Female Engineering Faculty at U.S. Institutions: A Data Profile

Committee on Women in Science and Engineering, National Research Council

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FEMALE ENGINEERING FACULTY AT U.S. INSTITUTIONS: A DATA PROFILE

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NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competencies and with regard for appropriate balance.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report: Sheila M. Humphreys, EECS; Eleanor Baum, Albert Nerken School of Engineering; and Julia Weertman, Northwestern University.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations, nor did they see the final draft of the report before its release. The review of this report was overseen by Stephen Lukasik. Appointed by Policy and Global Affairs he was responsible for making certain that an independent examination of the report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

This data source was supported by Academies Core Funding.

This report is available on the Internet at http://www.nap.edu.

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BACKGROUND AND ACKNOWLEDGEMENTS

This project grew from discussions between the National Research Council's Committee on Women in Science and Engineering (CWSE) and several of its sponsoring organizations concerning the absence of a national directory of female engineering faculty. Further review with staff of the National Academy of Engineering revealed additional interest in acquiring more specific information about female engineering faculty.

With the National Science Foundation and the National Academy of Engineering, CWSE engaged in a multi-year project to create a data profile of female faculty members from U.S. engineering schools and departments. Deans and department chairs submitted lists of faculty members to form the directory. It is available in searchable format at http://www4.nationalacademies.org/osep/fefhome.nsf.

The data profile was created through a directory and a survey of 1,303 women engineering faculty at 321 institutions conducted in 1996. The survey response rate was 71 percent (n= 775). The data profile includes information on faculty members' educational background and employment status, along with their own assessment of factors related to career success.

Because of difficulties in data collection and staff turnover, publication of the survey results was delayed. Thus, the survey responses and the directory of faculty members with their institutional locations are now several years old. However, the information on faculty members' educational experiences, career influences, and job satisfaction raise questions that are still relevant.

Much of the information obtained from the survey is organized by the "field of highest degree" of the faculty members. While this information is not a surrogate for participants' current "engineering field" or "department," it does provide a method of categorizing individuals that is relatively consistent. Since postsecondary institutions organize their engineering research and instruction very differently across the country, a taxonomy based on departmental affiliation or field of employment contains greater ambiguities. As many of the fields contain a small number of individuals, they have been grouped for purposes of analysis into 10 discipline areas, with an 11th group of "other fields" (see Table 2-2). This somewhat arbitrary aggregation was necessary to report the survey results in groups large enough to protect the identity of individual respondents.

This document is a data profile. It provides a snapshot of the education and careers of female engineering faculty members. It does not provide comparisons with male engineering faculty, or with female faculty in other fields, since those groups were not surveyed. Nevertheless, the responses of the faculty members to the survey questions do provide insight into the career paths of women faculty in engineering.

We thank the NAE and NSF staff who aided in this report, and the many NRC staff who worked on the project. The Committee gratefully acknowledges the following sponsors who

provided support to CWSE during the project: the Andrew W. Mellon Foundation, National Institutes of Health, United States Department of Energy, United States Department of the Interior, United States Department of Veterans Affairs, and Xerox Corporation. We would also like to thank the following individuals for their review of this report: Stephen Lukasik (Review Coordinator), Independent Consultant; Eleanor Baum, The Cooper Union; Sheila Humphreys, University of California, Berkeley; and Julia Weertman, Northwestern University.

The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

II. HIGHLIGHTS

Demographics

Age

- 69 percent of Female Engineering Faculty (FEF) were less than 45 years old; only 7 percent were age 55 or older (Table 1-1).

- FEF with a degree in aerospace/industrial engineering or materials science/plastics/ceramics engineering had the highest proportion of individuals under age 35 (33 and 26 percent, respectively).

- FEF whose highest degree was in an engineering field tended to be distributed more heavily in the younger age cohorts than those with a degree in a non-engineering field (Figure 1-1).

Race/Ethnicity

- 81 percent of FEF were white, 10 percent were Asians/Pacific Islanders, and 8 percent were underrepresented minorities (Table 1-2).

- Electrical/computer engineering had the highest proportion of Asians/Pacific Islanders (19 percent); aerospace/industrial engineering and other engineering had the highest proportions of underrepresented minorities (13 and 12 percent, respectively).

Citizenship

- 12 percent of FEF were foreign citizens; foreign citizens were in the highest proportion in the fields of electrical/computer engineering, physical sciences, and civil engineering (between 18 and 21 percent) (Table 1-3).

Marital Status/Family

- 57 percent of FEF had one or more dependents (Table 1-4).

- Of those married (73 percent of FEF respondents), 80 percent said that their spouse had completed a degree in science or engineering and 77 percent had a spouse working in science or engineering. The spouses of FEF were most likely to have been employed in a 4-year college/university (41 percent) or for-profit business (31 percent) (Figure 1-2).

Education/Employment of Parents

- Most parents of FEF had received at least a high school diploma (89 percent of mothers and 91 percent of fathers). Many had also gone further in their education, with 48 percent of

mothers and 64 percent of fathers receiving a bachelor's degree or higher (Table 1-5 and Figure 1-3).

- More mothers had some undergraduate education, but more fathers achieved post-baccalaureate degrees (Table 1-5).

- The employment sector of the mothers of FEF was most likely to have been elementary/secondary school or for-profit business (18 and 15 percent, respectively). 24 percent of FEF reported "not applicable" for their mothers' employment sector. Fathers of FEF were most likely to be working in a for-profit business (39 percent), be self-employed (18 percent), or working in the government sector (16 percent) (Table 1-6).

Education

Level of Highest Degree

- The majority of female engineering faculty held Ph.D.s (676, or 87 percent). Of the remaining 99 individuals, 70 held master's degrees, 9 held bachelor's degrees, 3 reported some other postsecondary degree, and 17 did not give information on their educational history (Table 2-1; Figure 2-1).

Field of Highest Degree

- Of the FEF with Ph.D.s who identified a field, 97 percent were in engineering and sciences compared to only 3 percent of those in "other fields" (Table 2-2).

- For all degree levels, 71 percent of the FEF held their highest degree in an engineering field (Figure 2-2).

Year of Highest Degree

- 80 percent of the Ph.D.s reported were earned between 1980 and 1996. 43 percent of the degrees were earned in the 1980s and 37 percent in the 1990s (Table 2-3).

- A higher proportion of Asians/Pacific Islanders and underrepresented minorities earned their highest degree in the 1990s (47 and 49 percent, respectively) than whites (35 percent) (Table 2-4; Figure 2-3).

Postsecondary Education

- FEF in the study reported earning 771 bachelor's degrees from 287 different institutions.[1] Table 3-5 lists the top producing institutions, headed by the Massachusetts Institute of

1 Thirty-eight individuals reported earning two bachelor's degrees.

Technology with 25 bachelor's degrees granted to FEF. In Table 3-6, the bachelor's degree-granting institutions were categorized by the Carnegie classification.[2]

- The 676 Ph.D.s earned by FEF were granted by 159 institutions. Again, Massachusetts Institute of Technology led in number of Ph.D.s granted (48), followed by Stanford University and University of California, Berkeley (38 and 37, respectively) (Table 2-7). The large majority of Ph.D.s were earned at Research I institutions (76 percent). Only a small proportion of the Ph.D. degrees were earned at foreign institutions (7 percent) (Table 2-8).

Decision to Become an Engineer

- 42 percent of FEF reported that they decided to become engineers before entering engineering college; an additional 20 percent made the decision in the first two years of college (Figure 2-4).

- The dominant influences on FEF deciding to become engineers were family and friends (26 percent), self-perceptions e.g., interest and ability in science or mathematics, and perception of what engineers do (24 percent), and factors related to employment e.g., job experiences, opportunity to teach or do research (18 percent) (Figure 2-5).

Postsecondary Mentoring

A mentor was defined as "a male or female who is knowledgeable about engineering, both theory and practice, and who takes an active interest in a person's career development."

Among the mentoring activities listed, three were reported most frequently (between 66 and 68 percent):

- counseled and directed research*
- provided opportunities to serve as research assistant*
- served as a role model

* research mentorship

- 40 to 68 percent of FEF reported experiencing each type of mentoring listed on the survey (Figure 2-6).

- The majority of FEF (63 percent) decided to pursue academic careers during graduate school or after earning their highest degree (Figure 2-7).

2 The Carnegie classifications were developed by the Carnegie Foundation for the Advancement of Teaching. The 1994 edition, which was used for this report, groups accredited U.S. institutions into 11 categories, based on the level of degrees they award, the fields in which the degrees are conferred, and in some categories, enrollment, federal research support, and selectivity of admissions criteria.

Employment

Academic Rank

- Nearly three-fourths of FEF were assistant or associate professors (39 percent and 34 percent, respectively). 18 percent held full professorships (Table 3-1).

- FEF with a degree in physical sciences were most likely to be full professors (40 percent, compared with 18 percent of FEF overall). It should be noted that 48 percent of the FEF in physical sciences received their degrees prior to 1980 (compared with 16 percent of FEF overall), and therefore had more time to achieve higher academic ranks (Table 2-3).

Tenure

- Nearly one-half (49 percent) of FEF were tenured, and another 39 percent were in tenure-track positions. Only 7 percent were not on tenure track and 5 percent said tenure was not applicable either to their position or to their institution (Table 3-2).

- Women with a degree in mathematical sciences/operations research or physical sciences were more likely to be tenured (70 percent and 64 percent, respectively).

- Among women whose highest degree was earned in engineering, the largest proportion in tenured positions were women with chemical/mineral engineering degrees (60 percent).

- Whites and Asians/Pacific Islanders were more likely to be tenured (49 percent for each) than underrepresented minorities (30 percent) (Figure 3-1).

- 50 percent of FEF felt that tenure criteria at their institutions were clear and well-defined. The proportion with this perception was higher among women who had achieved tenure than among those on tenure track (55 percent compared with 45 percent) (Table 3-3).

- A majority of both those tenured and those on tenure track believed the tenure policies under which they operated were fair to women (64 percent and 60 percent, respectively).

Primary Work Activity and Field of Teaching or Research

Respondents were asked to provide the percentage of time spent in various work activities. The activity with the highest percentage was designated as the primary work activity for the purposes of analysis. When teaching and research were both reported at 50 percent, the combination "teaching/research" was considered the primary work activity.

- The most common primary work activity was teaching (44 percent), followed by research (28 percent), teaching/research (15 percent), and administration (7 percent) (Table 3-4).

- FEF who received their highest degree in "other fields" (i.e., a field outside of engineering, mathematical sciences, computer science, or physical sciences) reported teaching in the

highest proportion (63 percent) and research (7 percent) in the lowest proportion as the primary work activity. Women trained in chemical/mineral engineering were most likely to report research as their primary activity (45 percent) (Table 3-4).

Salary

- 44 percent of FEF were earning salaries greater than $60,000 (Table 3-5). The largest proportion earning more than $80,000 had earned their highest degree in physical sciences (30 percent), while the largest proportion earning $50,000 or less was in mechanical engineering/general engineering (27 percent).

