

Diversity: Path to Change

UWADVANCE

National Leadership Workshop for SEM Department Chairs and Emerging Leaders

- Statistics -- we are number people
- Experiments -- we are scientists
- Stories -- we are human
- Policy -- we are leaders

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<http://courses.washington.edu/ph122mo/W06>

Workshop on Faculty Diversity

- National Data on Faculty Composition
 - Donna Nelson, University of Oklahoma
- Studies of the “Playing Field”
 - Implicit assumptions are there
- Personal Comments
 - The reality of small numbers
- Advice for Chairs
 - Small things can make big improvements

Faculty Diversity Study

- Donna Nelson, U. Oklahoma Chemistry
- 14 Fields -- 11 UW-ADVANCE fields
- Survey 100 top departments in 2005
 - Ranked by research expenditures in 2002
 - Biased toward large depts supporting students
- Faculty composition by race and gender
- Compare to Ph.D. Data from NSF

Example Data: Physics Faculty

<http://cheminfo.chem.ou.edu/faculty/djn/diversity/top50.html>

Table 2. Tenured/Tenure Track Faculty at the "Top 50" Physics Departments by Race/Ethnicity, by Gender, and by Rank (FY 2005)*

University	White				Black				Hispanic				Asian				Native American				Total
	Full	Assoc	Asst	Tot	Full	Assoc	Asst	Tot	Full	Assoc	Asst	Tot	Full	Assoc	Asst	Tot	Full	Assoc	Asst	Tot	
MIT	42.003	7.001	9.002	58.006	-	-	-	0	-	-	-	0	4	3	4.001	11.001	-	-	-	0	69.007
Caltech	42.001	-	-	42.001	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.001
Johns Hopkins	20.002	-	-	20.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	20.002
UC Berkeley	50.005	-	-	50.005	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	50.005
UT Austin	57.002	-	-	57.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	57.002
Florida State	40.002	-	-	40.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	40.002
UCLA	56.004	-	-	56.004	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	56.004
Cornell	40.002	-	-	40.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	40.002
Michigan State	58.004	-	-	58.004	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	58.004
Penn State	43.006	-	-	43.006	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	43.006
Wisconsin	48.005	-	-	48.005	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	48.005
Illinois	54.003	-	-	54.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	54.003
Indiana	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Maryland College Park	42.002	7.001	3.002	52.005	-	-	-	0	-	-	-	0	4	1.001	1.001	10.002	-	-	-	0	73.006
SUNY Stony Brook	37.001	2	6	45.001	-	-	-	0	1	1.001	-	2.001	2	-	1	3	-	-	-	0	50.002
Harvard	30.004	-	4.001	34.005	-	-	-	0	-	-	-	0	3	1	2	6	-	-	-	0	40.005
UC Santa Barbara	48.003	-	-	48.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	48.003
Colorado	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Rutgers	53.006	-	-	53.006	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	53.006
Missouri	11	-	-	11	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	11
Michigan	47.004	-	-	47.004	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	47.004
Central Michigan	25.003	-	-	25.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	25.003
Florida State	49.003	-	-	49.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	49.003
UC Santa Diego	45.003	-	-	45.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	45.003
Princeton	42.002	-	-	42.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.002
Yale	31.003	-	-	31.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	31.003
Iowa	31.003	-	-	31.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	31.003
Georgia	28.002	-	-	28.002	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	28.002
Pennsylvania	49.001	-	3.001	52.002	-	-	-	0	-	-	-	0	2.001	1	3	5.001	-	-	-	0	57.006
Chicago	29.001	-	4	33.001	-	-	-	0	-	-	1	1	2.001	1	3.001	6.002	-	-	-	0	40.003
Ohio St	33.002	8	4.001	45.003	-	-	-	0	-	-	-	0	9.001	8	4	21.001	-	-	-	0	66.004
Washington**	36.003	4.001	3	43.004	-	-	-	0	2	-	-	2	-	1	-	7	-	-	-	0	46.004
Minnesota	28.002	5	6	39.002	-	-	-	0	1	-	-	1	2	1	-	3	-	-	-	0	43.002
Duke	12	4.001	5.001	21.002	1	-	-	1	-	-	1	1	3	2.001	3.001	8.002	-	-	-	0	31.004
North Carolina	32.002	7.001	5.001	44.004	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	44.004
UC Irvine	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Texas	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Louisiana	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Kansas	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Purdue	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Washington State	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Rochester	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Illinois	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Morehead State	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Hawaii	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Northern Illinois	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Illinois Chicago	42.003	-	-	42.003	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-	42.003
Washington St. Louis	17	1	3	21	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	0	21
Tennessee	22.002	3	4	29.002	-	-	-	0	3.001	-	-	3.001	1	1	-	2	-	-	-	0	34.003
Notre Dame	25.003	5.001	5.001	35.005	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	0	35.005
Physics Total	1247.070	200.021	260.037	1707.128	9	1	4	14	18.001	4.002	15.004	37.007	149.014	46.004	54.005	249.023	1	1	0	2	2009.158
Percent within race	73%	12%	15%	100%	64%	7%	29%	100%	49%	11%	41%	100%	60%	18%	22%	100%	50%	50%	0%	100%	
Percent of grand total	62.1%	10.0%	12.9%	85.0%	0.4%	0.0%	0.2%	0.7%	0.9%	0.2%	0.7%	1.8%	7.4%	2.3%	2.7%	12.4%	0%	0%	0%	0%	100%
Females in column	5.6%	10.5%	14.2%	7.5%	0%	0%	0%	0%	5.6%	50.0%	26.7%	18.9%	9.4%	8.7%	9.3%	9.2%	0%	0%	0%	0%	7.9%

