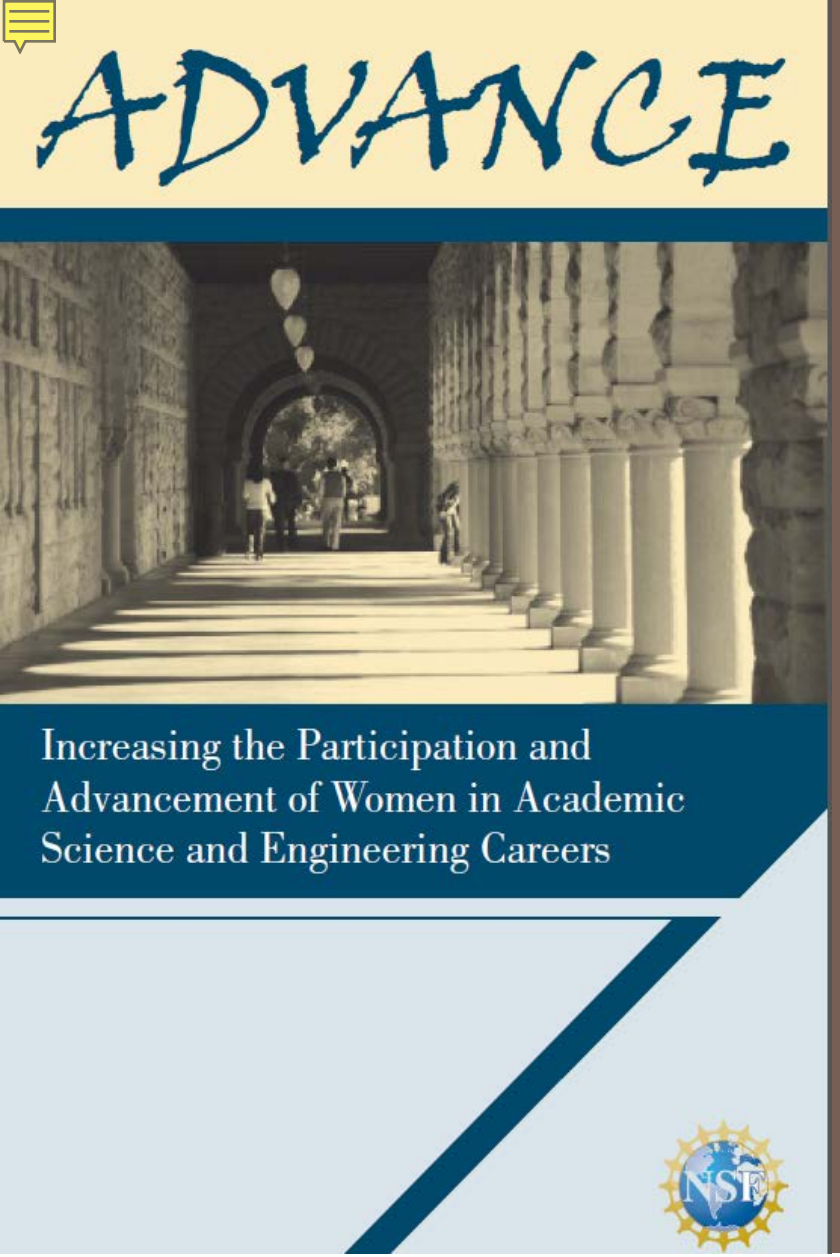


SYSTEMIC CHANGE TO *PROMOTE THE PARTICIPATION OF WOMEN IN STEM*

Gender Summit April 29, 2016

Session: Starting a career in Exact Sciences: How to promote the participation of women?

Dr. Jessie DeAro ADVANCE@nsf.gov

U.S. National Science Foundation's ADVANCE Program

ADVANCE Goals

- To develop systemic approaches to increase the representation and advancement of women in academic STEM careers
- To contribute to and inform the knowledge base on gender equity in academic environments
- To create positive and sustainable change in academic climates

ADVANCE Grant Types

- Institutional Transformation projects - $3.5M over 5 years at one institution
- Adaptation projects - $1M over 3 years at one institution
- Partnership projects - $1M over 3 to 5 years among multiple institutions and organizations

Systemic Change

ADVANCE focuses on “fixing” organizations rather than “fixing” women.

