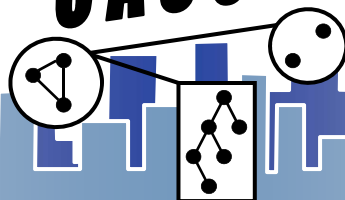


CASOS



Computer Science in Numbers: Diversity and Employment

Jana Diesner (diesner@cs.cmu.edu)

Talk at Computation, Organizations, Society (COS) Seminar

Carnegie Mellon University

School of Computer Science

October 20th, 2008

What the talk is about

- This presentation provides some statistics from national surveys on the enrollment and employment in computing with a focus on distribution over gender and ethnicity.



Data I: CRA

- Taulbee Survey by CRA (Computing Research Association)
 - <http://www.cra.org/statistics/> (free access)
 - Long-term, annual survey
 - 2006/07: 186 CS&CE (Computer Science & Computer Engineering) Ph.D.-granting departments in US and Canada
 - Foci: student enrollment, employment of graduates, faculty salaries



Data II: HERI

- Higher Education Research Institute (HERI) at UCLA
 - <http://www.gseis.ucla.edu/heri/cirpoverview.php>
 - No public access to data
 - Annual survey taken by ~400,000 entering freshmen during orientation or registration at ~700 two- and four-year colleges and universities



Data III: NSF

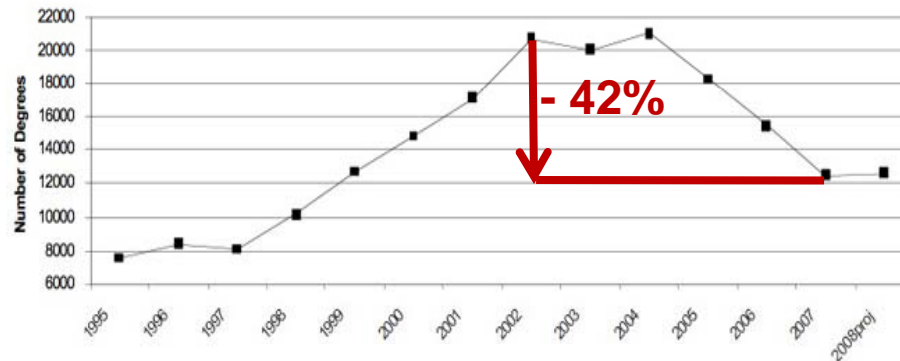
- <http://www.nsf.gov/statistics/> (free access)
- All degree-granting schools, up to 2006
- National Science Foundation, Division of Science Resources Statistics. 2008. Science and Engineering Degrees: 1966–2006. Detailed Statistical Tables NSF 08-321. Arlington, VA. Available at <http://www.nsf.gov/statistics/nsf08321/>



CS&CEng. Bachelors, US and Canada (Taulbee)

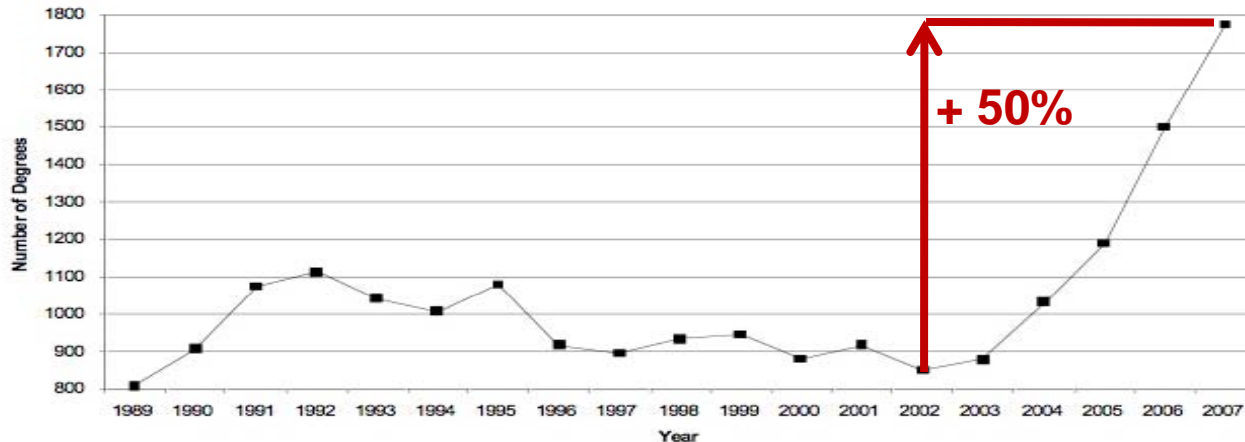
- Want to teach at a university? Recruit some students!

