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2-4:30 PM

Workshop on Strategies for Effective Diversity Programs in Graduate Schools—*A National Perspective*

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American Association for the Advancement of Science

Strategies for Effective Diversity Programs in Graduate Schools—*Guiding Questions*

1. What makes diversity programs ***successful***? What are the elements that should be in place to make a program successful? How do you know when the program is successful?
2. What are the ***problems*** that need to be fixed? Who needs to be involved in fixing the problems?
3. How do you ***duplicate*** successful programs within an institution and across institutions?
4. How do ***other initiatives*** and reforms, such as PFF programs and the PhD Completion Project, contribute to successful diversity programs?
5. What are some ways that diversity-focused programs (e.g., AGEP, IMSD, McNair) with complementary goals and objectives can ***work together*** to broaden participation in graduate education?

Problem Thread—Capacity Center Approach

- Who ***participates*** in STEM education & the workforce—who does not and why?
- How can ***institutions*** of higher education improve academic success and career advancement, i.e. utilization of talent?
- How does Federal ***policy*** help/hinder?

Capacity Center Approach (cont.)

- **What are the "tipping points"?**

  Given the fragmentation and decentralization of the university, action is needed at several levels. What are the institutional assets? How can they be shared beyond the "islands"?

- **How to create a climate of success?**

  This is a shared responsibility. What is the role of deans, department chairs, and the faculty?

AAAS Capacity Center Projects— Evidence from University-based Programs

- Packard Foundation Scholars, 2005-2007
- NSF Broadening Participation in Computing, 2006→
- Sloan Foundation-AAAS-AAU Making Faculty Diversity Programs Legally Sustainable, 2007-2009
- NIH Understanding Interventions That Encourage Minorities to Pursue Research Careers, 2007→
- NSF Science & Technology Centers Program Review, 2009-

Racial/Ethnic Group Representation—U.S. Population to Faculty in Four-Year Institutions

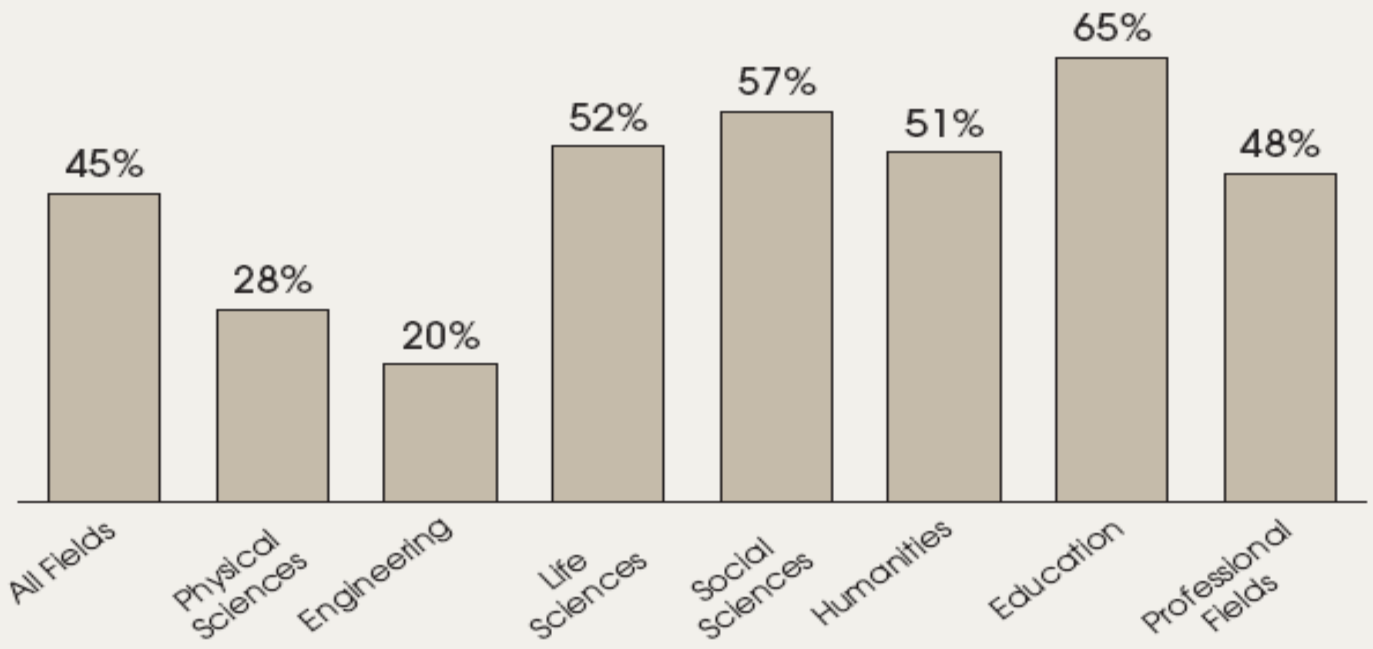
Racial/ Ethnic Group	U.S. Populati -on	Under- graduat es	Faculty							
			All Fields	Education	Engin- eering	Humanities	Life Sciences	Physical, Math and Computer Sciences	Prof. Fields	Social Sci.
Native American	1%	1%	0%	1%	0%	0%	0%	0%	0%	0%
Asian/ Pacific Islander	4%	6%	9%	5%	***24%***	5%	***11%***	***16%***	***11%***	5%
Black	12%	12%	5%	7%	4%	5%	3%	4%	6%	7%
Hispanic	14%	10%	3%	4%	2%	4%	2%	3%	2%	5%
White	67%	68%	81%	81%	68%	85%	82%	77%	79%	82%

