

CSU Long Beach

8 March 2016

Long Beach, CA

APS Bridge Program: Program Objectives and Outcomes

Theodore Hodapp

Director of Education and Diversity

8.2 JOINT DIVERSITY STATEMENT

(Adopted by Council on November 16, 2008)

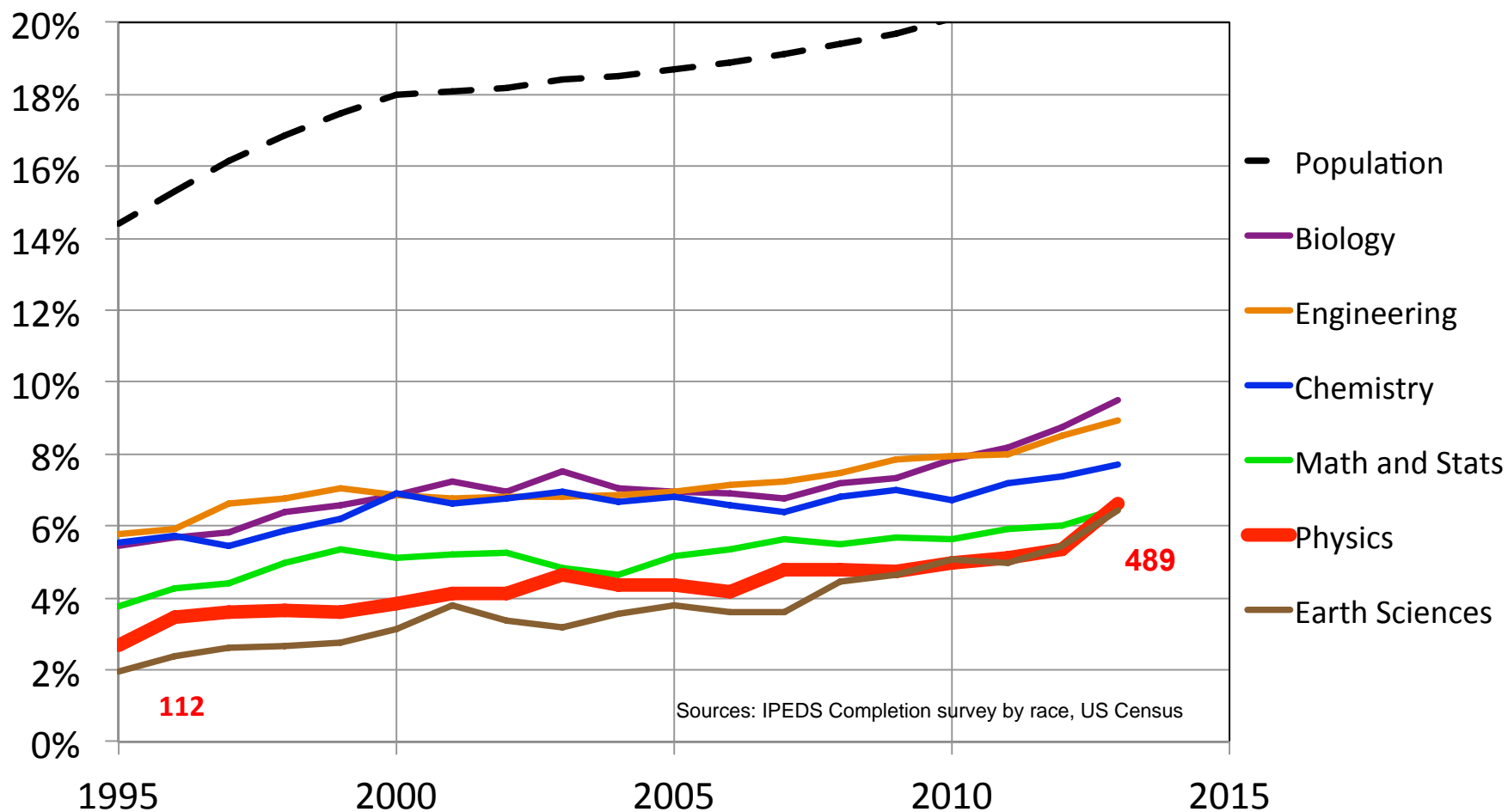
To ensure a productive future for science and technology in the United States, we must make physics more inclusive. The health of physics requires talent from the broadest demographic pool. Underrepresented groups constitute a largely untapped intellectual resource and a growing segment of the U.S. population.

