



Council of Graduate Schools

Advocacy, Research, and Innovation

**The CGS
Ph. D. Completion Project**

95th Annual Meeting

AACRAO

April 14, 2009

Chicago, IL

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; develop and disseminate best practices; research**



Why Focus of Ph.D. Completion?

- Of high interest to CGS members and other stakeholders in graduate education
- Previous studies suggest as an area that merits attention
- Maintain American competitiveness
- Changing demographics of Ph.D. students
- Quality of Ph.D. Programs



Ph.D. Completion Rates

Previous Studies

- Report 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

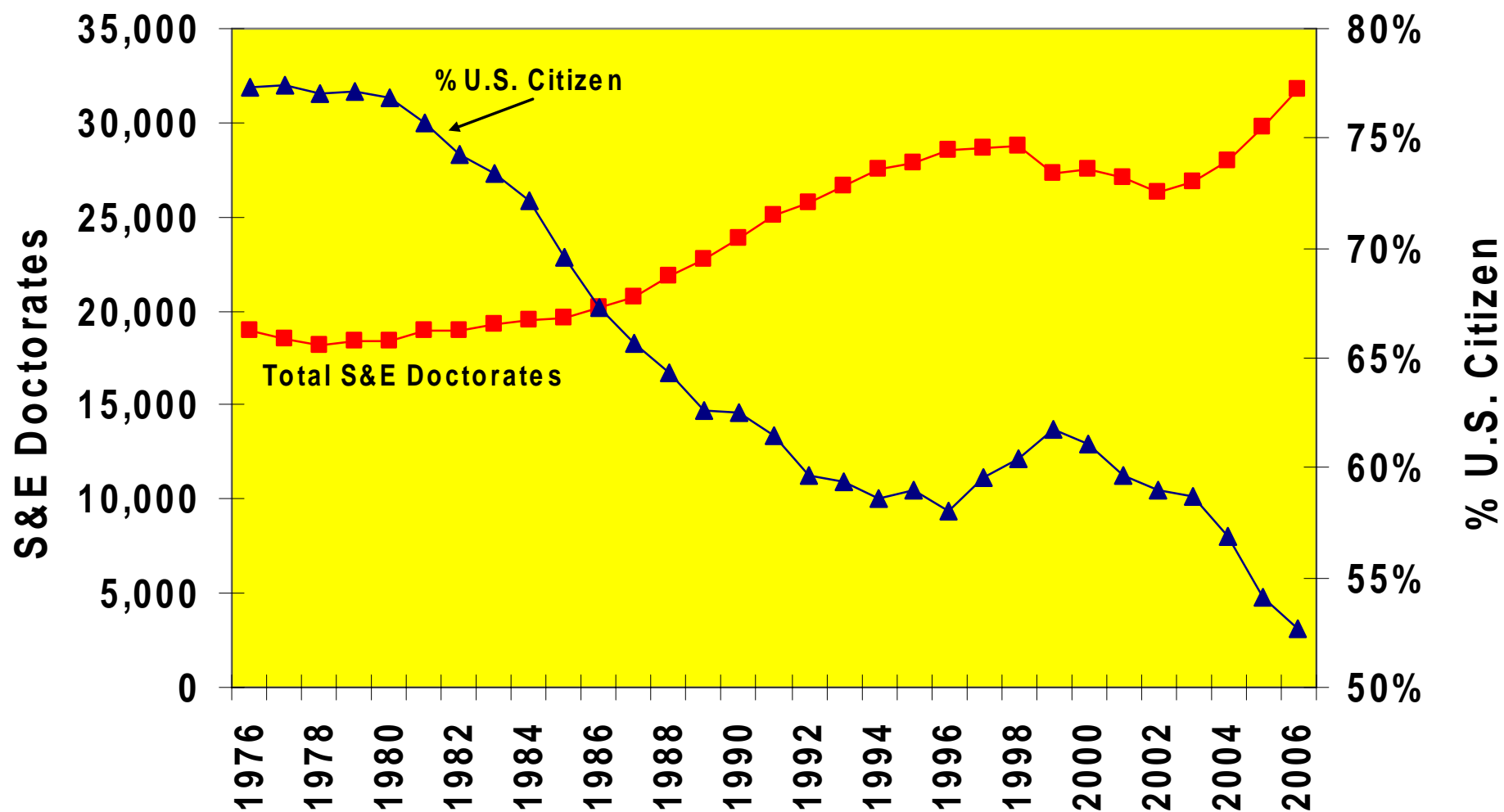


Competitiveness

A highly skilled workforce operating at the frontiers of knowledge creation and professional practice is key to America's competitiveness and national security.



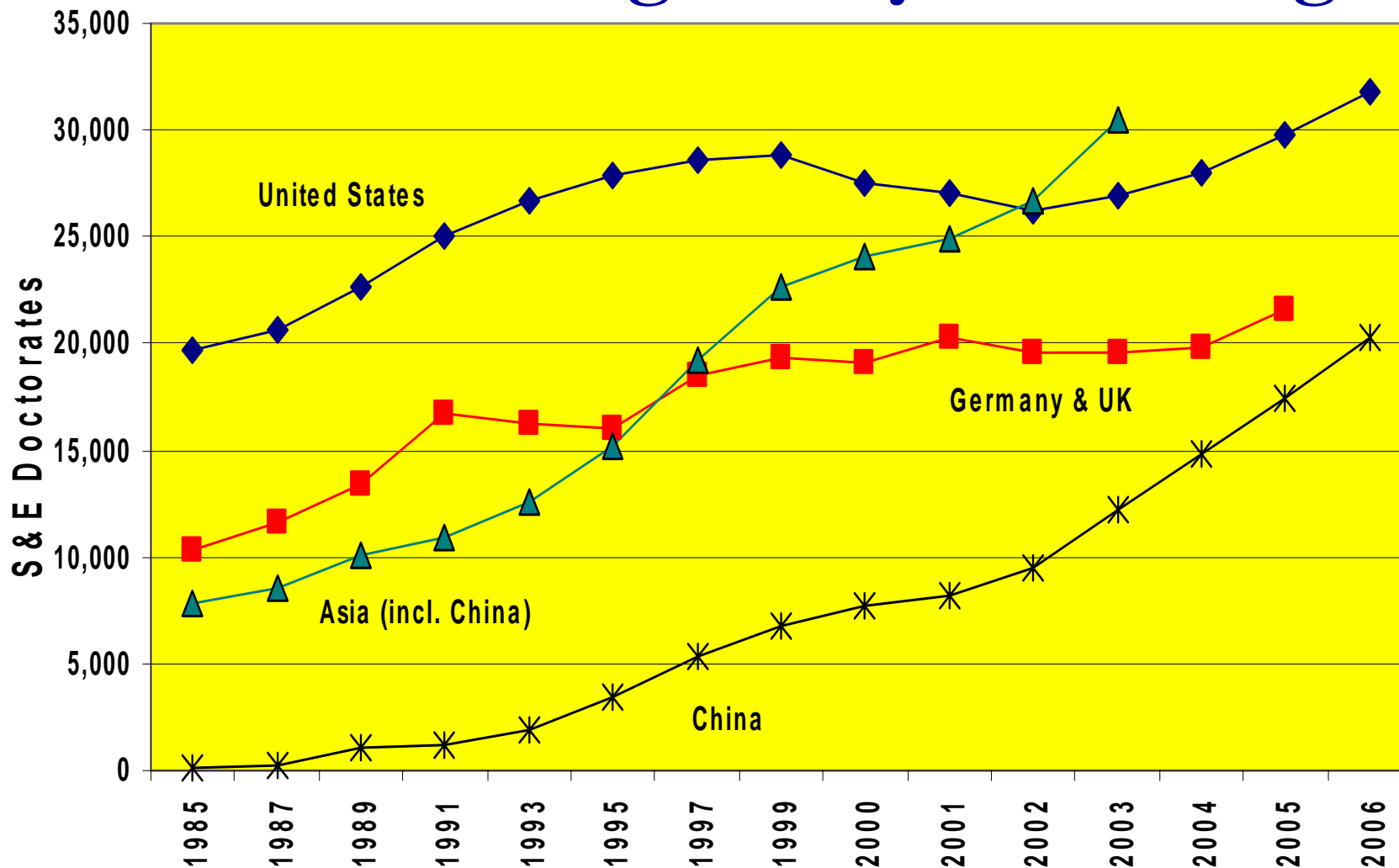
S&E Doctorates Awarded by US Institutions



Source: National Science Foundation, WebCA SPAR Database, retrieved September 2008



Doctoral S&E Degrees by World Region



Asia includes China, India, Japan, South Korea, and Taiwan

2005 and 2006 data for China estimated based on recent trends of 17% average annual growth

