

# Tricky Harbors & Leaky Boats: Challenges of Women in Science & Engineering

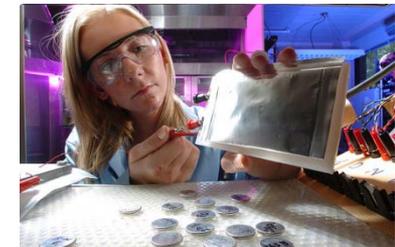
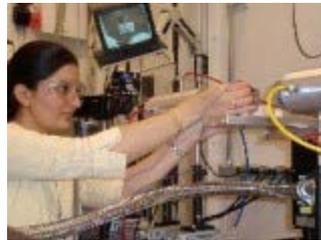
A Discussion of the report “To Recruit and Advance: Women Students and Faculty in U.S. Science and Engineering” from the National Research Council

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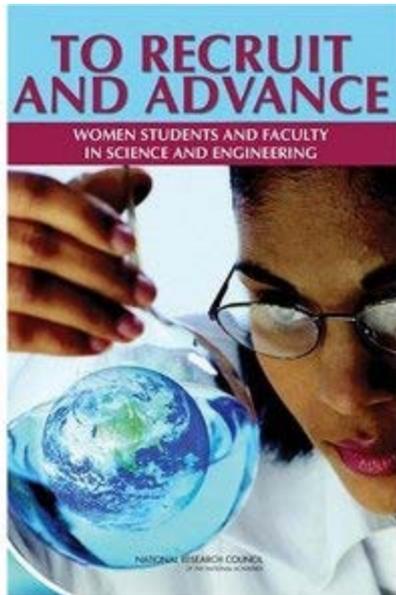
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# The Issue Is Personal To Us All



Images from the Argonne Educational Programs webpage

# Basic Report Information



## "To Recruit and Advance: Women Students and Faculty in U.S. Science and Engineering"

Committee on the Guide to Recruiting and Advancing Women Scientists and Engineers in Academia  
Committee on Women in Science and Engineering  
National Research Council

ISBN: 0-309-54715-6, 145 pages (2006)

This PDF is available from the National Academies Press at:  
<http://www.nap.edu/catalog/11624.html>



# Report Contents

- Introduction
- Recruiting Women Students
- Retaining Women Students
- Recruiting Women Faculty
- Advancing Women Faculty
- Advancing Women to Executive Positions
- Conclusion



# Report Summary

The issues that the guide will address are:

- (1) recruitment of undergraduates and graduate students;
- (2) ways of reducing attrition in science and engineering degree programs in the early undergraduate years;
- (3) improving retention rates of women at critical transition points – from undergraduate to graduate student, from graduate student to postdoc, postdoc to first faculty position;
- (4) recruitment of women for tenure track positions;
- (5) increasing the tenure rate for women faculty; and
- (6) increasing the numbers of women in administrative positions.



## A Notable Difference

*This report distinguishes itself by focusing on actual implemented policies and strategies, rather than simply discussing the challenges*



# Science & Engineering (S&E) Interest Indicators

TABLE 2-1 Percentage of High School Graduates Taking Selected Mathematics and Science Courses in High School, by Sex: 1990, 1994, and 1998

Course	1990			1994			1998		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
<b>Mathematics</b>									
Geometry	63.2	62.1	64.2	70.0	64.3	72.2	75.1	73.7	77.3
Algebra II	52.9	51.0	54.6	61.1	57.7	61.6	61.7	59.8	63.7
Trigonometry	9.6	9.8	9.4	11.7	11.1	12.3	8.9	8.2	9.7
Precalculus	13.4	14.0	12.8	17.3	16.3	18.3	23.1	23.0	22.9
Calculus	6.5	7.5	5.6	9.3	9.5	9.1	11.0	11.2	10.6
<b>Science</b>									
Biology	90.9	89.4	92.3	93.2	91.8	94.5	92.7	91.4	94.1
AP/Honors Biology	10.1	9.4	10.8	11.9	10.9	12.8	16.2	14.5	18.0
Chemistry	48.9	47.7	50.0	55.8	52.9	58.5	60.4	57.1	63.5
Physics	21.5	25.4	18.0	24.5	27.0	22.2	28.8	31.7	26.2
Engineering	4.2	4.4	4.1	4.5	3.9	5.0	6.7	7.1	6.5

NOTES: Numbers have been revised from previously published figures. These data only report the percentage of students who earned credit in each course while in high school and do not count those students who took these courses prior to entering high school. Included in the totals but not shown separately are graduates whose sex was not reported.

SOURCE: NSF (2003:103).



# Science & Engineering Interest Indicators

TABLE 2-2 Percentage of AP Examinees Who Are Female, by Subject, 2004

Subject	Percentage of Examinees Who Are Female
Biology	58
Calculus AB	48
Calculus BC	40
Chemistry	46
Computer science A and AB	15
Physics B	35
Physics C	25
Statistics	50

SOURCE: NAE and NRC (2005).



