



Community Colleges: Playing an Important Role in the Education of Science, Engineering, and Health Graduates

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Over academic years (AY) 2001 to 2007,² the percentage of science, engineering, and health (SEH) graduates who had ever attended community college at some point in their studies remained fairly steady, at around 50% for bachelor's degree recipients and just under 45% for master's degree recipients. In addition, the percentage of SEH graduates who earned an associate's degree also remained steady during this time, at 28% for both bachelor's and master's degree recipients.³ Community college attendance was driven largely by a desire to earn credits toward a bachelor's degree, followed by financial reasons and then by a desire to gain further skills or knowledge in an academic or occupational field. The trends and other findings presented in this InfoBrief are from the National Science Foundation's (NSF) 2008 National Survey of Recent College Graduates (NSRCG) (AY 2006 and 2007) and the earlier 2006 NSRCG (AY 2003, 2004, and 2005) and 2003 NSRCG (AY 2001 and 2002).

Community College Attendance among SEH Graduates

Previously published data from the 2001 NSRCG showed that in AY 1999 and

2000, 44% of all science and engineering (S&E) bachelor's and master's degree recipients had attended community college.⁴ More recent NSRCG data from AY 2001 to 2007, which also include graduates in health fields, showed that community college attendance among SEH graduates was around 50%. In all years, a higher percentage of bachelor's degree recipients had attended community college compared with master's degree recipients (table 1).

From AY 2001 to 2007 women were more likely than men to have taken community college courses by about a 10 percentage point margin (table 2). Across racial/ethnic groups, American Indians/Alaska Natives had the highest percentage of community college attendance (60% to 73%). A lower percentage of whites, blacks, and Hispanics had attended community college (48% to 57%). Asian graduates were the least likely to ever have attended commu-

TABLE 1. Community college attendance among recent recipients of SEH bachelor's and master's degrees, by degree level: AY 2001–07

Degree level	AY 2001 and 2002 graduates		AY 2003, 2004, and 2005 graduates		AY 2006 and 2007 graduates	
	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)
All graduates	1,184,000	49.0	1,982,000	48.2	1,437,000	50.3
Bachelor's	938,000	50.1	1,566,000	50.1	1,128,000	52.2
Master's	247,000	44.7	417,000	40.9	309,000	43.0

AY = academic years. SEH = science, engineering, and health.

NOTES: Numbers are rounded to nearest 1,000 and may not add to total because of rounding. Each academic year runs from 1 July of one year to 30 June of the next year. For example, the 2008 NSRCG sample included those graduating between 1 July 2005 and 30 June 2007, representing 2 academic years: AY 2006 and 2007.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2003, 2006, 2008.

TABLE 2. Community college attendance among recent recipients of SEH bachelor's and master's degrees, by sex, race/ethnicity, and citizenship: AY 2001–07

Characteristic	AY 2001 and 2002 graduates		AY 2003, 2004, and 2005 graduates		AY 2006 and 2007 graduates	
	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)
All graduates	1,184,000	49.0	1,982,000	48.2	1,437,000	50.3
Sex						
Male	518,000	42.8	877,000	41.7	619,000	44.4
Female	667,000	53.8	1,106,000	53.3	818,000	54.7
Race/ethnicity						
American Indian/Alaska Native	7,000	73.1	9,000	59.6	3,000	71.8
Asian	186,000	41.2	345,000	43.7	217,000	44.3
Black	86,000	52.4	130,000	51.4	98,000	54.8
Hispanic	80,000	56.7	152,000	54.9	117,000	56.1
White	789,000	49.2	1,274,000	48.2	931,000	50.1
Other race ^a	37,000	55.8	73,000	47.6	70,000	53.3
Citizenship status						
U.S. citizen	1,085,000	50.7	1,801,000	50.2	1,316,000	52.4
Permanent resident	33,000	49.4	63,000	51.0	38,000	47.7
Temporary visa holder	67,000	21.5	119,000	15.5	82,000	17.4

AY = academic years. SEH = science, engineering, and health.

^a Includes non-Hispanic Native Hawaiians/Other Pacific Islanders and non-Hispanic individuals reporting 2 or more races.