Source: National Science Board, *Science and Engineering Indicators 2008*, Appendix Tables 2-42 and 2-43



Demographics

- Expansion of U.S. citizen participation, particularly from underrepresented minority groups, should be a priority in fields that are essential to our nation's success. Development of STEM careers among domestic students must be a priority.
- To maintain our competitiveness in a global economy U.S. graduate schools must be able to attract the brightest and best talent globally



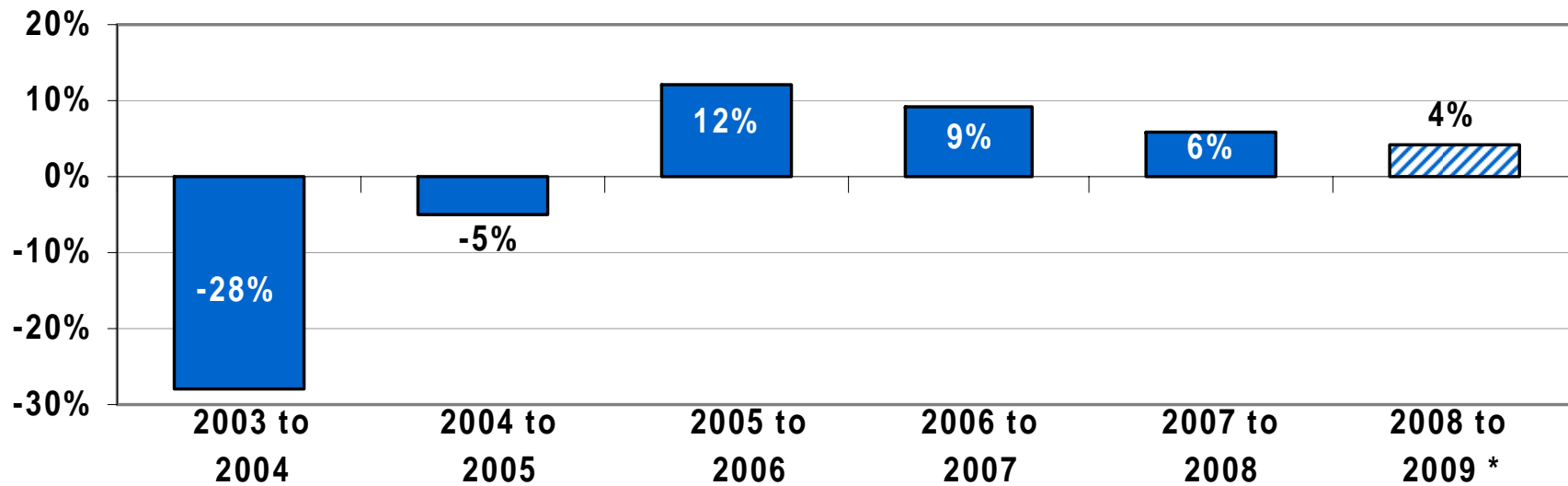
Demographic Transformations in U.S.

- 23% decline between 1980-2020 in Caucasians ages 22-60
- Growth potential in minority populations
- Minority graduate school participation gap
- The number of women who earn doctorate degrees in the U.S. is expected to grow by ~30% from 2006 to 2016, while the projected growth for men is less than 3%



International Students

Percent Change in Applications to U.S. Graduate Schools by Prospective International Students, 2003 to 2004 through 2008 to 2009



Note: Data for 2008 to 2009 are from the *Phase I* survey and are therefore preliminary. All other data are final applications figures from the *Phase II* surveys.

Sources: CGS International Graduate Admissions Survey, Phase II, 2004 to 2008 and Phase I, 2009



Quality

Graduate program quality is the driver of American higher education success and efforts to evaluate and improve all aspects of the quality of the U.S. graduate enterprise must be advanced and supported in order to foster innovation.



CGS Ph.D. Completion Project

- **Goal - to improve Ph.D. student completion and reduce attrition**
- **Focus - underrepresented minorities and women**



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 student degree 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 Ph.D. Completion Project

- **Background work (2003) 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)
- **29 Research Partner institutions received grants, others provided data**



Requirements to Participate in the Ph.D. Completion Project

- Engage in activities to increase Ph.D. completion in at least eight programs
- Implement at least six new interventions in an effort to increase completion
- Provide baseline completion and attrition data (12 years starting in 1992-93)
- Provide an additional 4 years of completion and attrition data (ending with 2007-08)
- Conduct student exit surveys



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



Ten-Year Completion Analysis: For Students Entering Ph.D. Programs in 1992-93 through 1994-95 (A Cohorts)

- **From Program Data**
 - **Completion: Overall, broad field and discipline**
- **From Demographic Data**
 - **Completion: Overall and broad field**
 - **Gender**
 - **Citizenship**
 - **Ethnicity**



