

CS 10K Project

Jan Cuny, National Science Foundation November 10, 2011



The computing community faces three significant and interrelated challenges in workforce development.

- Underproduction of degrees
- Underrepresentation
- Lack of a presence in K-12



Underproduction of degrees

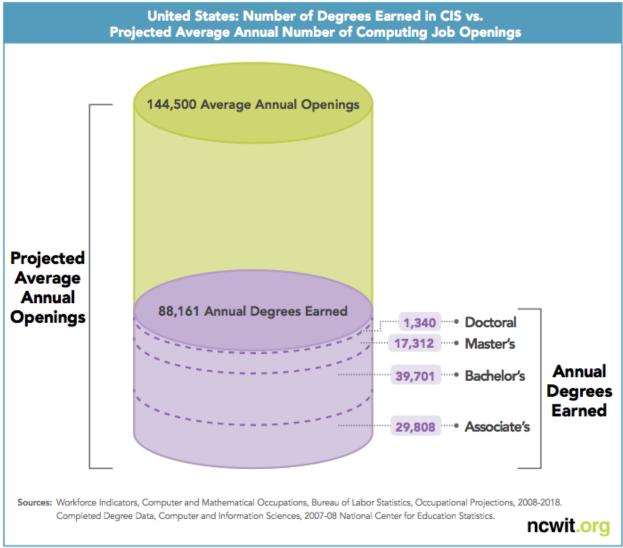


- Underrepresentation
- Lack of a presence in K-12



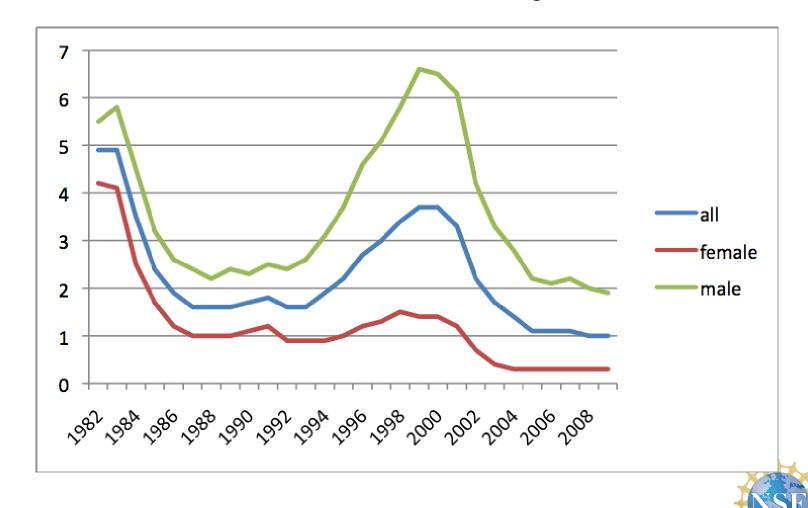
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Projected Annual Underproduction





