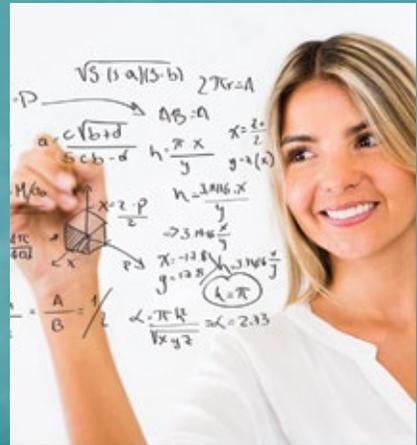


FINDING YOUR WORKFORCE: LATINOS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM)



LINKING COLLEGE COMPLETION WITH
U.S. WORKFORCE NEEDS – 2012-13

FINDING YOUR WORKFORCE: LATINOS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM)

June 2015

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committed and ready to meet the mission. Launched in 2004 in the nation's capital, *Excelencia* is building a network of results-oriented educators and policymakers to address the U.S. economy's need for a highly educated workforce and engaged civic leadership. For more information, visit: www.EdExcelencia.org.

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Throughout this report, the terms Latino and Hispanic are used interchangeably.

FOREWORD

Employers in science and technology fields are being called out publicly for the small representation of Latinos and African Americans in the workforce. To recruit more Latinos for America's workforce and educational programs, go to where the graduates are. Latinos graduating in science, technology, engineering, and mathematics (STEM) fields in 2012-13 were concentrated in a small number of colleges and universities. The analysis for this report, shows two percent of colleges and universities graduated one-third of all Latino STEM graduates.

Given the relative youth of the Latino population relative to the aging of the U.S. population overall, supporting the increased growth of Latinos with postsecondary credentials in STEM is critical to meeting the projected workforce needs of the nation by 2020. Expanding Latino representation in the workforce and education programs requires a willingness to expand traditional recruitment strategies. Rather than sending recruiters to the same set of 12-15 institutions or waiting for a diverse applicant pool to arrive at their door steps, smart, innovative companies are proactive and reach out to institutions and communities where students graduate.

Forward-looking employers and graduate schools who do not know where to begin their recruitment or ask where they can find Latinos to compete in today's global economy can start with *Finding Your Workforce: Latinos in STEM*. This brief links college completion and the workforce and shares where the highest concentrations of Latinos are graduating with postsecondary degrees in science, technology, engineering and mathematics.

Finding Your Workforce: Latinos in STEM is a straightforward informational tool to compel more outreach and engagement of college-educated Latinos by employers and graduate schools of all kinds. We should all know which institutions lead the country in the numbers of Latino graduates each year. While this brief provides the top 25 institutions graduating Latinos in 2012-13, the data and analysis in this series does not speak to the quality of the postsecondary education nor address the productivity of higher education through metrics such as graduation rates.

Excelencia in Education's mission is to accelerate Latino student success in higher education. Meeting this mission increases the numbers of Latinos prepared for the competitive workforce and civic needs throughout the nation. We hope *Finding Your Workforce: Latinos in STEM* spurs more informed dialogue about the college completion of Latinos and propels new emphasis on actions to address their success and workforce participation in STEM fields.



Sarita E. Brown



Deborah A. Santiago

EXECUTIVE SUMMARY

Drawing attention to the institutions graduating Latinos in postsecondary education links the college completion goals of the U.S. with the workforce needs of the country. *Finding Your Workforce: Latinos in STEM* provides a profile of the current Latino workforce in Science, Technology, Engineering, and Mathematics (STEM) for 2012-13 (the most recent data publicly available), and shares some current and potential opportunities for action to improve Latinos' retention and completion of a credential, and increase their representation in the STEM workforce.

KEY FINDINGS

In 2012-13, 2% of all institutions graduated 33% of Latinos earning STEM credentials. Given the relative youth of the Latino population relative to the aging of the U.S. population overall, supporting the increased growth of Latinos with postsecondary credentials in STEM is critical to meeting the projected workforce needs of the nation by 2020. Additional key findings include:

- **The number of Latinos earning credentials in STEM increased** over the last four years, but Latinos still earned a small percentage of credentials conferred in STEM.
- **Latinos earned credentials in STEM at a relatively small number of institutions.** At the undergraduate level, many institutions identified as Hispanic-Serving Institutions (HSIs).
- **Latino degree attainment in STEM is concentrated at the baccalaureate level.**
- **Institutions can award a handful of degrees to Latinos and still rank among the top 25 at the graduate level.**
- **Latinos working in STEM are concentrated in lower paying jobs.**
- **Latino representation is higher among STEM service than professional occupations.**

OPPORTUNITIES FOR ACTION

Colleges and employers have opportunities to implement outreach, engagement, completion, and workforce pathways strategies targeting the Latino community.

Action by institutions:

- Partner with K-12 schools in Latino communities to target students early and develop an interest in STEM.
- Engage Latino alumni for mentoring Latino students and sharing job opportunities.
- Develop opportunities for Latino students to engage in research and develop a professional identity early.
- Align training to skills with high demand, adding value for Latino students and the employer.

Action by employers:

- Partner with institutions to target Latino students in K-12 and create knowledge about STEM opportunities.
- Provide internship and fellowship opportunities to Latino students.
- Provide mentoring between employees and local Latino university students.
- Recruit employees from the institutions where Latinos are graduating.