Therefore, we charge our membership with increasing the numbers of underrepresented minorities in physics in the pipeline and in all professional ranks, with becoming aware of barriers to implementing this change, and with taking an active role in organizational and institutional efforts to bring about such change. We call upon legislators, administrators, and managers at all levels to enact policies and promote budgets that will foster greater diversity in physics. We call upon employers to pursue recruitment, retention, and promotion of underrepresented minority physicists at all ranks and to create a work environment that encourages inclusion. We call upon the physics community as a whole to work collectively to bring greater diversity wherever physicists are educated or employed.

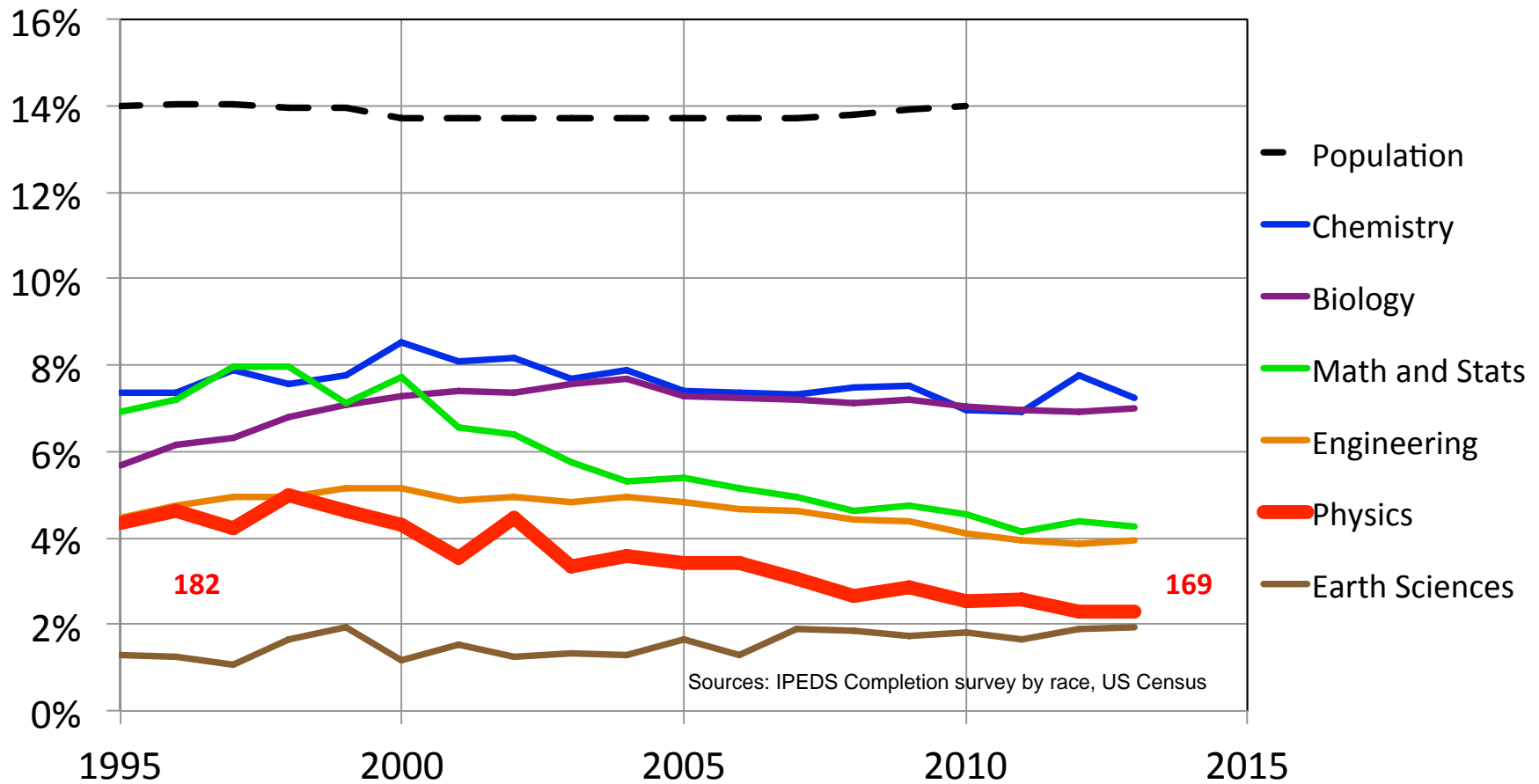
Bridge Program Timeline

- 2008 Initial conversations; APS Diversity Statement
- 2009 NSF pilot grant; conversations
- 2010 First conference (June); site visits
- 2011 Write and submit BP proposal
- 2012 Grant awarded (September)
- 2013 First bridge sites awarded (OSU, USF)
- 2014 Second round of sites (CSULB, FSU);
- 2015 Third round of sites (UCF, IU); establish Partnership Institutions; establish NMC; joint NMC/BP conference
- 2016 First Partnership Institution mini-grants
- 2019 First PhDs awarded

