Innovative Strategies for Building a Diverse Scientific Workforce

The Science of Broadening Participation NSF

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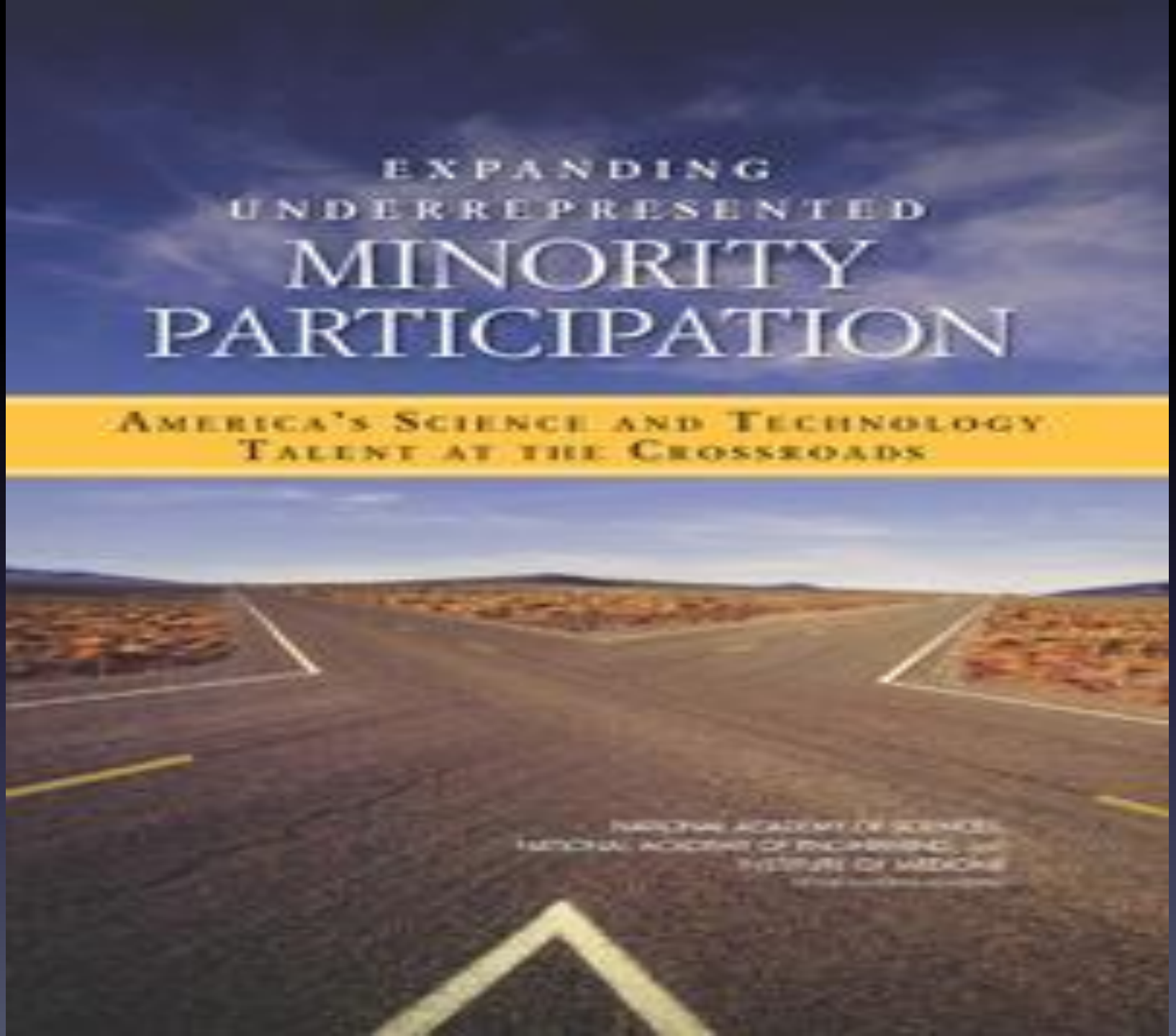
June 6, 2013

