2013 Taulbee Survey

Second Consecutive Year of Record Doctoral Degree Production; Continued Strong Undergraduate CS Enrollment

By Stuart Zweben and Betsy Bizot

This article and the accompanying figures and tables present the results from the 43rd annual *CRA Taulbee Survey*[1]. The *CRA Taulbee Survey* is conducted annually by the Computing Research Association to document trends in student enrollment, degree production, employment of graduates, and faculty salaries in academic units in the United States and Canada that grant the Ph.D. in computer science (CS), computer engineering (CE) or information (I)[2]. Most of these academic units are departments, but some are colleges or schools of information or computing. In this report, we will use the term "department" to refer to the unit offering the program.

Information is gathered during the fall. Responses received by January 21, 2014 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 (2012-13). Data for new students in all categories refer to the current academic year (2013-14). Projected student production and information on faculty salaries are also for the current academic year; salaries are those effective January 1, 2014.

We surveyed a total of 266 Ph.D.-granting departments; 179 completed the online survey form, for a response rate of 67 percent. This is lower than last year's 70 percent. The response rate from the U.S. CS departments was 77 percent this year, compared with 80 percent last year. The response rates from CE, I and Canadian departments continue to be rather low. Figure 1 shows the history of response rates to the survey. Response rates are inexact because some departments provide only partial data, and some institutions provide a single joint response for multiple departments. Thus, in some tables the number of departments shown as reporting will not equal the overall total number of respondents shown in Figure 1 for that category of department.

To account for the changes in response rate, we will comment not only on aggregate totals but also on averages per department reporting or data from those departments that responded to both this year's and last year's surveys. This is a more accurate indication of the one-year changes affecting the data.

Year	US CS Depts.	US CE Depts.	Canadian	US 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	151/181 (83%)	12/32 (38%)	20/30 (67%)	9/19 (47%)	192/264 (73%)
2009	147/184 (80%)	13/31 (42%)	16/30 (53.3%)	12/20 (60%)	188/265 (71%)
2010	150/184 (82%)	12/30 (40%)	18/29 (62%)	15/22 (68%)	195/265 (74%)
2011	142/185 (77%)	13/31 (42%)	13/30 (43%)	16/21 (76%)	184/267 (69%)
2012	152/189 (80%)	11/32 (34%)	14/30 (47%)	16/26 (62%)	193/277 (70%)
2013	144/188 (77%)	10/30 (33%)	14/26 (54%)	11/22 (50%)	179/266 (67%)

Figure 1. Number of Respondents to the Taulbee Survey

Departments that responded to the survey were sent preliminary results about faculty salaries in December 2013; these results included additional distributional information not contained in this report. The CRA Board views this as a benefit of participating in the survey.

Degree, enrollment and faculty salary data for the U.S CS departments are stratified according to a) whether the institution is public or private, and b) the tenure-track faculty size of the reporting department. The faculty size strata deliberately overlap, so that data from most departments affect multiple strata. This may be especially useful to departments near the boundary of one stratum. Salary data also is stratified according to the population of the locale in which the institution is located.[3] These stratifications allow our readers to see multiple views of important data, and hopefully gain new insights from them. In addition to tabular presentations of data, we will use "box and whisker" diagrams to show medians, quartiles, and the range between the 10th and 90th percentile data points.

For the first time this year, we requested information about the gender and ethnicity of students enrolled in the bachelor's and master's programs. In previous years, we only requested this information for those enrolled in the doctoral programs, and for degree recipients at all levels. Also this year, we requested for the first time the cross-tabulations of gender by ethnicity at each degree level, for both degree recipients and those enrolled in the programs, and for current faculty. Thus, we now have information such as the number of White males who were enrolled in master's programs, or the number of African-American females who received bachelor's degrees in the previous year, or the fraction of female full professors who are Hispanic and how it compares with the fraction of male full professors who are Hispanic.

This year, we also requested for the first time information about the total students and total credit-hours taught by the departments during the previous fiscal year. The purpose is to help track total demand for computing education, including courses for non-majors. Beginning next year, we will report trends on this data.

We thank all respondents to this year's questionnaire. Departments that participated are listed at the end of this article.

Doctoral Degree Production, Enrollments and Employment
(Tables D1-D10; Figures D1-D6)

For the second straight year, overall Ph.D. production in computing programs reported by the Taulbee Survey reached an all-time high, with 1,991 degrees granted (Table D1, Figure D1). This surpasses last year's total of 1,929, representing a 3.2 percent increase. Since this year fewer departments responded to the survey, the actual increase likely is even greater. Indeed, among all departments reporting both this year and last year, the number of doctoral degrees increased by 7.9 percent. In U.S. CS departments, overall Ph.D. production was up 6.8 percent among those departments reporting both years. Again this past year, the average number of doctoral degrees per U.S. CS department is similar at public and private universities.

Women comprised 17.2 percent of CS doctoral graduates and 18 percent of all doctoral computing graduates (Table D2), both values being lower than those reported last year (17.8 percent and 19.2 percent, respectively). Gender diversity also was lower among the CE and I graduates; 11.2 percent of the CE graduates in 2012-13 were female, compared with 13.3 percent in 2011-12, and 39.8 percent of the I graduates in 2012-13 were female, compared with 44.9 percent in 2011-12.

The fraction of doctoral degrees that went to Non-resident Aliens continues to grow considerably, reaching over 58 percent in 2012-13 both in CS and overall (Table D3). In 2011-12, these values were about 50-51 percent. Only in I programs is the fraction of Non-resident Aliens below 50 percent, but this year's reported 39.4 percent still exceeds last year's reported 26.9 percent. The fraction of doctoral graduates who were American Indian or Alaska Native, Black or African American, Native Hawaiian/Pacific Islander, Hispanic, or Multiracial Non-Hispanic was a paltry 3.3 percent

Department Type	# Depts	PhDs Awarded		PhDs Next Year		Passed Qualifier		Passed Thesis (if dept has)		
		#	Avg/ Dept	#	Avg/ Dept	#	Avg/ Dept	#	# Dept	Avg/ Dept
US CS Public	105	1,230	11.7	1,339	12.8	1,300	12.4	955	81	11.8
US CS Private	36	395	11.0	446	12.4	401	11.1	210	24	8.8
US CS Total	141	1,625	11.5	1,785	12.7	1,701	12.1	1,165	105	11.1
US CE	9	92	10.2	120	13.3	95	10.6	202	7	28.9
US Info	10	65	6.5	71	7.1	54	5.4	56	7	8.0
Canadian	15	209	13.9	195	13.0	221	14.7	128	10	12.8
Grand Total	175	1,991	11.4	2,171	12.4	2,071	11.8	1,551	129	12.0

Table D1. PhD Production and Pipeline by Department Type

Figure D1. PhD Production

CRA Taulbee Survey 2013
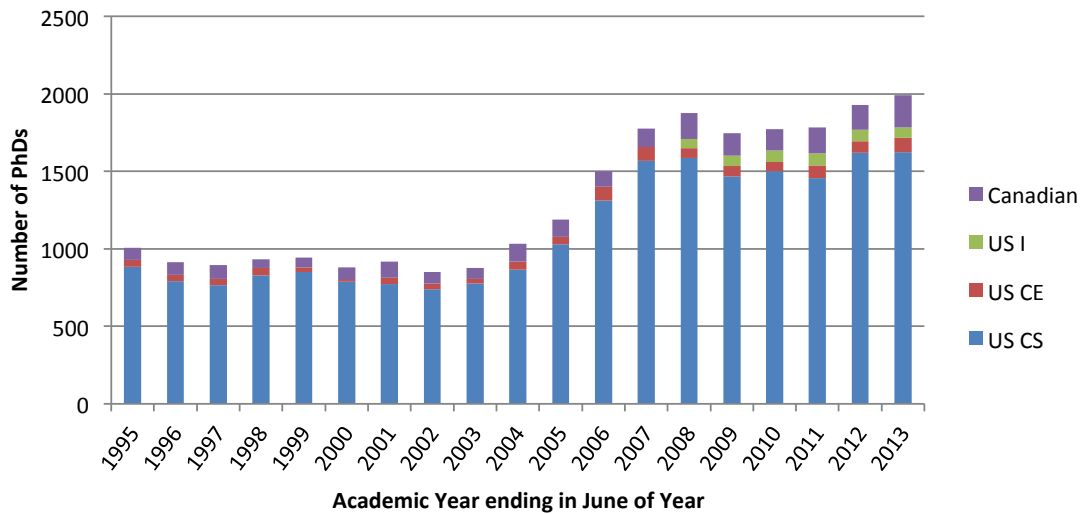
Table D2. PhDs Awarded by Gender

	CS		CE		I		Total	
Male	1,292	82.8%	183	88.8%	71	60.2%	1,546	82.0%
Female	269	17.2%	23	11.2%	47	39.8%	339	18.0%
Total Known Gender	1,561		206		118		1,885	
Gender Unknown	92		12		2		106	
Grand Total	1,653		218		120		1,991	

Table D3. PhDs Awarded by Ethnicity

	CS		CE		I		Total	
Nonresident Alien	840	58.7%	132	66.0%	43	39.4%	1,015	58.3%
Amer Indian or Alaska Native	3	0.2%	0	0.0%	0	0.0%	3	0.2%
Asian	136	9.5%	14	7.0%	15	13.8%	165	9.5%
Black or African-American	22	1.5%	0	0.0%	2	1.8%	24	1.4%
Native Hawaiian/Pac Islander	3	0.2%	0	0.0%	0	0.0%	3	0.2%
White	406	28.4%	52	26.0%	47	43.1%	505	29.0%
Multiracial, not Hispanic	2	0.1%	0	0.0%	0	0.0%	2	0.1%
Hispanic, any race	20	1.4%	2	1.0%	2	1.8%	24	1.4%
Total Residency & Ethnicity Known	1,432		200		109		1,741	
Resident, ethnicity unknown	106		16		2		124	
Residency unknown	115		2		9		126	
Grand Total	1,653		218		120		1,991	

Table D4. Employment of New PhD 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 PhD Granting Depts.																						
Tenure-track	6	0	14	6	7	8	1	6	8	11	5	13	2	4	2	0	4	10	4	10	121	7.7%
Researcher	4	1	3	4	1	3	1	2	1	0	1	5	1	0	2	2	1	5	2	7	46	2.9%
Postdoc	33	2	14	16	4	8	6	23	9	2	0	15	3	7	18	3	1	9	27	35	235	14.9%
Teaching Faculty	5	0	3	1	1	2	0	0	3	2	0	6	1	3	1	2	0	8	3	7	48	3.0%
North American, Other Academic																						
Other CS/CE/I Dept.	3	2	0	4	0	4	1	1	2	2	1	2	0	1	0	2	0	5	1	2	33	2.1%
Non-CS/CE/I Dept																						
North American, Non-Academic																						
Industry	74	6	62	42	53	31	37	21	27	14	17	77	42	34	34	15	12	83	44	151	876	55.5%
Government	7	0	2	3	2	3	7	4	5	1	0	1	0	1	2	2	0	1	0	5	46	2.9%
Self-Employed	5	0	3	2	0	1	0	0	1	1	0	1	1	0	0	0	1	1	0	4	21	1.3%
Unemployed	1	0	2	0	0	1	0	0	0	1	0	2	1	0	0	1	0	1	0	2	12	0.8%
Other	0	0	0	0	0	0	0	0	0	3	0	1	0	1	0	0	0	0	0	4	9	0.6%
Total Inside North America																						
	138	11	103	78	68	61	53	57	56	37	24	123	51	51	59	27	19	123	81	227	1,447	91.8%
Outside North America																						
Ten-Track in PhD	1	0	1	1	2	1	0	1	3	0	1	3	2	1	1	0	0	7	5	5	35	2.2%
Researcher in PhD	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	4	0.3%
Postdoc in PhD	4	0	0	0	0	1	1	1	1	0	0	0	0	3	1	0	1	0	6	0	19	1.2%
Teaching in PhD	0	0	1	2	1	0	0	1	1	1	1	2	0	0	0	0	0	0	1	1	12	0.8%
Other Academic	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	2	2	8	0.5%
Industry	6	0	4	2	2	1	2	0	0	0	0	7	0	0	2	0	1	4	3	8	42	2.7%
Government	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	4	0.3%
Other	0	1	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0	1	6	0.4%
Total Outside NA	12	2	7	5	6	4	4	5	6	2	3	14	2	4	4	0	2	11	17	20	130	8.2%
Total with Employment Data, Inside North America plus Outside North America																						
	150	13	110	83	74	65	57	62	62	39	27	137	53	55	63	27	21	134	98	247	1,577	
Employment Type & Location Unknown																						
	21	4	15	16	17	16	3	12	15	6	3	15	2	3	13	2	4	6	13	228	414	
Grand Total	171	17	125	99	91	81	60	74	77	45	30	152	55	58	76	29	25	140	111	475	1,991	

Table D4a. Detail of Industry Employment

	Artificial Intelligence	Computer-Supported Cooperative Work	Databases / Information Retrieval	Graphics/Visualization	Hardware/Architecture	Human-Computer Interaction	High-Performance Computing	Informatics: Biomedical/ 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	
Inside North America																						
Research	49	3	35	25	31	16	19	12	15	7	8	40	20	20	19	7	9	23	21	54	433	49.4%
Non-Research	10	3	14	11	13	7	6	6	4	4	6	23	12	7	7	6	3	43	8	49	242	27.6%
Postdoctorate	3	0	1	0	1	2	3	2	0	1	0	2	1	1	1	0	0	0	8	2	28	3.2%
Type Not Specified	12	0	12	6	8	6	9	1	8	2	3	12	9	6	7	2	0	17	7	46	173	19.7%
Total Inside NA	74	6	62	42	53	31	37	21	27	14	17	77	42	34	34	15	12	83	44	151	876	
Outside North America																						
Research	3	0	3	2	2	0	2	0	0	0	0	3	0	0	1	0	0	3	2	2	23	54.8%
Non-Research	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3	7	16.7%
Postdoctorate	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	4	9.5%
Type Not Specified	1	0	1	0	0	1	0	0	0	0	0	2	0	0	1	0	0	0	0	2	8	19.0%
Total Outside NA	6	0	4	2	2	1	2	0	0	0	0	7	0	0	2	0	1	4	3	8	42	

Table D5. New PhD Students by Department Type

Department Type	CS				CE				I				Total	
	New Admit	MS to PhD	Total	Avg. per Dept.	New Admit	MS to PhD	Total	Avg. per Dept.	New Admit	MS to PhD	Total	Avg. per Dept.	Total	Avg. per Dept
US CS Public	1,412	141	1,553	16.2	104	6	110	1.1	50	3	53	0.6	1,716	17.9
US CS Private	598	28	626	17.9	11	0	11	0.3	10	1	11	0.3	648	18.5
US CS Total	2,010	169	2,179	16.6	115	6	121	0.9	60	4	64	0.5	2,364	18.0
US CE	0	0	0	0.0	71	14	85	10.6	5	0	5	0.6	90	11.3
US Information	5	3	8	0.9	0	0	0	0.0	77	2	79	8.8	87	9.7
Canadian	135	21	156	11.1	27	1	28	2.0	3	0	3	0.2	187	13.4
Grand Total	2,150	193	2,343	14.5	213	21	234	1.4	145	6	151	0.9	2,728	16.8

in 2012-13 (3.4 percent for CS doctoral graduates), even worse than the 4.1 percent (4.0 percent for CS doctoral graduates) reported for 2011-12.[4]

Crosstab information of gender by ethnicity has been collected for doctoral degrees awarded since 2004 and is provided by 100% of responding departments; crosstab information for doctoral enrollment is new this year and 91% of those departments that reported any Ph.D. enrollment data provided enrollment crosstabs (Tables D9 - D10). A smaller fraction of the men who received CS doctoral degrees (9 percent) were of unknown ethnicity as compared with the fraction of women (18 percent) who were of unknown ethnicity. Among those whose ethnicity was known, about 30 percent of the men vs. 23 percent of the women were White, while 12 percent of the women vs. 8 percent of the men were Asian.

Among currently enrolled CS doctoral students whose ethnicity is known, we see a similar spread between the percent of men and the percent of women who are White; 65 percent of these women but 60 percent of these men are Non-resident Aliens. These statistics may be reflective of several Non-resident Aliens obtaining U.S. residency status during their doctoral studies; since most Non-resident Aliens come from Asian countries, they would graduate as (resident) Asians. However, since the data for enrolled students includes all students during a five year or more period, and this is the first year that we have obtained cross-

tabulations for either degrees awarded or enrollments, it will take a few more years before any such conclusion can be drawn confidently.

Among those pursuing CE doctoral degrees, 22 percent of the men but only 12 percent of the women are White, while 86 percent of the women but only 75 percent of the men are either Non-resident Aliens or Asians. There are no appreciable differences in the percentage of men vs the percentage of women in the ethnicity categories among those pursuing I doctoral degrees.

The number of students per department who passed qualifier exams during 2012-13 in U.S. CS departments is slightly lower average per department than was reported last year among public departments, but a higher average per department than was reported last year among private departments. The number per department who passed thesis candidacy exams (most, but not all, departments have such exams) decreased among U.S. CS public departments and remained constant among U.S. private departments (Table D1).

The number of new Ph.D. students in fall 2013 decreased compared with fall 2012 (Table D5, Table 1). Among all departments that reported both years, the number of new Ph.D. students declined 6.4 percent. If only U.S. CS departments that reported both years are considered, the decline was 8.1 percent. Decreases mainly were

Table D5a. New PhD Students from Outside North America

Department Type	CS	CE	I	Total New Outside	Total New	% outside North America
US CS Public	994	77	17	1,088	1,716	63.4%
US CS Private	329	8	5	342	648	52.8%
Total US CS	1,323	85	22	1,430	2,364	60.5%
US CE	0	60	3	63	90	70.0%
US Info	3	0	51	54	87	62.1%
Canadian	78	14	2	94	187	50.3%
Grand Total	1,404	159	78	1,641	2,728	60.2%

Table D6. PhD Enrollment by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	100	8,106	66.2%	518	37.3%	477	47.5%	9,101	62.2%
US CS Private	35	2,959	24.2%	69	5.0%	82	8.2%	3,110	21.2%
Total US CS	135	11,065	90.3%	587	42.3%	559	55.7%	12,211	83.4%
US CE	9	10	0.1%	682	49.2%	19	1.9%	711	4.9%
US Info	9	29	0.2%	0	0.0%	398	39.6%	427	2.9%
Canadian	15	1,143	9.3%	118	8.5%	28	2.8%	1,289	8.8%
Grand Total	168	12,247		1,387		1,004		14,638	

present in U.S. public CS departments and in Canadian departments. There was an increase again in the proportion of new doctoral students from outside North America. The proportion for fall 2013 is 60.2 percent while that reported for fall 2012 was 57.4 percent. U.S. public CS departments and I departments had increases, while Canadian departments had a decline, and US CE and US private CS departments had slight declines.

Among programs that reported both years, total doctoral enrollment fell 1.4 percent. If only U.S. computer science departments are considered, the decrease was 1.2 percent. Total doctoral enrollment by gender is in about the same proportion reported last year, except in I programs where there was a decline in the proportion of women (Table D7). There is very little change in the fraction of doctoral students who are not either Non-resident Aliens, Asian or White (Table D8).

Figure D5 shows a graphical view of the Ph.D. 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 two years 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. The graph suggests that doctoral production will be leveling off during the next few years, though for the coming year, at least, the departments are forecasting continued increased production.

Figure D6 shows the employment trend of new Ph.D.s in academia and industry, those taking employment outside of North America, and those going to academia who took positions in departments other than Ph.D.-granting CS/CE departments. Table D4 shows a more detailed breakdown of the employment data for new Ph.D.s. The fraction of new Ph.D.s who took positions in North American industry remained at 55.5 percent in 2012-13, near the historic high of 56.6 percent, set in 2007-08. This year, we also asked for information about whether or not these industry positions were research positions. Table D4a reports that breakdown. By almost a two-to-one margin, doctoral graduates who went to North American industry took research positions, though it should be noted that definitive data was provided for only 80 percent of these graduates.

