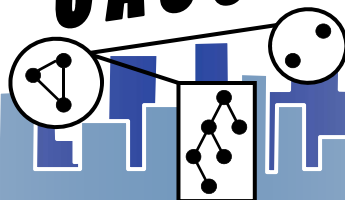


**CASOS**



# 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 20<sup>th</sup>, 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

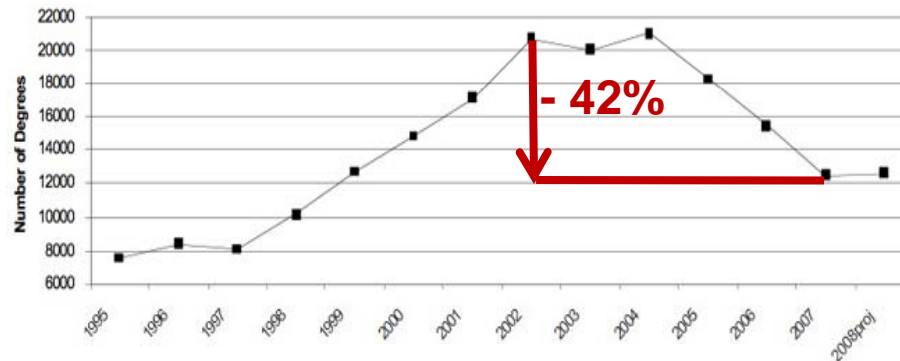
- <http://www.nsf.gov/statistics/> (free access)
- All degree-granting schools, up to 2006
- National Science Foundation, Division of Science Resources Statistics. 2008. Science and Engineering Degrees: 1966–2006. Detailed Statistical Tables NSF 08-321. Arlington, VA. Available at <http://www.nsf.gov/statistics/nsf08321/>



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

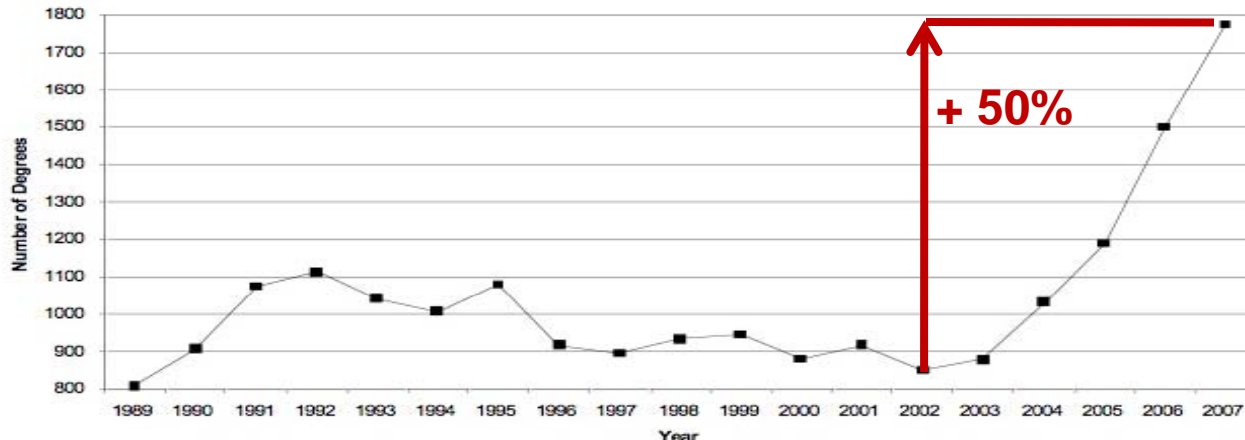
- Want to teach at a university? Recruit some students!

