2002-2003 Taulbee Survey

Undergraduate Enrollments Drop; Department Growth Expectations Moderate

By Stuart Zweben and William Aspray

This article and the accompanying figures and tables present the results of the 33rd annual CRA Taulbee Survey[1] of Ph.D.-granting departments of computer science (CS) and computer engineering (CE) in the United States and Canada. This survey is conducted annually by the Computing Research Association to document trends in student enrollment, employment of graduates, and faculty salaries.

Information was gathered during the fall of 2003. Responses received by December 10, 2003 are included in the analysis. The periods the data cover vary from table to table. Degree production (Ph.D., Master's, and Bachelor's) and total Ph.D. enrollments refer to the previous academic year (2002-2003). Data for new students in all categories and total enrollments for Master's and Bachelor's degrees refer to the current academic year (2003-2004). Projected student production and information on faculty salaries and demographics also refer to the current academic year. Faculty salaries are those effective January 1, 2004.

The data were collected from Ph.D.-granting departments only. A total of 225 departments were surveyed, the same number as last year. As shown in Figure 1, 177 departments returned their survey forms, for a response rate of 79 percent (compared to 80 percent last year). The return rate of 7 out of 29 (24%) for Computer Engineering (CE) programs is very low, as has been the case for several years (see below). We attribute this low response to two factors: 1) many CE programs are part of an ECE department, and they do not keep separate statistics for CE vs. EE; and 2) many of these departments are not aware of the Taulbee Survey or its importance. The response rate for US CS departments (151 of 169, or 89%) was very good, while the 70% response rate for Canadian programs was moderately good although not as good as in the past several years.

The set of departments responding varies slightly from year to year, even when the total numbers are about the same; thus, we must approach any trend analysis with caution. We must be especially cautious in using the data about CE departments because of the low response rate. However, we have reported CE departments separately because there are some significant differences between CS and CE departments.

The survey form itself is modified slightly each year to ensure a high rate of return (e.g., by simplifying and clarifying), while continuing to capture the data necessary to understand trends in the discipline and also reflect changing concerns of the computing research community. This year, preliminary survey results about faculty salaries were reported in December 2003 only to respondents. The CRA Board views this, and the release of this final report to respondents in early March 2004, as benefits of participation in the survey. We intend to continue this practice in future years.

This year we also included several new questions from the former Departmental Profiles Survey (see the section entitled "Additional Departmental Profiles Analysis"). We are especially pleased that the increased size of this year's survey did not have a detrimental effect on the response rate. We thank all respondents who completed this year's questionnaire. Departments that participated are listed at the end of this article.

Ph.D. Degree Production and Enrollments *(Tables 1-8)*

As shown in Table 1, a total of 877 Ph.D. degrees were awarded in 2003 by the 177 responding departments. This is an increase of 3% over last year, but still represents, as Figure 2 indicates, the second lowest total national Ph.D. production since 1989. Most likely this number is still reflecting the high-tech boom of the late 1990s when start-up companies presented an extremely attractive employment option for computer scientists.

The prediction from last year's survey that 1,224 Ph.D. degrees would be awarded in 2003 was, as usual, overly optimistic, with an "optimism" ratio, defined as the actual over the predicted, being 0.72. Given next year's prediction of 1,350 graduates (Table 1), we believe the actual number will be between 900 and 1,000.

Most of the other numbers indicate that doctoral students are staying in school and progressing towards the degree. The number entering Ph.D. programs (Table 5) decreased from 3,286 to 3,131 (5%), with this decrease entirely attributable to Canadian and CE respondents. The US CS numbers are flat. However, the number who passed qualifiers (Table 1) increased from 1,375 to 1,545 (12%). On a per-department basis, the number passing qualifiers has risen from 6.5 to 8.7 (33%) in three years. The number who passed thesis proposal exams (Table 1) stayed almost flat, changing from 884 to 881. Total Ph.D. enrollment (Table 6) increased from 10,021 to 12,007 (20%). It seems that the slow turn-around of the economy, and of the dot-com economy in particular, has attracted more people to graduate school in recent years, and more of them appear to be moving past at least the qualifier stage of the Ph.D. program.

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Figure 1. Number of Respondents to the Taulbee Survey

Year	US CS Depts.	US CE Depts.	Canadian	Total
1995	110/133 (83%)	9/13 (69%)	11/16 (69%)	130/162 (80%)
1996	98/131 (75%)	8/13 (62%)	9/16 (56%)	115/160 (72%)
1997	111/133 (83%)	6/13 (46%)	13/17 (76%)	130/163 (80%)
1998	122/145 (84%)	7/19 (37%)	12/18 (67%)	141/182 (77%)
1999	132/156 (85%)	5/24 (21%)	19/23 (83%)	156/203 (77%)
2000	148/163 (91%)	6/28 (21%)	19/23 (83%)	173/214 (81%)
2001	142/164 (87%)	8/28 (29%)	23/23 (100%)	173/215 (80%)
2002	150/170 (88%)	10/28 (36%)	22/27 (82%)	182/225 (80%)
2003	151/169 (89%)	7/29 (24%)	19/27 (70%)	177/225 (79%)

Figure 2. PhD Production

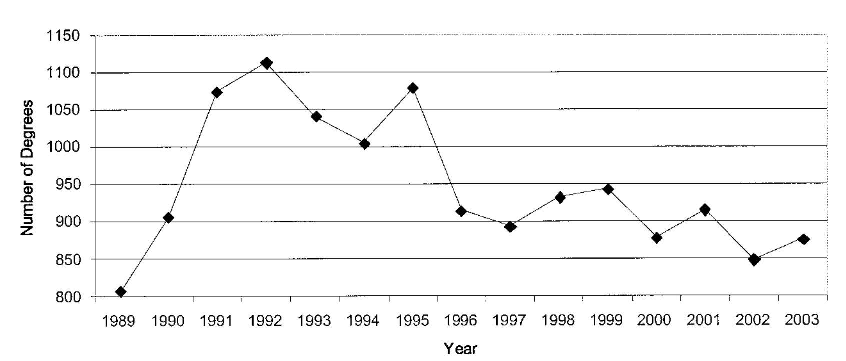

Figure 3. PhD Pipeline Corrected for Year of Entry

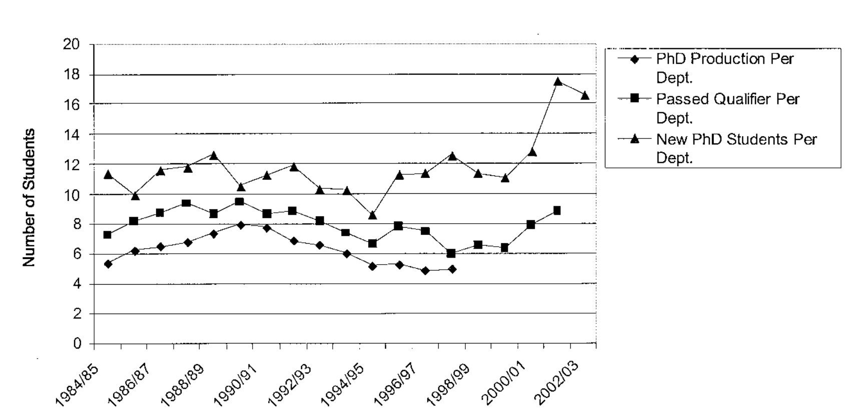

Table 1. Ph.D. Production by Type of Department and Rank

Department, Rank	Ph.D.s Produced	Avg. per Dept.	Ph.D.s Next Year	Avg. per Dept.	Passed Qualifier	Avg. per Dept.	Passed Thesis Exam	Avg. per Dept.
US CS 1-12	167	13.9	217	18.1	261	21.8	238	19.8
US CS 13-24	128	10.7	159	13.3	190	15.8	104	8.7
US CS 25-36	93	7.8	163	13.6	197	16.4	82	6.8
US CS Other	388	3.4	578	5.0	722	6.3	368	3.2
Canadian	72	3.8	126	6.6	133	7.0	79	4.2
US CE	29	4.1	107	15.3	42	6.0	10	1.4
Total	**877**	**5.0**	**1,350**	**7.6**	**1,545**	**8.7**	**881**	**5.0**

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Figure 3 shows a longer-term trend of the number of CS Ph.D. graduates, normalized by the number of departments responding to the Taulbee Survey. This graph also shows the number of new students entering Ph.D. programs and the number of students who passed qualifiers. These also are normalized for the number of departments reporting. The graph offsets the qualifier data by one year from the data for new students, and offsets the graduation data by five years from the data for new students, to approximate the lag between student entrance into the pipeline, and the qualifier and exit time frame for the same cohort. The figure suggests that, unless a larger fraction of those passing qualifiers do not complete the program, significant increases in Ph.D. production are only a few years away.

Table 4 shows employment for new Ph.D. recipients. Of those who reported employment domestically, 63% took academic employment (compared to 53% last year and 43% the year before). Most of these academic positions were in Ph.D.-granting departments, but 31 were in other CS/CE departments. This represents a considerable increase from the 9 reported last year as having gone to non-Ph.D.-granting CS/CE departments, but still likely falls considerably short of meeting the needs of those departments. There has also been a slight increase (from 83 to 89) in the number of postdoctoral positions (up from 56 two years ago). Figure 4 shows the trend of employment of new Ph.D.s to academia and industry, and the proportion of those going to academia who took positions other than in Ph.D-granting CS/CE departments. After many years of a decided preference for industry jobs over academic jobs, the trend during the most recent two years is striking, and indicative of economic conditions in industry. This has been good for Ph.D-granting CS/CE departments.

Table 4 also indicates increases in the proportion of new CS/CE Ph.D.s in the programming languages/compilers, OS/networks, software engineering, and graphics/HCI areas, while the AI/robotics, theory/algorithms, and database/information systems areas experienced a decreased proportion of Ph.D.s. Multi-year trends are less clear, though there appears to have been an increased production in the graphics/HCI and the numerical/scientific computing areas during the past five years.

Most statistics on gender and ethnicity for Ph.D. students (Tables 2, 3, 7, 8) show little change from last year or, indeed, the last several years. White and nonresident-alien men continue to account for a very large fraction of our Ph.D. production and enrollments. Women represented 20% of enrollments, 17% of graduates. All other underrepresented groups make up a very small minority. As Figure 5 illustrates, we see a second year of slight decrease in the proportion of enrolled Ph.D. students who are nonresident aliens. The cause of this trend is unclear. It could be an increased interest in Ph.D.