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

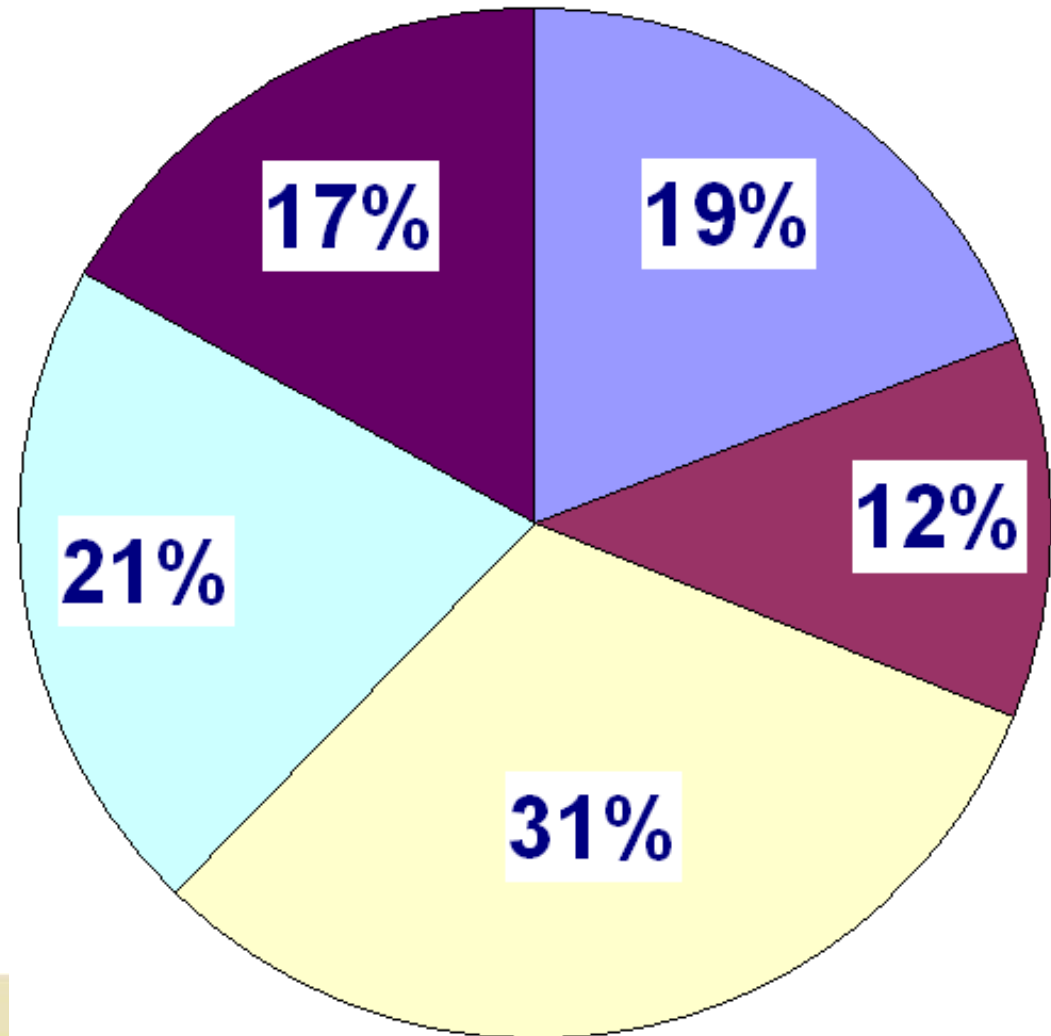
Program Data **12,135**

Approximate distribution across fields

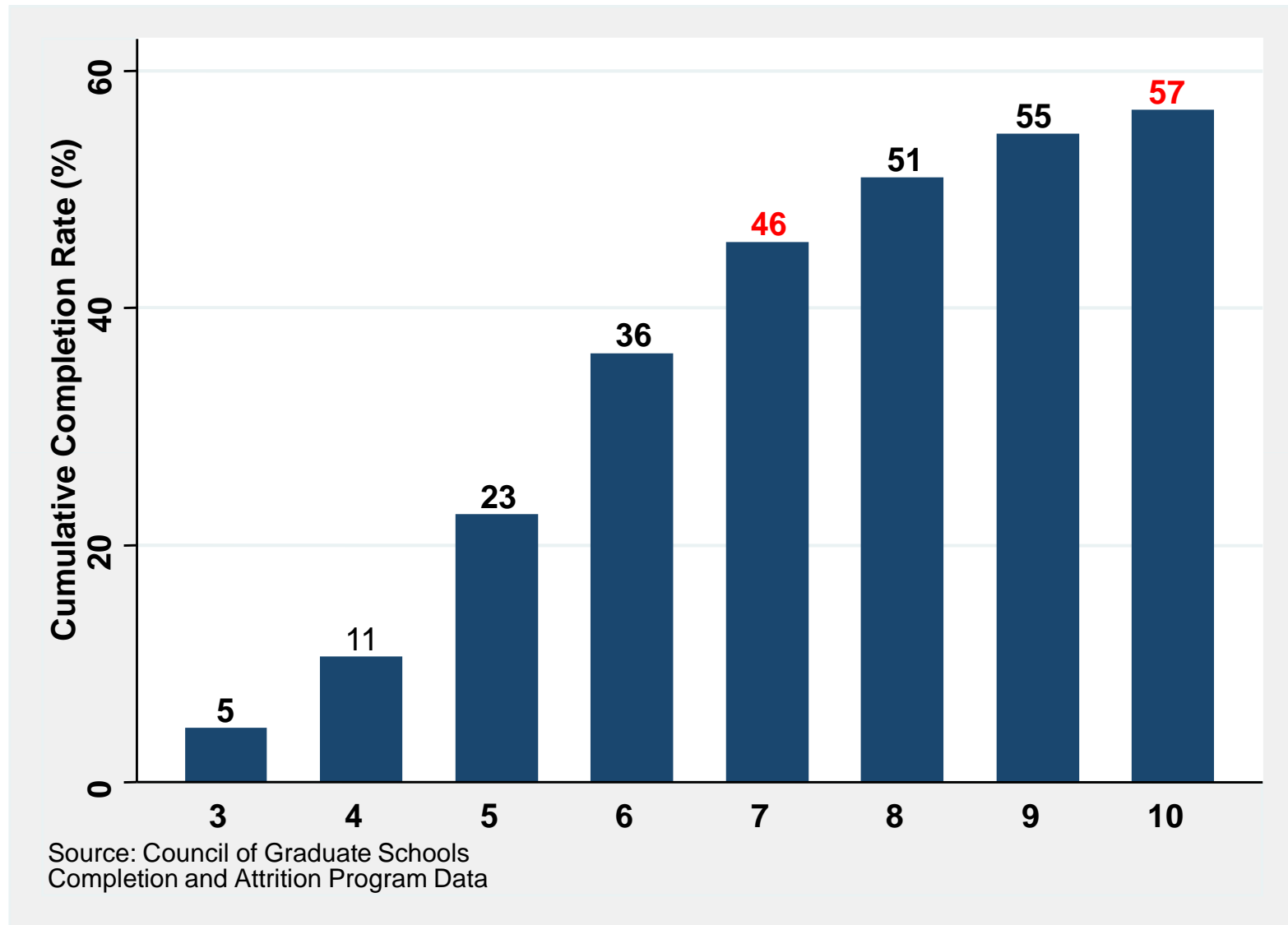
Gender Data **9,683**

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

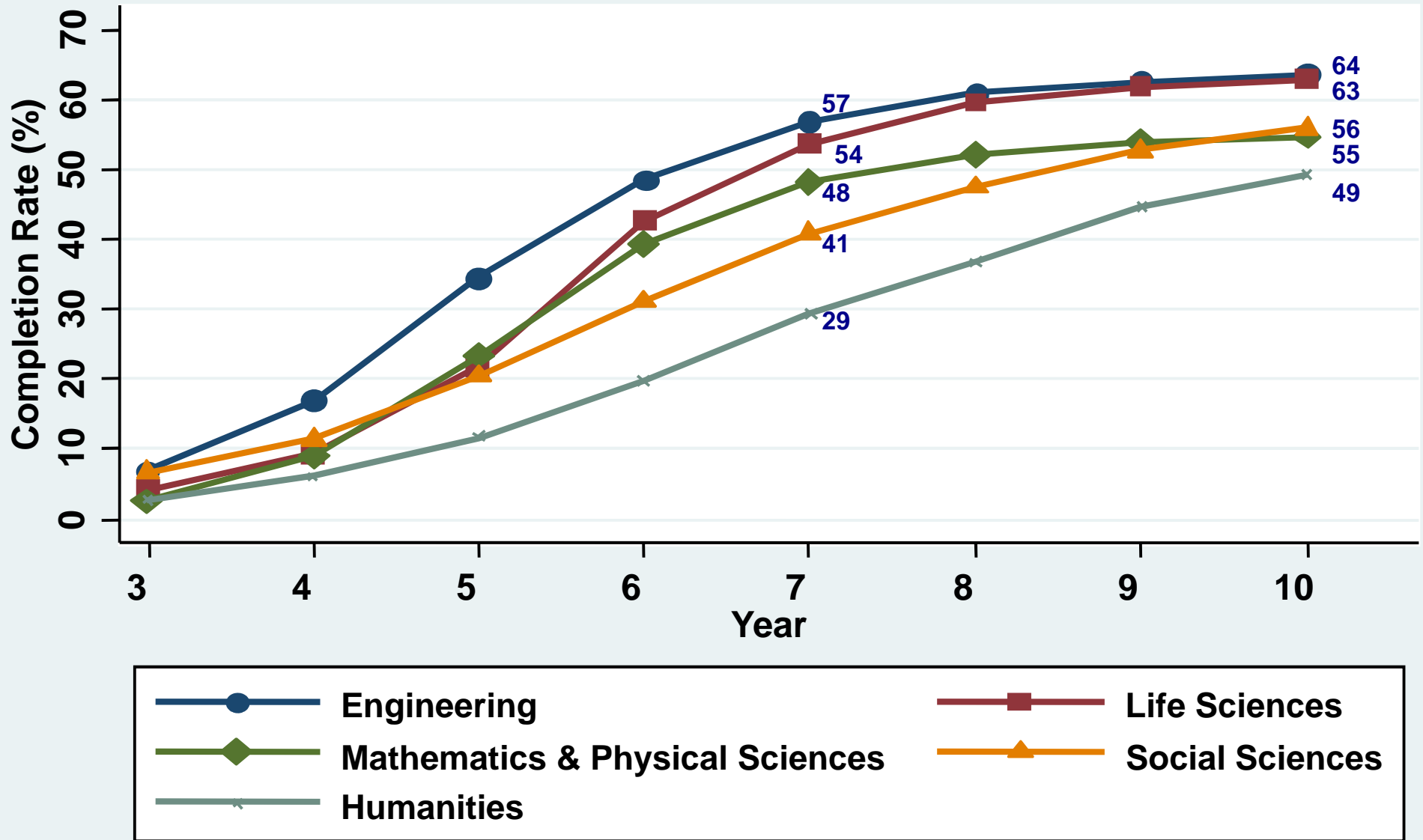
- Engineering
- Life Sciences
- Math & Physical Sci.
- Social Sciences
- Humanities



