

Understanding Interventions that Encourage Minorities to Pursue Research Careers

NRC Board on Life Sciences

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Session: State of Knowledge . . .

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Sources of Knowledge

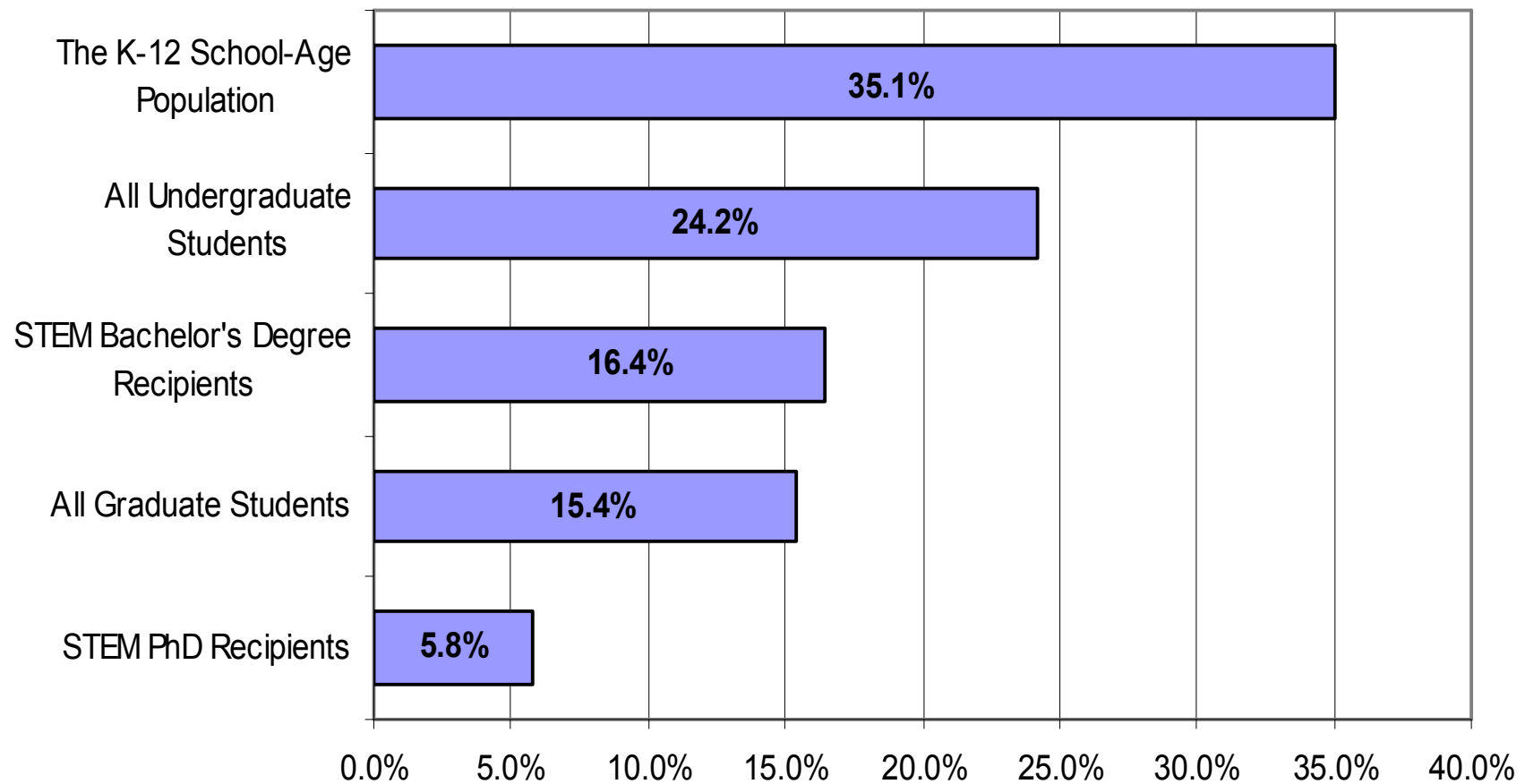
- Data (disaggregated)
- Research
- Evaluation (project)
- Technical Assistance (on-site)
- Biography/Self-report

→ *learn from interventions, apply to new contexts*

Ways to Think about Underrepresentation: Fix the Students, Pathways, or College?

- **Students:**
 - Demographic composition
 - Pre-college academic preparation
- **Pathways:**
 - Intervention programs—add-on to formal education
 - Access to higher education—cost reduces diversity
- **College Environment:**
 - Cultural competence of faculty—teaching diverse students
 - Structural support—climate, career information, mentoring

Underrepresented Minorities as a Percent of...



Source: CPST, *Professional Women and Minorities*, 16th edition, November 2006

Degrees Awarded to Underrepresented Minorities in STEM Fields by Level, 2004

Level	African American, non-Hispanic		Hispanic		Native American	
	No.	%	No.	%	No.	%
Bachelor's	38,328	8.4	33,290	7.3	3,216	0.7
Master's	7,455	6.3	5,073	4.3	535	0.5
Doctorates	746	2.8	715	2.7	61	0.2

Source: CPST, data derived from National Science Foundation, WebCASPAR Database

Table 2
**BEST Evaluation Criteria for Assessing
 Higher Education Programs/Practices**

Questions/Criteria	Exemplary – actionable now	Promising	Not ready to adapt/scale
1. Were expected outcomes defined before program launch?	Yes	Soon after	Sort of/vague
2. Are outcome data attributable to the program intervention?	Far exceeded original expectations	Exceeded original expectations	Failed to meet expectations
3. Does it demonstrate excellence, which requires equity? – i.e., did it increase the diversity of the target population?	Chief outcome achieved and documented (positive trend)	Chief outcome implied (no monotonic trend)	Equity at core of program design, not an add-on
4. What was the value-add of the experience to the target population?	Related outcomes that move treatment group to next competitive level	Majority (but not most) of individuals in treatment population enhanced	Gains for some individuals that can be attributed to treatment
5. Is there evidence of adaptation/ institutionalization, i.e., multiple sites?	Explicit scale-up strategy w/evidence	Attempt to implement strategy and evaluate	Confined to a single site
6. Is there evidence of effectiveness with a population different from that originally targeted?	Planned and executed	Planned	Serendipitous
7. How long has it been in place?	Self-sustaining (10+ years)	Majority soft money (3-10 years)	New (<3 years)
8. Were there unexpected consequences?	Positive in intensity or extent (and measured)	Identification of possible/probable consequences	Evidence for systematic rather than random effect

Source: *BEST Blue Ribbon Panel on Higher Education, 2002*

Policy & Bigger Questions

- **What is the effect of the legal challenges to diversify?** There is a backlash against affirmative action playing out at the state level. Targeted programs are scarce in public institutions.
- **Is the NSF “broader impacts” criterion a lever for intervention?** In some cases, but it is applied unevenly, reducing the reach to those underserved in STEM.
- **Is S&E losing talent?** Yes, even among students on portable fellowships. The professions (medicine, law, business) are more attractive/lucrative, with high retention despite cost to students.
- **Do institutions try to adapt proven models?** Not really. Even well-documented programs are treated as anomalies.