B.S. Degrees awarded



2006/07: 12,498

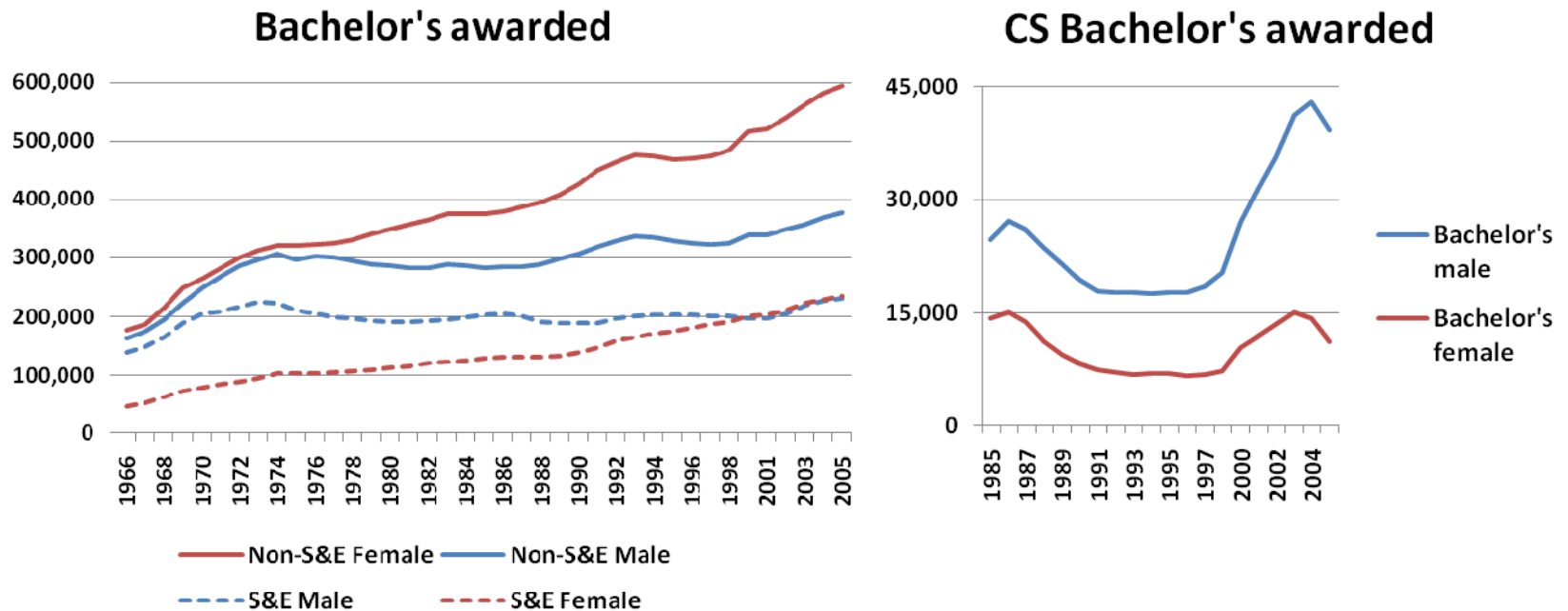
PhD Degrees awarded



2006/07: 1,775

Images on this slide from <http://www.cra.org/CRN/articles/may08/taulbee.html>