UW 2002: Full Professor: 35 WM, 3 WF, 1 HM
 Associate Professor: 2 WM
 Assistant Professor: 6 WM, 1 WF

UW 2005: Full Professor: 33 WM, 3 WF, 2 HM
 Associate Professor: 4 WM, 1 WF, 1 AM
 Assistant Professor: 3 WM

UW Next Year: Full Professor: 31 WM, 4 WF, 1 HM, 1 AM
 Associate Professor: 5 WM, 1 WF
 Assistant Professor: 2 WM, 1HM, 1AM

*By physics research expenditures FY2002, NSF, www.nsf.gov/sbe/srs/ns04330/sectb.htm; numbers after decimals designate females. **Data are from sources other than department chair. Reference: "The Nelson Diversity Surveys" Nelson, D. J.: Norman, OK, 2005; <http://cheminfo.chem.ou.edu/faculty/djn/diversity/top50.html>

Example Data: Physics Faculty

<http://cheminfo.chem.ou.edu/faculty/djn/diversity/top50.html>

Table 2. Tenured/Tenure Track Faculty at the "Top 50" Physics Departments by Race/Ethnicity, by Gender, and by Rank (2005)

Women of Color Hidden in Statistics

50 Departments: 2,009 Faculty in 2005

158 Women (7.9%); 302 Minorities (15%); 30 Women of Color (1.5%); 7 Non-Asian WoC

Full Professor: 1177/70 WM/WF; 9/0 BM/BF; 17/1 HM/HF; 135/14 AM/AF; 1/0 NAM/NAF

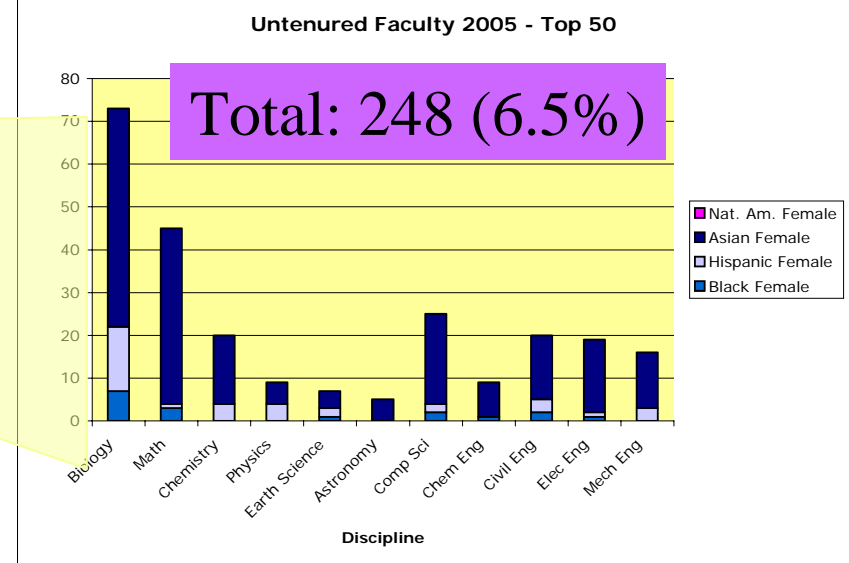
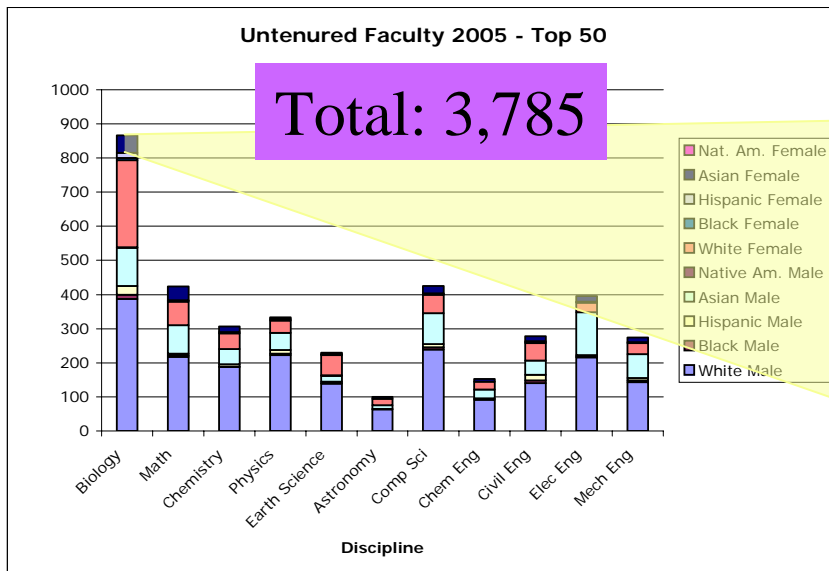
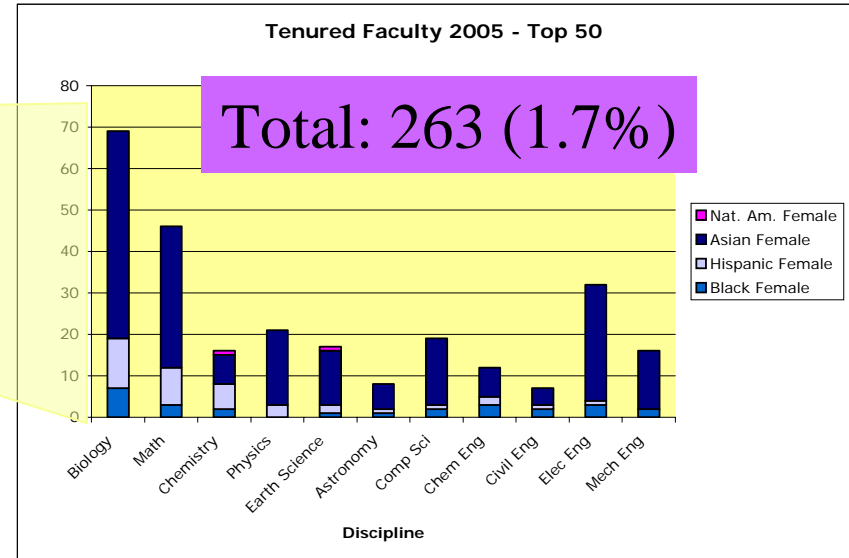
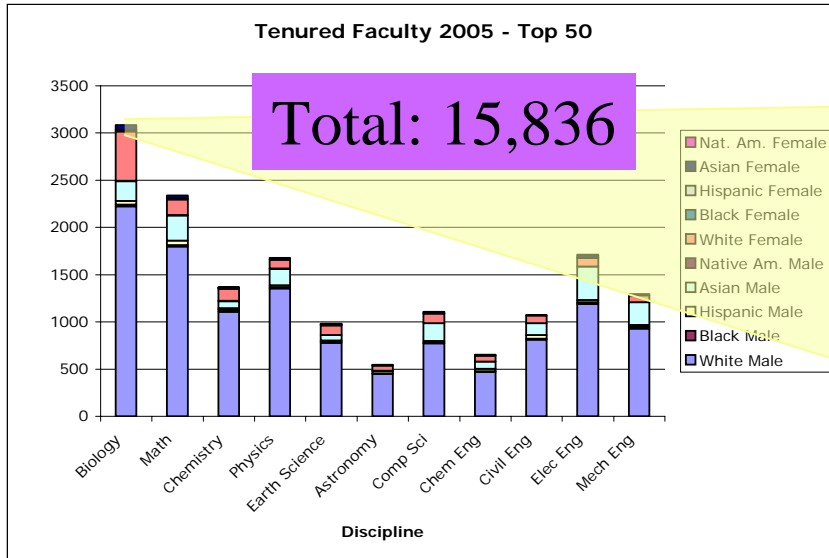
Assoc. Professor: 179/21 WM/WF; 1/0 BM/BF; 2/2 HM/HF; 42/4 AM/AF; 1/0 NAM/NAF

