



Setting the Context: Factors Affecting Career Choice and Training

**Understanding Interventions that Encourage
Minorities to Pursue Research Careers:
Major Questions and Appropriate Methods
The National Academies
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Factors Affecting Career Choice and Training

I have been asked to think with you today about the underlying issues of career choice. I was asked to emphasize:

- Systems aspects of students' decision-making process
 - **Finances**
- The way that many different factors contribute
 - **Mentoring**
- Highlight different approaches to these questions.
 - **Research Productivity**



Doctoral Facts

The National Picture

- Approximately 1.2% of the U.S. adult population age 25 and over has a doctoral degree.
- The United States awarded approximately 43,354 doctoral degrees in 2005.
 - Of the 1,131 chemistry Ph.D.s awarded to US citizens in 2005
 - 52 (4.6%) were awarded to Hispanics (Puerto Rican, Mexican, Other Hispanic)
 - 35 (3.1%) to Black, Non-Hispanics
- Fall 2001 full-time instructional faculty (617,868),
 - Black, Non-Hispanic – 31,681 (5%)
 - Hispanic – 18,514 (3%)
 - American Indian/Alaskan Native – 2775 (<1)



Funding for Research

- Lilly Endowment Planning Grant (Grant 950437)
- Department of Education - Office of Educational Research (through NCPI - Grant R309A60001)
- Spencer Foundation (Grant 19980004)
- National Science Foundation (Grant REC9903080)

THREE
MAGIC
LETTERS

GETTING TO

PH.D.

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CATHERINE M. MILLETT



Three Aspects of the Doctoral Student Experience That Are Critical to Success

- We have the capacity to talk about many aspects of the doctoral student experience but we cannot do it all today
 - funding arrangements,
 - faculty mentoring, and
 - research productivity



Participating Institutions

- Clark Atlanta University
- City University of New York
- Columbia University
- Harvard University
- Howard University
- Indiana University
- New York University
- Ohio State University
- Princeton University
- Rutgers University
- Stanford University
- Teachers College
- Temple University
- University of California at Berkeley
- University of California at Los Angeles
- University of Maryland
- University of Michigan
- University of North Carolina - Chapel Hill
- University of Texas
- University of Wisconsin
- Vanderbilt University

Source: Survey of Doctoral Student Finances, Experiences and Achievements.



Survey of Doctoral Student Finances, Experiences & Achievements (28 page survey)

- Application & enrollment
- Current doctoral program experience
- Attendance patterns
- Financing doctoral education
- Future plans
- Undergraduate experiences
- Background

Source: Survey of Doctoral Student Finances, Experiences and Achievements.





Listening. Learning. Leading.