B.S. Degrees awarded



2006/07: 12,498

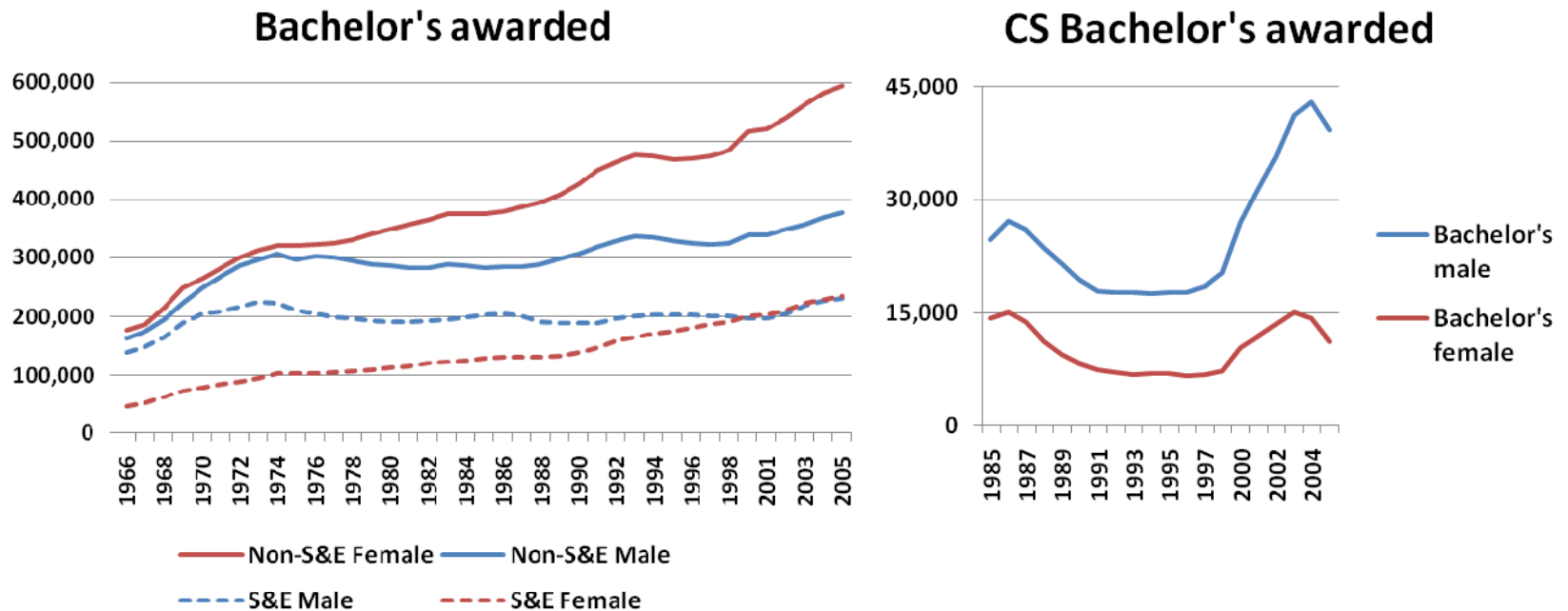
PhD Degrees awarded



2006/07: 1,775

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