Asst. Professor: 223/37 WM/WF; 4/0 BM/BF; 11/4 HM/HF; 49/5 AM/AF; 0/0 NAM/NAF

Source: Name	25,000	50,000	50,000	85,000	I				II				III				85,000				
Physics Total	1247.070	200.021	260.037	1707.128	9	1	4	14	18.001	4.002	15.004	37.007	149.014	46.004	54.005	249.023	1	1	0	2	2009.158
Percent within race	73%	12%	15%	100%	64%	7%	29%	100%	49%	11%	41%	100%	60%	18%	22%	100%	50%	50%	0%	100%	
Percent of grand total	62.1%	10.0%	12.9%	85.0%	0.4%	0.0%	0.2%	0.7%	0.9%	0.2%	0.7%	1.8%	7.4%	2.3%	2.7%	12.4%	0%	0%	0%	0%	100%
Females in column	5.6%	10.5%	14.2%	7.5%	0%	0%	0%	0%	5.6%	50.0%	26.7%	18.9%	9.4%	8.7%	9.3%	9.2%	0%	0%	0%	0%	7.9%

by physics research expenditures FY2002, NSF, www.nsf.gov/sbe/ses/nsf04350/sex.c.html; numbers after decimals designate females. Data are from sources other than department chair. Reference: "The Nelson Diversity Surveys" Nelson, D. J.: Norman, OK, 2005; <http://cheminfo.chem.ou.edu/faculty/djn/diversity/top50.html>