Table 2. Gender of Ph.D. Recipients by Type of Degree

	CS		CE		CS&CE	
Male	660	83.2%	57	86.4%	717	83.5%
Female	133	16.8%	9	13.6%	142	16.5%
Total have Gender Data for	**793**		**66**		**859**	
Unknown	18		0		18	
Total	**811**		**66**		**877**	

Table 3. Ethnicity of Ph.D. Recipients by Type of Degree

	CS		CE		CS&CE	
Nonresident Alien	314	41.9%	33	52.4%	347	42.7%
African-American, Non-Hispanic	10	1.3%	1	1.6%	11	1.4%
Native American/ Alaskan Native	1	0.1%	1	1.6%	2	0.2%
Asian/Pacific Islander	105	14.0%	9	14.3%	114	14.0%
Hispanic	16	2.1%	1	1.6%	17	2.1%
White, Non-Hispanic	281	37.5%	16	25.4%	297	36.5%
Other/Not Listed	23	3.1%	2	3.2%	25	3.1%
Total have Ethnicity Data for	**750**		**63**		**813**	
Ethnicity/Residency Unknown	61		3		64	
Total	**811**		**66**		**877**	

Figure 4. Employment of New PhDs in the US and Canada

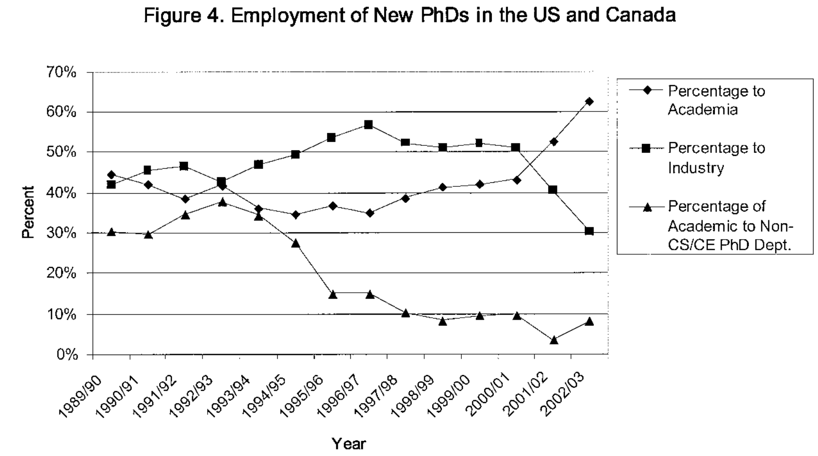

Table 4. Employment of New Ph.D. Recipients by Specialty

	Artificial Intelligence/ Robotics	Hardware/ Architecture	Numerical Analysis/ Scientific Computing	Programming Languages/ Compilers	OS/Networks	Software Engineering	Theory/ Algorithms	Graphics/ Human Interfaces	Databases/ Information Systems	Other/ Unknown	Total		
New Ph.D.s in Ph.D.-Granting Depts.													
Tenure-track	29	32	9	17	48	18	33	22	29	20	**257**	34.2%	
Researcher	17	2	4	1	15	3	4	8	3	4	**61**	8.1%	
Postdoc	23	2	6	7	12	4	12	11	6	6	**89**	11.9%	
Teaching Faculty	2	0	1	5	4	1	1	1	3	9	**27**	3.6%	
												57.8%	**Total**
New Ph.D.s, Other Categories													
Other CS/CE Dept.	5	1	4	1	2	3	4	8	2	1	**31**	4.1%	
Non-CS/CE Dept.	1	0	0	0	0	2	1	1	0	2	**7**	0.9%	
Industry	37	17	10	17	40	14	10	25	13	33	**216**	28.8%	
Government	2	0	4	2	3	0	0	1	1	2	**15**	2.0%	
Self-Employed	1	0	0	0	1	2	0	1	2	2	**9**	1.2%	
Employed Abroad	3	6	1	2	3	7	0	6	2	1	**31**	4.1%	
Unemployed	3	0	0	0	0	0	0	3	1	1	**8**	1.1%	
												42.2%	**Total**
Total have Employment Data for	**123**	**60**	**39**	**52**	**128**	**54**	**65**	**87**	**62**	**81**	**751**	**100.0%**	
Unknown	10	5	2	4	5	7	3	7	7	76	**126**		
Total	**133**	**65**	**41**	**56**	**133**	**61**	**68**	**94**	**69**	**157**	**877**		

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programs by domestic students, difficulties with visas for foreign students, or a perceived hostile environment that makes the United States seem less attractive to foreign students. Even with this two-year decline, the current proportion of non-resident aliens is the third highest in the past ten years. However, in 2003, the Educational Testing Service reports significant decreases in the number of students taking the GRE exam from countries that historically have been large feeders of North American graduate programs in CS/CE (especially China and India). The effect of this phenomenon on next year's Taulbee data bears watching.

Master's and Bachelor's Degree Production and Enrollments *(Tables 9-16)*

The statistics on Master's and Bachelor's degrees awarded show mixed trends. Master's degrees were awarded to 9,141 students, an increase of 15% (following a decrease of 4 percent the year before). This may be a byproduct of the increased enrollment trends in Ph.D. programs, since in many schools students obtain the M.S. on the way to the Ph.D. Actual Master's degrees awarded exceeded last year's projections by 17%. This year's expected Master's production (Table 12) exceeds the projection from last year's survey by 4 percent, but if met this still would represent a decrease of more than a 10% from last year's actual production. Bachelor's degrees numbered 19,990, a decrease of 3% (following an increase of 21 percent the year before). Most of this decrease came from CE programs; CS production was down less than 2%, perhaps reflecting the residuals of the high growth in undergraduate program enrollment of the late 1990s. Actual Bachelor's production was only about 1% less than projected last year. Projected Bachelor's production for this year shows a decrease from last year's projections of 7 percent (see Figure 6).

As shown in Figure 7, the number of new undergraduate majors dropped significantly from 23,033 to 17,706 (23%). For the previous three years, the number of new undergraduate students was approximately constant, whereas during the five years before that the number of new undergraduate students more than doubled. One major reason for this striking new trend is that the decline in the technology industry and the moving of jobs offshore are making computer science and engineering less alluring to new undergraduates. In addition, some programs have restricted admission to a subset of those desiring the computer science and engineering major, either by setting numerical limits or increasing the standards for admission. The selectivity of these programs has an impact on the number of students who want to compete for positions in these programs. Lastly, the introduction of new undergraduate programs in the IT field has created alternatives to the traditional CS and CE majors, possibly siphoning students who previously would have selected CS/CE programs. In any case, it is quite clear that the period of explosive growth in enrollments in Bachelor's programs is over.

In all other numbers, we again see mixed trends in both Bachelor's and Master's programs. New Master's students (Table 13) decreased by 8% after having decreased by 3% the previous year. This is further evidence of the effect of the dot-com crash, as fewer students seek degree programs designed mainly to prepare them for industry employment. Total enrollments in Bachelor's programs (Table 16) dropped by 19% (having increased in US CS departments by 4% to 5% and overall by 11% the previous year) and enrollments in Master's programs (Table 15) dropped by 4% (having increased by 21% the previous year).

Most demographics regarding gender and ethnicity for Bachelor's and Master's students show stability when compared with last year's results. The proportion of Master's degree recipients who are nonresident aliens (55.8%) is about the same as the previous year (Table 10).

Faculty Demographics *(Tables 17-23)*

Over the past year, the total number of faculty increased by 6 percent to a total of 5,831. Increases were shown in every category: tenure-track, researcher, postdoc, and teaching faculty.

Ph.D. production shows only 434 graduates taking faculty positions at CS/CE Ph.D-granting departments (Table 4). Tables 19 and 20 indicate that a total of 607 persons were hired during the past year. Thus, more than 70% of the faculty hires appear to have been new Ph.D.s, with the rest a combination of faculty who changed academic position, persons joining academia from government and industry, new Ph.D.s from disciplines outside of CS/CE, and non-Ph.D. holders (e.g., taking a teaching faculty appointment).

This year's observed faculty growth to 5,831 was very close to the prediction of 5,881 from last year's survey. Planned growth for this year is only 2% and only 5% for the following year. Departmental expectations appear to be much more modest and realistic than in previous years. This may reflect more firm numbers of open positions than in the days when several departments were reported to have an open-ended number of positions, and also may reflect an increased supply of candidates.

Table 23 on faculty "losses" shows that the same number of people (89, which is less than 2% of all faculty) actually left academia through death, retirement, or taking nonacademic positions this year and last year. However, this year, the amount of "churn," the number of professors moving from one academic position to another, decreased from 108 to 74. Thus we have further evidence that the faculty "retention problem" that was so much discussed over the past few years seems to have solved itself.

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Figure 5. Nonresident Aliens as a Fraction of PhD Enrollments

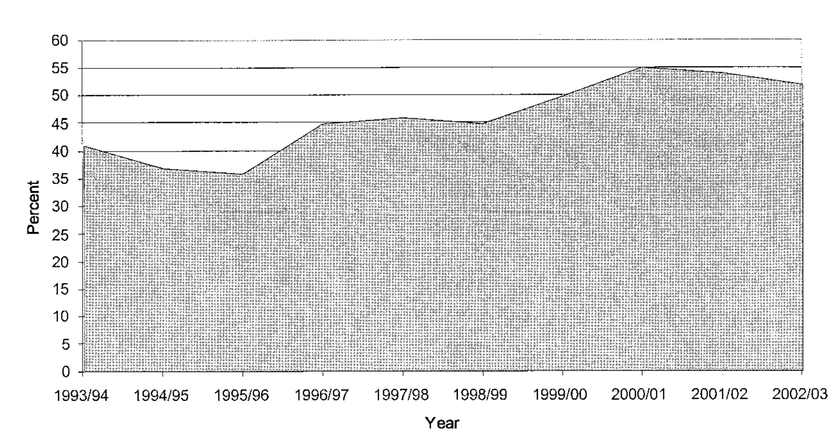

Figure 6. BS Production

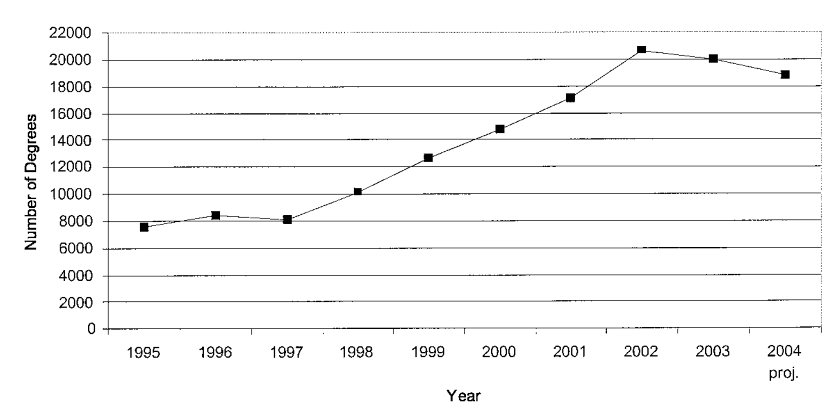

Figure 7. Newly Declared CS/CE Undergraduate Majors

Table 5. New Ph.D. Students in Fall 2003 by Department Type and Rank

	CS				CE				CS&CE	
Department, Rank	**New Admit**	**MS to Ph.D.**	**Total**	**Avg. per Dept.**	**New Admit**	**MS to Ph.D.**	**Total**	**Avg. per Dept.**	**Total**	**Avg. per Dept.**
US CS 1-12	437	28	465	38.8	0	0	0	0.0	465	38.8
US CS 13-24	321	43	364	30.3	6	0	6	0.5	370	30.8
US CS 25-36	274	29	303	25.3	0	0	0	0.0	303	25.3
US CS Other	1,161	347	1,508	13.1	139	27	166	1.4	1,674	14.6
Canadian	169	24	193	10.2	0	0	0	0.0	193	10.2
US CE	0	0	0	0.0	126	0	126	18.0	126	18.0
Total	**2,362**	**471**	**2,833**	**16.0**	**271**	**27**	**298**	**1.7**	**3,131**	**17.7**