Broader sample of schools

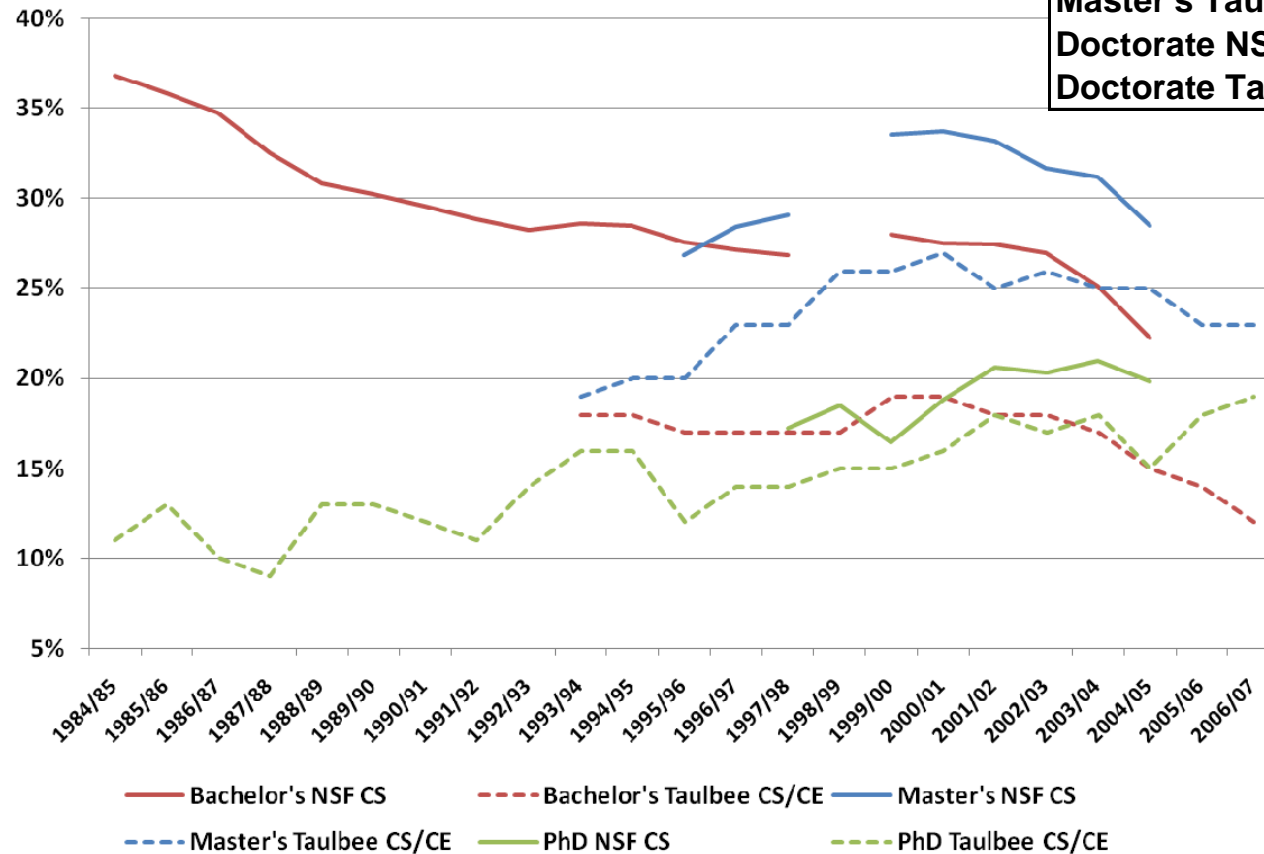


- BS Taulbee: 2005: ~18,000 (PhD granting dept.)
 - BS NSF: 2005: 50,564 (all BS granting schools)
- (S&E = science and engineering)