Table D7. PhD Enrollment by Gender								
	CS		**CE**		**I**		**Total**	
Male	9,942	81.5%	1,171	84.4%	643	64.6%	11,756	80.6%
Female	2,264	18.5%	216	15.6%	352	35.4%	2,832	19.4%
Total Known Gender	12,206		1,387		995		14,588	
Gender Unknown	41		0		9		50	
Grand Total	12,247		1,387		1,004		14,638	

Table D8. PhD Enrollment by Ethnicity								
	CS		**CE**		**I**		**Total**	
Nonresident Alien	6,679	60.7%	891	68.5%	410	42.0%	7,980	60.1%
Amer Indian or Alaska Native	15	0.1%	1	0.1%	2	0.2%	18	0.1%
Asian	648	5.9%	99	7.6%	127	13.0%	874	6.6%
Black or African-American	145	1.3%	19	1.5%	34	3.5%	198	1.5%
Native Hawaiian/Pac Islander	11	0.1%	2	0.2%	10	1.0%	23	0.2%
White	3,268	29.7%	256	19.7%	359	36.7%	3,883	29.3%
Multiracial, not Hispanic	48	0.4%	10	0.8%	15	1.5%	73	0.5%
Hispanic, any race	184	1.7%	22	1.7%	20	2.0%	226	1.7%
Total Known	10,998		1,300		977		13,275	
Resident, ethnicity unknown	514		80		22		616	
Residency unknown	735		7		5		747	
Grand Total	12,247		1,387		1,004		14,638	

Figure D2. Nonresident Aliens as Fraction of PhD Enrollments

CRA Taulbee Survey 2013
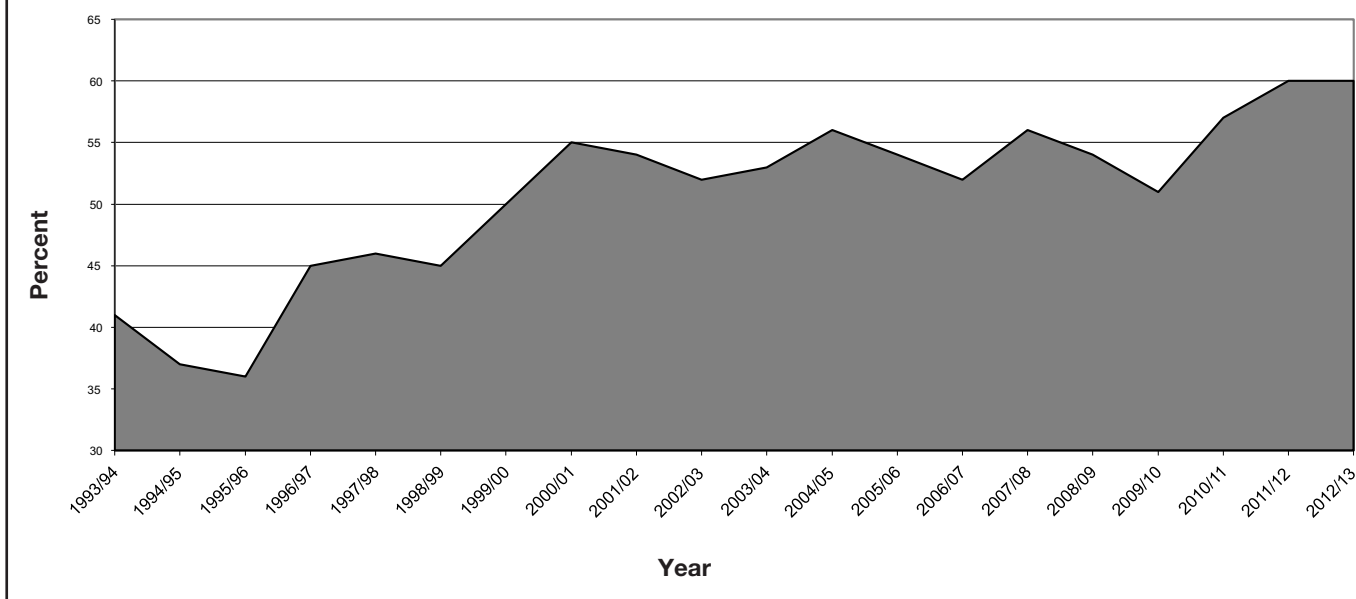
Table D9. PhDs Awarded by Gender and Ethnicity, From 175 Departments																
	CS					CE					I					Ethnicity Totals	
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	694	131	15	59	60	113	17	2	67	81	26	17		41	37	1,015	58.3
Amer Indian or Alaska Native	3	0	0	0	0	0	0	0	0	0	0	0		0	0	3	0.2
Asian	98	27	11	8	12	12	2	0	7	10	6	9	0	10	20	165	9.5
Black or African-American	12	7	3	1	3	0	0	0	0	0	2	0	0	3	0	24	1.4
Native Hawaiian/ Pac Islander	3	0	0	0	0	0	0	0	0	0	0	0		0	0	3	0.2
White	349	51	6	30	23	42	2	8	25	10	28	19		44	41	505	29.0
Multiracial, not Hispanic	2	0	0	0	0	0	0	0	0	0	0	0		0	0	2	0.1
Hispanic, any race	16	4	0	1	2	2	0	0	1	0	1	1		2	2	24	1.4
Total Res & Ethnicity Known	1,177	220	35			169	21	10			63	46	0			1,741	
Resident, ethnicity unknown	56	14	36			13	1	2			1	1				124	
Not Reported (N/R)	59	35	21			1	1				7	0	2			126	
Gender Totals	1,292	269	92			183	23	12			71	47	2			1,991	
%	82.8%	17.2%				88.8%	11.2%				60.2%	39.8%					

* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known

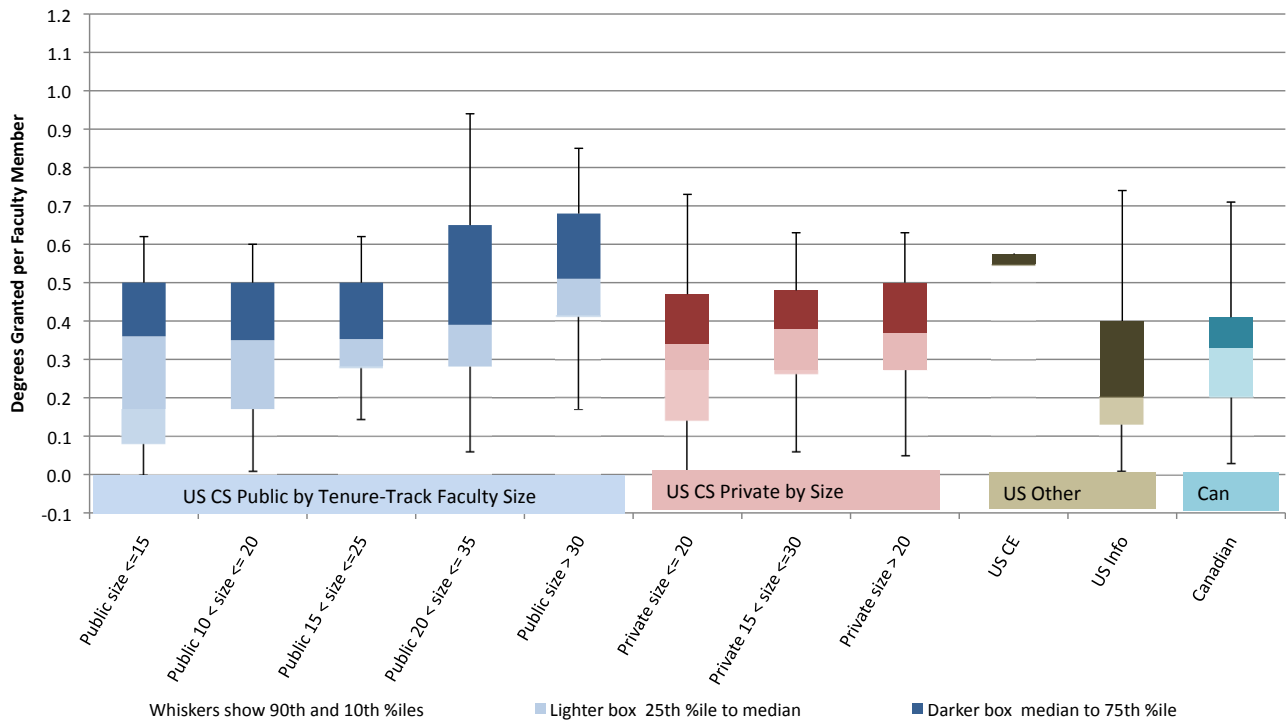## Figure D3. PhD Degrees Granted by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles   Lighter box 25th %ile to median   Darker box median to 75th %ile

Figure D4. PhD Enrollment Normalized by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles   Lighter box 25th %ile to median   Darker box median to 75th %ile
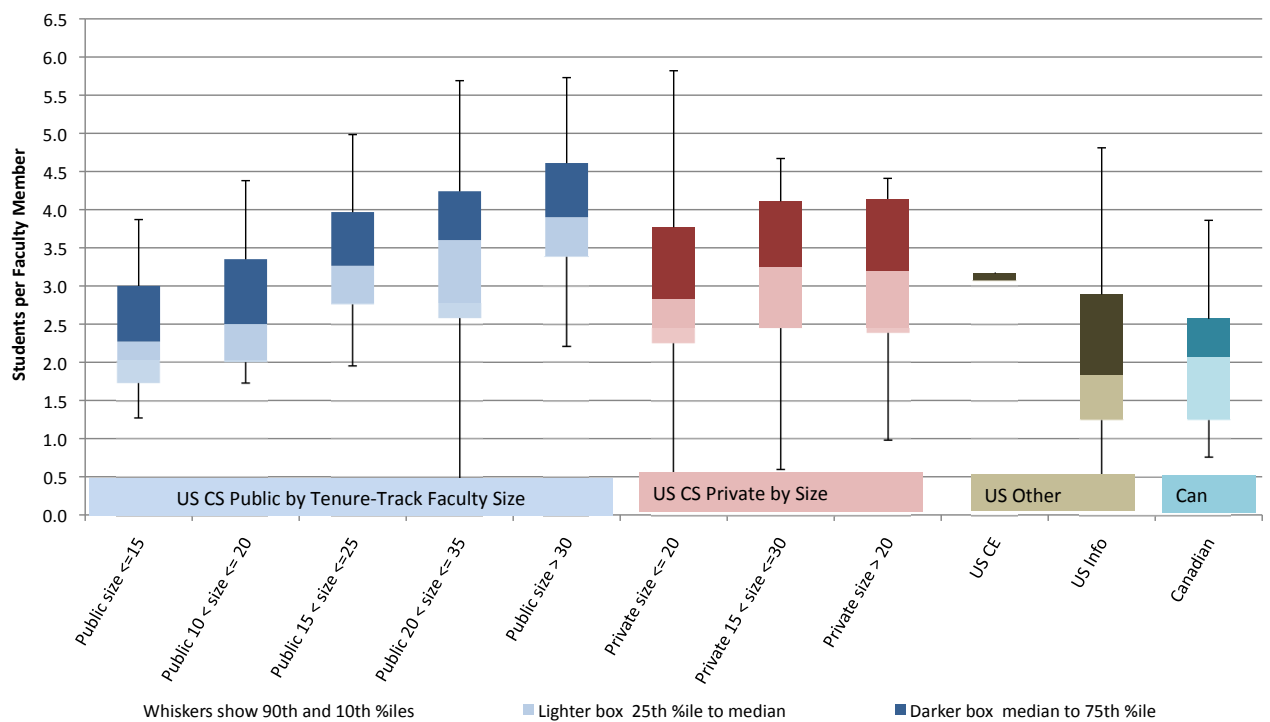
Figure D5. CS Pipeline corrected for year of entry

CRA Taulbee Survey 2013

- ■ Passed qualifier per dept
- ◆ Ph.D. production per dept
- ▲ New Ph.D. students per dept
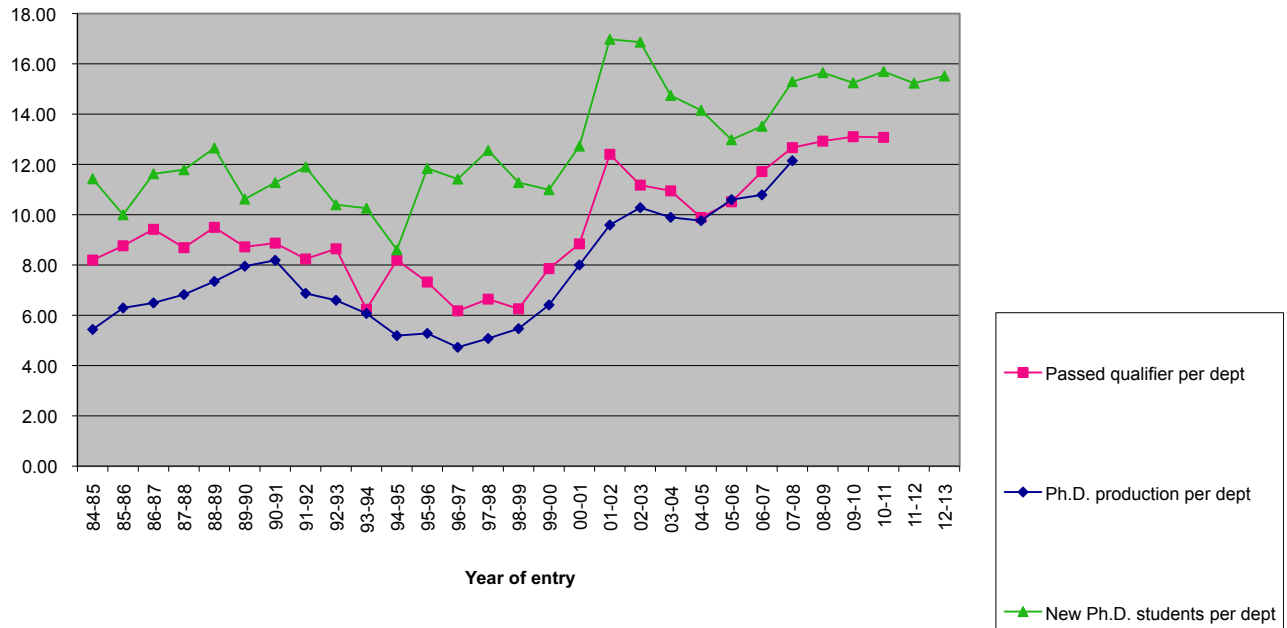
Figure D6. Employment of New Ph.D.s in U.S. and Canada

CRA Taulbee Survey 2013

- ◆ Academia (North America)
- ■ Industry (North America)
- ▲ Non-PhD Academia (North America)
- ■ Abroad
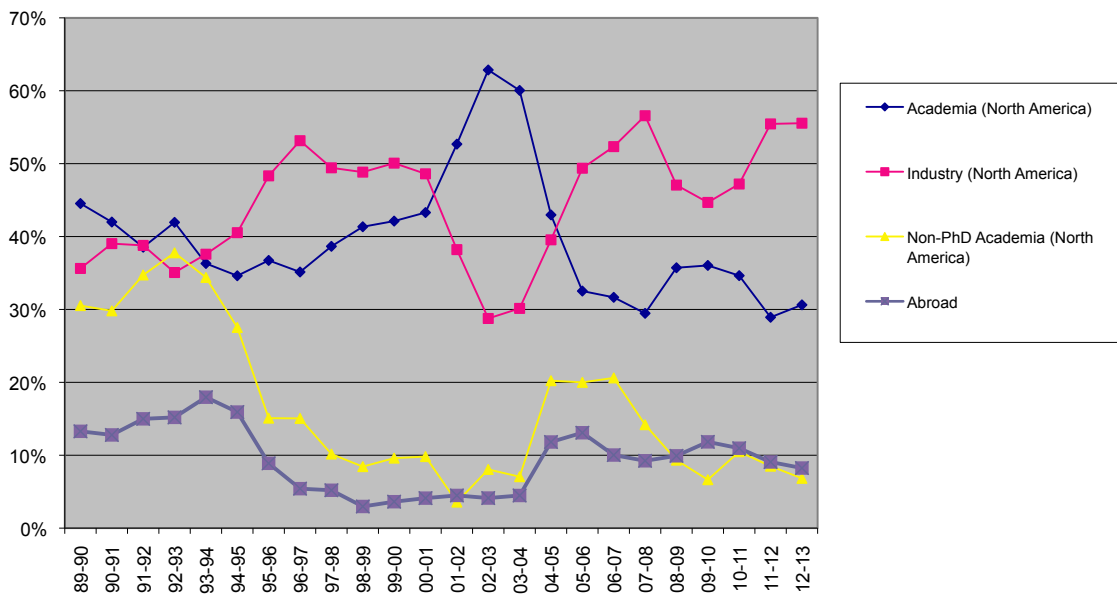
A slightly larger fraction (30.6 percent) of 2012-13 graduates took North American academic jobs as compared with 2011-12 graduates (29.1 percent). The fraction taking tenure-track positions in North American doctoral granting computing departments rose to 7.7 percent for 2012-13 graduates, from 6.6 percent for 2011-12 graduates. The fraction taking positions in North American non-Ph.D.-granting computing departments dropped again, from 2.5 percent for 2011-12 graduates to 2.1 percent for 2012-13 graduates. The fraction taking North American academic postdoctoral positions increased from 13.4 percent to 14.9 percent.

The proportion of Ph.D. graduates who were reported taking positions outside of North America, among those whose employment is known, declined again, to 8.2 percent from 9.1 percent for 2011-12 graduates. About 1/3 of those employed outside of North America went to industry (similar to last year's reported fraction), about 27 percent went to tenure-track academic positions (a higher rate than reported last year) and less than 15 percent went to academic postdoctoral positions (a lower rate than reported last year). Of the doctoral graduates who went to non-North American industry positions, the positions were research by a three-to-one margin over those that were not research. Similar to the North American breakdown, definitive data was provided for only 81 percent of these graduates.

This year, we also requested identification of graduates who went to industry postdoctoral positions. They are included in the overall industry numbers. When academic and industry postdocs are combined, the result is that 18.1 percent of 2012-13 doctoral graduates took some type of postdoctoral position. Approximately one-ninth of these were industry postdocs.

The unemployment rate for new Ph.D.s again this year was below one percent, though it rose somewhat from the reported rate for 2011-12 graduates. The fraction of new Ph.D.s whose employment status was unknown was 20.8 percent in 2012-13; in 2011-12 it was 17.7 percent. It is possible that the lack of information about the employment of more than one in six graduates skews the real overall percentages for certain employment categories.

Table D4 also indicates the areas of specialty of new Ph.D.s. Artificial intelligence, networking and software engineering continue to be the most popular areas of specialization for doctoral graduates. Databases, and theory and algorithms again were the next most popular areas.

Table D10. PhD Enrollment by Gender and Ethnicity, From 153 Departments Providing Breakdown Data																
	CS					CE					I					Ethnicity Totals	
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	5,077	1,223	0	60	65	730	144	0	68	73	229	135	0	41	43	7,538	60.2
Amer Indian or Alaska Native	13	2	0	0	0	1	0	0	0	0	1	1	0	0	0	18	0.1
Asian	472	136	0	6	7	70	27	0	7	14	67	41	9	12	13	822	6.6
Black or African-American	91	49	0	1	3	16	2	0	1	1	23	10	0	4	3	191	1.5
Native Hawaiian/ Pac Islander	10	1	0	0	0	2	0	0	0	0	6	4	0	1	1	23	0.2
White	2,624	449	0	31	24	232	24	0	22	12	209	106	0	38	34	3,644	29.1
Multiracial, not Hispanic	36	9	0	0	0	1	0	0	0	0	6	7	0	1	2	59	0.5
Hispanic, any race	157	20	0	2	1	21	1	0	2	1	11	8	0	2	3	218	1.7
Total Res & Ethnicity Known	8,480	1,889	0			1,073	198	0			552	312	9			12,513	
Resident, ethnicity unknown	360	76	41			66	14	0			15	6	0			578	
Not Reported (N/R)	25	5	0			4	1	0			0	0	0			35	
Gender Totals	8,865	1,970	41			1,143	213	0			567	318	9			13,126	
%	81.8%	18.2%				84.3%	15.7%				64.1%	35.9%					
* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known																	

Master's and Bachelor's Degree Production and Enrollments

This section reports data about enrollment and degree production for Master's and Bachelor's programs in the doctoral-granting departments. Although the absolute number of degrees and enrolled students reported herein only reflect departments that offer the doctoral degree, the trends observed in the master's and bachelor's data from these departments tend to strongly reflect trends in the larger population of programs that offer such degrees.
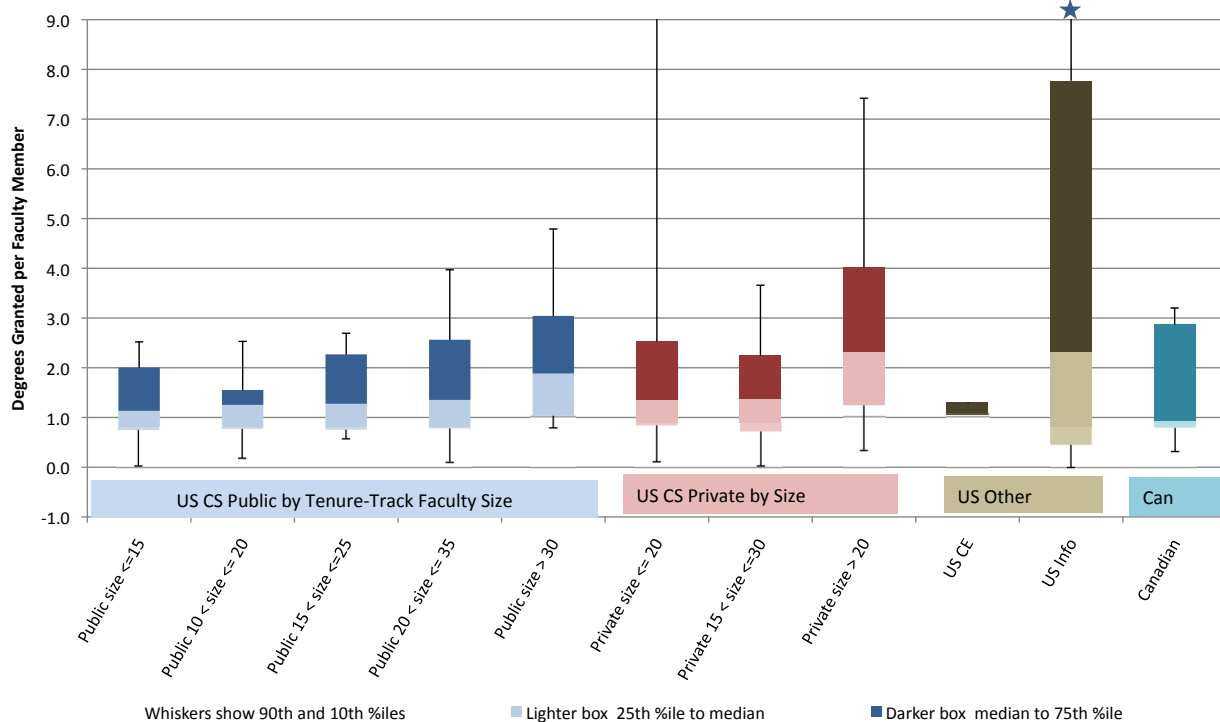
Master's (Tables M1-M8; Figures M1-M2)

On a per-department basis, master's degree production in CS increased in 2012-13. However, there was increased production among U.S. private departments, while U.S. public departments were unchanged.