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Table 6. Ph.D. Degree Total Enrollment by Department Type and Rank

Department, Rank	CS		CE		CS&CE	
US CS 1-12	1,972	18.4%	0	0.0%	1,972	16.4%
US CS 13-24	1,544	14.4%	14	1.1%	1,558	13.0%
US CS 25-36	1,348	12.6%	0	0.0%	1,348	11.2%
US CS Other	5,160	48.1%	502	39.0%	5,662	47.2%
Canadian	694	6.5%	0	0.0%	694	5.8%
US CE	1	0.0%	772	59.9%	773	6.4%
Total	**10,719**		**1,288**		**12,007**	

Table 7. Ph.D. Program Total Enrollment by Gender

	CS		CE		CS&CE	
Male	8,362	79.5%	1,087	84.8%	9,449	80.1%
Female	2,155	20.5%	195	15.2%	2,350	19.9%
Total have Gender Data for	**10,517**		**1,282**		**11,799**	
Unknown	202		6		208	
Total	**10,719**		**1,288**		**12,007**	

Table 8. Ph.D. Program Total Enrollment by Ethnicity

	CS		CE		CS&CE	
Nonresident Alien	5,294	54.0%	481	38.5%	5,775	52.2%
African-American, Non-Hispanic	152	1.5%	35	2.8%	187	1.7%
Native American/ Alaskan Native	19	0.2%	2	0.2%	21	0.2%
Asian/Pacific Islander	1,061	10.8%	413	33.1%	1,474	13.3%
Hispanic	112	1.1%	22	1.8%	134	1.2%
White, Non-Hispanic	2,959	30.2%	292	23.4%	3,251	29.4%
Other/Not Listed	213	2.2%	4	0.3%	217	2.0%
Total have Ethnicity Data for	**9,810**		**1,249**		**11,059**	
Ethnicity/Residency Unknown	909		39		948	
Total	**10,719**		**1,288**		**12,007**	

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The demographic data for faculty (Tables 19-22) show very small changes. Overall, the percentage of newly hired women faculty increased from 18% to 19%. The gender split of new faculty (81% male, 19% female) remains close to the split for new Ph.D. recipients (Table 2). While there are more newly hired men in tenure-track (82%) and research (86%) positions, these categories are slightly less male-dominated than they were the year before. The percentage of newly hired teaching faculty who are women dropped from 26% to 22%. These changes had no marked effect on the percentages of current faculty of each gender.

It is interesting to compare the ethnicity data for new faculty (Table 20) with that of Ph.D. recipients (Table 3). Forty-nine percent of the newly hired tenure-track faculty in Ph.D.-granting departments and 72% of the newly hired teaching faculty are white, non-Hispanic, even though only 37 percent of the Ph.D. recipients are in this category. By contrast, only 23 percent of the new faculty are nonresident aliens, whereas 43 percent of the degree recipients are in that category. Some new faculty could have become residents after receiving their Ph.D. degrees, but it seems clear that proportionately fewer foreign students take positions, especially teaching positions, at universities in North America.

Research Expenditures and Graduate Student Support *(Tables 24-26)*

Table 24 shows the department's total expenditure (including indirect costs or "overhead" as stated on project budgets) from external sources of support. As was true last year, the higher the ranking, the more external funding per capita, where capitation is computed relative to the number of tenured and tenure-track faculty members. Canadian levels are shown in Canadian dollars. The median per capita amount of support for schools in the 1-36 bands compared to the median reported in last year's survey grew in the 5% to 10% range, while in the lower ranks, the median actually dropped by 3%. Canadian departments show a lower level of expenditures from external sources than every US ranking band; this stems, no doubt, from differences in the way that research is funded in Canada. It is difficult to draw meaning for the numbers for computer engineering because of the small number of departments reporting.

Table 25 shows the number of graduate students supported as full-time students as of fall 2003, further categorized as teaching assistants, research assistants, fellows, or computer systems supporters, and split between those on institutional vs. external funds. The higher the ranking of the department, the greater the proportion of graduate students who are supported on external funds (typically as research assistants and fully supported, externally funded fellows). Canadian departments are more likely than US departments to

Table 9. Gender of Bachelor's and Master's Recipients

	Bachelor's						Master's					
	CS		CE		CS&CE		CS		CE		CS&CE	
Male	12,606	80.6%	2,892	88.6%	15,498	82.0%	5,912	73.6%	800	80.6%	6,712	74.4%
Female	3,041	19.4%	372	11.4%	3,413	18.0%	2,119	26.4%	193	19.4%	2,312	25.6%
Total have Gender Data for	**15,647**		**3,264**		**18,911**		**8,031**		**993**		**9,024**	
Unknown	986		93		1,079		117		0		117	
Total	**16,633**		**3,357**		**19,990**		**8,148**		**993**		**9,141**	

Table 10. Ethnicity of Bachelor's and Master's Recipients

	Bachelor's						Master's					
	CS		CE		CS&CE		CS		CE		CS&CE	
Nonresident Aliens	1,218	9.8%	199	6.3%	1,417	9.1%	4,096	57.2%	413	45.1%	4,509	55.8%
African-American, Non-Hispanic	399	3.2%	194	6.1%	593	3.8%	95	1.3%	40	4.4%	135	1.7%
Native American/ Alaskan Native	41	0.3%	13	0.4%	54	0.3%	13	0.2%	1	0.1%	14	0.2%
Asian/Pacific Islander	3,053	24.5%	747	23.5%	3,800	24.3%	1,072	15.0%	168	18.4%	1,240	15.4%
Hispanic	456	3.7%	136	4.3%	592	3.8%	86	1.2%	10	1.1%	96	1.2%
White, Non-Hispanic	6,934	55.6%	1,759	55.4%	8,693	55.6%	1,678	23.4%	277	30.3%	1,955	24.2%
Other/Not Listed	362	2.9%	127	4.0%	489	3.1%	123	1.7%	6	0.7%	129	1.6%
Total have Ethnicity Data for	**12,463**		**3,175**		**15,638**		**7,163**		**915**		**8,078**	
Ethnicity/ Residency Unknown	4,170		182		4,352		985		78		1,063	
Total	**16,633**		**3,357**		**19,990**		**8,148**		**993**		**9,141**	

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Table 11. Bachelor's Degree Candidates for 2003-2004 by Department Type and Rank

Department, Rank	CS		CE		CS&CE	
US CS 1-12	1,889	11.6%	218	8.4%	2,107	11.2%
US CS 13-24	1,461	9.0%	376	14.5%	1,837	9.7%
US CS 25-36	1,775	10.9%	83	3.2%	1,858	9.9%
US CS Other	7,889	48.5%	1,444	55.6%	9,333	50.2%
Canadian	3,246	20.0%	5	0.2%	3,251	17.2%
US CE	0	0.0%	470	18.1%	470	1.8%
Total	**16,260**		**2,596**		**18,856**	

Table 12. Master's Degree Candidates for 2003-2004 by Department Type and Rank

Department, Rank	CS		CE		CS&CE	
US CS 1-12	821	11.2%	65	7.7%	886	10.9%
US CS 13-24	781	10.7%	0	0.0%	781	9.6%
US CS 25-36	488	6.7%	0	0.0%	488	6.0%
US CS Other	4,728	64.7%	409	48.6%	5,137	63.1%
Canadian	488	6.7%	2	0.2%	490	6.0%
US CE	0	0.0%	366	43.5%	366	4.5%
Total	**7,306**		**842**		**8,148**	

Table 13. New Master's Students in Fall 2003 by Department Type and Rank

	CS		CE		CS&CE	
Department, Rank	Total	Avg. per Dept.	Total	Avg. per Dept.	Total	Avg. per Dept.
US CS 1-12	597	49.8	50	4.2	647	53.9
US CS 13-24	772	64.3	5	0.4	777	64.8
US CS 25-36	342	28.5	0	0.0	342	28.5
US CS Other	3,929	34.2	289	2.5	4,218	36.7
Canadian	736	38.7	31	1.6	767	40.4
US CE	0	0.0	206	29.4	206	29.4
Total	**6,376**		**581**		**6,957**	

support their graduate students through teaching assistantships rather than research assistantships.

Respondents were asked to "provide the net amount (as of fall 2003) of an academic-year stipend for a graduate student (not including tuition or fees)." The results are shown in Table 26. Canadian stipends are shown in Canadian dollars. The higher the ranking band, the higher the median level of support for teaching assistants. Median amounts of support for research assistants at the top 24 schools also are much higher than those for the lower-ranked bands.

Faculty Salaries *(Tables 27-34)*

Each department was asked to report the minimum, median, mean, and maximum salaries for each rank (full, associate, and assistant professors and non-tenure-track teaching faculty) and the number of persons at each rank. The salaries are those in effect on January 1, 2004. For US departments, nine-month salaries are reported in US dollars. For Canadian departments, twelve-month salaries are reported in Canadian dollars. Respondents were asked to include salary supplements such as salary monies from endowed positions.

The minimum and maximum of the reported salary minima (and maxima) are self-explanatory. The range of salaries in a given rank among departments that reported data for that rank is the interval ["minimum of the minima," "maximum of the maxima"]. The mean of the reported salary minima (maxima) in a given rank is computed by summing the departmental reported minimum (maximum) and dividing by the number of departments reporting data at that rank.

The median salary at each rank is the middle of the list if you order its members' mean salaries at that rank from lowest to highest, or the average of the middle two numbers if there is an even number of items in the set. The average salary at each rank is computed by summing the individual means reported at each rank and dividing by the number of departments reporting at that rank. We recognize that these means and medians are only approximations to the true means and medians for their rank.

U.S. average salaries increased between 1.9% and 2.5%, depending on tenure-track rank, and 1.4% for non-tenure teaching faculty. These increases are less than the 3% levels experienced last year. Canadian salaries (shown as 12-month salaries in Canadian dollars) decreased by 0.8% to 2.0%, depending on rank. This compares unfavorably to last year's increase of 3.8% to 5.2% for different tenure-track categories; it may also reflect differences in the specific departments reporting, which has a more profound effect on Canadian results than on US results.

