



Selected Results from the 2008 Survey of Doctorate Recipients

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www.nsf.gov/statistics



Presentation Outline

- NCSES background
- Human Resources Statistics (HRS) program overview
- Survey of Doctorate Recipients (SDR) background
- 2008 SDR results
- Access to SDR data
- International Survey of Doctorate Recipients (ISDR)



NCSES: Formerly the Division of Science Resources Statistics

NCSES is responsible for statistical data on the following:

- The science and engineering workforce
- Research and development (R&D)
- U.S. competitiveness in science, engineering, technology, and R&D
- The condition and progress of Science, Technology, Engineering, and Mathematics (STEM) education in the United States



HRS Postsecondary Education & Workforce Data

- Survey of Institutions: Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS)
- Surveys of Individuals
 - Survey of Earned Doctorates (SED)
 - **Survey of Doctorate Recipients (SDR)**
 - National Survey of Recent College Graduates (NSRCG)
 - National Survey of College Graduates (NSCG)
- Statistical Data System: Scientists and Engineers Statistical Data System (SESTAT) - combines SDR, NSCG, and NSRCG
- Project: Early Career Doctorates Project (ECD)

SDR Background

- Biennial longitudinal survey of individuals who earned research doctorates in science, engineering, or health (SEH) fields from U.S. academic institutions
- Conducted since 1973
- Federal agency support from National Institutes of Health
- Current data collection modes
 - Web (55%)
 - Mail (33%)
 - Computer Assisted Telephone Interviews (CATI) (12%)

SDR Target Population

Target population consisted of all individuals meeting the following criteria:

- earned a research doctorate in an SEH field from a U.S. academic institution
- less than 76 years of age
- not institutionalized
- living in the U.S. during the survey reference week of October 1, 2008

SDR Sample

- SDR sample is drawn from the Survey of Earned Doctorates (SED) respondents
- Sample members may be followed throughout their careers until age 76
- Random sample is cut each cycle to add newly awarded doctorates while holding constant the sample size
- 2008 SDR Sample Size: 40,093
 - including 3,449 newly awarded doctorates from the 2006 and 2007 SED
 - Target population size = 751,960



2008 SDR Response Rate

- Weighted response rate = 80.5%
 - 29,974 completed surveys from eligible respondents

Recurring SDR Survey Questions

- Demographics
- Recent training, education
- Employment during reference date
 - Employer type; change since last survey
 - Occupation; change since last survey
 - Faculty rank, tenure status
 - Postdoc status, reasons for holding postdoc
 - Work activities, including primary/secondary
 - Relation between job and degree
 - Salary and earned income
 - Overall job satisfaction



SDR Special Topic Module

- Work-Related Experiences (2008)
 - Number of papers, articles, & books authored
 - Number of patents, patent applications, and commercialized products/processes on which named as an inventor
 - Second job

