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Expanding the Pipeline: Diversity Drives Innovation

By Kathryn S. McKinley and Tracy Camp

Lack of diversity in computing is an enormous opportunity cost for technical innovation. For example, recent studies published by NCWIT show patents with diverse authors are cited more and companies with a more diverse sales force have more income. Diversity drives innovation.

Even as demand for computing professionals grows, women and minorities are severely under-represented. For example, only 5.7% of the computer and mathematical workforce is Hispanic and 6.9% are African American according to the Bureau of Labor Statistics, whereas Hispanics and African Americans make up 30% of the US population (2010 US census). Under-representation at research institutions is worse than the profession as a whole. While 25% of computing professionals are women, only 13% of Full Professors are women. Figure 1 shows the lack of diversity in computing doctoral degrees. At major research universities, only 14% of undergraduate degree recipients were women. Minority representation is even bleaker. Blacks represent only 1.4% of all computing faculty. Only 10 women of color, out of 3000+, serve as faculty members at the top ranked 100 computing departments.

Severe under-representation of minorities and women (URM+W) at top ranked research institutions is self-perpetuating at best, as it compounds with *pedigree bias* (all faculty positions are disproportionally filled with graduates from top ranked institutions). At worst, under-representation may drive out more URM+W students because they lack role models, mentors, and peers who "look like them."

CRA-Women, the Computer Research Association's Committee on the Status of Women in Computing Research (CRA-W), is working to change this dire situation by increasing the participation and success of women in computing. Founded in 1992, CRA-W has developed a suite of intervention programs to increase the success of women in computing research and education. These programs seek to produce academic and industry role models, mentors, and leaders that are diverse, because the diversity of research leadership drives student and workforce diversity. CRA-W partners with the Coalition to Diversify Computing (CDC), the Grace Hopper Celebration of Women in Computing Conference (GHC), Access Computing, and others to reach Under Represented Minorities and Women (URM+W), and people with disabilities. Figure 2 shows the range of CRA-W programs (some of which are collaborations with CDC) and how they span individual and group mentoring for undergraduates, graduate students, junior faculty members, and mid-career faculty members.

CRA-W programs apply social science research that shows research experiences, career knowledge, communities, and mentoring encourage

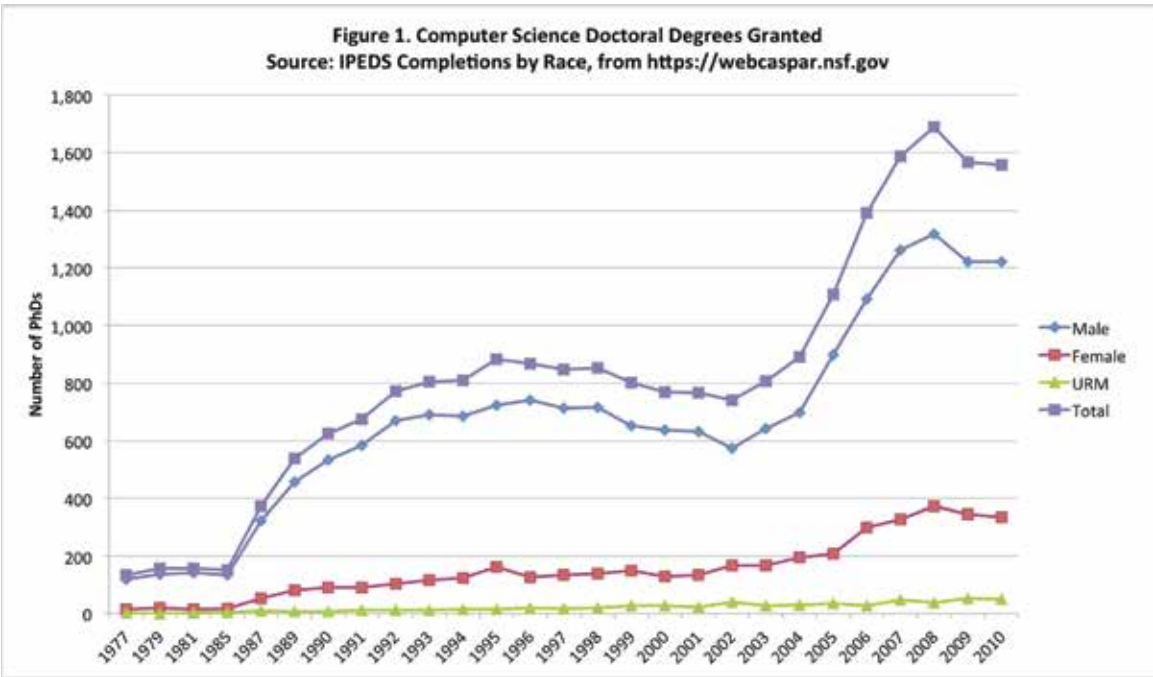

Fig. 1: Computer Science Doctoral Degrees Granted

persistence in research careers. For each intervention program, CRA-W carefully selects and helps prepare successful senior women and URMs (as well as a few majority men) to provide research experiences, to communicate career knowledge, and to mentor students, young researchers, and mid-career researchers. These programs create a supportive national community (see Figure 3) of URM+W researchers within and across computing sub-disciplines, since these types of communities are usually not available at an individual's home institutions.

Pedagogically, these experiences and communities serve to counter act cultural computing stereotypes, to create a diversity peer and mentor community, and to create positive research experiences. To discover if these programs work, the NSF Broadening Participation in Computing (BPC) program recently awarded CRA-W and CDC a grant for intervention programs and evaluation. This grant established the CRA Center for Evaluating the Research Pipeline (CERP), which is creating a national sample of computing students and professionals to study their experiences and compare their paths to intervention program participants.

Initial results are extremely positive (see the CERP Infographic in this CRN issue). Comparing other computing undergraduate and graduate students to CRA-W/CDC program participants reveals that CRA-W/CDC participants are more likely to persist in research, enroll in PhD programs, and publish compared to other students, even students with other research experiences.

Undergraduate programs include DREU, CREU, and a Distinguished Lecture Series. For example, the CRA-W/CDC Distributed Research Experiences for Undergraduates (DREU) program matches URM+W undergraduate students with URM+W faculty members with active research groups at another

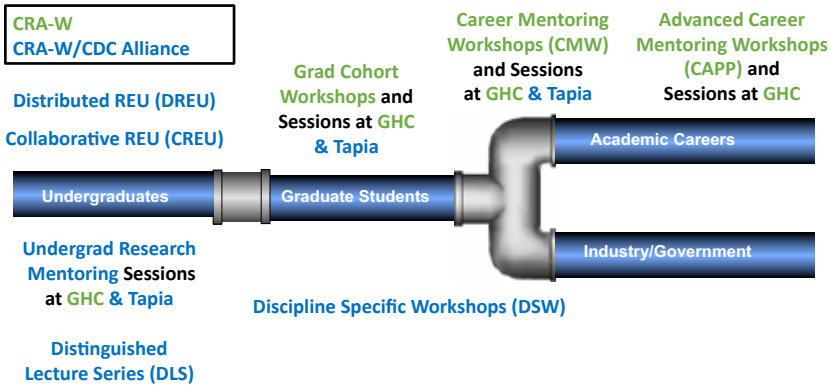

Fig. 2: CRA-W Programs for Women and Minorities

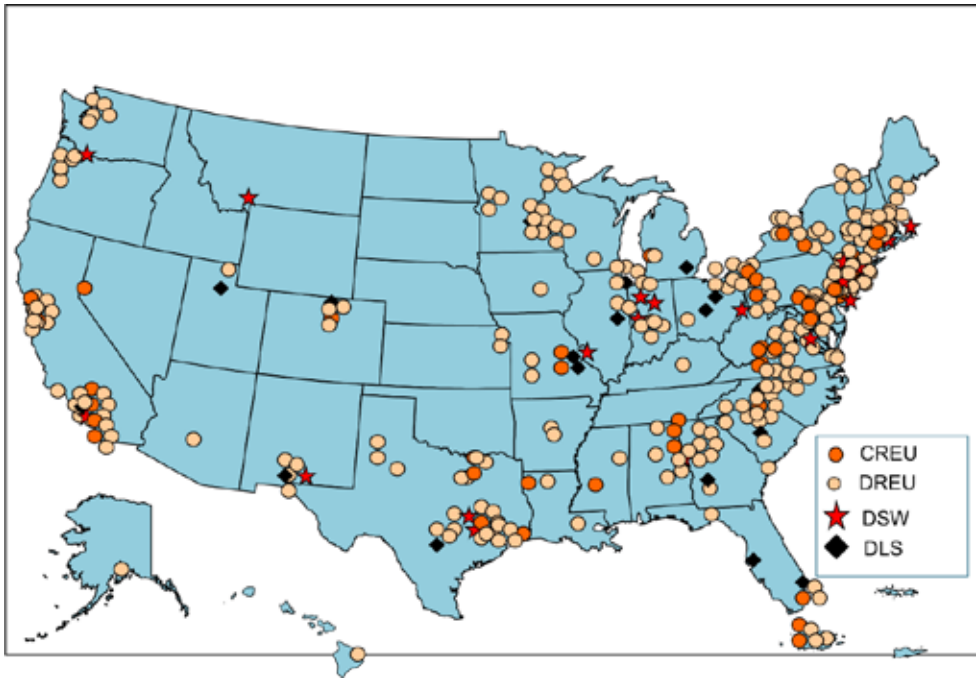

Fig. 3: CRA-W is Creating a National Community of Undergraduates, Graduate Students, and Faculty

institution for a 10-week summer research experience proposed by the mentor. The DREU program defines milestones and expectations for students and advisors, including a web page and periodic reports from the mentor and mentee. Mentors discuss research careers with the mentees. DREU students participate in graduate student life and benefit from a close mentoring relationship with their advisors. The learning experience begins during the application process, which is modeled upon the graduate school application process. It includes letters of recommendation and a research statement. These activities generate uniform expectations and programmatic experiences for all participants, in spite of differing research projects.

Figure 4 shows that CRA-W/CDC undergraduate program participants continue on to graduate school in master's and PhD programs at a higher rate than non-participants, adding URM+W to the computing research pipeline.

Table 1 shows the number of women and URM men that applied and participated in DREU since 1994. In 2007, CRA-W and CDC formed an Alliance to reach URMs and the number of URMs rose as a consequence. Due to funding constraints DREU always has more highly qualified applicants than it can support.

If you have REU funding, DREU can match you with an outstanding URM+W applicant. We encourage you to participate in DREU and apply as a mentor. For more information, contact dreu@cs.tamu.edu.

For graduate students, CRA-W offers Discipline Specific Workshops (with CDC), Career Mentoring Workshops (see Figure 5), and Grad Cohort. For example, Grad Cohort is a two-day workshop for first, second, and third year graduate students. A wide range of successful senior women researchers from academia and industry serve as role models. They offer practical advice and information on navigating graduate school. Example sessions include picking a thesis topic, writing papers, attending conferences, networking, internships, job hunting (it is never too early), publishing, interdisciplinary research, and managing your advisor. Figure 6 shows four accomplished speakers from Grad Cohort in 2012. Speakers describe personal insights on the challenges and rewards of their own careers. The workshop provides advising, mentoring, and peer networking opportunities.

Figure 7 shows that compared to their peer graduate students at the same career stage, continuing graduate students who attended CRA-W Grad Cohort are *twice* as likely to publish and *three* times more likely to be first author on a publication. Since publishing is a key step in a successful career, these milestones bode well for their future success.

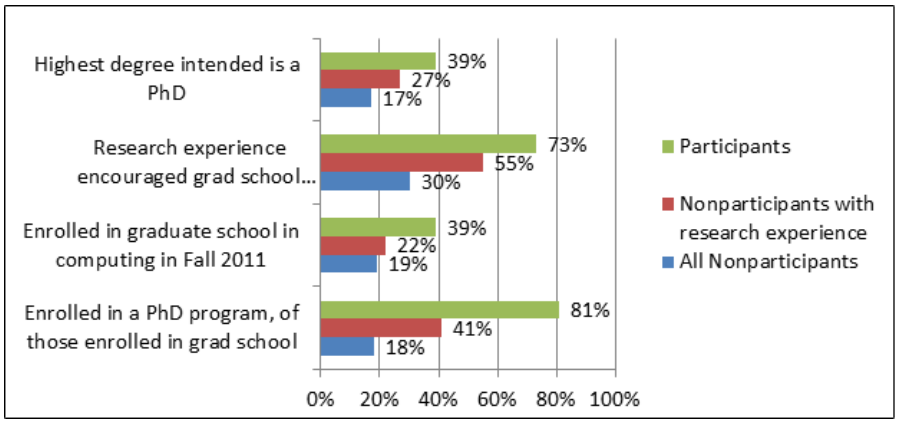

Fig. 4: CRA-W Undergraduate Program Participants Continue to Research Careers at a Higher Rate than Non-Participants

Year	Women	Under-Represented Men	Applicants
1994	22		
1995	28		
1996	20		74
1997	24		74
1998	20		60
1999	18		43
2000	20		46
2001	29		60
2002	33		103
2003	36		224
2004	44		195
2005	38		144
2006	42		227
2007	31	2	110
2008	36	6	71
2009	57	18	173
2010	54	13	189
2011	32	21	107
2012	36	11	150

Table 1: DREU Statistics
660 total students from 282 institutions hosted by 96 institutions

Table 2 shows the number of participants and applicants to Grad Cohort. In 2013, Grad Cohort was supported by industrial contributions from Microsoft (Platinum), ACM Special Projects (Gold), CRA (Silver), Google (Silver), a Private Foundation (Silver), Yahoo, IBM, and numerous Computer Science Departments. Unfortunately, as Table 2 shows, Grad Cohort has far more applicants than CRA-W is able to support.

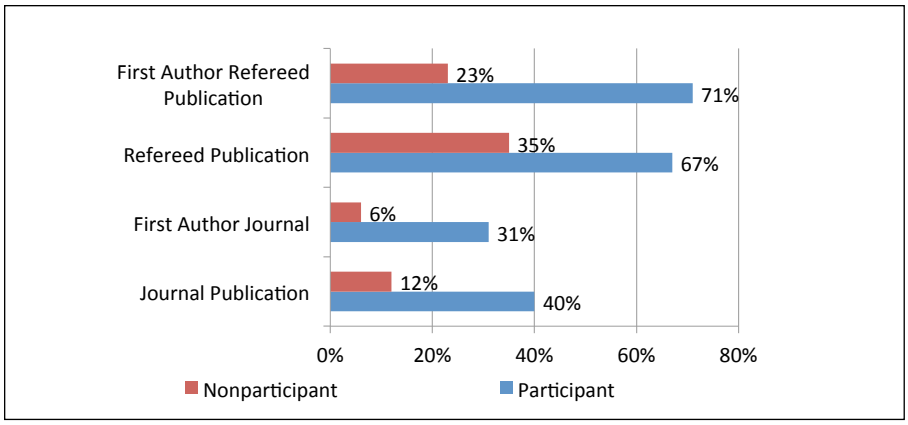

Fig. 7: Continuing Graduate Students who Participate in CRA-W Graduate Student Programs are More Successful in Publishing their Research

Fig. 5: Students Attending a CRA-W Career Mentoring Workshop at Grace Hopper

Fig. 6: Four of the 21 CRA-W 2012 Grad Cohort Mentors. From left to right: Professor Lori Pollock, University of Delaware (CRA-W Board); Professor Nancy Amato, Texas A&M (CRA-W Board); Professor Tiffani Williams, Texas A&M (CDC Member); Professor Margaret Martonosi, Princeton (CRA-W Board, CRA Board).

Note that, according to the Taulbee Survey in 2011, *only 345 women received a PhD in computing*. With 250 to 300 masters and PhD attendees each year, Grad Cohort reaches and impacts a large fraction of women computing graduate students. Demand is higher than CRA-W can currently support. CRA-W has the potential to reach and positively impact even more women and we needs your help to meet student demand. If you have women graduate students in your department or you supervise women graduate students, encourage them to apply to Grad Cohort. Even better, departments and advisors may sponsor students to attend Grad Cohort. To sponsor students, write to craw@cra.org.

Year	Women Participants	Applicants
2004	100	100
2005	200	225
2006	200	326
2007	245	279
2008	291	349
2009	240	350
2010	259	425
2011	294	578
2012	247	520
2013	302	549

Table 2: Grad Cohort Statistics 2376 total participants from over 125 institutions

A Call to Action

Increasing diversity starts with you. Every professor, student, and professional in computing is part of the solution to make computing a more welcoming, diverse, and thus innovative profession at a grass roots, departmental, institutional, and national level.

If you are a professor, call on and encourage URMs, women, and men equally in your classes. Apply to be a DREU/CREU mentor and pay for the student. Approach and give URM+W undergraduate and graduate students at your institution research experiences in your lab. Pay or get your department

to pay for URM+Ws to attend CRA-W/CDC programs, Grace Hopper, Tapia, and technical research conferences. Enroll your REU site and other intervention programs in CERP to see how well they work.

If you are a department chair, enroll your department as a "data buddy" department in CERP to help us create a larger national comparison group, making CERP a more comprehensive national resource for understanding student, faculty, and professional success and retention in computing.

If you are a URM+W in computing, join or start a research-centered support or outreach group. Attend CRA-W, CDC, Grace Hopper, and Tapia outreach programs. They work.

For all of us, vote and influence national and state policy makers to expand and fund outreach to diverse populations in computing, especially in K-12 CS education.

The CRA-W Board: Below we recognize the members of the CRA-W Board, who devote countless hours and boundless energy to developing and running CRA-W's programs.

Deb Agarwal, Lawrence Berkeley Lab
Nancy Amato, Texas A&M Univ.*
Carla Brodley, Tufts University*
A.J. Brush, Microsoft
Tracy Camp, Colorado School of Mines*
Sheila Castaneda, Clarke University*
Lori Clarke, Univ. of MA, Amherst*
Joanne Cohoon, University of Virginia
Andrea Danyluk, Williams College
Dilma Da Silva, Qualcomm
Sandhya Dwarkadas, Univ. of Rochester
Carla Ellis, Duke University, Emeritus*
Maria Gini, Univ. of Minn.
Julia Hirschberg, Columbia University
Anna Karlin, Univ. of Washington
Tessa Lau, Willow Garage
Patty Lopez, Intel
Margaret Martonosi, Princeton Univ. *
Kathryn McKinley, Microsoft & UT Austin*
Gail Murphy, Univ. of British Columbia
Lori Pollock, Univ. of Delaware*
Susan Rodger, Duke University
Holly Rushmeier, Yale University
Mary Lou Soffa, Univ. of Virginia*
Rebecca Wright, Rutgers University

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*Steering Committee

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Kathryn S. McKinley is a Principal Researcher at Microsoft, an Endowed Professor of Computer Science at the University of Texas, CRA-W co-chair (2011-2014), DARPA ISAT Board member (2012-present), and CRA Board member (2012-2015). Her research interests include programming language implementation, security, and architecture. She is an IEEE Fellow and an ACM Fellow.

Tracy Camp is a Professor at the Colorado School of Mines, CRA-W co-chair (2011-2014), and CRA Board member (2013-2016). Her interdisciplinary work develops technology for intelligent geosystems (such as earth dams and levees) that sense their environment and adapt to improve performance. Her honors include Board of Trustees Outstanding Faculty Award at the Colorado School of Mines, a Fulbright Scholar, and ACM Fellow.

2013 CRA-W Graduate Cohort Workshop

by Erik Russell, CRA Director of Programs

Boston offered up a sunny and brisk 52 degrees on April 4th as 338 participants, speakers, and staff began to arrive at the Seaport Hotel near the Boston Harbor. The hotel was the site of the 2013 CRA-W Graduate Cohort Workshop on April 5-6, 2013.

Grad Cohort is a workshop designed for women who are in their first, second, or third year of graduate school and studying computer science, computer engineering, or a closely related field. The workshop includes plenary sessions as well as three separate tracks for first, second, and third year participants. Plenary sessions included Strategies for Human-Human Interaction, Building Your Professional Persona, and Balancing Grad School and Personal Life.

First year sessions included topics such as Networking, Master's vs. PhD, Finding and Training Your Advisor, Financially Supporting Your Graduate Education, and Summer Internships. Topics offered to second year participants included Presentation and Other Verbal Communication Skills, Finding a Research Topic, MS Career Opportunities and Job Search, Building Self-Confidence, and Interdisciplinary Research. Third year sessions addressed Preparing Your Thesis Proposal and Becoming a PhD Candidate, Publishing Your Research, PhD Academic Career Paths, PhD Non-Academic Career Paths: Industrial Research and Development, and PhD Job Search.

Eighty-three participants signed up to present their research at the poster session held Friday afternoon. The poster session is always inspiring as it provides students the opportunity to present their research and receive feedback from other participants, speakers, sponsors, and local university faculty who also attend.

The Friday evening reception was once again a popular part of the workshop as students, speakers, and sponsors were able to socialize in a fun and energetic atmosphere. The reception, graciously co-hosted by Microsoft Research and Google, began at 6:30 and included plenty of food and dancing. Don't blame it on the sunshine, don't blame it on the moonlight, don't blame it on the good times, blame it on the boogey…

This year's Grad Cohort was the largest to date with 302 graduate students representing 118 institutions across the United States and Canada. We would like to thank the following sponsors for the investment they made in the lives of participants and speakers alike: Microsoft Research, Association for Computing Machinery – SIG Special Project Fund, Computing Research Association, Google, Yahoo!, IBM, a private foundation, and many university departments.

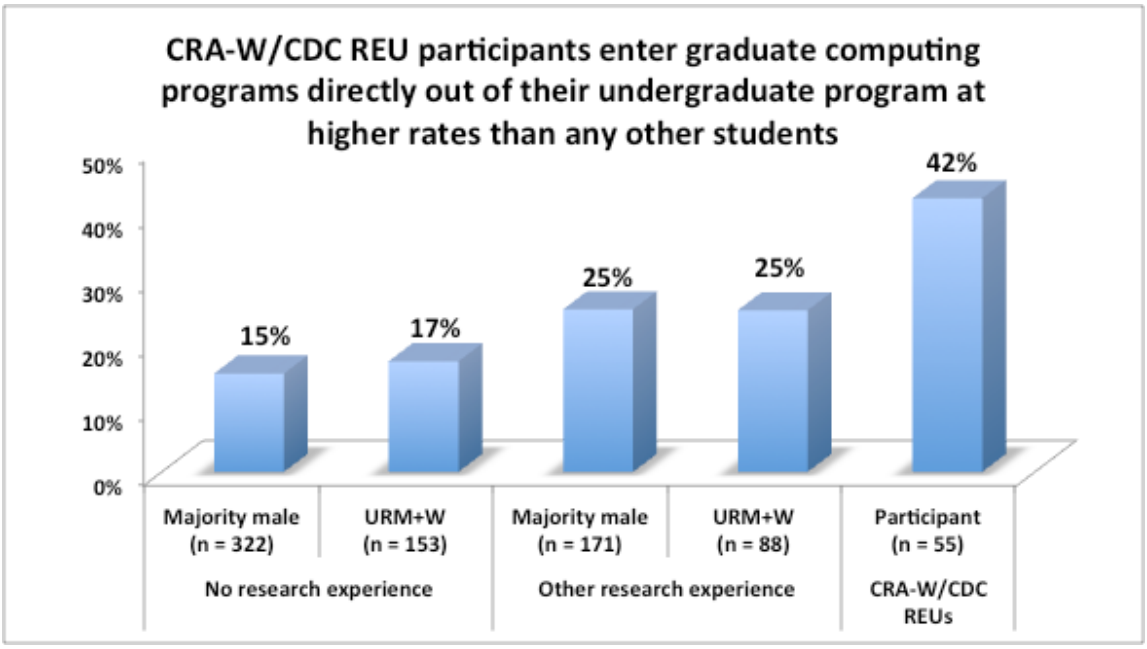
It takes a great deal of work to organize a workshop of this size and I'd like to personally thank the Grad Cohort co-chairs: Lori Clarke (University of Massachusetts Amherst), Sandhya Dwarkadas (University of Rochester), and Lori Pollock (University of Delaware). CRA staff members Sabrina Jacob and Sandra Corbett are also to be congratulated on a job well done.

Suju Rajan (Yahoo! Labs) speaks with a participant during one of the breaks.

Maria Francesca O'Connor (University of Notre Dame) presents her research to Rita Wouhaybi of Intel.

CRA-W Grad Cohort co-chairs, ***Sandhya Dwarkadas, Lori Clarke,*** and ***Lori Pollock*** welcome the participants to Grad Cohort.

Center for Evaluating the Research Pipeline



Two samples of undergraduate students graduating with computing majors indicated their plans for the fall; data were collected during the spring of 2011 and 2012. CRA-W/CDC REU participants indicated that they planned to enroll in a computer science graduate program in the fall at a higher rate than any other type of students, $p \leq .05$.

Note: Majority male students = Asian + White men. Underrepresented minorities and women (URM+W) = American Indian, Black, Hawaiian or Hispanic men + women of all ethnic/racial backgrounds. Other research experiences = research projects at one's home institution during the school year + summer research projects at one's home institution or another university. CRA-W/CDC REU programs = Collaborative Research Experience for Undergraduates (CREU) + Distributed Research Experience for Undergraduates (DREU) + Multidisciplinary Research Opportunities for Women (MRO-W).

This analysis is brought to you by the CRA's Center for Evaluating the Research Pipeline (CERP). Want CERP to do comparative evaluation for your program or intervention? Contact cerp@cra.org to learn more. Be sure to also visit our website at http://cra.org/cerp/.

Addendum to April 2013 CERP Article

In September 2012, the National Science Foundation awarded funding for The Center for Evaluating the Research Pipeline (CERP) as part of a Broadening Participation in Computing grant to an Alliance of the Computing Research Association Committee on the Status of Women (CRA-W) and the Coalition to Diversify Computing (CDC). One of the primary goals of CERP will be to evaluate the efficacy of programs designed and run by members of the CRA-W and CDC, who volunteer immeasurable amounts of time and care deeply about improving diversity in computing.

Highlights of the CISE Fiscal Year 2014 Budget Request

By Farnam Jahanian

On April 10th, the President delivered the Fiscal Year 2014 Budget Request to Congress. The Administration is requesting a total of nearly $7.6 billion dollars for NSF, which is an increase of $593 million, or almost 8.4 percent, over the FY 2012 NSF Enacted level. The Request also includes an increase of $85 million, or 9.8 percent, over the FY 2012 Enacted Level for the Computer and Information Science and Engineering (CISE) directorate, for a total of $950.25 million. For more information on the NSF FY 2014 budget, see: http://www.nsf.gov/about/budget/fy2014/index.jsp.

For more than six decades, NSF has had a profound impact on our Nation's discovery and innovation ecosystem by funding transformative research that has pushed forward the frontiers of knowledge. As the only Federal agency dedicated to the support of basic research and education in all fields of science and engineering, NSF enables discoveries across a broad spectrum of scientific inquiry. In its mission to promote progress in computer and information science and engineering research, education and infrastructure, CISE will continue to cast a wide net, letting the best ideas surface. Requested funding for each of CISE's four divisions – Advanced Cyberinfrastructure (ACI), Computing and Communication Foundations (CCF), Computer and Network Systems (CNS), and Information and Intelligent Systems (IIS) will support a broad range of ambitious, long-term research in computer, communication, and information science and engineering.

The CISE FY 2014 Request is shaped by investments in its core basic research, education, and infrastructure programs as well as investments in a cross-cutting portfolio that aligns closely with national priorities and societal challenges. In particular, I want to emphasize four specific areas: 1) expansions of CISE foundational research; 2) cross-cutting areas of exploration; 3) advanced cyberinfrastructure; and 4) education and workforce development.

Expansions of CISE Foundational Research: I wish to take this opportunity to reaffirm CISE's strong commitment to its core programs in all areas of computer and information science and engineering. Specifically, I want to focus on two highly complementary foundational research programs launched last year – Core Techniques and Technologies for Advancing Big Data Science and Engineering (BIGDATA) and eXploiting Parallelism and Scalability (XPS). In partnership with all other NSF directorates, CISE is leading the BIGDATA program in its second year. The goal is to address fundamental big data challenges, whose solutions may have wide applicability across a broad range of science and engineering domains. In XPS, the goal is to support groundbreaking research leading to a new era of parallel computing. XPS seeks research re-evaluating, and possibly re-designing, the traditional computer hardware and software stack for today's heterogeneous parallel and distributed systems and exploring new holistic approaches to parallelism and scalability.

Cross-cutting Investments in which CISE is the Lead: CISE leads a number of programs that span multiple NSF directorates to catalyze foundational research. Secure and Trustworthy Cyberspace (SaTC) is a partnership with the Directorates for Education and Human Resources (EHR), Engineering (ENG), Mathematical and Physical Sciences (MPS), and Social, Behavioral, and Economic Sciences (SBE); it seeks to protect the Nation's critical infrastructure, including the Internet, from a wide range of threats that challenge its security and reliability. The Cyber-Physical Systems (CPS) program (with ENG) aims to deeply integrate computation, communication, and control into physical systems and to engineer complex "smart" cyberphysical systems. All NSF directorates are participating in Cyber-enabled Sustainability Science and Engineering (CyberSEES), which is a partnership with the Semiconductor Research Corporation (SRC); it aims to advance interdisciplinary research in which the science and engineering of sustainability are enabled by new advances in computing, and where computational innovation is grounded in the context of sustainability problems. Through programs such as the Innovation Corps (I-Corps), CISE will continue to foster public-private partnerships to accelerate transfer of knowledge from lab to practice to benefit society.