Sources: U.S. Census Bureau, Population Estimates Program; U.S. Department of Education, National Center for Education Statistics IPEDS and NSOPF; University Leadership Council analysis, all 2008.

Fig. 1.13

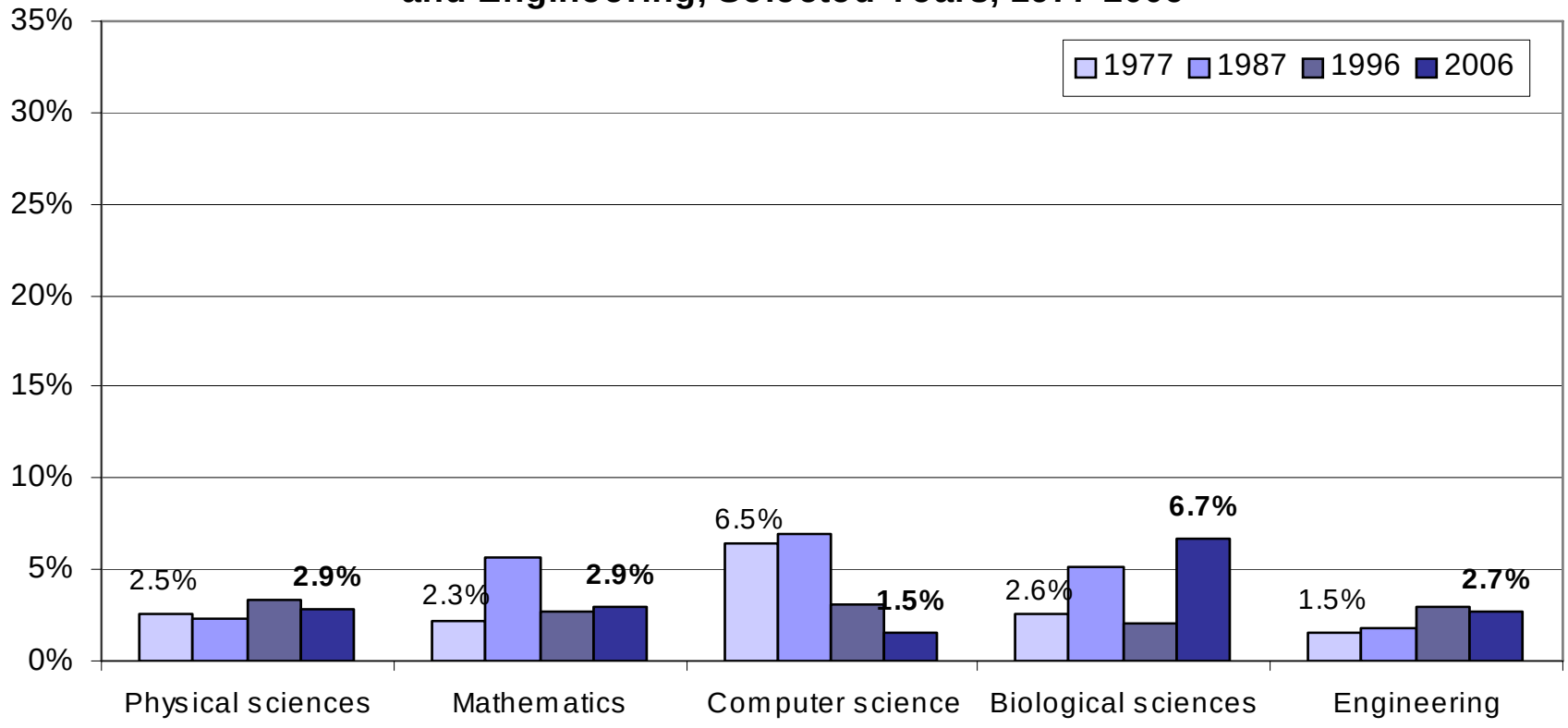
Women as a Percentage of Doctoral Recipients