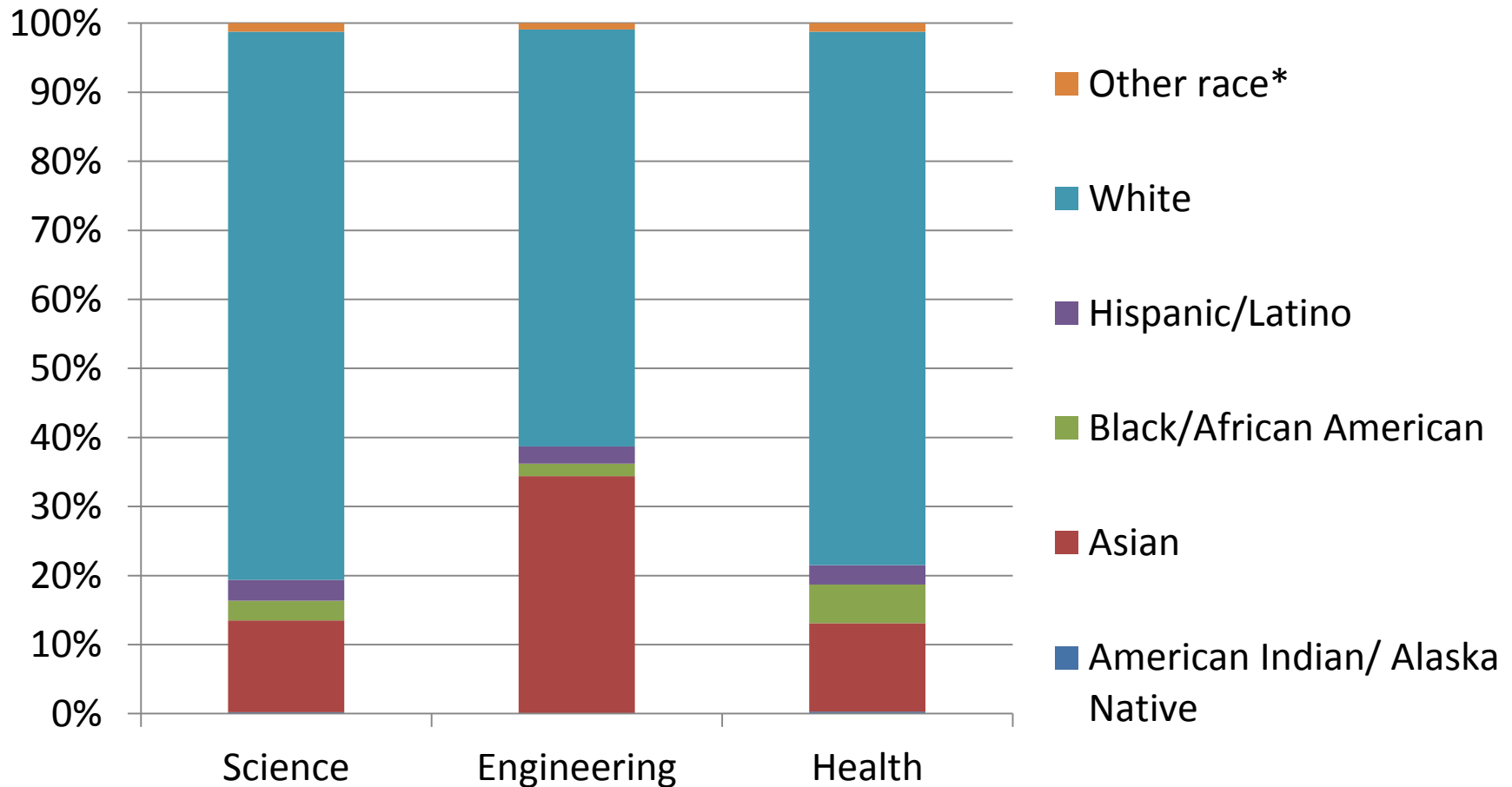


Doctoral scientists and engineers, by U.S. citizenship status: 2008

US Citizenship Status	2001	2003	2006	2008	
	Count	Count	Count	Count	Percent
All doctorate recipients	656,500	685,300	711,800	752,000	100.0%
US citizens	597,300	622,600	644,000	675,200	89.8%
Permanent residents	42,100	42,400	43,000	49,800	6.6%
Temporary residents	17,200	20,200	24,800	26,900	3.6%

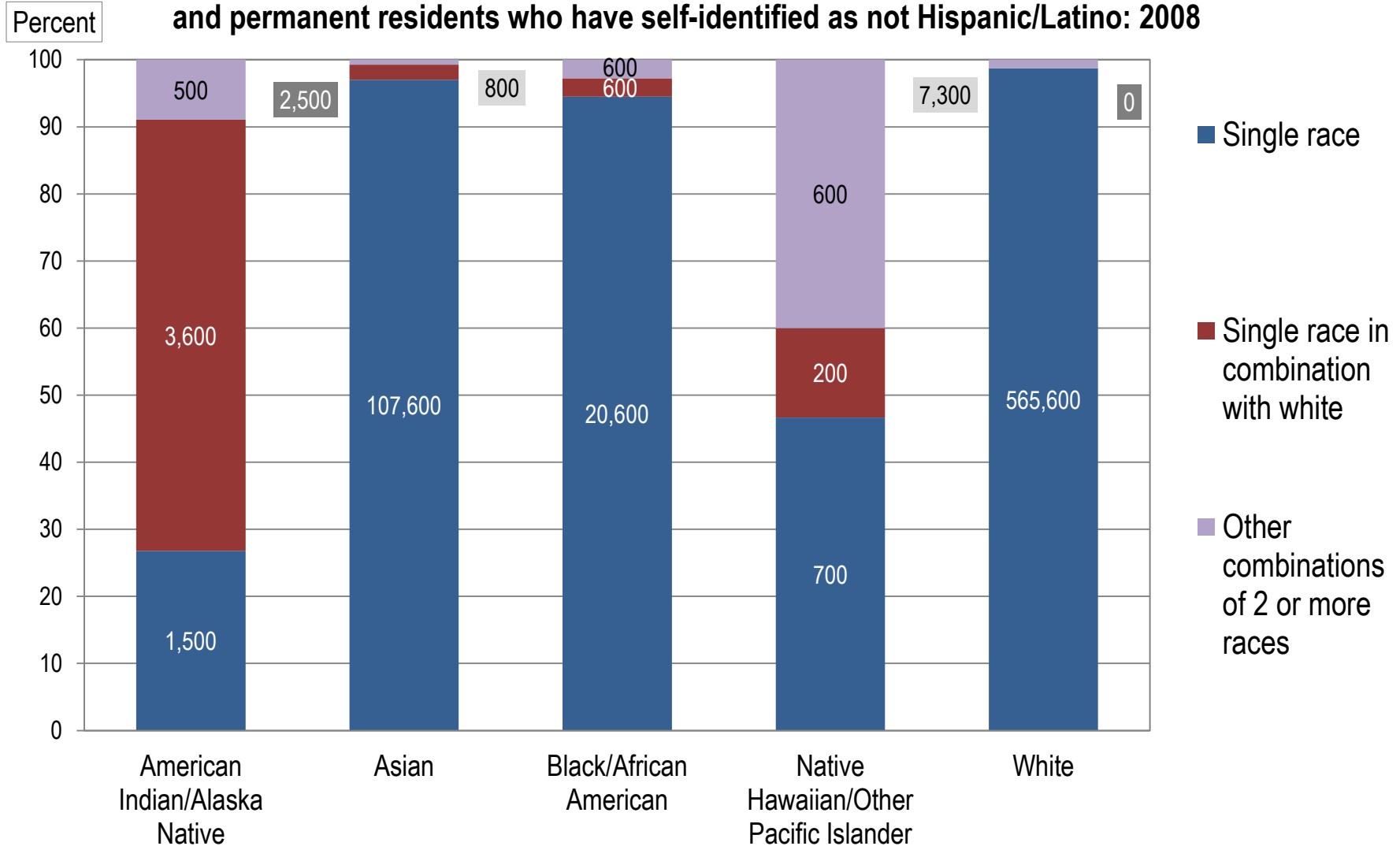
Notes: Numbers are rounded to nearest 100. Detail may not add to total because of rounding.