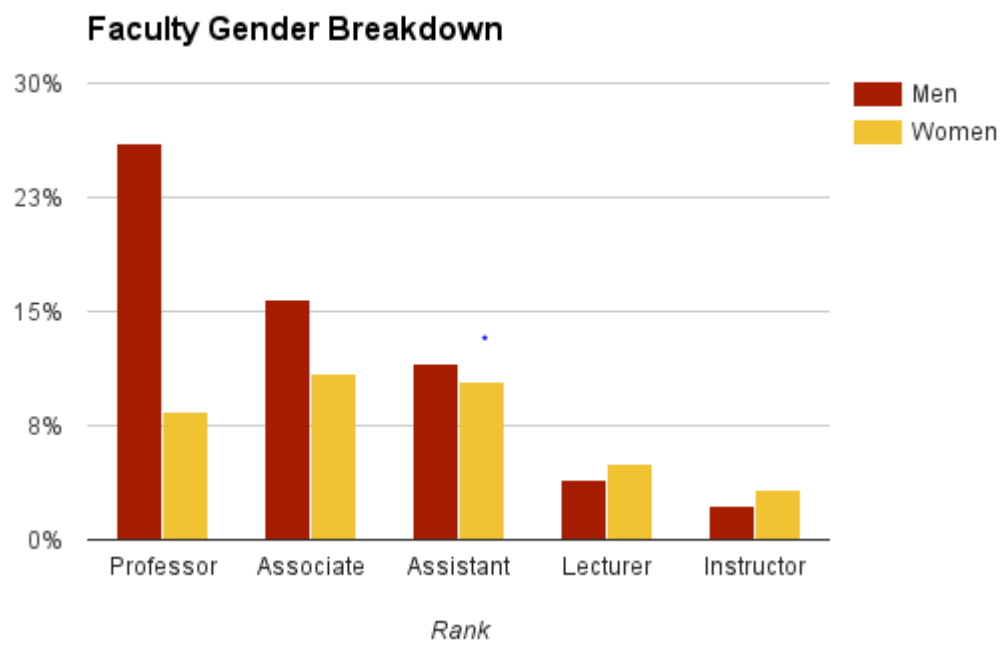
The goal is **long-term change** and **enhanced gender equity** for women in STEM academic careers within institutions of higher education.

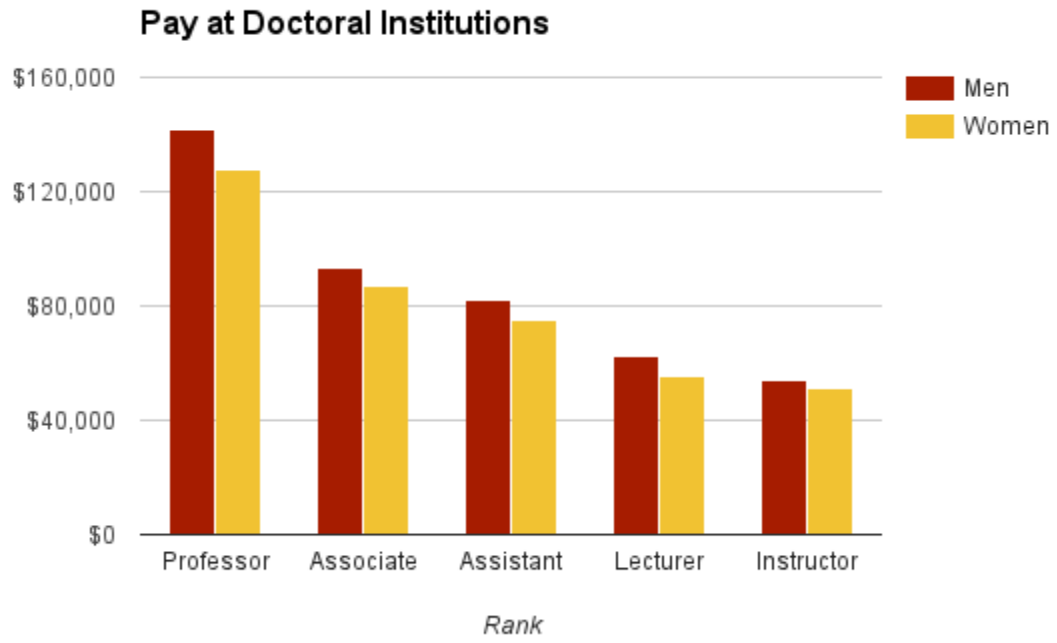
Systemic issues within institutions of higher education that impact women’s inclusion and success in STEM academics include:

- Unclear, inconsistent, and ambiguous recruitment, retention, tenure, and promotion policies and practices
- Lack of work-life balance and career flexibility policies and programs
- Gaps in salaries and access to resources
- Differential responsibility for institutional service and lack of credit for this work
- Data collection and reporting is not disaggregated or used by leadership
- Lack of accountability of institutional leadership for diversity

Gender Equity

- Gender equity is not the same as broadening participation in STEM - though it may serve this goal
- An example of an equity issue in STEM academics:



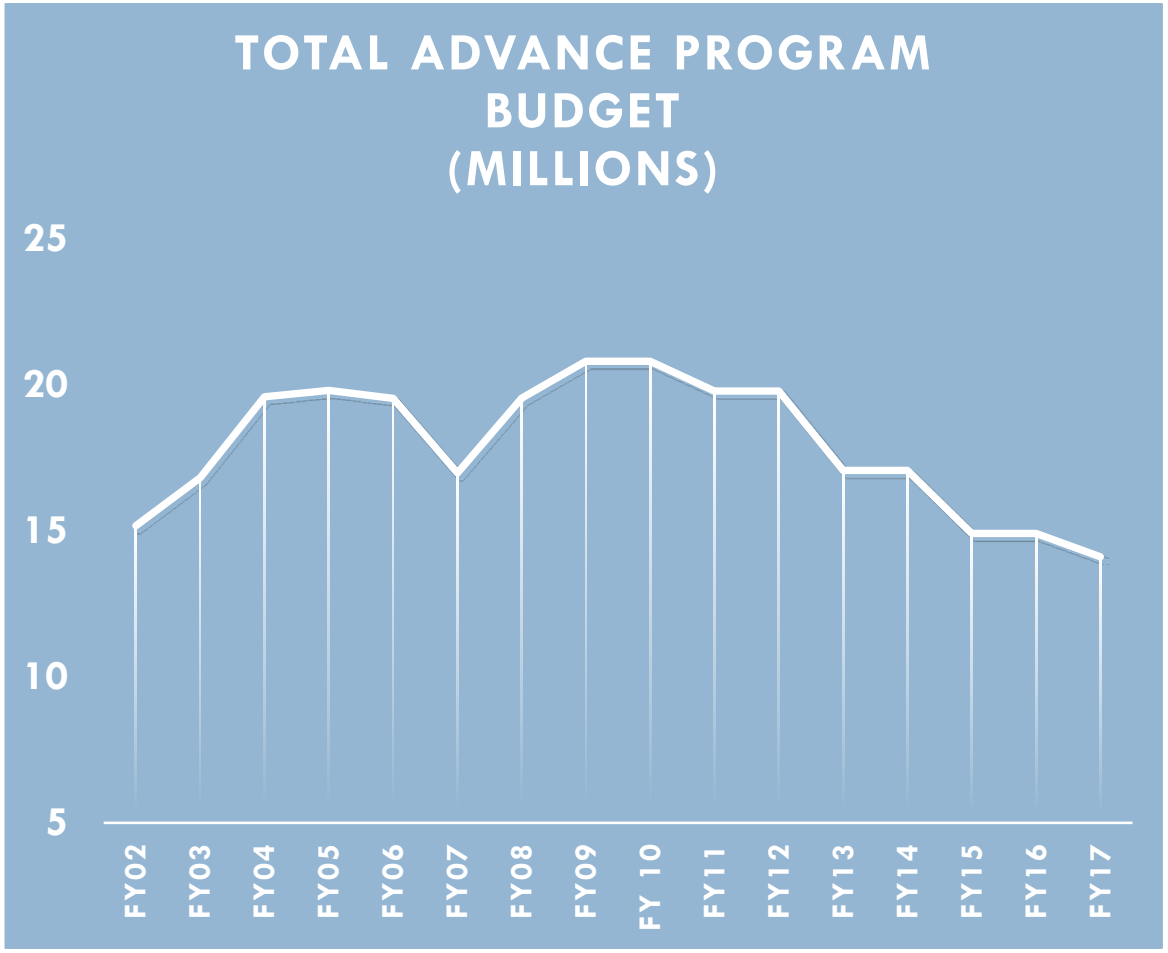


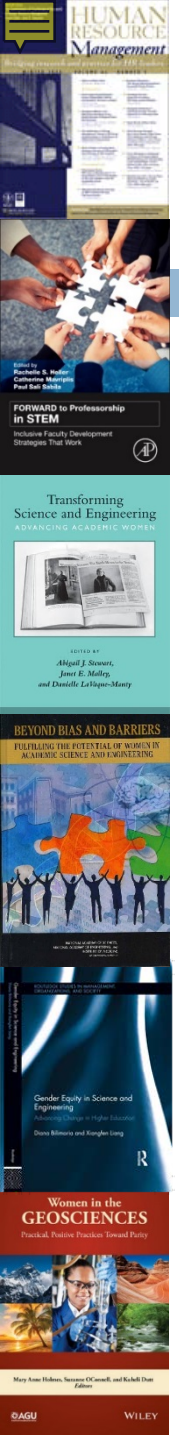
AAUP Faculty salary survey data U.S. doctoral institutions 2014-2015