By Broad Field, 2006



Source: Hoffer, Thomas B. et al, "Doctoral Recipients from the United States Universities. Summary Report 2006." National Opinion Resource Center (NORC) at the University of Chicago.

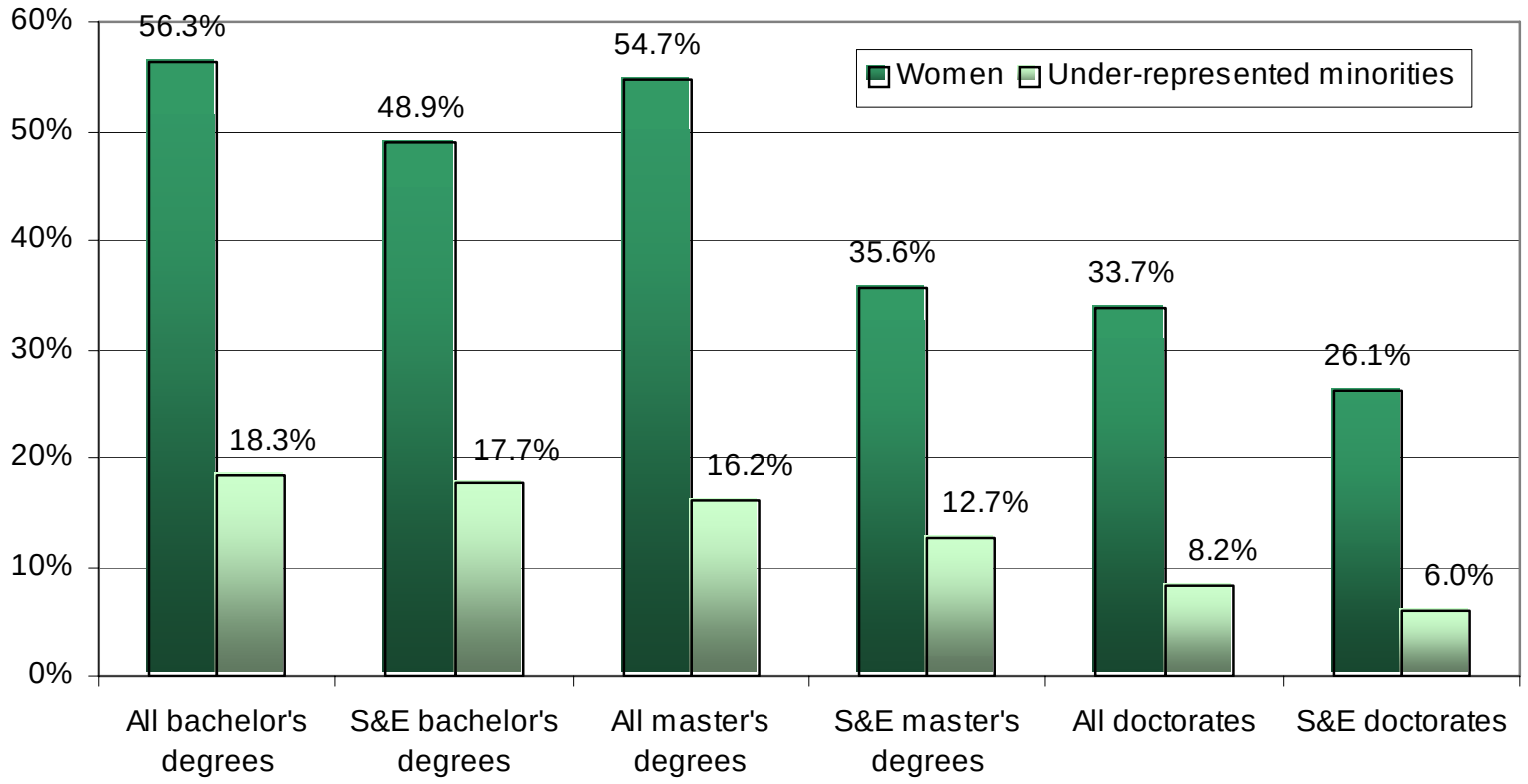
***PhDs Earned by URMs*: Little gain between 1977 and 2006, except in the biological sciences (with actual decline in computer science).**



