SC16 BoF: How to Build Diverse Teams for More Effective Research

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WHPC
WOMEN IN HIGH PERFORMANCE COMPUTING

ABOUT US

The Women in HPC (WHPC) network was created with the vision to encourage women to participate in the HPC community by providing fellowship, education, and support to women and the organizations that employ them.

Through collaboration and networking, WHPC strives to bring together women in HPC and technical computing while encouraging women to engage in outreach activities and improve the visibility of inspirational role models.
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Examples of research documenting the benefits of diversifying teams.

- **Gender-heterogeneous working groups produce higher quality science.** A study within the National Center for Ecological Analysis and Synthesis found that peer-reviewed publications with gender-heterogeneous authorship teams received 34% more citations than publications produced by gender-uniform authorship teams.[1]

- **Gender diversity at top management levels improves companies' financial performance.** An analysis of 2,360 global companies in a variety of industries found that companies with women on their executive boards outperformed companies with all-male executive boards. Gender-diverse management teams showed superior return on equity, debt/equity ratios, price/equity ratios, and average growth.[2,4]

- **Gender-balanced teams demonstrate greater innovation and productivity.** A study surveyed 1,400 team members from 100 teams at 21 companies in 17 countries. The study found that gender-balanced teams were the most likely to experiment, be creative, share knowledge, and fulfill tasks.[3,4]

1 Campbell LG, Mehtani S, Dozier ME, Rinehart J (2013) Gender-Heterogeneous Working Groups Produce Higher Quality Science. PLoS ONE 8(10): e79147. doi:10.1371/journal.pone.0079147
2 Rohner, U. and B. Dougan (2012). Gender diversity and corporate performance. Technical report, Credit Suisse Research Institute, Zurich.
3 Lehman Brothers Center for Women in Business. (2008). Innovative potential: Men and women in teams, 6.
4 Barker, L., Mancha, C., & Ashcraft, C. (2014). What is the Impact of Gender Diversity on Technology Business Performance? Research Summary, 8.

Common **assumptions** affecting progress towards diversifying teams followed by documented **realities**:

ASSUMPTION. **"There are no women or minorities in our field, or no qualified women or minorities."**
REALITY. Though women and minority applicants may be scarce in some fields, it is rarely the case that there are none. It may help to present actual data on the numbers and percentages of women in your discipline. Such data are available from the National Science Foundation's (NSF) "Survey of Earned Doctorates (SED)" available on its SED Tabulation Engine or from various professional organizations.[5]

ASSUMPTION. **"Recruiting women & minorities diminishes opportunities for white males."**
REALITY. A study examining the experiences of scholars who earned doctorates and won prestigious fellowships (Ford, Mellon, and Spencer) found no evidence of discrimination against white men. Indeed, white men who had some expertise related to diversity had a significant advantage in the job market.[5,6]

ASSUMPTION. **"Women end up leaving our organization anyway due to family obligations."**
REALITY. One large-scale study found that after about 12 years, approximately 50% of women had left their jobs in STEM fields—mostly in computing or engineering.[7] Only 20% of the women who left large private sector companies left to take time out of the workforce. Research suggests that women are not exiting these careers primarily for family concerns—and even when they are, they might have made different "choices" if more flexible options to support these competing responsibilities had been available.[8]

ASSUMPTION. **"It starts early with young girls' interest in math and science…the problem is so massive that I don't believe we can have any meaningful effect."**
REALITY. Despite these larger societal barriers, there are still significant changes that organizations can, and do, make to increase diversity.[9] See resources below for more information.

5 Fine, E. (Women in S. & E. L. I., & Handelsman, J. (Women in S. & E. L. I. (2012). Searching for Excellence & Diversity: A Guide for Search Committees at the University of Wisconsin-Madison. Madison, Wisconsin.
6 Smith, Achieving Faculty Diversity, 4, 95.
7 Glass, J.L., Sassler, S., Levitte, Y., & Michelmore, K.M. (2013). What's so special about STEM? A comparison of women's retention in STEM and professional occupations. Social Forces, 92(2), 723-756.
8 Ashcraft, C., Mclain, B., & Eger, E. (2016). WOMEN IN TECH : THE FACTS 2016 UPDATE // See what's changed and what hasn't.
9 Ashcraft, C., Dubow, W., Eger, E., Blithe, S., & Sevier, B. (2013). Male Advocates and Allies: Promoting Gender Diversity In Technology Workplaces.

Additional resources for **action** and further **study**:

- Characteristics of Scientists and Engineers in the United States with U.S. Doctorates, www.nsf.gov/statistics/doctoratework
- CIC Doctoral Directory, www.cic.net/students/doctoral-directory
- Doctoral Scientists and Engineers Profiles, www.nsf.gov/statistics/doctoralprofiles
- National Center for Women in Information Technology (NCWIT), www.ncwit.org
- NSF – National Science Foundation: Science and Engineering Doctorate Awards, www.nsf.gov/statistics/doctorates
- WebCASPAR and the Survey of Earned Doctorates (SED) Tabulation Engine, https://webcaspar.nsf.gov and https://ncses.norc.org/NSFTabEngine
- Women in Science and Engineering Leadership Institute (WISELI), http://wiseli.engr.wisc.edu/pubtype.php