



Council of Graduate Schools

Advocacy, Research, and Innovation

**The CGS Ph.D. Completion Project:
*A Study of Doctoral Completion at
Selected Universities in the US and
Canada***

2010 NC State Graduate School Symposium

November 9, 2010

Robert Sowell

Council of Graduate Schools

The Council of Graduate Schools (CGS)

- Mission – to improve and advance graduate education
- Association of 500+ colleges and universities in U.S. and Canada; 14 international
- Activities - Convene; advocate; research; develop and disseminate best practices



Ph.D. Completion and Attrition

Previous Studies

- Suggest that ~ 50% of students that start Ph.D. programs actually complete them
- Range from 33% in the humanities and social sciences to 76% for students in the biomedical sciences who have support from NIH
- Minorities and women complete at lower rates than majority students and males, particularly in science and engineering
- Completion rates in medical and law schools are reported to be in the 90-95% range



CGS Ph.D. Completion Project

- *Guiding Principles:*
 - Students admitted to Ph.D. programs should be given every opportunity to complete their degrees.
 - Understanding and improving completion and attrition rates is key to increasing the effectiveness of doctoral programs.
 - Graduate deans are in the best position to lead conversations about the best practices that will improve student completion rates.



CGS PhD Completion Project

- The goal of the project is to improve completion in and reduce attrition from Ph.D. programs by:
 - Determining what completion/attrition rates are and how they vary by field and demographics
 - Piloting interventions to improve completion
 - Empowering graduate schools to encourage PhD completion, with emphasis on URM



CGS Ph.D. Completion Project

■ Funding

- Background work (2002-03) funded by the Sloan Foundation and NSF
- Current Project funded by Pfizer Inc and the Ford Foundation
 - Phase I (2004-2007)
 - Phase II (2007-2010)

■ Institutional Participation

- 29 Research Partner institutions received grants, others provided data, etc.



CGS Ph.D. Completion Project Institutional Partners

- Engaged in activities to increase Ph.D. completion in at least eight programs
- Provided completion and attrition data - 12 years starting in 1992-93 (Phase I) and an additional 4 years for Phase II partners
- Conduct student exit surveys
- Implemented at least six new interventions in an effort to increase completion, with emphasis on URM's



Categories of Potential Interventions

- Selection/Matching
- Mentoring and Advising
- Financial Support and Structure
- Program Environments
- Research Experiences
- Curricular and Administrative Processes and Procedures



CGS Ph.D. Completion Project

Quantitative Data Submitted by Institutions 12 Years (1992-93 through 2003-04)

- Program completion and attrition
 - 30 Institutions
 - 5 Broad Fields
 - 54 Disciplines
 - 330 Programs
 - ~ 49,000 Students
- Broad field demographic completion
 - Gender (G)
 - Citizenship/Ethnicity (CE)
 - 24 Institutions (G)
 - 23 Institutions (CE)
 - ~ 40,000 Students