Overall production of master's degrees in the information area rose in 2012-13. Both U.S. pubic and U.S. private CS departments reported substantial increases in the number of information Master's degrees produced, while information departments reported decreased production of information master's degrees.

Department Type	# Depts	CS		CE		I		Total	
US CS Public	98	3,855	53.5%	260	35.0%	832	35.0%	4,947	47.9%
US CS Private	34	2,845	39.5%	65	8.8%	439	18.5%	3,349	32.4%
Total US CS	132	6,700	93.0%	325	43.8%	1271	53.4%	8,296	80.3%
US CE	8	0	0.0%	304	41.0%	0	0.0%	304	2.9%
US Info	8	34	0.5%	0	0.0%	927	39.0%	961	9.3%
Canadian	15	471	6.5%	113	15.2%	181	7.6%	765	7.4%
Grand Total	163	7,205		742		2,379		10,326	

Table M1. Master's Degrees Awarded by Department Type

Figure M1. Master's Degrees Granted by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles   Lighter box 25th %ile to median   Darker box median to 75th %ile

The proportion of female graduates among both computer science and information master's degree recipients decreased in 2012-13. In CS, the decrease was from 22.6 percent to 21.2 percent, while in the information area the decrease was from 51.7 percent to 47.1 percent. This was the second consecutive year of a decrease of more than one percent in the proportion of female CS master's graduates.

In both CS and information, a higher fraction of the master's recipients were Non-resident Aliens in 2012-13 as compared with 2011-12. In CS, 65 percent of the master's degrees

went to Non-resident Aliens, compared with 62.3 percent in 2011-12. In the information area, the corresponding percentages were 21.9 in 2012-13 and 19.8 in 2011-12. In both CS and I, the fraction of master's degrees going to resident Asians also rose.

Among departments reporting master's degree data, 90% provided the newly-requested gender by ethnicity breakdown for degrees awarded and 88% provided the breakdown for enrollment (Tables M7 - M8). Among CS master's degree recipients whose ethnicity was known, 26 percent of the

Table M2. Master's Degrees Awarded by Gender								
	CS		CE		I		Total	
Male	5,629	78.8%	543	75.6%	1,226	52.9%	7,398	72.7%
Female	1,518	21.2%	175	24.4%	1,092	47.1%	2,785	27.3%
Total Known Gender	7,147		718		2,318		10,183	
Gender Unknown	58		24		61		143	
Grand Total	7,205		742		2,379		10,326	

Table M3. Master's Degrees Awarded by Ethnicity								
	CS		CE		I		Total	
Nonresident Alien	4,245	65.0%	434	66.7%	448	24.9%	5,127	57.1%
Amer Indian or Alaska Native	9	0.1%	3	0.5%	4	0.2%	16	0.2%
Asian	556	8.5%	53	8.1%	199	11.1%	808	9.0%
Black or African-American	65	1.0%	7	1.1%	106	5.9%	178	2.0%
Native Hawaiian/Pac Island	4	0.1%	0	0.0%	4	0.2%	8	0.1%
White	1,521	23.3%	137	21.0%	934	51.9%	2,592	28.9%
Multiracial, not Hispanic	54	0.8%	6	0.9%	29	1.6%	89	1.0%
Hispanic, any race	78	1.2%	11	1.7%	76	4.2%	165	1.8%
Total Residency & Ethnicity Known	6,532		651		1,800		8,983	
Resident, ethnicity unknown	246		84		134		464	
Residency unknown	427		7		445		879	
Grand Total	7,205		742		2,379		10,326	

Table M4. Master's Degrees Expected Next Year by Department Type									
Department Type	# Depts	CS		CE		I		Total	
US CS Public	98	3,867	56.4%	308	45.8%	538	28.3%	4,713	50.0%
US CS Private	34	2,652	38.7%	71	10.6%	391	20.6%	3,114	33.0%
Total US CS	132	6,519	95.0%	379	56.4%	929	48.8%	7,827	83.0%
US CE	8	0	0.0%	290	43.2%	0	0.0%	290	3.1%
US Info	8	39	0.6%	0	0.0%	967	50.8%	1,006	10.7%
Canadian	15	303	4.4%	3	0.4%	6	0.3%	312	3.3%
Grand Total	163	6,861		672		1,902		9,435	

men and only 13 percent of the women were White, while 75 percent of the women and 63 percent of the men were Non-resident Aliens. Similar relationships were observed among those receiving CE master's degrees. However, among I master's degree recipients whose ethnicity was known, 58 percent of women vs. 43 percent of men were White, while 30 percent of men and 21 percent of women were Non-resident Aliens, and 14 percent of men and 9 percent of women were Asians. Enrollment among master's students shows the same direction of differences between percentage of men and percentage of women in all three degree areas (CS, CE, and I). However, in I programs the amount of difference between percentage of men and percentage of women is much smaller for enrollments than it is for degrees awarded.

Again this fall, there were large increases in the number of new master's students enrolled in both U.S. CS public and U.S. CS private departments. Considerable increases at both types of U.S. CS departments exist not only for CS master's programs but also for I programs in these departments. Information departments also reported larger numbers of new master's students in their I programs, on average. These increases should be reflected in degree production statistics in the very near future.

Roughly two-thirds of the new master's students in U.S. CS departments (whether public or private), and in CE and Canadian departments, are reported to be from outside North America. This is an increase of about seven percentage points over last year's reported numbers. In the information area, the fraction of new master's students is slightly over one-third, but that also is an increase of nearly seven percentage points over last year's figure. The entire increase in overall numbers of new CS and I master's students can be accounted for by the increased number of non-North American students.

Table M5. New Master's Students by Department Type

Department Type	CS			CE			I			Total			Outside North America	
	Total	# Depts	Avg / Dept	Total	# Depts	Avg / Dept	Total	# Dept	Avg / Dept	Total	# Dept	Avg / Dept	Total	%
US CS Public	3,638	99	36.7	303	19	15.9	578	11	52.5	4,519	99	45.6	3,108	68.8%
US CS Private	2,968	34	87.3	102	7	14.6	326	4	81.5	3,396	34	99.9	2,394	70.5%
Total US CS	6,606	133	49.7	405	26	15.6	904	15	60.3	7,915	133	59.5	5,510	69.6%
US CE	0	0		298	7	42.6	0	0		298	7	42.6	198	66.4%
US Info	35	1		0	0		943	8	117.9	978	9	108.7	355	36.3%
Canadian	477	13	36.7	177	2	88.5	30	1		684	13	52.6	454	66.4%
Grand Total	7,118	147	48.4	880	35	25.1	1,877	24	78.2	9,875	162	61.0	6,517	66.0%

Table M6. Total Master's Enrollment by Department Type

Department Type	CS			CE			I			Total		
	Total	# Depts	Avg / Dept	Total	# Depts	Avg / Dept	Total	# Dept	Avg / Dept	Total	# Dept	Avg / Dept
US CS Public	8,162	95	85.9	668	18	37.1	1,379	14	98.5	10,209	95	107.5
US CS Private	6,010	32	187.8	129	6	21.5	2,011	7	287.3	8,150	32	254.7
Total US CS	14,172	127	111.6	797	24	33.2	3,390	21	161.4	18,359	127	144.6
US CE	0	0		1,023	8	127.9	0	0		1,023	8	127.9
US Info	85	1		0	0		2,108	8	263.5	2,193	8	274.1
Canadian	1,664	13	128.0	131	2	65.5	72	1		1,867	13	143.6
Grand Total	15,921	141	112.9	1,951	34	57.4	5,570	30	185.7	23,442	156	150.3

Table M7. Masters Degrees Awarded by Gender and Ethnicity, From 147 Departments Providing Breakdown Data																	
	CS					CE					I					Ethnicity Totals	
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	3,135	1,018	9	62	75	306	115	0	65	76	284	162	0	30	21	5,029	57.6
Amer Indian or Alaska Native	4	4	0	0	0	3	0	0	1	0	3	1	0	0	0	15	0.2
Asian	400	133	0	8	10	31	15	0	7	10	127	72	0	14	9	778	8.9
Black or African-American	54	10	0	1	1	5	2	0	1	1	58	42	0	6	5	171	2.0
Native Hawaiian/ Pac Islander	4	0	0	0	0	0	0	0	0	0	3	1	0	0	0	8	0.1
White	1,312	174	0	26	13	111	18	0	24	12	405	456	0	43	58	2,476	28.4
Multiracial, not Hispanic	48	3	3	1	0	6	0	0	1	0	14	15	0	2	2	89	1.0
Hispanic, any race	66	10	0	1	1	9	2	0	2	1	38	35	0	4	4	160	1.8
Total Res & Ethnicity Known	5,023	1,352	12			471	152	0			932	784	0			8,726	
Resident, Ethnicity Unknown	192	46	0			62	22	0			70	53	4			449	
Not Reported (N/R)	40	20	0			0	0	0			98	164	0			322	
Gender Totals	5,255	1,418	12			533	174	0			1,100	1,001	4			9,497	
%	78.8%	21.2%				75.4%	24.6%				52.4%	47.6%					

* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known

Figure M2. Master's Enrollment Normalized by Tenure-Track Size
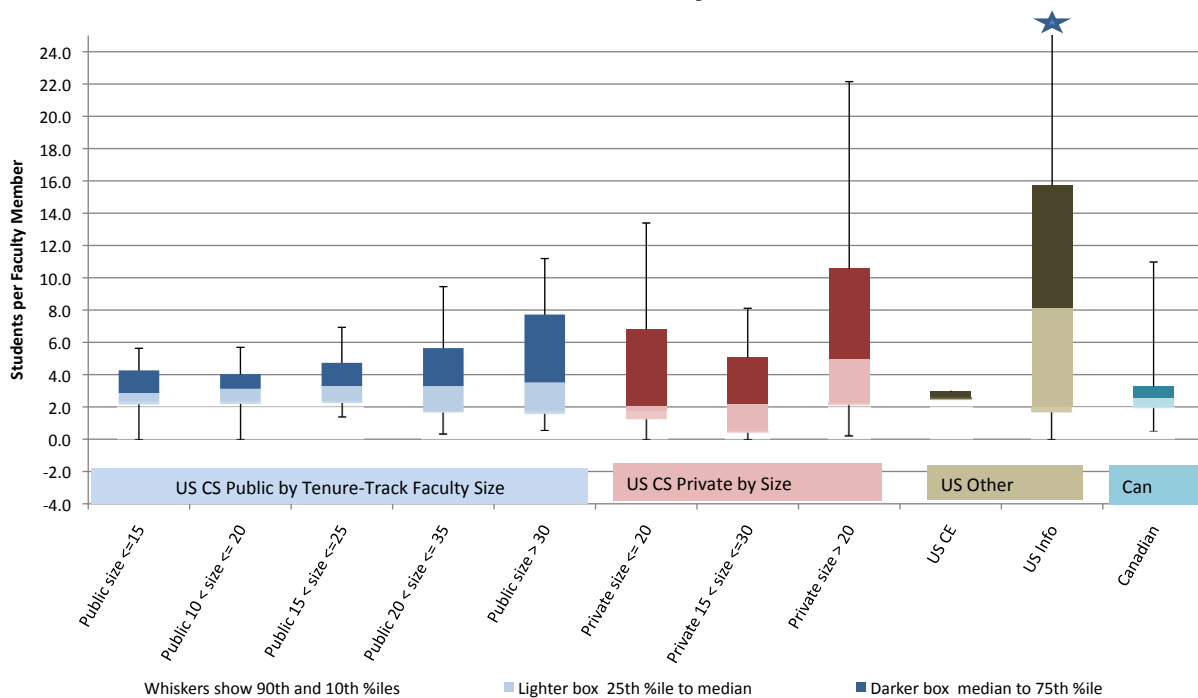
CRA Taulbee Survey 2013

Table M8. Masters Enrollment by Gender and Ethnicity, From 139 Departments Providing Breakdown Data																
	CS					CE					I					Ethnicity Totals
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	6,277	2,166	1	59	73	890	319	0	64	78	855	545	0	32	28	11,053	55.4
Amer Indian or Alaska Native	27	7	0	0	0	1	1	0	0	0	6	4	0	0	0	46	0.2
Asian	629	226	0	6	8	96	34	0	7	8	217	144	8	8	7	1,354	6.8
Black or African-American	162	66	0	2	2	18	1	0	1	0	222	161	0	8	8	630	3.2
Native Hawaiian/ Pac Islander	26	4	0	0	0	0	0	0	0	0	6	2	0	0	0	38	0.2
White	3,176	438	1	30	15	300	38	0	22	9	1,123	972	15	42	50	6,063	30.4
Multiracial, not Hispanic	62	14	0	1	0	42	10	0	3	2	46	23	0	2	1	197	1.0
Hispanic, any race	233	30	1	2	1	42	8	0	3	2	186	86	1	7	4	587	2.9
Total Res & Ethnicity Known	10,592	2,951	3			1,389	411	0			2,661	1,937	24			19,968	
Resident, Ethnicity Unknown	361	77	0			56	15	0			176	125	2			812	
Not Reported (N/R)	93	32	21			8	12	0			26	7	0			199	
Gender Totals	11,046	3,060	24			1,453	438	0			2,863	2,069	26			20,979	
%	78.3%	21.7%				76.8%	23.2%				58.0%	42.0%					
* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known																	

Bachelor's (Tables 1, B1-B8; Figures B1-B4)

After three straight years of double-digit percentage increases, bachelor's degree production increased by a smaller amount from 2011-12. When comparing all departments reporting this year to all departments reporting last year, there was an increase of only 1.2 percent, but this largely is due to the decreased response rate. If only those departments who reported both years are counted, the increase was 7.8 percent. In U.S. computer science departments there was a 3.7 percent increase overall but a 9.4 percent increase among those departments that reported both years[5].

The smaller growth in 2012-13 degree production might have been predicted by the fact that the Taulbee Survey reported very little change in the number of new CS majors among U.S. CS departments between fall 2009 and fall 2010. CS students in the U.S. CS departments comprise well over half of the total bachelor's students reported in the survey, and it takes about three years to graduate a typical newly declared major. Yet even with relatively flat new enrollment three years earlier, we see reasonable growth in degree production now. Only in I departments is there evidence of no degree increase once response rate is taken into account.

The much larger increases observed in new enrollment since 2010 bode well for future increases in undergraduate computing degree production. Indeed, this year's reporting departments forecast more than a 25 percent increase in CS degree production, between 2 and 3 percent increase in CE degrees, and approximately a 9 percent increase in I degrees.

U.S. CS departments at public universities tended to have a slightly larger rate of bachelor's degree production per faculty member than did those at private universities. Larger U.S. CS departments also tended to produce more bachelor's degrees per faculty member than did smaller departments (Figure B3).

When comparing the 2012-13 bachelor's degree data with that of 2010-11[6], we see that the fraction of women among bachelor's graduates increased in CS, from 11.7 percent in 2010-11 to 14.2 percent in 2012-13. There was a slight drop during this period in the fraction of women receiving CE and I degrees (from 11.8 percent to 11.6 percent in CE and 19.6 percent to 18.7 percent in I). The fraction of CS bachelor's degrees awarded to Whites declined from 66.9 percent in 2010-11 to 61.2 percent in 2012-13. Increases in the fraction of degrees awarded were present for Non-resident Aliens (7.0 percent to 8.3 percent), Asians (14.8 percent to 18.4 percent),

and Hispanics (5.4 percent to 6.0 percent). Smaller increases were present among Black and Multiracial graduates. The direction of change was similar for I degrees with the exception of Asians, which declined slightly between 2010-11 and 2012-13. In CE, there was a big increase during this two-year period in the fraction of Asians receiving degrees, while the other major categories of ethnicity experienced declines. In aggregate across the three degree areas, 60.6 percent of the graduates were White, 18.8 percent Asian, 7.6 percent Non-resident Aliens, and 13.0 percent all other ethnicity categories combined.

Among departments reporting bachelor's degree data, 83% provided the newly-requested gender by ethnicity breakdown for degrees awarded and 80% provided the breakdown for enrollment. (Tables B7 - B8) Among CS bachelor's degree recipients whose ethnicity was known, 64 percent of men and 50 percent of women were White, while 16 percent of men and 24 percent of women were Asian. Among CE degree recipients, there also was a greater percentage of men (57 percent) than women (37 percent) who were White, and a smaller percentage of men (25 percent) than women (38 percent) who were Asian. For I degree recipients, the corresponding percentages were 67 percent of men and

Table 1. Degree Production and Enrollment Change From Previous Year

| | Total | | | | | | Only Departments Responding Both Years | | | | | |
| | US CS Only | | | All Departments | | | US CS Only | | | All Departments | | |
PhDs	2012	2013	% chg	2012	2013	% chg	2012	2013	% chg	2012	2013	% chg
# Departments	149	135	-9.4%	186	168	-9.7%	129	129		159	159	
PhD Awarded	1,617	1,625	0.5%	1,929	1,991	3.2%	1,495	1,596	6.8%	1,777	1,917	7.9%
PhD Enrollment	13,208	12,211	-7.5%	15,648	14,638	-6.5%	12,121	11,977	-1.2%	14,316	14,117	-1.4%
New PhD Enroll	2,696	2,358	-12.5%	3,064	2,728	-11.0%	2,518	2,315	-8.1%	2,827	2,645	-6.4%
Bachelor's	2012	2013	% chg	2012	2013	% chg	2012	2013	% chg	2012	2013	% chg
# Departments	141	131	-7.1%	173	158	-8.7%	123	123		146	146	
BS Awarded	12,055	12,503	3.7%	14,901	15,087	1.2%	10,674	11,679	9.4%	13,094	14,112	7.8%
BS Enrollment	56,307	63,873	13.4%	67,850	77,653	14.4%	49,564	60,453	22.0%	59,867	72,487	21.1%
New BS Majors	17,041	17,348	1.8%	20,618	21,626	4.9%	14,175	16,122	13.7%	17,180	19,549	13.8%
BS Enroll/Dept	399.3	487.6	22.1%	392.2	491.5	25.3%	403.0	491.5	22.0%	410.0	496.5	21.1%

Table B1. Bachelor's Degrees Awarded by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	97	7,175	66.6%	1,423	66.0%	998	46.3%	9,596	63.6%
US CS Private	34	2,274	21.1%	204	9.5%	429	19.9%	2,907	19.3%
Total US CS	131	9,449	87.7%	1,627	75.5%	1,427	66.2%	12,503	82.9%
US CE	7	0	0.0%	429	19.9%	0	0.0%	429	2.8%
US Info	7	160	1.5%	0	0.0%	702	32.6%	862	5.7%
Canadian	12	1,167	10.8%	99	4.6%	27	1.3%	1,293	8.6%
Grand Total	157	10,776		2,155		2,156		15,087	

Table B2. Bachelor's Degrees Awarded by Gender

	CS		CE		I		Total	
Male	9,116	85.8%	1,852	88.4%	1,747	81.3%	12,715	85.5%
Female	1,511	14.2%	243	11.6%	402	18.7%	2,156	14.5%
Total Known Gender	10,627		2,095		2,149		14,871	
Gender Unknown	149		60		7		216	
Grand Total	10,776		2,155		2,156		15,087	

51 percent of women who were White, and 12 percent of men and 19 percent of women who were Asian. Among I degree recipients, 14 percent of the women but only 6 percent of the men were Black. Enrollment patterns in bachelor's programs mirror the degree recipient patterns with respect to direction of differences in percent of men and percent of women within these major ethnicity groups.