Median salaries for new Ph.D.s (those who received their Ph.D. last year and then joined departments as tenure-track faculty) were unchanged from those reported in last year's survey (Table 34). This may help ease the salary compression and inversion experienced during the dot-com boom.

Additional Departmental Profiles Analysis

Every three years, CRA collects additional information about various aspects of departmental activities that are not expected to change much over a one-year period. These data used to be collected via a separate survey, called the Departmental Profiles Survey. The most recent data from this survey were published in the November 2000 issue of *Computing Research News*. Effective this year, the data from this survey will be collected as part of the Taulbee data collection cycle during those years when these data are due to be collected (next in fall of 2006). The data include teaching loads, sources of external funding, methods of recruiting graduate students, departmental support staff, and space. Where possible, we will compare this year's results with the previous Profiles report. However, there is a much higher response rate from US CS departments to this year's survey, particularly among higher-ranked departments, so comparisons with the previous survey should be interpreted with this in mind.

Teaching Loads *(Tables 35-38)*

Tables 35-38 discuss teaching loads in semester-length courses per year. The US departments ranked 1-12 have the lowest teaching loads, both officially and actually, with departments ranked 13-36 having slightly higher loads and other CS departments and CE departments having the highest loads. The Canadian departments have official loads that are similar to those of the US departments ranked in the top 36, but they seem to have less load

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Table 14. New Undergraduate Students in Fall 2003 by Department Type and Rank

	CS			CE			CS&CE Majors	
Department, Rank	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Major	Avg. Major per Dept.
US CS 1-12	237	760	63.3	5	187	15.6	947	78.9
US CS 13-24	9	1,001	83.4	0	316	26.3	1,317	109.8
US CS 25-36	426	1,635	136.3	0	21	1.8	1,656	138.0
US CS Other	3,761	8,079	70.3	1,172	1,639	14.3	9,718	84.5
Canadian	823	3,423	180.2	0	59	3.1	3,482	183.3
US CE	0	0	0.0	38	586	97.7	586	97.7
Total	**5,256**	**14,898**	**84.6**	**1,215**	**2,808**	**16.0**	**17,706**	**100.6**

Table 15. Master's Degree Total Enrollment by Department Type and Rank

Department, Rank	CS		CE		CS&CE	
US CS 1-12	1,371	7.0%	70	3.7%	1,441	6.7%
US CS 13-24	1,718	8.8%	94	4.9%	1,812	8.4%
US CS 25-36	832	4.3%	0	0.0%	832	3.9%
US CS Other	13,649	69.7%	1,040	54.7%	14,689	68.4%
Canadian	2,001	10.2%	30	1.6%	2,031	9.5%
US CE	0	0.0%	668	35.1%	668	3.1%
Total	**19,571**		**1,902**		**21,473**	

CRA Welcomes New Members

Academic

City University of New York, Graduate Center (CS)
University of Michigan, Dearborn (CIS)
University of Nebraska at Omaha (IST)

Labs/Centers

McAfee Research, Network Associates, Inc.

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Table 16. Bachelor's Degree Program Total Enrollment by Department Type and Rank

	CS			CE			CS&CE Majors	
Department, Rank	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Total	Avg. Major per Dept.
US CS 1-12	584	5,170	430.8	0	368	30.7	5,538	461.5
US CS 13-24	286	5,185	432.1	0	1,598	133.2	6,783	565.3
US CS 25-36	1,230	6,423	535.3	0	286	23.8	6,709	559.1
US CS Other	7,418	36,657	318.8	1,978	6,443	56.0	43,100	374.8
Canadian	1,516	13,006	684.5	0	101	5.3	13,107	689.8
US CE	0	0	0.0	132	1,607	267.8	1,607	267.8
Total	**11,034**	**66,441**	**377.5**	**2,110**	**10,403**	**59.1**	**76,844**	**436.6**

Table 17. Actual and Anticipated Faculty Size by Position

	Actual	Projected		Expected Two-Year Growth	
	2003-2004	2004-2005	2005-2006		
Tenure-Track	4,208	4,302	4,499	291	6.9%
Researcher	468	485	539	71	15.2%
Postdoc	312	342	390	78	25.0%
Teaching Faculty	703	665	679	-24	-3.4%
Other/Not Listed	140	134	141	1	0.7%
Total	**5,831**	**5,928**	**6,248**	**417**	**7.2%**

Table 18. Actual and Anticipated Faculty Size by Department Type and Rank

	Actual	Projected		Expected Two-Year Growth	
	2003-2004	2004-2005	2005-2006		
US CS 1-12	704	695	685	-19	-2.7%
US CS 13-24	592	557	588	-4	-0.7%
US CS 25-36	516	563	609	93	18.0%
US CS Other	2,948	3,006	3,214	266	9.0%
Canadian	747	781	815	68	9.1%
US CE	324	326	337	13	4.0%
Total	**5,831**	**5,928**	**6,248**	**417**	**7.2%**

Table 19. Gender of Newly Hired Faculty

	Tenure-track		Researcher		Postdoc		Teaching Faculty		Other		Total	
Male	239	81.6%	73	85.9%	90	78.9%	73	78.5%	18	81.8%	493	81.2%
Female	54	18.4%	12	14.1%	24	21.1%	20	21.5%	4	18.2%	114	18.8%
Total	**293**		**85**		**114**		**93**		**22**		**607**	

Table 20. Ethnicity of Newly Hired Faculty

	Tenure-track		Researcher		Postdoc		Teaching Faculty		Other		Total
Nonresident Alien	62	22.8%	12	14.6%	34	32.7%	14	15.7%	6	30.0%	128
African-American, Non-Hispanic	6	2.2%	0	0.0%	0	0.0%	1	1.1%	0	0.0%	7
Native American/ Alaskan Native	1	0.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1
Asian/Pacific Islander	54	19.9%	23	28.0%	24	23.1%	9	10.1%	4	20.0%	114
Hispanic	3	1.1%	1	1.2%	4	3.8%	0	0.0%	0	0.0%	8
White, Non-Hispanic	134	49.3%	45	54.9%	39	37.5%	64	71.9%	10	50.0%	292
Other/Not Listed	12	4.4%	1	1.2%	3	2.9%	1	1.1%	0	0.0%	17
Total have Ethnicity Data for	**272**		**82**		**104**		**89**		**20**		**567**
Ethnicity/ Residency Unknown	21		3		10		4		2		40
Total	**293**		**85**		**114**		**93**		**22**		**607**

Table 21. Gender of Current Faculty

	Full		Associate		Assistant		Teaching Faculty		Total	
Male	1,589	91.4%	1,046	87.7%	1,063	84.2%	612	74.7%	4,310	86.0%
Female	150	8.6%	147	12.3%	200	15.8%	207	25.3%	704	14.0%
Total have Gender Data for	**1,739**		**1,193**		**1,263**		**819**		**5,014**	

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Table 22. Ethnicity of Current Faculty

	Full		Associate		Assistant		Teaching Faculty		Total	
Nonresident Alien	10	0.6%	34	3.0%	234	19.9%	38	4.8%	316	6.7%
African-American, Non-Hispanic	6	0.4%	10	0.9%	16	1.4%	12	1.5%	44	0.9%
Native American/ Alaskan Native	2	0.1%	1	0.1%	3	0.3%	3	0.4%	9	0.2%
Asian/Pacific Islander	307	19.2%	246	21.9%	219	18.7%	65	8.2%	837	17.9%
Hispanic	20	1.2%	17	1.5%	26	2.2%	15	1.9%	78	1.7%
White, Non-Hispanic	1,227	76.6%	780	69.5%	647	55.2%	649	82.4%	3,303	70.5%
Other/Not Listed	29	1.8%	34	3.0%	28	2.4%	6	0.8%	97	2.1%
Total have Ethnicity Data for	**1,601**		**1,122**		**1,173**		**788**		**4,684**	
Ethnicity/ Residency Unknown	138		71		90		31		330	
Total	**1,739**		**1,193**		**1,263**		**819**		**5,014**	

Table 23. Faculty Losses

	Total
Died	8
Retired	59
Took Academic Position Elsewhere	74
Took Nonacademic Position	22
Remained, but Changed to Part-Time	13
Other	30
Unknown	3
Total	**209**

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reduction than the US departments so that their official and actual loads are about the same. Mean actual teaching loads in US CS departments ranked above 12 are slightly higher than those in the previous Profiles survey conducted in 2000, while official loads and median actual loads for these departments are about the same as they were in 2000. The actual and official load in the top 12 departments appears to be slightly lower now than in 2000.

Virtually all departments offer some possibility for load reduction, and the majority offer the possibility of load increase. Load reductions are widely available as parts of special packages for new faculty and for administrative duties (and universal among the CE departments that responded). About one-third of the departments offer reduction for type or size of class taught. Buy-out policies vary widely, with the US 1-12 ranked and the Canadian departments least willing to offer buy-outs. The Canadian schools and the lower-ranked US departments are much more willing to give teaching load reduction for strong research involvement than the US schools ranked in the top 36. Increases in teaching load are mainly for faculty who are shifting their primary responsibilities to teaching. The responses from the US CS departments to this year's questions about load reduction and increase are similar to those published in the 2000 Profiles report.

Sources of External Funding *(Tables 39-44)*

Tables 39-45 discuss sources of external funding. In the US CS departments, NSF is the largest funder, consistent with the situation in 2000. Typically, NSF's share now is twice or more as high as the next largest funders, generally DARPA or other defense agencies. Only small percentages of funding are received from NIH, DOE, state agencies, other mission-oriented federal agencies, or private foundations. Defense agencies such as ARO, AFOSR, and ONR provide a larger proportion of current funding for top 12 departments than they did in 2000, while NSF and DARPA provide a smaller proportion. For other US CS departments, NSF's share is larger and DARPA's is smaller than in 2000. Industry provides a larger share of funding in the top 12 departments, but a smaller share in other departments.