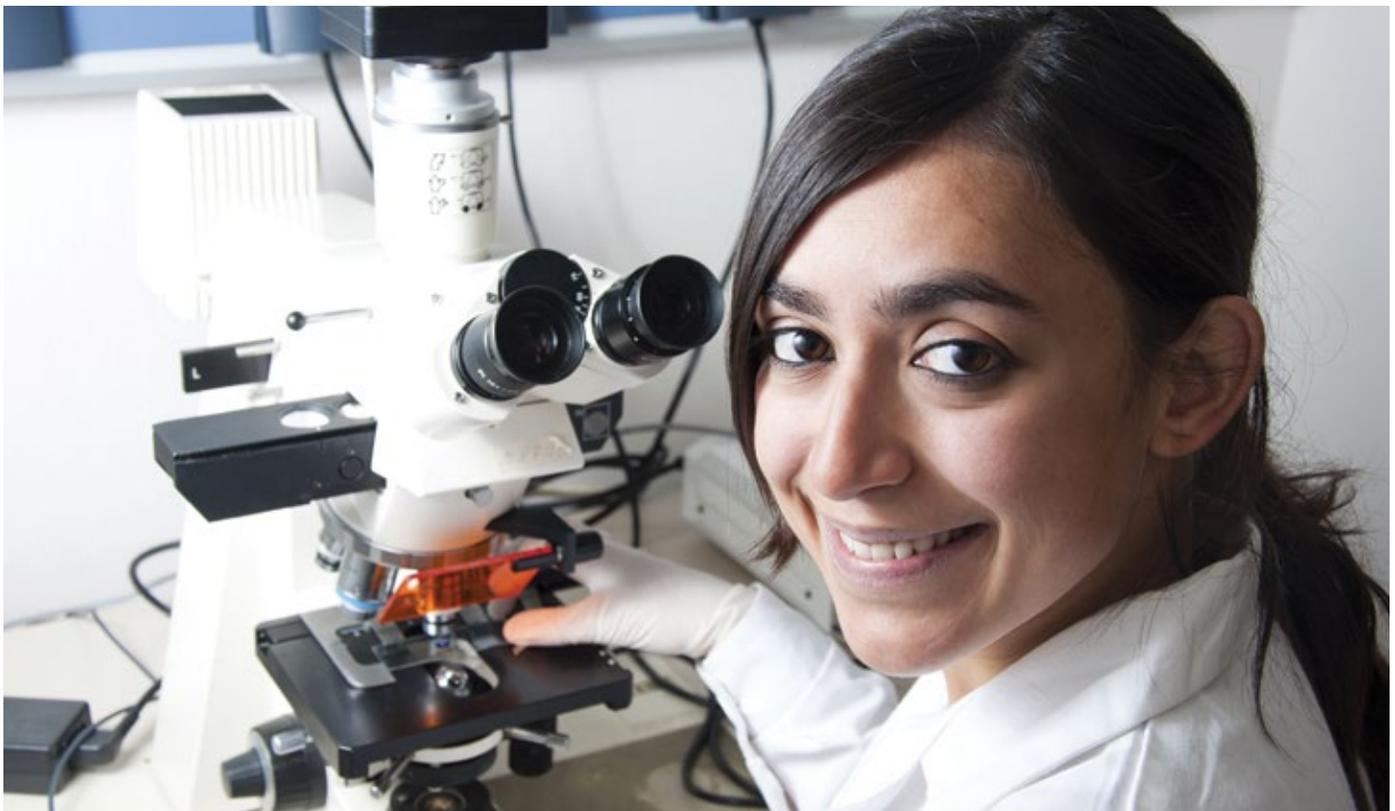
INTRODUCTION

Occupations in the fields of Science, Technology, Engineering, and Mathematics (STEM) are projected to grow faster than the overall average for all sectors. Between 2012-2022, the U.S. Bureau of Labor Statistics estimates STEM employment to increase 13 percent, an increase of approximately 1 million newly created jobs.¹ Workforce projections lend a sense of urgency to increase STEM degree attainment, particularly amongst Latinos, the nation's fastest growing student population.

This brief examines the current condition of Latinos in the STEM workforce, as well as the institutions graduating Latinos in 2012-13. Identifying the institutions graduating the most Latinos in STEM for recruitment and examining evidence-based institutional efforts to graduate Latinos in these fields is one tactical strategy to meet workforce needs.

This brief has four goals:

1. Increase awareness of Latinos graduating with degrees in occupational growth areas important to our current and future workforce;
2. Respond to those interested in recruiting Latinos with post-secondary credentials but do not know where to find them;
3. Highlight the institutions and their efforts in graduating Latinos; and,
4. Encourage employers to do more to engage the Latino community.



LATINOS AND THE STEM WORKFORCE

According to the U.S. Bureau of Labor Statistics, occupations in STEM are projected to grow by 2022. However, the salary scale varies between professional and service occupations. Consider the following:

- Between 2012 and 2022, total employment is projected to increase by 11% (15.6 million jobs).² By sector, occupations in computers and mathematics are projected to increase 18%, life, physical, and social sciences to increase 10%, and architecture and engineering occupations to increase 7%.³
- Professional STEM occupations, on average, have higher projected growth than STEM service occupations. Projected growth of professional STEM occupations include architectural and engineering managers (61%), information security analysts (37%), and biomedical engineers (27%). Service occupations include computer programmers (8%), engineering technicians (1%), and electrical, electronics, and electromechanical assemblers occupations (-7%).⁴

Concurrent with the projected growth in the STEM workforce, the Latino population is projected to continue growing; and more so than other racial/ethnic groups. Therefore, Latinos completing certificates and degrees in STEM will be vital for the STEM workforce.

Consider the following facts on STEM employment and salaries specific for Latinos:

Latinos represent a small percentage of those employed in STEM, and are more likely to be employed in lower paying occupations.

- In 2014, Latino labor force participation overall was generally in lower paying jobs, including those in STEM.⁵ Hispanics represented 23% of those employed in electrical, electronics, and electromechanical assembler occupations and 5% of those employed as electrical engineers.⁶ [Figure 1]

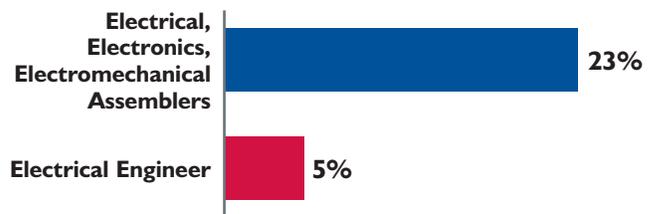
Salaries for STEM service occupations are lower than those of STEM professional occupations.

- Four of the top 20 occupations in the U.S. with the highest median annual pay in 2012 were in STEM professions that require postsecondary degrees: petroleum engineers, architectural and engineering managers, and computer and information systems managers.⁷ These professional STEM occupations require a bachelor's degree and have median annual pay of over \$120,000.

Examples of STEM Workforce by sector and occupation type		
	Professional Occupation	Service Occupation
Science	Biochemists & Biophysicists Chemists	Biological Technicians Chemical Technicians
Technology	Information Security Analysts Software Developer	Computer Support Specialist Computer Programmer
Engineering	Electrical Engineer Nuclear Engineer	Electrical, Electronics, & Electromechanical Assemblers Mechanical Engineering Technicians
Math	Mathematician Statistician	Mathematical Technicians Surveyors

Source: Bureau of Labor Statistics, US Department of Labor. *Employment and wages by science, technology, engineering, and math (STEM) occupations and detailed occupations, May 2013*. 2014.

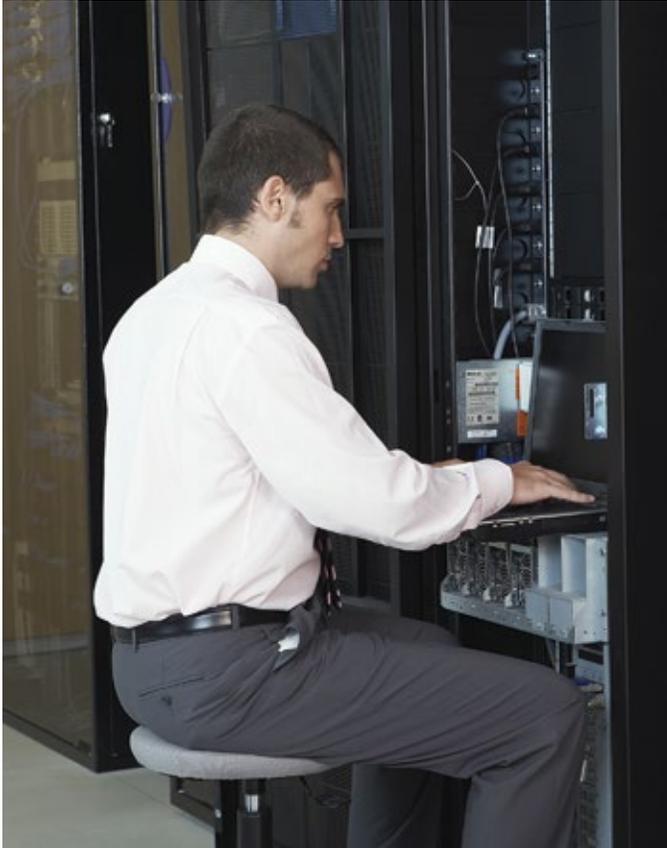
FIGURE 1: Representation of Latinos in select STEM occupations, 2014



Source: Bureau of Labor Statistics, U.S. Department of Labor. *Household Data, Annual Averages, Table 11: Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity*. 2015.