Overall Ten-Year Completion Rates



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%		



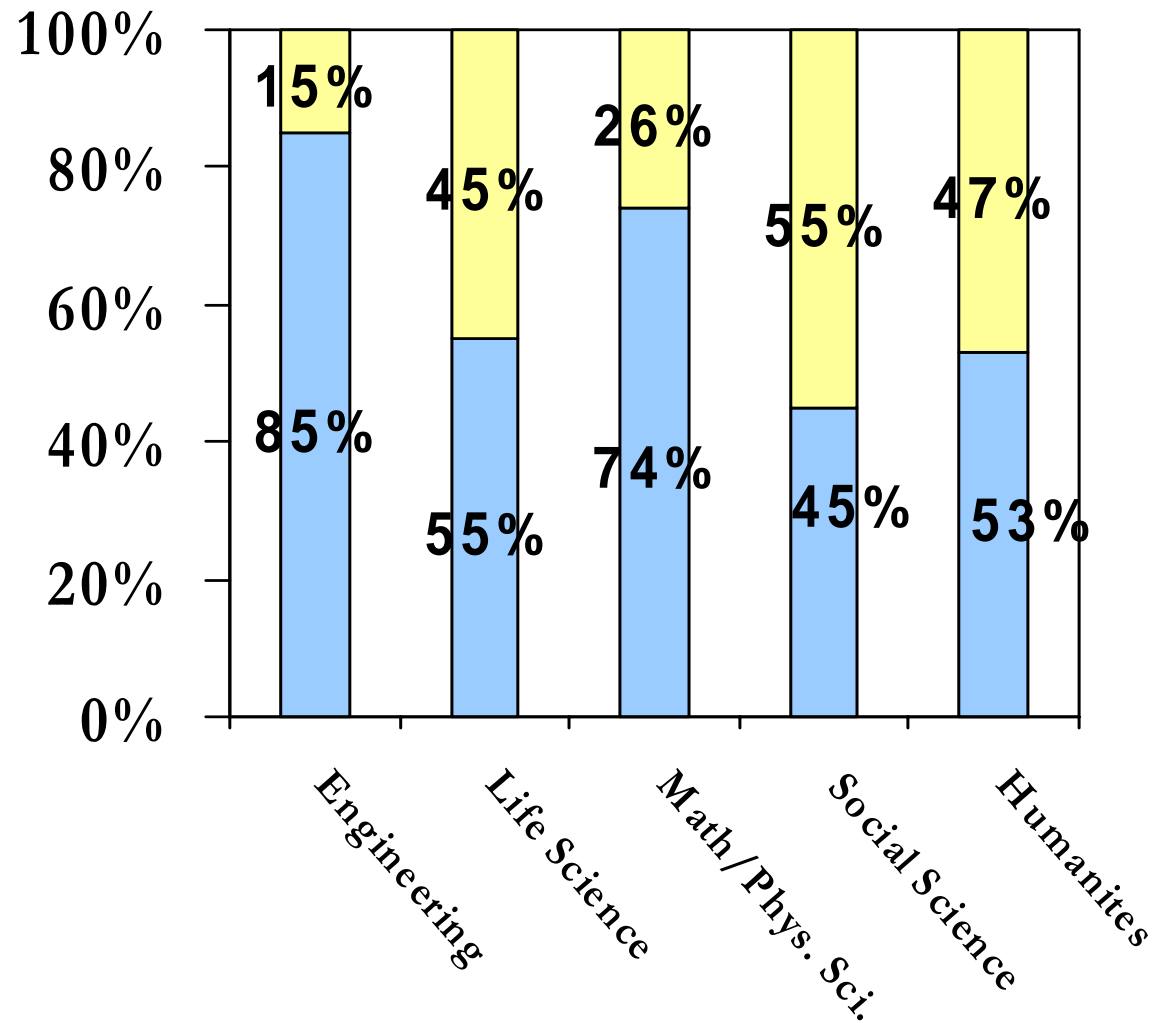
Ten-Year Completion Rates for Selected Disciplines

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

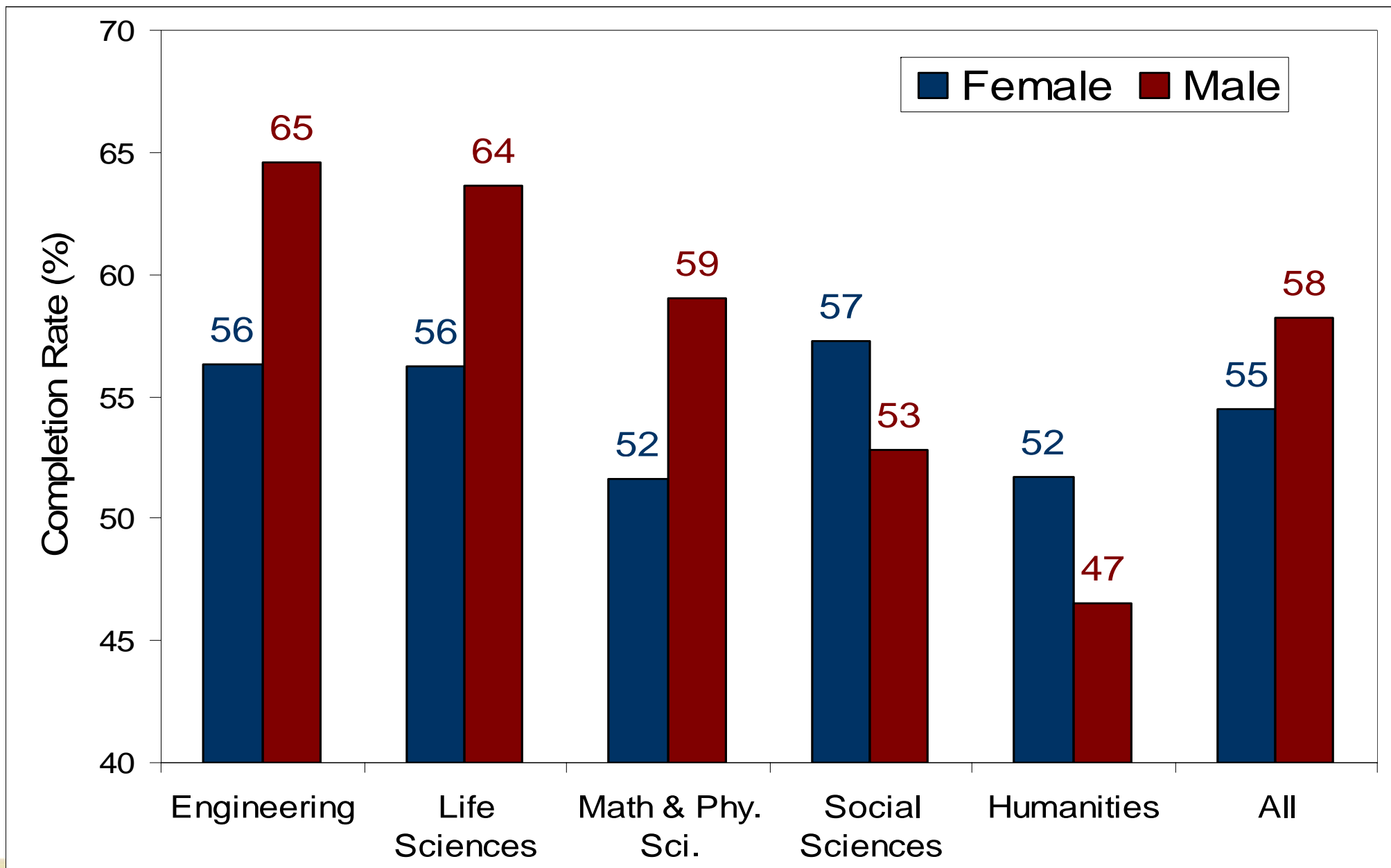
	Male	Female
Engineering	1,606	277
Life Science	602	489
Math/Phys. Science	2,251	792
Social Science	914	1,101
Humanities	869	782
Total	6,242	3,441



