

2007-2008 Taulbee Survey

Upward Trend in Undergraduate CS Enrollment; Doctoral Production Continues at Peak Levels

By Stuart Zweben

The CRA Taulbee Survey¹ is conducted annually by the Computing Research Association to document trends in student enrollment, degree production, employment of graduates, and faculty salaries in Ph.D.-granting departments of computer science (CS), computer engineering (CE) and information (I)² in the United States and Canada. This article and the accompanying figures and tables present the results of the 38th annual CRA Taulbee Survey.

Information is gathered during the fall. Responses received by January 5, 2009 are included in the analysis. The period covered by the data varies from table to table. Degree production and enrollment (Ph.D., Master's, and Bachelor's) refer to the previous academic year (2007-2008). Data for new students in all categories refer to the current academic year (2008-2009). Projected student production and information on faculty salaries and demographics also refer to the current academic year. Faculty salaries are those effective January 1, 2009.

We surveyed a total of 264 Ph.D.-granting departments. Included in this count are 19 I-school departments, which were surveyed for the first time. Of the 264 departments surveyed, 192 departments returned their survey forms, for a response rate of 73%. This is down from last year's 79%, but is still quite comprehensive (see Figure 1) and is negatively influenced by the 47% response rate from the new I departments and the typical low response rate (38%) from CE programs. We had a good response rate from U.S. CS departments (151 of 183, or 83%), and a reasonable response rate (20 of 30, or 67%) from Canadian departments, although the response rate in both U.S. CS and Canadian departments was lower this year than last year.³

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

CRA's Taulbee Survey and the Media

The Taulbee Survey has always been a rich source of data for the computing community. Frequently, the news media also have shown great interest in the results—particularly the student enrollment and degree production data—and have used them as a way of taking the pulse of the field. Unfortunately, given the complexity of the results we present and the number of caveats that surround certain trends, reporters have, in the past, misrepresented the survey's findings or simply missed the most noteworthy aspects.

This year, for the first time, CRA attempted to manage the media aspects of this release by putting together a special version of the report focused on just the student enrollment and degree production statistics, along with an executive summary that detailed what we thought were the most noteworthy findings. In addition, we partnered with a communications strategy firm to help put together an official "media rollout" of the report, complete with pitches to national and regional press and a well-developed message that accurately conveyed the results of this year's survey.

Because of this plan, and because the results from this year's survey were largely positive, the rollout garnered a significant amount of media attention. The Taulbee Survey received coverage in the *New York Times*, *USA Today*, *The Chronicle of Higher Education*, *ZDNet*, *NetworkWorld*, *Ars Technica*, *Scientific American*, *U.S. News and World Report*, *KCBS Radio* and *Computerworld*, as well as a large number of regional and university news publications. Almost without exception, the stories that appeared presented accurate summaries of the noteworthy results from the survey, with none of the confusion experienced with coverage in past years.

For a list of press coverage of CRA's Taulbee Survey, see: <http://www.cra.org/reports/news/index.html>

research community. In addition to including I departments, this year's survey modified the specialty areas within the Ph.D. (see Table 4 and the accompanying discussion). The ethnicity categories also were modified to conform to those used by the National Center for Educational Statistics.

Departments that responded to the survey were sent preliminary results about faculty salaries in December 2008; these results included additional distributional information

not contained in this report. The CRA Board views this as a benefit of participating in the survey.

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, Enrollments and Employment (Tables 1-8)

Total Ph.D. production among the responding departments grew to 1,877 for the period between July 2007 and

June 2008 (Table 1). This represents a 5.7% increase over last year. However, it includes 77 who graduated with I degrees (see Tables 2 and 3). Nearly all I degree graduates would not have been counted in previous years (though a small number may have been reported among CS department graduates). Subtracting the I degree graduates yields a total of 1,800 for a 1.4% increase over last year. This year's production of more than 1,800 is well below the nearly 2,000 predicted last year. The "optimism

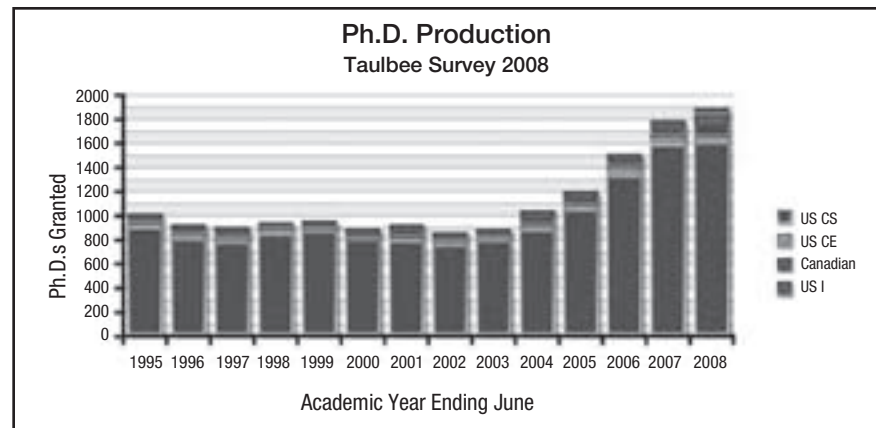
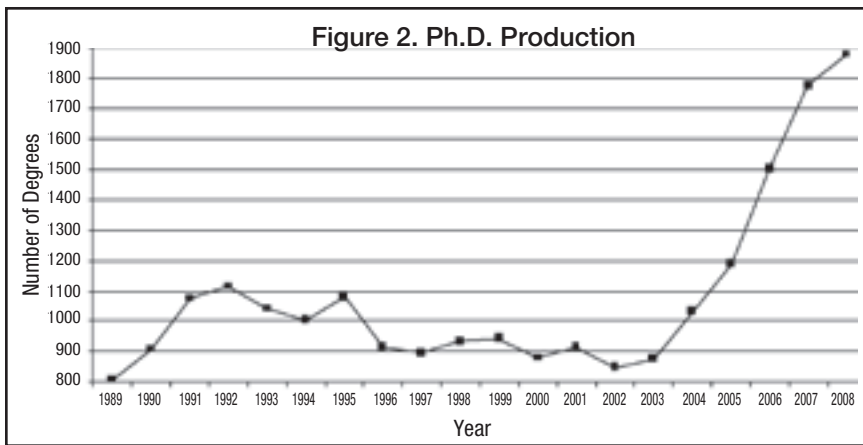
Figure 1. Number of Respondents to the Taulbee Survey

Year	U.S. CS Depts.	U.S. CE Depts.	Canadian	U.S. Information	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	148/170 (87%)	6/28 (21%)	19/27 (70%)		173/225 (77%)
2004	158/172 (92%)	10/30 (33%)	21/27 (78%)		189/229 (83%)
2005	156/174 (90%)	10/31 (32%)	22/27 (81%)		188/232 (81%)
2006	156/175 (89%)	12/33 (36%)	20/28 (71%)		188/235 (80%)
2007	155/176 (88%)	10/30 (33%)	21/28 (75%)		186/234 (79%)
2008	151/183 (83%)	12/32 (38%)	20/30 (67%)	9/19 (47%)	192/264 (73%)

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 Ex. (# Depts)	Avg. per Dept.
U.S. CS 1-12	338	28.2	326	27.2	236	19.7	151 (7)	21.6
U.S. CS 13-24	246	20.5	237	19.8	223	18.6	176 (11)	16.0
U.S. CS 25-36	162	13.5	202	16.8	197	16.4	110 (10)	11.0
U.S. CS Other	842	7.5	972	8.7	878	7.8	721 (96)	7.5
U.S. CS Total	1,588	10.7	1,737	11.7	1,534	10.4	1,158 (124)	9.3
U.S. CE	63	5.2	113	9.4	114	9.5	54 (9)	6.0
U.S. Information	56	8.0	57	8.1	68	9.7	38 (7)	5.4
Canadian	170	8.5	200	10.0	232	11.6	159 (17)	9.4
Total	1,877	10.0	2,107	11.3	1,948	10.4	1,409 (157)	9.0

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ratio," defined as the actual number divided by the predicted number, was 0.90, as opposed to last year's 0.95. If this year's optimism ratio holds again next year, there will be approximately 1,900 new Ph.D.s produced in 2008-09. However, it also may be that we are nearing a peak production rate. Changing hiring conditions resulting from the weak economy also may delay graduation for some Ph.D. students.

The number of new students passing thesis candidacy exams (most, but not all, departments have such exams) rose 7%, although more departments reported such exams this year. When the I departments are subtracted, the increase is only 4%. On a per department basis, the numbers are down slightly, whether I departments are included or not. The number of students passing the qualifier also rose significantly (13%) to its level of two years ago if I departments are included. Without I departments, the increase still was a healthy 9%.

The total number of new CS Ph.D. students (Table 5) rose by 10%, following a 4% increase last year. This year, the increase was due to the admission of a larger class of new students, while last year it was due to Master's students becoming Ph.D. students. More departments reported new student data this year, so the 10% increase is somewhat misleading. The number of new CS Ph.D. students per department reporting actually is almost the same this year as last. Figure 3 shows a graphical view of the pipeline for computer science programs. The data in this graph are normalized by 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. These data have been useful in estimating the timing of changes in production rates. They suggest that we have peaked in CS Ph.D. production for a few years, and expect a slight decline during the next couple of years. However, the turnaround in the number of students who passed qualifiers makes it difficult to forecast longer-term trends.