U.S. National Science Foundation's ADVANCE Program

ADVANCE Portfolio 2001-2015

- Institutional Transformation awards
  - 61 (1.8%) of non-profit IHEs in U.S.
  - 28% of very high research IHEs
- *Adaptation* and *Partnership* awards to share promising practices
  - 99 non-profit IHEs in U.S.
  - 10 STEM professional societies





Organizational Strategies that Work

- **Improvement of Institutional Structures**
  - Institutional data collection systems; Creating expectations for public reporting of data; Establish processes for using data in decision making; Review and revision of policies, practices, and processes (hiring, tenure, promotion and others) for transparency, clarity, and consistency
- **Equitable Career Support for Individuals**
  - Formal mentoring programs; Faculty leadership development; Research network development; Policies to support faculty during life events and critical junctures
- **Work Life Support Policies**
  - Dual career offices and policies; flexible academic career policies; dependent care policies; other work-life balance programs; training for leadership on the implementation of these policies and programs
- **Empowerment of Individuals and Leaders**
  - Training and awareness building of gender equity issues (implicit bias, micro-aggressions, stereotype threat, tec.); Creating tools and resources for faculty and leadership to use in decision making; Creating accountability measures for leadership and decision makers; combating isolation and creating networks for women in STEM

ADVANCE Institutional Transformation Example

- The University of Michigan STRIDE (Strategies and Tactics for Recruiting to Improve Diversity and Excellence) Committee
  - Provides training on the unconscious bias literature for senior STEM faculty who work with recruitment committees and promotion and tenure committees is very effective
  - Reduces influences of implicit bias on search committees and promotion and tenure committees
- Outcomes
  - A significant increase in the number of women hired in science and engineering tenure track positions (14% in 2001 – 34% in 2006)
  - The committee continues to be used at Michigan 10 years after funding.
  - This model has been adapted by many other institutions in the U.S. and internationally (mostly without ADVANCE funds)
  - Training and toolkits for others to use available at http://advance.umich.edu/stride.php

UNIVERSITY OF MICHIGAN

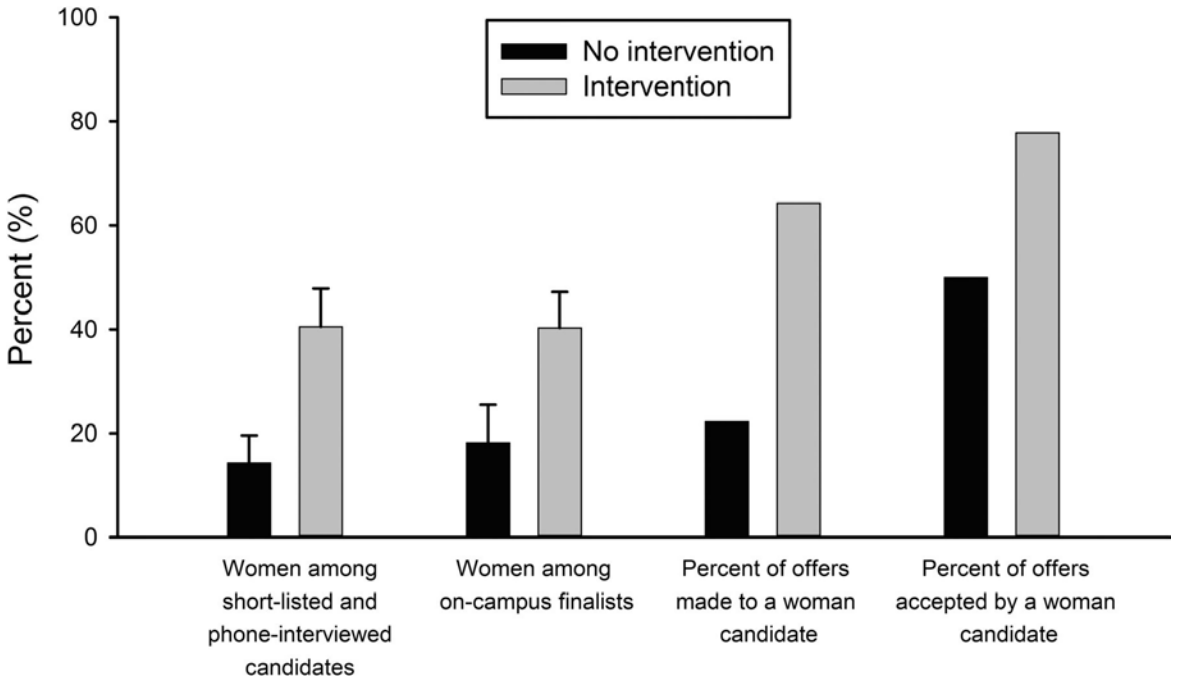
ADVANCE Institutional Transformation Impact