Funding

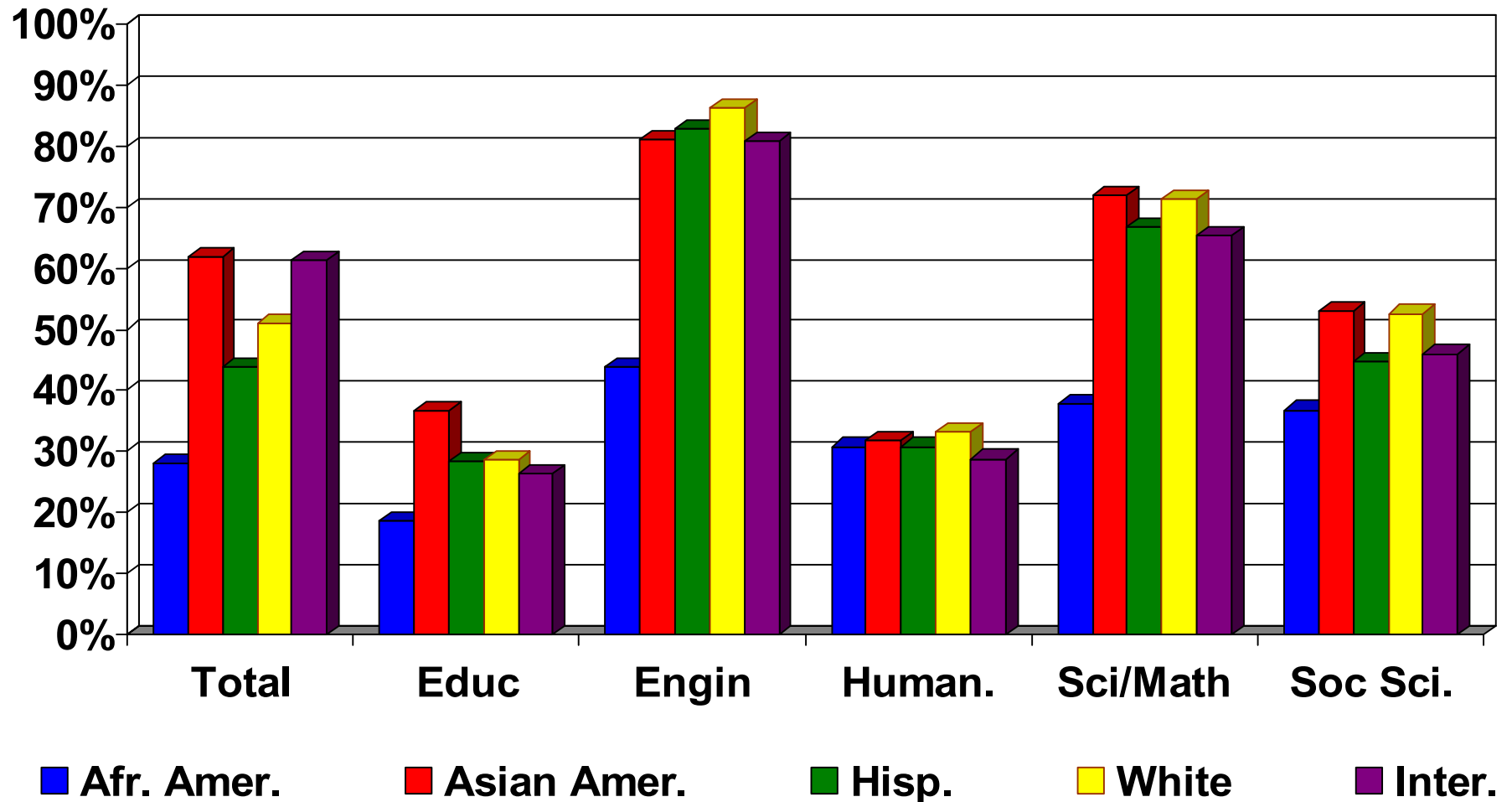
Funding

Our Working Definitions

- Fellowships:
 - monies and/or tuition and fee waivers given to students with no expectation of repayment or of services to be rendered.
- Research Assistantships
 - monies (tuition/fees and/or a stipend) given to students with the expectation of research services to be rendered.
- Teaching Assistantships
 - monies (tuition/fees and/or a stipend) given to students with the expectation of teaching services to be rendered.



Receiving a Research Assistantship During Doctoral Program Varies by Field of Study



African American & Hispanics ever having a research assistantship is significantly different from Whites overall. African Amer. differ from Whites in all fields except Humanities. Within field, Hispanics did not differ from Whites.

Source: Survey of Doctoral Student Finances, Experiences and Achievements.

Being a Research Assistant Contributes To

Ever Research Assistant

Influences *

- Acquiring debt during program
- Ever receiving a fellowship
- Ever being a teaching assistant
- Social interaction with peers
- Academic interactions with faculty
- Interactions with faculty advisor
- Presenting a paper at a conference
- Publishing an article
- Overall research productivity
- Stopping out of a doctoral program
- Rate of progress in program
- Degree completion

No Influences

- Student – faculty social interactions
- Satisfaction with doctoral program
- Time to Degree

* Note: Influences may not be in all fields

Mentoring

“Mentors, unlike advisors, cannot be assigned to specific students. Advisors may be mentors, but many advisor-advisee relationships never evolve to the mentor-protégé relationship”
(Willie, Grady & Hope, 1991, p. 72)

Faculty Advisor (B-6)

- A faculty or research advisor is a person assigned by your department/program to act in an official capacity in such ways as discussing and approving your coursework, or signing registration forms. Please note that your faculty or research advisor may not be your mentor. Do you have a faculty member who serves as your advisor?

1. Yes

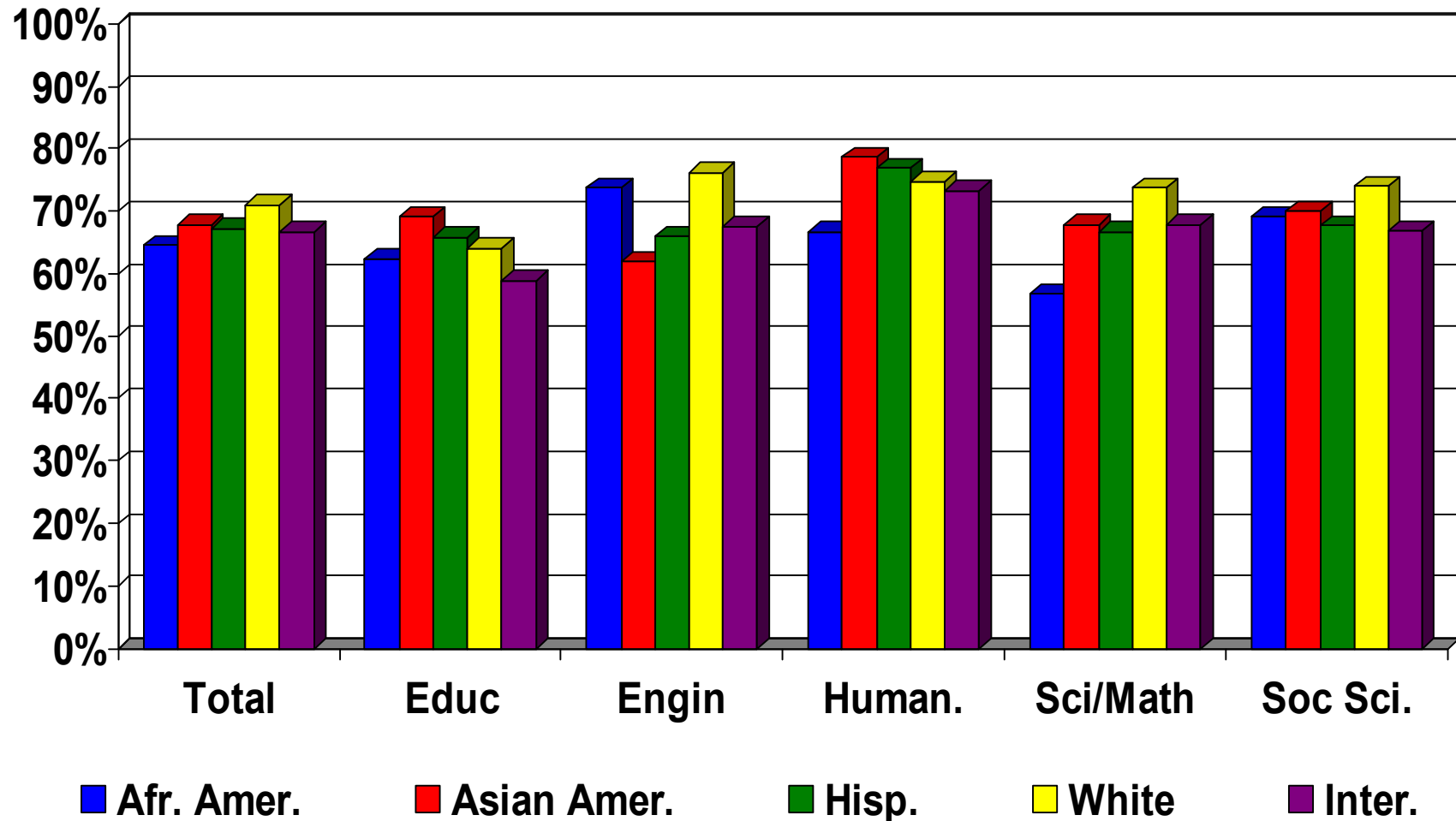
2. No (If 'NO,' **GO TO B-9**)

Mentor Question (B-9)

- Many doctoral students have someone on the faculty to whom they turn for advice, to review a paper, or for general support and encouragement. This person may be thought of as a mentor. If you have more than one mentor, please comment on the one with whom you work most closely. Do you have a faculty member who serves as your mentor?