Table 5a reports the data for new students in fall 2008 from outside North America. Top 12 U.S. departments continue to have a somewhat higher fraction of domestic students than do lower-ranked departments, and Canadian departments continue to have a lower percentage of Ph.D. students from outside North America than do their U.S. counterparts. The range of new

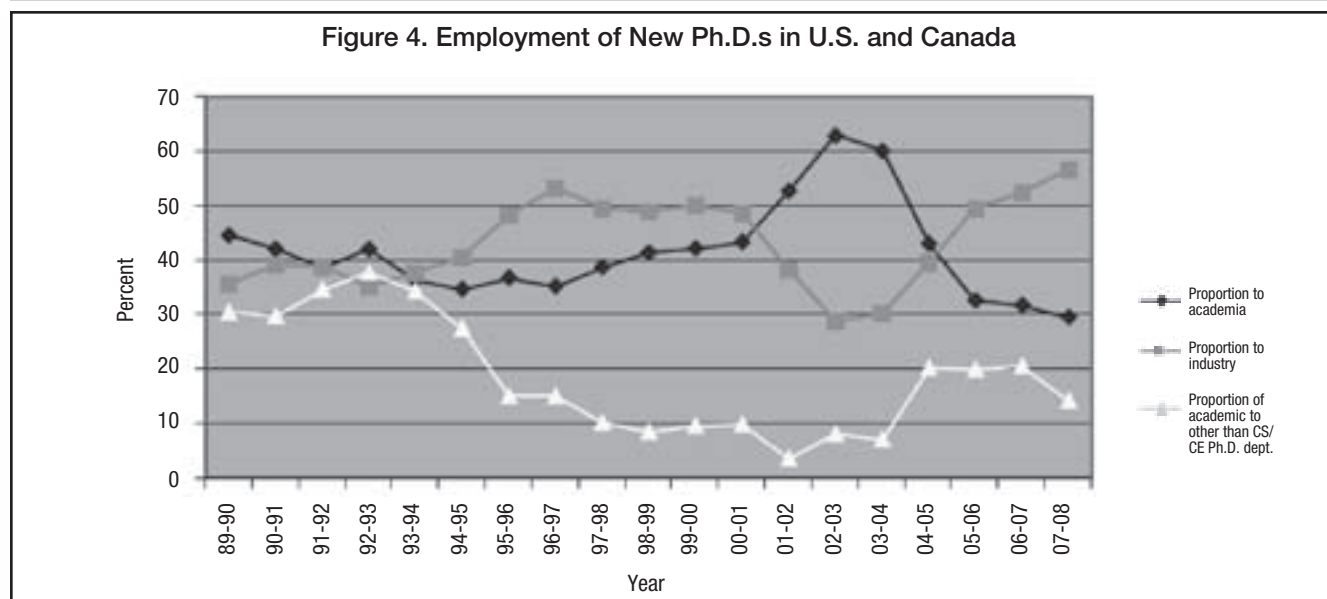
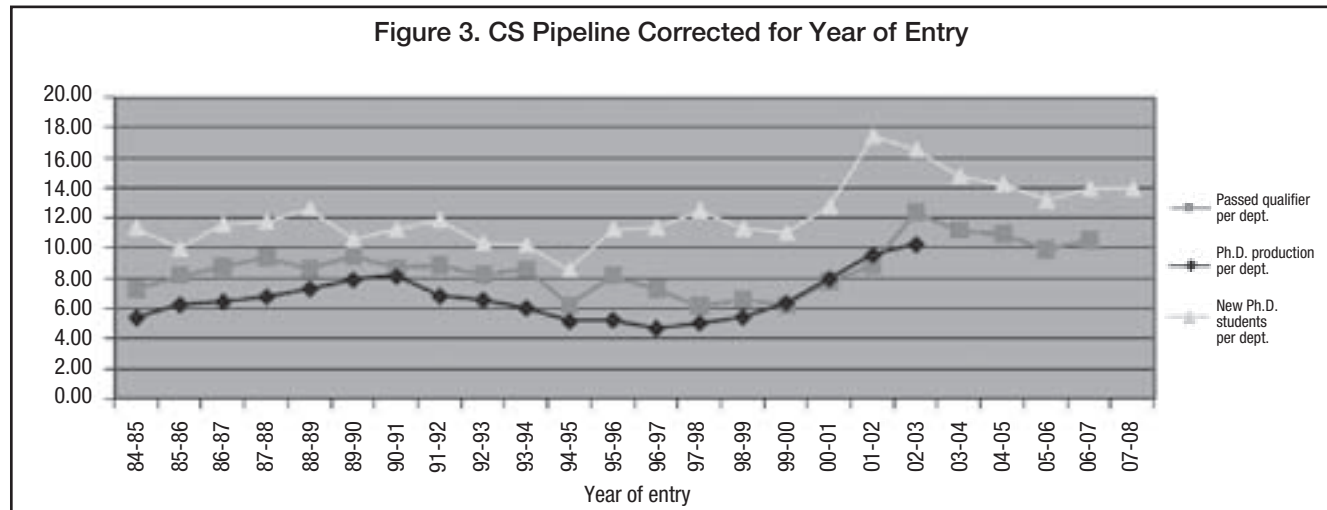


Table 2. Gender of Ph.D. Recipients by Type of Degree

	CS		CE		I		Total	
Male	1,255	79.4%	153	83.2%	44	71.0%	1,452	79.5%
Female	325	20.6%	31	16.8%	18	29.0%	374	20.5%
Total known Gender	1,580		184		62		1,826	
Unknown	17		19		15		51	
Total	1,597		203		77		1,877	

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

	CS		CE		I		Total	
Nonresident Alien	807	55.5%	133	66.5%	38	50.0%	978	56.5%
American Indian or Alaska Native	5	0.3%	1	0.5%	0	0.0%	6	0.3%
Asian	178	12.2%	20	10.0%	5	6.6%	203	11.7%
Black or African-American	22	1.5%	2	1.0%	3	3.9%	27	1.6%
Native Hawaiian or Pacific Islander	0	0.0%	0	0.0%	1	1.3%	1	0.1%
White	419	28.8%	42	21.0%	29	38.2%	490	28.3%
Multiracial, not Hispanic	2	0.1%	0	0.0%	0	0.0%	2	0.1%
Resident Hispanic, any race	21	1.4%	2	1.0%	0	0.0%	23	1.3%
Total have Ethnicity Data for	1,454		200		76		1,730	100.0%
Resident, race/ethnicity unknown	26		1		0		27	
Residency unknown	117		2		1		120	
Total	1,597		203		77		1,877	

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Ph.D. students in U.S. programs who are not North American is 50% to 64% across the ranking strata. I departments are at the lower end of this range. Among U.S. programs ranked 25-36, the fraction of new Ph.D. students from outside North America increased from 59% to 64%. In Canadian programs, the fraction of new students who were not North American declined from 43% to 36%. Overall, the fraction of non-North American new Ph.D. students (54.0%) is comparable to last year's 54.8%.

Figure 4 shows the employment trend of new Ph.D.s in academia and industry, and the proportion of those going to academia who took positions in departments other than Ph.D.-granting CS/CE departments. Table 4 shows a more detailed breakdown of the employment data for new Ph.D.s. The trend toward employment in industry over academia continues for the 2007-08 Ph.D. graduates. Of those for whom employment type is known, industry hired 56.6% of new Ph.D. graduates, compared to 52.3%,

49.4% and 39.6% in the previous three years. In contrast, about 30% took academic employment in North America (compared to 32%, 33%, 43% and 60%, respectively, in the previous four years). There also is a continued decline in the percentage who went into tenure-track positions in Ph.D.-granting programs (9.4% vs 11.4%, 12.8%, 17.5% and 27.5% in the previous four years) and to non-Ph.D.-granting CS/CE departments (4.2% vs. 4.7%, 5.2% and 7.0% in the previous three years). The decline

in the number of persons going into tenure-track positions in Ph.D.-granting programs is almost exactly offset by an increase in the number of new Ph.D.s going to postdoctoral positions.

The unemployment rate for new Ph.D.s remains less than 1%. The proportion of Ph.D. graduates who were reported taking positions outside of North America, among those whose employment is known, decreased again this year to 9.2%, from 10% last year and 13.1% two years ago.

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

	Artificial Intelligence	Computer-Supported Cooperative Work	Databases /Information Retrieval	Graphics/Visualization	Hardware/Architecture	Human-Computer Interaction	High-Performance Computing	Informatics: Biomedica/ Other Science	Information Assurance/Security	Information Science	Information Systems	Networks	Operating Systems	Programming Languages/ Compilers	Robotics/Vision	Scientific/Numerical Computing	Social Computing/Social Informatics	Software Engineering	Theory and Algorithms	Other	Total	
North American Ph.D. Granting Depts.																						
Tenure-track	11	1	13	5	5	10	2	6	8	1	2	9	7	5	5	2	1	10	11	26	140	9.4%
Researcher	5	0	2	3	0	2	0	2	2	0	0	3	4	0	2	2	0	2	9	7	45	3.0%
Postdoc	25	1	2	9	1	7	5	17	5	2	0	6	2	5	7	5	0	5	16	28	148	10.0%
Teaching Faculty	4	0	1	4	2	1	0	2	1	2	0	3	0	3	3	1	0	5	4	6	42	2.8%
North American, Other Academic																						
Other CS/CE/I Dept.	6	0	4	9	0	3	4	4	4	2	0	8	0	2	2	0	1	4	6	3	62	4.2%
Non-CS/CE/I Dept.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
North American, Non-Academic																						
Industry	77	5	98	52	42	24	15	18	29	2	13	72	36	31	30	13	6	104	50	122	839	56.6%
Government	4	0	2	2	1	0	1	2	4	1	0	3	0	3	4	2	0	4	3	8	44	3.0%
Self-Employed	3	0	0	1	0	0	0	1	0	0	0	1	2	1	1	0	1	1	1	1	14	0.9%
Unemployed	0	0	1	0	0	2	0	0	0	0	0	0	0	2	0	1	1	0	2	3	12	0.8%
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total Inside North America																						
	135	7	123	85	51	49	27	52	53	10	15	105	51	52	54	26	10	135	102	204	1346	90.8%
Outside North America																						
Tenure-Track in Ph.D. Granting	6	1	2	0	1	0	1	0	1	0	1	4	1	0	0	0	1	0	3	0	22	1.5%
Researcher in Ph.D.	2	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	6	0.4%
Postdoc in Ph.D.	4	0	0	6	1	0	0	1	0	0	1	2	1	2	2	1	0	1	5	6	33	2.2%
Teaching in Ph.D.	1	0	0	0	0	1	0	0	0	0	1	1	1	1	0	1	0	1	0	1	9	0.6%
Other Academic	2	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	3	2	11	0.7%
Industry	4	0	4	4	4	4	0	0	1	0	2	8	5	3	0	1	0	4	2	2	48	3.2%
Government	0	0	1	0	0	0	0	1	1	0	0	1	1	0	0	0	1	1	1	0	8	0.5%
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total Outside North America																						
	19	1	9	11	6	6	2	2	3	0	5	18	9	6	2	3	2	7	14	12	137	9.2%
Total with Employment Data, Inside North America plus Outside North America																						
	154	8	132	96	57	55	29	54	56	10	20	123	60	58	56	29	12	142	116	216	1483	100%
Employment Type & Location Unknown																						
	38	1	23	16	14	10	10	13	6	2	11	28	6	4	7	4	3	17	20	161	394	
Total																						
	192	9	155	112	71	65	39	67	62	12	31	151	66	62	63	33	15	159	136	377	1877	

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Table 5. New Ph.D. Students in Fall 2008 by Department Type and Rank

Department, Rank	CS				CE				I				Total	
	New Admit	MS to Ph.D.	Total	Avg. per Dept.	New Admit	MS to Ph.D.	Total	Avg. per Dept.	New Admit	MS to Ph.D.	Total	Avg. per Dept.	Total	Avg. per Dept.
U.S. CS 1-12	379	26	405	31.6	0	0	0	0.0	2	0	2	0.2	407	33.9
U.S. CS 13-24	272	27	299	22.7	0	1	1	0.1	0	0	0	0.0	300	25.0
U.S. CS 25-36	292	22	314	24.3	6	0	6	0.5	34	6	40	3.3	360	30.0
U.S. CS Other	1,189	140	1,329	10.6	133	17	150	1.3	34	8	42	0.4	1,521	13.6
U.S. CS Total	2,132	215	2,347	14.4	139	18	157	1.1	70	14	84	0.6	2,588	17.5
U.S. CE	0		0	0.0	60	5	65	5.4	1	0	1	0.1	66	5.5
U.S. Information	0	0	0	0.0	0	0	0	0.0	62	10	72	10.3	72	10.3
Canadian	206	62	268	10.3	13	4	17	0.9	3	3	6	0.3	291	14.6
Total	2,338	277	2,615	12.5	212	27	239	1.3	136	27	163	0.9	3,017	16.1

Averages per department are computed for all reporting departments.