- STEM service occupations, including electrical and electronic engineering technicians, mechanical engineering technicians, and computer support specialists, have lower median salaries than professional STEM occupations. Median salary for a STEM service occupation can range from \$40,000 to \$75,000.⁸ Although these salaries are within the national median, they are considered lower paying within STEM. The entry-level education required for these STEM service occupations is an associate degree.

CREDENTIALS EARNED BY LATINOS IN STEM



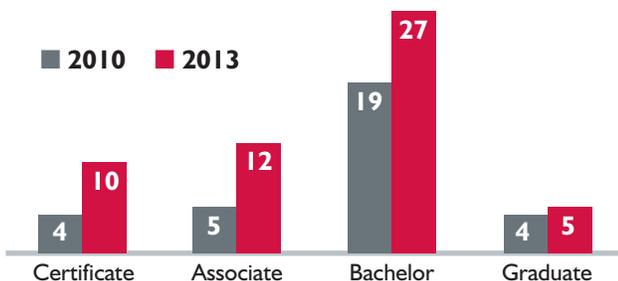
The number of Latinos earning credentials in STEM has increased over the last four years.

- Latinos represented a slightly higher percentage of those who earned degrees in STEM over the last four years. In 2010, Latinos earned 8% of credentials conferred in STEM; in 2013, Latinos earned 9% of credentials conferred in STEM.
- While Latinos increased credentials earned in STEM across all academic levels, Latinos earned certificates at a higher rate than any other type of credential. Between 2009-10 and 2012-13, the number of certificates earned by Latinos in STEM increased 160%, compared to associate (138%), bachelor (44%), and graduate degrees (74%).
- In the last four years, Latinos more than doubled the number of certificates earned in STEM. Between 2010 and 2013, the number of certificates earned by Latinos in STEM increased 160% (from 3,655 to 9,502 certificates). [Figure 2; Table 2]

Latinos graduating with credentials in STEM in 2012-13 were concentrated at the baccalaureate level.

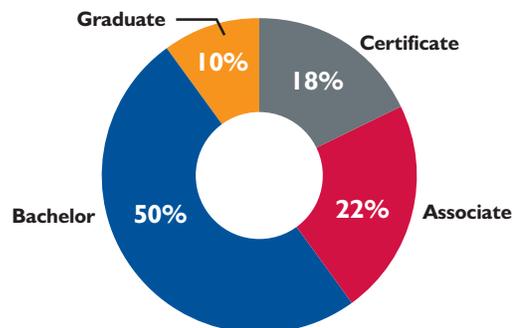
- In 2012-13, half of all STEM credentials earned by Latinos were bachelor degrees. Only 10% were graduate degrees. [Figure 3; Table 3]

FIGURE 2: Total number of credentials earned by Hispanics in STEM, by academic level, 2010 and 2013 (in thousands)



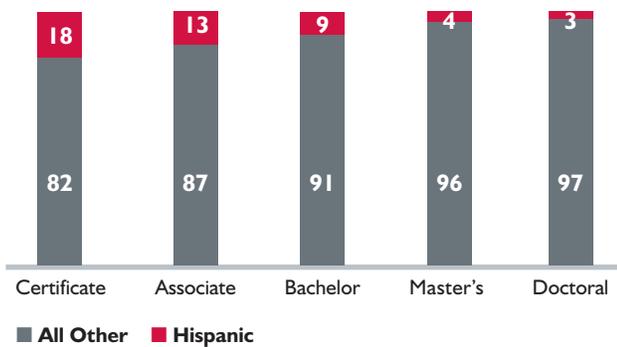
Source: *Excelencia in Education* analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2009-10 and 2012-13, Completions Surveys.

FIGURE 3: Credentials earned by Latinos in STEM, by academic level, 2013



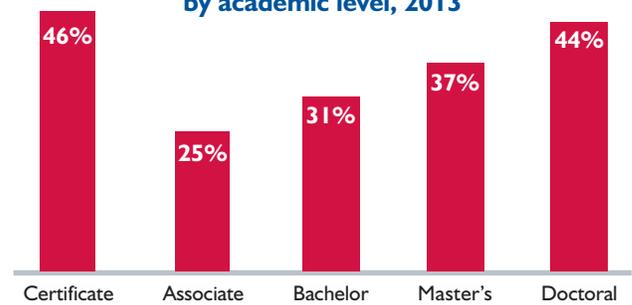
Source: *Excelencia in Education* analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

FIGURE 4: Representation of Hispanics and all others in STEM credentials earned, by academic level, 2013



Source: *Excelencia in Education* analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

FIGURE 5: Percentage of credentials earned by Hispanics in STEM at the top 25 institutions, by academic level, 2013



Source: *Excelencia in Education* analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

Although Latinos earned more STEM credentials at the baccalaureate level, they had higher levels of representation at the certificate and associate levels when compared to all students.

- Hispanics earned 9% of all degrees and certificates awarded in 2013 for STEM. [Table 3]
- Of all students earning degrees in STEM, Latinos had higher representation in completions at the certificate (18%) and associate (13%) levels than at the baccalaureate (9%) and graduate (3-4%) levels. [Figure 4; Table 4]

Latinos earned credentials in STEM at a concentrated number of institutions.

- A small number of institutions conferred degrees in STEM to Latinos in 2013. Across academic levels, 2% of all institutions (91) awarded one-third of all STEM credentials to Latinos in 2013.
- Almost one half of all certificates (46%) and doctoral degrees (44%) earned in STEM were received at 25 institutions. [Figure 5; Table 5]
- In 2013, the majority of the top 25 institutions (13) conferring bachelor degrees to Latinos in STEM were identified as Hispanic-Serving Institutions (HSIs).

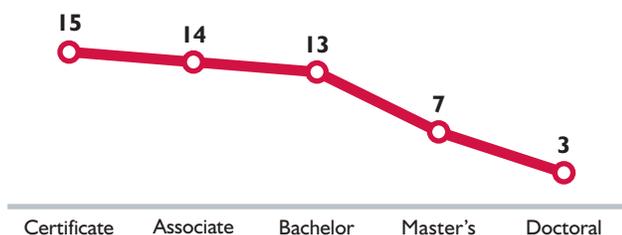
- Sector:** Of the top 25 institutions, the majority across academic levels were public institutions.
- Geography:** The top 25 institutions at each academic level conferring credentials to Latinos were primarily located in three states—California, Florida, Texas—and Puerto Rico.

HSIs rank among the top 25 institutions awarding credentials to Latinos across academic levels.

Hispanic-Serving Institutions (HSIs) are defined by federal law as not-for-profit, degree granting institutions with a 25% or more total undergraduate Hispanic full-time equivalent (FTE) student enrollment. Institutions defined as HSIs are eligible to apply for additional federal funding.

- The number of Hispanic-Serving Institutions (HSIs) in the top 25 decreases through the education pipeline, with higher numbers of HSIs at the undergraduate level than the graduate level. The majority of institutions at the certificate (15), associate (14), and baccalaureate (13) levels were HSIs, compared to master's (7) and doctoral (3) levels. [Figure 6]
- HSIs awarding STEM credentials are located in a small number of states. The majority of HSIs in the top 25 across academic levels were located in California, Florida, Texas, and Puerto Rico.

FIGURE 6: Number of HSIs in the top 25 institutions graduating Latinos in STEM, by academic level, 2012-13



Source: *Excelencia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

Institutions can graduate a handful of Latinos and still rank among the top 25 awarding graduate degrees to Latinos.