Source: Commission on Professionals in Science and Technology, analysis of data from NSF's WebCASPAR database system.

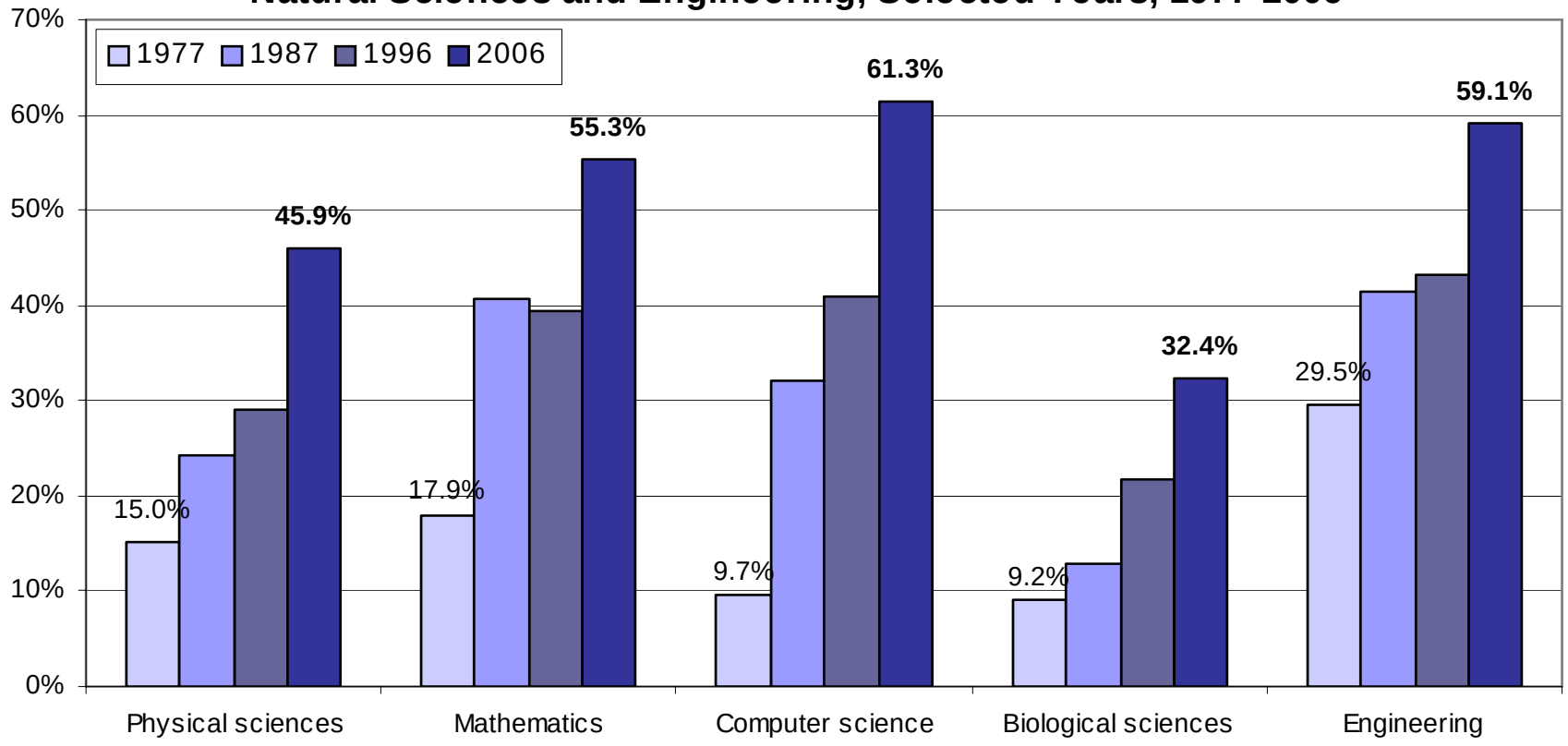
***Degrees in S&E*: As degree level increases, women's and URMs' share of degrees decreases. At each level, these groups are less likely to earn degrees in S&E.**

Figure 3-1. Percent of U.S. Citizen and Permanent Resident Women and Under-Represented Minorities at Each Degree Level, 2005-06



Source: CPST, data derived from National Science Foundation, *Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1995-200*6.