CISE is also actively engaging in several interagency initiatives and programs. For example, the National Robotics Initiative (NRI) is a partnership with three other agencies – NASA, NIH, and USDA – as well as three other NSF directorates – EHR, ENG, and SBE. The goal is to develop the next generation of collaborative robots that promise to enhance personal safety, health, and productivity. Smart and Connected Health is a newly formed partnership between NSF (including CISE, ENG, and SBE) and six institutes at the National Institutes of Health (NIH); it aims to accelerate the development and use of innovative approaches that would support the much-needed transformation of healthcare from reactive and hospital-centered to preventive, proactive, evidence-based and person-centered, with a focus on well-being rather than disease. CISE is also leveraging and building upon its investments in computational neuroscience as part of the recently announced, multiagency BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative, with NSF efforts led by BIO and SBE.

Advanced Cyberinfrastructure: Cyberinfrastructure has increasingly

become a critical component of the R&D ecosystem. Realizing the enormous potential of cyberinfrastructure to advance discovery across all disciplines requires a long-term, bold, sustainable, and comprehensive approach. In FY 2014, CISE, in partnership with all NSF research directorates, will increase its investments in the Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) programs. The goal is to develop and deploy comprehensive, integrated, sustainable, and secure cyberinfrastructure (CI), accelerating a new era in scientific discovery and engineering innovation, thereby transforming our ability to effectively address and solve the many complex problems facing science and society. NSF-wide investments include Data Infrastructure Building Blocks (DIBBs), BIGDATA, Software Infrastructure for Sustained Innovation (SI2), and Computational and Data-Enabled Science and Engineering (CDS&E).

With the launch of Stampede and Blue Waters, NSF continues to make significant investments in advanced cyberinfrastructure as well as in research and education networks, including the Campus Cyberinfrastructure – Network Infrastructure and Engineering (CC-NIE) Program and Global Environment for Network Innovations (GENI), a virtual laboratory for exploring future internets at scale.

Education and Workforce Development: In FY 2014, it is estimated that CISE will support approximately 20,800 people across the spectrum from undergraduate and graduate students to postdoctoral fellows and senior researchers. CISE reaffirms its commitment to education and workforce programs, including Faculty Early Career and Graduate Research Fellowships (CAREER and GRF), which support early-career researchers and contribute to the development of future generations of scientists and engineers. In collaboration with several other Directorates, including EHR and SBE, CISE will grow its investments on research in cyberlearning and online education, promising to integrate advances in technology with advances in what is known about how people learn. This is an important area of inter-disciplinary exploration with enormous potential to transform formal and informal education.

CISE continues its focus on STEM-C Partnerships (formerly, the Computing Education for the 21st Century (CE21) program) in order to increase the pool of students and teachers who develop and practice computational and data competencies in a variety of contexts and to prepare more students to pursue degrees in computing, computation, and data-intensive fields of study.

Computer and information science and engineering is a robust field of inquiry that has impacted nearly every part of today's society. Our investments in cross-cutting activities along with foundational CISE research and education programs will keep our community at the leading edge of discovery and innovation. I invite you to work with the National Science Foundation to ensure that our Nation remains at the forefront of advances in science and engineering research, education, and infrastructure.

Farnam Jahanian is the Assistant Director for Computer and Information Science and Engineering at the National Science Foundation.

2012 Taulbee Survey
Strong Increases in Undergraduate CS Enrollment and Degree Production; Record Degree Production at Doctoral Level

By Stuart Zweben and Betsy Bizot

The *CRA Taulbee Survey*[1] 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. This article and the accompanying figures and tables present the results from the 42nd annual *CRA Taulbee Survey*.

Information is gathered during the fall. Responses received by January 7, 2013 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 (2011-12). Data for new students in all categories refer to the current academic year (2012-13). Projected student production and information on faculty salaries are also for the current academic year; salaries are those effective January 1, 2013.

We surveyed a total of 277 Ph.D.-granting departments; 193 completed the online survey form, for a response rate of 70 percent. This is slightly higher than last year's 69 percent. The response rate from the U.S. CS departments was 80 percent this year, compared with 77 percent last year. The response rates from CE, I and Canadian departments continue to be rather low. Figure 1 shows the history of response

Figure 1. Number of Respondents to the Taulbee Survey

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%)

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 will be a more accurate indication of the one-year changes affecting the data.

Departments that responded to the survey were sent preliminary results about faculty salaries in December 2012; 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 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] This allows our readers to see multiple views of important data, and hopefully gain new insights from them. We no longer stratify the data according to any ranking of academic departments. 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.

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

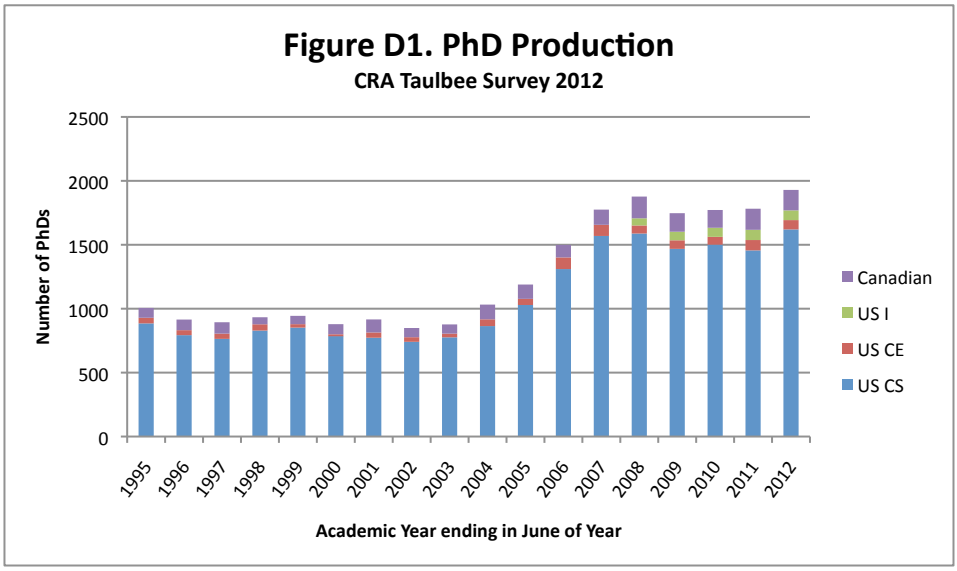
Doctoral Degree Production, Enrollments and Employment

(Tables D1-D8; Figures D1-D6)

Overall reported Ph.D. production in computing programs (Table D1, Figure D1) rose 8.2 percent in 2011-12, with 1,929 degrees granted compared with 1,782 in 2010-11. Among departments reporting both this year and last year,

Table D1. PhD Production and Pipeline by Department Type

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	109	1,177	10.8	1,326	12.2	1,395	12.8	1,064	87	12.2
US CS Private	42	443	10.5	471	11.2	389	9.3	254	29	8.8
US CS Total	151	1,620	10.7	1,797	11.9	1,784	11.8	1,318	116	11.4
US CE	10	73	7.3	81	8.1	120	12.0	107	7	15.3
US Info	14	76	5.4	66	4.7	92	6.6	59	11	5.4
Canadian	14	160	11.4	163	11.6	142	10.1	155	12	12.9
Grand Total	189	1,929	10.2	2,107	11.1	2,138	11.3	1,639	146	11.2



the number of total doctoral degrees increased 5.2 percent, and the number of doctoral degrees in U.S. CS programs rose 6.8 percent. (See Table 1 on p. 23). The 1,929 doctoral degrees is the highest number ever reported in the Taulbee Survey, surpassing the previous high of 1,877 in 2008. The CS Ph.D. count of 1,606 also is the highest ever reported, besting the 2007 count of 1,599.

The fraction of the 2011-12 computer science graduates who were women (Table D2) declined slightly, to 17.8 percent from 18.4 percent in 2010-11 and 18.8 percent in 2009-10). Also, a smaller fraction of CE graduates were women (13.3 percent vs. 22.1 percent in 2010-11), but a much larger fraction of I graduates were women (44.9 percent vs. 32.5 percent in 2010-11). The annual CE and I department fluctuations are larger due to the comparatively small number of departments reporting in these categories. Once again, a smaller fraction of this past year's graduates were White (33.2 percent vs. 34.3 percent in 2010-11 and 36.7 percent in 2009-10). The fraction of graduates who are non-resident Aliens increased slightly overall, but more significantly within CS programs (from 48.1 percent to 51.3 percent in the latter category).[4]

The number of new students per department passing qualifier exams in U.S. CS departments is similar to that reported last year, while the number who passed thesis candidacy exams (most, but not all, departments have such exams) increased. This suggests that the number of doctoral degrees produced will continue to increase in the near term. In fact, next year the departments predict an increase of more than 11 percent in doctoral degree production, though they consistently have over-predicted the number of Ph.D. graduates in past estimates.

The overall number of new Ph.D. students (Table D5) increased compared with last year (3,064 this year vs. 2,812 last year). However, on a per department basis, this total is similar to that of last year. The number of new students per department in CE and Canadian programs also increased compared with last year's figures, while the number of new students per department in I programs decreased. These comparisons are much more

Table D2. PhDs Awarded by Gender

	CS		CE		I		Total	
Male	1,275	82.2%	163	86.7%	70	55.1%	1,508	80.8%
Female	276	17.8%	25	13.3%	57	44.9%	358	19.2%
Total Known Gender	1,551		188		127		1,866	
Gender Unknown	55		6		2		63	
Grand Total	1,606		194		129		1,929	

Table D3. PhDs Awarded by Ethnicity

	CS		CE		I		Total	
Nonresident Alien	763	51.3%	99	55.3%	32	26.9%	894	50.1%
Amer Indian or Alaska Native	1	0.1%	0	0.0%	1	0.8%	2	0.1%
Asian	168	11.3%	32	17.9%	27	22.7%	227	12.7%
Black or African-American	27	1.8%	1	0.6%	7	5.9%	35	2.0%
Native Hawaiian/Pac Islander	5	0.3%	0	0.0%	0	0.0%	5	0.3%
White	496	33.4%	45	25.1%	51	42.9%	592	33.2%
Multiracial, not Hispanic	5	0.3%	0	0.0%	0	0.0%	5	0.3%
Hispanic, any race	22	1.5%	2	1.1%	1	0.8%	25	1.4%
Total Residency & Ethnicity Known	1,487		179		119		1,785	
Resident, ethnicity unknown	25		1		5		31	
Residency unknown	94		14		5		113	
Grand Total	1,606		194		129		1,929	

volatile than that for CS programs due to the small number of programs reporting in the CE, I and Canadian strata. There was a slight increase in the proportion of new doctoral students from outside North America (Table P5a), from 56.3 percent last year to 57.4 percent this year. CE programs had the largest percentage from outside North America (71.3 percent) while I programs had the smallest (39.8 percent).

Total enrollment in U.S. computer science doctoral programs (Table D1) increased 10 percent compared with last year. Among programs that reported both years, the increase was 6.5 percent. When CE, I and Canadian programs are included, the overall one-year increase in doctoral program enrollment is 6.7 percent, and the increase among programs reporting both years is 4.0 percent. Total CS enrollment by Non-resident Aliens is higher this year (59.6 percent vs 56.1 percent last year), while Non-resident Aliens made up a somewhat smaller fraction of CE and I programs this year. Among all doctoral programs, the proportion of Non-resident Aliens increased from 57.3 percent last year to 59.8 percent this year. This is almost exactly offset by a decrease in the proportion of resident Asians in

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	3	0	10	3	3	10	1	5	4	13	2	9	6	7	2	0	3	6	6	11	104	6.6%
Researcher	10	0	3	3	0	1	0	9	1	0	2	5	0	2	5	3	0	6	2	14	66	4.2%
Postdoc	29	2	4	15	4	8	6	28	8	7	4	12	6	5	15	4	1	5	19	30	212	13.4%
Teaching Faculty	2	0	2	1	1	3	1	0	1	0	4	4	2	2	3	2	1	6	0	3	38	2.4%
North American, Other Academic																						
Other CS/CE/I Dept.	3	0	0	1	2	4	4	6	1	3	1	0	1	1	3	2	0	5	1	1	39	2.5%
Non-CS/CE/I Dept.																						
North American, Non-Academic																						
Industry	101	3	81	40	64	30	22	26	31	11	18	77	38	37	32	11	8	95	53	102	880	55.5%
Government	6	1	4	8	0	1	5	5	7	1	0	3	3	0	1	3	0	3	0	5	56	3.5%
Self-Employed	3	0	0	1	0	1	0	0	2	1	0	1	1	0	1	0	0	3	0	7	21	1.3%
Unemployed	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	1	6	0.4%
Other	1	0	0	2	0	1	0	4	0	4	0	0	0	0	2	0	0	1	0	6	21	1.3%
Total Inside North America																						
	159	6	105	74	74	60	39	83	55	40	31	111	57	55	64	26	13	130	81	180	1443	90.9%

Table D4. Employment of New PhD Recipients By Specialty (Continued)

	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	
Outside North America																						
Ten-Track in PhD	3	0	5	1	2	4	2	2	1	3	0	2	1	0	0	0	0	0	1	4	31	2.0%
Researcher in PhD	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	4	0.3%
Postdoc in PhD	10	0	0	0	0	1	0	1	1	0	1	2	0	1	3	0	0	0	7	3	30	1.9%
Teaching in PhD	2	1	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	1	1	10	0.6%
Other Academic	1	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	2	10	0.6%
Industry	9	0	1	5	1	2	1	0	4	1	4	4	2	1	1	1	0	4	3	3	47	3.0%
Government	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	5	0.3%
Other	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	1	1	0	1	7	0.4%
Total Outside NA	26	1	6	7	6	9	4	5	8	5	5	13	4	4	4	2	2	6	12	15	144	9.1%
Total with Employment Data, Inside North America plus Outside North America																						
	185	7	111	81	80	69	43	88	63	45	36	124	61	59	68	28	15	136	93	195	1587	
Employment Type & Location Unknown																						
	18	1	11	18	10	11	6	9	6	12	13	23	5	5	10	4	5	13	23	139	342	
Grand Total	203	8	122	99	90	80	49	97	69	57	49	147	66	64	78	32	20	149	116	334	1,929	

Table D5. New PhD Students by Department Type

	CS				CE				I				Total	
Department Type	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	1,474	152	1,626	14.9	250	11	261	2.4	71	0	71	0.7	1,958	18.0
US CS Private	687	39	726	17.3	8	0	8	0.2	9	1	10	0.2	744	17.7
US CS Total	2,161	191	2,352	15.6	258	11	269	1.8	80	1	81	0.5	2,702	17.9
US CE	0	0	0	0.0	65	8	73	7.3	6	1	7	0.7	80	8.0
US Information	0	0	0	0.0	0	0	0	0.0	86	12	98	7.0	98	7.0
Canadian	149	12	161	11.5	23	0	23	1.6	0	0	0	0.0	184	13.1
Grand Total	2,310	203	2,513	14.1	346	19	365	2.1	172	14	186	1.0	3,064	17.2

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	928	205	22	1,155	1,958	59.0%
US CS Private	391	8	4	403	744	54.2%
Total US CS	1,319	213	26	1,558	2,702	57.7%
US CE	0	54	3	57	80	71.3%
US Info	0	0	39	39	98	39.8%
Canadian	98	7	0	105	184	57.1%
Grand Total	1,417	274	68	1,759	3,064	57.4%

Table D6. PhD Enrollment by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	109	9,122	69.6%	781	47.6%	333	37.0%	10,236	65.4%
US CS Private	42	2,911	22.2%	65	4.0%	23	2.6%	2,999	19.2%
Total US CS	151	12,033	91.8%	846	51.6%	356	39.6%	13,235	84.6%
US CE	10	0	0.0%	691	42.1%	0	0.0%	691	4.4%
US Info	14	0	0.0%	0	0.0%	544	60.4%	544	3.5%
Canadian	14	1,074	8.2%	104	6.3%	0	0.0%	1,178	7.5%
Grand Total	189	13,107		1,641		900		15,648	

Table D7. PhD Enrollment by Gender

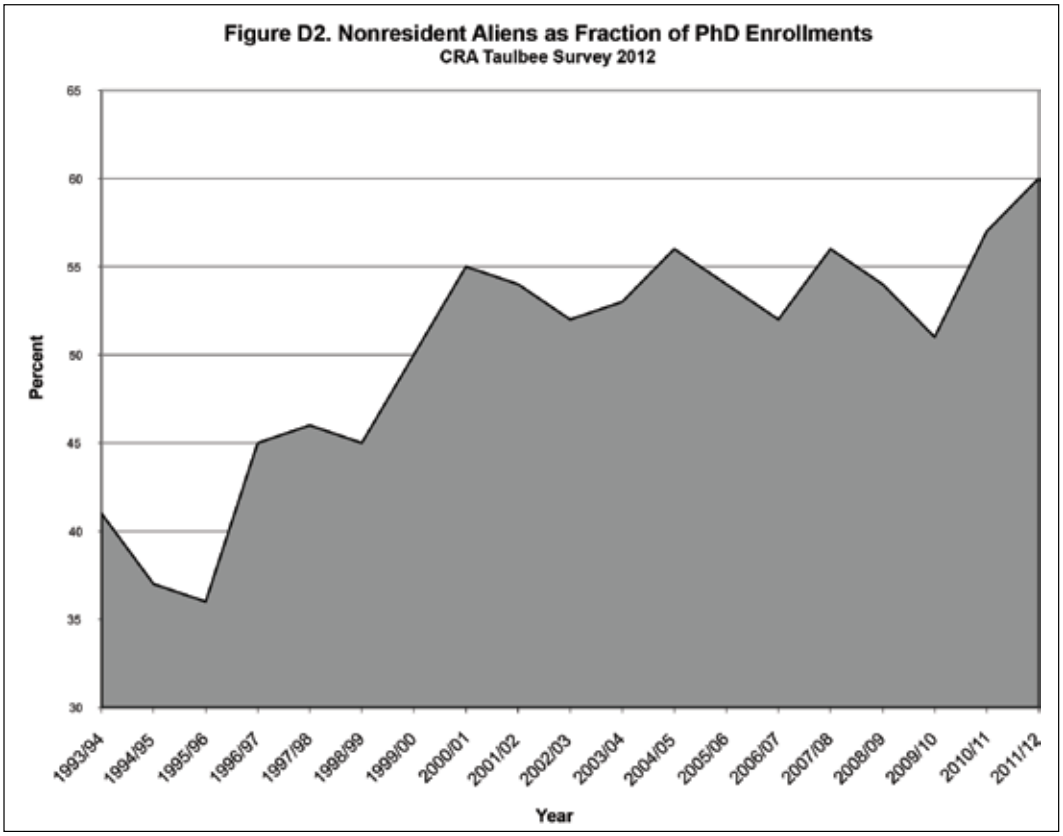
	CS		CE		I		Total	
Male	10,677	81.5%	1,386	84.6%	525	58.7%	12,588	80.5%
Female	2,428	18.5%	253	15.4%	370	41.3%	3,051	19.5%
Total Known Gender	13,105		1,639		895		15,639	
Gender Unknown	2		2		5		9	
Grand Total	13,107		1,641		900		15,648	

doctoral programs. Since most Non-resident Alien graduate students come from Asia, these changes may be due to a shift in the way some programs categorized such students. (Table D8 and Figure D2).

Again this past year, approximately 73 percent of the doctoral degrees at U.S. CS departments were granted by public universities, though the average per department is similar at public and private universities. Compared with last year, a similar fraction of new doctoral students (72 percent) are at public universities, and a similar fraction of new doctoral students from outside North America (approximately 74 percent) are at the public universities. As was the case last year, at public universities there are more doctoral students per

Table D8. PhD Enrollment by Ethnicity

	CS		CE		I		Total	
Nonresident Alien	6,963	59.6%	1,097	72.8%	343	39.9%	8,403	59.8%
Amer Indian or Alaska Native	19	0.2%	1	0.1%	4	0.5%	24	0.2%
Asian	659	5.6%	57	3.8%	87	10.1%	803	5.7%
Black or African-American	181	1.5%	25	1.7%	36	4.2%	242	1.7%
Native Hawaiian/Pac Islander	6	0.1%	19	1.3%	3	0.3%	28	0.2%
White	3,637	31.1%	281	18.7%	343	39.9%	4,261	30.3%
Multiracial, not Hispanic	35	0.3%	3	0.2%	26	3.0%	64	0.5%
Hispanic, any race	191	1.6%	23	1.5%	17	2.0%	231	1.6%
Total Known	11,691		1,506		859		14,056	
Resident, ethnicity unknown	335		131		19		485	
Residency unknown	1081		4		22		1,107	
Grand Total	13,107		1,641		900		15,648	



tenure-track faculty member and more degrees are given per tenure-track faculty member in larger departments, while at private universities there is less variability as department size increases (Figures D3 and D4).

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 qualifier data offset changed from previous graphs, which only offset new student data by one year, to more accurately reflect the fact that the qualifier data are for students passing in the previous academic year, while the new student data are data reflecting the current academic year. The new offset's consistency with new student data and subsequent graduation is improved as a result.

Figure D3. PhD Degrees Granted by Tenure-Track Size
CRA Taulbee Survey 2012

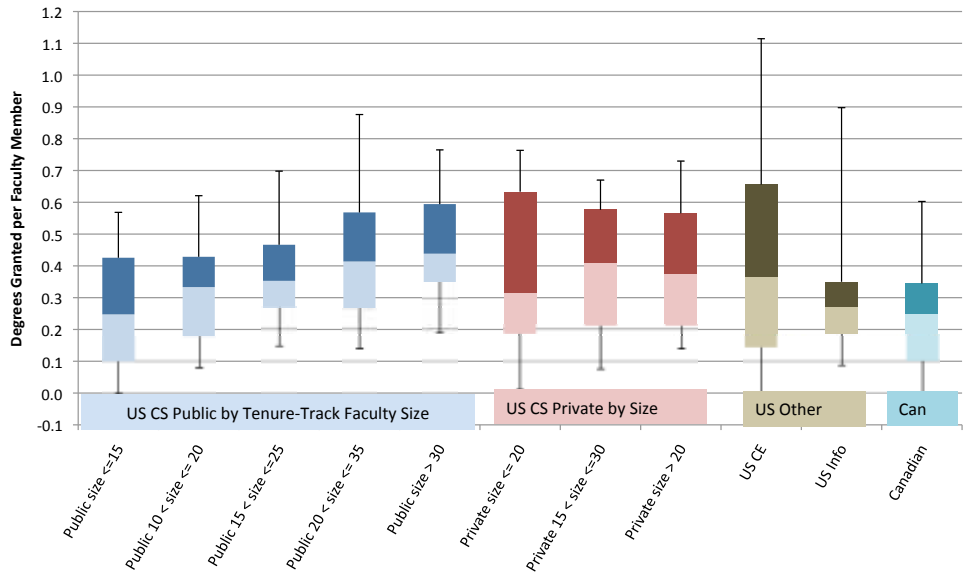
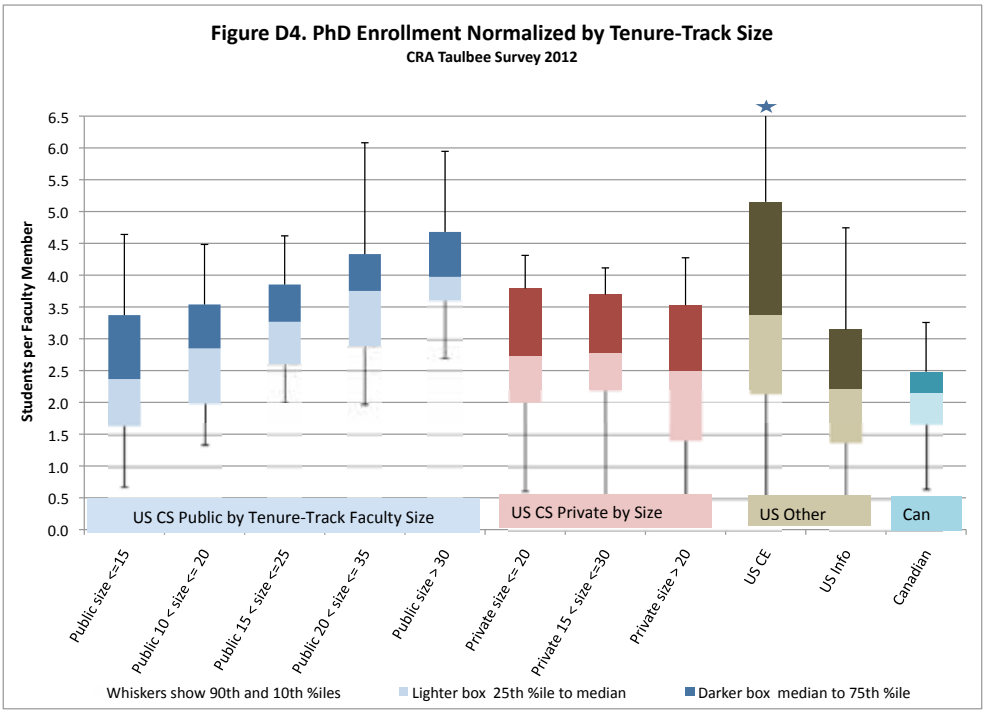


Figure D4. PhD Enrollment Normalized by Tenure-Track Size
CRA Taulbee Survey 2012

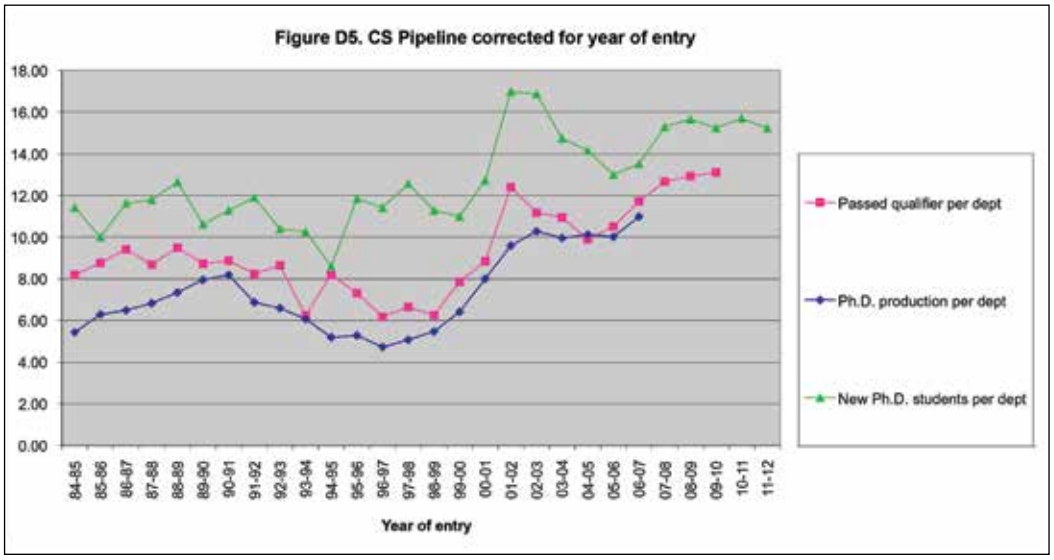


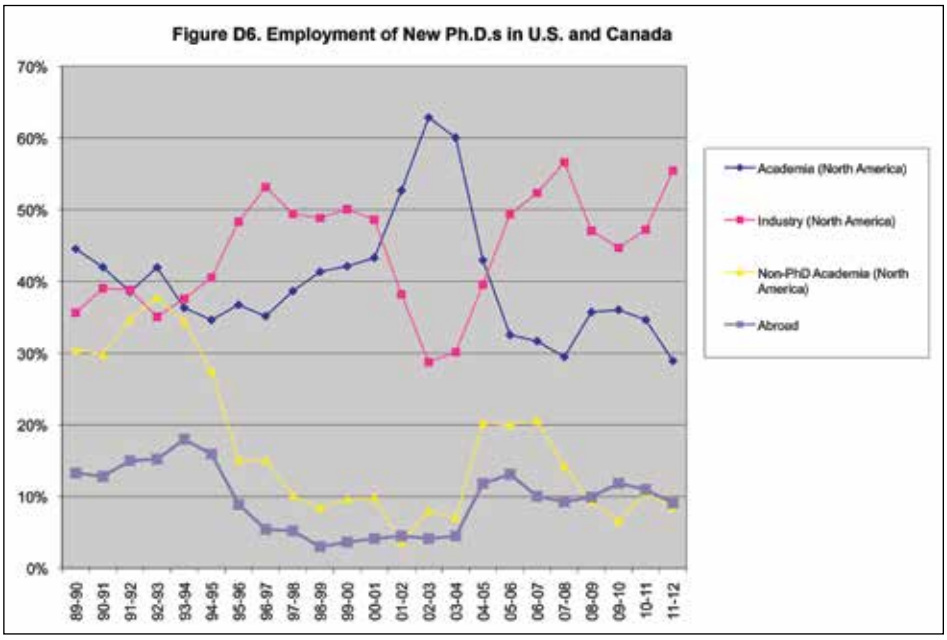
★ Outlier: Value outside chart range

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. There was a significant increase in the fraction of new Ph.D.s who took positions in North American industry (to 55.5 percent vs. 47.2 percent in 2010-11 and 44.7 percent in 2009-10). The 2011-12 level is close to the historic high of 56.6 percent, set in 2007-08. A smaller fraction (28.9 percent) of 2011-12 graduates took North American academic jobs as compared with 2010-11 graduates (34.6 percent). The fraction taking tenure-track positions in North American doctoral granting institutions dropped again this year, from 7.1 percent for 2010-11 graduates to 6.6 percent for 2011-12 graduates. The fraction taking positions in North American non-Ph.D.-granting departments dropped from 3.6 percent for 2010-11 graduates to 2.5 percent for 2011-12 graduates. This is about the same level as reported for 2009-10 graduates. The fraction taking North American postdoctoral positions declined for the second straight year, to 13.4 percent from 16.8 percent.

The proportion of Ph.D. graduates who were reported taking positions outside of North America, among those whose employment is known, declined to 9.1 percent from 11.0 percent for 2010-11 graduates and 11.8 percent for 2009-10 graduates. About 1/3 of those employed outside of North America went to industry, while just over 20% went to tenure-track academic positions and another 20% went to postdoctoral positions.