Profile of Data (A-Cohorts) for Ten-Year Completion Analysis

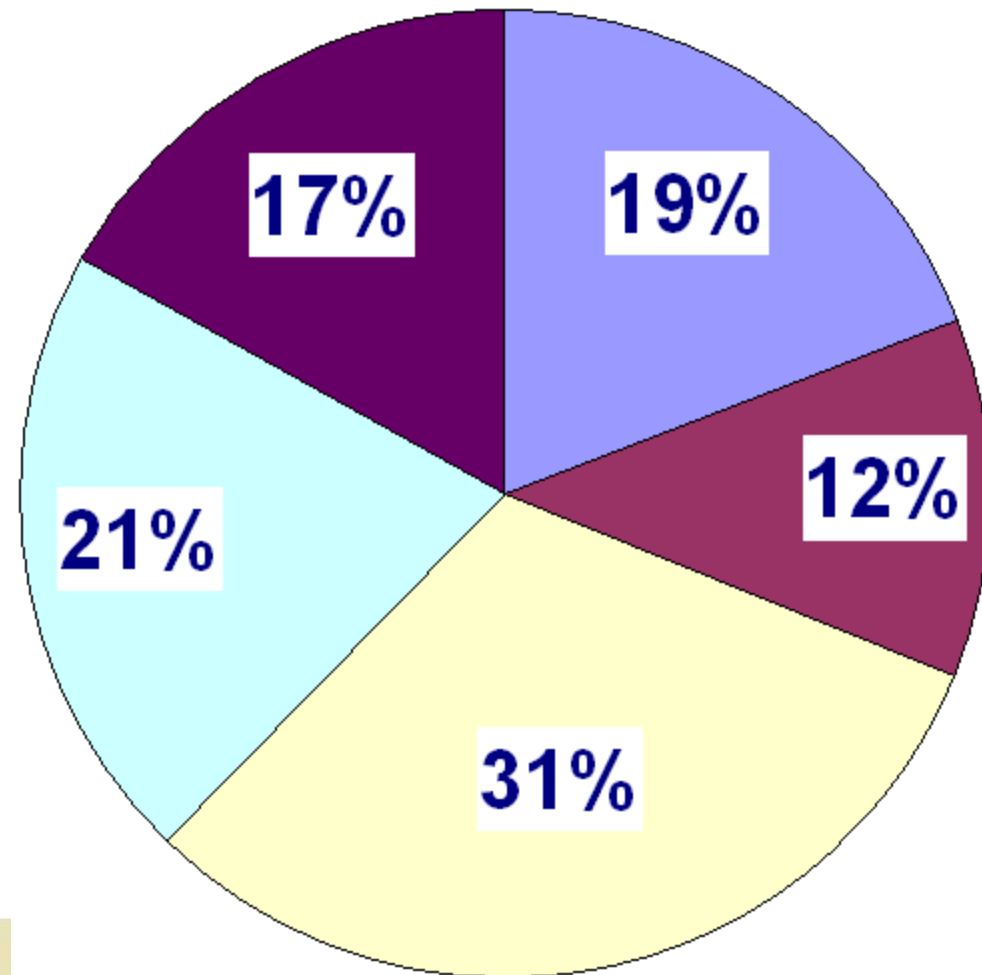
Program Data **12,135**

Approximate distribution across fields

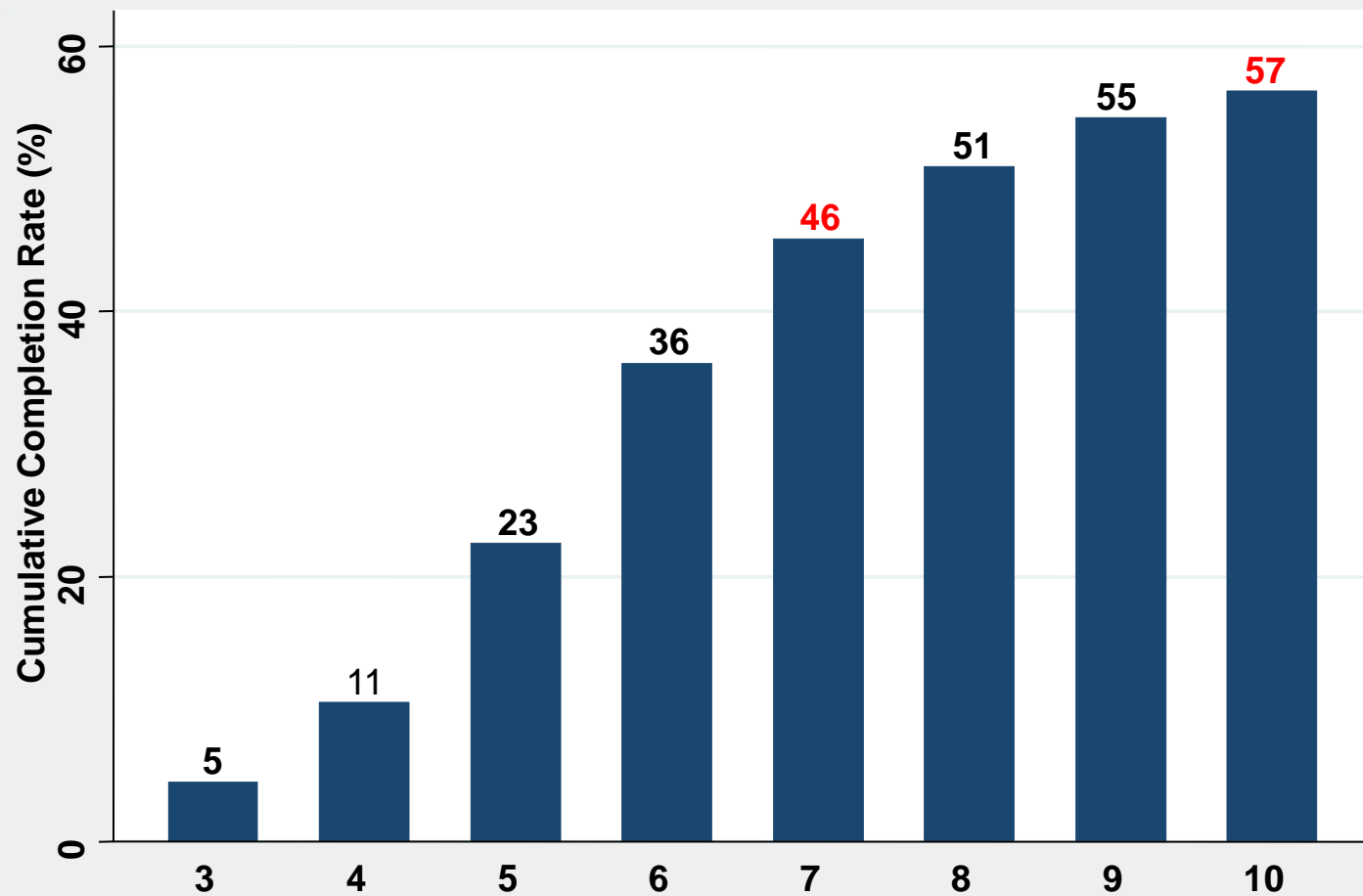
Gender Data **9,683**

**Citizenship &
Ethnicity Data** **9,359**

-  Engineering
-  Life Sciences
-  Math & Physical Sci.
-  Social Sciences
-  Humanities