# Broader sample of schools

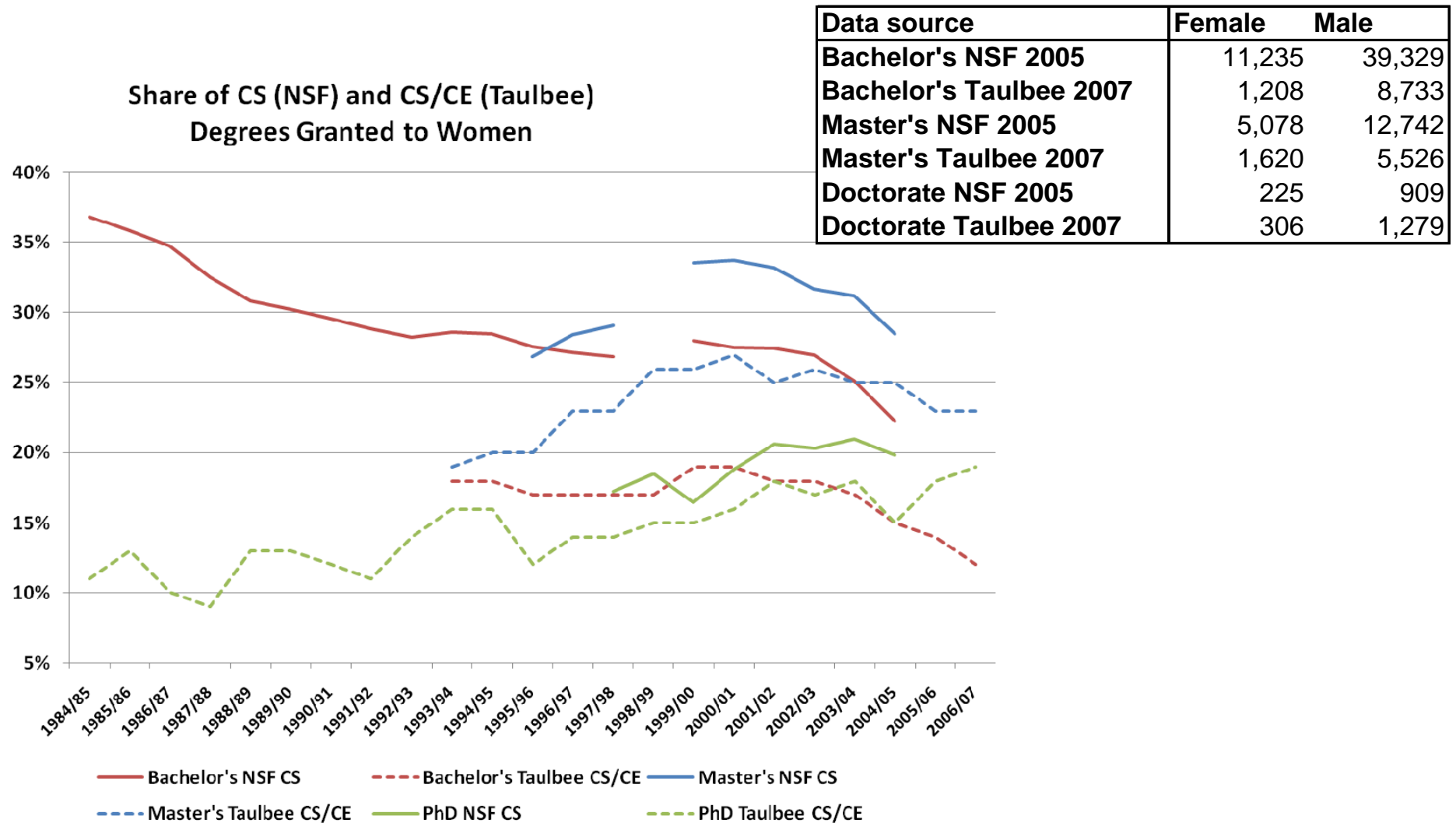


- BS Taulbee: 2005: ~18,000 (PhD granting dept.)
- BS NSF: 2005: 50,564 (all BS granting schools)

(S&E = science and engineering)