The number of new undergraduate computing majors rose for the sixth straight year. Even with the reduced response rate, the total number of new undergraduate majors rose 4.9 percent when all respondents are compared, and rose 13.8 percent among those departments reporting both this year and last year. Among U.S. computer science departments, the increase was 1.8 percent overall and 13.7 percent among departments reporting both this year and last year. Total undergraduate enrollment in computing majors among U.S. CS departments increased 13.4 percent in aggregate, and

22.0 percent among departments reporting both this year and last year.

Again in 2012-13, bachelor's level enrollment at public universities on a per faculty member basis was about twice as large as it is at private universities. At public universities, larger departments tended to have a slightly lower enrollment per faculty member than did smaller departments, while the reverse seemed to be true at private universities (Figure B4).

Aggregate total enrollment in CS, CE and I programs all increased. New student enrollment in computer science increased in Canadian departments and in U.S. CS private departments. New student enrollment in I programs decreased in all categories of U.S. departments. The changes in Canadian, CE and I departments are more volatile due to the small number of departments reporting in each of these areas.

Table B3. Bachelor's Degrees Awarded by Ethnicity								
	CS		**CE**		**I**		**Total**	
Nonresident Alien	698	8.3%	130	7.7%	80	4.2%	908	7.6%
Amer Indian or Alaska Native	22	0.3%	5	0.3%	6	0.3%	33	0.3%
Asian	1,545	18.4%	446	26.3%	260	13.5%	2,251	18.8%
Black or African-American	322	3.8%	67	3.9%	154	8.0%	543	4.5%
Native Hawaiian/Pac Islander	22	0.3%	7	0.4%	4	0.2%	33	0.3%
White	5,131	61.2%	922	54.3%	1,225	63.6%	7,278	60.6%
Multiracial, not Hispanic	141	1.7%	23	1.4%	17	0.9%	181	1.5%
Hispanic, any race	499	6.0%	98	5.8%	181	9.4%	778	6.5%
Total Residency & Ethnicity Known	8,380		1,698		1,927		12,005	
Resident, ethnicity unknown	498		86		81		665	
Residency unknown	1898		371		148		2,417	
Grand Total	10,776		2,155		2,156		15,087	

Table B4. Bachelor's Degrees Expected Next Year by Department Type									
Department Type	# Depts	**CS**		**CE**		**I**		**Total**	
US CS Public	97	8,477	61.3%	1,593	72.3%	1,259	53.6%	11,329	61.6%
US CS Private	34	3,104	22.4%	237	10.8%	294	12.5%	3,635	19.8%
Total US CS	131	11,581	83.7%	1,830	83.0%	1,553	66.1%	14,964	81.4%
US CE	7	0	0.0%	298	13.5%	0	0.0%	298	1.6%
US Info	7	295	2.1%	0	0.0%	715	30.5%	1,010	5.5%
Canadian	12	1,961	14.2%	76	3.4%	80	3.4%	2,117	11.5%
Grand Total	157	13,837		2,204		2,348		18,389	

Table B5. New Bachelor's Students by Department Type

Department Type	CS				CE				I				Total	
	Major	Pre-major	# Dept	Avg. Major per Dept.	Major	Pre-major	# Dept	Avg. Major per Dept.	Major	Pre-major	# Dept	Avg. Major per Dept.	Total Major	Avg. Major per Dept
US CS Public	10,774	2,943	94	114.6	2,020	670	31	65.2	726	472	26	27.9	13,520	143.8
US CS Private	3,101	586	32	96.9	344	12	10	34.8	379	3	5	75.8	3,828	119.6
US CS Total	13,875	3,529	126	110.1	2,368	682	41	57.8	1,105	475	31	35.6	17,348	137.7
US CE	0	0	0	0.0	320	137	9	53.3	0	0	0	0.0	320	53.3
US Information	294	93	1	0.0	0	0	0	0.0	417	85	6	69.5	711	101.6
Canadian	2,949	325	12	245.8	186	0	2	93.0	112	0	2	0.0	3,247	249.8
Grand Total	17,118	3,947	139	123.2	2,874	819	49	58.7	1,634	560	39	41.9	21,626	142.3

Table B6. Total Bachelor's Enrollment by Department Type

Department Type	CS				CE				I				Total	
	Major	Pre-major	# Dept	Avg. Major per Dept.	Major	Pre-major	# Dept	Avg. Major per Dept.	Major	Pre-major	# Dept	Avg. Major per Dept.	Total Major	Avg. Major per Dept
US CS Public	38,564	7,861	94	410.3	7,559	1,633	31	243.8	4,540	479	26	174.6	50,663	539.0
US CS Private	10,302	1,634	32	321.9	1,135	29	10	113.5	1,862	0	5	372.4	13,210	412.8
US CS Total	48,866	9,495	126	387.8	8,694	1,662	41	212.0	5,674	369	28	202.6	63,873	506.9
US CE	0	0	0	0.0	1,820	499	9	202.2	0	0	0	0.0	1,820	303.3
US Information	857	80	0	0.0	0	0	0	0.0	2,553	653	9	283.7	2,699	385.6
Canadian	8,352	300	13	642.5	319	0	2	159.5	0	40	0	0.0	9,261	712.4
Grand Total	58,075	9,875	139	417.8	10,833	2,161	52	208.3	8,227	1,062	37	222.4	77,653	510.9

Figure B1. BS Production (CS & CE)
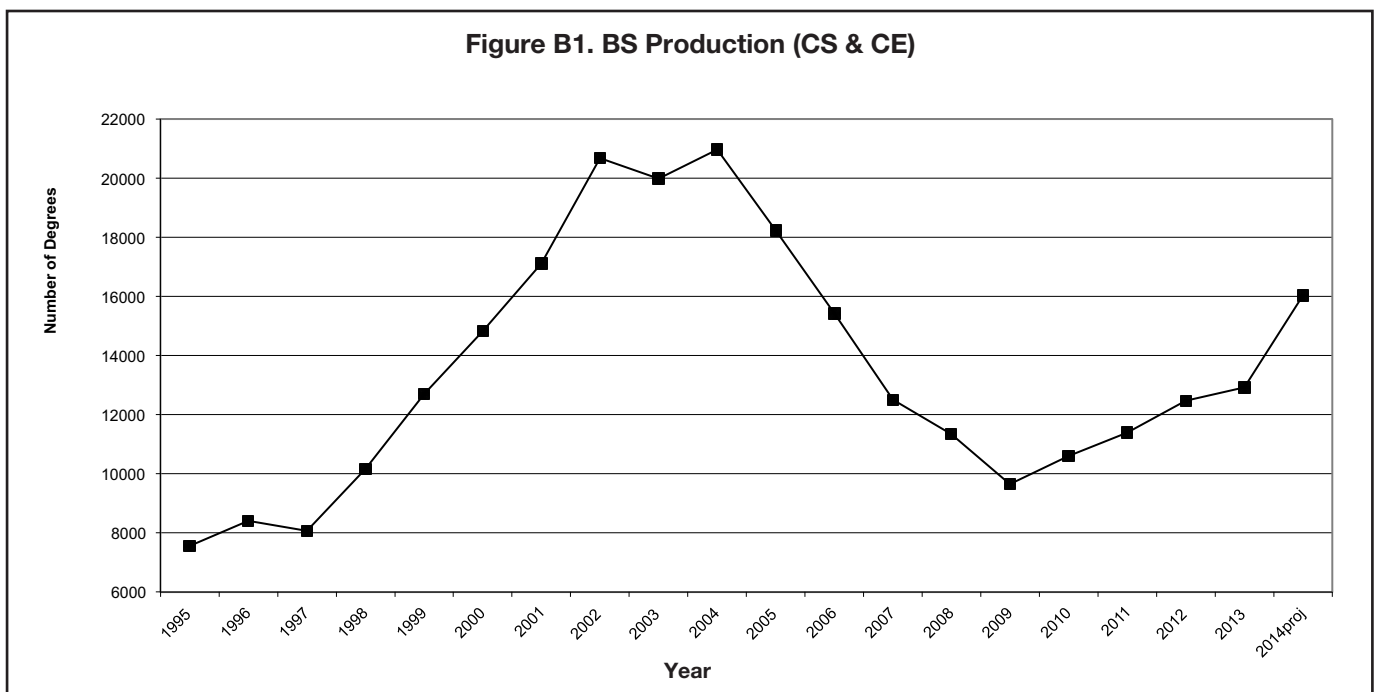
| Table B7. Bachelors Degrees Awarded by Gender and Ethnicity, From 125 Departments Providing Breakdown Data | | | | | | | | | | | | | | | | |
| | CS | | | | | CE | | | | | I | | | | | Ethnicity Totals | |
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	561	118	0	8	10	97	19	0	7	10	55	22	0	4	6	872	7.5
Amer Indian or Alaska Native	18	3	0	0	0	5	0	0	0	0	5	1	0	0	0	32	0.3
Asian	1,152	275	0	16	24	354	72	0	25	38	185	68	1	12	19	2,107	18.2
Black or African-American	251	68	0	4	6	52	15	0	4	8	88	48	0	6	14	522	4.5
Native Hawaiian/ Pac Islander	16	6	0	0	1	7	0	0	0	0	2	0	0	0	0	31	0.3
White	4,467	563	0	64	50	807	71	0	57	37	1,000	179	2	67	51	7,089	61.2
Multiracial, not Hispanic	118	23	0	2	2	19	4	0	1	2	13	3	0	1	1	180	1.6
Hispanic, any race	405	75	0	6	7	87	10	0	6	5	141	33	0	9	9	751	6.5
Total Res & Ethnicity Known	6,988	1,131	0			1,428	191	0			1,489	354	3			11,584	
Resident, Ethnicity Unknown	379	79	3			69	12	0			61	13	4			620	
Not Reported (N/R)	90	16	4			17	4	0			10	4	0			145	
Gender Totals	7,457	1,226	7			1,514	207	0			1,560	371	7			12,349	
%	85.9%	14.1%				88.0%	12.0%				80.8%	19.2%					

* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known

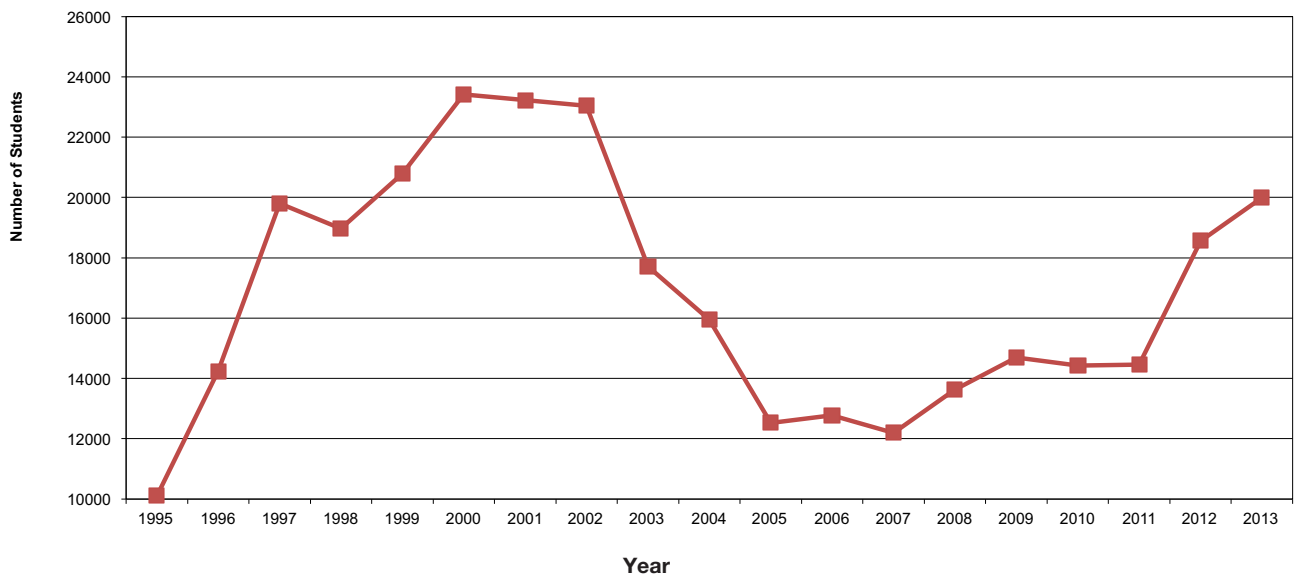
Figure B2. Newly Declared CS/CE Undergraduate Majors

Table B8. Bachelors Enrollment by Gender and Ethnicity, From 121 Departments Providing Breakdown Data																
	CS					CE					I					Ethnicity Totals
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	3,197	716	0	9	13	580	119	0	8	12	484	146	0	8	11	5,242	9.3
Amer Indian or Alaska Native	141	20	0	0	0	16	2	0	0	0	18	5	0	0	0	202	0.4
Asian	5,255	1,355	0	15	24	1,675	306	0	24	31	568	229	0	10	17	9,388	16.7
Black or African-American	1,569	440	0	4	8	319	60	0	5	6	379	154	0	7	11	2,921	5.2
Native Hawaiian/ Pac Islander	84	13	0	0	0	17	6	0	0	1	17	27	0	0	2	164	0.3
White	21,599	2,522	1	61	45	3,698	375	0	53	39	3,571	603	1	62	44	32,370	57.7
Multiracial, not Hispanic	714	162	0	2	3	145	34	0	2	3	97	54	0	2	4	1,206	2.2
Hispanic, any race	2,743	439	0	8	8	585	71	0	8	7	612	140	0	11	10	4,590	8.2
Total Res & Ethnicity Known	35,302	5,667	1			7,035	973	0			5,746	1,358	1			56,083	
Resident, ethnicity unknown	1,668	278	14			280	48	1			302	63	1			2,655	
Not Reported (N/R)	360	76	25			63	5	0			2	2	0			533	
Gender Totals	37,330	6,021	40			7,378	1,026	1			6,050	1,423	2			59,271	
%	86.1%	13.9%				87.8%	12.2%				81.0%	19.0%					
* % of M and % of F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known																	

Figure B3. Bachelor's Degrees Granted by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles — Lighter box 25th %ile to median — Darker box median to 75th %ile
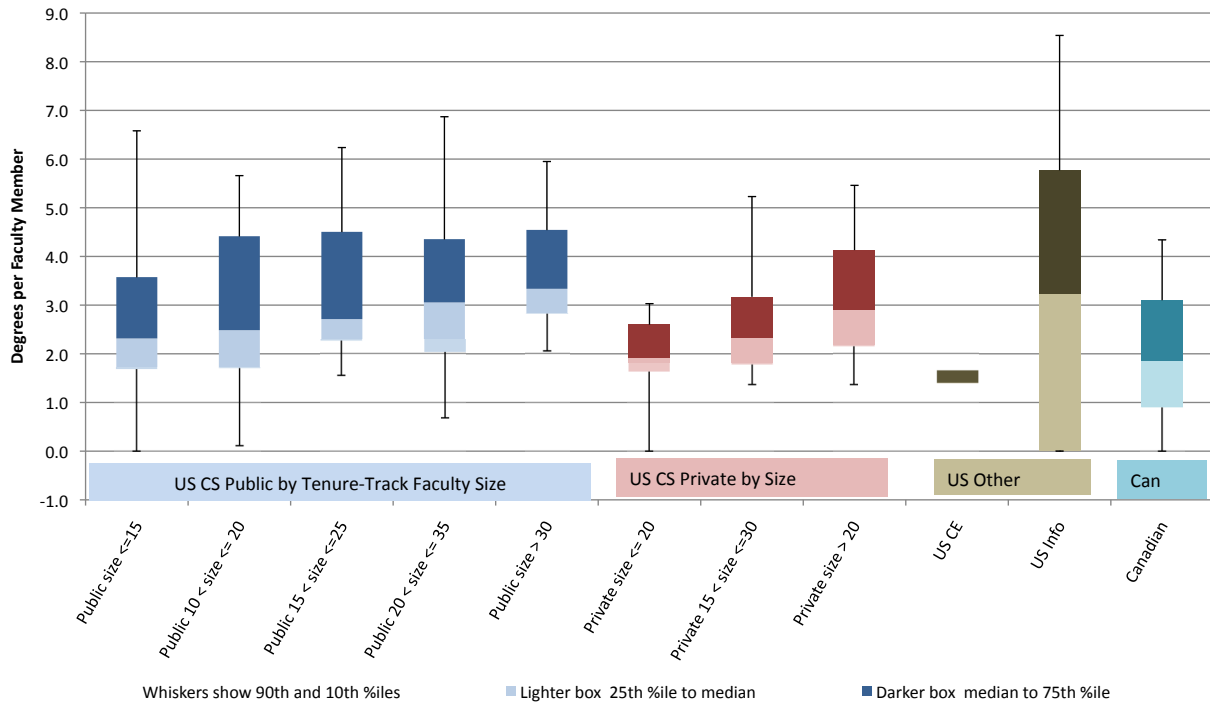
Figure B4. Bachelor's Enrollment Normalized by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles — Lighter box 25th %ile to median — Darker box median to 75th %ile
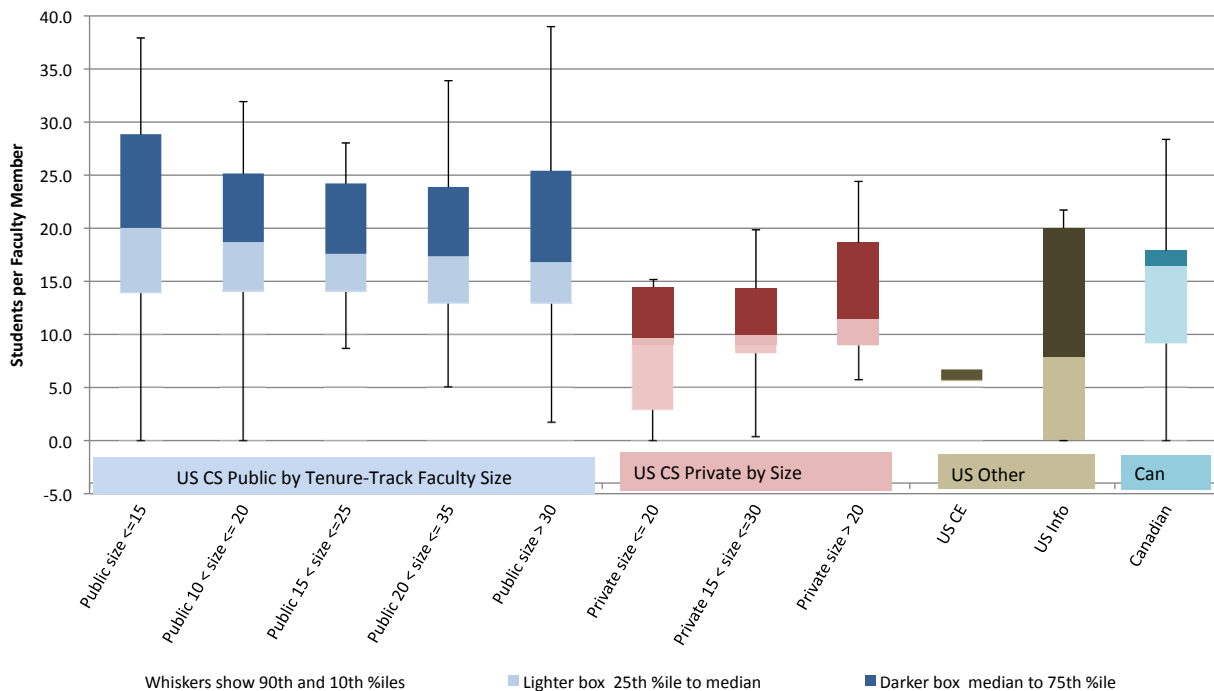
Faculty Demographics (Tables F1-F9)[7]

Table F1 shows the current and anticipated sizes, in FTE, for tenure-track, teaching and research faculty, and postdocs. The total tenure-track faculty count in U.S. CS departments (3,564) decreased 4.3 percent from last year, but there are fewer departments reporting this year. In fact, there was an increase from last year to this year, from 25.2 to 26.2, in the average tenure-track faculty size per U.S. CS department reporting. In these departments, there also were increases in the number of research faculty per department and the number of postdocs per department, while there was a decrease in the number of teaching faculty per department. The decrease in teaching faculty was confined to U.S. CS public departments; the average in private departments increased. Canadian, CE and I departments have much more volatile data due to the small number of departments reporting in each of those categories.