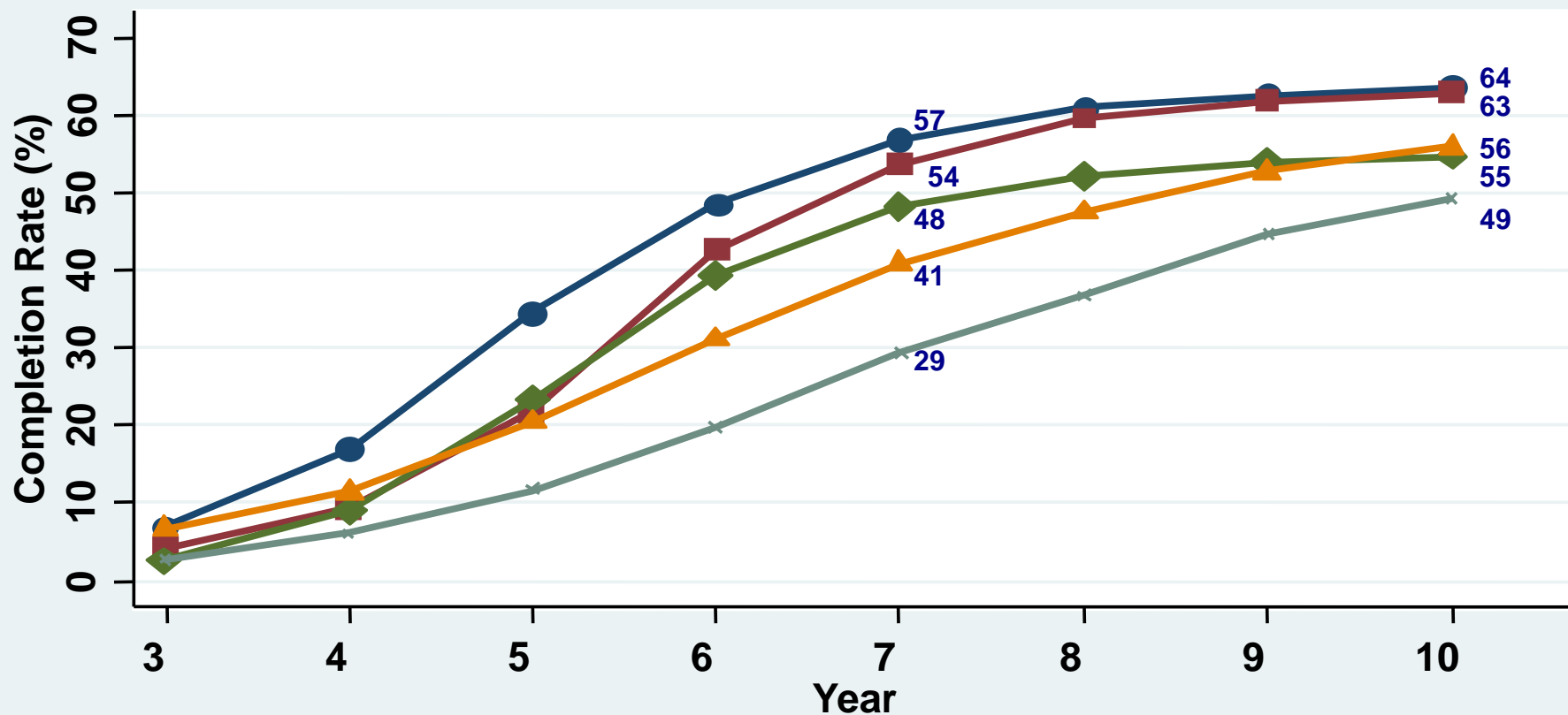
Overall Ten-Year Completion Rates



Source: Council of Graduate Schools
Completion and Attrition Program Data



Ten-Year Cumulative Completion Rates by Broad Field



Ten-Year Completion Rates for Selected Disciplines

Engineering (64%)		Life Science (63%)	
Civil	78%	Genetics	69%
Mechanical	66%	Micro/Immunology	69%
Chemical	63%	Neuroscience	65%
Biomedical	63%	Mole/Cell Biology	64%
Electrical	56%	Biology	59%
Mathematics and Physical Sciences (55%)			
Chemistry	62%		
Physics	59%		
Mathematics	51%		
Computer Science	41%		