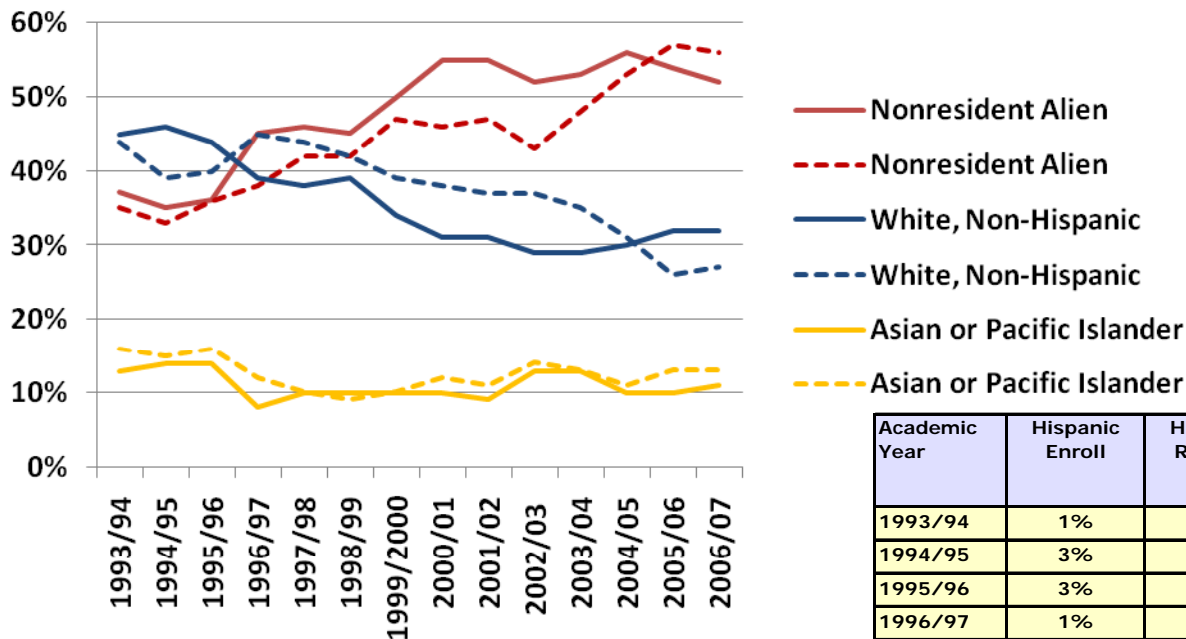
# Computing degrees earned by women





# Ethnicity among PhD students and graduates (Taulbee)

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

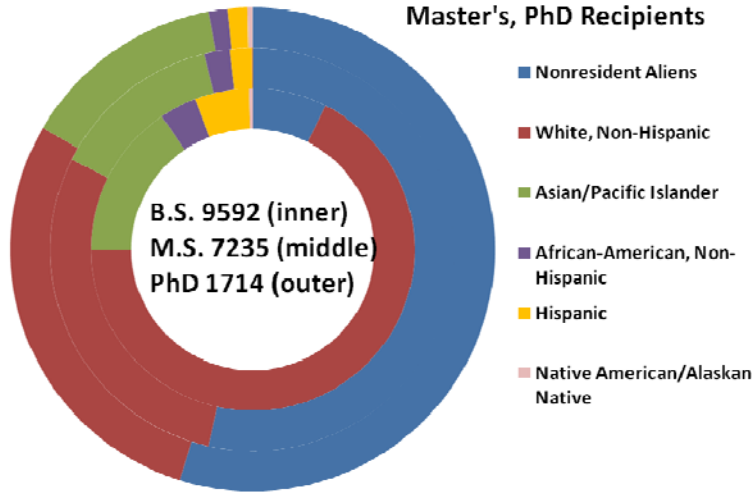


- Majority: foreigners
- Integration of minorities (Hispanics, African-Americans, Native Americans): together not >5% per year