- Nearly equal proportions of whites and underrepresented minorities were earning more than $60,000 (45 percent and 44 percent, respectively). A smaller proportion of Asians/Pacific Islanders was in this income range (36 percent) (Table 3-6).

Academic Productivity

As a means of measuring academic productivity, FEF were asked about their publications, presentations, and other projects during a two-year period (1994 and 1995).

- 47 percent made more than three presentations at conferences during a two-year period. 29 percent made one to three presentations. 38 percent published one or more articles in peer-reviewed journals; 31 percent published more than three articles (Figure 3-2).

Job Satisfaction

- By field of highest degree, physical sciences and other fields showed the highest percentage of some degree of job satisfaction, 76 percent and 74 percent, respectively (Table 3-7).

- The highest proportion expressing some degree of dissatisfaction were those with a degree in mechanical/general engineering (37 percent) and mathematical sciences/operations research (28 percent).

- Those aged 40-44 and over 55 reported the highest percentages of some degree of satisfaction. The 55+ age group also included the most FEF working in the physical sciences and other fields (Table 3-8; Table 1-1).

- Those aged 35-39 and 45-54 reported the highest percentages of some degree of dissatisfaction.

Previous Employment

Percentages in Tables 4-9 and 4-10 are based on the 492 women who reported a sector for their previous employment.

- The largest proportion of those who had had a prior engineering position were self-employed or employed by a for-profit business or industry (44 percent). Another 37 percent were formerly in the education sector, but were either at a different institution or held a different position (Table 3-9).

- By field of highest degree, FEF with degrees in aerospace/industrial engineering and other fields were the most likely to have been previously employed in business/industry (56 percent each). Those with a degree in civil engineering or physical sciences switched from the government sector to academe most frequently (23 percent each).

Reasons for Change of Employment

FEF gave a wide range of reasons for switching jobs. For analysis purposes, the reasons were grouped into three broad areas: work environment, professional motivation, and family/personal reasons. The subcategories associated with each of these areas are shown in Table 3-10.

- The reasons related to professional motivation accounted for 59 percent of the job changes, with "opportunities for advancement" being the individual subcategory chosen most frequently.

- Family/personal reasons and work environment were less important than professional motivation (19 percent and 13 percent, respectively).

Influences on the Careers of FEF

Female Engineering Faculty (FEF) were asked whether certain aspects of the work environment and certain life cycle events had had an impact on their careers. If a category was not applicable, the respondent was instructed to answer "no impact." Table 3-11 summarizes the results of these inquiries.

- "Teaching responsibilities" (62 percent), "opportunity to do research" (63 percent), and "opportunities to attend professional meetings" (70 percent) were most often said to have had a positive impact on the career. "Balancing work and family responsibilities" had the highest proportion of FEF reporting a negative impact (52 percent).

- FEF were asked to describe, in an open-ended format, what most facilitated their academic careers. Responses were grouped into five major categories for analysis: aspects of the work environment, influences by others, self, education, and prior experience.

- Aspects of the work environment were cited most frequently (33 percent) followed by influences by others (17 percent) (Table 3-12).

Areas for Further Inquiry

The final question on the Survey of Female Engineering Faculty gave respondents an opportunity to identify areas for additional inquiry (Table 4-1). Over 200 suggestions were offered, covering the following general areas:

- Personal Background
- Preparation for Academe
- Terms of Employment
- Work Environment
- Family Status and Responsibilities
- Job Satisfaction and Factors Affecting Success
- Non-native U.S. Citizens

Topics related to job satisfaction and factors affecting success predominated. Overall job satisfaction was mentioned 18 times and mentoring 19 times. Forty respondents thought more inquiry was needed into other obstacles faced in education and employment; 33 women mentioned the area of family status and responsibilities, especially balancing work responsibilities and personal life. Topics related to faculty members' terms of employment and work environment were mentioned 28 and 26 times, respectively.

TABLE 1-1 Age of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

		Age											
	Total	Under 35		35-39		40-44		45-54		55 or Older		No Report	
Field of Highest Degree	No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	124	16	219	28	194	25	156	20	58	7	24	3
Aerospace/Industrial Engineering	52	17	33	20	38	8	15	5	10	1	2	1	2
Chemical/Mineral Engineering	84	13	15	28	33	19	23	18	21	2	2	4	5
Civil Engineering	81	9	11	21	26	36	44	13	16	2	2	0	0
Electrical/Computer Engineering	124	26	21	40	32	27	22	20	16	7	6	4	3
Materials Sci/Plastics/Ceramics Engineering	42	11	26	11	26	12	29	6	14	1	2	1	2
Mechanical/General Engineering	99	17	17	33	33	26	26	16	16	5	5	2	2
Other Engineering	67	13	19	19	28	23	34	10	15	2	3	0	0
Computer Sciences	64	8	13	16	25	12	19	20	31	7	11	1	2
Mathematical Sci/Operations Research	40	6	15	7	18	8	20	12	30	6	15	1	3
Physical Sciences	50	0	0	9	18	12	24	15	30	10	20	4	8
Other Fields	43	3	7	9	21	3	7	16	37	12	28	0	0
No Field Specified	29	1	3	6	21	8	28	5	17	3	10	6	21

FIGURE 1-1 Engineering vs. non-engineering degree distribution by age.

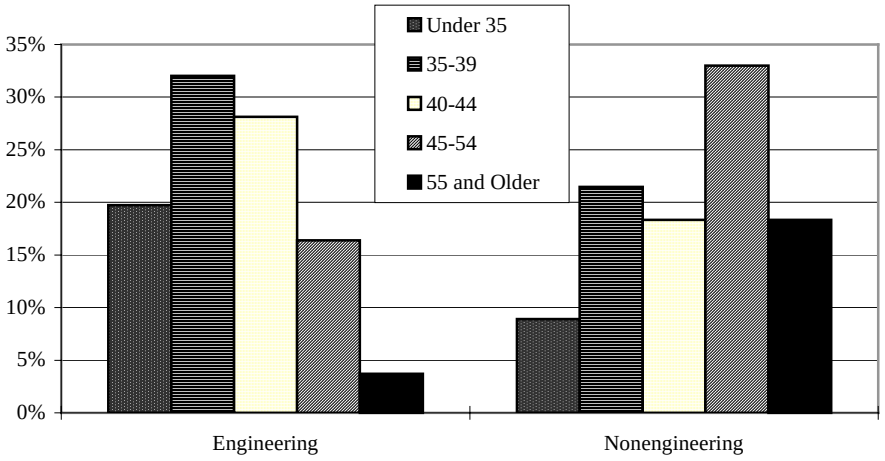

TABLE 1-2 Race/Ethnicity of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

		Race/Ethnicity							
	Total	White		Asian/Pacific Islander		Underrepresented Minorities*		No Report	
Field of Highest Degree	No.	No.	%	No.	%	No.	%	No.	%
Total	775	625	81	74	10	61	8	15	2
Aerospace/Industrial Engineering	52	41	79	4	8	7	13	0	0
Chemical/Mineral Engineering	84	71	85	6	7	6	7	1	1
Civil Engineering	81	67	83	8	10	6	7	0	0
Electrical/Computer Engineering	124	87	70	24	19	12	10	1	1
Materials Sci/Plastics/Ceramics Engineering	42	34	81	4	10	4	10	0	0
Mechanical/General Engineering	99	89	90	6	6	4	4	0	0
Other Engineering	67	56	84	2	3	8	12	1	1
Computer Sciences	64	51	80	8	13	2	3	3	5
Mathematical Sciences/Operations Research	40	35	88	2	5	3	8	0	0
Physical Sciences	50	39	78	6	12	3	6	2	4
Other Fields	43	35	81	2	5	4	9	2	5
No Report	29	20	69	2	7	2	7	5	17

*Underrepresented minorities include African American, Native American, Hispanic, and "other."

TABLE 1-3 Citizenship of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

		Citizenship					
	Total	U.S.		Non-U.S.		No Report	
Field of Highest Degree	No.	No.	%	No.	%	No.	%
Total	775	673	87	93	12	9	1
Aerospace/Industrial Engineering	52	46	88	6	12	0	0
Chemical/Mineral Engineering	84	76	90	7	8	1	1
Civil Engineering	81	64	79	17	21	0	0
Electrical/Computer Engineering	124	101	81	22	18	1	1
Materials Sci/Plastics/Ceramics Engineering	42	37	88	4	10	1	2
Mechanical/General Engineering	99	95	96	4	4	0	0
Other Engineering	67	60	90	7	10	0	0
Computer Sciences	64	59	92	5	8	0	0
Mathematical Sciences/Operations Research	40	37	93	3	8	0	0
Physical Sciences	50	38	76	10	20	2	4
Other Fields	43	40	93	3	7	0	0
No Field Specified	29	20	69	5	17	4	14

TABLE 1-4 Marital Status and Number of Dependents of Female Faculty at U.S. Institutions

	Number	Percent
Marital Status		
Total	775	100
Married	563	73
Not Married	199	26
No Report	13	2
Dependents		
Total	775	100
None	319	41
One	170	22
Two	188	24
Three or More	82	11
No Report	16	2

FIGURE 1.2 Employment of spouse of female engineering faculty at U.S. institutions.