# Science & Engineering Interest Indicators

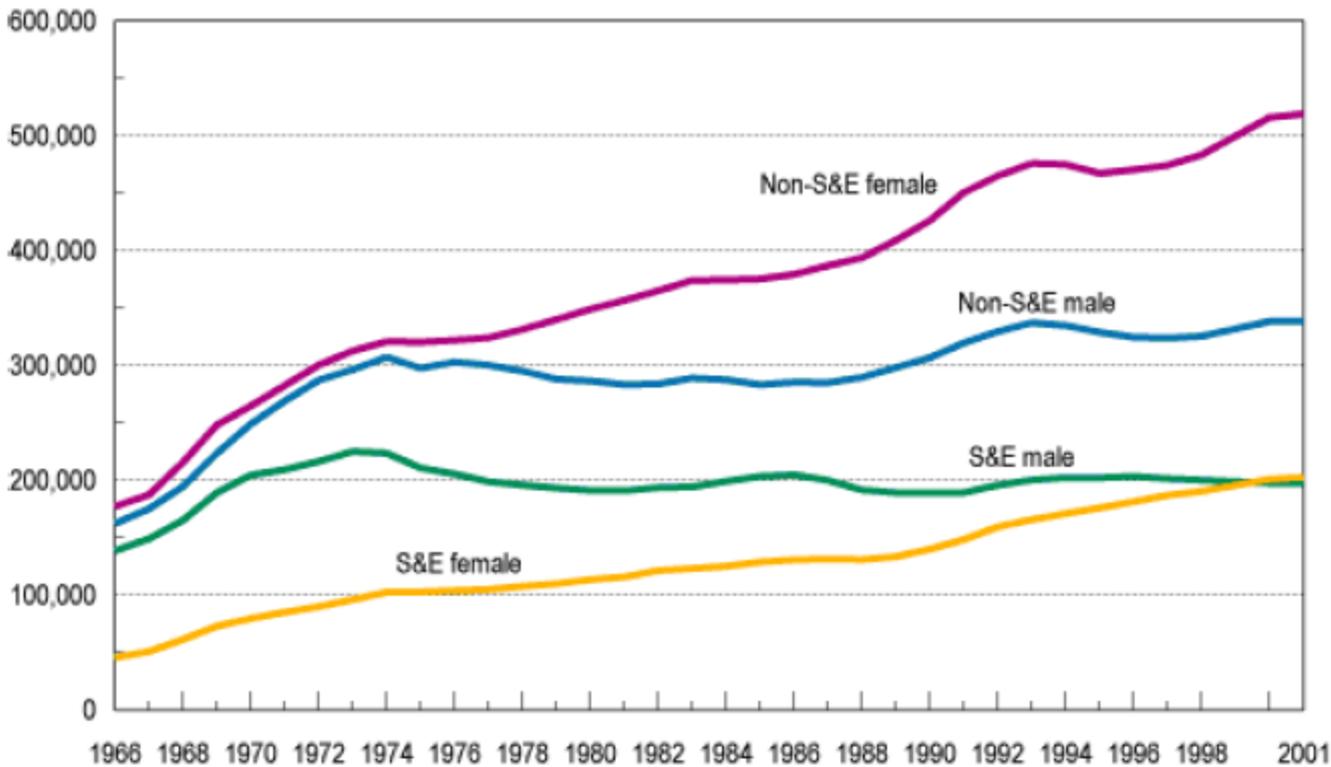


FIGURE 2-1 Number of baccalaureate degrees awarded, by field and gender, 1966-2001.

SOURCE: NSF (2004c).



# Science & Engineering Interest Indicators

TABLE 2-3 Percentage of Bachelor's Degrees Awarded to Women, by Field, 2001

Field	Percent
All fields	57.4
S&E	50.6
Sciences	55.9
Biological/agricultural sciences	57.3
Computer sciences	27.6
Earth, atmospheric, and ocean sciences	40.9
Mathematics/statistics	48.0
Physical sciences	41.7
Psychology	77.5
Social sciences	54.8
Engineering	20.1
Non-S&E	60.5

SOURCE: NSF (2004c).



# Science & Engineering Interest Indicators

TABLE 2-5 Freshmen Intending to Major in S&E, by Sex and Field: Selected Years, 1977-2002 (percentage distribution)

Sex/Field	1977	1981	1984	1987	1990	1993	1996	1999	2002
Men	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physical sciences	10.3	7.9	6.9	7.0	7.4	7.5	5.9	5.4	5.9
Biological/agricultural sciences	20.1	15.1	14.8	14.8	15.6	20.4	18.4	15.5	15.0
Mathematics/statistics	3.2	2.2	2.5	2.4	2.4	2.0	1.8	1.8	2.2
Computer sciences	5.5	16.9	16.1	9.7	8.8	8.5	15.5	21.9	14.6
Social/behavioral sciences	17.5	13.0	14.9	19.7	20.5	18.5	16.1	15.5	18.1
Engineering	43.0	44.9	44.8	46.4	45.4	42.9	42.4	39.9	44.0
Women	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physical sciences	7.3	5.9	5.3	4.9	5.1	6.9	6.2	5.4	5.7
Biological/agricultural sciences	28.8	20.1	21.7	21.1	21.0	28.2	32.6	32.0	31.1
Mathematics/statistics	5.0	4.2	5.2	3.8	3.4	2.8	2.5	2.3	2.6
Computer sciences	6.6	21.5	15.7	6.1	6.3	4.2	5.6	7.0	3.2
Social/behavioral sciences	42.4	33.3	37.3	51.0	50.5	43.5	40.7	42.3	45.8
Engineering	9.9	15.0	14.6	13.2	13.8	14.4	12.6	11.2	11.5

NOTE: Physical sciences include physics, chemistry, astronomy, and earth, atmospheric, and ocean sciences.

SOURCE: NSB (2004:Appendix Table 2-6).