Computing degrees earned by women

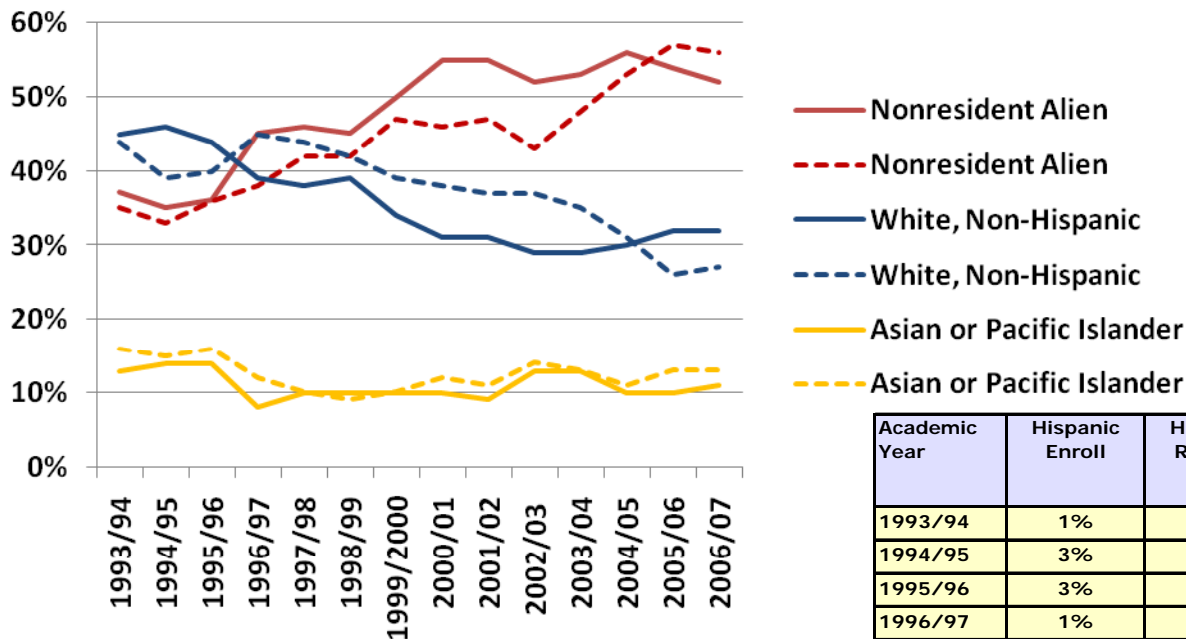
Share of CS (NSF) and CS/CE (Taulbee)
 Degrees Granted to Women



Data source	Female	Male
Bachelor's NSF 2005	11,235	39,329
Bachelor's Taulbee 2007	1,208	8,733
Master's NSF 2005	5,078	12,742
Master's Taulbee 2007	1,620	5,526
Doctorate NSF 2005	225	909
Doctorate Taulbee 2007	306	1,279

Ethnicity among PhD students and graduates (Taulbee)

Ethnicity of CS&CE Ph.D. enrolled (solid) and received (dash), US and Canada

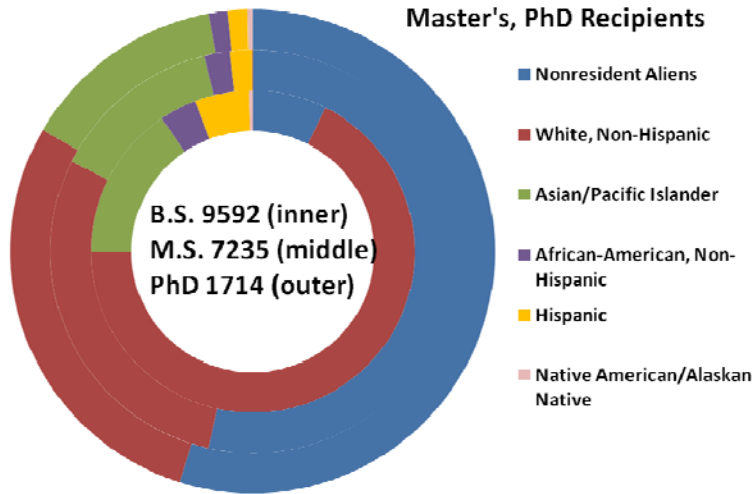


- Majority: foreigners
- Integration of minorities (Hispanics, African-Americans, Native Americans): together not >5% per year

