19	15	28	2	4	16	2	6
WYOMING										
Wyoming-U of	c	104	7	4				3		

* U of Pittsburgh - Astronomy graduate enrollment data are incorporated into their physics graduate enrollments listed in the physics roster.

Trend in physics enrollments and degrees, academic years 2005 to 2017.							
Academic Year	Number of physics degrees			Undergraduate physics major enrollments		Graduate physics student enrollments	
	Bachelors	Exiting Masters	PhDs	Juniors	Seniors	1 st -year	Total
2005-06	5,373	799	1,380	7,141	8,272	2,984	13,889
2006-07	5,755	824	1,460	7,072	8,651	2,967	14,114
2007-08	5,767	790	1,499	7,444	9,037	3,069	14,326
2008-09	5,908	838	1,554	7,329	9,312	2,908	14,538
2009-10	6,017	794	1,558	7,804	9,669	3,089	14,808
2010-11	6,296	735	1,688	8,851	10,567	3,164	15,182
2011-12	6,778	801	1,762	9,236	11,399	3,108	15,152
2012-13	7,329	801	1,743	9,566	12,144	3,294	15,365
2013-14	7,526	870	1,803	10,229	12,855	3,157	15,530
2014-15	8,081	891	1,860	10,611	13,542	3,232	15,812
2015-16	8,432	940	1,819	11,076	13,915	3,210	15,595
2016-17				11,141	14,277	3,264	15,849

Notations used in this roster:

<i>m</i>	Masters is the department's highest physics degree (N=56).
<i>p</i>	PhD is the department's highest physics degree (N=201).
<i>s</i>	This institution also has a <u>separate</u> astronomy department (N=37).
<i>c</i>	This is a <u>combined</u> department, offering degrees in both physics and astronomy (N=42). Data concerning the astronomy portion of their program can be found in the "Roster of Astronomy Departments, 2016".
GRADUATE ONLY	Department has no undergraduate program in physics (N=8).
FIRST YEAR	This column includes graduate students who were new to the department in the fall of 2016 as well as students who entered the department in the previous winter, spring and summer.
EXITING MASTER'S	This column reflects the number of students who left the department with a master's degree.
FIRST TERM INTRODUCTORY COURSE ENROLLMENTS	This column represents the number of students who took their first term of introductory level physics, astronomy or physical science. Departments were instructed not to include enrollments for courses that were a continuation of a sequence.
—	Data for this field were not provided.

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS									2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS									FALL 2016 GRADUATE STUDENTS		
PHYSICS & ASTRONOMY									EXITING BACHELORS MASTERS PHDS		
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR				
ALABAMA											
p Alabama A&M U	DATA NOT PROVIDED										
p AL-U of, Birmingham	705	844	12	15	33	11	4		5	1	2
p AL-U of, Huntsville	531	78	14	26	31	8	7		9	6	2
p AL-U of, Tuscaloosa	844	596	27	35	48	33	10		19	1	8
p Auburn U	1059	65	5	17	50	17	12		10	0	5
Birmingham-Southern Coll	69	19	6	6					3		
North Alabama-U of	85	20	0	1					6		
Samford U	129	45	6	12					8		
South Alabama-U of	817	64	6	10					1		
Troy U	228	472	2	3					1		
Tuskegee U	22	2	18	14					4		
ALASKA											
p Alaska-U of, Fairbanks	342	60	10	10	26	5	9		2	2	2
ARIZONA											
p Arizona State U	s 3548	137	68	131	80	39	11		52	17	16
p Arizona-U of	s 2498	92	43	53	90	43	23		22	4	6
Embry-Riddle Aeronautical U	c 591	0	11	13					5		
m Northern Arizona U	c 1420	44	38	41	11	1	5		27	10	
ARKANSAS											
Arkansas State U	423	275	5	1					4		
Arkansas Tech U	256	475	2	7					4		
p AR-U of, Fayetteville	DATA NOT PROVIDED										
AR-U of, Little Rock	260	207	4	7					4		
AR-U of, Pine Bluff	287	358	4	2					12		
Central Arkansas-U of	460	1028	17	23					13		
Harding U	164	0	2	5					0		
Henderson State U	105	440	10	6					4		
Hendrix Coll	86	102	12	12					5		
Quachita Baptist U	42	41	3	5					2		
Southern Arkansas U	219	270	3	6					3		
CALIFORNIA											
Azusa Pacific U	190	371	3	5					6		
p Cal Inst of Tech	s 223	0	27	22	151	79	24		22	0	12
Cal Lutheran U	136	98	5	7					11		
Cal Poly St U-San Luis Obispo	2945	686	43	64					30		
Cal St Poly U-Pomona	5357	106	—	—					25		
Cal St U-Bakersfield	375	275	4	5					0		
Cal St U-Channel Islands	DATA NOT PROVIDED										
Cal St U-Chico	1628	249	5	21					6		
Cal St U-Dominguez Hills	600	123	13	18					8		
m Cal St U-Fullerton	784	370	29	49	15	1	7		13	7	
Cal St U-East Bay	770	200	7	20					4		
m Cal St U-Long Beach	3144	1086	29	84	62	4	17		41	19	
m Cal St U-Los Angeles	—	—	—	—	—	—	—		8	—	
m Cal St U-Northridge	1408	2168	24	12	30	3	6		11	8	
Cal St U-San Bernardino	801	95	21	43					17		
Cal St U-San Marcos	—	—	21	42					15		
Cal St U-Stanislaus	531	220	10	12					5		
p CA-U of, Berkeley	s 2368	0	124	157	278	78	51		116	0	31
p CA-U of, Davis	3506	832	79	82	152	45	30		47	2	7
p CA-U of, Irvine	4479	1081	43	53	142	24	29		19	4	22
p CA-U of, Los Angeles	c 3325	0	86	147	164	41	29		80	1	20
p CA-U of, Merced	1610	0	21	12	47	16	14		8	1	2
p CA-U of, Riverside	2188	1292	27	17	132	68	28		23	2	16
p CA-U of, San Diego	3405	154	210	156	152	62	22		34	3	16
p CA-U of, Santa Barbara	2240	627	171	156	135	25	19		104	2	20
p CA-U of, Santa Cruz	s 1933	0	25	115	74	7	20		51	2	7
Claremont Colleges	205	52	10	15					13		

		2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS		FALL 2016 UNDERGRADUATE MAJORS		FALL 2016 GRADUATE STUDENTS		2015-16 PHYSICS DEGREES				
INSTITUTION		PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	EXITING MASTERS	PHDS	
CALIFORNIA CONTINUED												
m	Fresno State U	969	756	8	27	21	—	7	11	6		
	Harvey Mudd Coll	200	0	24	27				25			
	Humboldt State U	394	306	21	25				12			
	La Sierra U	341	21	3	5				5			
	La Verne-U of	274	184	3	6				2			
	Loyola Marymount U	525	128	5	7				8			
p	Naval Postgrad School	GRADUATE ONLY				47	12	23		29	1	
	Occidental Coll	69	0	14	21				15			
	Pacific Union Coll	106	78	3	4				6			
	Pacific-U of the	774	32	6	3				4			
	Point Loma Nazarene U	129	236	19	21				10			
	Pomona Coll	—	—	25	8				8			
	Redlands-U of	95	21	15	12				11			
	Sacramento State U	1256	612	18	59				10			
	St. Marys Coll of CA	124	101	2	10				2			
m	San Diego St U	s	3716	0	31	28	33	—	19	12	14	
	San Diego-U of		359	0	17	7			11			
m	San Francisco St U		1377	1604	29	30	70	18	26	22	3	
	San Francisco-U of		351	537	8	11			5			
m	San Jose State U		1547	181	21	37	33	—	9	7	4	
	Santa Clara U		581	118	15	10			8			
	Sonoma State U		381	912	14	23			8			
p	Southern Cal-U of (USC)	c	1072	0	23	13	74	56	11	17	6	8
p	Stanford U		775	251	29	31	195	79	36	22	1	24
p	Stanford U (Appl Phy)		GRADUATE ONLY				142	58	26		3	16
	Westmont Coll		62	110	4	6			8			
	Whittier Coll		80	27	3	8			7			
COLORADO												
	Colorado Coll		224	123	14	11			7			
	Colorado Mesa U		618	121	5	4			4			
p	Colorado School of Mines		1084	47	46	101	54	11	9	52	13	10
p	Colorado St U-Fort Collins		1841	519	13	16	60	8	11	16	0	7
	Colorado St U-Pueblo		205	158	2	0			1			
p	Colorado-U of, Boulder	s	3000	0	135	167	254	72	55	75	3	25
p	Colorado-U of, Colo Spgs		863	341	30	47	34	2	5	13	1	1
	Colorado-U of, Denver		824	112	23	35			5			
p	Denver-U of		311	97	5	18	19	4	5	9	1	3
	Fort Lewis Coll		203	0	5	6			11			
	Metropolitan St U of Denver		2291	570	24	31			7			
	Northern Colorado-U of		207	756	14	38			14			
	US Air Force Academy		924	4	17	16			13			
CONNECTICUT												
	Central Conn St U		266	0	16	24			5			
	Connecticut Coll		94	45	4	5			4			
p	Connecticut-U of		2089	145	45	59	80	33	12	19	7	12
	Fairfield U		454	228	3	2			1			
	Hartford-U of		1512	48	2	3			1			
m	Southern Conn St U		1144	0	11	21	12	0	4	8	5	
	Trinity Coll		100	0	8	3			0			
p	Wesleyan U	s	175	0	26	23	14	12	2	14	2	1
p	Yale U	s	911	0	28	35	127	58	23	28	0	20
p	Yale U (Appl Phy)				1	3	31	12	3	3	1	4
DELAWARE												
p	Delaware State U		161	48	11	20	12	7	2	4	0	2
p	Delaware-U of		1498	561	29	23	80	58	15	12	2	12
DISTRICT OF COLUMBIA												
	American U		185	100	8	7			13			
p	Catholic U		60	80	5	3	—	—	—	2	—	—
p	George Washington U		372	177	13	11	27	—	5	11	4	3
p	Georgetown U		269	13	14	12	25	8	4	15	0	3
p	Howard U		810	35	3	3	16	10	4	7	3	2