Canadian universities, on average, have several more tenure-track faculty members per department than do U.S. universities, while on average U.S. I departments and U.S. CE departments are slightly smaller than U.S. CS departments. The observations about U.S. CE and I departments may reflect the fact that we ask departments to report only computing-related faculty, so departments with Library Science or EE programs may report only part of their faculty.

Among U.S. CS departments, those at private universities tend to have more tenure-track, teaching faculty, research faculty and postdocs than do those at public universities on average.

Table F2 summarizes faculty hiring this past year. There were about the same number of tenure-track vacancies per reporting department (1.93) in 2012-13 as compared with 2011-12. U.S. CS departments had a slightly lower average in 2012-13 than in 2011-12, due to decreases per public department. In aggregate, 32.8 percent of the total number of vacant tenure-track positions went unfilled, similar to the 31.7 percent in 2011-12. U.S. CS departments and Canadian departments had lower success rates on average than did U.S. CE and U.S. I departments. The top reason why positions went unfilled again was because offers were

Table F1. Actual and Anticipated Faculty Size by Position and Department Type								
	Actual		**Projected**				**Expected 2-Yr Growth**	
	2013-2014		**2014-2015**		**2015-2016**			
US CS Public	**Total**	**Average**	**Total**	**Average**	**Total**	**Average**	**#**	**%**
TenureTrack	2,547	25.2	2,694	26.7	2,797	27.7	250	9.8%
Teaching	221	2.2	256	2.5	276	2.7	55	24.9%
Research	294	2.9	342	3.4	376	3.7	82	27.9%
Postdoc	401	4.0	428	4.2	447	4.4	46	11.5%
Total	3,463	34.3	3,720	36.8	3,896	38.6	433	12.5%
US CS Private								
TenureTrack	1,017	29.1	1,094	31.3	1,149	32.8	132	13.0%
Teaching	200	5.7	222	6.3	237	6.8	37	18.5%
Research	197	5.6	226	6.5	243	6.9	46	23.4%
Postdoc	191	5.5	208	5.9	332	9.5	141	73.8%
Total	1,605	45.9	1,750	50.0	1,961	56.0	356	22.2%
All US CS								
TenureTrack	3,564	26.2	3,788	27.9	3,946	29.0	382	10.7%
Teaching	421	3.1	478	3.5	513	3.8	92	21.9%
Research	491	3.6	568	4.2	619	4.6	128	26.1%
Postdoc	592	4.4	636	4.7	779	5.7	187	31.6%
Total	5,068	37.3	5,470	40.2	5,857	43.1	789	15.6%
US CE								
TenureTrack	212	23.6	220	24.4	228	25.3	16	7.5%
Teaching	33	3.7	36	4.0	38	4.2	5	15.2%
Research	32	3.6	34	3.8	36	4.0	4	12.5%
Postdoc	20	2.2	22	2.4	22	2.4	2	10.0%
Total	297	33.0	312	34.7	324	36.0	27	9.1%

Table F1. Actual and Anticipated Faculty Size by Position and Department Type *(continued)*								
	Actual		**Projected**				**Expected 2-Yr Growth**	
	2013-2014		**2014-2015**		**2015-2016**			
US I								
TenureTrack	216	24.0	234	26.0	245	27.2	29	13.4%
Teaching	21	2.3	21	2.3	19	2.1	-2	-9.5%
Research	18	2.0	19	2.1	24	2.7	6	33.3%
Postdoc	93	10.3	94	10.4	96	10.7	3	3.2%
Total	348	38.7	368	40.9	384	42.7	36	10.3%
Canadian								
TenureTrack	557	39.8	571	40.8	582	41.6	25	4.5%
Teaching	12	0.9	12	0.9	13	0.9	1	8.3%
Research	135	9.6	139	9.9	147	10.5	12	8.9%
Postdoc	61	4.4	65	4.6	64	4.6	3	4.9%
Total	765	54.6	787	56.2	806	57.6	41	5.4%
Grand Total								
TenureTrack	4,549	27.1	4,813	28.6	5,001	29.8	452	9.9%
Teaching	487	2.9	547	3.3	583	3.5	96	19.7%
Research	676	4.0	760	4.5	826	4.9	150	22.2%
Postdoc	766	4.6	817	4.9	961	5.7	195	25.5%
Total	6,478	38.6	6,937	41.3	7,371	43.9	893	13.8%

turned down; this occurred in 54.9 percent of the cases vs. 45.3 percent for 2011-12 (see Table F2a). Not finding a good fit accounted for 37.3 percent of the cases (36.8 percent in 2011-12).

The fraction of women hired into all categories of academic positions (tenure-track, teaching faculty, research faculty and postdoc) fell from 25.3 percent in 2011-12 to 21.0 percent in 2012-13 (Table F3). However, in tenure-track positions, the fraction remained steady (22.5 percent vs. 22.4 percent in 2011-12). There were large percentage decreases in the fraction of women taking research faculty positions and postdoc positions as compared with that reported last year. The fraction of new female tenure-track and overall faculty hires continues to exceed the fraction of new female Ph.D.s produced this past year (18 percent).

Among new tenure-track faculty, there was a somewhat smaller fraction of white, Asian and Black hires than reported last year, while there was a higher fraction of Non-resident Alien new hires. Whites again very much dominated the newly hired teaching faculty, with Asians and Non-resident Aliens accounting for most of the remainder. Among research faculty, whites again dominate, with Non-resident Aliens second. Among postdocs, Non-resident Aliens comprise the largest category, with whites second (Table F4).

There were more faculty losses reported this year as compared with last year (Table F5). This year's report showed a smaller fraction of losses due to retirements (31.9 percent

vs. 40.3 percent reported last year) and somewhat larger fraction of losses due to movement to another (academic or non-academic) position.

This year, there was almost no change in the fraction of women at all three academic professorial ranks (Table F6). For the second year in a row, the overall fraction of women among teaching faculty increased, while the fraction of women among both research faculty and postdocs declined. Ethnicity patterns do not change very much from year to year. Whites, Asians and Non-resident Aliens account for over 90 percent of each category of faculty members (Table F7).

Among departments reporting faculty data, 93% provided the newly-requested gender by ethnicity breakdown. (Table F8 and F9). Among full professors, 78 percent of the women are White while 69 percent of the men are White, and 17 percent of the women are Asian while 27 percent of the men are Asian. No other noticeable differences are present at other tenure-track faculty ranks. Among postdocs, 39 percent of the women are White while 33 percent of the men are White, and 45 percent of the men are Non-resident Aliens while 36 percent of the women are Non-resident Aliens.

For next year, reporting departments forecast a 5.8 percent growth in tenure-track faculty and a 6.6 percent growth in postdocs. Teaching and research faculty growth projections are even higher, at 12 percent.

Table F2. Vacant Positions 2012-2013 by Position and Department Type		
	Tried to fill	Filled
US CS Public		
TenureTrack	198	125
Teaching	87	80
Research	55	47
Postdoc	130	126
Total	470	378
US CS Private		
TenureTrack	77	51
Teaching	50	45
Research	23	23
Postdoc	57	56
Total	207	175
All US CS		
TenureTrack	275	176
Teaching	137	125
Research	78	70
Postdoc	187	182
Total	677	553
US CE		
TenureTrack	12	12
Teaching	4	4
Research	7	7
Postdoc	20	20
Total	43	43
US I		
TenureTrack	31	26
Teaching	5	4
Research	10	10
Postdoc	9	9
Total	55	49
Canadian		
TenureTrack	20	13
Teaching	8	7
Research	21	21
Postdoc	18	18
Total	67	59
Grand Total		
TenureTrack	338	227
Teaching	154	140
Research	116	108
Postdoc	234	229
Total	842	704

Table F2a. Reasons Positions Left Unfilled		
Reason	**# Reported**	**% of Reasons**
Didn't find a good fit	38	40.0%
Offers turned down	56	58.9%
Technically vacant, not filled for admin reasons	4	4.2%
Hiring in progress	3	3.2%
Other	1	1.1%
Total Reasons Provided	102	

Table F3. Gender of Newly Hired Faculty

	Tenure-Track		Teaching		Research		Postdoc		Total	
Male	169	77.5%	66	66.7%	47	92.2%	167	83.5%	449	79.0%
Female	49	22.5%	33	33.3%	4	7.8%	33	16.5%	119	21.0%
Unknown	0		0		0		4		4	
Total	218		99		51		204		572	

Table F4. Ethnicity of Newly Hired Faculty

	Tenure-Track		Teaching		Research		Postdoc		Total	
Nonresident Alien	50	23.9%	8	8.2%	11	22.0%	74	43.3%	143	27.1%
American Indian / Alaska Native	0	0.0%	1	1.0%	0	0.0%	0	0.0%	1	0.2%
Asian	42	20.1%	9	9.3%	6	12.0%	25	14.6%	82	15.6%
Black or African-American	4	1.9%	3	3.1%	0	0.0%	3	1.8%	10	1.9%
Native Hawaiian/ Pacific Islander	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
White	99	47.4%	69	71.1%	27	54.0%	52	30.4%	247	46.9%
Multiracial, not Hispanic	5	2.4%	1	1.0%	0	0.0%	0	0.0%	6	1.1%
Hispanic, any race	4	1.9%	4	4.1%	1	2.0%	0	0.0%	9	1.7%
Resident, race/ethnic unknown	5	2.4%	2	2.1%	5	10.0%	17	9.9%	29	5.5%
Total known residency	209	100.0%	97	100.0%	50	100.0%	171	100.0%	527	100.0%
Residency Unknown	9		2		1		33		45	
Total	218		99		51		204		572	

Table F5. Faculty Losses

Died	9
Retired	74
Took Academic Position Elsewhere	74
Took Nonacademic Position	32
Remained, but Changed to Part Time	11
Other	22
Unknown	10
Total	232

Table F6. Gender of Current Faculty

	Full		Associate		Assistant		Teaching		Research		Postdoc		Total	
Male	1,830	85.8%	1,223	79.5%	566	73.4%	565	70.3%	391	82.8%	574	81.3%	5,149	80.2%
Female	285	13.4%	302	19.6%	202	26.2%	237	29.5%	81	17.2%	129	18.3%	1,236	19.2%
Unknown	17		14		3		2		0		3		39	
Total	2,132		1,539		771		804		472		706		6,424	

Table F7. Ethnicity of Current Faculty

	Full		Associate		Assistant		Teaching		Research		Postdoc		Total	
Nonresident Alien	12	0.6%	26	1.9%	113	15.7%	18	2.4%	60	13.5%	242	43.1%	471	8.3%
American Indian / Alaska Native	2	0.1%	4	0.3%	1	0.1%	5	0.7%	0	0.0%	0	0.0%	12	0.2%
Asian	471	25.0%	422	31.1%	180	25.1%	69	9.3%	69	15.5%	87	15.5%	1,298	22.7%
Black or African-American	16	0.8%	25	1.8%	25	3.5%	25	3.4%	5	1.1%	24	4.3%	120	2.1%
Native Hawaiian/ Pacific Islander	2	0.1%	4	0.3%	0	0.0%	0	0.0%	0	0.0%	2	0.4%	8	0.1%
White	1,318	69.9%	806	59.4%	366	51.0%	595	80.5%	288	64.6%	179	31.9%	3,552	62.3%
Multiracial, not Hispanic	18	1.0%	15	1.1%	5	0.7%	3	0.4%	3	0.7%	1	0.2%	45	0.8%
Hispanic, any race	32	1.7%	40	2.9%	21	2.9%	18	2.4%	10	2.2%	9	1.6%	130	2.3%
Resident, race/ ethnic unknown	14	0.7%	14	1.0%	7	1.0%	6	0.8%	11	2.5%	18	3.2%	70	1.2%
Total known residency	1,885	100%	1,356	100%	718	100%	739	100%	446	100%	562	100%	5,706	100%
Residency Unknown	247		183		53		65		26		144		718	
Total	2,132		1,539		771		804		472		706		6,424	

Table F8. Current Tenured and Tenure-Track Faculty by Gender and Ethnicity, From 143 Departments Providing Breakdown Data

	Full Professor					Associate Professor					Assistant Professor					Ethnicity Totals	
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	9	3	0	1	1	21	5	0	2	2	87	26	0	17	14	151	3.9
Amer Indian or Alaska Native	2	0	0	0	0	1	2	0	0	1	1	0	0	0	0	6	0.2
Asian	429	42	0	27	17	332	90	0	31	34	125	54	0	24	29	1,072	27.5
Black or African-American	13	3	0	1	1	17	8	0	2	3	15	10	0	3	5	66	1.7
Native Hawaiian/ Pac Islander	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0	6	0.2
White	1,114	197	0	69	78	647	149	0	61	56	271	92	0	53	49	2,470	63.3
Multiracial, not Hispanic	14	4	0	1	2	15	0	0	1	0	3	0	0	1	0	36	0.9
Hispanic, any race	27	5	0	2	2	29	11	0	3	4	13	7	0	3	4	92	2.4
Total Res & Ethnicity Known	1,610	254	0			1,066	265	0			515	189	0			3,899	
Resident, ethnicity unknown	13	1	0			12	2	0			5	2	0			35	
Not Reported (N/R)	16	5	0			7	5	0			10	1	0			44	
Gender Totals	1,639	260	0			1,085	272	0			530	192	0			3,978	
%	86.3%	13.7%				80.0%	20.0%				73.4%	26.6%					

* %M and %F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known

Table F9. Current Non-Tenure-Track Faculty and Postdoctorates by Gender and Ethnicity, From 143 Departments Providing Breakdown Data

	Non-Tenure-Track Teaching					Non-Tenure-Track Research					Postdoctorates					Ethnicity Totals	
	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Male	Fem	N/R	% of M*	% of F*	Total	%
Nonresident Alien	13	5	0	3	2	52	8	0	14	11	189	37	1	45	36	305	18.1
Amer Indian or Alaska Native	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0.3
Asian	42	26	0	8	12	54	15	0	15	21	69	18	0	16	17	224	13.3
Black or African-American	13	12	0	3	6	3	1	0	1	1	17	7	0	4	7	53	3.1
Native Hawaiian/ Pac Islander	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0.1
White	423	163	0	83	75	241	46	0	67	64	139	40	0	33	38	1,052	62.5
Multiracial, not Hispanic	3	0	0	1	0	2	1	0	1	1	1	0	0	0	0	7	0.4
Hispanic, any race	9	9	0	2	4	8	1	0	2	1	7	2	0	2	2	36	2.1
Total Res & Ethnicity Known	507	216	0			360	72	0			424	104	1			1,684	
Resident, ethnicity unknown	4	2	0			9	2	0			12	3	0			32	
Not Reported (N/R)	10	2	0			1	0	0			35	4	0			52	
Gender Totals	521	220	0			370	74	0			471	111	1			1,768	
%	70.3%	29.7%				83.3%	16.7%	0			80.9%	19.1%					

* %M and %F columns are the percent of that gender who are of the specified ethnicity, of those whose ethnicity is known

Research Expenditures (Table R1; Figures R1-R2)

Table R1 shows the department's total expenditure (including indirect costs or "overhead" as stated on project budgets) from external sources of support. Figures R1 and R2 show the per capita expenditure, where capitation is computed two ways. The first (Figure R1) is relative to the number of tenure-track faculty members. The second (Figure R2) is relative to researchers and postdocs as well as tenure-track faculty. Canadian levels are shown in Canadian dollars.

Overall median research expenditures for 2012-13 at U.S. CS public departments rose 1.9 percent in comparison with 2011-12. At U.S. CS departments in private institutions, median expenditures declined by 6 percent. However,

research expenditures at U.S. departments in private institutions tend to exceed those departments in public institutions. Median expenditures also rose at U.S. CE departments (3.4 percent), U.S. I departments (9.2 percent) and Canadian departments (15.0 percent) in comparison with 2011-12.

The U.S. CS data for public institutions indicate that the larger the department, the more external funding is received by the department (both in total and per capita). Research expenditures at private institutions were less affected by the size of the department, though per capita they also tended to rise with department size. Both of these observations are consistent with what we reported in last year's survey.

Table R1. Total Expenditure from External Sources for Computing Research

Department Type	# Depts	Percentile of Department Averages				
		10th	25th	50th	75th	90th
US CS Public	87	$593,406	$1,840,219	$3,743,805	$7,796,783	$15,252,450
US CS Private	31	$906,575	$2,445,560	$4,872,000	$11,000,000	$23,695,307
US CE	5			$3,099,835		
US Information	9			$4,416,679		
Canadian	11	$194,548	$1,110,236	$3,595,968	$6,000,000	$6,374,580

Figure R1. Research Expenditures Normalized by Tenure-Track Size

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles · Lighter box 25th %ile to median · Darker box median to 75th %ile
Too little data in group to show distribution; bar at median · Outlier: Value outside chart range

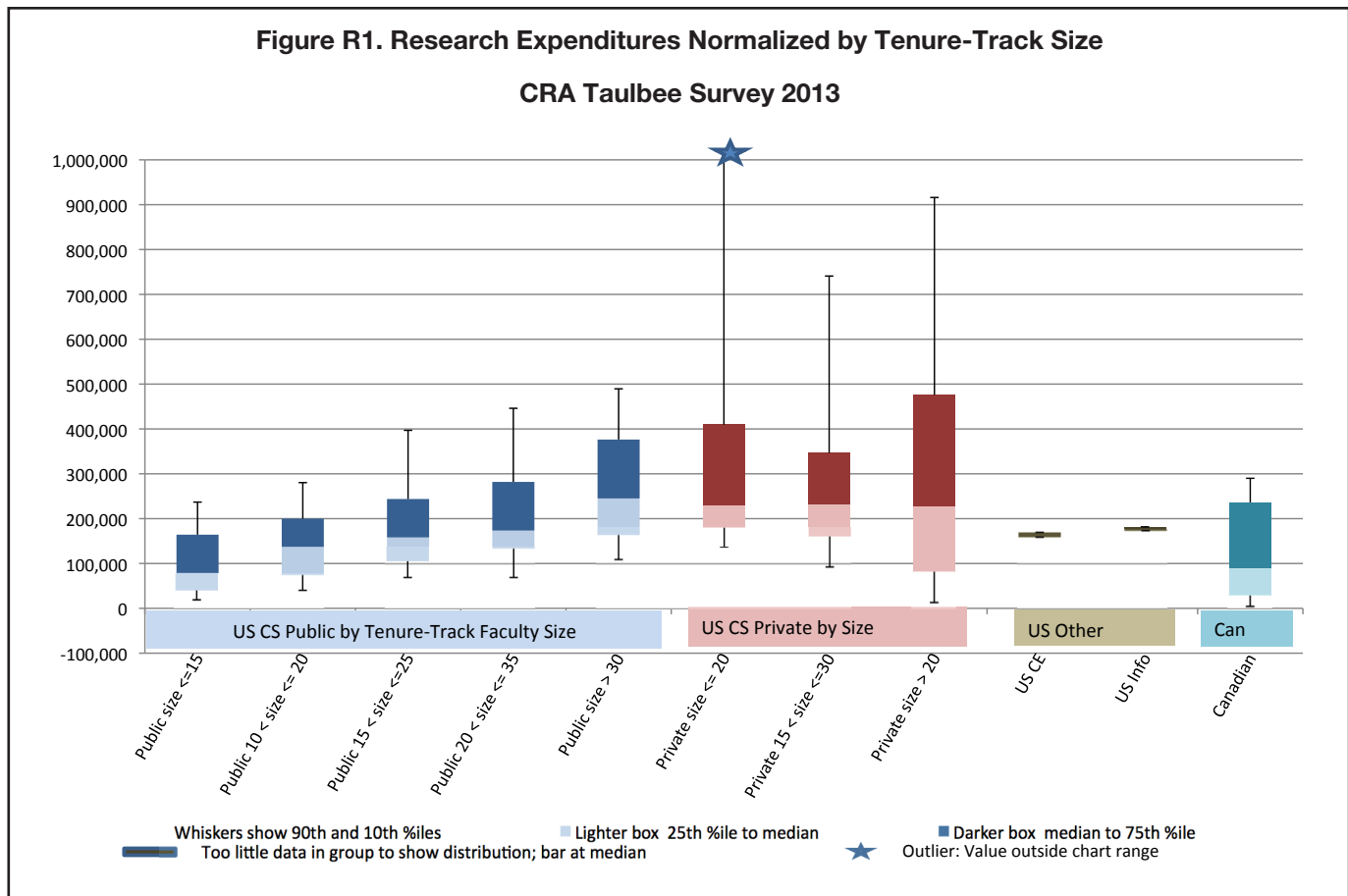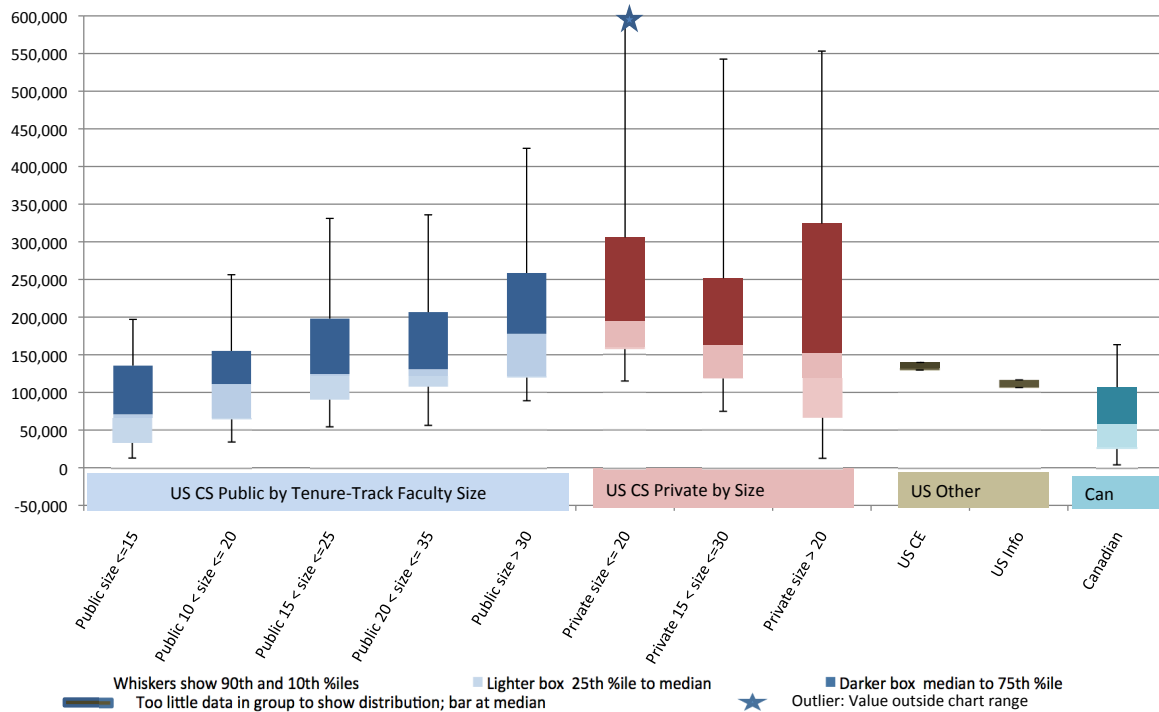**Figure R2. Research Expenditures Normalized by Tenure-Track + Research Faculty + Postdoctorates**