- _____ 1. Yes
_____ 2. No (If 'NO,' **GO TO B-13**)

Nearly 70% of Doctoral Students Have a Mentor



Afr Amer having a faculty mentor is significantly different from Whites overall and in Science & Math. Hispanics do not differ from Whites in the overall or within fields.

Source: Survey of Doctoral Student Finances, Experiences and Achievements.

Faculty Mentoring Contributes To:

Have a Faculty Mentor

Influences *

- Student-faculty social interactions
- Academic interaction with faculty
- Interactions with faculty advisor
- Presenting a paper at a conference
- Publishing an article
- Overall research productivity
- Rate of progress in program
- Degree completion
- Time to Degree

No Influences

- Satisfaction with doctoral program
- Stopping out of doctoral program

* Note: Influences may not be in all fields



Research Productivity

Presented a Paper

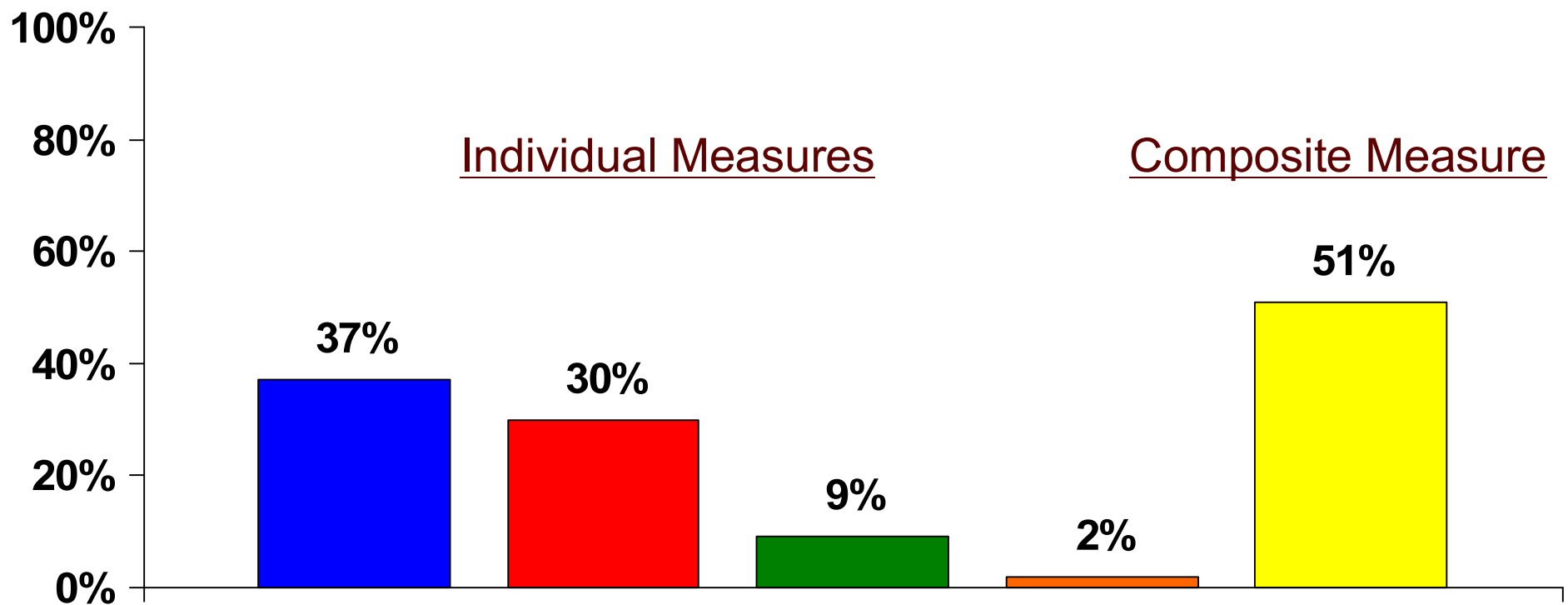
Published a Chapter

Published a refereed article

Published a book

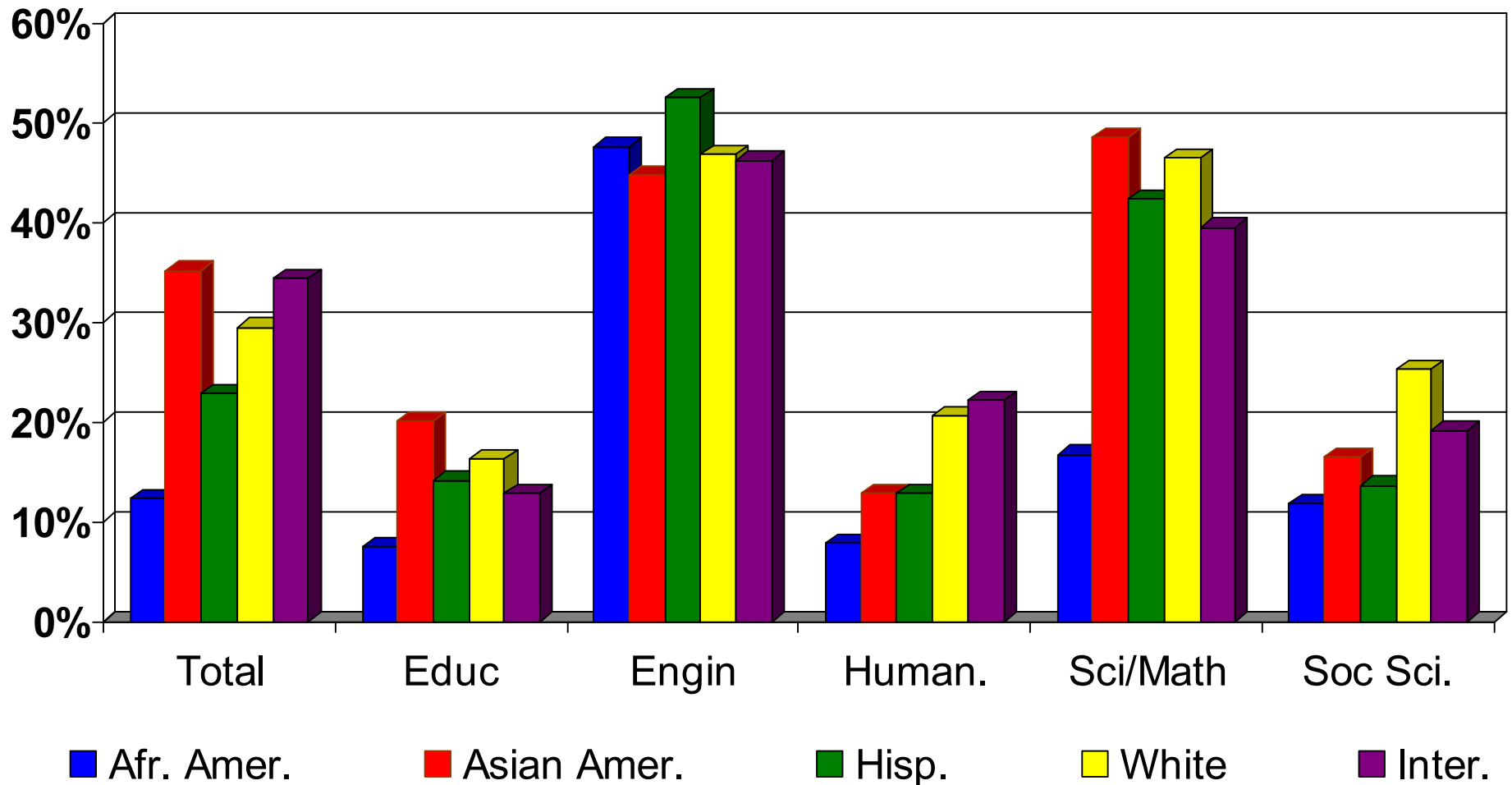
Doctoral Students' Reports of Achieving An Individual Measure at Least Once

- Created a composite measure that captures whether a student achieved at least one of the individual measures once.



■ Presented a paper
■ Published a Refereed Journal Article
■ Published a Chapter in an Edited Volume
■ Published a Book
■ Some Research Productivity

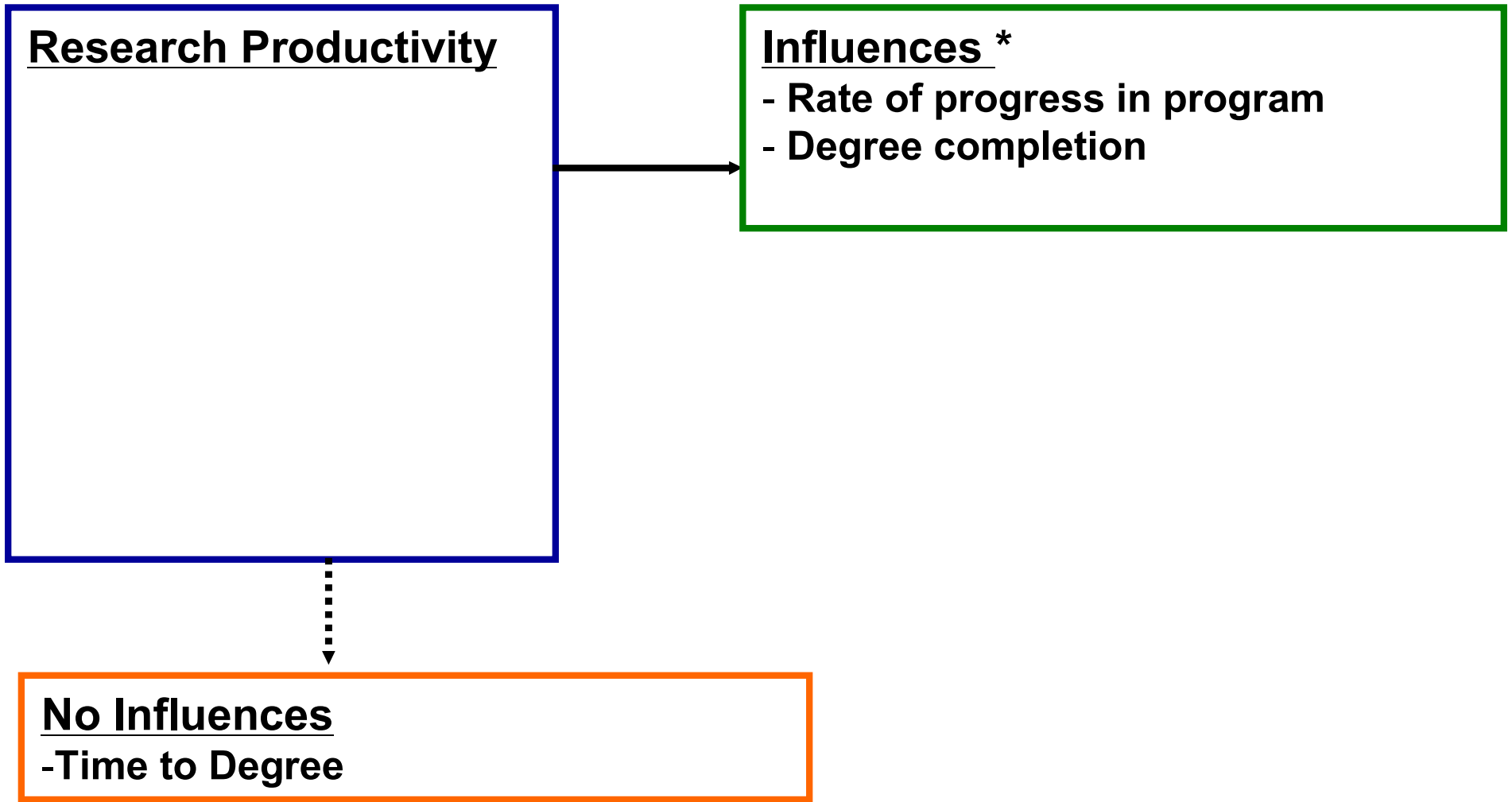
Doctoral Students are Publishing Refereed Journal Articles (sole or joint authored)



