NACME

NATIONAL ACTION COUNCIL FOR MINORITIES IN ENGINEERING

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The **National Action Council for Minorities in Engineering, Inc.** (NACME) was founded in 1974 to ensure American competitiveness in a flat world by leading and supporting the national effort to expand U.S. capability through increasing the number of successful African American, American Indian, and Latino young women and men in science, technology, engineering, and mathematics (STEM) education and careers. NACME Alumni hold leadership positions in industry, medicine, law, education, and government. With funding from corporate and individual donors, NACME has supported over 24,000 students with more than $142 million in scholarships and support. Currently NACME provides scholarship support to more than 1,300 college of engineering students through a national network of 51 partner institutions. NACME's STEM education strategy incorporates a continuum of programs and activities from middle school through workforce entry. Visit us at **nacme.org**.

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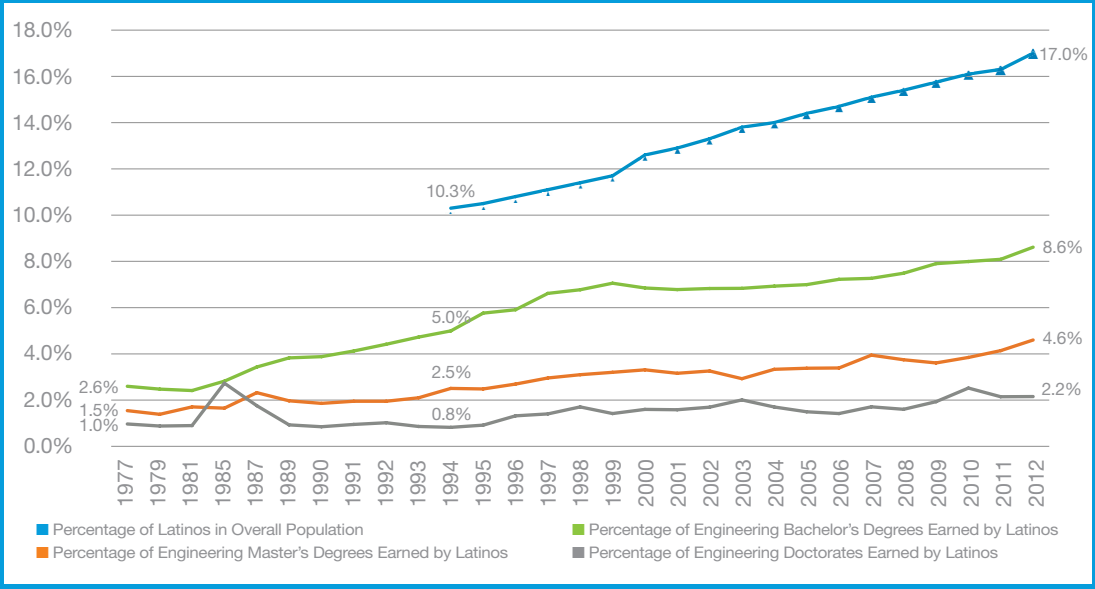
LATINOS IN ENGINEERING

Latinos are the fasting growing ethnic group in the United States, rising from 14.6 million in 1980[1] to more than 53 million in 2012. By 2050, they are expected to grow to more than 102 million, and comprise 27 percent of the overall population[2]. While their exponential growth in the population has led to a higher percentage of engineering degrees being earned by this group, the growth for Latinos in this field is considerably slower than the overall population trends, as seen in Figure 1.

Figure 1.
Percentage of Engineering Degrees Earned by Latinos Compared to Percentage of Latinos in Overall Population[3]



There are several reasons why Latinos are underrepresented in engineering education and the engineering workforce.

Limited Success in Early Education

The Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K:2011) is a longitudinal study that is following a nationally representative sample of students from their kindergarten year to the spring of 2016, when most of them are expected to be in fifth grade. During the first year of data collection, when all children were in kindergarten, data was collected in the fall and spring from more than 18,000 children enrolled in 970 schools. As seen in Table 1, Latino children ranked lower than their peers on both their English and math scores. The National Research Council highlights several barriers that help to explain this early deficit. Data shows that Latino children are the least likely to be enrolled in preschool, and Latino and Black children entering kindergarten are more likely to come from families with one or more of the following risk factors: having a mother who did not

Table 1.
Mean reading and mathematics scale scores for first time kindergarten students in the 2010-11 school year[4]

