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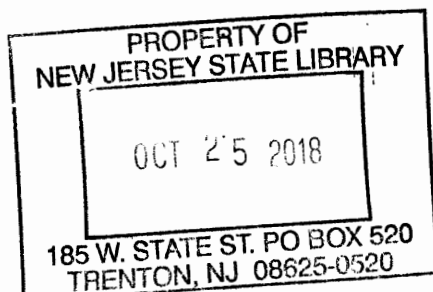
VOLUME XIII

GENDER

**HISTORICAL RECORD OF MINORITY
AND WOMEN-OWNED BUSINESS
ENTERPRISES
IN
PUBLIC AND PRIVATE CONTRACTING IN
NEW JERSEY**

**A Report Submitted to
NJ TRANSIT
and the
Governor's Study Commission on Discrimination in
Public Works Procurement and Construction Contracts**

**by
The Afro-American Studies Program
University of Maryland at College Park**



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Executive Summary
by Susan Cavin, Ph.D.

This report summarizes the most recent data regarding the ongoing effects of past and present gender discrimination, particularly in education and employment among women in New Jersey's marketplace. The goal was to identify factors that inhibit the growth and success of Women-Owned Businesses (WBEs) in New Jersey.

These factors involve a long and continuing history in New Jersey of:

- 1.) unequal pay for women which prevents wealth accumulation necessary for business startups;
- 2.) "protective" labor laws enacted in the nineteenth century and operative until 1964 which excluded women from certain areas of employment such as mining or restricted the conditions of employment for women, e.g., weightlifting restrictions;
- 3.) sexual harassment in the workplace, particularly in traditionally male occupations such as trade apprenticeships, as well as educational institutions;
- 4.) the occupational segregation of women into lower paying clerical and service sectors, which are not traditional routes to firm formation;
- 5.) lack of adequate and affordable childcare for all working New Jersey mothers or for those furthering their education in state institutions;
- 6.) the advisement and placement of girls and women in "pink curricula" in schools and colleges which later lock women out of a chance at the higher paying science/engineering fields, which are often highways to firm formation and government contracting;
- 7.) a long history of segregating girls and women out of predominantly male technical schools and technology universities where entrepreneurship are encouraged by faculty mentorships with students and networking with alumni;
- 8.) a mandatory curriculum which channeled females into typing and home economics, fields which leave women with low-to-no pay while males were channeled into "shop", which lead to trades traditionally associated with contractors.

Women suffer a severe disadvantage in business startups due to these past inequities, and this disadvantage still lingers in New Jersey today.

The State has sometimes enacted good laws in an attempt to address gender inequity in education, but has failed to adequately enforce the statutes. The State of New Jersey, particularly the Department of Education, has also failed to systematically collect sexual harassment data on women of all colors necessary to measure progress.

HISTORICAL FORMS OF GENDER DISCRIMINATION THAT PROHIBIT FIRM FORMATION AND SUCCESS OF WOMEN-OWNED BUSINESS ENTERPRISES (WBEs) IN NEW JERSEY

"At the beginning of the last century, a woman was regarded as a thing, a possession of her father or husband. The English common law gave men unlimited power over the persons of their wives and daughters, just as it did over black slaves. A married woman suffered 'civil death', having no legal existence apart from her husband; the law held that man and wife are one, and that one is the husband. She could not sign contracts; any money she earned or inherited belonged to the husband; she lost title to her separate property or any material goods she might accumulate--she had no property rights at all, not even to her own clothes. A mother had no legal claim to or authority over her own children; by law the husband owned the children just as he owned her and could give them away or leave them by (even an unborn child) to any other person. A wife had to ask her husband for money to buy anything and for permission to travel to visit her family or friends."

THE HIDDEN HISTORY OF THE FEMALE¹

¹ Martha Atkins, *The Hidden History of the Female; The Early Feminist Movement In the United States*, (Somerville, MA: New England Free Press, 1970). Pamphlet, 13 pages.

INTRODUCTION

Many historical factors contribute to the disproportionately low number of women-owned business enterprises (henceforward WBEs) in New Jersey. Such factors include : exclusion of women from higher education, business, construction, unions,² the trades, finance, transportation, engineering and science. This forced exclusion continued until the rise of the second wave of feminism in the mid-nineteen sixties.

This history of sex segregation in New Jersey was fought by Alice Paul, first wave Quaker feminist, who grew up on a farm in Moorestown, around the turn of the century. Paul is the most famous New Jersey suffragist; she endured hunger strikes and imprisonment and became one of the forerunners of the equal rights movement drafting the first Equal Rights Amendment in 1923.³

²For a general history of the exclusion of women from trade unions, see Barbara M. Wertheimer, "Union is Power: Sketches from Women's Labor History," in *Women : A Feminist Perspective*, edited by Jo Freeman (Palo Alto, Ca: Mayfield, 1984), pp. 337-352; see also John B. Andrews and W.D.P. Bliss, *History of Women in Trade Unions*, Bureau of Labor Report on Conditions of Women and Child Wage-Earners in the United States, vol. 10 (Washington, D.C.: U.S. Government Printing Office, 1911).

³ For more information on Alice Paul see Viola Klein, *Feminine Character: History of an Ideology*, (Urbana: University Illinois Press, 1973, Chapter 2; Aileen S. Kraditor, *The Ideas of the Woman Suffrage Movement, 1890-1920* (New York: Columbia University , 1965.)

There is a history of the exclusion of women from higher education in New Jersey which dates back to its origin in the 18th century at Rutgers University, now the State University of New Jersey and Princeton University. Princeton delayed the admission of women as long as it could in contrast to the New Jersey Institute of Technology, which graduated its first woman student in 1930.

Other historical factors that date back to colonial New Jersey still have the cumulative effect of prohibiting the startup, growth and success of WBEs in New Jersey today. Women's lack of control of property in their own names, combined with discriminatory treatment by commercial banks in securing loans in their own names without a male relative or husband, present continuing obstacles to firm formation, survival and growth for many actual and potential WBEs. Leslie Weisman's groundbreaking new book, *Discrimination by Design: A Feminist Critique of the Man-Made Environment*, notes another discriminatory practice:

"The now-illegal business practice of discounting a working wife's income in qualifying for a mortgage, based on the assumption that she would inevitably get pregnant and leave the labor force, could easily be perceived as a credit problem."⁴

There was a time when women had precious little property rights; when women were, for all intents and purposes, themselves the property of their husbands in colonial America.

⁴Leslie Kane Weisman, *Discrimination by Design: A Feminist Critique of the Man-Made Environment* (Chicago: University of Illinois, 1992), p. 115. Weisman is Professor of Architecture at the New Jersey Institute of Technology. Although her work is national in scope, it has relevance to the New Jersey picture.

The women's business community in New Jersey has been constricted by limited access to credit, historical limitations on educational and training opportunities and sexist attitudes about the roles of women in society.

The role played by sex discrimination in shaping women's businesses should not be underestimated. Labor market discrimination against women, the occupational segregation of women into the low-paying clerical and services sectors, pay inequity, sexual harassment on the job and in schools, glass ceilings, the mommy track, the feminization of poverty, female ghettos in public housing, the lack of affordable childcare for all working women in New Jersey--all these problems continue to make it difficult for women to accumulate the initial equity investment that business creation requires.

Lack of women-owned construction companies in the unionized urban areas of New Jersey is still partly due to the union's traditional practice of barring women altogether from entering apprenticeship programs in the construction and building trades. There is widely known anecdotal evidence of sexual harassment of women in the trades. However, this evidence is difficult to document with statistical data because it is not systematically kept or released by the unions.

The historical and continuing occupational segregation of New Jersey women into "women's work" has kept women from traversing the traditional routes a few men take into business ownership. These routes are located in the men's labor market: construction, engineering, unionized trades, business management, science, and

training at vocational technical schools and technology universities.

The traditional route available to many women entrepreneurs before set asides was via marriage and the family business. That is, a woman might inherit a business from her husband, father or other male relative and continue the business after the death of the male relative; or a male relative might co-sign a loan to help a woman start a family business; or the woman's name may simply be a front for her husband's business to shelter his assets from creditors. None of these traditional female routes into business ownership necessarily represent economic progress for women in New Jersey, although sexist and/or "nonfeminist economists"⁵ usually miss this point entirely and misinterpret the data.

This practice, where some women have inherited businesses from deceased male relatives, may actually benefit the individual

⁵ Barbara R. Bergmann, "Feminism and Economics," *Academe*, September/October 1983, pp. 22-25. Bergmann is professor of Economics at the University of Maryland and a member of the AAUP's Committee W on the Status of Women in the Academic Profession, as well as, Chair of American Economic Association's Committee on the Status of Women in the Economics Profession in 1983. Bergmann notes that the economics profession "is overwhelmingly male and conservative," and that "most economists have been hostile to any suggestion that the economic position of women was unfairly disadvantageous." Furthermore, Bergmann notes: "...those economists who have taken an interest in the economic implications of sex roles have formed themselves into two opposing factions. Feminist economists (of both sexes) have documented the severity of the problems women face in economic life, are attempting to develop the outlines of what they claim will be a more equitable future, and are trying to formulate policy proposals that might bring us closer to a workable yet equitable system. On the other hand, nonfeminist economists (of both sexes) have busied themselves in defending and justifying the old regime, in shouting 'vive la difference,' and in declaring the feminists' proposals for the amelioration of women's condition to be devoid of common sense...That women are less successful in the labor market than are men is something agreed to by economists of all factions. After all, women in the United States who are college graduates average less pay at a full-time job than men who dropped out before completing high school. What the economists do not agree on, however, is the interpretation of these facts...So if we see any occupation from which women are absent, a mainline economist tends to assume that either women themselves have shunned the occupation as not compatible with 'their' home responsibilities, or that employers have shunned women workers because of evidence of women's low productivity in that occupation." (p. 22-23)

businesswoman, but has as much to do with the economic progress of the mass of women as the patriarchal practice of a woman being appointed to succeed her deceased husband or father in political office.

Ownership of WBEs by men married to women "fronts" (women who simply appear to be the owner) has as little to do with the economic progress of women as the WEDTECH case in the Bronx has to do with the economic progress of minorities.⁶ These so-called women's businesses are really paper tigers!

To really examine the progress of women in New Jersey WBEs, one has to look at the data differently from "nonfeminist economists," who also treat only "nonminority females" (white women) as women, and lump women of color into the genderless category of "Minority," forgetting Sojourner Truth's classic question about the invisibility of women of color: "Ain't I a Woman?"⁷

⁶ The WEDTECH Corporation was set up as a MBE, and consequently received government defense contracts due to set asides. However, as the WEDTECH scandal unraveled in the newspapers, it came clear that WEDTECH was only a MBE on the face; minorities were only fronts for more powerful white businessmen, who wanted to profit from set asides for minorities. I am suggesting that this practice appears to be operating in some WBEs in New Jersey from data in the Bates Report, although Bates does not see the data in this way. (See Bates Report, Section I. "Women-Owned Businesses," pp. 132-137).

⁷ The modern Black Feminist equivalent of Sojourner Truth's "Ain't I a Woman?" speech can be found in a book titled: *All The Women are White, All the Blacks are Men, But Some of Us Are Brave: Black Women's Studies* co-edited by Barbara Smith, Gloria T. Hull and Patricia Bell Scott regarding the topic of African American women being ignored by both the Women's Movement and the Black Civils Rights Movement historically, although they have played major roles in both movements, often behind the scenes. The invisibility of women of color in discussions about the status of women is a recurring problem in most academic studies on women. The invisibility of women of color in discussions about the status of minorities is also a recurring problem in most academic studies on minorities. Unfortunately, these errors have been repeated in this Report for the Governor's Study Commission on Discrimination in Public Works Procurement and Contracts as well. More careful study of women of all colors is needed

To separate out the real WBEs from the paper tiger WBEs, this question must be answered: How many businesses in New Jersey are owned solely by women, with no male partners?

There is a link between having a home mortgage and accumulating household wealth necessary to start one's own business. Historically, women have had difficulty in obtaining credit in their own names, apart from their husbands, fathers, and other male relatives. Often, women have been unable to secure home mortgages in their own names, thus making it impossible for the majority of working women to own homes without the intervention of a male relative to co-sign. Thus, women have historically been at a disadvantage to accumulate the wealth and collateral needed to startup their own businesses.⁸

Weisman notes that "...women have traditionally achieved home ownership through marriage, divorce, widowhood or inheritance."⁹ Women are "systematically marginalized in the housing market," are primarily renters with low incomes and have

before the Governor's Study Commission's work is done. See also Johnetta B. Cole (editor) *All American Women, Lines That Divide, Ties That Bind* (New York: Free Press, 1986); and Pauline Terrelonge, "Feminist Consciousness and Black Women," in *Women: A Feminist Perspective* edited by Jo Freeman (Palo Alto, CA: Mayfield, 1984), pp. 557-567. See also Selected Bibliography of Social Science Readings on Women of Color in the United States, Center for Research on Women, Memphis State University, 1989.

⁸On April 15, 1992, I attended a Small Business Association seminar at Pace University on the subject of Financing New Businesses. A woman inventor in the audience who has attended many such seminars asked the SBA speaker, Isaac Rodriguez of European American Bank how many loans have been given to women to startup business. He said he did not know. She responded, "I asked the same question at a meeting of Citibank with venture capitalists in 1992 and the representative from Citibank said that Citibank has only given one loan to a WBE in the last decade." Although the seminar was held in New York City, there is some relevance here because New Jersey is in the New York metropolitan area and is influenced by the policies of Citibank.

⁹Weisman, *op. cit.*, p. 119.

little control over their housing. Furthermore, she argues that public housing is predominantly a "Female Ghetto" which segregates poor, female headed, primarily minority families. In the late 1980's, 90% of American households in public housing were headed by women.¹⁰ There is no reason to believe that New Jersey is different from the nation in this respect. Thus, female householders, particularly those with children, face discrimination in the housing market in New Jersey.

Other major problems intertwine to discriminate against the startup and growth of women's businesses in New Jersey. One such major problem includes the long and continuing history of unequal pay and the occupational segregation of women. State "protective" labor laws, in effect, created, maintained and condoned two separate but unequal labor markets in the State of New Jersey: 1) the men's labor market which received higher wages; and 2) the women's labor market, which received lower wages. State "protective" labor laws were enacted in the nineteenth century and were fully operative until 1964 when the New Jersey Commission on Sex Discrimination in the Statutes first began to untangle them. Some of these laws were still on the books until the 1970's. These

¹⁰Ibid., p. 116. "The prevalence of female-headed households in public housing is the result of a society in which women and children have the least. While the privately owned house symbolizes the stature of the traditional, male-headed family, American public housing serves the opposite purpose, that of segregating and stigmatizing poor, female-headed, primarily minority families. In 1980, 73% of American households in public housing were headed by women, and the figures were comparable in Canada. By the late 1980's, the U.S. figure had risen to above 90%. Women are segregated in public housing because they are too poor to live anywhere else. In 1978, almost half of all female-headed households in America lived in poverty, compared to 5% of male-headed households...Because women are frequently more impoverished than men, in 1974, there was a 20% probability that a poor woman who headed a household would live in substandard housing, compared to 10% among the general population." (pp. 105-106)

laws sought to exclude women from certain traditionally male areas of employment, .e.g., mining, and restricted the conditions of employment for women, e.g., weightlifting restrictions.¹¹ (See Appendix F for more on the state "protective" labor laws and wage discrimination in New Jersey.) Until 1848, husbands had the right in the United States to claim the wages and inheritance of their wives. In 1848, New York became the first state to put an end to this ancient patriarchal practice, when the New York State Assembly passed the Married Women's Property Act, allowing United States women for the first time to keep the wages they had earned or wealth they inherited from their fathers.

Sex segregated curricula in schools and sex segregated jobs are the result of New Jersey's long history of State "protective" labor laws. The law mandated that there be different men's jobs and women's jobs and the educational system devised a curricula to fill the job market needs. (See the section on Gendered Education for more details.)

Furthermore, there was a mandatory curriculum by law (1937 Revision of the Compilation of the Statutes) which segregated females into home economics, nursing, and hygiene classes, (no-to-low paying occupations) and males into and military training and shop, which taught trades associated with contractors.

Ruth Blumrosen argues that:

¹¹The State of New Jersey Commission on Sex Discrimination in the Statutes, 1st report, October 1979, was entitled "Sex Discrimination in the Employment Statutes." "An Analysis of Wage Discrimination in New Jersey State Service," appeared in March 1983. Both reports are appended in Appendix F.

"job segregation and wage discrimination are not separate problems, but rather are intimately related. Wherever there is job segregation, the same forces which determine that certain jobs or job categories will be reserved for women or minorities also and simultaneously determine that the economic value of those jobs is less than if they were 'white' or 'male' jobs."¹²

Blumrosen concludes that: "it is more probable than not that where jobs have been segregated, the valuation of the worth of those jobs has been influenced by the fact that they are the jobs of a disfavored group....minorities or women who demonstrate that they have occupied traditionally segregated jobs have established a prima facie case that the wage rate paid for those jobs is discriminatorily depressed, thus shifting the burden of demonstrating that the rate is not influenced by discriminatory factors to the employer."¹³

UNEQUAL PAY AND THE OCCUPATIONAL SEGREGATION OF WOMEN

According to feminist economist Barbara Bergmann at the University of Maryland, men with less qualifications get more pay than women because:

"... men and women are not competing in the same market. Men and women are selling themselves and their human capital in segregated

¹² Ruth G. Blumrosen, "Wage Discrimination, Job Segregation, and Title VII of the Civil Rights Act of 1964, *University of Michigan Journal of Law Reform*, Vol. 12, Spring 1979, Number 3, p. 401. Several major cases of gender discrimination came out of New Jersey: the Paterson Strike, the GE and Westinghouse Trenton plants, New Jersey Campbell Soup plants, the Wheaton glass case where "snap-up boys" were paid a higher wage than women packers. For more details, see the entire article, pp. 397-502. According to Blumrosen, State "protective" labor laws gave employers the incentive to occupationally segregate along gender lines. Certain industries in New Jersey and the nation have been occupationally sex-segregated; for example, the majority of workers are female in these industries: textile, glass, the drug industry, retailing, clerical, nursing, food preparation. The type of businesses that women startup are, for the most part, in the same sex segregated sectors where women have been tracked as workers. If women go off on their own to startup businesses, it is in those women's sectors where they have risen to managerial posts. But the glass ceiling has kept most women out of the upper levels of management in even women's professions. In the end, WBEs are often just as tracked in the women's labor market as women workers are in women's jobs.

¹³ *Ibid.*, p. 402.

markets, a separate market for each sex. Supply and demand in the men's market decrees one set of wages. Supply and demand in the women's market decrees a whole different set of wages, very much lower. The key to the low wages attached to women's jobs is the occupational segregation within a high proportion of workplaces. Many jobs are open just to men, and many others are open just to women. Some jobs--a slowly increasing number--are open to people of either sex. Up to 1972, want ads in newspapers were sex-segregated, and very few jobs were advertised as open to both sexes. The research of Bielby and Barron suggests that as of the late 1970's more than 90% of jobs still were earmarked for one sex or the other. Because such a high proportion of jobs are open only to people of just one sex, it makes sense to talk of a market for male labor and a substantially separate market for female labor.¹⁴

In 1982, only 20 out of 420 listed occupations in the U.S. accounted for 80% of women's jobs.¹⁵ These numbers have remained relatively unchanged in the last decade.

The women's labor market may be referred to as the "pink market" and the men's labor market as the "blue market". Why does the pink market ordain such low wages for jobs open to women? Bergmann's answer illuminates gender wage discrimination:

¹⁴Barbara Bergmann, "Why Are Women's Wages Low?," *The Economic Emergence of Women* (Basic Books, 1986). See also Francine D. Blau and Marianne A. Ferber, *The Economics of Women and Work* (Prentice Hall, 1986); Claudia Goldin, *Understanding the Gender Gap: An Economic History of American Women* (New York: Oxford, 1989); and the Women's Research Institute, *The American Women 1988-89: A Status Report* (New York: Norton, 1988). See also Ruth G. Blumrosen, "Wage Discrimination, Job Segregation, and Title VII of the civil Rights Act of 1964," *University of Michigan Journal of Law Reform*, Vol. 12, Spring 1979, No. 3, pp. 397-502.

¹⁵ Barbara Ehrenreich and Karin Stallard, "The Nouveau Poor," *MS. Magazine*, July-August 1982, 219-224. This article discusses the "feminization of poverty" issue; 2 out of 3 adults in poverty in the early eighties were women; and more than half of the families defined as poor in the U.S. are female headed households. "The National Advisory Council on Economic Opportunity predicted: All other things being equal, if the proportion of the poor in female-householder families were to continue to increase at the same rate as it did from 1967 to 1978, the population would be composed solely of women and their children before the year 2000." For more information on the female poor, see Guida West, *The National Welfare Rights Movement: The Social Protest of Poor Women* (New York: Praeger, 1981).

"...job segregation is not just a neutral and benign division of economic functions between the sexes; we are not dealing here with a case of 'separate but equal.' Rather, we are dealing with a segregation code in personnel administration that dictates the absence of women from most jobs that would make them the equal or the superior of males. The realities that underlie that segregation code puts pressure on employers to keep jobs for males. Obviously, under present conditions, hiring women reduces labor costs, and that is why there are jobs open to women. But if there are doubts as to which sex a particular job belongs to, the code of behavior pushes employers to resolve those doubts by giving it to a male. Adherence to the code of behavior holds down the number of jobs that women are allowed to have. Women are fenced off from a disproportionate share of what we might call 'labor-market turf.' As a result, the turf assigned to them tends to be relatively overcrowded, as compared to the male share of the turf. That translates into restricted demand for labor in the women's labor market and lowers the wage levels in the jobs that are filled there. It makes the wages low in the traditionally female occupations. It also lowers the pay of the jobs that women hold in occupations that are mixed-sex and mostly male. The law of supply and demand does affect men's and women's wages. But the supply and the demand in the markets for men's and women's labor are powerfully affected by discrimination. Discrimination keeps the men's and women's labor markets separate from each other. The exclusion of women from a big share of all of the jobs in the economy is what creates two labor markets where there should be only one. The discriminatory assignment of jobs, to one sex or the other is what sets the level of demand in the market...The wage differential that discrimination engenders ... cuts down the efficiency of the economy. The overcrowding in the women's jobs reduces the productivity of women's labor. Discrimination reduces the size of the traditionally male occupations because it makes labor artificially expensive to hire for those occupations. By the same process, the traditionally female occupations have been enlarged because labor is artificially cheap in the women's labor market. A single sex-blind labor market would allocate labor more efficiently throughout the economy, and productivity would be higher on average."¹⁶

As mentioned above, two separate and unequal labor markets operate in the national economy: a pink women's labor market and a blue men's labor market. There is no reason to believe that New Jersey is different from the rest of the nation, as it is tied to

¹⁶Bergman, op. cit., p. 123-126.

the national economy. New Jersey has not yet surpassed the nation in eliminating the occupational segregation of women.

Historically, wealth accumulation has been more difficult to achieve for anyone working in the pink market than in the blue market. These two separate but unequal labor markets currently are in effect in New Jersey, thus discriminating against women.

Francine Blau and Barbara Bergmann note that "the women's labor market" fills jobs open to women :

- 1) in traditionally female occupations;
- 2) in jobs "earmarked for women" in other occupations;
- 3) in a smaller number of jobs open to workers of either sex.

Blau found that firms that hired only women in a particular occupation paid those women considerably lower wages than firms who hired only men for that occupation, which Bergmann interprets that :

"...the wage level for a particular job title in a particular establishment is set after the employer decides whether those jobs will be filled by women or men. If the firm fills jobs in an ordinarily male-identified job with men, then the employer must pay something approximating the going wage for men in that job--namely, the wage set by the men's labor market. If the firm decides to fill that group of jobs with women, it can take into consideration that fact that the women's major alternative is to get a low-paying 'woman's job.' Thus, when women get employed in occupations outside the traditionally female-identified jobs, their wages still are set in the same labor market in which women compete for female-identified jobs....such a procedure combines sex discrimination in hiring with sex discrimination in pay-setting. When men get jobs in female -identified jobs, they have to be paid wages that are commensurate with the relatively high pay set in the male labor market for their human capital. Those few men who do take jobs in predominantly female fields view themselves and are viewed by their employers as in line for supervisory or administrative positions...Not infrequently, where men and women have the same functions, the men will be given higher pay. Studies of academic institutions have shown that women faculty have lower salaries than male faculty in the same

field with the same number of years of experience...The rare job not earmarked for one sex or the other presents a problem for employers, and that probably is one reason why there are so few of them. The wage in the employer's mind probably is the male-level wage."¹⁷

On the next page, Chart 1, "The Ten Most Female Jobs, 1880-1980," calculated by Virginia Shapiro in her book *Women in American Society* (1986), reveals two things: the length and depth of the occupational segregation of women in America. Very few of these traditional female occupations have yielded high wages, nor have they been traditional routes to firm formation.

What are the average wages for women and men in New Jersey? On average, New Jersey women earn about 65 cents for every male dollar earned. This fits the national picture, where women earn approximately 60 cents for every U.S. male dollar earned. (See Appendix B, "National Data on Women and Employment," for the national averages as a point of comparison).

Now, let us examine what happens to women who attempt to step outside of the typically female occupations. What happens to women who try to step out of the women's pink labor market and into the men's blue market? This is a relevant question for this study concerning WBEs, since business ownership, historically is almost by definition, a move into blue market territory. Further, the traditional routes to firm formation are found in the traditional men's labor market.

¹⁷ Ibid., p. 132-134.

THE TEN MOST FEMALE JOBS, 1880-1980

1880	1890	1900	1910	1920	1930	1940	1950	1960	1970
Domestic servants	Servants	Servants	Other servants	Other servants	Other servants and other domestic and personal servants	Servants (private family)	Stenographers, typists, and secretaries	Stenographers, typists, and secretaries	Secretaries
Agricultural laborers	Agricultural laborers	Farm laborers (family members)	Farm laborers (home farm)	Teachers (school)	Teachers (school)	Stenographers, typists, and secretaries	Other clerical workers	Other clerical workers	Sales clerks (retail trade)
Milliners, dress-makers, and seamstresses	Dress-makers	Dress-makers	Laundresses (not in laundry)	Farm laborers (home farm)	Stenographers and typists	Teachers (not elsewhere classified)	Saleswomen	Private household workers	Bookkeepers
Teachers and scientific persons	Teachers	Teachers	Teachers (school)	Stenographers and typists	Other clerks (except clerks in stores)	Clerical and kindred workers (not elsewhere classified)	Private household workers	Saleswomen	Teachers (elementary school)
Laundresses	Farmers, planters, and overseers	Laundry work (hand)	Dress-makers and seamstresses (not in factory)	Other clerks (except clerks in stores)	Saleswomen	Saleswomen (not elsewhere classified)	Teachers (elementary school)	Teachers (elementary school)	Typists
Cotton mill operators	Laundresses	Farmers and planters	Farm laborers (working out)	Laundresses (not in laundry)	Farm laborers (unpaid family workers)	Operators and kindred workers, apparel and accessories	Waitresses	Bookkeepers	Waitresses
Farmers and planters	Seamstresses	Farm and plantation laborers	Cooks	Saleswomen (stores)	Bookkeepers and cashiers	Bookkeepers, accountants, and cashiers	Bookkeepers	Waitresses	Sewers and stitchers
Tailor-esses	Cotton mill operators	Saleswomen	Stenographers and typists	Bookkeepers and cashiers	Laundresses (not in laundry)	Waitresses (except private family)	Sewers and stitchers, manufacturing	Miscellaneous and not specified operators	Nurses, registered
Woolen-mill operators	House-keepers and stewards	House-keepers and stewards	Farmers	Cooks	Trained nurses	House-keepers (private family)	Nurses, registered	Nurses, registered	Cashiers
Hotel and restaurant employees (not clerks)	Clerks and copyists	Seamstresses	Saleswomen (stores)	Farmers (general farms)	Other cooks	Trained nurses and student nurses	Telephone operators	Other service workers (except private houses)	

WOMEN AND EMPLOYMENT:

Few Women in the Men's Labor Market

Women and Construction

In 1987, the National Commission on Working Women found that American women held less than 2% of jobs in construction and about 7% of engineering positions. "In 1987, New Jersey ranked 44th among the 49 states for which data were available in the percentage of women working in the heavy construction workforce (on federally-aided bridge and roadbuilding projects) with 2.9% women --- up from 1.3%¹⁸ a year earlier." This was an improvement since New Jersey had previously ranked 49th, near the bottom of all¹⁹ states in 1986.

This increase was partially due to the work of the Women in Construction Task Force, a coalition of union, contractor representatives and New Jersey government officials, which was organized by then

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Dr. Louis Pignataro and Adrienne Scerbak, "Report on the Six Month Study for the Establishment of the Program for Women in Engineering and Construction," submitted to NJDOT and Port Authority of New York and New Jersey, March 1, 1990.

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Richard S. Remington, "Highway Jobs Panel Finds Gain for Women," Newark Star Ledger, June 20, 1989, p. 13.

Commissioner of Transportation Hazel Frank Gluck. In 1988, New Jersey had moved up to 40th, with 3.1% of women working in the heavy construction workforce under Gluck's tutelage.

Hiring statistics are reported annually to the Federal Highway Administration (FHWA) regarding these six trades: operating engineers, ironworkers, carpenters, semi-skilled laborers, unskilled laborers and truck drivers. The FHWA wants 6.9% of jobs in these trades to be filled by women, a goal no state achieved, as of 1989. According to the Newark Star Ledger:

"Of New Jersey's 3,438 highway construction workers, according to the July 1988 statistics, 105 were women. The state improved its record with operating engineers and semi-skilled and unskilled laborers, experienced slight declines in carpenters and truck drivers and along with 27 other states, had no female ironworkers." 20

The New Jersey Department of Transportation (DOT) did increase the number of women within its own maintenance crews, however, up from 25 to 95 in 1989. Women made up 8%²¹ of the DOT maintenance workforce in 1989.

In 1987, women held less than 2% of construction jobs and about 7% of the engineering positions in the state of New Jersey, according to the National Commission on Working Women. 22

Compared to the rest of the nation, New Jersey was in 1989 ranked 15th in percentage of women operating engineers compared to 29th in 1987, 34th in semi-skilled laborers compared to 39th in 1987, and 48th in unskilled laborers compared to 49th in 1987. "New Jersey dropped to 23rd in carpenters compared to 22nd in 1987, and to 30th²³ in truck drivers, compared to 26th in 1987. "

21

Ibid., p. 13.

22

Adrienne Scerbak, "Promoting the Entrance and Retention of Women in Engineering and the Construction Trades," Program for Women in Engineering and Construction, New Jersey Institute of Technology Report, 1990.

23

Women in Construction Task Force Newsletter, New Jersey Department of Transportation, June 1989, Final Newsletter, pp. 2-3. See also the Gluck Report in its entirety in Appendix D.

ENGINEERING - Women represent only 16.5% of undergraduates majoring in engineering nationally in 1990. How does New Jersey compare?

New Jersey College	% of women Engineering Undergrads.
Rutgers	15.8%
NJIT	12.2
Stevens	17.2%
* Fall 1989 enrollment figures, PWEC	

New Jersey is in the same ballpark as the national figures on women in engineering, therefore, national figures on women and engineering have relevance to the New Jersey picture.

Only 5% of women in New Jersey enroll in nontraditional vocational training programs. ²⁴ Now, we will examine women in engineering and science, while taking a careful look at women in apprenticeship programs.

DiTomaso and Farris of the Rutgers Graduate School of Management in Newark surveyed 1500 scientists and engineers from research and development (R & D) laboratories in eleven major U.S. based companies and found that many new hires are women and foreign males. Their question was: how are these new groups faring? They found that women scientists and engineers are less integrated into the workgroup, and consequently want to leave, more so than men, who are U.S. or foreign born. Managers rated women lower on innovativeness.²⁵

Women scientists and engineers are less likely to be managers of R & D labs and have less "cross-function interaction" than U.S. born or foreign born males.²⁶

Most importantly for this study of WBES, DiTomaso, et.al., write:

"We see that women are less likely than men to say that they plan to change their laboratories, to work abroad (for either their current or a new company), or to start their own business....the foreign born males are more likely to say...that they will start their own companies." ²⁷

²⁵Nancy DiTomaso and George Farris, "Demographic Diversity and Cross-Functional Interaction in the Technological Innovation Process," paper, December 1991. See also Nancy DiTomaso and George Farris, "Demographic Diversity and Cross-Functional Interaction in the Technological Innovation Process," paper, December 1991.

²⁶Nancy DiTomaso, George Farris, and Reno Cordero, "Results of a Large Scale-Survey of Diversity in the Industrial R & D Workforce," paper, February, 1992.

²⁷ Ibid., p. 3.

WOMEN

AND

APPRENTICESHIPS

IN NEW JERSEY

Regarding gender and apprenticeships, only 2% of apprenticeships in the United States are women. New Jersey does a better job: 4% of apprenticeships are women compared to 96% men. However, both New Jersey and the U.S. have a long history of gender imbalance in the trades.²⁸ New Jersey also does a better job than the U.S. though not good enough, of integrating minorities into apprenticeships. (See Tables 1-11 on the following pages.)

²⁸ WOMEN IN CONSTRUCTION: MOVING WOMEN INTO NEW JERSEY'S ROADBUILDING INDUSTRY (February 1988) Report prepared at the direction of Commissioner Hazel Frank Gluck, Chairwoman, Women in Construction Task Force, New Jersey Department of Transportation. Report written by: Kathy Stanwick, Paul Chrystie, Karen Holmes, Adrienne Scerbak with the assistance of Caryn Paul. This Gender Chapter endorses the recommendations of the Gluck Report and views the Gluck Report as the best guide on the subject of women and construction in New Jersey. See Appendix D for the complete Gluck Report.

PROGRAM STATISTICS - UNITED STATES BUREAU OF APPRENTICESHIP TRAINING

According to the United States Department of Labor, Bureau of Apprenticeship Training, the following are the latest apprenticeship enrollment figures as compared to the previous year:

Table 1.

Number of Apprentices According to Gender in 1990 and 1991

Gender	December, 1990		December, 1991		Change
	Number	%	Number	%	
Male	7,519	98%	7,230	98%	-289
Female	157	2%	161	2%	+4
Total	7,676		7,391		

Table 2.

Number of Apprentices According to Race Ethnic Origin in 1990 and 1991

Race	December, 1990		December, 1991		Change
	Number	%	Number	%	
Euro-American	6,617	86%	6,291	85%	-326
African-American	678	9%	682	9%	+4
Hispanic-American	319	4%	334	5%	+15
Asian-American	45	1%	44	1%	-1
Native-American	17	0%	19	0%	+2
Not Elsewhere Classified			21	0%	+21
Total	7,676		7,391		

*Percentage calculated on total number

PROGRAM STATISTICS - UNITED STATES BUREAU OF APPRENTICESHIP TRAINING

Table 3

Race/Ethnic Origin of Female Apprentices in 1990 and 1991

Race	1990		1991		Change
	Number	%*	Number	%*	
Euro-American	128	82%	122	76%	-6
African-American	19	12%	27	17%	+8
Hispanic-American	8	5%	8	5%	0
Asian-American	2	1%	2	1%	0
Native-American			2	1%	+2
Total	157		100%		

*Percentage calculated on total number of females.

Table 4

Race/Ethnic Origin of Male Apprentices in 1990 and 1991

Race	1990		1991		Change
	Number	%*	Number	%*	
Euro-American	6,489	86%	6,169	85%	-320
African-American	659	9%	655	9%	-4
Hispanic-American	311	4%	326	5%	+15
Asian-American	43	1%	42	1%	-1
Native-American	17	0%	17	0%	0
Not Elsewhere Classified			21	0%	+21
Total	7,519		7,230		

*Percentage calculated on total number of males.

DIVISION OF VOCATIONAL EDUCATION PROGRAM ENROLLMENTS FOR SCHOOL YEAR 1989-90 and 1990-91

The information for secondary enrollments presented here represents forty vocational schools in New Jersey. The schools include twenty county vocational technical schools and twenty other schools which receive \$100,000 or more Perkins funding. There are more public schools in New Jersey offering vocational training, however, the offerings probably do not include the training programs categorized by the twenty-six CIP^a codes noted in Table VI.

The CIP codes represent trade and technical training programs with overall enrollments of fifty or more. The twenty-six training programs can lead to entry into apprenticeships.

Table 5
Total Enrollments by Race/Ethnic Origin and Sex
Secondary

	<u>1989-90</u>	<u>%</u>
Total Enrollments	6,050	
Male	5,810	96%
Female	240	4%
Euro-American	3,792	
African-American	1,191	
Hispanic-American	818	
Asian-American	29	
Native-American	10	
No Response	210	

The Classification of Instructional Programs (CIP), developed by the U.S. Department of Education's Center for Education Statistics (CES) in 1979-80, was updated for the first time in 1985. CIP is a taxonomy for instructional programs at all levels. It is used in all CES surveys and is the accepted government standard for education information surveys.

Table 6
Secondary Female Enrollments by Race/Ethnic Origin

	<u>1989-90</u>
Total Female	240 (4%)
Euro-American	110 (46%)
African-American	77 (32%)
Hispanic-American	46 (20%)
Asian-American	3 (1%)
No Response	4 (1%)

Table 7
Secondary Male Enrollments by Race/Ethnic Origin

	<u>1989-90</u>
Total Male	5,810 (96%)
Euro-American	3,682 (63%)
African-American	1,114 (19%)
Hispanic-American	772 (13%)
Asian-American	26 (1%)
Native-American	10 (0)
No Response	206 (4%)

Table 8
Adult Female Enrollments by Race/Ethnic Origin

	<u>1989-90</u>
Total Female	2,958 (24%)
Euro-American	2,142 (72%)
African-American	176 (6%)
Hispanic-American	135 (5%)
Asian-American	89 (3%)
Native-American	7 (0%)
No Response	409 (14%)

Table 9
Adult Male Enrollments by Race/Ethnic Origin*

	<u>1989-90</u>
Total Male	9,359 (76%)
Euro-American	6,336 (68%)
African-American	754 (8%)
Hispanic-American	694 (7%)
Asian-American	229 (2%)
Native-American	25 (1%)
No Response	1,321 (14%)

*Adult statistics mainly represent enrollment in a single course and not a full training program leading to employment.

Adult female enrollment in apprenticeship training is weak in these three fields: Electronics technology (3% female), electrical equipment repair (9%), and Diesel Mechanics (14%). Adult female enrollment figures are higher than secondary enrollment because they may be only 1 course rather than the entire curriculum.

Table 10
Female Secondary Enrollment Statistics by Selected CIP Codes*

	<u>1989-90</u>
Auto Mechanics 470604	34 (2%)*
Automotive Technology 150803	6 (6%)
Carpentry 460201	34 (2%)
Computer Servicing 150402	10 (13%)
Cooling and Refrigeration 470202	3 (5%)
Diesel Mechanics 470605	0 (0)
Drafting 480101	50 (16%)
Drafting-Architectural 480102	5 (14%)
Drafting and Design 150202	12 (8%)
Drafting-Mechanical 480105	12 (10%)
470105	3 (4%)
Electrical 460301	1 (0)
Electrician 460302	7 (1%)
Electrical Equipment Repair 470101	5 (4%)
Electrical Technician 150302	8 (5%)
Electronics Communication 470103	4 (10%)
Electronics Technician 150303	12 (4%)
Heating and Air Conditioning 470203	0 (0)
Machine and Tool 480503	9 (3%)
Masonry 460102	1 (0)
Metal Fabrication 480504	5 (11%)
Millwork and Cabinet Making 480703	3 (2%)
Plumbing 460501	4 (1%)
Small Engine Repair 470606	0 (0)
Vehicle Repair 470601	0 (0)
Welding 480508	12 (3%)
	240 (94%)**

* Percentages are calculated of the total of each training program.

** Percentage of females in total secondary enrollments.

Table 10 indicates that there are no women in these trades: Electrical, Diesel Mechanics, Masonry, Heating and Air Conditioning Small Engine Repair, and Vehicle Repair in 1990 New Jersey vocation schools. The female pipeline also looks bleak in these trades, where between 1-3% of those enrolled are female: plumbing, carpent auto mechanics, electrician, millwork and cabinetmaking, welding, a machine and tool.

Table II
Female Adult Enrollment Statistics by Selected CIP Codes*

	<u>1989-90</u>
Auto Mechanics 470604	148 (21%)**
Automotive Technology 150803	194 (28%)
Carpentry 460201	488 (27%)
Computer Servicing 150402	6 (3%)
Cooling and Refrigeration 470202	172 (42%)
Diesel Mechanics 470605	12 (14%)
Drafting 480101	68 (36%)
Drafting-Architectural 480102	23 (39%)
Drafting and Design 150202	48 (43%)
Drafting-Mechanical 480105	3 (25%)
470105	9 (10%)
Electrical 460301	8 (27%)...
Electrician 460302	620 (22%)
Electrical Equipment Repair 470101	9 (9%)
Electrical Technician 150302	109 (28%)
Electronics Communication 470103	6 (10%)
Electronics Technician 150303	33 (3%)
Heating and Air Conditioning 470203	102 (23%)
Machine and Tool 480503	183 (24%)
Masonry 460102	107 (29%)
Metal Fabrication 480504	62 (26%)
Millwork and Cabinet Making 480703	32 (24%)
Plumbing 460501	310 (21%)
Small Engine Repair 470606	24 (25%)
Vehicle Repair 470601	
Welding 480508	99 (16%)
	2,958 (24%)**

-
- * Adult statistics mainly represent enrollment in a single course and not a full training program leading to employment.
- ** Percentages are calculated of the total of each training program.
- *** Percentage of females in total secondary enrollments.

THE GLUCK COMMISSION'S RECOMMENDATIONS

RECOMMENDATIONS FOR FUTURE ACTION

- " The challenge is to help ensure that minorities and women, particularly those with low incomes, have access to the skills they need to enter and succeed in well-paying technical occupations. To do this all barriers must be addressed.

The following is a list of recommendations:

1. Amend and strengthen current laws (such as the Technical Training for Minorities and Women Act) to include progressive incentives and strict penalties regarding enrollment and retention of minorities and women in apprenticeable technology programs. Recipients of state and federal funding for training include: public secondary schools, community colleges, four-year colleges, JTPA, Department of Community Services and the JOBS program. Because the number of minorities and women trained in high paying, apprenticeable occupations is so low, a twenty percent increase or five if the current number is zero would be a reasonable goal. Agencies surpassing twenty percent should receive recognition from the Governor and an increase per placed student which exceeds the state goal of twenty percent. For agencies falling below the twenty percent level, the funding source should mandate an assessment by a knowledgeable team of experts who will recommend changes which may include re-allocation of fiscal resources. After a second year without progress (twenty percent increase or five additional), the agency would begin to lose funding.
2. Allocate or re-allocate JTPA and state funds to provide technology training programs for those minorities and women who are presently in traditional female, low-paying jobs who want to switch to technical work.

According to a statistical report compiled by Project Research, Assessment and Evaluation at the Life Skills Center at Montclair State College, "low wage workers (\$5.00 per hour and lower) in New Jersey are predominantly white, female and between 30 and 45 years of age. Women are 67% of the total of 1,219,235 workers in the low wage category. Many of these low wage workers want to switch to technical work, but cannot because they fail to meet current eligibility guidelines for state-sponsored training."

3. Direct the providers of training within the State Employment and Training Commission to do the following:
 - a. Offer at least one training program for women in each county which replicates the Bergen County Technical School's Women Working Technical Program;
 - b. Offer at least one technical training program for minorities in each county which replicates the components of the Bergen County Technical School's Women Working Technical program.

- c. Offer at least one bilingual technical training program for limited English proficient women and minorities in the following counties: Hudson, Essex, Middlesex, Passaic, Mercer and Camden.
- d. Attend an inservice training program regarding the recruitment and retention of females and minorities into technical training.

It is a well-researched fact that the number of female and minorities recruits and apprentices increases when specialized training programs are offered. The Women Working Technical program at Bergen County Technical School has successfully operated for ten years. Each program component provides skills and addresses the barriers to women's entry into technical fields. With the passage of the Nontraditional Employment for Women Act within the JTPA legislation, funds must be provided to increase women's participation in trade and technology training. It is critical that JTPA training providers be knowledgeable about the components which create success in the recruitment and training of women in nontraditional programs.

The low number of females and minorities trained in technical programs through JTPA funds would indicate their lack of ability to recruit and train women. Likewise, most programs funded with vocational monies have not been successful in recruiting and training significant numbers. The following are schools with programs funded in part or totally with vocational funds which are highly successful (fifteen women or more trained) in the training of females in nontraditional areas: Bergen County Technical School, Salem County Vocational Technical School, Monmouth County Vocational School District, Middlesex County Vocational Technical School, and Sussex County Vocational Technical School with Project Self Sufficiency, a community-based organization. The expertise of these programs is available to the State Employment and Training Commission for tours and inservice training for JTPA providers of training.

The specialized training programs for minorities and women at minimum should include the following: trade and technical math, skill training in a technical area (mechanical, carpentry, plumbing, electricity, electronics), physical conditioning, survival skills, test-taking skills, and job search skills. In 1989, a comprehensive survey was conducted of trade preparation programs throughout the country. These components were consistent in each program which was successful in recruiting, training and placing minorities and women. " 29

29.

Ibid., Thanks to Pat Mitchell, Karen Holmes for providing this researcher data on women and apprenticeship in New Jersey.

WOMEN IN ENGINEERING AND SCIENCE,
TRADITIONAL HIGHWAYS TO BUSINESS OWNERSHIP
AND GOVERNMENT CONTRACTING

NATIONAL DATA ON WOMEN AND EMPLOYMENT REVEALS ENGINEERING IS THE MOST SEX SEGREGATED OCCUPATION IN THE U.S.

Since 1970, some professions have become increasingly female in what had once been traditional male professions. Between 1970 and 1980 women became numerically dominant in these professions: 60% of insurance adjusters and examiners, 59% of computer operators, 56% of typesetters and compositors.

"In these several other fields, women moved steadily toward becoming the majority by 1985: 36% of executive, administrative and managerial workers, 44% of accountants and auditors; 36% of financial managers; 48% of underwriters; and 49% of public-relations specialists.

Furthermore, more women are heading into nontraditional jobs from college; by 1983, women represented 36% of law school graduates, 45% of accounting graduates, 41% of business and management graduates, 33% of banking and finance graduates, and 36% of computer and information science graduates. That is the good news; the bad news is that wages have dropped in these occupations as women congregate in these sectors. The biggest pay declines over the past decade were in those insurance jobs, such as adjuster, where the most rapid increase of women occurred.

Women tend to be concentrated in the lower levels of these professions and on average are paid less than men." 30

The National Academy of Sciences released a report in the mid-eighties showing that overall in the United States, women's wages are about 60% of men's for full-time jobs and 40% of the earnings gap is caused by occupational sex segregation and that occupations pay less as the percentage of females increased.

30 Cathy Trost, "The New Majorities; Some Traditionally Male Professions are becoming Dominated by Women," Wall Street Journal, March 24, 1986, p. 15 D.

The Wall Street Journal reported in 1986 that engineering had made the least progress of all professions in integrating women into the engineering workforce.

" For each additional percentage point of women in the 499 occupations listed in the 1970 census, there was \$42 less in median annual earnings. It says female-dominated occupations were 'less desirable' because workers received lower wages, less on-the-job training and few advancement opportunities. In the past, teachers, bank tellers and secretaries were predominantly men, but these occupations slipped in both pay and status as women took over. Of all the professions in the United States, the one that has made the least amount of progress in terms of integrating women into its workforce is engineering. In 1980, only 2.8% of U.S. engineers were women; by 1985, women comprised 5.8%... in 1973, women were awarded only 1.2% of Bachelor's degrees in Engineering and 1.7% of Masters. This figure grew to 12.3% of Bachelors in Engineering and to 9.3% of Masters by 1983, but was still represented the lowest percentage of women in all professions in the U.S. by 1983."31

SCIENCE, ENGINEERING AND WOMEN

NATIONAL PICTURE IN NEW JERSEY FOCUS

...
In 1991, the American Association for the Advancement of Science released a report entitled: "Investing in Human Potential: Science and Engineering at the Crossroads" which surveyed 276 colleges and universities and found that less than 10% of the science and engineering programs in existence were specifically focused on the recruitment and retention of women:

"programs for women were more likely to charge fees for services and to rely heavily on the use of faculty volunteers...Faculty programs also focused heavily on recruitment, but few had any activities to support the integration of the new (female or minority) faculty member into the department or to promote mentoring by more experienced colleagues. Even at the precollege level, only about half of the programs at colleges and universities involved parents of students." 32

The Report also noted that programs for women have not been very successful in recruiting women of color into their activities, especially Hispanic and American Indian

32

Marsha Lakes Matyas and Shirley M. Malcom, "Investing in Human Potential: Science and Engineering at the Crossroads, Executive Summary," American Association for the Advancement of Science, Washington, D.C., 1991, p. 1-3.

students. However, these women's programs have done a better job at recruiting African American females than any other minority female. The staff at most programs reflected the racial/ethnic mix of the students, suggesting a mirroring effect. Most programs relied on a single funding source, soft grant money, that did not become institutionalized over time. Thus these women's programs have a short life and lack continuity. This funding pattern holds true in New Jersey as well. For example, most programs for girls and women in the math/science/engineering fields in New Jersey are funded by grants, and thus are not institutionalized.