Montana State University studies:

Department level interventions had impact on hiring of women

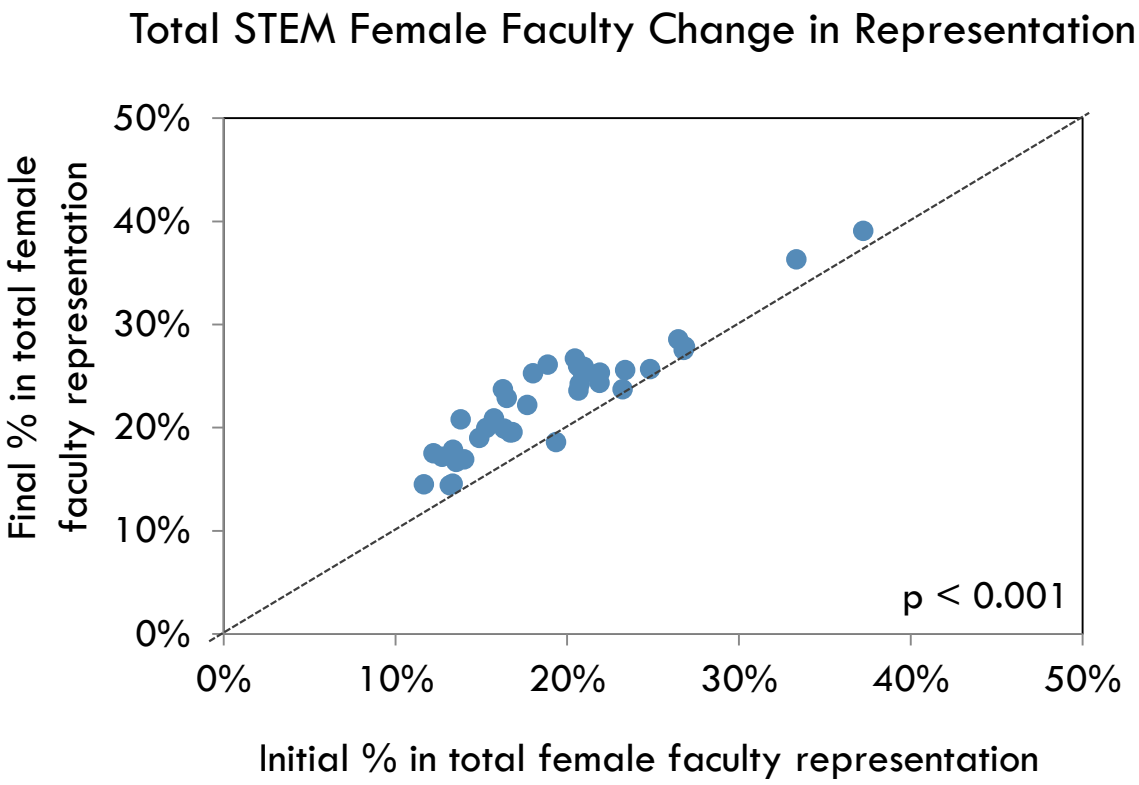
- Intervention: three stages including implicit bias training
- Results compared to control departments:
  - 6.3 times more likely to make an offer to women
  - Women were 5.8 times more likely to accept an offer

Another 2015 study revealed the acceptance of implicit bias research differs among men and women.