The unemployment rate for new Ph.D.s dropped considerably for 2011-12 graduates, to 0.4 percent from 1.6 percent the previous year. The fraction of new Ph.D.s whose employment status





was unknown was 17.7 percent in 2011-12; in 2010-11 it was 19.6 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, software engineering, and networking continue to be the most popular areas of specialization for doctoral graduates. Databases, and theory and algorithms were the next most popular areas.

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-M6; Figures M1-M2)

Overall Master's degree production in CS increased in 2011-12. The increase was particularly strong among U.S. private institutions, which generated 40 percent of this past year's U.S. CS master's graduates compared with only 1/3 the previous year. The increase in overall CS master's production is surprising given last year's departmental predictions of a decline in production, fewer departments reporting master's data this year than there were last year, and the total enrollment decrease observed last year in master's programs.

The proportion of female graduates among computer science master's recipients decreased from 24.6 percent in 2010-11 to 22.6 percent in 2011-12. However, there was a slightly larger fraction of women among I graduates this past year as compared with the previous year (51.7 percent vs. 47.8 percent). A higher fraction of the master's recipients were Non-resident Aliens this past year, but this was almost exactly offset by a decrease in those reported as resident Asians. Once again, this may be a function of the manner in which certain persons of Asian descent were counted during these two years, rather than reflecting any demographic shift.

The number of new master's students increased among CS programs, both public and private. The total increase in the CS programs is more than 10 percent. A somewhat larger proportion of new CS master's students are from outside of North America this year as compared with last year (62.3 percent vs. 61.1 percent last year), but the difference is entirely due to master's programs at private universities; the fraction of new master's students at U.S. public universities who are from outside North America actually declined slightly. Consistent with this year's increased number of new master's students, departments are predicting an increase in master's degree production for the coming year.

Table M1. Master's Degrees Awarded by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	107	4,156	55.7%	402	45.8%	544	25.0%	5,102	48.5%
US CS Private	41	2,817	37.8%	75	8.5%	385	17.7%	3,277	31.2%
Total US CS	148	6,973	93.4%	477	54.3%	929	42.7%	8,379	79.7%
US CE	9	0	0.0%	312	35.5%	45	2.1%	357	3.4%
US Info	12	0	0.0%	0	0.0%	1204	55.3%	1,204	11.4%
Canadian	14	489	6.6%	89	10.1%	0	0.0%	578	5.5%
Grand Total	183	7,462		878		2,178		10,518	

Table M2. Master's Degrees Awarded by Gender

	CS		CE		I		Total	
Male	5,645	77.4%	682	77.7%	1052	48.3%	7,379	71.3%
Female	1,644	22.6%	196	22.3%	1126	51.7%	2,966	28.7%
Total Known Gender	7,289		878		2,178		10,345	
Gender Unknown	173		0		0		173	
Grand Total	7,462		878		2,178		10,518	

Table M3. Master's Degrees Awarded by Ethnicity

	CS		CE		I		Total	
Nonresident Alien	4,123	62.3%	544	69.3%	397	19.8%	5,064	53.8%
Amer Indian or Alaska Native	10	0.2%	1	0.1%	9	0.4%	20	0.2%
Asian	484	7.3%	52	6.6%	213	10.6%	749	8.0%
Black or African-American	123	1.9%	8	1.0%	122	6.1%	253	2.7%
Native Hawaiian/Pac Island	9	0.1%	0	0.0%	0	0.0%	9	0.1%
White	1,725	26.1%	161	20.5%	1,144	57.0%	3,030	32.2%
Multiracial, not Hispanic	22	0.3%	1	0.1%	25	1.2%	48	0.5%
Hispanic, any race	123	1.9%	18	2.3%	96	4.8%	237	2.5%
Total Residency & Ethnicity Known	6,619		785		2,006		9,410	
Resident, ethnicity unknown	285		78		144		507	
Residency unknown	558		15		28		601	
Grand Total	7,462		878		2,178		10,518	

Table M4. Master's Degrees Expected Next Year by Department Type

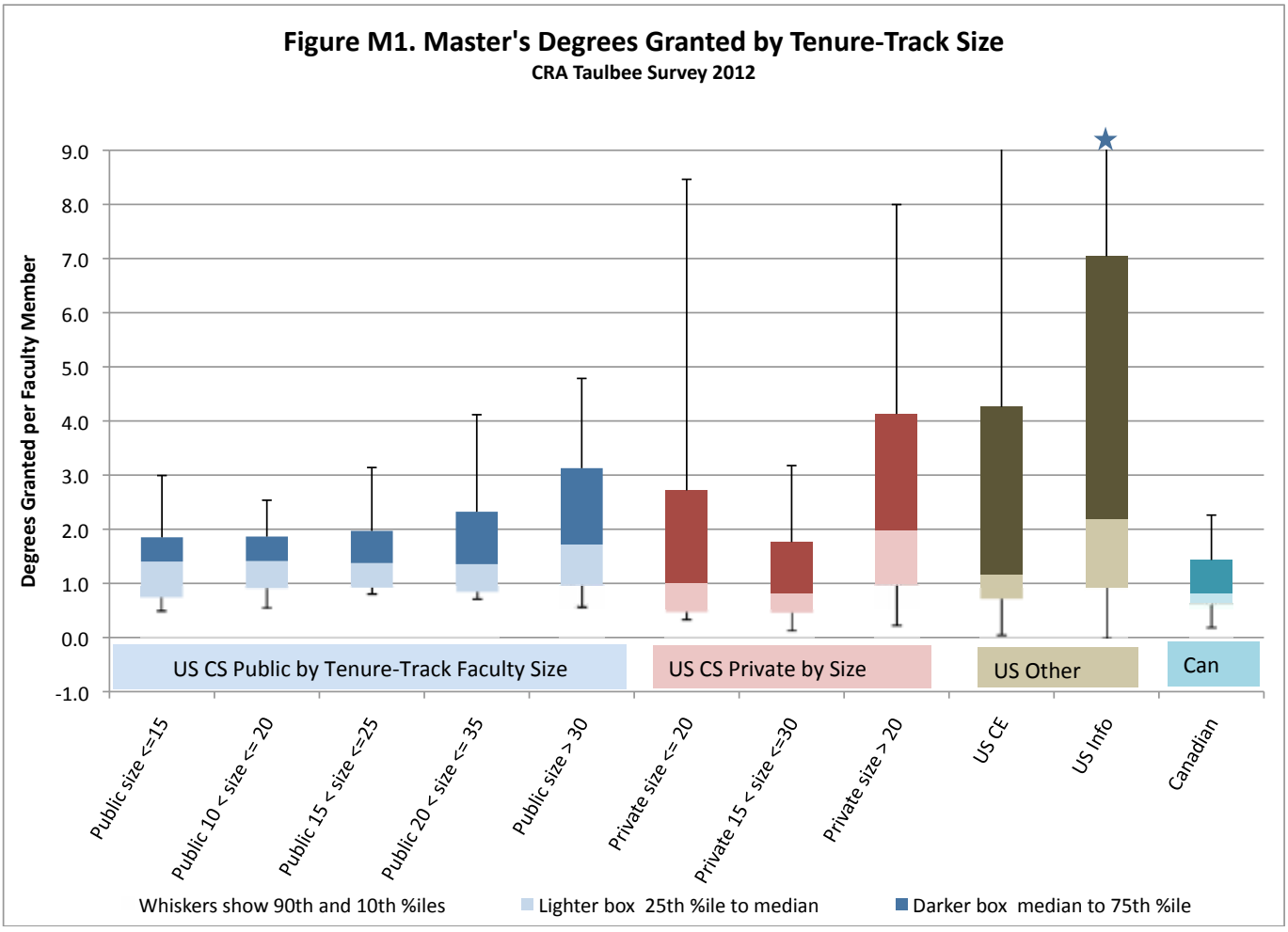
Department Type	# Depts	CS		CE		I		Total	
US CS Public	107	3,493	52.2%	379	46.3%	500	25.3%	4,372	46.1%
US CS Private	41	2,755	41.2%	141	17.2%	326	16.5%	3,222	34.0%
Total US CS	148	6,248	93.4%	520	63.5%	826	41.7%	7,594	80.0%
US CE	9	0	0.0%	294	35.9%	0	0.0%	294	3.1%
US Info	12	0	0.0%	0	0.0%	1153	58.3%	1,153	12.1%
Canadian	14	444	6.6%	5	0.6%	0	0.0%	449	4.7%
Grand Total	183	6,692		819		1,979		9,490	

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	3,436	104	33.0	356	18	19.8	400	13	30.8	4,192	106	39.5	2,600	62.0%
US CS Private	2,500	40	62.5	75	6	12.5	244	4	61.0	2,819	40	70.5	1,767	62.7%
Total US CS	5,936	144	41.2	431	24	18.0	644	17	37.9	7,011	146	48.0	4,367	62.3%
US CE	0	0		309	9	34.3	69	1		378	9	42.0	226	59.8%
US Info	0	0		0	0		1,145	12	95.4	1,145	12	95.4	339	29.6%
Canadian	527	14	37.6	34	2	17.0	0	0		561	14	40.1	320	57.0%
Grand Total	6,463	158	40.9	774	35	22.1	1,858	30	61.9	9,095	223	40.8	5,252	57.7%

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	8,711	104	83.8	754	19	39.7	1,272	12	106.0	10,737	106	101.3
US CS Private	5,826	40	145.7	164	6	27.3	1,474	4	368.5	7,464	40	186.6
Total US CS	14,537	144	101.0	918	25	36.7	2,746	16	171.6	18,201	146	124.7
US CE	0	0		845	9	93.9	242	1		1,087	9	120.8
US Info	0	0		0	0		2,466	12	205.5	2,466	12	205.5
Canadian	1,390	13	106.9	103	2	51.5	0	0		1,493	13	114.8
Grand Total	15,927	157	101.4	1,866	36	51.8	5,454	29	188.1	23,247	180	129.2

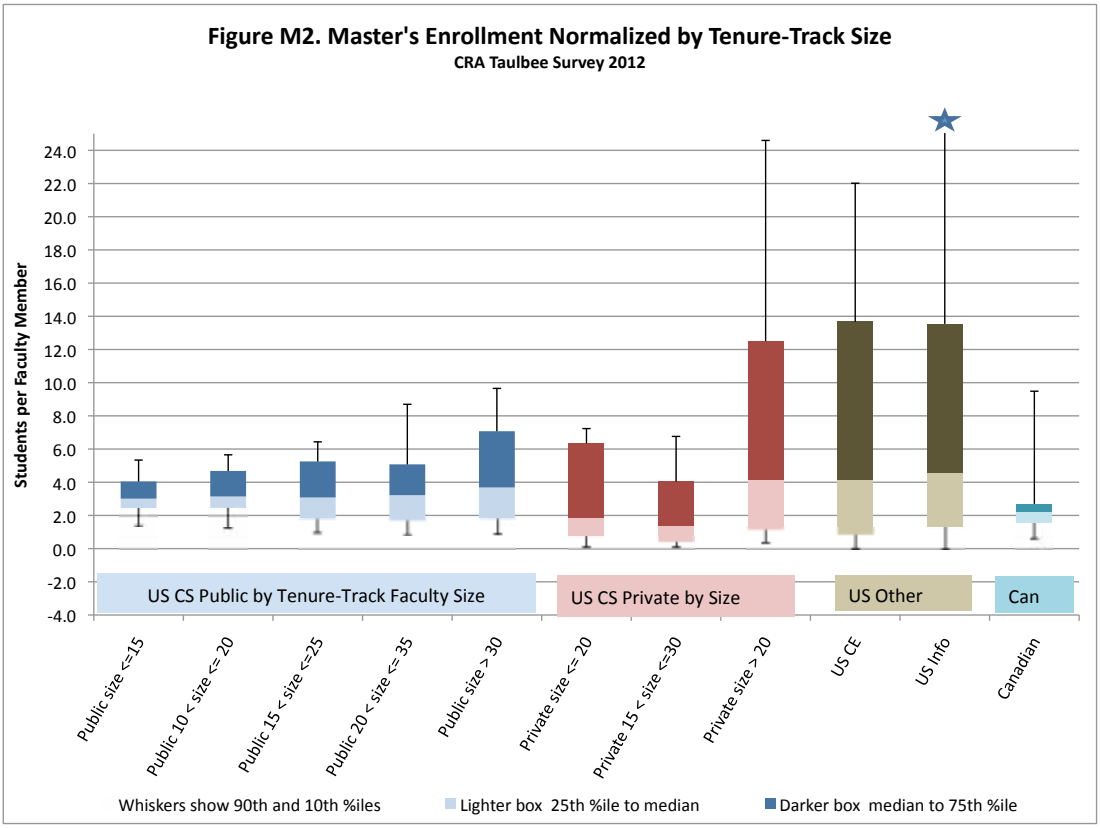


★ Outlier: Value outside chart range

Bachelor's (Tables 1, B1-B6; Figures B1-B4)

Bachelor's degree production increased by a double-digit percentage for the third straight year. Among all departments reporting, the increase was 15.7 percent, but if only those departments that reported both years are counted, the increase was 17.1 percent. In U.S. CS departments the increases were 19.8 percent overall and 16.6 percent among those departments that reported both years. U.S. CS departments at public universities tend to have a slightly larger rate of bachelor's degree production per faculty member than do those at private universities, though there is less of a pattern with respect to degree production per faculty member based on the size of the faculty at U.S. CS departments (Figure B3).

The fraction of women among CS bachelor's graduates increased from 11.7 percent in 2010-11 to 12.9



★ Outlier: Value outside chart range

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	**2011**	**2012**	**% chg**	**2011**	**2012**	**% chg**	**2011**	**2012**	**% chg**	**2011**	**2012**	**% chg**
# Departments	140	150	7.1%	178	187	5.1%	134	134		167	167	
PhD Awarded	1,457	1,620	11.2%	1,782	1,929	8.2%	1,435	1,532	6.8%	1,736	1,826	5.2%
PhD Enrollment	12,035	13,235	10.0%	14,671	15,648	6.7%	11,765	12,528	6.5%	14,217	14,783	4.0%
New PhD Enroll	2,442	2,702	10.6%	2,812	3,064	9.0%	2,396	2,532	5.7%	2,744	2,869	4.6%
Bachelor's	2011	2012	% chg	2011	2012	% chg	2011	2012	% chg	2011	2012	% chg
# Departments	133	142	6.8%	165	174	5.5%	127	127		151	151	
BS Awarded	10,901	13,055	19.8%	13,806	15,975	15.7%	10,438	12,171	16.6%	12,694	14,867	17.1%
BS Enrollment	48,817	56,742	16.2%	60,636	67,850	11.9%	47,105	52,396	11.2%	56,344	62,296	10.6%
New BS Majors	13,337	17,226	29.2%	16,279	20,618	26.7%	12,614	15,492	22.8%	15,149	18,294	20.8%
BS Enroll/Dept	367.0	399.6	8.9%	367.5	389.9	6.1%	370.9	412.6	11.2%	373.1	412.6	10.6%

Table B1. Bachelor's Degrees Awarded by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	105	7,619	69.0%	1,578	67.0%	1,004	39.1%	10,201	63.9%
US CS Private	37	2,248	20.3%	268	11.4%	338	13.2%	2,854	17.9%
Total US CS	142	9,867	89.3%	1,846	78.4%	1,342	52.2%	13,055	81.7%
US CE	9	0	0.0%	406	17.2%	0	0.0%	406	2.5%
US Info	9	0	0.0%	0	0.0%	1,190	46.3%	1,190	7.4%
Canadian	14	1,182	10.7%	104	4.4%	38	1.5%	1,324	8.3%
Grand Total	174	11,049		2,356		2,570		15,975	

Table B2. Bachelor's Degrees Awarded by Gender

	CS		CE		I		Total	
Male	9,349	87.1%	2,106	89.4%	2,129	82.8%	13,584	86.7%
Female	1,387	12.9%	250	10.6%	441	17.2%	2,078	13.3%
Total Known Gender	10,736		2,356		2,570		15,662	
Gender Unknown	313		0		0		313	
Grand Total	11,049		2,356		2,570		15,975	

Table B3. Bachelor's Degrees Awarded by Ethnicity

	CS		CE		I		Total	
Nonresident Alien	619	6.8%	216	10.5%	98	4.1%	933	6.9%
Amer Indian or Alaska Native	39	0.4%	6	0.3%	12	0.5%	57	0.4%
Asian	1,477	16.3%	447	21.7%	341	14.2%	2,265	16.7%
Black or African-American	407	4.5%	107	5.2%	203	8.4%	717	5.3%
Native Hawaiian/Pac Islander	18	0.2%	4	0.2%	3	0.1%	25	0.2%
White	5,793	64.0%	1,154	55.9%	1,522	63.2%	8,469	62.6%
Multiracial, not Hispanic	130	1.4%	27	1.3%	26	1.1%	183	1.4%
Hispanic, any race	575	6.3%	102	4.9%	203	8.4%	880	6.5%
Total Residency & Ethnicity Known	9,058		2,063		2,408		13,529	
Resident, ethnicity unknown	732		117		89		938	
Residency unknown	1,259		176		73		1,508	
Grand Total	11,049		2,356		2,570		15,975	

Table B4. Bachelor's Degrees Expected Next Year by Department Type

Department Type	# Depts	CS		CE		I		Total	
US CS Public	105	7,634	64.1%	1,611	64.6%	1,136	42.4%	10,381	60.8%
US CS Private	37	2,680	22.5%	249	10.0%	364	13.6%	3,293	19.3%
Total US CS	142	10,314	86.6%	1,860	74.6%	1,500	56.0%	13,674	80.0%
US CE	9	0	0.0%	509	20.4%	0	0.0%	509	3.0%
US Info	9	0	0.0%	0	0.0%	1,140	42.6%	1,140	6.7%
Canadian	14	1,598	13.4%	125	5.0%	37	1.4%	1,760	10.3%
Grand Total	174	11,912		2,494		2,677		17,083	

Table B5. New Bachelor's Students by Department Type

	CS				CE				I				Total	
Department Type	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	10,913	3,575	93	117.3	2,016	789	27	74.7	984	148	20	49.2	13,913	146.5
US CS Private	2,611	585	29	90.0	297	14	7	42.4	405	0	4	101.3	3,313	114.2
US CS Total	13,524	4,160	122	110.9	2,313	803	34	68.0	1,389	148	24	57.9	17,226	138.9
US CE	0	0	0	0.0	580	149	9	64.4	0	0	0	0.0	580	64.4
US Information	0	0	0	0.0	0	0	0	0.0	666	302	9	74.0	666	74.0
Canadian	2,059	385	9	228.8	87	0	2	43.5	0	10	0	0.0	2,146	238.4
Grand Total	15,583	4,545	131	119.0	2,980	952	45	66.2	2,055	460	33	62.3	20,618	136.5

Table B6. Total Bachelor's Enrollment by Department Type

	CS				CE				I				Total	
Department Type	Major	Pre-major	# Depts	Avg. Major per Dept.	Major	Pre-maj	Total	Avg. Major per Dept.	Major	Pre-major	Total	Avg. Major per Dept.	Major	Avg. Major per Dept
US CS Public	34,099	7,039	103	331.1	7,092	812	42	168.9	3,812	369	23	165.7	45,003	432.7
US CS Private	9,006	554	35	257.3	871	15	9	96.8	1,862	0	5	372.4	11,739	335.4
US CS Total	43,105	7,593	138	312.4	7,963	827	51	156.1	5,674	369	28	202.6	56,742	408.2
US CE	0	0	0	0.0	1,974	225	9	219.3	0	0	0	0.0	1,974	219.3
US Information	0	0	0	0.0	0	0	0	0.0	2,553	653	9	283.7	2,553	283.7
Canadian	6,351	449	13	488.5	230	0	2	115.0	0	40	0	0.0	6,581	598.3
Grand Total	49,456	8,042	151	327.5	10,167	1,052	62	164.0	8,227	1,062	37	222.4	67,850	403.9

percent in 2011-12. This year there was a smaller percentage of Whites and greater percentages of resident Asian, Black and Hispanic graduates in CS programs. I programs also had a smaller fraction of Whites and a larger fraction of Blacks among their graduates. CE programs had a slightly larger percentage of Whites, a larger percentage of Non-resident Aliens, and a smaller percentage of Blacks and Hispanics as graduates. In aggregate across the three areas, about 63 percent of the graduates were White, 17 percent Asian, 7 percent Non-resident Aliens, and 13 percent from all other ethnicity categories combined.

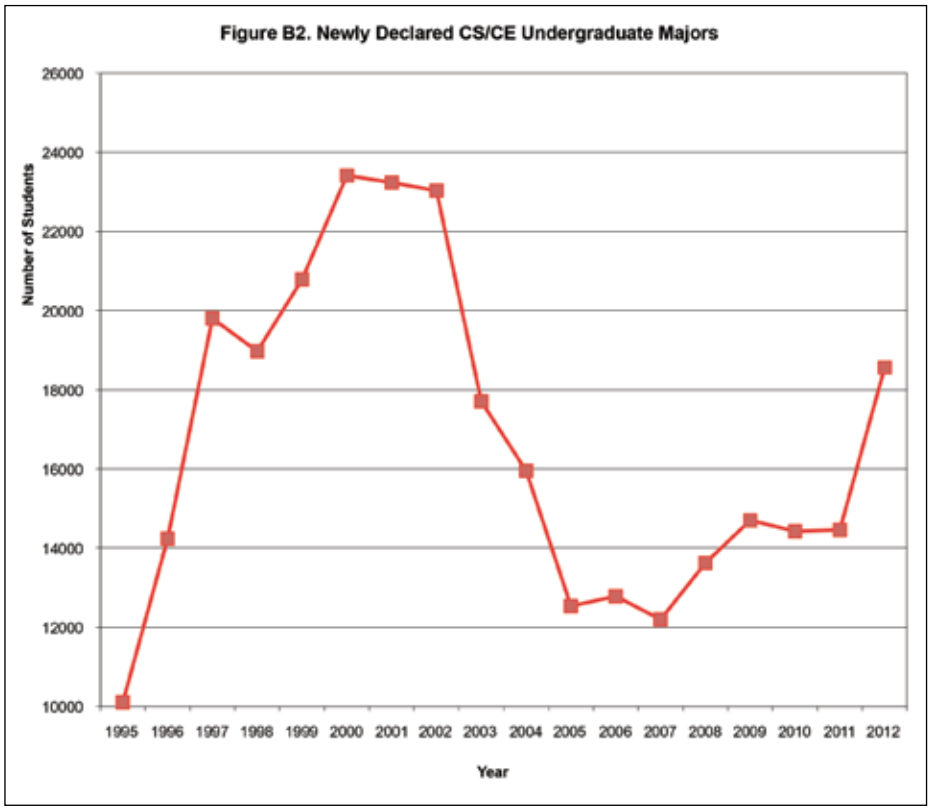
For next year, departments forecast an eight percent increase in CS bachelor degree production. More modest increases, in the five percent range, are forecast in CE and I bachelor's programs.

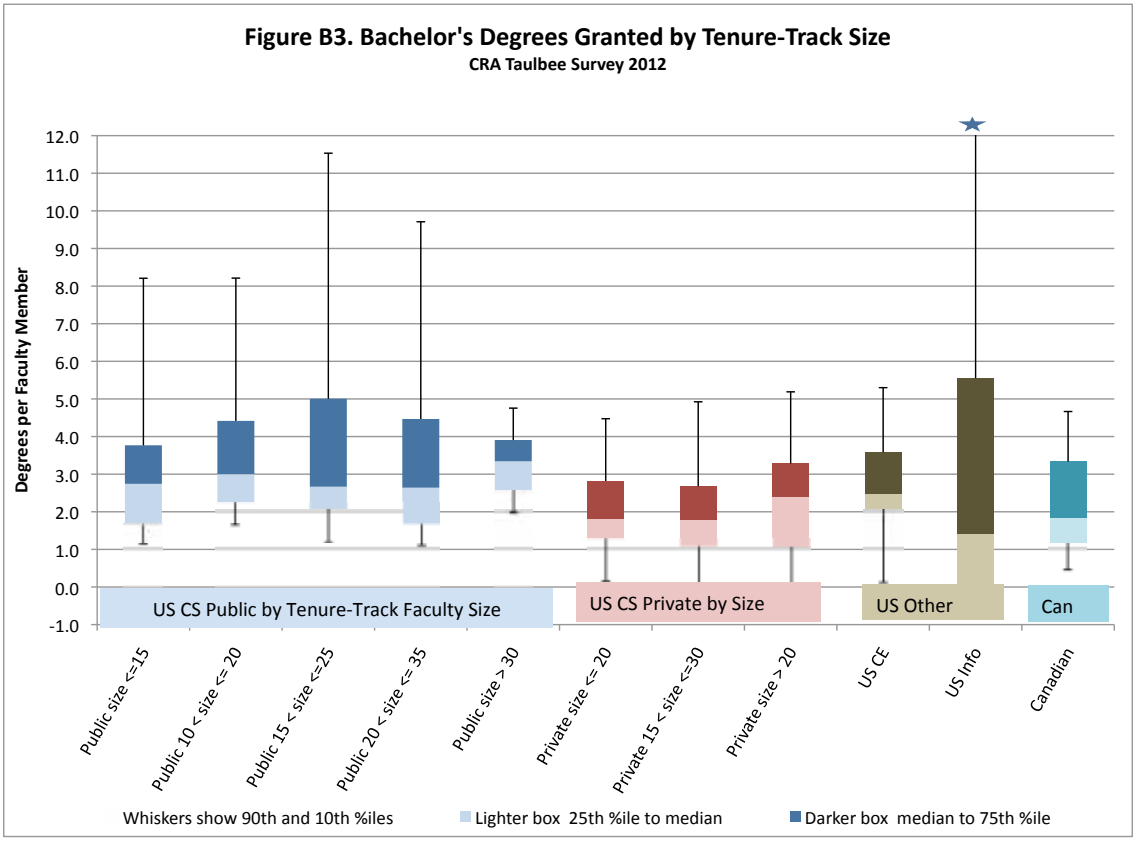
The number of new bachelor's level computing majors among U.S. CS departments rose an astonishing 29 percent (approximately 23 percent among those departments reporting both this year and last year). This is the fifth straight year of increased bachelor's level enrollment in computing majors by new students. Total bachelor's level enrollment in computing majors among U.S. CS departments increased 16.2 percent in aggregate (11.2 percent among departments reporting both this year and last year). Bachelor's level enrollment at public universities on a per faculty member basis is about twice as large as it is at private universities. However, there are less clear trends with respect to these enrollments at either public or private universities based on the size of the faculty (Figure B4).

Among the other departments, the overall bachelor's enrollment is down about six percent, due to declines in Canadian and I departments, while the new bachelor's enrollment is up 15 percent, with increases in all categories of departments. The bottom line seems to be that interest in computing is growing at a healthy clip among undergraduate students.