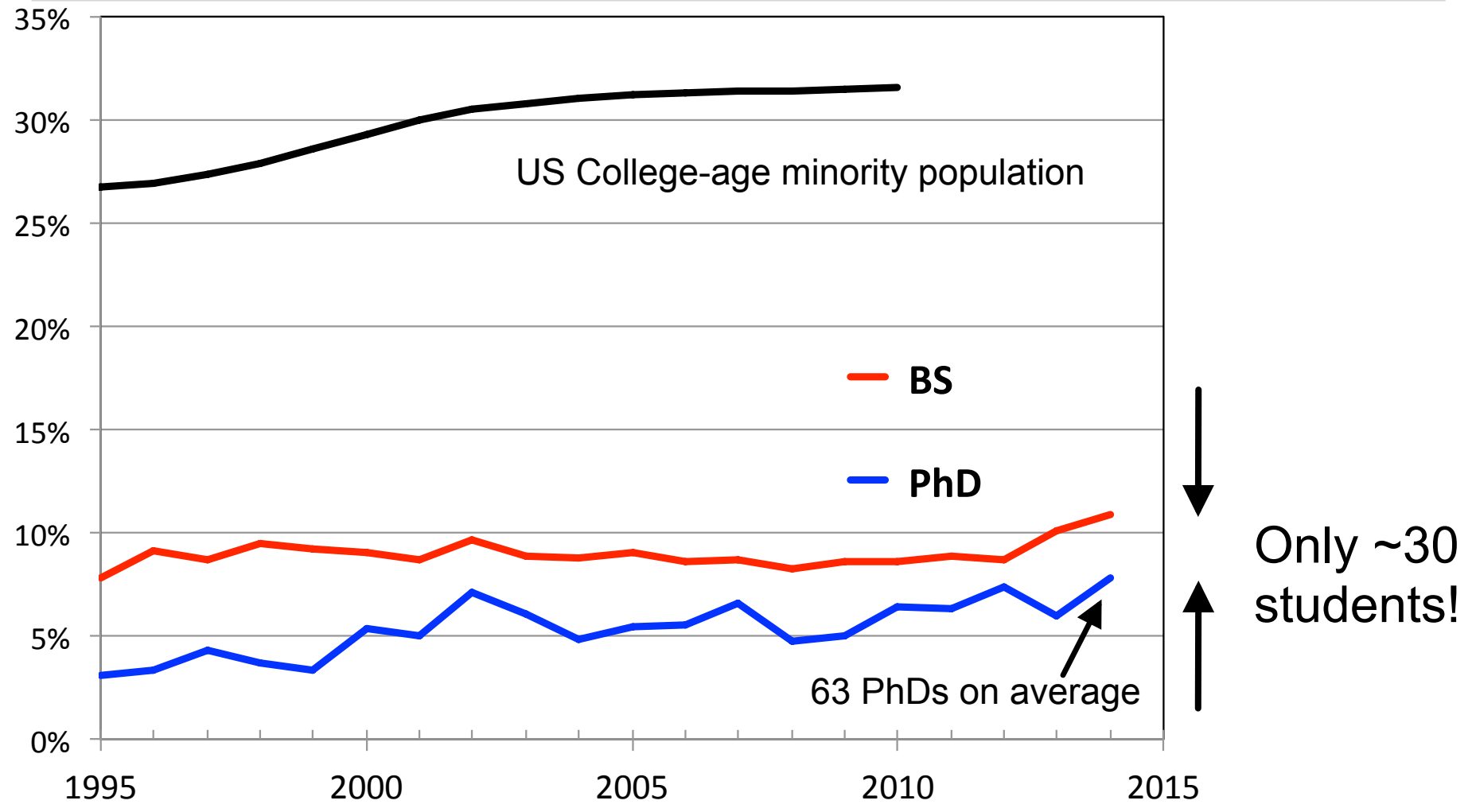
Hispanic American Bachelor Degrees



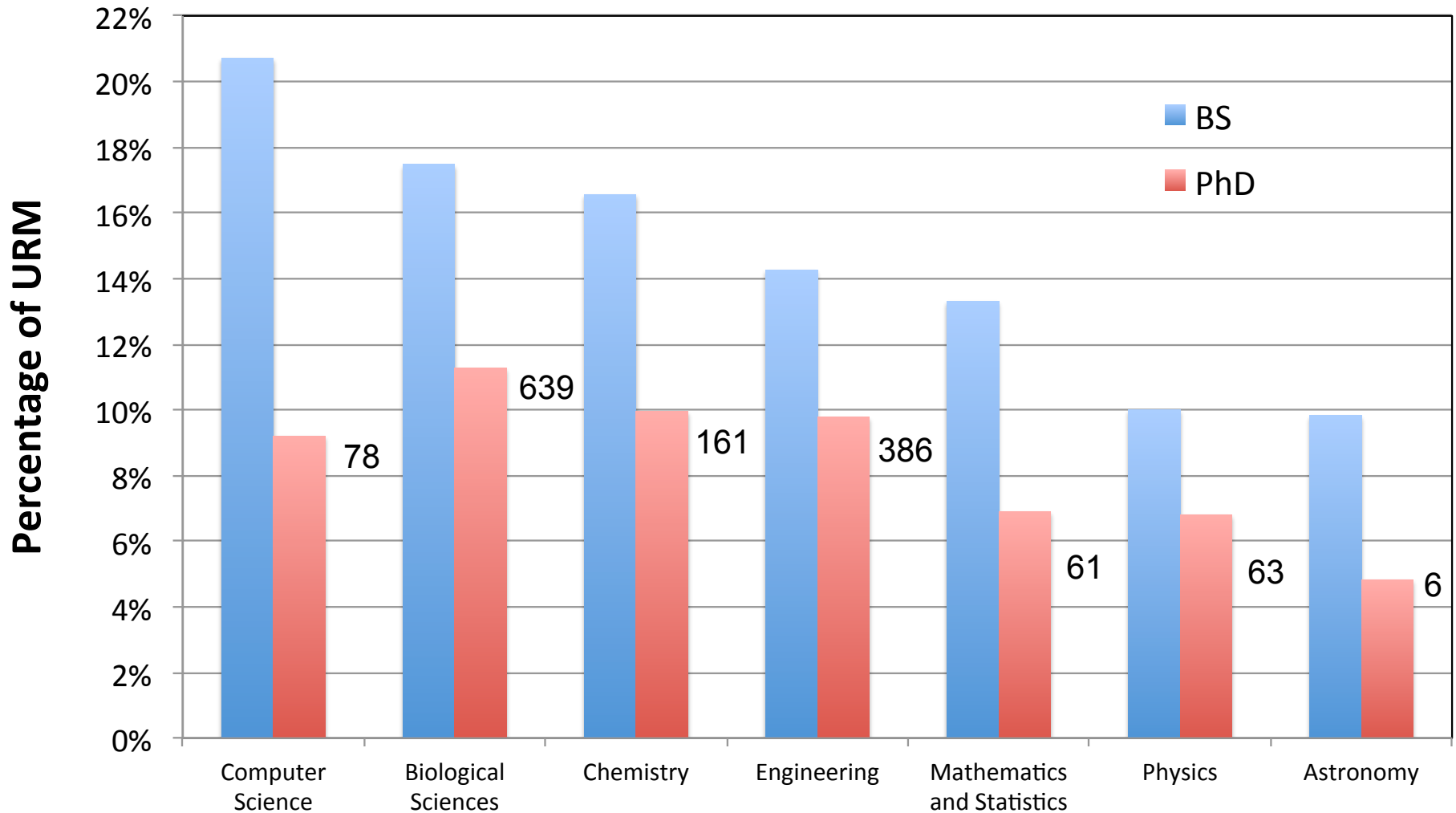
African American Bachelor Degrees



URM Physics PhDs to Minority Population



Bachelor and PhD STEM Degrees



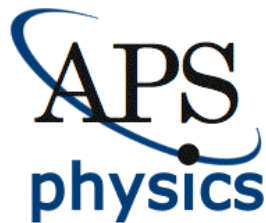
Leadership / Oversight

National Advisory Committee

- J.D. Garcia (Arizona)
- Yolanda George (AAAS)
- Paul Gueye (NSBP)
- Wendell Hill (UMCP)
- Anthony Johnson (**Chair**, UMBC)
- Brittany Kamai (Grad student)
- Ramon Lopez (UT Arlington)
- Luz Martinez-Miranda (NSHP)
- James Mathis (Grad student)
- Steve McGuire (Southern University)
- Ritchie Patterson (Cornell)

Funding

- NSF
- APS
- Bridge sites



Architect's Council

- Marcel Agüeros (Columbia)
- Ed Bertschinger (MIT)
- Andreas Bill (CSU Long Beach)
- Simon Capstick (Florida State)
- Cagliyan Kurdak (Michigan)
- Garrett Matthews (USF)
- Jon Pelz (Ohio State)
- Talat Rahman (UCF)
- Keivan Stassun (Fisk/Vanderbilt)
- Jon Urheim (Indiana)

Research / Assessment

- Geoff Potvin (FIU-Research advisor)
- Rachel Scherr (SPU-Project evaluator)

APS Staff

- **Geraldine Cochran** (Project Manager, Jan 2016)
- **Renee Michelle Goertzen** (IRB, Assessment)