Race/ethnicity of doctoral scientists and engineers, by broad field of doctorate: 2008



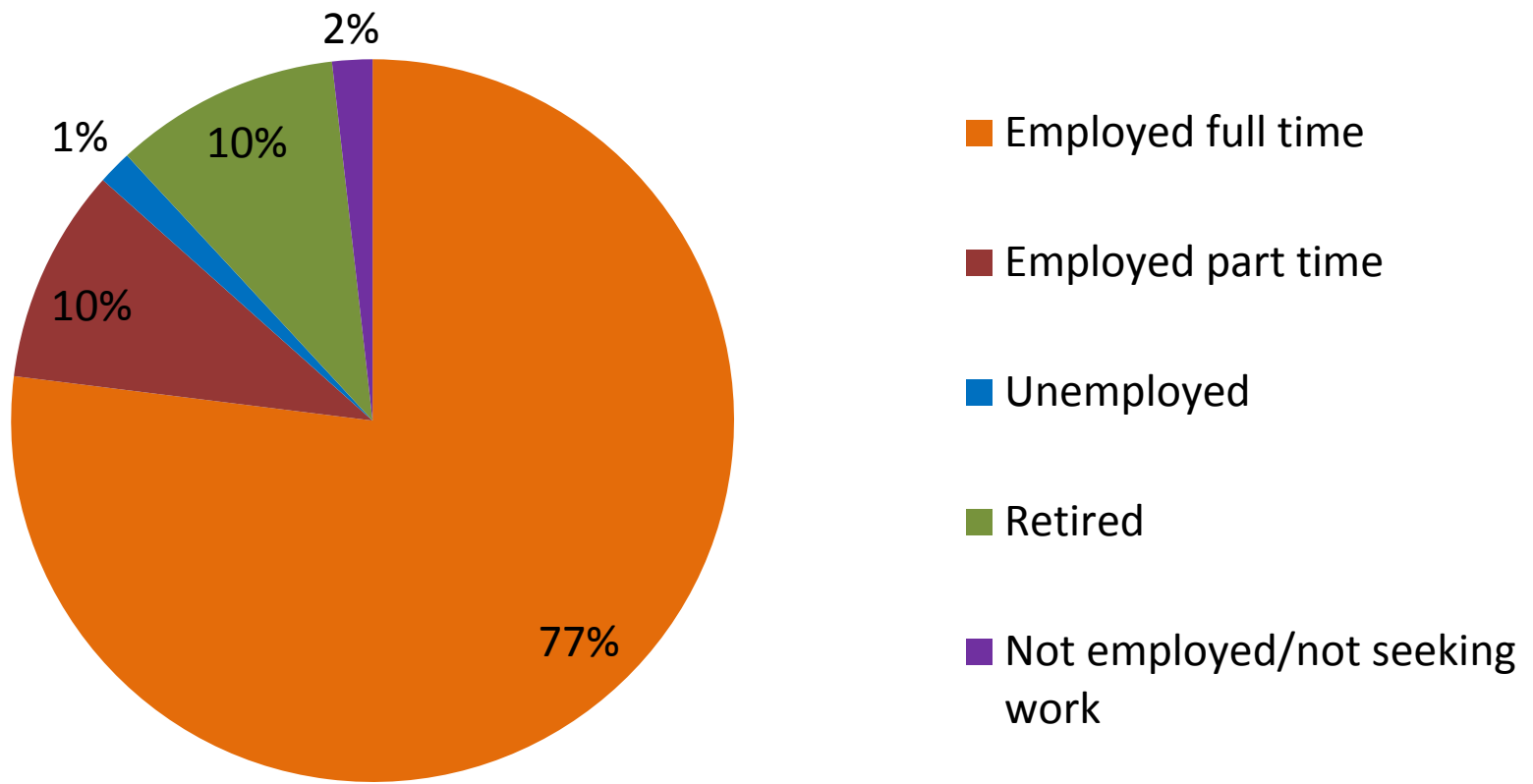
*Includes Native Hawaiians/Other Pacific Islanders and non-Hispanic respondents reporting 2 or more races.