Outline and Overview

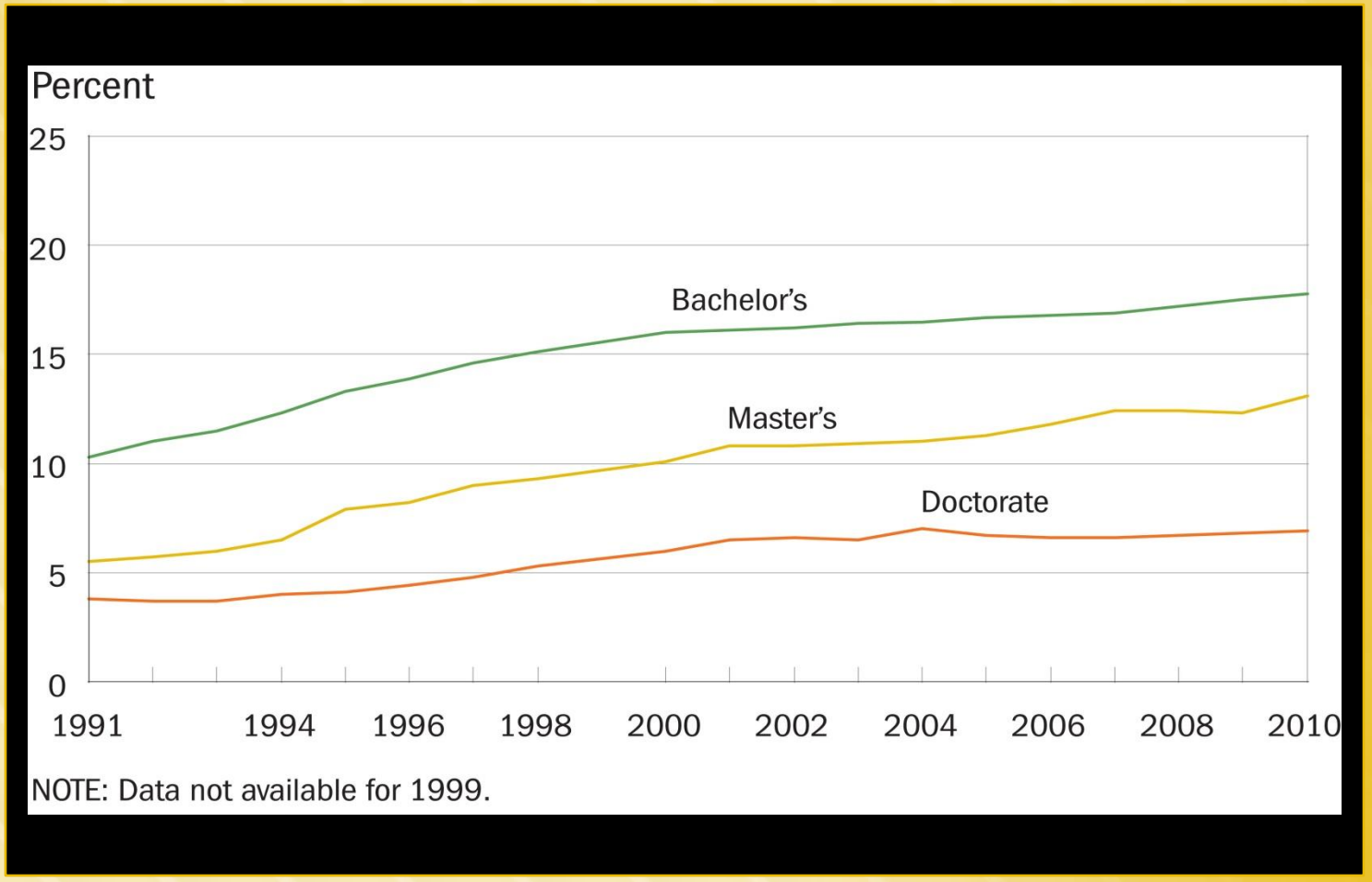
- Data on numbers of URGs in STEM
- Empirical evidence about experiences of URGs
- The Science of Broadening Participation
- Inform Steps towards greater participation of URGs