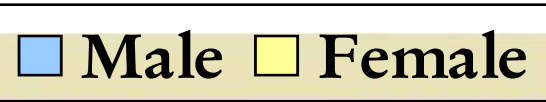
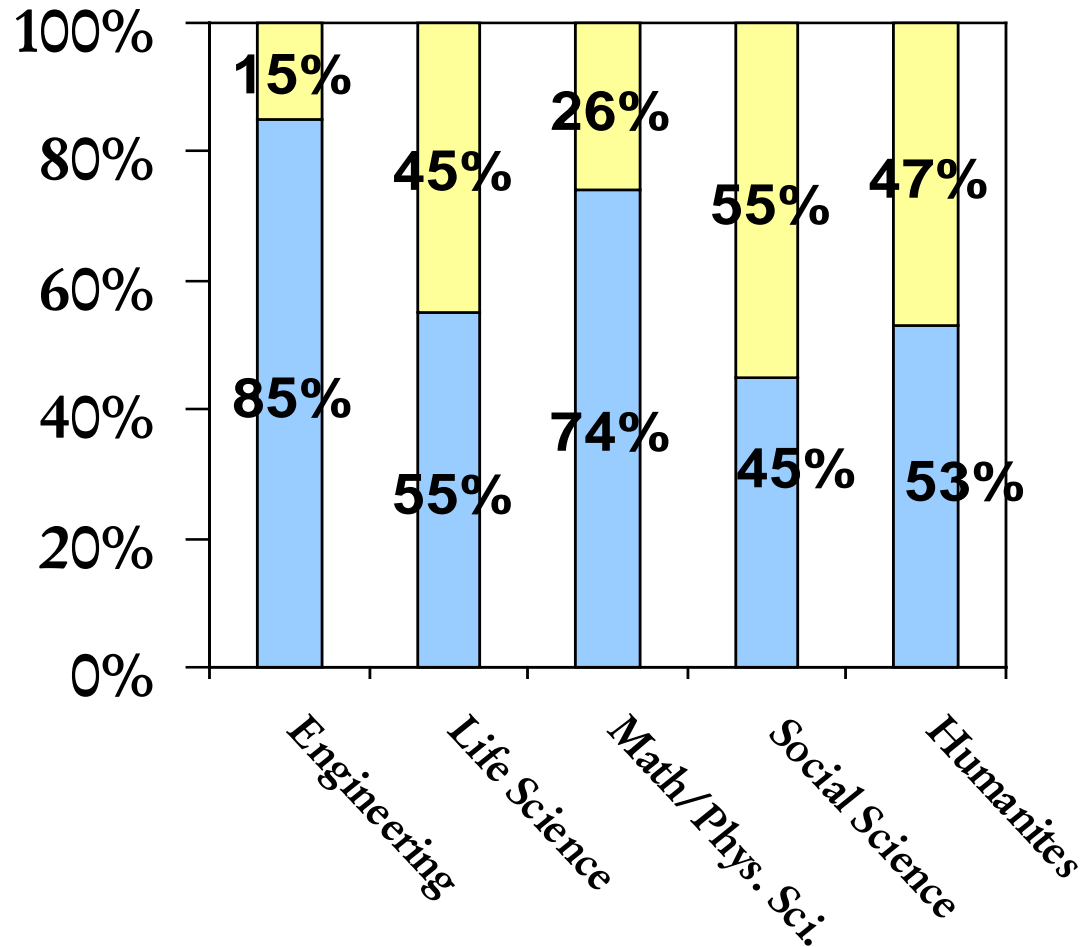
Ten-Year Completion Rates for Selected Disciplines (2)

Social Science (56%)	
Psychology	65%
Economics	52%
Anthropology	46%
Sociology	45%
Political Science	44%
Humanities (49%)	
English Language and Literature	52%
Philosophy	49%
Foreign Languages and Literatures	48%
History	47%

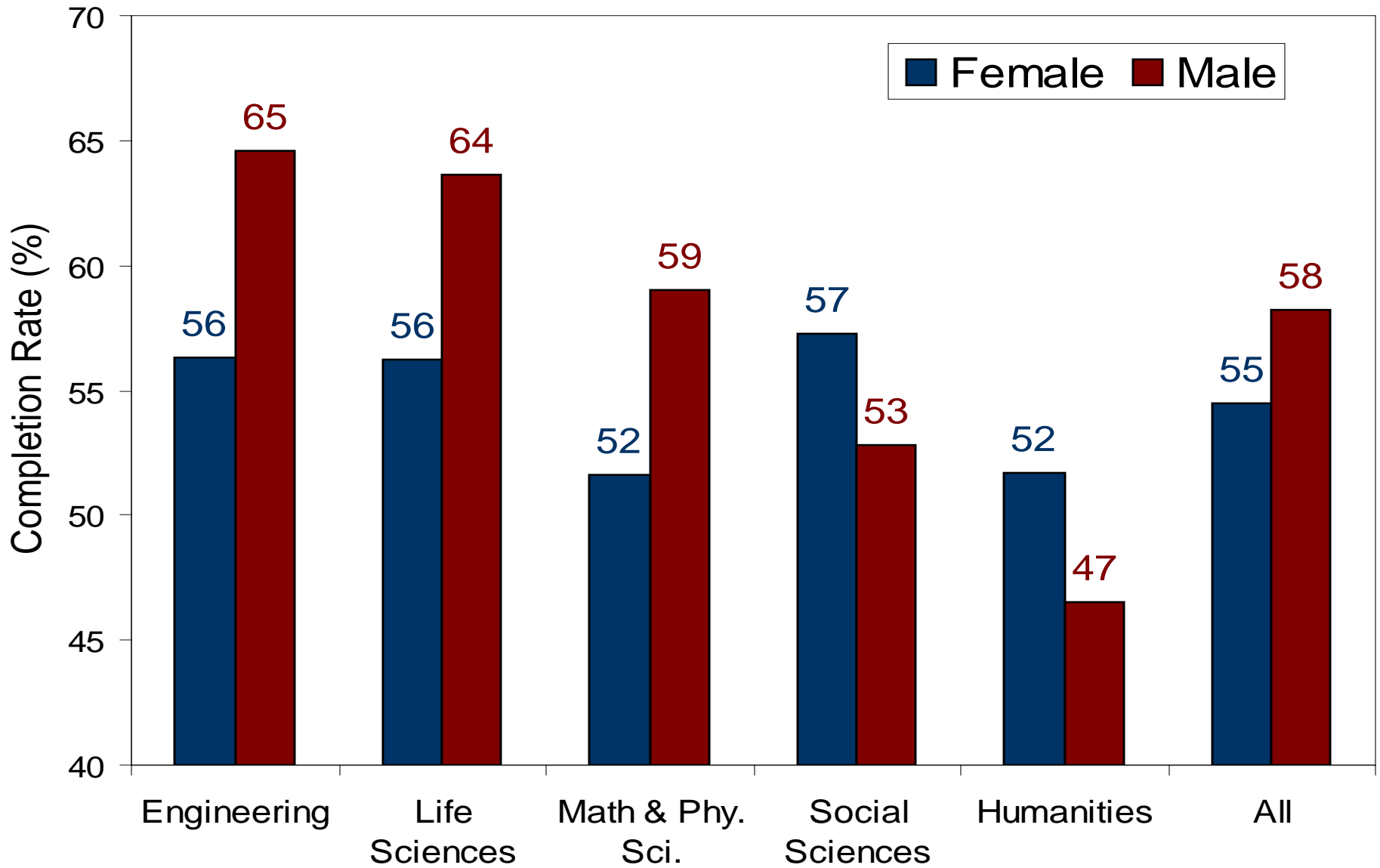


Gender Data

	Male	Female
Engineering	1,606	277
Life Science	602	489
Math/Phys. Science	2,251	792
Social Science	914	1,101
Humanities	869	782
Total	6,242	3,441