Single- and multiple-race identification within each racial group among U.S. citizens and permanent residents who have self-identified as not Hispanic/Latino: 2008

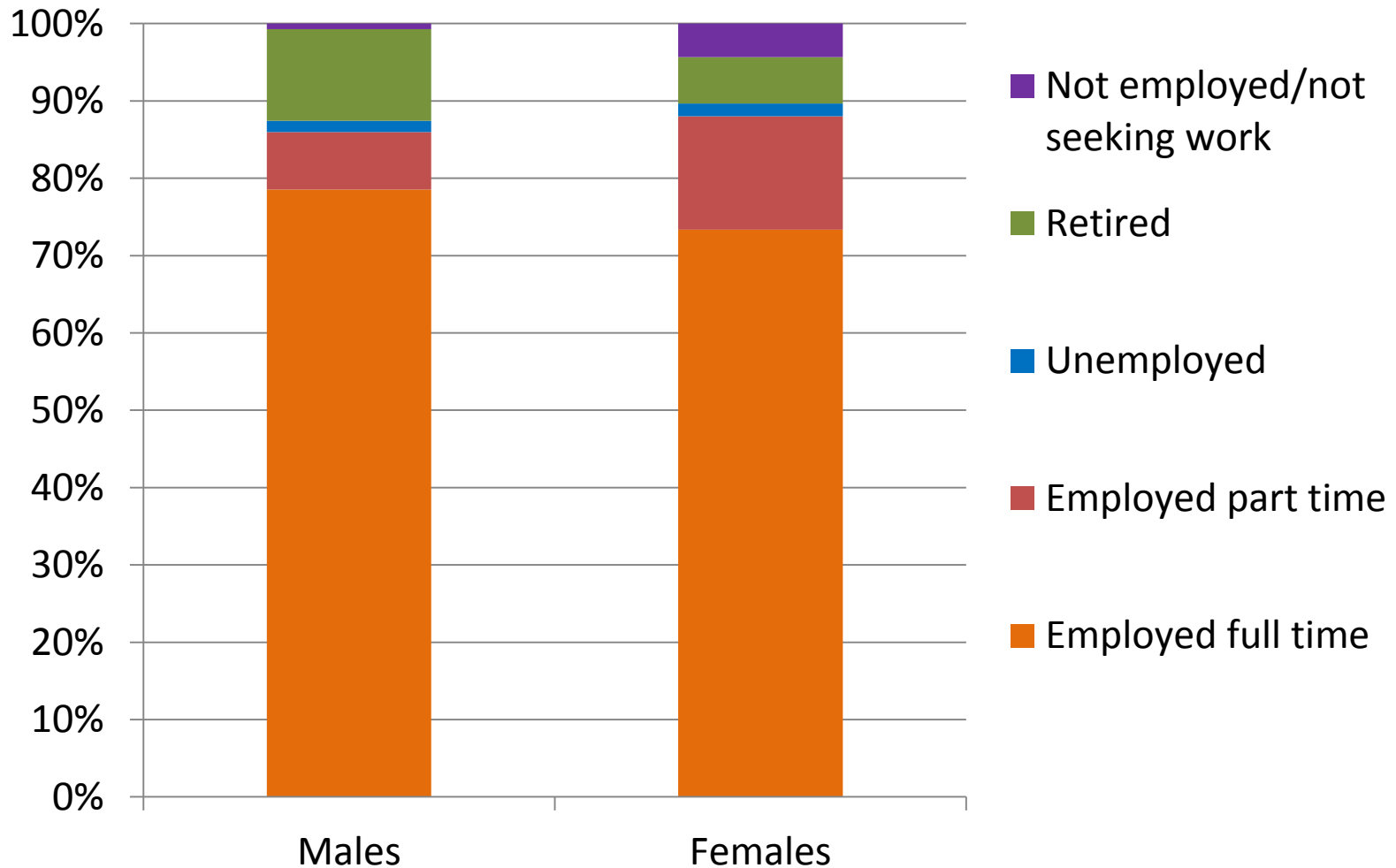


NOTE: Numbers are rounded to nearest 100. SOURCE: Survey of Doctorate Recipients, 2008.