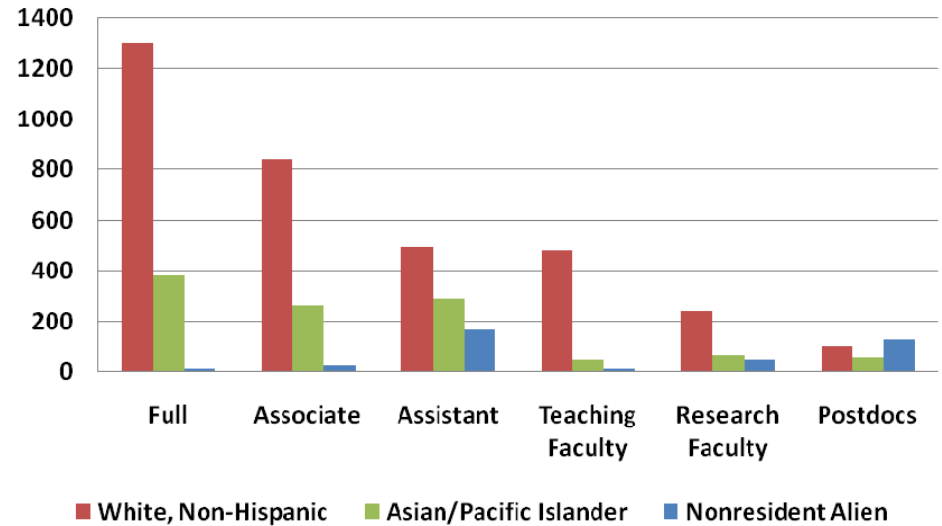
Academic Year	Hispanic Enroll	Hispanic Receive	African-American, Non-Hisp. Enroll	African-American, Non-Hisp. Receive	Native American Enroll	Native American Receive
1993/94	1%	1%	1%	2%	0%	0%
1994/95	3%	2%	1%	2%	0%	0%
1995/96	3%	2%	1%	1%	1%	0%
1996/97	1%	2%	1%	2%	0%	0%
1997/98	1%	2%	1%	2%	1%	0%
1998/99	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)

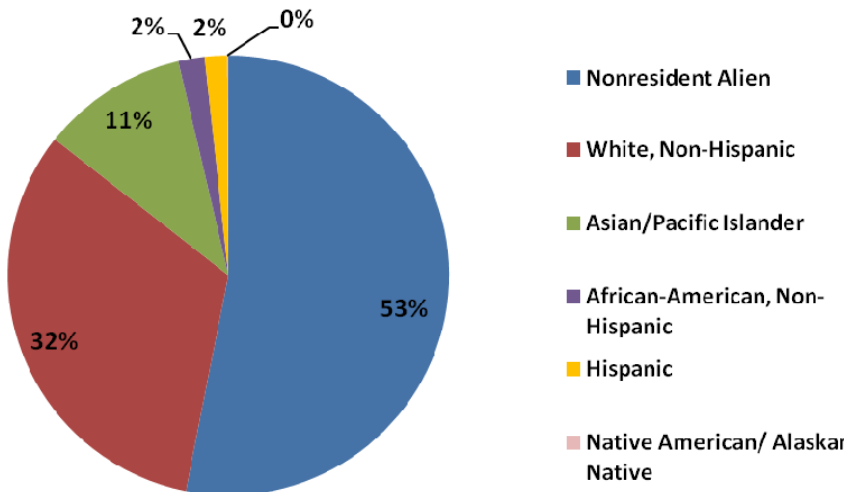
Ethnicity of CS&CE Bachelor's, Master's, PhD Recipients