The Douglass College Project for Women in Math Science is funded largely on grants by the National Science Foundation and private foundations; as are the pre-college programs for girls at New Jersey Institute of Technology

The Women in Engineering, Science and Technology Program at NJIT is funded solely by a one year NSF grant. This program focuses on recruitment and relies heavily on women faculty volunteers at community colleges this year. Stevens receives NSF and private grants to fund its women's programs. Therefore, these national conclusions regarding science and engineering programs for women have relevance to the New Jersey picture.

Women Employed in Science & Engineering Jobs

According to the National Science Foundation, women have made gains in Science/Engineering (hereafter S/E) employment from 1976 to 1986, but they remain:

"underrepresented in the S/E workforce in 1986. The 526,200 women scientists and engineers then employed in S/E fields represented about 13 percent of all scientists and engineers, up from 8 percent in 1976. As a proportion of the total workforce, however, only about 1 percent of all employed women were working in S/E jobs in 1986, compared to almost 6 percent of all employed men. These proportions reflect the fact that, historically women's participation in precollege science and mathematics courses and in undergraduate and graduate S/E education is below that of men."33

In the sciences, women represent 42% of all psychological scientists in 1986. Psychology has become a woman's field; but few government contracts are awarded in this area. Women were least represented in physical and environmental sciences (13% each). Within engineering, according to NSF data, women were more likely to be chemical engineers (about 8%) and least likely to be either mechanical or electrical/ electronics engineers (3% each). Most importantly, the National Science Foundation found:

33

National Science Foundation, *Science and Engineering Personnel: a national overview*, Special Report, NSF-90-310 (Washington, D.C.: 1990), P. VIII AND 19-20.

"The life sciences, social sciences, and psychology together accounted for over 80% of the decade's increase in the employment of doctoral women. Overall, however, the field distribution of women with science doctorates did not change greatly over the 1977-87 period. Women were somewhat more likely to be psychological scientists or computer specialists and less likely to be mathematical or physical scientists in 1987 than in 1977."³⁴

Women account for a much larger share of the science workforce than that of engineering: 26% of scientists are women, while only 4% of engineers by 1986. Blacks, who represent 10% of the U.S. workforce, and Hispanics, who represent 6.6% of all employed persons, both continue to be underpresented in the S/E workforce at about 2% each.

NEW JERSEY WOMEN AND ENGINEERING

HISTORY OF WOMEN AT NJIT

The Newark College of Engineering (now called New Jersey Institute of Technology, NJIT) granted a chemical engineering degree to its first woman student named Edythe R. Raabe in 1930. Raabe was referred to simply as "The Coed" in the yearbook; her entry read: "We rest assured that the seeming handicap of being a 'mere girl' will be rapidly discounted in the business world upon her graduation." 35

Most engineering schools in the U.S. regularly barred women from admission, refusing to even accept applications from women, during this pre-feminist time period, but not NJIT. Peggy Ellis, Class of 1934, is the oldest living female graduate of NCE (NJIT), said: "I had picked up typing along the line. So I got a job with the diocese doing youth

35 Arlene Horowitz, "You Can't Be An Engineer, You're a Girl," NJIT Magazine; The Alumni Magazine of New Jersey Institute of Technology, Spring 1991, pp. 4-11.

programs and office work."This has happened to many women trained in the S/E workforce, unfortunately. Women are more likely to be working in the non S/E workforce after they obtain S/E degrees than men.

Women engineers trained at NJIT in Newark, New Jersey recall the pioneer days in this way:

"... NJIT women have had to work hard to be accepted by their male colleagues. Peggy Ellis recalls that the first company that employed her refused to let her work on the factory floor because she was a woman. In her first job after graduation, says Anita LaSalle, Class of 1964, ---a professor of computer science and information systems at American University and former NJIT faculty member---'I was designing a device for a nuclear submarine. When they wouldn't let me on the submarine to install and test my own product because they said no one would trust something developed by a woman, I quit.' R. Cynthia Pruett, Class of 1955....believes women still have to demonstrate they perform better than their peers....Now a vice president for a pharmaceutical firm, Diane Ragosa, Class of 1975, explains, 'For most of my career, I was frequently the only woman in the room....When I began working, there was objection to my being there. There was an old boys network that excluded women.What was the most difficult was being the only woman and thinking if I fail, that I don't only fail for me, I fail for every other woman engineer who wants a chance. It's easier for the second and third.'³⁶

Lucy Gomez, Class of 1988,...a chemical engineering major who is now in pharmaceutical sales for Merck, said her career began in the company's engineering training program.

³⁶ Ibid., p. 5.

³⁷ Ibid., p. 5-6.

³⁸ Ibid., p. 9.

³⁹ Ibid., p. 9.

⁴⁰ Ibid., p. 9.

⁴¹ NSF Report, op. cit., p. 35.

Her first assignment was to audit companies contracted by Merck to dispose of hazardous waste. "In the beginning, the men were shocked to see me when I went to do an audit..." In contrast to Ellis' banishment from the factory floor in the '30's, Gomez was being encouraged to take on shift work on the factory floor. "The more I was there, the more I realized I'd have to go to work in the factory if I wanted to climb in engineering."37

More than fifty years ago NCE (NJIT) hired its first female faculty member named Lilian Gilbreth. For many decades, she was the only woman on the NCE faculty. Today, in 1992, there are 8 Female Faculty members in the School of Engineering, although 3 of them are chemists, not engineers. In 1991, the entire female faculty at NJIT in all schools is 36, including part-time lecturers and visiting re-searchers, out of a total faculty of 319 (11.3). Women faculty at NJIT represent only 10.6% of tenure track faculty and only 9.7% of tenured faculty. (See Table on the next page, "Women and Minority Full-Time Instructional Staff, 1981-1991.")

Gail de Planque, Class of 1973, who went on to become a nuclear physicist said of her years at NJIT:

"I was at NJIT for three years and during the entire time, I saw another woman only once....One night I got on the elevator and there she was. We looked at each other and I think we were both so shocked at seeing each other, we exchanged our entire life histories in just three floors."38

In 1964, there were only eight women at NJIT; that was

the largest class of women in the history of the school.

Anita LaSalle, Class of 1964, recalls:

"Women were isolated and some people resented us, both students and faculty...I was told that I was taking a space in college and a job that a man would need to support a family. We were not only grappling with science and engineering, we were also being told constantly that we shouldn't be there. It was a handicap the men didn't have. It was an energy drainer. That isn't happening anymore."39

In 1980 at NJIT, Cyndi Wilson Hardwick, class of 1980 who was on campus from 1975 to 1980 recalled that "there still weren't too many women around." She was surprised that some male faculty members had "an attitude" toward women students. "I had hoped it would be different because the women's movement was going on."40

By 1991, 16% of all NJIT students on campus were women; which includes the School of Architecture. Of those 1,239 women, 476 were enrolled in engineering programs.

Today, there are several programs for women at NJIT: Females in Engineering...Methods, Motivations, Experience, (FEMME) is a precollege summer program that encourages ninth grade girls to enroll in advanced mathematics and science courses. Women in Engineering, Science and Technology (WEST) is aimed at recruiting community college women in New Jersey to transfer to four year technology universities to major in engineering, science or technology. WEST was preceded by several short-lived, grant funded programs which included: the Women In Science and Engineering Program (WISE), now defunct, provided support for women in the mid-eighties. Then the Program for Women in Engineering and Construction,

4

also funded by NJDOT, and thus not institutionalized, existed from 1989-91.

The Stevens Institute of Technology has made the greatest progress in New Jersey attracting women students. The class of '94 is now 74% men and 26% women, which is above the national average for technological institutions. According to the Director of the Office of Women's Programs, Susan Staffin Metz, a national leader in WEPAN, Women in Engineering Program Advocates Network, since 1978, 87% of the 1,318 women in the Stevens precollege summer programs have decided to major in engineering or science in college.

LINK BETWEEN EDUCATION AND EMPLOYMENT: "S/E Supply--the Pipeline"

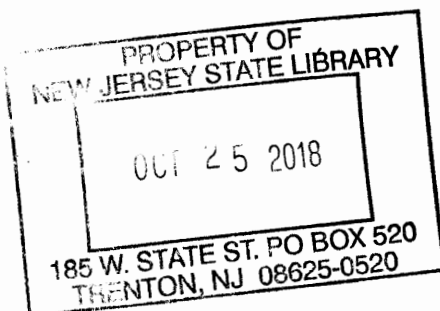
The National Science Foundation explains the link between a student's pre-college education in math/science and future Science/Engineering (henceforward S/E) career choices in this way:

"The S/E pipeline begins with a student's precollege experience. High school mathematics and science courses and performance on standardized tests measuring quantitative ability largely determine a student's likelihood of entering college S/E degree programs. Thereafter, new entrants to S/E employment depend on degree production in S/E fields and on the decisions of S/E degree recipients to pursue occupations in science and engineering. Precollege Science and Mathematics: The decision to pursue an undergraduate S/E program--and, subsequently, an S/E career--is influenced significantly by exposure to precollege science and mathematics courses. These provide a grounding in the basic principles needed to complete S/E undergraduate programs. For example, of high school sophomores in 1980 who graduated in 1982, more than 2/3 had taken three or more mathematics courses, while less than one-half had taken more than two science courses. A significant factor in determining the extent and type of science and mathematics courses selected is curriculum placement. Students pursuing an academic track (versus general or occupational tracks) tend to elect more advanced mathematics courses in geometry and algebra and are more likely than other students to take chemistry, physics, and biology." 41

The National Science Foundation clearly understands the critical link between the courses a student is advised to take in high school and her life chances⁴ of entering the science/engineering workforce as an adult. The national data on women in engineering, science and technology suggests that the scarcity of women in science and engineering is linked, in part, to the precollege curriculum placement and advisement they receive as girls in the secondary education system. Hence, we find the proliferation of precollege programs funded by the National Science Foundation and private foundations in the 1980's in New Jersey and the nation.

There is no reason to believe that New Jersey is different from the national picture. The end result in New Jersey is similar to the national picture, disproportionately fewer women end up as engineers than do their male counterparts.

National data on women in science gathered by the American Association of University Women indicates that cards are stacked against girls in school, which then lead to the adult cards being stacked against women occupationally, links in the education-occupation chain of low female achievement.



**WOMEN FACULTY/ADMINISTRATORS
AS MANAGERIAL MENTORS AND ROLE MODELS
AT NEW JERSEY COLLEGES**

WOMEN FACULTY AT NEW JERSEY COLLEGES AND UNIVERSITIES

RUTGERS WOMEN FACULTY OF ALL COLORS

On the next page, Table 12 reveals that Rutgers-the State University of New Jersey has made little progress in the last decade (1977-1987) of hiring women who are full-time faculty members. There has been no progress hiring Black Faculty, while Hispanics treaded water. Women comprise 29.7% of the Rutgers full time faculty in 1987; while Blacks comprise 5% and Hispanics 2.2% respectively.

Table 13, also on the next page, reveals that only 22.6% of tenured Rutgers Faculty are women (356 out of 1,575). About 88% of tenured women are white. Hispanic women were least likely to have tenure (only 7 do); followed by 12 Asian women; and 25 Black women. Historically at Rutgers, women were less likely to be tenured, and many who were had to fight their cases on appeal. Statistically, when a woman is tenured, the probabilities are much higher that she will be white, rather than a woman of color.

Who are the tenured faculty at Rutgers-the State University of New Jersey?

11.5% of the tenured faculty are minorities. By rank, 56% of Assistant professors are women, compared to 22% minority. A third of Associate Professors are women, compared to 14% minority; 15% of Professor Is are women, compared to 10% minority; and only 8.5% of Professor IIs are women, and 6%

Table 12
Rutgers University Full-Time Faculty by Race/Ethnicity & Gender *

	FALL 1977	Fall 1987
Black	156 (6.0 %)	123 (5.0 %)
Hispanic	53 (2.1 %)	55 (2.2 %)
Female	736 (28.5%)	727 (29.7%)
All Faculty	2,679	2,447

* NJ Department of Higher Education (May 1989) "Affirmative Action Status Reports, New Jersey Public Colleges & Universities 1987." Office of Employee Relations and Personnel Policies, Office of Planning & Research.

Table 13
Rutgers University, Tenured Faculty in 1989-90 by Rank, Racial/Ethnic Group, and Sex **

Rank	Asian/ Pacific Is		Black		Other Hispanic		Puerto Rican		white		TOTAL	
	f	m	f	m	f	m	f	m	f	m	f	m
PII	0	10	0	5	0	4	0	0	25	249	25	268
PI	2	27	4	15	1	2	1	1	69	397	77	442
Assoc P.	9	26	18	33	1	10	4	3	212	429	244	501
Assist. P.	1	1	3	0	0	0	0	0	6	7	10	8
	12	64	25	53	2	16	5	4	312	1,082	356	1,219

Total Tenured Faculty = 1, 575

** Rutgers University affirmative Action & Employment Research Office, Jan. 1990. "Workforce Analysis of Tenured Faculty, 1989-90, Appendix Chart A, p. 18.

minority. (See Table 13 for Rutgers ranking system of PI and PIIs.) The conclusion remains that the lower the academic rank at Rutgers, the higher percentage of women and minorities. The converse is also true: the higher the rank at Rutgers, the lower the percentage of women and minorities.

Professor Lillian Roberts of Rutgers University-Newark asserts that 20 years of affirmative action has not really penetrated the senior faculty ranks at Rutgers or most New Jersey colleges.⁴²

The Rutgers faculty sex ratios mirror the national sexual imbalance. This is why national gender data on education is especially relevant for New Jersey. (For more national data on education and gender, see Appendix A.) The March-April 1990 *Academe* reveals that 72.6% of the national tenured faculty are male; 27.4% are female. There are more men at all higher levels. According to Roberts, "The discrepancy is greatest for full professors--4.6% are women and 31.4% are men."⁴³

42

Lillian Roberts, "Is the Glass Half Full or Half Empty? A Reassessment of Affirmative Action in Higher Education," paper presented at the May 3, 1990 conference of the New Jersey College and University Coalition on Women's Education in Trenton and at the Conference of the Institute for Research on Women, New Brunswick, May 22, 1990, pp. 1-4. Thanks to Chris Berzinzki of the Rutgers Chapter of the AAUP for making this data available to me. Thanks also to Joyce Penfield, Professor of Education at Rutgers University for the data compiled in the Tables presented on page 49 A.

43

Ibid., p. 1.

Roberts then goes on to focus on New Jersey and writes:

"Data on the proportion of women who are Professors at various New Jersey institutions (Academe, pp. 52-55) indicate that the engineering schools have the fewest (less than 1% at NJIT and Stevens), Seton Hall has 4.2%, Princeton 4.4% and Rutgers as a whole 4.6%. Rutgers-Newark, which includes an all-woman College of Nursing, has 5.7% women Professors. The community and state colleges have higher rates, ranging from 6.8% to 9.5%.

Illustrative data from Rutgers (Robbins, 1989) indicate some of the underlying dynamics:

- a. More white men are being hired in beginning tenure-track positions than women or minorities.
- b. The tenure rate of white men is higher; 67.7% of whites are tenured vs. 59.7% minorities; 72% of men are tenured, and 53.7% of women.
- c. The promotion rate for white men who remain is more rapid.
- d. The number of new hires at senior levels has doubled in recent years -- 7.9% in 1976-78 vs. 18-19% in 1986-88. White men represented 75.0% of the 299 senior positions filled in the twelve years reviewed..."⁴⁴

SALARIES OF WOMEN FACULTY ARE LOWER

The salaries of women are lower than men's in all institutions and for every academic rank but one, in the U.S. : lecturers at church-related schools, a relatively small category. Salary differences reflect, in part, the belief that greater compensation is needed to attract people to teach what I would term the "blue curricula", notably Business, Computer Science, Engineering, and Law, where men predominate in these disciplines. It should also

noted for the purposes of this study that these higher paying men's fields in the "blue curricula" are where we would expect to see higher rates of firm formation among blue alumni compared to graduates who major in traditional women's fields within the "pink curricula."

Data on colleges and universities in New Jersey show that the state follows the national pattern. Roberts found that:

"Of 81 possible comparisons, 9 show slightly greater salaries for women, the magnitude ranging from \$200 for instructors at Rutgers-New Brunswick to \$3900, for Assistant Professors at Upsala...There were 3 equal salaries, all for assistant professors at state colleges, reflecting deliberate efforts to establish pay equity. The remaining 69 comparisons (85%) all favored men, with differentials ranging from \$200 for Professors at Jersey City State, to \$11,000 for Associate Professors at Ocean County College."⁴⁵

This despite the Rutgers consent decree correcting discriminatory salaries in the 1970's. (SEE CHART 2, PAGE 57.)

(STAR SYSTEM)

Academe does not seem to acknowledge the star system now rampant, in which people are called by titles such as 'Professor II' or 'World Class Scholar.' A tabulation of 66 people in named chairs or with other special professorial titles at Rutgers in August 1988 showed only one to be a woman. Fifty nine of the men are white, 3 are black and 3 of Asian background. Although the total number of people involved is small, their salaries are considerably above Academe's tabulations. Some also enjoy benefits ranging from low-cost loans for cooperative apartments to personal secretaries and home computer systems...many add to their earnings by commanding generous fees for talks."⁴⁶

⁴⁵

Ibid., p. 1.

⁴⁶

Ibid., p. 2.

FEW WOMEN'S BUSINESSES INCUBATED AT THE ENTREPRENEURIAL UNIVERSITY

ENTREPRENEURIAL PROFESSORS ARE MOSTLY MALE

Roberts also makes an excellent point about faculty salary differentials based on gender and fringe benefits and pensions, which now represent over 20% of one's salary. On average, male faculty are able to accumulate more wealth than female faculty, which directly affects the ability of the new "entrepreneurial professor class" to startup their own high technology businesses. 47

The historically high male-low female sex ratios among tenured full-time faculty in New Jersey colleges has given male professors an advantage in access to university support for professorial firm formation. Furthermore, the historically high male-low female sex ratio of students at Stevens and NJIT, technological universities, has given male student alumni a cumulative advantage over the years to gain access to university support and to be mentored by professor-entrepreneurs, who sometimes form business partnerships with favorite, bright and promising students. By the simple fact that few women faculty and students are present at technological universities, they have

47 Cindy Paul, "The Entrepreneurial University," NJIT MAGAZINE; THE ALUMNI MAGAZINE OF NEW JERSEY INSTITUTE OF TECHNOLOGY, SPRING 1991, pp. 4-11.

historically been absent from the networking and connections enterprising students and professors make, which constructs a traditional male highway into business ownership and procurement of state and federal contracts. 48

The congregation of women faculty at the lower ranks in New Jersey colleges and universities also puts female professors at the disadvantage of not being asked to participate in university enterprises; their low rank may make them ineligible to participate. There are certain university grants and privileges that are only open to full-time professors of higher ranks; this alone disqualifies the growing number of women part-time faculty at the bottom of the college totem pole from participation and profit in university supported business enterprises. Lack of role models and interest in mentoring women by senior professors must also handicap female students.

Lillian Roberts' data indicates that women administrators are still underrepresented in the upper reaches of administration:

"They tend to be typecast as Deans of Students or as Assistants or Associates of men with budgetary power. Academic Deans, Provosts, Chancellors and Presidents are still predominantly white males. While colleges that enroll virtually all women, such as Nursing, generally have female Deans--who are paid less than their male counterparts--other progress with a high proportion of female students and faculty, such as Education, Library and Social Work, often have male Deans." 49

48 Ibid., p.15-17.

49 Roberts, op. cit., p. 2.

In Roberts' estimation, during the current lean economic times for education in New Jersey, the people most at risk are:

"women who have served as part-time faculty and lower level administrators constitute the most vulnerable groups. They do not have the protection of tenure, and they may be perceived stereotypically as not needing to work and unlikely to fight back...as times get better, they will be replaced by another set of women. (This) does not diminish their plight, nor salvage their careers, particularly if they are middle-aged." 50

Table 14, on page 58, reveals that tenured women faculty have increased at NJIT in the last decade, up from 2.9% in 1981 to 6.5% in 1986 to 9.7% in 1991. That is for the entire NJIT faculty at all schools, including Architecture. The figure is lower in the School of Engineering, up from 1% in the late eighties to 2.5% in 1992. Although progress is occurring, this low female-high male faculty sex ratio at NJIT puts both women faculty and students at a historical disadvantage in accessing university support to startup women-owned businesses.

There is currently a lawsuit pending against NJIT, charging gender discrimination in Ph.D. programs, preventing

50 Ibid., p. 3. Roberts also notes that Women's Studies Programs and Afro-American Studies and Puerto Rican Studies have been underfunded compared to traditional white male departments.

women from graduating with doctorates. (Lubetkin v. NJIT).

Female students and faculty at NJIT have historically not been part of the "entrepreneurial university" network where male professors network with favored male alumni to startup businesses. Cindy Paul's article on NJIT as the "entrepreneurial university" tells the story of two male alumni, Radomski, '82, and Tarantino, '90, who started up their own business, New Jersey Prototype, with the help of an NJIT professor:

"Through one of Tarantino's professors, they found the Enterprise Development Center (EDC), a small business incubator, now housing 21 companies (only two of which are WBEs) which is located on the campus of their alma mater. Partially funded by the New Jersey Commission on Science and Technology and the Prudential Foundation, EDC nurtures new and emerging technology-based companies by supporting them in the early stages of their development....Key features include low rents, receptionist services, mail pickup, access to conference facilities, assistance in seeking venture capital and seed funding ...EDC also helps client companies contact university researchers who can serve as high calibre, cost-effective research and development resources...The lively network of business-oriented activities on campus includes:...Faculty and students working on R & D projects for EDC clients; student employment with start-up companies on campus; installation of faculty-owned companies on campus; encouragement of and an increase in faculty patent filings..."(Paul, op. cit., pp. 15-16)

How can anyone, male or female, outside this system compete on an equal footing for a government contract with someone inside the "entrepreneurial university" old boy network? Historically, women have been locked out of this university-business incubator at technological universities in New Jersey, such as NJIT, and Stevens.

CHART 2 NEW JERSEY FACULTY SALARIES BY GENDER. (IN \$1000's.)

APPENDIX A)

NAME OF INSTITUTION		NOTES	INST CATEGORY	RATING OF AVERAGE SALARY				AVERAGE SALARY BY RANK (IN THOUSANDS)					RATING OF AVERAGE COMP.				NUMBER OF FULL-TIME FACULTY								AVERAGE SALARY BY RANK AND BY SEX							
				PR	AO	AI	IN	PR	AO	AI	IN	AR	PR	AO	AI	IN	PR	AO	AI	IN	PR	AO	AI	IN	PR	AO	AI	IN	PR	AO	AI	IN
NEW JERSEY																																
Trenton State College			IIB	1*	1*	1*	1	63.3	52.0	41.5	30.8	51.4	1*	1*	1*	1	80	64	71	2	25	23	49	4	63.4	52.5	41.4	----	62.9	50.7	41.7	
Union County College		149	III	1	1	1	3	55.4	44.3	36.4	26.6	42.1	1	1	1	3	33	33	11	13	12	36	17	25	55.8	45.1	36.5	27.1	54.5	43.6	36.3	
Upsala College			IIB	3	3	4	4	42.9	33.7	26.7	23.6	32.7	3	4	4	4	12	8	7	2	3	3	11	4	----	----	28.6	----	----	----	25.5	
Westminster Choir College			IIA	5	5	5		13.3	26.0	22.6	-----	18.5	5	5	5		8	11	3		23	6	4	2	37.8	27.5	----	----	4.8	23.4	----	
William Paterson College			IIB	1*	1*	1*		63.8	50.8	40.5	-----	53.1	1*	1*	1*		81	61	41	5	36	45	30		64.3	51.4	40.4	----	62.8	50.0	40.7	
Atlantic Community College			III	2	1	1		46.8	45.1	37.1	-----	41.6	1	1*	1*		15	11	15		4	10	16	2	----	47.9	39.6	----	----	42.0	34.7	
Bergen Community College			III	1*	1*	1	1	61.6	52.0	38.9	31.1	48.1	1*	1*	1	1	33	50	24	1	17	36	23	10	62.4	53.7	40.7	----	60.2	49.7	37.1	
Bloomfield College			IIB	2	2	2		44.8	37.2	31.5	-----	36.1	2	2	2		7	8	9	1	2	6	7	2	----	38.1	31.3	----	----	36.0	31.7	
Brookdale Community College			III	1	1	1	1	55.5	44.8	36.4	31.2	45.3	1	1	1	1	44	20	12	10	21	18	23	14	56.3	46.3	37.8	32.4	53.9	43.2	35.7	3
Burlington County College			III	1	1*	1*	1	52.8	50.2	41.8	32.7	47.1	1	1*	1*	1	13	26	8	3	4	8	5	6	----	51.3	----	----	----	46.5	----	
Caldwell College			IIB	3	3	4	3	42.3	35.1	28.4	25.4	32.6	3	3	4	3	2	7	6	3	6	7	11	3	----	36.1	28.2	----	----	34.0	28.5	
Camden County College			III	1	1*	1*		55.4	49.0	42.3	-----	44.5	1*	1*	1*		20	15	25		2	11	20	2	----	51.4	45.5	----	----	45.7	38.3	
Centenary College			IIB	5	5			-----	28.2	23.6	-----	24.5	5	5	5		2	4	8		2	10	5		----	23.7	----	----	----	23.5		
College of Saint Elizabeth			IIB	3	3	4		39.7	36.2	28.8		33.9	4	4	4		1	4		9	18	15			----	----	----	----	----	----		
County College of Morris		54	III	1	1	1	1	55.2	45.9	37.1	30.3	45.0	3	3	4	4	34	49	20	2	14	35	34	7	56.8	47.0	40.3	----	51.3	44.3	35.2	
Cumberland County College			III	2	2	2		-----	41.5	34.8	28.5	37.1	2	1	2		3	10	7	2	5	6	6		----	36.8	----	----	----	32.4		
Drew University			I	4	4	5		56.8	43.5	35.2	-----	48.1	4	4	5		44	18	12		17	9	14	5	58.4	43.9	35.1		52.6	42.8	35.4	
Essex County College			III	1*	1*	1*	1*	63.7	55.4	48.6	34.0	51.0	1*	1*	1*	1*	32	35	20	12	2	11	16	10	----	58.7	48.5	36.0	----	44.9	48.8	3
Fairleigh Dickinson Univ.		65	IIA	3	2	2	2	49.8	42.6	36.9	29.6	43.4	2	2	2	2	129	61	41	4	28	14	17	4	50.0	42.8	38.7	----	48.9	41.7	32.5	
Felician College			IIB	4	4			-----	30.9	27.4	-----	28.0	5	4			7	6		1	4	15	5		----	27.0	----	----	----	27.6		
Georgian Court College			IIB	2	2	1	2	47.0	38.2	34.4	28.3	37.1	2	2	1	2	11	5	11	3	6	8	17	8	46.1	----	35.3	----	48.6	----	33.8	
Glassboro State College			IIB	1*	1*	1*		64.3	51.9	41.0		51.5	1	1*	1*		68	68	62		17	20	43		64.5	52.1	42.0		63.5	51.1	39.5	
Gloucester County College			III	1	1*	1*	1*	53.1	49.4	47.8	40.0	47.7	1	1*	1*	1*	12	11	15	7		10	6	6	----	49.6	47.9	40.1		49.1	47.6	35
Jersey City State College			IIB	1*	1*	1*		66.9	51.3	40.0		52.1	1*	1*	1*		60	46	47		19	28	45		67.4	51.3	39.9		65.5	51.3	40.1	
Kean College of New Jersey			IIA	1	1	1		62.9	50.4	40.6		51.1	1	1*	1		74	71	61		34	36	55		63.0	51.1	41.0		62.5	49.1	40.2	
Mercer County Comm. College			III	2	1	2	2	50.2	43.3	33.7	28.3	41.1	2	1	2	2	29	25	15	6	8	13	16	9	51.0	44.4	35.9	28.3	47.0	41.2	31.5	28
Middlesex County College		12	III	1*	1*	1*	1	58.9	54.0	44.5	33.5	49.0	1*	1*	1*	1*	34	35	36	9	12	21	31	18	60.3	55.5	47.4	35.6	54.9	51.5	41.3	32
Monmouth College			IIA	2	1	2		56.5	47.3	36.6		47.0	2	1	2		43	50	21		5	6	24		----	47.7	38.9	----	----	44.0	34.6	
Montclair State College			IIA	1	1*	1	2	62.8	50.8	40.5	29.8	51.5	1	1*	1	1	107	87	72	3	45	53	52	10	63.3	51.2	41.1	----	61.8	50.2	39.7	
New Brunswick Theol. Seminary			IIB					-----	-----	-----	-----	27.3					3		2				1		----	----	----	----	----	----		
New Jersey Inst. of Tech.			IIA	1*	1*	1*		76.9	60.1	49.9		60.0	1*	1*	1*		95	88	71		8	9	13		77.7	60.1	50.2		67.4	59.5	48.3	
Ocean County College			III	1*	1*	1	2	60.0	54.3	38.5	28.7	43.8	1*	1*	1	2	12	20	19	12	9	10	17	19	63.5	59.9	39.8	29.6	55.3	43.1	37.1	28
Passaic County Comm. College			III	1	4	4		-----	43.6	29.0	25.4	32.9	1	4	3		3	3	11	2	2	6	22	8	----	29.2	----	----	----	28.9		
Princeton Theol. Seminary			I	2	1	2		67.8	52.3	40.2		57.7	1	1*	1		19	8	5		2	2	4		----	----	----	----	----	----		
Princeton University			I	1*	1	2	1	88.2	52.3	41.3	34.7	67.6	1*	2	2	2	348	46	144	10	38	16	52	5	89.0	53.3	42.1	----	81.1	49.3	39.2	
Ramapo College of New Jersey			IIB	1*	1*	1*		63.2	51.8	40.2	-----	52.0	1*	1*	1*		34	34	24		11	10	16	1	63.8	52.1	40.6		61.5	50.7	39.7	
Raritan Valley Comm. College			III	1	1	1	2	53.9	44.5	37.5	29.8	42.9	1	1	1	1	17	12	9	5	10	14	8	14	55.0	46.7	41.5	----	52.1	42.5	33.0	
Rider College			IIA	1	1	1*		59.3	50.7	46.4	-----	51.9	1	1	1*		47	74	22		10	28	24	2	60.5	52.3	49.6		53.8	46.4	43.5	
Rutgers, State Univ.-Camden		22	IIA	1*	1*	1*	2	82.0	59.4	48.3	30.4	61.1	1*	1*	1*	1	48	65	25	3	6	17	21	5	83.1	59.7	49.8	----	73.2	58.4	46.4	
Rutgers, State Univ.-Newark		22	IIA	1*	1*	1*	1*	83.5	60.6	49.7	34.6	65.8	1*	1*	1*	1*	108	91	41	1	26	45	40	7	84.0	61.0	53.1	----	81.7	59.7	46.2	
Rutgers, State Univ.-N. Brunswick		22	I	1	1*	1*	3	79.9	57.9	45.4	29.4	62.5	1	1*	1*	2	474	309	150	39	78	111	117	26	80.8	58.5	48.1	28.4	74.7	56.3	41.9	30
Saint Peter's College		128	IIB	3	3	3	2	41.3	35.2	28.9	27.8	35.6	3	3	3	2	36	32	17	5	8	7	6	3	41.6	35.5	30.2	----	40.1	34.2	25.2	
Salem Community College			III		1	1		-----	-----	37.9	31.2	34.3		1	1		1	3	1	6			6	7	----	----	----	30.5	----	----	----	31
Seton Hall University			IIA	1*	1	1	1*	67.3	50.2	40.9	35.1	51.6	1*	1	2	1*	84	76	62	7	17	31	45	5	67.3	50.0	41.4	----	67.2	50.5	40.2	
Stevens Institute of Tech.			IIA	1	1	1		61.6	46.9	41.1	-----	52.9	1	1	1*		66	35	14	5	2	2	5		----	----	----	----	----	----		
Stockton State College			IIB	1*	1*	1*	1	63.1	49.7	38.8	30.6	47.7	1	1*	1*	1	37	36	34	6	7	18	29	7	63.5	50.4	38.6	31.4	61.4	48.5	39.0	29

NEW JERSEY INSTITUTE OF TECHNOLOGY
(NJIT)

NJIT**TABLE 14**

**Women and Minority Full-Time Instructional Staff
1981 - 1991**

Full-Time Women Instructional Staff	1981	1986	1991
Distribution by Rank			
Professor	0	1	8
Associate Professor	3	11	9
Assistant Professor	14	9	13
Other (Spec. Lect., Visiting Researcher)	6	13	6
Total	23	34	36
% of Full-Time Instructional Staff	10.6%	10.7%	11.3%
% of Tenure Track Faculty	7.6%	8.5%	10.6%
% of Tenured Faculty	2.9%	6.5%	9.7%
Full-Time Black and Hispanic Instructional Staff			
Distribution by Rank			
Professor	0	1	1
Associate Professor	3	3	5
Assistant Professor	0	3	3
Other (Spec. Lect., Visiting Researcher)	4	2	3
Total	7	9	12
% of Full-Time Instructional Staff	2.6%	2.8%	3.8%
% of Tenure Track Faculty	1.3%	2.8%	3.2%
% of Tenured Faculty	1.1%	1.6%	2.7%

NEW JERSEY INSTITUTE OF TECHNOLOGY

(NJIT)

TABLE 15
NJIT Full-Time Instructional Staff by Rank
1981 - 1991

Rank	Fall 1981		Fall 1986		Fall 1991	
	#	%	#	%	#	%
Distinguished & Full Prof.	73	27.3	89	28.1	103	32.3
Associate Prof.	95	35.6	109	34.4	97	30.4
Assistant Prof.	55	20.6	50	15.8	84	26.3
Other (Spec. Lect., Visiting Researcher)	44	16.5	69	21.7	35	11.0
Total	267	100.0	317	100.0	319	100.0

TABLE 16
NJIT New Faculty Hires by Rank
1987 - 1991

Rank	F87	F88	F89	F90	F91
Distinguished & Full	5	3	0	3	1
Associate	6	4	4	2	1
Assistant	11	26	9	12	8
Total	22	33	13	17	10

Princeton University

The Institute for Advanced Study at Princeton University has a history of gender and racial imbalance in its awards for scholars invited to visit and work in Princeton.

In 1992, only 14% of the members and visitors are women, (27 out of 193); only 2 scholars are black. The National Science Foundation, which helps fund the institute, has raised questions about the imbalance but has not cut grants because of the imbalance.

"Institute leaders say they do their best to find women and minority candidates, but few meet the institute's rigorous standards. Joan Wallach Scott, the sole woman among 21 permanent professors, counters that subtle, perhaps unconscious, discrimination comes into play. She thinks a woman has to be more qualified than a comparable man to get in. 'The emphasis on excellence always hides the fact there are different standards used to evaluate men and women,' says Scott, a social scientist. ' There are ways in which stock images of who 'the scientist' is have gender included in them, but not explicitly, not in a deliberately vicious or misogynist way.'"51

At the Institute, 21 "professors" have lifetime tenure; 95% of them are men, and it is they who decide who will be admitted to the Institute. With only one female in their ranks, they tend to favor men as they sift through more than 1,100 applications per year. In short, it is a self

51 "From Bard to Bart," Trenton Times, 1992.

perpetuating gender imbalance built into the admissions process. The admissions panel, which is 95% male, has created an Institute that is 86% male.⁴⁰ This is one of the most prestigious Institutes in New Jersey, if not the most prestigious for scholars. The tradition of first exclusion, then the tokenism of women scholars, at the Institute for Advanced Study at Princeton University suggests gender discrimination.

Interestingly enough, the elite Princeton Institute gives the same explanation for the lack of women in their ranks as the blue collar New Jersey construction unions: essentially their defense is--we'd like to take more women into our ranks, but we just can't find enough who are qualified to meet our rigorous standards of excellence!

Now, let us examine more carefully how gendered education in New Jersey has created essentially two different curricula for boys and girls, which fulfills the demands of two separate but unequal women's and men's labor markets.

discrimination in 1987. Before 1987, all sexual harassment cases were filed under sex discrimination, which includes a broader range of complaints including discrimination in employment, housing and accomodation. Therefore, we must look at both sets of data, historically, although the state is correct to separate sexual harassment from sexual discrimination. Sexual harassment is a form of sexual discrimination, but the reverse is not true.

See Table 19 "Gender Discrimination Complaints Filed with the New Jersey Division of Civil Rights, 1968-1992," which reveals that sex discrimination complaints generally represent a fifth to a fourth of the total complaints received by Civil Rights. This is significant, given that Mr. Rodriguez points out as do other experts in the field that many sexual harassment victims never come forward to file a complaint. He also notes that "since the Clarence Thomas hearings, there has been a significant rise in sexual harassment complaints filed with New Jersey Division of Civil Rights: in the period between July 1990 to February 1991, only 19 complaints were filed; compared to the period between July 1991 and February 1992, 56 complaints were filed. That reflects a 153% rise.

The vast majority of gender discrimination complaints in New Jersey involve employment, about 98% according to Mr. Rodriguez of the Division of Civil Rights.

In 1987, 31 sexual harassment complaints were lodged with New Jersey Civil Rights Division, representing 2% of

INTRODUCTION AND OVERVIEW

The hypotheses to be explored in this section of the Gender Chapter are:

1) applying Tractenberg's argument on race in the Education Chapter to gender, "that the kind, quality and extent of education historically available to minorities and women have limited their business opportunities in a substantial and demonstrable way, and that this limitation appropriately can be addressed by race and sex-conscious measures." 52

2) that historically students in New Jersey schools have been tracked by gender. Specifically, I will argue that the majority of females of all races have not been properly advised, encouraged or placed to take the higher level math/science/technical pre-college courses necessary to pursue college careers at the upper levels of the science/engineering workforce, nor have they been placed in vocational trades that would lead them into the heavy construction workforce that, by custom, will lead to owning SBEs in New Jersey.

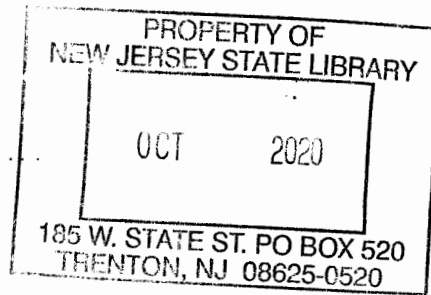
The majority of female students of all colors in New Jersey have historically been sex-stereotyped by education professionals (guidance coordinators, teachers and administrators) and placed

52 Paul Tractenberg, "Chapter on Education," Governor's Study Commission on Discrimination, p. 1.

into a "pink" curricula that leads all but the most exceptional girls into the traditional, low paying service and clerical sector, also known as "women's work", pink collar ghettos. The majority of male students have been steered into a "blue" curricula which will inevitably lead them into the traditional, higher paying "men's work". This is not to imply that gender is the only determinant of one's life chances in such a tracking system; a student's race or class may also track her into a blue collar or white collar curricula/occupation.

The major field of study that students select in colleges or vocational schools are still largely gendered fields that lead to gendered occupations, where there is a gender wage gap resulting in an historical imbalance of wealth accumulation between men and women in, which lowers women's ability to start up and succeed in business in New Jersey.

This is a national problem as well. Gender tracking in the New Jersey and U.S. educational systems leave most female students locked out of career tracks that lead to ownership of SBEs. The occupational segregation of men and women can be traced, in part, back to the gender tracking practices within the educational system as well as to the State "protective" labor laws.



TRACTENBERG REPORT'S GENDER IMPLICATIONS

Tractenberg interprets the New Jersey Supreme Court in its June 1990 decision in Abbott v. Burke (119 N.J. 287, 575 A. 2d 359 (1990)), to mean that: " Abbott is the culmination of a series of high court decisions dating back to 1895, which emphasize that a central purpose of the constitutional clause is to provide students with a public education designed to equip them to enter and compete in the marketplace." ⁵³ Tractenberg argues that the State of New Jersey and the Legislature have failed to afford urban, poor and minority students in "property-poor districts an adequate and constitutionally-mandated education."⁵⁴

This paper applies the Tractenberg analysis on race and class discrimination to gender discrimination in New Jersey as well. Although race and sex discrimination often take different forms, the result for both is effective denial of an adequate and constitutionally mandated education which equips them to enter and compete in the marketplace. In New Jersey today, there are still many schools that are horizontally (or physically, spatially) segregated by race; that is, equal numbers of whites and blacks do not occupy the same physical space in schools. They go to

⁵³Ibid., p. 7-8.

⁵⁴Ibid., p. 3.

different schools; many whites go to suburban schools and minorities to urban schools.

However, most New Jersey schools are horizontally sex integrated. That is, girls and boys physically occupy the same school in approximately equal numbers. So unlike racial segregation, many New Jersey public schools are horizontally sex integrated. Yet sex discrimination persists because these same schools which allow boys and girls to physically mingle in the same school, assign girls and boys different subjects, which leads to different classrooms, teachers and curricula based on traditionally gendered fields of study. This amounts to vertical sex segregation within a horizontally sex integrated school.

Specifically, a disproportionate number of female students are segregated into major fields of study and curricula that will not lead to careers at the higher levels of the math/science or technical fields, which are requisite routes into business ownership and contracting with the New Jersey State government.

This is not only a problem in New Jersey, but nationally as well. In fact, some data suggests that this is even true in Canada. The Canadian data goes so far as to suggest that the "gender barrier" is already in place among Canadian females as early as 9 years old and firmly set by age 13.⁵⁵ This "gender barrier" operates in New Jersey schools as well.

⁵⁵ Moyra McDill and Marilyn Johnston, "Tracking the Gender Barrier Through Declining Interest in Technology," Carleton University, Ottawa, Ontario, Canada. Thirteen thousand students, between the ages of 9 and 18 were studied by the researchers, at summer camps in Canada. Because Canada, like the United States, faces a shortage of women engineers. "Female enrollments of under 20% are typical of many undergraduate programmes in Canadian engineering schools." These figures almost mirror the U.S. picture.

The tracking of female student "survivors" of the "gender barrier" who still have math/science ability into the life sciences away from the physical sciences in order to supply society with female nurses and dental hygienists is discriminatory and can be traced back to mandatory curriculum by law (1937 Revision of the Statutes). This practice mandated by law only prepares females to compete in the pink collar marketplace, not the men's "blue" marketplace, which is the real free market economy. Segregating most female students out of upper level math/science/technical fields altogether, and then vertically segregating most remaining female survivors of the math/science culture to a second tier educationally, then occupationally, does not provide women students with the science literacy tools they need to compete in the increasingly technological marketplace of twenty first century New Jersey.

Other Tractenberg arguments on race that also apply to gender discrimination in the New Jersey education system concern the first provision of New Jersey's current constitution, adopted in 1947 as a model state constitution, Article I, Paragraph 1 which states that:

"All persons are by nature free and independent, and have certain inalienable rights, among which are those of enjoying and defending life and liberty, of acquiring, possessing and protecting property, and of pursuing and obtaining safety and happiness."⁵⁶

⁵⁶New Jersey Constitution, Article I, Paragraph 1.

The reports of sexual harassment and "date rape"⁵⁷ of female students on school grounds and college campuses in New Jersey violates these students' New Jersey constitutional rights of "obtaining safety" on school grounds and thus interferes with their right to education.

If female students' bodies are not safe on New Jersey school grounds and college campuses due to sexual harassment and rape, are their constitutional rights being violated by the New Jersey educational system itself? (See the Section on Sexual Harassment in New Jersey.)

Tractenberg's analysis of the N.J.A.C. 6:8-2.1, entitled "State Educational goals," is relevant to gender as well as race. This regulatory provision states that the public schools are to help every pupil in the state :

" 1. To acquire basic skills in obtaining information, solving problems, thinking critically and communicating effectively;...

3. To become an effective and responsible contributor to decision-making processes of the political and other institutions of the community, State, country and world;

⁵⁷See Christine Coverdale case against Rutgers University-New Brunswick, reported in the school newspaper, The Targum, wherein Coverdale, an undergraduate was raped at a fraternity party and held captive, then terrorized by her rapists via phone for months after. Coverdale charges that Rutgers University covered up this case and did nothing to help her after her ordeal. After the Coverdale case surfaced in the school newspaper, and she went on to become the student leader of a group called SASHA, Students Against Sexual Harassment and Attacks, other women students at Rutgers came forward and spoke out about their rapes at fraternity parties, which were then documented by The Targum. Coverdale claims that she has been harassed by the University to drop the case, that her grades get mysteriously lost every semester at the Registrar's Office, etc. The Coverdale v. Rutgers lawsuit is still pending.

The *New York Times* reported in an article titled, "University, Blamed in Rape, Is Told to Pay Victim," (March 29, 1992) that a jury awarded \$1.6 million to a student who was raped at the University of Southern California, saying that the University failed to provide adequate security around an off-campus dormitory where she lived.

4. To acquire the knowledge, skills and understanding that permit him or her to play a satisfying and responsible role as both producer and consumer;

5. To acquire job entry level skills and also to acquire knowledge necessary for further education;....

11. To develop an understanding of his or her own worth, abilities, potentialities and limitations..."⁵⁸

Regarding "State educational goal" #1, New Jersey has failed to give female students the basic skills in "solving problems" in math/science (See data on Science, Engineering and Women.)

Regarding goal #3, the number of women who hold public office in the New Jersey legislature has moved from 12 in 1979 to 11 between the years 1985-89⁵⁹. Few women students who travel the hallowed halls of the New Jersey educational system ever travel the corridors of political power in the state legislature, although there has been good progress at the local community level politically for women in recent years. (See Myers Report, Table 22.)

Regarding goal #4, women students in the New Jersey educational system are not acquiring the "knowledge, skills and understanding that permit them to play a satisfying and responsible role as...producer," ⁶⁰ although clearly the majority of consumers are women. The majority of producers in New Jersey are men; the majority of women in New Jersey work in the clerical and services sectors.

⁵⁸Tractenberg, p. 21.

⁵⁹Samuel Myers, "Demographic Trends: Historical Record of Minority and Women-Owned Business Enterprises in Public and Private Contracting in New Jersey," Table 22, p. 111.

⁶⁰Ibid., pp.

Regarding goal #11, there are numerous studies, the latest of which is the A.A U.W. Report on "How Schools Shortchange Girls," which conclude that female students suffer from low self esteem at the hands of the American educational system itself via sexist textbooks, curriculum, teachers, guidance counselors and administrators. These studies have relevance for New Jersey education. (See Appendix A for the A.A.U.W. Report, which is appended.)

Furthermore, Tractenberg notes that the N.J.A.C. 6:4-1.1 et. seq., "adopted in 1975,... guarantee of equal educational opportunity is designed to specifically implement federal statutes, and a State Board of Education resolution concerning sex equality."⁶¹ New Jersey has not implemented all these statutes.

Of particular interest to this gender chapter is Tractenberg's citation of N.J.A.C. 6:4-1.3, 6:4-1.5, 6:4-1.6, which require every school district in New Jersey to develop "(i) an equal educational opportunity policy; and (ii) two affirmative action programs or plans, one relating to school and classroom practices, and the other to employment and contracting practices."⁶² This is a rich regulation to mine regarding gender and employment/contracting. (See section on Women Faculty Salaries Are Lower Than Men's.)

Let us now look at administrative employment in the educational system of New Jersey according to gender and race. See Table 17 on the next page.

⁶¹Tractenberg, op, cit., p. 22.

⁶² Ibid., p. 22.

Table 11 New Jersey School District Administrators by Gender and Race.

Position	% FEMALE	% BLACK
Superintendent	6%	3%
Asst. Superintendent	17%	8%
Business Administrators	20%	2%
Secondary Principal	11%	10%
Elementary Principal	22%	12%
Supervisors	30%	8%
Guidance Counselors	31%	9%

Source: Sex Discrimination in N.J. Report, 1991.