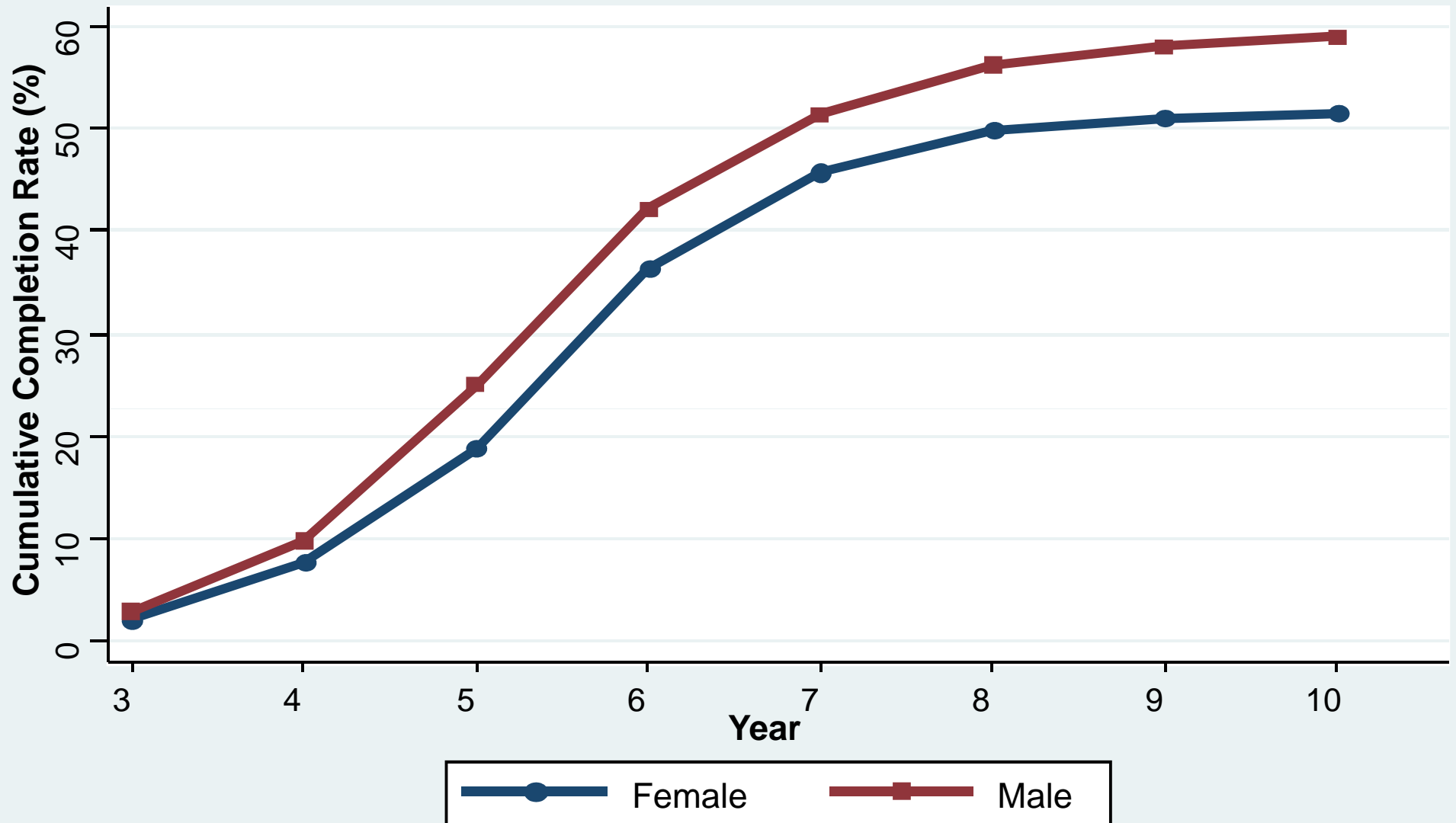
Male Female



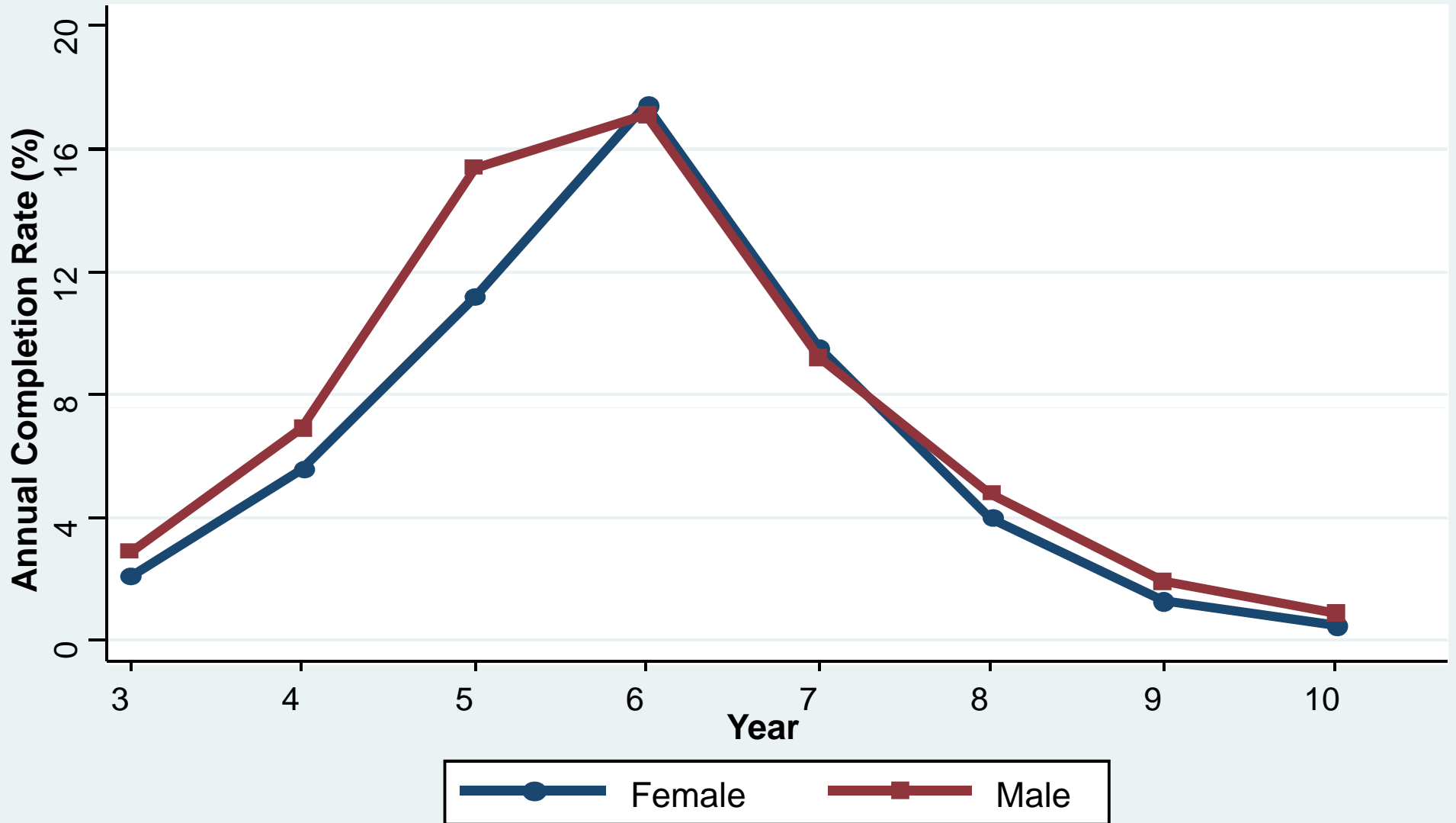
Ten-Year Completion Rates: Broad Field and Gender



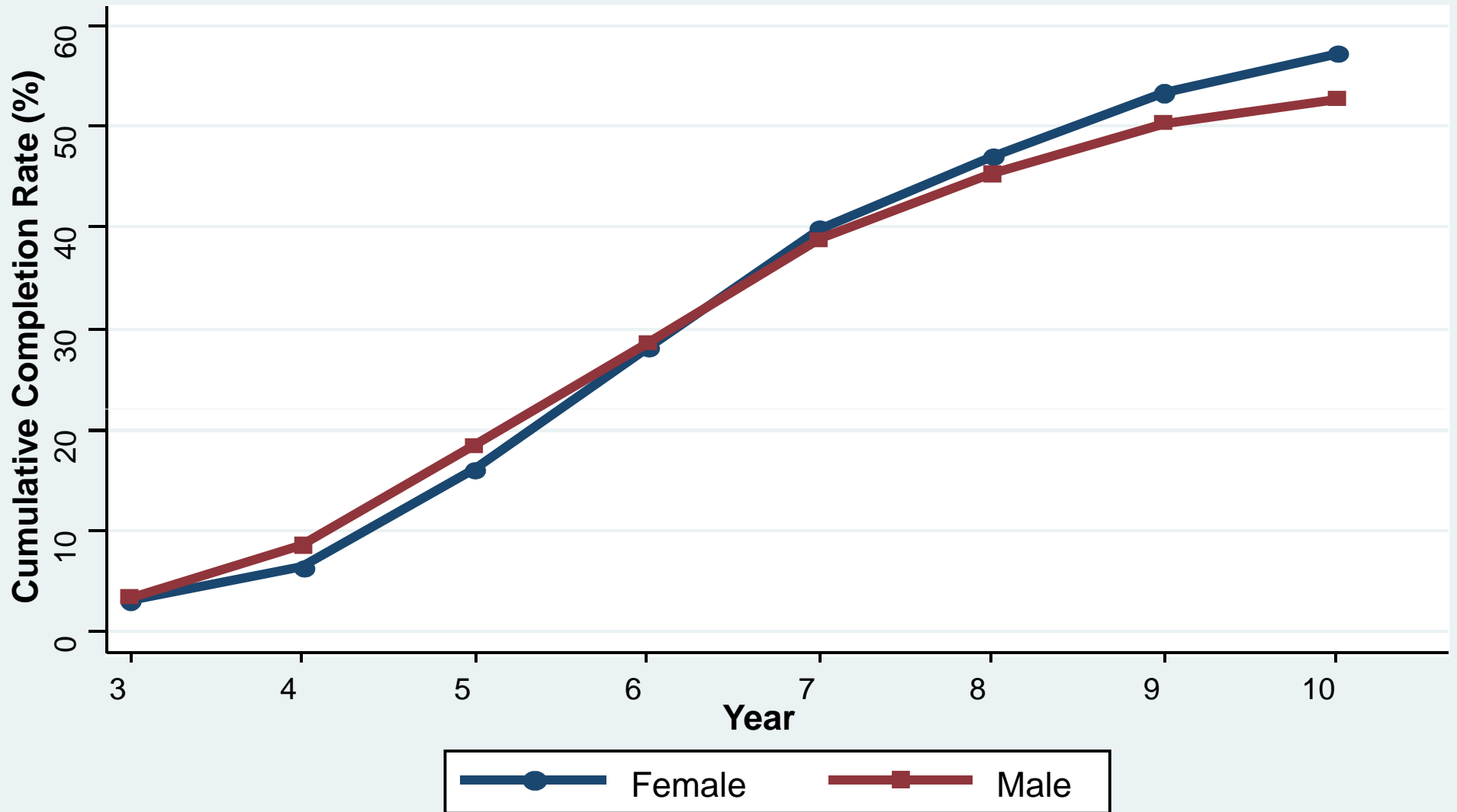
Cumulative Ten-Year Ph.D. Completion Rates by Gender in Mathematics & Physical Sciences