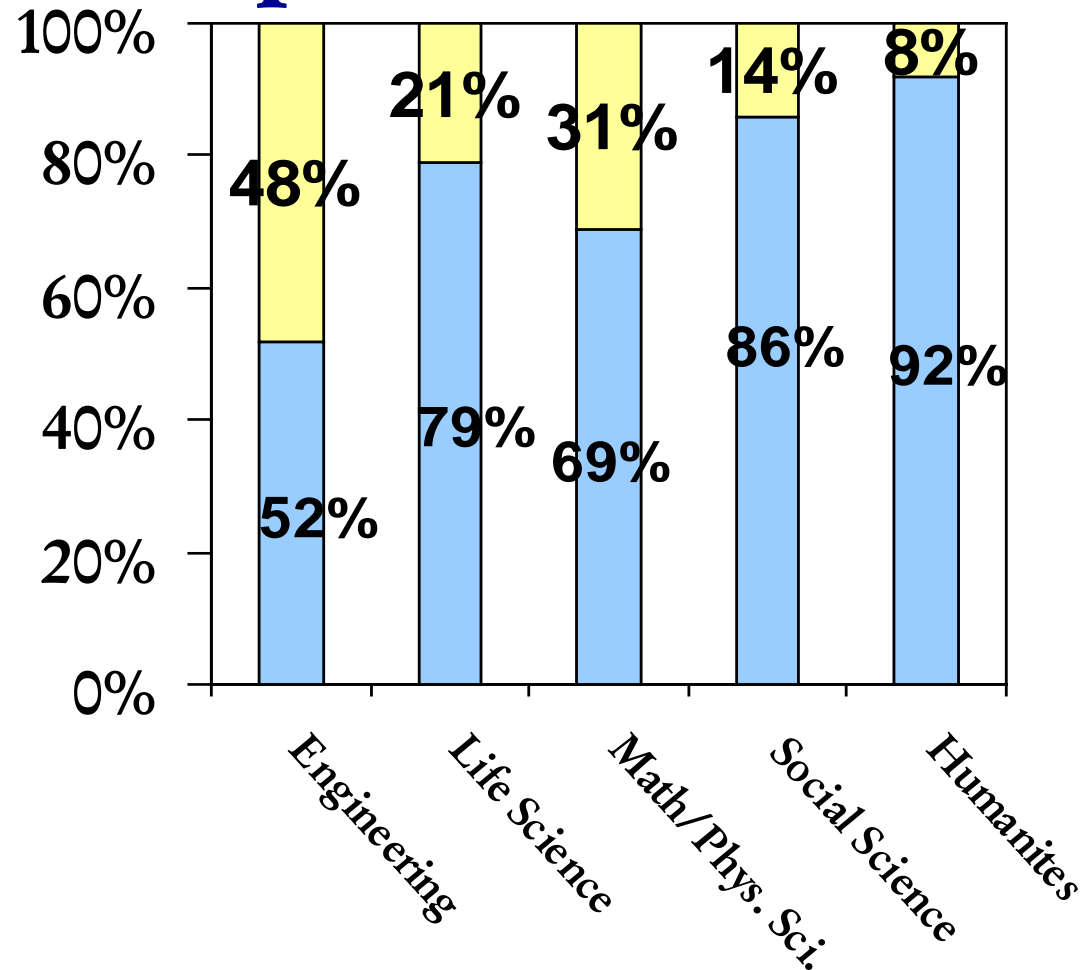


Ten-Year Completion Rates: Broad Field and Gender

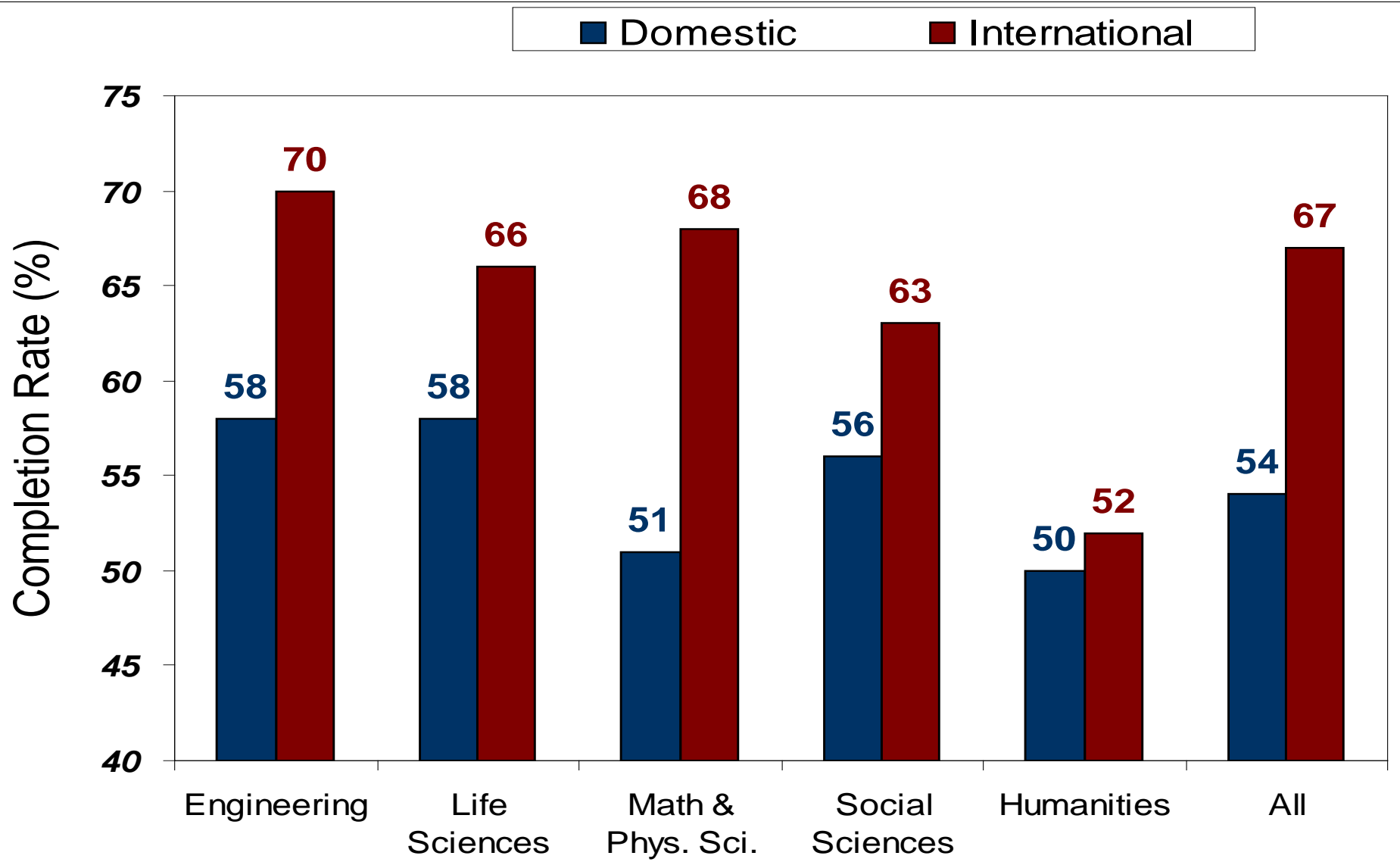


Citizenship Data