As The 1991 Report on "Sex Discrimination in Education" in New Jersey indicates:

"Title 6:4's provision on employment prohibits discrimination, but it does not provide for any affirmative steps to remedy the effects of past discriminatory practices. The National Center of Education Information issued a comprehensive report in January of 1988. This document, entitled 'Profile of the School Administrators in the U.S.' said, 'probably nowhere in

America is there a larger block that gives more credence to the phrase 'old boy's club' than public school administrators.' This study used the following statistics to support their conclusion: 'Public school principals are 76% male and 90% white and superintendents are 96% male and 97% white. Contrasting this data are the current statistics for public school teachers which show that women make up 69% and minorities 11% of this labor market. In New Jersey's educational community, the statistics closely resemble those on the national level. Allowing equal access is obviously not enough. Of the 583 school districts in the state of New Jersey, only 37 (6%) of the Superintendents (Chief School Officers- CSO's) are female and 19 are black. The remaining 527 are white male." ⁶³

...
This is not only true of primary and secondary education in New Jersey. At Rutgers - the State University of New Jersey in 1989-90, only two of the 31 undergraduate department chairs in New Brunswick were women. One was the Director of the Women's Studies Program, which was no surprise and the other was the temporary, acting chair of Puerto Rican Studies, who was not in office long, and has subsequently been replaced by a man.

The most relevant New Jersey regulation to gender discrimination today, is N.J.A.C. 6:4-1.5 which "bars a wide range of discriminatory practices regarding educational programs or activities, extracurricular activities, assessment processes, and guidance and counseling activities." New Jersey has yet to fully implement this regulation, particularly with guidance counselors. The section concludes:

"(h) When informing students about possible career, professional and/or vocational opportunities, school personnel shall in no way restrict or limit the options presented to students on the basis of race, color, creed, religion, sex ancestry, national origin or social or economic status." ⁶⁴

⁶³ Ibid., p. 25.

⁶⁴ Tractenberg, op. cit., p. 22-23.

My own fieldwork at New Jersey community colleges this year under a National Science Foundation grant to increase the number of women in engineering, science and technology in New Jersey indicates that inappropriate precollege advising and placement of female students in New Jersey is still the major obstacle for college women, many of whom have not taken the right courses they need to pursue careers in science/technology. By the time they get to the Women in Engineering, Science and Technology (W.E.S.T.) Program at NJIT via community colleges, it is too late for many of them to play catchup with the rigorous engineering curriculum. This dooms ill-advised women to spend 2-3 extra years beyond well-advised men for the same degree.⁶⁵ This factor alone is responsible for the discouragement of most math-able women I have encountered in New Jersey to abandon hopes of entering the Science/Engineering professions. (See the Science, Engineering, and Women section of this report.)

The New Jersey data in Table 1 may also explain partly why the advisement of girls and young women in New Jersey schools is based on outdated sex stereotyping of occupations: 69% of the top district guidance coordinators in the state are male.

The Commission on Sex Discrimination in the Statutes of the New Jersey Legislature repeatedly stressed that implementation of New Jersey statutes is a problem in the educational system.⁶⁶

⁶⁵ Women in Engineering, Science and Technology Report to the National Science Foundation, New Jersey Institute of Technology, January 1992.

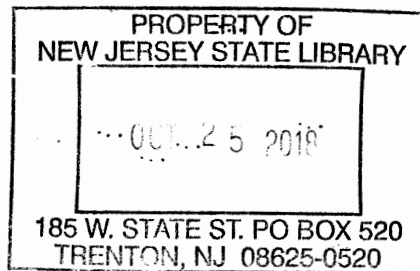
⁶⁶ Melanie Griffin, "State of New Jersey Commission on Sex Discrimination in the Statutes."

Finally, Tractenberg's work on Abbott is applicable to gender in New Jersey: "The denial of educational rights is tied directly and explicitly by the Court to ability to compete in the economy". To follow his analogy, women are being forced out of the "economic rewards race at the very starting blocks" when they are girls, and "that the state itself has contributed to the handicaps" by excluding girls from industrial arts courses in vocational schools and not enforcing the statutes that are already on the books.

The dropout rate of females and minorities from the math/sciences/technical fields is considered a national crisis by the National Science Foundation, which has invested in precollege programs in New Jersey at Rutgers, NJIT, and Stevens to seek solutions and remedies to the problem. The female and minority dropout rate from the math/sciences in New Jersey deserves as much attention as the more widely reported problem of the high minority male dropout rate from minority districts in New Jersey.⁶⁷ These female dropout rates have been historically ignored, until the National Science Foundation drew attention to the problem in the eighties.

What has been done in New Jersey's education system regarding gender discrimination that is relevant to this study?

⁶⁷ "Accurate Dropout Reporting Procedures Needed," *Public Affairs Research Institute of New Jersey, Inc. Newsletter*, (Princeton, N.J.: Carnegie Center, May 1990), Issue Number 12.



RECENT HISTORY OF THE STUDY OF SEX DISCRIMINATION IN NEW JERSEY

Commission on Sex Discrimination in the Statutes

In 1989, the Commission on Sex Discrimination in the Statutes began its study of the New Jersey educational system, and held public hearings in July of 1989. In July 1991, the Commission released its report, which found that a number of New Jersey statutes ban sex discrimination in the educational system, but few are adequately enforced. The Commission found:

"It was of great concern to the Commission that the practice of treating boys and girls differently and the passing on of stereotypes still exists and that this practice is not in keeping with the present and anticipated needs of the state for skilled people of both sexes.⁶⁸

The Commission also found problems with New Jersey's vocational schools in regard to sex stereotyping and made the link between education of students and occupation of workers:

"If New Jersey is to remain competitive in a national and international economy, our vocational schools must begin to prepare women as well as men for what are now viewed as 'traditional male' vocations....While our focus here today is on education itself, we should not ignore the effects that removing gender stereotyping will have on society at large. In fact, the effect on society is precisely the reason that these changes must

⁶⁸...Commission on Sex Discrimination in...New Jersey...op. cit., p. 5.

be made in our educational system. Single mothers make up a large portion of the population receiving public assistance. Many, if not most of these women are unaware that high paying opportunities in construction are available to them. A major obstacle in the retention of tradewomen is harassment on the job. By exposing boys as well as girls to female construction role models, we can eliminate the notion that women do not belong on a construction site, and help to reduce the incidence of sexual harassment."⁶⁹

The Commission examined the national statistical picture and found that Federal Title IX has not achieved sex equity in education:

"52% of all women participated in the labor force by 1980. Yet, women continue to be segregated in low-paying occupations: 70% of all men were in occupations dominated by men, while 54% of all women were in occupations dominated by women....Woman-dominated occupations are lower paying than those occupied by men. Title IX had been in place 14 years in 1986. Though women occupied half of all professional positions for the first time in that year, 60% of this figure included school teaching and nursing, traditional female jobs. Further, in 1986, 80% of those providing administrative support and clerical work were women, while 71% of all sales workers and personal and retail service providers were women. There were only 2% female construction workers, 3% female mechanics and repairers, 4% female dentists, 5% female welders, 6% female engineers, 17% female doctors, and 18% female lawyers. Women business owners are also concentrated in the relatively low-paying service industries and occupations: a full 35% of self employed women are in administrative support or service industries, compared to self-employed men, only 5% of whom are in such occupations. These figures reflect a work force that is still largely sex-segregated."⁷⁰

The Commission also noted that women are entering professions requiring advanced mathematics at a slow pace, and "in order to increase their numbers, girls must be encouraged to enter non-traditional fields while still in elementary or high school."⁷¹

⁶⁹ Ibid., p. 10.

⁷⁰ Ibid., p. 10.

⁷¹ Ibid., p. 10.

Another problem noted by the Commission is the "feminization of poverty," the increase in female-householders (1 in 6 American families), and the high rate of unemployment among such families, 10% for whites and 15% for blacks. Of single parent women maintaining families, 30% do not have a high school diploma while only 17% of household heads in married couple families lack a high school diploma. Only 8% of women in female headed households have a college education.⁷²

The subtle system of gender tracking in the education system which results in sex segregated occupations must be dismantled if New Jersey is to increase WBEs. The Commission looked at the national figures and found:

"Women continue to account for more than 3/4 of awarded degrees in education, health sciences, library sciences, and home economics. This is so despite a lessening of gender differences in career choice. From 1973-74 to 1983-84, the number of degrees awarded women in non-traditional areas more than doubled: agriculture and natural resources (from 10% to 32%), architecture (from 15% to 36%), business and management (from 13% to 43%), computer sciences (from 16% to 37%), engineering (from 2% to 14%), engineering technologies (from 1% to 8%)...The largest shift in choices has been a move from degrees in education to degrees in business and management."⁷³

(See Appendix A for national data on the segregation of women in educational curricula.)

The Commission called for a sex based program to break the "gender barrier":

An increasing literature on success anxiety and math anxiety among girls and women coincides with the Commission's warning that :

⁷² Ibid., p. 11.

⁷³ Ibid., p. 11.

"Girls are still being socialized and educated in ways which will continue to motivate women to avoid success, or fear success even if they seek it....We can no longer afford to ignore the comparatively low achievement rate of over half the population....Schools and teachers need to understand and acknowledge the disabilities facing girls when confronted with ...the sexist vision embodied in the traditional curriculum....In addition, girls may need extra space and attention. Such affirmative action would counteract years of socialization, the effect of which has been negative for females. This is particularly true in math, the physical sciences, computers, athletics, and similar pursuits where boys have traditionally been given more encouragement, attention, training, and role models."⁷⁴

NEW JERSEY STATE LAWS ON GENDER DISCRIMINATION

The State of New Jersey:

"stands opposed to discrimination in any place of public accommodation which by definition, includes any kindergarten, primary and secondary school, trade or business school, high school, academy, college and university, or any educational institution under the supervision of the State Board of Education, or the Commissioner of Education ." ⁷⁵

The Commissioner of Education and the Division on Civil Rights have concurrent, and sometimes confusing, jurisdiction covering complaints charging acts of gender discrimination in public school courses of study and curricula. In Flanders v. William Paterson College of New Jersey,⁷⁶ a female college teacher was denied a promotion to full professor solely because of her sex. The court ruled that the Director of the Division on Civil Rights could order the college to promote the female faculty

⁷⁴ Ibid., p. 11.

⁷⁵ Ibid., p. 22.

⁷⁶ Ibid., p. 22.

member to full professor and require the college to recruit, hire and promote qualified women.

According to the Commission, "the right to equality of education based on sex has not been expressly litigated in New Jersey." However, there are state provisions such as Titles 18 and 18A of the New Jersey Statutes which deal specifically with education, which state:

"no discrimination based on sex shall be made in the formulation of the scale of wages, compensation, appointment, assignment, promotion, transfer, resignation, dismissal, or other matter pertaining to the employment of teachers." ⁷⁷

The Commissioner of Education has jurisdiction over all disputes arising under the education laws. By 1989, the courts in New Jersey dealt primarily with interpreting Titles 18 and 18A in relation to school athletics departments.

Equal opportunity regulations must be complied with in all hiring and contracting situations in the public educational system of New Jersey. These Equal Opportunity regulations include: the New Jersey Law Against Discrimination; Title VII of the Civil Rights Act of 1964, as amended by the Equal Employment Opportunity Act of 1972; Executive Order 11246 as amended; Equal Pay Act of 1963 as amended; and Title IX of the Education Amendments of 1972.⁷⁸

⁷⁷Ibid., p. 23. "Equal compensation for male and female teachers is also mandated."

⁷⁸ Ibid., p. 24.

PROBLEMS STRESSED IN COMMISSION'S 1989 HEARINGS

The implementation of Title 6:4-1.3, 6:4-1.5, 6:4-1.6, the lack of funding for adequate implementation and lack of affirmative action were regarded as major problems by the 1989 Commission on Sex Discrimination in the Statutes. There is a lack of state funds for the training of school personnel regarding sexism and racism in the classroom and curriculum. All the funding for technical assistance has been federal, not state.

The recommendations suggested here are: 1) a mandatory policy of equal educational opportunity should be required by the state of each local school district; 2) compilation of a state-wide gender data base where each school district reports its affirmative action program data; 3) that affirmative action officers be knowledgeable in the area of sex equity; 4) specific time schedules for in-service trainings of school personnel; pregnant students and students with children should be provided daycare and parenting education; tests, procedures and other guidance and counselling materials must be thoroughly evaluated on a continuing basis by gender experts to avoid discriminatory impact.

This paper concurs with the Commission's findings, and particularly notes that the lack of a state-wide data

base on girls and women in New Jersey makes it impossible for researchers to tell whether state agencies are enforcing the statutes already on the books prohibiting gender discrimination. Until such a state-wide gender data base is mandated and in a central place, wide loopholes are provided to those who are indifferent or hostile to enforcing the statutes on both the state and local level. ⁷⁹

GENDER LEGISLATION IN OTHER STATES

Six states have statutes that explicitly focus on sex discrimination in education; they are: Alaska, California, Hawaii, New York, Rhode Island, and Washington. Maine also has strong enforcement provisions and thorough regulations.⁸⁰

The Supreme Court of the United States decided on February 26, 1992 in the case of Franklin v. Gwinnett County Public Schools et al. that victims of sexual harassment in schools may sue for civil damages under Title IX.

⁷⁹ Marilyn Hulme, Consortium for Sex Equity, Rutgers University; Paula Rothenberg, New Jersey Gender Project; Karen Holmes, Division of Women, State of New Jersey all separately noted that they know of no one agency in the state that keeps records of all the data requested by the RFP for this study on gender. The Department of Education may have some of the data needed on women in education, but it is difficult for an outside researcher to be allowed access to some of this material on discrimination within the education system. The same is true for sexual harassment data within apprenticeship programs and within the unions. If anyone has this data in the unions, it is difficult for an outside researcher to gain access to it.

⁸⁰ Ibid., 29-31.

TITLE IX

Title IX states that:

"No person...shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or subjected to discrimination under any education program or activity receiving federal financial assistance."

Since most math/science programs at the collégiate level are federally funded by NSF grants, a gender tracking system operating in the math/sciences would represent a violation of Title IX as well as the New Jersey Law Against Discrimination. Women students and faculty are disproportionately excluded from participation in upper level math/science courses at technological institutes and universities in New Jersey.

In the North Haven Board of Education v. Bell case, the U.S. Supreme Court held that "employment discrimination does in fact come within Title IX's prohibition" meaning that school employees as well as students were covered under Title IX. For the purposes of this chapter, this means female faculty and administrators within the New Jersey education system are covered under Title IX. (See Tables/2 and/3.)

The disproportionately low number of tenured female faculty at New Jersey colleges and universities violates Title IX in that women faculty are disproportionately denied the benefit of tenure and full professorships. A disproportionately high number of female faculty are congregated at the bottom of the faculty ranking system in New Jersey. (See Tables/2 and/3.) The high

number of female part-time faculty at New Jersey colleges and universities also violates Title IX in that a disproportionate number of women faculty are denied the benefits of full-time work at New Jersey colleges and universities.

The lack of female role models and mentors in leadership and management positions in higher education depresses the number of women trained to take initiative and leadership in business to startup WBEs. There has always been a link between universities and business, but in the nineties, the "entrepreneurial university" takes a more openly active role in helping faculty and alumni startup and incubate businesses to contract with the state and federal government. ⁸¹

⁸¹ Cindy Paul, "The Entrepreneurial University," *NJIT Magazine*, Spring 1991.

MATERNITY LEAVE AND CHILD CARE
IN NEW JERSEY COLLEGES AND UNIVERSITIES

In the Winter of 1989, the New Jersey American Association of University Professors (hereafter AAUP) surveyed 49 New Jersey institutions of higher education and received a response rate of 69% from 34 administrators. Their results were:

MATERNITY LEAVES/NURTURANCE LEAVES

About 65% of the thirty four responding New Jersey institutions stated that they had a policy regarding maternity leave, which differed for faculty and staff however, and ranged from six weeks to one year. Brief periods could be taken as disability leave by some personnel, but longer leaves were all unpaid. The chief exception to this is the University of Medicine and Dentistry of New Jersey (UMDNJ), where faculty can take six months of paid leave during the pregnancy/childbirth period. At Princeton Theological Seminary, employees are entitled to one-half pay for three months after using up sick days and vacation time.

Most New Jersey institutions, except Bloomfield College, guarantee that employees can return to the same or equal job and salary after return from nurturance leave.

The AAUP study found that:

"Childbirth and sick children typically involve junior faculty, many of whom are untenured. No data are available on the effects of requesting such favors, or on the pros and cons of stopping the tenure clock while the woman involved adjusts to her new responsibilities. 82

CHILDCARE

Unfortunately, only 19 of the 49 higher education facilities, 38%, in the state offer child care. This data was obtained by follow-up phone calls to all non-responding institutions to the survey.

Responding schools indicated that priority is given to full-time students, then part-time, before space is given to children of faculty, staff, or the surrounding community. This means consequently that the few centers that do exist are only operating on an academic year. The centers at Kean, Montclair and Middlesex County are the only childcare centers open at night in the state higher educational system. Several centers have waiting lists as long as two years.

Most childcare centers are geared to children attending on a regular basis, except for Ramapo, Glassboro, Jersey City State, Kean, Middlesex, Montclair and William Patterson which also accepted occasional visitors.

None of the schools had provisions for sick children, nor any space for mentally retarded children.

Most cater to children between two and a half and six years old, who are toilet trained and no longer require a

for students at a time when demographic predictions motivate outreach to older students...

2) Income restrictions render most faculty and staff ineligible for subsidized child care. One consequence may be that some employees perceive staying home as a more viable option than paying a disproportionate amount of their earnings for child care. This may create strains in two-parent families, where the second salary makes a sizable difference in the standard of living.

3) Graduate students, faculty and staff are generally expected to fend for themselves. Schools that lack on-campus child-care facilities typically do not even have centralized information about available alternatives. Since women still provide primary child care in our society, the scarcity of services affects them most.

4) Colleges and universities would seem to be an ideal setting for developing model child-care programs. Students aiming for careers in such fields as medicine, nursing, psychology and social work, and people interested in learning about child development form a large potential pool of assistants...college-affiliated nursery schools have traditionally served as laboratories for significant research.

Employers outside higher education have been more ready to recognize the links between the availability of good child care and the attraction and retention of skilled personnel....Although it is predictable that some women who work in colleges and universities will continue to have babies, and that others---typically also women---will need to care for a sick spouse or aged relative, these are still seen as individual problems. Institutional supports are lacking, and the people expected to nurture often must do so at the cost of their own economic security, in the form of salary, health benefits, and pensions." 83

Lack of childcare exacerbates the six years-or-out rule for getting tenure for women. This partially explains the lack of female full professors, which in turn may handicap students from going into business due to a lack of role models and mentors.

Nancy DiTomaso and George Farris of the Rutgers

Graduate School of Management note, that while affordable high quality childcare, is especially

"problematic for women studying in science fields which add on laboratory hours to classroom work or for women working in science and engineering jobs which frequently require extra hours to watch over experiments or to finish major projects." 84

DiTomaso and Farris also note that professionals and managers work long 10 hour days, then adding for long commutes to and from work, mothers are thus challenged to their limits to arrange for childcare and still perform their best in many professional jobs.

84 Nancy DiTomaso and George F. Farris, "Work and Career Issues for Women Scientists in Industrial Research and Development in the U.S.", paper presented to IREX Conference on "Current Problems in the Position of Women," Berlin, Germany, May 28-29, 1991. Forthcoming in the Berlin Journal of Sociology.

TABLE 18
Child Care Facilities
New Jersey Colleges/Universities

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Institution	Who Served?*	Who Runs The Facility?	When Is It Open?	Ages Served	Cost To Family
Bergen Community	A	Early Childhood Dept.	7:45-5:30 Sept. to June	2½ to 5	\$3 / hr.; \$65 / wk.
Brookdale Community	A	Community Services; Ed and Psych Departments	7:30-5:30	2½ to 5; T*	Sliding scale to \$100 / wk. max.
Caldwell	A	Off-campus profit-making group	7:30-5:30 Sept to June	2½ to 6; T*	Variable
Centenary	A	Early Childhood Dept.	7:00-6:00	1½ to 5	\$3768 / year 25% Staff discount
Felician	A	Student Services	7:45-5:00, not August	2½ to 5	Variable
Glassboro State	S	Adult Continuing Ed	7:30-5:00	2½ to 6	Free
Gloucester County	S, F	Early Childhood Dept.	7:30-3:30 Sept. to May	2½ to 6	\$6-\$10 / day to max of \$600
Institute for Advanced Study	A	Off-campus non-profit organization	9-1 Sept. to June	2½ to 5	\$1000-\$1600 / year
Jersey City State	S	Dept. of student services	7:45-5:15 School year	2½ to 6; T*	\$1.50 / hr.
Kean	S	Early Childhood Dept.	7:45-7:45 School year	2 to 6 (day) 3 to 12 (evening)	\$36-\$60 / wk. (day) \$16 / evening
Middlesex County	A	Division of Community Education	7:30-5:30 all year; Evening for S & F only	2½ to 5½	Sliding Scale
Montclair State	S, F	V.P. of Student Affairs	7:30-8:00 — All year	2½ to 6; T*	\$3 / hr. to \$95 / wk.
County College of Morris	S, F	Own private staff	7:45-5:00, Sept. to June 7:45-2:45, Summer	2½ to 5; T*	\$152-\$760 / semester
William Paterson	S, F	Student development	7:45-5:00 School year	2½ to 6	\$2.25 / hr.
Princeton Theological Seminary	S	Special on-campus committee	9-12 Mon.-Thursday	1 to 4	Free (2 paid staff, rest volunteers)
Ramapo	A	Student Life Division	8:00-6:00	2½ to 6; T*	\$2.35 / hr. to \$325 / mo. \$2.75 / hr. drop-ins
Rutgers — Cook	A	Home Economics Dept.	AM or PM School year	3 to 4; T*	Sliding scale \$200-\$700 / year
Rutgers — Douglass	A	Psychology Dept.	7:30-6:30 All year	2½ to 5	\$7-\$16 / day
Stockton State	S, F, L	Student club; Dept. of Campus activities	8:00-6:00 All year	2½ to 5	\$2 / hr. to \$60 / wk. 25% Student Discount
Trenton State	S, F	Individual Dept. Services	7:30-5:30 School year	3 to 5	\$1-\$1.75 / hour

* A = Anyone; S = Students; F = Faculty and Staff; L = Alumni; T = Toilet Trained

Source: AAUP

NOTE: In addition to the schools mentioned in the Table, responses were obtained from: Bloomfield, Burlington County, Cumberland County, Drew, Fairleigh Dickinson - Teaneck, Monmouth, New Brunswick Theological Seminary, New Jersey Institute of Technology, Ocean County, Rider, Rutgers - Camden and Newark, St. Peter's, and University of Medicine and Dentistry - Newark and Piscataway. Questionnaires were not returned by: Atlantic Community, Don Bosco, Essex County, Fairleigh Dickinson - Hackensack, Madison and Rutherford, Georgian Court, Mercer County, Princeton, Seton Hall, St. Elizabeth, Stevens Institute of Technology, Union County, Upsala, and Westminster Choir.

National AAUW Report: "HOW SCHOOLS SHORTCHANGE GIRLS" ⁸⁵

The education section of this report will conclude with a summary of "How Schools Shortchange Girls," which is appended to this report in Appendix A.

The American Association of University Women has just recently released a 1992 report on the deplorable conditions for girls and young women in the American education system. The report, entitled "How Schools Shortchange Women," found that girls and young women "face discrimination from teachers, textbooks, tests, and their male classmates." ⁴³

The study concludes that boys and girls in America today still do not receive an equal education. Boys and girls in New Jersey receive unequal educations, particularly in the math/science/technical fields, according to the data gathered by this researcher as well. So the AAUW Report is particularly relevant to New Jersey.

⁸⁵ Susan Chira, "Bias Against Girls Is Found Rife In Schools, With Lasting Damage," New York Times, pp. 1 and 23. February 12, 1992; American Association of University Women Educational Foundation, "How Schools Shortchange Girls: The AAUW Report," 1992.

The AAUW Report found specifically that :

- * Teachers pay less attention to girls. Most teachers call on boys more often than girls and offer boys more detailed and constructive criticism and "allowed boys to shout out answers, but reprimanded girls for doing so."
- * " Many science teachers and some math teachers tended to ignore girls in favor of boys.
- * Boys not only continue to score higher than girls on science standardized tests, but the gap may be widening."
- * Even girls who did well in science and mathematics tended not to pursue careers in those fields. Studies of girls who continued to study science after high school indicated that "encouragement of teachers was crucial in their decisions."
- * " Girls are also enduring increasing sexual harassment from their male classmates, but many teachers tolerate such behavior."
- * Females may drop out of school due to sexual harassment, sexual abuse, depression despite the widespread perception that they drop out due to pregnancy. Less than half of girls drop out because they are pregnant.

There is a link between possession of advanced educational credentials and entry and survival in the skilled services industries.

Using an outdated, sexist curriculum which still segregates girls into lower paying women's work interferes with the transfer of these skills.

Guidance counselors are still, albeit unconsciously, locking women out of the higher paying men's fields in the trades and science by not properly advising women students on what math/science subjects they need to take to later major in engineering, science or technology in college. There is a gender tracking system in junior and high school like the infamous race/class

tracking system in the public schools in New York City. Segregated curricula supply the labor for segregated job markets. This report will conclude with a brief look at how sexual harassment obstructs the ability of women to succeed in both education and business, which are necessary routes to starting up WBEs.

SEXUAL HARASSMENT
IN EDUCATION AND EMPLOYMENT
IN NEW JERSEY

SEXUAL HARASSMENT IN NEW JERSEY

The Division of Civil Rights and the Department of Education have a divided and hence ambiguous responsibility of keeping records of sexual harassment complaints for the State of New Jersey. The Department of Education is supposed to keep data on sexual harassment in the educational system. However, the current joint system is inadequate because the Department of Education has no statewide mechanism for collecting data from its 592 Affirmative Action officers in each of the 592 New Jersey school districts. The Department of Education has not funded any state office to collect this data. The Division of Civil Rights has done a better job in collecting the data on sexual harassment on a statewide basis since 1987, but is missing data from sexual harassment in the education system, an important piece of the puzzle.

Dr. Maureen Keller, Director of the Office of Controversies and Disputes for the Department of Education, said:

"No complaint of sexual harassment has ever been filed with the Commissioner of Education in the last nine years I've been in this office. Only two cases of gender discrimination have been filed in this time period--the Balsley v. Hunterdon case (1985) and the Jennifer Figurelli

v. Board of Education of the City of Jersey City (1984)."
8686

This conflicts with the staff reports of the Office of Equal Educational Opportunity (OEEO) of the Department of Education, which receives numerous calls from Affirmative Action officers and parents looking for guidance on sexual harassment and sexual discrimination cases in their local districts. The Office of Equal Educational Opportunity has referred these calls to the Office of Controversies and Disputes, which then says they have no record of sexual harassment in the state of New Jersey.

This only reinforces the need in the state of New Jersey for a well advertised mechanism of gender data collection in a centralized location, where everyone knows where to go to report and to find data on sexual harassment,

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Telephone Interview with Susan Cavin on March 24, 1992. For more information on the Balsley case, see James V. Hetzel, "Gender-Based Discrimination in High School Athletics," *Seton Hall Legislative Journal*, 10, 1986-87, pp. 275-298. Hetzel notes: "In the last two years...the Office of Administrative Law in New Jersey has decided two cases involving gender-based discrimination in high school athletics." In the Spring of 1985, Elizabeth Balsley, a 15 year old sophomore at N. Hunterdon Regional High School approached the coach of the boys football team and requested permission to try out for the team the following fall. Initially granted permission to try out by the coach, Balsley was later informed that the Board of Education policy precluded her from participation on the boy's football team. On August 16, 1985, Balsley instituted an action against the N. Hunterdon Regional School District Board of Education and the school athletic director. See also Jennifer Figurelli v Board of Education of City of Jersey City vn 1984:New Jersey School Law Decisions, p. 1297, Commissioner of Education decision on July 23, 1984, affirmed by the State Board of Education, p. 1319.

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sex discrimination, as well as general employment and educational data on women. This is necessary before any study can conclude whether or not gender discrimination has increased or decreased in the state of New Jersey.

The Department of Education is not systematically collecting or compiling data on the sexual harassment of girls and women in the New Jersey educational system. This does not mean it is not occurring.⁸⁷

Roberto Rodriguez of the N.J. Division of Civil Rights noted that four of the sexual harassment cases filed with Civil Rights between 1987 and February 28, 1992 deal with the New Jersey education system, specifically against these schools and colleges: 1) the New Jersey College of Medicine and Dentistry, 2) Essex County Vocational, 3) William Paterson College, and 4) Byram Township Board of Education in Sussex County.

The New Jersey Division of Civil Rights has kept statewide data on the number of gender discrimination cases filed in New Jersey since 1968, but it only began to separate out the data on sexual harassment from sexual

⁸⁷ When I was Assistant Director of Women's Studies at Rutgers University-New Brunswick from 1988-1991, and Coordinator of the Introduction to Women's Studies classes (7-10 classes of 50-60 students per class) from 1986-1991, most Introductory Women's Studies faculty members were overwhelmed with the number of female students reporting sexual harassment experiences from New Jersey high schools. Personally, in my classes, it was quite common for half of the class to raise their hand if asked if they had experienced sexual harassment in New Jersey. For more information on Sexual Harassment in Education see Phyllis L. Crocker, "Annotated Bibliography on Sexual Harassment in Education," Women's Rights Law Reporter, Vol. 7, No. 2, Winter 1982, Rutgers University.

discrimination in 1987. Before 1987, all sexual harassment cases were filed under sex discrimination, which includes a broader range of complaints including discrimination in employment, housing and accomodation. Therefore, we must look at both sets of data, historically, although the state is correct to separate sexual harassment from sexual discrimination. Sexual harassment is a form of sexual discrimination, but the reverse is not true.

See Table 19 "Gender Discrimination Complaints Filed with the New Jersey Division of Civil Rights, 1968-1992," which reveals that sex discrimination complaints generally represent a fifth to a fourth of the total complaints received by Civil Rights. This is significant, given that Mr. Rodriguez points out as do other experts in the field that many sexual harassment victims never come forward to file a complaint. He also notes that since the Clarence Thomas hearings, there has been a significant rise in sexual harassment complaints filed with New Jersey Division of Civil Rights: in the period between July 1990 to February 1991, only 19 complaints were filed; compared to the period between July 1991 and February 1992, 56 complaints were filed. That reflects a 153% rise.

The vast majority of gender discrimination complaints in New Jersey involve employment, about 98% according to Mr. Rodriguez of the Division of Civil Rights.

In 1987, 31 sexual harassment complaints were lodged with New Jersey Civil Rights Division, representing 2% of

the total complaint they received that year. In 1988, 45 complaints were filed (3%); in 1989, 45 complaints (3%); in 1990, 51 complaints (3%); in 1991, 84 complaints (4%); and as of February 28, 1992, the 1992 sexual harassment complaints number 56 (3% of the total complaints received). Complaints of sexual harassment have risen in the period that reliable records have been kept since 1987.

In this period between 1987 and 1992, three of the complaints filed with the Division of Civil Rights, involve trade unions. Sexual harassment cases have been filed in the state of New Jersey against: the United Steel Workers, the Teamsters, and the New Jersey Transit Mechanical Group Association. The latter is an interesting case and most relevant to this study because the complaint was filed by Michelle Darden against the New Jersey Transit Mechanical Department on November 13, 1987 dually with EEOC and the Division of Civil Rights for an incident that happened to her on November 12, 1987. A negotiated settlement was reached and New Jersey Transit paid her out of pocket expenses for filing the complaint: \$800.

Also, during this time period, sexual harassment complaints were filed in the state of New Jersey against three construction companies:

1. Iennacone Contracting Company, Burlington County by Donna Nocella for an incident which happened on April 24, 1989;

2. JRJ Contracting Company, Essex County by Jana Scipio for an incident which happened on June 5, 1989;

3. Rational Roofing, Bergen County by Sandra Fernandez for an incident which happened on May 3, 1990.

These cases also have relevance for this study about gender discrimination in the trades.

Most of the complaints were scattered throughout the services and clerical sector, which is where the majority of women work, according to Mr. Rodriguez of the Division of Civil Rights. Restaurants, accounting firms, lawyers and doctors' offices are the scene of many sexual harassment complaints in the workplace of New Jersey.

For more information on New Jersey universities and college's Sexual Harassment policies, see Appendix C: Sexual Harassment in New Jersey. See Tables 19-21 on the following pages.

TABLE 19 Gender Discrimination Complaints Filed with the
New Jersey Division of Civil Rights, 1968-1992.

DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION ON CIVIL RIGHTS
MANAGEMENT INFORMATION SYSTEMS

FISCAL YEAR COMPLAINTS RECEIVED BASIS OF DISCRIMINATION PERCENTAGE

1/1/68				
to				
12/31/71		SEX	423	
FY 71	1618	"	189	12%
FY 72	1958	"	509	26%
FY 73	1593	"	301	19%
FY 74	1824	"	405	22%
FY 75	1879	"	384	20%
FY 76	1678	"	346	21%
FY 77	1302	"	277	21%
FY 78	1414	"	317	22%
FY 79	1055	"	209	20%
FY 80	866	"	215	25%
FY 81	1149	"	233	20%
FY 82	971	"	216	22%
FY 83	1301	"	289	22%
FY 84	1515	"	407	27%
FY 85	1592	"	325	20%
FY 86	1737	"	332	19%
FY 87	1693	"	353	21%
FY 88	1736	"	382	22%
FY 89	1797	"	394	22%
FY 90	1664	"	367	22%
FY 91	2163	"	567	26%
FY 92*	2189*	"	339*	15%*

*FY 92 figures as of 2-28-92.

TABLE 20 Figures On Sexual Harassment in New Jersey

BREAKDOWN BY COUNTIES

(7/1/87---2/28/92)

ATLANTIC	16
BERGEN	26
BURLINGTON	16
CAMDEN	23
CAPE MAY	2
CUMBERLAND	10
ESSEX	32
GLOUCESTER	7
HUDSON	20
HUNTERDON	5
MERCED	4
MONMOUTH	19
MIDDLESEX	21
MORRIS	27
OCEAN	4
PASSAIC	19
SALEM	0
SOMERSET	3
SUSSEX	2
UNION	23
WARREN	2
TOTAL	281

Table 21 Sexual Harassment Complaints Filed with

DEPARTMENT OF LAW AND PUBLIC SAFETY

DIVISION ON CIVIL RIGHTS

MANAGEMENT INFORMATION SYSTEMS (1987-1992)

FISCAL YEAR COMPLAINTS RECEIVED BASIS OF DISCRIMINATION PERCENTAGE

1/1/68

to

12/31/71

SEXUAL HARASSMENT

FY 71	1618	"		
FY 72	1958	"		
FY 73	1593	"		...
FY 74	1824	"		
FY 75	1879	"		
FY 76	1678	"		
FY 77	1302	"		
FY 78	1414	"		
FY 79	1055	"		
FY 80	866	"		
FY 81	1149	"		
FY 82	971	"		
FY 83	1301	"		
FY 84	1515	"		
FY 85	1592	"		
FY 86	1737	"		
FY 87	1693	"	31	28
FY 88	1736	"	45	38
FY 89	1797	"	45	38
FY 90	1664	"	51	38
FY 91	2163	"	84	48
FY 92*	2189*	"	56	38

*FY 92 figures as of 2-28-92.

SEXUAL HARASSMENT AT
PRINCETON UNIVERSITY

The SHARE Program at Princeton, which stands for Sexual Harassment/Assault: Advising, Resources and Education, was created in the late eighties, due to an incident during the Take Back the Night March against Rape, when several Princeton men sexually harassed women marchers.

According to SHARE's records, in the academic year 1988-89, over 200 individuals sought individual and group counseling on sexual harassment or sexual assault compared to 50 the previous year. Seventy one complaints of sexual harassment/assault were filed with the SHARE office in the year 1988-89 (See Table 22, on page 105) at Princeton University. Of these, 89% were filed by women complainants, and 11% by men complainants. All of the sexual harassers were male.

Most of the victims were undergraduates (49 females, 7 males), eight were graduate females, one was a graduate male student, five were female staff members, one was a female faculty member and two were alumnae.

Most of the alleged sexual harassers were undergraduate males (26), 3 were graduate students, 6 male faculty, 1 staff, 10 non-university males, and 3 alumni.

In the sexual assaults, 7 attackers were undergraduate

males, 5 were alumni, 1 faculty, 1 staff and 13 non-university males. Several prominent male faculty members have had their names in the Princeton University student newspaper charged with sexual harassment. (For these clippings, see Appendix C: Sexual Harassment in New Jersey.)

Tables 23 and 24 on the following pages reveal that female student workers have been harassed at Princeton by male staff members. There was one case of an outside contractor who verbally harassed a female student and had to be removed from campus. Two cases involve Princeton male faculty: one sexually assaulted a female graduate student and was suspended with financial penalty for 1 year; the other sexually harassed an undergraduate and was given a warning and censure by the university.

Princeton is not unique in regard to sexual harassment; they simply keep better records of it, thanks to the SHARE office. However, the Princeton data does establish that sexual harassment of women in the New Jersey educational system does occur, regardless of whether the state education agencies are keeping track of it.

CHART OF ANNUAL SHARE COUNSELING SESSIONS
July 1, 1988 - June 30, 1989

Figures

Status of Complainant

	Under-graduate	Graduate	Alumni	Faculty	Staff	Overall Total
Female	47	8	2	1	5	63
Male	7	1	0	0	0	8
Total	54	9	2	1	5	71

Status of Respondent

	Under-graduate	Graduate	Alumni	Faculty	Staff	Non University	Misc	Overall Total
Female	0	0	1	0	0	0	0	1
Male	26	3	8	7	2	23	1	70
Total	26	3	9	7	2	23	1	71

Type of Complaint

Peer Sexual Harassment	Peer Sexual Assault	Relationship Issue/ Violence	Employment Harassment Discrimination	Faculty Student Harassment/ Assault	Sexual Orient. Harassment	Sex Abuse Incest	Misc.	Overall Total
26	19	9	3	5	3	5	1	71

Type of Resolution

Individual/ Group Counseling	Referral Psychol.	Police	Discipline	Letter	Proctors	Mediation	Intervention	Overall Total
57	10	4	12	6	5	3	3	100

Table 23

Sexual Harassment by Princeton University Faculty
1988-89.FACULTY
SEXUAL HARASSMENT CASES
1988-89

COMPLAINANT	RESPONDENT	TYPE OF CASE	RESOLUTION
Graduate Student (M)	Faculty (M)	complaint of sexual assault	one year's suspension with financial penalty
Undergraduate (F)	Faculty (M)	unwanted touching and inappropriate remarks of a sexual	warning and censure

TABLE 24.

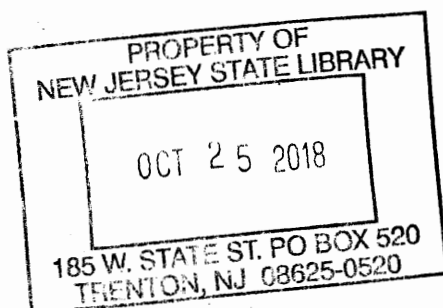
PERSONNEL OFFICE, PRINCETON
SEXUAL HARASSMENT CASES
1988-89

COMPLAINANT	RESPONDENT	TYPE OF CASE	RESOLUTION
Student Worker (F)	Staff Member (M)	sexual harassment/ visual and spatial	meeting with D.I. - no further complaints
Student Worker (F)	Staff Member (M)	unwanted touching/ verbal harassment	meeting with D.I.
Student Worker (F)	Staff Member (M)	obscenity- verbal and visual	meeting with D.I. - no further complaints
Student (F)	Outside Contractor (M)	verbal harassment	respondent removed from campus
2 Staff members (F)	Outside Workers (M)	verbal harassment	Vice President for Facilities reported to Project Managers

Table 25 Sexual Harassment Complaints by Undergraduates to
the Dean of Students at Princeton
University, 1988-89.

UNDERGRADUATE - DEAN OF STUDENTS
SEXUAL HARASSMENT CASES
1988-89

COMPLAINANT	RESPONDENT	TYPE OF CASE	RESOLUTION
3 Undergraduates (F)	Undergraduate (M)	verbal harassment unwanted touching	disciplinary proba- tion - two years
Undergraduate (F)	Undergraduate (M)	verbal harassment	disciplinary proba- tion until graduation
Undergraduate (F)	Undergraduate (M)	sexual assault coercion	degree withheld for one year
Undergraduate (F)	Undergraduate (M)	harassment by genital exposure	disciplinary proba- tion - two years
Undergraduate (F)	Undergraduate (M)	persistent harassment	disciplinary proba- tion - one semester
Undergraduate (F)	Undergraduate (M)	persistent harassment	disciplinary proba- tion - two years



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APPENDIX A:

NATIONAL DATA ON WOMEN AND EDUCATION

Source: National Center for Education Statistics Digest of
Education Statistics, 1991, U.S. Department of Education
Office of Educational Resources and Improvement, NCES-91-697

Table 181.—Total enrollment in all institutions of higher education, by attendance status, sex, and State:
Fall 1988 and fall 1989

State or other area	Fall 1988 ¹					Fall 1989 ²				
	Total	Full-time		Part-time		Total	Full-time		Part-time	
		Men	Women	Men	Women		Men	Women	Men	Women
1	2	3	4	5	6	7	8	9	10	11
United States	13,055,337	3,861,779	3,774,989	2,340,117	3,278,452	13,457,855	3,727,823	3,899,349	2,427,861	3,248,711
Alabama	197,352	64,037	70,964	28,586	33,765	208,562	66,990	76,942	28,138	32,864
Alaska	28,983	4,673	5,723	7,518	11,069	28,627	4,840	5,684	6,720	10,287
Arizona	258,792	57,864	51,967	63,522	85,639	252,614	56,565	51,958	62,860	86,895
Arkansas	84,562	27,863	32,300	8,906	15,493	88,572	28,889	34,352	9,222	15,493
California	1,754,478	381,779	390,984	426,523	555,192	1,744,879	381,543	390,922	423,133	555,192
Colorado	186,912	58,002	55,041	30,718	43,151	201,114	59,826	59,005	34,978	48,033
Connecticut	165,677	40,741	43,101	31,451	50,384	189,438	41,075	44,085	32,590	48,033
Delaware	38,261	10,355	13,185	5,991	8,720	40,562	11,087	13,733	6,481	9,252
District of Columbia	79,310	23,194	26,101	14,149	15,866	79,800	23,148	27,002	13,702	15,866
Florida	516,508	125,428	128,104	109,340	153,636	573,712	131,803	136,560	127,645	175,469
Georgia	230,893	74,341	78,999	33,283	44,270	239,208	76,498	81,987	33,570	44,270
Hawaii	52,297	14,516	15,714	10,005	12,062	54,188	14,686	16,076	10,336	12,062
Idaho	46,338	16,130	16,424	5,803	7,981	48,969	16,356	17,227	6,239	7,981
Illinois	689,326	174,892	172,036	140,827	201,771	709,937	178,001	178,057	146,570	201,771
Indiana	267,905	87,250	85,702	40,686	54,267	275,821	89,861	89,588	41,126	54,267
Iowa	162,088	60,748	56,205	17,360	27,785	169,901	60,897	58,281	18,981	27,785
Kansas	152,822	45,084	42,512	24,936	40,280	158,497	45,827	44,331	25,838	40,280
Kentucky	160,208	47,636	54,910	20,880	36,782	166,014	48,707	57,456	21,833	36,782
Louisiana	176,051	60,981	67,471	18,411	29,188	179,927	60,476	69,796	18,686	29,188
Maine	48,360	14,360	15,446	7,041	11,513	58,230	15,216	16,328	8,636	11,513
Maryland	249,079	55,310	59,617	53,995	80,157	255,326	56,287	60,870	54,992	80,157
Massachusetts	426,603	126,490	141,862	64,312	93,939	426,476	125,761	139,265	65,643	93,939
Michigan	544,399	133,571	143,403	112,816	154,609	560,320	136,837	147,715	117,790	154,609
Minnesota	244,612	72,484	75,407	38,248	58,473	253,097	74,144	78,925	39,822	58,473
Mississippi	111,262	39,503	45,042	9,745	16,972	116,370	40,305	47,782	10,381	16,972
Missouri	262,391	74,930	75,548	46,162	65,751	278,505	78,170	80,522	49,103	65,751
Montana	35,777	13,114	12,713	3,933	6,017	37,660	13,723	14,106	4,082	6,017
Nebraska	104,879	29,455	28,930	19,142	27,352	108,844	30,225	30,540	19,048	27,352
Nevada	48,831	7,740	7,612	14,363	19,116	56,471	8,466	8,790	16,287	19,116
New Hampshire	57,410	17,905	19,063	8,343	12,099	58,600	17,019	16,784	10,359	12,099
New Jersey	302,881	73,889	77,599	62,452	88,941	314,091	76,243	80,566	64,400	88,941
New Mexico	79,135	21,780	21,801	14,184	21,370	81,350	21,951	22,505	14,769	21,370
New York	1,006,494	301,430	329,533	146,808	228,723	1,018,130	299,460	330,534	151,882	228,723
North Carolina	332,226	86,485	111,824	49,844	74,273	345,401	100,786	118,117	51,364	74,273
North Dakota	38,489	16,609	14,228	3,404	4,248	40,350	17,176	15,243	3,602	4,248
Ohio	543,980	161,737	166,862	103,070	112,311	550,729	160,926	169,899	104,322	112,311
Oklahoma	176,308	50,676	50,359	30,978	44,295	175,855	50,645	49,917	31,003	44,295
Oregon	156,158	46,291	44,816	27,510	37,541	161,822	46,074	45,236	29,769	37,541
Pennsylvania	573,552	185,035	183,623	78,936	125,958	610,357	195,269	200,203	86,364	125,958
Rhode Island	74,847	22,941	23,735	10,930	17,241	76,503	22,961	23,779	11,626	17,241
South Carolina	148,168	46,770	53,383	18,402	29,613	145,730	46,463	52,220	17,951	29,613
South Dakota	31,461	11,301	11,639	2,973	5,548	32,666	11,404	12,145	3,217	5,548
Tennessee	206,367	66,539	70,907	28,611	40,310	218,866	68,373	75,462	31,398	40,310
Texas	847,310	232,049	229,078	167,898	218,285	877,859	236,372	238,551	173,629	218,285
Utah	108,631	37,136	32,838	19,761	18,896	114,815	38,861	35,347	20,328	18,896
Vermont	34,403	11,399	12,202	3,295	7,507	35,946	11,910	12,636	3,664	7,507
Virginia	320,931	85,301	97,237	55,959	82,434	344,284	88,621	102,181	64,362	82,434
Washington	254,051	71,167	74,800	42,673	65,411	255,760	71,240	76,191	43,048	65,411
West Virginia	80,540	26,275	26,702	9,579	17,984	82,455	27,398	28,383	9,214	17,984
Wisconsin	286,456	90,285	96,936	41,951	57,284	290,672	90,349	97,087	42,754	57,284
Wyoming	26,540	8,071	7,613	3,897	6,959	29,159	8,520	7,935	4,486	6,959
U.S. Service Schools	44,033	38,627	5,378	7	21	54,814	43,613	10,543	118	21
Outlying areas	163,449	48,928	76,856	14,017	23,648	163,348	49,074	75,543	14,609	23,648
American Samoa	908	236	184	233	255	1,011	280	178	329	255
Federated States of Micronesia	—	—	—	—	—	838	198	137	238	—
Guam	3,819	748	928	1,115	1,028	4,350	792	1,008	1,298	1,028
Northern Marianas	352	67	47	101	137	419	70	59	124	137
Palau	—	—	—	—	—	1,037	257	478	115	—
Puerto Rico	154,712	47,269	74,885	11,884	20,674	152,996	47,236	73,063	12,053	20,674
Trust Territory of the Pacific	1,187	423	246	250	268	—	—	—	—	—
Virgin Islands	2,471	185	566	434	1,286	2,697	241	620	452	1,286

¹ Data have been revised from previously published figures.² Preliminary data.

—Data not reported or not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment" survey. (This table was prepared February 1991.)