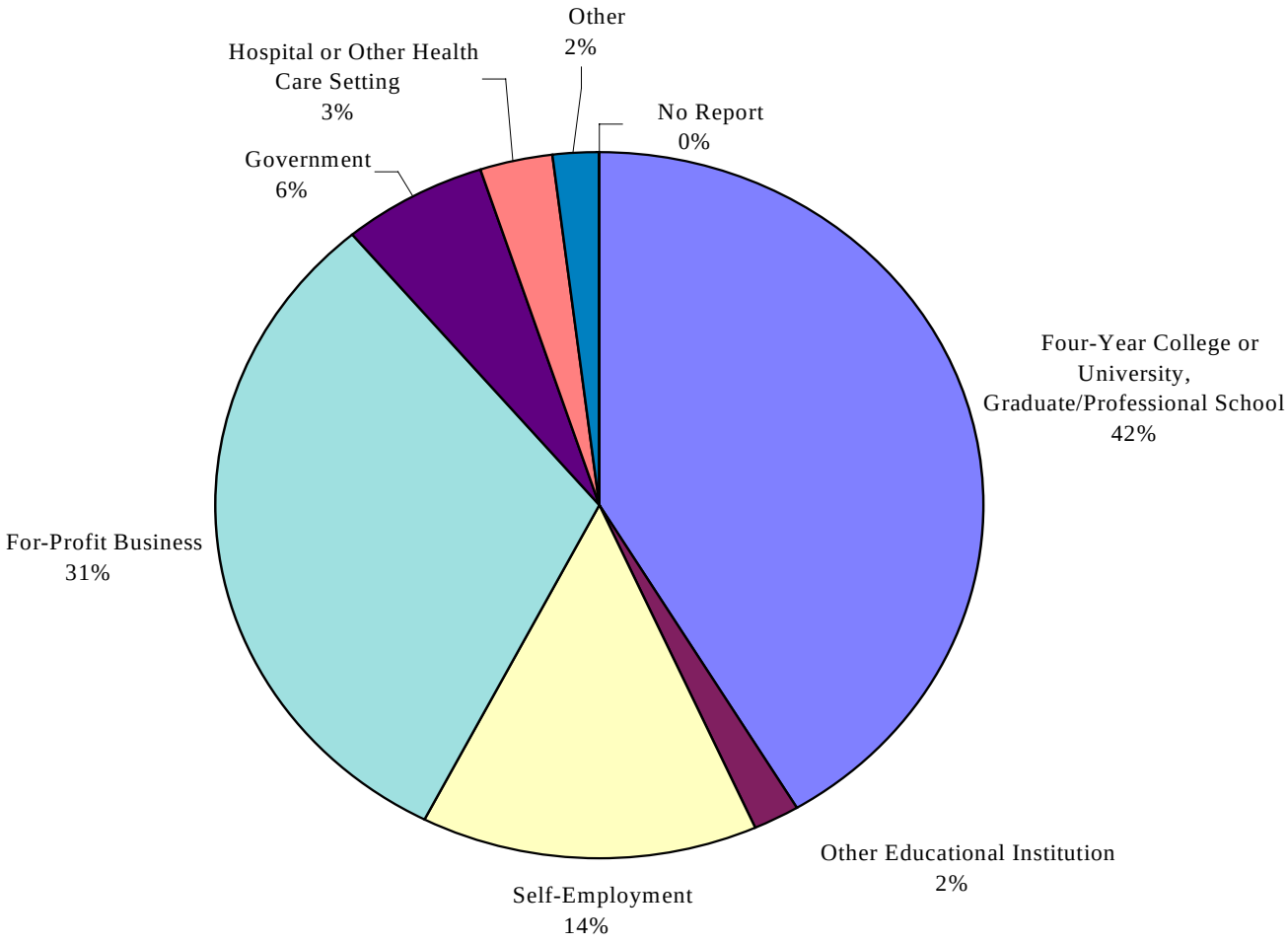

TABLE 1-5 Highest Levels of Education of Parents of Female Engineering Faculty at U.S. Institutions

	Of Mother		Of Father	
Highest Level of Education	Number	Percent	Number	Percent
Total	775	100	775	100
Less Than High School Diploma	76	10	65	8
High School Diploma	180	23	115	15
Some Postsecondary Education	108	14	67	9
Associate's Degree	40	5	22	3
Bachelor's Degree	137	18	161	21
Some Graduate Education	51	7	48	6
Master's Degree	93	12	122	16
Doctorate or Professional Degree	82	11	166	21
No Report	8	1	9	1

FIGURE 1-3 Highest education level of parents of female engineering faculty.

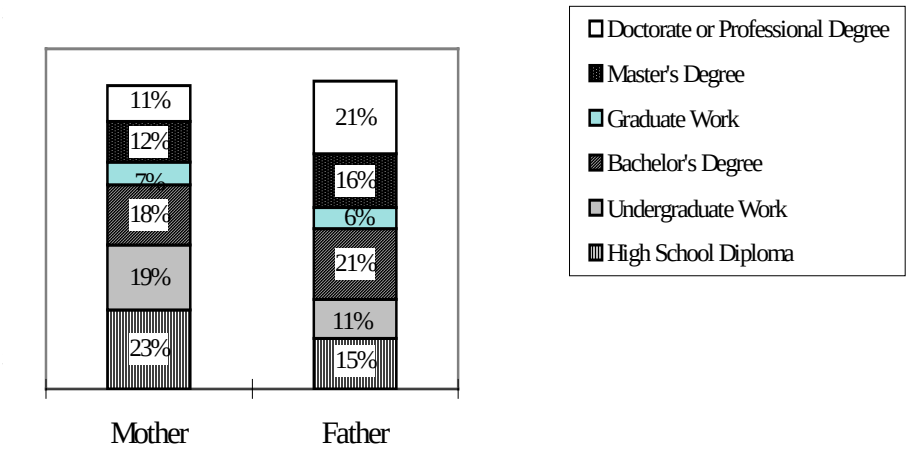

TABLE 1-6 Employment Sector of Parents of Female Engineering Faculty at U.S. Institutions

	Of Mother		Of Father	
Employment Sector	Number	Percent	Number	Percent
Total	775	100	775	100
4-Year College or University, Graduate/Professional School	33	4	78	10
2-Year or Other Postsecondary Institution	14	2	4	1
Elementary or Secondary School	137	18	37	5
Self-Employment	41	5	137	18
Hospital or Other Health-Care or Clinical Setting	83	11	23	3
For-Profit Business or Industry in Private Sector	114	15	301	39
Foundation or Other Nonprofit Organization	15	2	10	1
Federal, State, Local Government	45	6	121	16
Other	67	9	39	5
Not Applicable	188	24	9	1
No Report	38	5	16	2

TABLE 2-1 Level of Highest Degree for Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

	Total		Level of Highest Degree									
			Ph.D.		Master's		Bachelor's		Other		No Report	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	676	87	70	9	9	1	3	0	17	2
Aerospace/Industrial Engineering	52	7	46	88	6	12	0	0	0	0	0	0
Chemical/Mineral Engineering	84	11	80	95	4	5	0	0	0	0	0	0
Civil Engineering	81	10	77	95	4	5	0	0	0	0	0	0
Electrical/Computer Engineering	124	16	114	92	8	6	1	1	1	1	0	0
Materials Sci/Plastics/Ceramics Engineering	42	5	41	98	1	2	0	0	0	0	0	0
Mechanical/General Engineering	99	13	83	84	13	13	2	2	1	1	0	0
Other Engineering	67	9	63	94	4	6	0	0	0	0	0	0
Computer Sciences	64	8	59	92	5	8	0	0	0	0	0	0
Mathematical Sci/Operations Research	40	5	37	93	2	5	1	3	0	0	0	0
Physical Sciences	50	6	42	84	7	14	1	2	0	0	0	0
Other Fields	43	6	23	53	15	35	4	9	1	2	0	0
No Field Specified	29	4	11	38	1	3	0	0	0	0	17	59

FIGURE 2-1 Highest degree of female engineering faculty at U.S. institutions.

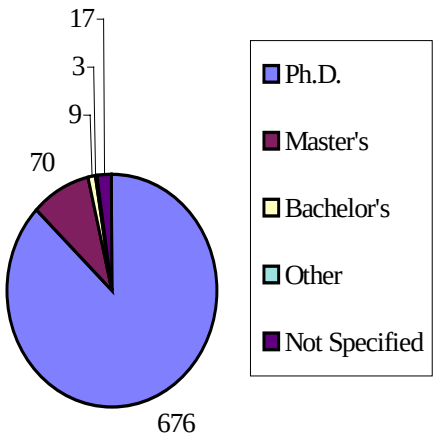

TABLE 2-2 Field of Highest Degree of Female Engineering Faculty at U.S. Institutions

Field	Number
Total	775
Aerospace/Industrial Engineering	52
Aerospace/Aeronautical/Astronautical	16
Industrial/Manufacturing	36
Chemical/Mineral Engineering	84
Chemical	70
Petroleum	1
Mineral	5
Metallurgical	8
Civil Engineering	81
Electrical/Computer Engineering	124
Computer	15
Electrical/Electronics	104
Systems	5
Materials Sci/Plastics/Ceramics Engineering	42
Materials Science	35
Plastics/Polymer	3
Ceramics	4
Mechanical/General Engineering	99
Engineering Mechanics	13
Mechanical Engineering	79
Engineering Science	2
Engineering, General	5
Other Engineering	67
Agricultural	4
Bioengineering/Biomedical	14
Environmental	29
Food	1
Nuclear	5
Engineering, Other	14
Computer Sciences	64
Computer Sciences	63
Information Science and Systems	1
Mathematical Sciences/Operations Research	40
Applied Mathematics	6
Mathematical Statistics	3
Operations Research	18
Mathematics, General	13
Physical Sciences	50
Astronomy	1
Atmospheric Science/Meteorology	1
Organic Chemistry	1
Physical Chemistry	1
Chemistry, General	4
Chemistry, Other	1
Geology	1
Geochemistry	1
Chemical/Atomic/Molecular Physics	1
Nuclear Physics	1
Solid State/Low Temperature Physics	2
Physics, General	25
Physics, Other	4
Environmental Science	2
Oceanography	1
Physical Sciences, Other	3
Other Fields	43
Other Soil Sciences	1
Other Agricultural Sciences	1
Biochemistry	1
Bacteriology	1
Anatomy	1
Biometrics/Biostatistics	1
Cell Biology	1
Microbiology	1
Human/Animal Genetics	1
Human/Animal Physiology	1
Counseling Psychology	1
Comparative Literature	1
English Literature	1
Archeology	1
Philosophy	1
Education	12
Business/Management	8
Communications	1
Architecture	2
Law	1
Other Professional Fields	1
Other Fields	3
No Report	29

FIGURE 2-2 Broad field of highest degree by degree level for female engineering faculty at U.S. institutions.

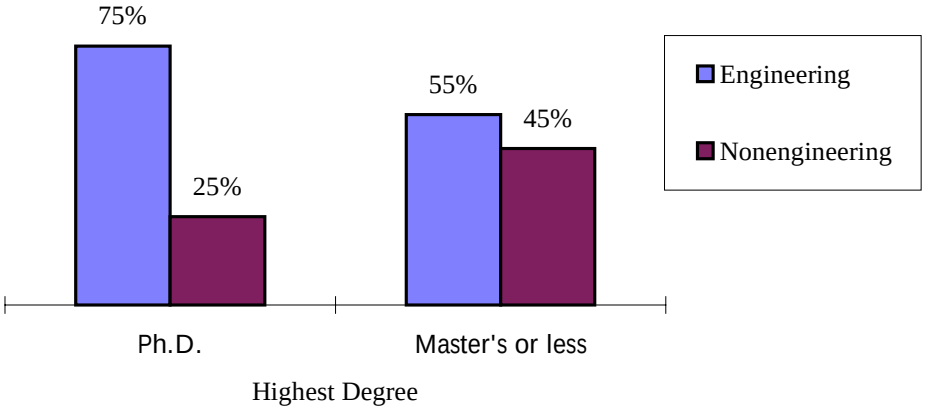

TABLE 2-3 Year of Highest Degree of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

		Year of Highest Degree									
	Total	1951-1969		1970-1979		1980-1989		1990-1996		No Report	
Field of Highest Degree	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	23	3	101	13	336	43	283	37	32	4
Aerospace/Industrial Engineering	52	0	0	4	8	20	38	26	50	2	4
Chemical/Mineral Engineering	84	3	4	8	10	47	56	24	29	2	2
Civil Engineering	81	0	0	3	4	44	54	34	42	0	0
Electrical/Computer Engineering	124	3	2	16	13	44	35	58	47	3	2
Materials Sci/Plastics/Ceramics Engineering	42	0	0	4	10	21	50	17	40	0	0
Mechanical/General Engineering	99	0	0	12	12	45	45	40	40	2	2
Other Engineering	67	1	1	3	4	33	49	29	43	1	1
Computer Sciences	64	1	2	9	14	25	39	27	42	2	3
Mathematical Sciences/Operations Research	40	2	5	15	38	14	35	9	23	0	0
Physical Sciences	50	8	16	16	32	21	42	4	8	1	2
Other Fields	43	5	12	10	23	14	33	13	30	1	2
No Report	29	0	0	1	3	8	28	2	7	18	62

TABLE 2-4 Race/Ethnicity of Female Engineering Faculty at U.S. Institutions, by Year of Highest Degree

			Race/Ethnicity							
	Total		White		Asian/Pacific Islander		Underrepresented Minorities*		No Report	
Year of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	625	81	74	10	61	8	15	2
Before 1970	23	3	18	78	5	22	0	0	0	0
1970-1979	101	13	86	85	6	6	7	7	2	2
1980-1989	336	43	280	83	27	8	22	7	7	2
1990-1996	283	37	217	77	35	12	30	11	1	0
Not Specified	32	4	24	75	1	3	2	6	5	16

*Underrepresented minorities include black, Native American, Hispanic, and "other."

