Towards gender balance in our field
(a few introductory comments)

Martina Barnas, Indiana University
ALL Science and Engineering – UNESCO data
Women in higher education and research -

ALL Science and Engineering Fields

(UNESCO data – global aggregate)
Figure 3.1: The leaky pipeline: share of women in higher education and research, 2013 (%)

- Female bachelor's graduates: 53%
- Female master's graduates: 53%
- Female PhD graduates: 43%
- Female researchers: 28%

Source: UNESCO Institute for Statistics estimates based on data from its database, July 2015
Women researchers-

**ALL** Science and Engineering Fields

(UNESCO data)

- Aggregate global data: 28% researchers are female
- Large regional differences
  - (inconspicuous hint: ... and discipline...)

Regional shares of female researchers, 2013 (%)

- Southeast Europe: 48.5
- Caribbean: 44.4
- Central Asia: 44.3
- Latin America: 44.3
- Eastern Europe: 40.2
- Arab States: 36.8
- European Free Trade Association: 34.2
- European Union: 33.1
- Sub-Saharan Africa: 30.0
- West Asia: 27.2
- Southeast Asia: 22.5
- South Asia: 16.9

**Spotlight on Europe**

33.1% Share of women researchers in the European Union

Note: Data for the most recent year available since 2007. For China, data cover R&D personnel rather than researchers. For Congo, India and Israel, data are based on full-time equivalents rather than head counts.

Source: UNESCO Institute for Statistics estimates based on data from its database, July 2015

Note: Data are unavailable for North America. The regional averages are based on available data and are derived by using the nearest year's data, whenever data are missing for 2013.
Some (surprising) facts about Europe:

- Some high income countries have markedly low proportion of female researchers:
  - France, Germany and Netherlands: one in four researchers is a woman
- High participation rates (45%-55%) – legacy of Soviet Block
- High participation rates in Southeast Europe

(ALL Science and Technology fields)
What about CS?
(reminder: undergrad enrollment across all fields 53%)

Fewer female graduates in computer science
An analysis of computer science shows a steady decrease in female graduates since 2000 that is particularly marked in high-income countries. Exceptions in Europe include Denmark, where female graduates increased from 15% to 24% between 2000 and 2012, and Germany, which saw an increase from 10% to 17%. These are still very low levels. In Turkey, the proportion of women graduating in computer science rose from a relatively high 29% to 33%. Over the same period, the share of women graduates slipped in Australia, New Zealand, the Republic of Korea and USA. The situation in Latin America and the Caribbean is worrying: in all countries reporting data, the share of women graduates in computer science has dropped by between 2 and 13 percentage points.

UNESCO Science Report *Towards 2030*, Chapter 3
USA: Regarding women in CS

• In year 2010/11 compared to 25 years prior:
  half as many female Bachelors while total the same

• It starts in middle school
  – All kids lose self confidence in adolescence; girls don’t recover

• Girls begin to lose confidence in:
  – Their math and science abilities
    • By age 15, girls only half as likely to feel competent in math and science as boys
    • Confidence drop precedes achievement/competence drop in math and science
  – Their bodies

• Gender wage gap
  – Women under represented in tech fields, overrepresented in fields with lower pay (e.g. education)

• ROLE OF MALE ALLIES AND ADVOCATES
• Martina Barnas
• Valeria Cardellini (Italy)
• Arny Rosenberg (USA)
• Denis Trystram (France)

• and YOU