Table 5a. New Ph.D. Students from Outside North America

Department, Rank	CS	CE	I	Total New Outside	Total New	% Outside North America
U.S. CS 1-12	201	0	1	202	407	49.6%
U.S. CS 13-24	169	0	0	169	300	56.3%
U.S. CS 25-36	209	5	17	231	360	64.2%
U.S. CS Other	735	83	20	838	1,521	55.1%
Total U.S. CS	1,314	88	38	1,440	2,588	55.6%
U.S. CE	0	48	0	48	66	72.7%
U.S. Information	0	0	37	37	72	51.4%
Canadian	101	3	0	104	291	35.7%
Total	1,415	139	75	1,629	3,017	54.0%
Total New	2,615	239	163	3,017		
% Outside	54.1%	58.2%	46.0%	54.0%		

Table 4 also indicates the areas of specialty of new CS/CE Ph.D.s. Year-to-year fluctuations among these data are common and multi-year trends are difficult to discern. This year, there was an increase in the database/information systems area, which no doubt is influenced by the inclusion of I departments in this year's survey. On the other hand, the programming languages and OS/networks area showed declines. AI/robotics took over from OS/networks as the area with the largest number of graduates. In this year's survey, we refined the choice of areas that the departments could use to classify Ph.D. recipients, including categories of interest to I departments. We will review the data in comparison with those of previous years to see if this classification is proving useful. There still are a large number of graduates classified as having their degree in some area not specified.

The proportion of women among new Ph.D.s rose for the third straight year, to 20.5% in 2008 from 19.1% last year. This includes I departments, which graduated women Ph.D.s. in higher proportion that did CS and CE departments. However, subtracting the I departments still results in an increase to 20.2% among CS and CE departments (Table 2). Ethnicity characteristics of new Ph.D.s are

similar to those reported last year (Table 3). This year, the ethnicity categories were modified to conform to those used by the National Center for Educational Statistics. Thus, the percentages may not all be entirely comparable. This year, we also broke out the reported data when residency status was known but ethnicity was not. Last year, we combined data for ethnicity unknown and residency unknown. Coupled with the inclusion of I departments this year, extra care therefore must be taken when comparing percentages in this year's ethnicity tables with those from last year. Nevertheless, among CS and CE departments, it appears there was an increase in the proportion of new Ph.D.s awarded to Whites this year, offset by a decrease in those to Asians (including Native Hawaiians and Pacific Islanders).

Current Ph.D. enrollment proportions show a slight decline in women among CS and CE departments (from 19.5% to 18.9%), although when I departments are included the proportion this year is 20.0% (Table 7). With respect to ethnicity breakdowns, there appears to be a larger proportion of Nonresident Aliens this year, offset by a decrease in the proportion of Whites and Asians, including Native Hawaiians and Pacific Islanders (Table 8).

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Figure 5. Nonresident Aliens as Fraction of Ph.D. Enrollments

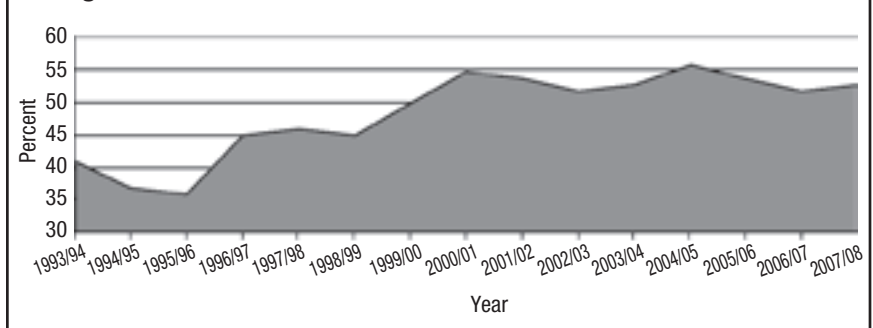


Figure 6. BS Production (CS & CE)

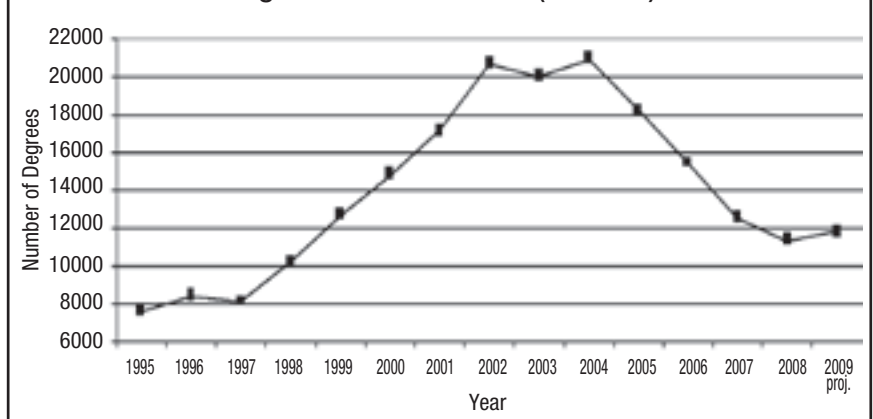
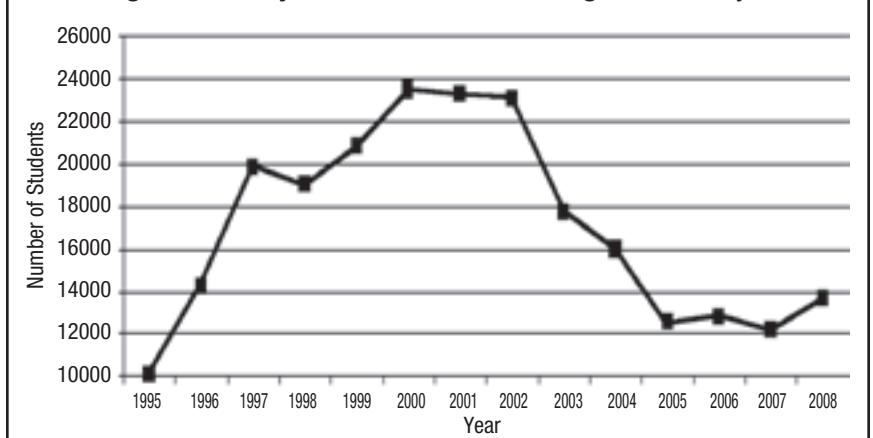


Figure 7. Newly Declared CS/CE Undergraduate Majors



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

Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	2,291	18.4%	0	0.0%	0	0.0%	2,291	15.7%
U.S. CS 13-24	1,600	12.9%	25	1.8%	0	0.0%	1,625	11.2%
U.S. CS 25-36	1,241	10.0%	19	1.4%	137	19.4%	1,397	9.6%
U.S. CS Other	5,851	47.0%	798	56.8%	194	27.4%	6,843	47.0%
Total U.S. CS	10,983	88.3%	842	60.0%	331	46.8%	12,156	83.5%
U.S. CE	0	0.0%	477	34.0%	13	1.8%	490	3.4%
U.S. Information	0	0.0%	0	0.0%	363	51.3%	363	2.5%
Canadian	1,462	11.7%	85	6.1%	0	0.0%	1,547	10.6%
Total	12,445		1,404		707		14,556	

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

	CS		CE		I		Total	
Male	9,896	80.7%	1,182	84.2%	431	60.1%	11,509	80.0%
Female	2,364	19.3%	222	15.8%	286	39.9%	2,872	20.0%
Total have Gender Data for	12,260		1,404		717		14,381	
Unknown	185		0		0		185	
Total	12,445		1,404		717		14,566	

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

	CS		CE		I		Total	
Nonresident Alien	5,958	54.7%	916	71.8%	308	45.1%	7,182	55.9%
American Indian or Alaska Native	12	0.1%	22	1.7%	8	1.2%	42	0.3%
Asian	859	7.9%	58	4.5%	60	8.8%	977	7.6%
Black or African-American	194	1.8%	17	1.3%	27	4.0%	238	1.9%
Native Hawaiian or Pacific Islander	38	0.3%	1	0.1%	1	0.1%	40	0.3%
White	3,610	33.2%	236	18.5%	265	38.8%	4,111	32.0%
Multiracial, not Hispanic	43	0.4%	8	0.6%	2	0.3%	53	0.4%
Resident Hispanic, any race	173	1.6%	18	1.4%	12	1.8%	203	1.6%
Total have Ethnicity Data for	10,887		1,276		683		12,846	
Resident, race/ethnicity unknown	679		22		22		723	
Residency unknown	879		106		12		997	
Total	12,445		1,404		717		14,566	

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

Master's degree production in CS and CE was negligibly different from last year, although there was a slight decline in CS and an increase in CE. The large number of Master's degrees in I departments and I degrees from CS departments added considerably to the total count of degrees awarded from the departments responding to this year's survey. This year, the Master's degree production numbers are displayed by department type and rank (Table 11b). Curiously, the prediction of the number of CS Master's degrees to be awarded in 2008-09 is higher than it was last year, while the enrollment in CS Master's programs is slightly lower. However, last year the departments did a poor job predicting the number of CS Master's degree recipients (5,883 predicted last year, and 7,383 awarded); therefore the increased prediction of 6,394 this year (Table 12b) appears to be justified.