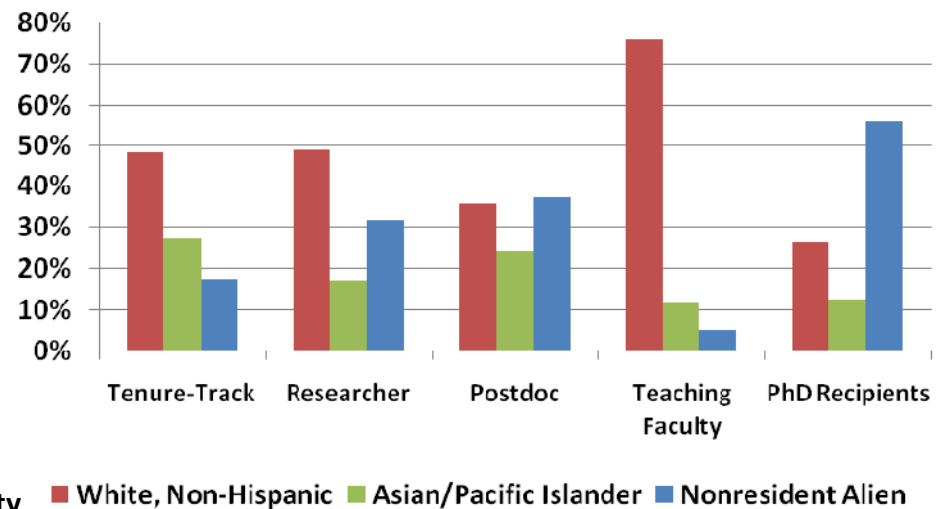
Ethnicity of Current Faculty



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

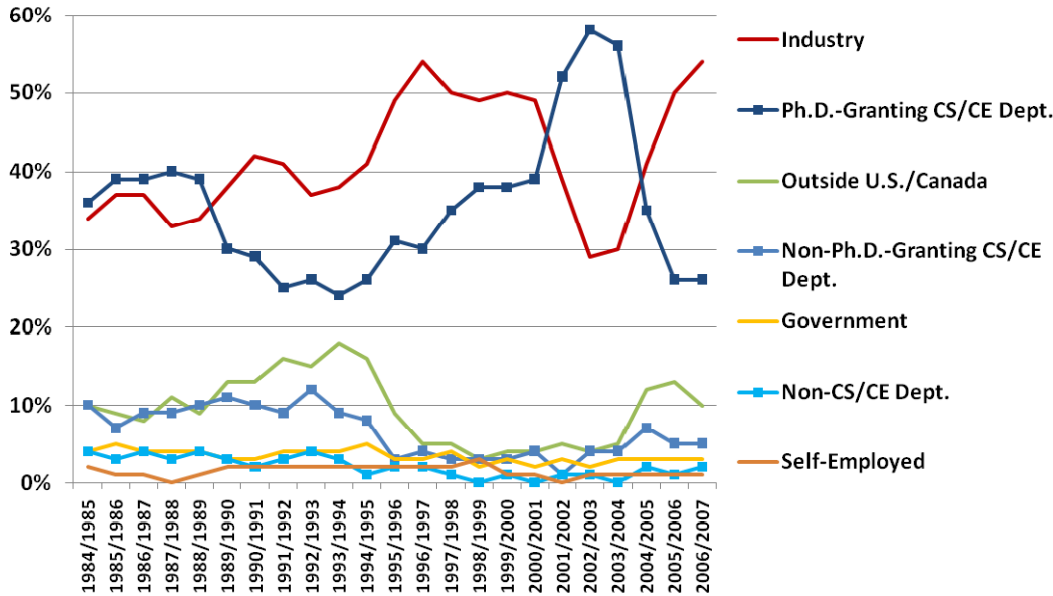


Ethnicity of Newly Hired Faculty

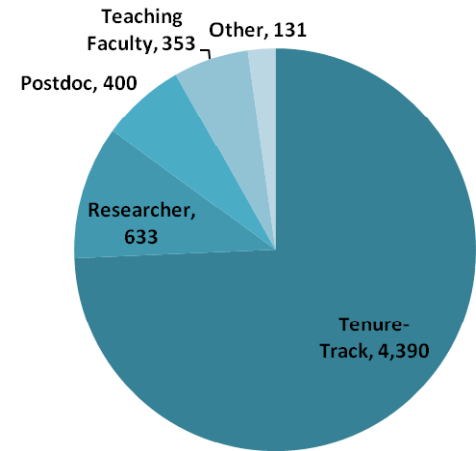


# Employment of PhD graduates (Taulbee)

Employment of New Ph.D. Recipients

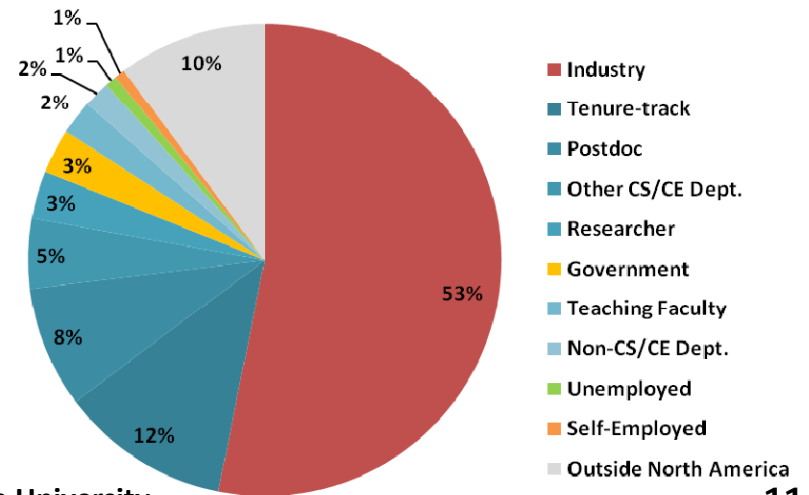