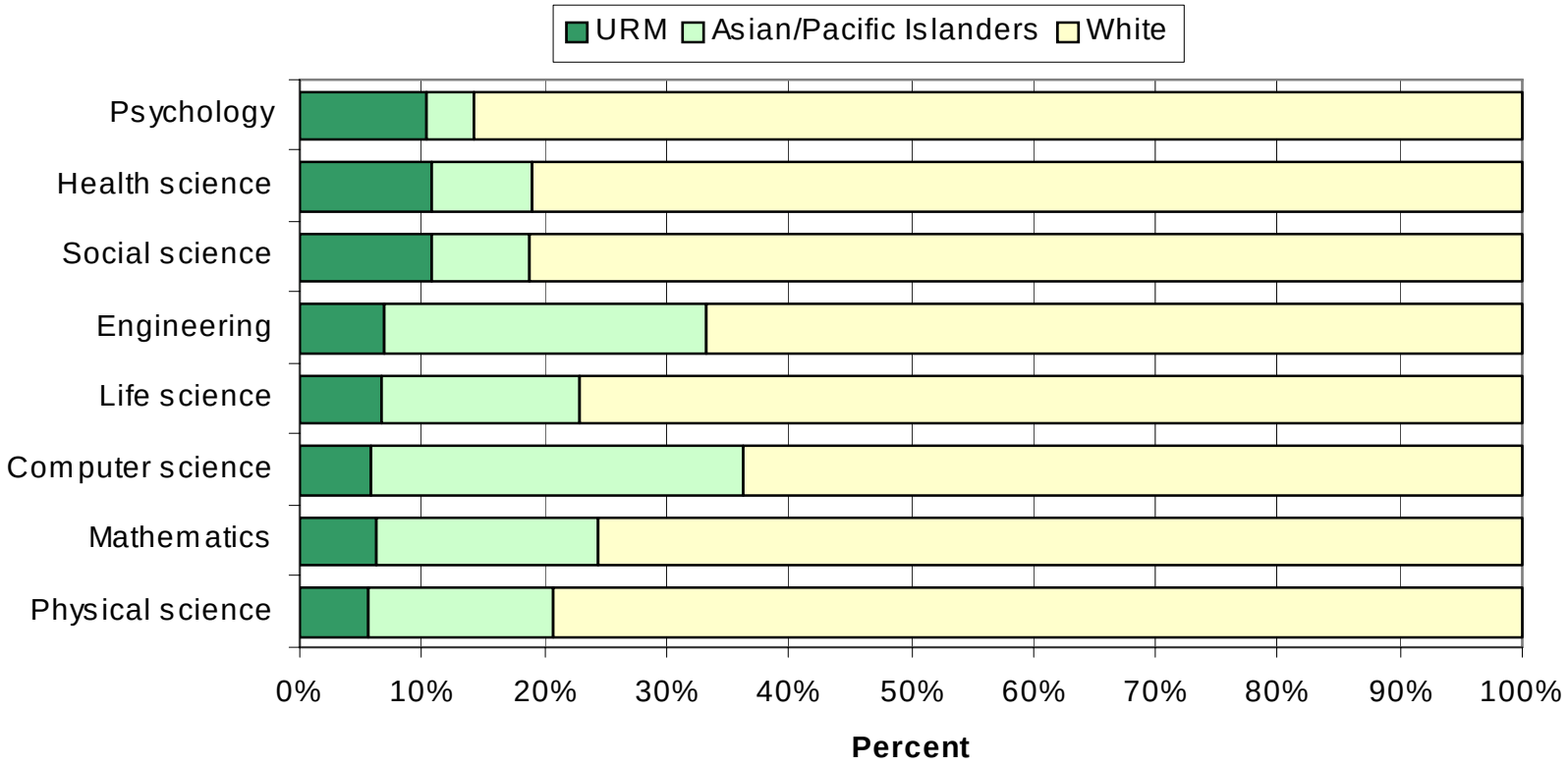
***Temporary Residents and the PhD*: They received the majority of engineering, computer science, and mathematics doctoral degrees from U.S. universities.**



Source: Commission on Professionals in Science and Technology, analysis of data from NSF's WebCASPAR database system.