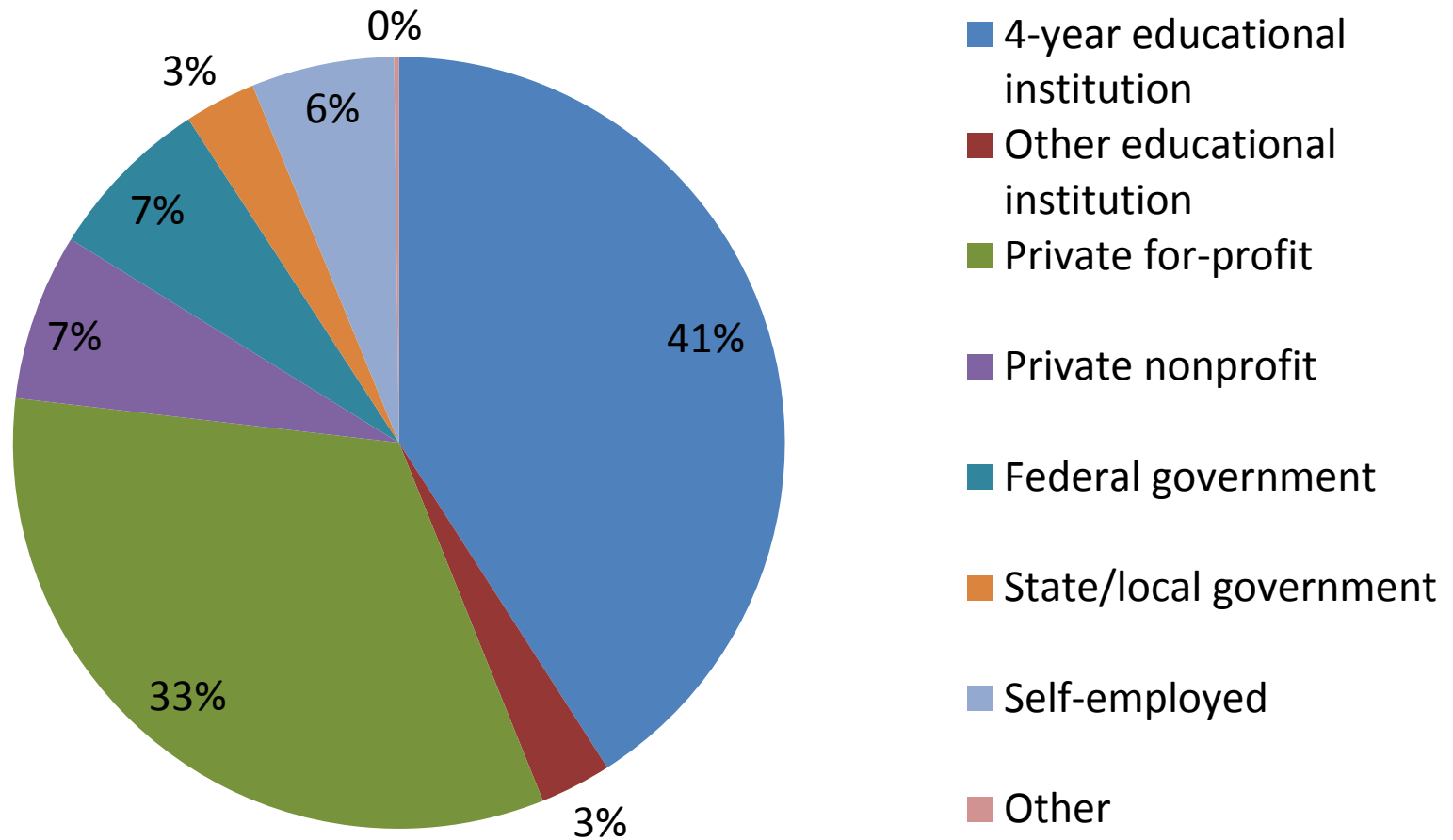
Employment status of doctoral scientists and engineers: 2008



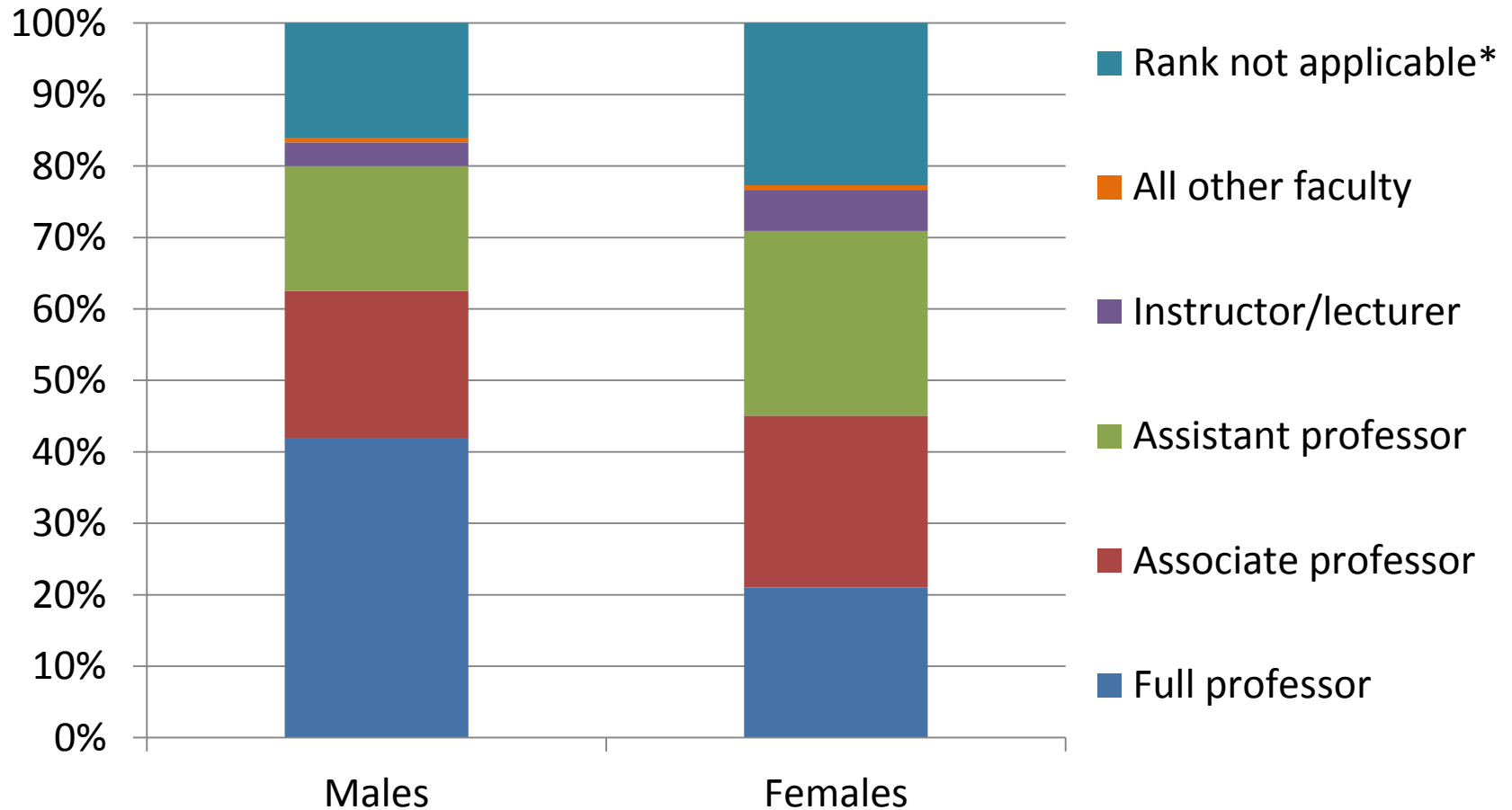
Employment status of doctoral scientists and engineers, by sex: 2008