# Translation To Graduate School Ranks

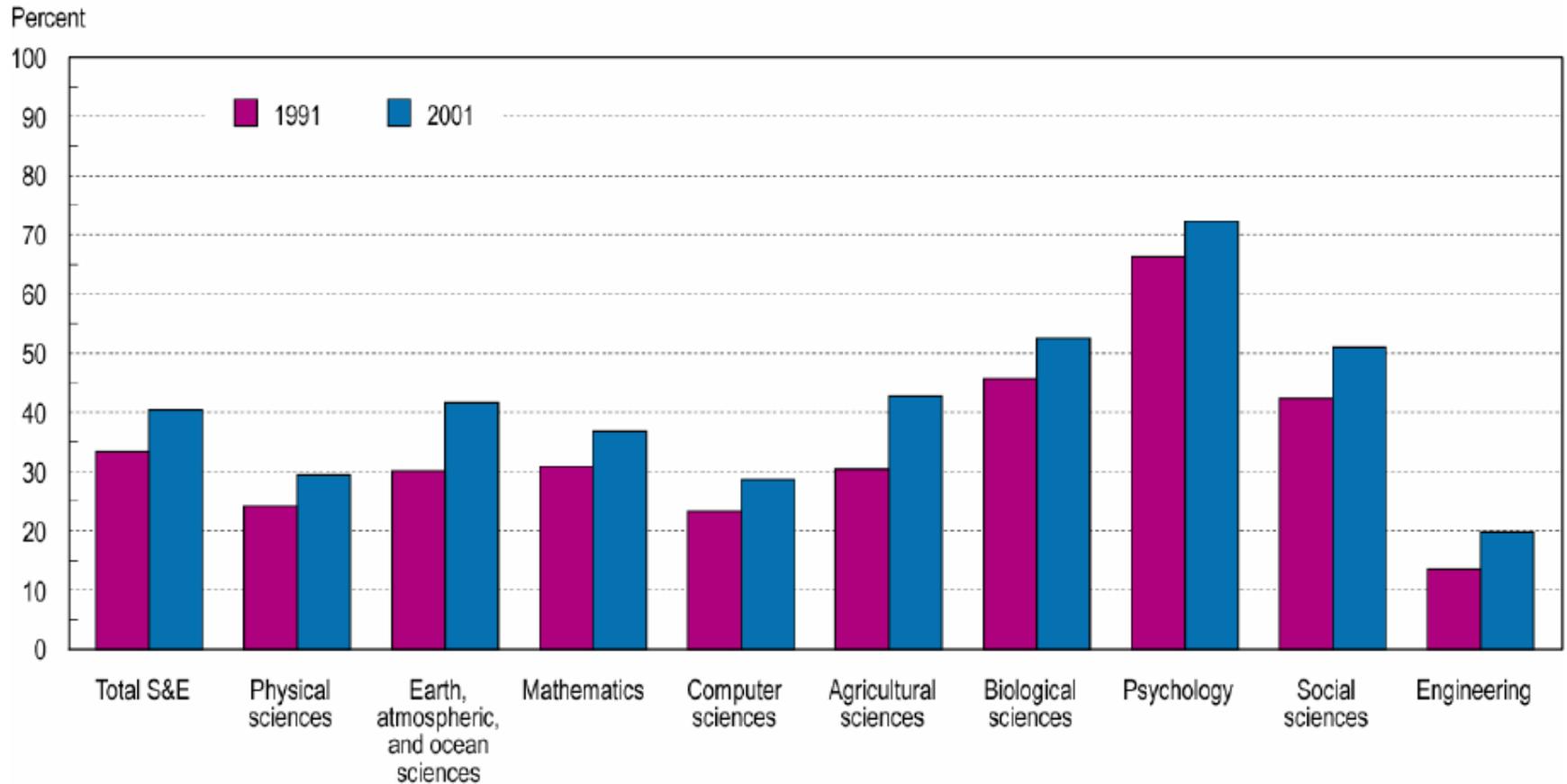


FIGURE 2-2 Female share of S&E graduate students, by field: 1991 and 2001.  
SOURCE: NSF (2004c).



# Less Translation To Degrees Beyond Bachelor's

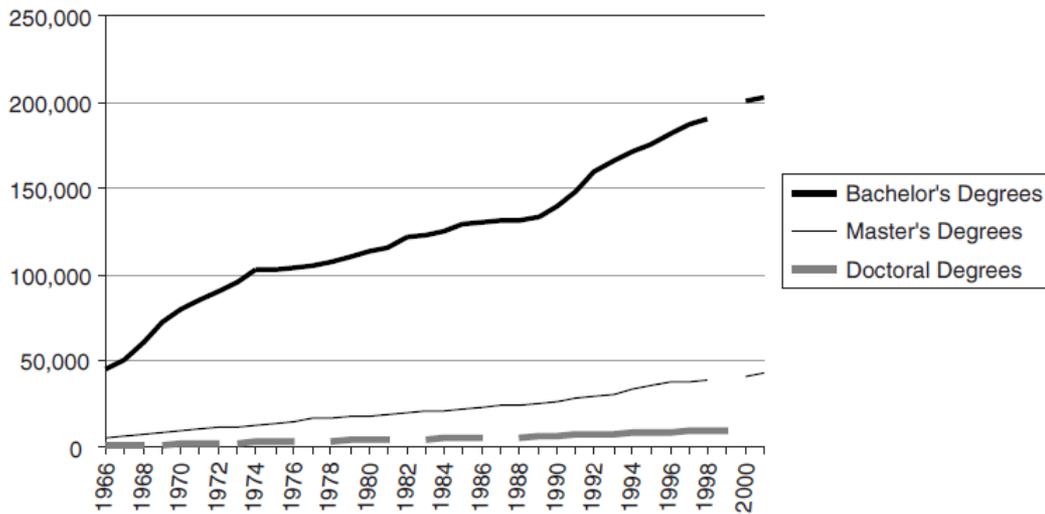


FIGURE 2-3 Number of women receiving bachelor's degrees, master's degrees, and doctoral degrees in science and engineering, 1966-2001. NOTE: Data for 1999 unavailable.