In all states I make up majority of P/T students (Col. 10 & 11) — 1.41%

Table 182.—Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989

State or other area	Fall 1988 ¹					Fall 1989 ²				
	Total	Full-time		Part-time		Total	Full-time		Part-time	
		Men	Women	Men	Women		Men	Women	Men	Women
1	2	3	4	5	6	7	8	9	10	11
United States	10,181,388	2,654,238	2,754,110	1,952,720	2,798,320	10,514,973	2,723,230	2,864,833	2,024,888	2,902,241
Alabama	173,736	55,163	60,674	26,745	31,154	187,575	58,244	67,235	26,720	34,376
Alaska	27,168	4,362	4,790	7,191	10,795	26,274	4,434	5,034	6,374	10,432
Arizona	242,889	48,493	47,588	62,658	83,960	238,314	50,037	48,747	61,084	79,446
Arkansas	71,954	22,659	26,499	8,395	14,401	78,418	23,772	28,609	8,770	15,265
California	1,542,351	302,954	318,030	394,499	526,868	1,534,209	304,544	319,671	380,139	519,855
Colorado	162,956	49,142	46,980	26,877	39,957	175,850	51,409	50,596	30,499	43,346
Connecticut	106,419	22,747	25,371	20,793	37,508	108,687	22,800	26,005	22,049	38,843
Delaware	31,846	9,028	11,310	4,704	6,604	33,037	9,371	11,590	5,088	6,978
District of Columbia	12,109	2,001	2,004	3,586	4,518	12,439	1,795	2,369	3,801	4,674
Florida	420,378	88,225	97,784	94,192	140,177	480,869	95,799	108,649	112,462	163,959
Georgia	177,852	53,781	57,001	28,323	38,747	186,776	55,904	60,731	28,616	41,525
Hawaii	42,529	11,077	12,714	8,019	10,724	43,644	11,298	13,087	7,901	11,358
Idaho	35,856	12,102	11,209	5,356	7,189	38,447	12,481	11,891	5,786	8,289
Illinois	521,718	118,252	118,334	114,536	170,596	536,643	120,495	122,295	120,156	173,687
Indiana	209,236	62,155	62,845	36,929	47,307	216,433	64,090	66,249	37,489	48,605
Iowa	113,268	42,404	38,518	13,006	19,340	116,889	43,762	40,107	12,954	20,066
Kansas	138,702	39,863	37,217	23,542	38,080	145,134	40,820	39,137	24,482	40,585
Kentucky	129,442	36,880	43,059	18,086	31,407	137,297	39,130	46,053	19,153	32,961
Louisiana	149,351	50,905	56,610	15,961	25,875	151,733	50,305	58,083	16,177	27,168
Maine	36,325	10,287	10,166	6,220	9,652	40,511	10,968	10,811	7,227	11,505
Maryland	212,322	45,883	48,878	46,829	70,732	217,562	46,457	49,950	47,885	73,270
Massachusetts	188,844	46,343	54,754	33,980	53,757	187,772	45,634	53,740	34,251	54,147
Michigan	466,091	111,478	116,280	101,495	136,838	479,714	115,399	120,610	105,036	138,669
Minnesota	181,182	52,829	53,039	33,572	51,752	198,610	54,396	55,930	35,067	53,217
Mississippi	98,394	35,779	39,970	8,208	14,437	103,035	36,358	42,278	8,851	15,548
Missouri	178,729	49,496	51,633	30,422	47,178	182,322	52,082	55,656	32,787	51,797
Montana	31,292	12,005	11,079	3,182	5,026	33,197	12,604	12,500	3,406	4,687
Nebraska	88,043	23,729	22,694	17,512	24,108	91,337	24,285	23,713	17,428	25,911
Nevada	48,644	7,633	7,575	14,341	19,085	56,184	8,339	8,726	16,256	22,863
New Hampshire	30,724	8,952	10,080	4,814	5,878	32,889	8,025	8,687	6,771	9,406
New Jersey	243,961	55,564	60,394	52,164	75,839	253,544	57,793	62,841	54,006	78,904
New Mexico	77,079	21,184	21,196	13,659	21,040	79,359	21,388	21,869	14,386	21,716
New York	583,850	155,694	180,926	94,350	152,880	600,587	157,864	184,351	99,071	159,301
North Carolina	267,070	70,111	83,049	45,870	68,040	277,062	73,369	87,600	47,378	68,715
North Dakota	35,622	15,523	13,027	3,205	3,867	37,501	16,202	13,939	3,419	3,941
Ohio	402,823	119,197	124,052	67,932	91,642	412,073	119,043	128,825	69,337	94,868
Oklahoma	151,410	40,866	41,675	27,883	40,986	151,410	40,866	41,675	27,883	40,986
Oregon	136,606	37,880	37,314	25,948	35,464	141,311	37,496	37,317	28,024	38,474
Pennsylvania	323,489	103,208	103,227	46,173	70,881	335,101	105,430	107,453	47,501	74,717
Rhode Island	38,993	8,612	10,998	6,646	12,737	40,604	8,813	11,242	7,069	13,480
South Carolina	120,386	36,189	40,070	16,759	27,368	118,639	36,073	39,481	16,262	26,823
South Dakota	23,899	9,291	8,452	2,256	3,900	25,075	9,424	8,896	2,476	4,279
Tennessee	155,610	46,282	48,806	25,340	35,182	167,056	47,903	52,532	28,250	38,371
Texas	753,145	196,164	194,785	155,442	206,754	782,495	200,387	202,897	161,388	217,823
Utah	74,434	24,369	20,547	15,226	14,292	79,623	25,379	22,227	16,105	15,912
Vermont	19,967	6,187	6,485	2,321	4,974	20,925	6,475	6,631	2,522	5,297
Virginia	270,372	68,770	75,792	50,307	75,503	287,624	71,961	79,449	56,163	80,051
Washington	219,290	60,067	61,426	37,851	59,946	221,362	60,302	63,008	38,380	59,672
West Virginia	70,381	22,843	22,982	8,523	16,033	72,478	24,185	24,584	8,194	15,515
Wisconsin	243,087	75,533	81,234	36,968	49,352	245,968	75,209	80,803	37,776	52,180
Wyoming	25,911	7,445	7,610	3,897	6,959	28,553	7,918	7,931	4,486	8,218
U.S. Service Schools	44,033	38,627	5,378	7	21	54,814	43,613	10,543	118	540
Outlying areas	67,433	19,822	31,236	5,635	10,740	67,449	19,408	30,034	6,218	11,789
American Samoa	908	236	184	233	255	1,011	280	178	329	224
Federated States of Micronesia	—	—	—	—	—	838	198	137	238	265
Guam	3,819	748	928	1,115	1,028	4,350	792	1,008	1,298	1,252
Northern Mariana Islands	352	67	47	101	137	419	70	59	124	166
Palau	—	—	—	—	—	1,037	257	478	115	187
Puerto Rico	58,696	18,163	29,265	3,502	7,766	57,097	17,570	27,554	3,662	8,311
Trust Territory of the Pacific	1,187	423	246	250	268	—	—	—	—	—
Virgin Islands	2,471	185	566	434	1,286	2,697	241	620	452	1,384

¹ Data have been revised from previously published figures.² Preliminary data.

—Data not reported or not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment" surveys. (This table was prepared February 1991.)

1. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
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 47. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 48. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 49. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 50. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 51. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 52. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 53. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 54. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 55. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 56. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 57. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 58. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 59. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 60. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 61. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 62. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 63. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 64. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 65. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 66. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 67. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 68. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 69. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 70. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 71. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 72. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 73. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
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 75. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 76. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 77. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 78. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 79. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 80. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 81. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 82. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 83. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
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 85. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 86. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 87. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 88. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 89. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 90. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 91. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 92. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 93. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 94. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 95. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 96. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 97. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 98. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 99. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989
 100. Total enrollment in public institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989

Table 183.—Total enrollment in private institutions of higher education, by attendance status, sex, and State: Fall 1988 and fall 1989

State or other area	Fall 1988 ¹					Fall 1989 ²				
	Total	Full-time		Part-time		Total	Full-time		Part-time	
		Men	Women	Men	Women		Men	Women	Men	Women
1	2	3	4	5	6	7	8	9	10	11
United States	2,883,948	1,005,541	1,020,879	387,387	480,132	2,942,882	1,004,583	1,034,516	402,882	508,813
Alabama	23,616	8,874	10,290	1,841	2,611	20,987	7,746	9,707	1,418	2,466
Alaska	1,815	281	933	327	274	2,353	406	850	346	361
Arizona	16,083	9,171	4,379	864	1,679	13,300	6,528	3,211	1,576	1,105
Arkansas	12,808	5,204	5,801	511	1,092	12,156	5,117	5,743	452	1,161
California	212,127	78,825	72,954	32,024	28,324	210,670	76,989	71,251	32,984	28,324
Colorado	23,956	8,860	8,061	3,841	3,194	25,264	8,417	8,408	4,479	4,479
Connecticut	58,258	17,994	17,730	10,658	12,876	59,741	18,275	18,080	10,541	10,541
Delaware	6,615	1,327	1,885	1,287	2,116	7,525	1,716	2,143	1,383	1,383
District of Columbia	67,201	21,183	24,087	10,563	11,348	67,361	21,353	24,633	10,101	10,101
Florida	96,130	37,203	30,320	15,148	13,459	92,843	36,004	27,911	15,183	15,183
Georgia	53,041	20,560	21,998	4,960	5,523	52,432	20,594	21,256	4,954	4,954
Hawaii	9,789	3,444	3,000	1,986	1,338	10,544	3,388	2,989	2,435	2,435
Idaho	10,482	4,028	5,215	447	792	10,522	3,875	5,336	453	453
Illinois	167,608	56,440	53,702	26,291	31,175	173,294	57,506	55,762	26,414	26,414
Indiana	58,688	25,085	22,857	3,757	6,960	59,388	25,771	23,339	3,637	3,637
Iowa	48,830	18,344	17,887	4,354	8,445	53,012	17,135	18,174	6,027	6,027
Kansas	14,120	5,231	5,295	1,384	2,200	13,363	4,907	5,194	1,356	1,356
Kentucky	30,786	10,756	11,851	2,784	5,375	28,717	9,577	11,403	2,480	2,480
Louisiana	26,700	10,076	10,861	2,450	3,313	28,194	10,171	11,713	2,509	2,509
Maine	12,035	4,073	5,280	821	1,861	17,719	4,248	5,517	1,408	1,408
Maryland	36,757	9,427	10,739	7,166	9,425	37,764	9,830	10,920	7,107	7,107
Massachusetts	237,759	80,147	87,108	30,322	40,182	238,704	80,127	85,525	31,382	31,382
Michigan	78,308	22,093	27,123	11,321	17,771	80,606	21,438	27,105	12,754	12,754
Minnesota	53,420	19,655	22,368	4,676	6,721	54,487	19,748	22,985	4,755	4,755
Mississippi	12,868	3,724	5,072	1,537	2,535	13,335	3,947	5,504	1,530	1,530
Missouri	83,662	25,434	23,915	15,740	18,573	86,183	26,088	24,866	16,316	16,316
Montana	4,485	1,109	1,634	751	991	4,463	1,119	1,806	676	676
Nebraska	16,836	5,726	6,236	1,630	3,244	17,507	5,940	6,827	1,620	1,620
Nevada	187	107	37	22	21	287	127	64	31	31
New Hampshire	26,686	8,853	8,983	3,529	5,221	25,711	8,984	8,087	3,588	3,588
New Jersey	58,920	18,325	17,205	10,288	13,102	60,547	18,450	17,725	10,394	10,394
New Mexico	2,056	586	605	525	330	1,991	563	636	383	383
New York	422,644	145,736	148,607	52,458	75,843	417,543	141,586	146,183	52,811	52,811
North Carolina	65,156	26,374	28,575	3,974	6,233	68,339	27,387	30,517	3,986	3,986
North Dakota	2,867	1,086	1,201	199	381	2,849	974	1,304	183	183
Ohio	141,157	42,540	42,810	35,138	20,669	138,656	41,883	41,074	34,985	20,774
Oklahoma	24,898	9,810	8,684	3,095	3,309	24,445	9,779	8,242	3,120	2,388
Oregon	19,552	8,411	7,502	1,562	2,077	20,614	8,578	7,919	1,745	2,388
Pennsylvania	250,063	81,827	80,396	32,763	55,077	275,256	89,839	92,750	38,863	52,888
Rhode Island	35,854	14,329	12,737	4,284	4,504	35,899	14,148	12,537	4,557	4,557
South Carolina	27,782	10,581	13,313	1,643	2,245	27,091	10,390	12,739	1,689	2,223
South Dakota	7,562	2,010	3,187	717	1,648	7,591	1,980	3,249	741	1,851
Tennessee	50,757	20,257	22,101	3,271	5,128	51,810	20,470	22,930	3,148	5,288
Texas	94,165	35,885	34,293	12,456	11,531	95,364	35,985	35,654	12,241	11,881
Utah	34,197	12,767	12,291	4,535	4,604	35,182	13,482	13,120	4,223	4,537
Vermont	14,436	5,212	5,717	974	2,533	15,021	5,435	6,005	1,142	2,439
Virginia	50,559	16,531	21,445	5,652	6,931	56,660	16,680	22,732	8,199	9,889
Washington	34,761	11,100	13,374	4,822	5,465	34,398	10,938	13,183	4,668	5,889
West Virginia	10,159	3,432	3,720	1,056	1,951	9,977	3,213	3,799	1,020	1,946
Wisconsin	43,369	14,752	15,702	4,963	7,932	44,704	15,140	16,284	4,978	8,288
Wyoming	629	626	3	0	0	606	602	4	0	0
Outlying areas	95,016	29,106	45,620	8,382	12,908	95,899	29,666	45,509	8,391	12,338
American Samoa	—	—	—	—	—	—	—	—	—	—
Federated States of Micronesia	—	—	—	—	—	—	—	—	—	—
Guam	—	—	—	—	—	—	—	—	—	—
Northern Marianas	—	—	—	—	—	—	—	—	—	—
Puerto Rico	95,016	29,106	45,620	8,382	12,908	95,899	29,666	45,509	8,391	12,338
United States Virgin Islands	—	—	—	—	—	—	—	—	—	—
Washington, D.C.	—	—	—	—	—	—	—	—	—	—

Data have been revised from previously published figures.

Preliminary data.

—Data not reported or not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment" surveys. (This table was prepared February 1991.)

* Definitely use. Not always true of other states.
 Not in private colleges: N = 0 or not applicable. F/T + 0

Table 184.—Total enrollment in institutions of higher education, by control and type of institution and State: Fall 1988 and fall 1989

State or other area	Fall 1988 ¹				Fall 1989 ²			
	Public 4-year	Public 2-year	Private 4-year	Private 2-year	Public 4-year	Public 2-year	Private 4-year	Private 2-year
1	2	3	4	5	6	7	8	9
United States	5,545,801	4,615,487	2,634,281	258,868	5,694,202	4,820,771	2,680,182	262,690
Alabama	112,944	60,782	18,886	4,730	121,155	66,420	17,526	3,461
Alaska	22,138	5,030	1,207	608	26,274	—	2,064	289
Arizona	94,317	148,382	14,104	1,989	96,276	143,038	11,371	1,929
Arkansas	55,353	16,601	9,823	2,785	58,662	17,754	9,916	2,240
California	484,181	1,058,170	200,657	11,470	494,089	1,040,110	201,838	8,732
Colorado	105,302	57,654	18,348	5,808	107,324	68,526	19,756	5,508
Connecticut	64,501	41,918	57,467	1,791	65,427	44,270	58,068	1,673
Delaware	22,328	9,318	6,615	—	23,080	9,957	7,525	—
District of Columbia	12,109	—	67,201	—	12,439	—	67,361	—
Florida	157,549	262,829	91,308	4,822	168,576	312,293	87,818	5,025
Georgia	129,683	48,159	42,554	10,487	136,239	50,537	42,284	10,148
Hawaii	22,550	19,979	9,768	—	23,111	20,533	10,544	—
Idaho	30,516	5,340	2,295	8,187	33,083	5,354	2,315	8,207
Illinois	193,442	328,276	158,008	9,600	194,913	341,730	164,985	8,309
Indiana	173,499	35,737	55,431	3,238	181,286	35,147	56,433	2,955
Iowa	68,872	44,398	45,339	3,491	68,221	48,668	50,955	2,057
Kansas	67,368	51,334	12,806	1,314	69,180	55,954	12,461	902
Kentucky	96,112	31,330	23,289	7,477	102,332	34,965	22,281	6,456
Louisiana	133,832	15,519	24,183	2,517	133,856	17,877	25,859	2,335
Maine	30,198	6,127	10,965	1,070	34,233	6,278	16,277	1,442
Maryland	109,281	103,041	35,882	875	110,167	107,395	37,043	721
Massachusetts	112,854	75,990	223,547	14,212	112,222	75,550	225,041	13,663
Michigan	249,484	216,607	73,402	4,906	255,555	224,159	75,567	5,039
Minnesota	133,905	57,287	48,681	4,739	134,896	63,714	49,381	5,106
Mississippi	54,272	44,122	10,251	2,617	56,716	46,319	10,329	3,006
Missouri	116,420	62,309	80,940	2,722	121,045	71,277	83,468	2,715
Montana	27,405	3,887	3,305	1,180	28,461	4,736	3,231	1,232
Nebraska	57,108	30,935	16,370	466	59,221	32,116	16,824	683
Nevada	25,179	23,465	161	26	27,085	29,099	264	23
New Hampshire	24,047	6,577	24,170	2,516	24,688	8,201	24,432	1,279
New Jersey	133,289	110,672	55,983	2,937	135,101	118,443	56,648	3,899
New Mexico	47,176	29,903	2,056	—	47,591	31,768	1,991	—
New York	352,559	231,291	393,027	29,617	358,538	242,049	394,521	23,022
North Carolina	140,025	127,045	59,265	5,891	144,413	132,649	63,205	5,134
North Dakota	27,932	7,690	2,659	208	29,718	7,783	2,672	177
Ohio	279,579	123,244	106,850	34,307	284,356	127,717	108,132	30,524
Oklahoma	94,688	56,722	18,434	6,464	94,688	56,722	18,487	5,948
Oregon	68,432	68,174	19,220	332	66,775	74,536	20,225	286
Pennsylvania	229,235	94,254	212,800	37,263	234,784	100,317	214,270	60,986
Rhode Island	24,278	14,715	35,854	—	25,204	15,400	35,899	—
South Carolina	79,252	41,134	22,980	4,802	79,252	39,387	22,480	4,601
South Dakota	23,899	—	7,180	382	25,075	—	7,232	359
Tennessee	103,791	51,819	45,075	5,682	107,780	58,276	45,666	6,144
Texas	391,942	361,203	89,969	4,196	410,392	372,103	90,771	4,593
Utah	52,633	21,801	33,171	1,026	54,444	25,179	34,164	1,028
Vermont	15,762	4,205	12,319	2,117	16,127	4,798	12,921	2,100
Virginia	154,165	116,207	47,766	2,793	158,260	129,364	54,389	2,271
Washington	78,174	141,116	33,011	1,750	78,387	142,975	32,455	1,943
West Virginia	60,733	9,648	7,488	2,671	62,227	10,251	7,196	2,781
Wisconsin	151,146	91,941	42,211	1,158	151,146	94,822	43,551	1,153
Wyoming	10,773	15,138	—	629	12,335	16,218	—	606
U.S. Service Schools	17,679	26,354	—	—	17,777	37,037	—	—
Outlying areas	57,792	9,641	86,164	9,852	57,019	10,430	85,727	10,172
American Samoa	—	908	—	—	—	1,011	—	—
Federated States of Micronesia	—	—	—	—	—	838	—	—
Guam	2,096	1,723	—	—	2,385	1,965	—	—
Northern Mariana Islands	—	352	—	—	—	419	—	—
Palau	—	—	—	—	—	1,037	—	—
Puerto Rico	53,225	5,471	86,164	9,852	51,937	5,160	85,727	10,172
Trust Territory of the Pacific	—	1,187	—	—	—	—	—	—
Virgin Islands	2,471	—	—	—	2,697	—	—	—

¹ Data have been revised from previously published figures.² Preliminary data.

—Data not reported or not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment" surveys. (This table was prepared February 1991.)

Table 218.—Average salary of full-time instructional faculty in institutions of higher education, by academic rank and sex: 1972-73 to 1989-90

Academic year and sex	All ranks	Professor	Associate professor	Assistant professor	Instructor	Lecturer	Undergraduate
1	2	3	4	5	6	7	
Current dollars							
Total							
1972-73	\$13,850	\$19,182	\$14,572	\$12,029	\$10,737	\$11,637	
1975-76	16,634	22,611	17,026	13,966	13,682	12,887	
1979-80	21,367	28,371	21,431	17,459	14,021	16,151	
1980-81	23,302	30,753	23,214	18,901	15,178	17,301	
1981-82	25,449	33,437	25,278	20,608	16,450	18,756	
1982-83	27,196	35,540	26,921	22,056	17,601	20,072	
1984-85	30,447	39,743	29,945	24,668	20,230	22,334	
1985-86	32,392	42,268	31,787	26,277	20,918	23,770	
1987-88	35,897	47,040	35,231	29,110	22,728	25,977	
1989-90	39,965	52,809	39,381	32,694	25,001	28,973	
Men							
1972-73	14,415	19,405	14,714	12,190	11,147	12,105	
1975-76	17,388	22,866	17,167	14,154	14,440	13,577	
1979-80	22,423	28,653	21,627	17,712	14,321	16,967	
1980-81	24,499	31,082	23,451	19,227	15,545	18,281	
1981-82	26,796	33,799	25,553	21,025	16,906	19,721	
1982-83	28,664	35,956	27,262	22,586	18,160	21,225	
1984-85	32,182	40,269	30,392	25,330	21,159	23,557	
1985-86	34,294	42,833	32,273	27,094	21,693	25,238	
1987-88	38,112	47,735	35,823	30,086	23,645	27,652	
1989-90	42,629	53,646	40,128	33,783	25,891	31,102	
Women							
1972-73	11,925	17,122	13,827	11,510	10,099	10,775	
1975-76	14,292	20,257	16,336	13,506	12,580	11,870	
1979-80	18,395	25,910	20,642	16,971	13,749	15,142	
1980-81	19,996	27,959	22,295	18,302	14,854	16,168	
1981-82	21,802	30,438	24,271	19,866	16,054	17,676	
1982-83	23,261	32,221	25,738	21,130	17,102	18,830	
1984-85	25,941	35,824	28,517	23,575	19,362	21,004	
1985-86	27,576	38,252	30,300	24,966	20,237	22,273	
1987-88	30,499	42,371	33,528	27,600	21,962	24,370	
1989-90	33,936	47,673	37,440	31,099	24,302	27,031	
Constant 1989-90 dollars ¹							
Total							
1972-73	41,081	56,897	43,223	35,680	31,848	34,517	
1975-76	38,085	51,769	38,982	31,976	31,326	29,506	
1979-80	34,947	46,403	35,052	28,556	22,932	26,416	
1980-81	34,156	45,078	34,027	27,705	22,248	25,360	
1981-82	34,337	45,115	34,106	27,805	22,195	25,306	
1982-83	35,183	45,977	34,827	28,533	22,770	25,967	
1984-85	36,552	47,712	35,949	29,614	24,286	26,812	
1985-86	37,797	49,321	37,091	30,662	24,409	27,736	
1987-88	39,347	51,561	38,617	31,908	24,912	28,473	
1989-90	39,965	52,809	39,381	32,694	25,001	28,973	
Men							
1972-73	42,757	57,558	43,644	36,157	33,064	35,905	
1975-76	39,811	52,353	39,305	32,407	33,061	31,085	
1979-80	36,675	46,864	35,373	28,969	23,423	27,784	
1980-81	35,911	45,560	34,374	28,183	22,786	26,796	
1981-82	36,154	45,603	34,477	28,368	22,810	26,609	
1982-83	37,082	46,516	35,268	29,219	23,493	27,458	
1984-85	38,635	48,344	36,486	30,409	25,402	28,281	
1985-86	40,017	49,980	37,658	31,615	25,313	29,449	
1987-88	41,774	52,322	39,266	32,978	25,917	30,310	
1989-90	42,629	53,646	40,128	33,783	25,891	31,102	
Women							
1972-73	35,371	50,786	41,013	34,140	29,955	31,960	
1975-76	32,723	46,380	37,402	30,923	28,803	27,177	
1979-80	30,086	42,378	33,762	27,757	22,488	24,766	
1980-81	29,310	40,982	32,680	26,827	21,773	23,699	
1981-82	29,416	41,068	32,748	26,804	21,661	23,849	
1982-83	30,092	41,684	33,297	27,336	22,125	24,360	
1984-85	31,143	43,007	34,235	28,302	23,244	25,216	
1985-86	32,178	44,635	35,356	29,132	23,614	25,990	
1987-88	33,431	46,443	36,750	30,253	24,072	26,712	
1989-90	33,936	47,673	37,440	31,099	24,302	27,031	

¹Data adjusted, using the Consumer Price Index prepared by the Bureau of Labor Statistics, averaged on an academic year time frame.

NOTE.—Data for 1972-73, 1975-76, 1987-88, and 1989-90 are for faculty on 9- to 10-month contracts; data for 1979-80 to 1985-86 are for faculty on 9-month contracts. Data for 1987-88 and 1989-90 include imputations for nonrespondent institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Faculty Salaries, Tenure, and Benefits, and Integrated Postsecondary Education System (IPEDS), "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty" surveys. (This table was prepared February 1991.)

* Ex. 10.1 Use - from Salaries - Ex. 10.1 Use - from Salaries

Table 220.—Average salary of full-time instructional faculty on 9-month contracts in institutions of higher education, by type and control of institution and by State: 1989-90

State or other area	Average, all institutions	Public institutions					Private institutions				
		Total	4-year institutions			2-year	Total	4-year institutions			2-year
			Total	University	Other 4-year			Total	University	Other 4-year	
1	2	3	4	5	6	7	8	9	10	11	12
United States	\$39,865	\$40,181	\$42,355	\$44,958	\$40,567	\$34,404	\$39,505	\$39,860	\$50,787	\$34,987	\$24,801
Alabama	33,308	34,148	35,386	38,711	32,956	30,644	29,305	29,760	—	29,760	23,961
Alaska	44,789	45,280	45,280	44,828	45,552	—	37,976	37,976	—	37,976	—
Arizona	40,903	41,386	43,465	44,856	36,893	37,413	32,987	32,987	—	32,987	—
Arkansas	31,588	32,194	33,369	37,902	31,869	25,471	28,044	28,116	—	28,116	23,968
California	46,476	47,194	52,765	59,945	51,396	35,482	43,846	44,071	56,997	37,461	33,148
Colorado	38,450	38,216	41,043	46,063	37,184	27,701	40,380	40,380	41,219	39,263	—
Connecticut	47,232	47,709	49,978	54,203	45,453	41,081	46,657	46,894	59,192	41,721	27,639
Delaware	40,682	41,248	42,074	43,547	32,733	35,401	36,537	36,537	—	36,537	—
District of Columbia	44,708	42,185	42,185	—	42,185	—	45,186	45,186	46,524	34,453	—
Florida	38,027	38,557	41,741	45,130	39,362	34,100	36,103	36,225	46,298	32,852	22,834
Georgia	36,261	36,912	38,118	40,468	37,439	30,925	34,317	35,198	48,112	30,833	23,326
Hawaii	39,917	40,847	43,535	44,984	36,729	35,317	25,466	25,466	—	25,466	—
Idaho	32,118	33,784	34,430	37,920	32,793	29,080	25,042	26,893	—	26,893	24,436
Illinois	40,546	40,065	41,180	43,712	38,725	38,201	41,486	41,728	53,081	34,086	24,867
Indiana	37,442	37,357	39,556	41,342	35,445	25,442	37,635	34,668	54,402	33,020	28,825
Iowa	38,028	41,229	45,619	47,892	38,613	29,047	32,406	32,499	40,177	31,261	26,836
Kansas	34,185	36,023	38,668	40,275	34,476	29,453	23,671	24,238	—	24,238	19,878
Kentucky	32,714	34,018	35,739	39,998	33,145	26,596	28,008	28,287	—	28,287	17,797
Louisiana	33,275	32,114	32,579	38,633	30,865	26,841	38,664	38,664	44,748	27,498	—
Maine	36,794	36,780	38,389	40,705	36,590	28,883	36,828	36,923	—	36,923	27,740
Maryland	41,877	42,087	44,000	48,442	41,861	38,560	41,077	41,126	55,798	34,358	20,076
Massachusetts	46,113	43,952	47,079	53,044	44,580	36,110	47,384	48,138	54,245	40,843	25,912
Michigan	41,270	42,820	44,081	49,745	39,285	39,648	33,502	33,757	37,886	33,362	23,095
Minnesota	39,376	41,204	42,342	49,879	38,650	38,119	34,952	35,303	—	35,303	25,670
Mississippi	30,585	30,747	33,602	36,245	31,925	26,972	29,434	30,290	—	30,290	17,156
Missouri	35,621	36,274	37,006	41,330	36,168	33,514	34,337	34,573	46,136	28,755	23,706
Montana	29,780	30,671	31,305	32,629	28,456	26,029	25,140	25,871	—	25,871	24,048
Nebraska	34,745	35,827	38,069	43,430	34,097	24,803	31,236	31,514	37,726	27,983	19,936
Nevada	39,414	39,483	41,104	42,479	40,116	33,411	29,110	27,454	—	27,454	33,250
New Hampshire	38,783	37,116	39,186	42,233	34,344	28,982	41,045	41,379	—	41,379	16,851
New Jersey	45,136	44,524	46,741	52,314	44,796	39,293	46,510	46,510	56,335	39,756	—
New Mexico	34,661	34,913	37,099	38,412	32,912	27,328	29,226	29,226	—	29,226	—
New York	44,557	46,786	49,452	53,364	48,847	41,741	42,473	42,631	51,237	37,973	21,911
North Carolina	37,207	38,753	40,473	45,466	38,216	24,915	34,050	34,582	45,404	29,616	25,709
North Dakota	30,907	31,696	32,768	33,781	30,541	27,642	23,832	24,897	—	24,897	17,948
Ohio	40,141	42,323	44,721	45,821	40,865	33,091	34,793	34,799	50,068	33,197	32,177
Oklahoma	34,508	34,234	35,665	37,590	33,978	29,554	35,598	36,182	40,977	34,303	20,775
Oregon	34,342	34,362	35,504	36,801	33,981	32,867	34,257	34,257	—	34,257	—
Pennsylvania	41,177	41,891	42,983	47,060	40,687	36,545	40,364	40,832	53,088	36,807	24,894
Rhode Island	43,971	42,442	44,559	47,341	39,862	36,018	45,566	45,566	—	45,566	—
South Carolina	34,017	35,312	38,343	42,133	34,211	26,117	29,041	29,755	—	29,755	24,209
South Dakota	29,437	31,351	31,351	31,848	30,663	—	24,917	24,928	—	24,928	21,000
Tennessee	36,126	37,160	39,158	43,378	37,606	29,094	33,857	34,157	51,787	27,450	21,336
Texas	37,615	37,449	40,233	44,696	35,920	32,469	38,339	38,444	46,116	32,324	22,529
Utah	38,319	34,181	36,404	39,185	29,953	27,109	43,647	43,684	44,271	27,414	33,596
Vermont	36,018	38,796	39,891	42,454	30,697	28,138	33,397	34,828	—	34,828	23,680
Virginia	40,984	43,328	46,232	49,697	43,846	34,370	33,743	33,861	—	33,861	24,068
Washington	36,675	37,024	41,097	43,742	36,576	31,435	35,120	35,120	—	35,120	—
West Virginia	29,758	30,426	30,975	35,759	28,490	24,471	26,303	26,583	—	26,583	21,295
Wisconsin	38,463	38,973	40,920	49,175	37,952	35,501	36,133	36,133	43,531	33,650	—
Wyoming	34,438	34,438	39,468	39,468	—	28,961	—	—	—	—	—
U.S. Service Schools	42,924	42,924	42,924	—	42,924	—	—	—	—	—	—
Outlying areas	22,364	26,677	26,345	25,519	27,530	28,747	9,863	9,663	—	9,663	10,598
American Samoa	20,694	20,694	—	—	—	20,694	—	—	—	—	—
Guam	36,263	36,263	39,966	—	39,966	30,809	—	—	—	—	—
Northern Marianas	—	—	—	—	—	—	—	—	—	—	—
Palau	30,873	30,873	—	—	—	30,873	—	—	—	—	—
Puerto Rico	19,961	24,383	24,190	25,519	21,374	27,950	9,863	9,663	—	9,663	10,598
Virgin Islands	40,888	40,888	40,888	—	40,888	—	—	—	—	—	—

—Data not reported or not applicable.

NOTE—Data include imputations for nonrespondent institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty, 1989-90" survey. (This table was prepared February 1991.)

*VIP - NJ For Salaries Higher than Nat'l Avg.

Table 221.—Average salary of full-time instructional faculty on 9-month contracts in institutions of higher education, by type and control of institution and by State: 1987-88¹

State or other area	Average, all institutions	Public institutions					Private institutions				
		Total	4-year institutions			2-year	Total	4-year institutions			2-year
			Total	University	Other 4-year			Total	University	Other 4-year	
1	2	3	4	5	6	7	8	9	10	11	12
United States	\$35,887	\$36,231	\$37,840	\$40,106	\$36,286	\$32,208	\$35,048	\$35,346	\$44,814	\$31,888	\$29,111
Alabama	31,328	31,806	32,953	36,307	30,422	28,268	29,024	29,234	—	29,234	29,234
Alaska	41,045	41,649	40,617	40,310	40,987	43,608	33,311	33,311	—	33,311	33,311
Arizona	38,080	38,674	41,074	41,828	37,035	33,975	27,786	28,259	—	28,259	28,259
Arkansas	28,911	29,520	30,572	34,266	29,292	23,165	25,354	25,411	—	25,411	25,411
California	42,611	43,026	47,686	53,307	46,585	37,288	40,472	40,756	50,491	34,117	34,117
Colorado	34,373	34,452	36,397	40,248	33,253	26,174	33,813	33,813	34,358	33,202	33,202
Connecticut	41,437	42,073	44,374	48,379	40,322	35,428	40,688	40,867	51,780	36,382	36,382
Delaware	35,706	36,545	37,624	38,933	29,372	29,661	29,951	29,951	—	29,951	29,951
District of Columbia	39,028	36,743	36,743	—	36,743	—	39,515	39,515	40,794	29,292	29,292
Florida	34,375	35,313	37,552	40,807	35,284	31,066	31,494	31,580	40,220	28,680	28,680
Georgia	33,171	34,251	35,342	37,378	34,727	28,176	30,040	30,538	43,750	26,770	26,770
Hawaii	35,489	36,289	38,449	39,747	32,331	31,526	22,900	22,900	—	22,900	22,900
Idaho	30,825	31,300	31,846	35,013	30,330	27,348	25,966	25,966	—	25,966	25,966
Illinois	35,509	34,804	35,258	38,453	32,330	34,067	36,909	37,154	46,880	30,435	30,435
Indiana	33,716	33,891	35,748	37,338	31,856	22,753	33,315	33,343	47,477	29,305	29,305
Iowa	31,894	33,935	37,162	38,541	32,995	25,688	28,276	28,371	31,828	27,828	27,828
Kansas	29,857	31,465	32,885	34,031	29,880	27,584	21,573	22,135	—	22,135	22,135
Kentucky	30,257	31,632	32,950	37,030	30,489	25,083	25,383	25,925	—	25,925	25,925
Louisiana	30,463	29,881	29,963	34,955	28,562	25,636	34,227	34,227	39,747	24,113	24,113
Maine	31,836	31,531	32,900	34,959	31,358	24,710	32,552	32,637	—	32,637	32,637
Maryland	36,874	36,543	37,886	41,867	35,800	34,108	38,077	38,114	54,324	30,760	30,760
Massachusetts	40,273	38,489	41,949	47,780	39,461	30,327	41,419	42,002	47,324	35,924	35,924
Michigan	36,947	38,456	39,294	44,038	35,246	36,211	28,888	28,990	32,820	28,582	28,582
Minnesota	34,719	36,199	36,911	44,272	32,901	34,129	31,276	31,496	—	31,496	31,496
Mississippi	26,763	27,223	29,828	31,866	28,529	23,566	22,052	22,841	—	22,841	22,841
Missouri	31,979	32,660	33,260	36,696	32,574	30,400	30,541	30,730	41,782	24,818	24,818
Montana	28,746	29,404	29,648	30,665	27,421	26,793	23,488	23,782	—	23,782	23,782
Nebraska	29,747	30,380	31,641	35,934	28,475	24,106	27,661	27,820	33,010	24,895	24,895
Nevada	36,250	36,306	37,654	38,469	36,963	31,157	31,381	31,381	—	31,381	31,381
New Hampshire	34,333	33,334	35,124	37,147	31,762	25,874	35,469	35,764	—	35,764	35,764
New Jersey	40,151	40,084	42,197	46,906	40,591	34,788	40,307	40,307	47,615	35,713	35,713
New Mexico	31,086	31,284	33,100	34,067	30,189	25,360	26,496	26,496	—	26,496	26,496
New York	39,727	40,658	42,708	47,695	42,028	35,922	38,866	38,916	45,215	34,384	34,384
North Carolina	32,908	34,889	36,514	40,697	34,495	22,802	28,616	29,136	33,417	27,171	27,171
North Dakota	28,591	29,156	29,959	30,813	28,111	26,591	22,758	23,272	—	23,272	23,272
Ohio	36,026	37,907	40,061	40,887	36,972	29,785	31,206	31,218	43,554	29,781	29,781
Oklahoma	30,461	30,670	31,763	33,719	30,089	27,143	29,609	29,947	35,903	27,018	27,018
Oregon	31,608	31,933	33,981	34,966	32,737	29,289	30,165	30,165	—	30,165	30,165
Pennsylvania	36,148	36,359	37,233	40,816	35,220	32,137	35,904	36,330	46,741	32,871	32,871
Rhode Island	36,907	36,408	38,127	40,658	33,874	31,108	37,306	37,306	—	37,306	37,306
South Carolina	30,382	31,288	34,051	37,015	30,726	22,484	27,603	28,045	—	28,045	28,045
South Dakota	27,388	28,958	28,958	29,592	28,103	—	22,608	22,753	—	22,753	22,753
Tennessee	32,935	33,759	35,396	38,979	33,964	26,660	31,022	31,373	45,469	25,454	25,454
Texas	33,990	33,955	35,963	39,990	32,291	29,872	34,136	34,221	40,696	29,048	29,048
Utah	32,208	32,342	34,060	36,346	28,574	26,460	25,557	25,557	—	25,557	25,557
Vermont	32,013	34,878	35,520	37,675	27,913	27,525	29,440	30,345	—	30,345	30,345
Virginia	35,987	37,760	40,038	43,708	37,372	30,747	29,628	29,758	—	29,758	29,758
Washington	33,182	33,824	37,295	39,663	33,299	29,267	30,417	30,417	—	30,417	30,417
West Virginia	28,287	29,223	29,825	33,929	27,888	23,644	23,296	23,520	—	23,520	23,520
Wisconsin	35,034	35,765	37,780	45,832	35,116	32,285	31,090	31,090	38,949	27,965	27,965
Wyoming	32,819	32,819	37,053	37,053	—	27,889	—	—	—	—	—
U.S. Service Schools	42,299	42,299	42,436	—	42,436	42,158	—	—	—	—	—
Outlying areas	17,346	22,411	22,294	22,804	21,410	24,736	7,750	8,657	—	8,657	6,321
American Samoa	—	—	—	—	—	—	—	—	—	—	—
Guam	9,336	9,336	9,336	—	9,336	—	—	—	—	—	—
Northern Marianas	—	—	—	—	—	—	—	—	—	—	—
Puerto Rico	16,717	21,771	21,593	22,804	19,045	25,190	7,750	8,657	—	8,657	6,321
Trust Territory of the Pacific	12,468	12,468	—	—	—	12,468	—	—	—	—	—
Virgin Islands	33,500	33,500	33,500	—	33,500	—	—	—	—	—	—

¹ Data have been revised from previously published figures.

—Data not reported or not applicable.

NOTE—Data include imputations for nonrespondent institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics. Integrated Postsecondary Education Data System (IPEDS), "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty, 1987-88" survey. (This table was prepared February 1991.)

* VIP - NJ Fac. 4.1 in Ten NJ/Am.

Table 222.—Average salary of full-time instructional faculty on 9-month contracts in 4-year institutions of higher education, by type and control of institution and rank of faculty and by State: 1989-90

State or other area	Public university			Public other 4-year			Private university			Private other 4-year		
	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor
1	2	3	4	5	6	7	8	9	10	11	12	13
United States	\$57,268	\$41,568	\$34,945	\$51,211	\$39,975	\$32,988	\$65,012	\$44,882	\$37,778	\$45,068	\$35,031	\$29,081
Alabama	50,844	38,269	32,255	42,817	34,406	30,150	—	—	—	38,235	30,430	26,414
Alaska	57,975	48,783	39,281	54,834	47,984	37,987	—	—	—	61,739	36,891	32,415
Arizona	56,672	41,536	35,621	47,202	37,844	31,295	—	—	—	38,931	35,403	29,375
Arkansas	49,323	36,941	31,849	41,026	34,111	29,112	—	—	—	33,090	27,935	24,723
California	71,827	46,048	40,322	58,997	44,909	37,163	70,566	48,990	40,881	47,082	35,248	30,555
Colorado	53,380	41,262	36,372	44,414	36,676	31,415	50,859	37,891	34,197	49,162	36,886	30,084
Connecticut	65,061	47,887	39,497	54,815	44,450	36,082	77,730	47,702	36,936	53,044	40,335	33,462
Delaware	58,787	42,535	34,665	43,324	34,348	30,479	—	—	—	41,549	42,118	30,892
Dist. of Columbia	—	—	—	52,056	41,242	33,497	61,615	42,945	34,974	48,661	36,340	30,110
Florida	55,257	38,648	34,834	49,106	38,299	33,801	57,708	41,603	37,146	42,633	33,548	27,957
Georgia	54,836	38,489	33,204	47,945	37,856	31,980	64,070	44,589	34,440	40,288	31,738	26,174
Hawaii	55,858	42,058	36,647	45,013	37,551	32,328	—	—	—	31,667	26,916	22,738
Idaho	44,099	35,296	33,421	38,039	32,728	28,896	—	—	—	29,640	—	—
Illinois	57,212	41,035	34,501	46,862	37,956	33,063	68,356	45,296	39,287	41,683	34,898	29,186
Indiana	53,336	40,362	32,670	47,513	37,281	30,942	69,142	47,039	40,783	40,083	32,755	28,078
Iowa	60,840	44,920	37,292	49,628	41,178	33,955	48,676	37,846	32,628	38,415	31,519	27,015
Kansas	50,335	38,034	32,006	42,513	34,110	29,490	—	—	—	29,315	24,958	22,206
Kentucky	49,851	36,474	32,110	40,088	34,022	28,776	—	—	—	35,955	29,122	24,522
Louisiana	53,246	38,255	32,996	38,623	32,421	28,356	56,858	42,877	35,015	35,311	27,957	25,377
Maine	52,313	39,870	33,820	45,100	36,506	30,640	—	—	—	51,078	36,578	29,588
Maryland	64,459	45,831	38,123	54,514	43,893	36,445	68,072	45,232	38,494	44,133	36,178	29,968
Massachusetts	62,303	48,799	37,625	51,227	44,190	35,898	71,241	46,834	39,769	53,846	39,862	33,066
Michigan	61,409	45,791	39,405	47,599	39,500	33,113	46,146	37,495	31,743	43,444	32,460	26,990
Minnesota	59,402	42,455	37,086	47,824	38,582	31,798	—	—	—	46,024	35,251	29,589
Mississippi	44,851	36,229	32,541	42,035	34,074	28,918	—	—	—	39,018	31,693	24,484
Missouri	50,859	37,445	34,569	45,594	37,333	31,591	57,632	40,530	35,754	36,276	29,740	25,238
Montana	37,495	31,527	27,967	35,133	28,990	25,066	—	—	—	31,400	27,146	22,829
Nebraska	54,124	40,066	35,302	42,280	34,909	30,115	53,978	37,353	30,171	34,512	28,144	25,361
Nevada	53,434	41,528	35,573	54,059	43,398	35,227	—	—	—	—	—	—
New Hampshire	53,212	41,206	32,883	42,114	34,457	28,927	—	—	—	56,700	36,920	31,781
New Jersey	69,550	48,413	38,378	56,058	44,855	35,630	72,654	46,658	38,025	49,333	39,862	31,589
New Mexico	47,669	36,405	32,621	40,033	33,798	28,824	—	—	—	30,191	27,162	23,864
New York	67,796	49,431	37,846	61,774	47,273	37,618	65,335	45,722	37,678	49,152	37,970	31,160
North Carolina	60,564	42,551	36,291	48,448	39,534	33,702	56,951	43,969	35,445	36,716	32,082	25,658
North Dakota	42,103	34,710	30,081	36,651	32,491	27,568	—	—	—	32,106	28,226	24,636
Ohio	58,301	43,644	35,745	53,759	41,538	33,461	63,022	44,399	38,188	41,995	33,428	27,991
Oklahoma	47,743	37,733	31,761	40,961	36,546	32,470	52,664	39,158	32,085	46,004	35,437	28,336
Oregon	46,209	36,276	30,314	40,444	33,116	28,358	—	—	—	43,213	32,556	27,578
Pennsylvania	59,986	44,071	36,735	52,388	41,738	33,639	67,308	47,162	39,669	48,338	36,465	30,534
Rhode Island	55,304	42,984	37,213	46,657	39,540	33,642	—	—	—	59,759	41,922	34,145
South Carolina	54,456	39,545	34,604	43,187	36,195	29,553	—	—	—	37,806	30,786	25,547
South Dakota	39,054	31,838	27,799	38,400	33,238	27,367	—	—	—	33,465	27,225	24,804
Tennessee	52,077	39,196	33,504	46,209	37,862	31,875	67,683	44,766	38,785	35,003	27,916	24,271
Texas	58,930	40,899	34,500	45,660	37,460	31,771	60,821	42,554	36,161	39,689	32,304	27,205
Utah	48,707	35,578	31,695	36,707	30,191	26,710	49,100	37,774	36,391	32,313	28,820	24,768
Vermont	56,015	40,506	34,252	37,255	31,928	26,518	—	—	—	47,698	34,848	29,769
Virginia	65,172	45,983	38,021	55,226	43,856	36,179	—	—	—	43,604	33,828	28,021
Washington	54,286	38,603	35,059	41,475	35,119	29,676	—	—	—	42,481	34,336	30,028
West Virginia	44,575	35,239	29,430	35,546	29,825	23,851	—	—	—	31,905	26,622	24,023
Wisconsin	57,140	41,910	36,526	45,583	36,975	32,453	57,987	43,526	36,684	43,172	33,600	27,739
Wyoming	47,944	36,943	33,733	—	—	—	—	—	—	—	—	—
U.S. Service Schools	—	—	—	53,022	41,484	32,856	—	—	—	—	—	—
Outlying areas	32,779	26,724	22,355	46,628	31,700	25,583	—	—	—	30,034	20,583	20,906
American Samoa	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	—	—	54,041	43,972	34,252	—	—	—	—	—	—
Northern Marianas	—	—	—	—	—	—	—	—	—	—	—	—
Puerto Rico	32,779	26,724	22,355	33,755	24,900	20,977	—	—	—	30,034	20,583	20,906
Trust Territory of the Pacific	—	—	—	—	—	—	—	—	—	—	—	—
Virgin Islands	—	—	—	52,027	43,659	36,159	—	—	—	—	—	—

—Data not reported or not applicable.

NOTE.—Data include imputations for nonrespondent institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Salaries, Tenure and Fringe Benefits of Full-Time Instructional Faculty, 1989-90" survey (This table was prepared February 1991.)

* VIP - NJ Fringe Sal. Higher than the nat'l avg.