FIGURE 2-3 Year of highest degree by race/ethnicity of female engineering faculty at U.S. institutions.

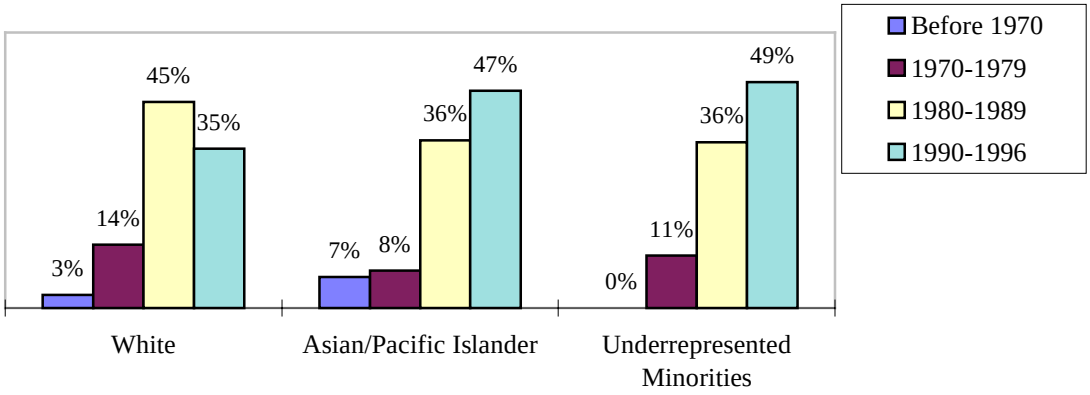

TABLE 2-5 U.S. Top-Producing Baccalaureate Institutions of Female Engineering Faculty

Institution	Number of Degrees
Massachusetts Institute of Technology	25
University of Michigan-Ann Arbor	17
Cornell University/NY	14
University of Illinois-Urbana-Champaign	14
Stanford University/CA	13
Carnegie Mellon University/PA	12
Iowa State University	12
Michigan State University	11
The Pennsylvania State University	10
University of Minnesota-Twin Cities	10
Princeton University/NJ	9
Georgia Institute of Technology	8
Rensselaer Polytechnic Institute/NY	8
Texas A&M University	8
Harvard University/MA	8
Columbia University/NY	7
University of California-Berkeley	7
Virginia Polytechnic Institute & State University	7
University of Wisconsin-Madison	7
University of Pittsburgh/PA	7
North Carolina State University-Raleigh	6
Swarthmore College/PA	6
Purdue University/IN	6
Alfred University/NY	5
University of Washington	5
University of Rochester/NY	5
University of Pennsylvania	5
University of California-San Diego	5
Northwestern University/IL	5
Clemson University/SC	5
Brooklyn College, CUNY	5

TABLE 2-6 Carnegie Classification of Baccalaureate Institutions of Female Engineering Faculty at U.S. Institutions

Carnegie Classification	Number of Degrees	Percent
Total Bachelor's Degrees	771	100
Research University I	341	44
Research University II	64	8
Doctorate Granting I	27	4
Doctorate Granting II	33	4
Comprehensive I	72	9
Comprehensive II	6	1
Liberal Arts I	44	6
Liberal Arts II	15	2
Other Classifications	13	2
Foreign Institutions	146	19
Unknown Institutions	10	1

TABLE 2-7 Top-Producing Doctoral Institutions of Female Engineering Faculty U.S. Institutions

Institution	Number of Degrees
Massachusetts Institute of Technology	48
Stanford University/CA	38
University of California-Berkeley	37
University of Illinois-Urbana-Champaign	24
Carnegie Mellon University/PA	21
Northwestern University/IL	16
University of Michigan-Ann Arbor	15
Cornell University/NY	12
Georgia Institute of Technology	12
Princeton University/NJ	11
Purdue University/IN	11
University of Minnesota-Twin Cities	11
Ohio State University	9
University of Colorado	9
University of Wisconsin-Madison	9
University of Pennsylvania	9
University of Maryland	9
Texas A&M University	9
California Institute of Technology	8
Iowa State University	8
Michigan State University	8
North Carolina State University-Raleigh	8
Columbia University/NY	7
University of California-Davis	7
Virginia Polytechnic Institute & State University	7
University of Southern California	7
Johns Hopkins University/MD	7

TABLE 3-1 Academic Rank of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

			Academic Rank											
	Total		Professor		Associate		Assistant Professor		Instructor/ Lecturer		Other		No Report	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	139	18	264	34	305	39	28	4	36	5	3	0
Aerospace/Industrial Engineering	52	7	3	6	22	42	23	44	3	6	1	2	0	0
Chemical/Mineral Engineering	84	11	14	17	37	44	31	37	0	0	2	2	0	0
Civil Engineering	81	10	9	11	28	35	40	49	3	4	1	1	0	0
Electrical/Computer Engineering	124	16	23	19	39	31	55	44	2	2	4	3	1	1
Materials Sci/Plastics/Ceramics Engineering	42	5	6	14	7	17	27	64	0	0	2	5	0	0
Mechanical/General Engineering	99	13	16	16	31	31	41	41	4	4	7	7	0	0
Other Engineering	67	9	7	10	21	31	35	52	2	3	2	3	0	0
Computer Sciences	64	8	12	19	25	39	22	34	4	6	1	2	0	0
Mathematical Sciences/Operations Research	40	5	11	28	17	43	10	25	1	3	1	3	0	0
Physical Sciences	50	6	20	40	17	34	9	18	1	2	3	6	0	0
Other Fields	43	6	9	21	8	19	7	16	7	16	11	26	1	2
No Field Specified	29	4	9	31	12	41	5	17	1	3	1	3	1	3

TABLE 3-2 Tenure Status of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

			Tenure Status									
	Total		Tenured		On Tenure Track		Not on Tenure Track		Tenure Not Applicable		No Report	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	376	49	300	39	53	7	38	5	8	1
Aerospace/Industrial Engineering	52	7	22	42	23	44	5	10	2	4	0	0
Chemical/Mineral Engineering	84	11	50	60	31	37	3	4	0	0	0	0
Civil Engineering	81	10	34	42	42	52	2	2	2	2	1	1
Electrical/Computer Engineering	124	16	60	48	50	40	5	4	6	5	3	2
Materials Sci/Plastics/Ceramics Engineering	42	5	11	26	28	67	2	5	1	2	0	0
Mechanical/General Engineering	99	13	44	44	38	38	11	11	6	6	0	0
Other Engineering	67	9	24	36	34	51	5	7	4	6	0	0
Computer Sciences	64	8	32	50	24	38	3	5	5	8	0	0
Mathematical Sciences/Operations Research	40	5	28	70	9	23	1	3	2	5	0	0
Physical Sciences	50	6	32	64	12	24	3	6	2	4	1	2
Other Fields	43	6	20	47	5	12	12	28	6	14	0	0
No Field Specified	29	4	19	66	4	14	1	3	2	7	3	10

FIGURE 3-1 Tenure status of female engineering faculty at U.S. institutions, by race/ethnicity.

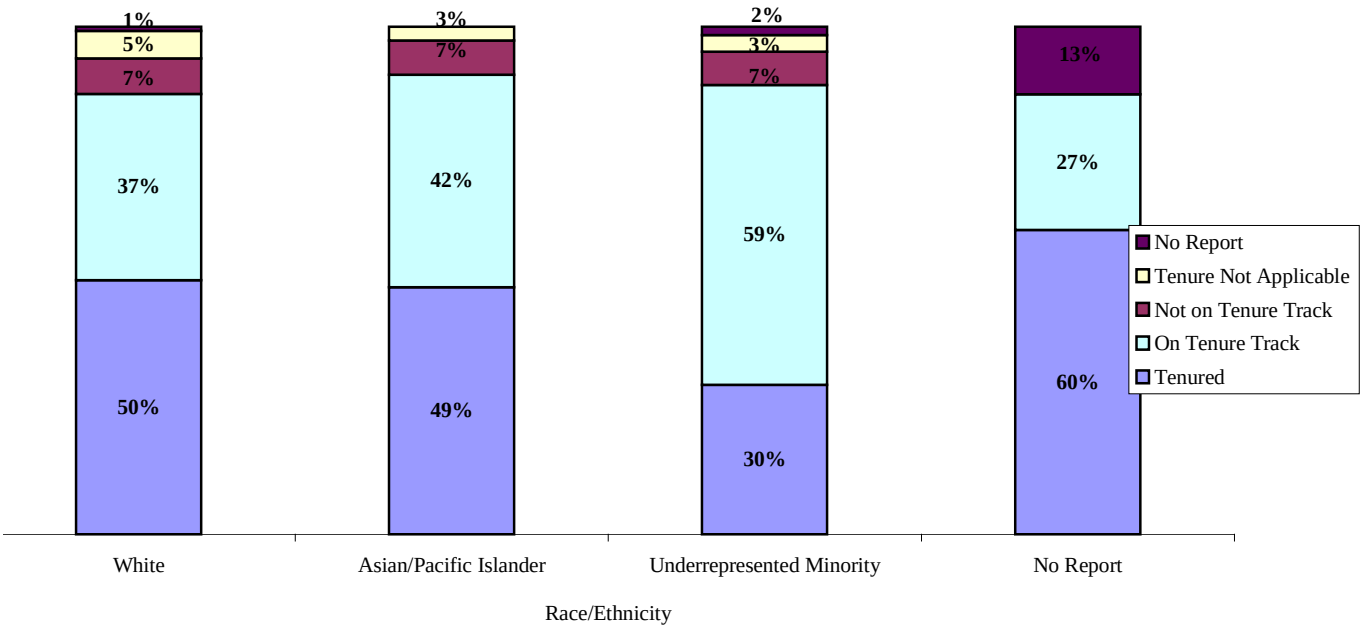

TABLE 3-3 Perceptions About Tenure Criteria and Policies Held by Female Engineering Faculty at U.S. Institutions (for Those Tenured and on Tenure Track)