- **Theodore Hodapp** (Project Director)
- **Asmaa Khatib** (Project Coordinator)
- **Arlene Modeste Knowles** (Project Management Team)
- **Monica Plisch** (Project Management Team)
- **Kathryne Woodle** (Project Manager)

APS Strategic Plan

Goal 2: To Better Serve the Physics Community

Objective 3: Education and Diversity:

- Coordinate and lead an innovative program to increase the number of underrepresented minorities obtaining a PhD in physics.

Bridge Program Design: Underlying Themes

- Focus on underrepresented minorities (Hispanic American, African American, Native American)
- Base components on published scholarship and operational successes of similar programs
- Design program to avoid “rearranging the deck chairs”
- Bring unique position of APS to bear on the problem
- Measurable outcomes must be immediately recognizable by an APS member as having significant value
- Must have significant national impact

APS Bridge Program: Key Features

- **Recruit** through graduate programs (unaccepted students), undergrad programs (promising students)
- **Establish** Bridge Sites (6):
 - Year 1: Advanced undergraduate or grad courses, introduction to grad-level research, active mentoring, progress monitoring, social integration into grad school ([Project funds](#))
 - Year 2: Take 1st year grad courses, apply to PhD program, research underway ([Department funds](#))
- **Place** additional students (at Partnership Institutions):
 - 46 graduate programs looked at “other” applications (2015), recruited additional students; No direct support, some travel
 - “COM approved” Partnership Institutions; national recognition of program
- **Monitor** student/site progress
- **Research**
- **Disseminate / Advocate**

Student Eligibility

- Bachelor's degree in physics or closely related discipline
- US citizen or permanent resident
- Either:
 - Applied but was not accepted
 - Did not apply to graduate program this year
- Be committed to improving diversity in physics
- Meet individual requirements of the institution
- Students may not be currently enrolled in a graduate program

We review applications AFTER April 15

Bridge Programs in Physics

APS Sites :

- Cal State Long Beach
- Florida State University
- Indiana University
- Ohio State University
- University of Central Florida
- University of South Florida