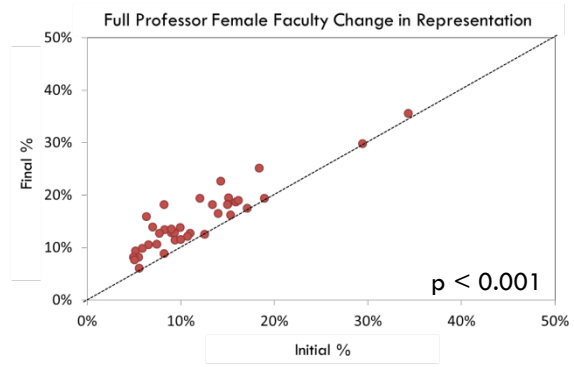


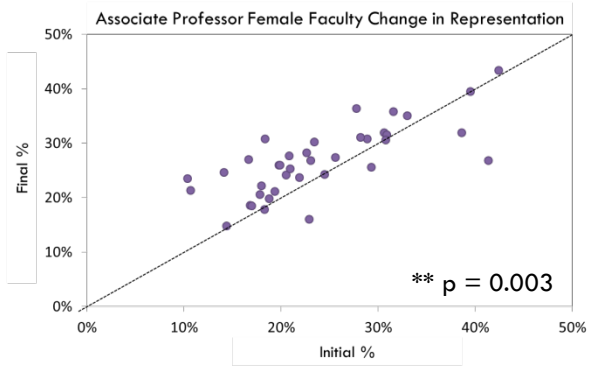
Jessi L. Smith et al. BioScience 2015;65:1084-1087

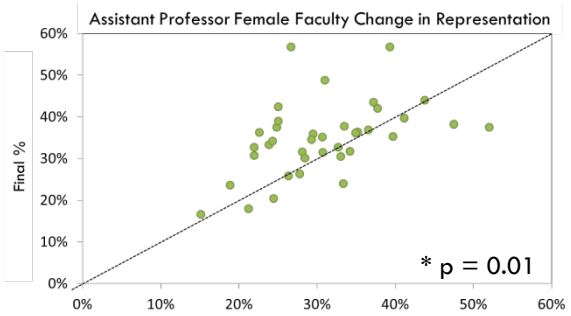
ADVANCE IT - Change in Percent Female Faculty



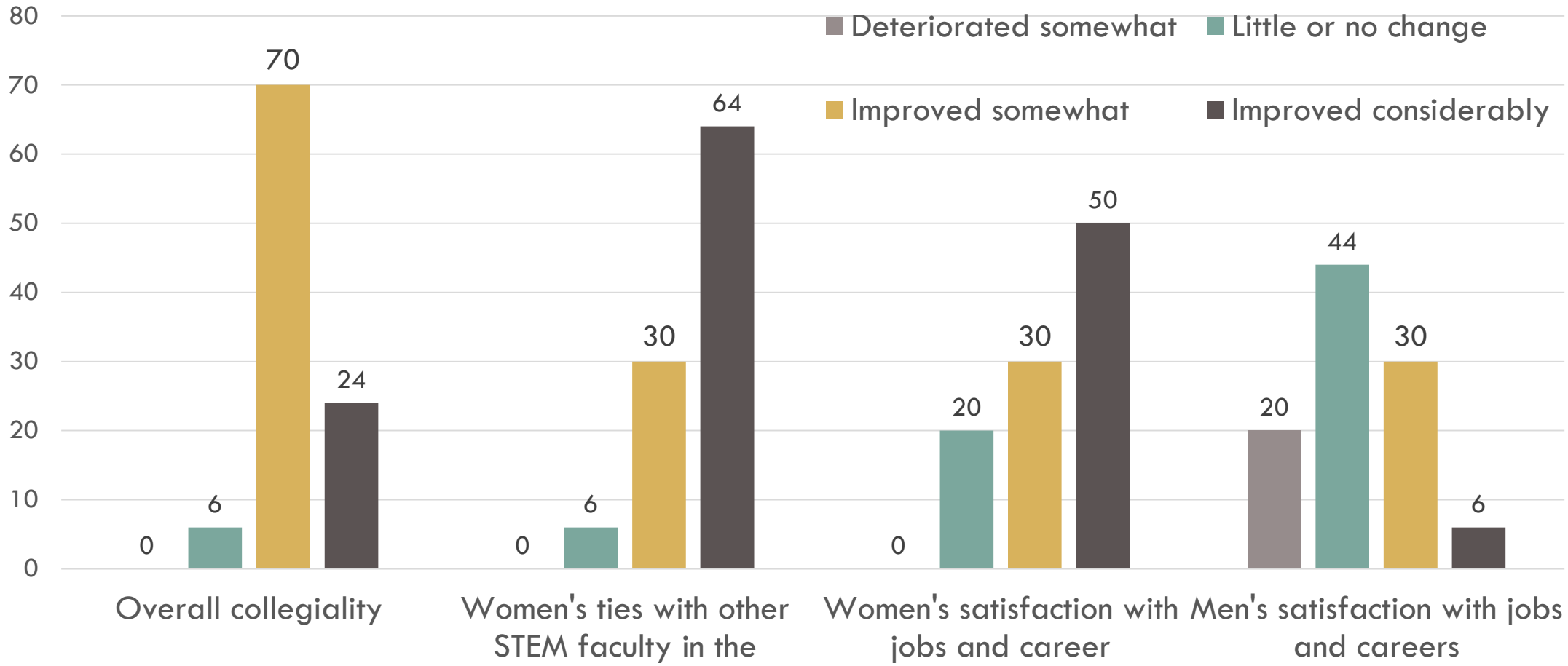
ADVANCE IT Institutions Cohorts 1-4 (n=41)