- At the graduate level, institutions graduating less than 50 Latino students were still in the top 25 of institutions graduating Latinos in 2013. The top institution in 2012-13 conferring doctoral degrees in STEM graduated 28 Latinos; and those conferring only nine degrees to Latinos were still in the top 25.
- The top 25 institutions at the doctoral level awarded 44% of all doctoral degrees in STEM earned by Latinos in 2012-13. [Table 5]

The top institution awarding certificates or degrees to Latinos in STEM for 2012-13 by academic level, is as follows:

Academic Level	Top Institution Awarding to Latinos	Sector
Certificate	Instituto de Banca y Comercio Inc. (PR)	2 year Private For-Profit
Associate	South Texas College (TX)	4 year Public
Bachelor	University of Puerto Rico-Mayaguez (PR)	4 year Public
Master's	Universidad Politécnica de Puerto Rico (PR)	4 year Private Not-For-Profit
Doctoral	Stanford University (CA)	4 year Private Not-For-Profit

Source: *Excelencia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

Several of the top 25 institutions graduating Latinos in STEM in 2012-13 stand out at multiple academic levels. For example:

Certificate & Associate

- El Paso Community College (TX)
- Lee College (TX)
- Miami Dade College (FL)
- South Texas College (TX)
- San Jacinto Community College (TX)
- Valencia College (FL)

Baccalaureate & Graduate

- Arizona State University-Tempe (AZ)
- University of California-Davis (CA)
- University of California-Irvine (CA)
- University of California-Los Angeles (CA)
- Florida International University (FL)
- University of Florida (FL)
- University of Puerto Rico-Mayaguez (PR)
- The University of Texas at El Paso (TX)
- The University of Texas-Pan American (TX)

Academic level	2009-10	2012-13	% Increase
Certificate	3,655	9,502	160
Associate	5,016	11,935	138
Bachelor	18,613	26,876	44
Master's	2,822	4,313	53
Doctoral	695	839	21
Total	30,801	53,465	74

Source: *Excelencia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2009-10 and 2012-13, Completions Surveys.

TABLE 3. Credentials earned by Latinos in STEM, by academic level: 2012-13

Academic level	Hispanic	% of total
Certificate	9,502	18
Associate	11,935	22
Bachelor	26,876	50
Graduate		
Master's	4,313	8
Doctoral	839	2
Total	53,465	100

Source: *Excelexia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

TABLE 4. Total degrees and certificates awarded to Hispanics and to all students in STEM, by academic level: 2012-13

ALL STUDENTS			
Academic level	Hispanic	Total	% Hispanic
Certificate	9,502	53,260	18
Associate	11,935	88,419	13
Bachelor	26,876	300,849	9
Master's	4,313	95,851	4
Doctoral	839	26,729	3
Total	53,465	565,108	9

Source: *Excelexia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.

TABLE 5. Total certificates and degrees awarded to Hispanics in STEM by top 25 institutions and all institutions, by academic level: 2012-13

Hispanics: Top 25 vs. All Institutions			
Academic level	Total by Top 25	Total by all institutions	% of all Hispanic at Top 25
Certificate	4,335	9,502	46
Associate	2,975	11,935	25
Bachelor	8,352	26,876	31
Master's	1,590	4,313	37
Doctoral	366	839	44
Total	17,618	53,465	33

Source: *Excelexia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2012-13, Completions Survey.



LATINAS IN STEM

Among the Latino population, Latinas enroll in postsecondary education at higher rates than their male counterparts. While their enrollment levels remain at higher rates than Latino males, Latinas are less likely to graduate in STEM. Outreach to increase the number of Latinas who pursue STEM majors and occupations is crucial for filling the expanding workforce demands in these fields. The following provides a quick snapshot of Latinas' college enrollment, educational attainment, and workforce representation in STEM.

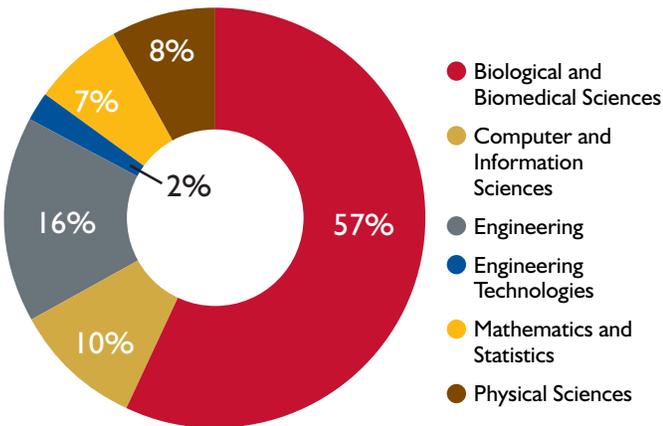
College Enrollment

- Fewer Latinas reported intending to major in STEM in college than Latino males. In 2012, 37% of Latina freshmen surveyed at four-year colleges reported they intended to major in science and engineering fields, compared to 48% of Latino males.⁹
- More Latinas reported intending to major in STEM compared to 10 years ago. In 2012, 37% of Latinas reported intending to major in STEM fields in college, an increase from 32% in 2003.¹⁰

Educational Attainment

- Latinas represent a small percentage of all women who earned bachelor degrees in STEM. In 2012-13, 9% of all women who earned bachelor degrees in STEM were Latinas, compared to Whites (61%), Asians (14%), African Americans (9%), and other groups (8%).¹¹
- Latinas earned more bachelor degrees in biological and biomedical sciences than other STEM fields. In 2012-13, of all Latinas with degrees in STEM, 57% had degrees in biological and biomedical sciences, 16% in engineering, 10% in computer and information sciences, 8% in physical sciences, 7% in mathematics and statistics, and 2% in engineering technologies.¹² [Figure 7]
- Latinas earned more overall bachelor degrees than Latino males, but less in STEM. In 2012-13, Latinas earned 60% of all bachelor degrees awarded to Latinos, but only 37% in STEM fields.¹³
- Latinas earned more bachelor degrees in biological and biomedical sciences than Latino males. Of all bachelor degrees earned by Latinos in 2012-13, Latinas earned 60% of degrees awarded in biological and biomedical sciences.¹⁴
- Latinas earned fewer bachelor degrees in computer science, engineering, and mathematics than Latino males. Of all bachelor degrees earned by Latinos in 2012-13, Latinas earned 45% of degrees awarded in mathematics, 21% of degrees in engineering, and 20% in computer science.¹⁵
- Latinas were significantly underrepresented in the number of all STEM degrees earned, across academic levels. In 2012-13, Latinas earned 3% of all bachelor degrees, 1% of all master's degrees, and 1% of all doctoral degrees earned in STEM.¹⁶

FIGURE 7: Latina Bachelor Degrees in STEM Fields – 2012



Source: NCES, *Digest of Education Statistics 2014*, Table 322.50: *Bachelor's degrees conferred to females by postsecondary institutions, by race/ethnicity and field of study: 2011-12 and 2012-13*. 2014.



Workforce

- Hispanics have lower representation in science and engineering occupations compared to other groups, and higher representation as African Americans. In 2013, 6% of those working in science and engineering were Hispanics and 5% were African Americans, compared to Whites (70%) and Asians (17%).¹⁷
- Latinas with STEM degrees were less likely to work in science and engineering compared to Latino males.