Employment sector of employed doctoral scientists and engineers: 2008



Employed doctoral scientists and engineers in 4-year educational institutions, by sex and faculty rank: 2008



*No ranks designated at this institution or no ranks designated for this position.

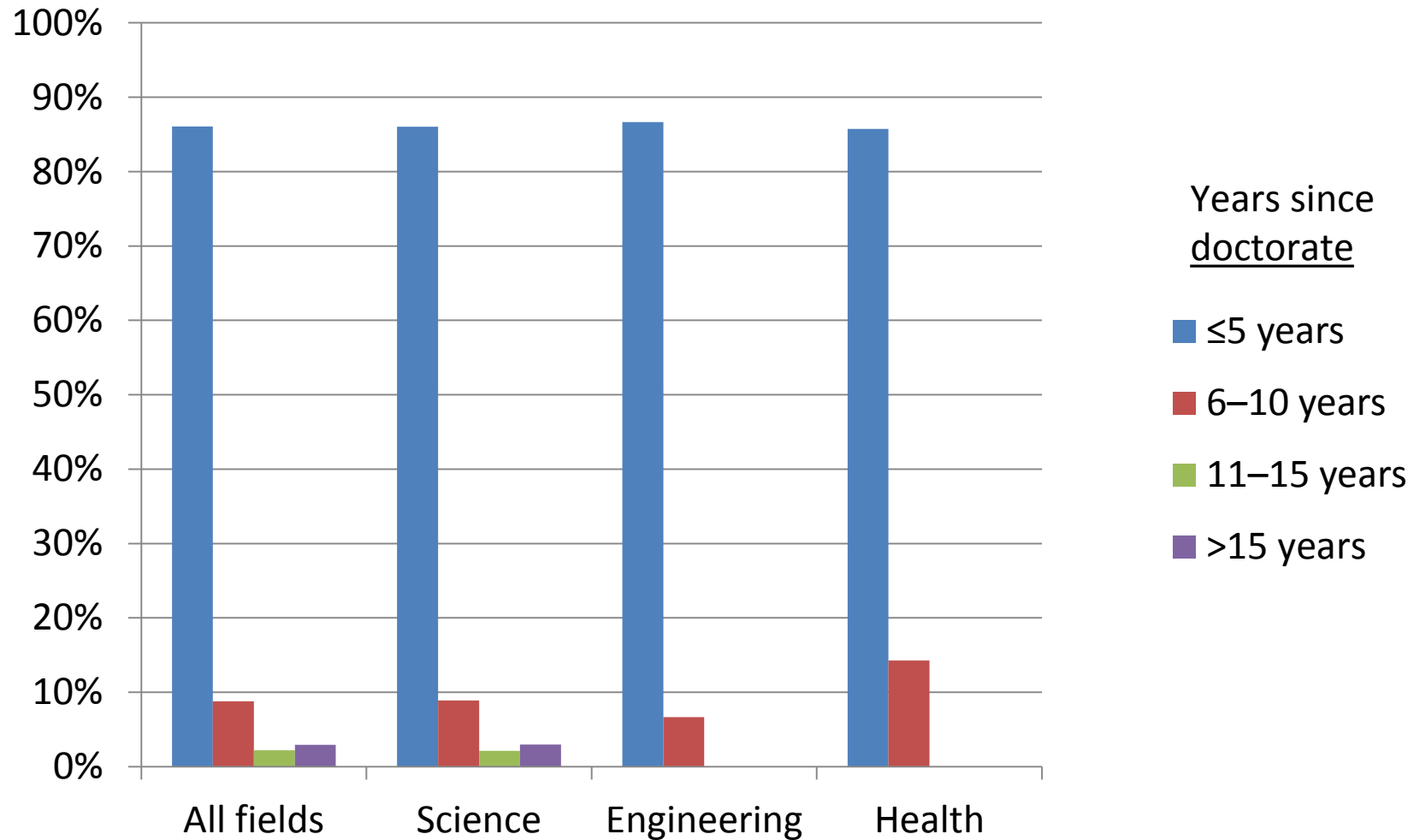


Doctoral scientists and engineers on postdoctoral appointments, by citizenship status: 2006 & 2008

U.S. Citizenship Status	2006		2008	
	Count	Percent	Count	Percent
Total on postdoc	29,890	100.0%	27,300	100.0%
U.S. citizen	18,260	61.1%	16,700	61.2%
Non-U.S. citizen	11,630	38.9%	10,500	38.5%

NOTES: Numbers are rounded to nearest 10 in 2006 and nearest 100 in 2008. Detail may not add to total because of rounding.