<div> <div>2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS</div> <div>FALL 2016 UNDERGRADUATE MAJORS</div> <div>FALL 2016 GRADUATE STUDENTS</div> <div>2015-16 PHYSICS DEGREES</div> </div>											
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR		BACHELORS	EXITING MASTERS	PHDS
FLORIDA											
Ave Maria U	45	0	2	4					3		
p Central Florida-U of	2559	1731	37	59	101	49	27		21	2	17
Eckerd Coll	114	0	2	8					3		
p Embry-Riddle Aeronautical U	c 1128	497	50	46	17	2	6		21	6	0
p Florida A&M U	630	330	2	2	18	6	8		2	0	1
p Florida Atlantic U	505	492	13	29	27	21	4		14	5	5
p Florida Inst of Tech	c 551	0	10	10	12	6	2		8	2	1
p Florida International U	1664	0	30	25	45	8	9		16	—	6
p Florida State U	1933	1119	28	54	147	70	22		22	2	27
p Florida-U of	s 3238	0	37	48	124	64	15		47	0	21
Jacksonville U	118	70	7	3					3		
p Miami-U of	1731	81	—	—	25	21	6		—	0	3
New Coll of Florida	65	59	4	4					2		
North Florida-U of	964	888	85	19					18		
Rollins Coll	106	23	5	7					6		
p South Florida-U of	5340	1001	63	149	70	48	8		35	1	10
Stetson U	126	79	5	6					7		
West Florida-U of	539	0	12	28					12		
GEORGIA											
Agnes Scott Coll	c 116	0	2	5					0		
Armstrong State U	283	266	5	8					0		
Augusta U	392	295	17	12					10		
Berry Coll	155	116	4	7					4		
m Clark-Atlanta U	151	319	4	5	19	16	9		4	4	
Covenant Coll	37	42	2	4					0		
p Emory U	1025	183	15	20	48	33	13		16	1	1
Georgia Coll	487	425	39	22					9		
p Georgia Inst of Tech	1791	191	50	77	133	56	22		31	10	19
Georgia Southern U	2207	836	8	15					5		
p Georgia State U	c 1241	0	35	40	47	36	10		22	—	5
p Georgia-U of	1644	1036	21	35	52	22	11		19	7	7
Kennesaw State U			DATA NOT PROVIDED								
Mercer U	378	21	0	0					0		
Morehouse Coll	290	323	19	12					4		
North Georgia-U of	338	239	46	21					16		
Oglethorpe U	60	0	—	—					1		
Piedmont Coll	46	17	0	0					0		
Spelman Coll	271	20	4	0					4		
Valdosta State U	c 302	157	8	8					4		
West Georgia-U of	245	1366	6	6					6		
HAWAII											
Hawaii-U of, Hilo	c 193	0	3	4					5		
p Hawaii-U of, at Manoa	s 441	190	12	15	39	8	9		11	1	4
IDAHO											
Coll of Idaho	64	40	10	7					8		
Boise State U	1199	208	19	52					5		
Brigham Young U-Idaho	1103	49	35	39					13		
p Idaho State U	598	272	11	13	13	7	5		10	2	4
p Idaho-U of	811	94	14	31	23	12	4		11	1	0
Northwest Nazarene U	68	0	1	4					4		
ILLINOIS											
Augustana Coll	193	73	17	17					13		
Benedictine U	262	333	2	5					2		
Bradley U	276	121	4	2					4		
Chicago State U	235	300	4	4					6		
p Chicago-U of	s 519	24	74	61	165	83	26		74	0	14
m DePaul U	740	122	20	29	9	2	6		17	2	
Eastern Illinois U	180	63	—	—					5		
Elmhurst Coll	90	115	4	4					6		
Greenville Coll			DATA NOT PROVIDED								
Illinois Coll	56	0	6	2					11		

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS			FALL 2016 UNDERGRADUATE MAJORS		FALL 2016 GRADUATE STUDENTS			2015-16 PHYSICS DEGREES			
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	EXITING MASTERS	PHDS	
ILLINOIS CONTINUED											
p Illinois Inst of Tech	584	31	10	18	84	31	28	12	14	5	
Illinois State U	1872	127	16	49				17			
p IL-U of, Chicago	1150	151	10	31	83	52	9	10	1	9	
p IL-U of, Urbana/Champaign	s 8296	43	142	244	292	135	50	149	1	28	
Illinois Wesleyan U	133	79	22	15				13			
Knox Coll	141	34	7	10				7			
Lake Forest Coll	183	0	7	6				6			
Lewis U	178	58	23	21				10			
Loyola U Chicago	687	101	34	32				47			
Millikin U	50	45	6	0				5			
Monmouth Coll	45	40	5	5				7			
North Central Coll	85	46	8	10				5			
North Park U	128	28	8	6				5			
Northeastern Illinois U	1194	355	4	8				5			
p Northern Illinois U	1542	133	13	30	56	25	14	5	7	3	
p Northwestern U	454	162	18	19	90	—	13	13	4	13	
Principia Coll			DATA NOT PROVIDED								
p Sthrn IL U-Carbondale			DATA NOT PROVIDED								
Sthrn IL U-Edwardsville	740	159	7	11				8			
m Western Illinois U	407	244	3	12	29	28	13	6	16		
Wheaton Coll	214	143	6	16				9			
INDIANA											
Anderson U			DATA NOT PROVIDED								
m Ball State U	275	427	4	14	21	6	5	7	6		
Butler U	289	76	10	12				8			
DePauw U			DATA NOT PROVIDED								
Earlham Coll			DATA NOT PROVIDED								
Evansville-U of	253	27	5	2				2			
Goshen Coll	24	0	3	7				6			
Hanover Coll	32	34	1	0				2			
Indiana State U	466	286	2	3				7			
p Indiana U-Bloomington	s 2338	197	24	59	106	35	24	26	5	15	
Indiana U-South Bend	133	219	7	11				2			
Indiana U Purdue U-Ft Wayne	624	50	14	15				8			
p Indiana U Purdue U-Indpls	1033	1175	10	18	27	14	8	15	1	1	
Indianapolis-U of	92	42	2	5				1			
Manchester U	140	25	3	4				4			
p Notre Dame-U of	1143	348	26	26	101	31	11	24	0	10	
Purdue U-Northwest	399	215	12	10				3			
p Purdue U-West Lafayette	4363	163	29	60	148	96	32	38	0	24	
Rose-Hulman Inst of Tech	448	82	8	5				13			
St. Marys Coll	78	33	3	0				0			
Southern Indiana-U of	280	48	3	3				2			
Taylor U	83	18	8	11				12			
Valparaiso U	265	116	8	9				4			
Wabash Coll	71	40	9	6				11			
IOWA											
Buena Vista U	68	30	0	1				0			
Central Coll	55	0	10	4				11			
Coe Coll	84	35	19	14				13			
Cornell Coll	56	12	4	5				4			
Dordt Coll	86	22	1	1				1			
Drake U	c 238	20	4	3				8			
Grinnell Coll	246	40	21	18				20			
p Iowa State U	c 3195	181	16	47	91	62	12	6	0	6	
p Iowa-U of	c 1606	75	15	27	65	20	9	11	0	10	
Luther Coll			DATA NOT PROVIDED								
Morningside Coll	95	70	2	0				2			
Northern Iowa-U of	423	0	19	16				5			
Simpson Coll	46	0	5	1				4			
Wartburg Coll	112	22	1	1				0			

INSTITUTION	2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS		FALL 2016 UNDERGRADUATE MAJORS		FALL 2016 GRADUATE STUDENTS			2015-16 PHYSICS DEGREES		
	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	EXITING MASTERS	PHDS
KANSAS										
Baker U	41	37	5	4				3		
Benedictine Coll	c	DATA NOT PROVIDED								
<i>m</i> Emporia State U	78	198	6	7	5	5	0	5	3	
Fort Hays State U	170	602	9	9				5		
<i>p</i> Kansas State U	2019	45	18	17	60	43	15	20	4	6
<i>p</i> Kansas-U of	c	2232	0	5	58	22	8	15	1	5
Kansas Wesleyan U	44	9	4	6				1		
<i>m</i> Pittsburg State U	191	513	5	6	9	4	3	1	3	
Washburn U of Topeka	127	405	7	3				2		
Wichita State U	683	158	12	31				2		
KENTUCKY										
Bellarmine U	191	79	4	7				2		
Berea Coll	—	—	3	9				2		
Centre Coll of KY	108	0	8	3				5		
Cumberlands-U of the	135	119	2	2				4		
Eastern Kentucky U	532	170	15	20				8		
Georgetown Coll	DATA NOT PROVIDED									
<i>p</i> Kentucky-U of	1860	877	27	46	83	46	22	16	1	5
Kentucky Wesleyan Coll	—	—	—	—				3		
<i>p</i> Louisville-U of	1185	656	18	24	35	23	6	8	5	2
Morehead State U	—	—	—	—				5		
Murray State U	182	73	4	1				3		
Northern Kentucky U	195	223	22	16				5		
Thomas More Coll	35	35	2	2				3		
Transylvania U	67	0	4	4				1		
<i>m</i> Western Kentucky U	458	402	5	9	7	3	2	4	4	
LOUISIANA										
Dillard U	176	0	10	7				4		
Grambling State U	231	360	5	7				3		
<i>p</i> LA St U-Baton Rouge	5416	2138	20	34	101	48	23	22	5	18
LA St U-Shreveport	DATA NOT PROVIDED									
<i>m</i> Louisiana Tech U	DATA NOT PROVIDED									
<i>m</i> Louisiana-U of, at Lafayette	1443	299	4	8	13	4	5	3	4	
Loyola U-New Orleans	97	17	6	7				3		
<i>p</i> New Orleans-U of	DATA NOT PROVIDED									
Southeastern Louisiana U	339	208	6	10				9		
<i>m</i> Southern U & A&M Coll	DATA NOT PROVIDED									
<i>p</i> Tulane U	543	0	27	29	36	22	10	15	2	2
Xavier U	199	21	5	5				4		
MAINE										
Bates Coll	278	134	15	20				13		
Bowdoin Coll	46	44	16	25				16		
Co by Coll	101	76	22	12				14		
<i>p</i> Maine-U of	729	379	17	17	35	3	6	11	5	3
Southern Maine-U of	206	99	2	2				2		