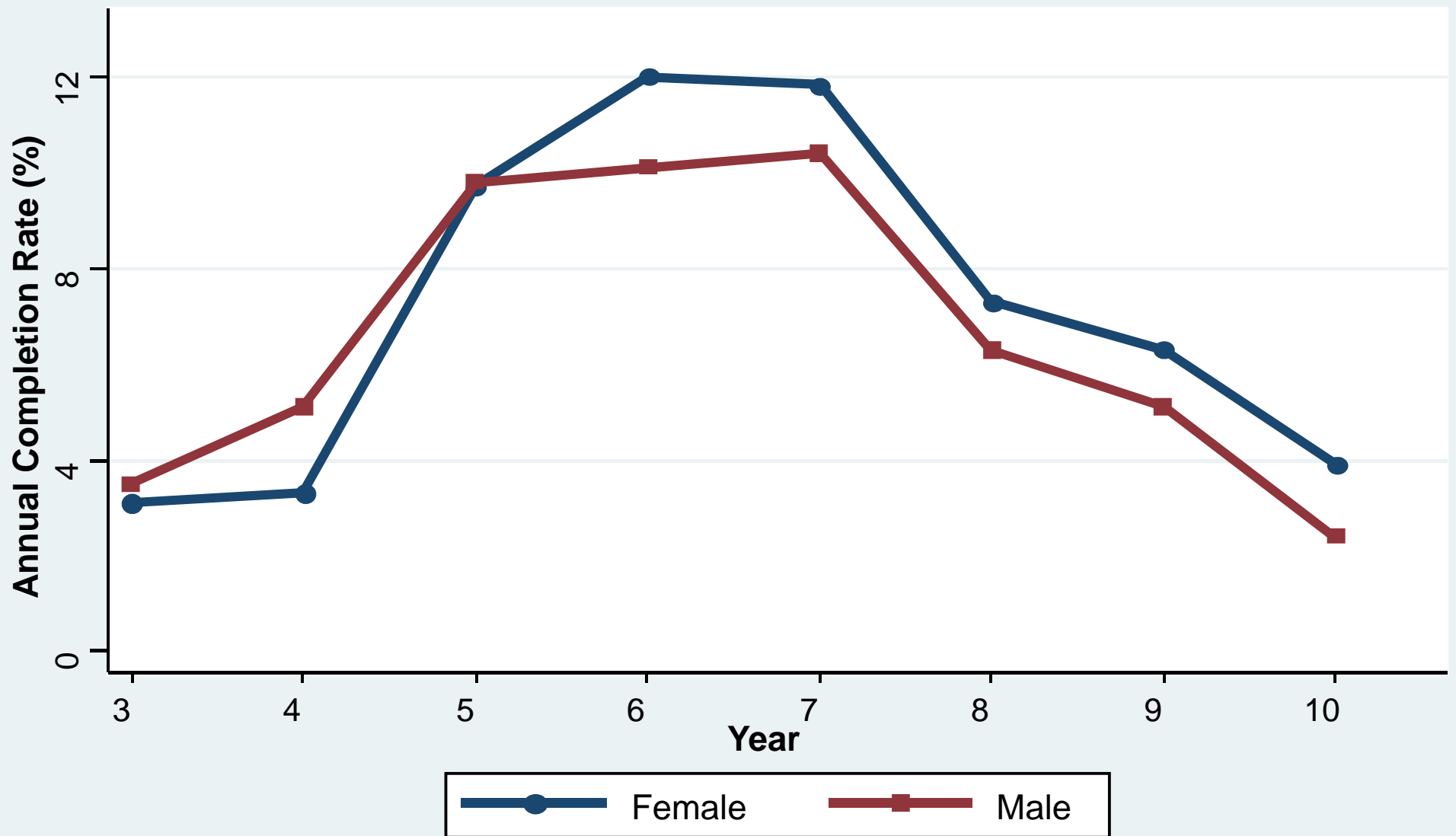
Annual Ph.D. Completion Rates by Gender in Mathematics & Physical Sciences