Figure B1. BS Production (CS & CE)

Figure B2. Newly Declared CS/CE Undergraduate Majors





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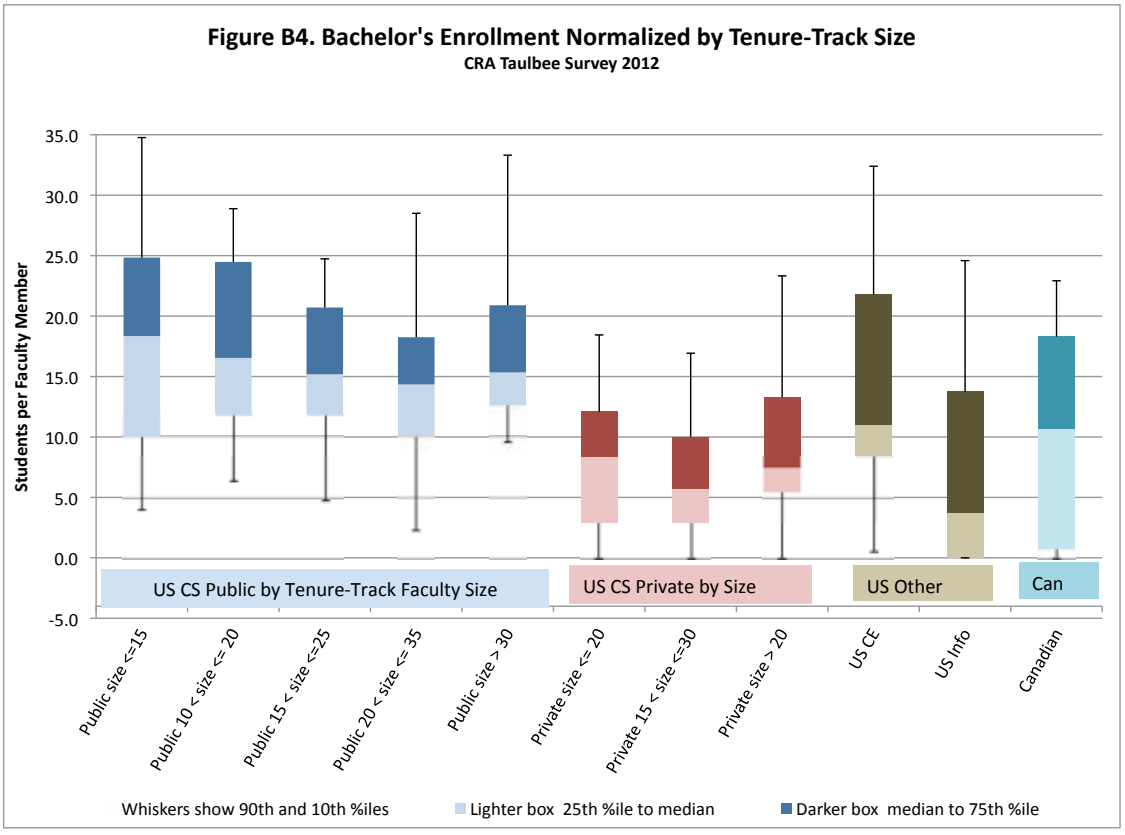


Faculty Demographics (Tables F1-F7)[5]

Table F1 shows the current and anticipated sizes, in FTE, for tenure-track, teaching and research faculty, and postdocs. In U.S. CS departments, the total tenure-track faculty count of 3,725 represents an increase of 7.8 percent from last year, but there also is a 7 percent increase in the number of departments reporting this year. There also are increases in the number of teaching faculty per department and the number of research faculty per department. However, despite the increase in the number of departments reporting this year, the total number of reported postdocs is almost identical to that of last year. Canadian, CE and I departments have much more volatile

Table F1. Actual and Anticipated Faculty Size by Position and Department Type

	Actual		Projected					
	2012-2013		2013-2014		2014-2015		Expected 2-Yr Growth	
US CS Public	Total	Average	Total	Average	Total	Average	#	%
TenureTrack	2,636	26.4	2,683	26.8	2,843	28.4	207	7.9%
Teaching	368	3.7	397	4.0	416	4.2	48	13.0%
Research	242	2.4	270	2.7	294	2.9	52	21.5%
Postdoc	298	3.0	337	3.4	359	3.6	61	20.5%
Total	3,544	35.4	3,687	36.9	3,912	39.1	368	10.4%
US CS Private								
TenureTrack	1,089	30.3	1,042	28.9	1,101	30.6	12	1.1%
Teaching	182	5.1	195	5.4	202	5.6	20	11.0%
Research	218	6.1	232	6.4	246	6.8	28	12.8%
Postdoc	223	6.2	250	6.9	274	7.6	51	22.9%
Total	1,712	47.6	1,719	47.8	1,823	50.6	111	6.5%
All US CS								
TenureTrack	3,725	27.4	3,725	27.4	3,944	29.0	219	5.9%
Teaching	550	4.0	592	4.4	618	4.5	68	12.4%
Research	460	3.4	502	3.7	540	4.0	80	17.4%
Postdoc	521	3.8	587	4.3	633	4.7	112	21.5%
Total	5,256	38.6	5,406	39.8	5,735	42.2	479	9.1%
US CE								
TenureTrack	121	11.0	126	11.5	130	11.8	9	7.4%
Teaching	16	1.5	18	1.6	18	1.6	2	12.5%
Research	13	1.2	14	1.3	14	1.3	1	7.7%
Postdoc	15	1.4	18	1.6	19	1.7	4	26.7%
Total	165	15.0	176	16.0	181	16.5	16	9.7%
US I								
TenureTrack	256	19.7	275	21.2	284	21.8	28	10.9%
Teaching	68	5.2	75	5.8	80	6.2	12	17.6%
Research	33	2.5	33	2.5	35	2.7	2	6.1%
Postdoc	28	2.2	33	2.5	36	2.8	8	28.6%
Total	385	29.6	416	32.0	435	33.5	50	13.0%
Canadian								
TenureTrack	434	33.4	432	33.2	438	33.7	4	0.9%
Teaching	27	2.1	27	2.1	26	2.0	-1	-3.7%
Research	9	0.7	9	0.7	9	0.7	0	0.0%
Postdoc	38	2.9	40	3.1	41	3.2	3	7.9%
Total	508	39.1	508	39.1	514	39.5	6	1.2%
Grand Total								
TenureTrack	4,536	26.2	4,558	26.3	4,796	27.7	260	5.7%
Teaching	661	3.8	712	4.1	742	4.3	81	12.3%
Research	515	3.0	558	3.2	598	3.5	83	16.1%
Postdoc	602	3.5	678	3.9	729	4.2	127	21.1%
Total	6,314	36.5	6,506	37.6	6,865	39.7	551	8.7%

data due to the small number of departments reporting in each of those categories.

Among U.S. CS departments, the average tenure-track faculty size is slightly larger at private universities (30.3 faculty per department) than at public universities (26.4 per department). As was the case last year, Canadian universities, on average, have more tenure-track faculty members per department than do U.S. universities, while on average U.S. I departments are smaller than U.S. CS departments and U.S. CE departments are smaller still. These last two observations 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.

Private universities also tend to have more teaching faculty, research faculty and postdocs than do public universities on average. The gap between private and public universities with respect to both teaching faculty per department and research faculty per department widened this year, while the gap with respect to postdocs narrowed somewhat.

Table F2 summarizes faculty hiring this past year. There were 372 tenure-track vacancies reported in 2011-12 vs. 245 in 2010-11. The strongest increase in vacancies (over 50%) was in U.S. CS departments. In aggregate, 31.7 percent of the total number of vacant tenure-track positions went unfilled, lower than the 37.6 percent in 2010-11 but higher than the 29.9 percent in 2009-10. Public universities had a better success rate than did private universities among U.S. CS departments, with more than 40 percent of the tenure-track vacancies unfilled at private universities. When examining the reasons why positions went unfilled (see Table F2a), the top reason was because offers were turned down (45.3 percent vs 34.1 percent in 2010-11) while not finding a good fit accounted for a similar fraction of the reasons (36.8 percent) in 2011-12 as in 2010-11.

The fraction of women hired into all categories of academic positions (tenure-track, teaching faculty, research faculty and postdoc) rose this year. In

Table F2. Vacant Positions 2011-2012 by Position and Department Type

	Tried to fill	Filled	Unfilled	% Unfilled
US CS Public				
TenureTrack	235	168	67	28.5%
Teaching	110	101	9	8.2%
Research	95	89	6	6.3%
Postdoc	124	107	17	13.7%
Total	564	465	99	17.6%
US CS Private				
TenureTrack	87	51	36	41.4%
Teaching	27	24	3	11.1%
Research	29	27	2	6.9%
Postdoc	56	56	0	0.0%
Total	199	158	41	20.6%
All US CS				
TenureTrack	322	219	103	32.0%
Teaching	137	125	12	8.8%
Research	124	116	8	6.5%
Postdoc	180	163	17	9.4%
Total	763	623	140	18.3%
US CE				
TenureTrack	11	7	4	36.4%
Teaching	14	14	0	0.0%
Research	13	13	0	0.0%
Postdoc	13	12	1	7.7%
Total	51	46	5	9.8%
US I				
TenureTrack	25	19	6	24.0%
Teaching	18	18	0	0.0%
Research	27	27	0	0.0%
Postdoc	23	23	0	0.0%
Total	93	87	6	6.5%
Canadian				
TenureTrack	14	9	5	35.7%
Teaching	6	5	1	16.7%
Research	0	0	0	0.0%
Postdoc	0	0	0	0.0%
Total	20	14	6	30.0%
Grand Total				
TenureTrack	372	254	118	31.7%
Teaching	175	162	13	7.4%
Research	164	156	8	4.9%
Postdoc	216	198	18	8.3%
Total	927	770	157	16.9%

aggregate, the fraction rose from 21.7 percent in 2010-11 to 25.3 percent in 2011-12. For tenure-track positions (Table F3) the fraction increased to 22.4 percent from 21.3 percent in 2010-11. Once again, the fraction of new female tenure-track and overall faculty hires outpaces the fraction of new female Ph.D.s produced this past year (17.8 percent).

Among tenure-track faculty, slightly over half of the new hires were white while Asians and Non-resident Aliens were the next most significant categories. Whites very much dominate the newly hired teaching faculty, with Asians a distant second. Among research faculty and postdocs, there is a significant number of new hires whose race/ethnicity was reported as unknown, though Whites and Non-resident Aliens appear to dominate these two categories, with Asians third. (Table F4).

There was a similar overall number of faculty losses this year as compared with last year, with an increased number of retirements and a slight increase in those moving to another academic position, and a decline in those who left for a non-academic position (Table F5). The increased number of retirements (89 this past year vs. 67 the previous year) bears watching as baby boomers hit their mid-60s and some retirement programs modify their rules to deal with financial issues exacerbated by the most recent recession.

This year, there was an increase in the overall fraction of women at all three academic ranks (Table F6). At the full professor rank, the fraction increased to 13.5 percent from 12.7 percent last year, at the associate professor rank to 19.5 percent from 17.9 percent, and at the assistant professor level to 26.0 percent from 25.3 percent. The overall fraction of women among teaching faculty also increased, while the fraction of women among both research faculty and postdocs declined this year but is still higher than two years ago in each category. Ethnicity patterns are similar to last year, except for a somewhat larger percentage of Non-resident Aliens and correspondingly smaller percentage of Whites as assistant professors, and a higher percentage of Asians and correspondingly smaller percentage of Non-resident Aliens as research faculty (Table F7).

Despite the enrollment growth at both undergraduate and graduate levels, for next year reporting departments surprisingly forecast less than a one percent growth in tenure-track faculty. U.S. private universities actually forecast a decline, while U.S. public universities forecast an offsetting increase.

Table F2a. Reasons Positions Left Unfilled

Reason	# Reported	% of Reasons
Didn't find a good fit	35	36.8%
Offers turned down	43	45.3%
Technically vacant, not filled for admin reasons	9	9.5%
Hiring in progress	4	4.2%
Other	4	4.2%
Total Reasons Provided	95	

Table F3. Gender of Newly Hired Faculty

	Tenure-Track		Teaching		Research		Postdoc		Total	
Male	228	77.6%	66	71.0%	78	77.2%	143	71.1%	515	74.7%
Female	66	22.4%	27	29.0%	23	22.8%	58	28.9%	174	25.3%
Unknown	0		2		40		2		44	
Total	294		95		141		203		733	

Table F4. Ethnicity of Newly Hired Faculty										
	Tenure-Track		Teaching		Research		Postdoc		Total	
Nonresident Alien	34	16.4%	1	1.1%	24	17.8%	63	31.7%	122	19.4%
American Indian/Alaska Native	1	0.5%	3	3.4%	0	0.0%	0	0.0%	4	0.6%
Asian	47	22.7%	11	12.5%	13	9.6%	36	18.1%	107	17.0%
Black or African-American	8	3.9%	3	3.4%	1	0.7%	3	1.5%	15	2.4%
Native Hawaiian/Pacific Islander	2	1.0%	0	0.0%	0	0.0%	0	0.0%	2	0.3%
White	109	52.7%	62	70.5%	51	37.8%	60	30.2%	282	44.8%
Multiracial, not Hispanic	2	1.0%	0	0.0%	0	0.0%	0	0.0%	2	0.3%
Hispanic, any race	4	1.9%	2	2.3%	3	2.2%	2	1.0%	11	1.7%
Resident, race/ethnic unknown	0	0.0%	6	6.8%	43	31.9%	35	17.6%	84	13.4%
Total known residency	207	100.0%	88	100.0%	135	100.0%	199	100.0%	629	100.0%
Residency Unknown	87		7		6		4		104	
Total	294		95		141		203		733	

Table F5. Faculty Losses	
Died	9
Retired	89
Took Academic Position Elsewhere	62
Took Nonacademic Position	27
Remained, but Changed to Part Time	11
Other	19
Unknown	4
Total	221

Table F6. Gender of Current Faculty														
	Full		Associate		Assistant		Teaching		Research		Postdoc		Total	
Male	1,948	86.4%	1,358	80.5%	615	74.0%	577	71.4%	414	79.0%	500	79.4%	5,412	80.4%
Female	305	13.5%	329	19.5%	216	26.0%	231	28.6%	107	20.4%	124	19.7%	1,312	19.5%
Unknown	1		0		0		0		3		6		10	
Total	2,254		1,687		831		808		524		630		6,734	

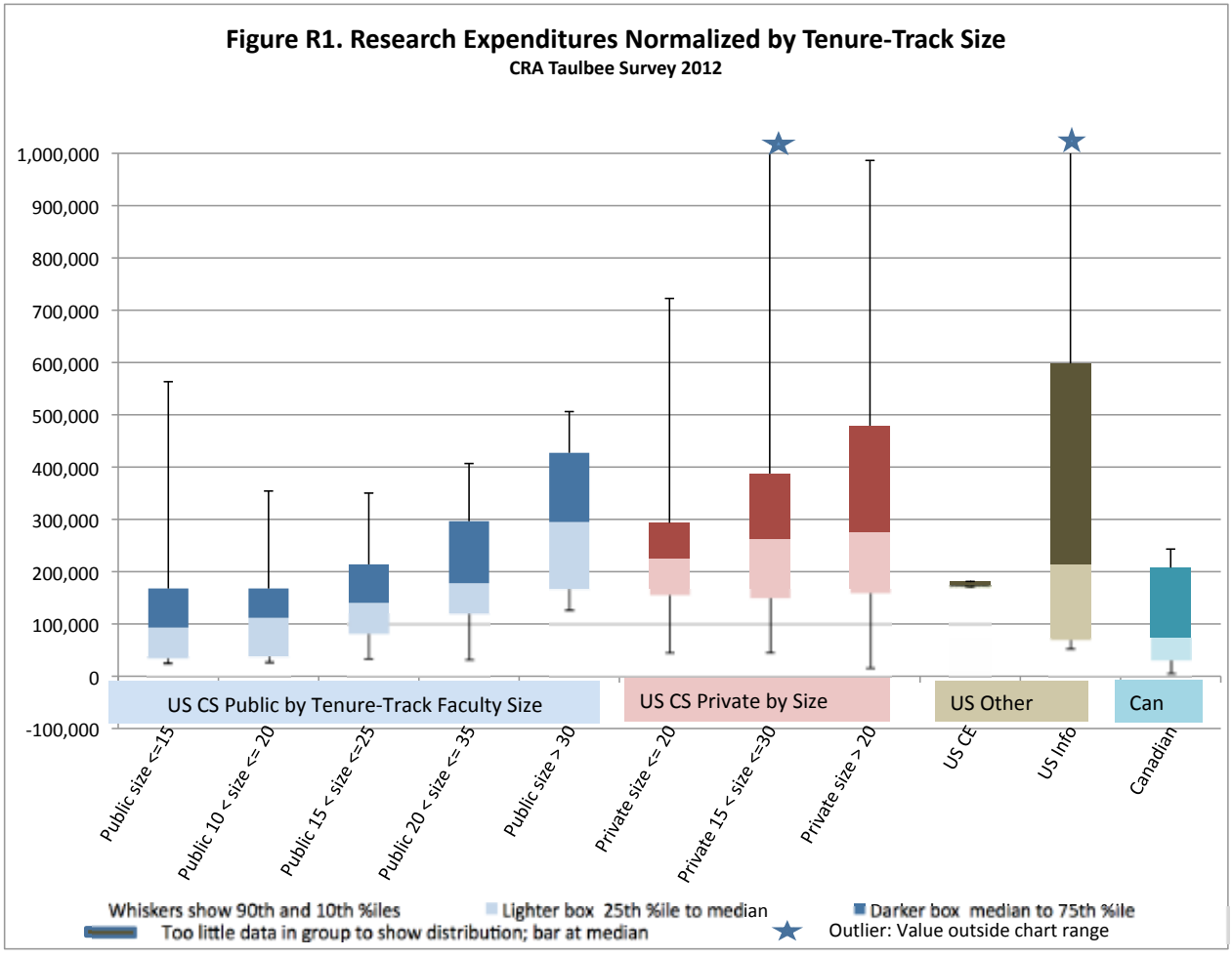
Table F7. Ethnicity of Current Faculty														
	Full		Associate		Assistant		Teaching		Research		Postdoc		Total	
Nonresident Alien	6	0.3%	49	3.2%	116	14.8%	14	1.9%	58	12.9%	214	37.3%	457	7.4%
American Indian / Alaska Native	6	0.3%	7	0.5%	6	0.8%	3	0.4%	9	2.0%	2	0.3%	33	0.5%
Asian	421	20.1%	426	27.8%	195	24.9%	63	8.3%	84	18.7%	110	19.2%	1,299	21.0%
Black or African-American	16	0.8%	25	1.6%	26	3.3%	20	2.6%	4	0.9%	6	1.0%	97	1.6%
Native Hawaiian/ Pacific Islander	13	0.6%	13	0.8%	6	0.8%	6	0.8%	1	0.2%	6	1.0%	45	0.7%
White	1,515	72.5%	910	59.3%	383	48.9%	607	80.4%	263	58.6%	205	35.7%	3,883	62.8%
Multiracial, not Hispanic	5	0.2%	3	0.2%	10	1.3%	4	0.5%	4	0.9%	2	0.3%	28	0.5%
Hispanic, any race	28	1.3%	38	2.5%	18	2.3%	17	2.3%	8	1.8%	13	2.3%	122	2.0%
Resident, race/ethnic unknown	81	3.9%	64	4.2%	24	3.1%	21	2.8%	18	4.0%	16	2.8%	224	3.6%
Total known residency	2,091	100.0%	1,535	100.0%	784	100.0%	755	100.0%	449	100.0%	574	100.0%	6,188	100.0%
Residency Unknown	163		152		47		53		75		56		546	
Total	2,254		1,687		831		808		524		630		6,734	

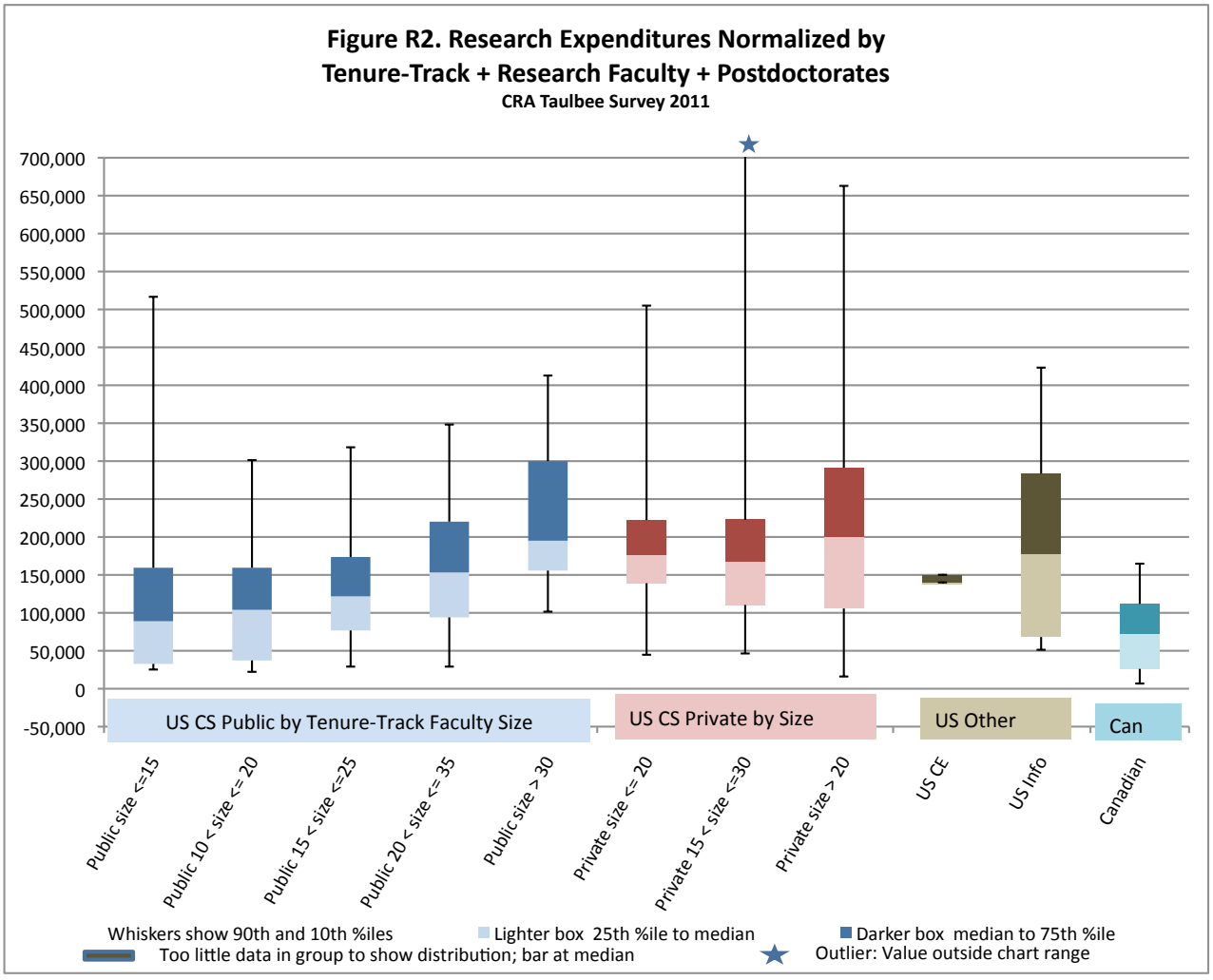
Research Expenditures (Table R1; Figures R1-R2)

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. 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. Overall, research expenditures at U.S. private universities tended to exceed that at public universities this year.

Table R1. Total Expenditure from External Sources for Computing Research

		Percentile of Department Averages				
Department Type	**# Depts**	**10th**	**25th**	**50th**	**75th**	**90th**
US CS Public	96	$397,076	$1,230,587	$3,674,956	$8,104,109	$16,210,237
US CS Private	35	$1,063,492	$2,406,355	$5,184,074	$10,401,629	$28,892,584
US CE	8			$2,997,903		
US Information	12	$845,641	$1,834,005	$4,043,881	$6,008,871	$14,507,343
Canadian	11	$183,028	$522,167	$3,127,906	$5,354,255	$6,367,192





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 2011, further categorized as teaching assistants (TAs), research assistants (RAs), and full-support fellows, and also shows the split between those on institutional vs. external funds. The total number of TAs on institutional funds in CS departments decreased five percent this year although the number of departments reporting this year increased. The decline is attributed to private universities, where there were only about 2/3 the number of TAs this year as compared with last year. A very different story exists in total RA support; here the number on institutional support at private universities more than doubled, while the number at public universities declined. However, the number of RAs on external funding declined in both public and private U.S. universities, and declined at a much greater rate at the private universities. So it seems that the decline in externally funded RAs at private universities resulted in a greater number of institutionally funded RAs, at the expense of institutionally supported TAs. In contrast, at public universities the decline in external funding for RAs simply resulted in fewer supported RAs. The number of full-support fellows rose at private U.S. universities with respect to both institutional fund and external fund support, and declined in both categories of support at U.S. public universities.

U.S. CE programs, like the private universities, showed a shift of support from external to institutional funds for RAs and also showed an increase in institutionally supported fellows. U.S. I programs showed an increased number of externally supported RAs and fellows and a decreased number of institutionally supported RAs. Canadian programs also showed a decline in institutionally supported RAs and an increase in externally supported RAs, but a decline in externally supported fellows. Canadian programs also showed an increased number of institutionally supported TAs.

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

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	111	2,348	32.6%	729	10.1%	269	3.7%	2	0.0%	3,598	50.0%	255	3.5%	7,201
US CS Private	42	477	16.5%	617	21.3%	282	9.8%	3	0.1%	1,195	41.3%	317	11.0%	2,891
US CS Total	153	2,825	28.0%	1,346	13.3%	551	5.5%	5	0.0%	4,793	47.5%	572	5.7%	10,092
US CE	11	77	27.5%	54	19.3%	24	8.6%	0	0.0%	118	42.1%	7	2.5%	280
US I	15	92	27.1%	65	19.2%	21	6.2%	10	2.9%	118	34.8%	33	9.7%	339
Canadian	14	348	37.6%	188	20.3%	65	7.0%	6	0.6%	304	32.8%	15	1.6%	926
Grand Total	193	3,342	28.7%	1,653	14.2%	661	5.7%	21	0.2%	5,333	45.8%	627	5.4%	11,637

Table G2. Fall 2011 Academic-Year Graduate Stipends by Department Type and Support Type						
Teaching Assistantships						
		Percentiles of Department Averages				
Department Type	# Depts	10th	25th	50th	75th	90th
US CS Public	101	$8,252	$12,878	$15,680	$17,444	$19,393
US CS Private	30	$2,490	$16,375	$20,475	$22,652	$26,047
US CE	8			$16,155		
US Information	9			$18,234		
Canadian	10	$4,644	$4,936	$8,075	$16,428	$18,711
Research Assistantships						
		Percentiles of Department Averages				
Department Type	# Depts	10th	25th	50th	75th	90th
US CS Public	98	$8,563	$14,553	$16,900	$18,171	$20,531
US CS Private	30	$3,450	$18,790	$21,375	$26,078	$27,078
US CE	8			$14,400		
US Information	12	$10,129	$15,480	$18,342	$19,849	$22,630
Canadian	10	$3,624	$13,625	$17,000	$21,250	$24,408
Full-Support Fellows						
		Percentiles of Department Averages				
Department Type	# Depts	10th	25th	50th	75th	90th
US CS Public	62	$11,155	$15,774	$19,063	$24,250	$30,000
US CS Private	24	$17,550	$20,238	$22,444	$26,965	$30,000
US CE	5			$18,000		
US Information	9			$22,000		
Canadian	4			$17,543		

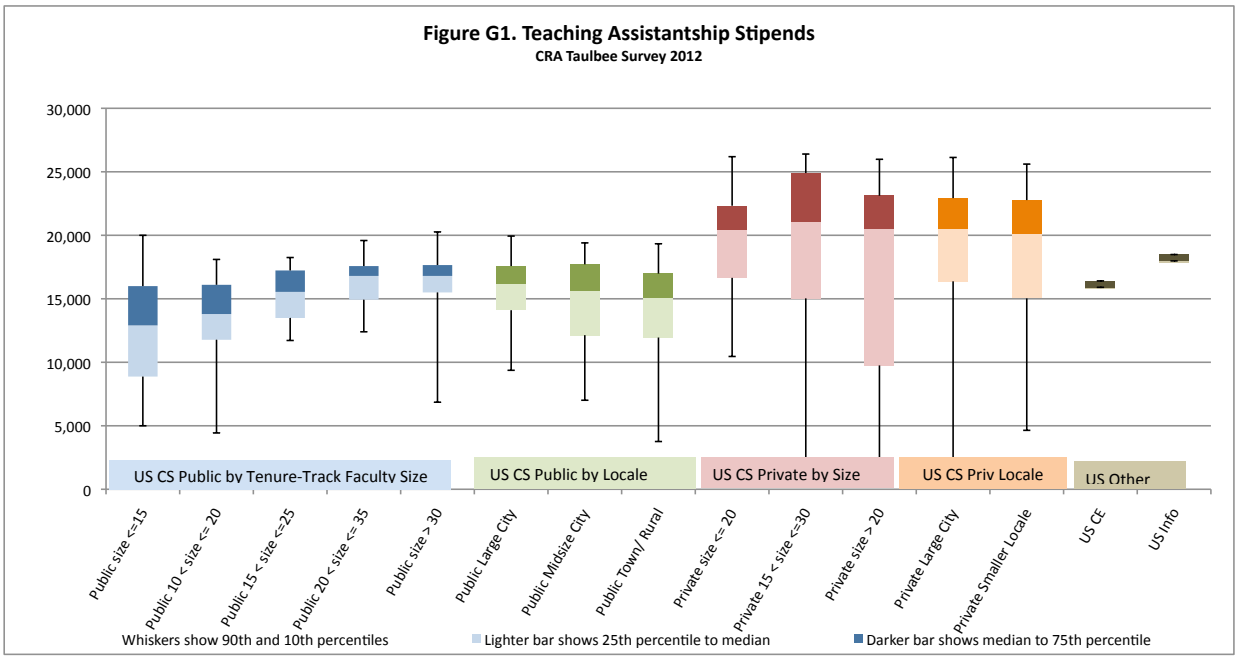


Figure G1. Teaching Assistantship Stipends
CRA Taulbee Survey 2012
30,000
25,000
20,000
15,000
10,000
5,000
0
US CS Public by Tenure-Track Faculty Size
US CS Public by Locale
US CS Private by Size
US CS Priv Locale
US Other
Public size <=15
Public 10 < size <= 20
Public 15 < size <=25
Public 20 < size <= 35
Public size > 30
Public Large City
Public Midsize City
Public Town/ Rural
Private size <= 20
Private 15 < size <=30
Private size > 20
Private Large City
Private Smaller Locale
US CE
US Info
Whiskers show 90th and 10th percentiles
Lighter bar shows 25th percentile to median
Darker bar shows median to 75th percentile

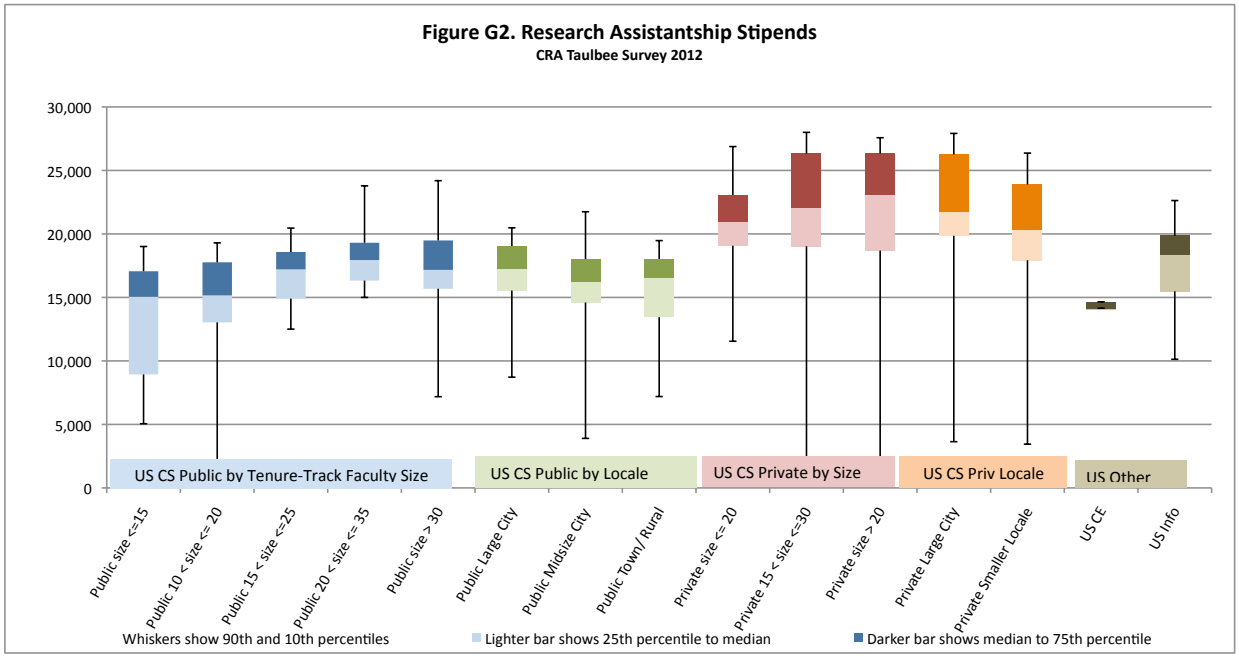


Figure G2. Research Assistantship Stipends
CRA Taulbee Survey 2012
30,000
25,000
20,000
15,000
10,000
5,000
0
US CS Public by Tenure-Track Faculty Size
US CS Public by Locale
US CS Private by Size
US CS Priv Locale
US Other
Public size <=15
Public 10 < size <= 20
Public 15 < size <=25
Public 20 < size <= 35
Public size > 30
Public Large City
Public Midsize City
Public Town/ Rural
Private size <= 20
Private 15 < size <=30
Private size > 20
Private Large City
Private Smaller Locale
US CE
US Info
Whiskers show 90th and 10th percentiles
Lighter bar shows 25th percentile to median
Darker bar shows median to 75th percentile

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. Larger departments tend to offer higher stipends to all categories of grad students than do smaller departments, and private universities tend to offer higher stipends to all categories of grad students than do public universities. 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. The median salaries at U.S. private universities were flat across all categories of supported students. At U.S. public universities, medians of TA salaries were flat, those of RA salaries increased by 3 percent, and those for fellows dropped by nearly 6 percent.

