

“How Successful Have Initiatives Aimed at Increasing Gender Equity in the STEM Disciplines Been in The United States?”

Shobha K. Bhatia



National Initiatives to Increase Women Faculty in STEM

National Science Foundation(NSF)ADVANCE Institutional transformation Grants

- Many Private and Public Universities received ADVANCE Institutional Transformation(IT) Awards, Started in 2001
- Multi Institutional ADVANCE Award
 - ❖ Women in Engineering Leadership Initiative (WELI), Effort started in 2000, First leadership meeting started in 2002

NSF ADVANCE Institutional Transformation Grants

Goals

- Innovative, *systemic* organizational approaches to transform institutions of higher education in ways that will increase the participation and advancement of women in STEM academic careers
- Comprehensive programs for institution-wide change
- Started in 2001

Most grants between \$3 million and \$5 million (with various institutional matching funds)

Initiatives to Increase Women in STEM

Women in Engineering Leadership Initiative (WELI)

- Established following Leadership Conference held in Winter Park, CO in 2000.
- Awarded an ADVANCE Institutional Transformation Award to offer similar conferences and workshops to engineering faculty
- WELI has offered six leadership workshops attended by over 200 engineering faculty

WELI

WELI Goals

- Increase the number of women in academic leadership positions.
- Accelerate and enhance the success of women in academic leadership positions.
- Establish and maintain a support network for women engineering faculty leaders.

Baseline Statistics, 2002 (Top 50 Research Universities)



TABLE 4. Female Science and Engineering Faculty by Rank (FY2002)

Discipline	Assistant Professor	Associate Professor	"Full" Professor	All Ranks
Chemistry (FY2003)	4.1%	3.0%	5.1%	12.1%
Math	2.8%	2.4%	3.1%	8.3%
Computer Science	2.8%	3.8%	4.0%	10.6%
Astronomy (FY2004)	3.4%	2.6%	6.5%	12.6%
Physics	1.5%	1.4%	3.8%	6.6%
Chemical Engineering	3.8%	4.0%	2.7%	10.5%
Civil Engineering	4.8%	3.2%	1.8%	9.8%
Electrical Engineering	1.8%	2.5%	2.2%	6.5%
Mechanical Engineering	2.5%	2.3%	1.8%	6.7%
Economics	4.3%	3.0%	4.2%	11.5%
Political Science	8.6%	8.2%	6.7%	23.5%
Sociology	12.6%	11.0%	12.2%	35.8%
Psychology	9.6%	8.4%	15.4%	33.5%
Biological Sciences	6.3%	5.4%	8.5%	20.2%

Effectiveness: NSF Advance

ADVANCE Institutional Transformation Awards:

Cohort 1 (2001)

- CUNY Hunter College
- University of Colorado at Boulder
- Georgia Tech
- University of Michigan (Ann Arbor)
- New Mexico State University
- University of Puerto Rico at Humacao
- UC Irvine
- University of Washington
- University of Wisconsin-Madison

Cohort 2 (2003)

- Case Western Reserve University
- University of Montana
- Columbia University
- University of Rhode Island
- University of Alabama at Birmingham
- University of Texas-El Paso
- Kansas State
- Utah State University
- University of Maryland, Baltimore County
- Virginia Tech

NSF ADVANCE: CUNY Hunter

- Size:15,566 Undergraduates,5,743 Graduate Students,544 Full time Faculty
- NSF funding used to fund creation of Gender Equity Project

GEP Initiatives

- Reviewing policy and changing procedures that disadvantage women.
- Educating faculty and administrators about how gender affects careers.
- Uncovering and correcting hidden and subtle biases.
- Measuring and reporting gender equity benchmarks.
- Sponsoring talented beginning and mid-level women scientists.
- Increasing recognition and leadership of outstanding women scientists.

