

EMPLOYMENT OUTCOMES OF RECENT SCIENCE AND ENGINEERING GRADUATES VARY BY FIELD OF DEGREE AND SECTOR OF EMPLOYMENT

by John Tsapogas

Data from the National Science Foundation's 2001 National Survey of Recent College Graduates (NSRCG) reveal patterns and trends in the employment of graduates who received bachelor's or master's degrees in science and engineering (S&E) in 1999 and 2000. Survey results on salaries, full-time employment status, employment in S&E occupations, employment sector, and postgraduation enrollment status of these graduates (hereafter, recent graduates) are highlighted here. These data predate the economic downturn that began in 2001 and may not reflect the status of graduates who received their degrees in the 2001, 2002, or 2003 academic years.

The NSRCG is a biennial survey. The 2001 survey covered persons who received a bachelor's and/or a master's degree between July 1998 and June 2000. The number of S&E bachelor's graduates increased 5 percent between the 1997 and 1999 surveys and increased 2 percent between the 1999 and 2001 surveys. Similar increases occurred for master's S&E graduates during the same periods. See <http://www.nsf.gov/sbe/srs/snsrcg/> for more information on the NSRCG.

Salaries

Among those employed full time, median annual salaries for computer sciences graduates and engineering graduates at the both the bachelor's and master's degree levels are higher than median annual salaries for other S&E graduates. Among recent bachelor's degree recipients, median annual salaries in April, 2001, were \$51,000 for graduates with a degree in computer sciences

and \$49,000 for graduates with a degree in engineering, compared with \$34,000 for all S&E graduates (table 1). Among recent master's degree recipients, median annual salaries in April, 2001, were \$65,000 for graduates with a degree in computer sciences and \$60,000 for graduates with a degree in engineering, compared with \$51,000 for all S&E master's graduates (table 2).

Full-Time Employment Status

The likelihood of holding a full-time job one to two years after graduation varies substantially by level and field of degree (tables 1, 2). In 2001, about three-quarters of all recent S&E bachelor's and master's degree recipients were employed full time. At both degree levels, engineering graduates were more likely than science graduates to have gained full-time employment: 87 percent of engineering bachelor's and master's graduates were employed full time, compared with 70 percent of science graduates with bachelor's degrees and 75 percent of those with master's degrees.

Among science graduates at both degree levels, graduates in computer sciences were more likely than other science graduates to be employed full time. At the master's level, more than 90 percent of recent graduates in the field of computer sciences had gained full-time employment.

Employment in S&E Occupations

Recent S&E graduates with a bachelor's degree who were employed as of April, 2001, were only about half as likely as those with a master's degree to have gained



TABLE 1. Enrollment and employment status and median annual salaries of 1999 and 2000 S&E bachelor's degree recipients, by field of degree: 2001

Field of degree	Total	Full-time student	Employed full time	Salary, full-time employed ¹
		Percent		
All science and engineering fields	758,300	22	73	\$34,000
Science	649,000	24	70	31,000
Computer and information sciences	61,500	S	89	51,000
Life and related sciences	159,400	33	62	29,000
Mathematical and related sciences	24,400	18	74	30,000
Physical and related sciences	32,200	31	67	34,000
Psychology	152,900	27	67	28,000
Social and related sciences	218,700	20	71	30,000
Engineering	109,200	13	87	49,000
Aerospace and related engineering	2,200	18	81	44,000
Chemical engineering	10,800	20	80	50,000
Civil and architectural engineering	16,800	9	87	42,000
Electrical, electronic, computer, and communications engineering	34,200	13	87	54,000
Industrial engineering	6,900	S	92	49,000
Mechanical engineering	25,800	10	91	48,000
Other engineering	12,600	18	79	45,000

S=Data suppressed because of small cell sizes.

¹Salary data are for principal job only and do not include the following groups: self-employed persons, full time students, and individuals whose principal job was less than 35 hours per week.

NOTES: Data were collected between May and November, 2001, and included bachelor's graduates who received an S&E degree between July 1, 1998, and June 30, 2000. The percentage of graduates who are full-time students and the percentage of graduates who are employed full time may exceed 100 percent because some graduates may be both full-time employees and full-time students.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates: 2001.

their employment in an S&E occupation (table 3).¹ At both degree levels, recent graduates in engineering fields were much more likely to be employed in an S&E occupation than were recipients of degrees in other S&E fields. Recent graduates with degrees in the social sciences or in psychology were less likely than other S&E degree recipients to be employed in an S&E occupation. Among graduates who majored in the social sciences, economics majors were more likely to have S&E employment than were other social science majors.