Minority Faculty: Doctoral-degreed URMs account for less than 10 percent of most S&E faculty at U.S. colleges and universities.

Figure 5-15. Race/Ethnicity of Doctoral Scientists and Engineers Employed at Four-Year Colleges and Universities by Field of Doctorate, 2006



URM = underrepresented minorities, includes African Americans, American Indians, and Hispanics.
Source: CPST data derived from National Science Foundation, *2006 Survey of Doctorate Recipients, Characteristics of Doctoral Scientists and Engineers in the United States, 2006*.

Table 3. URMs Among Degree Recipients and All Professors (%)

Discipline	B.S.		Ph.D.		Top 50 Faculty	
	2000	2005	2000	2005	FY2002	FY2007
Chemistry	17.0	16.7	8.4	8.5	3.2	3.7
Math	14.4	13.1	5.5	9.1	3.6	2.3
Computer Sci	17.6	20.6	7.4	6.5	1.6	2.5
Astronomy	6.4	8.6	3.8	4.5	2.4	2.2
Physics	9.5	10.3	5.9	5.6	2.6	2.5
Chemical Engr	14.2	14.7	7.2	11.0	4.9	5.6
Civil Engr	14.0	14.3	6.3	8.2	5.4	6.6
Electrical Engr	15.8	16.1	6.8	9.5	4.3	3.6
Mechanical Engr	12.5	11.5	8.6	8.9	3.9	4.3
Economics	12.4	13.1	9.2	10.7	4.3	5.7
Political Science	20.1	20.8	12.1	13.9	6.9	6.9
Sociology	27.0	28.7	17.7	19.2	10.1	12.9
Psychology	20.1	21.6	13.3	13.4	6.3	7.1
Biological Sci	15.5	16.5	7.4	9.6	3.0	3.8
Earth Sciences	5.4	6.6	5.2	6.7	na	3.4
average -->	15.5%	16.2%	8.5%	9.9%	4.5%	5.0%
5-yr increase -->	0.7%		1.4%		0.5%	
US population -->	25.7%	27.6%	=1.9% increase			

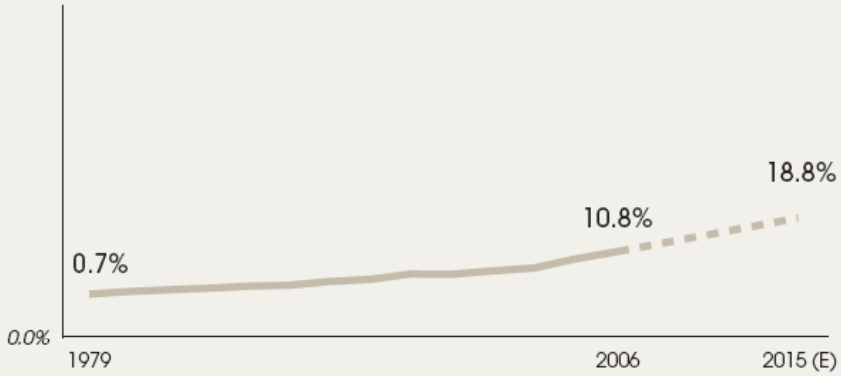
Source: Nelson, 2007

Fig. 1.25

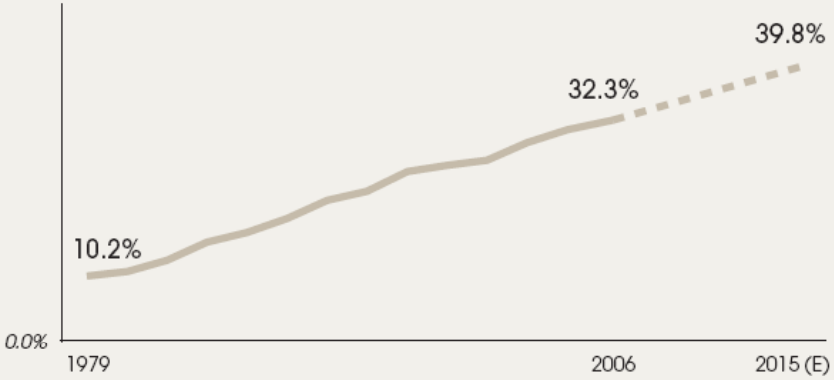
Women as a Percentage of Tenured and Tenure-Track Faculty in STEM at Two-Year and Four-Year Institutions