Current GEP Initiatives

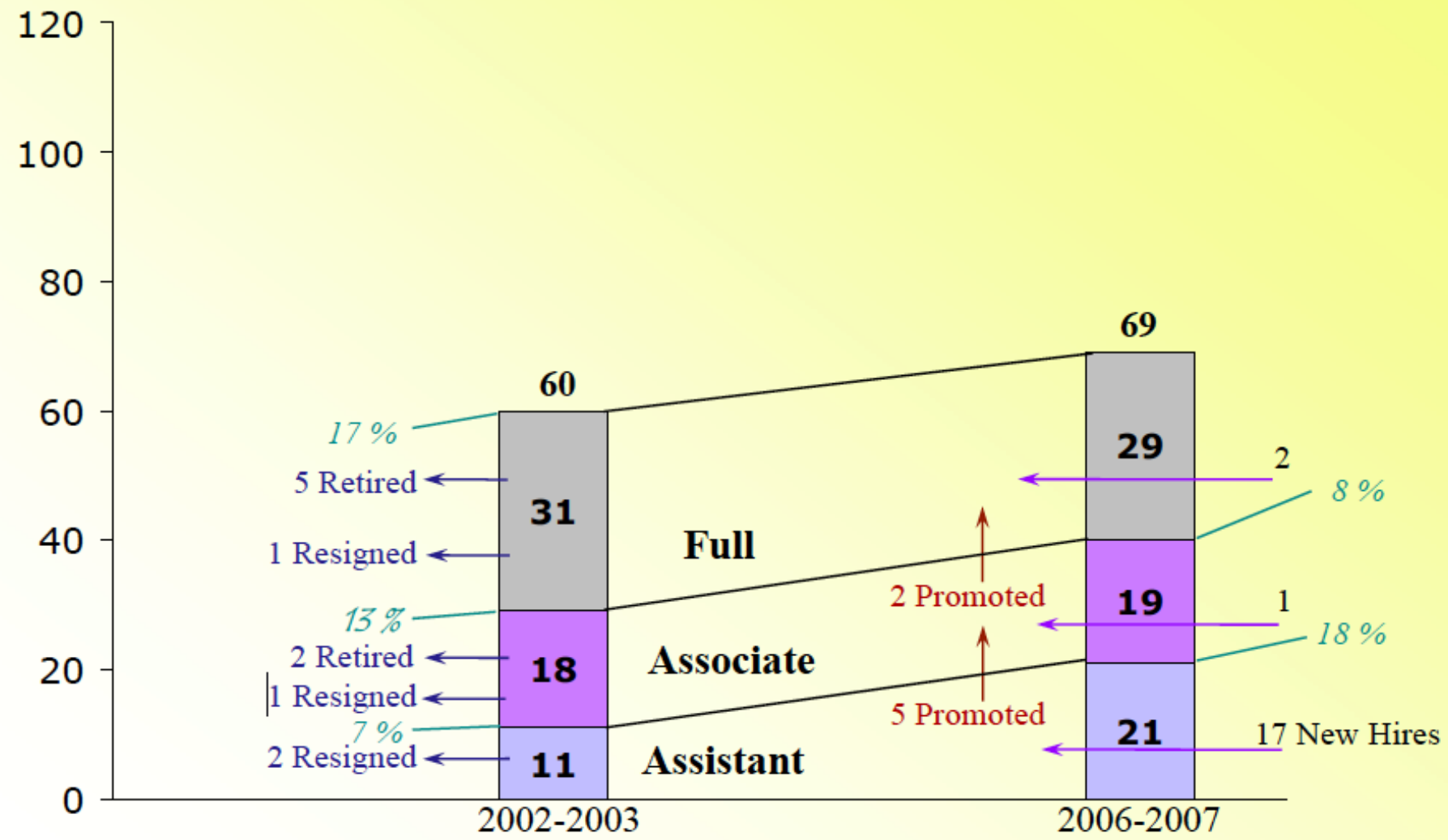
- Grant writing assistance program
- Workshop for junior faculty
- Make awards to women scientists.
- Identify/invite sponsors.
- Develop colloquia on women in science.
- Assess and evaluate program.
- Educate science departments & administration about gender schemas, subtle biases, and departmental gender disparities.
- Develop a training manual.
- Assess and evaluate training.

GEP Analysis

- Survey salaries, start-up packages, time in rank, grant support, and office/lab space for gender disparities.
- Publish annual report of benchmarks.
- Review recruitment, retention, and promotion policies.
- Establish/modify policies to ensure gender equity.
- Develop measures via interviews and surveys.
- Correct imbalances via new procedures.