	Reading		Math	
Child's Race/Ethnicity	**Fall 2010**	**Spring 2011**	**Fall 2010**	**Spring 2011**
White, non-Hispanic	36.6	51.6	31.7	44.6
Black, non-Hispanic	32.9	47.1	25.8	37.5
Hispanic	**30.3**	**45.3**	**24.7**	**37.8**
Asian, non-Hispanic	40.5	54.0	34.5	46.0
Native Hawaiian or other Pacific Islander, non-Hispanic	32.0	48.5	27.9	41.2
American Indian or Alaska Native, non-Hispanic	31.1	46.0	26.3	40.2
Two or more races, non-Hispanic	36.1	51.0	30.5	43.2

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LATINOS IN ENGINEERING (continued)

complete high school; living in a single-parent home; living in a low-income or welfare-dependent household; and/or having parents who primarily speak a language other than English at home[5].

Lack of Progress in High School

The achievement gap seen in the early childhood years continues into middle and high school. Math and science teachers with three or less years of experience are far more prevalent in high minority schools; 22 percent of math teachers and 25 percent of science teachers in these high minority middle and high schools were novices in 2009, compared to 13 percent and 15 percent, respectively, in low minority schools[6]. On average, Latino students earn the least amount of advanced math and science course credits in high school, as seen in Table 2.

Latino students are also the least likely group to take college entrance examinations, and apply to college[5]. High school completion is also a challenge, as 64.3 percent of Latinos age 25 and over had completed high school in 2011, compared to 87.6 percent for all groups[7]. A large part of this disparity stems from the high dropout rate of foreign-born Latinos; however, the dropout rate for U.S.-born Latinos is still higher than that of their white and black peers[5].

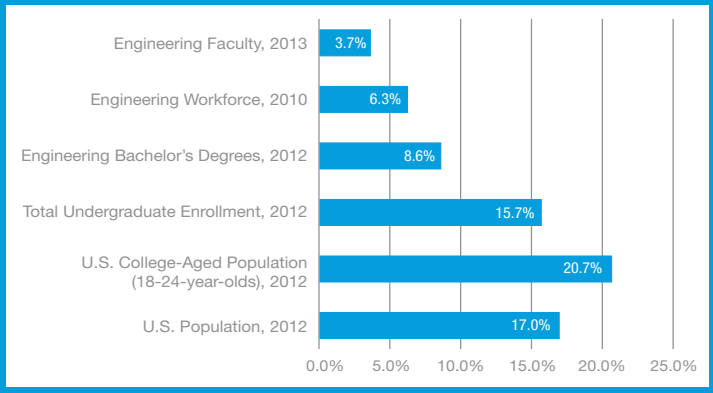
Table 2.
Advanced mathematics and science credits earned by high school graduates, 2009[6]

	Advanced Mathematics Course Credits	Advanced Science Course Credits
White	1.8	2.0
Black	1.4	1.6
Hispanic	**1.3**	**1.5**
Asian/Pacific Islander	2.4	2.8

Higher Enrollment Rates at Two-Year Institutions

The immediate college enrollment of Latino high school completers has risen sharply in recent years, from 42.3 percent in 1999 to 70.3 percent in 2012[8]. Most of this growth has been concentrated at community colleges. Fifty-six percent of Latino undergraduates are enrolled in two-year institutions[9]. Only 20 percent of Latino STEM bachelor's degree recipients first earned their associate's degree, suggesting this is an underutilized pathway for STEM degree production[10].

Figure 2.
Latinos in Engineering[11]



Policy Recommendations

While the production of Latino engineers has increased over time, this growth does not mirror the overall population growth seen for this group. Community colleges serve as an important pathway for Latino high school completers, so more intervention efforts, such as the Beyond the Dream initiative, need to be funded at these institutions to expand the pathway for Latinos in engineering. Additionally, college affordability greatly impacts this group, as Latinos with high and low undergraduate debt totals are less likely than Black, Asian, and White students with similar debt totals to enroll in graduate or professional school. Policies that reduce the need to borrow money for college will likely increase the percentage of Latinos who pursue graduate studies[12]. Finally, early intervention efforts are needed such as the Algebra by 7th Grade (Ab7G) Initiative, which is endorsed by NACME as a tangible outcome of the February 2013 meeting of minority STEM organizations hosted by the Office of Science and Technology Policy (OSTP).

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Endnotes

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