In 2013, 13% of Latinas with STEM degrees worked in science and engineering occupations, while 26% of Latino males with STEM degrees worked in science and engineering.¹⁸

- Latinas were slightly more likely to be STEM faculty than Latino males. In 2010, Latinas with PhDs in science and engineering represented 5% of faculty at colleges and universities, while Latino males represented 4%.¹⁹

WHAT WORKS FOR LATINO STUDENTS IN STEM

Excelencia in Education conducted informational interviews with representatives from a small and select group of institutions among the top in graduating Latinos. Institutional leaders indicated the importance of STEM pathways and stakeholder collaboration in STEM education for increasing overall student success. Institutional and industry cooperation are considered to be particularly valuable because they contribute to degree completion in two key ways:

- Diversification and multiplication of entry points more effectively capture a broader section of society. Community colleges are a common entry point for Latino students.
- Corresponding exchanges of resources increase institutional capacity to effectively serve and educate students.

Collaborative partnerships can do much to attract, retain, and graduate Latino students in STEM disciplines. Leveraging the strength of individual partners through collaboration expands entry points to STEM education and contributes to effectively serving Latino students. Other strategies implemented in successful STEM pathway designs include:

STEM PATHWAY STRATEGY	WHY IT WORKS
College Readiness	Supporting policies that enhance K-12 STEM competency works to attract new talent to the fields and is crucial to academic and workforce preparation.
Outreach	Targeted outreach to students throughout the educational pipeline allows students to learn about the many career options within STEM and stimulate interest in pursuing a post-secondary education.
Institutional Commitment	Commitment from leadership is needed to ensure sustainability of collaborative programs and efforts to increase student success.
Institutional Partnerships	Partnerships between community colleges and surrounding universities allow students to transfer and continue their education. Through these partnerships, academic advising to transfer students assist with matriculation and enrolling in courses.
Advising	Academic advisors make sure students stay on track to graduate through creating academic plans and informing students of available financial aid. Advising and support from faculty also play a crucial role in students' retention.
Mentorship	Peer-mentorship programs allow students to build networks of support and can help improve retention, especially for transfer students.
Faculty	Avenues for faculty development provide opportunities to keep courses exciting and current through the use of new pedagogies that use technology and problem-based learning.
Academic Support	Supplemental instruction and on-campus centers dedicated to increasing success in math and science provide students additional academic support in STEM disciplines.
Research & Fellowships	Undergraduate research opportunities are absolutely crucial to establishing a professional identity early. Fellowships allow students to earn on-the-job experience and technical skills needed for the workforce after graduation. These opportunities can empower individuals to move along educational levels and careers paths.
Industry Cooperation	Industry cooperation is needed to ensure students receive relevant training that can transition well into the workplace. Efforts to align training to specific skills demanded by employers can hold value for both employee and employer.

Institutions of higher education across the country have programs with evidence of effectiveness in graduating Latino students in STEM. While there are many programs at the high school, community-based, and industry-level, the following are a sample of evidence-based programs or departments recognized among the top 25 institutions conferring degrees to Latinos in STEM. More information about these and other programs can be found in *Excelexencia* in Education's online Growing What Works database at: www.edexcelencia.org/growing-what-works.

COLLEGE READINESS

Mathematics Intensive Summer Session (MISS): California State University- Fullerton, CA Since 1990, MISS has provided an intensive mathematics experience to females from underrepresented ethnic groups. High school girls attend MISS courses in college preparatory mathematics at the Algebra II level and above during the summer. Assigned to teams of four, students have the opportunity to build collaborative learning skills. Latinas are the largest ethnic group served, accounting for 57% of the participants. As a result of participating in MISS, follow-up questionnaires indicate that 99% of the students we are able to go on to attend college, 34% attend California State University, Fullerton, and 15% have chosen a STEM major. (<http://edexcelencia.org/program/mathematics-intensive-summer-session-miss>)

OUTREACH

Diversity Programs in Engineering: Cornell University, NY The Diversity Programs in the Engineering office operates programs at the undergraduate, graduate, and faculty levels to facilitate the outreach, recruitment, retention, and overall success of underrepresented minorities, women, and other underrepresented groups in engineering. Since its founding, Diversity Programs in Engineering has helped to significantly expand the enrollment and graduation of underrepresented minority and female undergraduate and graduate students. Latinos represent over 20% of the undergraduate and 30% of the graduate students supported by initiatives of Diversity Programs in Engineering. (<http://edexcelencia.org/program/diversity-programs-engineering>)

ACADEMIC SUPPORT

Computing Alliance of Hispanic-Serving Institutions (CAHSI): University of Texas at El Paso, TX CAHSI is a consortium of ten Hispanic-Serving Institutions with goals to: (1) increase the number of Hispanic students who enter the computing workforce with advanced degrees; (2) support the retention and advancement of Hispanic students and faculty in computing; and (3) develop and sustain competitive education and research programs. These efforts include the adoption

THE GEORGIA INSTITUTE OF TECHNOLOGY

Top 25 ranking-Master's: 13th

Measures of Success

- **Undergraduate Research** – More than one-third of engineering undergraduates participate in research.
- **Office of Hispanic Initiatives** – The Office of Hispanic Initiatives (OHI) at Georgia Tech serves as a key resource contributing to Latino student success. As the central resource for all members of the Georgia Tech Latino community, OHI collaborates with undergraduate and graduate admissions to directly increase the number of Hispanics pursuing STEM degrees.

Examples of Replicable Practices

- **Institutional Partnerships** – Administrators in the College of Engineering point to collaborative relationships with community colleges as part of their success. Through the Regents Engineering Transfer Program (RETP), Georgia Tech awards one-third of its engineering degrees to graduates who were not original matriculates. Community colleges Georgia and Florida have taken part in the program.
- **Academic Support** –Academic support strategies used to increase Latino enrollment in STEM, retention, and completion include customized campus visits, financial aid phone-a-thons, student-faculty mentoring, scholarships and fellowships through the Goizueta Foundation, and supporting Latino student organizations.

EL PASO COMMUNITY COLLEGE (EPCC)

Top 25 ranking-Associate: 4th

Top 25 ranking-Certificate: 25th

Measures of Success

■ **Skills Training** – The Computer/Information Science programs offered at EPCC prepares and develops graduates with the skills and knowledge necessary to qualify as junior programmers, data support specialists, network specialists, security specialists, and computer operators.

Examples of Replicable Practices

■ **Institutional Partnerships** – A robust partnership with the University of Texas – El Paso (UTEP) ensures academic preparation leads to seamless transfer to its

four-year computer science program. Counselors from UTEP are accessible to all EPCC students to facilitate matriculation, and peer mentors assist in student acclimation. College officials complement the strength of its technical programs and ease of transferability as factors contributing to Latino student success.