	Total		Yes		No		No Report	
	No.	%	No.	%	No.	%	No.	%
Clear, Well-Defined Tenure Criteria								
Tenured	376	56	206	55	132	35	38	10
On Tenure Track	300	44	134	45	150	50	16	5
Tenure Policies Fair to Women								
Tenured	376	56	242	64	92	24	42	11
On Tenure Track	300	44	180	60	89	30	31	10

TABLE 3-4 Primary Work Activity of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

	Primary Work Activity													
	Total		Teaching		Research		Teaching & Research		Administration		Other		No Report	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	339	44	217	28	114	15	53	7	29	4	23	3
Aerospace/Industrial Engineering	52	7	22	42	18	35	5	10	5	10	1	2	1	2
Chemical/Mineral Engineering	84	11	31	37	38	45	10	12	5	6	0	0	0	0
Civil Engineering	81	10	33	41	19	23	20	25	5	6	0	0	4	5
Electrical/Computer Engineering	124	16	59	48	25	20	19	15	13	10	6	5	2	2
Materials Sci/Plastics/Ceramics Engineering	42	5	19	45	15	36	4	10	3	7	0	0	1	2
Mechanical/General Engineering	99	13	45	45	29	29	11	11	8	8	5	5	1	1
Other Engineering	67	9	27	40	21	31	11	16	0	0	6	9	2	3
Computer Sciences	64	8	28	44	17	27	11	17	2	3	4	6	2	3
Mathematical Sciences/Operations Research	40	5	19	48	9	23	6	15	3	8	1	3	2	5
Physical Sciences	50	6	17	34	17	34	6	12	5	10	2	4	3	6
Other Fields	43	6	27	63	3	7	6	14	4	9	3	7	0	0
No Field Specified	29	4	12	41	6	21	5	17	0	0	1	3	5	17

TABLE 3-5 Range of Annual Salaries of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

			Salary Range							
	Total		$50,000 or Less		$50,001-$60,000		More Than $60,000		No Report	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	164	21	263	34	341	44	7	1
Aerospace/Industrial Engineering	52	6	12	23	18	35	22	42	0	0
Chemical/Mineral Engineering	84	11	13	15	29	35	42	50	0	0
Civil Engineering	81	10	24	30	29	36	27	33	1	1
Electrical/Computer Engineering	124	16	29	23	37	30	57	46	1	1
Materials Sci/Plastics/Ceramics Engineering	42	5	8	19	14	33	20	48	0	0
Mechanical/General Engineering	99	13	27	27	35	35	36	36	1	1
Other Engineering	67	9	11	16	31	46	25	37	0	0
Computer Sciences	64	8	9	14	25	39	29	45	1	2
Mathematical Sciences/Operations Research	40	5	4	10	11	28	25	63	0	0
Physical Sciences	50	6	7	14	13	26	29	58	1	2
Other Fields	43	6	17	40	13	30	13	30	0	0
No Field Specified	29	4	3	10	8	28	16	55	2	7

TABLE 3-6 Range of Annual Salaries of Female Engineering Faculty at U.S. Institutions, by Race/Ethnicity

			Salary Range							
	Total		$50,000 or Less		$50,001-$60,000		More Than $60,000		No Report	
Race/Ethnicity	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	100	164	21	263	34	341	44	7	1
White	625	81	130	21	211	34	280	45	4	1
Asian	74	10	18	24	29	39	27	36	0	0
Underrepresented Minorities*	61	8	12	20	22	36	27	44	0	0
No Report	15	2	4	27	1	7	7	47	3	20

*Underrepresented minorities include African American, Native American, Hispanic, and "other."

FIGURE 3-2 Academic productivity of female engineering faculty at U.S. institutions in 1994 and 1995.

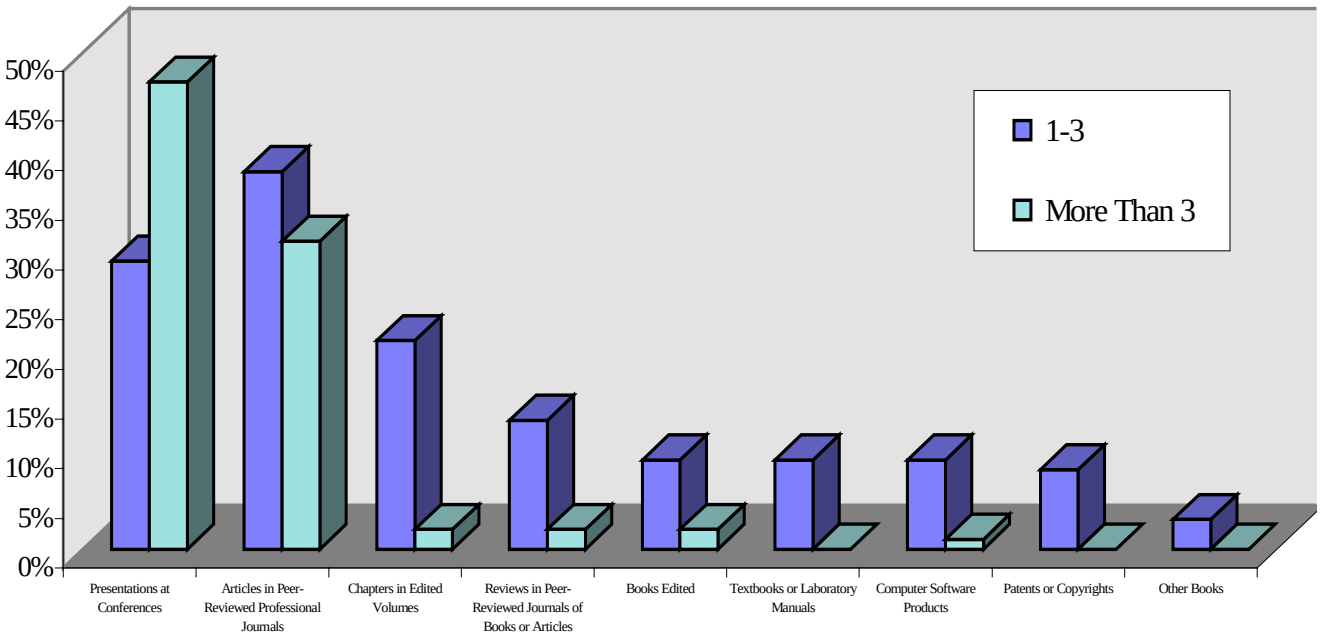

TABLE 3-7 Level of Satisfaction with Current Employment of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

		Level of Satisfaction									
	Total	Very Dissatisfied		Somewhat Dissatisfied		Somewhat Satisfied		Very Satisfied		No Report	
Field of Highest Degree	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	53	7	133	17	286	37	234	30	69	9
Aerospace/Industrial Engineering	52	2	4	10	19	20	38	16	31	4	8
Chemical/Mineral Engineering	84	5	6	18	21	21	25	31	37	9	11
Civil Engineering	81	3	4	18	22	32	40	25	31	3	4
Electrical/Computer Engineering	124	9	7	18	15	50	40	35	28	12	10
Materials Sci/Plastics/Ceramics Engineering	42	4	10	7	17	18	43	10	24	3	7
Mechanical/General Engineering	99	8	8	29	29	30	30	25	25	7	7
Other Engineering	67	8	12	7	10	35	52	14	21	3	4
Computer Sciences	64	2	3	8	13	27	42	17	27	10	16
Mathematical Sciences/Operations Research	40	4	10	7	18	13	33	13	33	3	8
Physical Sciences	50	4	8	5	10	13	26	25	50	3	6
Other Fields	43	2	5	5	12	13	30	19	44	4	9
No Field Specified	29	2	7	1	3	14	48	4	14	8	28

TABLE 3-8 Level of Satisfaction with Current Employment of Female Engineering Faculty at U.S. Institutions by Age

	Total	Very Dissatisfied		Somewhat Dissatisfied		Somewhat Satisfied		Very Satisfied		No Report	
Age	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Total	775	53	7	133	17	286	37	234	30	69	9
Under 35	124	7	6	26	21	47	38	34	27	10	8
35-39	219	16	7	45	21	84	38	61	28	13	6
40-44	194	10	5	28	14	79	41	62	32	15	8
45-54	156	16	10	26	17	51	33	44	28	19	12
55 and Older	58	2	3	6	10	15	26	29	50	6	10
No Report	24	2	8	2	8	10	42	4	17	6	25

TABLE 3-9 Previous Employment Sector of Female Engineering Faculty at U.S. Institutions, by Field of Highest Degree

			Sector							
	Total		Education		Government		For-Profit Business/Industry*		Other	
Field of Highest Degree	No.	%	No.	%	No.	%	No.	%	No.	%
Total	492	100	181	37	70	14	216	44	25	5
Aerospace/Industrial Engineering	34	7	10	29	2	6	19	56	3	9
Chemical/Mineral Engineering	44	9	13	30	8	18	19	43	4	9
Civil Engineering	57	12	17	30	13	23	22	39	5	9
Electrical/Computer Engineering	69	14	27	39	5	7	36	52	1	1
Materials Sci/Plastics/Ceramics Engineering	33	7	12	36	6	18	14	42	1	3
Mechanical/General Engineering	64	13	21	33	8	13	32	50	3	5
Other Engineering	45	9	17	38	4	9	20	44	4	9
Computer Sciences	39	8	18	46	5	13	14	36	2	5
Mathematical Sciences/Operations Research	21	4	12	57	3	14	6	29	0	0
Physical Sciences	43	9	21	49	10	23	11	26	1	2
Other Fields	32	7	9	28	4	13	18	56	1	3
No Field Specified	11	2	4	36	2	18	5	45	0	0

* Includes those self-employed.

NOTE: Total includes only those who provided a previous employment sector.

TABLE 3-10 Reasons Given by Female Engineering Faculty at U.S. Institutions for Leaving Previous Employer

Reasons	Number	Percent
Total	492	100
Professional Motivation	291	59
Opportunities for Advancement	79	16
More Education*	68	14
Overall Satisfaction	53	11
Sector*	35	7
Job Ended*	40	8
Better Job*	12	2
Your Ability to Obtain Research Funding	4	1
Family/Personal Reasons	93	19
Job for Spouse/Partner in Another Locale	33	7
Geographic Location	23	5
Lack of Job in Area for Spouse/Partner	19	4
Family*	17	3
Environment/Schools for My Children	1	0
Work Environment	66	13
Opportunity to Do Research	22	4
Experience with the Tenure Process	15	3
Salary Level	9	2
Teaching Responsibilities	5	1
Level of Communication Among Faculty	5	1
Opportunity for Administrative Responsibilities	4	1
Research Facilities and Equipment	2	0
Benefits	2	0
Instructional Facilities and Equipment	1	0
Pressure to Publish	1	0
Other	30	6
No Report	12	2

*Write-in responses.