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS									2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS									FALL 2016 GRADUATE STUDENTS		
PHYSICS & ASTRONOMY									EXITING BACHELORS MASTERS PHDS		
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR		BACHELORS	MASTERS	PHDS
MARYLAND											
Frostburg State U	330	79	5	8					11		
Goucher Coll	35	54	5	8					11		
p Johns Hopkins U	c 638	0	27	27	58	31	11		15	5	7
Loyola U of MD	151	375	2	4					3		
p Maryland-U of, Balt Cnty	956	125	45	65	41	16	11		18	0	6
p Maryland-U of, Coll Park	s 1801	0	81	152	219	111	47		69	1	34
McDaniel Coll	30	144	7	2					5		
Morgan State U											
Notre Dame of MD U	31	14	0	1					0		
St. Marys College of MD	94	92	9	10					10		
Salisbury U	247	124	29	25					22		
m Towson U	815	356	25	42	14	—	7		15	1	
US Naval Academy	1073	23	27	30					29		
Washington Coll	158	16	2	3					2		
MASSACHUSETTS											
Amherst Coll	—	—	6	9					7		
Bard Coll at Simon's Rock	28	0	2	2					0		
p Boston Coll	192	0	17	18	44	23	2		16	1	2
p Boston U	s 1096	0	32	36	81	48	11		23	4	15
p Brandeis U	182	91	20	17	48	19	12		13	1	8
Bridgewater State U	636	142	8	17					9		
p Clark U	146	136	9	14	10	7	2		11	0	1
Eastern Nazarene Coll											
Gordon Coll	56	0	7	14					11		
p Harvard U	s 427	0	75	53	224	89	35		56	11	31
p Harvard U (Appl Sci)	75	0			119	54	13			0	19
Holy Cross-Coll of the	154	24	12	14					15		
MA Coll of Liberal Arts	42	25	1	0					5		
p Mass Inst of Tech (MIT)	652	0	75	73	—	—	—		81	—	—
p MA-U of, Amherst	s 3711	400	41	30	74	48	15		48	6	10
p MA-U of, Boston	768	173	19	15	29	9	9		7	4	0
m MA-U of, Dartmouth	477	601	11	8	20	5	9		7	3	
p MA-U of, Lowell	1150	575	25	34	78	39	21		21	14	12
Merrimack College	215	0	2	1					1		
Mount Holyoke Coll	s 146	0	11	9					12		
p Northeastern U	1502	181	36	31	81	50	18		30	1	8
Simmons Coll	51	0	2	2					0		
Smith Coll	s 113	0	15	9					3		
Suffolk U	202	702	5	5					3		
p Tufts U	c 465	0	14	17	32	12	9		14	3	5
Wellesley Coll	s 180	0	15	16					17		
Wheaton Coll	128	274	7	8					6		
Williams Coll	s 171	0	10	17					14		
p Worcester Polytech Inst	1090	0	17	17	22	13	7		11	6	1
MICHIGAN											
Adrian Coll	56	0	1	8					2		
Albion Coll	118	41	15	5					5		
Alma Coll	73	0	2	4					3		
Andrews U	156	51	4	8					5		
Calvin Coll	251	64	3	4					3		
m Central Michigan U	1040	968	10	12	20	16	4		5	8	
m Eastern Michigan U	673	990	10	19	11	0	3		11	2	
Grand Valley St U	2254	197	9	17					8		
Hillsdale Coll											
Hope Coll	161	28	3	3					8		
Kalamazoo Coll	96	0	—	—					8		
Kettering U (Appl Phys)	780	0	15	29					9		
Lawrence Technological U	373	18	2	3					1		
p Michigan State U	c 3515	525	98	74	152	39	34		30	6	12
p Michigan Technological U	1156	101	9	22	41	29	10		7	2	6
p Michigan-U of, Ann Arbor	s 2344	0	41	124	150	59	24		61	3	22
p Michigan-U of, Ann Arbor (Appl Phys)					85	13	15			0	7

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS								2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS								FALL 2016 GRADUATE STUDENTS		
PHYSICS & ASTRONOMY								EXITING BACHELORS MASTERS PHDS		
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	MASTERS	PHDS
MICHIGAN CONTINUED										
Michigan-U of, Dearborn	479	225	4	6				1		
Michigan-U of, Flint	329	17	3	7				1		
Northern Michigan U	416	103	4	10				5		
p Oakland U	1295	266	13	12	18	11	8	12	0	3
Saginaw Valley St U	416	406	3	3				1		
p Wayne State U	c 911	0	27	41	67	32	14	12	1	9
p Western Michigan U	1175	251	14	14	27	22	8	8	2	2
MINNESOTA										
Augsburg Coll	79	90	7	12				13		
Bethel U	135	57	28	36				22		
Carleton Coll	187	142	21	20				24		
Coll. of St. Benedict / St. John's U	156	42	19	10				11		
Concordia Coll	72	101	4	5				3		
Gustavus Adolphus Coll	107	30	14	16				19		
Hamline U	153	40	13	6				13		
Macalester Coll	111	60	9	11				12		
m Minnesota St U-Mankato	1035	689	12	8	8	2	3	4	0	
Minnesota St U-Moorhead	250	388	6	8				8		
m Minnesota-U of, Duluth	1177	476	12	21	20	10	7	3	5	
p Minnesota-U of, Minnpls	s 3071	1321	32	110	189	80	34	57	3	21
Minnesota-U of, Morris	126	34	6	5				5		
St. Cloud State U	830	900	9	6				1		
St. Mary's U of MN	82	71	5	1				2		
St. Olaf Coll	175	0	25	23				35		
St. Thomas-U of	326	195	9	22				8		
Winona State U	969	78	1	7				2		
MISSISSIPPI										
Jackson State U	429	428	4	2				3		
Millsaps Coll	30	17	0	1				1		
Mississippi Coll	DATA NOT PROVIDED									
p Mississippi State U	1355	502	7	12	48	42	9	7	2	1
p Mississippi-U of	830	722	9	6	44	33	5	7	2	1
m Sthrn Mississippi-U of	420	119	5	5	19	9	3	3	1	
Tougaloo Coll	74	0	1	1				2		
MISSOURI										
Central Methodist U	44	56	0	2				1		
Central Missouri-U of	499	20	0	0				0		
Drury U	158	0	3	3				3		
Lincoln U (MO)	34	130	—	2				2		
Missouri Southern St U	122	366	7	4				5		
m Missouri State U	DATA NOT PROVIDED									
p Missouri U of Sci & Tech	498	0	12	35	26	17	5	15	2	6
p MO-U of Columbia	1380	0	35	30	55	22	10	27	1	7
p MO-U of, Kansas City	1000	14	12	24	25	11	4	13	0	2
p MO-U of, St. Louis (1)	335	211	12	17	20	8	5	8	3	2
Rockhurst U	DATA NOT PROVIDED									
St. Louis U	425	0	2	4				5		
Southeast Missouri St U	547	441	8	10				5		
Truman State U	513	89	23	15				7		
p Washington U	728	0	10	15	83	45	11	24	3	13
Westminster Coll	DATA NOT PROVIDED									
William Jewell Coll	78	72	11	5				12		
MONTANA										
p Montana State U	1599	1019	24	25	66	6	18	10	3	5
Montana-U of	364	439	16	23				10		

(1) Students earning a PhD at U of Missouri, St. Louis are in a co-op program with Missouri U of Sci & Tech.