The fraction of CS Master's degrees awarded to women was down slightly compared to last year's survey. In

Table 9a. Gender of Bachelor's Recipients

	CS		CE		I		Total	
Male	7,939	88.2%	1,839	89.3%	1,263	86.3%	11,041	88.2%
Female	1,061	11.8%	221	10.7%	201	13.7%	1,483	11.8%
Total have Gender Data for	9,000		2,060		1,464		12,524	
Unknown	217		62		12		291	
Total	9,217		2,122		1,476		12,815	

Table 9b. Gender of Master's Recipients

	CS		CE		I		Total	
Male	5,565	78.8%	636	78.1%	919	51.0%	7,120	73.6%
Female	1,500	21.2%	178	21.9%	882	49.0%	2,560	26.4%
Total have Gender Data for	7,065		814		1,801		9,680	
Unknown	318		0		0		318	
Total	7,383		814		1,801		9,998	

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Table 10a. Ethnicity of Bachelor's Recipients

	CS		CE		I		Total	
Nonresident Alien	423	6.2%	154	8.3%	60	4.2%	637	6.3%
American Indian or Alaska Native	56	0.8%	7	0.4%	6	0.4%	69	0.7%
Asian	998	14.7%	368	19.8%	205	14.3%	1,571	15.5%
Black or African-American	273	4.0%	100	5.4%	118	8.2%	491	4.9%
Native Hawaiian or Pacific Islander	54	0.8%	10	0.5%	1	0.1%	65	0.6%
White	4,483	65.8%	1,073	57.6%	922	64.4%	6,478	64.1%
Multiracial, not Hispanic	108	1.6%	0	0.0%	2	0.1%	110	1.1%
Resident Hispanic, any race	414	6.1%	151	8.1%	117	8.2%	682	6.8%
Total have Ethnicity Data for	6,809		1,863		1,431		10,103	
Resident, race/ethnicity unknown	1,125		125		30		1,280	
Residency unknown	1,283		134		15		1,432	
Total	9,217		2,122		1,476		12,815	

Table 10b. Ethnicity of Master's Recipients

	CS		CE		I		Total	
Nonresident Alien	3,469	55.8%	420	57.1%	380	22.7%	4,269	49.5%
American Indian or Alaska Native	14	0.2%	17	2.3%	7	0.4%	38	0.4%
Asian	665	10.7%	56	7.6%	197	11.7%	918	10.6%
Black or African-American	110	1.8%	14	1.9%	109	6.5%	233	2.7%
Native Hawaiian or Pacific Islander	14	0.2%	0	0.0%	0	0.0%	14	0.2%
White	1,783	28.7%	211	28.7%	915	54.6%	2,909	33.7%
Multiracial, not Hispanic	32	0.5%	0	0.0%	6	0.4%	38	0.4%
Resident Hispanic, any race	129	2.1%	18	2.4%	63	3.8%	210	2.4%
Total have Ethnicity Data for	6,216		736		1,677		8,629	
Resident, race/ethnicity unknown	655		38		91		784	
Residency unknown	512		40		33		585	
Total	7,383		814		1,801		9,998	

2007-08, 21.2% of the degrees went to women, while in the previous year 22.7% went to women. The CE numbers were within one-half of one percent of the previous year's data. Note that I departments awarded 49% of their Master's degrees to women (Table 9b). The ethnicity of I department Master's graduates also is more diverse than in CS or CE departments (Table 10b). In CS and CE departments, there is a slight increase in the fraction of graduates who are Nonresident Aliens, and a corresponding decrease in those who are Asian or Native Hawaiians/Pacific Islander.

Bachelor's degree production (Tables 9a and 10a) in CS was down 10% this year, compared to a decline of nearly 20% last year. The slowing of the decline in degree production is consistent with an increase in overall enrollment in U.S. CS programs. The average number of new students per department in U.S. CS programs is up 1.7% over last year, and if only majors are considered, the increase is 9.5% (however, the latter number is influenced by departments that no longer use pre-majors, and hence all of their new students now are counted as majors). During the last three years, the cumulative increase in average number of new students per department is 9.4%, and is 15.8% if only majors are considered. Furthermore, some of the CS departments that now are able to report I majors reported these majors among their CS majors in previous years. So the number of CS majors this year actually grew even more

Table 11a. Bachelor's Degree Recipients by Department Type and Rank

Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	1,016	11.0%	180	8.5%	27	1.8%	1,223	9.5%
U.S. CS 13-24	722	7.8%	145	6.8%	0	0.0%	867	6.8%
U.S. CS 25-36	823	8.9%	91	4.3%	162	11.0%	1,076	8.4%
U.S. CS Other	4,708	51.1%	1,185	55.8%	610	41.3%	6,503	50.7%
Total U.S. CS	7,269		1,601		799		9,669	
U.S. CE	0	0.0%	423	19.9%	0	0.0%	423	3.3%
U.S. Information	0	0.0%	18	0.8%	677	45.9%	695	5.4%
Canadian	1,948	21.1%	80	3.8%	0	0.0%	2,028	15.8%
Total	9,217		2,122		1,476		12,815	

Table 11b. Master's Degree Recipients by Department Type and Rank

Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	735	10.0%	45	5.5%	0	0.0%	780	7.8%
U.S. CS 13-24	1,181	16.0%	0	0.0%	0	0.0%	1,181	11.8%
U.S. CS 25-36	460	6.2%	1	0.1%	56	3.1%	517	5.2%
U.S. CS Other	4,343	58.8%	548	67.3%	684	38.0%	5,575	55.8%
Total U.S. CS	6,719	91.0%	594	73.0%	740	41.1%	8,053	80.5%
U.S. CE	0	0.0%	149	18.3%	9	0.5%	158	1.6%
U.S. Information	0	0.0%	3	0.4%	1052	58.4%	1,055	10.6%
Canadian	664	9.0%	68	8.4%	0	0.0%	732	7.3%
Total	7,383		814		1,801		9,998	

than is represented in the tabulated data. It definitely appears that U.S. CS departments are replenishing the freshman and sophomore ranks with larger groups than they are graduating as seniors. Total enrollment per department by majors and pre-majors in U.S. CS programs is up 6.2%

over last year, and if only majors are considered, the increase is 8.1%. This is the first increase in total enrollment in CS programs in six years. We should see this reflected in Bachelor's degree production soon.

New CS student data are similar in Canadian schools, though total

Canadian CS enrollment is lower for both majors and pre-majors this year. As mentioned at the beginning of this report, the Canadian data are much more sensitive to the particular departments that responded to the survey, although this also may suggest that Canadian departments are a year

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Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	1,113	11.3%	213	11.0%	38	2.9%	1,364	10.4%
U.S. CS 13-24	790	8.0%	194	10.0%	0	0.0%	984	7.5%
U.S. CS 25-36	893	9.1%	62	3.2%	222	16.8%	1,177	9.0%
U.S. CS Other	4,606	46.9%	935	48.2%	699	52.9%	6,240	47.7%
Total U.S. CS	7,402		1,404		959		9,765	
U.S. CE	0	0.0%	459	23.6%	0	0.0%	459	3.5%
U.S. Information	0	0.0%	0	0.0%	363	27.5%	363	2.8%
Canadian	2,427	24.7%	78	4.0%	0	0.0%	2,505	19.1%
Total	9,829		1,941		1,322		13,092	

Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	743	11.6%	75	8.6%	0	0.0%	818	9.3%
U.S. CS 13-24	1,070	16.7%	2	0.2%	0	0.0%	1,072	12.2%
U.S. CS 25-36	588	9.2%	2	0.2%	84	5.4%	674	7.6%
U.S. CS Other	3,462	54.1%	530	60.9%	592	38.1%	4,584	52.0%
Total U.S. CS	5,863	91.7%	609	70.0%	676	43.5%	7,148	81.1%
U.S. CE	0	0.0%	216	24.8%	7	0.5%	223	2.5%
U.S. Information	0	0.0%	4	0.5%	872	56.1%	876	9.9%
Canadian	531	8.3%	41	4.7%	0	0.0%	572	6.5%
Total	6,394		870		1,555		8,819	

Department, Rank	CS		CE		I		Total		Outside N America	
	Total	Avg. per Dept.	Total	Avg. per Dept.	Total	Avg. per Dept.	Total	Avg. per Dept.	Total	%
U.S. CS 1-12	646	64.6	67		0		713	71.3	343	48.1%
U.S. CS 13-24	736	61.3	3		0		739	61.6	522	70.6%
U.S. CS 25-36	380	34.6	3		110	39.7	493	44.8	330	66.9%
U.S. CS Other	3,078	29.0	372	13.8	468	58.5	3,918	37.0	2,244	57.3%
U.S. CS Total	4,840	34.8	445	14.8	578	48.2	5,863	39.3	3,439	58.7%
U.S. CE	0		189	15.8	2		191	15.9	116	60.7%
U.S. Information	0		5		911	151.8	916	130.9	200	21.8%
Canadian	524	26.2	21	7.0	0		575	28.8	214	37.2%
Total	5,364	33.7	690	15.0	1,491	135.6	7,545	42.6	3,969	52.6%

Department, Rank	CS			CE			I			Total	
	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Major	Avg. Major per Dept.
U.S. CS 1-12	147	861	86.1	0	156		0	15		1,032	103.2
U.S. CS 13-24	122	830	69.2	0	379		0	0		1,209	85.8
U.S. CS 25-36	197	989	89.9	0	106		12	146	36.5	1,241	90.0
U.S. CS Other	1,927	6,054	63.7	457	1,755	48.8	11	773	45.5	8,582	90.3
Total U.S. CS	2,393	8,734	68.2	457	2,396	54.5	23	934	42.4	12,064	94.2
U.S. CE	0	0		108	378	42.0	0	0		378	42.0
U.S. Information	0	0		0	5		0	334	66.8	339	56.5
Canadian	186	2,041	113.4	0	69		0	0		2,110	117.2
Total	2,579	10,775		565	2,848		23	1,268		14,891	

Averages per department are computed for departments with nonzero values, when there are 3 or more in a cell.

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Department, Rank	CS		CE		I		Total	
U.S. CS 1-12	1,206	7.8%	81	4.8%	0	0.0%	1,287	5.9%
U.S. CS 13-24	1,849	11.9%	4	0.2%	0	0.0%	1,853	8.5%
U.S. CS 25-36	893	5.8%	5	0.3%	182	3.9%	1,080	4.9%
U.S. CS Other	9,838	63.6%	1,150	67.7%	1,672	35.7%	12,660	57.9%
Total U.S. CS	13,786	89.1%	1,240	73.0%	1,854	39.5%	16,880	77.2%
U.S. CE	0	0.0%	359	21.1%	47	1.0%	406	1.9%
U.S. Information	0	0.0%	20	1.2%	2,789	59.5%	2,809	12.8%
Canadian	1,688	10.9%	79	4.7%	0	0.0%	1,767	8.1%
Total	15,474		1,698		4,690		21,862	

Averages per department are computed for departments with nonzero values, when there are 3 or more in a cell.