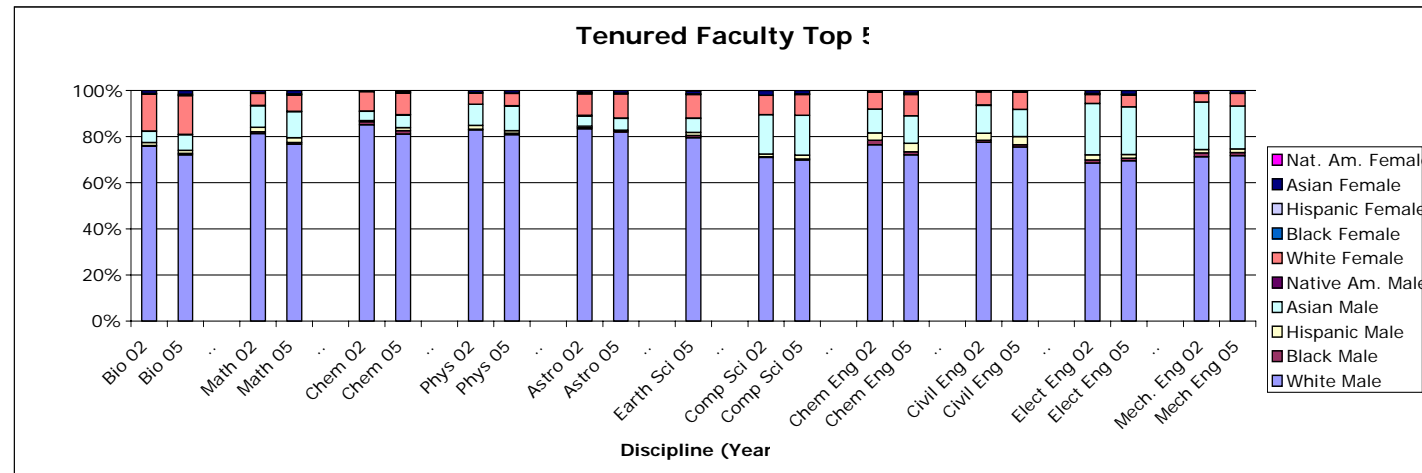
11 Fields, 550 Departments



Changes 2002 to 2005

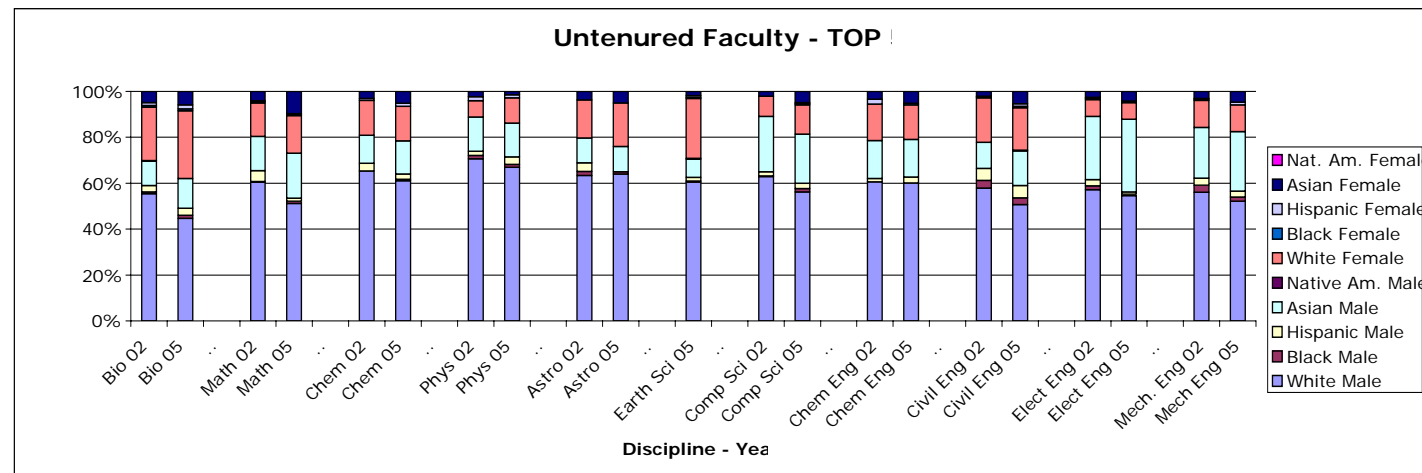
➤ Tenured

- WM 77% ⇒ 75%
- AM 11.0% ⇒ 11.4%
- OM 2.6% ⇒ 2.7%
- WF 8.0% ⇒ 9.1%
- AF 1.0% ⇒ 1.0%
- OF 0.3% ⇒ 0.4%



➤ Untenured

- WM 60% ⇒ 54%
- AM 16.1% ⇒ 17.7%
- OM 4.3% ⇒ 3.8%