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SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2003, 2006, 2008.

nity college during this period (<45%). With regard to citizenship status, a small percentage of SEH graduates from U.S. academic institutions were on temporary visas (6%). Only about one-fifth of SEH graduates on temporary visas had attended community college, compared with roughly half of SEH graduates who were U.S. citizens or who had permanent residence status (table 2).

However, community college attendance by race/ethnicity and citizenship status differed for bachelor's and master's degree recipients. For example, among SEH bachelor's degree graduates in AY 2006 and 2007, the percentage of Asians who had attended community college (56%) was similar to that of blacks (57%) and Hispanics (59%); the highest percentage of community college

attendance was found among American Indians/Alaska Natives (68%), and the lowest percentage was found among whites (50%) (table 3). At the master's degree level, the percentage of American Indians/Alaska Natives who had attended community college remained high (80%), but the percentage of Asians who had attended dropped sharply to 22%, or less than half of the percentage of Asians at the bachelor's degree level. Also at the master's degree level, the percentage of Hispanics and blacks who had attended community college dropped (42% and 49%, respectively), but the percentage of whites remained the same (50%) (table 3).

Prior community college attendance varied by field of major. From AY 2001 to 2007 health graduates were the most

likely to have taken community college courses (about two-thirds), and engineering graduates and physical/related sciences graduates were the least likely to ever have attended community college (generally <42%) (table 4). Only one field of major among SEH degree recipients, namely physical/related sciences, showed a significant decline in the percentage of prior community college attendance, from 42% of graduates in AY 2001 and 2002 to 33% of graduates in AY 2006 and 2007.

Reasons for Community College Attendance

The 2008 NSRCG asked SEH graduates about their reasons for attending community college. Overall, 75% of the graduates in AY 2006 and 2007 said that their reason was to earn credits

TABLE 3. Community college attendance among recent recipients of SEH bachelor's and master's degrees, by race/ethnicity, citizenship, and degree level: AY 2006–07

Characteristic	Bachelor's		Master's	
	All degree recipients (number)	Ever attended community college (%)	All degree recipients (number)	Ever attended community college (%)
All graduates	1,128,000	52.2	309,000	43.0
Race/ethnicity				
American Indian/Alaska Native	2,000	68.2	1,000	79.9
Asian	142,000	56.2	76,000	22.1
Black	78,000	56.5	21,000	48.5
Hispanic	99,000	58.6	18,000	42.2
White	751,000	50.2	181,000	50.0
Other race ^a	57,000	52.5	13,000	56.9
Citizenship status				
U.S. citizen	1,074,000	52.5	242,000	51.9
Permanent visa	24,000	59.6	14,000	27.9
Temporary visa	30,000	37.7	52,000	5.6

AY = academic years. SEH = science, engineering, and health.

^a Includes non-Hispanic Native Hawaiians/Other Pacific Islanders and non-Hispanic individuals reporting 2 or more races.

NOTES: Numbers are rounded to nearest 1,000 and may not add to total because of rounding. Each academic year runs from 1 July of one year to 30 June of the next year. For example, the 2008 NSRCG sample included those graduating between 1 July 2005 and 30 June 2007, representing 2 academic years: AY 2006 and 2007.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2008.

TABLE 4. Community college attendance among recent recipients of SEH bachelor's and master's degrees, by field of major: AY 2001–07

Field of major	AY 2001 and 2002 graduates		AY 2003, 2004, and 2005 graduates		AY 2006 and 2007 graduates	
	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)	Degree recipients (number)	Ever attended community college (%)
All graduates	1,184,000	49.0	1,982,000	48.2	1,437,000	50.3
Biological/life sciences	168,000	44.3	259,000	44.9	195,000	48.9
Computer/mathematical sciences	143,000	43.9	272,000	46.8	156,000	46.4
Physical/related sciences	45,000	41.5	71,000	39.8	52,000	33.4
Social/related sciences	443,000	48.2	763,000	46.9	551,000	49.0
Engineering	159,000	38.2	270,000	38.8	184,000	38.3
Health	226,000	66.4	348,000	63.4	298,000	65.9

AY = academic years. SEH = science, engineering, and health.