Postdoc status of doctoral scientists and engineers, by years since doctorate and broad field of doctorate: 2008



SOURCE: Survey of Doctorate Recipients, 2008.



Doctoral scientists and engineers employed in postdocs, by field of doctorate: 2008

Field	Count	Percent
Total in postdoc	27,300	100.0%
Science	23,600	86.4%
Biological/agricultural/environmental life sciences	14,900	54.6%
Computer/information sciences	300	1.1%
Mathematics/statistics	600	2.2%
Physical sciences	5,100	18.7%
Psychology	2,200	8.1%
Social sciences	500	1.8%
Engineering	3,000	11.0%
Health	700	2.6%

NOTES: Numbers are rounded to nearest 100. Detail may not add to total because of rounding.

Doctoral scientists and engineers on postdoctoral appointments, by employment sector: 2006 & 2008

Employment sector	2006		2008	
	Count	Percent	Count	Percent
All sectors	29,890	100.0%	27,300	100.0%
Educational institutions	23,600	79.0%	18,200	66.7%
Business/industry	3,780	12.6%	5,600	20.5%
Government	2,500	8.4%	3,500	12.8%

NOTES: Numbers are rounded to nearest 10 in 2006 and nearest 100 in 2008. Detail may not add to total because of rounding.

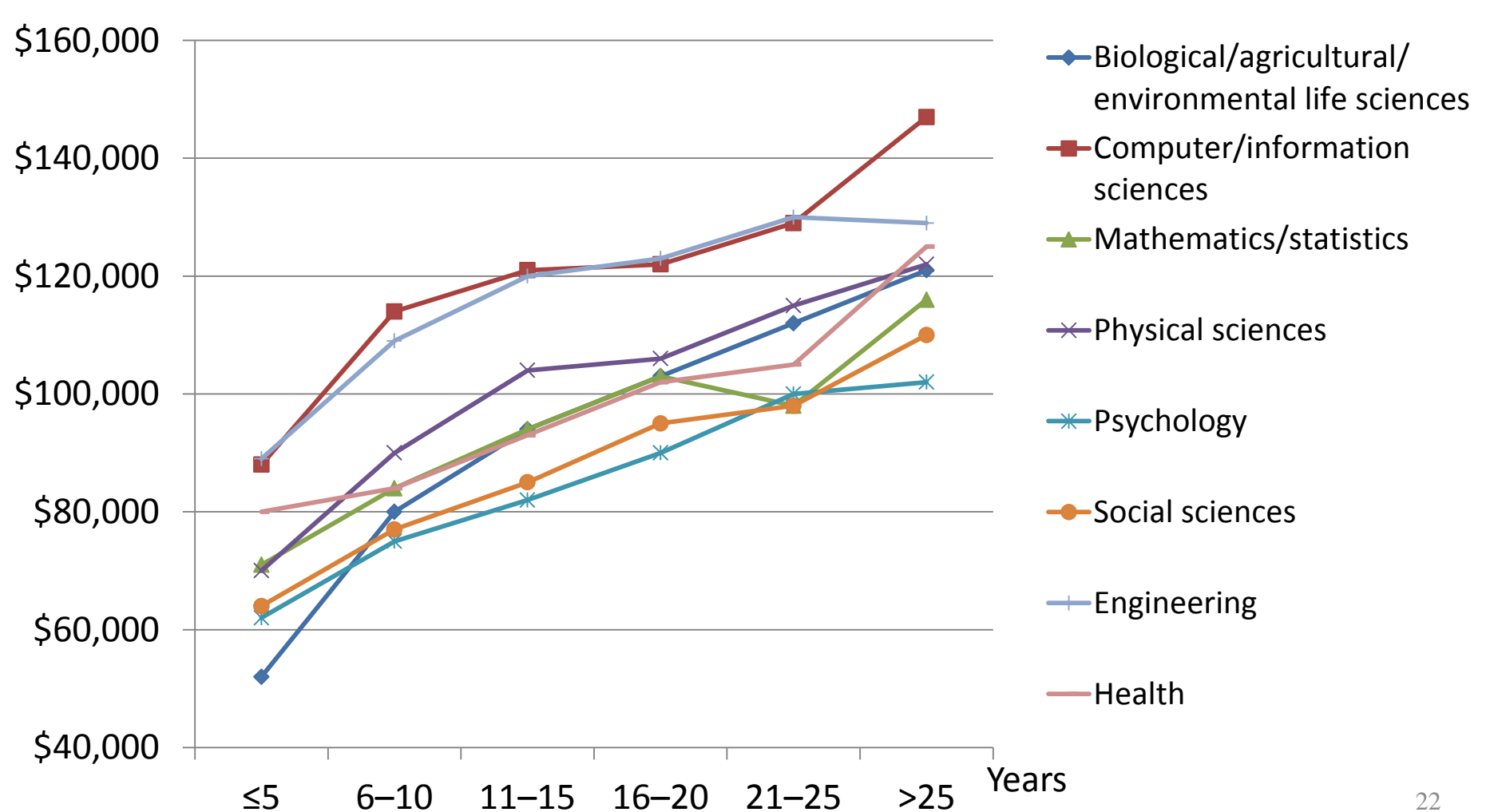
Median annual salaries of full-time doctoral scientists and engineers (in dollars), by field of doctorate and sex: 2008

Field	All full-time employed	Males	Females
All fields	98,000	101,000	82,000
Science	92,000	100,000	80,000
Biological/agricultural/ environmental life sciences	91,000	98,000	80,000
Computer/information sciences	107,000	109,000	98,000
Mathematics/statistics	95,000	97,000	83,000
Physical sciences	100,000	103,000	87,000
Psychology	84,000	94,000	77,000
Social sciences	88,000	93,000	79,000
Engineering	110,000	114,000	97,000
Health	90,000	100,000	84,000

NOTE: Median annual salaries are for principal job and are rounded to nearest \$1,000.

