WHY SO FEW?

What is the current state of underrepresentation?
What are some explanations for why?
What can we do about it?
According to Taulbee from 2010/2011 to 2011/2012

- Bachelor’s degree production increased by a double-digit percentage for the third straight year. (approx 16%)
- Percent of those graduates who are women increased from 11.7% to 12.9%
- Racial Data
  - White: 64.0%
  - Asian: 16.3%
  - Non-resident Alien: 6.8%
  - African American: 4.5%
  - Hispanic: 6.3%

Overall (2011-2012 Statistics)

- Women earn approximately 57% of all bachelor’s degrees.
  - compare that to 12.9% from the Taulbee report
- African Americans earn approximately 10.3% of all bachelor’s degrees
  - compare that to 4.5% from the Taulbee report
- Hispanics earn approximately 9.1% of all bachelor’s degrees
  - compare that to 6.3% from Taulbee report
AP Exam Enrollment 2012

<table>
<thead>
<tr>
<th></th>
<th>24,782 Total</th>
<th>4,635 Females</th>
<th>20,147 Males</th>
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</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>14</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1,650</td>
<td>5,219</td>
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<tr>
<td>Black</td>
<td>252</td>
<td>1,014</td>
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<tr>
<td>Mexican American</td>
<td>185</td>
<td>807</td>
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<tr>
<td>Other Hispanic</td>
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<td>Puerto Rican</td>
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<td>162</td>
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<tr>
<td>White</td>
<td>1,976</td>
<td>11,344</td>
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<tr>
<td>Other</td>
<td>167</td>
<td>624</td>
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<tr>
<td>Not Stated</td>
<td>145</td>
<td>647</td>
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</tbody>
</table>

Other STEM fields are at or near gender parity

The numbers

Computer science is all about math
Girls have already identified success in math and logic courses, but fail to see the future potential with those skills.
REASONS FOR LACK OF REPRESENTATION OF THESE UNDERREPRESENTED POPULATIONS

Think, pair, share- what are the contributing factors (share top three)
- Middle school level
- High school level
- AP exams
- Bachelors Degree Level
- Graduate Degree Level
- Industry
- Industry Leadership

VIDEO CREATED BY CS STUDENTS AT STANFORD

- http://sheplusplus.stanford.edu/
ABOUT 50 percent of all girls feel THAT STEM ISN'T A TYPICAL CAREER PATH FOR GIRLS

STEM: science, technology, engineering, and mathematics
Based on a survey of 850 girls done by the Girl Scouts of the United States

DESPITE the fact that about 46% of the WORKFORCE and more than 50% of COLLEGE students are female, they represent only about 35 percent of STARTUP BUSINESS owners.

As of Marissa Mayer’s appointment as Yahoo! CEO, there are only 19 FORTUNE 500 companies run by women.

WE don’t raise our daughters to be as AMBITIOUS as our sons. From early childhood through marriage we reward men for being leaders, taking risks, being competitive. We teach women as young as four to lay back, be communal. We need our boys to be as ambitious to contribute in the home and we need our girls to be as ambitious to ACHIEVE IN THE WORKFORCE.

SHERYL SANDBERG, COO, FACEBOOK
WHAT CAN WE DO?

Think, pair, share- what can help
(share your groups top ideas)

- Think at Different Levels
- Think about Different Populations
- Have both Local and Global Ideas

SMALL SUBSET OF ORGANIZATIONS PROVIDING EVENTS FOR GIRLS IN TECH

- NCWIT
- ACM-W
- Anita Borg Institute
  - Grace Hopper Celebration of Women in Computing
- Mid-Atlantic Girls Collaborative (MAGiC) Project
- National Girls Collaborative Project
  - Computer Mania
  - Girls Who Code – Summer Immersion Project
- She++
- dotdiva.org
- gemsclub.org
- Others…
SURVEY IN “UNLOCKING THE BARRIERS” (HBCU SURVEY DATA)

“What can schools do to entice more girls and minority students into computer science majors?”

There were a variety of responses which included:

- “introduce a summer program with programming and introductory math classes to be taken by freshmen before the fall begins”
- “have more relation to real world usage”
- “need better trained high school teachers teaching computing classes”
- “offer more fun programs like game or Web design”
- “more emphasis on the importance of foundations”.

MORE FROM “UNLOCKING THE BARRIERS”

Participants were asked to offer suggestions for getting more girls and minorities to become, and remain, computer science majors. The suggestions included:

- “visit high schools”
- “tell kids what CS is about”
- “offer summer programs”
- “require fewer math classes”
- “work with high schools to develop courses”
- “support students better when they get in the program”
- “have courses available the summer before freshmen year”
- “offer a pre-programming or a programming fundamentals classes”
- “offer more scholarships”
ON-LINE EDUCATION AND MOOCs

- There are theories about on-line education - improving participation by underrepresented groups.

- How will on-line education and MOOCs affect the numbers?

WE MUST WORK ON FIXING THE PIPELINE AT ALL LEVELS

- “Early intervention is critical to reversing the decline of women in technology careers. Lack of K-12 computing courses and dull computing courses at the middle school level, lack of accurate career information about computer science and the absence of female mentors in the field all play a role in inadvertently turning young women away from the industry.”
  - Gloria C. Townsend
SOME REFERENCES

- http://www.ngcproject.org
- http://nces.ed.gov/fastfacts/display.asp?id=72
- US Census data
- Unblocking the Barriers: