The Computing Alliance of Hispanic-Serving Institutions (CAHSI): Enhancing the Success of Hispanic Undergraduate Students in Computing Disciplines

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Abstract:
Various cultural, social, educational, and economic barriers contribute to the underrepresentation of Hispanics in computer science education and the technical workforce. The Computing Alliance of Hispanic-Serving Institutions (CAHSI) is a partnership of ten institutions with the objective of recruiting, retaining, and advancing Hispanics in computing fields. CAHSI provides comprehensive support to students within and beyond the classroom to redress the barriers faced by Hispanics in technical fields. This mixed-methods study incorporates institutional records analysis, surveys, and interviews to assess the impact of CAHSI’s systematic approach on students’ academic achievement and educational and career aspirations. CAHSI’s efforts to support undergraduates at critical transition points have increased Hispanic students’ graduation rates in computing at a time of national decline in computing baccalaureates, and positively influenced students’ aspirations to pursue graduate education.

Demands for equity of and equal access to opportunity along with concerns about the scientific workforce have contributed to recent calls to increase the representation of minorities and women in science, technology, engineering, and mathematical (STEM) fields (Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development, 2000). The underrepresentation of Hispanics in the computing field is particularly alarming, given the recent and continued growth of the Hispanic population in
According to the U.S. Higher Education Opportunity Act of 2008, a Hispanic-Serving Institution is defined as a public or private nonprofit degree-granting institution that has at least 25% Hispanic full-time equivalent enrollment. CAHSI has grown to 10 institutions in 2009–2010, though all data reported in this paper come from the original seven schools. The original seven CAHSI institutions are: University of Texas at El Paso, Texas A&M at Corpus Christi, New Mexico State University, California State University at Dominguez Hills, University of Houston Downtown, Florida International University, and University of Puerto Rico at Mayaguez.

Issues of equity and access are not the only concerns driving efforts to increase the representation of Hispanics in computing and technical careers. The U.S. faces a potential shortage of skilled technical workers in the coming decade, particularly for computer software applications engineers and network systems and data communications analysts (Lacey & Wright, 2009). According to the U.S. Bureau of Labor Statistics, over 750,000 new computing jobs will be created by 2018, representing an increase of over 22% (Lacey & Wright, 2009). The fast-growing population of young Hispanic adults represents a large, untapped pool of potential workers in the computing and information technology industries. In other words, the technology industry needs Hispanics and other underrepresented groups to fulfill growing employment demands, while Hispanics need the technology industry as an avenue for successful employment in high-status careers.

However, current graduation rates of Hispanic baccalaureates in the computing field are not high enough to meet this growing demand for technical workers. The growth of the Hispanic population is concentrated in particular regions, suggesting that colleges and universities in these regions may hold the greatest potential for increasing the representation of Hispanics in computing. Hispanic college students are more likely to graduate from a small number of higher educational institutions, largely consisting of Hispanic-Serving Institutions (HSIs) (Dowd, Malcolm, & Macias, 2010). The majority of Hispanic

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