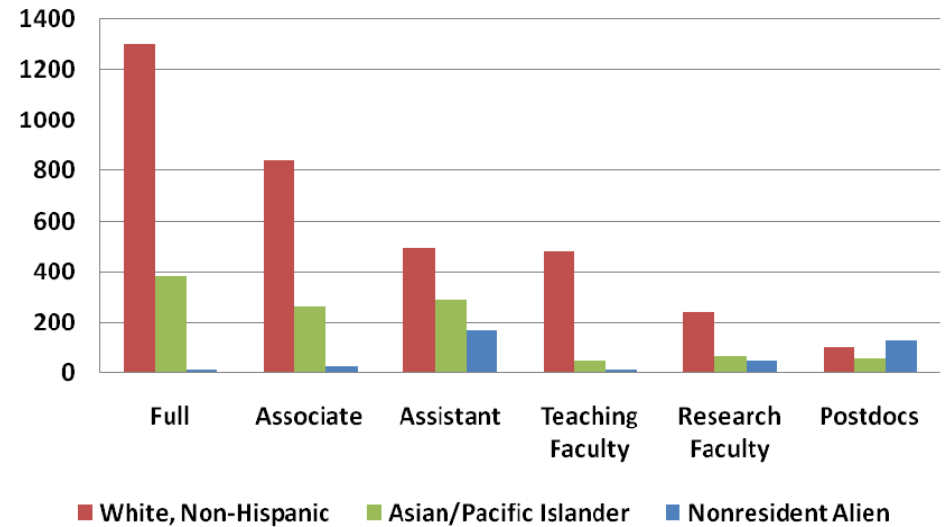
Academic Year	Hispanic Enroll	Hispanic Receive	African-American, Non-Hisp. Enroll	African-American, Non-Hisp. Receive	Native American Enroll	Native American Receive
1993/94	1%	1%	1%	2%	0%	0%
1994/95	3%	2%	1%	2%	0%	0%
1995/96	3%	2%	1%	1%	1%	0%
1996/97	1%	2%	1%	2%	0%	0%
1997/98	1%	2%	1%	2%	1%	0%
1998/99	2%	2%	2%	2%	0%	0%
1999/00	2%	1%	2%	2%	0%	0%
2000/01	1%	1%	1%	2%	0%	0%
2001/02	1%	1%	1%	2%	1%	0%
2002/03	2%	1%	1%	2%	0%	0%
2003/04	1%	1%	2%	2%	0%	0%
2004/05	2%	1%	1%	1%	0%	0%
2005/06	1%	1%	1%	2%	1%	0%
2006/07	1%	2%	1%	2%	0%	0%

Ethnicity by degree and academic job (Taulbee)

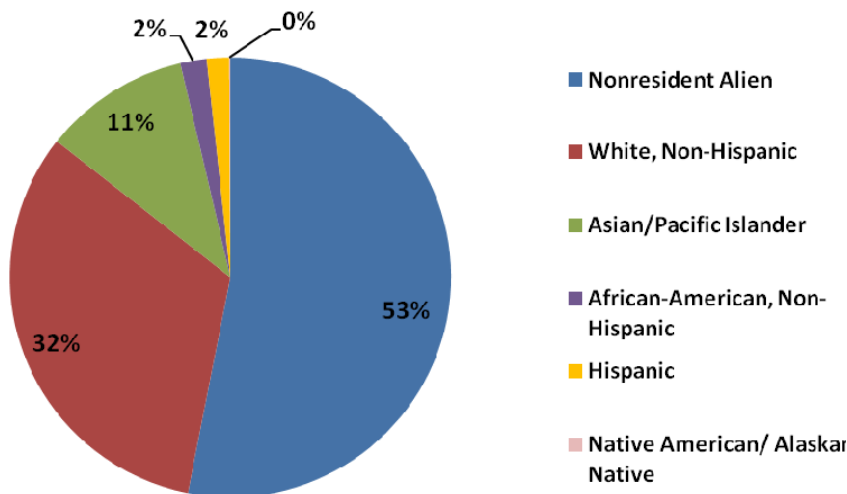
Ethnicity of CS&CE Bachelor's, Master's, PhD Recipients



