Physics Majors in the US: Trends and Implications

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US Population

Source: US Census
Physics / STEM Bachelor Degrees

Source: IPEDS Completion Survey
Physics / STEM Bachelor Degrees
Population Normed

Source: IPEDS Completion Survey
Physics PhDs
Domestic Fraction

Source: IPEDS Completion Survey
Physics PhDs
Number by Origin

Source: IPEDS Completion Survey
Initial PhD Employment by Type

Source: AIP Statistical Research Center
Initial BS Employment by Type

Source: AIP Statistical Research Center
Joint Task Force on Undergraduate Physics Programs

An effort by the American Physical Society and the American Association of Physics Teachers to answer the question:

What skills and knowledge should the next generation of undergraduate physics degree holders possess to be well prepared for a diverse set of careers?

Providing guidance to physicists on:
- Revising undergraduate curriculum
- Educating a diverse student population
- Improving content, pedagogy, professional skills, and student engagement

Report due in 2016

For more information or to provide input, contact:
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compadre.org/jtupp
Hispanic Science/Math Majors

US College-age Hispanic population

Sources: IPEDS Completion survey by race, US Census
African American Science/Math Majors

US College-age African American population

Sources: IPEDS Completion survey by race, US Census

www.aps.org
Percentage of African American Physics Majors from HBCUs/BSIs

Source: IPEDS Completion Survey
Underrepresentation in Physics

Source: IPEDS, US Census
Bridge Program Achievements

- 25 URM Students placed in 5 Bridge sites and 6 Affiliated sites
- ~30 additional students each year would erase the gap in achievement
- Project partially funded only 8 students this year – demonstrating long-term sustainability of the model
- 95% retention rate so far
- Adding 2 additional Bridge sites (March 2015)
GRE Physics Scores: Impact of Cutoff Scores

Source: ETS

- Fraction (F)
- Fraction (M)

- 0.25 (F)
- 0.46 (M)
- 650

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Admissions Bias?

GRE Scores for Physics Subject Test

<table>
<thead>
<tr>
<th>Before Graduate Admission</th>
<th>After Graduate Admission</th>
<th>Graduate GPA</th>
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<td>3.6 3.7 3.8</td>
<td>3.6 3.7 3.8</td>
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Source: PhD Recipients from Oregon State University
Physics GRE: Impact of Cutoff Scores

Source: ETS
Goal: Increase URM degree completion in physics

- APS identifies / connects mentors
- Mentors recruit mentees (locally)
- Provide an annual gathering of mentors and mentees to:
  - Spread best-practices; conduct professional skills workshops; connect students and their mentors with others (9-10 October 2015, Florida International University, Miami, FL)
- Track student progress
- Math Alliance has developed a network of 350+ mentors providing local mentoring to 600+ undergraduates
- Provide merit-based honors
- Needs-based scholarship program
- Connect students with known mentors
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