Median funding for US CS departments from each major source follow the ranking strata, with highest values for rank 1-12 departments, next highest values for departments ranked 13-24, and so on. Similarly, industrial funding makes up a much higher percentage of the funding in the US CS departments ranked 1-12 than in any other departments. CE departments tend to get slightly more funding from NSF than DARPA, and they receive higher percentages of funding from state agencies and industrial sources than most CS departments. Since only a small number of CE departments responded to the survey, care should be exercised when trying to generalize these observations to other CE departments. NSERC and the provincial agencies provide three-

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Table 24. Total Expenditure from External Sources for CS/CE Research by Department Rank and Type

Department, Rank	Total Expenditure				Per Capita Expenditure			
	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	$4,075,000.00	$19,104,087.00	$11,857,635.00	$72,577,846.00	$181,524.00	$409,596.00	$324,980.00	$1,051,853.00
US CS 13-24	$5,026,662.00	$ 8,566,394.00	$ 7,418,250.00	$14,185,474.00	$114,242.00	$300,087.00	$305,861.00	$ 524,209.00
US CS 25-36	$2,419,083.00	$ 6,109,443.00	$ 5,795,062.00	$16,908,841.00	$115,635.00	$213,113.00	$178,522.00	$ 337,992.00
US CS Other	$ 33,502.00	$ 2,321,627.00	$ 1,414,981.00	$21,270,796.00	$ 2,393.00	$110,460.00	$ 87,603.00	$ 820,949.00
Canadian	$ 65,457.00	$ 2,002,239.00	$ 1,135,837.00	$ 8,725,154.00	$ 2,045.00	$ 55,322.00	$ 35,272.00	$ 189,677.00
US CE	$1,000,000.00	$ 2,659,400.00	$ 2,819,287.00	$ 3,999,027.00	$ 71,795.00	$201,574.00	$117,311.00	$ 499,878.00

Table 25. Graduate Students Supported as Full-Time Students by Department Type and Rank

Department, Rank	Number on Institutional Funds										Number on External Funds									
	Teaching Assistants		Research Assistants		Full-Support Fellows		Graduate Assistants for Computer Systems Support		Other		Teaching Assistants		Research Assistants		Full-Support Fellows		Graduate Assistants for Computer Systems Support		Other	
US CS 1-12	437	21.0%	266	12.8%	96	4.6%	0	0.0%	0	0.0%	0	0.0%	1,058	50.9%	210	10.1%	1	0.0%	10	0.5%
US CS 13-24	314	20.7%	193	12.7%	111	7.3%	6	0.4%	6	0.4%	3	0.2%	826	54.5%	45	3.0%	0	0.0%	12	0.8%
US CS 25-36	388	29.3%	151	11.4%	56	4.2%	10	0.8%	38	2.9%	0	0.0%	621	46.8%	49	3.7%	0	0.0%	13	1.0%
US CS Other	1,709	36.6%	635	13.6%	162	3.5%	157	3.4%	74	1.6%	40	0.9%	1,697	36.3%	176	3.8%	16	0.3%	9	0.2%
Canadian	358	47.7%	176	23.5%	13	1.7%	4	0.5%	6	0.8%	0	0.0%	158	21.1%	16	2.1%	1	0.1%	18	2.4%
US CE	215	22.8%	70	7.4%	24	2.6%	10	1.1%	1	0.1%	0	0.0%	613	65.1%	8	0.9%	0	0.0%	0	0.0%
Total	**3,421**	**30.3%**	**1,491**	**13.2%**	**462**	**4.1%**	**187**	**1.7%**	**125**	**1.1%**	**43**	**0.4%**	**4,973**	**44.1%**	**504**	**4.5%**	**18**	**0.2%**	**62**	**0.5%**

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Table 26-1. Fall 2003 Academic-Year Graduate Stipends by Department Type and Rank

Department,	Teaching Assistantships				Research Assistantships			
Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	$ 9,225	$17,444	$17,100	$36,552	$13,824	$19,318	$17,100	$39,264
US CS 13-24	$12,540	$17,441	$16,100	$28,290	$14,980	$20,105	$17,888	$43,908
US CS 25-36	$13,000	$15,867	$14,753	$25,299	$13,190	$16,566	$14,925	$31,686
US CS Other	$ 2,194	$12,447	$12,600	$24,300	$ 2,194	$13,472	$13,536	$24,300
Canadian	$ 1,522	$ 9,588	$11,610	$17,060	$ 4,000	$11,967	$12,000	$23,200
US CE	$ 9,500	$14,076	$13,815	$19,464	$13,500	$15,426	$14,370	$19,464

Table 26-2. Fall 2003 Academic-Year Graduate Stipends by Department Type and Rank

Department,	Full-Support Fellows				Assistantships for Computer Systems Support			
Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	$14,400	$18,864	$18,350	$24,600	$13,824	$15,912	$15,912	$18,000
US CS 13-24	$13,750	$18,274	$17,438	$27,000	*	*	*	*
US CS 25-36	$13,000	$19,252	$18,000	$29,940	$14,228	$14,693	$14,850	$15,000
US CS Other	$ 5,600	$15,743	$15,500	$24,000	$ 1,323	$11,213	$12,250	$18,000
Canadian	$11,440	$24,434	$21,250	$40,000	*	*	*	*
US CE	$11,200	$16,276	$16,300	$21,000	*	*	*	*

*Numbers not reported due to low number of respondents

Table 26-3. Fall 2003 Academic-Year Graduate Stipends by Department Type and Rank

Department,	Other Assistantships			
Rank	Minimum	Mean	Median	Maximum
US CS 1-12	*	*	*	*
US CS 13-24	*	*	*	*
US CS 25-36	$3,300	$15,382	$15,925	$26,378
US CS Other	$1,200	$10,037	$12,000	$15,000
Canadian	$1,875	$16,015	$ 9,000	$34,100
US CE	*	*	*	*

*Numbers not reported due to low number of respondents

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quarters of the Canadian support, with the next highest levels of support coming from industrial sources and other mission-oriented federal agencies. Actual funding amounts were not reported in the *CRN* article associated with the 2000 Profiles Survey.

Graduate Student Recruiting *(Tables 45-47)*

Earlier we presented the current status of graduate student stipends (see Table 26). We update these each year as part of the regular Taulbee Survey. The Profiles Survey asks about factors that affect these stipends, and this information is summarized in Table 45. For most US departments, stipend amounts are most frequently affected by advancement within the graduate program. Differences among the stipend source are important at many US CS departments, with years of service and recruiting enhancements being other factors in about a quarter of the departments. It is noteworthy that recruiting enhancements now are only a factor in about a quarter of the departments rather than about a third in 2000, while the other factors are present in the same proportion of departments as in 2000. In Canada, the most important factor influencing stipend amounts is the source of funds.

Table 46 shows methods used by departments to recruit graduate students, and Table 47 shows the costs associated with these methods. Most of the top 36 ranked departments use multi-year (typically 3 or 4 years) support guarantees as a recruiting tool, whereas less than half of the CE departments and departments ranked above 36 or unranked do so. The vast majority of the top-ranked departments also pay for graduate students to visit campus, which is much less common among the CE and other CS departments. Top-ranked US CS departments are also much more likely to enhance graduate student stipends than the other departments surveyed. Overall, 45% of the US CS departments had stipend enhancements in the 2000 survey, so this appears to be a much less prevalent tool than it was during the dot-com era. The typical enhancement is between $3,000 and $4,000 in the United States (about two-thirds the value for the 2000 survey) and $5,000 Canadian in Canada. The amount spent on paid visits to campus appears comparable to the value in 2000, and the amount of guaranteed summer support appears consistent with the general stipend increases over the three-year period since the last Profiles Survey.

Departmental Support Staff *(Tables 48-50)*

Tables 48-50 show various kinds of staff support provided to the department. Table 48 shows that the higher the ranking, the more full-time secretarial and administrative support the department has. Schools ranked 1-12 have more than four times as much support as the lower-ranked CS departments and 1.5 times as much support as a CE department. It may be more useful to normalize these data by the size of the department's tenure-track faculty. If this is done, the top 12 departments and the CE departments have about 0.4 administrative support staff per faculty, departments ranked 13-36 about 0.3, and those ranked

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Table 27. Nine-month Salaries, 147 Responses of 169 US Computer Science Departments

Faculty Rank	Number of Faculty	Reported Salary Minimum: Minimum	Reported Salary Minimum: Mean	Reported Salary Minimum: Maximum	Overall Mean	Overall Median	Reported Salary Maximum: Minimum	Reported Salary Maximum: Mean	Reported Salary Maximum: Maximum
Non-Tenure Teaching Faculty	608	$16,000	$48,182	$ 88,303	$ 55,833	$ 55,526	$34,000	$ 65,234	$135,100
Assistant Professor	1,000	$48,269	$72,091	$ 87,000	$ 76,531	$ 76,392	$61,316	$ 81,297	$124,542
Associate Professor	922	$42,158	$77,029	$108,000	$ 85,555	$ 85,437	$64,744	$ 94,932	$165,000
Full Professor	1,335	$52,200	$89,300	$122,540	$111,354	$107,670	$83,500	$147,671	$280,786

Table 28. Nine-month Salaries, 11 Responses of 12 US Computer Science Departments Ranked 1-12

Faculty Rank	Number of Faculty	Reported Salary Minimum: Minimum	Reported Salary Minimum: Mean	Reported Salary Minimum: Maximum	Overall Mean	Overall Median	Reported Salary Maximum: Minimum	Reported Salary Maximum: Mean	Reported Salary Maximum: Maximum
Non-Tenure Teaching Faculty	60	$32,205	$45,792	$ 70,000	$ 66,802	$ 67,919	$ 67,700	$ 85,589	$110,838
Assistant Professor	113	$51,748	$77,281	$ 87,000	$ 83,477	$ 82,794	$ 85,000	$ 92,775	$115,000
Associate Professor	90	$66,732	$86,228	$108,000	$ 95,252	$ 94,662	$ 79,300	$107,859	$130,000
Full Professor	230	$73,874	$94,943	$113,000	$124,510	$121,887	$125,737	$176,277	$ 225,000

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Table 29. Nine-month Salaries, 12 Responses of 12 US Computer Science Departments Ranked 13-24

		Reported Salary Minimum					Reported Salary Maximum		
Faculty Rank	Number of Faculty	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Non-Tenure Teaching Faculty	46	$48,000	$59,944	$ 74,000	$ 68,413	$ 66,829	$ 62,220	$ 79,761	$100,000
Assistant Professor	89	$75,000	$79,525	$ 85,000	$ 84,913	$ 83,572	$ 82,500	$ 91,169	$117,000
Associate Professor	70	$67,915	$87,669	$ 98,900	$ 95,435	$ 94,297	$ 85,900	$101,882	$127,000
Full Professor	192	$76,000	$94,554	$110,500	$129,861	$121,421	$153,422	$189,246	$280,786

Table 30. Nine-month Salaries, 12 Responses of 12 US Computer Science Departments Ranked 25-36

		Reported Salary Minimum					Reported Salary Maximum		
Faculty Rank	Number of Faculty	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Non-Tenure Teaching Faculty	51	$40,823	$52,945	$ 75,408	$ 62,830	$ 61,209	$ 60,705	$ 78,617	$135,100
Assistant Professor	106	$68,000	$75,101	$ 81,600	$ 78,682	$ 78,396	$ 78,000	$ 83,261	$ 88,134
Associate Professor	98	$64,307	$80,238	$ 96,750	$ 91,144	$ 92,706	$ 87,725	$105,200	$165,000
Full Professor	158	$68,199	$93,131	$120,756	$121,309	$119,633	$110,650	$166,450	$252,000