SOURCE: NSF (2004b).

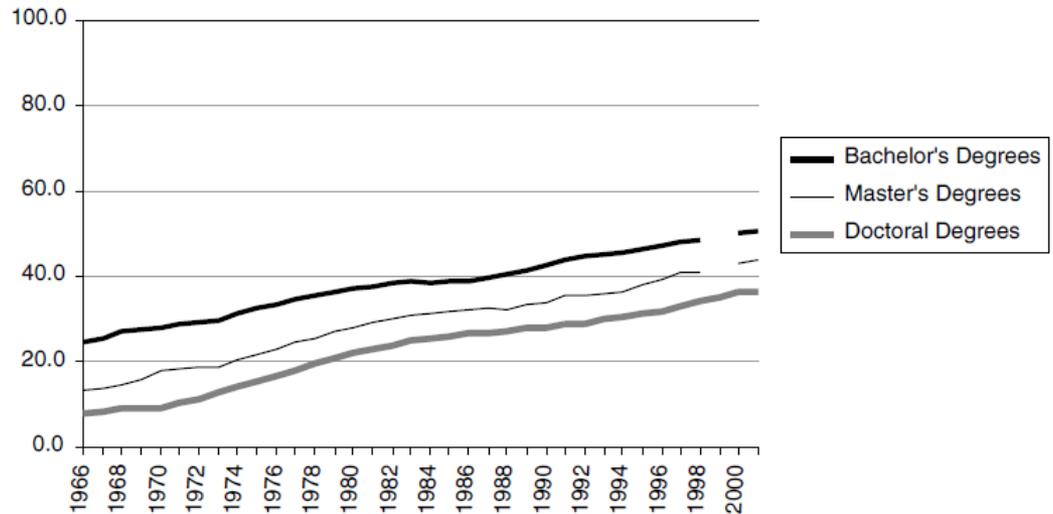
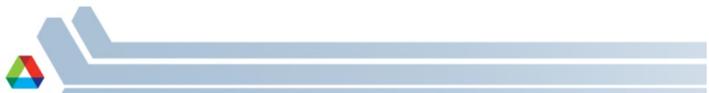


FIGURE 2-4 Percentage of women receiving bachelor's degrees, master's degrees, and doctoral degrees in science and engineering, 1966-2001. NOTE: Data for 1999 unavailable.

SOURCE: NSF (2004b).



# Relative Postdoctoral Gains, But Less Translation

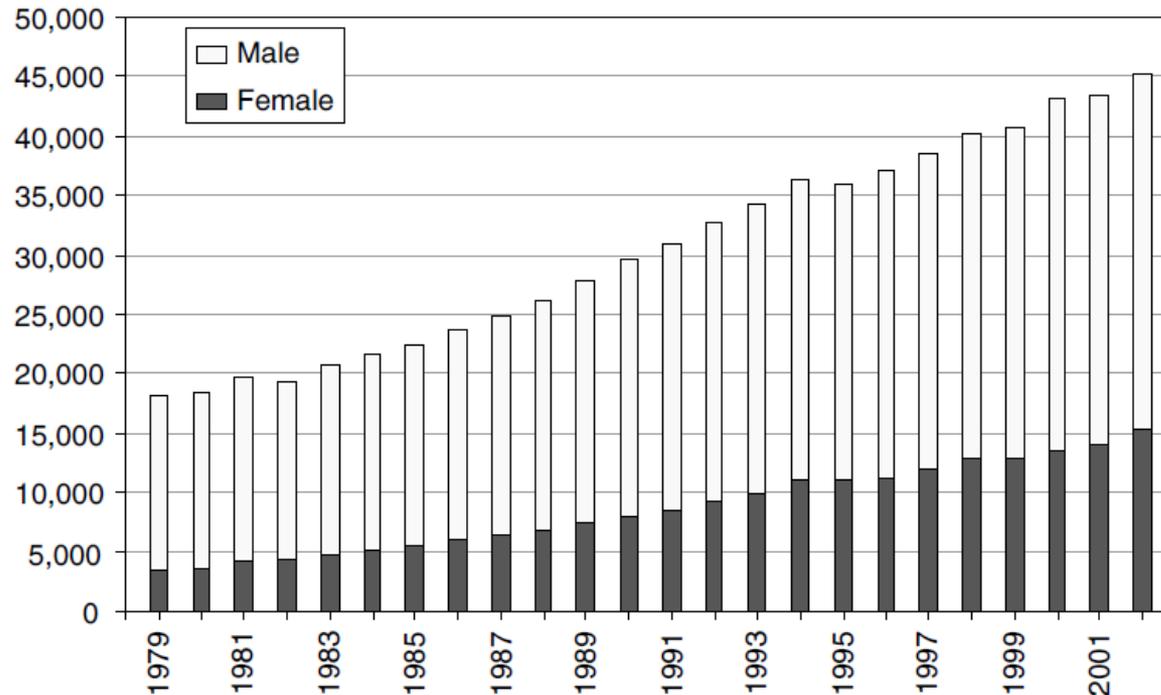


FIGURE 2-5 Postdocs in science and engineering, by gender, 1979-2002.