African Americans & Hispanics rates of publishing an article are significantly different from Whites in the total. Within fields, Afr Amer differ from Whites in education, science & math, and the social sciences. Within fields, Hispanics do not differ from Whites.

Source: Survey of Doctoral Student Finances, Experiences and Achievements.

Research Productivity Contributes To:



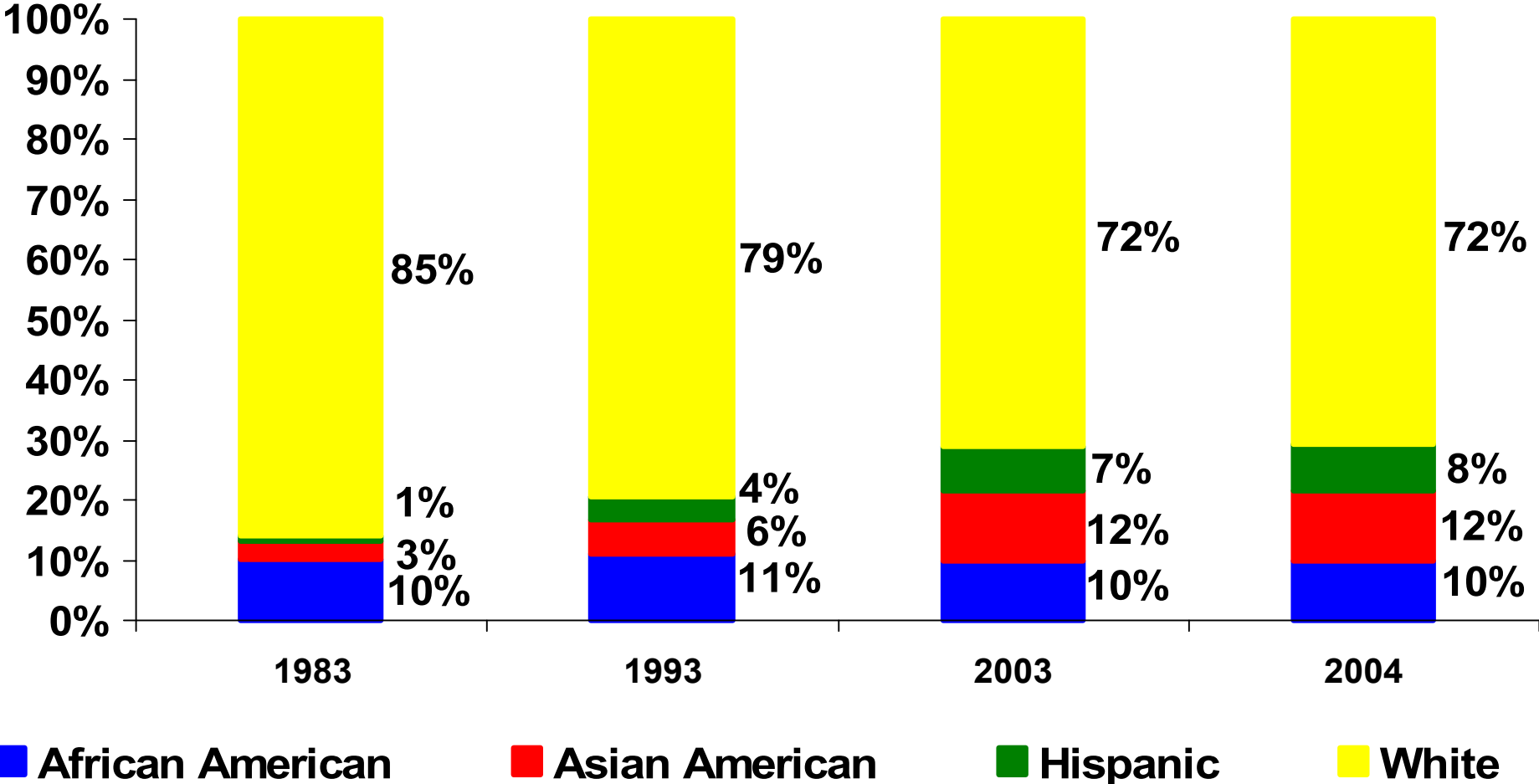
*** Note: Influences may not be in all fields**