Cumulative Ten-Year Ph.D. Completion Rates by Gender in Social Sciences

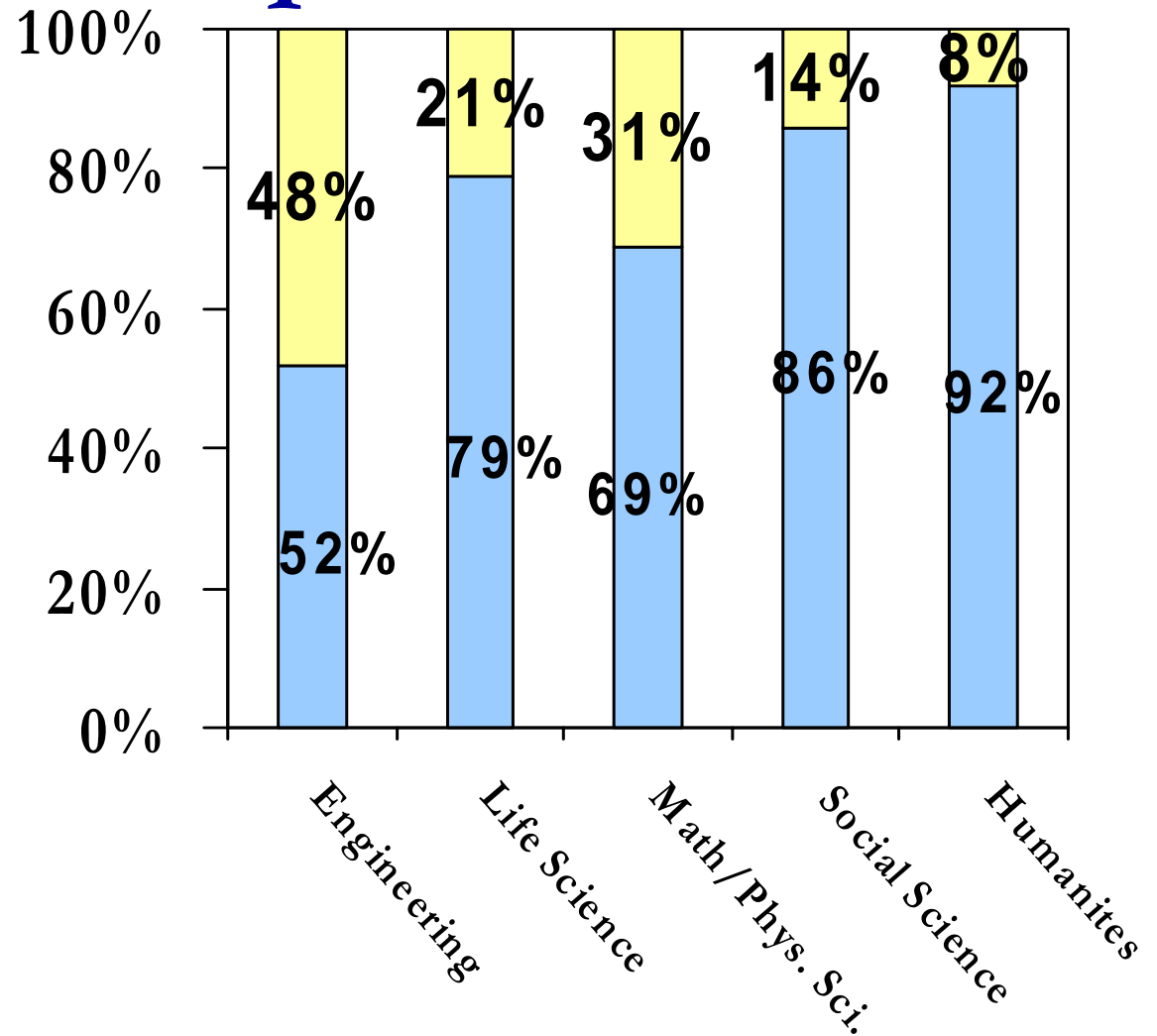


Annual Ph.D. Completion Rates by Gender in Social Sciences



Citizenship Data

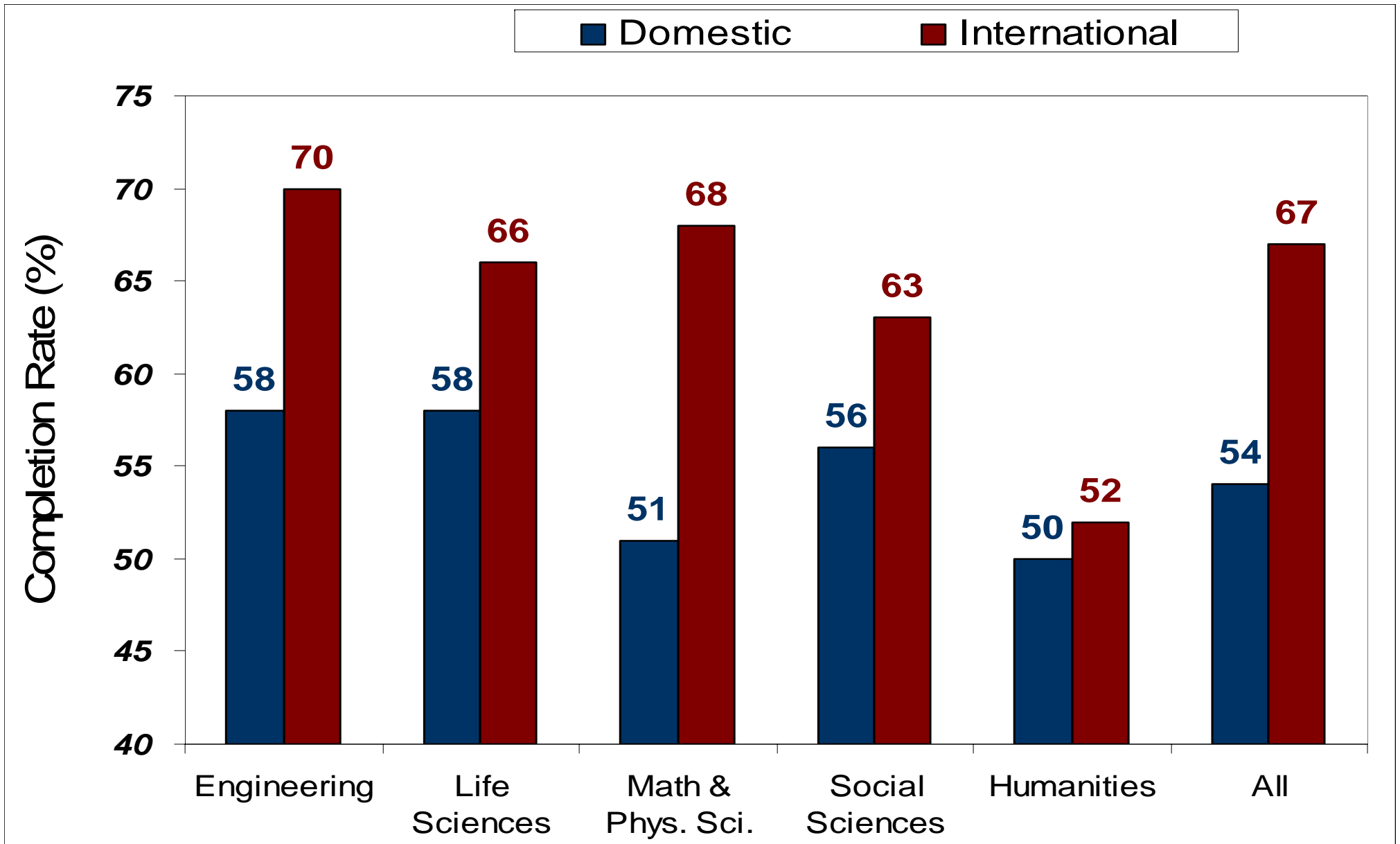
	Domestic	Intl.
Engineering	970	888
Life Science	811	212
Math/Phys. Science	2,100	941
Social Science	1,655	278
Humanities	1,390	114
Total	6,926	2,433