■ **Fellowships** – Opportunities for employment through Student Technology Services serve as a successful tool for retention. Through these opportunities, students earn income while learning and practicing computer skills. Currently, the program hires, trains, and manages approximately 85 – 110 students for positions on campus and with industry partners.

of a pre-computer science course that actively engages students and prepares them for mathematics, engineering, and computer science courses; Peer-Led Team Learning activities and Affinity Research Groups that broaden participation in undergraduate research. Mentor-Grad mentors students in activities that prepare them for graduate studies and onto the professoriate. (<http://edexcelencia.org/program/computing-alliance-hispanic-serving-institutions-cahsi>)

Biology Undergraduate Scholars Program (BUSP):

University of California-Davis, CA The program was initiated with the goal of increasing the performance and persistence of URM students in biology majors at the University of California-Davis (UCD). Over time, BUSP goals have evolved to include preparing students to pursue post-baccalaureate programs, such as doctoral studies and/or human and veterinary medicine studies. BUSP is a large-scale, professional development program for underrepresented minority (URM) students in life sciences majors. The program takes a holistic approach to assisting students to thrive academically and personally through supplemental education in chemistry, calculus, and biology; through sound academic and personal advising by experienced professional staff and faculty advisors; and,

through practical experience in the discipline afforded by internships in research laboratories. Since its inception in 1988, BUSP has provided academic enrichment activities to over 1,000 students, of whom 46% are Latino. (<http://edexcelencia.org/program/biology-undergraduate-scholars-program-busp>)

ARMAS (Achieving in Research Math and Science)

Center: New Mexico Highlands University, NM The ARMAS Center opened in 2009 to support students majoring in Science, Technology, Engineering, and Math (STEM) disciplines at NMHU, as well as the faculty who teach these courses. The mission of ARMAS is to provide comprehensive support to STEM students and faculty, recognizing our historical commitment as a Hispanic-Serving Institution. The ARMAS Center's overarching goal is to increase STEM student retention and graduation through collaborative-based and innovative best practices, including STEM fellowship opportunities and the provision of supplemental instruction in STEM gateway courses. Of NMHU's main campus STEM majors (312), 60% are served by ARMAS and 51% are Latino. In 2012-2013, 438 students registered and visited the center 8,202 times. (<http://www.edexcelencia.org/program/armas-achieving-research-math-and-science-center>)

APPENDIX I. TOP 25 INSTITUTIONS GRADUATING LATINOS BY ACADEMIC LEVEL

The following tables include the top 25 institutions awarding credentials to Latinos for 2012-13 at the certificate, associate, baccalaureate, master’s, and doctoral levels. Each list includes information on location, sector, identification of Hispanic-Serving Institutions (HSI), as well as a summary. In the case of a tie between institutions for the top 25 institutions awarding degrees to Latinos, institutions are arranged in alphabetical order. The institution sector key is as follows:

Additional information on data

The lists of top 25 institutions conferring degrees to Latinos by academic level are based solely on the numbers of certificates or degrees awarded in 2012-13. Thus, the institutions are different for each academic level. The lists included in the brief do not provide any information on the quality or productivity of the institutions. This would require additional and more detailed analysis outside of the scope of this project. Further, the lists count awards, not an unduplicated headcount of recipients.

The top 25 were created with data on certificates and degrees conferred from the Integrated Postsecondary Education Data System (IPEDS), Institutional Characteristics and Completions Survey, 2012-13, from the National Center for Education Statistics (NCES), U.S. Department of Education. These data are reported by every institution of higher education participating in Title IV (federal student financial aid programs). Therefore, these lists do not exclude for-profit institutions or those that only offer certificate programs. Certificates of less than two years are included to reflect the diverse postsecondary options available to those preparing for the current workforce needs of the country. Doctoral degrees reflect degrees earned at the doctoral-

KEY	SECTOR
1	4-year public
2	2-year public
3	4-year private not-for-profit
4	2-year private not-for-profit
5	4-year private for-profit
6	2-year private for-profit

research/scholarship level. Institutions located in the United States and Puerto Rico were used in this analysis.

Appendix 2: STEM CIP Codes, provides a complete list of the STEM programs identified in the IPEDS dataset for 2012-13, aggregated to identify the top institutions conferring degrees to Latinos in 2012-13.

The identification of institutions as HSIs, is based on analysis by *Excelencia* in Education using the IPEDS, Institutional Characteristics and Enrollment Survey, 2012-13, from NCES, U.S. Department of Education. For more information about HSIs and the entire 2012-13 HSI List, visit *Excelencia* in Education’s Hispanic-Serving Institutions Center for Policy and Practice (HSI-CP2) at <http://www.edexcelencia.org/hsi-cp2>

CERTIFICATES AWARDED TO LATINOS							
LESS THAN TWO YEAR COURSE OF STUDY							
	Institution	State	HSI	Sector	Total Degrees Awarded	Total Degrees: Hispanics	% Total Degrees: Hispanics
1	Instituto de Banca y Comercio Inc	PR		6	915	915	100
2	South Texas College	TX	*	1	372	352	95
3	Miami Dade College	FL	*	1	445	327	73
4	Wyotech-Long Beach	CA		6	473	301	64
5	United Education Institute-Huntington Park	CA		6	387	211	55
6	Valencia College	FL	*	1	703	203	29
7	Seminole State College of Florida	FL		1	842	171	20
8	San Jacinto Community College	TX	*	2	356	161	45
9	Laredo Community College	TX	*	2	141	136	96
10	College of Business and Technology-Flagler	FL		6	140	135	96
11	Los Angeles Trade Technical College	CA	*	2	216	131	61
12	Lee College	TX	*	2	316	122	39
13	College of Business and Technology-Hialeah	FL		6	121	121	100
14	Florida Career College-Miami	FL		5	362	110	30
15	Refrigeration School Inc	AZ		6	442	108	24
16	Coastal Bend College	TX	*	2	249	107	43
17	Lone Star College System	TX	*	2	283	99	35
18	Central New Mexico Community College	NM	*	2	251	89	35
19	Universidad Metropolitana	PR	*	3	85	85	100
20	Rio Salado College	AZ		2	479	83	17
21	Santiago Canyon College	CA	*	2	232	78	34
22	City College of San Francisco	CA		2	393	75	19
23	Tarrant County College District	TX	*	2	325	74	23
24	St Philip's College	TX	*	2	108	71	66
25	El Paso Community College	TX	*	2	84	70	83
Total for Top 25:					8,720	4,335	50

SUMMARY

Of the top 25 institutions where Latinos earned certificates (less than 2 years) in STEM in 2012-13,

- The majority (17) were public institutions
- 15 were Hispanic-Serving Institutions (HSIs)
- Texas had the most institutions (9), followed by Florida (6)
- Hispanic representation ranged from 17% to 100%, but averaged 50% overall

ASSOCIATE DEGREES AWARDED TO LATINOS

	Institution	State	HSI	Sector	Total Degrees Awarded	Total Degrees: Hispanics	% Total Degrees: Hispanics
1	South Texas College	TX	*	1	357	328	92
2	San Jacinto Community College	TX	*	2	628	264	42
3	University of Phoenix-Online	AZ		5	2,848	242	8
4	El Paso Community College	TX	*	2	216	185	86
5	Instituto Tecnológico de Puerto Rico-Recinto de Guayama	PR	*	2	127	127	100
6	CUNY New York City College of Technology	NY	*	1	375	119	32
7	Texas State Technical College-Harlingen	TX	*	2	143	118	83
8	Technical Career Institutes	NY		6	278	106	38
9	Instituto Tecnológico de Puerto Rico-Recinto de Manati	PR	*	2	96	96	100
10	ITT Technical Institute-Houston West	TX		5	235	96	41
11	San Antonio College	TX	*	2	198	94	47
12	ITT Technical Institute-National City	CA		5	327	93	28
13	Lee College	TX	*	2	289	92	32
14	Texas State Technical College-Waco	TX		2	501	92	18
15	Mech-Tech College	PR		6	89	89	100
16	Universidad Del Turabo	PR	*	3	89	89	100
17	ITT Technical Institute-Orange	CA		5	189	86	46
18	Miami Dade College	FL	*	1	153	85	56
19	ITT Technical Institute-Houston North	TX		5	232	85	37
20	ITT Technical Institute-San Antonio	TX		5	178	84	47
21	El Camino Community College District	CA	*	2	223	83	37
22	Valencia College	FL	*	1	293	82	28
23	ITT Technical Institute-San Bernardino	CA		5	188	81	43
24	CUNY Borough of Manhattan Community College	NY	*	2	310	80	26
25	College of Southern Nevada	NV		1	342	79	23
	Total for Top 25:				8,904	2,975	33