Employment Sector

The private, for-profit sector is by far the largest employer of recent bachelor's and master's S&E degree recipients. Private, for-profit companies in 2001 employed 62 percent of bachelor's degree recipients and 58 percent of master's degree recipients and employed a larger proportion of engineering than science graduates (table 4). The academic sector was the second largest employer of recent S&E graduates at both degree levels.

¹In this analysis, persons who were in school on a full-time basis were excluded. Also excluded were persons who were unemployed or not in the workforce.

Science graduates were more likely to find employment in the state and local government sector than were engineering graduates, and engineering graduates were more likely to find employment in the federal sector than were science graduates. Most science graduates in state and local governments are employed as social workers, psychologists, and protective-service workers. In the Federal Government, graduates in engineering fields are employed mostly as electrical/electronics engineers, mechanical engineers, and aerospace and related engineers.

Postgraduation Enrollment Status

Among recent S&E graduates, about 22 percent and 18 percent, respectively, of those with bachelor's and master's degrees were enrolled in school on a full-time basis in 2001. Master's degree recipients who had majored in the physical and related sciences were more likely to be enrolled as full-time students than were S&E master's graduates who had majored in other fields. Likewise, recipients of a bachelor's degree in this field, as well as those who had majored in the life and related sciences, were more likely than other S&E bachelor's graduates to be enrolled full time (figure 1).

TABLE 2. Enrollment and employment status and median annual salaries of 1999 and 2000 S&E master's degree recipients, by field of degree: 2001

Field of degree	Total	Full-time student	Employed full time	Salary, full-time employed ¹
All science and engineering fields	160,100	18	78	\$51,000
Science	115,300	21	75	45,000
Computer and information sciences	24,300	7	92	65,000
Life and related sciences	16,200	29	70	37,000
Mathematical and related sciences	6,200	26	72	45,000
Physical and related sciences	8,600	37	75	45,000
Psychology	33,000	18	74	35,000
Social and related sciences	27,100	26	66	43,000
Engineering	44,800	13	87	60,000
Aerospace and related engineering	1,200	17	89	62,000
Chemical engineering	2,000	30	86	58,000
Civil and architectural engineering	6,300	S	94	50,000
Electrical, electronic, computer, and communications engineering	16,400	10	88	66,000
Industrial engineering	3,200	5	85	62,000
Mechanical engineering	6,100	16	86	60,000
Other engineering	9,500	17	82	61,000

S=Data suppressed because of small cell sizes.

¹ Salary data are for principal job only and do not include the following groups: self-employed persons, full time students, and individuals whose principal job was less than 35 hours per week.

NOTES: Data were collected between May and November, 2001, and included master's graduates who received an S&E degree between July 1, 1998, and June 30, 2000. Percentage of graduates who are full-time students and percentage of graduates who are employed full time may exceed 100 percent because some graduates may be both full-time employees and full-time students.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates: 2001.

TABLE 3. Percentage of 1999 and 2000 S&E bachelor's and master's degree recipients whose employment was in S&E jobs, by field of degree: 2001

Field of degree	Bachelor's degree recipients	Master's degree recipients
All science and engineering fields	29	59
Science	19	48
Computer and information sciences	S	S
Life and related sciences	17	51
Mathematical and related sciences	19	54
Physical and related sciences	48	72
Psychology	10	33
Social and related sciences	9	28
Engineering	81	85
Aerospace and related engineering	72	85
Chemical engineering	74	86
Civil and architectural engineering	82	S
Electrical, electronic, computer, and communications engineering	86	88
Industrial engineering	S	S
Mechanical engineering	81	88
Other engineering	73	80

S=Data suppressed because of small cell sizes.

NOTE: Data exclude recent college graduates who were full-time students in 2001.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates: 2001.