Table 31. Nine-month Salaries, 112 Responses of 133 US Computer Science Departments Ranked Higher than 36 or Unranked

		Reported Salary Minimum					Reported Salary Maximum		
Faculty Rank	Number of Faculty	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Non-Tenure Teaching Faculty	451	$16,000	$46,650	$ 88,303	$ 53,037	$ 52,903	$34,000	$ 60,884	$110,000
Assistant Professor	692	$48,269	$70,463	$ 85,698	$ 74,720	$ 74,779	$61,316	$ 78,901	$124,542
Associate Professor	664	$42,158	$74,723	$106,500	$ 83,032	$ 82,885	$64,744	$ 91,933	$160,000
Full Professor	756	$52,200	$87,744	$122,540	$106,934	$103,443	$83,500	$138,227	$220,773

Table 32. Nine-month Salaries, 7 Responses of 29 US Computer Engineering Departments

		Reported Salary Minimum					Reported Salary Maximum		
Faculty Rank	Number of Faculty	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Non-Tenure Teaching Faculty	13	$44,112	$64,287	$ 83,150	$ 70,549	$ 70,437	$ 54,468	$ 77,539	$ 95,000
Assistant Professor	64	$65,000	$74,760	$ 88,800	$ 78,419	$ 78,093	$ 71,108	$ 82,861	$ 89,300
Associate Professor	42	$63,700	$79,865	$109,200	$ 86,404	$ 85,865	$ 77,563	$ 93,051	$109,200
Full Professor	111	$76,360	$92,674	$109,000	$110,966	$101,747	$108,749	$156,693	$200,000

Table 33. Twelve-month Salaries, 19 Responses of 27 Canadian Computer Science Departments (Canadian Dollars)

		Reported Salary Minimum					Reported Salary Maximum		
Faculty Rank	Number of Faculty	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Non-Tenure Teaching Faculty	69	$37,963	$57,174	$ 75,000	$ 62,720	$ 62,852	$49,551	$ 70,216	$105,327
Assistant Professor	182	$45,606	$70,799	$ 90,000	$ 77,371	$ 77,207	$65,268	$ 85,724	$105,342
Associate Professor	190	$50,000	$78,544	$ 97,277	$ 88,637	$ 88,011	$69,582	$ 99,221	$130,212
FullProfessor	244	$60,659	$91,774	$112,485	$110,008	$107,883	$85,017	$138,125	$193,814

Table 34. Nine-month Salaries for New PhDs, Responding US CS and CE Departments

		Reported Salary Minimum					Reported Salary Maximum		
Employment Position	Number	Minimum	Mean	Maximum	Overall Mean	Overall Median	Minimum	Mean	Maximum
Tenure-Track Faculty	117	$61,128	$75,493	$87,679	$76,379	$76,308	$61,128	$77,363	$120,000
Researcher	9	$36,900	$55,556	$72,000	$55,556	$55,556	$36,900	$55,556	$72,000
Postdoc	24	$30,000	$44,737	$61,000	$45,970	$45,970	$35,000	$47,204	$61,000
Non-Tenure Teaching Faculty	9	$40,000	$55,726	$72,000	$55,793	$55,793	$40,000	$55,860	$72,000

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Table 35. Official and Actual Teaching Loads of Tenured and Tenure-track Faculty

	Official Teaching Load				Actual Teaching Load			
Department, Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	2	2.3	2.0	3	2	2.2	2.0	3
US CS 13-24	2	2.7	2.5	4	2	2.4	2.0	4
US CS 25-36	2	2.6	2.5	4	2	2.4	2.0	4
US CS Other	2	3.8	4.0	9	2	3.3	3.0	9
Canadian	2	2.3	3.0	4	2	3.0	3.0	4
US CE	2	3.6	4.0	5	2	2.9	3.0	4
Total	**2**	**3.5**	**3.0**	**9**	**2**	**3.0**	**3.0**	**9**

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above 36 or unranked and the Canadian departments have about 0.2. For the US CS departments, these normalized values are less than they were in 2000. About 80% of funding for administrative support staff comes from institutional funds in the top 24 departments, and 90% or more comes from institutional funds in other departments.

The number of computer-support personnel employed by a CS department (Table 49) varies from a low of about 0.1 per tenure-track faculty for CE departments and US CS departments ranked above 36 or unranked, to slightly more than 0.2 per tenure-track faculty for US departments ranked 1-12 and for Canadian departments. Top-ranked departments are much more likely to support such positions with external funds (almost half of computer support personnel in the top 12 departments are paid from external funds, while only 10% to 20% of these personnel in Canadian departments, CE departments, and US departments ranked above 24 are supported by external funds).

Table 50 shows full-time research employees. US CE and Canadian CSE departments typically employ with internal funds five or six times as many full-time researchers as do US CS departments. US CS departments ranked in the top 24 have many more such positions than do the other departments, both in raw numbers and on a per FTE tenure-track faculty basis; they are mainly supported with external funds. Except for the top 12 departments, the ratios of research employees per FTE tenure-track faculty in US CS departments have declined since 2000.

Departmental Space *(Tables 51-62)*

Tables 51-62 illustrate a variety of space details. Table 51 lists total current departmental space. The amount of space held by a department varies widely, by a factor of almost 200 from smallest to largest space. Within the US CS departments, the average department ranked 1-12 has 1.5 times as much space per tenure-track faculty as the typical other CS department. Average values per tenure-track faculty in all US CS categories are below their corresponding values in the 2000 Profiles Survey, although in each stratum, actual average space has grown at least 10%. The actual amount of additional space per department increased about 5,000 sq. ft. from 2000 to 2003. In 2000, departments estimated that they would receive over 30,000 sq. ft. of new space by 2003. These differences may be explained by a combination of optimism on the part of the departments, and the fact that much of the new space ends up replacing existing space rather than adding to it. Canadian departments average about 10% to 20% below typical US CS departments. CE departments have the highest amount of space per FTE faculty (about 56% above the level for rank 1-12 US CS departments).

Tables 52-55 break down current space by category of space. The pattern in Table 51 for total department space is similar in Table 52 (space for faculty, staff, and student offices) and Table 53 (space for conference and seminar rooms). Table 54 shows that the CS departments ranked in the top 24 have substantially more research laboratory space than the other CS departments. On a per tenure-track faculty basis, the differences are not as great among the US CS departments, but Canadian departments appear to have only three-quarters the space per tenure-track faculty. CE departments have about three times as much research lab space per tenure-track faculty as do CS departments. Instructional lab space, shown in Table 55, is much greater for the top 12 ranked US CS departments and the Canadian departments than for other departments responding. However, several departments apparently do not have instructional lab space. Probably in those departments that space is owned by their college or central campus offices, and in fact it is likely that many of the other departments have at least some of their instructional space provided by a more central university unit.

It is interesting to note that research lab space now is 27.7% of the total space, whereas in 2000 it was only 21.0%. All other categories of space are a somewhat smaller portion of total space to compensate for this.

Tables 56-62 show space growth expectations. Table 56 indicates that only about half of the departments responding actually have definite plans for new space. This contrasts with an 81% figure in the 2000 survey. Table 57 shows when the space is expected to be added, Table 58 shows the total space expected, and Tables 59-62 break down these expected additions by category of space. Expected growth in office space accounts for the largest proportion (41.5%) of the total expected space growth, but this is a smaller proportion of office space than exists currently (50.9%). Each other category of space accounts for about a 3% higher proportion of the total planned space than it does as a proportion of current space.

Concluding Observations

This year, we see more conclusive data supporting reductions in undergraduate enrollments. This effect is observed in both the United States and Canada. While the reductions are significant, they should be interpreted in view of the staggering increases experienced in the late 1990s. Present enrollment levels are still considerably higher than before the surge during the dot-com era.

An upturn in the number of Ph.D.s produced appears to be on the horizon, absent exogenous forces. The multi-year increase in the number of students who passed qualifiers should soon have an effect on the number of graduates from Ph.D. programs. It will be interesting to see if this trend continues as economic conditions improve.

Faculty churn appears to be over, at least for the time being. Far fewer faculty moved from one academic position to another. Estimates of faculty growth are considerably more modest, and more accurate, than in previous years. Faculty salaries showed rather small increases compared with the recent past. These observations all are consistent with the economic downturn.

Some data from the former Departmental Profiles Survey showed differences, but much of it did not. This validates CRA's decision to conduct the Profiles analysis only every 3 years (next in fall 2006). Of

Table 36. Faculty Load Reductions and Increases

	Faculty Load Reduction Possible		Faculty Load Increase Possible	
Department, Rank	Yes	No	Yes	No
US CS 1-12	91.7%	8.3%	77.8%	22.2%
US CS 13-24	83.3%	16.7%	80.0%	20.0%
US CS 25-36	83.3%	16.7%	80.0%	20.0%
US CS Other	98.2%	1.8%	77.0%	23.0%
Canadian	100.0%	0.0%	81.3%	18.8%
US CE	100.0%	0.0%	66.7%	33.3%
Total	**96.0%**	**4.0%**	**77.5%**	**22.5%**

Table 37. Type of Load Reductions Possible in Departments Offering Reductions

Department, Rank	Special Package for New Faculty	Administrative Duties	Type or Size of Class Taught	Buyout Policy	Strong Research Involvement	Other
US CS 1-12	75.0%	75.0%	33.3%	33.3%	33.3%	25.0%
US CS 13-24	58.3%	83.3%	25.0%	66.7%	33.3%	25.0%
US CS 25-36	75.0%	75.0%	16.7%	58.3%	33.3%	16.7%
US CS Other	88.6%	83.3%	29.8%	83.3%	52.6%	7.9%
Canadian	89.5%	94.7%	21.1%	21.1%	68.4%	42.1%
US CE	100.0%	100.0%	57.1%	85.7%	42.9%	14.3%
Total	**85.2%**	**84.1%**	**29.0%**	**70.5%**	**50.0%**	**14.8%**

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Table 38. Reasons for Increase in Teaching Load

Department, Rank	Shifting Primary Responsibilities to Teaching	Other
US CS 1-12	77.8%	22.2%
US CS 13-24	80.0%	20.0%
US CS 25-36	80.0%	20.0%
US CS Other	74.4%	25.6%
Canadian	81.3%	18.8%
US CE	50.0%	50.0%
Total	**70.3%**	**29.7%**

particular note is that high space growth is no longer forecast, consistent with the softening of faculty growth. Also, fewer departments appear to be offering special stipend enhancements as a means to recruit new graduate students.

Rankings

For tables that group computer science departments by rank, the rankings are based on information collected in the 1995 assessment of research and doctorate programs in the United States conducted by the National Research Council [see http://www.cra.org/statistics/nrc-study2/home.html].