- Foreigner nationals leaving the US: 10% of graduates (33% about 2 years after)

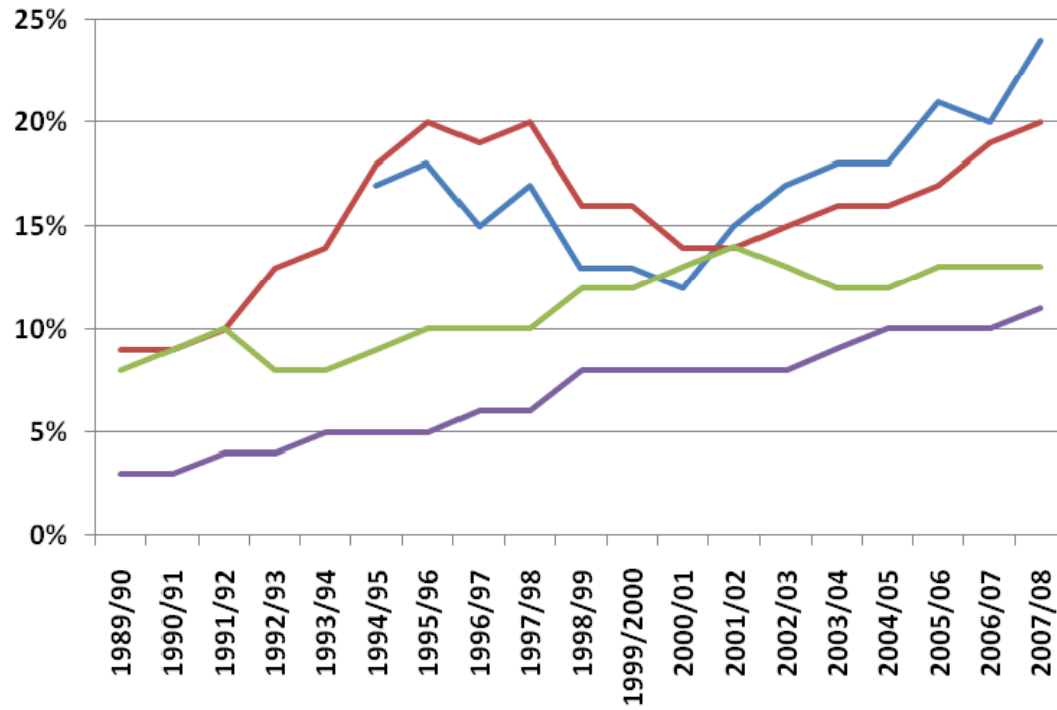


2006/07 Faculty Size

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.
- Carol Frieze, CMU, for pointing me to some of the data sources used for this talk and for giving me information on enrollment rates at CMU.
- Kathleen M. Carley, director of CASOS at Carnegie Mellon University, ISR (advisor).