SUMMARY

Of the top 25 institutions where Latinos earned associate degrees in STEM in 2012-13,

- 15 were public institutions
- 14 were Hispanic-Serving Institutions (HSIs)
- Puerto Rico had the most institutions (10), followed California and Puerto Rico (4 each)
- Hispanic representation ranged from 8% to 100%, but averaged 33% overall

BACHELOR DEGREES AWARDED TO LATINOS							
	Institution	State	HSI	Sector	Total Degrees Awarded	Total Degrees: Hispanics	% Total Degrees: Hispanics
1	University of Puerto Rico-Mayaguez	PR	*	1	952	951	100
2	Florida International University	FL	*	1	1,169	784	67
3	The University of Texas at El Paso	TX	*	1	642	521	81
4	Texas A & M University-College Station	TX		1	2,813	444	16
5	The University of Texas-Pan American	TX	*	1	458	381	83
6	Universidad Politecnica de Puerto Rico	PR	*	3	377	377	100
7	University of Florida	FL		1	2,207	369	17
8	The University of Texas at Austin	TX		1	2,597	350	13
9	The University of Texas at San Antonio	TX	*	1	782	332	42
10	University of Central Florida	FL		1	1,688	326	19
11	California State Polytechnic University-Pomona	CA	*	1	1,262	320	25
12	University of Houston	TX	*	1	1,250	284	23
13	Arizona State University-Tempe	AZ		1	1,884	282	15
14	University of California-San Diego	CA		1	2,734	275	10
15	University of South Florida-Main	FL		1	1,456	243	17
16	University of California-Riverside	CA	*	1	1,125	243	22
17	University of Phoenix-Online	AZ		5	2,844	223	8
18	University of California-Davis	CA		1	2,330	223	10
19	University of Arizona	AZ		1	1,392	222	16
20	University of California-Irvine	CA		1	1,844	214	12
21	University of California-Los Angeles	CA		1	2,289	208	9
22	University of Puerto Rico-Rio Piedras	PR	*	1	258	206	80
23	University of New Mexico-Main	NM	*	1	559	195	35
24	New Mexico State University-Main	NM	*	1	515	191	37
25	Inter American University of Puerto Rico-Bayamon	PR	*	3	189	188	99
	Total for Top 25:				35,616	8,352	23

SUMMARY

Of the top 25 institutions where Latinos earned bachelor degrees in STEM in 2012-13,

- 13 were Hispanic-Serving Institutions (HSIs)
- California and Texas had the most institutions (6 each)
- 22 were 4-year public institutions
- Hispanic representation ranged from 8% to 100%, but averaged 23% overall

MASTER'S DEGREES AWARDED TO LATINOS							
	Institution	State	HSI	Sector	Total Degrees Awarded	Total Degrees: Hispanics	% Total Degrees: Hispanics
1	Universidad Politecnica de Puerto Rico	PR	*	3	181	181	100
2	Florida International University	FL	*	1	305	115	38
3	The University of Texas at El Paso	TX	*	1	203	93	46
4	University of Puerto Rico-Mayaguez	PR	*	1	127	89	70
5	University of Southern California	CA		3	1,745	86	5
6	Johns Hopkins University	MD		3	1,470	80	5
7	University of South Florida-Main	FL		1	636	75	12
8	Stanford University	CA		3	1,269	66	5
9	University of Florida	FL		1	1,233	62	5
10	The University of Texas-Pan American	TX	*	1	92	57	62
11	Texas A & M University-College Station	TX		1	921	55	6
12	The University of Texas at San Antonio	TX	*	1	266	55	21
13	Georgia Institute of Technology-Main	GA		1	1,338	54	4
14	New Jersey Institute of Technology	NJ		1	760	54	7
15	University of Michigan-Ann Arbor	MI		1	1,650	49	3
16	Columbia University in the City of New York	NY		3	1,643	47	3
17	University of Maryland-University College	MD		1	1,054	45	4
18	University of Central Florida	FL		1	432	43	10
19	Barry University	FL		3	161	43	27
20	The University of Texas at Austin	TX		1	561	41	7
21	Cornell University	NY		3	1,004	41	4
22	Nova Southeastern University	FL	*	3	216	41	19
23	Massachusetts Institute of Technology	MA		3	812	40	5
24	Arizona State University-Tempe	AZ		1	802	39	5
25	Boston University	MA		3	944	39	4
	Total for Top 25:				19,825	1,590	8

SUMMARY

Of the top 25 institutions where Latinos earned master's degrees in STEM in 2012-13,

- 15 were public universities
- 7 were Hispanic-Serving Institutions (HSIs)
- Florida had the most institutions (6), followed by Texas (5)
- Hispanic representation ranged from 3% to 100%, but averaged 8% overall

DOCTORAL DEGREES AWARDED TO LATINOS

	Institution	State	HSI	Sector	Total Degrees Awarded	Total Degrees: Hispanics	% Total Degrees: Hispanics
1	Stanford University	CA		3	569	28	5
2	University of California-Berkeley	CA		1	515	26	5
3	The University of Texas at El Paso	TX	*	1	50	23	46
4	University of California-Davis	CA		1	399	19	5
5	University of California-Irvine	CA		1	286	18	6
6	University of California-Los Angeles	CA		1	380	17	4
7	University of Florida	FL		1	405	16	4
8	University of Michigan-Ann Arbor	MI		1	511	16	3
9	University of California-San Diego	CA		1	329	16	5
10	Texas A & M University-College Station	TX		1	399	15	4
11	Massachusetts Institute of Technology	MA		3	478	14	3
12	University of Puerto Rico-Mayaguez	PR	*	1	27	13	48
13	Johns Hopkins University	MD		3	325	13	4
14	University of Puerto Rico-Rio Piedras	PR	*	1	28	13	46
15	University of Southern California	CA		3	272	12	4
16	Columbia University in the City of New York	NY		3	253	12	5
17	University of Washington-Seattle	WA		1	348	12	3
18	University of Illinois at Urbana-Champaign	IL		1	441	12	3
19	University of Rochester	NY		3	165	12	7
20	Pennsylvania State University-Main	PA		1	368	10	3
21	Purdue University-Main	IN		1	423	10	2
22	University of Wisconsin-Madison	WI		1	359	10	3
23	Rice University	TX		3	129	10	8
24	University of Kansas	KS		1	124	10	8
25	California Institute of Technology	CA		3	225	9	4
	Total for Top 25:				7,808	366	5

SUMMARY

Of the top 25 institutions where Latinos earned doctoral degrees in STEM in 2012-13,

- 3 were Hispanic-Serving Institutions (HSIs)
- The majority (17) were public universities
- California had the most institutions (8), followed by Texas (3)
- Hispanic representation ranged from 2% to 48%, but averaged 5% overall

APPENDIX 2. STEM CIP CODES

The following lists the Science, Technology, Engineering, and Math (STEM) programs identified in the IPEDS dataset for 2012-13, aggregated to identify the top institutions conferring credentials to Latinos in STEM fields.