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 minimum, median, mean, and maximum salaries for each rank (full, associate, and assistant professors and non-tenure-track teaching faculty including post-doctorates) and the number of persons at each rank. The salaries are those in effect on January 1, 2013. 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 2012. 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.

As was the case last year, 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, assistant professor and early stage associate and full professor salaries are somewhat higher at larger departments, but salaries of senior faculty with more time in rank show little difference across changes in department size (Tables S9-S11). Public university salaries appear to be generally lower in smaller locales (Tables S12-S14), while private university salaries exhibit no clear pattern relative to type of locale (Tables S15-S16).

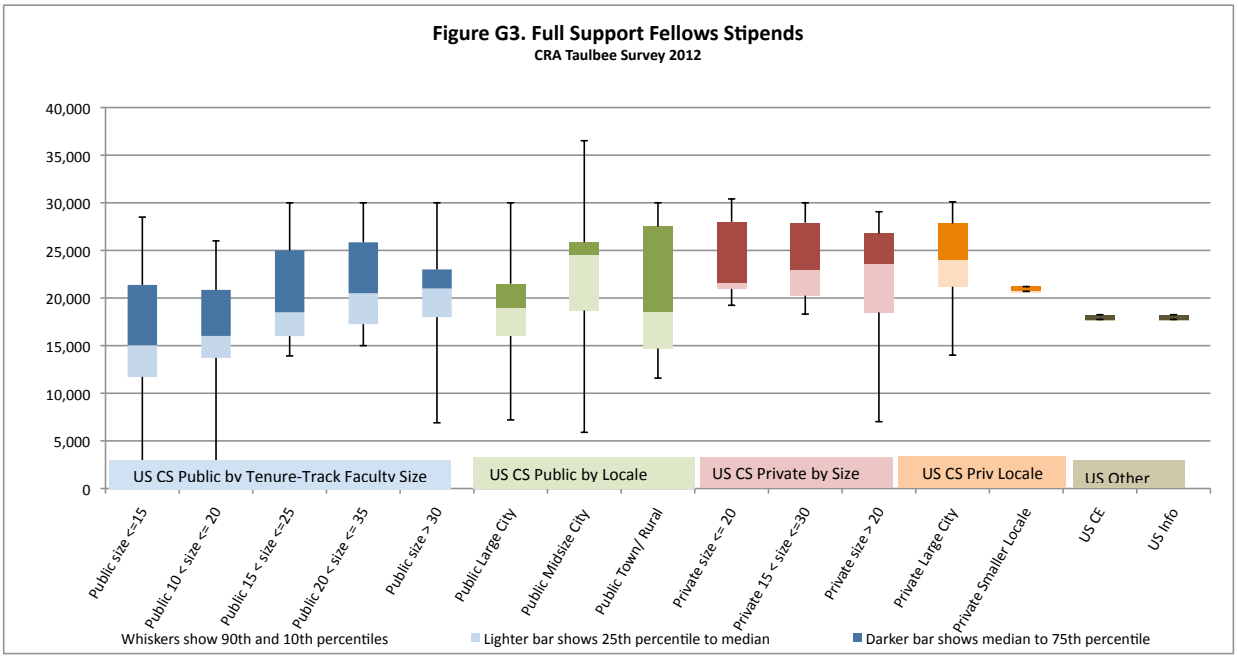


Table S1. Nine-month Salaries, 139 Responses of 189 US CS Departments, Percentiles from Department Averages

	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	105	111	111	13	95	126	10	129	120	62	79
Indiv	509	509	530	101	292	815	70	620	515	365	450
10	$118,065	$114,810	$104,411	$124,282	$89,869	$91,824	$86,246	$82,550	$53,771	$52,194	$39,296
25	$130,721	$125,927	$115,012	$129,932	$95,600	$97,309	$98,263	$87,079	$59,782	$62,341	$44,526
50	$153,683	$139,679	$131,234	$148,485	$102,935	$105,500	$102,006	$91,666	$68,914	$83,640	$50,916
75	$170,100	$155,966	$150,000	$170,455	$112,450	$113,500	$115,653	$96,386	$81,787	$110,060	$59,885
90	$190,497	$182,223	$164,742	$194,459	$117,656	$122,857	$159,723	$102,000	$99,047	$128,476	$70,000

Table S2. Nine-month Salaries, 104 Responses of 136 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	77	88	84	11	77	96	8	97	91	41	60
Indiv	347	360	385	73	224	606	61	453	363	218	250
10	$118,080	$114,637	$102,888	$122,511	$90,011	$91,155	*	$81,934	$53,418	$49,936	$37,658
25	$129,905	$123,856	$113,406	$129,884	$95,555	$96,565	*	$85,836	$58,335	$59,359	$42,653
50	$153,123	$138,764	$128,469	$148,485	$102,357	$103,497	$102,006	$90,200	$67,333	$76,170	$50,452
75	$166,877	$153,167	$145,801	$165,300	$111,350	$111,274	*	$94,275	$76,503	$95,768	$59,370
90	$182,561	$170,037	$163,898	$200,466	$116,230	$117,728	*	$97,706	$99,813	$118,055	$70,088

Table S3. Nine-month Salaries, 35 Responses of 53 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	28	23	27	2	18	30	2	32	29	21	19
Indiv	162	149	145	28	68	209	9	167	152	147	200
10	$117,182	$119,417	$109,592		$85,733	$97,459		$85,732	$54,000	$58,956	$41,337
25	$132,296	$133,498	$122,007		$95,721	$106,490		$93,016	$66,346	$84,841	$50,000
50	$165,390	$155,966	$142,394		$106,807	$113,324		$98,010	$73,661	$103,357	$56,580
75	$192,127	$180,255	$162,773		$117,133	$123,311		$102,225	$94,460	$126,532	$62,768
90	$204,174	$189,793	$181,517		$125,128	$139,122		$106,008	$98,904	$159,303	$70,000

Table S4. Nine-month Salaries, 30 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	17	21	20	2	22	27	2	24	24	3	9
Indiv	38	51	42	7	48	95	5	73	57	4	11
10	$103,699	$106,311	$100,025	*	$80,114	$86,828	*	$75,893	$45,720	*	*
25	$115,217	$115,557	$102,957	*	$94,216	$91,370	*	$82,687	$55,758	*	*
50	$128,237	$126,752	$114,372	*	$100,114	$97,315	*	$86,782	$65,780	$83,800	$45,000
75	$158,897	$148,380	$124,448	*	$113,047	$105,876	*	$90,092	$74,526	*	*
90	$190,689	$191,187	$147,839	*	$117,677	$118,362	*	$95,701	$84,983	*	*

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	30	35	30	2	34	39	1	37	34	8	13
Indiv	86	87	75	6	83	180	8	111	109	15	19
10	$113,890	$111,839	$101,421	*	$89,489	$89,171	*	$80,394	$46,970	*	$31,200
25	$123,478	$118,615	$110,727	*	$95,402	$94,702	*	$85,462	$55,387	*	$40,823
50	$138,461	$133,875	$118,350	*	$99,206	$100,860	*	$88,738	$62,259	$73,328	$50,000
75	$154,106	$150,383	$128,693	*	$109,168	$105,876	*	$91,250	$71,159	*	$60,000
90	$180,887	$177,502	$149,889	*	$115,165	$111,368	*	$94,615	$79,026	*	$81,440

Table S6. Nine-month Salaries, 37 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	31	33	30	4	29	34	3	36	33	15	20
Indiv	105	91	91	20	84	193	27	129	132	60	53
10	$119,882	$113,820	$107,662	*	$88,825	$92,480	*	$81,392	$51,783	$37,424	$34,937
25	$130,918	$122,701	$115,449	*	$94,312	$96,808	*	$87,090	$57,126	$60,000	$41,806
50	$145,600	$137,671	$126,589	$152,174	$99,819	$103,077	$102,683	$90,210	$62,675	$71,655	$51,448
75	$163,134	$152,402	$146,997	*	$107,303	$107,883	*	$92,940	$70,331	$108,222	$59,638
90	$181,476	$160,189	$165,991	*	$113,472	$114,085	*	$95,078	$84,956	$118,412	$73,400

Table S7. Nine-month Salaries, 34 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	27	31	30	4	26	32	3	33	30	19	28
Indiv	123	122	126	23	88	201	27	169	125	88	101
10	$122,125	$115,767	$103,266	*	$88,615	$93,826	*	$80,700	$53,376	$47,300	$37,285
25	$134,737	$126,074	$113,002	*	$95,914	$98,222	*	$87,167	$56,662	$58,718	$43,705
50	$155,176	$138,776	$137,483	$157,098	$104,173	$105,500	$102,683	$91,918	$67,676	$74,902	$50,150
75	$170,925	$154,695	$155,143	*	$113,698	$112,235	*	$94,655	$91,330	$95,798	$59,551
90	$182,755	$169,809	$166,148	*	$115,599	$118,999	*	$96,560	$105,511	$118,269	$74,400

Table S8. Nine-month Salaries, 26 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	21	24	24	5	18	24	3	26	25	18	21
Indiv	169	167	196	46	59	243	29	199	139	129	158
10	$145,664	$124,213	$109,899	*	$94,587	$98,214	*	$88,897	$57,848	$49,194	$38,700
25	$150,224	$137,579	$128,311	*	$98,480	$100,923	*	$90,168	$67,854	$53,207	$46,605
50	$156,524	$146,259	$135,067	$148,896	$107,497	$110,021	$101,637	$93,430	$75,518	$77,646	$50,916
75	$169,712	$157,728	$148,396	*	$113,907	$116,099	*	$97,706	$95,793	$95,278	$59,822
90	$184,094	$177,619	$159,009	*	$120,807	$126,676	*	$102,260	$114,793	$123,880	$64,425

Table S9. Nine-month Salaries, 17 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	11	9	11	1	9	15	1	16	14	8	7
Indiv	34	39	50	6	20	54	6	53	37	34	32
10	$113,827	*	$109,459	*	*	$96,854	*	$86,694	$45,645	*	*
25	$117,554	*	$116,410	*	*	$103,455	*	$93,253	$54,788	*	*
50	$165,273	$169,238	$132,255	*	$102,400	$110,608	*	$96,276	$71,973	$97,902	$56,580
75	$180,517	*	$164,035	*	*	$118,420	*	$101,296	$80,422	*	*
90	$194,500	*	$191,004	*	*	$134,414	*	$106,357	$103,485	*	*

Table S10. Nine-month Salaries, 19 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	15	14	14	0	9	17	0	16	15	12	13
Indiv	72	73	73	0	23	72	0	71	56	44	99
10	$117,447	$131,829	$113,016		*	$102,325		$85,956	$47,837	$48,875	$46,861
25	$136,207	$144,953	$127,999		*	$108,142		$93,358	$65,600	$89,204	$51,989
50	$167,693	$165,528	$147,149		$99,656	$112,648		$99,801	$71,620	$110,120	$56,944
75	$196,301	$185,896	$169,602		*	$120,609		$104,261	$95,781	$131,572	$65,752
90	$212,326	$194,736	$187,143		*	$144,753		$106,390	$102,669	$167,835	$72,160

Table S11. Nine-month Salaries, 18 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	17	14	16	1	9	15	1	16	15	13	12
Indiv	128	110	95	22	48	155	3	114	115	113	168
10	$125,246	$120,776	$109,578	$175,610	$91,168	$97,070	$120,645	$83,672	$65,933	$49,929	$42,294
25	$133,600	$132,622	$123,388	$175,610	$94,992	$107,357	$120,645	$91,801	$68,808	$69,396	$46,076
50	$165,506	$150,464	$145,836	$175,610	$108,349	$115,573	$120,645	$99,603	$81,490	$110,000	$54,012
75	$196,640	$171,807	$161,442	$175,610	$118,874	$125,756	$120,645	$104,261	$98,075	$132,775	$61,982
90	$211,413	$191,434	$183,955	$175,610	.	$141,799	$120,645	$106,362	$103,542	$154,340	$66,937

Table S12. Nine-month Salaries, 43 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	33	33	35	6	29	38	4	40	41	20	28
Indiv	173	141	197	27	86	248	33	200	183	113	142
10	$114,905	$112,771	$108,403	*	$88,825	$92,707	*	$83,235	$53,568	$50,034	$34,377
25	$132,828	$132,156	$124,857	*	$97,871	$100,505	*	$88,808	$60,992	$65,135	$40,595
50	$155,176	$143,813	$134,846	$143,916	$104,067	$105,500	$102,006	$91,799	$68,901	$83,640	$53,073
75	$166,877	$157,636	$144,454	*	$110,533	$112,571	*	$95,050	$78,304	$105,658	$59,971
90	$185,018	$180,609	$160,947	*	$117,629	$116,616	*	$100,833	$97,262	$122,492	$70,989

Table S13. Nine-month Salaries, 25 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	20	23	21	3	20	23	3	24	20	9	12
Indiv	79	93	91	37	45	132	24	115	70	53	35
10	$118,458	$111,850	$101,463	*	$89,513	$91,630	*	$80,858	$53,794	*	$30,083
25	$125,576	$120,300	$111,365	*	$94,899	$98,190	*	$86,006	$60,500	*	$44,545
50	$150,809	$136,972	$120,830	$165,300	$101,436	$103,988	$113,989	$90,603	$65,989	$79,122	$52,159
75	$170,131	$144,771	$141,716	*	$113,726	$111,368	*	$96,356	$91,834	*	$60,000
90	$188,737	$170,221	$161,343	*	$117,546	$123,069	*	$101,918	$117,336	*	$81,680

Table S14. Nine-month Salaries, 36 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	24	32	28	2	28	35	1	33	30	12	20
Indiv	95	126	97	9	93	226	4	138	110	52	73
10	$116,257	$114,829	$102,755	*	$91,127	$88,468	*	$80,118	$47,568	$41,344	$40,453
25	$128,507	$118,819	$109,833	*	$94,300	$94,702	*	$83,700	$55,419	$54,761	$42,369
50	$151,428	$133,711	$123,884	*	$98,703	$97,315	*	$88,613	$64,019	$62,182	$50,000
75	$166,893	$150,275	$149,205	*	$111,181	$106,955	*	$91,565	$75,067	$80,384	$50,843
90	$176,708	$159,605	$166,048	*	$114,413	$119,373	*	$94,808	$100,654	$99,478	$60,558

Table S15. Nine-month Salaries, 23 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	18	14	19	2	14	19	2	23	21	14	11
Indiv	100	91	102	28	55	159	9	125	123	129	139
10	$117,181	$107,362	$109,477	*	$84,147	$96,778	*	$86,326	$53,169	$68,719	$40,707
25	$141,677	$130,668	$122,007	*	$98,125	$107,357	*	$93,000	$68,160	$86,421	$44,526
50	$165,525	$141,926	$132,255	*	$113,165	$114,000	*	$97,892	$73,661	$92,313	$56,944
75	$188,905	$181,365	$157,450	*	$119,487	$124,260	*	$101,900	$88,070	$131,815	$60,000
90	$196,458	$194,736	$196,520	*	$130,838	$140,288	*	$105,010	$98,835	$172,133	$72,623

Table S16. Nine-month Salaries, 12 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	10	9	8	0	4	11	0	9	8	7	8
Indiv	62	58	43	0	13	50	0	42	29	18	61
10	$114,436	*	*		*	$98,260		*	*	*	*
25	$124,909	*	*		*	$103,890		*	*	*	*
50	$158,143	$156,406	$147,738		$97,242	$110,976		$98,129	$76,163	$110,240	$55,091
75	$205,229	*	*		*	$122,994		*	*	*	*
90	$214,608	*	*		*	$143,151		*	*	*	*

Table S17. Nine-month Salaries, 7 Responses of 32 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	3	4	4	2	4	6	2	7	6	5	4
Indiv	9	14	22	22	8	23	6	18	26	16	20
10	*	*	*	*	*	*	*	*	*	*	*
25	*	*	*	*	*	*	*	*	*	*	*
50	$155,925	$130,462	$118,035	*	$88,851	$95,584	*	$87,321	$63,001	$82,500	$52,139
75	*	*	*	*	*	*	*	*	*	*	*
90	*	*	*	*	*	*	*	*	*	*	*

Table S18. Nine-month Salaries, 14 Responses of 25 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	9	11	12	0	10	14	0	14	13	6	7
Indiv	18	39	44	0	40	67	0	75	93	40	29
10	*	$103,919	$112,741		$80,841	$84,526		$70,896	$52,650	*	*
25	*	$116,791	$120,218		$91,214	$88,779		$74,409	$62,786	*	*
50	$138,037	$159,964	$133,461		$102,789	$101,912		$90,454	$68,685	$87,015	$50,667
75	*	$167,629	$152,223		$108,086	$110,881		$97,725	$81,761	*	*
90	*	$175,550	$165,950		$118,927	$120,440		$104,441	$97,127	*	*

Table S19. Nine-month Salaries, 11 Responses of 30 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	9	9	7	1	8	10	1	10	9	2	4
Indiv	56	73	54	11	42	97	23	42	38	4	41
10	*	*	*	*	*	$95,275	*	$81,227	*	*	*
25	*	*	*	*	*	$107,058	*	$94,040	*	*	*
50	$155,386	$152,167	$134,004	*	$127,469	$117,963	*	$102,364	$84,523	$75,866	$47,364
75	*	*	*	*	*	$135,287	*	$111,462	*	*	*
90	*	*	*	*	*	$156,141	*	$136,001	*	*	*

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	50	16	16	36	2	0	0	2
Indiv	80	26	20	103	3	0	0	16
10	$79,621	$40,800	$42,750	$37,672	*			*
25	$84,180	$46,002	$55,163	$44,698	*			*
50	$90,838	$55,218	$78,520	$52,532	*			*
75	$95,000	$71,875	$92,462	$60,368	*			*
90	$99,313	$77,936	$113,600	$67,635	*			*

Table S21. Salary Changes for Departments that Reported in Both 2011 and 2012

	U.S. CS (125)	U.S. CE (7)	U.S. I (13)	Canadian (8)
Full Profs	+4.3%	+2.3%	+3.9%	+4.0%
Assoc. Profs.	+1.7%	+7.5%	+0.6%	+2.0%
Asst. Profs.	+1.2%	-2.7%	+1.6%	+1.1%
Non-ten-track teaching faculty	+1.1%	-5.3%	-2.1%	+7.5%
Research faculty	-0.7%	+16.1%	-6.1%	-6.1%
Post doctorates	+0.7%	+13.8%	+3.9%	-1.7%

Figure S1. US CS Department Average Salary, Full Professor in Rank 16+ Years
CRA Taulbee Survey 2012

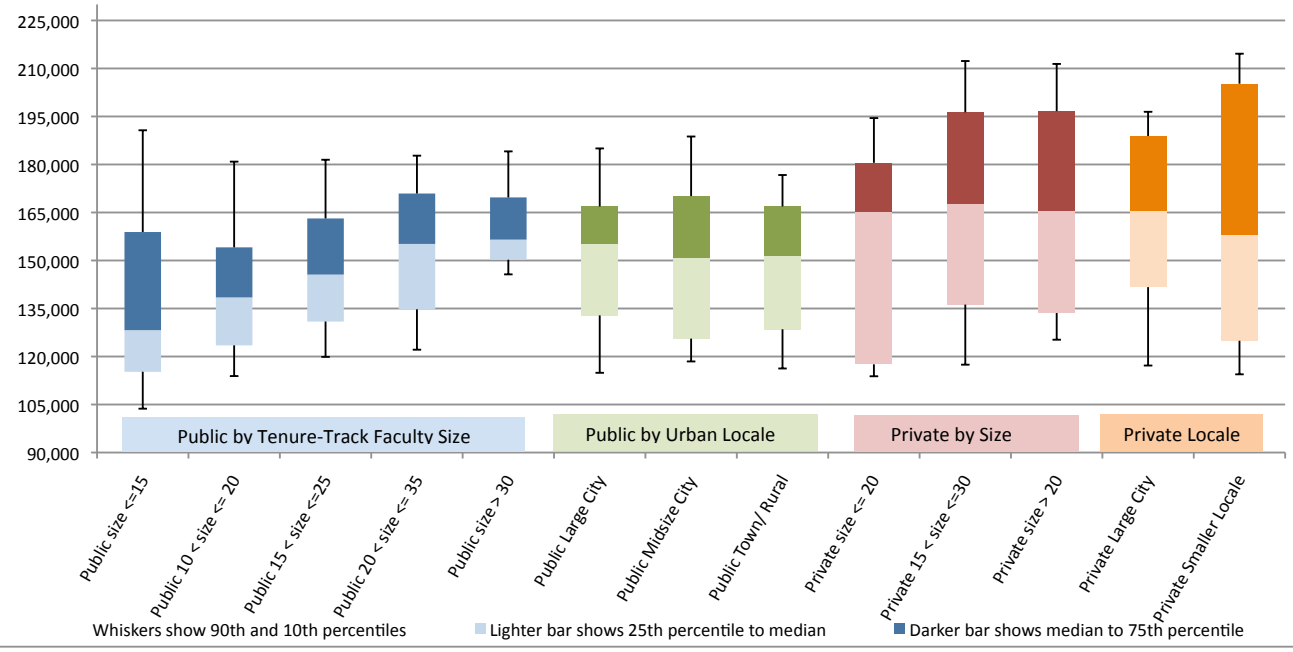


Figure S2. US CS Department Average Salary, Full Professor in Rank 8-15 Years
CRA Taulbee Survey 2012

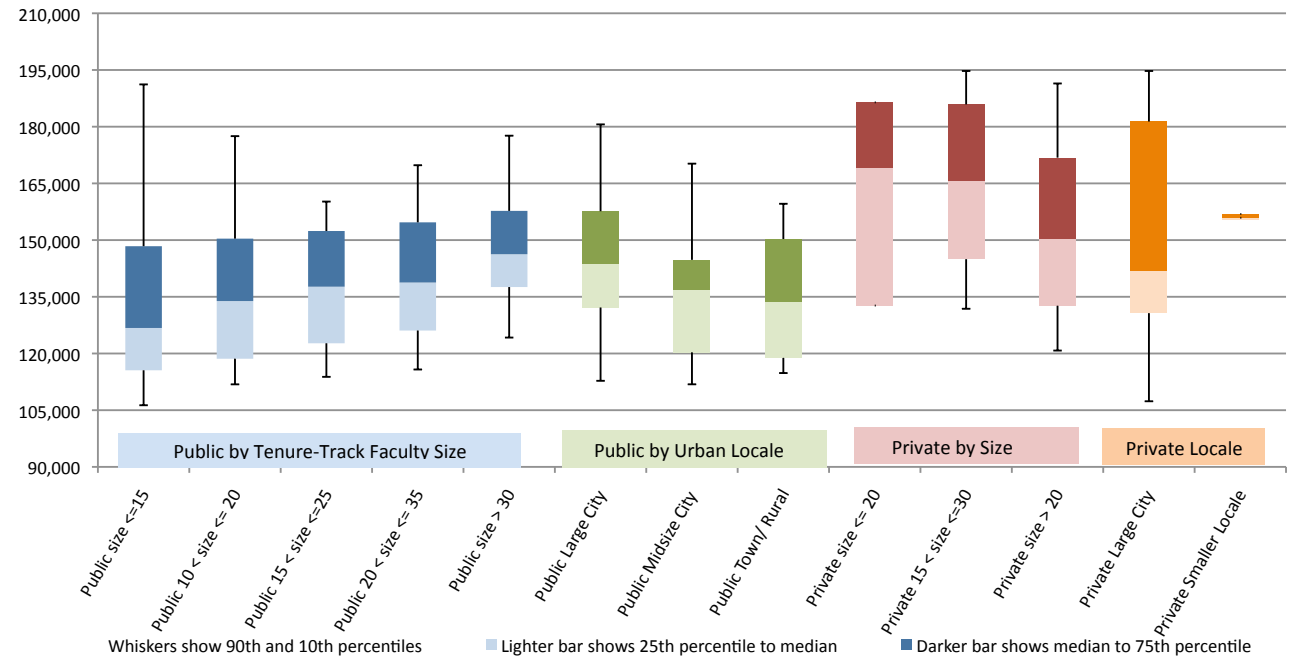


Figure S3. US CS Department Average Salary, Full Professor in Rank 0-7 Years
CRA Taulbee Survey 2012

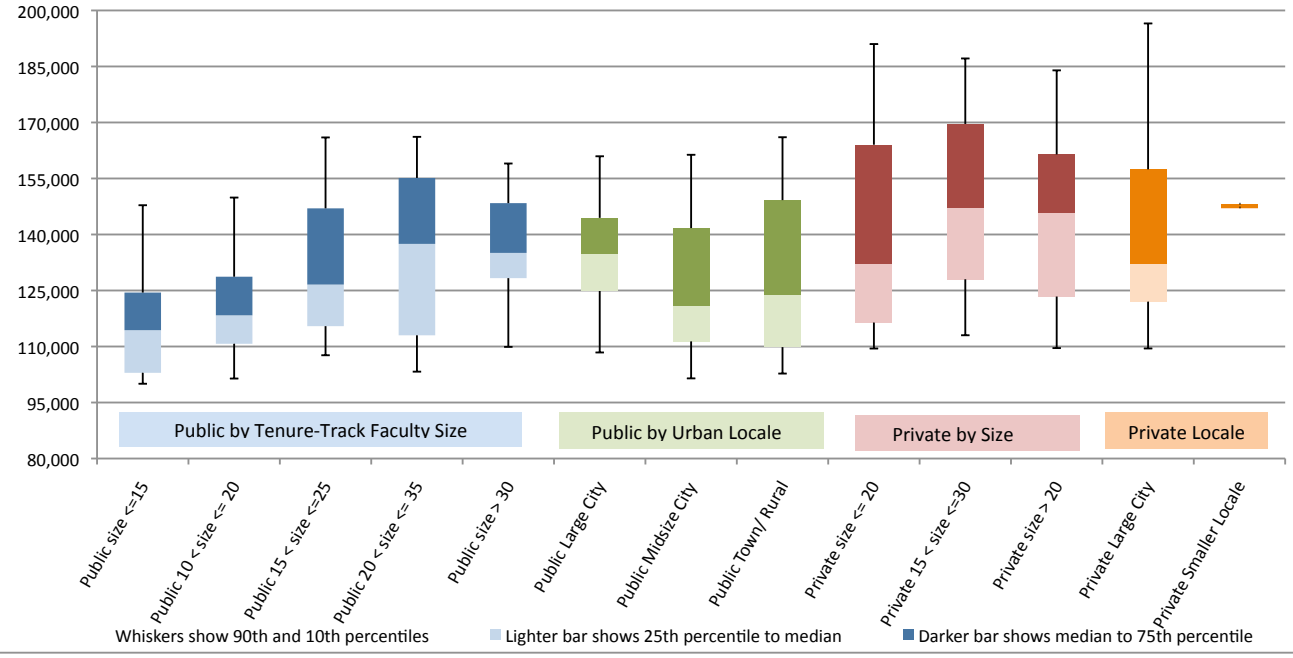


Figure S4. US CS Department Average Salary, Associate Professor in Rank 8+ Years
CRA Taulbee Survey 2012