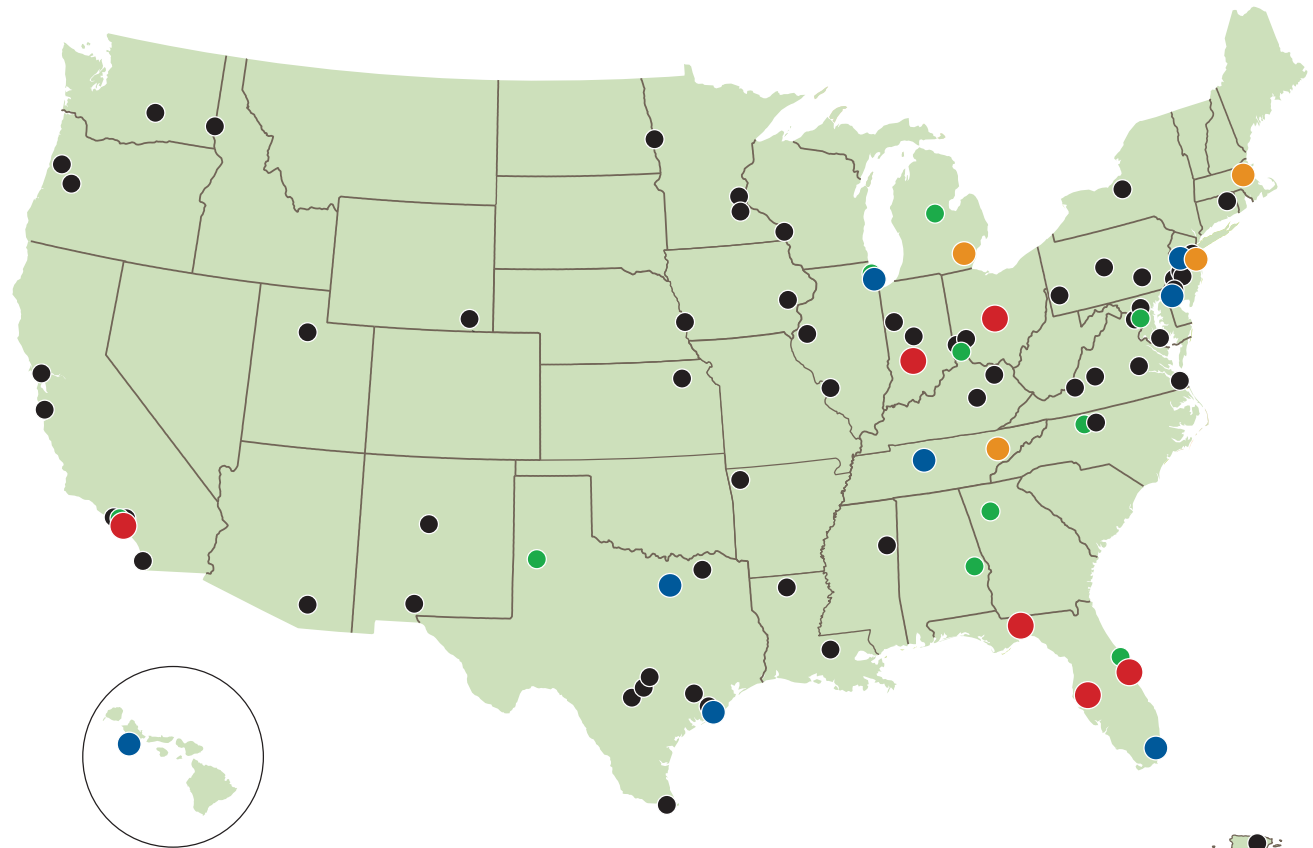
Non-APS Sites:

- Columbia University
- Fisk / Vanderbilt
- MIT
- Princeton University
- University of Chicago
- University of Michigan
- several others
developing...

Institutional Members

- Member Institutions
 - 93 in 36 states
- Partnership Institutions
 - 19 in 14 states
- Bridge Sites
 - Pre-existing: 4
 - APS: 6
 - Developing: 4

● APS Bridge Sites
 ● Additional Bridge Sites
 ● APS Partnership Sites
 ● APS Affiliate Sites
 ● APS Member Institutions

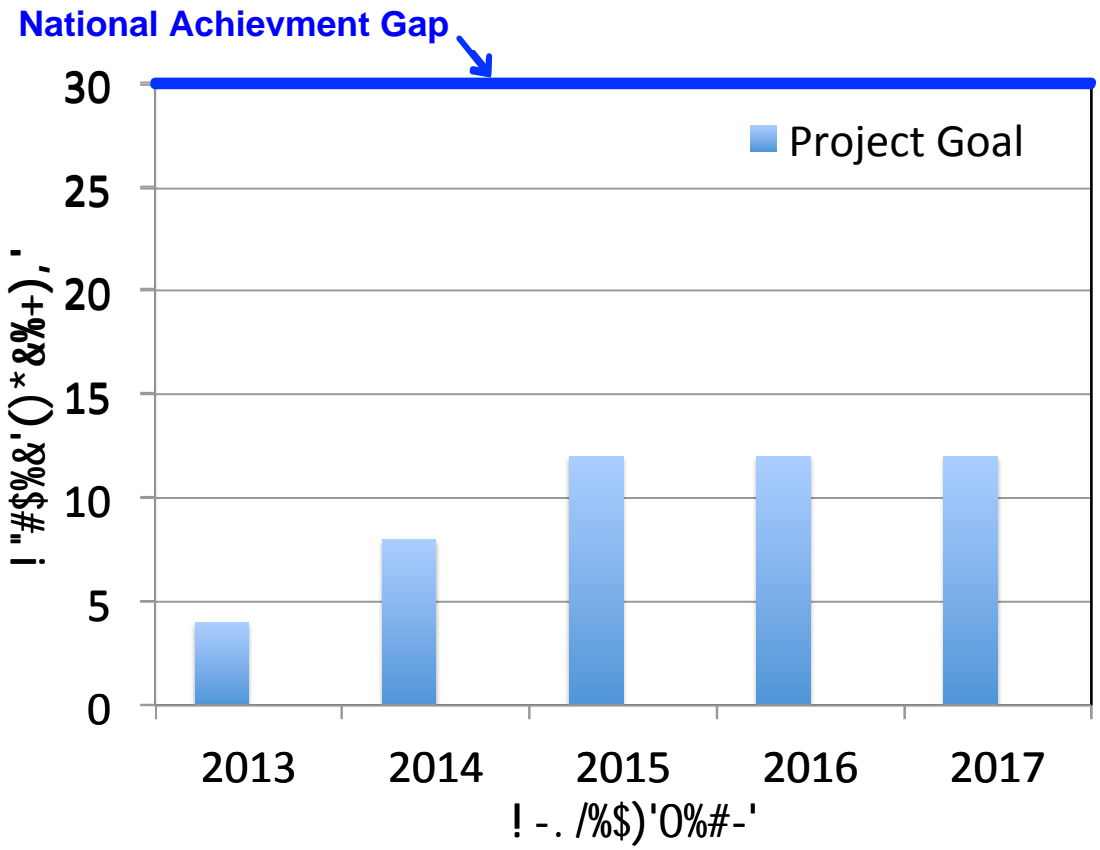


Bridge Sites and Partnership Institutions

- Admission decisions (“holistic” criteria)
- Financial support (timing)
- Coursework (induction advising critical, allow advanced undergrad courses, alternative plan)
- Progress monitoring (timing, tutors if needed)
- Multiple mentors (intervention, peer involvement)
- Research (appropriate match)

Bridge Program Achievements

- **23% Female** (All: 20%)
- **93% URM** (All: 6%)
 - 64% Hispanic
 - 24% African American
 - 5% Native
- **95% Retention** (All: 60%)



What we didn't know...

...and learning this surprised us!

1. Aggregating applications is a powerful tool
2. Graduate programs (most) want to do better
3. Admissions are not what they seem
4. Applications are expensive
5. Importance of graduate student groups

Some reasons students are not admitted

Students:

- Low physics GRE score
- Apply to too few places
- Apply to wrong places
- “Feel” unprepared (self-esteem)
- Inadequate preparation: will fail in grad courses
- Application materials do not tell a predictive story

Admissions Committees:

