Getting more females in tech careers

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Why it matters

- Demand
- Access to great jobs
- Better solutions to the world's problems

Change is needed at all levels

- Increase the % female majors in CS and engineering
- Increase the hiring and retention of females in the tech industry
- Increase the hiring and retention of females in academia
- Increase promotion of women into highest levels of leadership in industry and academia

Hypothesis

If we

- make learning and work environments interesting and supportive,
- build confidence and community among women
- and demystify success

women will come, thrive and stay

Things we can do

- Provide fun and interesting CS and engineering courses in middle and high school
- Change the way we teach CS and engineering at the college level
- Learn how to recruit and retain more female faculty
- Learn how to recruit and retain more females in the tech industry
- Create and support networking and mentoring opportunities for females at all levels
- Increase the visibility of the issues
- Lean forward in our own careers

Did you know?

- CS is the only STEM discipline where female % of majors has declined in last 30 years (from > 30% to < 15%)
- 45% of math majors are female
- CS graduates have the best job prospects for the next two decades
- Successful institutions for female CS majors
  - CMU from 8% to 38%
  - UBC from 16% to 27%
  - MIT from 20% to 32%
  - HMC from 10% to 40%
  - Cal Poly SLO from 12% to 29%
  - UW from 15% to 30%

CRA-W programs

- DMP for undergrad CS women
- Ph.D. cohorts
- Workshops for early academic success
- Workshops for getting tenure
- Workshops for promotion to full professor

Female Taulbee Data 2008 - 2013

2002	18.8%	17.8%	17.3%	15.4%	13.1%	7.7%
year	**B.Sc**	**Ph.D.**	**New faculty**	**assistant**	**associate**	**full**
2008	12.2%	19.3%	23.9%	19.6%	13.4%	10.9%
2009	11.3%	20.8%	23.1%	24.3%	15.9%	12.3%
2010	13.8%	18.8%	26.5%	25.6%	15.9%	12.6%
2011	11.7%	18.4%	21.3%	25.3%	17.9%	12.7%
2012	12.9%	17.8%	22.4%	26%	19.5%	13.5%
2013	14.2%	17.2%	22.5%	26.6%	20%	13.7%

Getting from 10% to 40% at HMC

- Female students at HMC over all:
  - 22% in 1997
  - 32% in 2006
  - 42% in 2010
  - 45% in 2012
  - 47% in 2014
- Female faculty at HMC over all:
  - About 20% in 1997
  - 33% in 2006
  - 40% in 2010

What the CS department did…

- Changed the intro course
- Eliminated student macho behavior
- Took first year females to Hopper
- Provided summer research experiences between first and second year

Changing the intro course

- Old course: learning to program in Java
- New course: computational approaches to creative problem-solving using Python
- Grouping by prior experience
  - CS 5 gold, CS 5 black, CS 42
  - Elimination of macho behavior for CS 5 and CS 60
- Outcomes: everyone loves it, more majors, more non-majors in higher level CS classes

Sharing best practices

- BRAID project
- Scratch course (Colleen Lewis) on EdX
- CS 5 MOOC for profs available fall 2015
- Infusing computational tech into other disciplines

BRAID

- Building Recruiting and Inclusion for Diversity
- Collaboration by HMC, ABI, NCWIT, CRA, CMDIT
- 15 CS departments (plus beacons and affiliates)
- Funded by Facebook, Google, Intel, Microsoft and NSF
- UCLA research team studying outcomes

Strategies for recruiting and retaining female faculty

- Educate search committees on best practices for recruiting a diverse pool of candidates, and landing a diverse candidate
- Spousal hiring programs
- Maternity leaves
- Parent-friendly department cultures
- Access to good child-care
- Provide back-up care (BrightHorizons.com)

How to retain more females in tech careers in industry

- Anita Borg Institute study (anitaborg.org)
- Annual Hopper conference in October
- Commitment from companies to change the culture

Increase the visibility

- Ask why there are so few females
  - Faculty
  - Keynote speakers
  - Summer interns
  - Board members

- Talk about the importance of having women in tech

Discussion