Projections Based on Compounded Annual Growth Rate, 1995–2006

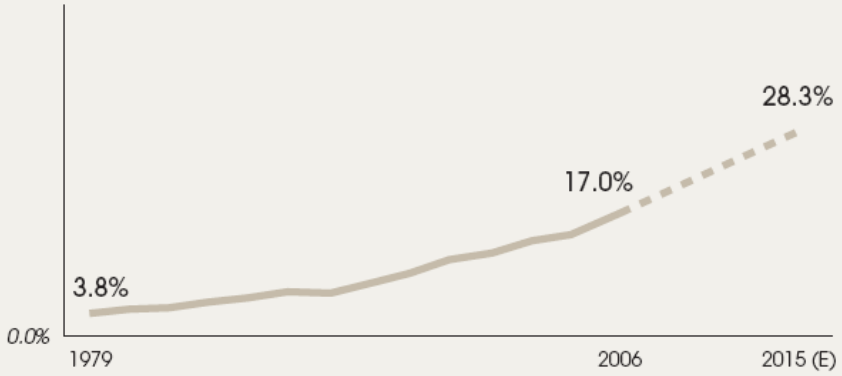
Engineering



Life Sciences



Physical Sciences



Note: Historical data not available on women in faculty positions in STEM fields at four-year institutions only.
Source: Burelli, Joan, "Thirty-Three Years of Women in S&E Positions," NSF InfoBrief (July 2008).

An Empirical Basis for Optimism

"One of the most important findings from our research is that success in faculty diversity is no mere historical accident. A significant amount of the variation in faculty diversity reflects individual university effort and practice—strategies that can be replicated at other institutions."

source: University Leadership Council, *Breakthrough Advances in Faculty Diversity*, 2008, p. 14

1-2. Elements of Successful Programs / *Problems They Were Designed to Fix*

- **Climate**: Creation of support groups & "community," integrating students into research teams, climate studies / *isolation, low retention to degree completion, lack of info on career paths*
- **Faculty:** as recruitment magnets, as mentors, developing cultural competency/ *elitism-racism-sexism, low expectations, unspoken rules*
- **Documentation**: linking to institutional mission, keeping score, evaluation, making goals explicit / *legal vulnerability of even effective programs, not consulting university counsel, conducting faculty searches that violate employment/workplace law*,
- **Understanding Interventions:** body of knowledge on promoting self-efficacy, previewing research careers, utilizing training-workshops-conferences & on-site assistance / *no data or rationale for programs, little accountability for outcomes, few efforts to tell the story to sponsors & other publics*

What Do STEM Minority PhD Candidates Say?

- Outreach must penetrate the academic ***reward system***.
- Gender and racial bias is a reality. Get over it—***faculty mentoring*** helps.
- The student must take responsibility for completing doctoral ***requirements*** ("performance contract").
- All kinds of institutions can be ***"minority-serving"*** (e.g., non-HBCUs).
- New Ph.D.'s underestimate the ***skills*** they possess (which extend beyond research).
- This is about ***leadership***—there is an overarching need to grow leaders.

source: Focus groups with 50+ Packard Scholars, Monterey, CA & Washington, DC, 2005-2006. Also see D.E. Chubin, "Minding the Student Client," *Inside Higher Education*, Feb. 13, 2006, http://insidehighered.com/views/2006/02/13/chubin