% Intended CS majors

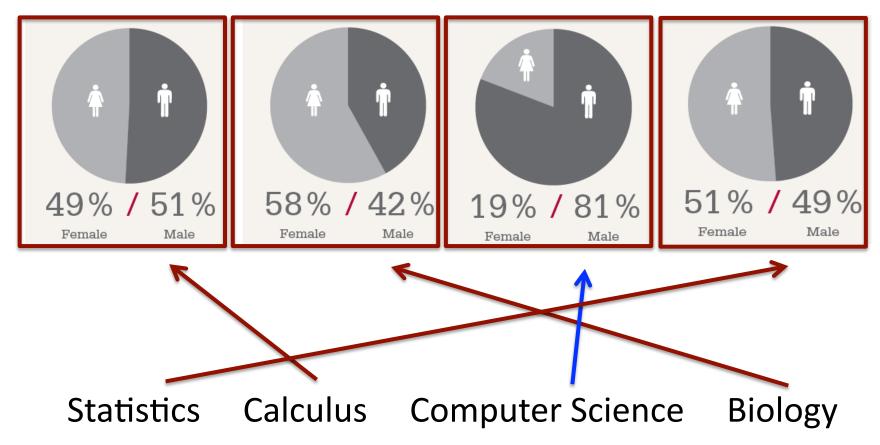


- Underproduction of degrees
- Lack of a presence in K-12



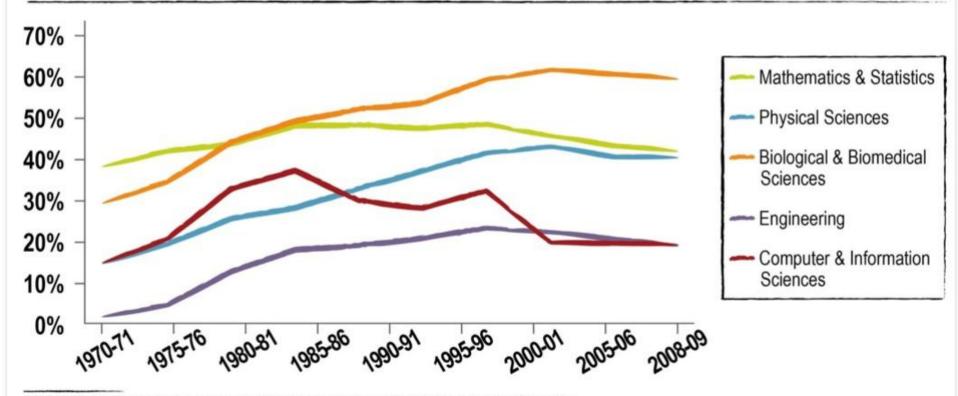
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2010 AP Gender Gap





Female % of STEM Undergrads



© NCWIT. Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System.

ncwit.org/scorecard



In 2010, underrepresented minorities

- Received just 10.6% of the bachelor degrees, 4.8% of the masters, and 3.6% of the PhDs.
- Only 49 of 1,620 Ph.D.s were awarded to African Americans or Hispanics.



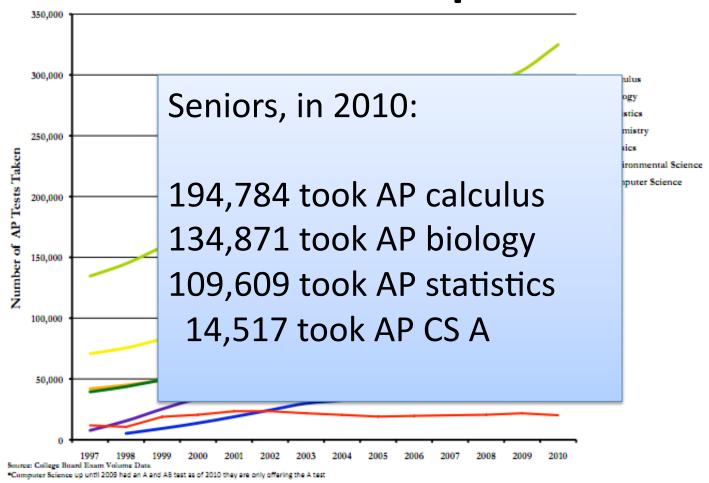
- Underproduction of degrees
- Underrepresentation
- Lack of a presence in K-12
 - No research base
 - Not taught in most schools



The percentage of U.S. high school students taking STEM courses has increased over the last 20 years for all STEM disciplines *except* computer science, where participation dropped from 25% to 19%.



High School Participation in AP STEM Disciplines



—Data: College Board, 2010 Slide: CSTA



High School is the key to both underproduction and underrepresentation.



CS 10K Project

Develop effective new high school computing curricula and get that curricula into courses taught in 10,000 schools by 10,000 well-prepared teachers by 2015.

CS Principles (AP)



Why AP?

- Often the only CS course that carries college prep credit
- Attractive to students & schools
- 2,000 CB-audited teachers
- Single point of national leverage
- Fidelity of replication



CS Principles



- Engaging, accessible, inspiring, rigorous
- Focused on the fundamental concepts of computing (CT)



Timeline

2009-2010

✓ Course framework

2010-11

- ✓ Pilot I: Five colleges
- ✓ College Survey
- ✓ College attestation/support
- **✓**2011-12
- Pilot II: Official & Unofficial



ECS & CS Principles Pilot Sites 2011-12



CS 10K Project

- Additional course curricula, materials, models
- Standards & assessments
- Teacher preparation X 10,00
- Entrée into schools

CE21

Yikes!





What all do we need?

- CS Standards
- Changes in teacher certification
- Changes in the crediting of CS courses
- CSTA Chapters
- Pre- and in-service teacher training
- Ongoing teacher support



NSF Can't do this alone: It will take the Community

- Academic departments at universities and community colleges
- —Individuals

Faculty, undergraduates, graduate students, teachers, guidance counselors, parents, IT professionals

—Companies and Foundations

Public/Private Partnership





Thanks!

Jan Cuny jcuny@nsf.gov