- WF 15.1% ⇒ 17.8%
- AF 3.3% ⇒ 5.2%
- OF 1.1% ⇒ 1.4%

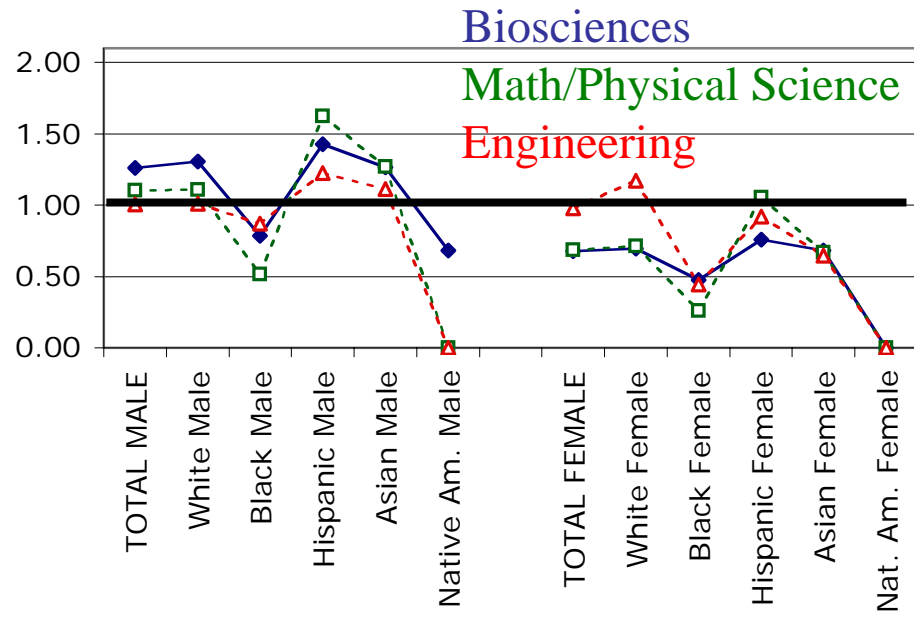


Pipeline 2002 vs 2005

➤ Compare Asst. Profs. To Ph.D.'s

- Foreign-born “minorities” only present in numerator
- Definite improvement in some fields

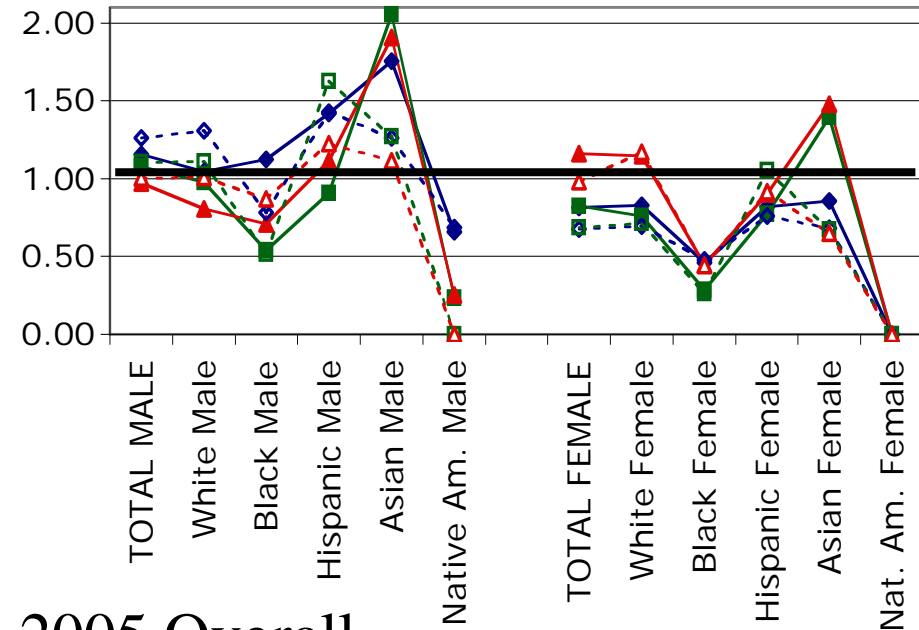
(2002 Asst Prof) / (93-02 PhD)