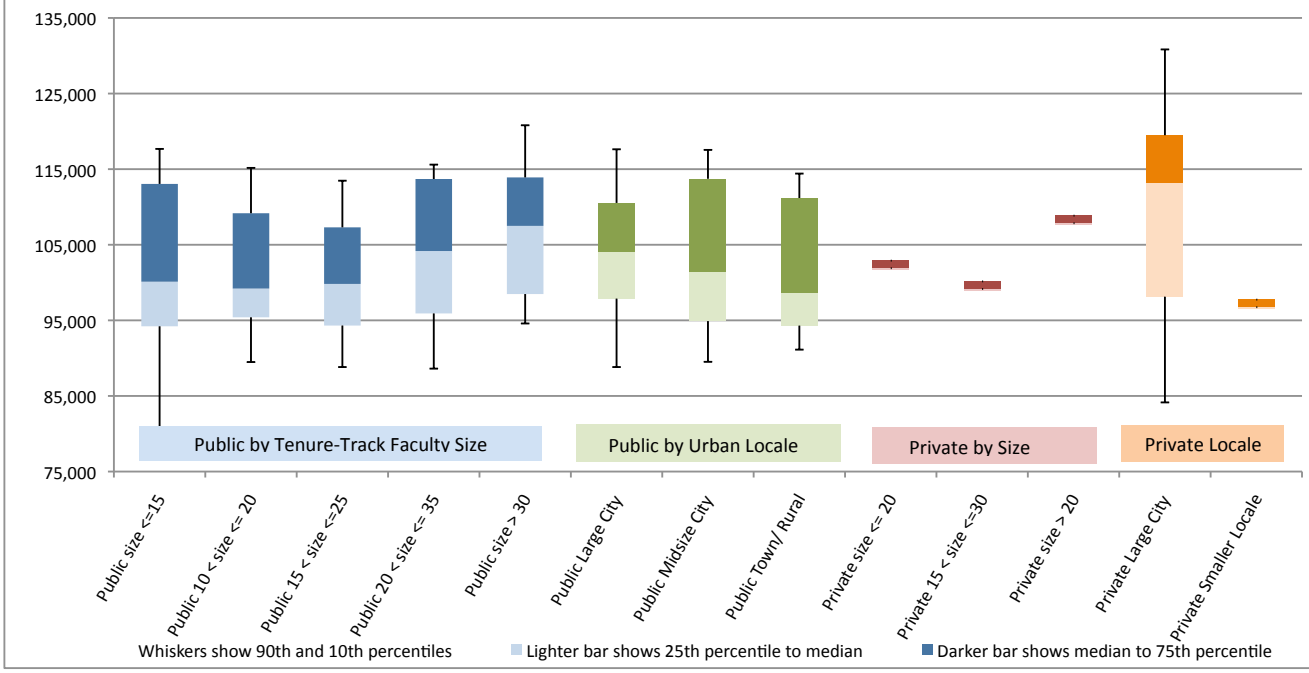


Figure S5. US CS Department Average Salary, Associate Professor in Rank 0-7 Years
CRA Taulbee Survey 2012

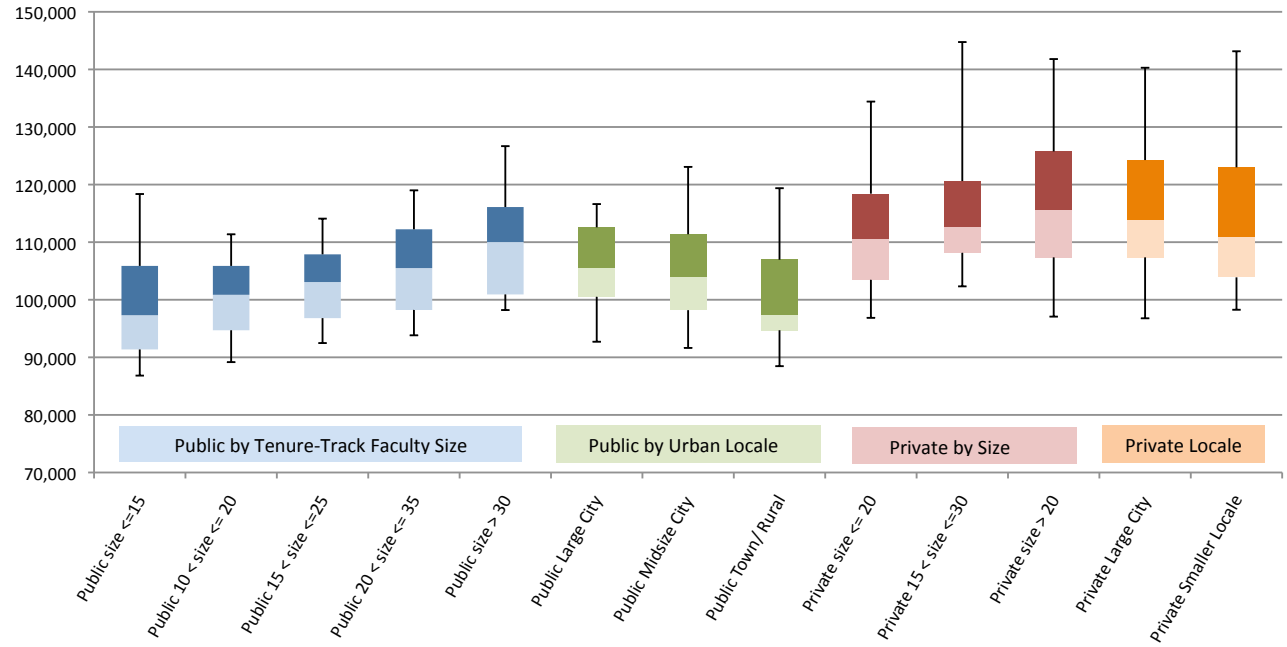


Figure S6. US CS Department Average Salary, Assistant Professor
CRA Taulbee Survey 2012

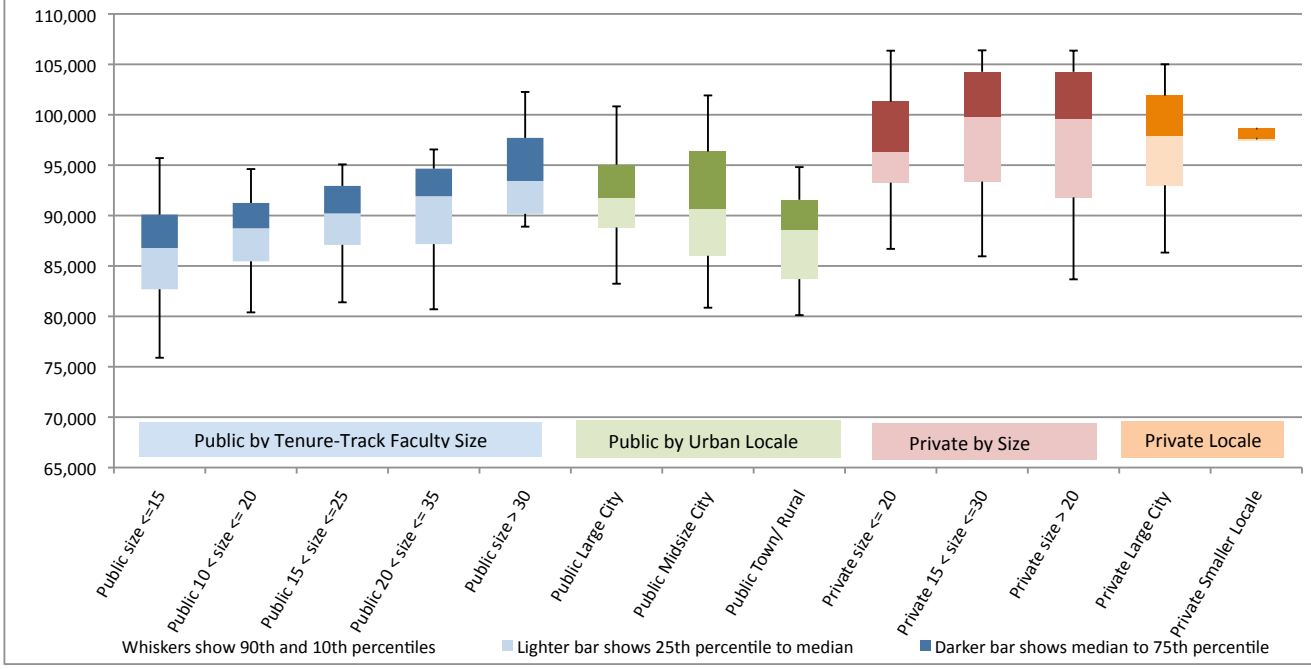


Figure S7. US CS Department Average Salary, Non-Tenure Track Teaching Faculty
CRA Taulbee Survey 2012

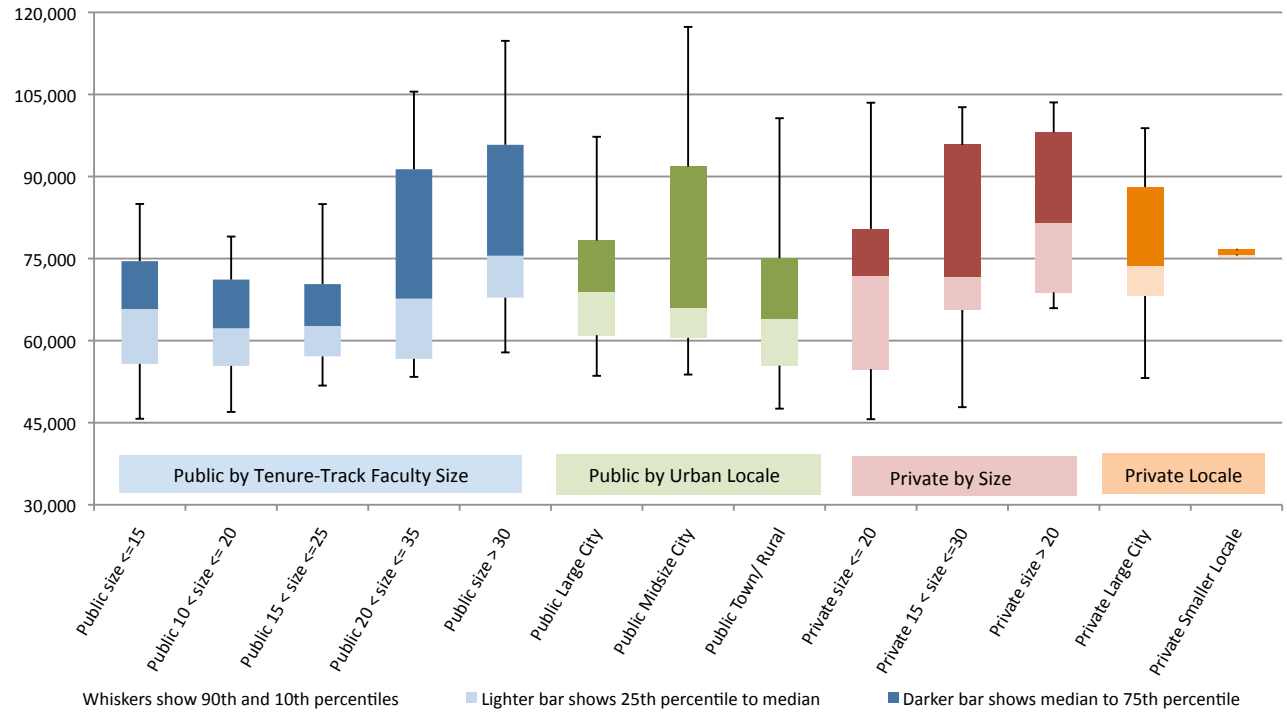
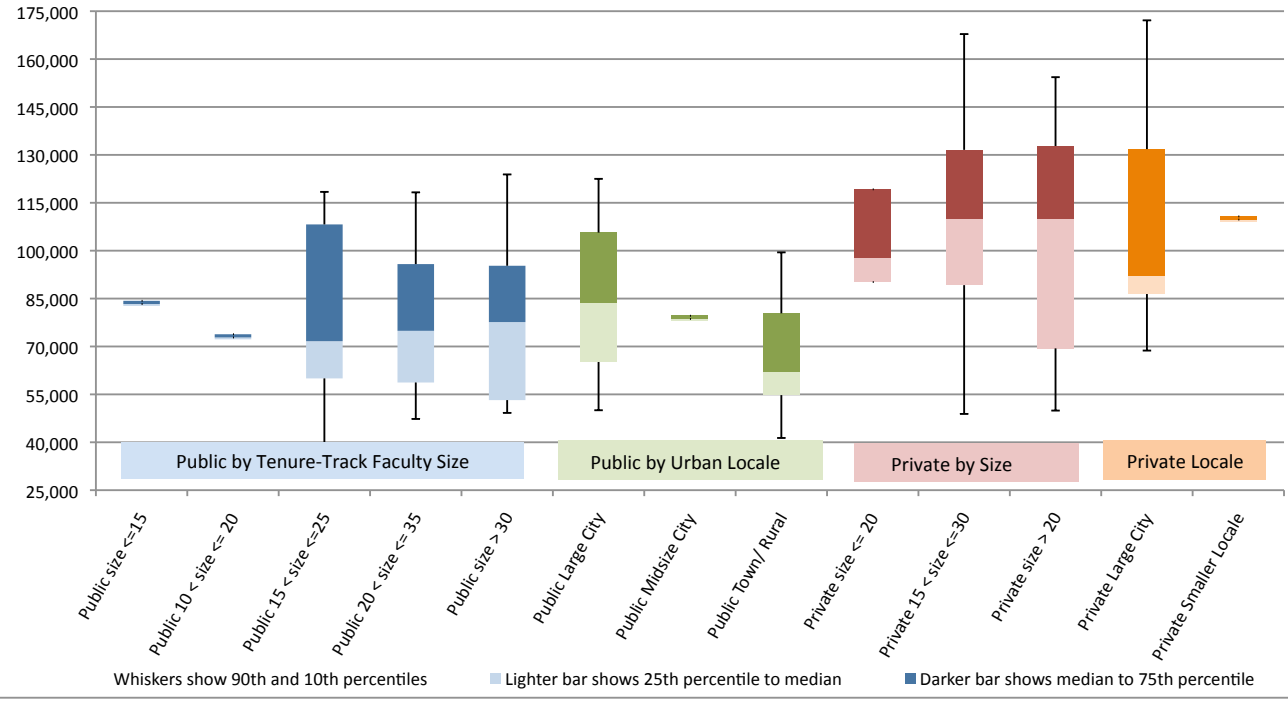


Figure S8. US CS Department Average Salary, Non-Tenure Track Research Faculty
CRA Taulbee Survey 2012



When comparing this year's salaries with those from last year's Taulbee report, we use only those departments that reported both years; otherwise, the departments that reported during only one year can skew the comparison. 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).

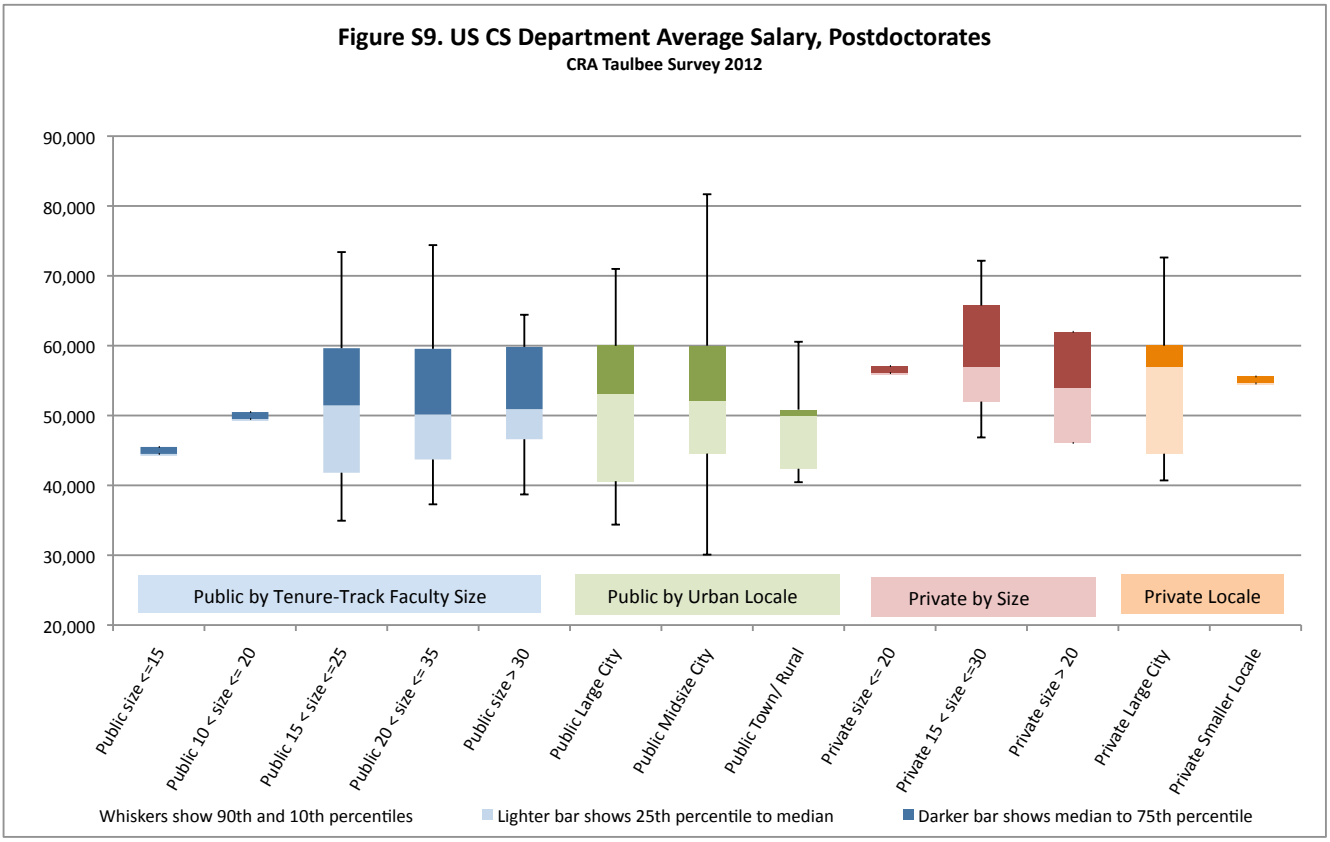
When interpreting these changes, it is important to remember the effect that promotions have on the departmental data from one year to the next, since individual faculty members move from one rank to another. Thus, a department with a small number of faculty members in a particular rank can have its 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 just 0.9% vs. last year. Again this year, there are too few reported Canadian salaries for new Ph.D.s to make meaningful comparisons.

Additional Department Profiles Analysis

Every three years, the Taulbee Survey collects data about elements of department activities that are not expected to change much from year to year. Included are data about teaching loads, sources of external funding, methods of recruiting graduate students, department support staff, and space. The most recent data about these activities were collected in the 2008-09 Taulbee Survey. The results of this survey are available on the CRA web site at (http://cra.org/uploads/documents/resources/taulbee/0809.pdf).

Figure S9. US CS Department Average Salary, Postdoctorates
CRA Taulbee Survey 2012



Teaching Loads (Tables Prof1–Prof4)

Tables Prof1 – Prof4 have information on the official teaching loads of tenured and tenure-track faculty. Across all departments, the median teaching load in semester courses per year is 3.0, which is unchanged from three years ago. US CS public institutions have a higher teaching load (median 3.0) than US CS private institutions (median 2.0), but lower than US CE (4.0) or Information (3.5). Table Prof2 summarizes whether a decrease or increase in teaching load is possible in the department; overall, the numbers have changed little from three years ago. 95.6% allow load reduction compared to 98.3% three years ago, and 68.4% now allow a load increase compared to 66.3%.

Tables Prof3 and Prof4 show reasons why adjustments might be allowed. Although the total percent of departments allowing load reduction is similar to three years ago, the percentage allowing most types of reduction is either unchanged or

Table Prof1. Official Teaching Load of Tenured and Tenure-Track Faculty

		Official Teaching Load*				Academic Calendar		
Department Type	# Dept	Minimum	Mean	Median	Maximum	Semester	Quarter	Other
US CS Public	91	2.0	3.4	3.0	8.0	94	12	0
US CS Private	39	0.7	2.8	2.0	6.0	32	7	1
US CE	9	2.0	3.5	4.0	4.7	7	2	0
US I	10	2.0	3.3	3.5	5.0	8	4	0
Canadian	12	2.0	3.3	3.0	4.0	11	0	3
Grand Total	162	0.7	3.3	3.0	8.0	153	25	4

* Teaching load is given for a semester calendar. Loads for a quarter system were multiplied by 2/3. To convert back to quarter-system equivalent, multiply these values by 1.5.

Table Prof2. Faculty Load Reductions and Increases

		Faculty Load Reduction Possible		Faculty Load Increase Possible	
Department Type	# Dept	Yes	No	Yes	No
US CS Public	106	96.2%	3.8%	70.2%	29.8%
US CS Private	40	92.5%	7.5%	68.4%	31.6%
US CE	10	90.0%	10.0%	77.8%	22.2%
US I	12	100.0%	0.0%	50.0%	50.0%
Canadian	14	100.0%	0.0%	64.3%	35.7%
Grand Total	182	95.6%	4.4%	68.4%	31.6%

Table Prof3. Types of Load Reductions Possible in Departments Offering Reductions

Department Type	# Dept	Special Package for New Faculty	Administrative Duties	Type of Size of Class Taught	Buy-out Policy	Strong Research Involvement	Other
US CS Public	102	78.4%	87.3%	20.6%	75.5%	58.8%	12.7%
US CS Private	37	75.7%	78.4%	10.8%	54.1%	40.5%	16.2%
US CE	9	77.8%	77.8%	22.2%	100.0%	44.4%	22.2%
US I	12	83.3%	91.7%	16.7%	66.7%	25.0%	8.3%
Canadian	14	64.3%	92.9%	7.1%	35.7%	78.6%	14.3%
Grand Total	174	77.1%	85.7%	17.1%	68.6%	53.1%	13.7%

down, suggesting that departments are making more limited and strategic choices. Overall, a smaller percentage of departments now allow reduction as part of a new faculty package (77% compared to 83%) or as a buy-out (68.6% vs. 72.5%). However, a larger percentage now allow a reduction for strong research involvement (53.1% vs. 49.7%). Across types of departments, the US CS public schools are noticeably more likely to allow reductions in teaching load for any of the reasons offered. This suggests that faculty at public schools may have a variety of options to bring their actual teaching load in line with that at the private schools.

Somewhat fewer schools allow an increase in teaching load because of shifting primary responsibilities to teaching (76% now vs. 81% three years ago), but more allow an increase in teaching load for other reasons (24% vs. 18.7%). The most common other reasons for an increase are overloads, low research productivity, and personal preference or special circumstances.

Table Prof4. Reasons for Increase in Teaching Load in Departments Where Increase is Possible

Department Type	# Dept	Shifting Primary Resopnsibilities to Teaching	Other
US CS Public	104	82.2%	17.8%
US CS Private	38	80.8%	19.2%
US CE	9	57.1%	42.9%
US I	12	50.0%	50.0%
Canadian	14	44.4%	55.6%
Grand Total	177	76.0%	24.0%

Sources of External Funding
(Tables R2 and R3)

Table R2 shows a breakdown of the sources of funding among all U.S. CS departments, and a comparison of this breakdown with the previous three profiles reports. In comparison with three years ago, the fraction of funding from DOE and other defense (outside of DARPA) increased, while the fraction of funding from NSF, state agencies and industrial sources declined. However, NSF still is the dominant funder of U.S. CS departments, with 42.2% of the external funding. Defense department agencies other than DARPA, and industrial funding again comprise the two next largest fractions of external funding. Overall, the average external funding per department rose 27.5% over the level three years ago.

Table R2. Comparison of US CS External Funding 2003-2012.

	2003 (126 departments)		2006 (123 departments)		2009 (117 departments)		2012 (123 departments)	
	Total	% Fund	Total	% Fund	Total	% Fund	Total	% Fund
NSF	$354,451,309	40.7%	$255,089,816	43.0%	$281,076,341	43.1%	$368,922,448	42.2%
DARPA	$85,401,891	9.8%	$64,191,150	10.8%	$38,393,018	5.9%	$52,526,824	6.0%
NIH	$15,864,767	1.8%	$24,880,112	4.2%	$33,128,578	5.1%	$46,533,387	5.3%
DOE	$20,471,676	2.4%	$24,391,329	4.1%	$17,225,839	2.6%	$30,149,692	3.4%
State agencies	$24,438,483	2.8%	$16,875,578	2.8%	$17,861,292	2.7%	$17,725,647	2.0%
Industrial sources	$70,813,388	8.1%	$50,333,039	8.5%	$76,464,763	11.7%	$89,149,734	10.2%
Other defense	$177,357,598	20.4%	$97,512,961	16.4%	$109,510,806	16.8%	$173,606,289	19.8%
Other federal	$50,555,980	5.8%	$32,388,664	5.5%	$27,695,790	4.2%	$37,088,925	4.2%
Private foundation	$32,977,093	3.8%	$10,826,656	1.8%	$18,297,020	2.8%	$23,600,989	2.7%
IMLS							$288,059	0.0%
Other	$37,995,002	4.4%	$16,996,108	2.9%	$32,763,366	5.0%	$35,190,510	4.0%
Total	**$870,327,187**		**$593,485,413**		**$652,416,813**		**$874,782,504**	
Average/ Dept	**$6,907,359**		**$4,825,085**		**$5,576,212**		**$7,112,053**	

Table R3a. External Funding Breakdown of 91 US CS Public Departments							
Funding Source	**Sum**	**% of Fund**	**Percentile of Department Funding From Source**				
			10th	**25th**	**50th**	**75th**	**90th**
NSF	$254,144,699	46.3%	$234,249	$772,364	$1,775,059	$3,829,346	$6,966,194
DARPA	$21,225,737	3.9%	$0	$0	$71,678	$313,690	$1,104,523
NIH	$23,148,555	4.2%	0	37078	$142,563	$379,957	$1,009,803
DOE	$24,506,068	4.5%	$0	$18,572	$147,366	$571,115	$1,799,374
State agencies	$16,762,121	3.1%	$0	$12,001	$100,209	$212,674	$820,592
Industry	$52,146,047	9.5%	$17,207	$53,919	$209,804	$669,088	$2,283,890
Other defense	$87,744,480	16.0%	$21,082	$150,054	$451,382	$1,382,084	$3,199,465
Other federal	$25,547,055	4.6%	$0	$58,176	$256,466	$550,288	$1,016,933
Pvt foundation	$17,112,859	3.1%	$0	$2,472	$44,883	$177,172	$1,342,423
IMLS	$134,782	0.0%	$0	$0	$0	$0	$10,928
Other	$27,013,860	4.9%	$0	$12,616	$110,009	$359,622	$1,160,478
Total	$549,486,263						

Table R3b. External Funding Breakdown of 32 US CS Private Departments							
Funding Source	**Sum**	**% of Fund**	**Percentile of Department Funding From Source**				
			10th	**25th**	**50th**	**75th**	**90th**
NSF	$114,777,749	35.3%	$479,523	$1,447,547	$2,215,961	$3,950,642	$6,638,718
DARPA	$31,301,087	9.6%	$0	$79,437	$567,685	$1,730,178	$5,590,980
NIH	$23,384,833	7.2%	$0	$92,481	$395,896	$1,005,087	$2,297,804
DOE	$5,643,624	1.7%	$0	$31,154	$102,701	$508,579	$1,432,249
State agencies	$963,526	0.3%	$0	$0	$0	$20,276	$285,179
Industry	$37,003,687	11.4%	$0	$75,171	$244,948	$770,620	$3,670,828
Other defense	$85,861,809	26.4%	$132,653	$299,433	$846,104	$1,909,934	$5,847,091
Other federal	$11,541,870	3.5%	$0	$0	$77,751	$357,441	$4,068,550
Pvt foundation	$6,488,130	2.0%	$0	$8,384	$83,671	$193,622	$659,074
IMLS	$153,277	0.0%	$0	$0	$0	$0	$122,622
Other	$8,176,650	2.5%	$0	$6,203	$123,620	$406,100	$1,149,343
Total	$325,296,242						

Table R3c. External Funding Breakdown of 6 US CE Departments							
Funding Source	Sum	% of Fund	Percentile of Department Funding From Source				
			10th	25th	50th	75th	90th
NSF	$7,568,022	42.9%			$1,381,321		
DARPA	$176,955	1.0%			$63,655		
NIH	$3,630,805	20.6%			$623,863		
DOE	$315,410	1.8%			$52,911		
State agencies							
Industry	$2,866,990	16.3%			$478,859		
Other defense	$2,238,916	12.7%			$305,548		
Other federal							
Pvt foundation							
IMLS							
Other	$845,314	4.8%			$334,398		
Total	$17,642,412						

Table R3d. External Funding Breakdown of 12 US Information Departments							
Funding Source	Sum	% of Fund	Percentile of Department Funding From Source				
			10th	25th	50th	75th	90th
NSF	$14,329,273	25.2%	$235,022	$386,244	$960,439	$1,750,847	$2,712,239
DARPA							
NIH	$15,463,167	27.2%			$75,450		
DOE	$241,356	0.4%			$31,767		
State agencies	$3,102,915	5.4%			$44,467		
Industry	$3,707,265	6.5%	$3,562	$47,668	$103,973	$467,036	$1,905,923
Other defense	$4,985,479	8.8%			$308,010		
Other federal	$2,340,848	4.1%			$129,104		
Pvt foundation	$3,138,754	5.5%	$3,523	$45,890	$161,374	$586,030	$959,895
IMLS	$5,098,380	9.0%			$525,345		
Other	$4,534,342	8.0%	$15,347	$72,931	$254,561	$836,069	$1,296,609
Total	$56,941,779						

Tables R3a-R3e show the data for different departmental strata. Among U.S. CS departments, public universities get a larger fraction of their funding than do private universities from NSF, DOE and state agencies, while private universities get a larger fraction of funding than do public universities from DARPA, NIH and other defense agencies. NSF and NIH are the two dominant funders among CE and I departments, and both categories of departments also have significant funding from defense agencies other than DARPA. CE departments also get significant funding from industry, while I departments get significant funding from IMLS. Canadian departments get the largest share of their funding from NSERC.

Other Graduate Student Data
(Tables Prof5–Prof7)

Tables Prof5 – Prof7 contain information on the factors that affect a graduate student's stipend and on recruitment tactics used by departments.

Graduate student stipends are most likely to be affected by advancing to the next stage of the program (especially in the US CS public and Canadian schools) and by differences in stipend sources. Stipends are more likely than three years ago to be affected by years of service (24.6% vs. 19.9%) and less likely to be affected by differences in stipend sources (37.7% vs. 41.4%).