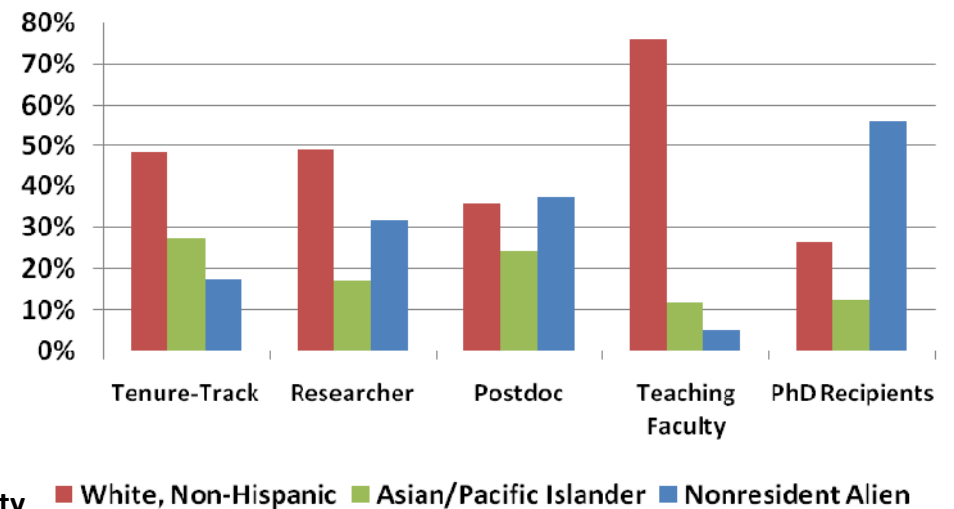
Ethnicity of Current Faculty



Ethnicity of PhD Enrolled CS&CE (N = 11806)

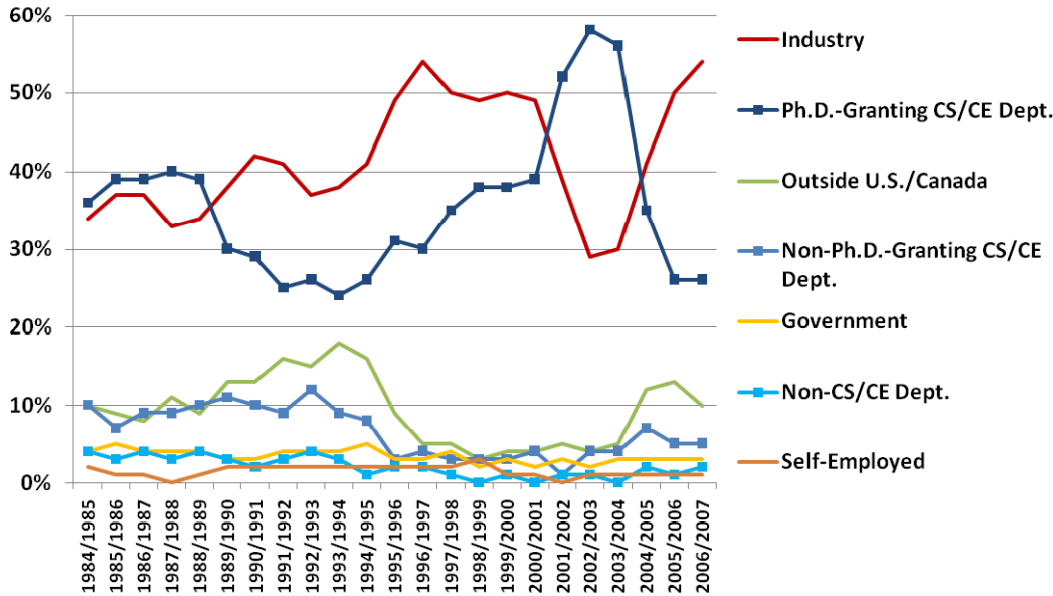


Ethnicity of Newly Hired Faculty

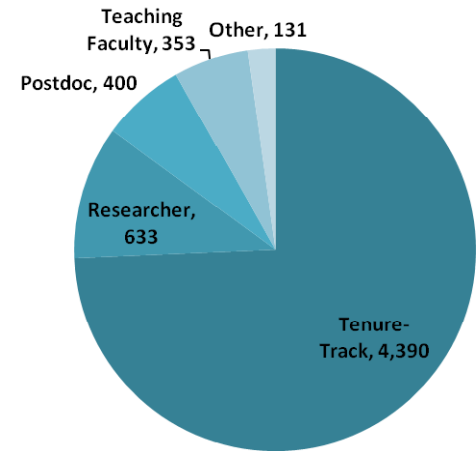


Employment of PhD graduates (Taulbee)