The top twelve CS departments in this ranking are: *Stanford, Massachusetts Institute of Technology, University of California (Berkeley), Carnegie Mellon, Cornell, Princeton, University of Texas (Austin), University of Illinois (Urbana-Champaign), University of Washington, University of Wisconsin (Madison), Harvard, and California Institute of Technology.* All schools in this ranking participated in the survey this year.

CS departments ranked 13-24 are: *Brown, Yale, University of California (Los Angeles), University of Maryland (College Park), New York University, University of Massachusetts (Amherst), Rice, University of Southern California, University of Michigan, University of California (San Diego), Columbia, and University of Pennsylvania.*[2] All schools in this ranking participated in the survey this year.

CS departments ranked 25-36 are: *University of Chicago, Purdue, Rutgers, Duke, University of North Carolina (Chapel Hill), University of Rochester, State University of New York (Stony Brook), Georgia Institute of Technology, University of Arizona, University of California (Irvine), University of Virginia, and Indiana.* All schools in this ranking participated in the survey this year.

CS departments that are ranked above 36 or that are unranked that responded to the survey include: *Arizona State University, Auburn, Boston, Brandeis, Case Western Reserve, City University of New York Graduate Center, Clemson, College of William and Mary, Colorado School of Mines, Colorado State, Dartmouth, DePaul, Drexel, Florida Institute of Technology, Florida International, Florida State, George Mason, George Washington, Georgia State, Illinois Institute of Technology, Iowa State, Johns Hopkins, Kansas State, Kent State, Lehigh, Louisiana State, Michigan State, Michigan Technological, Mississippi State, Montana State, New Jersey Institute of*

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Table 39. Sources of External Funding, US CS Ranked 1-12

	Mean	Median	Total	% of Total External Funding
NSF	$6,366,220	$4,952,790	$57,295,983	30.0%
DARPA	$5,453,909	$2,236,118	$27,269,545	14.3%
NIH	$ 345,590	$ 183,000	$ 1,727,950	0.9%
DOE	$ 814,417	$ 400,000	$ 4,072,087	2.1%
State agencies	$ 773,488	$1,150,681	$ 2,320,465	1.2%
Industrial sources	$3,437,715	$ 580,656	$30,939,433	16.2%
Other defense agencies- e.g., ARO, AFOSR, ONR	$4,639,002	$2,679,563	$37,112,013	19.4%
Other mission-oriented federal agencies	$2,007,744	$1,676,260	$12,046,461	6.3%
Private foundation	$ 225,414	$ 85,321	$ 1,803,313	0.9%
Other	$2,350,517	$ 514,161	$16,453,616	8.6%

Table 40. Sources of External Funding, US CS Ranked 13-24

	Mean	Median	Total	% of Total External Funding
NSF	$3,317,498	$3,509,750	$36,492,481	38.5%
DARPA	$1,795,567	$1,189,851	$14,364,532	15.2%
NIH	$ 366,867	$ 312,865	$ 2,934,936	3.1%
DOE	$ 400,345	$ 192,227	$ 2,402,071	2.5%
State agencies	$ 700,109	$ 433,446	$ 4,900,764	5.2%
Industrial sources	$ 507,896	$ 357,274	$ 5,078,957	5.4%
Other defense agencies- e.g., ARO, AFOSR, ONR	$1,902,168	$1,201,700	$19,021,681	20.1%
Other mission-oriented federal agencies	$ 556,761	$ 505,765	$ 4,454,090	4.7%
Private foundation	$ 249,418	$ 76,803	$ 2,244,760	2.4%
Other	$ 483,744	$ 210,579	$ 2,902,461	3.1%

Total external funding does not equal total in Table 24 due to one department not reporting breakdowns

Table 41. Sources of External Funding, US CS Ranked 25-36

	Mean	Median	Total	% of Total External Funding
NSF	$3,233,047	$2,847,444	$38,796,567	52.9%
DARPA	$ 992,573	$ 660,749	$ 6,948,014	9.5%
NIH	$ 310,895	$ 113,820	$ 1,554,477	2.1%
DOE	$ 306,480	$ 273,845	$ 2,145,357	2.9%
State agencies	$ 285,500	$ 159,681	$ 1,998,498	2.7%
Industrial sources	$ 404,481	$ 349,472	$ 4,044,807	5.5%
Other defense agencies - e.g., ARO, AFOSR, ONR	$ 877,101	$ 898,438	$ 7,893,911	10.8%
Other mission-oriented federal agencies	$ 502,320	$ 351,262	$ 3,013,920	4.1%
Private foundation	$ 553,838	$ 58,494	$ 3,876,868	5.3%
Other	$ 434,414	$ 83,285	$ 3,040,901	4.1%

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Table 42. Sources of External Funding, US CS Ranked Higher than 36 or Unranked

	Mean	Median	Total	% of Total External Funding
NSF	$1,054,709	$502,646	$97,033,219	42.6%
DARPA	$ 377,842	$285,161	$14,735,837	6.5%
NIH	$ 412,931	$225,346	$ 9,497,404	4.2%
DOE	$ 347,239	$ 77,357	$10,764,409	4.7%
State agencies	$ 247,246	$118,676	$13,104,054	5.8%
Industrial sources	$ 181,055	$ 77,945	$11,587,501	5.1%
Other defense agencies - e.g., ARO, AFOSR, ONR	$ 533,171	$323,180	$36,788,786	16.2%
Other mission-oriented federal agencies	$ 341,826	$160,449	$14,014,854	6.2%
Private foundation	$ 84,330	$ 26,176	$ 2,698,547	1.2%
Other	$ 375,975	$136,957	$17,294,863	7.6%

Table 43. Sources of External Funding, US CE

	Mean	Median	Total	% of Total External Funding
NSF	$913,026	$876,053	$3,652,105	34.3%
DARPA	$758,024	$700,000	$3,032,096	28.5%
NIH	*	*	$ 150,000	1.4%
DOE	$-	$-	$ -	0.0%
State agencies	*	*	$1,171,074	14.9%
Industrial sources	$375,500	$417,458	$1,126,501	10.6%
Other defense agencies - e.g., ARO, AFOSR, ONR	*	*	$ 530,525	5.0%
Other mission-oriented federal agencies	$-	$-	$ -	0.0%
Private foundation	*	*	$ 82,297	0.8%
Other	*	*	$ 893,002	8.4%

* Numbers not reported due to low number of respondents

Table 44. Sources of External Funding, Canadian CS/CE

	Mean	Median	Total	% of Total External Funding
NSERC	$ 837,728	$592,319	$12,565,925	41.8%
Provincial agencies	$1,160,106	$463,432	$10,440,950	34.8%
Industrial sources	$ 289,239	$ 96,033	$ 2,892,393	9.6%
Defense agencies	*	*	$ 239,242	0.8%
Other mission-oriented federal agencies	$ 439,554	$455,322	$ 2,197,771	7.3%
Private foundation	*	*	$ 246,643	0.8%
Other	$ 207,237	$165,411	$ 1,450,661	4.8%

* Numbers not reported due to low number of respondents

Table 45. Factors Affecting the Amount of a Graduate Student's Stipend

Department, Rank	Advancement to Next Stage of Program	Years of Service	GPA	Recruitment Enhancements	Differences Among Various Stipend Sources	Other
US CS 1-12	66.7%	16.7%	0.0%	41.7%	41.7%	25.0%
US CS 13-24	33.3%	25.0%	8.3%	8.3%	16.7%	58.3%
US CS 25-36	58.3%	25.0%	8.3%	25.0%	25.0%	33.3%
US CS Other	65.5%	22.1%	15.9%	23.0%	48.7%	19.5%
Canadian	29.4%	23.5%	23.5%	35.3%	64.7%	29.4%
US CE	66.7%	33.3%	16.7%	16.7%	16.7%	33.3%
Total	**59.3%**	**22.7%**	**14.5%**	**24.4%**	**44.8%**	**25.0%**

Table 46. Departments Using Selected Graduate Student Recruitment Incentives

Department, Rank	Upfront One-Time Signing Bonus	Stipend Enhancements	Guaranteed Multi-Year Support	Guaranteed Summer Support	Paid Visits to Campus	Other Recruitment Incentives
US CS 1-12	25.0%	41.7%	75.0%	8.3%	83.3%	41.7%
US CS 13-24	8.3%	33.3%	100.0%	50.0%	83.3%	33.3%
US CS 25-36	16.7%	41.7%	75.0%	41.7%	83.3%	25.0%
US CS Other	6.2%	15.0%	38.1%	21.2%	25.7%	23.0%
Canadian	17.6%	17.6%	64.7%	11.8%	23.5%	23.5%
US CE	0.0%	16.7%	33.3%	50.0%	50.0%	16.7%
Total	**9.3%**	**20.3%**	**50.0%**	**23.8%**	**38.4%**	**25.0%**

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Technology, New Mexico State, North Carolina State, North Dakota State, Northeastern, Northwestern, Oakland, Ohio, Ohio State, Oklahoma State, Old Dominion, Oregon Health & Science, Oregon State, Pennsylvania State, Polytechnic, Portland State, Rensselaer Polytechnic, Southern Methodist, State University of New York (Albany), Syracuse, Texas A&M, Texas Tech, Tufts, Utah State, Vanderbilt, Virginia Commonwealth, Virginia Polytechnic, Washington State, Washington (St. Louis), Wayne State, Western Michigan, Worcester Polytechnic, and Wright State.

University of: *Alabama (Birmingham, Huntsville, and Tuscaloosa), Buffalo, California (at Davis, Riverside, Santa Barbara, and Santa Cruz), Cincinnati, Colorado (at Boulder, Colorado Springs, and Denver), Connecticut, Delaware, Denver, Florida, Georgia, Hawaii, Houston, Idaho, Illinois (Chicago), Iowa, Kansas, Kentucky, Louisiana (Lafayette), Louisville, Maine, Maryland (Baltimore Co.), Massachusetts (at Boston and Lowell), Minnesota, Missouri (at Kansas City and Rolla), Nebraska (Lincoln), Nevada (Las Vegas), New Hampshire, New Mexico, North Texas, Notre Dame, Oklahoma, Oregon, Pittsburgh, South Carolina, South Florida, Tennessee (Knoxville), Texas (at Arlington, Dallas, El Paso, and San Antonio), Tulsa, Utah, and Wyoming.*

Computer Engineering departments participating in the survey this year include: *Georgia Institute of Technology, Northwestern, Princeton, Rensselaer Polytechnic, Santa Clara University, the University of Tennessee (Knoxville), and the University of California (Santa Cruz).*

Canadian departments participating in the survey include: *Concordia, Dalhousie, McGill, Memorial, Queen's, Simon Fraser, and York universities.* **University of:** *Alberta, British Columbia, Calgary, Manitoba, Montreal, New Brunswick, Quebec (Montreal), Regina, Saskatchewan, Victoria, Waterloo, and Western Ontario.*

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Endnotes

[1]The title of the survey honors the late Orrin E. Taulbee of the University of Pittsburgh, who conducted these surveys for the Computer Science Board until 1984, with retrospective annual data going back to 1970.