2002 Overall

Male: 1.17 Female: 0.63

Asst Prof / PhD Utility Ra

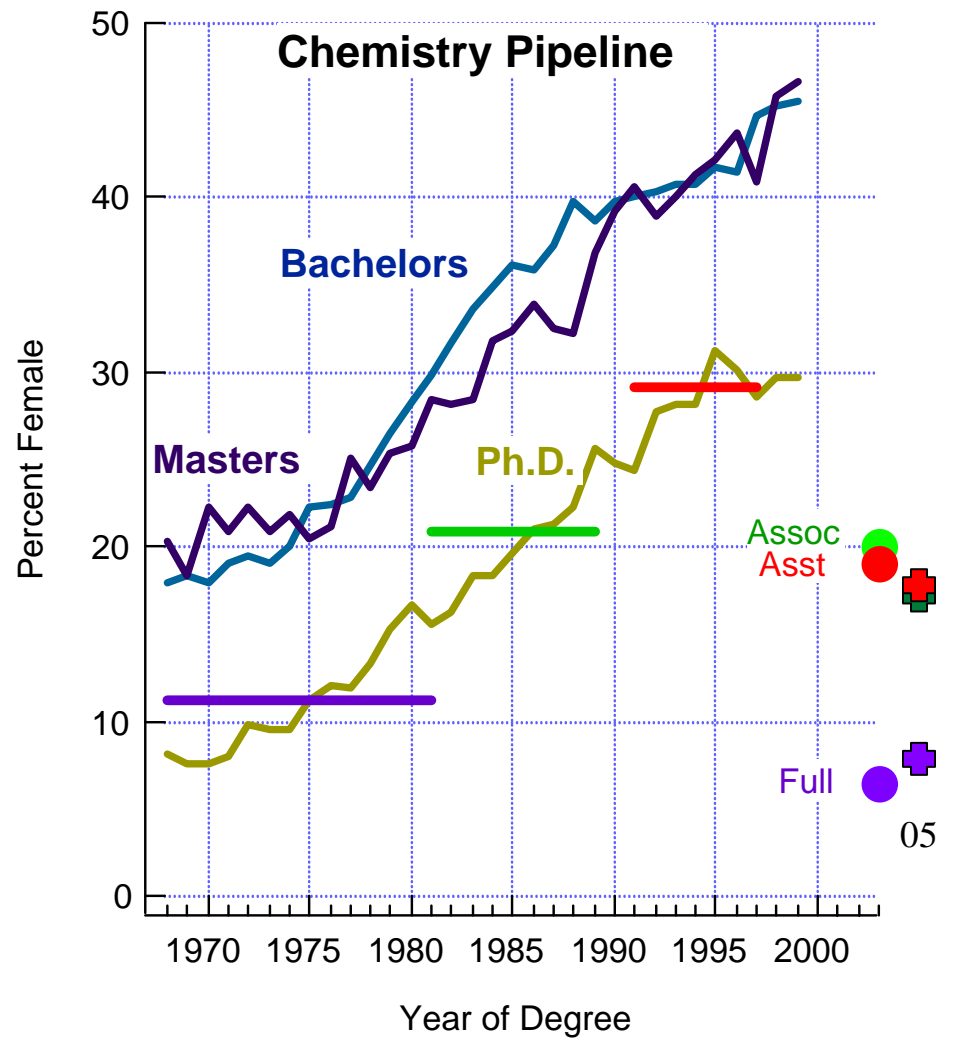
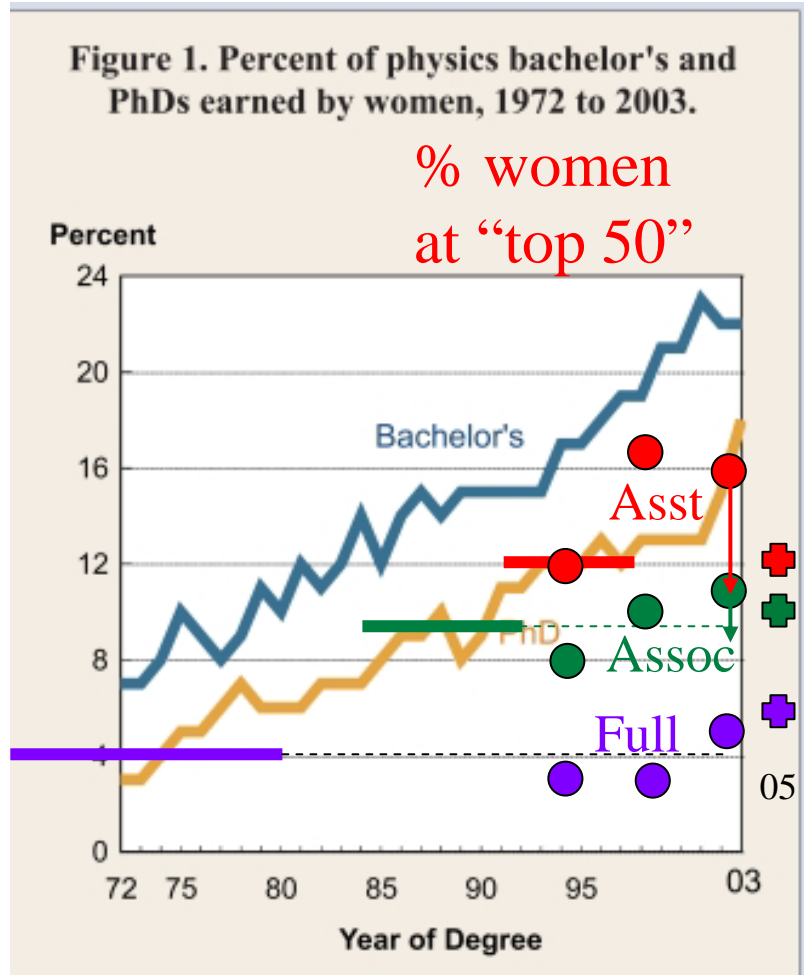


