Status of Women in Mathematics, Canada

Dr. Jenna P. Carpenter
1st Vice President, MAA
Founding Dean of Engineering
Campbell University
Outline

• Data: What do the Numbers Say?
  – Women Undergraduate and Graduate Students in the Mathematical Sciences
  – Women Faculty in the Mathematical Sciences

• Issues: What does Research Say?

• Questions

• Resources
Data: STEM UnderGrad Degrees

NHS Survey, 2011, 25-34 years old

STEM Grads
non-STEM Grads
Math/CS STEM
Science & Tech
Engr Grads

Men
Women
Data: STEM Grad Students

Math & Phys Sci MS, Canadians & PR

% Women
% Men
Data: STEM Grad Students

Math & Phys Sci, PhD, Canadians & PR

- % Women
- % Men

Year: 1999-00 to 2008-09

- Grad Students distribution over years
Data: Women Faculty
Figure 9: Faculty of Science Faculty Count by Appointment Type and Gender 2005/06 and 2011/12
Issues

• Implicit or Unconscious Bias
  – Women are always less likely to major in STEM, *regardless of mathematical ability*.
  – Only 23% of women in the three highest categories of PISA scores (out of six) chose a STEM major.
  – 39% of men in the three *lowest* categories of PISA scores chose STEM.
Issues

• Stereotype Threat
  – Students who chose STEM had higher PISA scores at age 15 than those who chose non-STEM.
  – Women who chose STEM had an average math PISA score of 588, compared with 565 for those who chose social science.
  – Men who chose STEM had a score of 597, versus 585 for those who chose social science.
  – Men tended to have higher PISA scores than women on average (589 versus 569).
Issues

• Self-Confidence and Growth Mindset
  – Students with higher math marks in high school were more likely to choose STEM at university.
  – More than 40% of women with marks of 90% to 100% chose STEM, versus 11% of women with marks under 80%.
  – Men were more likely to opt for STEM, even in lower-marks categories.
  – More than 30% of men with marks under 80% chose STEM.
  – Women with math marks of at least 90% in grade 9 or 10 were less likely to choose STEM than men with marks in the 80% to 89% range.
Resources


• The Four Frames: A Framework for Promoting Gender Equity in Organizations, WEPAN, https://www.wepan.org/news/224377/A-Framework-for-Promoting-Gender-Equity-in-Organizations.htm (adapted from CGO Insights, Briefing Note No. 1, Simmons Graduate School of Management)
Resources

• ADVANCEing Faculty Program, Louisiana Tech University, OWISE Library, 
  http://www.advance.latech.edu/index.php?option=com_content&view=article&id=35&Itemid=63

• “Engineering: Where are the Girls and Why aren’t They Here?” J. Carpenter, TEDx Monroe, Women in STEM Who Rock!, DreamBox Learning, Oct. 2015, 
References

• Gender differences in science, technology, engineering, mathematics and computer science (STEM) programs at university, Darcy Hango, *Statistics Canada*

• Where Are the Women Professors in Canada’s Math and Science Departments? M. Kuzmin, A. Motskin, Z. Gallinger, The 10 and 3, Jan. 29, 2015,
  http://www.the10and3.com/where-are-the-women-professors-in-canadas-math-and-science-departments/
References