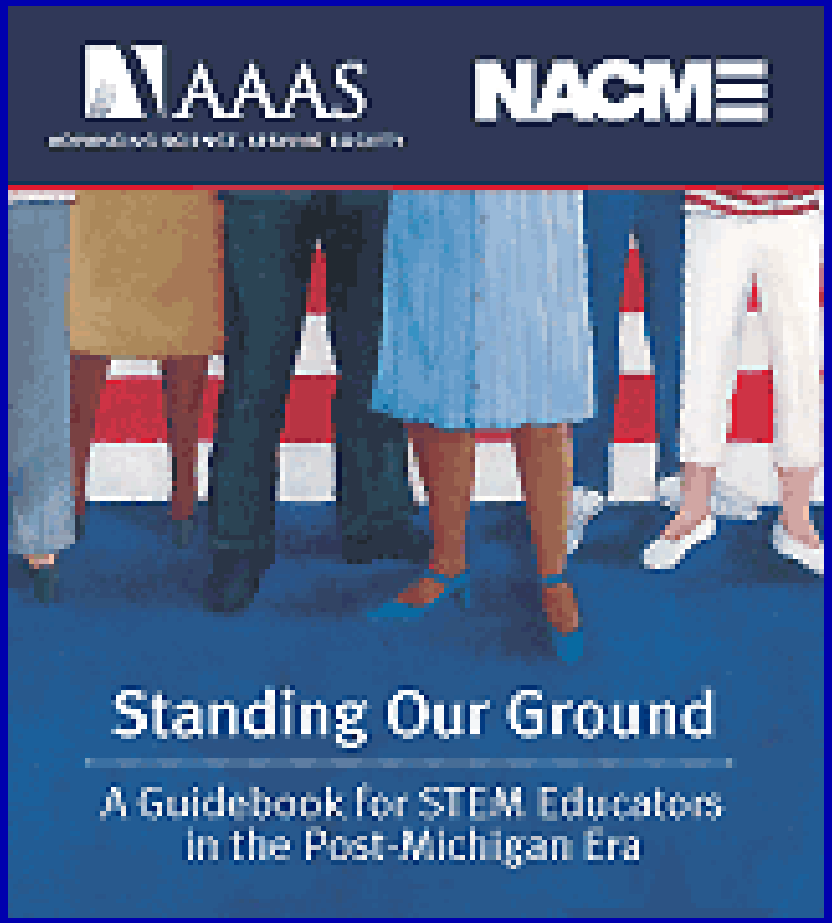
3-4. Adaptation of Successful Programs from Inside and Outside the Institution

- **Do institutions try to adapt proven models?**
  - Not really. Even well-documented programs within the same institution are treated as anomalies.
- **Are the data compelling?**
  - Not yet, since we lack longitudinal data on “cumulative effects” of interventions–-not a program at a time—on career outcomes.
- **What is the effect of the legal challenges to diversify?**
  - There is a backlash against affirmative action targeting any group at the state level. Targeted programs are vanishing in public institutions. How does an overarching strategy support the institutional mission?

***Project Origins*: Operate on the Context, not just the Content**

2004: To help guide program staff & university counsels in interpreting the Grutter and Gratz rulings . . .

2008: Sloan- and NSF-funded project (AAAS/AAU) to identify effective STEM diversity programs/practices for faculty and students that are legally sustainable



See http://www.aaas.org/publications/books_reports/standingourground/

5. Combining Diversity Programs to Spread & Scale Success

- **What are the barriers?**
  - Context matters—programs don't readily "transfer" or scale
- **What does "combining programs" mean?**
  - Most PIs are unaware of related programs operating in other departments/colleges on campus. STEM is a construct without practical impact.
- **Who should lead such coordination?**
  - Disciplinary societies look after their own. OSTP has been reluctant, so left to individual agencies. Higher ed organizations, through workshops and on-site trainings, can deliver programmatic innovations.

Tipping Points—Institution

- When “climate surveys” are no longer required, but conducted at regular intervals
- When soft-money projects that have demonstrated efficacy are institutionalized as an ongoing program supported by the institution’s operating budget
- When promising practices are shared across departments, with or without administration incentives
- When the institution, and not its constituent parts, is seen as the unit of change

Other Key Sources

- "Bias Literacy: A Review of Concepts in Research on Discrimination," Sevo and Chubin, 2008, http://momox.org/BiasLiteracy.pdf
- *Professional Women and Minorities: A Total Human Resources Data Compendium, 17th Ediition,* Commission on Professionals in Science and Technology*, 2008,* www.cpst.org/BlubPWM17F.cfm
- "Making a Case for Diversity in STEM Fields," *Inside Higher Ed*, Oct. 6, 2008, Chubin and Malcom http://www.insidehighered.com/views/2008/10/06/chubin
- "Navigating A Complex Legal Landscape To Foster Productive Legal-Policy Partnerships For Greater Faculty and Student Diversity In Higher Education," Keith et al., AAAS-AAU, 2009 http://www.aaas.org/news/releases/2009/1123aaas_aau_chubin.shtml

To continue the conversation. . .

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