Table 226.—Institutions of higher education and branches, by type, control of institution, and State: 1989-90

State or other area	Total	All institutions		4-year institutions							2-year institutions		
		Public	Private	All 4-year institutions			Universities		Other 4-year institutions		Total	Public	Private
				Total	Public	Private	Public	Private	Public	Private			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
United States	3,535	1,563	1,972	2,127	595	1,532	83	62	502	1,470	1,408	968	440
Alabama	87	55	32	36	18	18	2	0	16	18	51	37	14
Alaska	8	3	5	7	3	4	1	0	2	4	1	0	1
Arizona	37	20	17	17	3	14	2	0	1	14	20	17	3
Arkansas	37	20	17	20	10	10	1	0	9	10	17	10	7
California	310	138	172	171	31	140	2	4	29	136	139	107	32
Colorado	54	28	26	30	13	17	2	1	11	16	24	15	9
Connecticut	48	24	24	28	7	21	1	1	6	20	20	17	3
Delaware	10	5	5	7	2	5	1	0	1	5	3	3	0
District of Columbia	17	2	15	17	2	15	0	5	2	10	0	0	0
Florida	95	38	57	53	10	43	2	1	8	42	42	28	14
Georgia	95	47	48	51	19	32	1	1	18	31	44	28	16
Hawaii	14	9	5	8	3	5	1	0	2	5	6	6	0
Idaho	11	6	5	7	4	3	1	0	3	3	4	2	2
Illinois	166	59	107	103	12	91	3	4	9	87	63	47	16
Indiana	78	28	50	55	14	41	4	1	10	40	23	14	9
Iowa	58	18	40	37	3	34	2	1	1	33	21	15	6
Kansas	54	29	25	30	8	22	3	0	5	22	24	21	3
Kentucky	59	22	37	32	8	24	2	0	6	24	27	14	13
Louisiana	34	20	14	24	14	10	1	2	13	8	10	6	4
Maine	31	13	18	21	8	13	1	0	7	13	10	5	5
Maryland	57	33	24	35	14	21	1	1	13	20	22	19	3
Massachusetts	117	30	87	85	14	71	1	7	13	64	32	16	16
Michigan	97	44	53	63	15	48	3	1	12	47	34	29	5
Minnesota	81	36	45	44	10	34	1	0	9	34	37	26	11
Mississippi	47	29	18	21	9	12	2	0	7	12	26	20	6
Missouri	89	27	62	65	13	52	1	2	12	50	24	14	10
Montana	19	13	6	9	6	3	2	0	4	3	10	7	3
Nebraska	36	20	16	21	7	14	1	1	6	13	15	13	2
Nevada	8	6	2	3	2	1	1	0	1	1	5	4	1
New Hampshire	29	12	17	17	5	12	1	0	4	12	12	7	5
New Jersey	62	33	29	39	14	25	1	2	13	23	23	19	4
New Mexico	26	22	4	10	6	4	2	0	4	4	16	16	0
New York	326	90	236	228	42	186	2	12	40	174	98	48	50
North Carolina	126	74	52	53	16	37	2	2	14	35	73	58	15
North Dakota	20	15	5	10	6	4	2	0	4	4	10	9	1
Ohio	152	61	91	90	25	65	8	1	17	64	62	36	26
Oklahoma	47	28	19	27	14	13	2	1	12	12	20	14	6
Oregon	46	21	25	32	8	24	2	0	6	24	14	13	1
Pennsylvania	217	61	156	146	43	103	2	4	41	99	71	18	53
Rhode Island	11	3	8	10	2	8	1	0	1	8	1	1	0
South Carolina	64	33	31	32	12	20	2	0	10	20	32	21	11
South Dakota	19	7	12	17	7	10	2	0	5	10	2	0	2
Tennessee	86	24	62	52	10	42	1	1	9	41	34	14	20
Texas	174	107	67	96	40	56	6	4	34	52	78	67	11
Utah	14	9	5	6	4	2	2	1	2	1	8	5	3
Vermont	22	6	16	17	4	13	1	0	3	13	5	2	3
Virginia	78	39	39	48	15	33	3	0	12	33	30	24	6
Washington	55	33	22	26	6	20	2	0	4	20	29	27	2
West Virginia	28	16	12	21	12	9	1	0	11	9	7	4	3
Wisconsin	61	30	31	41	13	28	1	1	12	27	20	17	3
Wyoming	9	8	1	1	1	0	1	0	0	0	8	7	1
U.S. Service Schools	9	9	0	8	8	0	0	0	8	0	1	1	0
Outlying areas ¹	63	23	40	44	14	30	1	0	13	30	19	9	10
American Samoa	1	1	0	0	0	0	0	0	0	0	1	1	0
Guam	2	2	0	1	1	0	0	0	1	0	1	1	0
Northern Marianas	1	1	0	0	0	0	0	0	0	0	1	1	0
Palau	2	2	0	0	0	0	0	0	0	0	2	2	0
Puerto Rico	55	15	40	41	11	30	1	0	10	30	14	4	10
Virgin Islands	2	2	0	2	2	0	0	0	2	0	0	0	0

¹ Excludes Federated States of Micronesia.

NOTE.—Because of revised survey procedures, data are not entirely comparable with figures for earlier years. The number of branch campuses reporting separately has increased.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Institutional Characteristics, 1989-90" survey. (This table was prepared June 1990.)

Table 229.—Earned degrees conferred by institutions of higher education, by level of degree and by State: 1987-88 and 1988-89

State or other area	1987-88					1988-89 ¹				
	Associate degrees	Bachelor's degrees	First-professional degrees	Master's degrees	Doctor's degrees (Ph.D., Ed.D., etc.)	Associate degrees	Bachelor's degrees	First-professional degrees	Master's degrees	Doctor's degrees (Ph.D., Ed.D., etc.)
1	2	3	4	5	6	7	8	9	10	11
United States	435,085	994,829	70,735	299,317	34,870	435,210	1,017,867	70,758	309,762	35,759
Alabama	5,974	16,270	817	4,559	289	5,877	16,508	787	4,233	341
Alaska	661	927	—	318	15	606	1,011	—	286	14
Arizona	5,466	12,348	404	4,970	495	6,167	13,767	420	4,884	559
Arkansas	2,412	7,017	369	1,746	101	2,432	7,300	343	1,801	96
California	47,503	88,553	7,889	31,506	4,116	48,018	91,508	7,651	33,060	4,209
Colorado	5,825	15,144	872	4,397	667	5,943	15,561	873	4,574	665
Connecticut	4,781	13,680	918	5,892	496	4,703	13,525	920	6,022	553
Delaware	1,131	3,527	284	649	107	1,138	3,414	317	691	114
District of Columbia	391	6,933	2,437	5,126	542	407	7,482	2,467	5,123	503
Florida	30,666	32,406	1,984	9,849	1,200	32,244	34,244	2,051	10,563	1,201
Georgia	6,653	19,481	1,875	5,883	737	7,126	19,883	1,846	6,099	800
Hawaii	2,309	3,724	126	969	116	2,120	3,628	119	1,017	172
Idaho	2,600	3,043	71	703	63	2,589	3,017	67	706	60
Illinois	24,720	47,958	4,353	17,783	2,152	23,141	48,865	4,404	18,666	2,176
Indiana	8,949	26,408	1,422	7,079	941	8,902	26,874	1,442	7,514	962
Iowa	7,013	16,747	1,518	3,001	658	8,145	16,859	1,489	3,218	574
Kansas	4,759	11,891	628	2,983	376	5,171	12,189	590	3,132	379
Kentucky	4,915	12,074	1,161	3,333	313	4,938	12,337	1,167	3,491	332
Louisiana	2,532	16,367	1,400	3,941	346	2,542	16,210	1,505	3,859	384
Maine	2,069	5,168	157	548	25	1,884	5,173	139	633	36
Maryland	7,061	17,334	1,081	5,414	717	6,938	17,928	1,124	5,970	711
Massachusetts	13,047	41,801	3,721	15,692	1,937	13,016	42,500	3,605	16,967	1,986
Michigan	19,249	38,939	2,341	11,904	1,238	20,168	40,767	2,212	12,720	1,333
Minnesota	7,591	21,167	1,560	3,839	549	6,947	21,901	1,486	4,114	568
Mississippi	4,448	8,486	473	2,082	241	4,810	8,227	414	2,108	245
Missouri	6,711	23,024	2,264	7,920	531	6,891	23,700	2,300	8,569	621
Montana	714	4,170	78	724	65	683	3,887	59	674	57
Nebraska	2,546	8,288	706	1,722	248	2,734	8,406	727	1,776	248
Nevada	857	1,943	46	434	28	885	2,023	46	502	35
New Hampshire	2,377	6,803	172	1,635	69	2,334	6,797	154	1,754	87
New Jersey	9,379	22,327	1,723	6,397	824	9,337	22,898	1,613	7,024	747
New Mexico	1,760	4,778	164	1,798	222	1,698	4,959	181	1,868	217
New York	46,888	87,981	6,628	34,360	3,497	45,465	87,719	7,046	34,442	3,579
North Carolina	10,333	25,688	1,594	5,938	796	9,894	26,981	1,632	5,872	724
North Dakota	1,886	4,110	114	584	66	1,797	4,287	115	579	61
Ohio	17,656	43,909	3,199	12,287	1,434	18,827	45,141	3,225	12,791	1,652
Oklahoma	5,341	13,173	1,031	4,118	349	6,172	13,617	950	4,112	358
Oregon	4,823	11,251	845	2,869	409	4,456	11,823	906	3,120	414
Pennsylvania	18,283	58,348	3,637	13,791	1,882	16,823	58,890	3,575	14,587	2,027
Rhode Island	3,659	7,934	84	1,625	237	3,663	8,493	80	1,774	222
South Carolina	4,776	12,136	683	3,535	302	4,949	12,524	738	3,269	266
South Dakota	831	3,627	121	756	51	783	3,698	130	793	48
Tennessee	5,906	17,175	1,348	4,423	541	5,605	17,398	1,343	4,840	582
Texas	21,993	55,575	3,999	17,559	2,067	22,595	56,987	4,146	17,163	2,113
Utah	3,552	10,820	378	2,574	418	3,572	10,682	376	2,345	367
Vermont	1,149	4,273	98	830	45	1,136	4,193	85	991	49
Virginia	8,192	25,149	1,699	6,056	746	7,438	26,028	1,695	6,545	764
Washington	11,664	17,552	898	4,262	576	12,284	18,118	809	4,275	583
West Virginia	2,419	7,260	308	1,824	131	2,640	7,033	315	1,691	112
Wisconsin	8,570	25,057	988	5,479	812	8,658	25,604	1,017	5,398	771
Wyoming	1,386	1,631	69	343	73	1,507	1,647	57	335	73
U.S. Service Schools	8,709	3,454	—	1,308	14	6,412	3,456	—	1,222	9
Outlying areas	5,556	12,671	729	1,358	58	4,846	12,504	560	1,288	32
American Samoa	—	—	—	—	—	89	—	—	—	—
Federated States of Micronesia	—	—	—	—	—	10	—	—	—	—
Guam	64	227	—	35	—	65	186	—	40	—
Northern Marianas	23	—	—	—	—	23	—	—	—	—
Palau	—	—	—	—	—	16	—	—	—	—
Puerto Rico	5,324	12,298	729	1,291	58	4,587	12,200	560	1,215	32
Trust Territory of the Pacific	71	—	—	—	—	—	—	—	—	—
Virgin Islands	74	146	—	32	—	56	118	—	33	—

¹ Revised from previously published data.² Preliminary data.

—Data not available or not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics. Integrated Postsecondary Education Data System (IPEDS), "Completions" survey (This table was prepared February 1991.)

Table 248.—Master's degrees conferred by institutions of higher education, by racial/ethnic group, major field of study, and sex of student: 1988–89

Major field of study and sex of student	Total	White non-Hispanic	Black non-Hispanic	Hispanic	Asian/Pacific Islander	American Indian/Alaskan Native	Nonresident alien
1	2	3	4	5	6	7	8
All fields, total ¹	308,872	241,807	14,076	7,270	10,714	1,133	2,922
Men	148,486	109,184	5,200	3,360	6,247	500	1,227
Women	160,386	132,623	8,876	3,910	4,467	633	1,695
Agriculture and natural resources, total	3,245	2,222	53	56	53	6	1
Men	2,231	1,464	41	39	31	6	1
Women	1,014	758	12	17	22	0	0
Architecture and environmental design, total	3,378	2,350	98	90	118	9	3
Men	2,191	1,461	54	68	73	3	3
Women	1,187	889	44	22	45	6	0
Area and ethnic studies, total	978	667	30	57	48	7	7
Men	497	358	16	21	24	5	5
Women	481	309	14	36	24	2	2
Business and management, total	73,154	57,445	3,077	1,581	2,962	187	7
Men	48,557	38,013	1,746	982	1,886	125	7
Women	24,597	19,432	1,331	599	1,076	72	0
Communications, total	4,233	3,328	215	70	99	14	2
Men	1,710	1,329	82	24	47	3	2
Women	2,523	1,999	133	46	52	11	0
Computer and information sciences, total	9,392	5,290	218	152	987	43	2
Men	6,769	3,809	132	107	628	40	2
Women	2,623	1,481	86	45	359	3	0
Education, total	82,238	70,827	5,272	2,157	1,064	386	2
Men	20,286	17,046	1,105	591	278	121	1
Women	61,952	53,781	4,167	1,566	786	265	1
Engineering, total	23,713	13,575	375	472	2,108	35	7
Men	20,633	11,538	278	396	1,803	31	6
Women	3,080	2,037	97	76	305	4	1
Engineering technologies, total	828	631	49	10	38	2	0
Men	722	548	37	8	36	1	0
Women	106	83	12	2	2	1	0
Foreign languages, total	1,911	1,271	21	158	46	3	4
Men	602	399	8	51	10	1	1
Women	1,309	872	13	107	36	2	3
Health sciences, total	19,255	16,235	854	398	563	85	1
Men	4,210	3,203	179	102	168	21	5
Women	15,045	13,032	675	296	395	64	6
Home economics, total	2,174	1,820	67	45	54	10	1
Men	311	240	12	12	5	1	1
Women	1,863	1,580	55	33	49	9	0
Law, total	2,098	1,050	73	41	62	4	0
Men	1,491	751	43	29	41	1	0
Women	607	299	30	12	21	3	0
Letters, total	6,608	5,469	125	125	187	24	6
Men	2,272	1,863	30	40	51	8	2
Women	4,336	3,606	95	85	136	16	4
Liberal/general studies, total	1,408	1,248	31	39	24	6	0
Men	495	423	13	9	12	2	0
Women	913	825	18	30	12	4	0
Library and archival science, total	3,940	3,444	129	61	113	19	1
Men	816	708	25	11	29	4	0
Women	3,124	2,736	104	50	84	15	1
Life sciences, total	4,933	3,791	128	113	230	17	6
Men	2,484	1,882	61	59	108	8	3
Women	2,449	1,909	67	54	122	9	3
Mathematics, total	3,424	2,123	61	29	186	6	1
Men	2,058	1,220	33	20	122	5	0
Women	1,366	903	28	9	64	1	1
Military sciences, total	0	0	0	0	0	0	0
Men	0	0	0	0	0	0	0
Women	0	0	0	0	0	0	0
Multi/interdisciplinary studies, total	3,225	2,741	125	76	99	7	1
Men	1,966	1,656	69	45	72	5	1
Women	1,259	1,085	56	31	27	2	0
Parks and recreation, total	460	376	24	5	15	1	0
Men	213	158	14	4	11	0	0
Women	247	218	10	1	4	1	0

Table 248.—Master's degrees conferred by institutions of higher education, by racial/ethnic group, major field of study, and sex of student: 1988-89—Continued

Major field of study and sex of student	Total	White non-Hispanic	Black non-Hispanic	Hispanic	Asian/Pacific Islander	American Indian/Alaskan Native	Nonresident alien
1	2	3	4	5	6	7	8
Philosophy and religion, total	1,274	1,054	51	32	36	2	99
Men	755	598	43	21	22	0	71
Women	519	456	8	11	14	2	28
Physical sciences, total	5,737	3,962	82	77	292	18	1,306
Men	4,204	2,888	59	53	187	12	1,005
Women	1,533	1,074	23	24	105	6	301
Protective services, total	1,046	826	138	15	12	1	54
Men	722	573	80	11	7	1	50
Women	324	253	58	4	5	0	4
Psychology, total	8,579	7,420	414	301	137	35	272
Men	2,799	2,402	126	108	46	13	104
Women	5,780	5,018	288	193	91	22	168
Public affairs, total	17,928	14,337	1,626	594	417	100	854
Men	6,398	4,871	508	235	168	33	583
Women	11,530	9,466	1,118	359	249	67	271
Social sciences, total	10,854	7,678	397	247	329	53	2,150
Men	6,493	4,457	200	148	192	31	1,465
Women	4,361	3,221	197	99	137	22	685
Theology, total	4,625	3,767	146	99	148	9	456
Men	3,003	2,376	103	74	107	4	339
Women	1,622	1,391	43	25	41	5	117
Visual and performing arts, total	8,234	6,660	197	170	287	34	886
Men	3,598	2,950	103	92	83	15	355
Women	4,636	3,710	94	78	204	19	531

¹ Reported racial/ethnic distributions of students by level of degree, field of degree, and sex were used to estimate race/ethnicity for students whose race/ethnicity was not reported. Excludes 496 men and 394 women whose racial/ethnic group and field of study were not available.

NOTE.—To facilitate trend comparisons, certain aggregations have been made of the degree fields as reported in the IPEDS "Completions" survey: "Agriculture and natural resources" includes Agribusiness and agriculture production, Agricultural sciences, and Renewable natural resources; "Business and management" includes Business and management, Business and office, Marketing and distribution, and Consumer and personal

services; "Engineering and related technologies" includes Engineering and related technologies, Mechanics and repairers, and Construction trades; "Physical sciences" includes Physical sciences and Science technologies; "Public affairs" includes Public affairs and Transportation and material moving; and "Visual and performing arts" includes Visual and performing arts and Precision production.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), "Completions" survey. (This table was prepared November 1990.)

Table 254.—Earned degrees in business and management¹ conferred by institutions of higher education, by level of degree and sex of student: 1955–56 to 1988–89

Year	Bachelor's degrees			Master's degrees			Doctor's degrees		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
1	2	3	4	5	6	7	8	9	10
1955–56	42,813	38,706	4,107	3,280	3,118	162	129	127	2
1957–58	51,991	48,063	3,928	4,223	4,072	151	110	105	5
1959–60	52,110	48,265	3,845	4,814	4,645	169	138	136	2
1961–62	52,139	48,236	3,903	5,401	5,221	180	232	227	5
1963–64	59,198	54,692	4,506	6,513	6,310	203	281	274	7
1965–66	63,639	58,376	5,263	13,142	12,806	336	402	385	17
1967–68	80,138	73,147	6,991	18,048	17,431	617	456	442	14
1969–70	105,580	96,346	9,234	21,561	20,792	769	620	610	10
1970–71	114,865	104,404	10,461	26,481	25,443	1,038	807	784	23
1971–72	121,360	109,776	11,584	30,367	29,166	1,201	896	876	20
1972–73	126,263	112,897	13,366	31,007	29,481	1,526	923	871	52
1973–74	131,766	114,850	16,916	32,644	30,491	2,153	961	931	50
1974–75	133,010	111,411	21,599	36,247	33,185	3,062	1,009	968	41
1975–76	142,379	114,267	28,112	42,512	37,559	4,953	953	901	52
1976–77	150,964	115,526	35,438	46,420	39,766	6,654	863	809	54
1977–78	160,187	116,579	43,608	48,326	40,150	8,176	866	794	72
1978–79	171,764	119,227	52,537	50,372	40,701	9,671	860	760	100
1979–80	185,361	122,897	62,464	55,006	42,722	12,284	792	677	115
1980–81	199,338	125,795	73,543	57,898	43,394	14,504	842	717	125
1981–82	214,001	129,668	84,333	61,299	44,243	17,056	855	704	151
1982–83	226,893	131,718	95,175	65,319	46,457	18,862	809	673	136
1983–84	230,031	129,909	100,122	66,653	46,565	20,088	977	775	202
1984–85	233,351	128,032	105,319	67,527	46,624	20,903	866	718	148
1985–86	238,160	129,271	108,889	67,137	46,288	20,849	969	759	210
1986–87	241,156	128,958	112,198	67,496	45,211	22,285	1,098	839	259
1987–88 ²	243,725	129,948	113,777	69,655	46,305	23,350	1,109	853	256
1988–89 ³	246,659	131,419	115,240	73,154	48,557	24,597	1,150	844	306

¹ Includes degrees in business and management, business and office, marketing and distribution, and consumer and personal services.

² Revised from previously published data.

³ Preliminary data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" surveys, and Integrated Postsecondary Education Data System (IPEDS), "Completions" survey. (This table was prepared October 1990.)

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Table 255.—Earned degrees in communications¹ conferred by institutions of higher education, by level of degree and sex of student: 1970–71 to 1988–89

Year	Bachelor's degrees			Master's degrees			Doctor's degrees		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
1	2	3	4	5	6	7	8	9	10
1970–71	10,802	6,989	3,813	1,856	1,214	642	145	126	19
1971–72	12,340	7,964	4,376	2,200	1,443	757	111	96	15
1972–73	14,317	9,074	5,243	2,406	1,546	860	139	114	25
1973–74	17,096	10,536	6,560	2,640	1,668	972	175	146	29
1974–75	19,248	11,455	7,793	2,794	1,618	1,176	165	119	46
1975–76	21,282	12,458	8,824	3,126	1,818	1,308	204	154	50
1976–77	23,214	12,932	10,282	3,091	1,719	1,372	171	130	41
1977–78	25,400	13,480	11,920	3,296	1,673	1,623	191	138	53
1978–79	26,457	13,266	13,191	2,882	1,483	1,399	192	138	54
1979–80	28,616	13,656	14,960	3,082	1,527	1,555	193	121	72
1980–81	31,282	14,179	17,103	3,105	1,448	1,657	182	107	75
1981–82	34,222	14,917	19,305	3,327	1,578	1,749	200	136	64
1982–83	38,602	16,185	22,417	3,604	1,661	1,943	214	126	88
1983–84	40,165	16,647	23,518	3,656	1,600	2,056	219	131	88
1984–85	42,083	17,238	24,845	3,669	1,576	2,093	234	143	91
1985–86	43,091	17,647	25,444	3,823	1,610	2,213	223	116	107
1986–87	45,408	18,155	27,253	3,937	1,606	2,331	275	158	117
1987–88 ²	46,726	18,592	28,134	3,925	1,568	2,357	234	134	100
1988–89 ³	48,625	19,263	29,362	4,233	1,710	2,523	248	137	111

¹ Includes degrees in communications, general; journalism; radio-television; advertising; communications media; and other communications.

² Revised from previously published data.

³ Preliminary data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" surveys, and Integrated Postsecondary Education Data System (IPEDS), "Completions" survey. (This table was prepared February 1991.)

Table 249.—Doctor's degrees¹ conferred by institutions of higher education, by racial/ethnic group and sex of student: 1976–77 to 1988–89

Year and sex of student	Total	White non-Hispanic	Black non-Hispanic	Hispanic	Asian or Pacific Islander	American Indian/Alaskan Native	Non-resident alien
1	2	3	4	5	6	7	8
Number of degrees conferred							
1976–77							
Total ²	33,126	26,851	1,253	522	658	95	3,747
Men	25,036	20,032	766	383	540	67	3,248
Women	8,090	6,819	487	139	118	28	499
1978–79							
Total ³	32,675	26,138	1,268	439	811	104	3,915
Men	23,488	18,433	734	294	646	69	3,312
Women	9,187	7,705	534	145	165	35	603
1980–81							
Total ⁴	32,839	25,908	1,265	456	877	130	4,203
Men	22,595	17,310	694	277	655	95	3,564
Women	10,244	8,598	571	179	222	35	639
1984–85							
Total ⁵	32,307	23,934	1,154	677	1,106	119	5,317
Men	21,296	15,017	561	431	802	64	4,421
Women	11,011	8,917	593	246	304	55	896
1986–87							
Total ⁶	34,033	24,435	1,060	750	1,097	104	6,587
Men	22,059	14,813	488	439	795	58	5,466
Women	11,974	9,622	572	311	302	46	1,121
1988–89							
Total ⁷	35,692	24,895	1,071	625	1,337	84	7,680
Men	22,651	14,568	497	352	954	49	6,231
Women	13,041	10,327	574	273	383	35	1,449
Percentage distribution of degrees conferred							
1976–77							
Total ²	100.0	81.1	3.8	1.6	2.0	0.3	11.3
Men	100.0	80.0	3.1	1.5	2.2	0.3	13.0
Women	100.0	84.3	6.0	1.7	1.5	0.3	6.2
1978–79							
Total ³	100.0	80.0	3.9	1.3	2.5	0.3	12.0
Men	100.0	78.5	3.1	1.3	2.8	0.3	14.1
Women	100.0	83.9	5.8	1.6	1.8	0.4	6.6
1980–81							
Total ⁴	100.0	78.9	3.9	1.4	2.7	0.4	12.8
Men	100.0	76.6	3.1	1.2	2.9	0.4	15.8
Women	100.0	83.9	5.6	1.7	2.2	0.3	6.2
1984–85							
Total ⁵	100.0	74.1	3.6	2.1	3.4	0.4	16.5
Men	100.0	70.5	2.6	2.0	3.8	0.3	20.8
Women	100.0	81.0	5.4	2.2	2.8	0.5	8.1
1986–87							
Total ⁶	100.0	71.8	3.1	2.2	3.2	0.3	19.4
Men	100.0	67.2	2.2	2.0	3.6	0.3	24.8
Women	100.0	80.4	4.8	2.6	2.5	0.4	9.4
1988–89							
Total ⁷	100.0	69.7	3.0	1.8	3.7	0.2	21.5
Men	100.0	64.3	2.2	1.6	4.2	0.2	27.5
Women	100.0	79.2	4.4	2.1	2.9	0.3	11.1

¹ Includes Ph.D., Ed.D., and comparable degrees at the doctoral level. Excludes first-professional degrees.

² Excludes 106 men whose racial/ethnic group was not available.

³ Excludes 53 men and 2 women whose racial/ethnic group was not available.

⁴ Excludes 116 men and 3 women whose racial/ethnic group was not available.

⁵ Excludes 404 men and 232 women whose racial/ethnic group was not available.

⁶ Reported racial/ethnic distributions of students by level of degree, field of degree, and sex were used to estimate race/ethnicity for students whose race/ethnicity was not reported. Excludes 40 men and 47 women whose racial/ethnic group and field of study were not available.

⁷ Reported racial/ethnic distributions of students by level of degree, field of degree, and sex were used to estimate race/ethnicity for students whose race/ethnicity was not reported. Excludes 54 men and 13 women whose racial/ethnic group and field of study were not available.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" surveys, and Integrated Postsecondary Education Data System (IPEDS), "Completions" survey. (This table was prepared November 1990.)

H Major Use

Table 274.—Statistical profile of persons receiving doctor's degrees,¹ by field of study: 1988–89

Item	All fields	Field of Study								
		Education	Engineering	Humanities	Life sciences	Mathematics	Physical sciences ²	Business and management	Social sciences and psychology	Other professional fields ³
1	2	3	4	5	6	7	8	9	10	11
Doctor's degrees conferred (number)	34,319	6,285	4,536	3,588	6,343	881	5,480	1,871	5,855	1,379
Sex (percent)										
Men	63.5	42.5	91.8	54.5	61.8	81.9	81.2	73.9	54.8	86.1
Women	36.5	57.5	8.2	45.5	38.2	18.1	18.8	26.1	45.2	13.9
Racial/ethnic group (percent) ²										
American Indian	0.4	0.4	0.3	0.2	0.3	0.0	0.5	0.1	0.4	0.1
Asian	5.1	1.9	16.2	2.9	5.2	5.6	7.2	6.7	3.1	2.4
Black	3.8	8.0	1.4	2.8	2.1	1.9	1.3	2.2	4.3	0.4
Mexican-American	0.7	0.9	0.6	0.8	0.5	0.5	0.4	0.3	1.0	0.8
Puerto Rican	0.7	1.0	0.3	0.8	0.8	0.9	0.7	0.1	0.8	0.5
Other Hispanic	1.3	1.2	1.2	2.1	1.0	1.2	1.3	1.0	1.5	1.3
White	86.2	85.7	77.4	88.2	88.2	86.2	86.0	87.5	87.5	86.4
Other and unknown	1.8	0.9	2.5	2.3	2.0	3.7	2.6	2.1	1.8	0.9
Citizenship (percent)										
United States	67.5	82.9	40.9	76.4	71.1	45.6	59.0	61.5	70.4	73.3
Foreign	23.9	9.7	50.4	15.5	22.1	43.9	32.9	30.8	17.3	16.7
Unknown	8.6	7.4	8.8	8.1	6.9	10.5	8.0	7.7	12.2	8.9
Median age at doctorate (years)	33.8	41.1	31.1	35.7	32.2	30.7	30.2	35.1	33.9	38.5
Percent with bachelor's degree in same field as doctorate	54.2	38.5	76.2	55.5	53.4	68.5	66.2	34.2	52.3	23.8
Median time lapse from bachelor's to doctorate (years)										
Total time	10.5	17.3	8.1	12.5	9.1	7.8	7.3	11.7	10.3	14.7
Registered time	6.9	8.2	6.0	8.4	6.5	6.2	6.1	7.0	7.4	8.1
Postdoctoral activities (percent)										
Postdoctoral study plans	22.7	4.1	19.4	5.9	51.4	23.3	41.8	2.7	14.1	3.7
Fellowship	11.3	1.6	5.8	3.5	29.7	10.7	17.8	0.7	8.4	1.5
Research associateship	9.0	1.3	11.7	1.1	16.3	9.4	22.4	1.1	2.7	1.3
Traineeship	1.0	0.3	1.4	0.2	1.4	2.2	0.9	0.6	1.6	0.8
Other	1.5	0.9	0.5	1.1	4.1	1.0	0.8	0.3	1.3	0.4
Planned postdoctoral employment	65.8	85.8	67.8	82.7	39.4	62.8	47.5	86.9	71.1	83.8
Educational institution	39.0	63.3	23.1	67.6	20.5	49.5	20.0	75.7	36.7	52.7
Industry, business	13.5	6.0	34.6	4.3	8.3	7.4	20.9	7.9	11.2	8.9
Government	6.3	8.2	7.0	2.1	6.1	3.4	4.4	1.6	9.5	5.3
Nonprofit organization	4.2	5.0	1.2	4.9	2.6	0.7	0.6	0.6	9.0	14.9
Other and unknown	2.8	3.3	1.9	3.8	1.9	1.9	1.5	1.1	4.8	2.9
Postdoctoral status unknown	11.4	10.2	12.8	11.4	8.2	13.8	10.7	10.4	14.8	12.5
Definite postdoctoral study	16.9	2.2	11.7	3.4	41.3	16.4	32.3	1.8	9.7	2.3
Seeking postdoctoral study	5.8	1.8	7.7	2.4	10.1	7.0	9.5	0.9	4.3	1.4
Definite employment	48.5	85.5	46.8	56.9	29.3	45.2	36.0	72.7	51.6	64.5
Seeking employment	17.3	20.2	21.0	25.8	10.1	17.7	11.5	14.2	19.6	19.3
Primary activity (percent)										
Research and development	29.9	5.8	63.5	7.0	44.0	36.2	59.4	34.1	24.4	11.0
Teaching	36.9	36.3	20.0	72.4	28.5	53.0	26.8	54.0	29.8	50.8
Administration	12.6	36.7	1.7	4.5	6.1	2.1	2.1	3.0	6.2	12.2
Professional services	12.4	11.1	6.0	5.0	11.4	2.6	3.8	1.9	31.4	15.6
Other	3.1	2.8	2.4	5.2	4.0	0.8	2.4	1.8	2.5	4.3
Region of employment after doctorate (percent)										
New England	6.1	6.2	4.8	7.5	4.6	7.5	6.5	6.5	7.1	3.5
Middle Atlantic	14.4	15.1	13.9	13.8	10.5	11.8	17.4	13.0	14.9	13.7
East North Central	12.7	12.7	12.4	14.2	10.2	15.9	12.6	16.7	12.5	13.5
West North Central	6.3	7.9	4.1	5.5	7.1	5.4	5.0	6.3	6.8	7.1
South Atlantic	15.1	16.0	11.5	15.1	15.6	14.9	13.8	15.4	17.0	14.8
East South Central	4.6	5.4	3.2	5.1	4.8	4.1	3.9	7.7	3.1	5.9
West South Central	7.8	8.3	8.0	6.8	7.4	8.7	8.5	9.4	6.6	10.8
Mountain	5.0	5.7	5.2	4.6	4.3	3.9	4.8	4.5	4.6	5.0
Pacific and insular	10.6	8.7	13.4	10.7	10.7	8.5	13.6	9.1	10.2	7.3
Foreign	9.8	5.1	16.7	7.9	18.1	12.9	8.4	8.3	9.0	9.7
Region unknown	7.6	8.9	6.8	8.9	6.8	6.4	5.5	3.1	8.3	8.6

¹ Includes Ph.D., Ed.D., and comparable degrees at the doctoral level. Excludes first-professional degrees, such as M.D., D.D.S., and D.V.M.

² Includes 2,952 individuals who did not report their citizenship at time of doctorate.

³ Includes mathematics, computer science, physics and astronomy, chemistry, and earth, atmospheric, and marine science.

NOTE.—The above classification of degrees by field differs somewhat from that in most publications of the National Center for Education Statistics (NCES). The major differences are that history is included under humanities rather than social sciences and

that psychology is included under social sciences. The number of degrees also differs slightly from that reported in the NCES "Degrees and Other Formal Awards Conferred" survey. The above tabulation excludes some non-research doctorate degrees such as doctor's degrees in theology. Because of rounding, percents may not add to 100.0.

SOURCE: National Academy of Sciences, National Research Council, Office of Scientific and Engineering Personnel, *Summary Report 1989: Doctorate Recipients From United States Universities*. (This table was prepared February 1991.)

* Ph.D. by Gender

APPENDIX B:

NATIONAL DATA ON WOMEN AND EMPLOYMENT

1980

Census of Population

VOLUME 1
CHARACTERISTICS OF THE POPULATION

CHAPTER D

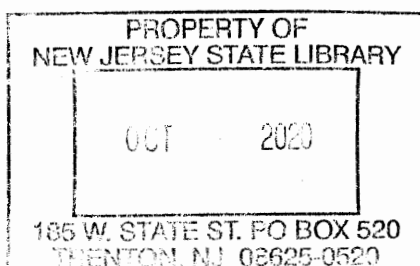
Detailed Population Characteristics

PART 32

NEW JERSEY

PC80-1-D32

Section 2: Tables 221—238



Issued December 1983



U.S. Department of Commerce
Malcolm Baldrige, Secretary
Robert G. Dederick,
Under Secretary for
Economic Affairs

BUREAU OF THE CENSUS
C. L. Kinsman, Acting Director

44-38861

	MICHIGAN WITH LABORERS						YEAR		PER 1000
	1970	1971	1972	1973	1974	1975	1976		
TOTAL	312,000	315,000	320,000	325,000	330,000	335,000	340,000		
MALES 15 YEARS AND OVER.	312,723	374,764	384,280	343,135	74,761	818,410	817,659	8393	
WORKED IN 1979	312,723	374,764	384,280	343,135	74,761	818,410	817,659	8393	
50 TO 52 WEEKS	148,737	317,621	348,647	331,954	68,384	818,256	821,394	8413	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	143,898	310,310	343,594	324,819	66,390	818,737	821,999	8424	
40 TO 49 WEEKS	24,723	42,180	28,627	23,136	5,101	813,019	818,344	8244	
27 TO 39 WEEKS	9,716	10,013	4,706	3,439	309	84,778	88,498	8249	
14 TO 26 WEEKS	3,981	3,383	1,566	1,649	479	83,444	84,943	8234	
13 WEEKS OR LESS	957	1,044	575	550	164	81,143	82,144	8237	
DID NOT WORK IN 1979	609	421	279	487	142	86,577	87,614	...	
WITH UNEMPLOYMENT IN 1979	24,713	39,462	14,174	12,654	1,332	86,349	88,370	8277	
UNEMPLOYED 1 TO 4 WEEKS	7,503	9,747	4,037	5,646	433	88,643	810,444	8277	
UNEMPLOYED 5 TO 14 WEEKS	11,409	14,177	7,987	5,589	977	88,379	818,124	8280	
UNEMPLOYED 15 TO 26 WEEKS	4,922	4,760	1,781	1,488	188	85,624	87,170	8284	
UNEMPLOYED 27 OR MORE WEEKS	749	718	371	339	138	82,738	83,980	8289	
FEMALES 15 YEARS AND OVER.	160,870	137,823	45,881	23,647	2,376	87,621	87,678	8193	
WORKED IN 1979	160,870	137,823	45,881	23,647	2,376	87,621	87,678	8193	
50 TO 52 WEEKS	128,016	303,632	32,533	19,724	1,898	88,643	810,494	8203	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	121,184	108,972	30,574	18,387	1,691	818,845	811,672	8225	
40 TO 49 WEEKS	24,841	24,234	9,749	2,747	385	87,035	88,434	8194	
27 TO 39 WEEKS	5,272	5,132	1,756	633	72	84,241	85,340	8163	
14 TO 26 WEEKS	3,404	3,287	1,449	449	98	82,473	83,127	8153	
13 WEEKS OR LESS	340	506	173	179	48	81,000	81,239	8155	
DID NOT WORK IN 1979	384	312	188	221	104	85,895	85,480	...	
WITH UNEMPLOYMENT IN 1979	8,333	5,406	1,784	925	199	83,344	84,683	8158	
UNEMPLOYED 1 TO 4 WEEKS	3,645	1,750	481	854	62	83,947	84,755	8158	
UNEMPLOYED 5 TO 14 WEEKS	3,911	3,880	994	444	49	84,423	83,274	8162	
UNEMPLOYED 15 TO 26 WEEKS	986	628	248	121	38	83,399	84,180	8158	
UNEMPLOYED 27 OR MORE WEEKS	181	138	115	100	18	81,852	82,340	8163	
WHITE									
MALES 15 YEARS AND OVER.	179,801	330,158	261,628	341,615	71,993	815,978	818,382	8404	
WORKED IN 1979	179,801	330,158	261,628	341,615	71,993	815,978	818,382	8404	
50 TO 52 WEEKS	143,479	329,196	260,764	312,944	64,108	816,036	818,134	8427	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	139,484	375,894	324,677	307,323	64,284	819,489	822,743	8439	
40 TO 49 WEEKS	22,998	34,818	23,388	23,144	4,697	813,383	813,633	8394	
27 TO 39 WEEKS	8,344	8,734	4,254	3,134	358	84,830	84,771	8271	
14 TO 26 WEEKS	3,369	2,829	1,391	1,498	341	83,444	84,954	8239	
13 WEEKS OR LESS	861	907	344	311	188	81,180	82,181	8268	
DID NOT WORK IN 1979	530	532	264	380	131	84,738	87,453	...	
WITH UNEMPLOYMENT IN 1979	20,772	25,993	14,743	11,642	1,302	86,706	88,923	8225	
UNEMPLOYED 1 TO 4 WEEKS	6,894	8,227	3,348	4,780	410	88,993	819,915	8282	
UNEMPLOYED 5 TO 14 WEEKS	9,429	12,491	7,403	5,311	501	88,740	818,348	8278	
UNEMPLOYED 15 TO 26 WEEKS	4,379	4,239	1,612	1,344	146	85,848	86,461	8278	
UNEMPLOYED 27 OR MORE WEEKS	479	641	370	347	125	82,840	84,101	8277	
FEMALES 15 YEARS AND OVER.	135,710	114,683	38,249	20,990	2,104	84,928	87,843	8194	
WORKED IN 1979	135,710	114,683	38,249	20,990	2,104	84,928	87,843	8194	
50 TO 52 WEEKS	106,937	268,634	27,683	17,212	1,572	89,893	810,887	8203	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	102,947	24,817	26,831	18,172	1,405	810,864	811,806	8225	
40 TO 49 WEEKS	20,218	20,180	8,282	2,277	288	84,842	88,321	8192	
27 TO 39 WEEKS	4,343	4,345	1,690	471	61	84,128	85,234	8193	
14 TO 26 WEEKS	1,657	1,000	578	381	80	82,434	83,088	8148	
13 WEEKS OR LESS	244	380	147	184	37	81,800	81,194	8194	
DID NOT WORK IN 1979	289	193	167	183	100	84,233	85,268	...	
WITH UNEMPLOYMENT IN 1979	7,881	4,462	1,429	730	119	83,608	84,489	8158	
UNEMPLOYED 1 TO 4 WEEKS	2,889	1,337	398	218	34	83,908	84,892	8193	
UNEMPLOYED 5 TO 14 WEEKS	8,253	2,591	809	370	42	84,448	85,384	8159	
UNEMPLOYED 15 TO 26 WEEKS	813	498	228	76	38	83,388	84,888	8157	
UNEMPLOYED 27 OR MORE WEEKS	166	106	84	83	3	81,867	82,344	8162	
BLACK									
MALES 15 YEARS AND OVER.	25,194	25,211	17,177	12,948	1,054	811,154	811,970	8281	
WORKED IN 1979	25,113	25,128	17,173	12,918	1,051	811,198	812,007	8280	
50 TO 52 WEEKS	19,384	28,527	14,274	11,894	746	813,783	814,778	8286	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	18,751	27,493	13,877	10,736	693	814,109	815,119	8292	
40 TO 49 WEEKS	4,167	5,089	2,384	1,433	179	812,086	812,740	8284	
27 TO 39 WEEKS	1,013	1,057	331	234	28	86,233	87,842	8239	
14 TO 26 WEEKS	480	416	144	116	71	83,481	84,918	8239	
13 WEEKS OR LESS	71	119	20	19	28	81,800	81,883	8237	
DID NOT WORK IN 1979	79	83	4	27	5	84,818	86,048	...	
WITH UNEMPLOYMENT IN 1979	2,948	3,088	1,152	341	97	84,897	86,894	8240	
UNEMPLOYED 1 TO 4 WEEKS	1,034	1,387	312	215	7	87,216	88,382	8279	
UNEMPLOYED 5 TO 14 WEEKS	1,483	1,368	477	207	61	86,348	87,036	8246	
UNEMPLOYED 15 TO 26 WEEKS	421	478	112	123	22	84,703	85,942	8233	
UNEMPLOYED 27 OR MORE WEEKS	98	63	31	14	7	82,163	83,874	8237	
FEMALES 15 YEARS AND OVER.	21,081	18,919	5,478	3,132	208	87,618	88,853	8197	
WORKED IN 1979	20,930	18,808	5,468	3,083	196	87,648	88,840	8196	
50 TO 52 WEEKS	16,193	13,534	3,894	1,622	186	89,732	818,224	8198	
USUALLY WORKED 35 OR MORE HOURS PER WEEK.	15,376	12,843	3,881	1,934	94	810,216	810,810	8208	
40 TO 49 WEEKS	3,334	3,404	1,234	384	94	87,977	89,624	8204	
27 TO 39 WEEKS	887	744	303	204	11	84,938	86,917	8183	
14 TO 26 WEEKS	394	239	84	71	13	82,411	83,419	8148	
13 WEEKS OR LESS	194	117	26	7	8	81,800	81,478	8148	
DID NOT WORK IN 1979	71	11	13	30	4	85,809	85,364	...	
WITH UNEMPLOYMENT IN 1979	1,994	916	321	130	33	83,438	84,617	8160	
UNEMPLOYED 1 TO 4 WEEKS	358	321	94	31	26	84,273	84,322	8122	

TABLE 5-1 Labor Force Participation Rates, by Race and by Sex, 1986

	Percent in Labor Force			
	All	Whites	Blacks	Hispanics
Men	76.3%	76.9%	71.2%	81.0%
Women	55.3	55.0	56.9	50.1

Source: U.S. Bureau of Labor Statistics, *Employment and Earnings*. Washington, D.C.: U.S. Government Printing Office, January 1987.

TABLE 5-2 Median Income for Families and Individuals, 1985

	All	White	Black	Hispanic
All families	\$27,735	\$29,152	\$16,786	\$19,027
Married couples	31,100	31,602	24,570	22,269
— with wife in paid labor force	36,431	36,992	30,507	22,132
— wife not in paid labor force	24,556	25,307	15,129	17,116
Female householders (no husband present)	13,660	15,825	9,305	8,782
Male householders (no wife present)	22,622	24,190	16,416	19,773
Persons*				
— Males	16,311	17,111	10,768	11,434
— Females	7,217	7,357	6,277	8,089

Please send _____ copies of *Sexual Harassment: Research and Resources* at \$16 each.

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address _____

city _____ state _____ zip _____ phone number _____

For further information, contact Paulette Tulloch at 212/570-5001.

...from *Sexual Harassment: Research and Resources*

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Most harassers are older than their victims (although some are younger), married (although some are single), and of the same race as their victims. Some harass many women, others harass only once (Fitzgerald 1991).

There are no 'typical' harassers.

HELP US HELP THEM "GET IT"...

Get the most current research and resource information about sexual harassment in the workplace, in the board room, in the classroom, in the courtroom.

Order the latest report from the National Council for Research on Women
SEXUAL HARASSMENT: RESEARCH AND RESOURCES,
A Report-in-Progress

- ♦ *summaries of current research*
- ♦ *lists of key researchers and expert witnesses*
- ♦ *lists of resource organizations*
- ♦ *lists of guides, media, and conferences*
- ♦ *NOW Legal Defense and Education Fund Guidelines for Effective Policy*

Written by Deborah L. Siegel. Edited by Susan A. Hallgarth and Mary Ellen S. Capek.
Published November 1991. 48 pages. ISBN#1-880547-10-4.

\$16 individual copies. Quantity discounts available.

SEXUAL HARASSMENT: RESEARCH AND RESOURCES, A Report-in-Progress is the first publication of the National Council for Research on Women's Sexual Harassment Information Project. Launched immediately following the Senate Judiciary Hearings on October 14, 1991, the project is designed to make available to the broadest possible audiences the wealth of research and resources available on sexual harassment.

The research summary highlights current legal and scholarly definitions of sexual harassment, the extent of the problem, typical behavior of the harassed, myths about the harassers, anti-harassment policy and procedures, and efforts needed to bring about significant change.

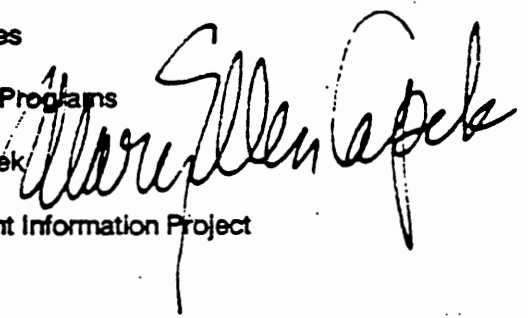
MORE ABOUT THE NATIONAL COUNCIL FOR RESEARCH ON WOMEN...

The National Council for Research on Women is a coalition of seventy centers and organizations that support and conduct feminist research, policy analysis, and educational programs. Formed in 1981 as a working alliance to bridge traditional distinctions among scholarship, policy, and action programs, NCRW works to strengthen ties with other national and international organizations and coalitions. Through its member centers, affiliates, and projects like the Sexual Harassment Information Project, the Council links over 10,000 women and men scholars and practitioners in this country and abroad and serves constituencies that include the academic community, public policy makers, the media, and the nonprofit sector.

(order form on back)

The National Council for Research on Women

TO: Women's Caucuses
Women's Centers
Women's Studies Programs

FROM: Mary Ellen S. Capek 

RE: Sexual Harassment Information Project

DATE: February 11, 1992

I'm pleased to enclose 1) a description and order form for the Council's new publication *Sexual Harassment: Research and Resources, A Report-in-Progress* and 2) a flyer describing a national sexual harassment initiative that we hope many campus-based women's groups and programs can participate in. Please duplicate the flyer for posting and sharing with other groups on your campus and in your caucuss and professional associations.

Sexual Harassment: Research and Resources was designed for use as a supplemental classroom text, for faculty and administrative workshops, for workshops at professional association conferences, or as background information for anyone needing to "get up to speed" on the topic in a hurry. It is the only publication of its kind that synthesizes the social science research, legal literature, effective policies, and practitioners' expertise in addressing the issues in many different contexts.

Until the end of March, we are offering to campus-based groups and programs a 20% special discount for both individual and bulk orders—you can order individual copies for \$12 each (\$9 each for 20-49 copies, \$7.50 each for 50-99 copies, and \$6 each for quantiles over 100). Be sure to write in the discount on your order form. We will also include a free copy of *Guidelines for Organizing Speakouts and Forums on Sexual Harassment* with all orders of the report.

As you can see from the flyer, there is a lot of national activity around the issue of sexual harassment, and we are grateful to the individuals and organizations listed on the reverse side of the flyer for their willingness to provide resource information as needed. The National Association of Commissions for Women and the Women's Network of the National Conference of State Legislatures have agreed to monitor hearings within their constituencies, and we hope to see a nationally-televised hearing on Capitol Hill on the Equal Remedies Act sometime this year. Please help our national awareness project by ordering and distributing as many multiple copies as you can afford. We have raised some start-up funding for the project but must rely on sales of the report to cover remaining costs.

PS: Watch for next month's publication of *A Directory of National Women's Organizations* (at the printer) and *A Women's Media Directory* (in final editing). Publication of the directories was put on hold to launch the Sexual Harassment Information Project, but we're finally getting caught up!

Please send ____ copies of *Sexual Harassment: Research and Resources* at \$16 each.

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SUBTOTAL: _____

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name _____

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state _____

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phone number _____

For further information, contact Paulette Tulloch at 212/570-5001.

...from *Sexual Harassment: Research and Resources*

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Most harassers are older than their victims (although some are younger), married (although some are single), and of the same race as their victims. Some harass many women, others harass only once (Fitzgerald 1991).

There are no 'typical' harassers.

Section F: Prevention is the best tool for the elimination of sexual harassment. An employer should take all steps necessary to prevent sexual harassment from occurring, such as affirmatively raising the subject, expressing strong disapproval, developing appropriate sanctions, informing employees of their right to raise and how to raise the issue of harassment under Title VII, and developing methods to sensitize all concerned.

Section G: Other related practices, where employment opportunities or benefits are granted because of an individual's submission to the employer's sexual advances or requests for sexual favors, the employer may be held liable for unlawful sex discrimination against other persons who were qualified for but denied that employment opportunity or benefit.



TYPES OF SEXUAL HARASSMENT

TYPE	BEHAVIOR	HARASSER
Power Plays	Using One's Position of Authority, Either Implicitly or Explicitly, to Coerce an Employee into Complying with Sexual Favors	Manager Supervisor
Physical	Unwanted Touching, Fondling, Patting, Hugging, Pinching, Kissing	Supervisor, Subordinate, Co-Worker
Verbal	Questions and Comments About a Person's Sexual Behavior, Sexually Oriented Jokes, Comments About a Person's Body, Conversations Filled with Sexual Innuendo and Double Meanings	Supervisor, Subordinate, Co-Worker
Mental/ Non-Verbal	Displaying Sexually Suggestive Pictures or Objects in the Work-Place Leering, Ogling in a Sexually Demeaning Manner Gesturing and Making Lewd Motions with One's Body	Supervisor, Subordinate, Co-Worker

- . An employee has the right to work in an environment free of intimidation, harassment and hostility. This includes such things as sexual harassment and subjecting an individual to racial name calling, etc.
- . Employment agencies and personnel departments cannot discriminate in job referrals, or ask pre-employment questions or circulate information which limits employment because of a person's membership in a protected class. Also, newspapers cannot publish discriminatory employment advertisements.
- . An individual cannot be retaliated against for filing a discrimination complaint or testifying or assisting in any proceedings during an investigation of a discrimination complaint. In addition, an employee cannot be retaliated against for complaining about discriminatory treatment or for not participating in such behavior.
- . An applicant or employee cannot be discriminated against because of a handicap or a perceived disability.

Employers may be liable for sexual harassment by supervisors. They may also be liable for harassment by non-supervisory employees such as co-workers, third parties such as customers or outside contractors, only if the employer knew or should have known about the harassment.

An employer may be considered to have been aware of acts of sexual harassment, ("should have known"), through rumors in the workplace, unexpected poor performance reviews of a consistently satisfactory employee, or any other indirect channel.

Although there are no guaranteed procedures to eliminate sexual harassment, prevention is the most important method. A policy prohibiting sexual harassment should be conspicuously posted, thereby letting employees know that top management disfavors such conduct. All supervisory training programs should include discussions of ways to prevent or correct sexual harassment. Also, an internal grievance procedure assuring confidentiality should be established and published.

Mistakes Frequently Made By Employers

The most frequent mistakes made by employers are the inconsistent application of standards, policies, rules and disciplinary procedures, and the failure of managers to follow through with their decisions.

Another reason why so many discrimination complaints are needlessly filed is an employer's failure to clearly communicate with employees and applicants. All too often, an individual does not understand what has happened to him/her or why it has happened.

RL:kk
1/17/92

EEOC GUIDELINES

The Federal Equal Employment Opportunity Commission has issued guidelines on sexual harassment under Title VII of the 1964 Civil Rights Act. The guidelines, Section 1604.11 (29 CFR Chapter XIV, part 1604) are reprinted here.

Section A: Harassment on the basis of sex is a violation of Sec. 703 of Title VII. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, (2) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individual, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.

Section B: In determining whether alleged conduct constitutes sexual harassment, the Commission will look at the record as a whole and at the totality of circumstances, such as the nature of the sexual advances, and the context in which the alleged incidents occurred. The determination of the legality of a particular action will be made from the facts, on a case by case basis.

Section C: Applying general Title VII principles, an employer, employment agency joint apprenticeship committee or labor organization (hereinafter collectively referred to as "employer") is responsible for its acts and those of its agents and supervisory employees with respect to sexual harassment regardless of whether the employer knew or should have known of their occurrence. The Commission will examine the circumstance of the particular employment relationship and the job functions performed by the individual in determining whether an individual acts in either a supervisory or agency capacity.

Section D: With respect to conduct between fellow employees, an employer is responsible for acts of sexual harassment in the workplace where the employer, its agents or supervisory employees, knows or should have known of the conduct, unless it can show that it took immediate and appropriate corrective action.

Section E: An employer may also be responsible for the acts of non-employees, with respect to sexual harassment of employees in the workplace, if the employer knows or should have known of the conduct and fails to take immediate and appropriate corrective action. In reviewing these cases, the Commission will consider the extent of the employer's control and any other legal responsibility which the employer may have with respect to the conduct of such non-employees.

PRINCETON UNIVERSITY

CLIPPINGS ON SEXUAL HARASSMENT

Need for education 4-23-66 **Faculty harassment**

Of the many valuable demands made by the organizers of the Take Back the Night March last week, one deserves the special and immediate attention of the campus community. Recent campus events highlight the need for more effective and comprehensive programs to educate faculty members on the nature of sexual harassment.

Sexual harassment is a problem that obviously must be prevented, especially in an academic community where it can have particularly negative effects. It is also true, however, that "harassment" is an ambiguous and vague term, leaving ample room for confusion and misunderstanding.

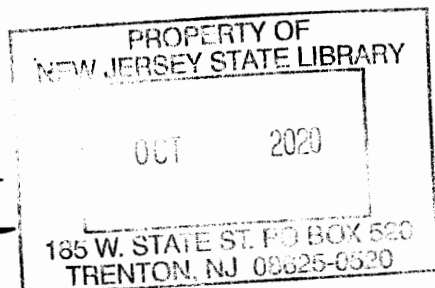
The campus has generally recognized the need to educate students, through SHARE-sponsored meetings with R.A. groups for first-year students or discussions in the eating clubs for upperclass students. These have proved invaluable in allowing students to clarify the types of behavior that are unacceptable and considered to be sexual harassment.

It is equally imperative that the SHARE office initiate similar educational programs for faculty and staff, especially given the particular pressures inherent to the faculty-student relationship. Literature should be sent to and read by every departmental office and, at the beginning of each year, SHARE should send trained representatives to discuss the issue with faculty members.

This training session, mandatory if possible, at faculty meetings, or more preferably, at the smaller departmental meetings, would foster an understanding of sexual harassment, dispel confusion and thus prevent future incidents.

These added obligations will strain the already resource- and personnel-strapped SHARE office. Given the absolute and evident importance of clarifying and educating the entire campus community about issues of sexual harassment and assault, the university should assure that the SHARE program is sufficiently equipped to effectively handle and pursue these questions.

The **Daily PRINCETONIAN**



Sexual Harassment is

"Unwelcomed sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when:

- . Submission to such conduct by an individual is made explicitly or implicitly a term of employment;**
- . Submission to, or rejection of such conduct by an individual is used as the basis for an employment decision;**
- . And such conduct has the purpose or effect to interfere with an individual's work performance, or creates a hostile or intimidating environment."**

EEOC Guidelines



STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION
CN 600
TRENTON, N.J. 08625-0600

OFFICE OF EQUAL EDUCATIONAL OPPORTUNITY
DR. GILDA L. RORNO, DIRECTOR
(609) 984-1435

JOHN ELLIS, COMMISSIONER

INFORMATION TO AFFIRMATIVE ACTION OFFICERS
ON
SEXUAL HARASSMENT

What Is Sexual Harassment?

Sexual harassment is unwelcomed sexual advances, requests for sexual favors and other spoken or physical conduct of a sexual nature. Sexual harassment becomes illegal discrimination when:

- (a) Submission to such conduct is made either explicitly or implicitly, a term or condition of an individual's employment, or
- (b) Submission to or rejection of such conduct by an individual is used as a basis for employment decisions affecting such individual, or
- (c) Such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile or offensive working environment.

Moreover, when employment opportunities and benefits are granted because of a person's submission to the employer's sexual advances, it may be sexual harassment to the other individuals who were denied that employment opportunity or benefit. This is called third party sexual harassment.*

Things You Should Know About Employment Discrimination

An employer should not ask questions concerning an applicant's credit or garnishment record. In most instances, significantly greater numbers of minority persons or women are at the lower economic levels of society. Therefore, consideration of an applicant's credit background may have an adverse and discriminatory effect on minorities and women unless credit worthiness is clearly required by business necessity.

- . A job applicant cannot be denied employment because he/she is a member of one of the classes protected* by law. Employers cannot discriminate when recruiting, interviewing or hiring employees who are qualified.
- . An employee cannot be discriminated against because of his/her membership in one of the protected classes in any terms, conditions or privileges of employment. This means that employers cannot discriminate in upgrading, compensation, setting working conditions, discharging or any other employment practice.

* Protected classes are women, Blacks and national origin groups who have experienced a historical pattern of discrimination in the United States and therefore are protected from continued discrimination by prevailing federal and state laws, policies and practices.

PRINCETON UNIVERSITY

The following procedure is proposed for dealing with complaints of sexual harassment at Princeton University using EEOC guidelines covering students, faculty and staff:

Step I - Complaints against students: see Rights, Roles, Responsibilities (pp 64-66).

Complaints against faculty members, see Procedures for Faculty (p 56).

Complaints against staff, see Handbook of Information for Administrative and Related Staff (pp 40-41).

Undergraduate contact Dean of Students—Committee on Discipline may be involved if Dean's decision is appealed.

Graduate student contact Dean of Graduate School, Assistant Dean.

Faculty, librarians, research, technical staff, contact Dean of Faculty, 2 Assistant Deans (one male and one female)—referred to Committee on Conference and Faculty Appeal.

Staff contact Vice President for Administrative Affairs.

NOTE: In addition to the above mentioned offices, there are several other designated individuals whom members of the University may contact on matters relating to sexual harassment.

Sexual Harassment

Reprinted by the Office of Equal Educational Opportunity (OEEO)
(609) 984-0889

Table 5 PROPORTION OF U.S. FAMILIES MAINTAINED BY WOMEN
(NO HUSBAND PRESENT)

Year	Total	White	Black	Hispanic
1963	10.1	8.5	24.4	NA
1970	11.5	9.5	30.5	NA
1975	13.0	10.5	35.4	19.3
1980	15.1	11.9	41.7	21.9
1985	16.1	12.9	41.5	23.2
1988	16.8	13.4	43.5	23.9

PROPORTION OF U.S. FAMILIES WITH CHILDREN UNDER 18 MAINTAINED BY WOMEN
(NO HUSBAND PRESENT)

Year	Total	White	Black	Hispanic
1975	16.3	12.6	42.6	NA
1980	19.2	14.6	48.6	NA
1985	20.6	16.1	48.9	25.9
1987	21.1	16.2	50.1	26.6

PROPORTION OF ALL FAMILIES LIVING BELOW THE POVERTY LINE, 1987

	Families Maintained by Women	Husband-Wife Families
Total	34.3	6.0
White	26.7	5.2
Black	51.8	12.3
Hispanic	51.8	18.1

PROPORTION OF ALL FAMILIES WITH CHILDREN UNDER 18 LIVING BELOW
THE POVERTY LINE, 1987

	Families Maintained by Women	Husband-Wife Families
Total	46.1	7.8
White	38.7	7.0
Black	59.5	13.6
Hispanic	60.7	NA

Sources: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 163, *Poverty in the United States, 1987*, pp. 11-14. U.S. Department of Labor, Bureau of Labor Statistics, "Employment in Perspective: Women in the Labor Force" Report 767.

The increase in the share of the poverty population represented by families maintained by women is the marked rise in the prevalence of these families. (See the top half of Table 5.) Whereas in 1963, about 10% of all American families were

maintained by women, by 1988, this number had grown to nearly 17% (21% of families with children under 18).

The growth in the number of families maintained by women and the attendant feminization of poverty

"APPENDIX C: SEXUAL HARASSMENT

NEW JERSEY

SOMERSET COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Somerset County College using Title IX guidelines for students and employees:

- Step I - Students report to Dean of Students.
Employees report to immediate supervisor within thirty days.
Decision within ten days.
- Step II - Formal complaint within fifteen days to Title IX Committee.
- Step III - If no resolution, hearing within five days. Report to President within fifteen days. President's response within fifteen days.

DREW UNIVERSITY

The following procedure is proposed for dealing with complaints of sexual harassment as stated in the Drew University Personnel Policy Manual: "the use of one's authority or power to coerce another into unwanted sexual relations or to punish another for his/her refusal, or the creation by a member of the university community of an intimidating, hostile, or offensive working or educational environment through repetitive verbal or physical conduct of a sexual nature."

Step I - Student vs University; lodge complaint with University Senate Aff. Action Committee, University Senate Committee on Student Affairs or Aff. Action Officer.

Student vs student; informal: Dean of Students try mediation.

Student vs faculty; informal: resolution with person.

Student vs staff; seek resolution with person.

Step II - Written complaint to University Judiciary proceedings.

File charge with Dean of Students.

File charge with Vice President of Academic Dean.

Step III - Written charges with Dean or Vice President; hearing within fifteen days; subcommittee of faculty.

Written charges with Vice-President; hearing within fifteen days by subcommittee of Aff. Action Committee.

Step IV - Subcommittee of Prof. Policies & Conduct Committee (2 faculty, 2 students from Judiciary Committee) Dean acts as Chair.

2 Aff. Action Committee and 2 students from Judiciary Committee Vice President acts as Chair.

Step V - Findings within five days to full PCC.

Findings within five days to Aff. Action Review Board.

MERCER COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Mercer County College using EEOC guidelines for faculty, staff and students:

Step I - Students — Informal: Dean of Students appoints one male and one female student member available for confidential mediation.

Faculty/Staff — Informal: Director of Personnel Services designates one male and one female staff member to be available for confidential mediation.

Step II - Student — Formal: file written complaint with Aff. Action Officer; reviewed through procedures appropriate to particular complaint, and becomes part of the permanent record.

Faculty/Staff — Above policy for staff/faculty also.

MORRIS COUNTY COMMUNITY COLLEGE

Morris County Community College is in the process of discussion with
Committee W representative

Brookdale Community College

The following procedure is proposed for dealing with complaints of sexual harassment at Brookdale Community College requires sexual cooperation for academic advancement for students, faculty and staff:

Step I - Students report to Director of Student Life and Activities.

Faculty and Staff report to Aff. Action Officer, consults with Director of Personnel Services.

GLOUCESTER COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Gloucester County College using EEOC guidelines for faculty, staff and students:

Step I - Informal: report within ten days in writing. Aff. Action Officer determines within two working days.

Step II - Formal: student gives written statement to Aff. Action Officer within five working days. Hearing (if necessary) by sub-committee of Aff. Action Committee. Decision by Aff. Action Officer.

Step III - Appeal to President within two days of decision. Decision by President within seven days.

Step IV - Appeal to Board of Trustees within five days of President decision. Written decision within thirty days.

Step V - EEOC or N. J. Director on Civil Rights.

TRENTON STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Trenton State College using EEOC guidelines:

- Step I - Confront the harasser and demand that the unwanted behavior stop.
- Step II - Document the incidents, state that you have not obtained results from previous discussion(s) and request a meeting to include the administrator of the department/unit.
- Step III - If these steps do not resolve the situation a formal grievance may be filed. This process is handled through the Aff. Action Officer.

WILLIAM PATERSON COLLEGE OF NEW JERSEY

The following procedure is proposed for dealing with complaints of sexual harassment at William Paterson College using N. J. Civil Service guidelines covering faculty and staff:

Step I - Complaint to Director of Aff. Action. Investigation and findings within 15 days.

Step II - Appeal to Civil Service-ERO Aff. Action.

RAMAPO STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Ramapo College using EEOC guidelines covering students and employees:

Step I - Complaint filed within 15 days with Aff. Action Office.

Step II - Procedure available upon request.

STOCKTON STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Stockton State College using KEOC guidelines:

- Step I - Use regular procedure for investigating and resolving grievance or file complaint with college Aff. Action Office.
- Step II - Confidential investigation as quickly and reasonably as possible. Results reported to complainant.
- Step III - If appropriate, perpetrator will receive appropriate counseling referral/and/or disciplinary action.

JERSEY CITY STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Jersey City State College using EEOC (Civil Service Guidelines, State Employees) guidelines:

Step I - Same process as discrimination complaints under Civil Service.

Step II - May file with EEOC or N. J. Division on Civil Rights.

MONTCLAIR STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Montclair State College using EEOC guidelines covering all members of the college community:

Step 1 - Students report to Dean of Student Affairs.

Employees report to Director of Aff. Action.

SOMERSET COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Somerset County College using Title IX guidelines for students and employees:

- Step I - Students report to Dean of Students.
Employees report to immediate supervisor within thirty days.
Decision within ten days.
- Step II - Formal complaint within fifteen days to Title IX Committee.
- Step III - If no resolution, hearing within five days. Report to President within fifteen days. President's response within fifteen days.

DREW UNIVERSITY

The following procedure is proposed for dealing with complaints of sexual harassment as stated in the Drew University Personnel Policy Manual "the use of one's authority or power to coerce another into unwanted sexual relations or to punish another for his/her refusal, or the creation by a member of the university community of an intimidating, hostile, or offensive working or educational environment through repetitive verbal or physical conduct of a sexual nature."

- Step I - Student vs University; lodge complaint with University Senate Aff. Action Committee, University Senate Committee on Student Affairs or Aff. Action Officer.

Student vs student; informal: Dean of Students try mediation.

Student vs faculty; informal: resolution with person.

Student vs staff; seek resolution with person.

- Step II - Written complaint to University Judiciary proceedings.

File charge with Dean of Students.

File charge with Vice President of Academic Dean.

- Step III - Written charges with Dean or Vice President; hearing within fifteen days; subcommittee of faculty.

Written charges with Vice-President; hearing within fifteen days by subcommittee of Aff. Action Committee.

- Step IV - Subcommittee of Prof. Policies & Conduct Committee (2 faculty, 2 students from Judiciary Committee) Dean acts as Chair.

2 Aff. Action Committee and 2 students from Judiciary Committee Vice President acts as Chair.

- Step V - Findings within five days to full FPCC.

Findings within five days to Aff. Action Review Board.

MERCER COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Mercer County College using EEOC guidelines for faculty, staff and students:

Step I - Students — Informal: Dean of Students appoints one male and one female student member available for confidential mediation.

Faculty/Staff — Informal: Director of Personnel Services designates one male and one female staff member to be available for confidential mediation.

Step II - Student — Formal: file written complaint with Aff. Action Officer; reviewed through procedures appropriate to particular complaint, and becomes part of the permanent record.

Faculty/Staff — Above policy for staff/faculty also.

MORRIS COUNTY COMMUNITY COLLEGE

Morris County Community College is in the process of discussion with
Committee W representative --

Brookdale Community College

The following procedure is proposed for dealing with complaints of sexual harassment at Brookdale Community College requires sexual cooperation for academic advancement for students, faculty and staff:

Step I - Students report to Director of Student Life and Activities.

Faculty and Staff report to Aff. Action Officer, consults with Director of Personnel Services.

GLOUCESTER COUNTY COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Gloucester County College using EEOC guidelines for faculty, staff and students:

- Step I - Informal: report within ten days in writing. Aff. Action Officer determines within two working days.
- Step II - Formal: student gives written statement to Aff. Action Officer within five working days. Hearing (if necessary) by sub-committee of Aff. Action Committee. Decision by Aff. Action Officer.
- Step III - Appeal to President within two days of decision. Decision by President within seven days.
- Step IV - Appeal to Board of Trustees within five days of President decision. Written decision within thirty days.
- Step V - EEOC or N. J. Director on Civil Rights.

NEW JERSEY INSTITUTE OF TECHNOLOGY

The following procedure is proposed for dealing with complaints of sexual harassment at N.J.I.T. using KEOC guidelines covering faculty, staff and students:

Step I - Verbal to Director of Aff. Action Program (for faculty/staff) or to Dean of Students (for students).

Step II - If not resolved in 5 days to area Vice President or highest level Administrator in Department of perpetrator.

(Clauses in contract (if bargaining agent)).

Step III - Within 15 days (if not resolved) review by Director of Aff. Action, recommendations to President in 10 days.

RUTGERS - THE STATE UNIVERSITY

The following procedure is proposed for dealing with complaints of sexual harassment at Rutgers using EEOC guidelines:

Undergraduate students

Step I - Complaint to Dean, Associate Dean, Assistant Dean of Students or directly to University Director of Aff. Action & Employment.

Step II - If not resolved in 3 work days, written complaint to Dean of College

Step III - Dean notifies Director of appropriate program supervisor of academic/work unit of person charged. Resolve in 10 day; if not

Step IV - complaint sent to Provost, action in 10 working days.

Graduate students

Step I - Complaint to Dean of Graduate School or directly to University Director of Aff. Action & Employment

Step II - Initiate action in 5 work days.

Faculty & Non-Instructional Staff

Step I - University Director of Aff. Action & Employment, try to resolve in 5 days.

Step II - If not, Director transmits complaint in writing to supervisor of person mentioned in complaint; 10 days for action

Step III - If faculty, written notice to Provost and Vice President for University Personnel: 10 days for action.

If staff person, written complaint to Vice President for University Personnel: 10 days for action.

TRENTON STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Trenton State College using EEOC guidelines:

Step I - Confront the harasser and demand that the unwanted behavior stop.

Step II - Document the incidents, state that you have not obtained results from previous discussion(s) and request a meeting to include the administrator of the department/unit.

Step III - If these steps do not resolve the situation a formal grievance may be filed. This process is handled through the Aff. Action Officer.

WILLIAM PATERSON COLLEGE OF NEW JERSEY

The following procedure is proposed for dealing with complaints of sexual harassment at William Paterson College using N. J. Civil Service guidelines covering faculty and staff:

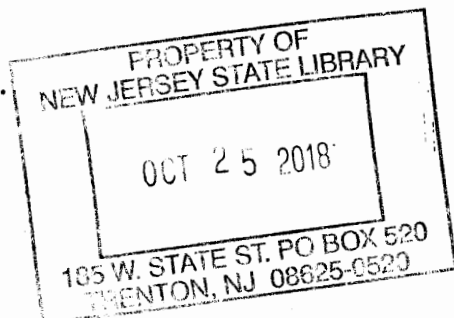
Step I - Complaint to Director of Aff. Action. Investigation and findings within 15 days.

Step II - Appeal to Civil Service-ERO Aff. Action.

GLASSBORO STATE COLLEGE

The following procedure is proposed for dealing with complaints of sexual harassment at Glassboro State College using EEOC and all phases of academic affairs covering all of the College Community:

- Step I - Informal: confidential session with contact person
- Step II - Informal: Grievance Committee determines if it should go to formal procedure
- Step III - If necessary, formal hearing with written signed statement to President or his designate with written account of proceedings.
- Step IV - If sufficient evidence, party accused is notified within 3 days in writing of specific charges.
- Step V - If disagreement, accuser and accused in private hearing before President. Decision within 2 weeks.
- Step VI - If evidence is insufficient to warrant disciplinary action, all records are destroyed. If disciplinary action President makes decision.



KEAN COLLEGE OF NEW JERSEY

Drafted proposal not approved as yet....will send after approved.

evidence, rebuttal, closing statement.

Decision communicated to principal parties within five (working) days.

Mutual consent in writing is necessary for any time extensions requested.

Appeal to the President within five days allowed.

Final decision rests with President...within five days.

Appeal to the KEOC at any part.

*Complaints may be handled outside at any time (in court).

Committee: Membership appropriate (student members and faculty members, two each, for situations involving student and faculty member). Representation should include administration and staff members as well as counseling persons.

*Informal complaints handled by Contact Person who advises Dean appropriate.

8. SAMPLE POLICY STATEMENT

One hopes that incidents of sexual harassment are exceptions. However, as recent litigations have focused national attention on the subject, the College or University wishes to make clear its position in regard to this unacceptable behavior by implementing the following policy.

The college or university reaffirms its' desire to create an academic/work environment for all students, faculty and staff, that is not only responsible but supportive and conducive to the achievement of educational/career goals on the basis of such relevant factors as ability and performance. All students, faculty and staff at the university or college have the right to expect administration to maintain an environment which allows them to enjoy the full benefits of their work or learning experience. Therefore, the use of implicit or explicit coercive sexual behavior to control, influence or affect the performance or status of an individual, regardless of where such conduct is initiated, will not be tolerated.

Sexual harassment is prohibited by the Civil Rights Act of 1964, Title VII, Section 703 and by the Education Amendment of 1972, Title IX. The college or

university intends to abide by the law. Immediate and appropriate correction action will be taken should any student, faculty member, staff or administrative employee be found guilty of this illegal behavior.

Draw a clear distinction between discrimination by university policy/program from discrimination of or harassment by an individual.

RECOMMENDATIONS.

1. ISSUE AND POST POLICY STATEMENTS ON SEXUAL HARASSMENT

Bulletin boards, faculty/student/employee handbooks, include in contracts, etc. Should cover faculty, staff and students.

2. BE SPECIFIC RE: RIGHTS, RESPONSIBILITIES, PROCEDURAL METHODS FOR GRIEVANCE

If Bargaining Units involved, see clause in contract; general grievance process.

3. IDENTIFY SANCTIONS TO BE IMPOSED FOR VIOLATIONS

Students warned, suspended or expelled; faculty and employees oral or written reprimand, probation, suspension with or without pay, recommendation of dismissal; counseling or referral made a condition.

4. PROVIDE FOR IMMEDIATE AND APPROPRIATE ACTION ON CASES

As soon as possible, ie: five working days between steps; commensurate with degree of misconduct.

5. EMPHASIZE THE ILLEGALITY OF SEXUAL HARASSMENT

Bases: Section 703, Title VII, Civil Rights Act '64; Title IX, Education Amendment '72

6. EDUCATION OF ADMINISTRATORS, FACULTY, STAFF AND STUDENTS RE: SEXUAL HARASSMENT

Unwelcome sexual advances, requests for sexual activity, verbal or physical conduct of sexual nature: when submission is made implicitly or explicitly a term or condition of employment, admission to a program or activity or course, evaluation or grade or performance: when submission to or rejection of same is used as basis for decisions affecting employment status or academic standing: when such conduct has the purpose or effect of substantially or unreasonably interfering with work or school performance: when such conduct has the effect of creating an intimidating, hostile or offensive working or learning environment:

Emphasis of an individuals' sexuality which prevents them from enjoying the full benefits of their work or learning experience; Sexist remarks or behavior: Inappropriate or offensive sexual advances: Solicitation of sexual activity by promise of rewards: Coercion of sexual activity by threat of punishment: Sexual assaults: Discrimination for or against on the basis of conduct not related to (job) performance: Promotion of those who submit to sexual advances: Refusal to promote those who resist or protest sexual advances: Deliberate or repeated unsolicited verbal comments, gestures, or physical contact of a sexual nature which is unwelcome: Sexual jokes, slurs; Speculating about virginity: Circulating insulting caricatures: Use of implicit or explicit coercive sexual behavior to control, influence or affect the (career, salary, job) of an individual: Sexually explicit derogatory statements: Sexually discriminating remarks offensive or objectionable to recipient or causing discomfort or humiliation or interfering with performance or standing: Use of ones' authority or power to coerce another into unwanted sexual activity or to punish another for refusal of same: regardless of where such conduct or action is initiated!

7. SUGGESTED PROCEDURE FOR DEALING WITH COMPLAINTS

Designation of contact persons male or female by Dean of Students, Dean of Academic Affairs and Dean of Administration (for students, faculty, staff), Committee chaired by Counseling person, Advisory to President or Designate. Informal complaints heard by Designated CONTACT PERSON, who sees both in five days. Decision made and communicated to principal persons within five days. Decision as unwarranted based on insufficient evidence (or satisfactory resolution). Formal complaints to Committee in writing, signed, supported by evidence or witness, with redress sought (within five days of previous decision). Hearing within ten days accompanied by person of choice (attorneys or agents o.k.). Transcripts of Hearing should be kept (three years in two year colleges, five years in a four year college). Decision after hearing both sides, examining

AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS

Committee W
(Women and Minorities)

REPORT ON THE STUDY
OF
POLICIES AND PROCEDURES
TOWARD
SEXUAL HARASSMENT
IN
COLLEGES AND UNIVERSITIES IN NEW JERSEY

Committee W of the New Jersey State Conference of the American Association of University Professors undertook a summary study of policies and procedures present in the colleges and universities in New Jersey that relate to sexual harassment. Several steps were taken to complete the study by the Fall of 1982.

1. In the Fall, 1981, a letter was sent to all colleges and universities New Jersey asking for copies of the procedures and policies in place or in development that pertain to cases of sexual harassment at their institution.
2. Records were kept of the colleges as they responded; a second letter was sent out in the early winter to remind institutions that had not responded.
3. A special subcommittee was appointed during the winter with the charge of summarizing the information submitted to date. The subcommittee met several times during the winter and developed a chart form of report which presented the information from the institutions, and also developed a discussion draft of the elements that appeared to be present in the policies of New Jersey institutions.
4. The summary chart and discussion document were discussed at the full Committee W meeting this Spring. A very high percentage of institutions in New Jersey responded to the survey.
5. Institutions that had responded to the survey were sent the summary form of their policies and were requested to check the summary for accuracy; institutions which had not yet responded were asked again for copies of the policies.
6. Final correlation of the corrected summaries from the colleges and universities and development of a sample or recommended policy for institutions that are interested in further development of their policies were completed in the Summer, 1982.

Submitted by,

Dr. Constance Waller (Montclair)
Dr. Kandy Rudy (Upsala)
Dr. Kathy Zimmerman (County College
Of Morris)

DEFINITIONS

Federal Rules and Regulations (Sec. 703 of Title VII)

Harassment on the basis of sex is a violation of Sec. 703 of Title VII. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, (2) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individual, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.

Civil Service

Unwelcomed sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature, regardless of where such conduct or action is initiated, constitute sexual harassment when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment;
2. Submission to or rejection of such conduct by an individual is used as a basis for employment decisions affecting such individual; or
3. Such conduct has the purpose or effect of substantially interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.

Equal Employment Opportunity Commission

Sexual harassment is defined as unwelcome advances, request for sexual favors or other verbal or physical conduct of a sexual nature when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or status in a course, program or activity; or
2. Submission to or rejection of such conduct is used as a basis for employment or educational decisions affecting an individual; or
3. Such conduct has the purpose or effect of unreasonable interfering with an individual's work or educational performance, or of creating an intimidating, hostile or offensive working/learning environment.



New Jersey Advisory Commission on the **STATUS of WOMEN**

383 West State Street • Trenton, New Jersey 08625 • P.O. Box 2763 • (609) 292-8840

Brendan Byrne, Governor
Constance Woodruff, Chairperson



REPORT ON SEX DISCRIMINATION CASES IN HIGHER EDUCATION FILED WITH THE NEW JERSEY DIVISION ON CIVIL RIGHTS

New Jersey Advisory Commission on the Status of Women
Higher Education Committee
1977-1978

ABSTRACT

Delays in processing sex discrimination complaints made to the New Jersey Division on Civil Rights by women in higher education, were studied by the Committee on Higher Education of the New Jersey Commission on the Status of Women.

The Committee found many causes for the delays. In general the causes were inadequate staffing and insufficient funding of the Division, an enormous backlog of cases awaiting resolution, the intransigence of college and university administrations in dealing with sex discrimination in their institutions, the small number of hearing examiners and alleged sex discrimination within the Division and the Department of Higher Education.

Cases dragging on for 4 and 5 years have produced economic, psychological and physical damage to the women complainants. Recommendations are made in the report which include: provision of adequate funding and staffing to permit the Division to carry out its mandate quickly and efficiently, amending the New Jersey Civil Rights Statute(s) to require the speedy settlement of sex discrimination complaints, ordering college and university administrators to pay their own legal counsel in such cases out of their institutional budgets and censuring administrations which take reprisals against a complainant or her supporters.

Susan Reynolds Arndt
Sandra Grundfest

Elizabeth Marie Hogan
Doris Kulman

Jean C. Lane
Ide Carro

Nilda Frulin
Dorothy Riley

Bernard Segge Sigmund
Anita E. Voorhes

REPORT
ON
SEXUAL HARASSMENT PROCEDURES
IN
COLLEGES AND UNIVERSITIES IN NEW JERSEY

Sit-in

• continued from A1

from opening windows to Shapiro's first-floor office to keep anything from being handed in or out. They did not, however, prevent them gathering around one cracked window to hear several hundred other students convened on the lawn outside rallying for their cause.

"What we're demanding is mental health," said Maurice Stevens, a student organizer of the rally. "We shouldn't have to demand it. We shouldn't have to have rallies like this one to get our needs met."

Citing a fourfold increase in students seeking help after being sexually assaulted, from 50 to 200, students are asking the administration to create a second full-time position in the university's sexual harassment-assault advising resources and education office, known as SHARE. The office counsels victims of sexual harassment, and currently has one full-time and one part-time position.

THE NAMES of 28 protesters were taken at 4 p.m., when the students refused to leave the offices, said university spokeswoman Jacquelyn Savani. The students will likely face a disciplinary hearing

and probably receive a dean's warning, she said.

According to the university, the issue of further staffing for the office has been under consideration all year, and will be one of several issues discussed during the Priorities Committee's budget talks next fall.

The process of allotting funds for the upcoming academic year is already over, and any changes will have to wait until the following year.

"We are engaged in a careful review of the actual activities and time commitments of the SHARE staff, so that we may have better information about how needs are currently served and how needs in the area might best be met," Thomas Wright, general counsel for the university said in a prepared statement. "It is also important to identify what needs Princeton University can be expected to take on."

But those words meant little to student after student who spoke of traumatic experiences with sexual violence and aggression at yesterday's rally. And many, like Wendy Brick, attribute their ability to deal with them to Myra Hindus, the one full-time SHARE counselor.

"I was a victim of sexual assault here at Princeton," said Brick. "And Myra Hindus saved my life."

While date-rape and other forms of sexual violence are a problem at Princeton, said graduate student Lee Tally, sexual harassment is as well.

"Sexual harassment has the effect

of silencing women in class and eroding their self-esteem," Tally said.

THE STUDENTS also took issue with administration suggestions that some counseling now conducted by SHARE could be met by other counseling services.

"Shuffling a survivor of sexual harassment or assault from office to office may involve considerable emotional trauma," the students stated. "Wright does not appreciate the danger of combining the enormous stress of dealing with a rape with that of dealing with Princeton's bureaucracy."

For a rape victim, mistakes in care that can happen when staff is untrained can be traumatic.

"This violation is not OK. This kind of mistreatment is not OK," said Paige Lewis, a student who was raped on campus last year and complained of her subsequent treatment at the student infirmary. "When the system violates you, when the system abuses you, it's time to stop trusting the system."

While university proctors would not allow reporters access to the students in Nassau Hall, about 15 plan to remain in the building until their demands are met or they are arrested, said Cate Woods, national director for the Committee on Constitutional Rights who trained the core group for non-violence.

"They are totally prepared and will stay there as long as they can," she said.

Frank Starsburger, the Episcopal

campus minister who acted as a liaison between students and administrators yesterday, said there appeared to be little chance for resolution.

"I don't think they (the administrators) yet fully understand the issue," he said.

THE DEMANDS yesterday included guarantees that anyone involved in the protest not be subject to disciplinary action, and that an independent observer be allowed to monitor any arrests.

Some student organizers were expecting arrests of the activists sometime today.

According to Savani, there also has been a campus-wide debate on whether counseling services should be expanded to include minority students who feel harassed, such as gays, blacks, or Hispanics.

"You could make an argument that another half-time position ought to go gay students, or Hispanic, or any other minority," she said. "One must consider these kinds of demands, too."

Last night, a group of students who attended the rally gathered on the lawn behind Nassau Hall to camp out in an all-night vigil to support those inside.

Early last year, about 100 students staged a similar sit-in at Nassau Hall to protest several university policies and to ask for more open communication from Shapiro.

United Press International contributed to this story.

The Times

Students in sit-in⁴⁻²⁵⁻⁹⁰ protest

Occupy Nassau Hall

By CARLA ANDERSON
Staff Writer

PRINCETON BOROUGH — A group of about 30 Princeton University students prepared to spend the night in President Harold Shapiro's office late last night, after spending more than 12 hours in a sit-in to demand more services for victims of sexual harassment and assault.

The students, most of whom had been preparing for the event during the past three weeks with special sessions in non-violence training, started wandering through Shapiro's suite of rooms in Nassau Hall starting at about 8:30 a.m. They used walkie-talkies to communicate with reporters and a small group of supporters who waited outside the building.

A handful of university security officers guarded the entrances to the building and prevented students

• see SIT-IN, A15



Staff photo by Herman Loecher

Princeton University students demanding more services for campus victims of sexual harassment and assault watch a demonstration supporting them yesterday from a window of Nassau Hall in Princeton Borough.

29 students occupy Shapiro's office

Hundreds attend rally for SHARE

By LARRY ZYGMUNT
and MARC SOLE

Approximately 400 people gathered on Cannon Green yesterday afternoon to hear speakers demand a second full-time counseling position for the SHARE office.

The two-hour rally, held while 29 students staged a sit-in in President Shapiro's office, featured over 70 speakers addressing the expansion of the SHARE office, the value of the program and perceived administrative opposition.

While participants took turns holding a banner reading "Save our SHARE," several sexual assault survivors recounted experiences and testified to the help they received from SHARE and its director Myra Hindus.

At 10:30 p.m., approximately 60 students reconvened behind Nassau Hall for a candlelight vigil in support of the protesters inside the building. Nearly one-third of those planned to remain there all night.

The students also considered appearing in front of Nassau Hall this morning wearing armbands or t-shirts as a sign of solidarity in the face of any possible police action.

Sneakers in the afternoon voiced



Chris Payson — Princetonian

Seconds after President Shapiro's arrival yesterday morning, Hsiuchen Chen '92 and a group of students present a list of demands calling for additional SHARE support.

Demand full-time post, autonomy for SHARE

By JULIET EILPERIN
and NORIMITSU ONISHI

Twenty-nine students surged into Nassau Hall early yesterday morning and occupied President Shapiro's office, demanding a second full-time SHARE counselor and autonomy for the program.

The protesters rushed out of the Student Center and entered Shapiro's office through a side door minutes before 9 a.m., handing him four demands when he arrived. The protesters — 16 women and 13 men — said SHARE administrators were not involved in the planning of the occupation.

"We feel that we have only been given lip service and here are demands," said Hsiuchen Chen '92 to Shapiro. "We'll stay until we get them."

Not on the record

Shapiro refused to speak on the record, demanding the removal of a Daily Princetonian reporter and photographer present at the occupation. The protesters refused to speak off the record, prompting Shapiro to shortly walk off with a copy of the demands.

"I think he's nervous and doesn't know what to do right now," Chen said of Shapiro, "and he's taking a strong stance."

The protesters also demanded amnesty for themselves and an independent observer to oversee the actions during the occupation. Episcopal chaplain Frank Strasburger '67 and Wesley-Westminster chaplain Susan Craig acted as the observers.

Protesters emphasized that the demands were not negotiable, while administrators said they were will-

(Continued on page five)

from administration on SHARE

4-25-90 Protesters sit in

(Continued from page one)

ing to discuss them but refused to consider granting the demands under the present circumstances.

Antonia Merzon '92 said the protesters saw the occupation as a last resort after they unsuccessfully tried to obtain a second full-time counselor through normal university channels. "I was so impressed by how everybody went through every possible way to go through the university's way," she said. "Since their way didn't work, we had to do it our way."

Single Issue

Corinne Roosevelt '92 said the occupation was strengthened by its commitment to a single issue. "We're a pretty diverse group of people," she said. "The only thing that is keeping us focused and brought us together in the first place is that we share the same level of commitment to the same issue."

Protesters, who were allowed to leave but not permitted to return, passed time by naming their favorite courses, playing cards, doing homework and eating food they had brought inside with them.

Dean of Students Eugene Lowe '71 briefly met with the protesters in the morning, but discussions did not prove fruitful because the protesters insisted that talks remain on the record.

"We're taking the view right now that this is a conversation between people who are concerned about the university and who are concerned about SHARE," Lowe said yesterday morning.

Protesters denied allegations that SHARE counselor Myra Hindus helped organize the occupation. "We are independently acting," Roosevelt said. "Myra doesn't control us."

Meeting

In the afternoon, Shapiro decided not to meet with the protesters after they insisted discussions be held on the record. Shapiro, Assistant to the President Carl Wartenburg and Provost Paul Benacerraf '52 convened in West College at an unscheduled U-Council executive meeting at 3 p.m. which was also attended by student delegates.

Meanwhile, Lowe, Vice President Thomas Wright '62, Dr. Louis Pyle '41 and Associate Provost Janet McKay GS '74 met with the



Chris Pannan — Princetonian

Students enter Nassau Hall yesterday morning to take over President Shapiro's office, protesting lack of support for SHARE.

gle problem, but by identifying areas of concerns and allocating resources.

"The university can't budget or make long-term commitments on this type of action," he said. "We've been moving steadily in every cycle. This place will fall apart if people think they can get things done by taking things into their own hands."

Roosevelt said, "You're talking about allocating resources and real-locating responsibilities. We're saying that will not work."

Deceitful

"I think you're being deceitful in characterizing the administration's attitude towards this program," Roosevelt told Wright. "You've taken the same line every year. 'We don't want to increase it. We don't want to keep it the same way. We want to divide it up.'"

Merzon said the university seems

to have let the issue drown in red-tape and is forgetting the personal element of the SHARE dispute.

"Fundamentally, bureaucracy has come before people," she said. "We're talking about people and their lives."

Warning

At the meeting, Lowe warned the protesters that if they refused to leave the president's office by 4 p.m., they would be violating university policy.

Later in the evening, Lowe said the discipline committee had not yet decided what actions to take against the protesters. "It's premature to make a decision now," he said. "We will evaluate the situation in the morning."

As of 12:30 a.m., 27 protesters planned to spend the night in Nassau Hall. The protesters will meet with Benacerraf, Pyle and Wright at 9 a.m. this morning.

Students sit in to demand action

400 rally for expansion of SHARE

(Continued from page one) 4-25-80

"This university has a very flawed conception of how to spend money," said rally participant Kristof Haavik GS. "If they want to save more, they ought to shut the university down piece by piece — they're doing that already."

Response to the sit-in varied as some speakers gave unequivocal support to the sit-in protesters while others stressed the rally as a separate action.

Organizers Maurice Stevens '92 and Abby Schoenbaum '91 said the rally was not connected to the sit-in.

"These things were planned separately by different people with similar needs who are choosing to ask for these needs in different ways," Stevens said. "This rally is a separate function from what's going on inside." He added that 2,200 signatures have been collected on a petition demanding an autonomous SHARE office and a full-time second counseling position.

Throughout the rally, sit-in participants peered through three win-

dows in Shapiro's office, observing the Cannon Green events. The rally audience responded with cheers to speakers' references to the sit-in protesters.

Speakers repeated vehement attacks on Shapiro and Wright. "It seems to me we gave them a lot of facts at Take Back the Night," Lee Talley GS said, referring to evidence of sexual assault at Princeton. "How many facts do they need?" Her statements were met with resounding applause.

Equally supportive applause followed strong criticism by Chris Meade '90, who asked ralliers to shout if they disagreed with Wright's vision of SHARE.

"President Shapiro has been noticeably silent on this issue, letting Tom Wright speak for him," Meade said, calling on Shapiro to take a leading role in dealing with SHARE's future.

"Wright is insane," said rally participant Bruce Godfrey '91. "Wright has lost his mind."

Political allusion

"Tom Wright is Princeton's answer to George Bush," Nick Cull GS said after the rally. "He wants a thousand points of counseling." Wright has proposed expanding sexual assault and harassment counseling through university facilities other than SHARE.

Mathey College resident adviser Heather Gerkin '91 and Episcopal chaplain the Rev. Frank Strasburger '67 condemned proposals for other personnel to act as sexual assault and harassment counselors.

"The university simply cannot pass on this responsibility to a group of untrained 20- and 21-year olds," Gerkin said.

Strasburger called the SHARE office and the Women's Center "the

We demand:

1. that the University allocate funds for a second full-time SHARE position for the next academic year, in the expectation that the Priorities Committee in the fall will recommend adding the position as a permanent part of the regular budget.

2. that SHARE remain a separate, central office, providing counseling, education, and advising to all students, faculty and staff, as well as working to change university policies and procedures related to sexual harassment and assault.

3. that full amnesty be granted to all students involved in this action.

4. that an independent observer be allowed to monitor this action, exempt from any and all disciplinary charges and proceedings.

only two sanctuaries for women on this campus."

"Who could argue in the face of such fine work against expanding the SHARE office?" history professor Christine Stansell '71 said during the rally. Administrators would not oppose the expansion of SHARE if men were the victims of harassment, she said, adding, "Could it be that too much is being said about sexual harassment?"

"I'm appalled that we have to be here merely to get the university to negotiate," said assault survivor Steven Jablonski GS, who attended the rally. "But I'm afraid it's the only way to do this."

Cate Woods, Director of the Committee on Constitutional Rights, spoke briefly, identifying herself as a liaison present to advise protesters on legal issues.

Woods said in an interview later that she had given several sit-in participants "non-violence training" through role-playing games and training. Sit-in protesters denied any connection with Woods.



Officials condemn sit-in, agree to further talk

4-25-90

By NORIMITSU ONISHI

Administrators yesterday castigated the student occupation of President Shapiro's office and said they would not yield to protesters' demands that the university appoint a second full-time SHARE counselor and reaffirm the program's autonomy.

Though the protesters presented four demands, discussions focused on obtaining a second full-time counselor.

As he was returning to Nassau Hall from lunch, Shapiro yesterday afternoon said the occupation would not change his opinions on the necessity of having a second full-time SHARE counselor.

"These are issues that have been discussed for a long time," Shapiro said of the demands.

Out of town

Shapiro added he deplored the tactics the protesters employed. "It's not the way to get things done," he said. Shapiro later in the afternoon left Princeton for a two-

day conference in Washington.

After a 3 p.m. unscheduled U-Council executive meeting, Assistant to the President Carl Wartenburg said Shapiro was willing to speak with students but not under present circumstances. "He's perfectly happy to meet with students," Wartenburg said, "but without the press and photographers."

A reporter and photographer from The Daily Princetonian were present inside Nassau Hall early in the morning. The photographer left shortly thereafter.

Wartenburg said the university is committed to strengthening and

supporting the SHARE program, but a second full-time counselor may not solve the problem. He added that though there have been strong, compelling testimonies, there has not been enough evidence to warrant a second full-time position.

Not willing

"The response to the students is that the university is not willing to accept a second full-time counselor," he said. "It's not clear an additional staff member is the best way to proceed."

The Rev. William Gibson said he respected the students for standing

by their convictions. "These particular demands must be worked in the community," he said.

Vice President Thomas Wright '62 in the morning handed protesters a memorandum outlining efforts the university is making to examine the problem of harassment and assault.

Wright yesterday afternoon said the protesters seemed to regard occupation as a last resort to obtain a second full-time counselor.

"I think the students have put themselves in the situation that they have only one issue," Wright

(Continued on page nine)

Officials criticize protest tactics

(Continued from page one)

"We did the best we could, but they said the demands were non-negotiable."

Wright said he was disappointed that the protesters felt the need to occupy the president's office. "If that's the way we solve problems," he said, "we are in trouble."

Wright added that though Supporters of SHARE last month said it had located outside monetary sources to fund a second full-time counselor, funding would have been limited to a year.

"Ongoing positions have to be funded on an ongoing basis," he said.

Provost Paul Benacerraf '52 defended Shapiro's decision not to hold discussions on the record. "He has a very strong feeling that you don't negotiate these matters in public," he said. "It becomes not a negotiation but a show."

"If you're seriously interested in making headway, you have a discussion," he said. "I don't think this is the right way to adjudicate a question."

Other administrators also criticized the protesters. "We've always

tried to consider issues on their merits," said Vice President of Finance Richard Spies GS '72, "not on how many people show up at a rally."