CRA Taulbee Survey 2013

Whiskers show 90th and 10th %iles   Lighter box 25th %ile to median   Darker box median to 75th %ile
Too little data in group to show distribution; bar at median   ★ Outlier: Value outside chart range

Graduate Student Support (Tables G1-G2; Figures G1-G3)

Table G1 shows the number of graduate students supported as full-time students as of fall 2013, further categorized as teaching assistants (TAs), research assistants (RAs), and full-support fellows. The table also shows the split between those on institutional vs. external funds. The total number of TAs on institutional funds in U.S. CS departments increased 8.6 percent this year although the number of departments reporting this year decreased. Private universities led the way, with over a 25 percent increase. In last year's report, we noted that just the opposite was true; there was an overall decrease in TAs at U.S. CS departments, with private universities having over a 30 percent decrease. It is possible that there were some errors in departmental reporting last year. Compared with two years ago, public universities show about a 10 percent increase in TAs on university funds, with 5 percent more departments reporting, while private universities show an 18 percent decrease with the same number of departments reporting.

There was an overall decrease of 1.7 percent in the number of RAs that were supported on institutional funds at U.S. CS departments, but with fewer departments reporting that is not surprising. Departments at private universities showed an 8 percent decline while departments at public universities showed a small increase. The number of RAs

on external funding declined in U.S. CS departments at public universities, but increased sizably (over 17 percent) in departments at private universities. Here again, we see private institutions experiencing just the reverse of what was experienced in last year's report. We do note that, last year, departments at private universities had lower research expenditures (see the previous section), so it is possible that this impacted the number of RAs they could support last year. Perhaps the sizeable increase in RA support this year is evidence of increased external funding. Compared with two years ago, RA support on external funds is 6 percent lower this year.

The number of full-support fellows rose at U.S. CS departments at public institutions with respect to both institutional fund and external fund support, and declined in both categories of support at U.S. private universities. This is the reverse of what happened last year.

U.S. CE departments showed an increase in both institutionally and externally supported RAs. U.S. I departments showed an increased number of externally supported RAs and fellows and a decreased number of institutionally supported RAs, as well as an increase in institutionally supported TAs and a decrease in externally supported TAs. Canadian departments showed a decline in TAs and in institutionally supported RAs, and an increase in externally supported RAs and in both institutionally and externally supported fellows.

Table G2 shows the distribution of stipends for TAs, RAs, and full-support fellows. U.S. CS data are further broken down in this table by public and private institution. Figures G1-G3 further break down the U.S. CS data by size of department and by geographic location of the university.

The median salaries at U.S. private departments were flat across the TA and RA categories for the second straight year. Median salaries of full support fellows at U.S. private departments rose nearly 7 percent. At U.S. public departments, medians of RA salaries were flat, those of

TA salaries increased by 5 percent, and those for fellows increased 9 percent.

Larger departments at U.S. public universities tend to offer higher stipends to both TAs and RAs than do smaller departments, and private universities tend to offer higher stipends to all categories of grad students than do public universities. As was the case last year, departments located in larger population centers also tend to pay higher stipends to TAs and RAs, while the data for full-support fellows exhibits no clear trend relative to locale.
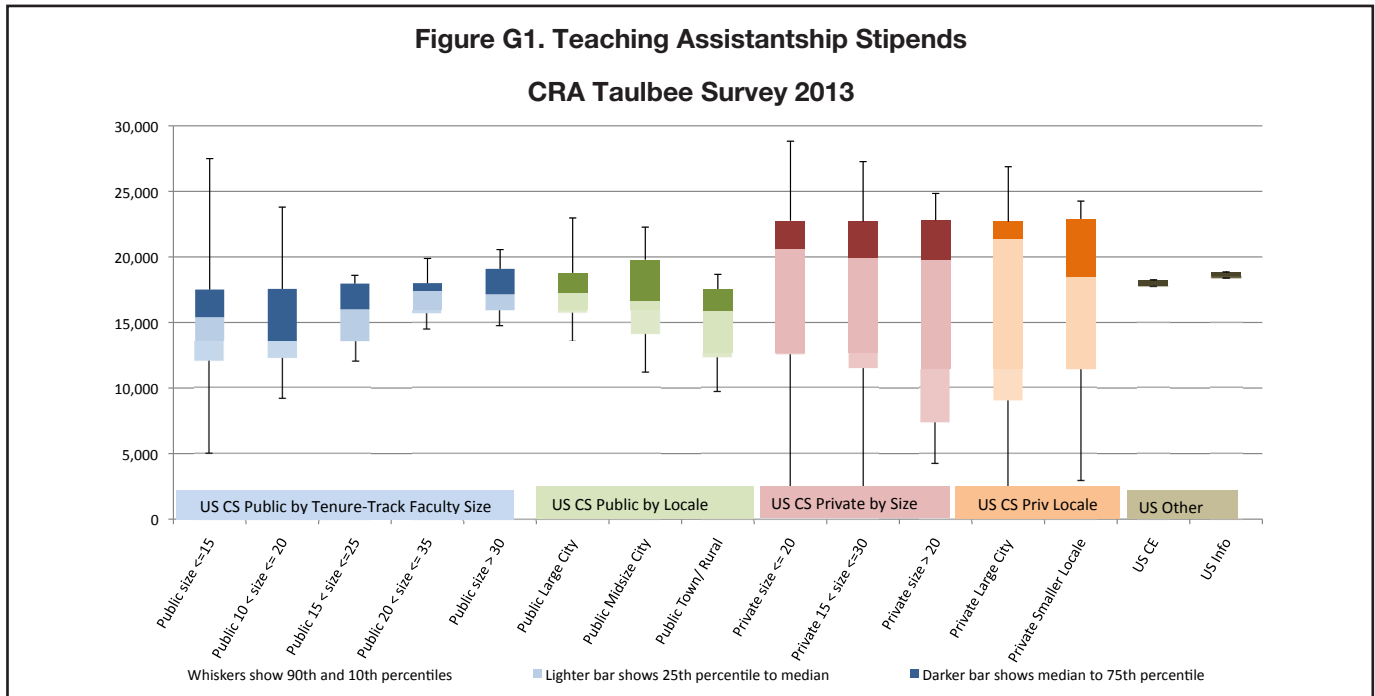

Figure G1. Teaching Assistantship Stipends
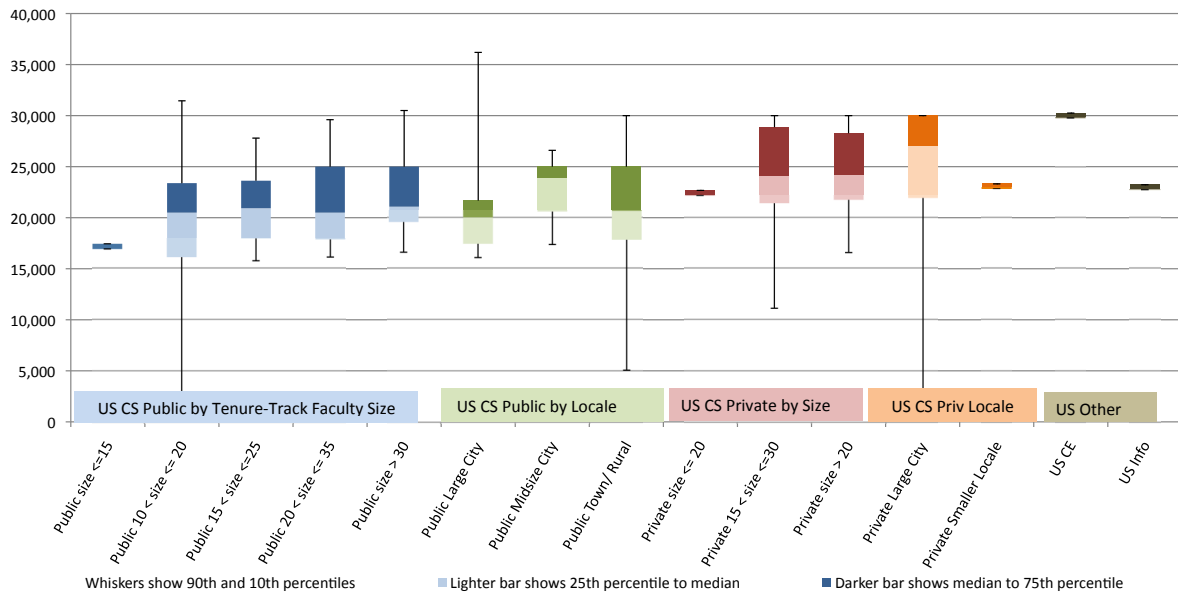
CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile

Figure G2. Research Assistantship Stipends

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile

Figure G3. Full Support Fellows Stipends

CRA Taulbee Survey 2013

Table G1. Graduate Students Supported as Full-Time Students by Department Type												
		On Institutional Funds						On External Funds					Total
Department Type	# Dept	Teaching Assistants		Research Assistants		Full-Support Fellows		Teaching Assistants		Research Assistants		Full-Support Fellows	
US CS Public	105	2,470	34.3%	755	10.5%	275	3.8%	10	0.1%	3,398	47.2%	298	4.1%	7,206
US CS Private	36	597	20.2%	568	19.2%	186	6.3%	16	0.5%	1,400	47.3%	192	6.5%	2,959
US CS Total	141	3,067	30.2%	1,323	13.0%	461	4.5%	26	0.3%	4,798	47.2%	490	4.8%	10,165
US CE	9	58	16.6%	131	37.5%	22	6.3%	0	0.0%	134	38.4%	4	1.1%	349
US I	10	162	37.7%	41	9.5%	22	5.1%	1	0.2%	194	45.1%	10	2.3%	430
Canadian	15	294	31.3%	168	17.9%	93	9.9%	0	0.0%	351	37.3%	34	3.6%	940
Grand Total	175	3,581	30.1%	1,663	14.0%	598	5.0%	27	0.2%	5,477	46.1%	538	4.5%	11,884

Table G2. Fall 2013 Academic-Year Graduate Stipends by Department Type and Support Type

Teaching Assistantships

Department Type	# Depts	Percentiles of Department Averages				
		10th	25th	50th	75th	90th
US CS Public	97	$12,000	$13,801	$16,500	$17,948	$20,710
US CS Private	28	$2,263	$11,520	$20,210	$22,784	$25,560
US CE	7			$18,000		
US Information	7			$18,600		
Canadian	9			$13,360		

Research Assistantships

Department Type	# Depts	Percentiles of Department Averages				
		10th	25th	50th	75th	90th
US CS Public	95	$12,106	$14,982	$17,000	$19,000	$22,568
US CS Private	31	$2,836	$18,315	$21,375	$23,060	$27,959
US CE	8			$19,700		
US Information	7			$18,600		
Canadian	8			$19,500		

Full-Support Fellows

Department Type	# Depts	Percentiles of Department Averages				
		10th	25th	50th	75th	90th
US CS Public	56	$15,476	$18,000	$20,770	$24,725	$30,000
US CS Private	24	$10,920	$21,145	$23,988	$28,464	$30,000
US CE	3			$24,650		
US Information	6			$22,976		
Canadian	3			$16,369		

Faculty Salaries (Tables S1-S21; Figures S1-S9)

Each department was asked to report individual (but anonymous) faculty salaries if possible; otherwise, the department was requested to provide the mean salary for each rank (full, associate, and assistant professors and non-tenure-track teaching faculty, research faculty, and post-doctorates) and the number of persons at each rank. The salaries are those in effect on January 1, 2014. 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.

U.S. CS data are reported in Tables S1-S16 and in the box and whiskers diagrams. Data for CE, I, Canadian and new Ph.D.s are reported in Tables S17-S20. The tables and diagrams contain distributional data (first decile, quartiles, and ninth decile) computed from the department averages only. Thus, for example, a table row labeled "50" or the median line in a diagram is the median of the averages for the departments that reported within the stratum (the number of such departments reporting is shown in the "depts" row). It therefore is not a true median of all of the salaries.

We also report salary data for senior faculty based on time in rank, for meaningful comparison of individual or departmental faculty salaries with national averages. We report associate professor salaries for time in rank of 7 years or less, and of more than 7 years. For full professors, we report time in rank of 7 years or less, 8 to 15 years, and more than 15 years.

Those departments reporting salary data were provided a summary report in December 2013. Those departments that provided individual salaries were additionally provided more comprehensive distributional information based on these individual salaries. This year, 86 percent of those reporting salary data provided salaries at the individual level. The remainder of this section is an excerpt from the basic report sent in December to all departments that provided salary data.

The data this year again show that salaries at private universities tend to be higher than those at public universities in all faculty strata (Tables S2 and S3). At public universities, salaries tend to be higher for larger departments (Tables S4-S8). At private universities, early stage associate and full professor salaries are somewhat higher in smaller locales, while early stage associate professor salaries are somewhat lower in larger departments. Public university salaries appear to be generally lower in smaller departments and in smaller locales.

To provide a more meaningful comparison of this year's salaries with those from last year's Taulbee report, we use only those departments that reported both years. Because some departments that reported both years provided only aggregate salaries for their full and associate professors during one year and in the other year reported them by years in rank, we only include the salaries for all full professors and for all associate professors in the year-to-year comparison. Table S21 shows the change in median of the average salaries in departments that reported both years (the number of departments being compared is indicated in parenthesis in the first row of each column).

Table S1. Nine-month Salaries, 138 Responses of 187 US CS Departments, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	109	115	118	12	101	127	10	131	115	69	80
Indiv	549	516	538	89	326	830	52	635	544	350	483
10	$118,476	$118,090	$110,110	$139,090	$92,244	$94,364	$96,357	$84,048	$53,811	$59,265	$41,622
25	$133,728	$127,925	$123,301	$151,849	$97,797	$100,363	$102,366	$88,549	$59,496	$68,809	$45,865
50	$153,572	$143,086	$134,246	$159,221	$103,497	$107,447	$108,800	$94,191	$70,993	$87,395	$52,980
75	$169,388	$164,518	$148,648	$182,173	$114,606	$115,333	$141,825	$100,614	$81,500	$99,035	$59,515
90	$195,935	$184,056	$164,934	$201,620	$122,738	$124,095	$161,593	$106,015	$97,500	$121,546	$68,282

Table S2. Nine-month Salaries, 105 Responses of 135 US CS Public (All Public), Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	84	89	90	10	81	98	8	99	89	47	58
Indiv	392	379	403	66	239	642	45	455	385	221	318
10	$118,702	$117,443	$106,737	$151,059	$92,244	$92,772	*	$83,155	$51,523	$59,171	$41,554
25	$132,620	$125,696	$119,269	$151,867	$97,516	$99,591	*	$86,820	$58,812	$68,100	$45,767
50	$149,499	$141,734	$131,650	$159,221	$101,714	$105,664	$108,800	$92,278	$67,407	$86,420	$51,874
75	$164,539	$159,019	$145,390	$177,062	$112,031	$111,932	*	$97,526	$76,610	$97,257	$58,899
90	$176,225	$172,917	$156,634	$202,540	$120,009	$118,927	*	$101,740	$94,740	$110,424	$67,009

Table S3. Nine-month Salaries, 33 Responses of 52 US CS Private (All Private), Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	25	26	28	2	20	29	2	32	26	22	22
Indiv	157	137	135	23	87	188	7	180	159	129	165
10	$117,469	$129,675	$118,988		$79,191	$102,913		$91,827	$54,275	$57,786	$41,227
25	$139,999	$142,631	$127,109		$102,199	$108,500		$96,007	$71,346	$68,917	$46,308
50	$168,300	$161,962	$150,167		$113,221	$116,911		$103,297	$76,462	$92,709	$54,167
75	$202,113	$183,941	$164,982		$124,765	$127,571		$107,078	$90,760	$115,202	$61,543
90	$214,540	$194,919	$211,082		$139,421	$138,667		$110,393	$101,797	$138,469	$70,088

When interpreting these changes, it is important to remember the effect that promotions have on the departmental data from one year to the next, since individual faculty members move from one rank to another. Thus, a department with a small number of faculty members in a particular rank can have its average salary in that rank change appreciably (in either direction) by a single promotion to or from that rank. Departures via resignation or retirement also impact these figures, particularly in the non-tenure-track categories. Because of the small number of Canadian and Computer

Engineering departments reporting, the values in those columns are considerably more volatile.

For new Ph.D.s in tenure-track positions at U.S. computer science, computer engineering, and I-school departments (Table S20) the median of the averages increased by 2.4 percent vs. last year. Again this year, there are too few reported Canadian salaries for new Ph.D.s to make meaningful comparisons.