Faculty Flux* at Hunter

Female science faculty 2002-2007



NSF ADVANCE: New Mexico State

- Size-14,698 Undergraduate,3,799 Graduate,1,219 Faculty
- Between 2002 and 2008, the strategies used doubled the number of female scientists hired into faculty positions at NMSU from 17% to 34%
- In 2006, New Mexico State University established ADVANCE as a permanent program at the Teaching Academy.
 - This ongoing program has a broader focus, serving all faculty members, especially underrepresented faculty

NSF ADVANCE: New Mexico State University

*All Data Provided by the Office of Institutional Research, Planning, and Outcomes Assessment (IRPOA) unless otherwise noted

Table 1: New Mexico State University Faculty by Category, Fall 2008

Faculty Category	All NMSU			STEM and SBS Departments			Social and Behavioral Science Departments			ADVANCE (STEM) Departments		
	All	Female	% Female	All	Female	% Female	All	Female	% Female	All	Female	% Female
Tenured/ Tenure Track	582	198	34.0%	290	73	25.2%	46	20	43.5%	244	53	21.7%
Temporary / Non-Tenure Track	141	92	65.2%	51	29	56.9%	13	8	61.5%	38	21	55.3%
Total	723	290	40.1%	341	102	29.9%	59	28	47.5%	282	74	26.2%

¹For a complete list of Social and Behavioral Science Departments and ADVANCE (STEM) Departments, see Table 3.

NSF ADVANCE: UC Irvine

- **Size:** 22,122 Undergrad, 5,509 Graduate, 2,685 Faculty
- **Goals: Promoting a Faculty Culture of Inclusion through Gender Equity and Diversity in**
 - Recruitment
 - Retention and Advancement
 - Leadership Opportunities

NSF ADVANCE: UC Irvine

- **Equity Advisor Model Implemented in All Eleven Schools and Department of Education**
 - Faculty Assistant to the Dean
 - 3-year term w/ stipend Participate in recruitment process
 - Coordinate mentoring programs Proactively investigate inequities
- **Gender Equity Indicators**
 - Survey of Faculty and Chairs Equity Advisor Annual Reports
 - Start-up Packages in Selected STEM Schools
 - Selection of Final Candidates in Selected STEM Schools
- **Best Practices, Career Tools, Family Friendly Resources**
 - Search Committee Workshops Mentoring:
 - Instructional DVD for Gender
 - Equity Sponsored Lecturers and Events: Hastings College of Law Professor Joan Williams, University of Michigan CRLT Players

NSF ADVANCE: UC Irvine

Initiatives:

- Implement recommendations of the UC President's Task Force for Faculty Diversity
- Coordinate campus Scholarship on Diversity FTE Call and Program
- Develop \$16m ADVANCE fundraising priorities for the campus comprehensive campaign
- Promote UC President's Postdoctoral Fellowship
- Hiring Incentive Program - eight fellows hired since 2003

NSF ADVANCE: University of Washington



- Size: 42,907 Undergrad, 30,790 Graduate, 5,803 Faculty
- Grant used for creation of Center for Institutional Change (CIC).
 - The CIC focuses on the implementation of programs designed to eliminate existing barriers and to precipitate cultural change at both the departmental and the institutional level.

NSF ADVANCE: University of Washington

- The Center for Institutional Change focus on
 - Leadership development for current chairs, deans, provost, and president
 - SEM department cultural change
 - Examination of UW policies for equity and policy transformation
 - Mentoring women in SEM for leadership
 - Transitional support for women faculty in SEM

NSF ADVANCE: University of Washington

- 28.3% increase in the number of tenured or tenure-track women faculty (60 to 77) (Fall 2001 to Fall 2006)
- 17.8% increase in number of women full professors (28 to 33) (Fall 2001 – Fall 2006).
- Through AY04-05, more than 37% of the women in the faculty interview pool were offered positions, resulting in 16 new women faculty through Fall 2004.
- ADVANCE CIC staff has met with over 25 women faculty candidates
- *Quarterly Leadership Workshops for UW Department Chairs and Emerging Leaders*