Associate Dean of the College Eva Gossman said, "I believe in

rational discourse. This signals a breakdown in communication."

The occupation disrupted the daily work of several administrators at Nassau Hall, Wartenburg said, though Shapiro remained largely unaffected.

"He had several appointments," he said, "but he was able to keep them. Fortunately, several of the were scheduled outside Nassau Hall."

(Marc Sole and Larry Zygmunt also contributed to this article.)



Thomas Wright '62
"Only one issue"

800 protest sexual assault

(Continued from page one).

4-20-80

she said. "When we come here, we are seen as overreacted or passive women. The only time we are noticed is when we are going to be someone's bedtime."

Expanding homophobia

Another woman spoke about the difficulties of being a lesbian at Princeton. "The inherent homophobia here is so pervasive and so strong that it prevented many women from being here," she said, adding that her own experience of revealing her homosexuality last year was the most difficult event in her life.

Also at Firestone Plaza, Olivia Farrer-Wellman GS — who filed sexual harassment charges against Romance Languages and Literature professor Karl Utti in December — described the reasons which led to her disclosure. "You will have to expect that if the system is to be changed, you have to be willing to put your name on the line," she said, explaining that she decided to file charges after she learned Utti had caused serious problems for other women advisees in the department.

"He is not evil," Farrer-Wellman said of Utti, "but he is also someone who has done wrong."

One undergraduate woman, supported by three of her friends, stood in front of the university chapel's side entrance and vividly described

an off-campus rape she suffered last year.

"It happened when I went to see a man I considered a friend. He said, 'Are you still a virgin?' . . . We'll have to do something about that," she said. "He raped me. I remember the look in his eyes. Rape is not a crime of passion. It's not sex. I remember the look of hatred in his eyes."

"I felt my life was worth nothing. I felt all meaning in my life was gone through that act," she continued. "The counseling I received at SHARE saved my life."

Marchers first halted in front of Nassau Hall where one woman criticized Wright's inaction regarding SHARE.

"This is the person that is trying to break up the organization that saved my life," she said. "I don't know if Wright knows what it feels like to be pinned on a bed, unable to move and then raped."

A male speaker — who identified himself as the graduate student assaulted by former English professor Thomas McFarland — also criticized Wright.

"I did not want to attack Wright because he controls the future of SHARE," he said.

"I'm afraid to say my name out loud because professor McFarland has friends in academia who can destroy my career," he said.



Danilys Cullen — Princeton

Rape survivor speaks out

3-24-90 By MINDY BRICKMAN '91

I am one of the rape victims who spoke at the Take Back the Night March this past Thursday evening. Being at the march was a very traumatic experience for me and speaking at it was one of the most difficult things I have ever done. What made it possible for me to speak was the support of my boyfriend, friends and professors who marched along with me and the other survivors of sexual assault.

I truly believe that this march is the most important thing that happens on this campus. The students and administrators of Princeton need to know that rape does happen here and pressure needs to be put on the administration to improve the safety and consequent quality of life for the women on campus.

We need better lighting, more blue phones, better proctor escort ser-

***'I truly believe that this march
is the most important thing
that happens on this campus.'***

vices and another full-time sexual harassment counselor to help the already ridiculously overburdened Myra Hindus.

Because I was raped on campus while walking home from Prospect Street alone, I beg other Princeton women not to walk around campus alone at night. Walk in groups, call the proctor's office or ask a male friend to escort you where you need to go.

And, I beg the male students here to offer to walk their female friends home. Go a little bit out of your way and help make your friends feel safe.

I want to thank everyone who participated in the march for their support and to ask those of you who saw me (or any of the other survivors) speak to approach me, give me a hug and tell me how brave I was to get up in front of hundreds of people and speak about the most personal and terrible thing that ever happened to me.

If you weren't at the march but you know me, I still need your support. You can still tell me how brave you think I was and promise to come and watch me speak at the march again next year, and please really mean it.

Again I thank everyone who participated in the march, and I am not ashamed to sign my name on this letter because what happened to me is not my fault.

The **Daily PRINCETONIAN**

Sexual misconduct charges against Uitti prompt meeting

By JULIET EILPERIN

Responding to charges of sexual and academic harassment levied against professor Karl Uitti last year, the Romance Languages and Literatures department held a closed meeting April 10 with graduate students in the French section to discuss the complaints, according to students who attended.

Olivia Farrar-Wellman, one of Uitti's female advisees in the graduate program, said she filed an official letter of complaint to the university Dec. 1 charging Uitti with making improper sexual advances towards her during the summer of 1984.

Nature of problem

"The nature of the problem was vulgar language, vulgar body language and inappropriate remarks," Farrar-Wellman said in an interview Friday.

In mid-November, another female grad student filed a complaint with the university alleging that Uitti failed to give her proper guidance on her dissertation throughout the six years she has been studying at Princeton.

Uitti, 56, is the only tenured medievalist in the French section of the department and the John N. Woodhull Professor of Modern Languages. He declined to comment on the allegations.

Act of censure

After a four-month investigation of the two cases, the university in March inserted an "act of censure" in Uitti's file warning him "that any further infractions beyond a first offense would be treated by the university with the utmost gravity," according to a confidential letter President Shapiro sent Farrar-Wellman on April 3.

The April meeting, conducted in French, was called by Director of Graduate Studies Lionel Hoffman to warn the approximately 12 grad students present not to discuss the alleged harassment in front of prospective grad students, said grad students who attended.

Hoffman refused to comment on the meeting.

Farrar-Wellman said while she was on the Princeton in France program during the summer of 1984, Uitti asked her to spend the night at his friend's apartment in Paris.

After arriving at the apartment on a hot evening, Uitti suggested she take a shower and wear his bathrobe, Farrar-Wellman said. She added that though she showered, she put on her own clothes. Uitti declined to comment on the events of the evening.

An inferior position

Farrar-Wellman, who had just completed her first year in Princeton's graduate program, added that she felt as if she was "very much in an underling position."

Farrar-Wellman said Uitti made an advance while she was washing dinner dishes.

"He came over behind me and started holding my hands," she said. "I tried to pull away and change the topic."

Farrar-Wellman said that after she asked to leave the apartment, Uitti asked her to spend the night.

"I didn't want to be too aggressive for fear that I couldn't get out. I then suggested that I really ought to be going home," she said, adding that Uitti let her leave after a period of discussion.

Time spent

The graduate student who filed a complaint against Uitti for academic harassment said he failed to spend the time with her that he allots to other grad students.

"I would see him once a year and he would give me 30 minutes," she said in an interview Saturday.

Uitti declined to comment on the academic harassment charge.

Farrar-Wellman said, "The problem in my particular case and in those of a number of other people is that he tends to select those he's



Karl Uitti
No comment

going to cultivate as his protegee."

The sexual harassment complaint was first brought to the administration's attention on Dec. 1, when Farrar-Wellman spoke to Associate Dean of the Faculty Ruth Simmons. Simmons then transcribed a five-page summary from her interview with Farrar-Wellman officially detailing the events of the evening.

Simmons, now the provost at Spelman College in Atlanta, Ga., declined to comment.

Normal procedure

Though Dean of Faculty Robert Gunning GS '55 declined to comment on Uitti's case, he explained that normal procedure dictates that grad students who wish to file a complaint against a faculty member first speak to one of the associate deans in his office.

If the complaint warrants further inquiry, the case is forwarded to

(Continued on page three)

Over 800 marchers attend rally to protest campus sexual violence

By NORIMITSU ONISHI and NOAM LEVEY

More than 800 people thronged Firestone Plaza last night in an outpouring of student support for the fourth annual Take Back the Night march.

The Firestone rally kicked off a

five-hour march during which speakers criss-crossed the campus and stopped at various spots, where they shared personal experiences of sexual assault and harassment. Speakers voiced support for Sexual Harassment/Assault, Advising, Resources

and Education and often levied criticism at Vice President Thomas Wright '62 for what they called his inaction regarding the program.

By 2 a.m., 150 marchers emerged from 1879 Hall archway and paraded down Prospect Avenue chanting, "Princeton unite, take back the night."

At Firestone Plaza, several speakers presented different perspectives on the problems of sexual assault, prompting some listeners to cry and embrace one another.

Call to unite

"I'm here because I believe if we sisters unite, we can take over the night," said Special Services Adviser Melinda Contreras-Byrd at Firestone Plaza, one of the handful of administrators present. "I believe this rally must be about love. My sisters, unite, take back the night."

Women's Center participant Dina Hossain '91 read the center's recently issued demands, including continuing SHARE's status as an autonomous office and expanding the program's second counseling post to a full-time position.

Amparo Gonzalez '90 spoke about the particular problems facing minority women at Princeton, explaining that a patronizing white male attitude pervades the university. "Women of color at Princeton are the least respected,"

(Continued on page seven)



Dominique Call — Princetonian

Special Services Adviser Melinda Contreras-Byrd speaks outside the chapel last night as part of the Take Back the Night march.

TABLE 1 Labor force status of women by marital status, presence and age group of children, race, and Hispanic origin, March 1983 (numbers in thousands)

444 Marital status and presence and age group of children	Civilian labor force participation rate			
	Total	White	Black	Hispanic origin
Total	52.3	52.0	54.0	47.7
No own children under 18 years old	48.7	48.7	47.6	48.1
With own children under 18 years old	58.9	58.3	62.5	47.2
Children 6 to 17 years old, none younger	66.3	66.0	68.1	56.0
Children under 6 years old	50.5	49.1	57.0	40.0
Children under 3 years old	46.0	44.9	50.9	37.4
Never married	62.6	65.3	52.0	52.7
No own children under 18 years old	64.1	66.1	52.4	55.8
With own children under 18 years old	49.8	46.8	51.2	35.0
Children 6 to 17 years old, none younger	68.1	71.6	67.1	(*)
Children under 6 years old	42.5	38.6	44.4	25.3
Children under 3 years old	37.9	36.6	38.3	23.2
Married, husband present	51.8	51.0	60.8	46.9
No own children under 18 years old	46.6	46.2	51.5	47.2
With own children under 18 years old	57.2	56.2	68.5	46.8
Children 6 to 17 years old, none younger	63.8	63.4	69.1	53.5
Children under 6 years old	49.9	48.2	67.8	41.9
Children under 3 years old	46.0	44.4	62.5	38.6
Married, husband absent	58.7	58.5	58.9	37.7
No own children under 18 years old	55.6	56.4	52.9	32.9
With own children under 18 years old	61.5	60.5	63.2	40.5
Children 6 to 17 years old, none younger	68.7	68.0	70.5	46.8
Children under 6 years old	53.8	53.1	54.0	34.7
Children under 3 years old	53.0	52.4	53.4	(*)
Widowed	19.8	19.2	23.8	24.6
No own children under 18 years old	17.9	17.4	21.8	19.5
With own children under 18 years old	54.5	58.5	40.0	(*)
Children 6 to 17 years old, none younger	54.8	60.0	36.0	(*)
Children under 6 years old	52.4	(*)	(*)	(*)
Children under 3 years old	48.4	(*)	(*)	(*)
Divorced	74.6	75.2	71.0	66.2
No own children under 18 years old	71.7	72.1	68.6	63.8
With own children under 18 years old	78.3	79.5	73.2	68.2
Children 6 to 17 years old, none younger	82.2	84.1	73.9	74.9
Children under 6 years old	68.7	68.3	71.5	(*)
Children under 3 years old	59.9	60.6	(*)	(*)

Source: "Marital and Family Characteristics of Workers, March 1983," unpublished data released by the U.S. Bureau of Labor Statistics, Office of Employment and Unemployment Statistics, September 1983.

Note: Children are defined as "own" children of the family. Included are never-married daughters, sons, stepchildren, and adopted children. Excluded are other related children such as grandchildren, nieces, nephews, and cousins, and unrelated children.

*Data not shown where base is less than 75,000.

TABLE 2 Occupational distribution of employed white, black, and Hispanic-origin women and men, 1982

446	Occupational group	Percentage of women	Percentage of men
	White (37,615,000 women; 50,287,000 men)		
	Professional-technical workers	18.0	17.0
	Managerial-administrative, except farm, workers	8.0	15.6
	Salespeople	7.4	6.8
	Clerical workers	35.1	6.1
	Craft workers	2.1	20.8
	Operatives, excluding transport workers	8.2	9.5
	Transport workers	0.7	5.2
	Nonfarm laborers	6.5	1.2
	Private household workers	1.9	(*)
	All other service workers	16.3	8.3
	Farmworkers	1.2	4.1
	Black and other (5,641,000 women; 5,983,000 men)		
	Professional-technical workers	15.7	12.7
	Managerial-administrative, except farm, workers	3.9	7.4
	Salespeople	3.3	2.9
	Clerical workers	29.7	8.4
	Craft workers	1.5	15.9
	Operatives, excluding transport workers	13.5	13.5
	Transport workers	0.7	7.6
	Nonfarm laborers	1.5	11.8
	Private household workers	5.4	0.2
	All other service workers	24.4	16.9
	Farmworkers	0.6	2.7
	Hispanic-origin (2,047,000 women; 3,111,000 men)		
	Professional-technical workers	9.5	7.9
	Managerial-administrative, except farm, workers	4.9	7.9
	Salespeople	5.1	3.7
	Clerical workers	32.8	6.9
	Craft workers	2.4	20.3
	Operatives, excluding transport workers	19.6	17.4
	Transport workers	0.05	6.7
	Nonfarm laborers	1.5	11.0
	Private household workers	4.0	0.01
	All other service workers	18.1	13.2
	Farmworkers	1.6	4.9

Source: For whites and blacks and others, *Employment and Earnings* (January 1983), vol. 30, no. 1, table 22, p. 157. For Hispanic-origin, unpublished data from the 1982 annual averages made available by the Bureau of Labor Statistics.

Note: Data are for persons 16 years of age and over.

*Less than 1 percent.

TABLE 3 Occupational distribution of the labor force by sex and race, 1982

Major occupation group	Percentage of employed labor force					
	Males			Females		
	Total	White	Non-white	Total	White	Non-white
White-collar workers ^a	43.9	45.4	31.4	66.5	68.5	52.5
Professional and technical workers	16.5	17.0	12.7	17.7	18.0	15.7
Managers and administrators (except farm)	14.7	15.6	7.4	7.4	8.0	3.9
Clerical workers	6.3	6.1	8.4	34.4	35.1	29.7
Salespeople	6.4	6.8	2.9	6.9	7.4	3.3
Blue-collar workers ^a	42.8	42.0	48.8	12.8	12.1	17.1
Craft and kindred workers	20.3	20.8	15.9	2.0	2.1	1.5
Operatives, excluding transport	9.9	9.5	13.5	8.9	8.2	13.5
Transport equipment operatives	5.5	5.2	7.6	0.7	0.7	0.7
Nonfarm laborers	7.1	6.5	11.8	1.2	1.2	1.5
Service workers ^a	9.3	8.4	17.1	19.7	18.1	29.7
Private household workers	0.1	(^b)	0.2	2.3	1.9	5.4
Other	9.2	8.3	16.9	17.3	16.3	24.4
Farm workers ^a	4.0	4.1	2.7	1.1	1.2	0.6
Farmers and farm managers	2.3	2.5	0.4	0.4	0.4	0.1
Farm laborers and foremen	1.7	1.7	2.3	0.7	0.7	0.5

Source: U.S. Department of Labor, *Employment and Earnings* (Jan. 1983), p. 157.^aFigures may not add to totals because of rounding.^bLess than 0.05 percent.

TABLE 1 *Labor force participation rates by sex, 1890-1982 (total labor force)*

302 The Working Woman	Labor force participation rates			Females as a percentage of all workers
	Year	Males	Females	
	1890	84.3	18.2	17.0
	1900	85.7	20.0	18.1
	1920	84.6	22.7	20.4
	1930	82.1	23.6	21.9
	1940	82.5	27.9	25.2
	1945	87.6	35.8	29.2
	1947	86.8	31.8	27.4
	1950	86.8	33.9	28.8
	1955	86.2	35.7	30.2
	1960	84.0	37.8	32.3
	1965	81.5	39.3	34.0
	1970	80.6	43.4	36.7
	1975	78.5	46.4	39.1
	1978	78.4	50.1	41.0
	1982	77.2	52.7	42.7

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, Bicentennial ed., Part 1 (1975), pp. 131-132; U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (January 1983), pp. 144-45; U.S. Department of Labor, Employment and Training Administration, *Employment and Training Report of the President* (1981), pp. 119-20.

Note: Figures for 1947 and after include persons sixteen years old and over; for the years prior to 1947, those fourteen and over are included.

TABLE 5-3 Occupational Distribution of the Labor Force, by Race and Sex, 1986*

Occupational Category	Total		Men		Women	
	Black	White	Black	White	Black	White
Managerial/professional specialty	14.7%	25.2%	12.8%	16.7%	16.7%	24.6%
— Executive, administrative, and managerial	6.1	12.2	6.2	13.9	6.0	10.0
— Professional specialty	8.7	13.1	6.6	11.9	10.7	14.6
Technical, sales, and administrative support	27.0	31.9	15.9	20.3	38.3	46.7
— Technicians	2.6	3.1	2.0	3.0	3.1	3.2
— Sales	6.9	12.7	5.2	11.9	8.7	13.7
— Administrative support, including clerical	17.5	16.1	8.6	5.4	26.5	29.8
Service occupations	22.9	12.2	17.6	8.5	28.3	17.0
— Private household	2.2	.8	.1	.1	4.3	1.6
— Protection service	2.5	1.6	4.2	2.4	.8	.4
— Other service	18.3	9.9	13.4	6.0	23.2	14.9
Precision production, craft, and repair	9.3	12.6	16.0	20.7	2.6	2.3
Operators, fabricators, and laborers	23.9	14.7	34.0	19.8	13.7	8.2
— Machine operators, assemblers, and inspectors	10.8	6.8	11.0	7.4	10.6	5.9
— Transportation and material moving	5.9	4.0	10.8	6.5	1.0	.8
— Handlers, equipment cleaners, helpers, and laborers	7.2	4.0	12.2	5.9	2.1	1.5
Farming, forestry, fishing	2.1	3.3	3.7	4.9	.4	1.2

*The Bureau of Labor Statistics does not report separate data on the occupational distribution for those of Hispanic origin; they appear in both the categories - black and white, depending on their self-identification.

Source: U.S. Bureau of Labor Statistics, *Employment and Earnings*. Washington, D.C.: U.S. Government Printing Office, January 1987.

... of elementary and secondary school teachers while
... professions and are located in

TABLE 5-4 Employed Persons in Selected Professional Occupations, by Race and Sex, 1985 (as Percent of Total)

Occupational Category*	Percent Female	Percent Black	Percent Hispanic
Managerial and professional specialty occupations	44.4%	9.9%	6.6%
— Executive, administrative, and managerial	36.8	5.2	3.7
— Professional specialty	49.4	6.7	3.3
— Engineers	6.0	3.7	2.5
— Architects	9.7	3.2	4.1
— Mathematicians/computer scientists	36.2	7.2	2.5
— Natural scientists	22.5	2.5	3.2
— Physicians	17.6	3.3	4.1
— Dentists	4.4	5.5	2.0
— Registered nurses	94.3	6.7	2.4
— Teachers			
— college/university	36.0	4.0	3.2
— other	73.4	9.5	3.6
— Librarians	85.9	7.5	1.7
— Lawyers	18.0	2.9	1.8

*Because these are selected occupations, percentages will not total 100%.

Source: U.S. Bureau of Labor Statistics, *Employment and Earnings*. Washington, D.C.: U.S. Government Printing Office, January 1987.

TABLE 1 Labor force status of women by marital status, presence and age group of children, race, and Hispanic origin, March 1983 (numbers in thousands)

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Marital status and presence and age group of children	Civilian labor force participation rate			
	Total	White	Black	Hispanic origin
Total	52.3	52.0	54.0	47.7
No own children under 18 years old	48.7	48.7	47.6	48.1
With own children under 18 years old	58.9	58.3	62.5	47.2
Children 6 to 17 years old, none younger	66.3	66.0	68.1	56.0
Children under 6 years old	50.5	49.1	57.0	40.0
Children under 3 years old	46.0	44.9	50.9	37.4
Never married	62.6	65.3	52.0	52.7
No own children under 18 years old	64.1	66.1	52.4	55.8
With own children under 18 years old	49.8	46.8	51.2	35.0
Children 6 to 17 years old, none younger	68.1	71.6	67.1	(*)
Children under 6 years old	42.5	38.6	44.4	25.3
Children under 3 years old	37.9	36.6	38.3	23.2
Married, husband present	51.8	51.0	60.8	46.9
No own children under 18 years old	46.6	46.2	51.5	47.2
With own children under 18 years old	57.2	56.2	68.5	46.8
Children 6 to 17 years old, none younger	63.8	63.4	69.1	53.5
Children under 6 years old	49.9	48.2	67.8	41.9
Children under 3 years old	46.0	44.4	62.5	38.6
Married, husband absent	58.7	58.5	58.9	37.7
No own children under 18 years old	55.6	56.4	52.9	32.9
With own children under 18 years old	61.5	60.5	63.2	40.5
Children 6 to 17 years old, none younger	68.7	68.0	70.5	46.8
Children under 6 years old	53.8	53.1	54.0	34.7
Children under 3 years old	53.0	52.4	53.4	(*)
Widowed	19.8	19.2	23.8	24.6
No own children under 18 years old	17.9	17.4	21.8	19.5
With own children under 18 years old	54.5	58.5	40.0	(*)
Children 6 to 17 years old, none younger	54.8	60.0	36.0	(*)
Children under 6 years old	52.4	(*)	(*)	(*)
Children under 3 years old	(*)	(*)	(*)	(*)
Divorced	74.6	75.2	71.0	66.2
No own children under 18 years old	71.7	72.1	68.6	63.8
With own children under 18 years old	78.3	79.5	73.2	68.2
Children 6 to 17 years old, none younger	82.2	84.1	73.9	74.9
Children under 6 years old	68.7	68.3	71.5	(*)
Children under 3 years old	59.9	60.6	(*)	(*)

Source: "Marital and Family Characteristics of Workers, March 1983," unpublished data released by the U.S. Bureau of Labor Statistics, Office of Employment and Unemployment Statistics, September 1983.

Note: Children are defined as "own" children of the family. Included are never-married daughters, sons, stepchildren, and adopted children. Excluded are other related children such as grandchildren, nieces, nephews, and cousins, and unrelated children.

*Data not shown where base is less than 75,000.

TABLE 2 Occupational distribution of employed white, black, and Hispanic-origin women and men, 1982

446	Occupational group	Percentage of women	Percentage of men
	White (37,615,000 women; 50,287,000 men)		
	Professional-technical workers	18.0	17.0
	Managerial-administrative, except farm, workers	8.0	15.6
	Salespeople	7.4	6.8
	Clerical workers	35.1	6.1
	Craft workers	2.1	20.8
	Operatives, excluding transport workers	8.2	9.5
	Transport workers	0.7	5.2
	Nonfarm laborers	6.5	1.2
	Private household workers	1.9	(*)
	All other service workers	16.3	8.3
	Farmworkers	1.2	4.1
	Black and other (5,641,000 women; 5,983,000 men)		
	Professional-technical workers	15.7	12.7
	Managerial-administrative, except farm, workers	3.9	7.4
	Salespeople	3.3	2.9
	Clerical workers	29.7	8.4
	Craft workers	1.5	15.9
	Operatives, excluding transport workers	13.5	13.5
	Transport workers	0.7	7.6
	Nonfarm laborers	1.5	11.8
	Private household workers	5.4	0.2
	All other service workers	24.4	16.9
	Farmworkers	0.6	2.7
	Hispanic-origin (2,047,000 women; 3,111,000 men)		
	Professional-technical workers	9.5	7.9
	Managerial-administrative, except farm, workers	4.9	7.9
	Salespeople	5.1	3.7
	Clerical workers	32.8	6.9
	Craft workers	2.4	20.3
	Operatives, excluding transport workers	19.6	17.4
	Transport workers	0.05	6.7
	Nonfarm laborers	1.5	11.0
	Private household workers	4.0	0.01
	All other service workers	18.1	13.2
	Farmworkers	1.6	4.9

Source: For whites and blacks and others, *Employment and Earnings* (January 1983), vol. 30, no. 1, table 22, p. 157. For Hispanic-origin, unpublished data from the 1982 annual averages made available by the Bureau of Labor Statistics.

Note: Data are for persons 16 years of age and over.

*Less than 1 percent.

TABLE 5-5 Median Weekly Earnings by Sex and Race, 1986 (for Workers Aged 16 and Over)

	Full-time Workers		Part-time Workers	
	Men	Women	Men	Women
Whites	\$433	\$294	\$ 93	\$102
Blacks	318	263	92	93
Hispanics	299	241	107	100
All men		\$419		\$ 93
All women		290		101
		Full-time Workers		Part-time Workers
Men who maintain families		\$397		\$128
Women who maintain families		\$290		108

Source: U.S. Bureau of Labor Statistics, *Employment and Earnings*. Washington, D.C.: U.S. Government Printing Office, January 1987.

TABLE 5-6 Unemployment Rates by Race and by Sex, 1986

	Whites	Blacks	Hispanics
All, 16 years and over	6.0%	14.5%	10.6%
Men	6.0	14.8	10.5
—aged 16-19 years	16.3	39.3	24.5
—20 yrs. and older	5.3	12.9	9.5
Women	6.1	14.2	10.8
—aged 16-19 years	14.9	39.2	25.1
—20 yrs. and older	5.4	12.4	9.6

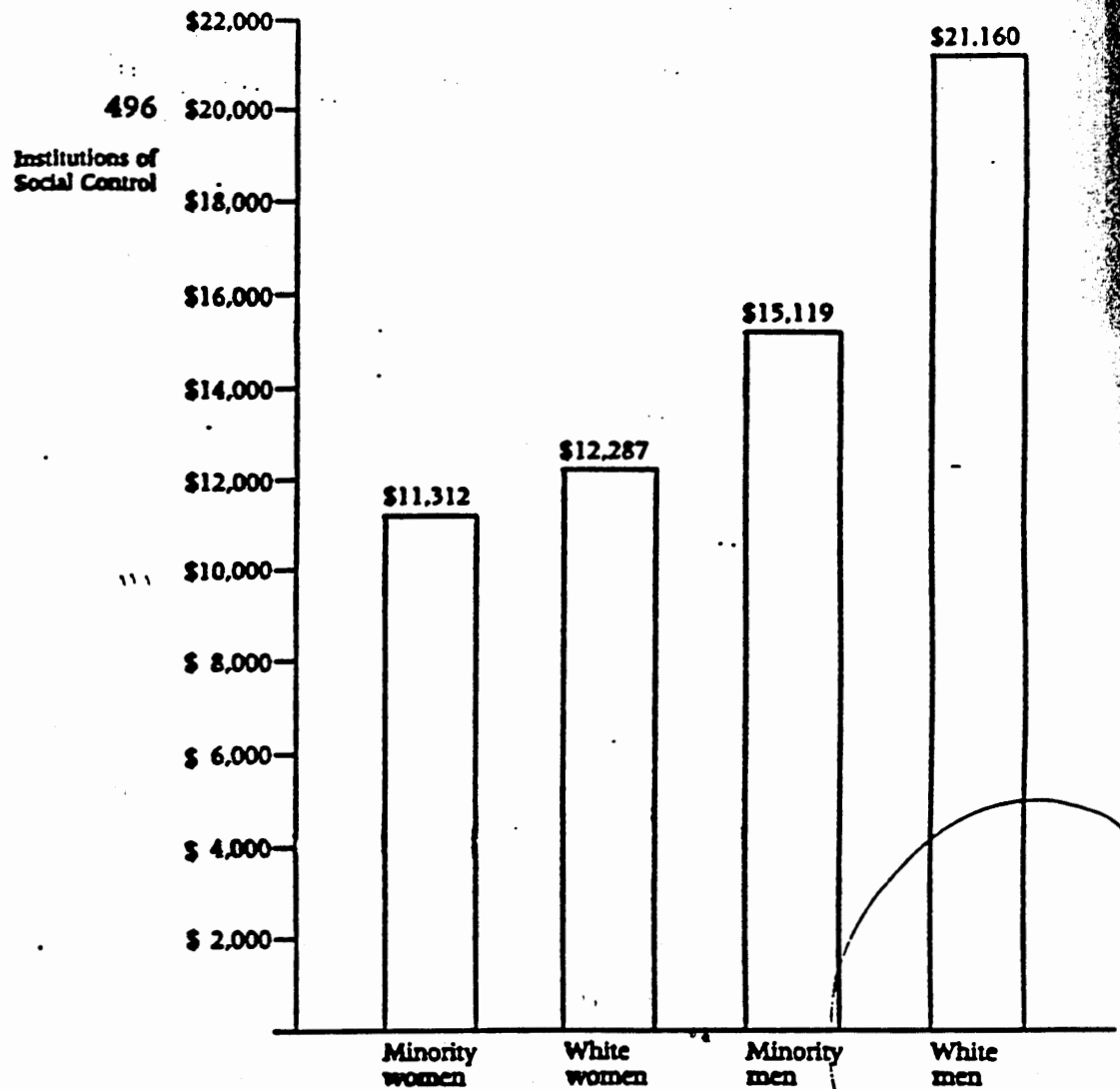
Source: U.S. Bureau of Labor Statistics, *Employment and Earnings*. Washington, D.C.: U.S. Government Printing Office, January 1987.

TABLE 6-2 Marital Status of the Population 15 Years and Over, March 1985

	Total	Men	Women
All persons			
Single, never married	26.2%	30.0%	22.7%
Married, spouse present	56.1	58.7	53.6
Married, spouse absent	3.2	2.8	3.5
Widowed	7.4	2.4	11.9
Divorced	7.2	6.0	8.2
Blacks			
Single, never married	39.8	43.3	36.9
Married, spouse present	34.7	38.9	31.2
Married, spouse absent	7.9	7.3	8.5
Widowed	8.9	3.5	13.3
Divorced	8.7	7.0	10.2
Whites			
Single, never married	24.3	28.2	20.7
Married, spouse present	58.9	61.3	56.6
Married, spouse absent	2.5	2.2	2.8
Widowed	7.3	2.3	11.8
Divorced	7.1	6.0	8.0
Spanish-origin			
Single, never married	31.2	36.6	26.0
Married, spouse present	51.3	50.6	51.9
Married, spouse absent	6.6	5.8	7.5
Widowed	4.7	2.1	7.2
Divorced	6.2	4.9	7.4

Source: U.S. Bureau of the Census, *Current Population Reports; Marital Status and Living Arrangements: March 1985*. Series P-20, No. 410. Washington, D.C.: U.S. Government Printing Office, November 1986.

FIGURE 4 Median wage and salary income for full-time, year-round workers, 1981



Source: U.S. Department of Labor, Women's Bureau, *20 Facts on Women Workers* (Washington, D.C.: Government Printing Office, 1982), 1-3.

percent of mothers with preschoolers do.⁵ The problem is that, although women are working, they are not earning much, as figure 4 shows. The average full-time year-round woman worker receives less than 60 percent of the median man's income.

Women's low income is primarily attributable to occupational segregation, with women concentrated in low-wage occupations. Women cluster in the jobs characterized by the U.S. Department of Labor as clerical, service, and operative jobs. Some 70 percent of working women are in these three groups. Women make

TABLE 3 *Median annual earnings of year-round full-time workers by sex and ethnic group, 1981*

Earnings	White		Black		Hispanic-origin	
	Women	Men	Women	Men	Women	Men
Annual earnings	\$12,108	\$20,706	\$11,199	\$14,727	\$10,729	\$14,720
Minority earnings as a percentage of white earnings			92.5%	71.7%	88.6%	71.7%
Women's earnings as a percentage of white men's earnings	58.5%		54.1%		51.8%	
Women's earnings as a percentage of men's earnings in same group	58.5%		76.0%		72.9%	

Source: U.S. Department of Commerce, Bureau of the Census, *Money Income and Poverty Status of Families and Persons in the United States, 1981*, Current Population Reports, Series P-60, No. 137 (Washington, D.C.: Government Printing Office, 1982), table 55.

Note: Data pertain to workers 15 years of age and over.

TABLE 1 Percent female in eight selected professions, 1900-80

Profession	1980	1970	1960	1950	1940	1930	1920	1910	1900
Physicians ^a	13.4	9.3	6.8	6.5	4.7	4.4	5.0	6.0	5.6
Lawyers and Judges	12.8	4.9	3.5	3.5	2.5	2.1	1.4	0.5	.8
Clergy	5.8	2.9	2.3	4.1	2.7	2.2	1.4	0.5	3.1
Professors ^b	36.6	28.6	21.9	23.3	26.5	32.5	30.2	18.9	6.3
Social workers ^c	64.9	62.8	62.7	69.1	64.3	78.7			
Nurses ^d	95.9	96.1	97.5	97.6	97.8	98.1	96.3	92.9	93.6
Librarians ^e	82.5	82.0	85.5	88.5	89.5	91.3	88.2	78.5	74.7
Teachers ^f	70.8	69.5	72.5	78.8	75.3	81.8	84.5	80.1	74.5

Sources: For 1980: *Supplementary Report from the 1980 Census of Population*, Table 1, "Detailed Occupations and Years of School Completed, by Age for Civilian Labor Force, by Sex, Race, and Spanish Origin: 1980," PC80-51-8. For 1970: *Nineteenth Decennial Census of the United States*, Vol. 1, *Characteristics of the Population*, Part 1, Section 2, Table 221, "Detailed Occupations of Experienced Civilian Labor Force and Employed Persons by Sex, 1970 and 1960," p. 1-718. For 1960 and 1950: *Eighteenth Decennial Census of the United States*, Vol. 1, *Characteristics of the Population*, Part 1, Table 201, "Detailed Occupations of Experienced Labor Force, by Sex, for the United States, 1960 and 1950," p. 1-522. For 1940: *Sixteenth Decennial Census of the United States: Population: Comparative Occupation Statistics for the United States, 1870 to 1940*, Table 2, "Persons 14 Years Old and over in the Labor Force (except New Workers), 1940," p. 49. For 1930, 1920, and 1910: *Fifteenth Decennial Census: Population: General Report on Occupations*, Table 1, "Gainful Workers 10 Years Old and over, by Occupation and Sex, with the Occupations Arranged according to the Classification of 1930, for the United States, 1930, 1920, and 1910," Vol. 5, p. 20. For 1900: *Twelfth Decennial Census: Population: Part 2*, Table 91, "Total Persons 10 Years of Age and over in the United States Engaged in Each Specified Occupation (in Detail), Classified by Sex, 1900," p. 505.

^aOsteopaths were included with physicians in 1910, 1970, and 1980.

^bFor "professors" we have used the category "Teachers, College and University" in the 1970 and 1980 censuses. "College Presidents, Professors, and Instructors" was used for the others.

^cFrom 1930 to 1960 the decennial reports use the category "Social and Welfare Workers," but the 1930 count is not comparable to those that came afterward. Prior to 1920, social and welfare workers were included in the group "Religious, Charity, and Welfare Workers."

^dThe category used for 1970 and 1980 is "Registered Nurses"; that for 1950 and 1960 is "Nurses, Professional"; that for 1940 is "Nurses and Student Nurses." Before 1930, the category is "Trained Nurses."

^eIn 1910, "Librarians" includes librarian assistants.

^f"Teachers" is a composite figure for elementary and secondary school teachers from 1960 to 1980. The 1940 and 1950 reports use "Teachers (Not Elsewhere Classified)," and those for 1910 to 1930 use "Teachers (School)" as the category. Prior to 1910, "Teachers" included all teachers of every kind.

TABLE 1 Labor force participation rates by sex, 1890-1982 (total labor force)

302 The Working Woman	Labor force participation rates			Females as a percentage of all workers
	Year	Males	Females	
	1890	84.3	18.2	17.0
	1900	85.7	20.0	18.1
	1920	84.6	22.7	20.4
	1930	82.1	23.6	21.9
	1940	82.5	27.9	25.2
	1945	87.6	35.8	29.2
	1947	86.8	31.8	27.4
	1950	86.8	33.9	28.8
	1955	86.2	35.7	30.2
	1960	84.0	37.8	32.3
	1965	81.5	39.3	34.0
	1970	80.6	43.4	36.7
	1975	78.5	46.4	39.1
	1978	78.4	50.1	41.0
	1982	77.2	52.7	42.7

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial ed., Part I* (1975), pp. 131-132; U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings* (January 1983), pp. 144-45; U.S. Department of Labor, Employment and Training Administration, *Employment and Training Report of the President* (1981), pp. 119-20.
 Note: Figures for 1947 and after include persons sixteen years old and over; for the years prior to 1947, those fourteen and over are included.

TABLE 3 Occupational distribution of the labor force by sex and race, 1982

Major occupation group	Percentage of employed labor force					
	Males			Females		
	Total	White	Non-white	Total	White	Non-white
White-collar workers ^a	43.9	45.4	31.4	66.5	68.5	52.5
Professional and technical workers	16.5	17.0	12.7	17.7	18.0	15.7
Managers and administrators (except farm)	14.7	15.6	7.4	7.4	8.0	3.9
Clerical workers	6.3	6.1	8.4	34.4	35.1	29.7
Salespeople	6.4	6.8	2.9	6.9	7.4	3.3
Blue-collar workers ^a	42.8	42.0	48.8	12.8	12.1	17.1
Craft and kindred workers	20.3	20.8	15.9	2.0	2.1	1.5
Operatives, excluding transport	9.9	9.5	13.5	8.9	8.2	13.5
Transport equipment operatives	5.5	5.2	7.6	0.7	0.7	0.7
Nonfarm laborers	7.1	6.5	11.8	1.2	1.2	1.5
Service workers ^a	9.3	8.4	17.1	19.7	18.1	29.7
Private household workers	0.1	(*)	0.2	2.3	1.9	5.4
Other	9.2	8.3	16.9	17.3	16.3	24.4
Farm workers ^a	4.0	4.1	2.7	1.1	1.2	0.6
Farmers and farm managers	2.3	2.5	0.4	0.4	0.4	0.1
Farm laborers and foremen	1.7	1.7	2.3	0.7	0.7	0.5

Source: U.S. Department of Labor, *Employment and Earnings* (Jan. 1983), p. 157.^aFigures may not add to totals because of rounding.

(*) Less than 0.05 percent.

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Women in the Labor Force

TABLE 6-1 Households by Type and Race, 1984 and 1970

	All Groups	Whites	Blacks	Spanish- Origin
1984				
Family households	72.6%	72.0%	72.3%	82.5%
—married-couple families	58.6	61.2	37.3	60.3
—male householder	2.4	2.2	3.8	3.5
—female householder	11.6	9.1	31.1	18.7
Nonfamily households*	27.4	27.5	27.7	17.5
—male householder	11.4	11.2	13.1	8.9
—female householder	16.0	16.3	14.6	8.6
1970				
Family households	81.2	81.6	78.0	87.0
—married-couple families	70.5	72.5	53.3	70.0
—male householder	1.9	1.8	2.9	3.7
—female householder	8.7	7.2	21.8	13.3
Nonfamily householders	18.8	18.4	22.0	13.0
—male householder	6.4	6.0	9.1	6.6
—female householder	12.4	12.4	12.9	6.4

*Includes single-member households.

Source: U.S. Bureau of the Census, Current Population Reports, Series F-20, No. 398. *Household and Family Characteristics: March 1984*. Washington, D.C.: U.S. Government Printing Office, April 1985.

TABLE 5-7 Poverty Status of Families and Individuals, 1985 (Percent Below the Poverty Line, \$10,989)

	All	White	Black	Hispanic
All families	11.4%	9.1%	28.7%	25.5%
Married-couple families	6.7	6.1	12.2	17.0
Female householder (no husband present)	34.0	27.4	50.5	53.1
Male householder (no wife present)	12.9	11.2	22.9	18.4
All persons	14.0	11.4	31.5	29.0

Source: U.S. Bureau of the Census, Current Population Reports, Series P60, No. 154. *Money Income and Poverty Status of Families and Persons in the U.S., 1985*. Washington, D.C.: U.S. Government Printing Office. August 1986.

Rates/100	White	Black	Hispanic	All <18
Total	17.3%	46.7%	38.2%	22.2%
Female-headed families	47.6	68.5	70.5	55.8
With mothers,				
— never married	71.3	77.2	85.8	75.1
— separated/divorced	47.3	66.8	70.1	53.5
— widowed	27.9	60.7	38.9	41.1
Male-present families	11.9	23.8	27.3	13.5

(Poverty line = \$7,938 for family of three in 1983)

Source: Congressional Research Service and Congressional Budget Office, *Children in Poverty*. Reported in *Washington Post* (May 23, 1985): 1 ff.

How do you pronounce *harassment*?
"Let's pronounce it dead." --Anita Hill *

MAKE SEXUAL HARASSMENT HISTORY

*celebrate Women's History Month
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with speakouts, forums, and
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YOUR COMMUNITY, YOUR WORKPLACE,
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in your city, county, and state*
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- ♦ *break the silence*

* November 15, 1991, San Diego, California, at the Forum for Women State Legislators, sponsored by the Center for the American Woman and Politics, Eagleton Institute, Rutgers University.

** *Sexual Harassment: Research and Resources, A Report-in-Progress* by the National Council for Research on Women, \$16. Quantity discounts available. Call (212) 570-5001 or fax (212) 570-5380.

(see over for a list of resource people)

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jobs in construction, maintenance, mechanics, electronics, and other trades. They assist women in southern New Jersey and in Pennsylvania. The group maintains a telephone hot line, publishes a newsletter, Inroad, provides a referral and resource service, and provides speakers.

Wider Opportunities for Women (WOW)

1325 G Street NW
Lower Level
Washington, DC 20005
(202) 638-3143

WOW was founded in 1964 to expand employment opportunities for women. It provides direct assistance to women seeking to enter the market and has been a pioneer in the development of employment programs for women in non-traditional occupations. In the late 1970s, WOW was one of the plaintiffs in a suit against the Department of Labor regarding the non-enforcement of Executive Order 11246 which requires equal employment opportunity and affirmative action for women workers. The suit resulted in the establishment of the national goals and timetable for women in the construction industry.

Women's Action Alliance

370 Lexington Avenue
Room 603
New York, NY 10017
(212) 532-8330

The Women's Action Alliance was founded in 1971. It is a national organization that works on many projects to further the goal of women's equality. Among other services, it provides publications on sex equality education. It is currently completing a project on the kinds of training women are receiving from JTPA-funded projects.

Women In Apprenticeship, Inc.

1095 Market Street
Room 712
San Francisco, CA 94103
(415) 864-3255

Women in Apprenticeship, Inc. is an affiliate of PREP, Inc., although

APPENDIX D :

Women in Construction , the Trades and Apprenticeships



Moving Women Into New Jersey's Roadbuilding Industry

Report Prepared At The Direction Of:
Commissioner Hazel Frank Gluck, Chairwoman
Women in Construction Task Force
New Jersey Department of Transportation

Report Prepared By:
Stanwick Associates
Kathy A. Stanwick, President
402 Main Street, Suite 200
Metuchen, NJ 08840

Report Written By:
Kathy Stanwick
Paul Chrystie
Karen Holmes
Adrienne Scerbak
with the assistance of Caryn Paul

February 1988

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FOREWORD

Remember the children's rhymes and games that made us think about what type of work we wanted to do when we grew up? The "Three Men in a Tub" were "a butcher, a baker and a candlestick maker." In another game, which I think was played only by girls, we would tear the petals from flowers to find out whether we were going to marry a "rich man, poor man, beggar man, thief" or a "doctor, lawyer, merchant chief." Clearly, those weren't career options available to girls.

In the past thirty years, women have moved into many careers and jobs which were previously unavailable to them. Women can now be found as "butchers, bakers, candlestick makers" and as doctors, lawyers, heads of major corporations, United States Senators, justices on the U.S. Supreme Court, astronauts, mechanics, and truckdrivers.

Yet in 1986 in New Jersey, there was one category of jobs where women had made virtually no progress: highway construction. When I assumed the position of Commissioner of Transportation, New Jersey ranked last of all fifty states in the overall percentage of women working on Federal Aid highway construction projects -- 50 women, representing 2.0 percent of the total workforce. Subtracting women clerical workers from that total, there were only 33 women working as tradeswomen or laborers -- representing 1.3 percent of the total highway construction workforce.

Since 1982, Governor Thomas Kean has developed a "New Jersey -- We're Number One" attitude among the members of his administration and our residents. In keeping with this attitude, I asked: "Why does New Jersey rank last among all states in the proportion of women working on transportation construction projects?" To provide an answer to this question, I convened this Women in Construction Task Force.

The Women in Construction Task Force includes relevant members of the State Cabinet, union officials, contractors, Federal Highway Administration representatives and tradeswomen advocates. Since early last year, the Task Force has been meeting to discuss the problem and working to find solutions to it. Stanwick Associates, a public policy research firm headquartered in Metuchen, New Jersey, was hired to assist us in our efforts to study the problem and to help devise programs and strategies for ensuring that New Jersey no longer ranks at the bottom of all states in the percentage of women working in highway construction jobs.

PREFACE

This report explores some of the reasons why women are underrepresented in the highway construction workforce in New Jersey and proposes some steps which might be taken to increase the numbers of tradeswomen in New Jersey. This report is only a beginning. It does not identify and analyze every problem nor does it claim to present all possible solutions. Instead, we hope this report informs the reader about the current status of women in highway construction, raises questions about the effectiveness of present methods of recruiting women, and provides some suggestions for increasing women's numbers. It is our hope that "Moving Women into New Jersey's Roadbuilding Industry" will stimulate discussion and response by members of the Women in Construction Task Force and other interested parties.

Kathy A. Stanwick, President
Stanwick Associates
Metuchen, New Jersey

Executive Summary

"Bringing More Women Into New Jersey's Roadbuilding Industry"

The Women in Construction Task Force was convened by Commissioner of Transportation Hazel Frank Gluck in early 1987 to examine the reasons why women were so underrepresented in New Jersey's road and bridge building construction workforce, to recommend policies and programs for increasing women's numbers in the highway construction workforce and, ultimately, to increase the number of women working on these jobs in New Jersey.

"Bringing More Women Into New Jersey's Roadbuilding Industry" provides a snapshot of the current status of women in highway construction in 1987 in the United States and in New Jersey, evaluates the methods used to recruit women to the industry and presents some preliminary recommendations for increasing the number of women working in the construction workforce in New Jersey. The report is based on: (1) analyzing existing data about the number of women in the construction workforce; (2) reviewing other reports and documents on the subject; (3) interviewing/surveying union officials, officials from state Departments of Transportation, contractors, representatives of tradeswomen advocacy organizations, and others who work with programs which educate tradespersons.

As required by federal Executive Order 11246, each state receiving Federal Highway Administration dollars should have 6.9 percent women workers per craft/per job. According to 1987 figures compiled by the Federal Highway Administration, 15 states met or exceeded the goal of 6.9

percent women workers, not including clerical workers, in their overall workforces. However, no state currently meets the goal of 6.9 percent women per craft/per job; yet many states have made significant progress in increasing women's numbers in the highway construction workforces in their states. States which have higher numbers or percentages of women working in the roadbuilding industry appear to have four distinct characteristics: (1) commitment by the state to enforce affirmative action goals; (2) support and programs for increasing women's numbers by the unions; (3) active recruitment of women by contractors; (4) tradeswomen advocacy organizations which prepare women for construction jobs and which pressure unions, contractors and relevant federal and state agencies to enforce existing laws.

In July 1987, New Jersey ranked 43 among the 49 states for which data were available, in the percentage of women working on Federal-aid highway construction projects. Excluding clerical workers, New Jersey contractors employed 106 women on highway construction projects -- or 2.9 percent of the non-clerical workforce. This figure is up substantially from July, 1986, when only 33 women were employed -- 1.3 percent of the total non-clerical workforce.

A number of factors contributed to women's underrepresentation in New Jersey's construction workforce: lack of active recruitment efforts by contractors and unions; lack of clear and enforceable policies and procedures within NJDOT and the FHWA; lack of enforcement of existing apprenticeship goals by the Bureau of Apprenticeship Training of the U.S. Department of Labor; lack of information on the part of women about the job opportunities in construction.