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SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2003, 2006, 2008.

for a bachelor's degree (table 5). The next three most frequently mentioned reasons included for financial reasons (44%), to gain further skills or knowledge in academic or occupational field (42%), and to prepare for college/increase chance of acceptance to a 4-year college or university (42%). Twenty-nine percent of the SEH graduates stated that one of their reasons for attending community college was to complete an associate's degree, and this is consistent with the percentage of SEH graduates who reported having earned an associate's degree (28%).

Regardless of field of major, earning credits toward a bachelor's degree was the top reason given for taking community college courses. However, some of the other reasons for attending community college varied by field of major. For example, financial reasons was chosen by 50% of the recent health graduates, compared with 37% of biological/life sciences and physical/related sciences graduates. In contrast, the percentage of graduates who mentioned leisure or personal reasons was nearly twice as high among physical/related sciences graduates as among health graduates (35% versus 20%). Overall, to increase opportunities for promotion, advancement, or higher salary was the least cited reason for attending community college (21%).

Timing of Community College Attendance

The 2008 NSRCG also asked SEH graduates about the timing of their community college attendance. The five delineated time periods to choose from included (1) before graduating from high school or earning a high school equivalency certificate, (2) after high school and before ever enrolling in a 4-year college or university, (3) while enrolled in a 4-year college or university and before receiving a first

TABLE 5. Reasons for attending community college among recent recipients of SEH bachelor's and master's degrees, by field of major: AY 2006–07 (Percent)

Reasons for attending community college	All recipients	Biological/ life sciences	Computer/ mathematical sciences	Physical/ related sciences	Social/ related sciences	Engineering	Health
Attended community college (number)	722,000	95,000	72,000	17,000	270,000	71,000	197,000
Earn credits for bachelor's degree	74.5	73.8	71.1	69.2	74.7	75.8	75.7
Financial reasons (e.g., cost of 4-year school)	44.0	36.9	46.1	37.0	42.7	42.5	49.5
Gain skills or knowledge in academic or occupational field	42.3	38.5	48.7	34.8	41.0	37.9	45.9
Prepare for college/increase chance of acceptance to 4-year college or university	41.6	37.9	42.4	39.2	43.7	38.4	41.5
Complete associate's degree	28.7	18.3	33.1	15.3	28.8	15.8	37.7
Leisure or personal interests	28.0	27.8	33.3	35.0	32.4	27.1	19.7
Facilitate change in academic or occupational field	26.6	21.1	24.9	17.8	26.0	16.7	35.0
Earn college credits while in high school	25.3	34.3	23.9	29.8	27.0	28.2	17.6
Increase opportunities for promotion, advancement, or higher salary	21.4	15.1	25.7	13.0	21.7	15.0	25.4

AY = academic years. SEH = science, engineering, and health.

NOTES: Numbers are rounded to nearest 1,000. Percentages sum to more than 100% because of multiple responses. Each academic year runs from 1 July of one year to 30 June of the next year. For example, the 2008 NSRCG sample included those graduating between 1 July 2005 and 30 June 2007, representing 2 academic years: AY 2006 and 2007.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2008.

bachelor's degree, (4) after leaving a 4-year college or university without a first bachelor's degree, and (5) after receiving a first bachelor's degree.

Overall, the two most frequently reported periods of attendance were “while enrolled in a 4-year college or university and before receiving a first bachelor's degree” (45%) and “after high school and before ever enrolling in a 4-year college or university” (43%) (table 6). These also were the two most frequent periods for SEH graduates in computer/mathematical sciences, social/related sciences, engineering, and health. In contrast, SEH graduates in biological/life sciences and physical/related sciences reported attendance “before graduating from high school or earning a high school equivalency certificate” as the second most frequently cited period of attendance behind “while enrolled in a 4-year college or university and before receiving a first bachelor's degree.”

Overall, the least likely period of community college attendance was “after leaving a 4-year college or university without a first bachelor's degree” (11%). Bachelor's recipients who went on to earn an SEH master's degree were more likely (31%) to have attended a community college after receiving a first bachelor's degree than were those who did not (20%).

Data Sources, Limitations, and Data Availability

Data Sources and Limitations

The NSRCG has been conducted since 1974 and is sponsored by the NSF. The NSRCG is a cross-sectional sample survey of recent bachelor's and master's degree recipients who majored in a SEH field. SEH fields include biological/agricultural/environmental life sciences, computer and information sciences, mathematics and statistics, physical sciences, psychology, social sciences, engineering, and health.