Source:

http://www.engr.washington.edu/advance/resources/UW_ADVANCE_results_overview.pdf

NSF ADVANCE: Case Western Reserve University

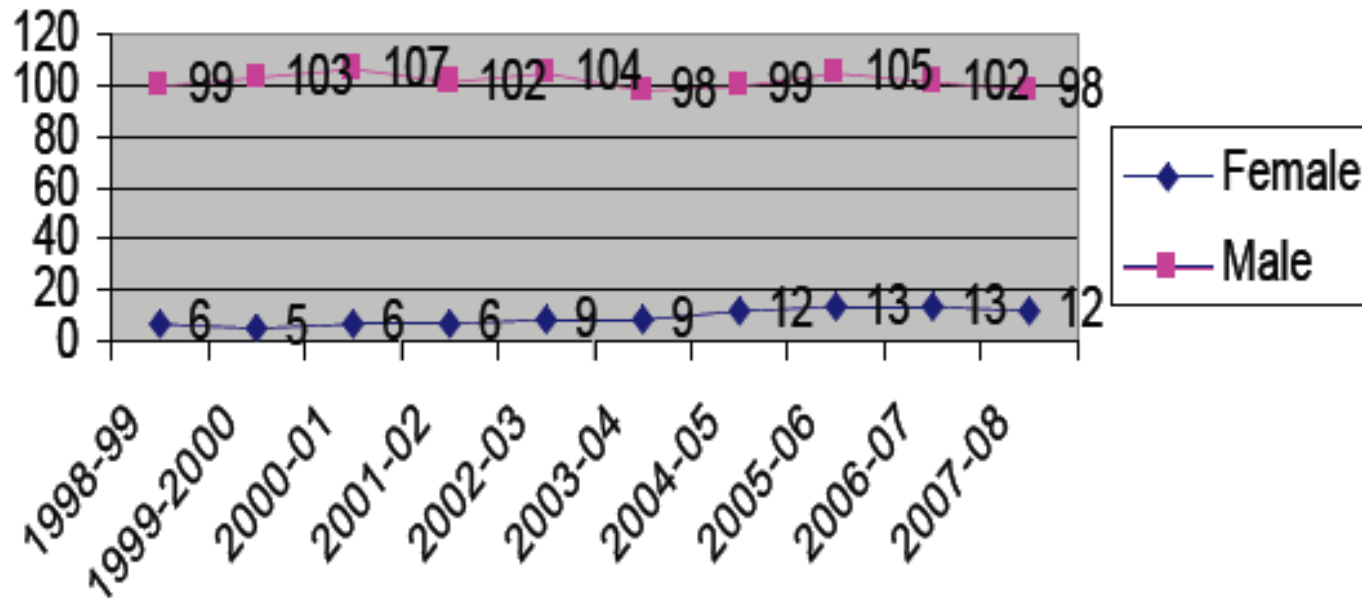
- Size: 4,356 Undergraduates, 5,458 Postgraduates, 2,400 Faculty
- First private university to be awarded the NSF-ADVANCE Institutional Transformation Grant
- Grant used to create Academic Careers in Engineering & Science (ACES) program
 - enhanced transparency in faculty recruitment, advancement, development, and retention policies and improved accountability and effectiveness at the school/college and departmental level.

NSF ADVANCE: Case Western Reserve University

- ACES Initiatives
 - NSF-ACES Executive Coaching Initiative
 - Advance Opportunity Grants
 - provide small amounts of supplemental support of current or proposed projects and activities
 - Hotline Coaching
 - Provost Leadership Retreat
 - Undergraduate summer research program

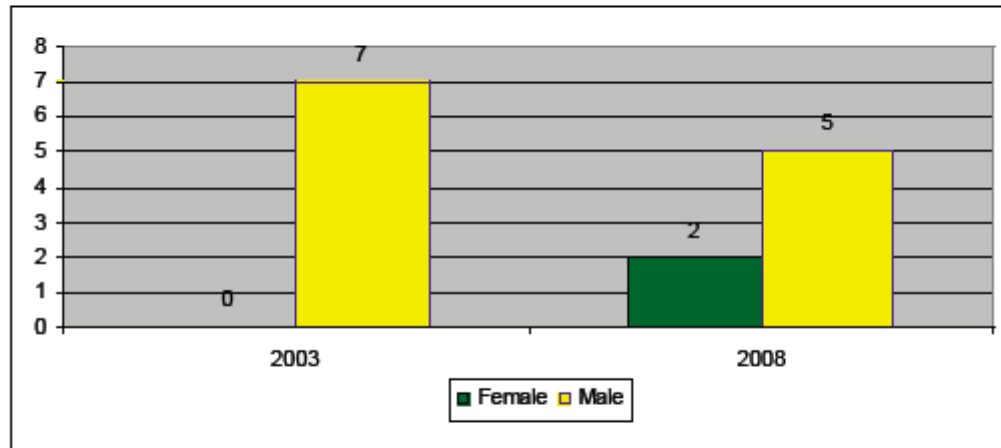
NSF ADVANCE: Case Western Reserve University