Department, Rank	CS			CE			I			Total	
	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Pre-Major	Major	Avg. Major per Dept.	Major	Avg. Major per Dept.
U.S. CS 1-12	779	2,874	239.5	0	648	162.0	0	77		3,599	291.9
U.S. CS 13-24	219	2,739	228.2	0	733	146.6	0	0		3,472	289.3
U.S. CS 25-36	405	3,173	264.4	0	220		16	672	168.0	4,065	369.5
U.S. CS Other	3,940	22,217	211.6	727	5,496	140.9	75	2,804	164.9	30,517	338.8
Total U.S. CS	5,343	31,003	219.9	727	7,097	141.9	91	3,553	161.5	41,653	295.4
U.S. CE	0	0		96	1,778	161.6	0	0		1,778	161.6
U.S. Information	0	0		0	18		0	1,677	335.4	1,695	282.5
Canadian	144	8,001	421.1	0	243		0	0		8,244	433.9
Total	5,487	39,004		823	9,136		91	5,230		53,370	

Averages per department are computed for departments with nonzero values, when there are 3 or more in a cell.

	Actual		Projected		Expected Two-Year Growth	
	2008-2009	2009-2010	2009-2010	2010-2011		
Tenure-Track	4,776	4,936	4,936	5,086	310	6.5%
Researcher	589	593	593	614	25	4.2%
Postdoc	456	487	487	529	73	16.0%
Teaching Faculty	423	478	478	519	96	22.7%
Other/Not Listed	162	166	166	171		
Total	6,406	6,660	6,660	6,919	513	8.0%

or so behind U.S. CS departments in realizing the turnaround.

Diversity in our undergraduate programs remains poor. The fraction of Bachelor's degrees awarded to women held steady at a paltry 11.8% this year (Table 9a). As was the case last year, nearly two-thirds of those receiving Bachelor's degrees were White, non-Hispanics.

Faculty Demographics (Tables 17-23)

Total faculty sizes, as well as tenure-track faculty sizes, increased nearly 5% at U.S. CS departments during the past year. There was a 12% increase in the number of postdocs at U.S. CS departments this year compared to last year, although the number of researchers at these departments declined by nearly 14%; when combined, the total number is down 4%. With the increased opportunities for tenure-track positions, some of the people in the postdoc and researcher categories may have moved to tenure-track. Teaching faculty increased by almost 8% at U.S. CS departments.

The fraction of women hired into tenure-track positions was 21.9%, down from last year's 23.9% but still slightly above the fraction of new Ph.D.s who were women (20.5%). There was an increased percentage of new faculty members who are Nonresident Aliens and African Americans this year, offset by a decreased percentage of Asians, Native Hawaiians or Pacific Islanders. Although the African American

	Actual		Projected		Expected Two-Year Growth	
	2008-2009	2009-2010	2009-2010	2010-2011		
U.S. CS 1-12	749	782	782	813	64	8.5%
U.S. CS 13-24	608	626	626	650	42	6.9%
U.S. CS 25-36	605	639	639	665	60	9.9%
U.S. CS Other	3,034	3,153	3,153	3,280	246	8.1%
U.S. CS Total	4,996	5,200	5,200	5,408	412	8.2%
U.S. CE	272	285	285	300	28	10.3%
U.S. Information	204	218	218	224	20	9.8%
Canadian	933	957	957	988	55	5.9%
Total	6,405	6,660	6,660	6,920	515	8.0%

percentage of new tenure-track hires this year rose to 3.4%, this still is a very low fraction, and since the total enrollment in Ph.D. programs currently is less than 2%, this one-year gain is a small contribution to our goal of improving faculty diversity.

Actual faculty size increases were fairly close to predicted values this

year. For next year, reporting departments forecast a 3% to 4% growth in tenure-track faculty. These forecasts were made before many institutions announced actions associated with impending economy-related cuts for FY09 and/or FY10. We'll see if these hiring predictions are met.

Table 18b shows the recruiting results from last year's hiring cycle. During that cycle, roughly one of every four open tenure-track positions went unfilled. For each of the two previous years, one of every three positions went unfilled. This could be one consequence of the tightening job

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Table 18a. Actual and Anticipated CS Faculty Size by Position and Department Rank								
	Actual		Projected				Expected Two-Year Growth	
	2008-2009		2009-2010		2010-2011		#	%
U.S. CS 1-12	Total	Average	Total	Average	Total	Average		
TenureTrack	494	41.2	510	42.5	527	43.9	33	6.7%
Research	56	4.7	60	5.0	64	5.3	8	14.3%
Postdoc	62	5.2	68	5.7	72	6.0	10	16.1%
Teaching	101	8.4	106	8.8	111	9.3	10	9.9%
Other	36	3.0	38	3.2	40	3.3	4	11.1%
U.S. CS 13-24								
TenureTrack	387	32.3	401	33.4	415	34.6	28	7.2%
Research	50	4.2	52	4.3	56	4.7	6	12.0%
Postdoc	128	10.7	133	11.1	134	11.2	6	4.7%
Teaching	43	3.6	40	3.3	45	3.8	2	4.7%
Other	0	0.0	0	0.0	0	0.0	0	
U.S. CS 25-36								
TenureTrack	420	35.0	438	36.5	457	38.1	37	8.8%
Research	52	4.3	53	4.4	54	4.5	2	3.8%
Postdoc	55	4.6	63	5.3	67	5.6	12	21.8%
Teaching	42	3.5	49	4.1	51	4.3	9	21.4%
Other	36	3.0	36	3.0	36	3.0	0	0.0%
U.S. CS Other								
TenureTrack	2,371	20.4	2,447	21.1	2,525	21.8	154	6.5%
Research	324	2.8	320	2.8	331	2.9	7	2.2%
Postdoc	141	1.2	154	1.3	170	1.5	29	20.6%
Teaching	125	1.1	158	1.4	176	1.5	51	40.8%
Other	72	0.6	74	0.6	77	0.7	5	6.9%

Table 18b. Vacant Positions 2007-2008 by Position and Department Rank and Type				
	Vacant Positions 2007-2008			
	Tried to fill	Filled	Unfilled	% Unfilled
U.S. CS 1-12				
TenureTrack	31	22	9	29.0%
Research	3	3	0	0.0%
Postdoc	12	12	0	0.0%
Teaching	28	28	0	0.0%
U.S. CS 13-24				
TenureTrack	23	11	12	52.2%
Research	2	1	1	50.0%
Postdoc	11	8	3	27.3%
Teaching	18	13	5	27.8%
U.S. CS 25-36				
TenureTrack	37	26	11	29.7%
Research	9	5	4	44.4%
Postdoc	23	19	4	17.4%
Teaching	18	12	6	33.3%
U.S. CS Other				
TenureTrack	320	247	72	22.5%
Research	95	95	0	0.0%
Postdoc	52	47	5	9.6%
Teaching	67	64	3	4.5%
U.S. CS Total				
TenureTrack	411	306	104	25.3%
Research	109	104	5	4.6%
Postdoc	98	86	12	12.2%
Teaching	131	117	14	10.7%
U.S. CE				
TenureTrack	15	11	4	26.7%
Research	33	33	0	0.0%
Postdoc	8	8	0	0.0%
Teaching	54	54	0	0.0%
U.S. Information				
TenureTrack	52	39	13	25.0%
Research	19	16	3	15.8%
Postdoc	6	6	0	0.0%
Teaching	0	0	0	
Canadian				
TenureTrack	27	13	14	51.9%
Research	4	4	0	0.0%
Postdoc	20	20	0	0.0%
Teaching	54	50	4	7.4%
Total				
TenureTrack	505	369	135	26.7%
Research	165	157	8	4.8%
Postdoc	132	120	12	9.1%
Teaching	239	221	18	7.5%

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Table 19. Gender of Newly Hired Faculty

	Tenure-track		Researcher		Postdoc		Teaching Faculty		Total	
Male	150	78.1%	53	76.8%	127	85.8%	63	68.5%	393	78.4%
Female	42	21.9%	16	23.2%	21	14.2%	23	25.0%	102	20.4%
	0		0		0		6		6	
Total	192		69		148		92		501	

Table 20. Ethnicity of Newly Hired Faculty

	Tenure-Track		Researcher		Postdoc		Teaching Faculty		Total	
Nonresident Alien	39	21.8%	22	37.3%	52	41.9%	6	6.5%	119	
American Indian or Alaska Native	2	1.1%	0	0.0%	0	0.0%	2	2.2%	4	
Asian	37	20.7%	6	10.2%	17	13.7%	18	19.6%	78	
Black or African-American	6	3.4%	0	0.0%	3	2.4%	3	3.3%	12	
Native Hawaiian or Pacific Islander	3	1.7%	1	1.7%	2	1.6%	0	0.0%	6	
White	88	49.2%	25	42.4%	44	35.5%	51	55.4%	208	
Multiracial, not Hispanic	1	0.6%	1	1.7%	1	0.8%	0	0.0%	3	
Resident Hispanic, any race	2	1.1%	2	3.4%	2	1.6%	2	2.2%	8	
Resident, race/ethnicity unknown	1	0.6%	2	3.4%	3	2.4%	10	10.9%	16	
Total have Residency Data for	179		59		124		92		454	
Residency Unknown	13		10		24		0		47	
Total	192		69		148		92		501	

Table 21. Gender of Current Faculty

	Full		Associate		Assistant		Teaching Faculty		Research Faculty		Postdocs		Total	
Male	1,879	88.3%	1,365	84.6%	882	78.3%	507	72.8%	354	82.7%	386	85.4%	5,373	83.4%
Female	248	11.7%	248	15.4%	245	21.7%	189	27.2%	74	17.3%	66	14.6%	1,070	16.6%
Total gender known	2,127		1,613		1,127		696		428		452		6,443	
Gender unknown	0		0		0		0		0		0		0	
Total	2,127		1,613		1,127		696		428		452		6,443	