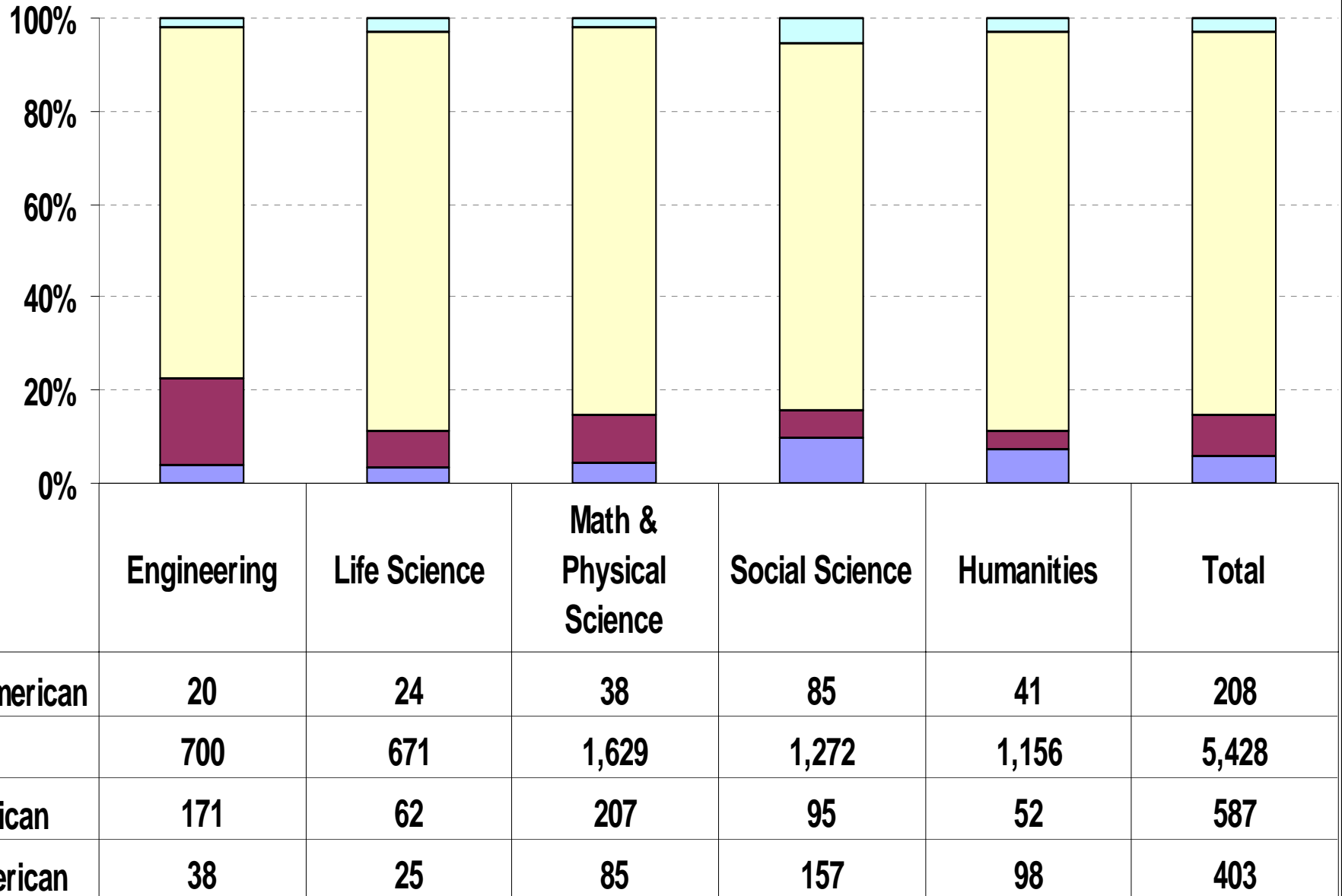
■ Domestic
 ■ International



Ten-Year Completion Rates: Broad Field and Citizenship



Race/Ethnicity Data

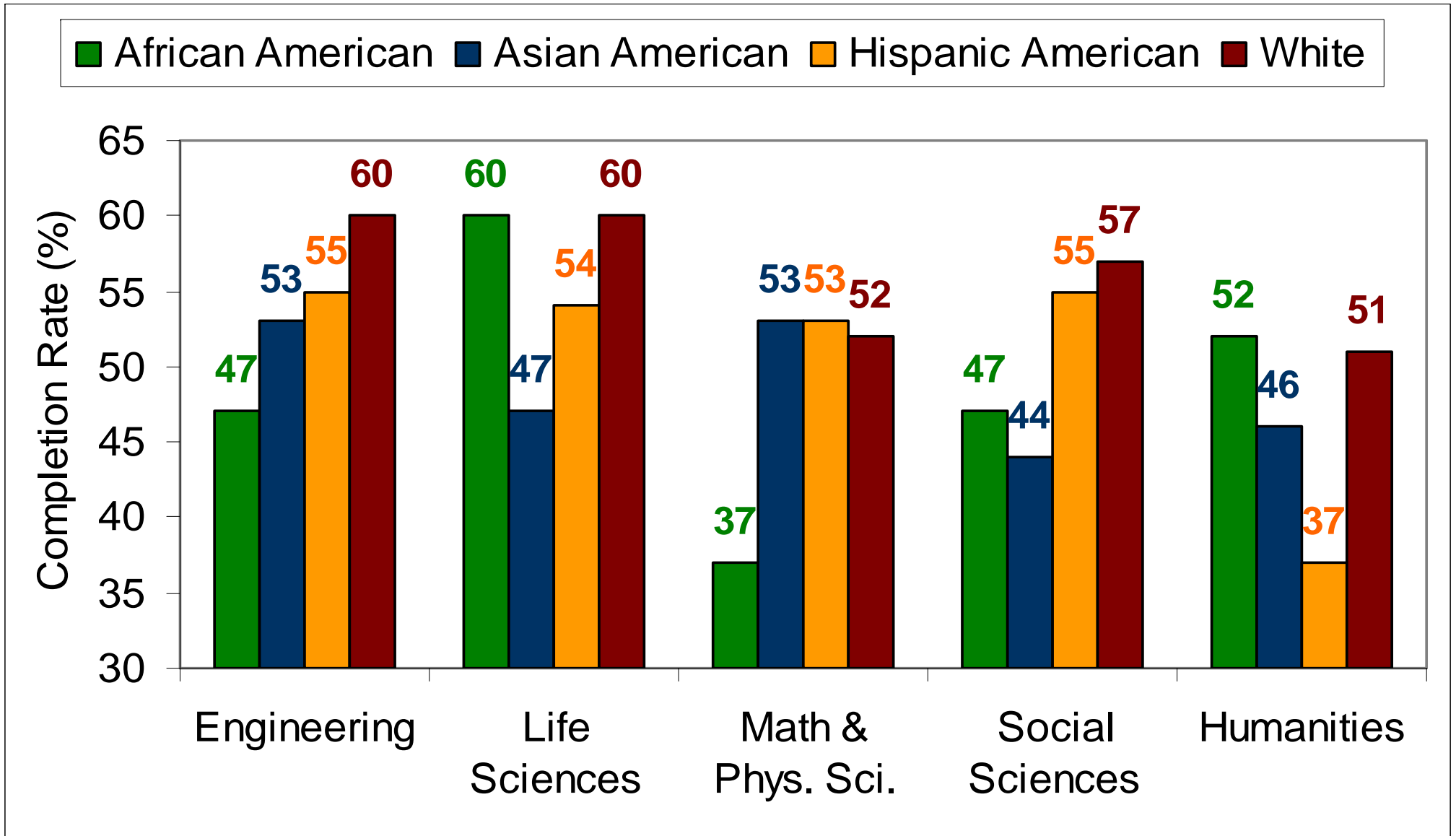


Ten-Year Completion Rates By Ethnicity

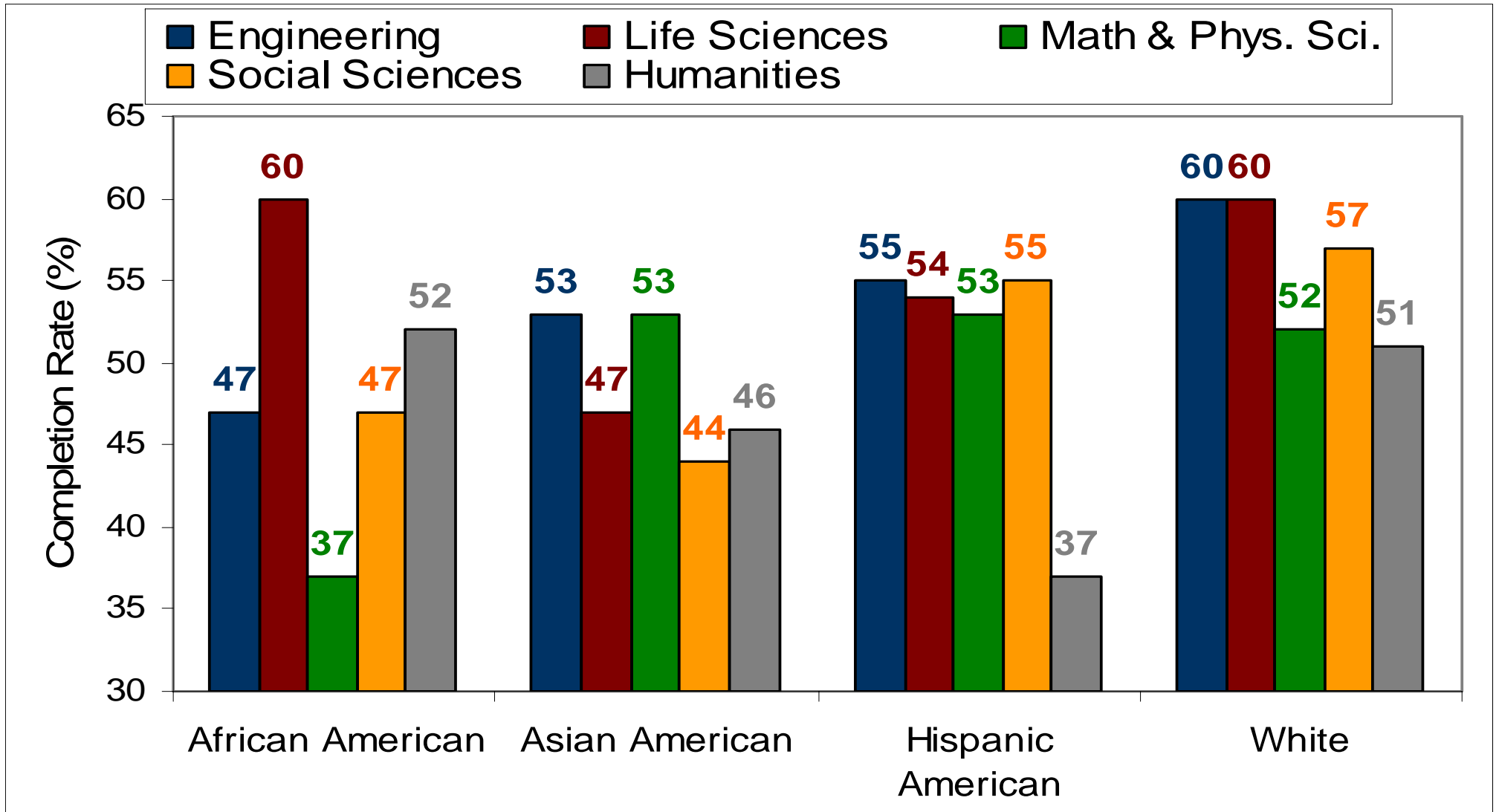
- African Americans – 47%
- Asian Americans – 50%
- Hispanic Americans – 51%
- White – 55%



Ten-Year Completion Rates: Broad Field and Ethnicity



Ten-Year Completion Rates: by Ethnicity and Broad Field



Interventions: Selection and Matching

- **Pre-admission visits to campus.**
- **Adapt best practices in recruiting for different disciplines and demographics.**
- **Increase minority student recruitment activities during the academic year with the efforts of the new Diversity Coordinator**
- **Incorporate alumni into program recruitment strategies, in particular women and members of underrepresented groups.**



Interventions: Mentoring and Advising

- **Require each first year student to have an advisor or advisory structure.**
- **Monitor the process of advisor/mentor selection, especially for minorities and women.**
- **Participate in peer-to-peer mentoring programs for new students, especially women and underrepresented groups.**
- **Develop a graduate student supervision workshop for new faculty**



Interventions: Program Environments

- **Monthly support group for minority students**
- **Initiate a seminar series to address the theme of inclusion and diversity.**
- **Women's Leadership Society that links prominent professional and graduate women with current doctoral students.**
- **Develop institution-wide policies on family and medical leave for graduate assistants.**



Interventions: Other

- **Dissertation assistance workshops, “Dissertation Boot Camps.”**
- **Web-based systems for tracking student progress to degree.**
- **Study student data from the past ten years to assess patterns of attrition versus short-term enrollment gaps.**
- **Inclusion of completion rates and time-to-degree in the program review process.**



Future Ph.D. Completion Project Activities & Reports

- Student exit surveys
- Document promising interventions, practices, policies and other activities
- Collect completion and attrition data through data through the 2007-08
- Final “Best Practices” report at the conclusion of the project in 2010 documenting impact of new interventions on completion and attrition