NOTE: Total includes only those who provided a previous employment sector in Question 53.

TABLE 3-11 Career Impact of Aspects of the Work Environment and Life Cycle Events on Female Engineering Faculty at U.S. Institutions

	Total	Positive Impact		Negative Impact		No Impact/ Not Applicable		No Report	
	No.	No.	%	No.	%	No.	%	No.	%
Opportunities for Advancement	775	399	51	100	13	188	24	88	11
Requirement to Publish	775	421	54	152	20	133	17	69	9
Teaching Responsibilities	775	480	62	166	21	61	8	68	9
Opportunity to do Research	775	492	63	115	15	91	12	77	10
Number of Women on Engineering Faculty	775	140	18	257	33	308	40	70	9
Opportunity for Administrative Responsibilities	775	182	23	125	16	395	51	73	9
Research Facilities and Equipment	775	339	44	235	30	129	17	72	9
Research Funding Available to Faculty	775	306	39	276	36	116	15	77	10
Your Ability to Obtain Research Funding	775	403	52	199	26	99	13	74	10
Instructional Facilities and Equipment	775	274	35	185	24	237	31	79	10
Salary Level	775	287	37	162	21	256	33	70	9
Benefits	775	301	39	62	8	340	44	72	9
Level of Communication Among Department Faculty	775	333	43	262	34	110	14	70	9
Opportunities to Attend Professional Meetings	775	545	70	77	10	82	11	71	9
Geographic Location	775	315	41	178	23	207	27	75	10
Job or Job Opportunities in Area for Spouse or Partner	775	274	35	162	21	217	28	122	16
Marriage	775	292	38	116	15	286	37	81	10
Being Part of a Dual-Career Couple	775	242	31	260	34	195	25	78	10
Having Children	775	128	17	272	35	288	37	87	11
Balancing Work and Family Responsibilities	775	127	16	401	52	166	21	81	10

TABLE 3-12 Factors Facilitating the Academic Careers of Female Engineering Faculty at U.S. Institutions

Factor	Number	Percent
Total	775	100
Aspects of the Work Environment (Rewards of Teaching; Availability of External Research Funds; Flexible Schedules; Opportunity Both to Teach and to Conduct Research; Affirmative Action)	252	33
Influences From Others (Mentors; Family; Professional Networks)	133	17
Self 1 (Personal Ability; Research and Publications)	10	14
Education (University Where Ph.D. Was Earned; Timing of Degree; Developments in Chosen Field)	54	7
Prior Experience (As a Teaching or Research Assistant; As a Postdoctoral Fellow; Working in Industry)	50	6
Other	8	1
No Report	168	22

NOTE: Subcategories listed under each broad area of influence are examples of some of the write-in responses.

TABLE 4-1 Suggestions From Female Engineering Faculty at U.S. Institutions of Areas for Additional Inquiry

Topic	Number of Responses
Total	206
Personal Background	9
Parents' Educational Background	2
Family's Socioeconomic Status	2
Careers of Siblings	1
Other Precollege Influences on Career Decisions	4
Preparation for Academe	22
Financing One's Education	3
Postdoctoral Experience	2
Preparation for Work in Academe	7
Factors Affecting Choice to Work in Academe	10
Family Status and Responsibilities	33
Balancing Work Responsibilities and Personal Life	24
Sex of Partner	7
Careers of Children	2
Terms of Employment	28
Specific Field and Position of Employment	7
Primary Work Activity	5
Tenure	5
Salary in Comparison to That of Men	4
Importance of Collaboration and Publication	4
Availability of Research Funding	3
Work Environment	26
Evolving Work Environment	4
Collegiality of Faculty in My Department	5
Extra-Departmental Influences	8
Influences of Female Engineering Faculty and Administrators	9
Job Satisfaction and Factors Affecting Success	85
Overall Job Satisfaction	18
Mentoring	19
Factors Enabling Some Female Faculty to be More Successful Than Others	8
Other Obstacles Faced in Education and/or Employment Because of Being Female (Including Discrimination)	40
Non-Native U.S. Citizens	3

APPENDIX A

SURVEY OF FEMALE ENGINEERING FACULTY

NATIONAL RESEARCH COUNCIL
OFFICE OF SCIENTIFIC AND ENGINEERING PERSONNEL
2101 Constitution Avenue Washington, D.C. 20418

COMMITTEE ON WOMEN
IN SCIENCE AND ENGINEERING

LOCATION: 1000 Thomas Jefferson Street
TELEPHONE: (202) 334-1372
FACSIMILE: (202) 334-2753

SURVEY OF FEMALE ENGINEERING FACULTY

Employment History

1. At what point did you decide to seek academic employment in engineering? _____1.
   1. Prior to high school completion
   2. Between high-school graduation and receipt of bachelor's degree
   3. In graduate school
   4. After earning highest academic degree
   5. Other time (specify): _____
   6. None of the above.

2. In what year did you first begin employment on an engineering faculty? 19_____2.

3. In what year did you begin employment on the engineering faculty at your current institution? 19_____3.

Rank

4. Of the following, which best describes your academic rank at your current institution? _____4.
   1. Professor
   2. Associate Professor
   3. Assistant Professor
   4. Instructor
   5. Lecturer
   6. Other (specify): _____
   7. Not applicable: no ranks designated at this institution [SKIP TO QUESTION 6]

5. In what year did you first achieve this rank? 19_____5.

6. Which of the following appointments do you hold at your current institution? _____6.
   1. Acting
   2. Affiliate or adjunct
   3. Visiting
   4. Assigned by religious order
   5. Research [TITLE/POSITION: _____]
   6. Clinical [TITLE/POSITION: _____]
   7. Other (specify): _____

Tenure

7. What is your present tenure status? _____7.
   1. Tenured
   2. On tenure track, but not tenured [GO TO QUESTION 9]
   3. Not on tenure track [GO TO QUESTION 9]
   4. No tenure system for my faculty status [GO TO QUESTION 9]
   5. No tenure system at this institution [GO TO QUESTION 9]

8. In what year did you achieve this tenure? 19_____8.

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations.

Salary

9. In what range, is your annual salary as an engineering faculty? _____
   1. less than $40,000
   2. $40,001 - $50,000
   3. $50,001 - $60,000
   4. $60,001 - $70,000
   5. $70,001 - $80,000
   6. more than $80,000

10. How many months is that annual salary expected to cover? _____10.
   1. 9-10 months
   2. 11-12 months

Work Activities

11. For each of the following work activities in your current job, list the percentage of time that it occupies.

A.	Teaching	_____11A.
B.	Research (including supervising graduate research assistants)	_____11B.
C.	Advising undergraduate students	_____11C.
D.	Advising graduate students	_____11D.
E.	Serving on departmental or institutional committee(s)	_____11E.
F.	Administration (e.g., academic dean, department chair, academic senate, etc.)	_____11F.
G.	Outside consulting or free-lance work	_____11G.
H.	Professional growth (e.g., taking courses; pursuing an advanced degree; other professional development activities)	_____11H.
I.	Community or public service	_____11I.
J.	Service to professional societies or associations	_____11J.
K.	Acting as mentor to junior faculty or students	_____11K.
L.	Other (specify): _____	_____11L.

[IF 11A. WAS ANSWERED WITH "0," THEN SKIP TO QUESTION 13]

12. What is your principal field of teaching? _____12.
   1. Aerospace, Aeronautical, & Astronautical
   2. Agricultural
   3. Bioengineering & Biomedical
   4. Ceramic Sciences
   5. Chemical
   6. Civil
   7. Communications
   8. Computer
   9. Electrical & Electronics
   10. Engineering Mechanics
   11. Engineering Physics
   12. Engineering Science
   13. Environmental Health
   14. Industrial & Manufacturing
   15. Materials Science
   16. Mechanical
   17. Metallurgical
   18. Mining & Mineral
   19. Nuclear
   20. Ocean
   21. Petroleum
   22. Polymer & Plastics
   23. Engineering Systems
   24. Engineering, General
   25. Engineering, Other
   26. Other (specify): _____

[IF YOU HAVE A DUAL APPOINTMENT, LIST THE SECOND DEPARTMENT/FIELD HERE] _____12A.

[IF 11B. WAS ANSWERED WITH "0," THEN SKIP TO QUESTION 14]

13. What is your principal field of research? _____13.
   1. Aerospace, Aeronautical, & Astronautical
   2. Agricultural
   3. Bioengineering & Biomedical
   4. Ceramic Sciences
   5. Chemical
   6. Civil
   7. Communications
   8. Computer
   9. Electrical & Electronics
   10. Engineering Mechanics
   11. Engineering Physics
   12. Engineering Science
   13. Environmental Health
   14. Industrial & Manufacturing
   15. Materials Science
   16. Mechanical
   17. Metallurgical
   18. Mining & Mineral
   19. Nuclear
   20. Ocean
   21. Petroleum
   22. Polymer & Plastics
   23. Systems
   24. Engineering, General
   25. Engineering, Other
   26. Other (specify): _____

Academic Productivity: The next three questions focus on the academic productivity of female engineers while employed in academe. For works you have authored or co-authored, please include only those that have been accepted for publication. Count multiple presentations/publications of the same work only once.

14. In 1994 and 1995, how many of the following have you presented or published?

	[ENTER NUMBER in appropriate column] 0	1-3	4-6	7-9	10+
A. Articles in peer-reviewed professional journals					
B. Reviews in peer-reviewed journals of books or articles					
C. Chapters in edited volumes (texts or laboratory manuals)					
D. Textbooks or laboratory manuals					
E. Other books					
F. Books edited					
G. Presentations at conferences or workshops					
H. Patents or copyrights					
I. Computer software products					

15. How many works have you presented/published during your entire faculty career?

	[ENTER NUMBER in appropriate column] 0-9	10-18	19-27	28-36	37+
A. Articles in peer-reviewed professional journals					
B. Reviews in peer-reviewed journals of books or articles					
C. Chapters in edited volumes (texts or laboratory manuals)					
D. Textbooks or laboratory manuals					
E. Other books					
F. Books edited					
G. Presentations at conferences or workshops					
H. Patents or copyrights					
I. Computer software products					

16. To what extent does your department encourage you to engage in the above activities? _____ 16.

1. Strongly encourages
2. Encourages
3. Slightly encourages
4. Not applicable

Engineers, both male and female, have identified several factors that affect the success of one's career in academe. For questions 17-38, please rate the extent to which the following have had an impact on your career. Use a scale of 1-5, where 1=high level of negative impact, 2=low level of negative impact, 3=no impact, 4=low level of positive impact, and 5=high level of positive impact. If a factor does not apply to you, circle "3."