Table S4. Nine-month Salaries, 32 Responses of US CS Public With <=15 Tenure-Track Faculty, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	19	22	24	3	21	29	3	27	24	6	8
Indiv	46	41	62	9	40	105	11	71	64	12	12
10	$103,644	$107,762	$98,434	*	$91,308	$87,465	*	$74,323	$47,810	*	*
25	$113,254	$117,249	$104,787	*	$95,517	$92,494	*	$81,603	$55,344	*	*
50	$131,807	$124,001	$124,369	$151,840	$98,118	$99,806	$102,540	$86,005	$61,085	$68,211	$52,016
75	$140,364	$134,125	$137,082	*	$111,612	$107,147	*	$90,913	$74,064	*	*
90	$148,197	$162,280	$154,443	*	$123,629	$111,590	*	$99,815	$86,904	*	*

Table S5. Nine-month Salaries, 40 Responses of US CS Public With 10 < Tenure-Track Faculty <=20, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	31	30	33	3	33	38	2	38	31	9	13
Indiv	86	64	77	8	80	163	6	107	95	16	23
10	$112,152	$114,369	$103,013	*	$91,138	$88,751		$80,445	$49,815	*	$21,434
25	$129,080	$119,527	$110,047	*	$95,262	$94,341		$84,574	$54,136	*	$34,448
50	$139,628	$128,180	$123,714	$169,950	$98,300	$101,298		$88,900	$60,978	$66,755	$49,170
75	$152,454	$142,935	$136,425	*	$105,799	$107,312		$93,235	$72,465	*	$57,000
90	$174,030	$169,454	$156,686	*	$117,400	$112,996		$100,181	$83,055	*	$66,730

Table S6. Nine-month Salaries, 35 Responses of US CS Public With 15 < Tenure-Track Faculty <=25, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	30	31	31	3	30	33	2	35	31	14	18
Indiv	102	105	92	16	78	176	22	137	123	57	45
10	$123,929	$117,458	$110,348	*	$88,682	$93,274		$83,240	$51,148	$48,378	$22,711
25	$132,054	$124,682	$117,890	*	$96,168	$100,160		$87,130	$56,215	$65,573	$42,272
50	$151,152	$137,621	$130,502	$165,300	$100,579	$105,593		$91,500	$64,800	$71,990	$49,585
75	$166,984	$146,238	$140,788	*	$107,788	$110,500		$97,034	$71,667	$97,394	$59,438
90	$189,458	$163,880	$155,453	*	$120,039	$120,566		$100,740	$83,390	$107,398	$67,334

Table S7. Nine-month Salaries, 33 Responses of US CS Public With 20 < Tenure-Track Faculty <=35, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	30	31	30	4	27	31	2	33	29	20	22
Indiv	138	129	116	21	86	192	22	163	132	78	123
10	$123,929	$120,773	$112,820		$92,139	$95,946		$83,482	$56,142	$60,288	$41,861
25	$135,211	$132,526	$125,431		$97,973	$102,421		$88,661	$61,578	$68,394	$45,506
50	$158,312	$146,238	$136,949	$159,221	$104,322	$106,499		$92,947	$67,801	$87,631	$51,146
75	$169,129	$165,227	$146,485		$115,242	$113,250		$97,296	$85,744	$95,201	$58,899
90	$173,079	$186,873	$164,026		$120,232	$118,385		$101,950	$108,426	$100,720	$65,925

Table S8. Nine-month Salaries, 31 Responses of US CS Public With Tenure-Track Faculty >30, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	28	29	28		24	29	3	30	28	25	26
Indiv	209	202	223		100	312	12	214	170	144	203
10	$137,401	$129,007	$124,790		$97,003	$101,414		$87,804	$56,595	$61,316	$44,155
25	$146,859	$143,079	$129,765		$101,339	$103,509		$92,163	$65,319	$74,279	$49,058
50	$158,585	$154,740	$140,713		$108,143	$111,620	$140,000	$96,259	$74,766	$87,867	$55,412
75	$168,373	$165,123	$147,339		$115,718	$116,061		$99,830	$84,860	$100,472	$59,724
90	$193,725	$179,789	$156,872		$122,066	$121,916		$105,679	$99,277	$121,919	$71,423

Table S9. Nine-month Salaries, 13 Responses of US CS Private With <=20 Tenure-Track Faculty, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	6	6	10	2	7	10	2	12	10	9	10
Indiv	21	15	32	23	15	33	7	41	31	43	36
10	*	*	$115,889		*	$100,341		$90,410	$55,359	*	$33,150
25	*	*	$121,427		*	$109,954		$96,518	$66,905	*	$52,125
50	$143,643	$171,824	$154,385		$115,103	$117,767		$101,887	$74,903	$91,500	$57,455
75	*	*	$185,362		*	$125,921		$109,342	$78,182	*	$62,188
90	*	*	$229,094		*	$137,338		$117,653	$97,536	*	$72,494

Table S10. Nine-month Salaries, 18 Responses of US CS Private With 15 < Tenure-Track Faculty <=30, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	14	16	15	1	11	15	1	18	14	12	14
Indiv	60	62	66	17	28	63	1	76	53	43	88
10	$117,433	$140,299	$121,968		$79,248	$103,985		$93,690	$47,754	$59,910	$43,272
25	$158,772	$147,648	$140,934		$102,366	$108,580		$97,011	$70,733	$68,855	$52,187
50	$182,872	$173,841	$155,575		$113,130	$116,911		$103,404	$75,612	$88,806	$59,459
75	$208,435	$185,228	$176,921		$126,850	$126,179		$109,606	$86,462	$102,230	$65,861
90	$221,818	$211,927	$193,308		$141,896	$144,085		$111,522	$106,148	$158,788	$72,059

Table S11. Nine-month Salaries, 20 Responses of US CS Private With Tenure-Track Faculty >20, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	19	20	18	0	13	19	0	20	16	13	12
Indiv	136	122	103	0	72	155	0	139	128	86	129
10	$134,123	$132,008	$122,763		$98,889	$102,913		$91,206	$50,358	$54,152	$41,227
25	$141,327	$141,975	$128,507		$102,254	$108,421		$95,532	$72,907	$68,053	$45,175
50	$175,661	$161,962	$144,819		$113,130	$116,903		$103,404	$84,923	$94,583	$50,769
75	$206,780	$182,841	$164,945		$126,806	$128,413		$105,926	$97,600	$114,348	$60,149
90	$220,000	$188,142	$185,020		$142,900	$142,212		$110,129	$107,289	$137,686	$70,088

Table S12. Nine-month Salaries, 38 Responses of US CS Public In Large City or Suburbs, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	34	31	34	4	31	37	3	35	36	22	23
Indiv	187	150	176	13	96	258	12	196	183	127	134
10	$119,238	$117,637	$109,296	*	$91,098	$93,016	*	$84,522	$55,685	$56,667	$42,511
25	$135,797	$129,007	$128,073	*	$97,446	$102,931	*	$90,305	$61,350	$66,874	$48,000
50	$148,672	$141,882	$132,423	$164,945	$103,874	$108,233	$105,401	$95,258	$70,054	$92,943	$55,335
75	$164,803	$165,020	$145,139	*	$110,737	$112,977	*	$99,234	$81,589	$100,346	$63,700
90	$172,477	$178,831	$150,990	*	$120,535	$119,715	*	$103,802	$98,782	$119,208	$68,429

Table S13. Nine-month Salaries, 27 Responses of US CS Public In Midsize City or Suburbs, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	21	23	22	3	19	24	2	26	21	13	17
Indiv	99	102	107	43	53	154	21	112	82	53	72
10	$120,786	$113,353	$102,283	*	$94,283	$90,774		$82,508	$50,246	$52,467	$23,282
25	$132,709	$127,478	$118,278	*	$97,353	$99,253		$87,090	$59,063	$74,226	$43,288
50	$143,467	$141,780	$130,495	$165,300	$100,107	$106,195		$93,071	$65,823	$86,420	$50,595
75	$165,747	$154,740	$145,377	*	$114,151	$112,518		$99,620	$75,760	$94,200	$59,391
90	$194,435	$178,211	$162,873	*	$119,566	$117,326		$110,053	$106,195	$105,459	$69,400

Table S14. Nine-month Salaries, 40 Responses of US CS Public in Small City, Town, or Rural, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	29	36	34	3	30	37	3	37	32	12	18
Indiv	106	127	120	10	90	230	12	147	120	41	112
10	$111,877	$116,179	$106,955	*	$92,627	$92,384	*	$81,475	$49,838	$60,127	$42,409
25	$130,492	$121,723	$114,721	*	$97,586	$96,822	*	$84,361	$55,128	$66,286	$46,254
50	$152,683	$136,791	$131,109	$151,840	$100,887	$102,398	$102,540	$88,755	$62,585	$69,637	$51,285
75	$165,120	$153,149	$147,896	*	$112,844	$110,068	*	$93,493	$74,868	$76,647	$57,036
90	$180,088	$165,338	$159,073	*	$120,776	$119,188	*	$99,748	$83,882	$121,622	$61,669

Table S15. Nine-month Salaries, 21 Responses of US CS Private in Large City or Suburbs, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	17	17	20	1	15	20	1	22	20	16	15
Indiv	103	97	97	6	70	142	6	137	140	111	118
10	$116,810	$124,706	$116,163		$91,183	$100,273		$91,530	$54,992	$57,708	$37,354
25	$136,566	$137,694	$127,109		$102,366	$107,690		$95,125	$69,071	$71,769	$43,500
50	$168,300	$155,592	$150,167		$115,103	$117,767		$102,088	$75,612	$95,751	$52,627
75	$196,955	$184,133	$173,941		$129,479	$131,794		$106,767	$85,778	$129,306	$61,250
90	$210,091	$192,746	$214,274		$141,850	$141,857		$110,544	$100,198	$152,573	$70,398

Table S16. Nine-month Salaries, 11 Responses of US CS Private in Other than Large City, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	8	9	8	1	5	9	1	10	6	6	7
Indiv	54	40	38	17	17	46	1	43	19	18	47
10	*	*	*		*	*		$91,443	*	*	*
25	*	*	*		*	*		$100,969	*	*	*
50	$171,472	$176,358	$148,577		$103,791	$113,900		$103,404	$87,159	$77,875	$55,000
75	*	*	*		*	*		$110,036	*	*	*
90	*	*	*		*	*		$110,464	*	*	*

Table S17. Nine-month Salaries, 9 Responses of 30 US Computer Engineering Departments, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	7	8	7	3	8	8	2	8	6	4	4
Indiv	37	31	34	13	17	45	7	26	18	7	12
10	*	*	*	*	*	*		*	*	*	*
25	*	*	*	*	*	*		*	*	*	*
50	$148,905	$151,196	$112,785	$120,000	$99,460	$100,513		$92,003	$64,691	$89,660	$51,145
75	*	*	*	*	*	*		*	*	*	*
90	*	*	*	*	*	*		*	*	*	

Table S18. Nine-month Salaries, 12 Responses of 21 US Information Departments, Percentiles from Department Averages

	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	6	10	11	0	10	12	0	12	11	7	8
Indiv	22	48	50	0	51	93	0	90	111	24	26
10	*	$108,002	$129,221		$81,803	$88,470		$77,852	$29,296	*	*
25	*	$126,514	$134,682		$94,042	$103,612		$86,351	$57,125	*	*
50	$132,991	$140,817	$138,232		$105,891	$107,608		$92,945	$71,901	$84,333	$46,949
75	*	$174,557	$164,358		$120,563	$116,812		$99,023	$79,595	*	*
90	*	$184,985	$187,055		$160,879	$125,337		$106,156	$88,987	*	*

Table S19. Nine-month Salaries, 13 Responses of 26 Canadian Departments, Percentiles from Department Averages											
	Full Professor				Associate			Assistant	Non-Tenure Track		
	In rank 16+ yrs	In rank 8-15 yrs	In rank 0-7 years	Years not given	In rank 8+ years	In rank 0-7 years	Years not given		Teach	Research	Postdoc
Depts	12	12	11	0	11	12	0	12	12	4	11
Indiv	78	85	106	0	84	110	0	43	54	11	128
10	$148,304	$142,106	$118,272		$108,570	$107,412		$88,308	$70,600	*	$34,780
25	$156,073	$150,225	$133,123		$123,807	$113,128		$92,736	$73,418	*	$37,596
50	$165,090	$172,242	$162,000		$139,681	$121,744		$99,565	$83,458	$84,703	$46,620
75	$197,011	$184,905	$169,160		$158,233	$142,560		$114,771	$104,891	*	$52,714
90	$228,270	$199,269	$181,670		$168,215	$156,508		$127,474	$123,099	*	$63,750

Table S20. Nine-month Salaries for New PhDs							
	US (CS, CE, and Info Combined)				Canadian			
	Tenure-Track	Non-ten Teaching	Non-ten Research	Postdoc	Tenure-Track	Non-ten Teaching	Non-ten Research	Postdoc
Depts	59	18	17	41	2	0	1	4
Indiv	105	65	19	142	2	0	1	16
10	$82,971	$15,268	$17,829	$40,148	*			*
25	$88,750	$46,230	$46,313	$44,627	*			*
50	$93,000	$61,000	$68,615	$50,000	*			$44,167
75	$98,000	$75,000	$93,449	$58,813	*			*
90	$101,617	$92,399	$139,000	$66,814	*			*

Table S21. Salary Changes for Departments that Reported in Both 2012 and 2013				
	US CS (125)	US CE (7)	US I (10)	Canadian (11)
Full Profs	+2.8%	+2.4%	-3.1%	+2.4%
Assoc. Profs.	+1.9%	-0.7%	+0.2%	+2.0%
Asst. Profs.	+2.5%	+4.8%	+2.3%	-4.8%
Non-ten-track teaching faculty	+3.7%	-7.5%	+2.3%	-3.7%
Research faculty	+4.3%	+26.1%	+1.6%	+1.5%
Post doctorates	+3.9%	-1.9%	-4.7%	-14.1%

Figure S1. US CS Department Average Salary, Full Professor in Rank 16+ Years
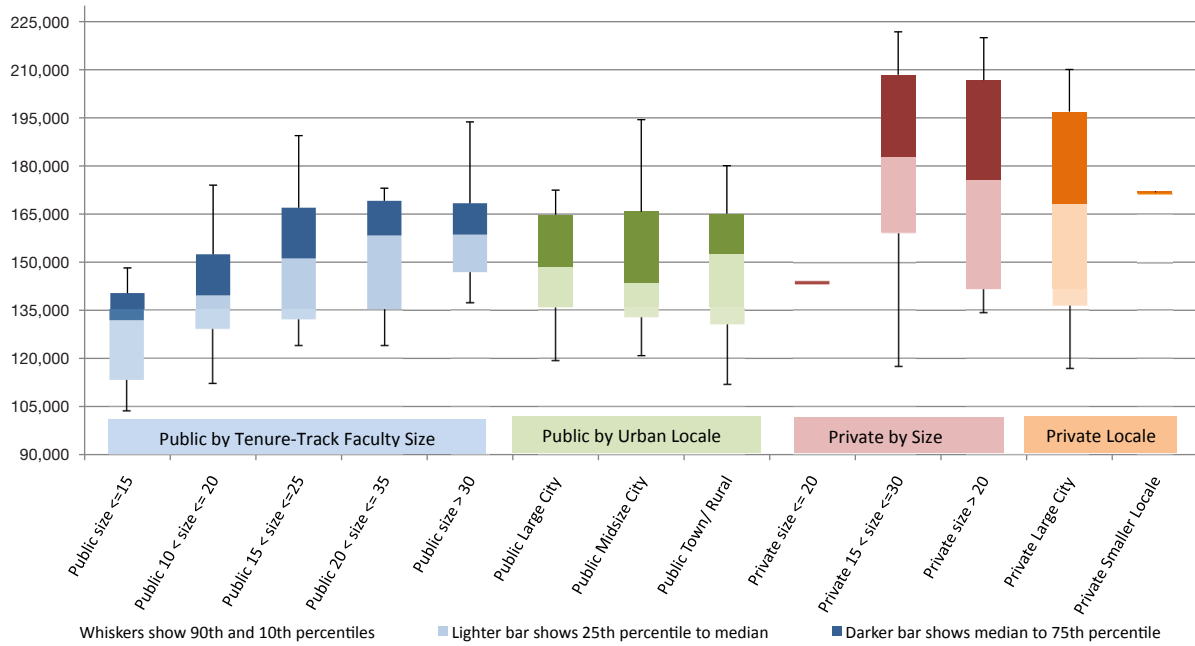
CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   ■ Lighter bar shows 25th percentile to median   ■ Darker bar shows median to 75th percentile

Figure S2. US CS Department Average Salary, Full Professor in Rank 8-15 Years

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   ■ Lighter bar shows 25th percentile to median   ■ Darker bar shows median to 75th percentile
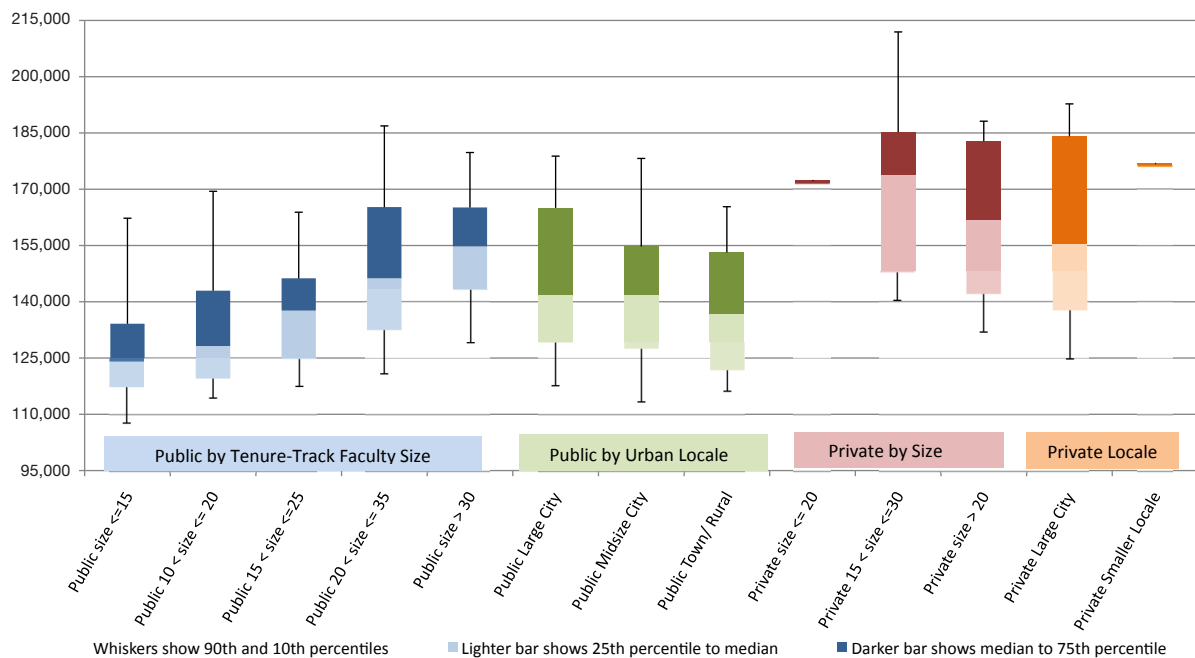
Figure S3. US CS Department Average Salary, Full Professor in Rank 0-7 Years

CRA Taulbee Survey 2013
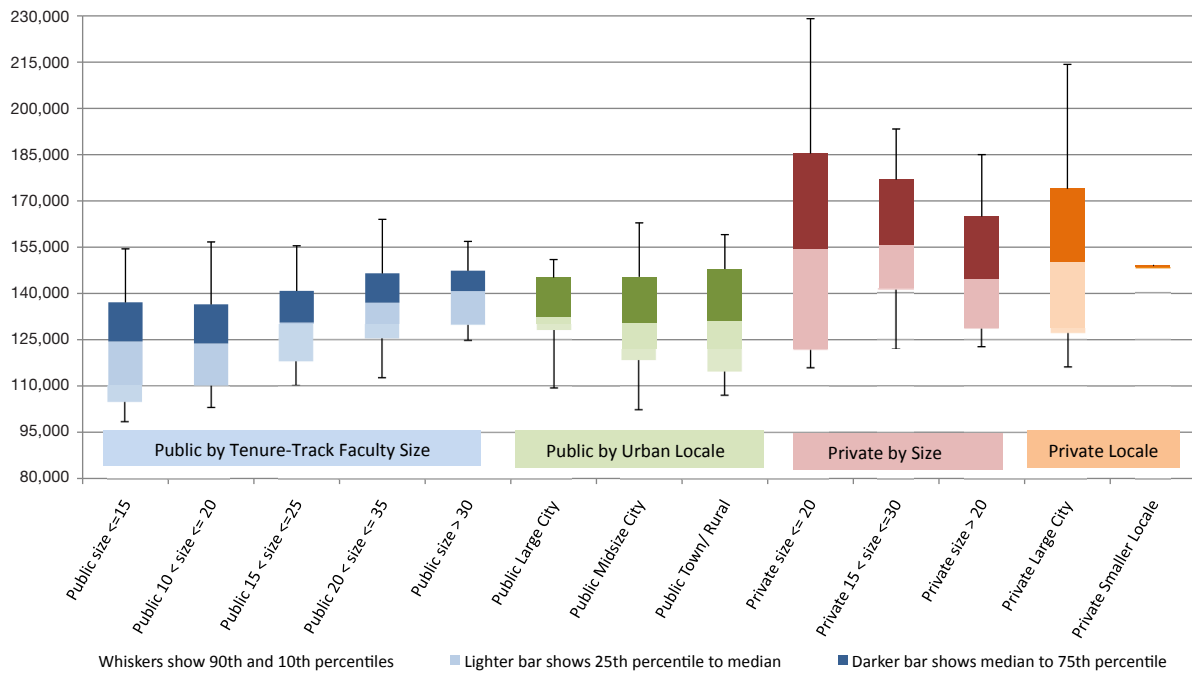
Figure S4. US CS Department Average Salary, Associate Professor in Rank 8+ Years