ADVANCE IT - Change in Faculty Climate and Culture



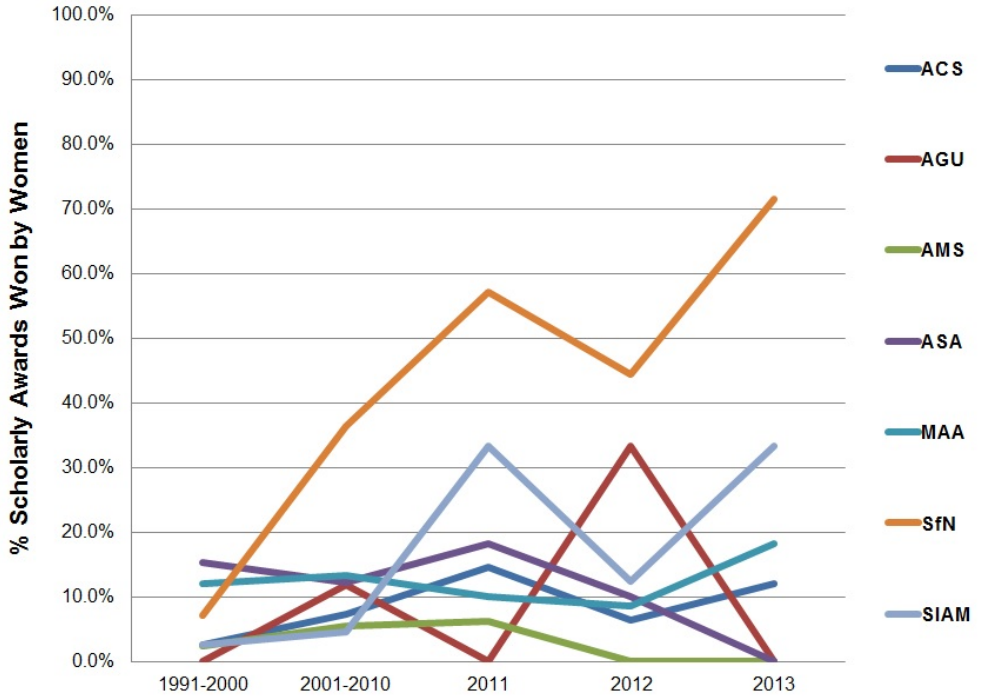
**Outcomes provided by the WESTAT program evaluation of ADVANCE-measured in the first 19 ADVANCE IT awardee institutions only.*

Cohorts 1-2 (n=19)