EXPANDING
UNDERREPRESENTED
MINORITY
PARTICIPATION
AMERICA'S SCIENCE AND TECHNOLOGY
TALENT AT THE CROSSROADS

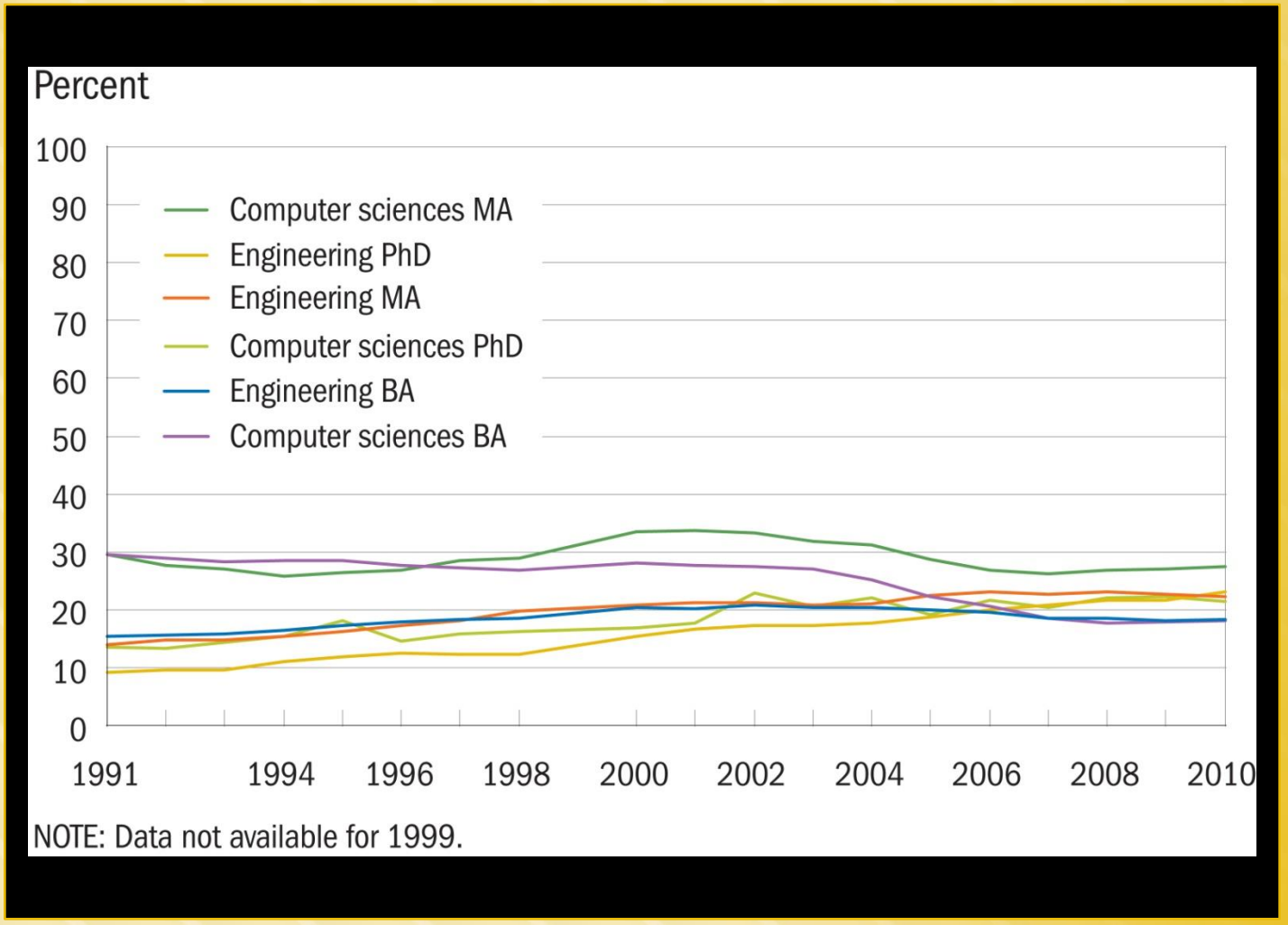
The "Cross Roads" report from the National Academy of Sciences (9/2010)

- U.S. faces urgent need to expand participation in STEM fields.
- Non U.S. citizens and international students account for large numbers of STEM doctorates and employees.
- Stricter visa requirements and increasingly competitive opportunities in countries of origin make U.S. reliance on pool uncertain.
- URM = just over 9% of STEM employees.
- Target programs to increase URM in STEM.