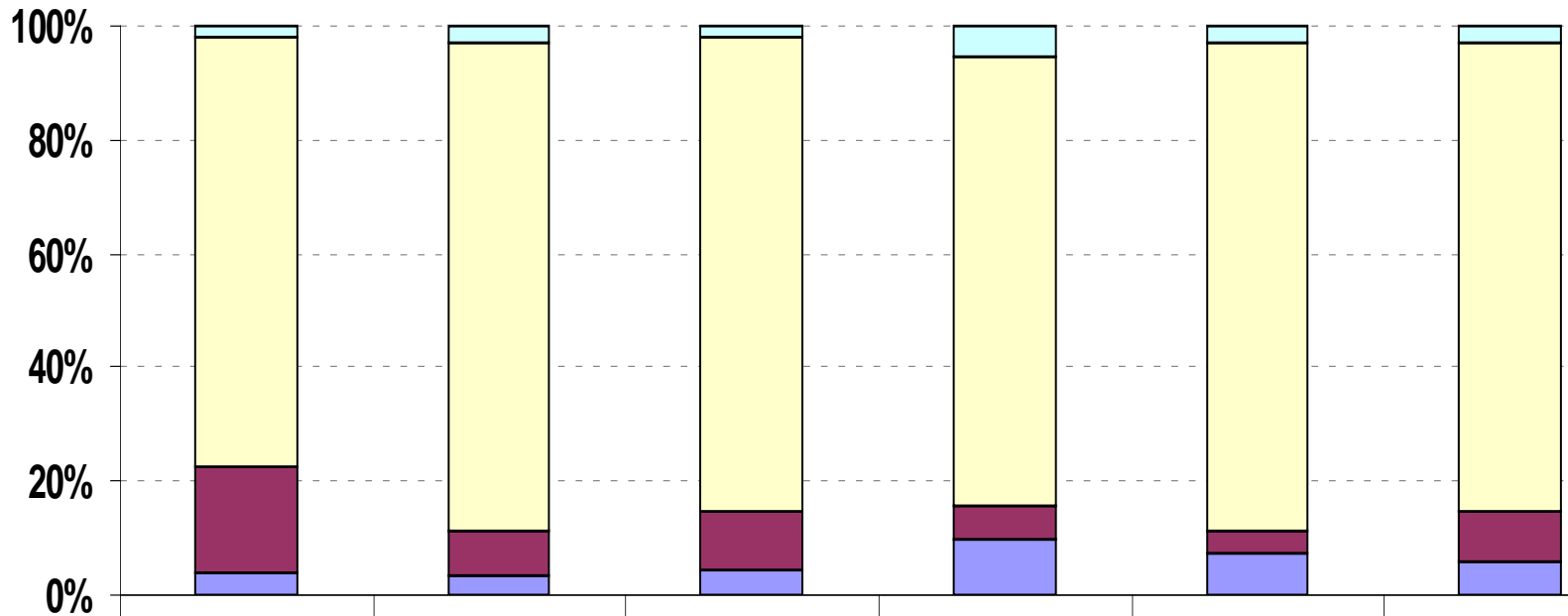
	Domestic	Intl.
Engineering	970	888
Life Science	811	212
Math/Phys. Science	2,100	941
Social Science	1,655	278
Humanities	1,390	114
Total	6,926	2,433