SOURCE: NSF, WebCASPAR.

Four factors may explain the slightly greater drop in females becoming postdocs, relative to females receiving Ph.D.'s:

- (1) insufficient advising or mentoring during the graduate program;
- (2) negative experiences during the graduate program;
- (3) individual preferences about career goals and views on the relevance of higher education; and
- (4) Biases against female applicants for postdoctoral positions.



## BOX 2-1 Summary of Challenges

### **Undergraduate Recruiting**

- ✓ Female students are less likely to take higher levels of mathematics prior to enrolling in college and are more likely to concentrate on the biological sciences or chemistry.
- ✓ Female students have a less positive view of science and mathematics.

### **Graduate Recruiting**

- ✓ Departmental cultures are more of an obstacle for women than for men.
- ✓ Universities often lack female-friendly policies.
- ✓ Students have negative perceptions of academic careers.

### **Postdoctoral Recruiting**

- ✓ Universities provide insufficient advising and mentoring during the graduate program.
- ✓ Postdocs had negative experiences during their graduate careers.
- ✓ Postdocs have individual preferences about career goals and views on the relevance of higher education.
- ✓ There may be bias against female postdoctoral candidates.



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## **BOX 2-2**

### **Undergraduate Recruitment Strategies**

- ✓ Have the institution signal the importance of women.
  - ✓ Enhance science, engineering, and mathematics education at the K-12 level.
  - ✓ Reach out to students at the K-12 level.
  - ✓ Develop better methods for identifying prospective students.
  - ✓ Create alternative assessment methods for admissions.
  - ✓ Organize/improve on-campus orientations.
  - ✓ Develop bridging programs.
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## **BOX 2-3**

### **Graduate Student Recruitment Strategies**

- ✓ Have the institution and S&E departments signal the importance of recruiting women.
  - ✓ Enhance science, engineering, and mathematics education at the undergraduate level.
  - ✓ Develop better methods for identifying prospective students.
  - ✓ Organize on-campus orientations.
  - ✓ Offer financial aid.
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# Postdoc Recruitment

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## **BOX 2-4** **Postdoctoral Recruitment Strategies**

- ✓ Have the institution and S&E departments signal the importance of recruiting women.
  - ✓ Enhance science, engineering, and mathematics education at the graduate level.
  - ✓ Develop better methods for identifying prospective postdocs.
  - ✓ Establish female- and family-friendly policies and practices.
  - ✓ Increase postdoctoral salaries.
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## BOX 2-5

### Summary of Strategies for Recruiting Women Undergraduate, Graduate, and Postdoctoral Students

#### What faculty can do:

- Advise and mentor prospective and current female undergraduate and graduate students and postdocs.
- Conduct outreach to K-12 institutions to help prepare women for college and to combat negative attitudes about the place of women in science and engineering.
- Network with faculty at community colleges and other four-year institutions to broaden the search for prospective recruits.
- Invite female students to participate in research opportunities.
- Participate in bridge programs, campus visits, lectures, and seminars.
- Broaden admission criteria and cast a wider net in recruiting students.

#### What department chairs can do:

- Create an image of the department as female friendly and feature this image in promotional materials and on the department's web site.
- Communicate with faculty about the importance of diversity in recruiting.
- Support and reinforce a faculty member's commitment to advising and encouraging female students and postdocs through service awards and recognition during tenure and promotion reviews.
- Monitor the allocation of resources to students and survey students' opinions.



### **What deans and provosts can do:**

- Communicate with department chairs about the importance of diversity in recruiting.
  - Sponsor competitions, contests, career days, bridge programs, campus orientations, and other efforts to bring prospective students to campus.
  - Monitor departments' progress in increasing the percentage of female students and postdocs.
  - Conduct school-wide assessments of status of women.

### **What presidents can do:**

- Publicly state the institution's commitment to diversity and inclusiveness whenever possible.
  - Create an institutional structure, such as a standing committee, to address diversity issues within the student body. Charge that committee with monitoring diversity across the institution and with making recommendations to increase diversity.
  - Demonstrate the institution's commitment by meeting with female students and postdocs and devoting resources to programs that assist them.



# Summary of Student Retention Challenges

## BOX 3-1 Summary of Challenges

Female students may be more likely to leave undergraduate and graduate S&E programs for the following reasons:

- ✓ The demographic characteristics of females make them more at risk for attrition.
- ✓ Women may have negative experiences, including marginalization, isolation, or harassment.
- ✓ For female undergraduates, the curricula may not be as engaging as for male undergraduates.
- ✓ The characteristics of graduate programs, including departmental culture, may favor male students.
- ✓ Women may face financial issues.
- ✓ Women may more likely have negative, unsupportive, or missing relationships with advisors or mentors.



# Summary of Undergraduate Retention Strategies

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## **BOX 3-2** **Undergraduate Retention Strategies**

- ✓ Have the institution signal the importance of women.
  - ✓ Strengthen student advising.
  - ✓ Establish mentoring programs.
  - ✓ Change pedagogy.
  - ✓ Increase engagement with students.
  - ✓ Increase professional socialization.
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# Building Trust

The guide *Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering* prepared by the *National Academies*:

To build trust, this guide suggests that faculty

- **take students seriously,**
- **do not dictate answers,**
- **be frank and direct,**
- **help students to develop self-esteem,**
- **invite other mentors,**
- **address fears without belittling, and**
- **meet on “neutral ground.”**



# Growth of Inclusive Culture

Whitten et al. (2003) have suggested additional steps faculty can take to “encourage the growth of a warm and inclusive student culture”:

- **a student lounge**
- **a tutorial service**
- **lab assistants**
- **seminars**
- **a chapter of a professional society or club**
- **social activities**



# Summary of Graduate Retention Strategies

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## BOX 3-3 Graduate Student Retention Strategies

- ✓ Have the institution signal the importance of women.
  - ✓ Improve advising and mentoring.
  - ✓ Increase engagement with students.
  - ✓ Increase professional socialization.
  - ✓ Make funding more secure.
  - ✓ Provide students with constructive feedback.
- 
- 



## **BOX 3-4**

### **Summary of Strategies for Retaining Women Undergraduate, Graduate, and Postdoctoral Students**

#### **What faculty can do:**

- Advise and mentor prospective and current female undergraduate, graduate, and postdoctoral students.
- Conduct outreach to K-12 institutions to help prepare women for college and to combat negative attitudes about the place of women in science and engineering.
  - Advise and encourage female students in science and engineering groups.
  - Invite female students to participate in research opportunities.
  - Participate in bridge programs, campus visits, lectures, and seminars.
  - Encourage female students to give presentations at conferences.
  - Make curricula more practically relevant and ask whether all students are equally aided by different instructional techniques and technologies.

#### **What department chairs can do:**

- Create an image of the department as female friendly and feature this image in promotional materials and on the department's web site.
- Communicate with faculty about the importance of diversity in recruiting.
- Support and reinforce a faculty member's commitment to advising and encouraging female students and postdocs through service awards and recognition

## **What department chairs can do:**

- Create an image of the department as female friendly and feature this image in promotional materials and on the department's web site.
- Communicate with faculty about the importance of diversity in recruiting.
- Support and reinforce a faculty member's commitment to advising and encouraging female students and postdocs through service awards and recognition during tenure and promotion reviews.
  - Monitor the allocation of resources to students and survey students' opinions.
  - Meet with faculty to assess the relationship of curricular content and instruction methods to student learning outcomes for male and female students.

## **What deans and provosts can do:**

- Devote resources to female undergraduate students—mentoring, advising, tutoring services, and if feasible, separate housing.
- Craft female-friendly policies on campus.
- Monitor departments' progress in increasing the percentage of female students and postdocs.
- Conduct school-wide assessments of status of women.

## What presidents can do:

- Publicly state the institution's commitment to diversity and inclusiveness whenever possible.
  - Create an institutional structure, such as a standing committee, to address diversity issues within the student body. Charge that committee with monitoring diversity across the institution and with making recommendations to increase diversity.
  - Demonstrate the institution's commitment by meeting with female students and postdocs and devoting resources to programs that assist them.