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS									2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS											
FALL 2016 GRADUATE STUDENTS											
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR		BACHELORS	MASTERS	PHDS
NEBRASKA											
<i>m</i> Creighton U	220	160	12	9	14	4	5		5	1	
Doane U	76	47	5	5					5		
Hastings Coll	46	23	6	7					7		
Nebraska-U of, Kearney	93	80	4	0					1		
<i>p</i> Nebraska-U of, Lincoln	1734	642	21	30	90	59	21		12	1	3
Nebraska-U of, Omaha	—	—	8	12					4		
Nebraska Wesleyan U	81	46	6	1					6		
Union Coll	32	12	0	0					0		
NEVADA											
<i>p</i> Nevada-U of, Las Vegas	DATA NOT PROVIDED										
<i>p</i> Nevada-U of, Reno	1732	351	27	8	27	4	6		21	3	6
NEW HAMPSHIRE											
<i>p</i> Dartmouth Coll	<i>c</i> 416	35	32	17	50	25	5		20	1	9
<i>p</i> New Hampshire-U of	860	303	15	25	59	19	11		11	4	11
St. Anselm Coll	51	63	5	6					1		
NEW JERSEY											
Drew U	DATA NOT PROVIDED										
Montclair State U	403	20	10	9					5		
New Jersey City U	DATA NOT PROVIDED										
New Jersey-The Coll of	432	234	18	18					29		
<i>p</i> New Jersey Inst of Tech	76	18	13	14	22	17	5		10	2	5
<i>p</i> Princeton U	<i>s</i> 204	0	20	26	117	76	26		17	0	15
Ramapo Coll of NJ	459	350	8	13					9		
Rowan U	1013	457	53	47					23		
Rutgers U-Camden	DATA NOT PROVIDED										
<i>p</i> Rutgers U-New Brunswick	3543	924	67	107	118	58	23		62	0	13
<i>p</i> Rutgers U-Newark*	DATA NOT PROVIDED										
St. Peter's U	6	0	2	3					2		
Seton Hall U	711	145	20	17					8		
<i>p</i> Stevens Inst of Tech	515	0	8	6	27	22	8		10	0	4
Stockton U	983	390	21	21					5		
NEW MEXICO											
<i>p</i> NM Inst of Mining & Tech	365	23	27	32	21	5	3		12	0	4
<i>p</i> New Mexico St U	<i>s</i> 781	0	16	39	30	23	5		21	3	7
<i>p</i> New Mexico-U of	1496	1677	29	54	119	54	20		10	4	13
NEW YORK											
Adelphi U	450	160	20	11					—		
Alfred U	177	112	3	5					3		
Bard Coll	157	0	6	5					8		
Barnard Coll	<i>c</i> 54	0	10	10					4		
Canisius Coll	83	35	1	1					3		
<i>p</i> Clarkson U	1279	0	12	20	18	6	5		7	2	2
Colgate U	<i>c</i> 171	0	25	13					18		
<i>p</i> Columbia U	<i>s</i> 1988	8	17	26	99	52	17		39	0	21
<i>p</i> Columbia U (Appl Sci)			10	13	71	32	18		8	14	3
<i>p</i> Cornell U	<i>s</i> 2147	0	40	39	159	72	28		40	1	21
<i>p</i> Cornell U (Appl Sci)	DATA NOT PROVIDED										
(CUNY) Lehman Coll	1040	676	5	17					1		
(CUNY) Staten Island-Coll of	DATA NOT PROVIDED										
(CUNY) York Coll	387	512	4	6					3		
<i>p</i> (CUNY) Grad Center	GRADUATE ONLY				106	54	22				21
<i>m</i> (CUNY) Brooklyn Coll**	990	0	8	10					3	2	
<i>m</i> (CUNY) City Coll**	1335	731	20	44					12	8	
<i>m</i> (CUNY) Hunter Coll**	398	325	8	7					8	5	
<i>m</i> (CUNY) Queens Coll**	738	645	27	35					6	14	

*U of Rutgers, Newark's graduate program is administered in partnership with the New Jersey Institute of Technology (NJIT) but did not provide data this year.

**All CUNY graduate enrollment data are incorporated into CUNY Grad Center enrollments.

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2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS								2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS								FALL 2016 GRADUATE STUDENTS		
PHYSICS & ASTRONOMY								EXITING BACHELORS MASTERS PHDS		
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR	BACHELORS	MASTERS	PHDS
OREGON										
Lewis & Clark Coll	188	58	19	9				12		
Linfield Coll	DATA NOT PROVIDED									
p Oregon State U	2182	990	35	55	43	11	9	16	0	5
p Oregon-U of Pacific U	1264	279	49	76	87	14	10	30	21	13
	125	0	6	12				10		
p Portland State U	832	93	40	65	46	6	11	36	3	1
Portland-U of	376	84	5	5				4		
Reed Coll	98	0	26	20				18		
Willamette U	144	36	16	13				10		
PENNSYLVANIA										
Albright Coll	40	73	3	2				3		
Allegheny Coll	133	65	8	12				14		
Bloomsburg U of PA	270	617	8	13				1		
p Bryn Mawr Coll	151	0	18	12	6	1	1	6	0	0
Bucknell U	336	42	11	12				11		
California U of PA	DATA NOT PROVIDED									
p Carnegie Mellon U	253	36	26	24	79	47	15	20	0	15
Clarion U of PA	164	390	8	13				6		
Dickinson Coll	81	29	11	15				10		
p Drexel U	2318	328	12	26	46	5	5	5	0	4
Duquesne U	553	419	9	20				11		
East Stroudsburg U	301	215	4	7				2		
Edinboro U of PA	360	27	5	4				3		
Elizabethtown Coll	193	86	3	2				0		
Franklin & Marshall Coll	144	124	14	15				8		
Geneva Coll	81	122	0	3				0		
Gettysburg Coll	266	138	15	16				12		
Grove City Coll	330	50	10	6				6		
Haverford Coll	c 74	0	14	17				15		
m Indiana U of PA	334	281	25	26	4	3	1	13	3	
Juniata Coll	173	47	11	13				10		
Kutztown U	151	547	12	16				15		
Lafayette Coll	278	36	3	9				7		
Lebanon Valley Coll	118	22	6	5				5		
p Lehigh U	586	249	10	19	44	15	8	9	0	5
Lincoln U (PA)	89	356	2	2				2		
Lock Haven U	126	70	10	22				8		
Lycoming Coll	c 50	0	15	5				7		
Mercyhurst U	60	0	1	2				4		
Messiah Coll	280	0	5	2				6		
Millersville U	273	200	11	14				8		
Moravian Coll	60	80	7	4				7		
Muhlenberg Coll	161	86	12	5				4		
p Pennsylvania St U	s 7676	0	31	70	130	79	21	51	3	25
Pennsylvania St U-Erie	698	166	8	3				3		
p Pennsylvania-U of	414	23	16	69	—	—	18	28	6	—
p Pittsburgh-U of	c 2310	0	33	42	110*	72*	30*	18	3	14
St. Josephs U	104	100	2	2				3		
St. Vincent Coll	231	56	2	6				3		
Scranton-U of	307	0	2	1				7		
Shippensburg U	525	341	22	12				7		
Slippery Rock U	764	73	14	19				10		
Susquehanna U	140	56	8	6				3		
Swarthmore Coll	c 138	33	11	6				8		
p Temple U	2347	440	20	36	61	41	10	12	1	7
The Sciences-U of	143	0	2	6				1		
Thiel Coll	18	13	1	1				3		
Ursinus Coll	171	28	14	5				8		
Villanova U	s 380	0	6	4				12		
Wash. & Jefferson Coll	45	0	7	4				7		
West Chester U	1490	149	27	39				6		
Westminster Coll	46	20	4	2				5		
Widener U	236	58	4	9				1		

*U of Pittsburgh - includes graduate-level astronomy enrollments

								</		

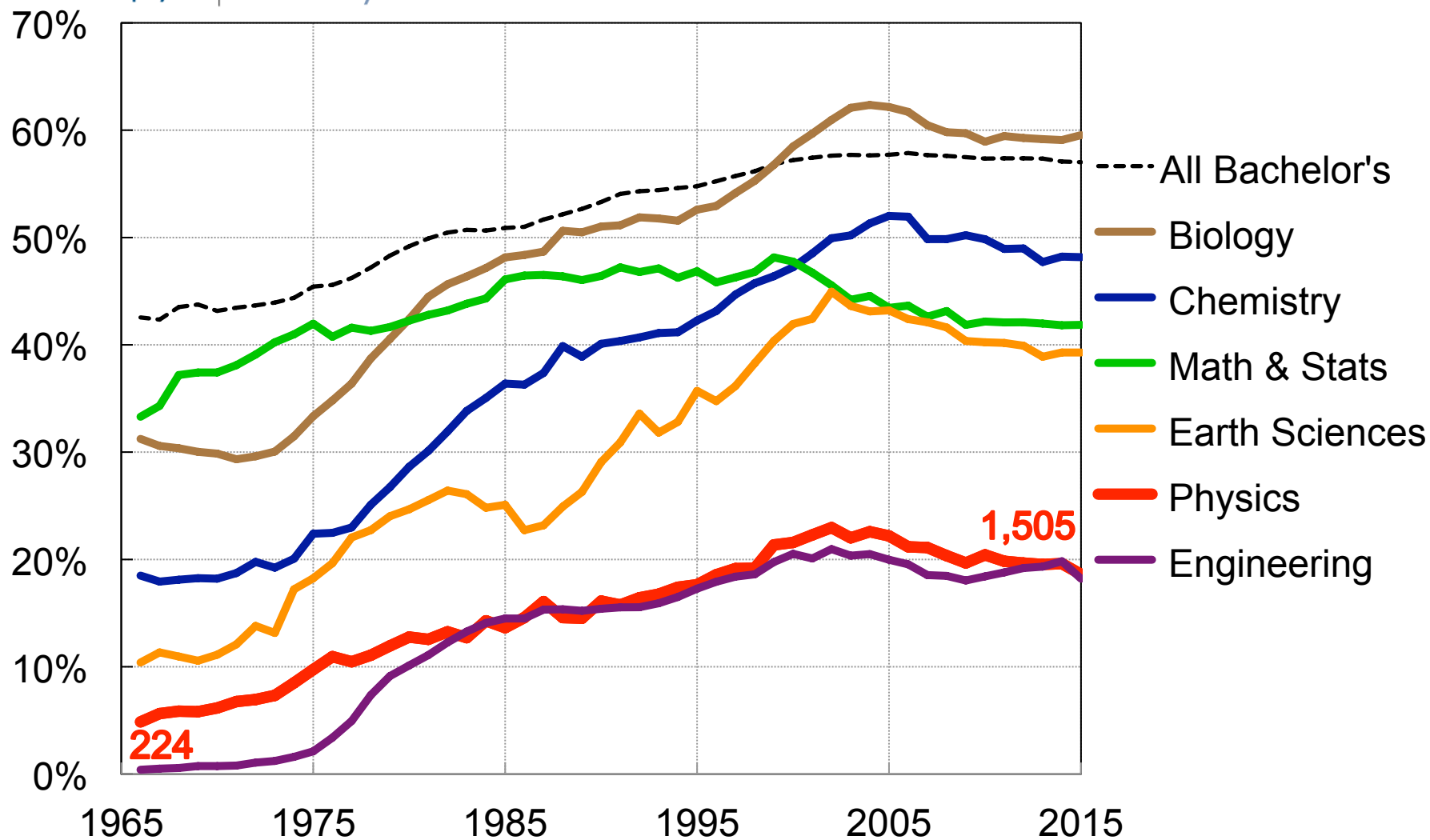
(2) Data for the degree program at University of Tennessee, Space Institute are included with U. of TN, Knoxville