Departments continue to use a variety of recruitment tactics, with guaranteed multi-year support the most common (reported by 57.6% of the departments) and up-front signing bonuses the least used at 5.8% of reporting departments. Most recruitment strategies are little changed from three years ago, but guaranteed summer support has decreased (now 22.5%, formerly 29%). In the departments that offer them, the dollar value of most recruitment incentives is about the same as three

Table R3e. External Funding Breakdown of 11 Canadian Departments (in Canadian dollars)

Funding Source	Sum	% of Fund	Percentile of Department Funding From Source				
			10th	25th	50th	75th	90th
NSF	$33,957,429	51.1%	$174,644	$335,791	$1,806,827	$2,595,473	$14,664,781
DARPA							
NIH	$109,987	0.2%			$25,240		
DOE							
State agencies	$2,665,994	4.0%			$166,309		
Industry	$8,463,914	12.7%			$324,881		
Other defense	$233,066	0.4%			$55,000		
Other federal	$5,790,101	8.7%			$627,206		
Pvt foundation	$1,188,831	1.8%			$594,416		
IMLS							
Other	$14,051,860	21.1%			$169,140		
Total	$66,461,182						

Table Prof5. Factors Affecting the Amount of a Graduate Student's Stipend

Department Type	# Dept	Advance to Next Stage of Program	Years of Service	GPA	Recruitment Enhancements	Different Stipend Sources	Other
US CS Public	110	60.0%	25.5%	12.7%	22.7%	35.5%	13.6%
US CS Private	41	41.5%	19.5%	12.2%	26.8%	34.1%	22.0%
US CE	11	36.4%	9.1%	0.0%	9.1%	36.4%	18.2%
US I	13	38.5%	46.2%	15.4%	38.5%	38.5%	15.4%
Canadian	14	50.0%	21.4%	28.6%	21.4%	64.3%	28.6%
Grand Total	189	52.4%	24.6%	13.1%	23.6%	37.7%	16.8%

years ago, except that the median stipend enhancement has decreased from $5000 to $4000 and the median number of years for which support is guaranteed has increased from 3 to 4.

Space (Tables Prof8–Prof15)

Table Prof8 shows statistics on space for all US departments (CS, CE, and I). The median of total department space increased 6%, or about 1600 square feet, in the past three years. This reflects small increases in each type of space.

Tables Prof9 – Prof13 show the distribution of space for each department type.

Table Prof14 shows the percent of departments expecting to gain or lose space. Three years ago, 26% of departments expected to gain space and 66% expected no change; this year, less change is expected with 17.6% having plans for an increase and 77% expecting to remain unchanged. Table Prof15 shows the sources of funding for those departments with plans to add space. The most notable change from three years ago is that none of the US programs are now using federal funds and fewer are using industry funds.

Table Prof6. Departments Using Selected Graduate Student Recruitment Incentives

Department Type	# Dept	Upfront One-Time Signing Bonus	Stipend Enhance-ments	Guaranteed Multi-Year Support	Guaranteed Summer Support	Paid Visits to Campus	Other
US CS Public	110	5.5%	23.6%	56.4%	23.6%	38.2%	11.8%
US CS Private	41	7.3%	29.3%	58.5%	26.8%	56.1%	12.2%
US CE	11	0.0%	9.1%	36.4%	18.2%	45.5%	9.1%
US I	13	7.7%	30.8%	84.6%	15.4%	61.5%	15.4%
Canadian	14	7.1%	28.6%	64.3%	14.3%	21.4%	14.3%
Grand Total	189	5.8%	24.6%	57.6%	22.5%	42.4%	12.0%

Table Prof7. Median Amounts and Years of Selected Graduate Student Recruitment Incentives

Department Type	# Dept	Upfront One-Time Signing Bonus	Stipend Enhance-ments	Guaranteed Years of Support	Guaranteed Summer Support	Paid Visits to Campus
US CS Public	50	$3,250	$5,000	3.5	$5,450	$500
US CS Private	20	$1,600	$3,950	4.5	$6,750	$500
US CE	2			2.0		
US I	9	$2,000		4.0		$500
Canadian	5	$5,000	$5,000	4.0		$700
Grand Total	86	$3,000	$4,000	4.0	$5,672	$500

Table Prof8. Department Space, net square feet, 135 US institutions

Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10	10,580	3,920	392	424	0
25	16,456	6,450	802	2,168	1,601
50	27,646	11,018	1,609	6,236	3,404
75	46,500	17,828	3,041	10,352	6,725
90	80,133	32,784	6,000	19,246	12,550

Table Prof9. Department Space, net square feet, 86 US CS Public					
Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10	9,733	3,924	444	1,136	663
25	16,078	6,347	744	2,890	2,054
50	27,823	10,389	1,544	6,719	3,497
75	45,317	17,962	3,025	11,460	6,932
90	73,515	33,219	5,866	16,253	13,517

Table Prof10. Department Space, net square feet, 31 US CS Private					
Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10	11,990	4,124	0	58	0
25	19,443	9,221	721	2,881	1,377
50	27,885	13,114	2,000	6,224	2,063
75	56,156	21,000	4,975	9,060	5,500
90	86,757	35,028	8,812	22,353	19,335

Table Prof11. Department Space, net square feet, 6 US CE Departments					
Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10					
25					
50	21,125	6,668	1,140	6,676	4,631
75					
90					

Table Prof12. Department Space, net square feet, 12 US Information Departments					
Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10	9,156	4,168	817	0	0
25	17,418	8,428	1,063	305	819
50	33,665	12,636	2,156	1,620	3,133
75	37,504	17,472	2,797	6,370	7,755
90	89,383	19,836	5,753	18,447	11,666

Departmental Support Staff
(Tables Prof16 – Prof21)

Table Prof16 shows the distribution of support staff across all departments. Since these questions were last asked three years ago, the median total administrative staff (both internal and external support) fell by one person, from 6 to 5. Median computer support also fell by one person, from 2 to 1.

Tables Prof17 – Prof21 show the distribution of support staff by department type. Among the US CS programs, those in private schools have a higher median of administrative staff (6) than do those in public schools (4). Administrative staff is significantly higher in the information programs, with a median of 13.3. This is two persons higher than the median for the I programs three years ago, but because of the small number of I-programs that respond to Taulbee, this may reflect a difference in participating departments.

Concluding Observations

The popularity of computing as a major at both the undergraduate and graduate levels seems to be growing at a solid clip. Industry positions for doctoral graduates have been able to keep up with increased supply, even as the academic job market did not show any growth. The several-year increase in undergraduate computing enrollments may provide pressure on both doctoral granting programs and non-doctoral granting programs to increase the

Table Prof13. Department Space, net square meters, 13 Canadian Departments

Percentiles	Total Space	Faculty, Staff, and Student Offices	Conference and Seminar Rooms	Research Labs	Instructional Labs
10	1,818	220	21	63	0
25	3,021	849	94	900	115
50	5,530	1,130	279	1,718	650
75	6,487	2,043	479	2,120	1,110
90	7,425	3,247	803	4,308	1,363

Table Prof14. Definite Plans to Gain or Lose Space

Department Type	# Dept	Gain Space	No Change	Lose Space	No Answer
US CS Public	86	9.3%	82.6%	4.7%	3.5%
US CS Private	31	25.8%	74.2%	0.0%	0.0%
US CE	6	33.3%	66.7%	0.0%	0.0%
US I	12	58.3%	41.7%	0.0%	0.0%
Canadian	13	7.7%	84.6%	7.7%	0.0%
Grand Total	148	17.6%	77.0%	3.4%	2.0%

Table Prof15. Sources of Funding for Additional Space for Departments with Plans to Add

Department Type	# Dept	Percent of Departments Using Funds from Source				
		Institutional	Federal	State / Provincial	Industry	Private
US CS Public	10	60.0%	0.0%	30.0%	10.0%	60.0%
US CS Private	11	100.0%	0.0%	0.0%	0.0%	18.2%
US CE	3	0.0%	0.0%	66.7%	0.0%	33.3%
US I	7	85.7%	0.0%	14.3%	0.0%	28.6%
Canadian	2	50.0%	50.0%	0.0%	50.0%	0.0%
Grand Total	193	72.7%	3.0%	18.2%	6.1%	33.3%

Table Prof16. Full Time Staff by Type of Support – All Institutions

	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10	1.5	.0	2.0	.0	.0	.0	.0	.0	.0
25	3.0	.0	3.0	1.0	.0	1.0	.0	.0	.0
50	5.0	.0	5.0	2.0	.0	2.0	.0	.0	.0
75	9.0	.2	9.6	4.0	.0	5.0	.0	1.0	2.0
90	15.9	3.0	17.2	9.0	1.0	10.1	1.0	5.1	6.1

Table Prof17. Full Time Staff by Type of Support – 103 US CS Public

	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10	1.0	.0	1.0	.0	.0	.0	.0	.0	.0
25	2.0	.0	2.5	1.0	.0	1.0	.0	.0	.0
50	4.0	.0	4.0	2.0	.0	2.0	.0	.0	.0
75	8.0	.0	8.0	4.0	.0	4.0	.0	1.6	2.0
90	13.6	2.5	14.8	8.0	1.0	9.0	.0	6.0	6.0

Table Prof18. Full Time Staff by Type of Support – 40 US CS Private

	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10	2.0	.0	2.0	.0	.0	.0	.0	.0	.0
25	3.0	.0	4.0	.6	.0	1.0	.0	.0	.0
50	6.0	.0	6.0	2.0	.0	2.0	.0	.0	.0
75	10.8	.2	12.0	4.0	.0	4.8	.0	1.0	2.0
90	35.4	3.0	35.7	12.4	1.9	12.9	1.9	6.8	7.9

Table Prof19. Full Time Staff by Type of Support – 9 US CE Departments

	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10									
25									
50	4.0	0.0	4.0	1.0	0.0	1.0	0.0	0.0	0.0
75									
90									

Table Prof20. Full Time Staff by Type of Support – 11 US Information Departments									
	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10	2.4	.0	2.4	.7	.0	1.2	.0	.0	.0
25	4.2	.0	10.2	2.0	.0	2.0	.0	.0	.0
50	12.8	1.0	13.3	4.0	.0	4.5	.0	.0	1.5
75	34.7	1.8	34.7	7.0	.5	7.7	1.0	2.5	2.5
90	35.1	6.2	38.6	9.5	27.4	30.6	3.5	7.6	10.8

Table Prof21. Full Time Staff by Type of Support – 14 Canadian Departments									
	Secretarial / Administrative			Computer Support			Research		
	Institutional	External Support	Total	Institutional	External Support	Total	Institutional	External Support	Total
10	1.8	.0	1.8	1.5	.0	1.5	.0	.0	.0
25	3.9	.0	3.9	3.8	.0	3.8	.0	.0	.0
50	6.8	.0	7.0	6.0	.0	6.0	.0	.0	.0
75	8.1	1.0	10.5	10.6	.0	11.4	.0	.3	1.5
90	15.5	4.0	16.0	15.0	3.5	17.0	17.5	7.5	23.5

number of faculty beyond the very small predicted increases. It will be interesting to see if there is a narrowing of the now very wide gap in the fraction of new doctoral grads going to industry vs. those going to academia.

Participating Departments

US CS Public (109): *Arizona State, Auburn, City University of New York Graduate Center, Clemson University, College of William & Mary, Colorado School of Mines, Colorado State, Florida International, Florida State, George Mason, Georgia State, Georgia Tech, Indiana, Iowa State, Kansas State, Kent State, Louisiana State, Michigan State, Michigan Technological, Mississippi State, Montana State, Naval Postgraduate School, New Jersey Institute of Technology, New Mexico State, North Carolina State, North Dakota State, Ohio State, Ohio, Old Dominion, Oregon State, Penn State, Portland State, Purdue, Rutgers, Southern Illinois, Stony Brook SUNY, Temple, Texas A&M, Texas Tech University, Universities at Albany and Buffalo (SUNY), Universities of Alabama (Birmingham, Huntsville, and Tuscaloosa), Arizona, Arkansas, Arkansas at Little Rock, California (Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, Santa Barbara, and Santa Cruz), Central Florida, Cincinnati, Colorado (Boulder), Connecticut, Delaware, Florida, Georgia, Hawaii, Houston, Idaho, Illinois (Chicago and Urbana-Champaign), Iowa, Kansas, Kentucky, Maryland (College Park and Baltimore County), Massachusetts (Amherst, Boston, and Lowell), Michigan, Minnesota, Mississippi, Missouri (Columbia), Nebraska (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 and El Paso), Utah, Virginia, Washington, Wisconsin (Madison and Milwaukee), and Wyoming, Virginia Commonwealth, Virginia Tech, Washington State, Wayne State, Western Michigan, and Wright State.*

US CS Private (42): *Boston University, Brandeis, Brown, Carnegie Mellon, Case Western Reserve, Columbia, Cornell, Dartmouth, DePaul, Drexel, Duke, Emory, Florida Institute of Technology, Georgetown, Harvard, Illinois Institute of Technology, Johns Hopkins, Lehigh, Massachusetts Institute of Technology, New York University, Northeastern, Northwestern, Nova Southeastern, Pace, Princeton, Rensselaer Polytechnic Institute, 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, Vanderbilt, Washington University in St. Louis, Worcester Polytechnic Institute, and Yale.*

US CE (11): *Florida Institute of Technology, North Carolina State,*

Northeastern, Santa Clara, Universities of California (Santa Cruz), Illinois (Urbana-Champaign), Iowa, New Mexico, Rhode Island, and Southern California, and Virginia Tech.

US Information (16): *Cornell, Drexel, Indiana, Penn State, Purdue, Syracuse, University at Albany, Universities of California (Berkeley, Los Angeles, and Santa Cruz), Maryland (Baltimore County), Michigan, North Carolina (Chapel Hill), Pittsburgh, Texas (Austin), and Washington.*

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

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[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]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.

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Professional Opportunities

Bowdoin College

Department of Computer Science
Visiting Assistant Professor

The Department of Computer Science at Bowdoin College invites applications for a one-year position as Visiting Assistant Professor starting Fall 2013, with the possibility of a one-year renewal. Preference will be given to applicants with proven teaching excellence and whose research interests lie in systems and software. In addition, Bowdoin is building an environment in which students and faculty from across all disciplines can employ computational approaches to enrich their work; we welcome applications from candidates who can contribute to this effort. The teaching load is two courses per semester. Ph.D. preferred, advanced ABDs considered.

Bowdoin accepts only electronic submissions. Please visit https://careers.bowdoin.edu to submit a cover letter, a curriculum vitae, a statement of research plans, a statement on teaching philosophy, and the names of three references who have agreed to provide letters of recommendation.

Review of applications will begin March 25, 2013, and will continue until the position is filled.

A highly selective liberal arts college on the Maine coast with a diverse student body made up of 30% students of color, 4% International students and approximately 15% first generation college students, Bowdoin College is committed to equality and is an equal opportunity employer. We encourage inquiries from candidates who will enrich and contribute to the cultural and ethnic diversity of our college. Bowdoin College does not discriminate on the basis of age, race, creed, color, religion, marital status, gender identity and/or expression, sexual orientation, veteran status, national origin, or disability status in employment, or in our education programs.

For further information about the college please visit our website: http://www.bowdoin.edu.

Bryn Mawr College

Department of Computer Science
Visiting Assistant Professor

The Department of Computer Science at Bryn Mawr College invites applications for a full-time, three-year position in Computer Science starting August 2013. Annual renewal of the position is required and contingent upon a successful review of teaching evaluations. The title is Visiting Assistant Professor at the rank of a Lecturer. A full-time load is 3/2 with full participation in all department activities. A Ph.D. in hand by the start of the position is required.

S/he will be expected to teach courses at all levels of the undergraduate program in Computer Science, from Intro and Data Structures through core systems and theory courses to advanced topics in their areas of research. Along with scholarly contributions to research, the ideal candidate will have evidence of interest and expertise in Computer Science pedagogy and relevant teaching experiences.

Located in suburban Philadelphia, Bryn Mawr College is a highly selective liberal arts college for women. The College promotes faculty excellence in both research and teaching, and has strong consortial relationships with Haverford College, Swarthmore College, and the University of Pennsylvania.

To apply, submit pdf documents including a cover letter; curriculum vitae; sample syllabi of courses able to offer and course evaluations from past courses; together with two letters of reference to cs-search@brynmawr.edu. Review of applications will begin immediately and continue until position is filled.

Bryn Mawr College is an equal-opportunity employer; minority candidates and women are especially encouraged to apply.

College of William and Mary

Department of Computer Science
One Year Non-Tenure-Track Position

The Department of Computer Science at the College of William & Mary invites applications for a one year non-tenure-track position of Visiting Assistant Professor that will begin August 10, 2013. Renewal for subsequent years is contingent on satisfactory performance and the availability of funds.

Responsibilities include teaching three sections per semester of a mix of lower- and upper-division undergraduate courses, with course assignment based on experience and abilities.

A degree in Computer Science or a closely-related discipline is required. Strong oral presentation and communication skills are required. Preference will be given to candidates with a Ph.D. at the time the appointment begins, but candidates who either have an M.S. or are ABD in Computer Science also will be considered. Prior teaching experience and an interest in advising and mentoring undergraduate students is particularly welcome.

Application Instructions

Applicants must apply using William & Mary's online recruitment system at: https://jobs.wm.edu. The Position Number is F0395W. Submit a current curriculum vita and cover letter that includes a statement of teaching philosophy. Student evaluations from courses taught are also welcome, but not required. You will be prompted to submit online the names and email addresses of three references who will be contacted by us with instructions on how to submit a letter of reference. At least one letter should address teaching experience.

Review of applications will begin April 30, 2013; applications received by this date will receive fullest consideration. The position will remain open until filled.

The College is an EO/AA Employer. The College of William & Mary conducts background checks on applicants for employment.

Lake Forest College

Mathematics and Computer Science
Assistant Professor

The Department of Mathematics and Computer Science invites applications for a one-year position as a Visiting Assistant Professor, with possible conversion

Professional Opportunities

to tenure-track. The position, beginning in the Fall 2013 semester, requires a Ph.D. in computer science or evidence that all Ph.D. requirements will be completed by Fall 2013. Successful applicants will be able to teach computer science courses across our curriculum – introductory courses and upper-level electives – and will exhibit potential for a sustained research career and a willingness to foster undergraduate research.

A highly selective liberal arts college located on Chicago's North Shore, Lake Forest College enrolls approximately 1,500 students from over 47 states and 79 countries. At Lake Forest College, the quality of a faculty member's teaching is the most important criterion for evaluation. The College also expects peer-reviewed publications and active participation in the College community. Lake Forest College embraces diversity and encourages applications from women and other members of historically underrepresented groups.

Applications should include a letter of application and CV that includes documentation of teaching experience. Applicants must also arrange to have three letters of reference sent separately. Electronic submissions to cssearch@lakeforest.edu are preferred.

Applications may also be mailed to:
Prof. Craig Knuckles, Chair
Department of Mathematics & Computer Science,
Lake Forest College
555 N. Sheridan Road
Lake Forest, IL 60045

Review of applications will begin immediately and will continue until the position is filled.

Loyola University Maryland

Computer Science
Visiting Affiliate Assistant Professor or Instructor, Computer Science

If Temporary or Visiting, Estimated End Date: 06-08-2014

Essential Duties of the Position:
- Teach computer science classes on the undergraduate, non-majors level.
- Teach other courses in the program as feasible.
- Total teaching load of 8 courses per academic year.
- Render other service to the Department and Loyola University, as needed.

Required Qualifications:
- Masters degree in Computer Science or a closely related discipline.
- Experience and a strong commitment to teaching.
- PhD to be at the Affiliate Assistant Professor rank.
- Commitment to the goals of education in the Jesuit/ Mercy tradition.

Desired Qualifications:
- Teaching experience in Computer Science at the introductory level.
- Expertise in Java or a similar high-level language.

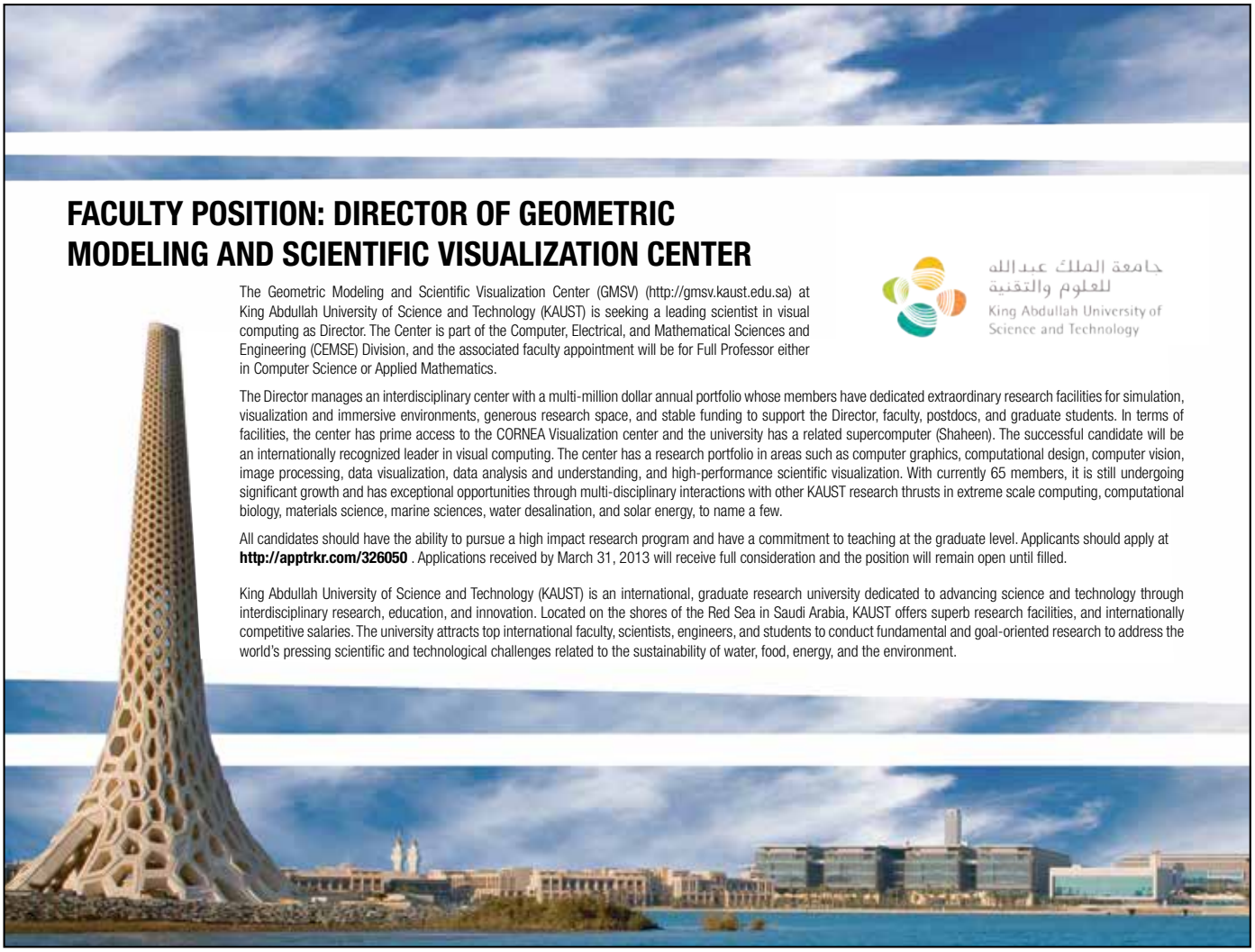
Job Posting Date: 04-04-2013

Priority Application Deadline Date: 05-15-2013

Job Close Date: Open Until Filled

Anticipated Start Date: 08-24-2013

Special Instructions to Applicants: Successful candidates for any staff, faculty, or administrative position at Loyola University Maryland will be subject to a pre-employment background check.



Professional Opportunities

Documents that must be associated with this posting:
Cover Letter
Curriculum Vitae
Mission Essay

If "Other" was selected above, please describe the document(s) and when uploading, attach each document individually.

Quicklink for Posting:
careers.loyola.edu/applicants/Central?quickFind=53481

Mount Holyoke College

Computer Science Department
Visiting Assistant Professor

The Computer Science Department has a one-year position for a full-time, Visiting Assistant Professor. We are seeking someone with a strong interest in teaching and working closely with undergraduate students. The teaching load is five courses for the year. Applicant must have Ph.D in computer science by September 2013.

Mount Holyoke is an undergraduate liberal arts college for women with 2,300 students and 220 faculty. Over half of the faculty are women; one-fifth are persons of color. It is located about 80 miles west of Boston in the Connecticut River valley, and is a member of the Five College Consortium consisting of Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University of Massachusetts. Mount Holyoke is committed to fostering multicultural diversity and awareness in its faculty, staff, and student body and is an Equal Opportunity Employer. Women and persons of color are especially encouraged to apply.

Review of applications will begin immediately and continue until the position is filled. Candidates should submit letter of interest, CV, description of research interest, and teaching philosophy statement online at http://jobsearch.mtholyoke.edu along with email addresses for those submitting letters of recommendation. Three are required. At least one letter should address teaching experience.

NEC Laboratories America, Inc.

Research Staff Members — Large-Scale Complex Systems

NEC Laboratories America, Inc. conducts research in support of NEC's US and global businesses. Our research program covers many areas, reflecting the breadth of NEC business, and maintains a balanced mix of fundamental and more applied research. We focus on topics with strong innovations in the US and place emphasis on developing deep competence in selective areas that are important to NEC business and which are ripe for technical breakthrough.

The Autonomic Management group conducts research on all aspects of large-scale complex systems. We have ongoing projects in cloud and data center networking, distributed system debugging, software-defined networking, computer security, and big data analytics. Our group brings together researchers with expertise in operating systems, networking, distributed systems, security, modeling, statistics, and data mining. We strongly believe in both publishing our research as well as building technologies that solve real world problems and ultimately help business needs. Many of our research results have been transferred into award-winning NEC products. Currently, the group is seeking research staff members to work in the following areas:

Distributed Systems

The ideal candidates will have expertise in the design, implementation, experimentation, deployment, and analysis of large-scale middleware, distributed systems, and operating systems. A PhD in CS/CE or similar degree is required. Qualifications include, but are not limited to, good math skills and a strong publication record in the following areas:

- Performance, reliability, and dependability
- Data centers and cloud computing
- Debugging and diagnosis of distributed systems
- Autonomic configuration, management, and troubleshooting of networked systems
- Probabilistic approaches and data mining techniques for distributed systems

https://neclabs.hua.hrsmart.com/hrsmart/ats/Posting/view/1123

Computer Networking

The ideal candidates will have a research focus in system networking and networked systems. A PhD in CS or related area is required. Qualifications include a strong research record demonstrating expertise in the design, implementation, and analysis of networked systems, including, but not limited to, the following areas:

- Data center and enterprise networking
- Software-defined networks (SDN)
- Network modeling and measurement
- Network analytics and management

https://neclabs.hua.hrsmart.com/hrsmart/ats/Posting/view/1124

For more information about NEC Labs, access http://www.nec-labs.com/. Submit your CV and research statement through our career center at the links noted with each position.

EOE/AA

NEC Laboratories America, Inc

Research Staff Member — Big Data Analytics

NEC Laboratories America, Inc. is a vibrant industrial research center, conducting research in support of NEC's U.S. and global businesses. Our research program covers many areas, reflecting the breadth of NEC business, and maintains a balanced mix of fundamental and applied research.

The Autonomic Management group at NEC Labs America conducts research in the area of large-scale complex systems. We are creating innovative analytics from big data to simplify and automate the management of physical systems (e.g., automobiles, power plants, smart city, etc.), as well as large-scale IT systems and services. Our group has several ongoing projects on big data analytics including massive time series modeling, discrete events mining, and large graph mining, etc. Our researchers have expertise in statistics, data mining, signal processing, pattern recognition and distributed systems. We strongly believe in publishing our research results as well as building technologies that can solve real world problems and ultimately support our business needs. Many of our research results have been transferred into award-winning NEC products.

Currently, the group is seeking research staff members to work in the area of data analytics and mining for complex systems. The ideal candidate must have expertise in data mining and statistical learning, and is expected to analyze massive amount of monitoring data from complex physical and IT systems to model and analyze their complex behaviors. He/she must have a PhD in CS/CE with a strong publication record in the following areas:

- Data mining and statistical learning
- Time series analysis and prediction
- Big data analytics and algorithms
- Signal processing and information theory

For more information about NEC labs, access http://www.nec-labs.com/, and submit your CV and research statement through our career center at https://neclabs.hua.hrsmart.com/hrsmart/ats/Posting/view/1125.

EOE/AA

The Ohio State University-Columbus, OH

Department of Computer Science and Engineering
Lecturer/Senior Lecturer – Computer Science and Engineering

The Ohio State University, one of the nation's leading public universities, is seeking several highly skilled Lecturers and Senior Lecturers to support the teaching mission of the Department of Computer Science and Engineering. Lecturers and Senior Lecturers are responsible for teaching introductory and advanced undergraduate courses in the areas of software engineering, programming languages, architecture, information security, operating systems, theory, algorithms, graphics, artificial intelligence and other areas of computing, based on student interest and enrollment demands. Work requirements may include day and/or evening courses. Part-time and full-time options are available based on demand. Temporary positions may be offered based on each semester's enrollment demands. Appointment level and salary will depend on the candidate's qualifications and experience. Although these are non-tenure-track positions, well-qualified individuals will be offered annual

Professional Opportunities

renewable contracts. For full details, please see: http://www.cse.ohio-state.edu/department/positions.shtml

Application Instructions: Applicants should submit a letter of application, teaching statement and philosophy (to include types of classes you can teach), and a current CV, and arrange for three letters of reference to be submitted electronically to Dr. Neelam Soundarajan c/o Kathryn Reeves at (reeves@cse.ohio-state.edu).