The survey is generally conducted on a biennial basis to cover 2 academic years of SEH graduates (the 2006 NSRCG covered 3 academic years). In addition to having a bachelor's or master's degree in a SEH field from a U.S. institution, the target population for the survey included those who were younger than 76 years and living in the United States during the survey reference week (1 October for the 2003 and 2008 NSRCG, and 1 April for the 2006 NSRCG). The total sample size for the 2008 survey was 18,000 graduates (9,000 graduates per academic year), and the overall response rate was 65.7%. Additional information about the coverage and design of the NSRCG can be found at <http://www.nsf.gov/statistics/srvyrecentgrads/>.

Comparative terms in this InfoBrief, such as increased/decreased, differed, more/less likely, and higher/lower, are based on statistical tests for significant differences at the 95% confidence level.

TABLE 6. Period of community college attendance among recent recipients of SEH bachelor's and master's degrees by field of major: AY 2006–07
(Percent)

Period of attendance	All recipients	Biological/ life sciences	Computer/ mathematical sciences	Physical/ related sciences	Social/ related sciences	Engineering	Health
Attended community college (number)	722,000	95,000	72,000	17,000	270,000	71,000	197,000
Before graduating from high school or earning a high school equivalency certificate	29.2	39.6	27.1	35.5	31.8	34.2	19.2
After high school and before ever enrolling in a 4-year college or university	43.1	34.5	46.5	34.4	43.5	34.9	49.2
While enrolled in a 4-year college or university and before receiving a first bachelor's degree	44.9	47.8	37.4	41.0	45.1	48.8	45.0
After leaving a 4-year college or university without a first bachelor's degree	10.9	9.4	14.0	7.4	10.6	5.8	13.0
After receiving a first bachelor's degree	21.8	27.3	14.8	19.7	20.6	14.6	26.0

AY = academic years. SEH = science, engineering, and health.

NOTES: Numbers are rounded to nearest 1,000. Percentages sum to more than 100% because of multiple responses. Each academic year runs from 1 July of one year to 30 June of the next year. For example, the 2008 NSRCG sample included those graduating between 1 July 2005 and 30 June 2007, representing 2 academic years: AY 2006 and 2007.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, National Survey of Recent College Graduates: 2008.

Percentage comparisons in this report are based on unrounded counts and may differ from percentages calculated from the rounded counts displayed in the tables.

The racial/ethnic categories in this report are mutually exclusive. The estimates on racial backgrounds refer to individuals who identified as non-Hispanic with only one racial background. Non-Hispanic individuals who identified two or more racial backgrounds are reported as a separate group. Hispanic ethnicity refers to individuals who identified a Hispanic origin regardless of racial background.

Data Availability

The full set of detailed tables from the 2008 NSRCG will be available in the forthcoming report *Characteristics of Recent Science and Engineering Graduates: 2008* at <http://www.nsf.gov/statistics/recentgrads/>. Individual detailed

tables may be available in advance of the full report. Please contact Flora Lan (flan@nsf.gov; 703-292-4758) for more information. Data from the NSRCG are also available in the Scientists and Engineers Statistical Data System (SESTAT) at <http://www.nsf.gov/statistics/sestat/>. SESTAT integrates information on employment, education, and demographic characteristics of scientists and engineers in the United States that is collected by three NSF surveys: the National Survey of Recent College Graduates, the National Survey of College Graduates, and the Survey of Doctorate Recipients.

Notes

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2. Each academic year runs from 1 July of one year to 30 June of the next year. For example, the 2008 NSRCG sample included those graduating between 1 July 2005 and 30 June 2007, representing 2 academic years: AY 2006 and 2007.

3. Because the emphasis of this report is the percentage of SEH graduates who had ever attended community college at some point in time before earning their bachelor's or master's degree, the percentage who earned an associate's degree is not included in the statistical tables.

4. Tsapogas J. 2004. *The Role of Community Colleges in the Education of Recent Science and Engineering Graduates*. InfoBrief NSF 04-315. Arlington, VA: National Science Foundation.

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