Direction / Level	Negative High	Negative Low	No Impact	Positive Low	Positive High
Academic Work Environment					
17. Opportunities for advancement	1	2	3	4	5
18. Requirement to publish	1	2	3	4	5
19. Teaching responsibilities	1	2	3	4	5
20. Opportunity to do research	1	2	3	4	5
21. Number of women on the engineering faculty	1	2	3	4	5
22. Opportunity for administrative responsibilities (i.e., positions as dean, department chairperson, academic senate, etc.)	1	2	3	4	5
23. Research facilities and equipment	1	2	3	4	5
24. Research funding available to faculty	1	2	3	4	5
25. Your ability to obtain research funding	1	2	3	4	5
26. Instructional facilities and equipment	1	2	3	4	5
27. Salary level	1	2	3	4	5
28. Benefits (e.g., health insurance)	1	2	3	4	5

29. Level of communication among department faculty	1	2	3	4	5
30. Opportunities to attend professional meetings and conferences	1	2	3	4	5
31. Geographic location	1	2	3	4	5
32. Job or job opportunities in the area for my spouse or partner	1	2	3	4	5
33. Other (specify): _____					

Life-Cycle Events

34. Marriage	1	2	3	4	5
35. Being part of a dual-career couple	1	2	3	4	5
36. Having children	1	2	3	4	5
37. Balancing work & family responsibilities	1	2	3	4	5
38. Other (specify): _____	1	2	3	4	5

Mentoring

A mentor can be a role model but a role model is not always a mentor: a mentor is a male or female who is knowledgeable about engineering, both theory and practice, and who takes an active interest in a person's career development while a role model is someone whose involvement is more passive—typically, an engineer or teacher whose work/life inspires others. For #39-45, rate your satisfaction of the mentoring received during your career on a scale of 1 to 5, where 1 is very dissatisfied and 5 is very satisfied. If a statement does not, circle "NA."

		Very Dissatisfied				Very Satisfied
39. Directed your career	NA	1	2	3	4	5
40. Informed you of departmental programs, politics, protocol, policies, and procedures	NA	1	2	3	4	5
41. Encouraged you to take part in professional seminars	NA	1	2	3	4	5
42. Acted as a "door opener" to run interference for you in gaining access to departmental resources, space, equipment, and information	NA	1	2	3	4	5
43. Served as a role model (professional engineer, teacher, researcher)	NA	1	2	3	4	5
44. Gave constructive and critical reviews of your work, free of judgmental bias	NA	1	2	3	4	5
45. Introduced you to opportunities and options for employment	NA	1	2	3	4	5

[IF ALL QUESTIONS 39-45 WERE ANSWERED WITH "NA," THEN SKIP TO QUESTION 49]

46. Was(were) your mentor(s) someone other than your department chair? _____46.
1. Yes
2. No

47. How many of your mentors during this time were:
A. Female? _____47A.
1. None 2. One 3. More than one
B. Male? _____47B.
1. None 2. One 3. More than one

48. How many of the mentors during your career were of the same racial/ethnic background as you? _____48.

Tenure

49. Do you perceive the tenure criteria in your administrative unit to be clear and well-defined? _____49.
1. Yes
2. No

50. Do you believe the tenure policies under which you operate are fair to women? _____50.
1. Yes
2. No

51. Please rate your satisfaction with your current employment on a scale of 1-4, where 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied. _____51.

52. In two or three sentences, please describe what has most facilitated your employment in academe:

_____

_____

_____

Last Engineering Employment

For the next three questions, please do not include as different jobs either promotions in rank at your current institution, temporary positions (i.e., summer positions), or work as a graduate student.
[IF NO PREVIOUS JOB, CIRCLE "NA" AND SKIP TO QUESTION 56] NA

53. In what sector of employment was that job? _____53.
1. 4-year college or university, graduate/professional school
2. 2-year or other postsecondary institution
3. Elementary or secondary school
4. Self-employment (e.g., consulting, free-lance work, self-owned business, or private practice)
5. Hospital or other health-care or clinical setting
6. Foundation or other nonprofit organization other than health-care organization
7. For-profit business or industry in the private sector
8. Federal (military), state, or local government (including national laboratories owned by the government but operated by the private sector)
9. Other (specify): _____

54. Between what years did you hold that job? from: 19____ to: 19____54.

55. Why did you leave that job? (Enter the number of the most influential reason) _____55.
1. Experience with the tenure process
2. Opportunities for advancement
3. Pressure to publish
4. Teaching responsibilities
5. Opportunity to do research
6. Number of women on the engineering faculty
7. Opportunity for administrative responsibilities (i.e.,positions as dean, department chairperson, academic senate, etc.)
8. Research facilities and equipment
9. Instructional facilities and equipment
10. Salary level
11. Benefits (e.g., Health insurance)
12. Level of communication among department faculty
13. Geographic location
14. Lack of job or job opportunities in the area for my spouse or partner
15. Job or job opportunities for my spouse or partner in another location
16. Environment/schools for my children
17. Research funding available to faculty
18. Your ability to obtain research funding
19. Opportunity to attend external professional meetings
20. Overall satisfaction
21. Other (specify): _____

Education

56. List chronologically all colleges (including 2-year) and graduate institutions that you have attended. If more room is needed, please provide on an attached sheet of paper.

Institution	Years Attended	Field of Study	Degree (if any)	Year
(undergraduate)				
_____	19__-__	_____	_____	19__
_____	19__-__	_____	_____	19__
_____	19__-__	_____	_____	19__
(graduate)				
_____	19__-__	_____	_____	19__
_____	19__-__	_____	_____	19__

57. When you were a postsecondary student (i.e., since high school graduation), did anyone mentor you in the following ways?

		Yes	No	
A.	Directed your course choice and career plans	1	2	_____
B.	Introduced you to opportunities and options for graduate study	1	2	_____57B.
C.	Provided opportunities for you to serve as a research assistant	1	2	_____57C.
D.	Provided job tasks that allowed you to develop proficiency and job competency	1	2	_____57D.
E.	Gave constructive and critical reviews of your work, free of judgmental bias	1	2	_____57E.
F.	Counseled and directed your research	1	2	_____57F.
G.	Informed you of departmental programs, politics, protocol, policies, and procedures	1	2	_____57G.
H.	Acted as a "door opener" to run interference for you in gaining access to departmental resources (space, equipment, information)	1	2	_____57H.
I.	Encouraged you to take part in professional seminars	1	2	_____57I.
J.	Served as your advocate as you progressed toward the completion of your degree	1	2	_____57J.
K.	Served as a role model (professional engineer, teacher, researcher)	1	2	_____57K.
L.	Introduced you to opportunities and options for employment	1	2	_____57L.

58. Was(were) your mentor(s) someone other than your undergraduate or graduate advisor? _____58.
1. Yes
2. No

59. How many of your mentors were:
A. Female? _____59A.
1. None 2. One 3. More than one
B. Male? _____
1. None 2. One 3. More than one

60. How many of your mentors were of the same racial/ethnic background as you? _____60.

Career Decisions

61. At what point did you decide to become an engineer? _____61.
1. Prior to grade 9
2. In grade 9 or 10
3. In grade 11 or 12
4. As a college freshman
5. As a college sophomore
6. As a college junior or senior
7. Other (specify): _____

62. In two or three sentences, please describe what most influenced that decision (e.g., parents, an especially inspiring teacher, developments in a particular engineering field).

_____

_____

_____

Demographic Information

63. What is the highest level of formal education completed by your mother? _____63.

Less than high school diploma	1
High school diploma	2
Some postsecondary education	3
Associate's degree	4
Bachelor's degree	5
Some graduate education	6
Master's degree	7
Doctorate or professional degree	8

[IF THE ANSWER TO QUESTION 63. IS 1, 2, or 3, THEN SKIP TO 65]

64. Did your mother earn a degree in a science or engineering field? _____64.
1. Yes
2. No

65. In what sector is/was your mother employed? _____65.
1. 4-year college or university, graduate/professional school
2. 2-year or other postsecondary institution
3. Elementary or secondary school
4. Self-Employment (e.g., consulting, free-lance work, self-owned business, or private practice)
5. Hospital or other health-care or clinical setting
6. Foundation or other nonprofit organization other than health-care organization
7. For-profit business or industry in the private sector
8. Federal (including military and national laboratories owned by the government but operated by the private sector), state, or local government
9. Other (specify): _____
10. Not applicable

66. What is the highest level of formal education completed by your father? _____66.

Less than high school diploma	1
High school diploma	2
Some postsecondary education	3
Associate's degree	4
Bachelor's degree	5
Some graduate education	6
Master's degree	7
Doctorate or professional degree	8

[IF THE ANSWER TO QUESTION 66. IS 1, 2, or 3, THEN SKIP TO 68]

67. Did your father earn a degree in a science or engineering field? _____67.
1. Yes
2. No

68. In what sector is/was your father employed? _____68.
1. 4-year college or university, graduate/professional school
2. 2-year or other postsecondary institution
3. Elementary or secondary school
4. Self-Employment (e.g., consulting, free-lance work, self-owned business, or private practice)
5. Hospital or other health-care or clinical setting
6. Foundation or other nonprofit organization other than health-care organization
7. For-profit business or industry in the private sector
8. Federal (including military and national laboratories owned by the government but operated by the private sector), state, or local government
9. Other (specify): _____
10. Not applicable

69. Are you currently: _____69.
1. Single, never been married [SKIP TO QUESTION 73]
2. Married
3. Widowed
4. Separated
5. Divorced

70. Did your spouse complete a degree in science or engineering? _____70.
1. Yes
2. No

71. Is/was your spouse employed in science or engineering? _____71.
1. Yes
2. No

72. In what sector is/was your spouse employed? _____72.
1. 4-year college or university, graduate/professional school
2. 2-year or other postsecondary institution
3. Elementary or secondary school
4. Self-Employment (e.g., consulting, free-lance work, self-owned business, or private practice)
5. Hospital or other health-care or clinical setting

6. Foundation or other nonprofit organization other than health-care organization
7. For-profit business or industry in the private sector
8. Federal government (including military and national laboratories owned by the government but operated by the private sector), state, or local government
9. Other (specify): _____

73. How many dependents do you have? A dependent is someone other than yourself receiving at least one-half of his or her financial support from you. _____73.
[IF ANSWER FOR QUESTION 73 IS "0," THEN SKIP TO QUESTION 76]

74. How many of these are children? _____74.
[IF ANSWER FOR QUESTION 74 IS "0," THEN SKIP TO QUESTION 76]

75. How many of these children are:
A. Under the age of 6 _____75A.
B. Age 6 - 11 _____75B.
C. Age 12 - 17 _____75C.
D. 18 or older _____75D.

76. Are you: _____76.
1. American Indian or Alaskan Native
2. Asian or Pacific Islander
3. African American or black
4. White
5. Other (specify): _____

77. Are you of Hispanic origin or descent? _____77.
1. Yes
2. No [SKIP TO QUESTION 79]

78. Which of the following categories best describes your Hispanic descent? _____78.
1. Mexican American
2. Puerto Rican
3. Cuban
4. Other Hispanic descent (specify): _____

79. In what year were you born? 19_____79.

80. Citizenship status: Are you a U.S. citizen? _____80.
1. Yes; Native-born
2. Yes; Naturalized
3. No; With a Permanent U.S. Resident Visa
4. No; With a Temporary U.S. Resident Visa

81. Social Security number: _ _ _-_ _-_ _ _ _

82. We would appreciate your comments. For instance, were there any questions that you wish you had been asked? _____82.
1. Yes
2. No
Comments: _____

Signature: _____ Date: _____

Thank you for participating in this survey. We expect to analyze the data that we have collected from you and from other female engineering faculty, with a report published by the National Research Council in June 1996. If you would like a copy of this report, please check here. _____

If you have any questions, please contact Linda Skidmore, Director, Committee on Women in Science and Engineering, at the address on page 1 of this questionnaire.