2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS									2015-16 PHYSICS DEGREES		
FALL 2016 UNDERGRADUATE MAJORS									FALL 2016 GRADUATE STUDENTS		
PHYSICS & ASTRONOMY									EXITING BACHELORS MASTERS PHDS		
INSTITUTION	PHYSICS	PHYSICAL SCI & ASTRONOMY	JR	SR	TOTAL	FOREIGN	FIRST YEAR		BACHELORS	MASTERS	PHDS
TEXAS CONTINUED											
Midwestern State U*			DATA NOT PROVIDED								
p North Texas-U of	1613	3825	29	38	66	29	14		15	4	6
Prairie View A&M U*			DATA NOT PROVIDED								
p Rice U	c 512	0	18	6	104	59	19		7	5	12
St. Mary's U	365	32	10	9					8		
Sam Houston St U	449	488	17	20					6		
p Southern Methodist U	411	27	5	7	19	10	3		6	1	2
Southwestern U			DATA NOT PROVIDED								
m Stephen F Austin St U	245	1098	19	14	0	0	0		3	0	
Tarleton State U*	480	174	7	4					6		
p Texas A&M-College Station	c 3745	0	25	40	174	99	33		26	2	29
m Texas A&M-Commerce*	257	155	13	15	50	2	42		9	3	
Texas A&M-Corpus Christi*	517	114	0	1					0		
Texas A&M-Kingsville*			DATA NOT PROVIDED								
p Texas Christian U	c 413	0	7	10	15	7	5		3	0	6
Texas Lutheran U	44	0	3	11					3		
Texas Southern U*			DATA NOT PROVIDED								
m Texas State U-San Marcos	3084	352	43	23	22	4	7		21	4	
p Texas Tech U	1546	656	48	38	78	62	9		6	2	4
p Texas-U of, at Arlington	—	—	—	—	53	27	16		32	2	10
p Texas-U of, at Austin	s 4734	1131	93	205	206	98	37		96	5	23
m Texas-U of, Rio Grande Valley	1460	1636	43	79	19	9	—		45	4	
p Texas-U of, at Dallas			DATA NOT PROVIDED								
m Texas-U of, at El Paso	1558	854	27	35	23	14	16		20	10	
p Texas-U of, at San Antonio	2029	829	31	44	75	25	18		25	2	12
Trinity U	143	146	8	9					8		
West Texas A&M U*	295	124	3	4					1		
UTAH											
p Brigham Young U	2292	3931	48	129	34	4	7		65	7	1
p Utah State U	1232	792	24	54	34	6	4		13	2	2
p Utah-U of	1472	593	59	139	106	64	19		45	2	16
Utah Valley U			DATA NOT PROVIDED								
Weber State U	1096	501	12	30					9		
Westminster Coll	88	17	3	7					6		
VERMONT											
Marlboro Coll	c 5	0	1	0					0		
Middlebury Coll	164	43	18	21					20		
Norwich U	155	112	6	3					2		
St. Michael's Coll	59	37	3	2					2		
m Vermont-U of	1030	480	10	9	2	0	0		4	1	
VIRGINIA											
Bridgewater Coll	128	34	10	8					16		
m Christopher Newport U	691	167	10	12	18	3	—		3	4	
Emory & Henry Coll			DATA NOT PROVIDED								
P George Mason U	c 1209	0	24	40	51	11	18		13	9	10
Hampden-Sydney Coll	239	116	7	6					17		
p Hampton U	211	135	1	2	18	11	1		3	0	1
James Madison U	912	466	17	39					23		
Longwood U	574	0	9	6					6		
Lynchburg Coll	54	22	0	5					0		
Mary Baldwin Coll			DATA NOT PROVIDED								
Mary Washington-U of	111	75	6	12					1		
Norfolk State U	198	234	2	4					1		
p Old Dominion U	1214	390	18	26	49	26	11		12	3	4
Radford U	208	154	3	13					11		
Randolph-Macon Coll	73	0	4	2					3		
Randolph Coll	62	50	10	12					8		

*Part of the Texas Physics Consortium

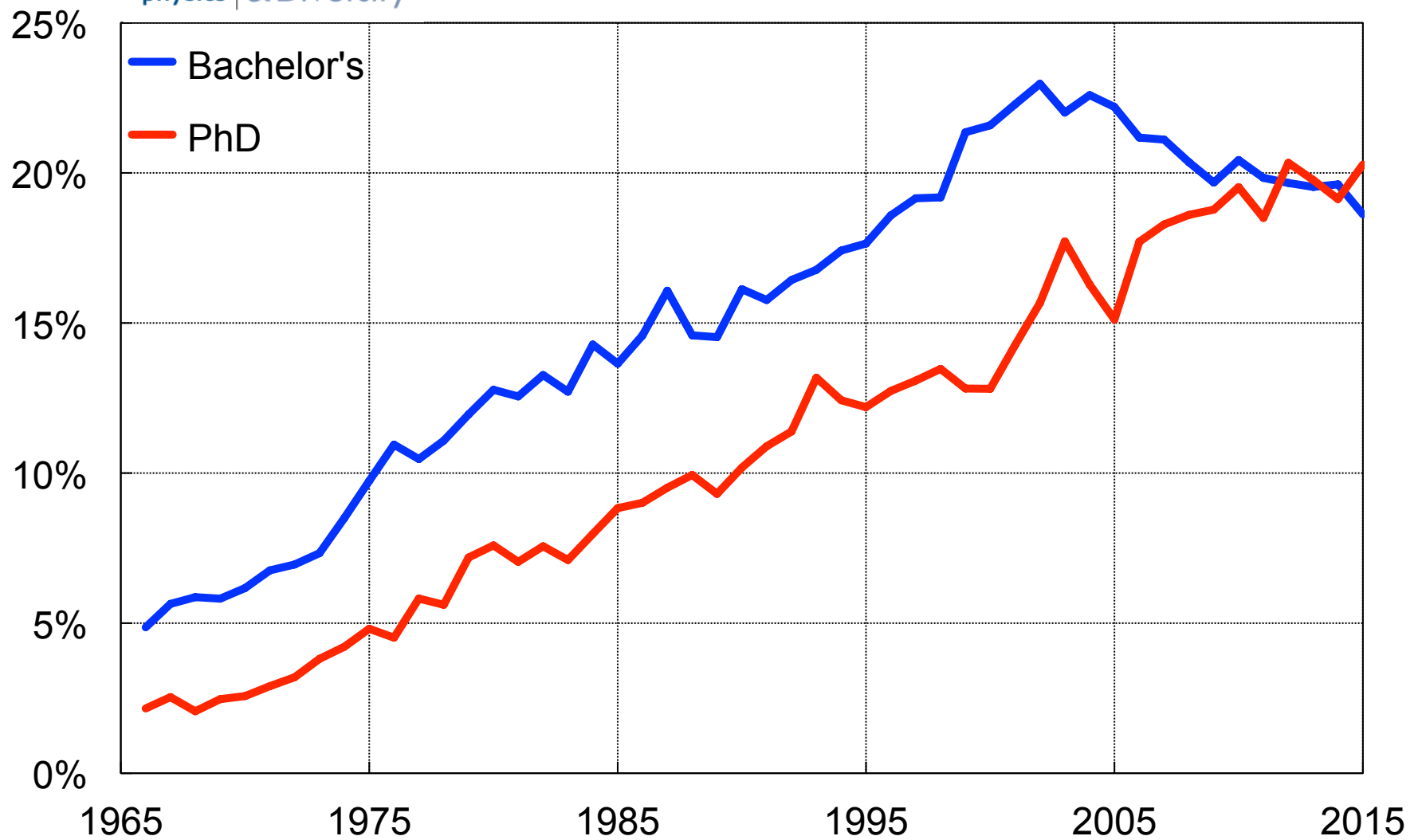
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2015-16 FIRST-TERM INTRODUCTORY COURSE ENROLLMENTS									2015-16 PHYSICS DEGREES			
FALL 2016 UNDERGRADUATE MAJORS												
FALL 2016 GRADUATE STUDENTS												
FIRST YEAR												
PHYSICS									EXITING			
PHYSICAL SCI & ASTRONOMY									BACHELORS			
JR									MASTERS			
SR									PHDS			
TOTAL												
FOREIGN												
INSTITUTION												
VIRGINIA CONTINUED												
Richmond-U of									14			
Roanoke Coll									8			
Sweet Briar College									1			
m	Virginia Commonwealth U									19	5	
Virginia Military Inst									7			
p	Virginia Polytech Inst & St U									42	1	12
p	Virginia-U of	s	1772	0	32	32	101	67	20	42	9	15
Washington & Lee U									5			
p	William & Mary-Coll of									30	2	14
WASHINGTON												
Central Washington U									15			
Eastern Washington U									7			
Gonzaga U									3			
Pacific Lutheran U									DATA NOT PROVIDED			
Puget Sound-U of									14			
Seattle Pacific U									DATA NOT PROVIDED			
Seattle U									9			
Walla Walla U									1			
p	Washington State U									DATA NOT PROVIDED		
p	Washington-U of	s	3336	0	147	254	197	29	43	135	11	17
Western Washington U									11			
Whitman Coll									13			
Whitworth U									25			
WEST VIRGINIA												
Marshall U									DATA NOT PROVIDED			
p	West Virginia U									14	3	11
West Virginia Wesleyan Coll									17			
Wheeling Jesuit U									DATA NOT PROVIDED			
WISCONSIN												
Beloit Coll									8			
Carthage Coll									10			
Lawrence U									10			
Marquette U									2			
Ripon Coll									4			
St. Norbert Coll									2			
WI-U of, Eau Claire									27			
WI-U of, La Crosse									41			
p	WI-U of, Madison	s	3271	0	19	89	185	47	39	37	4	16
p	WI-U of, Milwaukee		1882	786	9	13	46	22	5	6	3	5
WI-U of, Oshkosh									8			
WI-U of, Parkside									0			
WI-U of, River Falls									16			
WI-U of, Stevens Point									4			
WI-U of, Whitewater									11			
WYOMING												
p	Wyoming-U of	c	424	0	10	11	34	14	7	3	1	1