The Perennial Challenge

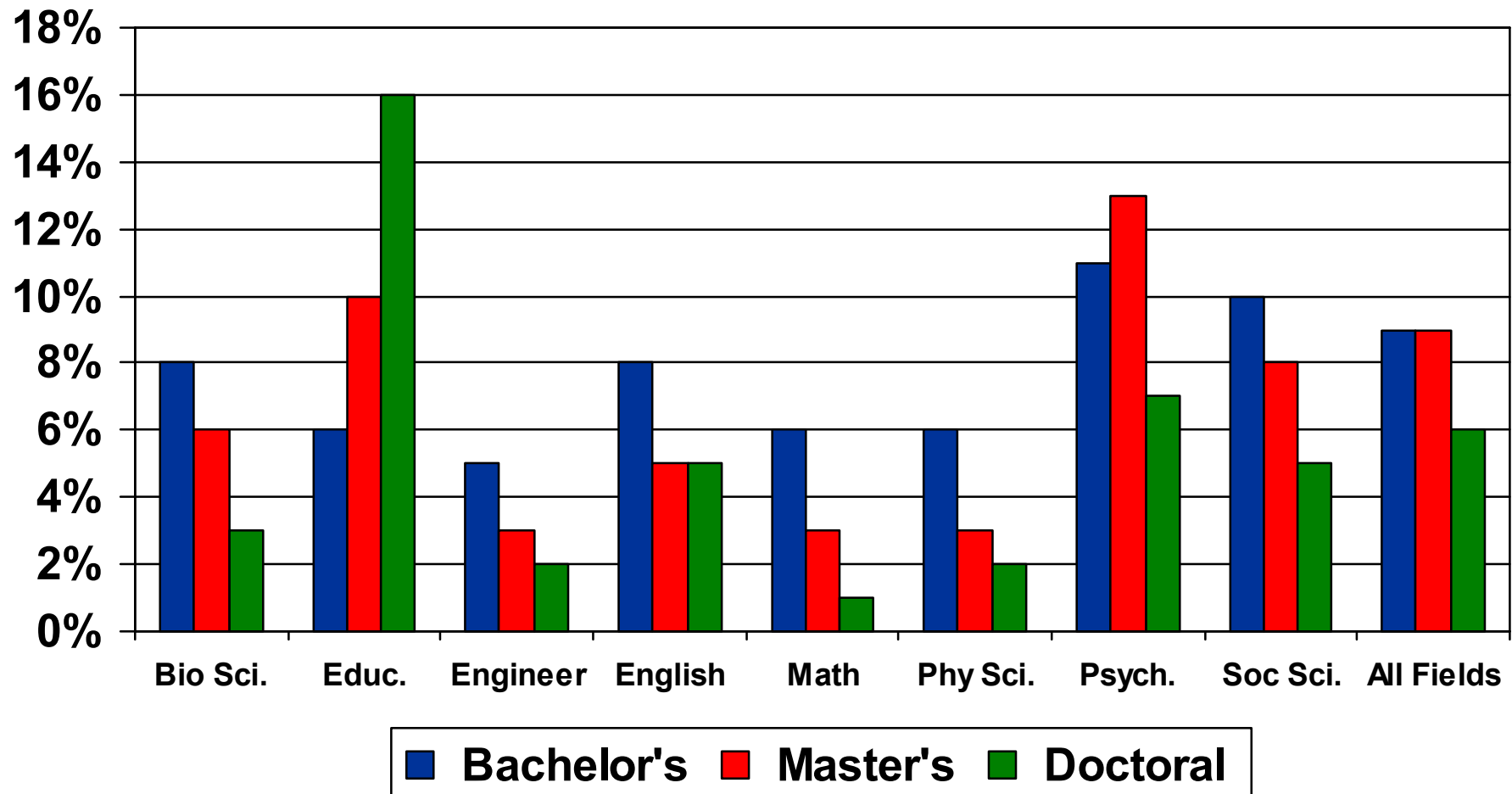
How Can We Increase the Pool of STEM Students?

Hispanic and Asian First Year Students Intending to Major in a Science or Engineering Field Increased from 1983 to 2004 While African American Students Remained Constant



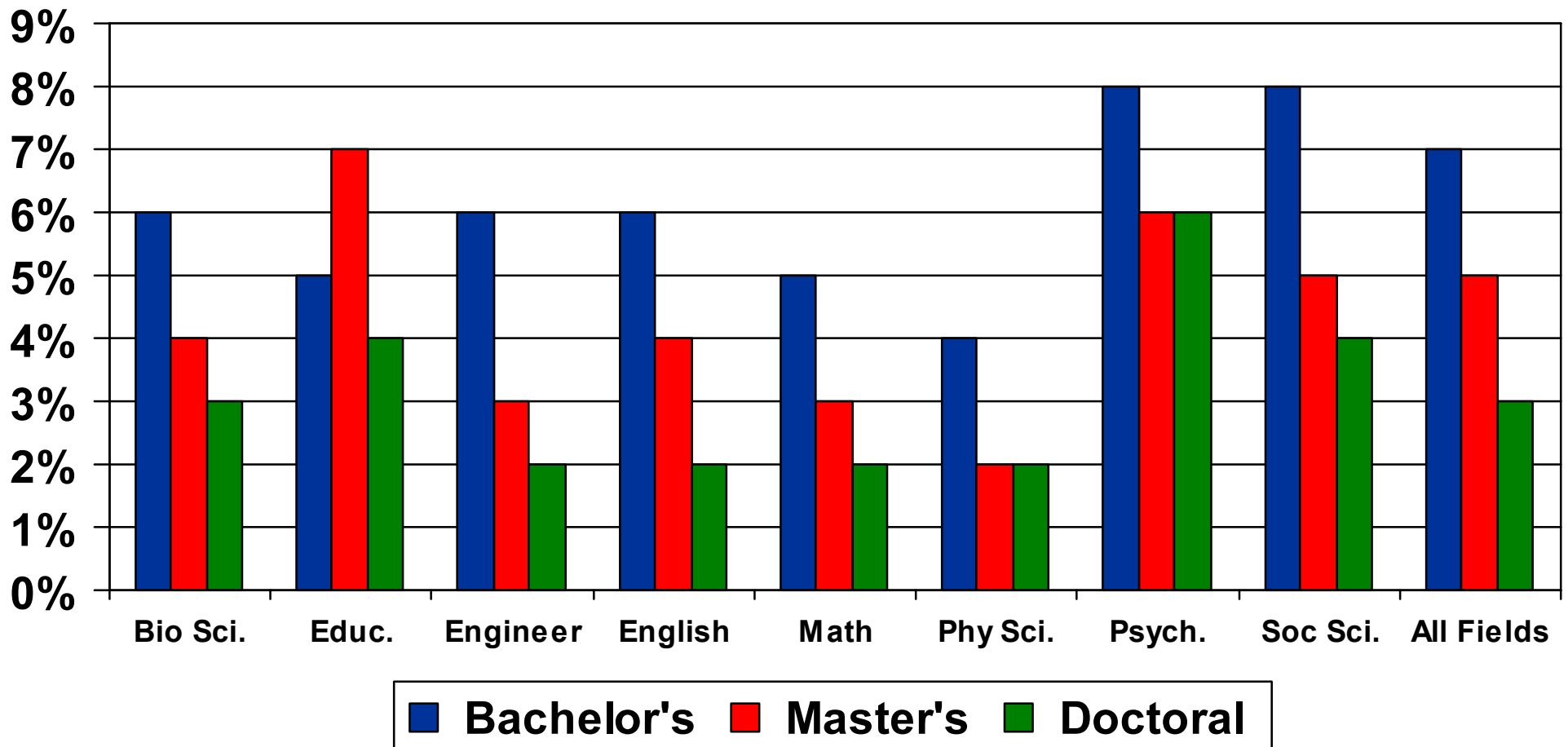
Source: NSF Indicators 2006 Report.