Figure 1: Tenure-Stream Positions by Gender for the Case School of Engineering, AY 1998-99 to AY 2007-08



NSF ADVANCE: Case Western Reserve University

Figure 2: Number of Department Chairs by Gender for the Case School of Engineering, 2003-2008



Of the 7 departments in the Case School of Engineering, the number of female department chairs increased from 0 in 2003 to 2 in 2008. In 2008, the female department chairs were from the Mechanical and Aerospace Engineering department and the Electrical Engineering and Computer Science department.

NSF ADVANCE: Columbia University

- Size:
 - 7,169 Undergraduate
 - 17,065 Postgraduate
 - 3,566 Faculty
- Grant created ADVANCE Program within the Earth Institute at Columbia University
 - Constituents include faculty and research scientists in the departments and centers affiliated with the Earth Institute and the Lamont-Doherty Earth Observatory, the Fu Foundation School of Engineering and Applied Science, and the Natural Sciences at Columbia.
 - The program works closely with the Vice Provost for Diversity Initiatives to expand successful ADVANCE initiatives to other parts of the University.

Source:

http://advance.ei.columbia.edu/sitefiles/file/Columbia_ADVANCE_Overview_NSF_013007.pdf

NSF ADVANCE: Columbia University



Initiatives:

- Workshops for department chairs and search committees on best practices for recruiting women scholars
- Departmental transformation awards to increase the number of women who are visiting scientists and to support recruitment and retention efforts
- Marie Tharp Visiting Fellowship for distinguished women scientists
- Institutional climate survey

Source:

http://advance.ei.columbia.edu/sitefiles/file/Columbia_ADVANCE_Overview_NSF_013007.pdf

NSF ADVANCE: Columbia University

- Initiatives
 - Targeted support for women scholars in the form of workshop leadership awards and research productivity grants
 - Faculty development programs
 - Symposium on the Science of Diversity
 - Lecture series on the Science of Diversity at the Lamont campus
 - Presidential lectures with eminent scientists who have had an impact on diversity at other institutions
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NSF ADVANCE: Columbia University



The ADVANCE grant was awarded to the Earth Institute in June 2004. Since that time:

- The proportion of women among new hires has increased from 17% to 38% in the School of Engineering and 17% to 25% in the Natural Sciences.
- The proportion of women on the junior research staff at the Lamont campus has increased from 14% to 20%.

NSF ADVANCE: Kansas State

- Size: 18,778 Undergraduate, 4,366 Postgraduate
 - 1,305 Faculty
- Designed to increase the participation, retention, and advancement of women in academic science, technology, engineering and math careers by changing institutional culture and practices