Bachelor's Degrees Earned by Women



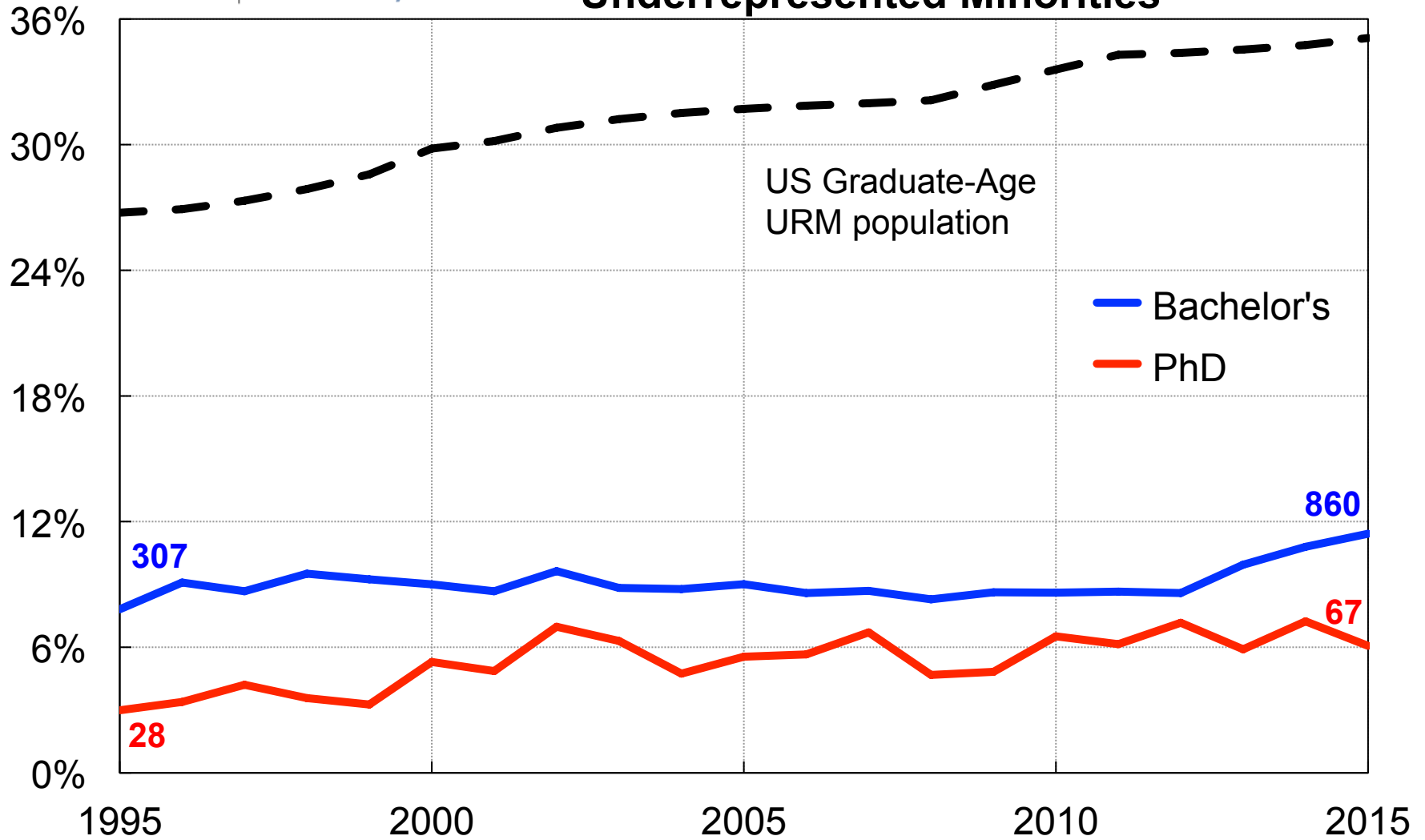
Source: IPEDS and APS

Physics Degrees Earned by Women



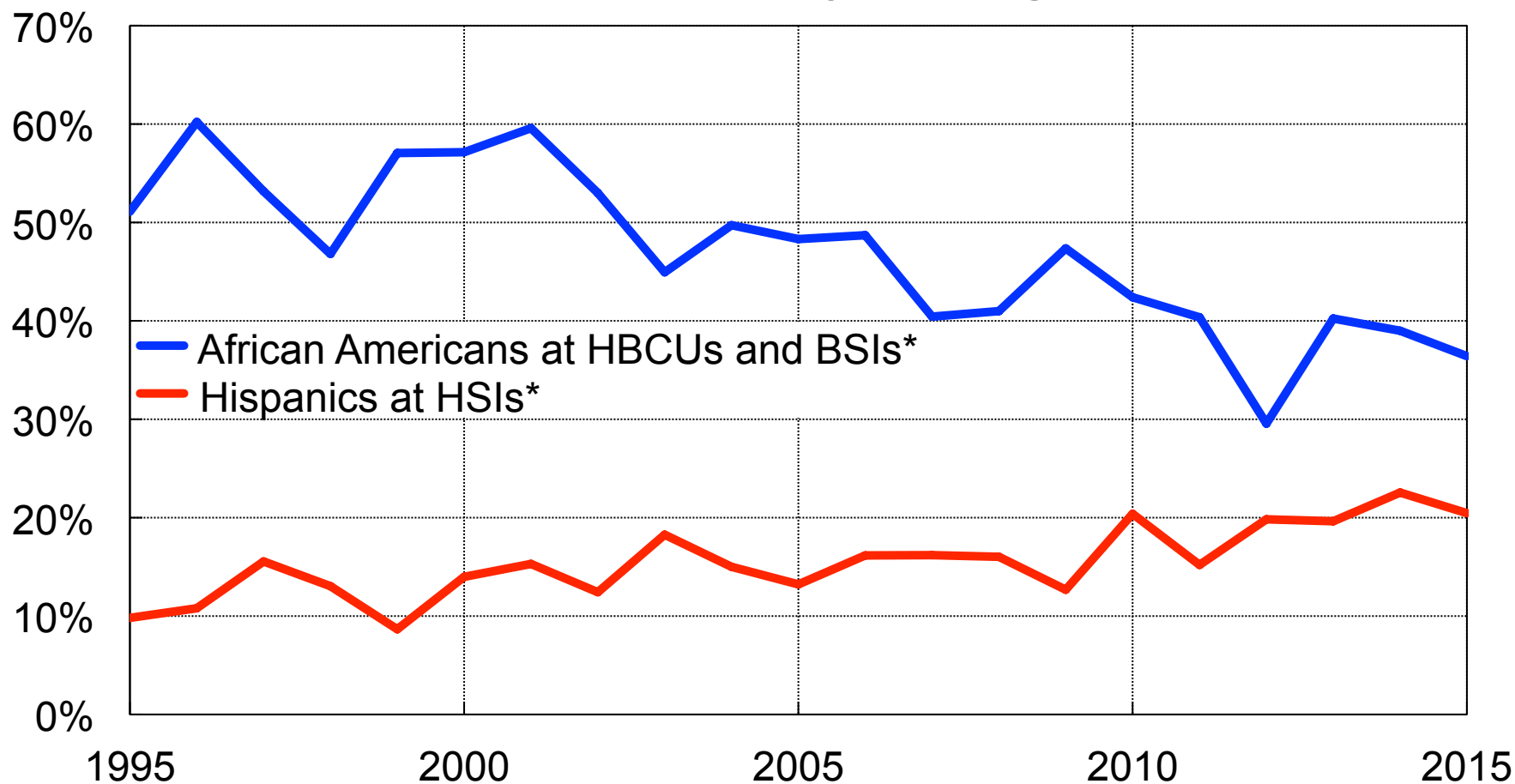
Source: IPEDS and APS

Physics Degrees Earned by Underrepresented Minorities



Source: IPEDS, US Census, and APS

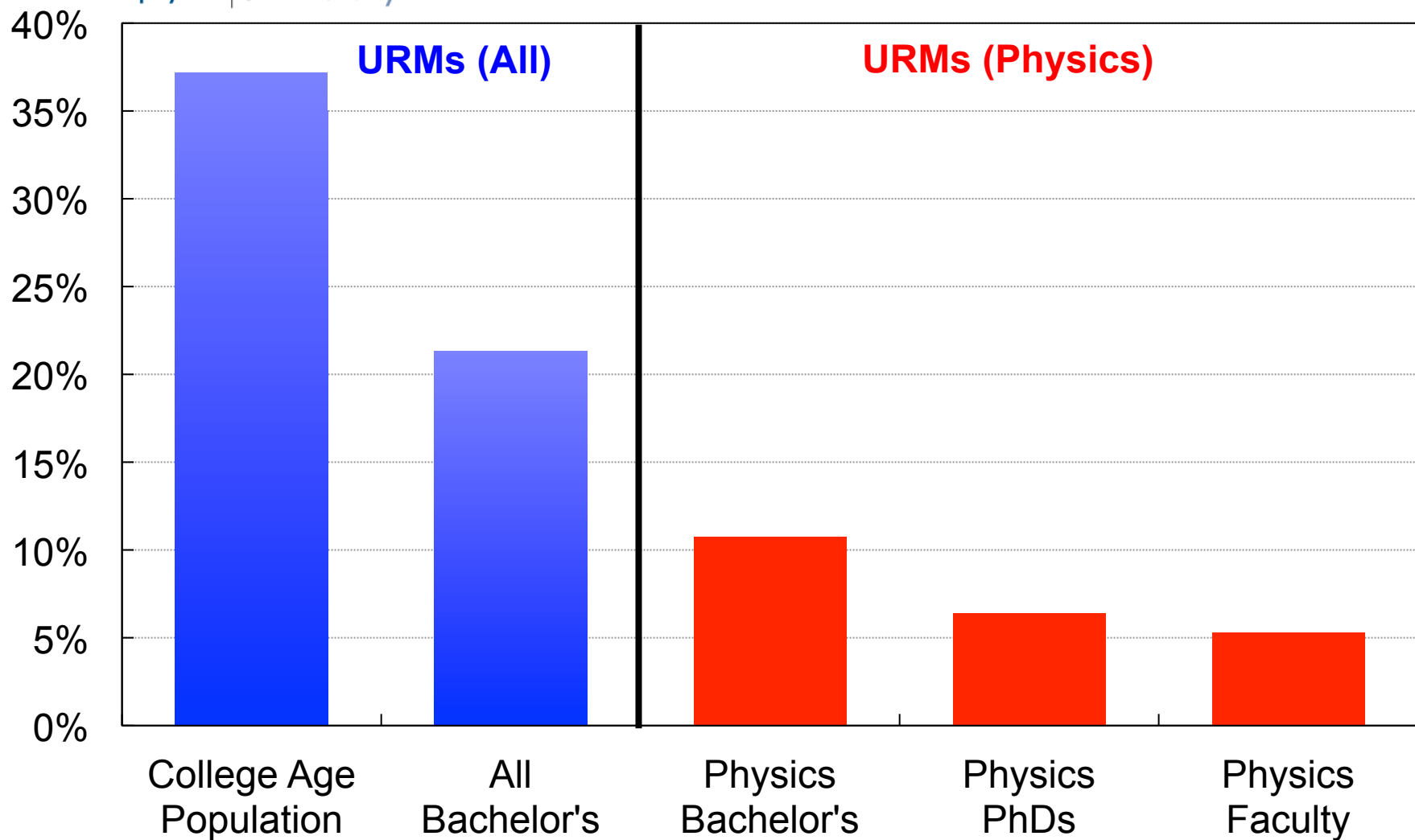
Physics Bachelor's Degrees Awarded at Minority-Serving Institutions



* HBCUs = Historically Black Colleges and Universities
 BSIs = Black Serving Institutions
 HSIs = Hispanic Serving Institutions