# Breakout of Doctoral Degrees

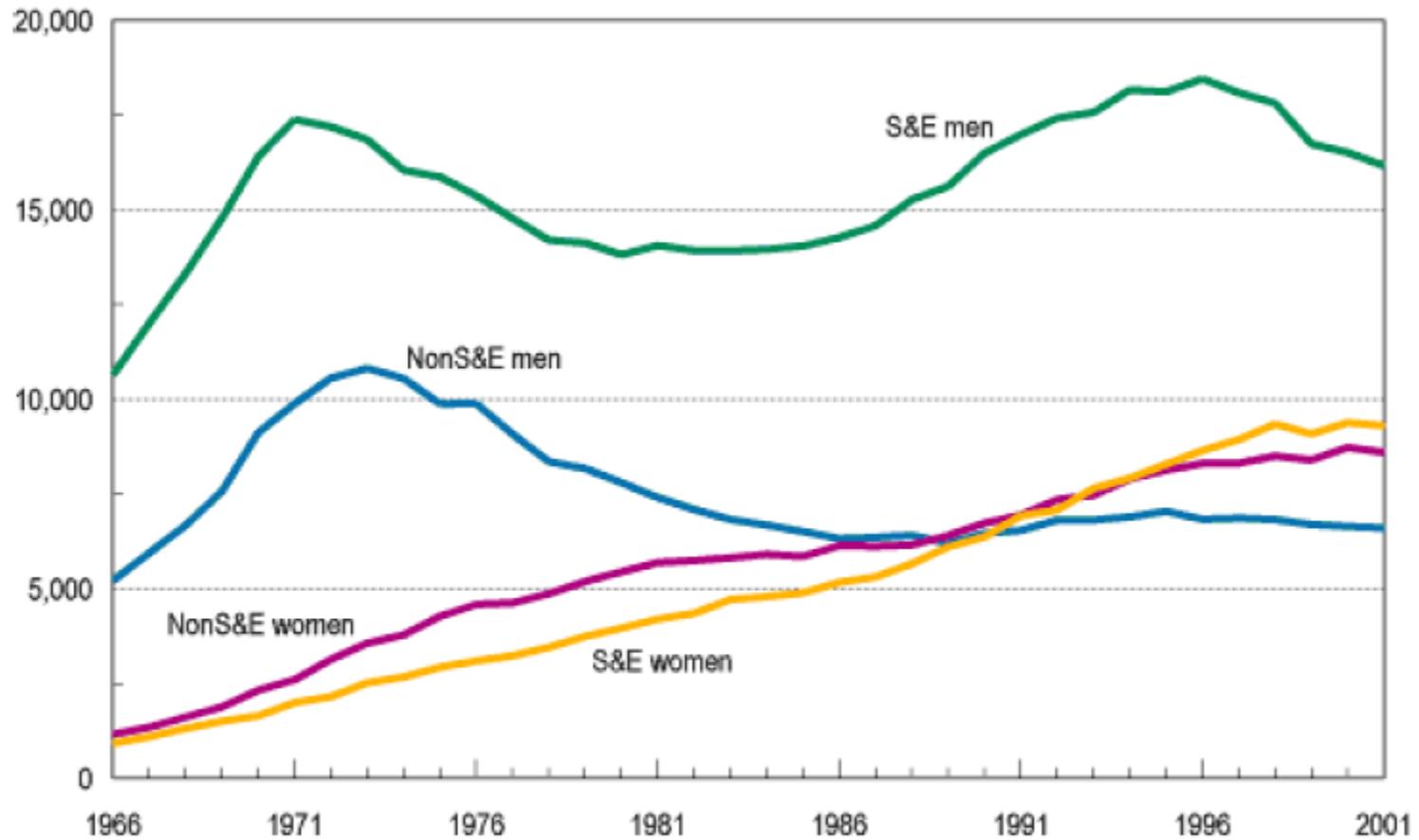


FIGURE 4-1 Doctoral degrees received, by broad field and gender, 1966-2001.  
SOURCE: NSF (2004c).

**TABLE 4-2** Male and Female Tenure-Track Faculty at Top 50 U.S. Educational Institutions (percent)

Discipline	Female		Male	
	Assistant Professors (%)	Ph.D. Attainment (%) (1993–2002)	Assistant Professors (%)	Ph.D. Attainment (%) (1993–2002)
Biological sciences	30.2	44.7	69.8	55.2
Chemistry (FY 2003)	21.5	31.3	78.5	68.6
Math	19.6	27.2	80.5	72.7
Computer science	10.8	20.5	89.2	79.2
Astronomy (FY 2004)	22.0	20.6	78.0	79.0
Physics	11.2	13.3	88.8	86.6
Chemical engineering	21.4	22.3	78.7	77.2
Civil engineering	22.3	18.7	77.8	81.3
Electrical engineering	10.9	11.5	89.2	88.5
Mechanical engineering	15.7	10.4	84.4	89.6
Economics	19.0	29.3	81.0	70.5
Political science	36.5	36.6	63.5	63.0
Sociology	52.3	58.9	47.7	41.0
Psychology	45.4	66.1	54.6	33.9

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: Adapted from Nelson and Rogers (2004).

# Summary of Faculty Recruitment Challenges

## BOX 4-1 Summary of Challenges

- ✓ Academe is one of several career choices for both men and women. Women, however, may find major research universities less attractive than other academic institutions and may be less inclined to seek employment in this sector.
  - Perceptions of working conditions are more negative for women than for men.
  - A lack of diversity in the department and among majors may deter some women from applying.
- ✓ Women with similar qualifications have less probability of being hired than male candidates.
  - Search committees do not cast a wide net.
  - Search committees evaluate women more rigidly than men.



# Summary of Faculty Recruitment Strategies

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## **BOX 4-2** **Strategies for Recruiting Women Faculty**

- ✓ Have the institution signal the importance of female faculty by making positive declarative statements, establishing a committee on women, exercising oversight over the hiring process, and devoting resources to hiring women.
  - ✓ Modify and expand faculty recruiting programs by creating special faculty lines, diversifying search committees, encouraging intervention by deans, and assessing past hiring efforts.
  - ✓ Improve institutional policies and practices such as the tenure clock, child care, leave, spousal hiring, and training to combat harassment.
  - ✓ Improve the success rate of women candidates by means of career advising, networking, and enhancing qualifications.
- 



## **BOX 4-3**

### **Summary of Strategies for Recruiting Women Faculty**

#### **What faculty can do:**

- Offer career advice and mentoring to doctoral and postdoctoral students.
- Assist doctoral and postdoctoral students in compiling a strong application package.

#### **What department chairs can do:**

- Create an image of the department as female friendly.
- Communicate with faculty about the importance of diversity in recruiting.
- Make departmental policies and practices transparent.
- Encourage faculty to work with doctoral and postdoctoral students for career placement and support their efforts.
  - Diversify search committees.
  - Evaluate and broaden efforts to publicize position openings.
  - Identify ways to limit service requirements for junior faculty.



## What deans and provosts can do:

- Communicate with department chairs about the importance of diversity in recruiting.
  - Review policies on tenure clock, child care, leave, and spousal hiring. Policies could be made transparent.
  - Conduct an assessment of recent hiring efforts and outcomes.
  - Get involved in departmental searches.
  - Institute human resources programs on sexual and racial discrimination.
  - Evaluate recent departmental job offers for fairness in allocation of resources and salary.
  - Consider the feasibility of special hiring slots for female faculty.
  - Offer incentives to departments that are more inclusive.

## What presidents can do:

- Publicly state the institution's commitment to diversity and inclusiveness whenever possible.
  - Create an institutional structure, such as a standing committee, to address diversity issues within the faculty. Charge that committee with monitoring diversity across the institution and with making recommendations to increase diversity.
  - Demonstrate the institution's commitment by meeting with faculty, encouraging the use of resources to enhance hiring strategies, and examining the institution's policies and practices on faculty issues.