Table 22. Ethnicity of Current Faculty

	Full		Associate		Assistant		Teaching Faculty		Research Faculty		Postdocs		Total	
Nonresident Alien	10	0.5%	28	1.9%	166	15.8%	26	4.2%	55	14.4%	183	47.2%	468	8.0%
American Indian or Alaska Native	12	0.6%	10	0.7%	13	1.2%	2	0.3%	0	0.0%	0	0.0%	37	0.6%
Asian	407	20.9%	319	22.1%	313	29.8%	54	8.7%	37	9.7%	72	18.6%	1,202	20.6%
Black or African-American	14	0.7%	20	1.4%	21	2.0%	16	2.6%	1	0.3%	3	0.8%	75	1.3%
Native Hawaiian or Pacific Islander	24	1.2%	30	2.1%	10	1.0%	2	0.3%	11	2.9%	0	0.0%	77	1.3%
White	1,442	74.1%	999	69.2%	510	48.6%	513	82.6%	272	71.2%	124	32.0%	3,860	66.2%
Multiracial, not Hispanic	4	0.2%	0	0.0%	2	0.2%	1	0.2%	1	0.3%	0	0.0%	8	0.1%
Resident Hispanic, any race	32	1.6%	38	2.6%	14	1.3%	7	1.1%	5	1.3%	6	1.5%	102	1.7%
Total have Residency Data for	1,945		1,444		1,049		621		382		388		5,829	
Resident, race/ethnicity unknown	45		54		30		24		20		27		200	
Residency Unknown	137		115		48		51		26		37		414	
Total	2,127		1,613		1,127		696		428		452		6,443	

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	Total
Full Professor	104
Associate Professor	39
Assistant Professor	33
Teaching Faculty	191
Research Faculty	53
Postdoctorate	12
Total	432

	Total
Died	8
Retired	71
Took Academic Position Elsewhere	97
Took Nonacademic Position	50
Remained, but Changed to Part-Time	10
Other	20
Unknown	19
Total	275

market. U.S. CS departments ranked 13-24 and Canadian departments filled only about half of their vacant positions.

There was a slight increase in the number of reported retirements this year, and in the number of faculty who went to other than an academic position. However, in general, the distribution of faculty losses was similar to last year (Table 23).

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

Table 24-1 shows the department's total expenditure (including indirect costs or "overhead" as stated on project budgets) from external sources of support. Table 24-2 shows the per capita expenditure, where capitation is computed two ways. The first is relative to the number of tenured and

tenure-track faculty members. The second is relative to researchers and postdocs as well as tenured and tenure-track faculty. Canadian levels are shown in Canadian dollars. The data indicate that the higher the ranking, the more external funding is received by the department (both in total and per capita).

Mean total expenditures increased this year in all CS ranking strata except U.S. departments ranked 25-36. Median total expenditures increased in all U.S. CS ranking strata. Canadian departments also showed strong increases in both mean and median expenditures. U.S. departments also generally improved with respect to median per-capita expenditures, as did Canadian departments, although median expenditures using the second capitation method declined in U.S. departments ranked 13-24.

Table 25 shows the number of graduate students supported as full-time students as of fall 2007, further categorized as teaching assistants (TAs), research assistants (RAs), fellows, or computer systems supporters, and split between those on institutional vs. external funds. The number of TAs in CS departments increased significantly this year, except in U.S. departments ranked 13-24. There also was an increase in the total number of RAs this year, except at U.S. departments ranked 1-12. However, the number of RAs supported on external funds declined

at U.S. departments ranked 1-12 and 25-26, while the number increased at U.S. departments ranked 13-24 and departments not ranked in the top 36. Lower-ranked departments had more RAs on institutional funds this year compared to last year, while higher-ranked departments had fewer.

The number of externally supported, full-support fellows increased at U.S. departments ranked 1-12 and 25-36, and at Canadian departments (it had declined last year in these strata). This statistic held steady at U.S. departments not ranked in the top 36 and declined at U.S. departments ranked 13-24.

Respondents were asked to "provide the net amount (as of fall 2008) of an academic-year stipend for a first-year doctoral student (not including tuition or fees)." The results are shown in Table 26. Canadian stipends are shown in Canadian dollars. The data show another year of healthy stipend increases for TAs at U.S. departments ranked 1-36 and at Canadian departments, with flat stipend levels at U.S. departments not ranked in the top 36. RA stipends were higher across the board. Fellow stipends at U.S. CS departments showed very modest increases compared to last year.

Department, Rank	Total Expenditure			
	Minimum	Mean	Median	Maximum
U.S. CS 1-12	\$2,500,000	\$21,571,193	\$15,740,448	\$86,816,024
U.S. CS 13-24	\$3,240,261	\$10,379,856	\$8,792,080	\$23,010,127
U.S. CS 25-36	\$191,795	\$6,222,737	\$5,354,924	\$18,988,249
U.S. CS Other	\$20,916	\$3,595,794	\$2,261,529	\$41,862,000
U.S. CE	\$17,086	\$2,066,014	\$2,132,428	\$4,305,407
U.S. Information	\$429,319	\$2,545,944	\$2,621,243	\$5,422,000
Canadian	\$277,064	\$5,453,227	\$2,435,888	\$40,913,179

Department, Rank	Per Capita Expenditure (Tenure-Track Faculty Only)				Per Capita Expenditure (Tenure-Track, Research, and Postdoctorate Faculty)			
	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
U.S. CS 1-12	\$166,667	\$414,109	\$384,427	\$1,009,489	\$151,515	\$330,659	\$367,347	\$607,105
U.S. CS 13-24	\$159,713	\$300,398	\$298,488	\$500,220	\$126,952	\$217,539	\$216,594	\$296,958
U.S. CS 25-36	\$11,987	\$175,895	\$169,447	\$313,603	\$11,987	\$142,795	\$141,761	\$301,858
U.S. CS Other	\$1,609	\$160,152	\$116,451	\$1,610,077	\$1,494	\$134,470	\$91,488	\$1,268,638
U.S. CE	\$4,272	\$113,949	\$110,664	\$275,000	\$4,272	\$99,170	\$90,355	\$235,714
U.S. Information	\$20,444	\$99,245	\$90,174	\$209,546	\$20,444	\$81,363	\$62,597	\$198,972
Canadian	\$12,594	\$194,669	\$67,880	\$1,740,986	\$11,083	\$163,414	\$61,399	\$1,435,550

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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	
U.S. CS 1-12	538	21.5%	73	2.9%	210	8.4%	0	0.0%	78	3.1%	0	0.0%	1,329	53.0%	236	9.4%	0	0.0%	42	1.7%
U.S. CS 13-24	284	19.5%	56	3.8%	89	6.1%	0	0.0%	2	0.1%	58	4.0%	884	60.7%	64	4.4%	0	0.0%	20	1.4%
U.S. CS 25-36	438	33.5%	284	21.7%	69	5.3%	7	0.5%	1	0.1%	20	1.5%	429	32.8%	57	4.4%	0	0.0%	2	0.2%
U.S. CS Other	1,933	35.6%	790	14.6%	185	3.4%	57	1.1%	141	2.6%	17	0.3%	2,150	39.6%	118	2.2%	10	0.2%	27	0.5%
U.S. CS Total	3,193	29.8%	1,203	11.2%	553	5.2%	64	0.6%	222	2.1%	95	0.9%	4,792	44.8%	475	4.4%	10	0.1%	91	0.9%
U.S. CE	98	26.4%	59	15.9%	10	2.7%	0	0.0%	1	0.3%	1	0.3%	190	51.2%	12	3.2%	0	0.0%	0	0.0%
U.S. Information	65	23.7%	19	6.9%	18	6.6%	34	12.4%	2	0.7%	0	0.0%	112	40.9%	24	8.8%	0	0.0%	0	0.0%
Canadian	648	45.1%	331	23.1%	36	2.5%	2	0.1%	63	4.4%	4	0.3%	308	21.4%	42	2.9%	0	0.0%	2	0.1%
Total	4,004	31.3%	1,612	12.6%	617	4.8%	100	0.8%	288	2.3%	100	0.8%	5,402	42.3%	553	4.3%	10	0.1%	93	0.7%

Table 26-1. Fall 2008 Academic-Year Graduate Stipends by Department Type and Rank

Department, Rank	Teaching Assistantships				Research Assistantships			
	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
U.S. CS 1-12	10,400	19,564	20,025	33,274	16,029	22,380	20,124	44,640
U.S. CS 13-24	4,756	16,470	16,636	26,100	16,324	20,677	20,052	26,000
U.S. CS 25-36	14,000	16,954	16,373	19,547	14,000	16,977	16,373	19,759
U.S. CS Other	1,082	14,289	14,850	22,080	1,352	16,071	16,000	30,000
U.S. CE	1,372	11,219	13,333	18,800	1,372	12,016	13,300	22,320
U.S. Information	15,759	18,149	17,250	23,000	15,759	19,799	19,500	24,203
Canadian	2,000	10,978	12,640	19,233	5,500	15,220	14,930	25,000

Table 26-2. Fall 2008 Academic-Year Graduate Stipends by Department Type and Rank

Department, Rank	Full-Support Fellows				Assistantships for Computer Systems Support			
	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	Maximum
U.S. CS 1-12	18,320	21,730	20,124	28,320	*	*	*	*
U.S. CS 13-24	16,324	21,452	20,600	26,673	*	*	*	*
U.S. CS 25-36	5,000	18,763	19,152	30,000	*	*	*	*
U.S. CS Other	5,500	18,703	18,236	30,000	1,439	12,648	13,950	18,000
U.S. CE	13,500	17,500	18,000	21,000	*	*	*	*
U.S. Information	15,759	21,427	19,902	30,000	*	*	*	*
Canadian	6,900	17,088	16,725	28,000	*	*	*	*

Table 26-3. Fall 2008 Academic-Year Graduate Stipends by Department Type and Rank

Department, Rank	Other Assistantships			
	Minimum	Mean	Median	Maximum
U.S. CS 1-12	18,320	22,940	23,220	27,000
U.S. CS 13-24	*	*	*	*
U.S. CS 25-36	*	*	*	*
U.S. CS Other	1,800	12,314	13,800	22,080
U.S. CE	*	*	*	*
U.S. Information	*	*	*	*
Canadian	*	*	*	*

Faculty Salaries (Tables 27-34)

Each department was asked to report individual (but anonymous) faculty salaries if possible; otherwise, the department was requested to provide 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, 2009. For U.S. departments, nine-month salaries are reported in U.S. 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 tables contain data about ranges and measures of central tendency only. Those departments reporting individual salaries were provided more comprehensive distributional information in December 2008. Again this year, 85% of those reporting salary data provided salaries at the individual level.