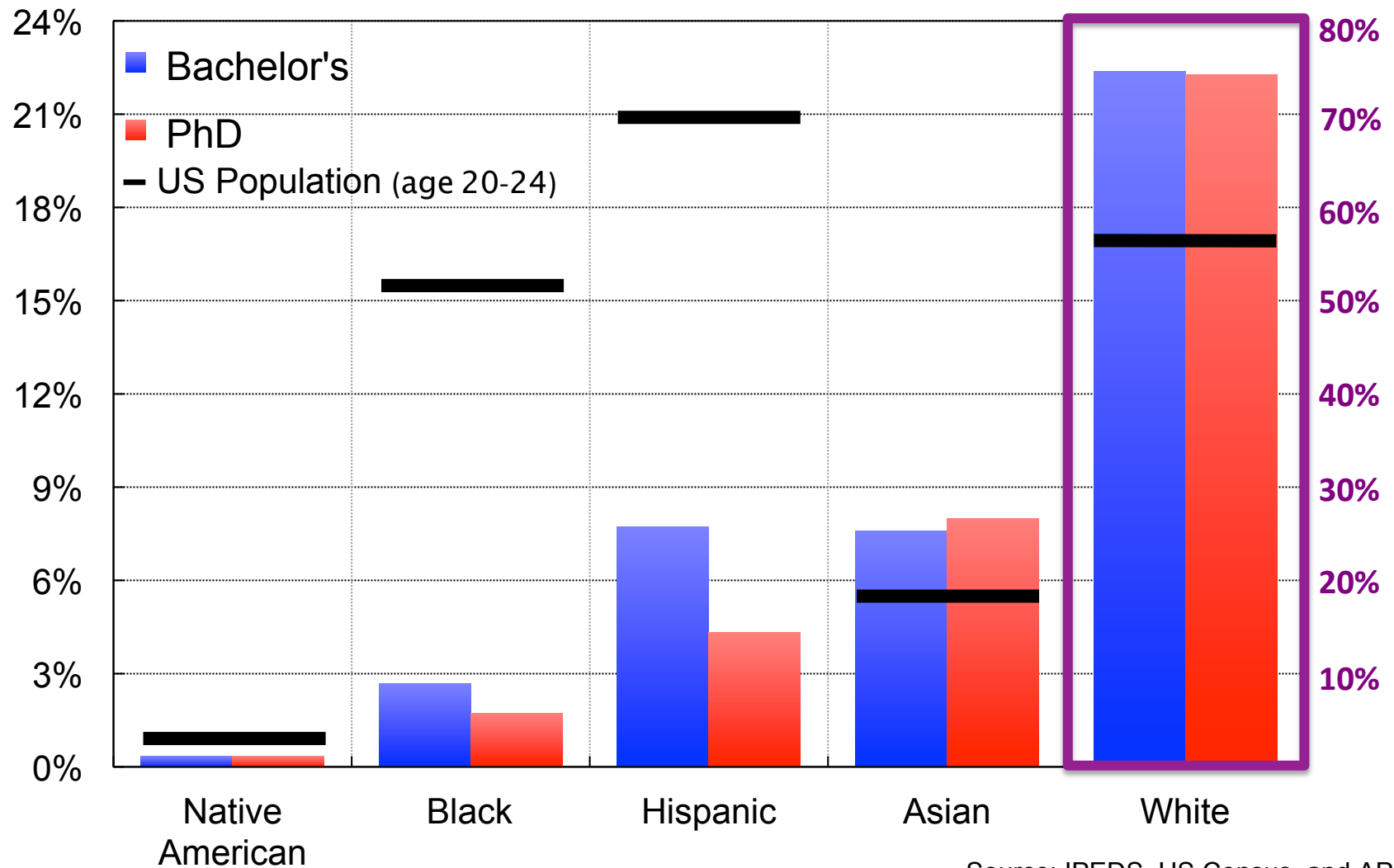
Source: IPEDS and APS

Retention of Underrepresented Minorities



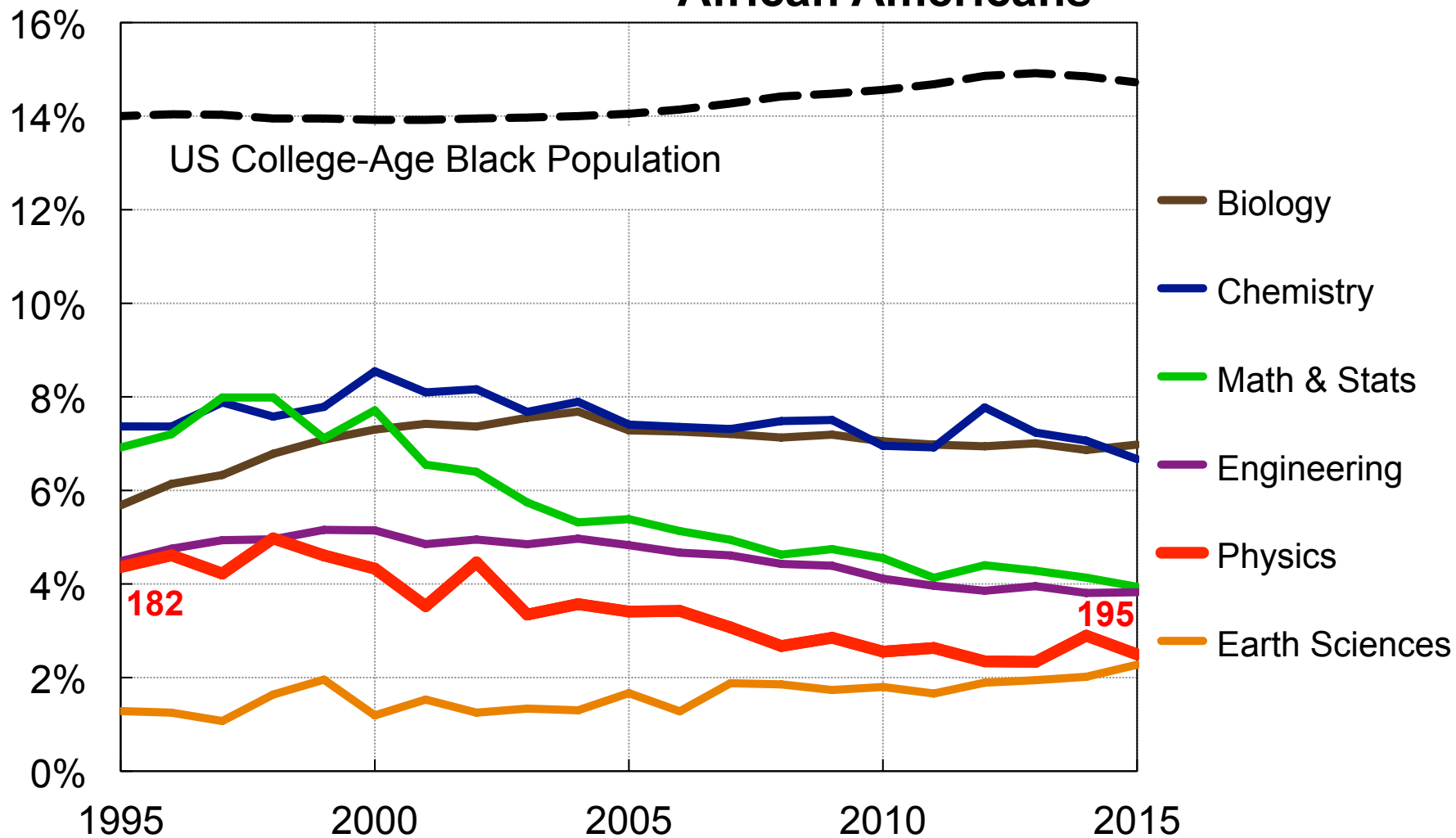
Source: US Census, IPEDS, AIP, and APS

Physics Degrees (3-yr avg 2013-2015)



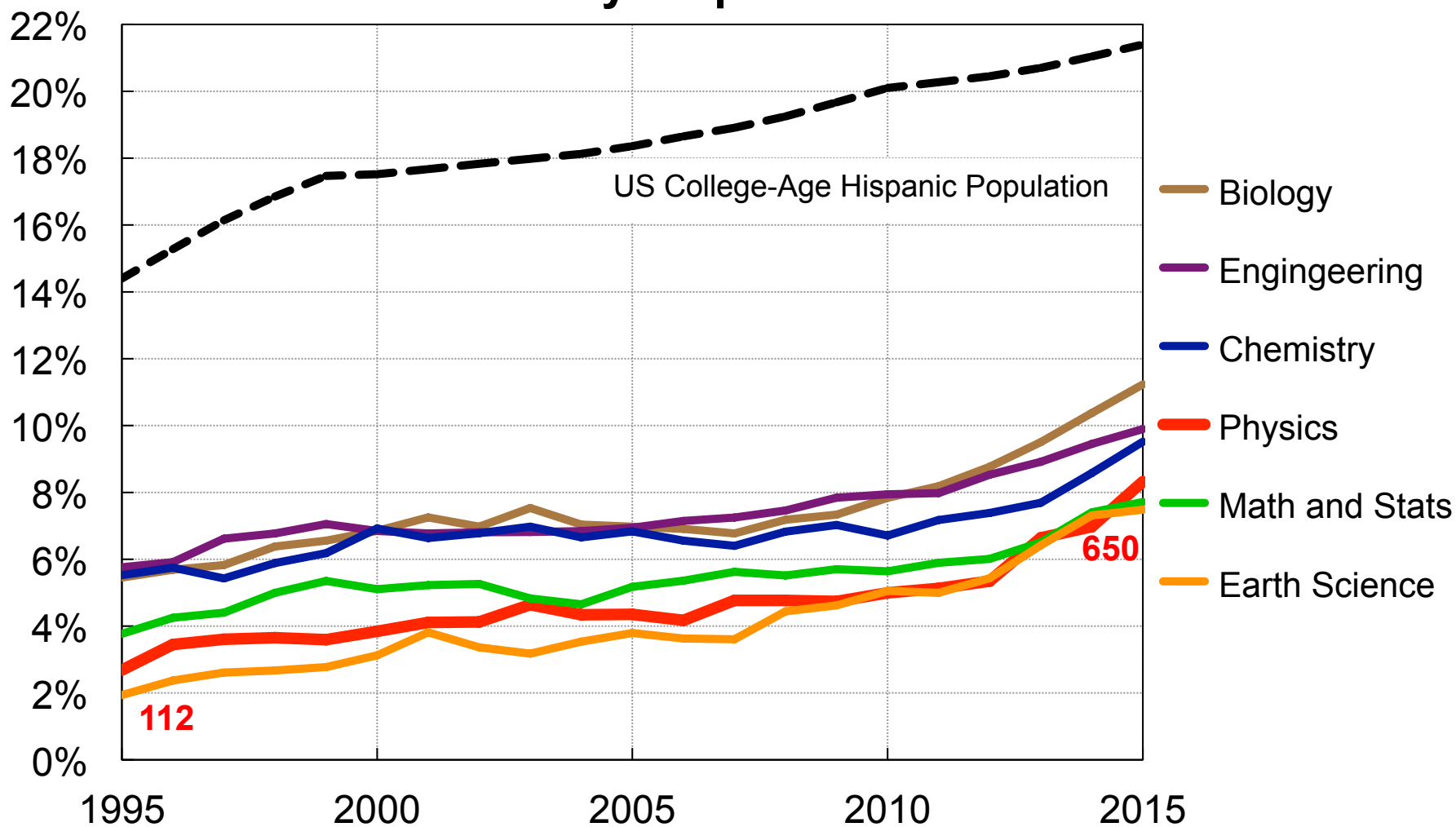
Source: IPEDS, US Census, and APS