APPENDIX B

PARTICIPATING ENGINEERING INSTITUTIONS

PARTICIPATING ENGINEERING INSTITUTIONS

Air Force Institute of Technology
Dayton, OH

Alabama A&M University
Normal, AL

Alfred University
Alfred, NY

Arizona State University
Tempe, AZ

Arkansas Tech University
Russellville, AR

Auburn University
Auburn, AL

Boston University
Boston, MA

Bradley University
Peoria, IL

Broome Community College
Binghamton, NY

Brown University
Providence, RI

Bucknell University
Lewisburg, PA

California Institute of Technology
Pasadena, CA

California Polytechnic State University
San Luis Obispo, CA

California State University, Fullerton

California State University, Fresno

California State University, Los Angeles

California State University, Northridge

California State University, Sacramento

Calvin College
Grand Rapids, MI

Capitol College
Laurel, MD

Carnegie Mellon University
Pittsburgh, PA

Case Western Reserve University
Cleveland, OH

Christian Brothers University
Memphis, TN

CUNY, College of Staten Island
Staten Island, NY

CUNY, New York City Technical College
Brooklyn, NY

Clarkson University
Pottsdam, NY

Clemson University
Clemson, SC

Cleveland State University
Cleveland, OH

Cogswell College, North
Kirkland, WA

Colorado School of Mines
Golden, CO

Colorado State University
Fort Collins, CO

Colorado Technical College
Colorado Springs, CO

Columbia University
New York, NY

Cooper Union
New York, NY

Cornell University
Ithaca, NY

Dartmouth College
Hanover, NH

DeVry Technical Institute
Woodbridge, NJ

Drexel University
Philadelphia, PA

Duke University
Durham, NC

East Tennessee State University
Johnson City, TN

Embry-Riddle Aeronautical University
Daytona Beach, FL

Farleigh Dickinson University
Teaneck, NJ

Ferris State University
Big Rapids, MI

Florida A&M University
Tallahassee, FL

Florida Atlantic University
Boca Raton, FL

Florida Institute of Technology
Melbourne, FL

Florida International University
Miami, FL

George Mason University
Fairfax, VA

George Washington University
Washington, DC

Georgia Institute of Technology
Atlanta, GA

PARTICIPATING ENGINEERING INSTITUTIONS

Grand Valley State University
Allendale, MI

Grove City College
Grove City, PA

Hagerstown Junior College
Hagerstown, MD

Howard University
Washington, DC

Hudson Valley Community College
Troy, NY

Humboldt State University
Arcata, CA

Illinois Institute of Technology
Chicago, IL

Indiana University-Purdue University at Indianapolis
Indianapolis, IN

Iowa State University of Science & Technology
Ames, IA

Johns Hopkins University
Baltimore, MD

Kansas State University
Manhattan, KS

Lafayette College
Easton, PA

Lamar University
Beaumont, TX

Lawrence Technological University
Southfield, MI

Lehigh University
Bethelem, PA

Louisiana State University
Baton Rouge, LA

Louisiana Tech University
Ruston, LA

Maine Maritime Academy
Castine, ME

Mankato State University
Mankato, MN

Marquette University
Milwaukee, WI

Massachusetts Institute of Technology
Cambridge, MA

McNeese State University
Lake Charles, LA

Mercer University
Macon, GA

Merrimack College
North Andover, MA

Miami University
Oxford, OH

Michigan State University
East Lansing, MI

Michigan Technological University
Houghton, MI

Mississippi State University
Mississippi State, MS

Montana State University
Bozeman, MT

Morgan State University
Baltimore, MD

Naugatuck Valley Community Technical College
Waterbury, CT

Naval Postgraduate School
Monterey, CA

New Jersey Institute of Technology
Newark, NJ

New Mexico State University
Las Cruces, NM

New York Institute of Technology
New York, NY

Norfolk State University
Norfolk, VA

North Carolina A&T State University
Greensboro, NC

North Carolina State University
Raleigh, NC

North Dakota State
Fargo, ND

Northeastern University
Boston, MA

Northern Arizona University
Flagstaff, AZ

Northern Illinois University
De Kalb, IL

Northwestern University
Evanston, IL

Oakland University
Rochester, MI

Ohio Northern University
Ada, OH

Ohio State University
Columbus, OH

Ohio University
Athens, OH

Oklahoma State University
Stillwater, OK

Old Dominion University
Norfolk, VA

Oregon Institute of Technology
Corvallis, OR

Oregon State University
Corvallis, OR

PARTICIPATING ENGINEERING INSTITUTIONS

Pellissippi State Technical College
Knoxville, TN

Penn State University
University Park, PA

Polytechnic University
Brooklyn, NY

Portland Community College
Portland, OR

Portland State University
Portland, OR

Prairie View A&M University
Prairie View, TX

Princeton University
Princeton, NJ

Purdue University
West Lafayette, IN

Rensselaer Polytechnic Institute
Troy, NY

Rice University
Houston, TX

Rochester Institute of Technology
Rochester, NY

Rose-Hulman Institute of Technology
Terre Haute, IN

Rutgers State University
New Brunswick, NJ

San Francisco State University
San Francisco, CA

San Jose State University
San Jose, CA

Seattle University
Seattle, WA

South Dakota School of Mines & Technology
Rapid City, SD

South Dakota State University
Brookings, SD

Southern Illinois University, Carbondale
Carbondale, IL

Southern Methodist University
Dallas, TX

St. Cloud State University
St. Cloud, MN

Stanford University
Stanford, CA

Stark Technical College
Canton, OH

SUNY, College of Technology at Alfred
Alfred, NY

SUNY, Binghamton
Binghamton, NY

SUNY, Buffalo
Buffalo, NY

SUNY, Farmingdale
Farmingdale, NY

SUNY, Stony Brook
Stony Brook, NY

SUNY, Syracuse
Syracuse, NY

SUNY, Syracuse
Syracuse, NY

Swarthmore College
Swarthmore, PA

Syracuse University
Syracuse, NY

Temple University
Philadelphia, PA

Tennessee State University
Nashville, TN

Tennessee Technological University
Cookeville, TN

Texas A&M University
College Station, TX

Texas Christian University
Fort Worth, TX

Texas Southern University
Houston, TX

Texas Tech University
Lubbock, TX

Tufts University
Medford, MA

Tulane University
New Orleans, LA

Tuskegee University
Tuskegee, AL

United States Air Force Academy
US Air Force Academy, CO

United States Military Academy
West Point, NY

University of Akron
Akron, OH

University of Alabama
Tuscaloosa, AL

University of Alabama, Birmingham

University of Alabama, Huntsville

University of Alaska, Fairbanks

University of Arizona, Tuscon

University of Arkansas
Fayetteville, AR

PARTICIPATING ENGINEERING INSTITUTIONS

University of California, Berkeley

University of California, Davis

University of California, Irvine

University of California, Los Angeles

University of California, Riverside

University of California, San Diego
La Jolla, CA

University of California, Santa Barbara

University of California, Santa Cruz

University of Central Florida
Orlando, FL

University of Cincinnati
Cincinnati, OH

University of Colorado, Boulder

University of Colorado, Colorado Springs

University of Colorado, Denver

University of Connecticut
Storrs, CT

University of Dayton
Dayton, OH

University of Delaware
Newark, DE

University of Florida
Gainesville, FL

University of Georgia
Athens, GA

University of Hartford
West Hartford, CT

University of Hawaii, Manoa
Honolulu, HI

University of Houston
Houston, TX

University of Idaho
Moscow, ID

University of Illinois, Urbana-Champaign

University of Iowa
Iowa City, IA

University of Kansas
Lawrence, KS

University of Kentucky
Lexington, KY

University of Louisville
Louisville, KY

University of Maine, Orono

University of Maryland
College Park, MD

University of Massachusetts, Amherst
Amherst, MA

University of Massachusetts, Boston
Boston, MA

University of Massachusetts, Dartmouth
North Dartmouth, MA

University of Memphis
Memphis, TN

University of Miami
Coral Gables, FL

University of Michigan
Ann Arbor, MI

University of Minnesota
Minneapolis, MN

University of Mississippi
University, MS

University of Missouri, Columbia

University of Missouri, Rolla

University of Nebraska, Lincoln

University of Nevada, Reno

University of New Haven
West Haven, CT

University of New Mexico
Albuquerque, NM

University of North Carolina, Charlotte

University of North Dakota
Grand Forks, ND

University of Notre Dame
Notre Dame, IN

University of Oklahoma
Norman, OK

University of Pennsylvania
Philadelphia, PA

University of Pittsburgh
Pittsburgh, PA

University of Rhode Island
Kingston, RI

University of Rochester
Rochester, NY

University of San Diego
San Diego, CA

University of South Carolina
Columbia, SC

PARTICIPATING ENGINEERING INSTITUTIONS

University of South Florida
Tampa, FL

University of Southern California
University Park, CA

University of Southern Maine
Portland, ME

University of Southern Mississippi
Hattiesburg, MS

University of Southwestern Louisiana
Lafayette, LA

University of Tennessee, Knoxville

University of Texas, Arlington

University of Texas, Austin

University of Texas, Dallas
Richardson, TX

University of Texas, El Paso

University of Texas, San Antonio

University of the Pacific
Stockton, CA

University of Tulsa
Tulsa, OK

University of Utah
Salt Lake City, UT

University of Vermont
Burlington, VT

University of Virginia
Charlottesville, VA

University of Washington
Seattle, WA

University of Wisconsin, Madison

University of Wisconsin, Milwaukee

University of Wisconsin, Platteville

University of Wisconsin, Stout
Menomonie, WI

University of Wyoming
Laramie, WY

Utah State University
Logan, UT

Vanderbilt University
Nashville, TN

Virginia Tech
Blacksburg, VA

Walla Walla College
College Place, WA

Wake Technical Community College
Raleigh, NC

Washington State University
Pullman, WA

Washington University
St. Louis, MO

Wayne State University
Detroit, MI

Webb Institute
Glen Cove, NY

West Virginia University
Morgantown, WV

Western Kentucky University
Bowling Green, KY

Western Michigan University
Kalamazoo, MI

Western Washington University
Bellingham, WA

Wichita State University
Wichita, KS

Widener University
Chester, PA

Wilkes University
Wilkes-Barre, PA

Winona State University
Winona, MN

Worcester Polytechnic Institute
Worcester, MA

Wright State University
Dayton, OH

Yale University
New Haven, CT

Youngstown State University
Youngstown, OH