[2]Although the University of Pennsylvania and the University of Chicago were tied in the National Research Council rankings, CRA made the arbitrary decision to place Pennsylvania in the second tier of schools.

All tables with rankings: Statistics sometimes are given according to departmental rank. Schools are ranked only if they offer a CS degree and according to the quality of their CS program as determined by reputation. Those that only offer CE degrees are not ranked, and statistics are given on a separate line, apart from the rankings.

All ethnicity tables: Ethnic breakdowns are drawn from guidelines set forth by the U.S. Department of Education.

All faculty tables: The survey makes no distinction between faculty specializing in CS vs. CE programs. Every effort is made to minimize the inclusion of faculty in electrical engineering who are not computer engineers. ∎

Table 47. Mean Amounts and Years of Selected Graduate Student Recruitment Incentives

Department, Rank	Upfront One-Time Signing Bonus	Stipend Enhancements	Guaranteed Years of Support	Guaranteed Summer Support	Paid Visits to Campus
US CS 1-12	$4,000	$2,960	3.6	*	$598
US CS 13-24	*	$4,000	3.7	$5,870	$570
US CS 25-36	$3,500	$3,640	3.4	$5,374	$511
US CS Other	$2,857	$2,866	3.1	$3,739	$559
Canadian	$4,667	$5,000	3.0	$3,800	$563
US CE	NA	*	4.5	$6,400	$267
Total	**$3,625**	**$3,238**	**3.3**	**$4,601**	**$546**

*Numbers not reported due to low number of respondents

Table 48. Full-time Secretarial/Administrative Employees by Type of Support

	Institutional Support				External Support				Total			
Department, Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	5.0	19.3	12.0	80.0	-	6.1	2.5	37.0	5.0	25.4	18.5	85.0
US CS 13-24	7.0	11.2	10.0	18.0	-	2.8	2.0	10.0	8.0	14.0	13.5	22.0
US CS 25-36	5.0	12.6	9.0	38.0	-	1.0	1.0	4.0	5.0	13.6	9.0	42.0
US CS Other	1.0	4.6	3.0	33.0	-	0.5	-	8.0	1.0	5.1	4.0	33.0
Canadian	3.0	8.3	7.0	22.0	-	0.4	-	3.0	3.0	8.7	7.0	25.0
US CE	-	16.1	7.0	79.0	-	1.0	-	4.0	-	17.1	11.0	120.0
Total	**-**	**7.4**	**5.0**	**80.0**	**-**	**1.1**	**-**	**37.0**	**-**	**8.5**	**6.0**	**85.0**

Table 49. Full-time Computer Support Employees by Type of Support

	Institutional Support				External Support				Total			
Department, Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	-	6.2	4.0	20.0	-	5.8	4.0	30.0	3.0	11.9	8.0	50.0
US CS 13-24	-	5.3	4.0	13.0	-	2.1	0.5	9.0	-	7.4	5.5	22.0
US CS 25-36	-	7.1	7.0	15.0	-	0.8	1.0	2.0	-	7.8	7.0	16.0
US CS Other	-	2.5	2.0	12.0	-	0.5	-	8.0	-	3.0	2.0	12.0
Canadian	4.0	8.5	6.0	22.0	-	0.2	-	2.0	4.0	8.7	6.5	22.0
US CE	-	3.0	1.0	15.0	-	0.3	-	2.0	-	3.3	2.0	15.0
Total	**-**	**3.9**	**3.0**	**22.0**	**-**	**0.9**	**-**	**30.0**	**-**	**4.8**	**3.0**	**50.0**

Table 50. Full-time Research Employees by Type of Support

	Institutional Support				External Support				Total			
Department, Rank	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
US CS 1-12	-	0.9	-	10.0	-	21.3	6.0	160.0	-	22.2	6.0	170.0
US CS 13-24	-	1.4	-	11.0	-	13.9	7.0	42.0	1.0	15.3	9.0	42.0
US CS 25-36	-	0.8	-	9.0	-	2.2	0.5	11.0	-	2.9	0.5	11.0
US CS Other	-	0.3	-	9.0	-	1.6	-	26.0	-	1.9	-	28.0
Canadian	-	1.8	-	30.0	-	3.3	0.5	15.0	-	5.2	1.5	30.0
US CE	-	8.3	-	56.0	-	1.9	-	11.0	-	10.1	-	56.0
Total	**-**	**0.9**	**-**	**56.0**	**-**	**4.1**	**-**	**160.0**	**-**	**5.0**	**-**	**170.0**

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Table 51. Total Departmental Space (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	14,410	65,147	53,357	201,580	781,765
US CS 13-24	13,344	36,669	36,206	58,162	440,032
US CS 25-36	15,383	37,675	27,943	109,941	452,102
US CS Other	1,500	20,255	16,924	57,743	2,106,551
Canadian	4,912	26,990	24,542	63,520	404,845
US CE	10,509	80,386	41,000	291,000	401,933

Table 52. Departmental Space for Faculty, Staff, and Student Offices (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	6,270	33,904	30,297	104,295	406,848
US CS 13-24	10,632	23,062	21,889	37,618	276,749
US CS 25-36	7,735	22,161	18,233	52,027	265,936
US CS Other	763	9,656	7,744	32,997	1,004,200
Canadian	1,959	11,275	8,653	32,301	169,132
US CE	4,118	42,632	8,000	181,225	213,164

Table 53. Departmental Space for Conference and Seminar Rooms (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	1,939	6,597	5,371	16,754	79,168
US CS 13-24	-	2,663	2,383	5,287	31,950
US CS 25-36	836	2,801	2,509	7,246	33,613
US CS Other	-	1,048	700	5,000	108,998
Canadian	-	1,582	1,226	7,376	23,731
US CE	-	776	242	2,500	3,884

Table 54. Departmental Space for Research Labs (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	4,500	14,763	8,568	74,131	177,156
US CS 13-24	2,228	8,405	8,678	15,841	100,862
US CS 25-36	-	9,586	4,762	51,675	115,027
US CS Other	-	5,891	4,705	40,168	612,617
Canadian	687	7,121	6,380	15,477	106,816
US CE	3,145	31,674	23,000	100,000	158,368

Table 55. Departmental Space for Instructional Labs (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	1,631	9,883	7,830	28,255	118,593
US CS 13-24	-	2,539	2,625	8,716	30,471
US CS 25-36	700	3,127	2,434	8,073	37,526
US CS Other	-	3,661	2,722	19,875	380,736
Canadian	700	7,011	5,903	16,845	105,166
US CE	1,341	5,303	6,239	10,000	26,517

Table 56. Definite Departmental Plans to Gain New Space

Department, Rank	Yes	No	No Answer
US CS 1-12	41.7%	16.7%	41.7%
US CS 13-24	50.0%	16.7%	33.3%
US CS 25-36	66.7%	0.0%	33.3%
US CS Other	45.6%	31.6%	22.8%
Canadian	66.7%	16.7%	16.7%
US CE	71.4%	14.3%	14.3%
Total	**50.3%**	**19.4%**	**30.3%**

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Table 57. Year Departments Plan to Add Space

2003		2004		2005		2006		2007		2008		2009	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6	7.1%	48	56.5%	17	20.0%	6	7.1%	2	2.4%	5	5.9%	1	1.2%

Table 58. Total Expected Additional Space of Departments Adding Space (net sq. ft.)

Department, Rank	Minimum	Mean	Median	Maximum	Total
US CS 1-12	700	41,723	3,900	158,390	166,890
US CS 13-24	1,528	21,134	15,068	46,600	126,803
US CS 25-36	500	26,261	19,920	63,000	183,824
US CS Other	100	16,733	12,000	82,048	752,993
Canadian	1,658	13,492	8,000	35,647	148,412
US CE	3,614	18,259	9,710	50,000	73,034

Table 59. Total Expected Additional Office Space* for Faculty, Staff, and Grad Students (net sq. ft.)

Department, Rank	% Adding None**	Minimum	Mean	Median	Maximum	Total
US CS 1-12	25.0%	700	28,367	5,000	79,400	85,100
US CS 13-24	0.0%	764	10,268	4,677	28,000	61,607
US CS 25-36	14.3%	550	8,611	6,578	20,000	51,664
US CS Other	13.3%	100	7,900	4,401	35,589	308,094
Canadian	0.0%	1,231	5,802	3,000	16,645	63,824
US CE	0.0%	2,000	8,164	2,827	25,000	32,654

*Square footage numbers include only those departments adding additional office space
**Percentage is among all departments adding total space

Table 60. Total Expected Additional Conference and Seminar Space (net sq. ft.)**

Department, Rank	% Adding None***	Minimum	Mean	Median	Maximum	Total
US CS 1-12	50.0%	*	9,540	9,540	*	19,080
US CS 13-24	33.3%	625	3,079	2,885	5,923	12,317
US CS 25-36	42.9%	1,600	4,263	4,475	6,500	17,050
US CS Other	40.0%	153	2,506	1,000	10,515	67,658
Canadian	27.3%	800	1,651	1,253	3,420	13,209
US CE	50.0%	*	2,725	2,725	*	5,450

*Numbers not reported due to low number of respondents
**Square footage numbers include only those departments adding additional conference and seminar space
***Percentage is among all departments adding total space

Table 61. Total Expected Additional Research Laboratory Space (net sq. ft.)**

Department, Rank	% Adding None***	Minimum	Mean	Median	Maximum	Total
US CS 1-12	75.0%	*	*	*	*	29,470
US CS 13-24	16.7%	764	8,991	11,000	17,727	44,956
US CS 25-36	28.6%	500	18,246	16,920	32,700	91,230
US CS Other	24.4%	300	6,157	5,621	17,983	209,344
Canadian	27.3%	1,105	6,048	5,701	10,555	48,382
US CE	25.0%	6,930	8,310	8,000	10,000	24,930

*Numbers not reported due to low number of respondents
**Square footage numbers include only those departments adding research laboratory space
***Percentage is among all departments adding total space

Table 62. Total Expected Additional Instructional Laboratory Space (net sq. ft.)**

Department, Rank	% Adding None***	Minimum	Mean	Median	Maximum	Total
US CS 1-12	50.0%	*	16,620	16,620	*	33,240
US CS 13-24	50.0%	1,100	2,641	2,823	4,000	7,923
US CS 25-36	42.9%	650	5,970	6,615	10,000	23,880
US CS Other	44.4%	600	6,716	5,064	27,636	167,897
Canadian	36.4%	350	3,285	2,000	9,944	22,997
US CE	75.0%	*	*	*	*	10,000

*Numbers not reported due to low number of respondents
**Square footage numbers include only those departments adding instructional laboratory space
***Percentage is among all departments adding total space