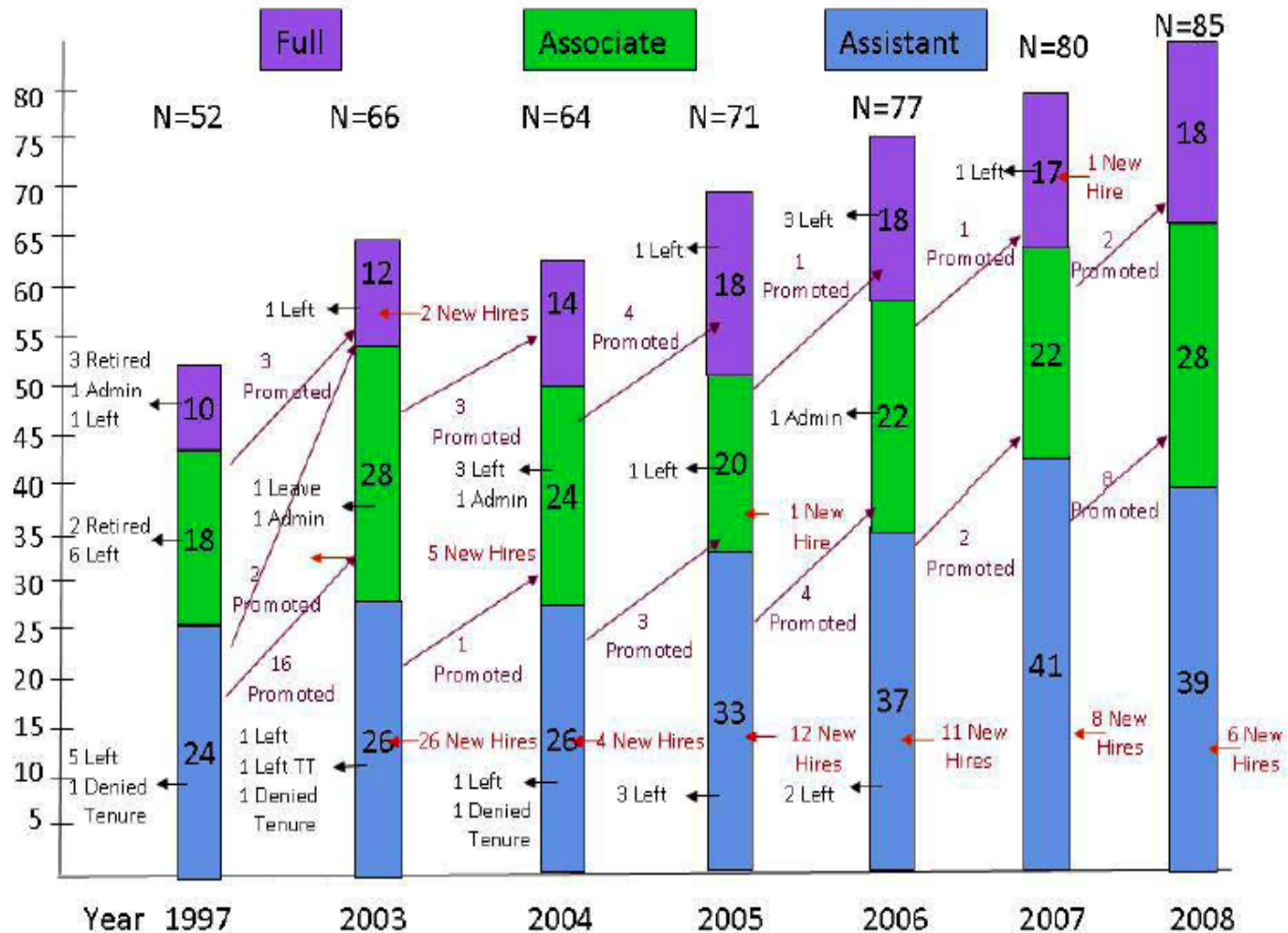
NSF ADVANCE – Kansas State

Programs

- Distinguished lecture series
- Work-life resources website
 - <http://www.k-state.edu/worklife/>
- Mentoring program:
 - Career Milestones for Academic Personal Success (Career MAPS)
 - <http://advance.ksu.edu/projects/32/career-milestones-for-academic-personal-success>

NSF ADVANCE: Kansas State

Full-Time Tenure-Line Women SEM Faculty 1997-2008



WELI

Six Participating institutions:

- Iowa State University, University of Utah, University of Connecticut, Syracuse University, Louisiana State University, University of Central Florida.

Activities:

- Advanced Leadership Workshop: examining transformative leadership
 - Syracuse, Oct, 2004 (30 participants,)
 - Leadership Summit: Broad national strategies for advocacy for women engineers in the workplace
 - Storrs, Connecticut, May 2004 (70 participants, different organizations)
 - The conference and Summit involved faculty members and administrators from **96 institutions representing 38 states**, Puerto Rico and Canada.
 - Electronic Networking Community
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Which Door to Open?



Conclusions



- Nationally funded programs are changing institutional climate.
 - Women are successful in taking activist roles in creating change in their institutions.
 - Activism needs to translate into broad leadership in institutions.
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ADVANCE it- SU: The Inclusive Connective Corridor (ICC)