Employment of New Ph.D. Recipients

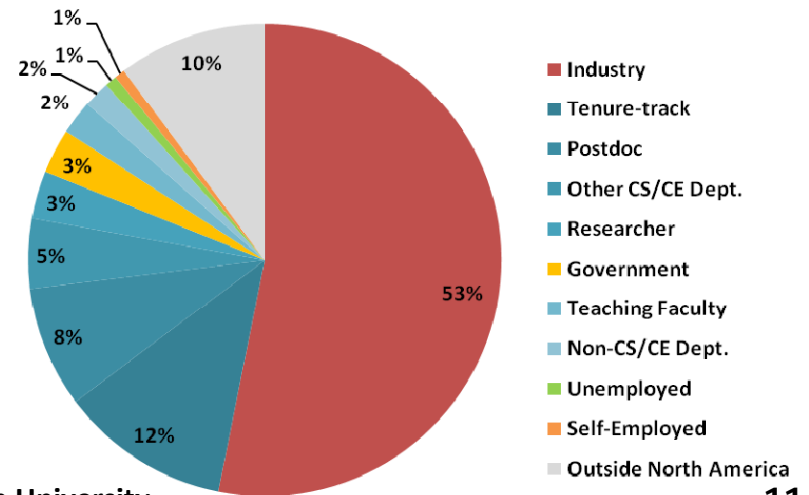


- Foreigner nationals leaving the US: 10% of graduates (33% about 2 years after)

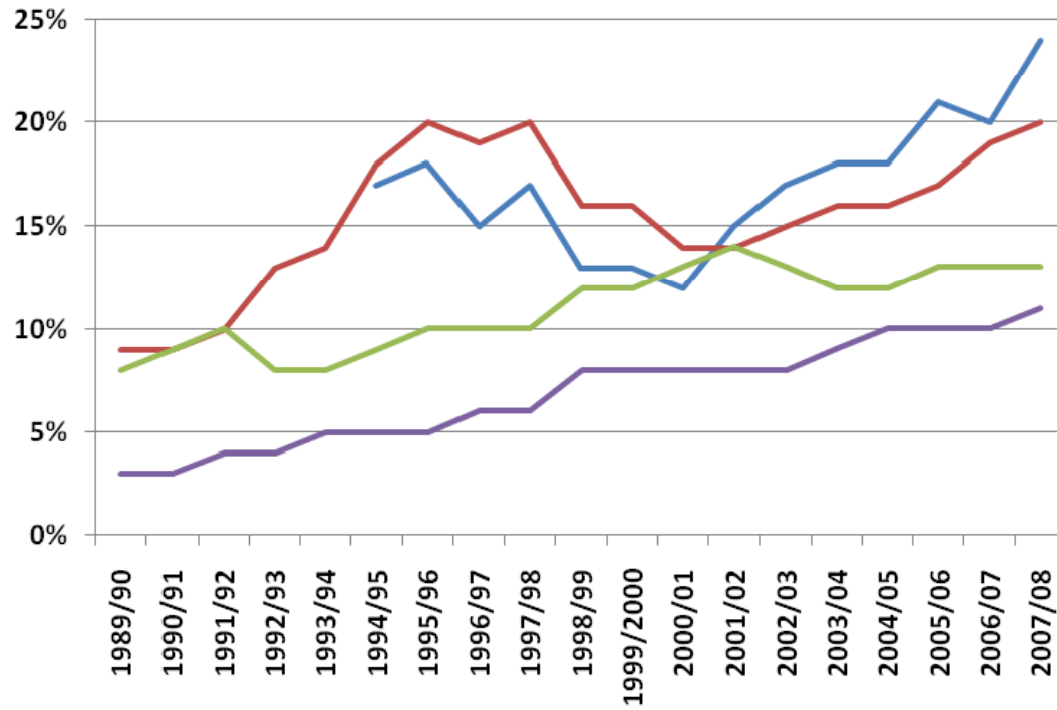


2006/07 Faculty Size

Employment of 2006/07 PhD Recipients



Women in academic jobs (Taulbee)



— Newly Hired, Tenure-Track — Assistant Prof.
— Associate Prof. — Full Prof.

Gender	PhD Students	PhD Recipients
Male	80.50%	80.70%
Female	19.50%	19.30%



Outreach at CMU (incomplete list)

- Women@SCS: Creative TechNights, Roadshows, Google/Women@SCS Girl Scouts Day, and more, URL: <http://women.cs.cmu.edu/>
 - Support students in attending Grace Hopper conference (<http://gracehopper.org>)
- Society of Women Engineers: High School Day (<http://swe.cit.cmu.edu/High%20School%20Day.html>)



Acknowledgements

I am grateful to

- IBM for giving me a stipend for attending the Grace Hopper 2008 meeting.
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- Kathleen M. Carley, director of CASOS at Carnegie Mellon University, ISR (advisor).