Last year, we began providing salary data based on time in rank. This year, we reduced the number of time-in-rank strata somewhat as our experience last year indicated that more strata did not provide additional meaningful information.

The minimum and maximum of the reported salary minima (and maxima) are self-explanatory. The

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Table 27. Nine-month Salaries, 146 Responses of 183 U.S. CS Computer Science Departments

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	449	\$77,750	\$119,730	\$188,000	\$139,795	\$137,415	\$86,285	\$165,660	\$311,013
Full, in rank 8-15 years	458	\$81,070	\$120,714	\$213,333	\$136,823	\$134,740	\$92,847	\$157,409	\$254,667
Full, in rank 0-7 years	542	\$83,343	\$114,523	\$210,000	\$129,691	\$127,396	\$86,015	\$152,633	\$300,000
Full, yrs in rank not given	138	\$90,900	\$188,904	\$191,304	\$138,851	\$134,754	\$133,929	\$170,451	\$229,257
Full Professor: total	1,587	\$77,750			\$135,404				\$311,013
Assoc, in rank 8 years +	310	\$51,150	\$90,680	\$149,048	\$97,589	\$97,439	\$60,618	\$105,719	\$198,187
Assoc, in rank 0-7 years	683	\$71,753	\$94,557	\$147,109	\$101,582	\$100,632	\$82,917	\$111,766	\$164,226
Assoc yrs in rank not given	164	\$69,124	\$88,494	\$110,828	\$101,318	\$101,711	\$94,950	\$114,956	\$139,740
Assoc Professor: total	1,157	\$51,150			\$100,475				\$198,187
Assistant Professor	872	\$56,962	\$84,609	\$130,267	\$89,103	\$88,769	\$72,625	\$94,404	\$138,000
Non-Tenure-Track									
Teaching Faculty	508	\$30,627	\$59,535	\$139,950	\$68,730	\$67,223	\$35,929	\$82,570	\$182,550
Research Faculty	344	\$24,780	\$69,128	\$138,000	\$87,357	\$84,894	\$49,500	\$113,521	\$280,088
Postdoctorates	273	\$23,435	\$42,659	\$75,000	\$48,546	\$48,500	\$30,000	\$56,771	\$150,000

Table 28. Nine-month Salaries, 10 Responses of 12 U.S. Computer Science Departments Ranked 1-12

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	59	\$104,922	\$137,174	\$184,625	\$169,138	\$165,405	\$146,957	\$211,083	\$260,850
Full, in rank 8-15 years	80	\$103,549	\$123,035	\$175,550	\$153,348	\$149,730	\$134,676	\$198,861	\$224,887
Full, in rank 0-7 years	72	\$96,075	\$115,456	\$152,900	\$132,491	\$131,310	\$130,000	\$159,600	\$183,500
Full, yrs in rank not given	37	*	\$120,300	*	\$145,651	\$144,100	*	\$184,000	*
Full Professor: total	248	\$96,075			\$149,901				\$260,850
Assoc, in rank 8 years +	5	*	*	*	\$101,617	*	*	*	*
Assoc, in rank 0-7 years	85	\$80,729	\$99,156	\$125,500	\$111,692	\$110,633	\$110,000	\$125,310	\$147,500
Assoc yrs in rank not given	16	*	\$97,000	*	\$109,500	\$106,700	*	\$126,100	*
Assoc Professor: total	106	\$80,729			\$110,886				\$147,500
Assistant Professor	86	\$70,967	\$87,677	\$96,500	\$95,010	\$94,770	\$94,150	\$102,694	\$137,543
Non-Tenure-Track									
Teaching Faculty	58	\$37,331	\$74,330	\$139,950	\$93,901	\$93,479	\$71,236	\$114,755	\$182,550
Research Faculty	50	\$63,809	\$76,629	\$99,600	\$107,632	\$102,336	\$91,629	\$150,961	\$238,770
Postdoctorates	71	\$24,750	\$43,941	\$60,000	\$53,072	\$53,337	\$50,456	\$63,285	\$75,000

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

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

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	75	\$82,051	\$128,716	\$180,613	\$170,216	\$165,280	\$166,900	\$217,858	\$311,013
Full, in rank 8-15 years	70	\$81,070	\$139,620	\$183,300	\$168,074	\$165,607	\$160,000	\$199,878	\$254,667
Full, in rank 0-7 years	62	\$98,400	\$124,207	\$160,000	\$149,899	\$146,340	\$141,080	\$185,311	\$279,600
Full, yrs in rank not given	14	*	\$115,533	*	\$158,243	\$156,540	*	\$188,873	*
Full Professor	221	\$81,070			\$163,079				\$311,013
Assoc, in rank 8 years +	21	\$74,473	\$109,845	\$149,048	\$115,266	\$116,115	\$89,100	\$119,609	\$149,048
Assoc, in rank 0-7 years	71	\$92,000	\$106,597	\$147,109	\$114,220	\$112,192	\$109,500	\$127,699	\$160,896
Assoc yrs in rank not given	9	*	\$110,828	*	\$122,694	\$125,769	*	\$134,312	*
Assoc Professor: total	101	\$74,473			\$115,193				\$160,896
Assistant Professor	64	\$87,400	\$93,721	\$130,267	\$98,253	\$97,980	\$94,150	\$102,694	\$137,543
Non-Tenure-Track									
Teaching Faculty	42	\$56,500	\$74,505	\$95,500	\$85,319	\$83,274	\$73,862	\$102,640	\$164,404
Research Faculty	107	\$28,917	\$77,526	\$129,348	\$100,472	\$97,832	\$72,800	\$280,088	\$132,797
Postdoctorates	61	\$31,122	\$43,962	\$54,500	\$55,219	\$55,185	\$54,500	\$67,393	\$94,836

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

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 "average of dept median salaries" at each rank is computed by summing the individual medians reported at each

rank and dividing by the number of departments reporting at that rank. Thus, it is not a true median of all the salaries. Similarly, "average of dept. mean salaries" at each

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

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	56	\$96,700	\$111,070	\$136,350	\$143,290	\$138,468	\$128,201	\$189,105	\$217,360
Full, in rank 8-15 years	47	\$104,202	\$115,161	\$130,977	\$139,801	\$135,430	\$124,419	\$169,933	\$211,334
Full, in rank 0-7 years	89	\$95,600	\$113,508	\$126,300	\$150,938	\$147,150	\$117,900	\$209,785	\$300,000
Full, yrs in rank not given	16	*	\$118,000	*	\$133,150	\$145,849	*	\$225,000	*
Full Professor	208	\$95,600			\$144,944				\$300,000
Assoc, in rank 8 years +	28	\$70,516	\$90,205	\$104,158	\$99,225	\$95,972	\$91,633	\$111,918	\$163,900
Assoc, in rank 0-7 years	87	\$85,960	\$94,812	\$106,000	\$106,011	\$103,827	\$94,561	\$117,983	\$143,172
Assoc yrs in rank not given	6	\$95,200	*	*	\$113,133	\$115,650	*	*	\$125,200
Assoc Professor: total	121	\$70,516			\$104,794				\$125,200
Assistant Professor	100	\$70,000	\$86,240	\$102,278	\$91,699	\$90,248	\$85,947	\$98,070	\$105,000
Non-Tenure-Track									
Teaching Faculty	49	\$43,260	\$59,862	\$88,300	\$75,663	\$71,763	\$60,000	\$101,687	\$158,628
Research Faculty	56	\$31,750	\$65,500	\$106,000	\$84,493	\$79,962	\$66,100	\$119,593	\$238,154
Postdoctorates	28	\$30,195	\$41,906	\$54,000	\$46,642	\$46,700	\$30,195	\$53,148	\$81,600

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

Table 31. Nine-month Salaries, 112 Responses of 147 U.S. Computer Science Departments Ranked Higher than 36 or Unranked

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	259	\$77,750	\$117,617	\$188,000	\$132,137	\$130,520	\$86,285	\$151,596	\$252,995
Full, in rank 8-15 years	261	\$88,156	\$118,492	\$198,462	\$130,448	\$128,823	\$92,847	\$146,080	\$222,000
Full, in rank 0-7 years	319	\$83,343	\$113,404	\$210,000	\$124,347	\$122,528	\$86,015	\$141,239	\$294,156
Full, yrs in rank not given	71	\$90,900	\$119,125	\$229,257	\$136,294	\$132,483	\$133,929	\$163,796	\$229,257
Full Professor: total	910	\$72,983			\$129,246				\$266,667
Assoc, in rank 8 years +	256	\$51,150	\$88,320	\$124,000	\$95,354	\$95,403	\$60,618	\$103,753	\$198,187
Assoc, in rank 0-7 years	440	\$71,753	\$92,873	\$124,000	\$98,829	\$98,185	\$82,917	\$108,228	\$164,226
Assoc yrs in rank not given	133	\$69,124	\$85,081	\$102,400	\$97,556	\$97,803	\$94,950	\$111,253	\$139,740
Assoc Professor: total	829	\$51,150			\$97,552				\$198,187
Assistant Professor	622	\$56,962	\$83,131	\$118,000	\$87,216	\$87,007	\$72,625	\$92,526	\$138,000
Non-Tenure-Track									
Teaching Faculty	359	\$30,627	\$56,314	\$107,000	\$63,441	\$62,206	\$35,929	\$74,833	\$155,600
Research Faculty	131	\$24,780	\$66,218	\$138,000	\$80,497	\$79,106	\$49,500	\$99,873	\$185,832
Postdoctorates	113	\$23,435	\$42,287	\$75,000	\$45,872	\$45,967	\$30,000	\$53,389	\$150,000

Table 32. Nine-month Salaries, 12 Responses of 32 U.S. Computer Engineering Departments

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	32	\$91,254	\$113,816	\$155,700	\$127,521	\$125,093	\$107,679	\$149,740	\$221,202
Full, in rank 8-15 years	34	\$90,900	\$123,852	\$179,600	\$138,874	\$134,856	\$133,493	\$160,923	\$200,188
Full, in rank 0-7 years	29	\$90,624	\$109,346	\$135,240	\$124,266	\$123,282	\$101,200	\$144,829	\$210,000
Full, yrs in rank not given	13	\$96,080	\$116,089	\$129,787	\$131,381	\$126,613	\$129,787	\$158,989	\$199,426
Full Professor: total	108	\$90,624			\$130,686				\$221,202
Assoc, in rank 8 years +	28	\$55,500	\$88,649	\$113,600	\$97,059	\$95,294	\$75,144	\$105,522	\$162,000
Assoc, in rank 0-7 years	53	\$78,611	\$90,286	\$98,227	\$95,734	\$94,590	\$87,004	\$103,501	\$118,850
Assoc yrs in rank not given	11	\$87,150	\$94,770	\$112,525	\$95,911	\$95,862	\$88,760	\$97,020	\$116,490
Assoc Professor: total	92	\$55,500			\$96,158				\$162,000
Assistant Professor	51	\$76,160	\$82,203	\$89,979	\$85,432	\$84,835	\$76,376	\$89,812	\$97,783
Non-Tenure-Track									
Teaching Faculty	18	\$35,250	\$59,363	\$78,018	\$64,023	\$62,225	\$32,250	\$71,061	\$136,471
Research Faculty	15	\$28,700	\$49,309	\$81,000	\$76,920	\$77,811	\$57,660	\$103,832	\$154,500
Postdoctorates	32	\$27,038	\$51,774	\$78,000	\$52,264	\$52,040	\$41,250	\$60,347	\$80,000