CRA Taulbee Survey 2013
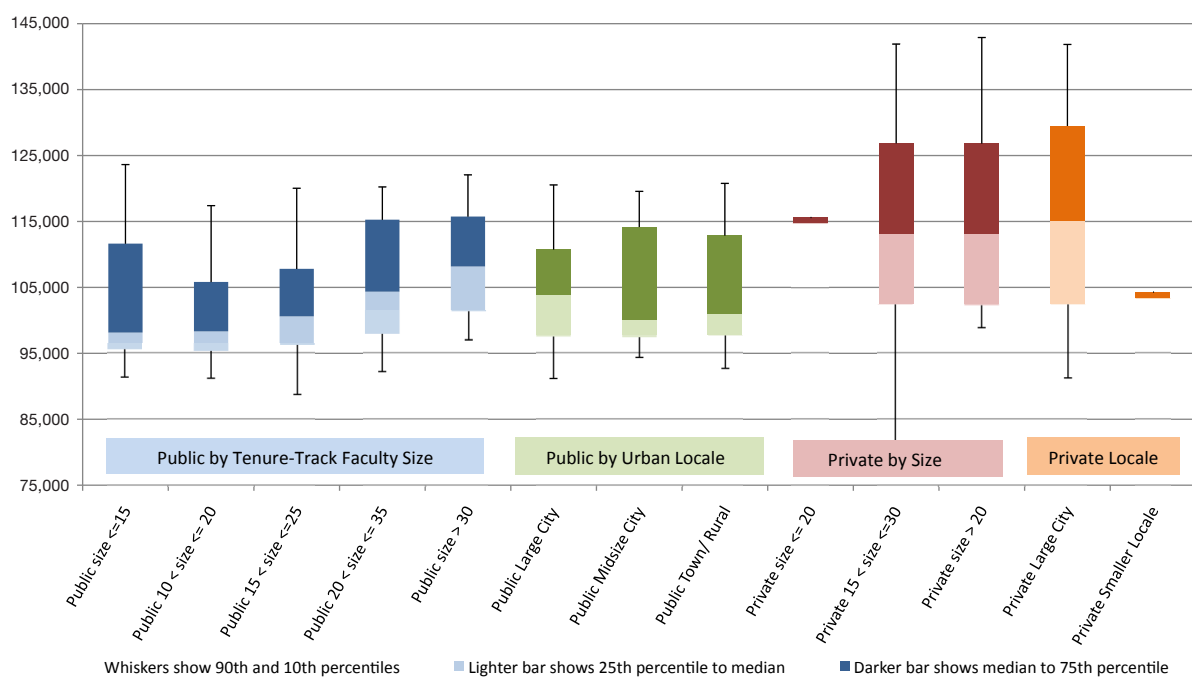
Figure S5. US CS Department Average Salary, Associate Professor in Rank 0-7 Years

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile
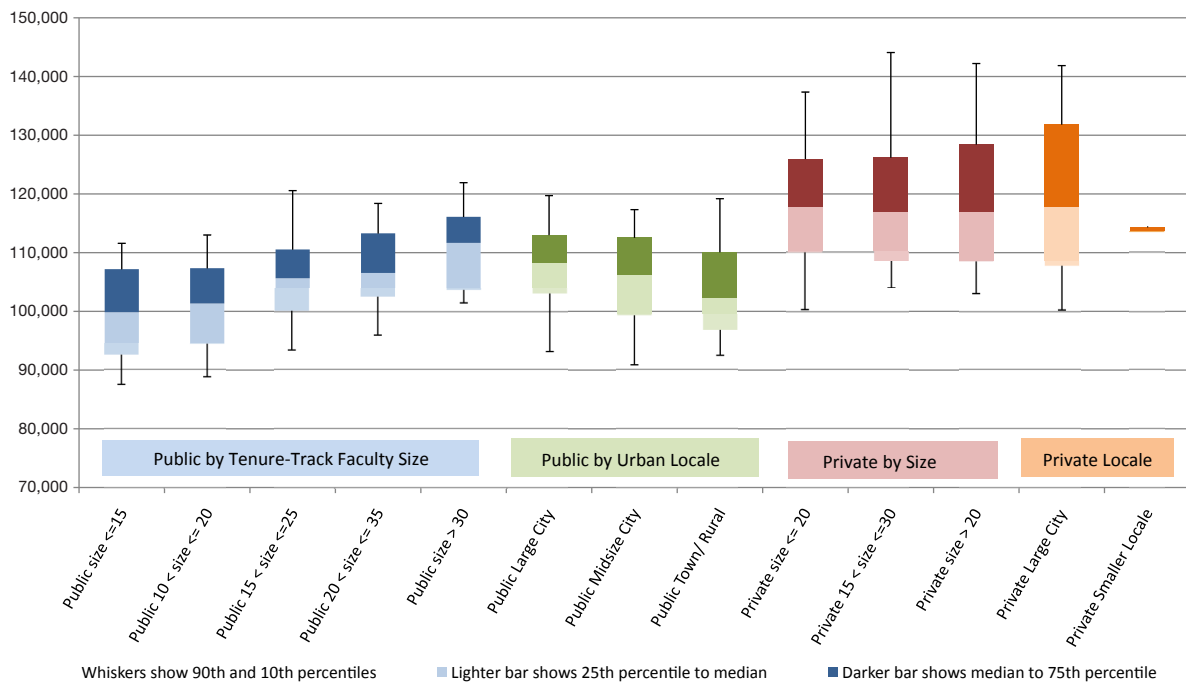
Figure S6. US CS Department Average Salary, Assistant Professor

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile
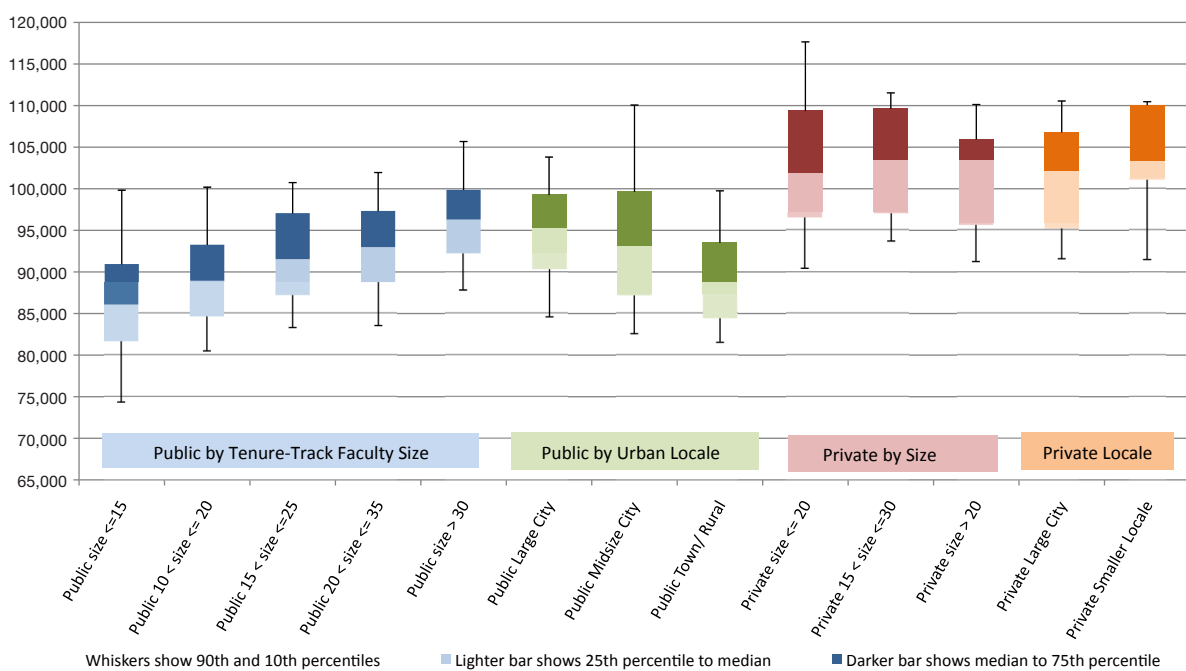
Figure S7. US CS Department Average Salary, Non-Tenure Track Teaching Faculty

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile
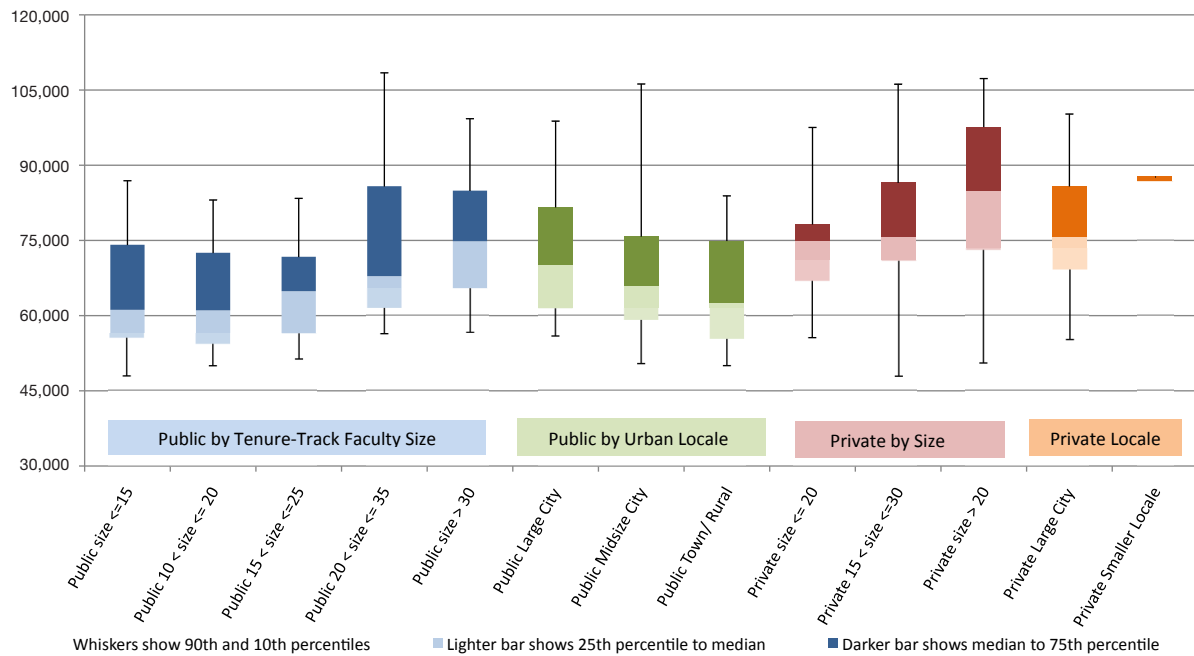
Figure S8. US CS Department Average Salary, Non-Tenure Track Research Faculty

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles   Lighter bar shows 25th percentile to median   Darker bar shows median to 75th percentile
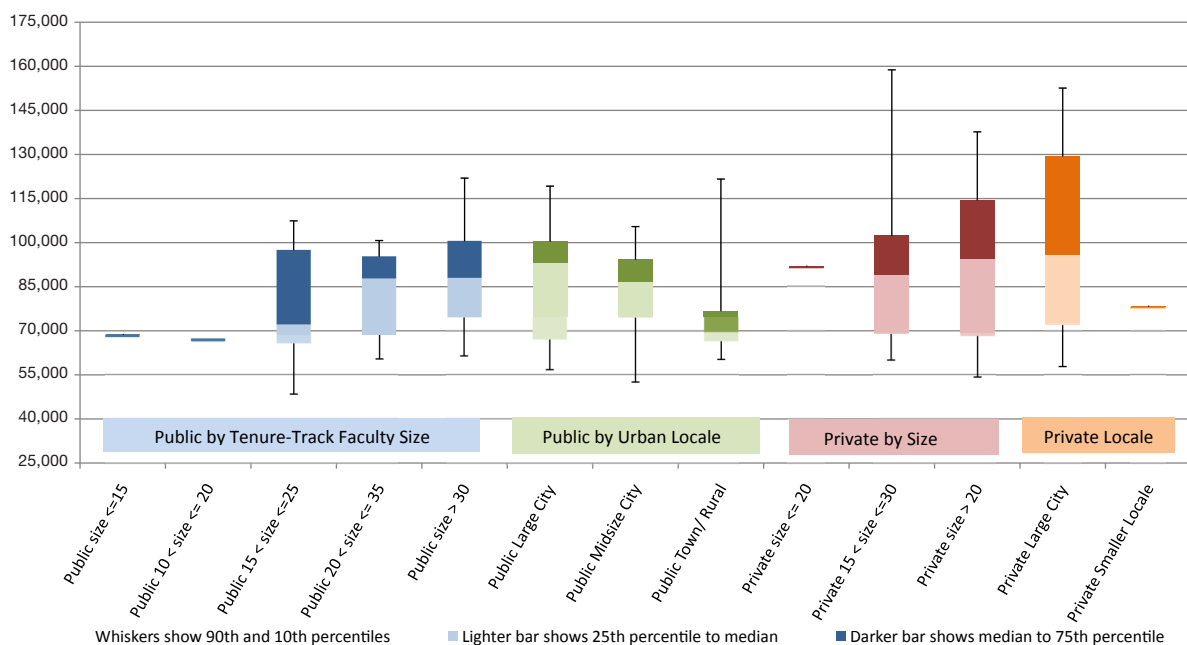
Figure S9. US CS Department Average Salary, Postdoctorates

CRA Taulbee Survey 2013

Whiskers show 90th and 10th percentiles · Lighter bar shows 25th percentile to median · Darker bar shows median to 75th percentile
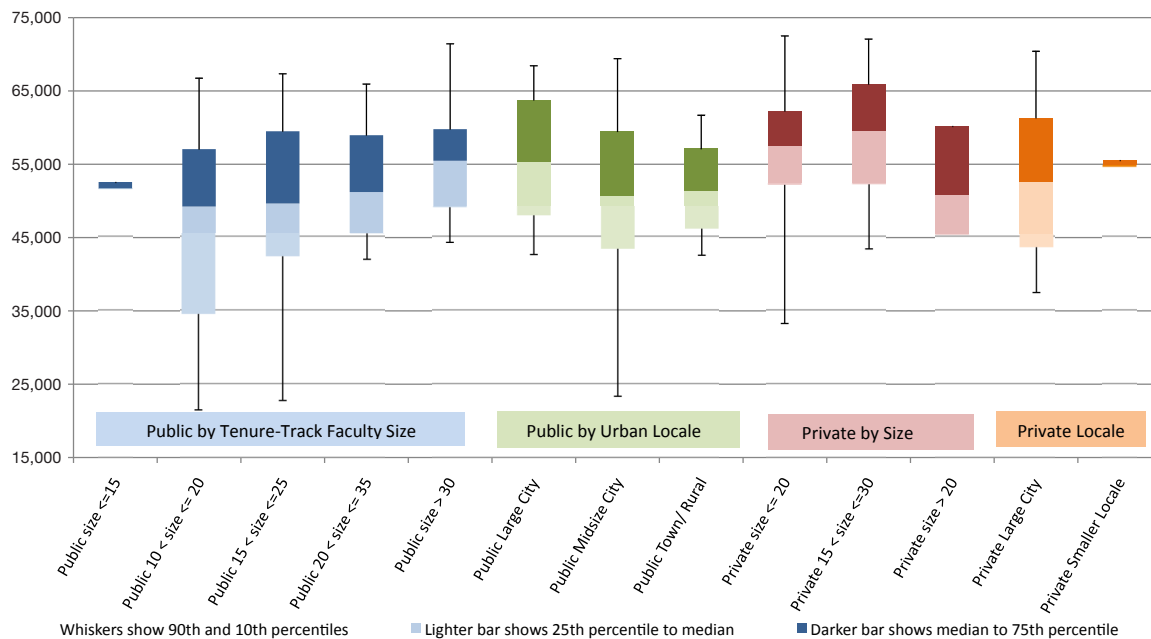
Concluding Observations

Undergraduate students continue to flock to computing majors, putting increased teaching pressure on the faculty and demonstrating the recognition of computing as a valuable career choice. For the first time in four years, the fraction of doctoral graduates who took tenure-track positions at doctoral-granting departments rose, albeit by a very modest amount. Industry's ability to employ the lion's share of doctoral graduates is impressive, and most of those taking industry positions go into some kind of research position. There seems to be ample and diverse opportunity for doctoral graduates to pursue their chosen field.

Participating Departments

US CS Public (105): Arizona State, Auburn, Clemson, College of William & Mary, Colorado School of Mines, Colorado State, Florida International, Florida State, George Mason, Georgia Tech, Indiana, Iowa State, Kansas State, Kent State, Louisiana State, Michigan State, Michigan Technological University, Mississippi State, Missouri Science & Technology, Montana State, Naval Postgraduate School, New Mexico State, North Carolina State, North Dakota State, Ohio State, Ohio, Oklahoma State, Old Dominion, Oregon State, Pennsylvania State, Portland State, Purdue, Southern Illinois (Carbondale), Stony Brook (SUNY), Temple, Texas A&M, Texas Tech, Universities at Albany and Buffalo (SUNY), Universities of: Alabama (Birmingham and Tuscaloosa),

Arizona, Arkansas, Arkansas at Little Rock, California (Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, Santa Barbara, and Santa Cruz), Central Florida, Colorado (Boulder), Connecticut, Delaware, Florida, Georgia, Hawaii, Houston, Idaho, Illinois (Chicago and Urbana Champaign), Iowa, Kansas, Kentucky, Louisiana at Lafayette, Maryland (College Park and Baltimore County), Massachusetts (Amherst and Boston), Michigan, Minnesota, Mississippi, Missouri (Columbia), Nebraska (Omaha and Lincoln), Nevada (Las Vegas and Reno), New Hampshire, New Mexico, North Carolina (Chapel Hill and Charlotte), North Texas, Oklahoma, Oregon, Pittsburgh, Rhode Island, South Carolina, South Florida, Tennessee (Knoxville), Texas (Austin, Dallas, and El Paso), Utah, Vermont, Virginia, Washington, Wisconsin (Madison and Milwaukee), Wyoming, Virginia Tech, Washington State, Western Michigan, and Wright State.

US CS Private (37): Boston University, Brown, Carnegie Mellon, Case Western Reserve, Columbia, Cornell, Dartmouth, DePaul, Drexel, Duke, Florida Institute of Technology, Harvard, Illinois Institute of Technology, Johns Hopkins, Lehigh, MIT, New York University, Northeastern, Pace, Polytechnic, Princeton, Rensselaer, Rice, Rochester Institute of Technology, Stanford, Stevens Institute of Technology, Toyota Technological Institute at Chicago, Tufts, Universities of: Chicago, Notre Dame, Pennsylvania, Rochester, Southern California, and Tulsa, Washington in St. Louis, Worcester Polytechnic Institute, and Yale.

US CE (10): Florida Institute of Technology, North Carolina State, Princeton, Purdue, Santa Clara, Universities of: Illinois (Urbana Champaign), Iowa, New Mexico, and Southern California, and Virginia Tech.

US Information (13): Cornell, Drexel, Indiana, Penn State, Purdue (IT), Syracuse, University at Albany (SUNY), Universities of: California (Berkeley), Maryland (Baltimore County), Michigan, North Carolina (Chapel Hill), Pittsburgh, and Washington.

Canadian (14): Concordia, Dalhousie, McGill, Memorial University of Newfoundland, Simon Fraser, Universities of: Alberta, British Columbia, Calgary, Manitoba, Ottawa, Toronto, Victoria, and Waterloo, and York University.

---

[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. Surveys were sent to CRA members, the CRA 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 who meet these criteria and would like to participate in the survey in future years are invited to contact survey@cra.org for inclusion.

[3]Classification of the population of an institution's locale is in accordance with the Carnegie Classification database. Large cities are those with population >= 250,000. Mid-size cities have population between 100,000 and 250,000. Town/rural populations are less than 100,000.

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

[5]These comparisons are different from those reported in the March 2014 sneak preview article in CRN. This is because we discovered that some bachelor's degree data was reported incorrectly by departments last year. See also end note 6. The discovery was made after the sneak preview article was published. We regret this error.

[6]Normally, we would provide comparative data with 2011-12 about bachelor's degrees by gender and by ethnicity. However, we are unable to do so. When reviewing the bachelor's degree data reported this year and comparing it with last year's data, we observed discrepancies that appeared odd. More detailed investigation revealed that some departments reported their bachelor's degree data inaccurately last year. We were able to obtain corrected total 2011-12 bachelor's degrees for these departments, but did not obtain corrected 2011-12 gender and ethnicity data from them. Hence, comparisons against any bachelor's degree data by gender or ethnicity that was reported last year would be inappropriate. We caution our readers to not use the bachelor's degree data from last year's Taulbee Survey articles. The corrected bachelor's degree data by department type appears in this article's Table B1(2012). Table 1 also reflects these corrections. Total bachelor's enrollment and new student enrollment data, and master's and doctoral student degree data, were unaffected by these errors.

[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.

Department Type	# Depts	CS		CE		I		Total	
Table B1 (2012 UPDATED). Bachelor's Degrees Awarded by Department Type									
US CS Public	105	6,932	67.2%	1,365	63.7%	1,004	41.2%	9,301	62.4%
US CS Private	37	2,248	21.8%	268	12.5%	278	11.4%	2,794	18.8%
Total US CS	142	9,140	88.5%	1,633	76.2%	1,282	52.6%	12,055	80.9%
US CE	9	0	0.0%	406	18.9%	0	0.0%	406	2.7%
US Info	9	0	0.0%	0	0.0%	1,116	45.8%	1,116	7.5%
Canadian	14	1,182	11.5%	104	4.9%	38	1.6%	1,324	8.9%
Grand Total	174	10,322		2,143		2,436		14,901	