TABLE 4. Number and percentage distribution of employed 1999 and 2000 S&E bachelor's and master's degree recipients, by sector of employment and field of degree: 2001

Degree and field	Total employed (in thousands)	Sector of primary employment					
		Educational institutions ¹	Private, for-profit company ²	Self-employed	Nonprofit organization	Federal Government	State or local government
Bachelor's, all S&E	545,300	17.4	61.5	1.1	8.1	4.9	7.0
All sciences	453,100	19.9	56.8	1.2	9.5	4.8	7.8
All engineering	92,200	5.2	84.5	0.4	1.2	5.4	3.2
Master's, all S&E	123,200	20.2	58.4	0.9	7.6	5.5	7.4
All sciences	85,500	25.5	48.5	1.2	10.4	4.9	9.5
All engineering	37,700	8.8	79.9	0.3	1.4	6.9	2.7

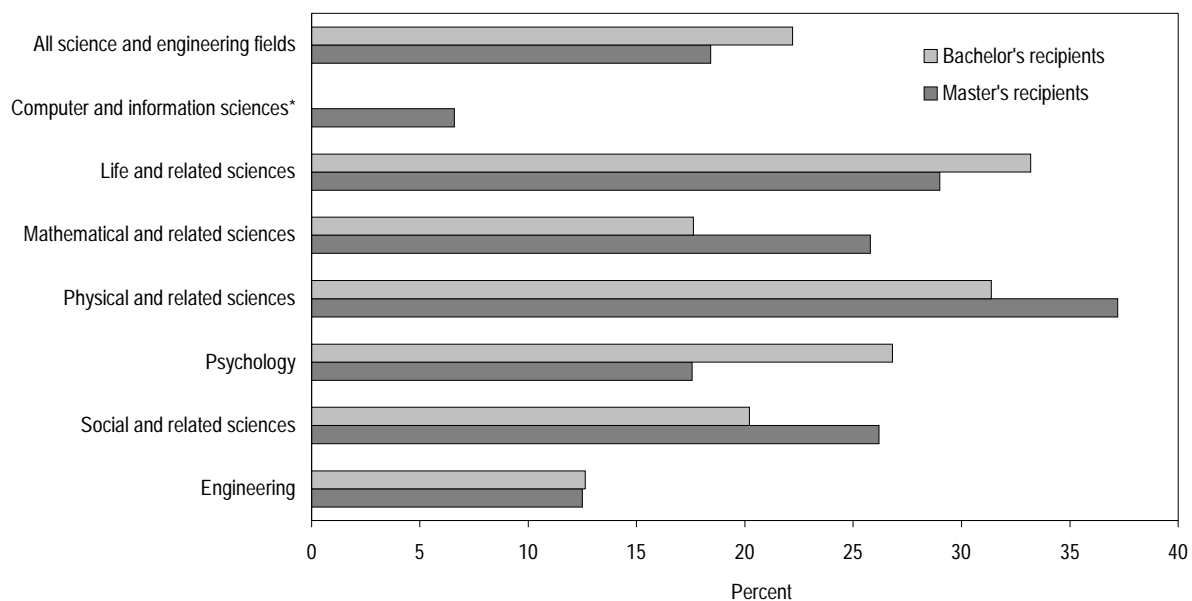
¹ Sector includes those working in elementary, middle, or secondary schools; two-year colleges; four-year colleges; or university affiliated medical schools.

² Sector includes those reporting that they were self-employed but in an incorporated business.

NOTE: Details may not add to totals because of rounding.

SOURCE: National Science Foundation/Division of Science Resources Statistics, National Survey of Recent College Graduates: 2001.

FIGURE 1. Percentage of 1999 and 2000 S&E bachelor's and master's degree recipients who were full-time students in April 2001



*S&E bachelor's degree data for computer and information sciences were suppressed due to small cell size.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates: 2001.

Conclusion

Continuing a pattern that has been evident for decades, recent computer sciences and engineering graduates not only are more likely than graduates in other fields to find full-time employment, but upon entering the workforce, they are rewarded with higher salaries. The private, for-profit sector continues to be the largest employer of recent bachelor's and master's degree recipients.

About 20 percent of individuals who received their degrees in 1999 or 2000 reported that they were continuing their education full time in 2001. Most of these students were pursuing a master's or doctoral degree,

with the remainder working toward a second bachelor's degree.

For more information, contact

John Tsapogas
Human Resources Statistics Program
Division of Science Resources Statistics
National Science Foundation
4201 Wilson Boulevard, Room 965
Arlington, VA 22230
(703) 292-7799
jtsapoga@nsf.gov

NATIONAL SCIENCE FOUNDATION
ARLINGTON, VA 22230

OFFICIAL BUSINESS

RETURN THIS COVER SHEET TO ROOM P35 IF YOU DO NOT WISH TO RECEIVE THIS MATERIAL , OR IF CHANGE OF ADDRESS IS NEEDED , INDICATE CHANGE INCLUDING ZIP CODE ON THE LABEL (DO NOT REMOVE LABEL).

**PRESORTED STANDARD
U.S. POSTAGE PAID
National Science Foundation**

NSF 04-316