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Table 33. Twelve-month Salaries, 20 Responses of 30 Canadian Computer Science Departments (Canadian Dollars)

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	90	\$111,000	\$133,362	\$185,655	\$149,386	\$150,270	\$118,835	\$165,149	\$241,971
Full, in rank 8-15 years	79	\$107,369	\$128,096	\$165,054	\$142,738	\$141,682	\$115,294	\$155,244	\$197,764
Full, in rank 0-7 years	97	\$83,902	\$116,387	\$155,519	\$132,102	\$130,308	\$105,551	\$153,154	\$219,683
Full, yrs in rank not given	34	\$105,156	\$113,941	\$119,800	\$136,572	\$128,403	\$168,958	\$180,425	\$190,310
Full Professor: total	300	\$83,902			\$140,595				\$241,971
Assoc, in rank 8 years +	79	45,524	\$101,888	\$138,695	\$114,212	\$115,852	\$105,173	\$124,193	\$160,194
Assoc, in rank 0-7 years	180	\$81,630	\$101,540	\$143,490	\$109,676	\$110,161	\$95,851	\$121,372	\$161,633
Assoc yrs in rank not given	24	\$78,292	\$96,691	\$123,216	\$107,585	\$106,806	\$106,357	\$142,575	\$119,768
Assoc Professor: total	283	\$45,524			\$110,765				\$160,194
Assistant Professor	115	\$68,218	\$88,291	\$110,000	\$94,389	\$94,157	\$71,576	\$101,877	\$142,648
Non-Tenure-Track									
Teaching Faculty	73	\$44,437	\$68,550	\$89,884	\$82,026	\$80,427	\$57,703	\$99,904	\$177,784
Research Faculty	131	\$37,684	\$44,895	\$55,000	\$59,639	\$59,288	\$50,004	\$75,867	\$92,598
Postdoctorates	74	\$24,000	\$37,000	\$60,000	\$49,091	\$46,406	\$44,000	\$50,376	\$59,844

Table 34. Nine-month Salaries, 7 Responses of 19 U.S. Information Departments

Faculty Rank Tenured & Tenure-Track	Number of Faculty	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Full, in rank 16 years +	8	*	*	*	\$130,980	*	*	*	*
Full, in rank 8-15 years	14	\$107,892	*	*	\$145,165	\$139,453	*	*	\$219,960
Full, in rank 0-7 years	21	\$93,200	\$112,349	\$125,166	\$130,768	\$126,001	\$121,050	\$157,753	\$238,004
Full, yrs in rank not given	0								
Full Professor: total	43	\$93,200			\$135,495				\$177,073
Assoc, in rank 8 years +	22	\$63,268	\$82,439	\$99,402	\$101,067	\$102,380	\$94,729	\$116,318	\$167,563
Assoc, in rank 0-7 years	49	\$76,660	\$92,125	\$104,249	\$104,956	\$104,755	\$96,408	\$119,880	\$155,222
Assoc yrs in rank not given	0								
Assoc Professor: total	71	\$63,268			\$103,751				\$167,563
Assistant Professor	42	\$70,899	\$80,621	\$88,500	\$89,263	\$85,588	\$91,587	\$105,296	\$147,600
Non-Tenure-Track									
Teaching Faculty	61	\$38,520	\$60,783	\$90,558	\$78,450	\$77,524	\$77,700	\$108,076	\$207,281
Research Faculty	11	\$50,000	\$61,474	\$70,796	\$73,233	\$71,707	\$57,825	\$87,698	\$115,355
Postdoctorates	4	*	*	*	*	*	*	*	*

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

Table 35. Nine-month Salaries for New PhDs, Responding U.S. CS, CE, and I Departments

Faculty Rank	Number of New Ph.D.s	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Tenure-Track	99	\$67,266	\$84,951	\$106,076	\$86,059	\$86,319	\$67,266	\$87,387	\$165,958
Non-Tenure-Track									
Teaching Faculty	20	\$33,915	*	*	\$63,597	\$63,831	*	*	\$80,000
Research Faculty	31	\$33,480	*	*	\$68,927	\$68,421	*	*	\$106,000
Postdoctorates	92	\$30,000	*	*	\$48,959	\$49,411	*	*	\$94,836

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

Table 35a. Twelve-month Salaries for New PhDs, Responding Canadian Departments

Faculty Rank	Number of New Ph.D.s	Reported Salary Minimum			Average of Dept. Mean Salaries	Average of Dept. Median Salaries	Reported Salary Maximum		
		Minimum	Mean	Maximum			Minimum	Mean	Maximum
Tenure-Track	3	*	*	*	\$82,156	*	*	*	*
Non-Tenure-Track									
Teaching Faculty	1	*	*	*	*	*	*	*	*
Research Faculty	5	*	*	*	\$68,500	*	*	*	*
Postdoctorates	15	\$30,000	\$41,950	\$60,000	\$49,227	\$49,800	\$45,000	\$55,800	\$72,000

* Values which are too revealing of individual department information, or which provide the distribution of fewer than 10 individuals, are not shown.

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rank is computed by summing the individual means reported at each rank and dividing by the number of departments reporting at that rank. Thus, it is not a true average of all the salaries.

Overall U.S. CS average salaries (Table 27) increased between 1.6% and 4.5%, depending on tenure-track rank, and 1.4% for non-tenure-track teaching faculty. Faculty at higher rank received larger average increases than did faculty at lower rank.

The increases are lower than those experienced in the past few years for all faculty ranks except full professor.

Canadian salaries (Table 33) rose 2.3% to 4.1% among tenure-track ranks, with the largest increase at the associate professor rank and the smaller at the assistant professor rank. Non-tenure-track teaching faculty salaries for Canadian departments rose 4.4%. Except at the full professor rank, Canadian increases were larger than those observed for U.S. CS programs at the same faculty rank.

Average salaries for new Ph.D.s (those who received their Ph.D. last year and then joined departments as tenure-track faculty) increased 1.2% from those reported in last year's survey (Table 34). This is a smaller increase than was observed in each of the past two years for new Ph.D.s and, as has been the case for the past few years, is somewhat smaller than the average increases for continuing faculty. There were too few new Ph.D. salaries in Canadian departments to make meaningful comparisons.

Concluding Observations

It is encouraging to see a three-year increase in new undergraduate CS students and the increased total undergraduate enrollment. With the continued peak production of new CS Ph.D.s, the rise in the number of academic faculty positions available among the CRA departments also was welcome. However, economic conditions have changed considerably since last year. How this will affect new Ph.D. hiring in both industry and academia remains to be seen. With the exception of diversity, our discipline entered these changed economic conditions from a position of strength. This should help us cope with the times much better than most.

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 (NRC) [see <http://www.cra.org/statistics/nrcstudy2/home.html>]. New NRC rankings are anticipated later in 2009, and future Taulbee reports may be modified as a result.

The top twelve schools 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.⁴ 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, Binghamton University SUNY, Boston University, Case Western Reserve, City University of New York Graduate Center, College of William and Mary, Colorado School of Mines, Colorado State, Dartmouth, DePaul, Drexel, Florida Institute of Technology, Florida International, Florida State, George Mason, 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, Naval Postgraduate School, New Jersey Institute of Technology, New Mexico State, New Mexico Technology, North Carolina State, North Dakota State, Northeastern, Northwestern, Oakland, Ohio State, Oklahoma State, Old Dominion, Oregon State, Pace, Pennsylvania State, Polytechnic, Portland State, Rensselaer Polytechnic, Rochester Institute of Technology, Stevens Institute of Technology, Syracuse, Texas A&M, Texas Tech, Toyota Technological Institute (Chicago), Tufts, Vanderbilt, Virginia Tech, Washington State, Washington (St. Louis), Wayne State, Worcester Polytechnic, and Wright State.

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

Computer Engineering departments participating in the survey this year include: Boston

University, Clemson, Florida Institute of Technology, Iowa State, Northeastern, Princeton, Purdue, Rensselaer Polytechnic, Santa Clara, Virginia Tech; and the **Universities of:** California (Santa Cruz), Houston, New Mexico, and Southern California.

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

Information departments participating in the survey include: Drexel University, Syracuse, and **Universities of:** California (Berkeley), Illinois, Maryland (Baltimore County), Michigan, Pittsburgh, and Washington. I-programs at Indiana University and University of California (Irvine) also submitted information combined with their CS programs.

Acknowledgments

Betsy Bizot once again provided valuable assistance with the data collection, tabulation, and analysis for this survey. Thanks also to Debra Richardson and Bobby Schnabel for their assistance in modifying the survey for use with the I-schools, and to Susanne Hambrusch and Jean Smith for offering constructive comments to an earlier version of the report.

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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. Information (I) programs included here are Information Science, Information Systems, Information Technology, Informatics, and related disciplines with a strong computing component. In fall 2008, the first year these programs were surveyed as part of Taulbee, surveys were sent to CRA members, the CRA IT Deans group members, and participants in the iSchools Caucus (www.ischools.org) who met the criteria of granting Ph.D.s and being located in North America. Other I-programs that meet these criteria and would like to participate in the survey in future years are invited to contact survey@cra.org for inclusion.
3. 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 and I departments because of the low response rates.
4. 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.
5. 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 or I degrees are not ranked, and statistics are given on a separate line, apart from the rankings.
6. All ethnicity tables: Ethnic breakdowns are drawn from guidelines set forth by the U.S. Department of Education.
7. 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. ■

CRA-W Honors Irwin and Soffa



At the recent Grad Cohort meeting in San Mateo, Mary Jane Irwin and Mary Lou Soffa were honored for their role as founders/organizers of the program. CRA-W co-chair, Lori Pollock (left), made the presentations.

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