African American Students Representation Decreases as Degree Level Increases in STEM Fields



Source: U.S. Department of Education, National Center for Education Statistics (2005).
Digest of Education Statistics: 2005, Tables 262, 265, and 268.

Hispanic Students Representation Decreases as Degree Level Increases in STEM Fields



Source: U.S. Department of Education, National Center for Education Statistics (2005).
Digest of Education Statistics: 2005, Tables 262, 265, and 268.



III. Model Programs

The Pre-College Years

The Bank St. College of Education - I-LEAD

Institute for Leadership, Excellence & Academic Development

9th GRADE

- Recruiting
- Rigorous academic summer program (3 weeks)

10th GRADE

- Advanced Academic Saturday Academy (2 times per month)
- After-school academic enrichment
- PSAT Prep Classes I
- Summer Options – International learning experiences, college programs, leadership development, community service
- Weekend leadership retreats

11th GRADE

- Weekend leadership retreats
- PSAT Prep Classes II
- SAT Prep Enrichment
- College Essay Writing Workshop
- SAT preparation course
- College tours
- Summer Options – International learning experiences, college programs, leadership development, community service

12th GRADE

- Weekend leadership retreats
- College Application Process
- Workshops – Financial aid, interviewing skills, college survival series

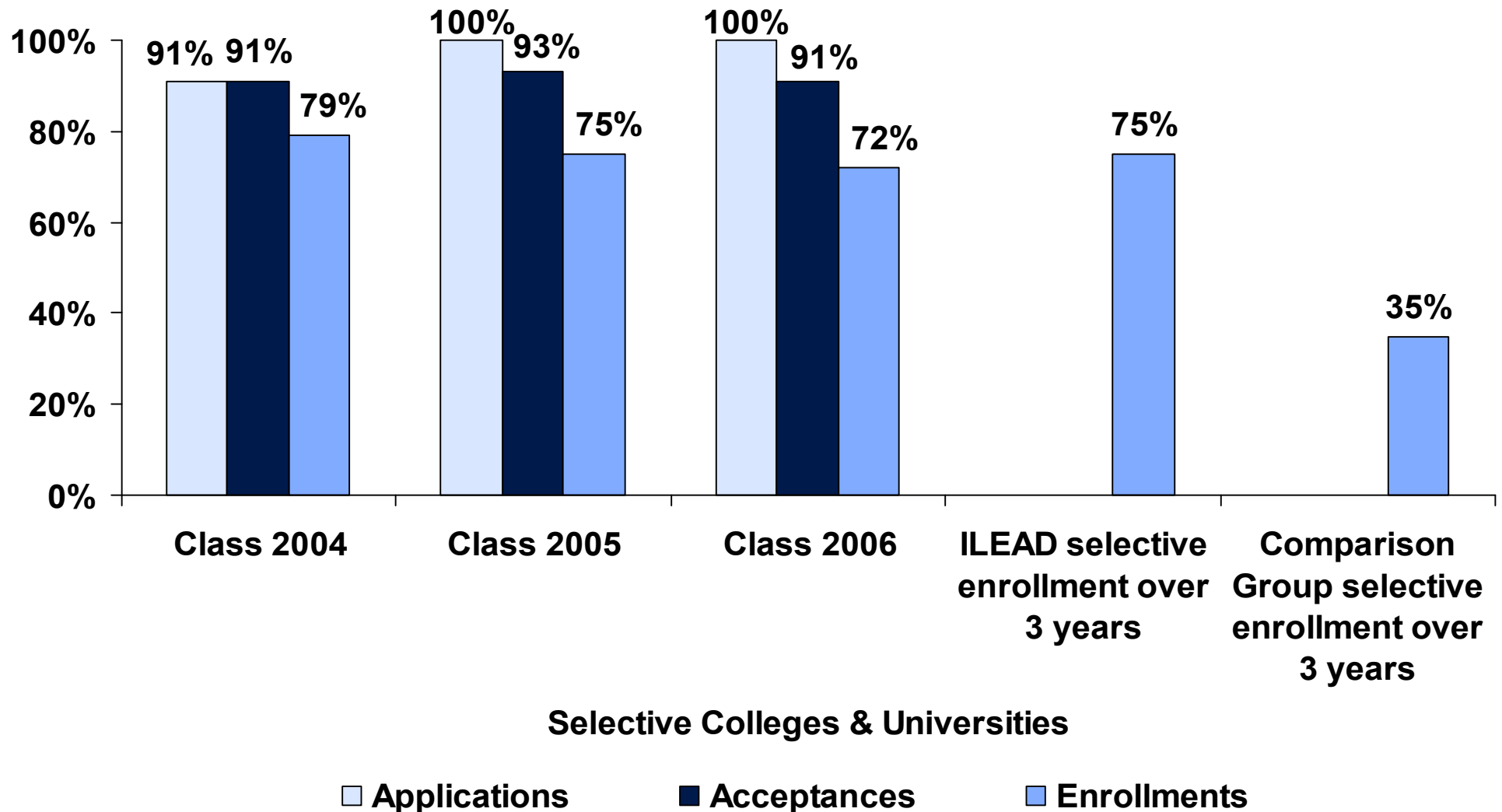
Who Are the I-LEAD Goldman Sachs Foundation Scholars?