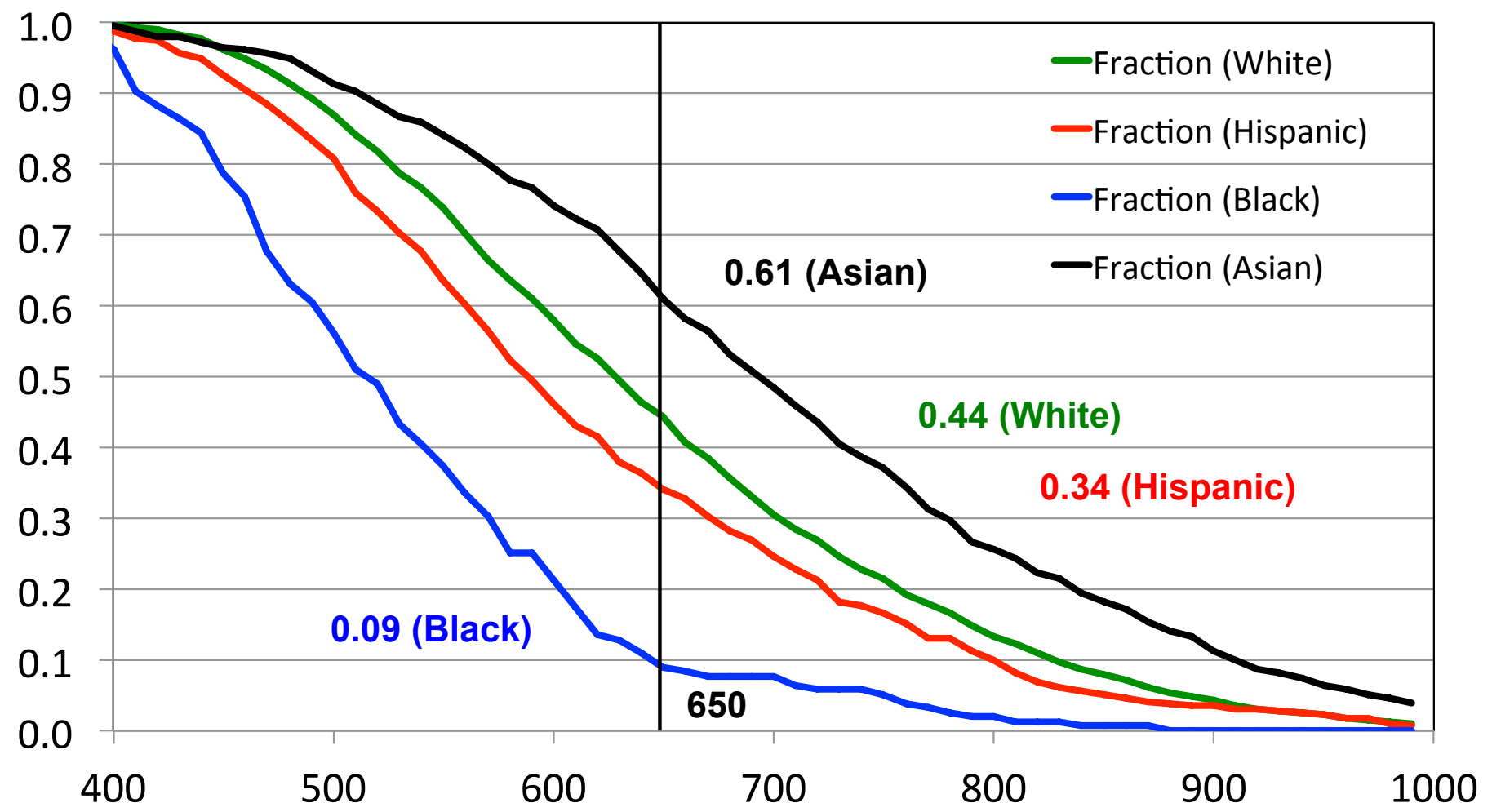
- Members overwhelmed
- Members unaware of admissions research findings

- **Graduate admissions study**
 - Doctoral institutions
 - Master's institutions
- **GRE (and other) admissions data:** Correlations with student success; impact on diversity
- **Holistic admissions practices:** practical use of non-cognitive measures or other practical techniques for use by physics graduate admissions faculty (parallel effort by CGS)

Near future: (hiring a postdoc at FIU this spring)

Student perspective on admissions

Physics GRE: Impact of Cutoff Scores



Next Steps...

- Broader implementation of advances made by Bridge Program (*admissions, induction, 1st year support, peer and faculty mentoring*)
- Interface with **APS National Mentoring Community** (www.aps.org/nmc)
- Better understand graduate admissions and advocate for a better informed process
- Spawning related research efforts in graduate education
- Planning joint Bridge Program / Graduate Education in Physics Meeting: **February 2017**

Happy Physicists ⇒ Great Physics

This material is based upon work supported by the
National Science Foundation under Grant No. 1143070

Any opinions, findings, and conclusions or recommendations
expressed in this material are those of the author(s) and do not
necessarily reflect the views of the National Science Foundation.