2005 Overall

Male: 1.09 Female: 0.79

Physics vs. Chemistry Pipeline

➤ AIP Study on Academic Women in Physics



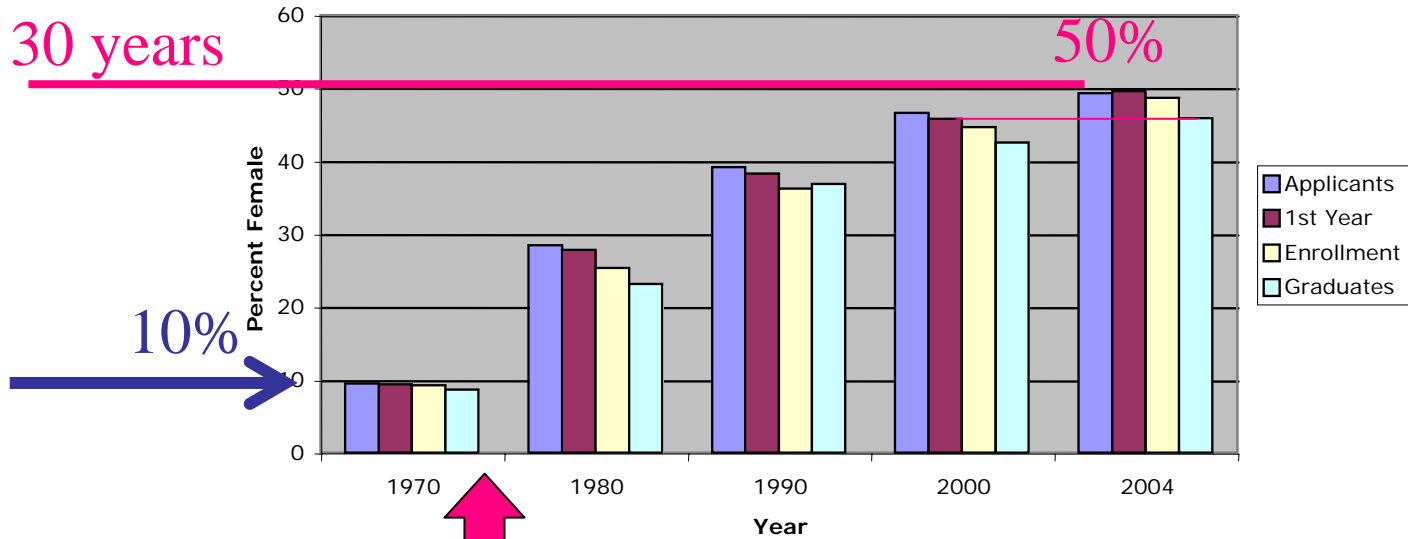
Physics women 2x as likely to be at UG Institutions (14% vs. 7% faculty)

Why so Few?