Ten-Year Completion Rates: Broad Field and Citizenship



Race/Ethnicity Data



	Engineering	Life Science	Math & Physical Science	Social Science	Humanities	Total
Hispanic American	20	24	38	85	41	208
White	700	671	1,629	1,272	1,156	5,428
Asian American	171	62	207	95	52	587
African American	38	25	85	157	98	403

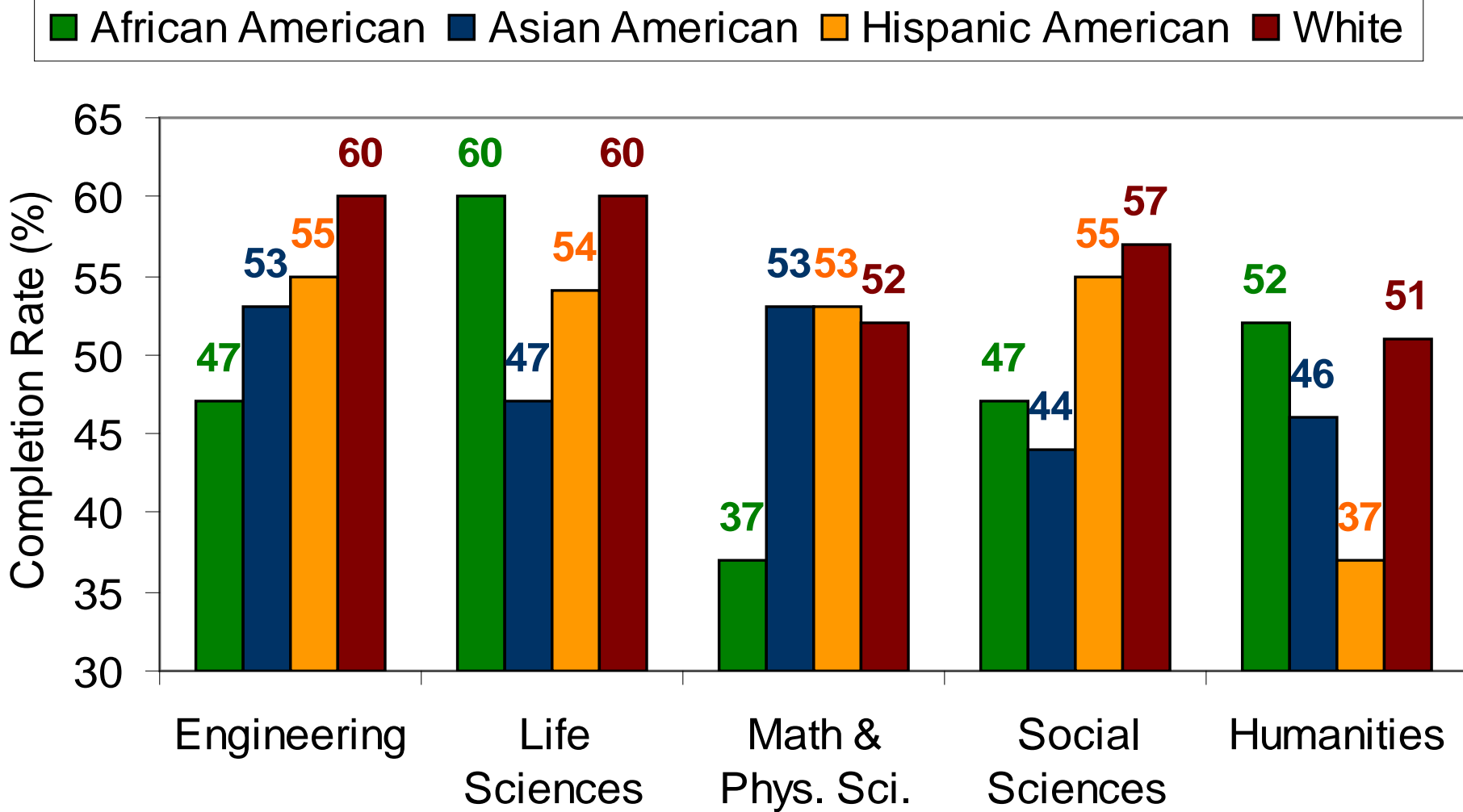


Ten-Year Completion Rates By Ethnicity

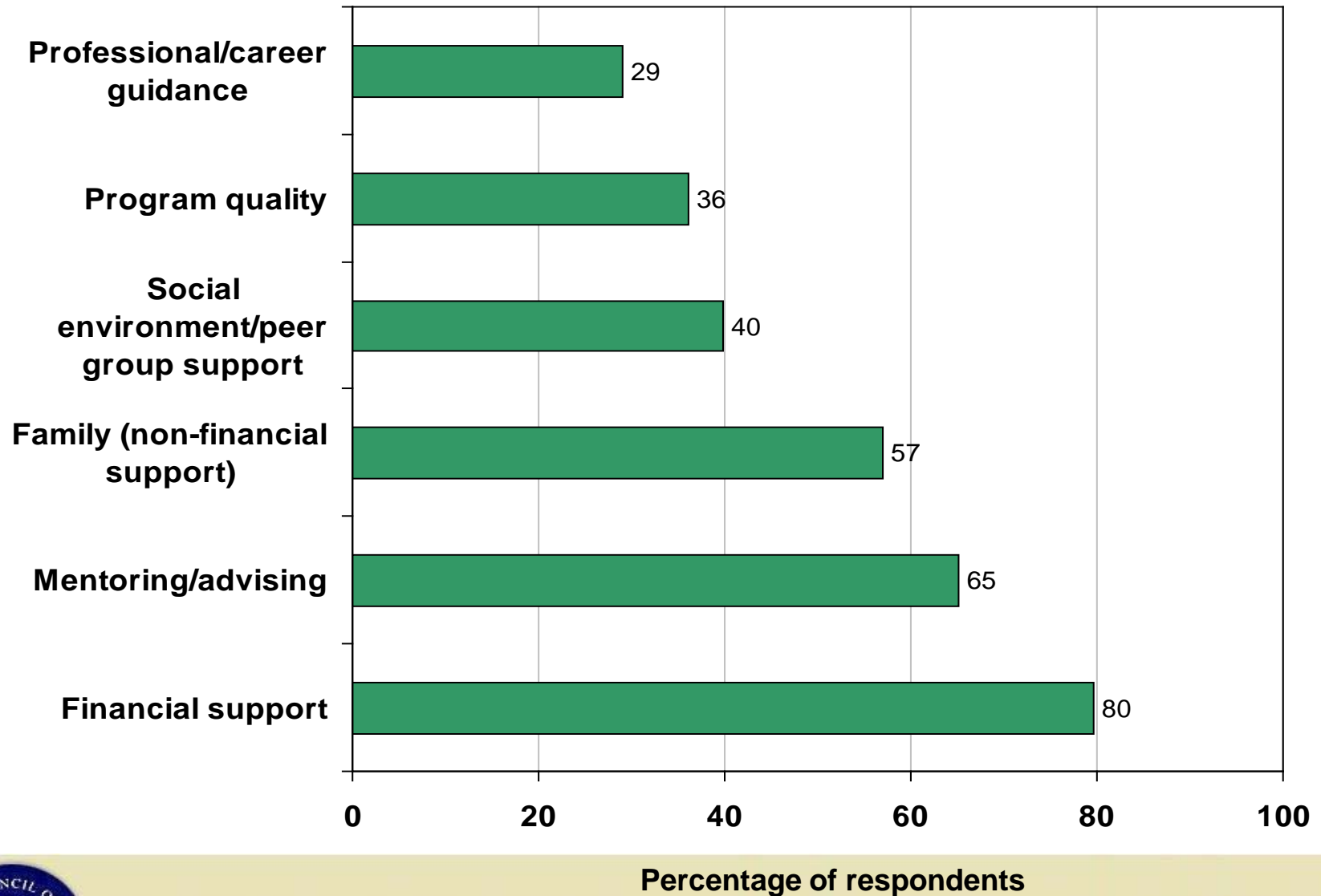
- African Americans – 47%
- Asian Americans – 50%
- Hispanic Americans – 51%
- White – 55%



Ten-Year Completion Rates: Broad Field and Ethnicity



Factors Contributing to Degree Completion: Per Successful Students



Categories of Interventions

- Selection/Matching
- Mentoring and Advising
- Financial Support and Structure
- Program Environments
- Research Experiences
- Curricular and Administrative Processes and Procedures



Preliminary Conclusions: Strategies That Work

- **Selection and Admission**
 - Offer pre-admission and pre-enrollment visits to campus
 - Expand/improve efforts to recruit underrepresented students
- **Mentoring & Advising**
 - Make expectations and requirements transparent
 - Establish administrative structures for the early identification of, and interventions aimed at retaining, “at-risk” students



Preliminary Conclusions: Strategies That Work

- **Financial Support & Structure**
 - Increase stipends for summer research
 - Provide health insurance
- **Curricula Process**
 - Provide dissertation writing assistance
 - Implementation of on-line graduate student tracking systems to monitor student progress to the degree



Preliminary Conclusions: Strategies That Work

- **Research Experience**
 - Offer summer pre-doctoral opportunities for underrepresented students
 - Streamline course requirements to allow students the opportunity to engage early in research
- **Program Environment**
 - Create support groups that address needs of underrepresented students
 - Implement a parental accommodation policy



Preliminary Conclusions: Strategies That Work

- Create a Culture of Evidence
 - Assemble and use data
 - In meetings with faculty, college deans, provost and president
 - To develop statistical profiles of the graduate school and graduate programs for use in comparing programs within the institution and across institutions



CGS Ph.D. Completion Project

Advice from Institutional Partners

- Early engagement of faculty and university leadership
- Start with the data
- Must have capable staff in graduate school and other involved campus units
- Limit the interventions and focus on diversity
- Focus on interventions that are sustainable
- Provide appropriate training where necessary
- Remain positive



CGS Ph.D. Completion Project

Future Activities/Plans

- Complete analyses of Phase II completion and attrition data (16 years)
- Determine patterns of completion and attrition over time
- Study impact of new interventions on completion and attrition
- Publish findings
- Seek funding for a more in-depth study of completion and attrition of minority students in STEM fields