# Advancing Women Faculty: Challenges and Causes

**Lower Tenure and Promotion Rates**

**Longer Time to Promotion**

**Lower Job Satisfaction**

**Lower Retention Rates**

**Work-Family Conflicts**

**Fewer Institutional Resources**

**An Alienating Departmental Culture**

**Inadequate Protection of Research Time**



**TABLE 5-1** Perception and Experience of Discrimination and Harassment by Gender

Problem <sup>a</sup>	Adjusted Mean Value <sup>b</sup> (Percent)		Adjusted Means (95% CD) <sup>c</sup>	
	Women (n=953)	Men (n=1010)	Percentage Points	<i>p</i> value
Respondents who perceived gender-specific bias in the academic environment <sup>d</sup>	11	90	47 (43-52)	<0.001
Respondents who personally experienced gender bias in professional advancement <sup>e</sup>	60	9	51 (48-55)	<0.001
Respondents who personally experienced gender advantage in professional advancement	31	11	20 (16-23)	<0.001
Respondents who personally experienced harassment <sup>f</sup>	52	5	47 (44-50)	<0.001

<sup>a</sup>Each question was scored on a scale of 1 to 5. Responses of 3, 4, or 5 were counted as positive.

<sup>b</sup>Adjusted for medical school, specialty, ethnicity/race or minority, and years since first faculty appointment.

<sup>c</sup>Value for women minus the value for men.

<sup>d</sup>1 = no, never, 5 = yes, frequently

<sup>e</sup>1 = no, 2 = not to my knowledge, 3 = possibly, 4 = probably, 5 = yes

<sup>f</sup>1 = number 2 = yes.

SOURCES: Carr et. al (2000).

# Summary of Faculty Advancement Issues

## BOX 5-1 Summary of Challenges

- ✓ Women faculty have lower rates of tenure and promotion.
- ✓ Women faculty must wait longer to receive a promotion.
- ✓ Women faculty have lower rates of retention.
- ✓ Women faculty have lower job satisfaction.

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## BOX 5-2 Strategies for Advancing Women Faculty

- ✓ Have the institution and departments signal the importance of women.
  - ✓ Create and reinforce female-friendly policies.
  - ✓ Strengthen mentoring.
  - ✓ Engage women faculty more fully in the institution.
- 



## **BOX 5-3**

### **Summary of Strategies for Advancing Women Faculty**

#### **What faculty can do:**

- Treat women faculty respectfully as equal colleagues.
- Be wary of unintentional thinking based on gender schemas.

#### **What department chairs can do:**

- Create an image of the department as female-friendly.
- Where possible, modify existing departmental policies and practices—for example, selecting times for standing meetings—so that no type of faculty member is disproportionately affected.
  - Make departmental policies and practices transparent.
  - Assess the distribution of institutional resources such as lab space and research assistants for fairness.
  - Put women on important departmental committees and recommend female faculty for important school-wide or university-wide committees.
  - Develop mentoring programs for all faculty.
  - Identify ways to limit service requirements for junior faculty.

## What deans and provosts can do:

- Communicate with department chairs about the importance of diversity.
- Review policies on tenure clock, child care, leave, and spousal hiring. Policies could be made transparent.
- Conduct an assessment of diversity within departments.
- Reinforce human resources programs on sexual and racial discrimination.
- Evaluate recent departmental offers for fairness in allocation of resources and salary.
- Offer incentives to departments that are more inclusive.

## What presidents can do:

- Publicly state the institution's commitment to diversity and inclusiveness whenever possible.
- Create an institutional structure, such as a standing committee, to address diversity issues within the faculty. Charge that committee with monitoring diversity across the institution and with making recommendations to increase diversity.
- Demonstrate the institution's commitment by meeting with faculty and devoting resources to programs that assist female students and faculty.



# Summary of Leadership Issues

## BOX 6-1 Summary of Challenges

There are fewer women top administrators than might be expected by simply viewing the proportion of senior women.

- ✓ The pipeline may still be small.
- ✓ Universities are increasingly searching in areas dominated by male candidates.
  - ✓ Women may show less interest in top administration positions, because they perceive the job to be less satisfying or to offer fewer rewards.
  - ✓ Discrimination may hinder the advancement of women.

## BOX 6-2 Strategies for Recruiting and Advancing Women to Executive Positions

- ✓ Conduct an institutional audit.
- ✓ Mentor “presidents-in-training.”
- ✓ Develop executive leadership training.
- ✓ Engage in networking activities.
- ✓ Change the search process.



## **BOX 6-3**

### **Summary of Strategies for Recruiting and Advancing Women to Executive Positions**

#### **What faculty can do:**

- Aspire to leadership positions.
- Take advantage of opportunities, both on and off campus, to gain leadership experience.
  - Network with other female faculty interested in leadership positions and with male and female academic officers.

#### **What department chairs can do:**

- Encourage female faculty to gain experience and skills in administration and to consider seeking administrative positions.
- Mentor female faculty on matters of administration.
- Create and use support networks (applicable to female department chairs).

## **What deans and provosts can do:**

- Encourage female faculty to gain experience and skills in administration and to consider leadership positions.
- Conduct an institutional audit.
- Develop on-campus leadership programs for faculty.
- Mentor prospective academic officers.
- Create and use support networks (applicable to female deans and provosts).

## **What presidents can do:**

- Publicly state the institution's commitment to diversity and inclusiveness whenever possible.
- Mentor prospective candidates for executive positions. Mentoring can be done at the same institution or across institutions.
- Conduct a self-assessment of the institution.
- Encourage prospective candidates to enroll in leadership training programs.
- Develop a leadership program on campus.
- Diversify search committees for departmental chair or dean positions.



# Reflections

- Recruitment **and** retention of women in S&E remain issues
- The subject is personal to everyone in S&E
- The report discussed highlights implemented strategies
- The report provides blueprints for action at all academic levels
- **Institutional signaling is a top recommendation**
- Absent: high-level recommendations for people at a given level



**What should Argonne postdocs be doing?**