- MYTH: “It’s **THEIR** fault -- women just don’t apply.”
- REALITY: “My grad school experience was so awful I just want to get out of there.”
- Example of Change: Medical Schools after Title IX

Medical School Gender Distribution

Parity in 30 years



Widely Practiced

10% Quota

Matriculation rate = Applicant rate

1972 Law -- Education Gender Discrimination Made Illegal

Tilted Playing Field

➤ Large body of research shows:
Implicit Assumptions Impact Evaluation

➤ Gender Bias and Research Papers

- Paludi and Bauer (Sex Roles, 1983)

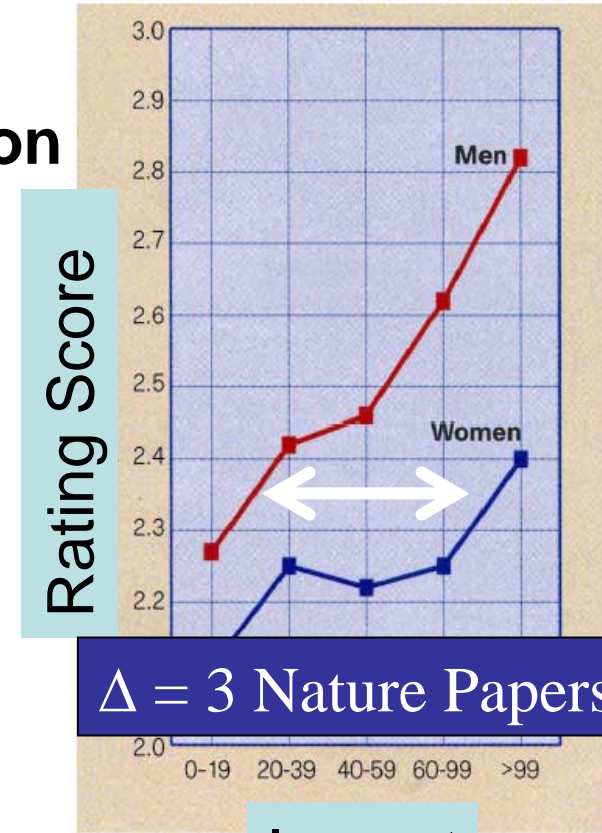
Reviewer (1-5, 1 top)	John T. McKay	Joan T. McKay	J. T. McKay
Male	1.9	3.0	2.7
Female	2.3	3.0	2.6

➤ Gender Bias and Post-Doc Applications

- Wenerås and Wold (Nature, 1997)

➤ Gender Bias and Performance Evaluation

- Orchestra tryouts behind curtain
- Stereotype threat on exam performance



$\Delta = 3$ Nature Papers

Figure 1 The mean **Impact** given to male (red squares) and female (blue squares) applicants by the MRC reviewers as a function of their scientific productivity, measured as total impact. One impact point equals one paper published in a journal with an impact factor of 1. (See text for further explanation.)

(Implicit) Discrimination

- Lower expectations
- Uneven evaluation
- Narrow view of excellence
- Exclusion from informal networks
- Other people feel uncomfortable
- **Accumulation of Disadvantage**

$$\left(\frac{0.49}{0.51}\right)^{10} = \frac{2}{3}; \quad \left(\frac{0.48}{0.52}\right)^8 = \frac{1}{2}$$

Personal Observations

- Small numbers mean everybody counts
 - UW Physics nearly lost 60% of women in one quarter
 - US Physics PhDs -- 12 years ('92-'03): 8,261 total
 - 2 Native American Women
 - 21 Black Women
 - 31 Hispanic American Women
 - Enrolled in US Grad School 2005 (7506 US; 5966 Foreign):
 - US Women: 7 Native American; 67 Black; 69 Hispanic; 130 Asian
- Each person must consciously confront their implicit assumptions
 - Grew up in 99 % white suburb
 - Adult before I knew professional, educated minorities
- Scientific and educational enterprise requires trust
 - Different cultural expectations must be dealt with head on

Good Chairs Make a Difference

- Take ownership of the “problem” to create a public, inclusive climate for students and faculty
- Consciously and publicly counter implicit assumptions and accumulated disadvantage
- Set transparent and inclusive criteria and processes for hiring, promotion, salary and resources.
- Give women and minorities assignments to gain leadership skills (both scientific and administrative)
- Have all faculty actively mentor and recruit minority students to the profession. One more/year is significant.
- Compare attitudes of 1st and 5th year grad students -- do they still want to be academics? Is there a gender and/or ethnicity difference in the response? Find out WHY.

Diversity: Path to Change

UWADVANCE

National Leadership Workshop for SEM Department Chairs and Emerging Leaders

- Statistics -- we are number people
- Experiments -- we are scientists
- Stories -- we are human
- Policy -- we are leaders

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<http://courses.washington.edu/ph122mo/W06>

To access course readings:

Login: womensci Password: curie1903