- 251 students from New York City
- All students attend parochial schools in low-income, high-risk, underserved neighborhoods
- 53% males
- 41% African American and
48% Hispanic
- 62% from families in which at least one parent does not have a bachelor's degree
- 19% from families with a family income of less than \$20,000



I-LEAD GSF Scholars Are Applying, Being Accepted and Enrolling at Selective Colleges and Universities at a Greater Rate Than a Comparison Group of Similar Students

- Almost all I-LEAD students are applying to selective colleges and universities
- Over 75% of students enroll at a selective college or university compared to 37% of Comparison Group



Prep for Prep - NYMRLA

New York Metro Region Leadership Academy

7th GRADE

- Recruiting
- Rigorous academic summer program (7 weeks)

8th GRADE

- Advanced Academic Saturday Academies (every week)
- Rigorous academic summer program (7 weeks)

9th GRADE

- Academic guidance
- Life skills guidance through Prep for Prep
- Social Activities and Contingent Days to Build Peer Support Network
- Optional Participation in Prep for Prep/Goldman Sachs Institute for Entrepreneurship and select other Prep for Prep opportunities

10th GRADE

- Academic guidance
- Life skills guidance through Prep for Prep
- Social Activities and Contingent Days to Build Peer Support Network
- Leadership development through retreats

11th GRADE

and

12th GRADE

- Academic guidance
- College Guidance including SAT Preparation Course, College Information Meetings and Individual Counseling, Financial Aid Counseling, and Overnight College Trips
- Life skills guidance through Prep for Prep
- Leadership development through retreats
- Optional Participation in Prep for Prep Professional Advancement Opportunities (e.g. Summer Jobs Bank and Professional Skills Workshops)
- Optional Participation in Prep for Prep Leadership Development Opportunities (e.g. international learning experiences, Public Policy Institute)

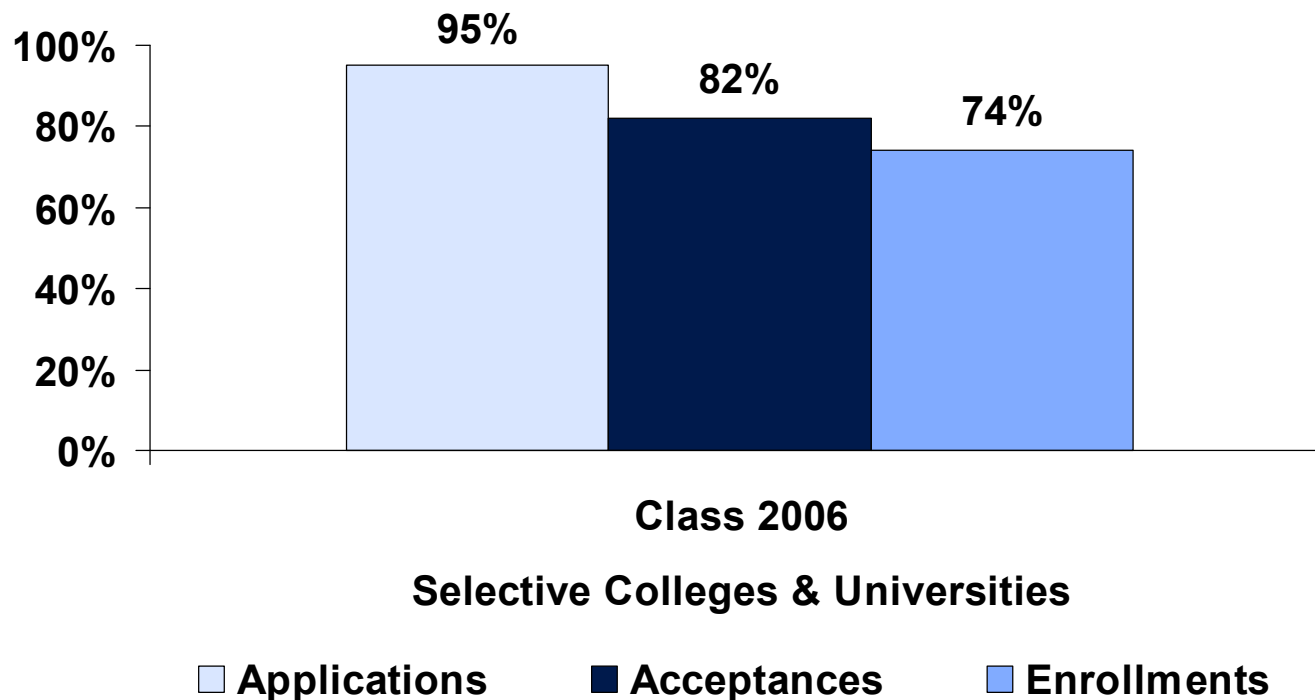
Who Are the NYMRLA Students?

- 131 students from NY, NJ, and CT
- 52% males
- 35% African American
45% Hispanic
20% from multiracial backgrounds
- Nearly 50% from families in which at least one parent does not have a bachelor's degree
- Nearly 10% from families with a family income of less than \$20,000



Nearly All NYMRLA Students Applied to Selective Colleges and Universities, and Most Attend

- 82% of students who applied were accepted
- Students may not have enrolled due to family, financial, or personal reasons



Questions for Consideration

- Question 1





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