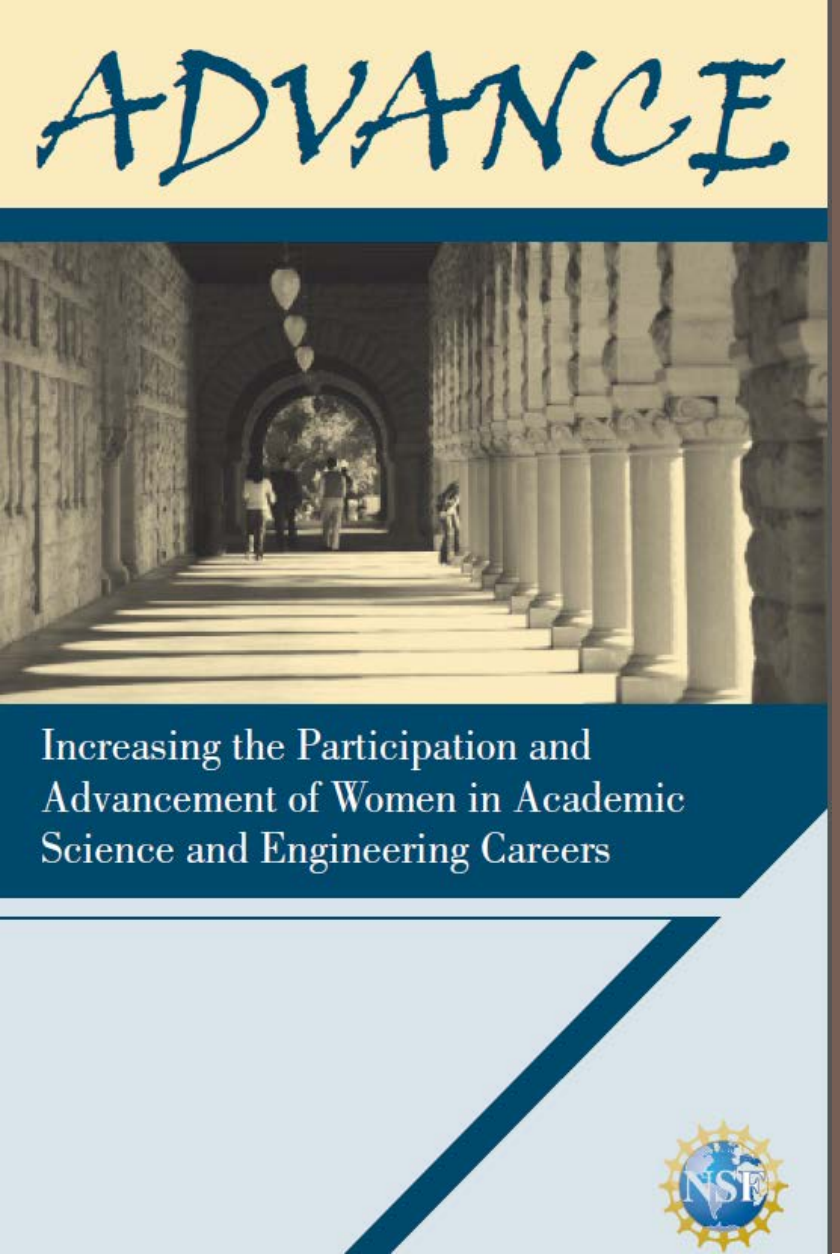
Disseminating Lessons Learned from ADVANCE

- The Association for Women in Science (AWIS) worked with 18 scientific societies to provide implicit bias training for awards committees and review award guidelines.

Overall the societies that worked with AWIS made changes to the language in the call for nominations and the selection process and have seen increases in the percent of awards made to women in their disciplines.



Data from seven societies working with AWIS for three years (from www.AWIS.org)



THANK YOU!

ADVANCE portals created by grantees:

www.startegictoolkit.org

www.portal.advance.vt.edu/

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Indicators of Transformation

Area of Accomplishment	Accomplishment	Description
STEM Women's Representation	**49%** increase in women STEM faculty	The percentage of women among STEM faculty increased by 49% between 2001 and 2008 (from 16% to 24% of faculty). Compared to 24% increase over same time period in SDR comparison group (from 22% to 27% of faculty).
STEM Hiring	**40%** increase in new women STEM hires	The percentage of women among new STEM hires increased by 40% in the first six years of the grant (from 25% to 35% of new hires).
Women in Leadership	**64%** increase in STEM women in leadership	The percentage of STEM women serving in leadership positions increased by 64% between 2001 and 2008 (from 10% to 16% of leadership).

Disseminating Lessons Learned from ADVANCE

- University of Washington LEAD-it-Yourself! (LiY!) toolkit (PAID1310305)
  - Online open source toolkit that provides planning and instructional materials to enable institutions to run leadership training workshops (train the trainers).
  - Builds on work done as part of the ADVANCE IT 0123552 and PAID 0619159
- University of Wisconsin-Madison "Bias Literacy" workshop
  - With an NIH grant in 2010 WISELI created and studied the effectiveness of a bias literacy workshop to educate STEMM (science, technology, engineering, mathematics, and medicine) faculty about implicit gender bias in academia. The result is a "workshop in a box" that contains everything needed for facilitators to implement a 2.5 hour workshop.
  - Builds on work done as part of the ADVANCE IT 0123666

WISELI Online Bookstore