Bachelor's Degrees Earned by African Americans



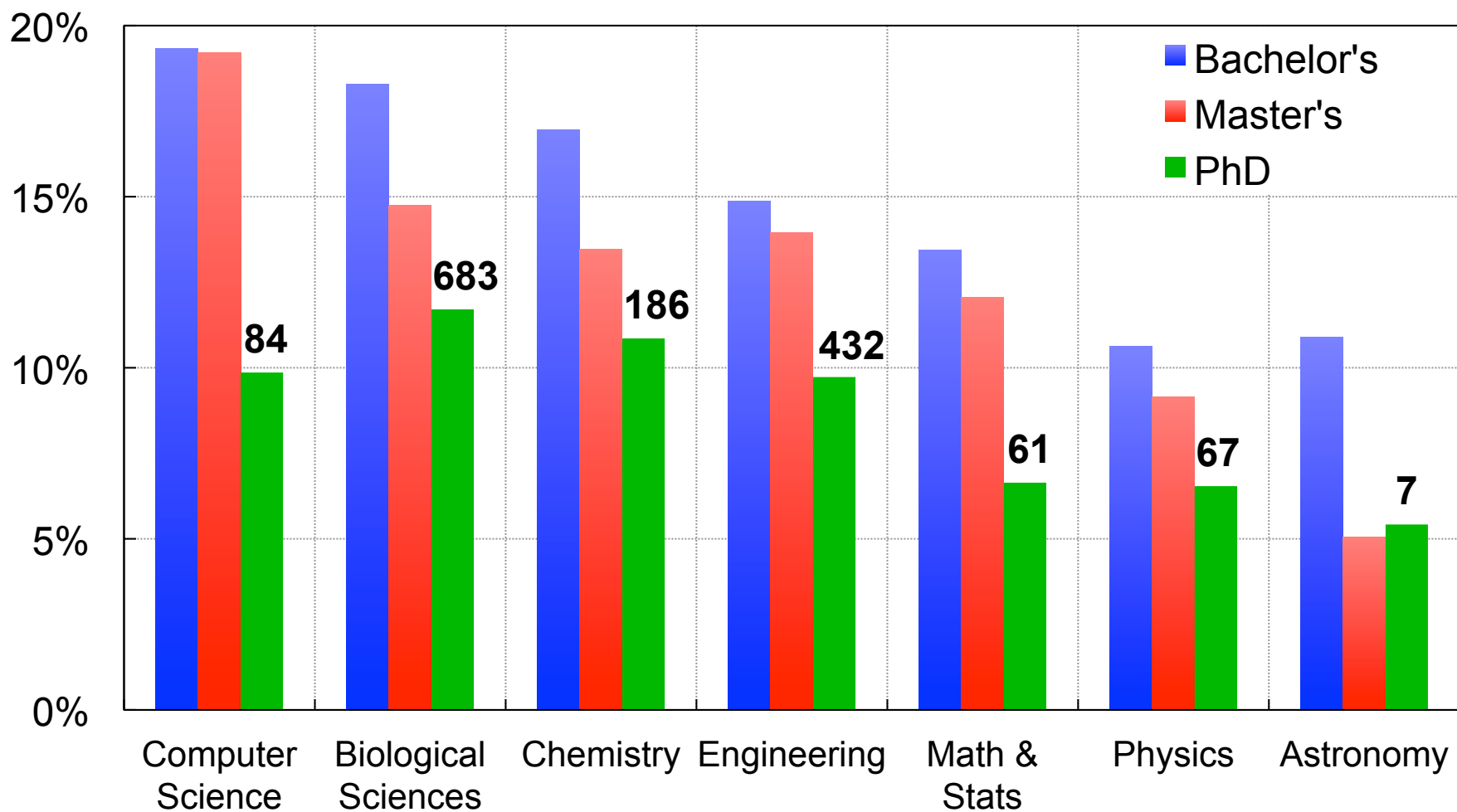
Source: IPEDS, US Census, and APS

Bachelor's Degrees Earned by Hispanic Americans



Source: IPEDS, US Census, and APS

Degrees to Underrepresented Minorities (3-yr average 2013-2015)



Source: IPEDS and APS