SCIENCE

26 – Biological and Biomedical Sciences

- 26.01 – Biology, General
- 26.02 – Biochemistry, Biophysics and Molecular Biology
- 26.03 – Botany/Plant Biology
- 26.04 – Cell/Cellular Biology and Anatomical Sciences
- 26.05 – Microbiological Sciences and Immunology
- 26.07 – Zoology/Animal Biology
- 26.08 – Genetics
- 26.09 – Physiology, Pathology and Related Sciences
- 26.10 – Pharmacology and Toxicology
- 26.11 – Biomathematics, Bioinformatics, and Computational Biology
- 26.12 – Biotechnology
- 26.13 – Ecology, Evolution, Systematics, and Population Biology
- 26.14 – Molecular Medicine
- 26.15 – Neurobiology and Neurosciences
- 26.99 – Biological and Biomedical Sciences, Other

40 – Physical Sciences

- 40.01 – Physical Sciences
- 40.02 – Astronomy and Astrophysics
- 40.04 – Atmospheric Sciences and Meteorology
- 40.05 – Chemistry
- 40.06 – Geological and Earth Sciences/Geosciences
- 40.08 – Physics
- 40.10 – Materials Sciences
- 40.99 – Physical Sciences, Other

41 – Science Technologies/Technicians

- 41.00 – Science Technologies/Technicians, General
- 41.01 – Biology Technician/Biotechnology Laboratory Technician
- 41.02 – Nuclear and Industrial Radiologic Technologies/Technicians
- 41.03 – Physical Science Technologies/Technicians
- 41.99 – Science Technologies/Technicians, Other

TECHNOLOGY

11 – Computer and Information Sciences and Support Services

- 11.01 – Computer and Information Sciences, General
- 11.02 – Computer Programming
- 11.03 – Data Processing
- 11.04 – Information Science/Studies
- 11.05 – Computer Systems Analysis
- 11.06 – Data Entry/Microcomputer Applications
- 11.07 – Computer Science
- 11.08 – Computer Software and Media Applications
- 11.09 – Computer Systems Networking and Telecommunications
- 11.10 – Computer/Information Technology Administration and Management
- 11.99 – Computer and Information Sciences and Support Services, Other

ENGINEERING

14 – Engineering

- 14.01 – Engineering, General
- 14.02 – Aerospace, Aeronautical and Astronautical Engineering
- 14.03 – Agricultural Engineering
- 14.04 – Architectural Engineering
- 14.05 – Biomedical/Medical Engineering
- 14.06 – Ceramic Sciences and Engineering
- 14.07 – Chemical Engineering
- 14.08 – Civil Engineering
- 14.09 – Computer Engineering
- 14.10 – Electrical, Electronics and Communications Engineering
- 14.11 – Engineering Mechanics
- 14.12 – Engineering Physics
- 14.13 – Engineering Science
- 14.14 – Environmental/Environmental Health Engineering
- 14.18 – Materials Engineering
- 14.19 – Mechanical Engineering
- 14.20 – Metallurgical Engineering
- 14.21 – Mining and Mineral Engineering
- 14.22 – Naval Architecture and Marine Engineering
- 14.23 – Nuclear Engineering
- 14.24 – Ocean Engineering
- 14.25 – Petroleum Engineering
- 14.27 – Systems Engineering
- 14.28 – Textile Sciences and Engineering
- 14.32 – Polymer/Plastics Engineering
- 14.33 – Construction Engineering
- 14.34 – Forest Engineering
- 14.35 – Industrial Engineering
- 14.36 – Manufacturing Engineering
- 14.37 – Operations Research
- 14.38 – Surveying Engineering
- 14.39 – Geological/Geophysical Engineering
- 14.40 – Paper Science and Engineering
- 14.41 – Electromechanical Engineering
- 14.42 – Mechatronics, Robotics, and Automation Engineering

- 14.43 – Biochemical Engineering
- 14.44 – Engineering Chemistry
- 14.45 – Biological/Biosystems Engineering
- 14.99 – Engineering, Other

15 – Engineering Technologies and Engineering-related Fields

- 15.00 – Engineering Technology, General
- 15.01 – Architectural Engineering Technologies/Technicians
- 15.02 – Civil Engineering Technologies/Technicians
- 15.03 – Electrical Engineering Technologies/Technicians
- 15.04 – Electromechanical Instrumentation and Maintenance Technologies/Technicians
- 15.05 – Environmental Control Technologies/Technicians
- 15.06 – Industrial Production Technologies/Technicians
- 15.07 – Quality Control and Safety Technologies/Technicians
- 15.08 – Mechanical Engineering Related Technologies/Technicians
- 15.09 – Mining and Petroleum Technologies/Technicians
- 15.10 – Construction Engineering Technologies
- 15.11 – Engineering-Related Technologies
- 15.12 – Computer Engineering Technologies/Technicians
- 15.13 – Drafting/Design Engineering Technologies/Technicians
- 15.14 – Nuclear Engineering Technologies/Technicians
- 15.15 – Engineering-Related Fields
- 15.16 – Nanotechnology
- 15.99 – Engineering Technologies/Technicians, Other

MATH

27 – Mathematics and Statistics

- 27.01 – Mathematics
- 27.03 – Applied Mathematics
- 27.05 – Statistics
- 27.99 – Mathematics and Statistics, Other

ENSURING AMERICA'S FUTURE BY INCREASING LATINO COLLEGE COMPLETION

An emphasis on college degree attainment by the Obama Administration, and major foundations including the Bill & Melinda Gates Foundation and the Lumina Foundation for Education, reflects the growing recognition that increasing college completion is key to future prosperity. Given the magnitude of the Latino



proportion of the American society, the current educational attainment levels for Latinos, and America's need for a skilled workforce, increasing Latino college degree attainment is vital.

According to the U.S. Census, only 23 percent of Hispanics in the United States had earned an associate degree or higher in 2013. In comparison, 46 percent of whites, 33 percent of blacks, and 59 percent of Asians had earned an associate or higher.²⁰ Further, demographic predictions show Latinos will represent 20 percent of the U.S. population by 2025.²¹ In combination, these facts create a compelling call to action.

To meet this challenge, *Excelencia* in Education is shaping a policy strategy with measures, tactics, and strategies focused on young adults generally, and Latino students specifically. Through the initiative Ensuring America's Future by Increasing Latino College Completion (EAF) launched in 2010, *Excelencia* in Education established a baseline for informing, benchmarking and organizing stakeholder efforts to increase Latino college completion at the national and state levels. For the U.S. to regain the top ranking in the world for college degree attainment, Latinos will need to earn 5.5 million more degrees by 2020.

Ensuring America's Future analysis and research including an interactive national profile of Latinos and college completion

with top five institutions enrolling and graduating Latinos nationally, and by state may be found at www.edexcelencia.org/ensuring-americas-future/research

Further, through Ensuring America's Future, *Excelencia* in Education engaged national, regional and state organizations and institutions in seven sectors—business and workforce, educational associations and policy groups, government and elected officials, institutions and systems of higher education, Latino advocacy, media and philanthropy. In 2015 *Excelencia* in Education is organizing the next phase for collective impact to increase Latino college completion.

Accelerating Latino college degree completion requires: (1) intentionality in serving this group of students; (2) delineation of degree completion goals and measures of progress; (3) commitment to practices and policies that produce positive results; and, (4) clarity about the federal, state and institutional policy environments that affect Latino student success. There is a role for all stakeholders committed to increasing U.S. college degree completion.

FOR MORE INFORMATION PLEASE VISIT: www.edexcelencia.org/ensuring-americas-future

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