SOURCE: Survey of Doctorate Recipients, 2008.

Median annual salaries of full-time doctoral scientists and engineers (in dollars), by field of doctorate and years since doctorate: 2008



SOURCE: Survey of Doctorate Recipients, 2008.



Median annual salaries of full-time doctoral scientists and engineers (in dollars), by broad field of doctorate and employment sector: 2008

Field	All full-time employed	4-year educational institution	Private for-profit	Private non-profit	Federal gov't	Self-employed
All fields	98,000	80,000	117,000	100,000	107,000	99,000
Science	92,000	80,000	115,000	95,000	105,000	93,000
Engineering	110,000	100,000	119,000	120,000	117,000	116,000
Health	90,000	82,000	119,000	101,000	104,000	95,000

NOTE: Median annual salaries are for principal job and are rounded to nearest \$1,000.

Employed doctoral scientists and engineers engaged in patent-related activities, by broad field of doctorate and employment sector: 2008

Field	4-year educational institution	Other educational institution	Private for-profit	Private non-profit	Federal gov't	State/local gov't	Self-employed
All fields	23.9%	0.5%	63.7%	4.0%	4.6%	0.7%	2.8%
Science	26.2%	0.8%	59.0%	5.2%	5.4%	0.9%	2.3%
Engineering	19.3%	D	71.6%	1.8%	3.4%	D	3.6%
Health	37.5%	D	62.5%	D	D	D	D

D = suppressed for confidentiality.

Employed doctoral scientists and engineers engaged in publication-related activities, by broad field of doctorate and employment sector: 2008

Field	4-year educ. institution	Other educ. institution	Private for-profit	Private non-profit	Federal gov't	State/local gov't	Self-employed	Other
All fields	51.1%	2.1%	27.0%	6.6%	7.3%	2.2%	3.5%	0.2%
Science	54.3%	2.5%	22.5%	7.1%	7.4%	2.3%	3.7%	0.3%
Engineering	33.6%	0.5%	50.3%	3.5%	7.0%	1.7%	3.1%	D
Health	60.7%	2.1%	16.5%	9.5%	6.2%	2.9%	1.7%	D

D = suppressed for confidentiality.

Access to SDR Data

- InfoBriefs - highlight results from recent surveys or analyses
- Detailed Statistical Tables (DSTs) - standard tabulations (electronic only)
- Online database: SESTAT Data Tool table generator
- Downloadable public use data files
- Restricted use data files with a license



SDR Info on the Web

- **Survey Overview**

<http://www.nsf.gov/statistics/srvydoctoratework/>

- **Questionnaires**

<http://www.nsf.gov/statistics/question.cfm#5>

- **Publications (including Detailed Statistical Tables)**

<http://www.nsf.gov/statistics/doctoratework/>

- **SESTAT Data Tool and Public Use Files**

<http://www.nsf.gov/statistics/sestat/>

- **Restricted-Use Data License**

<http://www.nsf.gov/statistics/database.cfm#MICRODATA>



NCSES Secure Data Access Facility (SDAF)

- A virtual data access facility is being built to provide secure access to confidential microdata from NCSES surveys for statistical analysis
- Initially will include Doctorate Records File (1958-2009) and NSRCG, SDR, and SESTAT (1993-2008)
- Research work can be saved in the virtual data center; multiple members of a research team can share work; anything shared publicly must undergo disclosure review
- Similar licensing process as with restricted-use data
- Access provided with a secure, thin-client terminal
- Available by December 2011

Limitations of 20th-Century SDR

- Undercoverage of non-U.S. citizens who...
 - reported definite plans to leave U.S. after doctorate award so were not sampled, but ended up staying in U.S., or
 - reported definite plans to stay in U.S. but subsequently lived in foreign country for 2 consecutive survey cycles and were dropped from SDR sample
- Doctorate-holders in SDR sample who were residing in a foreign country on the survey reference date were not surveyed

National/International SDR (NSDR/ISDR)

- 2003 SDR tested the feasibility of obtaining surveys from sample members who were living abroad
- ISDR currently has two components
 - Sampled non-U.S. citizens from 2001 or later cohorts who reported plans to emigrate
 - Non-U.S. citizen NSDR panel members found outside U.S. for 2 consecutive cycles
- Combining the two ISDR components with the traditional NSDR yields an integrated data set with virtually complete coverage of U.S.-earned SEH doctorates awarded in 2001 or later

Current Status of ISDR

- Extensive statistical work to determine the best methods of integrating the NSDR and ISDR samples
- 2010 ISDR sample = 5,712
- Analysis potential
 - ISDR sample becoming large enough to enable analysis of aggregated categories of respondents (by field of study, employment sector, occupations, demographics)
 - Can examine international mobility
- ISDR data are not yet available



For further information on the SDR, contact

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