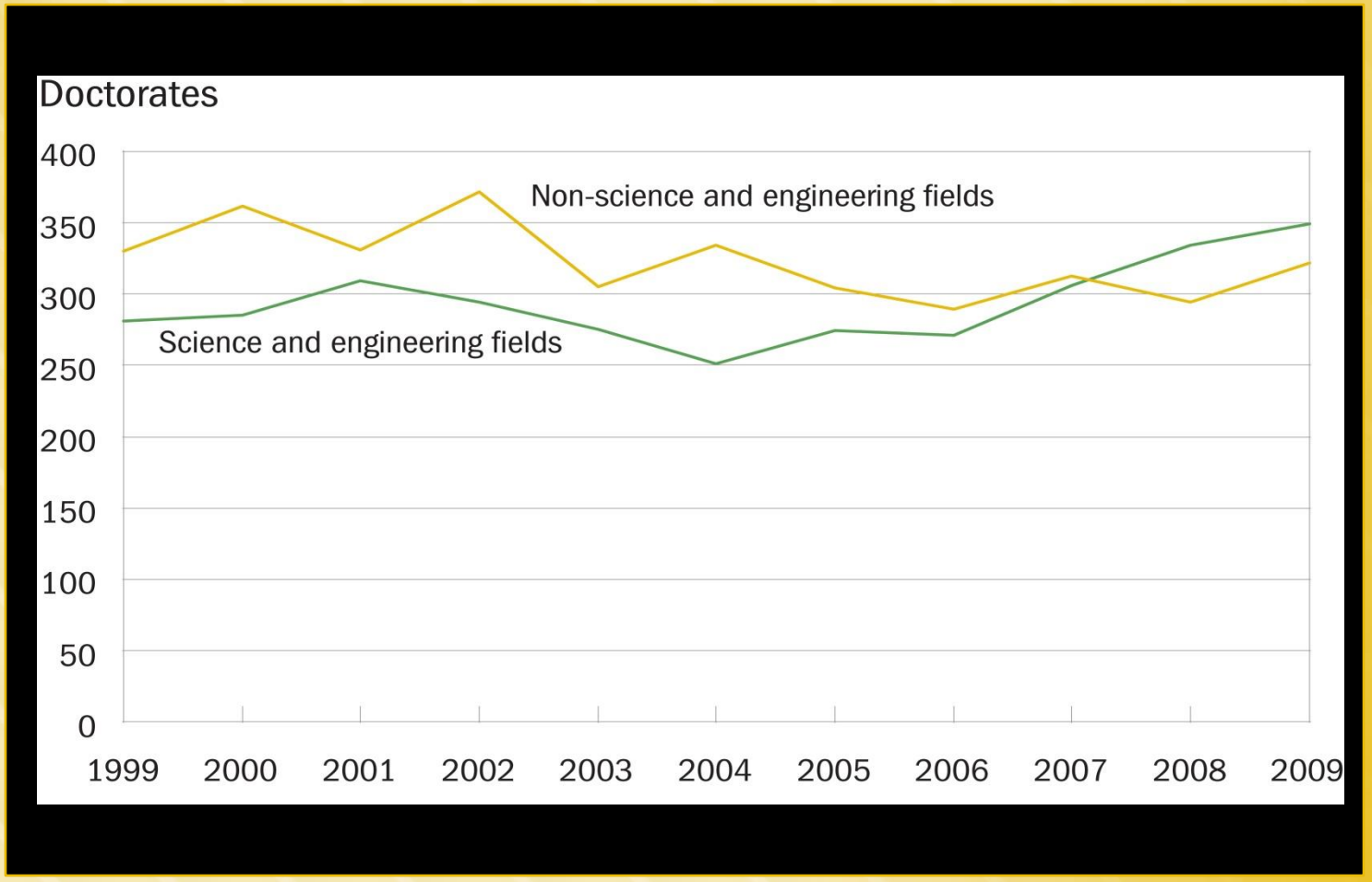
Science and engineering degrees earned by underrepresented minorities: 1991–2010



Low participation fields for women: Computer sciences and engineering, 1991–2010



Doctoral degrees awarded to U.S. citizens and permanent residents with disabilities: 1999–2009



Empirical evidence about experiences of URGs

- Implicit Bias (Moss-Racusina, Dovidio, Brescollc, Graham & Handelsman, 2012).
- Stereotype threat (Steele & Aronson, 1995; Maass, 2008; Osborne, 2007).
- Letters of recommendation disadvantage women (Trix & Psenka (2003); Madera, Hebl & Martin (2009); Schmader, Whitehead, Wysocki, (2007)).
- Engineering training settings prove hostile for LGB students (Cech & Waidzunas, 2011).

The Science of Broadening Participation (SBP)

- Documents the distribution of educational and economic opportunities.
- All levels of analysis of behavior including the individual, group and societal.
- Impetus for collaboration between SBE scientists and those in the natural and physical sciences engaged BP efforts.
- Tells us what works and what doesn't work to reduce disparity in STEM participation.

What does the SBP look like?

- **Informed by and building on to existing social and behavioral science theories**
- **Inherently interdisciplinary.**
- **Methodologically rigorous** incorporating research that employs a variety of **empirical approaches** and methods.
- **Potentially transformative** (i.e., disrupt existing paradigms)

The *evidence-based* approach of SBP often yields surprising findings:

- Assertiveness training does not improve women's ability to negotiate (Babcock, 2003, 2005, 2007).

- Colorblind approaches to racial attitude interventions are less effective in reducing bias than those with explicit reference to prejudice (e.g., Richeson & Nussbaum, 2003).

- Diversity training does not lead to greater diversity in senior management (Dobbin, F. et al. 2010 ASR).

Dear Colleague Letter for SBP

Dear Colleague Letter - Stimulating Research Related to the Science of Broadening Participation

- National Science Foundation
  - Directorate for Social, Behavioral and Economic Sciences
  - Directorate for Education and Human Resources

Thank you!

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