To build a diverse workforce Ohio State encourages applications from individuals with disabilities, veterans and women. EEO/AA employer

Polytechnic Institute of NYU

Associate Department Head and Industry Professor

The Computer Science and Engineering Department of Polytechnic Institute of NYU invites applications for an Industry Faculty position, at either the assistant, associate, or full levels; depending on experience. In addition to being an Industry Professor, the candidate will also serve as Associate Department Head. In this position, the candidate will have both important teaching and administrative responsibilities. Industry Professors are multi-year non-tenured positions. Salary is competitive and commensurate with experience and expertise.

As Associate Department Head, the candidate will assist the Department Head in the administration and management of the Department. Possible responsibilities may include core staffing, resolution of student advising issues, and organizing and participating in departmental events such as open houses and freshman orientation.

The position requires a PhD in computer science or a highly related background, with several years of teaching experience in a US university. Outstanding teaching skills are desired, with expertise in operating systems, distributed systems, and/or computer security. Management experience, either in an academic or industrial context, is also required.

Polytechnic Institute of NYU was formerly Brooklyn Polytechnic, but has recently merged with NYU. Polytechnic will soon become the engineering school of NYU. The Computer Science and Engineering Department has about 23 faculty including both tenure-track faculty and industrial professors. It has a very active PhD and research program, with about $4 million in research expenditures each year. It has about 400 master students and about 200 undergraduate students. The Department's research strengths include cyber security, big data and visualization, game engineering, and computer science theory.

Applicants should send their curriculum vitae, statement of research and teaching interests, and the names and addresses of three referees, as a PDF attachment, to cssearch@poly.edu. Please indicate which job you are applying for.

Polytechnic is an Equal Opportunity Employer.

Polytechnic Institute of NYU

Industry Professor

The Computer Science and Engineering Department of Polytechnic Institute of NYU invites applications for an Industry Faculty position, at either the assistant, associate, or full levels, depending on experience. An industry Professor's primary role is teaching, although the position may also entail some administrative work and community building. The successful candidate will teach both at the undergraduate and master's levels. Industry Professors are multi-year non-tenured positions. Salary is competitive and commensurate with experience and expertise.

The position requires a PhD in computer science or a highly related background, with several years of teaching experience in a US university. Outstanding teaching skills are desired, with expertise in operating systems, distributed systems, and/or computer security. Industry experience is also desirable but not mandatory.

Polytechnic Institute of NYU was formerly Brooklyn Polytechnic, but has recently merged with NYU. Polytechnic will soon become the engineering school of NYU. The Computer Science and Engineering Department has about 23 faculty, including both tenure-track faculty and industrial professors. It has a very active PhD and research program, with about $4 million in research expenditures each year. It has about 400 master students and about 200 undergraduate students. The Department's research strengths include cyber security, big data and visualization, game engineering, and computer science theory.

Applicants should send their curriculum vitae, statement of research and teaching interests, and the names and addresses of three referees, as a PDF attachment, to cssearch@poly.edu. Please indicate which job you are applying for.

Polytechnic is an Equal Opportunity Employer.

UNIVERSITY OF ALBERTA

ASSISTANT OR ASSOCIATE PROFESSOR – COMPUTING SCIENCE

The Department of Computing Science at the University of Alberta invites applications for a full-time tenure-track faculty position in theoretical computing science at the level of Assistant or Associate Professor. Areas of interest include (but are not limited to) algorithmics, approximation algorithms, algorithmic discrete mathematics, computational complexity and combinatorial optimization. Applicants should be acknowledged by their peers as having the potential to lead in their research field and be committed to teaching. The successful candidate will be considered for nomination as a Canada Research Chair at the Tier II level.

Qualified candidates must hold a PhD at the time of appointment. Salary will be commensurate with experience.

The University of Alberta, one of Canada's largest research universities is situated in Edmonton, a metropolitan area of over one million people with a vibrant research community and an excellent standard of living. The Department of Computing Science at the University of Alberta is widely recognized as a leading CS department, both within Canada and worldwide.

The application should include a current curriculum vitae, a statement of current research interests and plans for future research, as well as evidence of teaching effectiveness. The application should also include a document outlining the candidate's board plans for the direction of the Canada Research Chair, and potential collaborations both at The University of Alberta and elsewhere. Applicants must arrange for at least three, and up to five, confidential letters of reference to be sent to the Chair. All documents should be sent to:

Mike MacGregor, Chair, Department of Computing Science, University of Alberta, Edmonton, Alberta, Canada T6G 2E8 Email: mike.macgregor@ualberta.ca

Application review will begin May 1, 2013; however, the competition will remain open until suitable candidates are found. The start date for this position is July 1, 2013, or as soon as possible thereafter.

For more information about the Department, the Faculty of Science, and The University of Alberta, please see the Department's web page at www.cs.ualberta.ca

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. The University of Alberta hires on the basis of merit. We are committed to the principle of equity in employment. We welcome diversity and encourage applications from all qualified women and men, including, persons with disabilities, members of visible minorities, and Aboriginal persons.

careers.ualberta.ca

Professional Opportunities

United States-Israel Educational Foundation

Fulbright Israel Post-Doctoral Fellowships for American Researchers in All Academic Disciplines

The United States-Israel Educational Foundation (USIEF), the Fulbright commission for Israel, offers 8 fellowships to American post-doctoral researchers in support of work to be carried out at Israeli universities during the course of the 2014/2015-2015/2016 academic years.

The US Post-Doctoral Fellowship Program is open to candidates in all academic disciplines.

Program grants total $40,000, $20,000 per academic year.

Program fellows must be accepted as post-doctoral researchers by Israeli host institutions, which agree to provide them with a standard post-doctoral grant, which they will receive in addition to their Fulbright Fellowship. Thus, the total financial support received by Program Fellows is likely to be in the range of at least $35,000-$40,000 per year.

Applications for 2014/2015-2015/2016 Fulbright Post-Doctoral Fellowships must be submitted to the Council for International Exchange of Scholars by August 1, 2013.

Further details on the program and on application procedures may be found at:

http://fulbright.org.il/en/?page_id=1024
http://catalog.cies.org/viewAward.aspx?n=4397&dc=IS
http://www.cies.org/us_scholars/us_awards/Application.htm

Potential candidates should contact Ms. Judy Stavsky, Deputy Director, USIEF (jstavsky@fulbright.org.il; +972-3-517-2392) for advice and assistance.

University of Central Florida

Center for Research in Computer Vision (CRCV Faculty Positions Available

The University of Central Florida (UCF) has recently established a University level Center for Research in Computer Vision (CRCV). The common goal of the center is to strongly promote basic research in computer vision and its applications.

CRCV is looking for multiple exceptional tenured or tenure-track faculty members, at all levels in the Computer Vision area. Of particular interest are mid-career and senior candidates with a strong track record of publications and research funding. CRCV will offer competitive salaries and start-up packages, and UCF provides generous benefits. Faculty hired at CRCV will be tenured in the Electrical Engineering & Computer Science department and will be required to teach a maximum of two courses per academic year and be expected to bring in substantial external research funding. In addition, Center faculty are expected to have a vigorous program of graduate student mentoring and are encouraged to involve undergraduates in their research.

Applicants must have a Ph.D. in an area appropriate to Computer Vision by the start of the appointment and a strong commitment to academic activities, including teaching, scholarly publications and sponsored research. Prefer applicants with an exceptional record of scholarly research and, at the senior levels, be highly recognized for their technical contributions and leadership in their areas of expertise. In addition, successful candidates must be strongly effective teachers.

To submit an application, please go to:
http://www.jobswithucf.com/postings/34681

Applicants must submit all required documents at the time of application which includes the following: Research Statement; Teaching Statement; Curriculum Vitae; and a list of at least three references with address, phone numbers and email address.

Applicants for this position will also be considered for position numbers 38406 and 37361.

Professional Opportunities

University of Chicago

Department of Computer Science
Associate Professor - Req # 01629

The Department of Computer Science at the University of Chicago invites applications from qualified candidates for faculty positions at the rank of Associate Professor in the area of machine learning. Outstanding researchers working in both the theory of machine learning and applications to areas such as natural language processing, computer vision, and computer systems are encouraged to apply.

Candidates must have a doctoral degree in computer science or a related field and be several years beyond the Ph.D. Candidates are expected to have established an outstanding independent research program and will be expected to contribute to the Department's undergraduate and graduate teaching programs.

The University of Chicago has the highest standards for scholarship and faculty quality, is dedicated to fundamental research, and encourages collaboration across disciplines.

The Department of Computer Science (cs.uchicago.edu) is the hub of a large, diverse computing community of two hundred researchers focused on advancing foundations of computing and driving its most advanced applications. Long distinguished in theoretical computer science and artificial intelligence, the Department is now building strong systems and machine learning groups. The larger community in these areas at the University of Chicago includes the Computation Institute, the Toyota Technological Institute, the Department of Statistics, and Argonne's Mathematics and Computer Science Division.

The Chicago metropolitan area provides a diverse and exciting environment. The local economy is vigorous, with international stature in banking, trade, commerce, manufacturing, and transportation, while the cultural scene includes multiple cultures, vibrant theater, world-renowned symphony, opera, jazz, and blues. The University is located in Hyde Park, a Chicago neighborhood on the Lake Michigan shore just a few minutes from downtown on an electric commuter train.

All applicants must apply through the University's Academic Career Opportunities website http://tinyurl.com/at8olkr and must upload a curriculum vitae with a list of publications, a succinct outline of research plans, a one-page teaching statement and a reference contact list consisting of three people. Review of completed applications will continue until the position is filled.

The University of Chicago is an Affirmative Action / Equal Opportunity Employer.

University of Louisville

Computer Engineering and Computer Science
Tenure Track Assistant Professor

Tenure Track Assistant Professor Position available at the J. B. Speed School of Engineering in the Computer Engineering and Computer Science Department.

Details are at University of Louisville Higher Ed link: http://www.higheredjobs.com/m/details.cfm?JobCode=175726936&Title=Assistant%20Professor%20%28Job%20ID%3A%20UL023%29

University of Massachusetts Lowell

Department of Computer Science
Non-Tenure Track Lecturer

The Computer Science Department invites applications for one full-time, non-tenure-track faculty position at the rank of Lecturer to start on September 1, 2013. Primary responsibilities are to provide high quality teaching and service to the department. This position is renewable annually, potentially leading to an appointment as Senior Lecturer following six consecutive years of outstanding performance evaluations.

Minimum Qualifications: Applicants must hold a doctoral degree in Computer Science or a closely related

UNIVERSITY OF KENTUCKY

Director
Center for Visualization & Virtual Environments

The University of Kentucky's Center for Visualization & Virtual Environments invites applications from outstanding individuals to serve as Director of the Center. Candidates having an exceptional record of research productivity and who have a demonstrated ability to lead an interdisciplinary unit are encouraged to apply. External applicants will be considered for a tenured faculty position at the associate to full professor level, with the departmental affiliation dependent on the candidate.

Candidates with expertise in any area related to visualization, including but not limited to machine vision, medical imaging, and pattern recognition, will be considered. Successful candidates will have: 1) a clear vision for advancing the Center; 2) experience leading large collaborative proposals; 3) experience managing large and complex budgets; 4) experience with supervising staff; 5) a willingness to work with a wide range of internal and external constituencies; and 6) a commitment to advancing diversity among faculty, staff, and students.

UK offers strong collegial collaboration, with on campus proximity to the Colleges of Architecture, Arts & Sciences, Business and Economics, Dentistry, Education, Engineering, Fine Arts, Medicine, and Pharmacy, and to the UK Hospital. A competitive salary and start-up package will be available, as well as access to excellent core research facilities.

Founded in 1865 as a land-grant institution adjacent to downtown Lexington, UK is nestled in the scenic heart of the Bluegrass region of Kentucky. Recently ranked as one of the safest, most creative, and the brainiest cities in the nation, Lexington is an ideal location to experience the work-life balance that the University strives to provide to its employees. See for yourself what makes UK one great place to work.

Review of applications will begin immediately and will continue until the position is filled. Applicants should apply for position SM545908 on-line at http://ukjobs.uky.edu. Submit PDF files consisting of a letter of interest, complete curriculum vitae, statement of research goals, vision statement for the Center, and contact information for three professional references.

Please visit http://vis.uky.edu for more information about the Center.

VISCENTER

The University of Kentucky is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.

Professional Opportunities

discipline. Experience and demonstrated excellence teaching Computer Science at the undergraduate level is required.

The University of Massachusetts Lowell is located about 25 miles northwest of Boston in the high tech corridor of Massachusetts. The Computer Science department has 17 tenured and tenure track faculty and two lecturers, serving about 300 BS students, 100 MS students, and 75 PhD students. It also offers bioinformatics options at all levels, a robotics minor, and a PhD in computational mathematics.

The Computer Science faculty has received approximately $6M in the last two years in external research funding from NSF, DOD, NIH, and corporations. The department has five NSF CAREER Award recipients. More information about the department can be found at www.cs.uml.edu.

The University of Massachusetts Lowell is a comprehensive University with a national reputation in science, engineering and technology, committed to educating students for lifelong success in a diverse world, and conducting research and outreach activities that sustain the economic, environmental and social health of the region. In February of 2009, a campus wide strategic planning initiative was launched to reposition UMass Lowell as a world-class institution over the next decade. A major component of that initiative is to ensure that diversity and inclusion are in every aspect of our strategic plan. We seek a diverse talented candidate pool to be part of our mission and achievements.

How to apply: Interested applicants should apply online at https://jobs.uml.edu. Review of applications will begin immediately, and continue until the position is filled. However, the position may close when an adequate number of qualified applications are received. Women and under-represented minorities are strongly encouraged to apply. Thank you for considering the University of Massachusetts Lowell as an employer of choice. We look forward to receiving your application.

The University of Massachusetts Lowell is committed to increasing diversity in its faculty, staff, and student populations, as well as curriculum and support programs, while promoting an inclusive environment. We seek candidates who can contribute to that goal and encourage you to apply and to identify your strengths in this area.

University of Massachusetts Medical School

Quantitative Health Sciences
Postdoc Scientist

Several postdoctoral scientists are open for NLP experts to join a leading group in biomedical NLP. Experience with machine-learning, social media, question answering and/or multimedia NLP is desirable.

See the full job description at:
http://umassmed.jobs/worcester-ma/post-doc-assoc/21712424/job/

The University Of Michigan, Ann Arbor

Department Of Electrical Engineering and Computer Science - Computer Science and Engineering Division
CSE Lecturer III

Posting Begin Date: 3/05/2013
Posting End Date: 4/02/2013

Applications are accepted through the University of Michigan's job posting site at http://umjobs.org/job_detail/79912/cse_lecturer_iii

Responsibilities*

Primarily to teach introductory courses in Computer Science and Engineering on programming, discrete mathematics, data structures, etc. Instructor will be responsible for developing course materials, lecturing, holding office hours and preparing and grading exams, managing and grading class projects.

Additional administrative duties, as needed. Such as, mentoring and advising students and student groups, participate on departmental, College and University committees in support of Computer Science & Engineering initiatives.

Required Qualifications*

- PhD degree in Computer Science, Computer Engineering, or related discipline.
- Previous effective teaching experience as evidenced by evaluations.
- Demonstrated support of academic programs and student success.
- Strong oral presentation and communication skills are required.

Selection criteria based on resume with supplemental materials and in-person interview.

Desired Qualifications*

Ability to teach advanced level courses in computer science and engineering. Course descriptions can be found at: www.engin.umich.edu/...in/eecs/courses.html

Additional Information

- Department: Computer Science & Engineering
- Hours: 40 (100%)
- Appointment period: Sept-May (U-YR)
- Duration of appointment: Sept. 1, 2013 through May 31, 2016

Salary range: Anticipated to be between $75,000 and $80,000, dependent upon experience and credentials.

Union Affiliation

This position is covered under the collective bargaining agreement between the U-M and the Lecturers Employee Organization, AFL-CIO, which contains and settles all matters with respect to wages, benefits, hours and other terms and conditions of employment.

Application Deadline

Application deadline is two weeks from posting date. Decisions will be made within 1 month of the posting date. Final hiring approval is subject to administrative approval.

U-M EEO/AA Statement

The University of Michigan is an equal opportunity/affirmative action employer.

University of Nebraska at Omaha

College of Information Science and Technology
STEM Faculty Position in Computer Science

The College of Information Science and Technology (IS&T) is an interdisciplinary college focusing on meeting the needs of a vibrant metropolitan area. The College invites applications for a STEM position within the college's computer science department. The position is open to all ranks. Candidates applying for this position should have a well-established, active and vigorous research program in any computing area with an emphasis on STEM education and research. This mid-career faculty will have the experience to provide leadership in the college and the campus relating to STEM coupled with a strong research emphasis in computing related disciplines and in the pedagogical issues associated with STEM education in computing. The successful candidate will have completed a doctorate in computer science or affiliated disciplines and a demonstrated ability to generate external research and development grants. Teaching experience and publication record must be commensurate with the rank sought. Contributions to service in the form of interactions with university, business, government agencies and professional organizations are expected and important requirements for this position. Qualified candidates will be considered for an endowed professorship.

In addition to the computer science department, the college has two other units – an Information Systems and Quantitative Analysis department and a School of Interdisciplinary Informatics. The College of IS&T's academic program portfolio includes five undergraduate degree programs (Computer Science, Management Information Systems, Bioinformatics, Information Assurance, IT Innovation) and three Master of Science degree programs (Computer Science, Management Information Systems and Information Assurance). The college also hosts an innovative college-wide interdisciplinary PhD in Information Technology degree. Two graduate degrees in Biomedical Informatics are currently at the stages of approval. The college of IS&T has nearly 1,000 total students with 300 graduate students and 700 undergraduate students.

The College of IS&T has nearly 60 full-time tenure track faculty/staff and an active research grants portfolio of $15 million with funds from

Professional Opportunities

federal agencies (e.g., NSF, NIH, Dept of Ed), state government (e.g., NRI, NSF EPSCoR, NU Foundation), a number of local and national corporations and foundations. The college's interdisciplinary focus has resulted in a variety of collaborations with units across the University of Nebraska Omaha and the rest of the University of Nebraska system including the medical center and a number of private and public organizations.

Individuals who desire to contribute to the development of these programs and lead the charge on STEM initiatives in the college are encouraged to apply. We invite candidates to visit the college web site at http://www.ist.unomaha.edu for more information. To apply, please visit the UNO careers web site at www.unomaha.edu/humanresources/employment.php, create your account and apply for this position. Cover letter, curriculum vita and list of references must be attached to the electronic application. If you have any additional questions, please contact:

Dr. Mahadevan Subramanian, Chair STEM Search Committee
Email: msubramaniam@unomaha.edu
Department of Computer Science
College of Information Science & Technology
University of Nebraska at Omaha
6001 Dodge Street
Omaha NE 68182-0116
Phone: (402) 554-4984
Fax: (402) 554-3284

The university and college have a strong commitment to achieving diversity among faculty and staff. We are particularly interested in receiving applications from members of underrepresented groups and strongly encourage women and persons of color to apply for this position.

The University of Nebraska at Omaha is the only public, metropolitan university in the state. Located in the heart of Nebraska's largest city, UNO is a comprehensive university offering programs at the bachelor's, master's, specialist, and doctoral degree levels. Serving approximately 15,000 students, UNO offers more than 130 undergraduate majors and more than 60 graduate programs in a wide variety of fields. In addition to the university-wide Graduate College, UNO's colleges include Arts and Sciences, Business Administration, Education, Communication, Fine Arts and Media, Information Science and Technology, Public Affairs and Community Service and Continuing Studies.

The University of Nebraska at Omaha does not discriminate in its academic, employment or administration policies and abides by all federal, state and regental regulations pertaining to same. Employment eligibility verification is required for all new hires. UNO provides reasonable accommodation for the known disabilities of applicants and employees, unless to do so would pose an undue hardship. If you need accommodation in order to complete the application process or to perform any essential element of the position sought, please contact the A-line Affirmative Action Office in the Office of Academic & Student Affairs. Address: Eppley Administration Building 202, University of Nebraska at Omaha, Omaha NE 68182-0185. Telephone: 402/554-2262, FAX 402/554-4896

The University of Newcastle

Pro Vice-Chancellor

UON 2025 Vision

The University of Newcastle aspires to be a global leader in each of its spheres of achievement. Through engagement with partners, the University will deliver world class innovation to support the development of strong regional communities.

PRO VICE-CHANCELLOR FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

Under the leadership of the Vice-Chancellor and President, Professor Caroline McMillen, the University of Newcastle is embarking on an ambitious new strategic plan, NeW Directions 2013 - 2015. Delivery of the goals and targets in this plan will require an outstanding leadership team.

The Faculty of Engineering and Built Environment has been led with absolute distinction by Professor John Carter FAA for the past 5 years and following Professor Carter's decision to retire, the University is now seeking a leader to build the next successful phase of this impressive faculty. Members of the faculty rank in the top 1 per cent of their discipline and the core disciplines of the faculty are ranked in the top global 200 in world university ranking systems. In the recent national Excellence in Research Assessment exercise, the performance of the faculty also placed it in the top 2 institutions in Australia in core engineering disciplines.

As Pro Vice-Chancellor you will provide the vision, strategy and energy for the faculty that will ensure its graduates are recognised as future leaders in their professional fields and that the core disciplines in the faculty will rank in the top 100 in the world. You will also engage with industry, business and government leaders to deliver world class innovation in areas of global significance.

Reporting directly to the Vice-Chancellor and as a member of the University's Executive, this role also provides you with an opportunity to contribute to the strategic direction and policies of the University and to engage in the development of national and international policy in the higher education sector.

The successful candidate will have global academic and professional standing, will be a strategic thinker, will have outstanding communication and engagement skills and will be results oriented, leading by example. They will have a demonstrated track record of managing a large and diverse team to deliver outstanding results. The University is happy to entertain applications from all relevant discipline areas including disciplines not in the current faculty profile.

Initial enquiries, in confidence, should be made to: Julie Steiner, Director, Braithwaite Steiner Pretty Executive Search (BSP) on +61 2 9460 4505 or email UNewcPVCEng@bspes.com
Applications close: 17 May 2013

An attractive remuneration package will be offered to the successful candidate. An information booklet containing selection criteria will be provided to interested candidates. The University of Newcastle values equity and diversity. www.newcastle.edu.au/futurestaff

University of New Mexico

Computer Science Department
Lecturer II

We invite applications for a non-tenured position of Lecturer II in the Computer Science Department. The department is committed to excellence in both undergraduate and graduate education, with an ABET-accredited B.S. degree program in computer science, as well as M.S. and Ph.D. programs involving students in leading edge research.

The Department of Computer Science seeks individuals who have an earned Master of Science in Computer Science, Computer Engineering, or closely related field and proven teaching skills in undergraduate education. The successful candidate should have a commitment to undergraduate teaching and ability to teach computer sciences courses in areas of department needs.

The Computer Science department currently has seventeen faculty with plans to increase faculty numbers as we continue to see enrollment growths in our undergraduate and graduate programs. Lecturers in this department are considered an essential part of the faculty and participate in faculty meetings and departmental decisions. This position carries a salary between $50,000 - $53,000 as well as a package of generous benefits including pension, health, dental, etc. In addition, the Department of Computer Science actively supports the professional growth of its lecturers to ensure that they reach their professional potential.

New Mexico has a rich and varied culture, and representatives of all underrepresented groups are encouraged to apply. The University of New Mexico is the premier research university in the state of New Mexico. UNM is a Carnegie Very High Research Activity Institution and a federally designated Hispanic Serving Institution, with nearly 35,000 students on the main and branch campuses. It is located in Albuquerque, the largest city in New Mexico and one of the fastest growing cities in the Southwest. Albuquerque is an ethnically diverse city with a rich culture and a location offering unparalleled

Professional Opportunities

opportunities for outdoor adventure including hiking, biking, rock climbing and skiing in the nearby Sandia and Manzano mountains.

For best consideration, complete applications must be received by April 27, 2013. This position will remain open until filled. Each application must include a cover letter summarizing the applicant's experience, curriculum vita, teaching statement, and a list of 3 references. In addition, as part of the application requirements, three letters of references from those individuals named in your reference list must be emailed directly to faculty_search@cs.unm.edu. It is the applicant's responsibility to ensure that the letters of reference are submitted before the application deadline.

Applications must be submitted online through UNMJobs.unm.edu, by referencing posting #0819933. Reference letters should be emailed directly to faculty_search@cs.unm.edu.

Inquiries should be sent to:
faculty_search@cs.unm.edu

The University of New Mexico is an equal opportunity/affirmative action employer and educator. We especially encourage members of underrepresented groups to apply.

University of Southern California

Computational Biology and Bioinformatics Post-doc Research Associate in Bioimaging Analysis

A postdoctoral position is available in the Alber Computational Biology lab at the University of Southern California in Los Angeles. The research focus is to develop and apply computational methods for the analysis of cryo-electron tomograms and x-ray tomograms of whole cells or cellular organelles. In particular, the prospective candidate will develop advanced image pattern mining methods in the emerging area of visual proteomics or visual genomics. Research will be conducted in close collaboration with experimentalists.

The qualified applicants should have a Ph.D. degree in computer science with prior experiences in image analysis. Previous experience in bioinformatics is preferred but not essential.

The USC computational biology division is highly interactive including 9 faculty members with research interest in computational sequence analysis, data integration, epigenomics, evolution, and structural biology. There are extensive collaborations between computational and experimental biologists. We are also an NIH Center for Excellence in Genomic Sciences.

Interested applicants should send curriculum vitae, and contact addresses of two references via email to Prof. Frank Alber at alber@usc.edu.

The University of Virginia

Department of Computer Science
Lecturer

The University of Virginia School of Engineering and Applied Science invites applications for nine-month, full-time Lecturer positions in the Department of Computer Science for the fall 2013 and spring 2014 semesters. Renewal for subsequent years is contingent on satisfactory performance and availability of funds. Responsibilities include teaching three sections per semester of a mix of upper- and lower-division courses, with course assignment based on experience and abilities.

Preference will be given to candidates with a Ph.D., experience in undergraduate teaching, industry work in computer science, and interest in innovative curriculum development.

Applicants must apply online at: https://jobs.virginia.edu and search by Posting Number 0611659. Applicants are requested to submit a letter of application, current curriculum vita, statement of teaching philosophy, and contact information for at least three references. Previous teaching evaluations are also welcome, but not required. Review of applications is expected to begin March 21, 2013, and will continue until the positions are filled.

For additional information, please e-mail csjobs@virginia.edu.

The University of Virginia is an equal opportunity/affirmative action employer committed to developing diversity in faculty, and welcomes women, minorities, veterans and persons with disabilities.

University of Washington

The Information School
Lecturer or Senior Lecturer in Masters of Human-Computer Interaction + Design Program

The Masters of Human-Computer Interaction + Design program (http://mhcid.washington.edu) at the University of Washington invites applications for a full time (100% FTE) Lecturer or Senior Lecturer. The MHCI+D program is a joint effort of the primary member departments of dub (http://dub.washington.edu), which are Computer Science & Engineering, the Design Division of the School of Art, Human-Centered Design & Engineering, and the Information School. The position's main responsibilities involve teaching and service in the MHCI+D program. University of Washington faculty engage in teaching, research and service.

The successful candidate will join a vibrant UW faculty in the dub group conducting interdisciplinary work in human-computer interaction and design. Current activities include work in CSCW, computer-mediated communication, ICTD, user research, design methods, information visualization, user experience design, emerging communication technologies, assistive technologies, and health applications. Faculty members also routinely engage in projects and partnerships with affiliates from the region's noted high-tech industry. Seattle is home to many prominent technology companies, along with a robust startup and global health community

The position requires a Masters degree in a field related to Design or HCI or significant work and/or teaching experience in these areas, level of appointment and compensation will be commensurate with the applicant's qualifications.

Review of applications will begin March 31, 2013. The University of Washington is building a culturally diverse faculty and strongly encourages applications from women and minority candidates. The University is an affirmative action, equal opportunity employer. The University of Washington, a recipient of the 2006 Alfred P. Sloan award for Faculty Career Flexibility, is committed to supporting the work-life balance of its faculty.

For complete posting and information on how to apply please visit us at http://ischool.uw.edu/jobs/faculty

Wentworth Institute of Technology

Department Chair

Wentworth Institute of Technology seeks a department chair for its Computer Science and Networking Department. This department is one of five departments within the College of Engineering and Technology. A department chair's responsibilities include:

Leadership

- Provide leadership and vision for the department
- Develop curriculum in conjunction with the faculty
- Develop and implement multi-disciplinary projects
- Oversee accreditation reviews (CAC ? ABET)
- Develop departmental strategic plan including assessment
- Work with departmental Industry Professional Advisory Committee
- Resource Development
- Develop and manage department budget
- Assist in recruiting and hiring of faculty, staff and adjuncts
- Mentor faculty and staff
- Assist in fund raising initiatives

Administrative

- Prepare faculty class schedules
- Call and preside over department meetings
- Oversee physical facilities of the department
- Oversee the department website
- Collaborate with other Wentworth departments as well as external partners

Professional Opportunities

- Represent department on Institute committees, including Academic Leadership Team
- Represent department off campus as required

Interpersonal

- Conduct faculty and staff evaluations; assist in developing faculty planning worksheets
- Cultivate an atmosphere which is civil, supportive and inclusive
- Advise students; review and act on student petitions
- Resolve student issues when necessary

Teach 16 credits over a two-year period

Participate in scholarly and creative activities

Presently there are fourteen full-time faculty, eight adjunct faculty, two staff members, and approximately 450 students in two majors (Computer Science and Computer Networking).

Job Requirements

Candidates must possess a master's degree (doctorate preferred) in computer science or a related field, a proven track record in teaching, accomplishments in scholarly work and a strong commitment to entrepreneurial education. Teaching experience at the university level. Strong communication and interpersonal skills. Ph.D. in a related field is preferred. Prior academic administrative experience is also preferred.

To apply, please visit our online application site at http://jobs.wit.edu. Wentworth is an AA/EEO employer. Women and minorities are encouraged to apply. Wentworth is a tobacco-free campus.