The report makes several recommendations for increasing the number of women applying for and working in jobs in highway construction. They include:

- ▲ providing more and better information and materials about the career opportunities in construction to young girls and women of all ages and undertaking special efforts to inform women currently in the workforce, or contemplating entering the workforce, about opportunities in the trades

- ▲ developing partnerships between schools, unions and contractors to promote women's involvement in the trades

- ▲ establishing pre-apprenticeship programs which will prepare those women already interested in the trades to enter apprenticeship programs and which can motivate, educate and prepare women not knowledgeable about careers in the trades to apply for apprentice programs or to directly seek construction work

- ▲ monitoring apprenticeship programs registered by the Bureau of Apprenticeship Training to assure they are in full compliance with their affirmative action regulations (not less than one half the proportion of women who are in the workforce in the program sponsor's labor market area)

- ▲ targeting union recruitment efforts toward women and making union application procedures more standardized and more visible

- ▲ educating unions and contractors about the positive consequences of an environment free of sexual harassment

- ▲ expanding the efforts of contractor associations to educate individual contractors about the need for stronger compliance with

affirmative action mandates

- ▲ recruiting women for on-the-job trainee slots
- ▲ strengthening NJDOT review and enforcement procedures of contractors
- ▲ developing programs for educating NJDOT's internal workforce about the importance of enforcing affirmative action guidelines
- ▲ changing FHWA data collection procedures to allow for a more accurate counting of women on federal-aid transportation construction policies
- ▲ altering FHWA policies so that they offer consistency to states when addressing varied levels of compliance with federal employment goals.

INTRODUCTION

The United States economy and labor force have undergone a radical transformation over the past thirty years: manufacturing and industrial jobs have moved overseas; service sector jobs and government employment have risen; foreign products have made significant inroads in markets that were once dominated by United States companies; white collar positions have grown astronomically; blue collar jobs have declined.

By far, the most dramatic change has occurred as a result of the movement of women into the labor force. In 1955, women represented 30.2 percent of all workers. Recent statistics (August, 1987) show that women now represent 44.3 percent of all workers and that 52.9 percent of all women work outside the home either full time or part time.

As women have moved in record numbers into the workforce, they have generally moved into female-dominated occupations such as retail sales workers, clerks, typists, secretaries, teachers and nurses. Over the past ten years, the ranks of professional women-- lawyers, engineers, managers and administrators -- have been growing as well. However, it is only recently that women have started to seek jobs in "non-traditional" occupations. A "non-traditional occupation" for women is defined as any occupation in which seventy-five percent or more of individuals who work in that occupation are men. These would include, for example, auto mechanic, construction laborer, carpenter, pilot and truck driver. Generally, non-traditional jobs are also those which require learning a specific craft or skill. They are often, but not exclusively, "blue collar" jobs. "White collar" non-traditional occupations for women include

Second, affirmative action goals attached to federal, state, local and other public agency infrastructure dollars, require that private contractors make a "good faith effort" to hire women on highway construction jobs. On jobs which include any federal dollars, the goal is 6.9 percent women per craft, per job. This national goal for female representation in the industry was established in April, 1980 through Executive Order 11246. In New Jersey, totally state-funded jobs employ the same goals.

Despite the federal goals for employment of women, women are still underrepresented in the highway construction workforce. A report by the Southeast Women's Employment Coalition issued in 1984 found that nationally less than four percent of skilled crafts and unskilled and semiskilled laborers in the private construction workforce were women. An analysis of the 1987 reports which provide a summary of employment data on Federal Aid Highway projects shows that in highway construction only 21 states have greater than 6 percent of women in their workforces (exclusive of clerical) and that the bulk of these workers are unskilled or semiskilled laborers.

The situation in New Jersey is even worse. In 1986, women represented less than 2 percent of skilled crafts and unskilled and semiskilled laborers in New Jersey's private highway construction workforce and New Jersey ranked last among all fifty states in the proportion of women in its highway construction workforce. This underrepresentation of women in the federally-funded highway construction workforce in New Jersey prompted Hazel Frank Gluck, upon her appointment as New Jersey Commissioner of Transportation, to

number of women workers on highway and bridge construction projects in New Jersey.

Beginning in July 1987, Stanwick Associates, a public issues consulting firm specializing in public policy research, information and advocacy, was hired as staff for the Task Force. Stanwick Associates has been hired for two years to collect, analyze and report data on women's participation in the construction workforce and to assist the New Jersey Department of Transportation in devising, implementing and monitoring strategies for increasing the number of women working on highway and bridge construction projects.

Research Design

To gather the data necessary for preparing this report, Stanwick Associates conducted interviews and surveys, and analyzed already existing data on women in construction. They also reviewed previous research on women in non-traditional occupations; interviewed union, contracting and government officials from other states which have higher proportions of women on construction projects to learn how they recruit and retain women workers; and surveyed and met with representatives of organizations which have sponsored training programs or projects that have had success in bringing women into the trades.

The initial research steps of the project included:

- compiling a list of and surveying organizations which: (1) train women in non-traditional occupations (2) provide a network for women in these occupations, and (3) advocate for women in non-traditional occupations. Twenty relevant groups responded to our inquiries. (A list of

with trades union women -- to better understand what motivates women to pursue careers in non-traditional fields.

The Report

In addition to this introduction, the report includes three other sections and ten appendices. The goal of this document is to provide a "snapshot" of the status of women in construction in late 1987 and evaluate current methods of recruiting women to the industry. It is based on Stanwick Associates' interviews, surveys and conversations with union representatives, State Departments of Transportation officials, contractors, and representatives of tradeswomen advocacy organizations. The opinions expressed in this report represent those of the authors of this report and do not necessarily reflect the opinions of the New Jersey Department of Transportation.

Section one reports on the status of women in road construction across the United States. It examines and evaluates data gathered from state DOT's, unions and tradeswomen advocacy groups. It also includes a section reviewing apprenticeship and training programs.

In the second section, we analyze women in the road construction workforce in New Jersey. This section includes information from our interviews with union officials, representatives of the Bureau of Apprenticeship Training, a survey of contractors, focus groups with women working or interested in non-traditional employment and women's employment advocates from across the state.

Finally, section three, drawing on all the data collected for the report, presents some preliminary recommendations for increasing the number of women working in the construction workforce in New Jersey.

Table 1 -- Percentage of women employed on federal-aid highway construction projects (including clerical workers), taken from FHWA reports, July 1986

State	# of women	percent	rank
Colorado	262	16.5	1
Wyoming	261	14.3	2
Utah	323	14.0	3
Washington	668	13.6	4
Alaska	51	12.7	5
Maine	123	12.6	6
Vermont	158	12.0	7
North Dakota	129	11.9	8
Idaho	49	11.8	9
Nevada	123	11.6	10
Montana	160	10.0	11
Oregon	132	9.9	12
Oklahoma	213	9.5	13
New Hampshire	109	9.1	14
Delaware	69	9.0	15
South Dakota	143	8.7	16
West Virginia	167	7.8	17
Wisconsin	371	7.7	18
Kentucky	240	7.6	19
Arizona	127	7.6	
South Carolina	190	7.4	21
New Mexico	104	7.4	
Rhode Island	50	7.3	23
California	386	7.1	24
Georgia	483	6.9	25
Iowa	240	6.8	26
Minnesota	339	6.8	
Nebraska	129	6.6	28
Florida	425	6.6	
Indiana	406	6.6	
Mississippi	188	6.4	31
Ohio	344	6.3	32
New York	617	6.1	33
Tennessee	194	5.7	34
Missouri	318	5.4	35
Michigan	196	5.3	36
Virginia	293	5.1	37
Massachusetts	100	5.0	38
Illinois	685	5.0	
Hawaii	35	4.9	40
North Carolina	232	4.8	41
Kansas	129	4.8	
Alabama	158	4.4	43
Maryland	179	4.4	
Pennsylvania	469	4.3	45
Connecticut	104	4.3	
Texas	534	4.2	47
Louisiana	106	3.2	48
Arkansas	76	3.1	49
New Jersey	50	2.0	50

Table 3 -- Percentage of women working on federal-aid highway construction (including clerical workers), taken from FHWA reports, July 1987

State	# of women	percentage	rank
Utah	292	17.4	1
Wyoming	351	15.9	2
Idaho	58	15.8	3
Washington	471	15.2	4
Colorado	140	14.1	5
Alaska	165	13.9	6
Vermont	122	12.4	7
New Hampshire	130	11.5	8
Oregon	225	11.2	9
Delaware	55	11.2	
North Dakota	129	10.5	11
Nevada	86	10.4	12
Montana	126	9.4	13
Arizona	105	9.2	14
South Dakota	163	8.8	15
Kentucky	191	8.5	16
Florida	532	8.1	17
West Virginia	134	8.1	
Maine	90	8.0	19
Indiana	268	7.6	20
Ohio	435	7.4	21
Oklahoma	208	7.3	22
Tennessee	246	7.2	23
Michigan	159	7.1	24
California	394	6.9	25
Minnesota	310	6.7	26
New York	619	6.6	27
Wisconsin	205	6.5	28
Iowa	228	6.3	29
New Mexico	94	6.3	
South Carolina	152	6.1	31
Nebraska	126	6.1	
Missouri	295	5.8	33
Mississippi	141	5.6	34
Alabama	134	5.6	
Georgia	319	5.5	36
North Carolina	258	5.4	37
Illinois	509	5.3	38
Virginia	331	5.2	39
Pennsylvania	319	4.7	40
Hawaii	14	4.2	41
Maryland	99	4.0	42
Texas	422	3.8	43
Louisiana	107	3.8	
Arkansas	60	3.8	
Connecticut	54	3.8	
Massachusetts	104	3.7	47
<u>New Jersey</u>	<u>129</u>	<u>3.5</u>	<u>48</u>
Kansas	64	3.1	49
Rhode Island	figures not available		

An analysis of figures released by the Federal Highway Administration for 1987 showed high percentages of women employees in highway construction in a few states, however, these figures are somewhat misleading for several reasons. First, the collection of data for the reports allows a single worker to be counted more than once. Each time a female or minority male worker goes to a new site in July, s/he is counted as having worked on that job. Therefore, if a woman goes to four different sites in July, she could be counted four times in the July report. For example, the New Jersey report for July, 1987, indicates twelve journey-level female operating engineers. However, as of that time, there were only eight journeywomen in Operating Engineers Local #825 which covers all of New Jersey. Thus, it appears as though some women were counted twice. "Double-counting" is not unique to New Jersey, since the methodology of counting workers is consistent across the country.

Furthermore, the total number of women workers on the July reports include clerical workers, the majority of whom are women, causing each state to seem as if it has more women working in construction than it actually does. Executive Order 11246 establishes a goal of 6.9 percent women per craft/per job, yet the July reports count clerical workers, which technically should not be counted toward meeting the goal. When clerical workers are subtracted from the totals, each state's percentage of women workers drops dramatically. In fact, although 15 states have more than 6.9 percent women in their construction workforces (Table 4) no state currently meets the 6.9 percent goal per craft/per job established

addition, investigative compliance reviews are scheduled when deficiencies are identified through the monitoring process. Both contractors and subcontractors are subject to compliance reviews. Sanctions for failing to respond to show cause notices may include suspension, cancellation, or termination of any NYSDOT contract and possible debarment.

NYSDOT has also been aggressive in its attempt to meet the federal goals in other ways. For example, it has given the Engineer-in-Charge (EIC), who represents NYSDOT and has direct supervision of the execution of the contract, a much stronger role to play earlier in the life of the contract. Recognizing that it is easier to correct a deficiency during the hiring process than in the middle of the job, the EIC must now continually monitor the buildup of the workforce to make sure that women and minority males are represented as the job is getting started and as the workforce changes according to the evolution of the project elements. The EIC has the authority to request a quick correction of any deficiency. Failure to remedy the situation will result in show cause orders, withholding of payments and other sanctions taken by the Regional Office of NYSDOT.

Other directives issued by NYSDOT cover use of female and minority male trainees when not enough journey-level and registered apprentices are available for work; preconstruction meetings with the contractors which outline affirmative action goals and stress the inclusion of women and minority male goals in individual contracts.⁵

⁵It is important to note that New York State did not achieve 6.9% women per craft/per job. New York, in the July 1987 reports, was at 5.7% excluding clerical. Per craft, New York had: Operating engineers: 3.5%; ironworkers: 1.9%; carpenters: 4.4%; truck drivers: 4.4%; semi-skilled laborers: 8.1%; unskilled laborers: 11.0%.

several trades and comes close to meeting the goal per craft in several others. Ohio exceeds the goal with 8.4 percent carpenters, 7.8 percent truck drivers and 9.0 percent unskilled laborers. Although Ohio does not meet the goal in the other major trades, in no trade do they have less than 4.5 percent women -- 6.0 percent operating engineers, 5.1 percent semi-skilled laborers and 4.5 percent ironworkers.

Organizing in support of women in construction in Ohio began in the early 1980s. Pressure to enforce the goals for women was exerted on the state DOT both externally and internally. In 1980, the Southeast Women's Employment Coalition filed a complaint against Ohio and five other states for failure to hire women. In early 1983, immediately after Governor Richard Celeste was sworn in, then-U.S. Secretary of Labor Raymond Donovan wrote to Ohio charging that the State had failed to appropriately utilize CETA funds to train women and older workers. Shortly thereafter, Dr. Roberta Steinbacher, Director of the Ohio Bureau of Employment Services, invited Lucy Green, Executive Director of PREP, Inc. a tradeswomen advocacy group in Ohio, to meet with representatives of the Celeste administration and the Women's Bureau of the U.S. Department of Labor to design a pilot project to train women for construction work.⁷ The project, directed by PREP, Inc. was a success.

In addition, in 1984, Governor Celeste signed an executive order identical to 11246 for all state-funded road and bridge contracts.⁸ Shortly after, PREP Inc. was asked to expand their training project to three sites. For a brief period, a women's advocacy advisory group met to

⁷ PREP, Inc. has three training facilities in Ohio which also train workers in Indiana and Kentucky, and satellite affiliates in Kansas, Missouri, California and New York. PREP is described in more detail later in this report.

⁸ This executive order is included in Appendix IV of this report.

that would train these groups for construction work and then secure them employment.

One of the most successful programs was a three-month, "open-exit" program. This meant that students (including both females and minority males) could leave prior to the ending of the program if they were able to find a job. The program ran five days a week, from 7:00 a.m. to 3:30 p.m. Each day started with two to three hours of physical conditioning. Students learned relevant construction skills and learned how to use power tools in the classes that were held at a local carpenters' union. In order to perfect their skills, the students would provide free labor for community service projects that were needed by non-profit organizations.

Students also learned about safety training, construction math, and how to deal with sexual harassment. Some students took courses which prepared them to take the test for their General Equivalency Diploma (GED). Speakers came from the various trades to discuss career options with students. After finishing the course, students were placed in jobs and/or apprenticeship programs. An individual placement was counted as a success if that individual remained at the job for a minimum of 200 hours.

The program was designed to weed out prospective participants who were not likely to complete the program. Women signed contracts with the program stating that they had their own personal transportation (not that of a husband, friend, or relative), that they had arranged for child care when necessary, and that they were at least eighteen years of age. In addition, they agreed to consult with the program coordinator should anything in their personal lives occur that might interrupt their training. Caltrans gave the participants small stipends for day care and transportation costs.

women into the union. Some have found that working with women's trade organizations can provide a pool of applicants that already have the basic skills and understanding of the job necessary to enter an apprenticeship program. Reserving a certain number of places in a union apprenticeship program for women (set asides) has been effective at increasing the number of women in unions, but is generally used only when a union has previously been involved in a legal action over minorities and wishes to avoid such a legal action over women, or where the state has taken a particularly strong stand. A number of unions pointed to pre-apprenticeship programs as effective means of ensuring that women who enter the union apprenticeship complete the program and are retained by the union. No union contacted ran these specifically for women, but all found that the retention rate of both men and women increased when they were graduates of a pre-apprenticeship program.

In some states, unions keep women out of the system by not affording them permanent status in the union. One technique involves giving women "guest passes" for day or week use. Thus, the contractor can hire an union "affiliated" person and show good faith efforts in hiring women yet the union never gives the woman membership status.

In New York and New Jersey it is almost impossible to obtain a construction job unless one belongs to a union. It is impossible to attain journeyperson's status in a trade without completing a union apprenticeship program. This can be a significant problem. Women often do not hear about or are not prepared to take the basic entry tests for union apprenticeship programs. In some cases, exams have been found to be discriminatory and testing skills not germane to the work. In New York, for example, the sanitation workers were found to be giving exams that

Rhode Island (50, 7.9% in 1986); Ohio (362, 6.3%); New York (532, 5.7%); Illinois (286, 3.1%); and Pennsylvania (277, 4.1%). In addition, unions outside these states which have successful training or recruitment programs were contacted.

Union attitudes towards women in construction vary widely, even within the same union. Many of the union leaders contacted expressed a belief that women do not want to work in construction because the work is dirty or the weather conditions inhospitable. Many also still feel that women are unable to do the work physically. In addition, there are real obstacles cited by union leaders to attracting women into construction. The process for acquiring a job may require driving quite a distance to a union hiring hall, and then driving a distance to the job site itself. Once on a job, a worker may have to leave home for work at 4:30 a.m. While this is obviously a problem that affects both men and women, for a single mother or a woman who assumes most of the child-raising responsibilities, the problem may be more significant.

However, attitudes in some unions are changing. When discussing the reasons that women left training programs, the reasons cited were the same as the reasons the men left, and the drop-out rates were similar. Training directors acknowledge that women are able to do the work as well as men. The two exceptions are the Ironworkers, who state that women cannot physically do the work without significant physical conditioning, and the Teamsters, who say that for certain kinds of truck driving, the women are better than the men.

Most unions do not specifically recruit for women; the women are welcome to apply and join the union, but the union takes no special steps to reach out to them. In some cases, the unions have been lucky and, by

operating engineers and carpenters, and least successful in recruiting electricians and ironworkers. Indeed, the FHWA July 1987 reports show that while under four percent of the operating engineers and carpenters are women, among ironworkers and electricians, women constitute less than one percent.

The most dramatic step that unions have taken to incorporate women into construction is to set aside a percentage of spots in their training program for women. A road construction project the operating engineers in East St. Louis were working on was shut down by the federal government in 1968 over lack of minorities on the job site, so when women on the site became a concern, the union was determined not to repeat the 1968 shut down. Therefore, in the early 1980s, the union took three consecutive classes of only women. Because the economy in southern Illinois is in decline, they have only taken two classes since then, but they have made sure that there was at least one woman in each of those classes of 10 people.

Despite these efforts and although Illinois ranks in the top half of the country in terms of percentage of women operating engineers, women only comprise 2.9 percent of operating engineers in Illinois. One reason for the lack of women operating engineers may be that the recruitment effort is rather standard. Another possible explanation is the economy in parts of Illinois. As mentioned previously, although the union in East St. Louis has ensured that at least one woman is included in each of their classes of ten, if only 2 classes have been held since 1984, a maximum of two women have joined the union since 1984. Therefore, the number of women operating engineers in Illinois may not have changed drastically since the early 1980s.

In addition to aggressive recruitment, the unions have found that some type of pre-apprenticeship training is helpful in terms of retaining women workers. One operating engineers local near Chicago has a 5-day pre-apprenticeship that is part of the application procedure. This week is not intended to develop skills but rather to acquaint the applicant with the work involved. The Laborers in Spokane have a week of training that has little schooling and is mostly physical labor. The people in the program are then graded, and enter into the apprenticeship program in grade order. The Carpenters in Chicago have a 12-week pre-apprenticeship program which orients the workers in material handling, concrete and residential work. Carpenters in Kentucky work with a JTPA-funded pre-apprenticeship program. The program is 6 months long, and enrollees attend 5 days a week, 8 hours a day. Applicants must meet income guidelines similar to those for the Comprehensive Educational Training Act (CETA) and the Job Training Partnership Act (JTPA), and the Carpenters find that the retention rate of people who come through the program is about 70 percent.

Whenever men enter a field of employment previously dominated by women and whenever women enter a line of work traditionally considered "men's work," on-the-job resentments and tensions are bound to occur. As women have started to move into trade jobs and join the union, one of the problems they face is sexual harassment. While many unions don't think that there is a problem with sexual harassment in their training programs, in the unions themselves, or once their women members are working at job sites, women union members report that harassment is something they often face. Most unions say that they would deal with harassment of a female employee the same way that they would

Administration covering the period from July 1 to September 30, 1987. New Jersey ranks 44th of the 46 states for which numbers are available with 1.7 percent women apprentices. According to the federal regulations, between 20 and 25 percent of enrolled apprentices in New Jersey should be women.

While data broken down by apprenticeable trade are not readily available, it can probably be safely assumed that a majority of female apprentices are in "traditional" trades such as beautician and cosmetologist. Given that there are not large numbers of women in apprenticeable trades, and that the majority of women enrolled in apprenticeship programs are most likely to be found in traditionally female occupations, it is highly unlikely that there are enough women apprentices in construction trades to be called upon to help meet to 6.9 percent goal. Furthermore, of the 772 trades identified as apprenticeable, only 42, or 5.4 percent, are in the construction trades.

Joint Apprenticeship Committees direct the apprenticeship programs in the states. These committees, usually organized within counties, consist of six members. Three are union representatives and three are area employers. It is unclear how much authority the JACs have. They are not the full-time administrators of the programs, although the administrators must consult them before making any decisions. According to one source, the JACs meet only once or twice a year, and meet primarily to decide which applicants will be allowed to enter the program. People serve on these committees on a volunteer basis, for a term without a time frame. If someone cannot meet on a particular evening, someone else (another employer or another union person) can take that person's place. The one requirement is that there be an equal number of employers and

Women and the Trades

Despite the low numbers of women in the skilled trades today, women do have a history of working in nontraditional areas. This history extends as far back as the founding of our country. The greatest social acceptance of women in nontraditional work, however, occurred during World War II when government advertisements promised women men's wages for performing men's work in munitions factories and shipyards. There were countless "Rosie the Riveters" recruited by the U.S. Government who worked in these and other jobs traditionally held by men. After the war ended, most of those women were laid off and few were encouraged to work in the trades again.

While many of the studies of women's nontraditional employment have focused on women in the professions, tradeswomen advocacy groups have studied and written about women in blue collar jobs. These studies provide historical background and current information about women in the construction trades.

An article written by two members of Non-Traditional Employment for Women, notes that the feminist resurgence of the late 1960s led to the formation of organizations dedicated to promoting women's economic well-being. In time, these groups and others advocated that women had to break through the barriers of the nontraditional trades just as they had broken into the male-dominated professions if women were ever going to be able to achieve economic self-sufficiency. The authors conclude that the key to the trades is fair testing and access to apprenticeship

Organizations and Programs . Across the country, women's organizations which focus on bringing women into the trades often train women and advocate for laws and regulations which treat tradeswomen fairly. One of the most important functions these programs perform is to let these women know they are not alone in wanting the ability to do construction work and earn a journey person's wages. They also offer ongoing communication with other "hard-hatted" women."

Some of the most well-established and prominent organizations include: Tradeswomen, Inc. in San Francisco; Apprenticeship and Nontraditional Employment for Women (ANEW) in Renton, Washington; Southeast Women's Employment Coalition (SWEC) in Lexington, KY; Wider Opportunities for Women (WOW) in Washington, DC; Tradeswomen of Philadelphia (TOP-WIN); the Center for Women in Government (CWIG) in New York State; and Non-Traditional Employment for Women (NEW) in New York City. (Addresses for these groups can be found in Appendix VII.)

Tradeswomen, Inc., headquartered in San Francisco, is a strong advocate for tradeswomen in California. In addition to pursuing legal challenges on behalf of trades women, they publish a monthly newsletter and quarterly magazine and coordinate activities for members and affiliate organizations across the country. (A copy of the newsletter is included as Appendix VIII to this report.) Tradeswomen, Inc. also conducts educational seminars to recruit women to the trades and organizes support groups with women from the area working in the same trade. Tradeswomen, Inc. received its seed money for the magazine from the U.S. Department of Labor's Women's Bureau in San Francisco.¹²

¹² Madeline Mixer has been with the Women's Bureau for twenty-five years and her avocation is nontraditional employment for women. She also helped the California State Personnel Board organize its PATH plan mentioned above.

placed into jobs or apprenticeship programs.

PREP, Inc., headquartered in Cincinnati, Ohio, is a nonprofit employment/advocacy organization for women and minority men. Ohio programs offer training for residents of Ohio, Indiana and Kentucky; satellite affiliates are located in Indiana, Kentucky, Kansas, Missouri, California and New York. PREP was started about twenty years ago, primarily to train minority men for the skilled trades. PREP now runs an eight week training program for women in the vertical (building) and heavy construction trades. PREP contracts with the state of Ohio to recruit and train women and assists in job searches to place women in jobs or into union apprenticeship programs.

The Southeast Women's Employment Coalition has an extensive advocacy plan which uses legal, grassroots, and leadership training methods to challenge states on their contract compliance ratings. SWEC's efforts have been successful in several states including Virginia and Ohio. They are currently pursuing an administrative complaint against the USDOT for not monitoring state DOTs' compliance with federal regulations.

Wider Opportunities for Women, Inc., known as WOW, is a twenty-two year old independent, nonprofit organization, located in Washington, D.C. which works to expand employment opportunities for women. For the past fifteen years, WOW has developed employment programs for women in skilled, well-paid nontraditional occupations, worked with employers and unions to develop a partnership for effective hiring and promoting of women, and served as advocates for women in the development of federal employment policy. WOW was one of the original plaintiffs in the suit filed against the Department of Labor (Advocates for Women v. Marshall) which resulted in the amendment of Executive Order 11246 to establish

issues such as hazing, harassment, and relations with supervisors and co-workers.

One of the most successful training and advocacy organizations is NEW, Non-Traditional Employment for Women. Located in New York City, NEW has combined training women for construction jobs along with legal challenges to become one of the top advocates for women in construction in the country. They recently won a law suit against New York City regarding the hiring practices involved in the Battery Park renovations. In that case, a Federal Court Judge approved a settlement in a Title VII class action suit which alleged that women had been systematically excluded from laborer positions for which they were qualified. The settlement established remuneration to all plaintiffs and hiring goals for the Battery Park Project. According to the spring 1987 newsletter published by Non-Traditional employment for Women, "under the terms of the settlement, each of the named plaintiffs will receive \$4000 and will be eligible to share in an additional \$324,000 set aside for women who were discouraged from seeking construction work at Battery Park City or who sought work and were turned away... [the developer] has agreed to make a good faith effort to fill at least nine percent, increasing to ten percent, of available laborer jobs at the Battery Park site with women. A recent state law authorized the Battery Park City Authority to establish an affirmative action plan with a goal to increase the number of women working at the BPC site to five percent of the total construction workforce." In addition, both the BPCA and the developer of the site, Olympia and York, have agreed to meet with NEW representatives to discuss construction schedules and employment needs.

Mary Ellen Boyd, the director of NEW, feels very strongly that

childcare stipends of up to \$50 a week for one child and \$75 a week for two. Funds are limited and the classes must be kept small, but each has been filled. While most graduates of this program are working, a very small number are currently employed in highway construction jobs.

Another program, STEP-UP for Women, is co-sponsored by the Vermont Departments of Education and Employment and Training and the City of Burlington to prepare women for careers in carpentry, welding, automotive trades, logging/forestry, sheet metal, plumbing and machine trades.

Summary

Currently, no state meets the per trade, per job 6.9 percent goal. States which have higher numbers or percentages of women working in the trades appear to have four distinct characteristics: (1) commitment from the state to enforce affirmative action goals; (2) in union states, support from the unions; (3) active recruitment of women by contractors; (4) an infrastructure of active women's organizations. The need for all of the factors to be present can be seen by comparing states such as Washington and Ohio with Pennsylvania. The City of Seattle, the State of Washington and the State of Ohio all have requirements similar to Executive Order 11246. Both states have active women's organizations, ANEW in Washington and PREP, Inc. and SWEC in Ohio. The unions in both states are committed to employing women. Women have been involved in Washington unions for almost 15 years, and the idea of a woman working as an operating engineer or as a carpenter is no longer a surprising event. In Ohio, unions have contracted with PREP, Inc. to provide women and, for example, the Operating Engineers designate a certain number of slots in

SECTION II: WOMEN IN CONSTRUCTION IN NEW JERSEY

Overview

The construction industry, including road building, utilities construction, and commercial and residential building, has long been an almost exclusively male domain. In New Jersey, statistics provided by the New Jersey Department of Labor show that in 1985, 10.1 percent of workers employed in the construction industry were women, up from 5.1 percent in 1960. However, these figures include clerical workers in the industry. Thus the actual proportion of women working in skilled, non-traditional trades jobs in the construction industry is actually lower, perhaps significantly lower.¹³

Examining the most recent statistics collected for the Federal Highway Administration, we find that the number of women working in highway construction in New Jersey increased between 1986 and 1987. Excluding clericals, New Jersey employed 106 women on highway construction in July, 1987, 2.9 percent of the workforce. This figure is up substantially from July, 1986, when only 33 non-clerical women were employed, or 1.3 percent of the total workforce.

The number of tradeswomen working in federal-aid highway and bridge construction jobs in New Jersey has slowly but steadily increased since 1983. In 1983, only 14 of 1,939 tradespeople (or 0.7%) were women. By 1987, that number had grown to 106 tradeswomen out of a trades workforce of 3,632 (2.9%). In addition, the number of women in each trade

¹³This information was taken from a paper entitled "Women in Construction," prepared by Gary LoCassio, Executive Assistant to Pamela S. Poff, Director, NJ Division on Civil Rights (2/3/87).

degree of pressure exerted by the NJDOT, the Contract Compliance Office and engineering supervisors. Contractors in non-unionized states are somewhat more likely than those in unionized states to recruit women from outside the union. However, in New Jersey, direct recruitment of women by contractors poses difficulties because nearly all construction trade jobs are filled through union hiring halls.

Contractor attitudes toward women in construction, and their efforts to recruit women for trade jobs, are unsupportive and weak at best. A survey mailed by Stanwick Associates to 350 contractors and subcontractors who have worked on NJDOT projects within the past year shows that most of the respondents (89 for a 25% response rate):

- do not now have women working in trade jobs on DOT projects
- are unaware of any organizations which refer women for construction employment
- perceive unions as the main cause of the low number of women working on DOT projects.

Of the contractors and subcontractors currently working on DOT projects, 62 percent do not currently have a woman employed in a trade job. Nearly one-third of those working on DOT projects, 31 percent, have **never** employed a woman in a trade. Although few contractors have women working in trade jobs, there does not seem to be any effort to find women. Of those contractors working on DOT contracts, 64 percent are unaware of organizations that refer women for construction jobs.

Over two-fifths of contractors rating the work abilities of women indicate that women cannot do construction work as well as men. While a majority, 56 percent, say that the work abilities of observed tradeswomen were the same or about the same as male workers, 41 percent rate

workers and commented, "Blew a D-8 engine, cost \$15,000."

Contractors also commented on what they feel is undue pressure being exerted on them to reach goals that they feel are unrealistic. "Minority and female workers have been given unfair advantages as it is. They should not be hired just to reach percentage goals." "Quotas-- sometimes they just cannot be met." Included in this feeling is the belief of some contractors that the 16 steps -- a series of steps outlined by the Office of Federal Contract Compliance aimed at recruiting women and minority men and providing a hospitable job site environment -- are not useful. In response to a question about which of the 16 steps were useful and which were not, one contractor commented, "Those steps are only useful if you are seeking 'warm bodies.' All 16 [are not useful] since they mostly recruits people who are 'waiting' for a job." Another contractor complained that the "volume of paperwork is too cumbersome."

The contractors also reiterated their belief that unions and not the contractors were responsible for the lack of women in construction. One contractor listed the unions as being most responsible and the contractors least responsible, with FHWA and the federal and state DOT in between. Another commented, "I don't believe [bringing women into construction] is important to unions at all. They just want their union dues and initiation fees." A third said bluntly, "Union contractors utilize union workers."

Some contractors also criticized the DOT Civil Rights Compliance Officers. One asked, "Do they function? Count workers and you will see most jobs are way under for minorities and women." When asked to describe their relationship with the officers, one wrote, "We are very cooperative, they are not very cooperative," while another answered, "Never heard of them."

98 semi-skilled and 21 unskilled women to reach the goal. In the two Laborers locals (#472 and #172) that supply workers to NJDOT jobs, only about 70 construction workers (out of a combined membership of about 10,600) are women. (The union has other female members who work in maintenance positions at several race tracks in the state.) Thus, for the Laborers to meet the goal, about 50 more women would have to join the union as construction workers and then all of the female members would have to be sent to DOT jobs.

In the case of the Operating Engineers, there are not enough women in the union to meet the DOT goals, even if every woman operating engineer was sent to a DOT job. Thirty-three of the 7000 Operating Engineers in Local #825 which covers all of New Jersey are women (0.5 percent). Based on the work load in 1987, the Operating Engineers would have to supply 47 women operators to reach the 6.9 percent goal.

The Carpenters and Millwrights Union has twice the number of women, 30, needed to reach 6.9 percent, but only 6 members worked on DOT sites according to the July 1987 report. While the Carpenters have the raw numbers of women to meet the requirement, to do so would require moving women from non-DOT jobs to DOT jobs, since only 0.2 percent, or 30 of 18,000 members, of the union are women.

Finally, in the case of the Northern New Jersey District Council of Ironworkers, which includes five locals, only one woman is a member of the union and she was working on a DOT job according to the July 1987 reports.

These numbers do not necessarily reflect union opposition to women on the job site. At the very least, each of the unions in New Jersey expressed a willingness to accept women who want and are able to do

Unions can also take a lead role in another retention issue: sexual harassment. Union members are the people closest to where the harassment occurs, and could be the first step in halting harassment; peer pressure and sanctions from union leaders can have an effect on those found harassing women members.

Apprenticeship and Training. In New Jersey, as in every other state, the Bureau of Apprenticeship and Training has a Director and Field Representatives and a BAT-recognized registration agency. In New Jersey, the registration agency represents a partnership between this state's Vocational Education Division and the BAT. Dennis Fitzgerald, BAT Director for the State of New Jersey, said that the partnership between the two agencies has worked for about thirty years and that they "jointly administer apprenticeship programs." Each county has an apprenticeship coordinator who reports to the Director of Apprenticeships in the Vocational Education Division.

In order to have a new apprenticeship program approved and registered, three steps must be followed. The county apprenticeship coordinator signs a statement that the necessary instruction is available either at a union site or at one of the vocational schools. One of the five New Jersey BAT field representatives reviews the statement and insures that on-the-job training is available. The BAT Director gives the application a final review and approval.

Programs are supposed to be monitored on a yearly basis for compliance. When BAT field representatives monitor programs, they are charged with ensuring that programs make a "good faith" effort to recruit women. This "good faith" effort includes advertising the new courses thirty days before they are to start, sending notices to state agencies, the

one for an attorney, and the Director now reports directly to the Commissioner. In addition, NJDOT promulgated new rules and regulations which place the Director of Civil Rights Compliance on the Prequalification Committee which annually judges a contractor's fitness to perform DOT work. Beginning in the summer of 1987, the issuance of show cause notices was increased to contractors who fell far short of meeting the federal goal and, in certain circumstances, payments were withheld from contractors. Another aspect of NJDOT's contract compliance activity includes increased monitoring to ensure an environment free of harassment.

Indeed, it is only in those states which have made reaching the 6.9 percent goal and maintaining a harassment-free work environment a real priority that we find significant forward progress in the numbers of women working in federally-funded highway construction. Moreover, when policies and procedures are clearly outlined to contractors, taking steps to enforce the policies naturally follow. NJDOT is following in the steps of those states which have taken an active interest in attempting to reach the 6.9 percent goal.

NJDOT has also taken steps to increase the number of women working in its own maintenance workforce. Currently, the Department has set an annual goal for women as 30 percent of all new hires. For fiscal year 1988 (ending June 30, 1988), that percentage translates into 50 women; to date, 26 have been recruited and hired.

Role of FHWA. As the review agency which translates federal policy for NJDOT, the FHWA can play an important role in the effort to increase women's numbers in the construction workforce. As was pointed out earlier, the manner in which FHWA collects data for its July reports allow

in the first place.¹⁴

The wages for non-traditional work are one incentive for women to work in these types of jobs. In New Jersey, wages paid employees on highway construction depend on who is funding the project. Projects funded entirely by the federal government are subject to wage guidelines issued by the US Department of Labor under the Davis-Bacon and related acts. However, the only work in New Jersey that is entirely federally funded is on installations such as McGuire Air Force Base or Fort Dix.

Projects that are either entirely state funded, or in which the state and the federal government split the cost, are subject to wage guidelines determined by the New Jersey Department of Labor for each county; these must be equal to or higher than Davis-Bacon wages. Although the wages paid are set individually for each county, for the most part they are quite similar. Journey-level carpenters in New Jersey generally earn about \$20 an hour in wages and about \$5 an hour in benefits. A journey-level tractor trailer driver earns about \$16 an hour in wages and \$4 an hour in benefits while a raker (an asphalt laborer) earns about \$14 an hour in wages and \$4 an hour in benefits. The greatest variety in wages and benefits is among ironworkers, where a journey-level ironworker in Cape May County will earn \$16.43 an hour in wages and \$9.20 in benefits, while an ironworker in the Northern New Jersey District Council will earn \$19.60 an hour in wages and \$10.18 in benefits. The wages for journey-level operating engineers is uniform statewide, with combination backhoe operators, for example, earning \$20.63 an hour with \$8.25 in benefits. When compared with traditional female jobs -- clerical or retail sales, for example, these wages are particularly attractive. Clerical or retail sales workers

¹⁴ A description of the Focus Groups and their results can be found in Appendix IX.

However, the responsibility does not fall entirely on the contractors since DOT supervising engineers and contract compliance investigators are obligated to monitor affirmative action goals and the job environment. A more aggressive enforcement policy by the Department of Transportation and clear reporting procedures instituted by contractors and unions are essential. Currently, steps are being taken by contractors and unions to prevent sexual harassment on job sites.

Sexual harassment has no common definition and that presents some special challenges on the job site. Harassment and hazing on the construction site take place among all employees, male and female. Union women indicated that hazing is generally part of the practice of becoming an accepted member of the work crew. Thus older workers tend to "haze" younger workers; ethnic and racial jokes are common; practical jokes abound. But hazing often has a different impact on women workers, particularly if it includes repeated and unwarranted sexual comments or advances and may be a primary reason why some women drop out of work even after the long struggle to achieve employment.

Another problem for women working on the job site in New Jersey and other states where few women are available, involves having contractors keep women workers on the job even though their work is complete solely to meet affirmative action goals. In the focus groups, union women reported that often they are required to sit around with "nothing to do" because a contractor does not want to lose a tradeswoman once he has her on the job site. This contributes to a woman's problems on the job site and with her fellow workers, making it more difficult for her to be integrated into the workplace.

The environment of a construction job site, in New Jersey and across

work; in others, they join a union apprenticeship program.

The program is endorsed by Middlesex County's building trades unions and all classes are taught by union members. Several eight-week courses are taught a year. Each course teaches the skills for a specific building trade.

Another program which offers non-traditional employment training in white collar trades is the Career Development Center for women located at the Bergen County Technical Institute. Funded by the New Jersey Department of Education's Division of Vocational Education and the New Jersey Division on Women to provide special services for women, the Center's program includes necessary support services such as counselling, assertiveness training, childcare and transportation.

A third program, called W.I.N. (Women in Non-Traditional Jobs) is located at Gloucester County Vocational Technical School. It is sponsored by the local JTPA council and offers women training in a variety of skills including metalwork, auto repair, and carpentry. This program also has an on-site day care center for participants' children.

Most of the programs that encourage women to enter non-traditional occupations are sponsored by the Department of Education's Sex Equity office which allocates federal funds designated for this purpose. The Sex Equity program, headed by Elizabeth Stambolian, currently funds five sex equity projects in the state. One program, Project PEP (Publicity/Editing/Publications), is located at Rider College in Lawrenceville and monitors the secondary school implementation of programs which encourages young girls to make nontraditional career choices. Another, Project SERVE (Sex Equity in Vocational Education), located at the New Jersey Vocational Education Resource Center in

Section III: Recruiting Women to the Trades in New Jersey: Recommendations For Action

The number of women in the construction trades is directly related to the type of information, education and training available to women and the recruitment of women to apprenticeship programs. The low number of women in the trades is, to a large extent, due to the lack of information available to women. In situations such as the military, where women are given the same information and opportunities as men, they perform in nontraditional areas as well as the men.

Education Programs

Better information about the career opportunities in construction must be distributed to young girls and women of all ages. Some of this can be done through Vocational Education programs. If young girls in grade school are offered experiences and encouragement similar to those offered to boys, special recruitment efforts and pre-apprenticeship training may not be necessary to attract the women of the future to the trades.

Opportunities also exist for developing partnerships between schools, unions and contractors to promote women's involvement in the trades. An effort should be made in secondary and vocational schools to expose young women to the jobs available in highway construction. Both male and female students should be dissuaded from the idea that vocational opportunities for men are as ironworkers and for women are as beauticians. Visual aids (movies, fact sheets) should be used to show women working in non-traditional fields, and guidance counselors should be actively encouraged to inform young women about the available

example, the ironworkers physical test includes climbing an I beam, a skill that a majority of men said they were taught by a male relative *before* they took the test. Pre-apprenticeship can take the place of the informal training that men have traditionally received.

Pre-apprenticeship programs serve several purposes. First, women in the program develop a basic understanding of how the apprenticeship program works -- its requirements and expectations. Second, women who complete the program have a clearer idea of what trade work entails. Thus women who have misconceptions about the work have these corrected before they apply for the union apprenticeship. Third, the women applying to the unions are more likely to possess the physical skills necessary for the work. Finally, these programs help to allay the concerns of the unions, contractors and the women already on the job that unqualified women would be working on the sites simply to meet government goals.

If possible, some type of financial aid should be made available to women in the pre-apprenticeship programs. In some cases that might include JTPA funds or other employment and training dollars targeted toward economically disadvantaged women, especially single-parent households. Unions which commit substantial dollars to training their members, are presented with a difficult challenge when young, trained women work for several years and then leave the union to begin families. On the other hand, women heads of households are the most likely to remain working for an extended period of time in jobs such as these which offer substantial wages. Yet women heads of households are least likely to have the financial resources necessary to take advantage of training programs which do not include financial compensation. Financial aid would allow those women most likely to succeed, but least likely to be

against members who are found to be engaging in harassing behavior.

Contractor Efforts

Contractors must play a role in increasing the numbers of women in construction. The Associated General Contractors of New Jersey and the Utility and Transportation Contractors of New Jersey must continue and expand their efforts to educate their individual members about the need to comply with affirmative action mandates.

Contractors must also actively recruit women for their trainee spots and when requesting employees from a union they must specify the required number of female workers needed. These trainee positions will play a potentially important role in providing women with "bridge" employment once they complete pre-apprenticeship training and before union apprenticeship programs open up.

Contractor- Union Initiatives

Project BUILD can provide a vital link in having contractors and unions join together in these efforts. The unions have often said that they would be happy to accept qualified women recommended to them by contractors. Many of a union's activities are spurred by contractor requests. Unions do not generally open new training programs until contractor requests for personnel necessitate such a move. The unions say that they are able, for the most part, to fulfill contractor requests for women. At the same time, the unions do not have enough women members to meet the 6.9 percent goal. If contractor requests for women were made more consistently and more strongly, the unions would need to take steps to fulfill those requests. It should be remembered that the contractor has the legal responsibility to meet the goal. The contractors must begin requesting the personnel to meet it.

harassment-free workplace and if the person responsible for maintaining such a site is identified, such a workplace may eventually become more hospitable. If at the time employees sign W-2 forms to begin work on a project, they are handed information outlining to whom they should report problems, employees may become more aware of their rights and more likely to report violations of those rights.

NJDOT Efforts

The NJDOT Office of Civil Rights Contract Compliance must continue its review and enforcement of affirmative action goals in contracts and strengthen the sanctions against contractors found out of compliance with the law. In addition, NJDOT must ensure that members of its construction supervisory engineering staff are aware of their responsibility for enforcing day-to-day compliance with affirmative action policies; internal policies and procedures for supervising engineers and compliance staff must be clearly outlined and personnel must be held accountable for oversight and enforcement.

FHWA Responsibilities

The Federal Highway Administration should examine and revise its data collection procedures so that a more accurate count of women on federal-aid transportation construction projects can be taken. They should serve as a conduit of information on affirmative action policies and should examine their procedures to offer consistency to states when addressing levels of varied compliance. It would also be beneficial for the FHWA to become directly involved in educating Bureau of Apprenticeship Training (BAT) officials about the need for women construction workers and the federal goals for construction employment.

Appendix I

Women in Construction Task Force

"Moving Women into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

Women In Construction Task Force

Hazel Frank Gluck, Chairwoman
Commissioner
Department of Transportation

Judith Shaw Berry, Executive Director
Chief of Staff
Department of Transportation

MEMBERS

Administration

Drew Altman, Commissioner
Department of Human Services

Leonard Coleman, Commissioner
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Saul Cooperman, Commissioner
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Brenda Davis, Chief
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W. Cary Edwards, Attorney General
Department of Law and Public Safety

Francis R. Gerard, Major General
Department of Defense

John J. Kessler, Division Administrator
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Eugene McCaffrey, Commissioner
Department of Personnel

Borden R. Putnam, Commissioner
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Other

Daria Finn, President
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Inez Killian, Affirmative Action Officer
Casino Control Commission

Joan Sampieri, Research Assistant
Commission on Sex Discrimination in the Statutes

TASK FORCE STAFF

Stanwick Associates
Kathy Stanwick, President

Summary of Literature Review

The articles reviewed can be broken down into five broad categories--presentation of career choices, training, occupational sex segregation, work experience, and women in construction. The following is a brief summary of the major points of the articles in each category.

Presentation of Career Choices

The literature emphasized that non-traditional occupations are not presented as an option to women making career decisions. A review of career guidance instruments suggested that they need to include more non-traditional occupations for women. A study of factors affecting women's career choices concluded that family members, friends, teachers and counselors need to be aware of and support a woman's desire to enter a non-traditional field. An analysis of how women's magazines present work indicated that women are portrayed as full-time workers but there was little evidence of presentation of non-traditional blue-collar jobs.

Training

The literature discusses the need for women to receive additional training and support besides apprenticeship programs. The point was also made that women will leave traditional jobs for non-traditional ones--most probably in search of higher pay.

Occupational Sex Segregation/Sex Discrimination

The articles in this category are a cross-section of the different theories used to explain occupational sex segregation. In reviewing the literature, it was clear that some scholars see occupational sex segregation resulting from different preferences and decisions of men and women, while others explain it by sex discrimination or bias on the part of employers. The results of the studies generally supported the sex bias theory. Another article explored occupational sex segregation by looking at the relationship between women's perceptions of male co-worker hostility and their satisfaction with non-traditional jobs. The evidence in this study refuted the notion that women are more concerned with social interaction in the workplace than with economic issues and interesting work.

Work Experience

The articles in this section illustrate the obstacles women

Literature Review

The following is a review of literature and previous research on women employed in non-traditional occupations. The following reference sources were consulted from 1984 to the present: *Readers' Guide to Periodical Literature*, *Psychological Abstracts*, *Sociological Abstracts*, *Womens' Studies Abstracts*, and *Education Index*. The information uncovered ranges from columns of advice in women's magazines to scholarly research. This literature review will summarize the various articles of interest.

Presentation of Career Choices

Vocational Education Journal "A Nontraditional Conference," Dennis McLelland, May 1986 pp. 57-58.

The article describes the 'Nontraditional Job Training for Women' county-wide conference, held by the Union County, NJ Vocational-Technical Schools. Local high school counselors, high school girls, adult women and leaders from corporations and community agencies attended the conference.

47% of all families maintained by women are below poverty level and 90% of single parent families are headed by women. Millions of women are in need of training designed to teach job skills that are in demand. Many of those jobs fall under occupational areas that are dominated by men and still nontraditional for women. The author sees a need to hold similar conferences.

The Vocational Guidance Quarterly "Nontraditional Career Options for Women: An Evaluation of Career Guidance Instruments," Merna Dee Galassi, Lawrence K. Jones, Madra N. Britt, Vol. 34, No. 2 December 1985.

Subject: The purpose of the study was to identify the potential of career instruments to suggest nontraditional occupations to women. It is hypothesized that if only a small proportion or number of nontraditional jobs are included in an instrument and its supporting materials, then only a relative few can be suggested to the user.

Method: The authors analyzed 7 currently used career guidance

every 5 jobs."

Job requirements, with rare exceptions, are unrelated to sex. Society has labeled certain jobs as women's and men's based on tradition, rather than job content. The implications for vocational education are great--must make necessary training available and offer guidance, evaluation and assistance. Women must be encouraged to explore all available options and be provided with the pertinent information relative to that choice so they can make a wise and solid decision. Barriers to employment need early identification so that women are prepared for what faces them in the future. Not until the majority of women are assisted and directed into the normally accepted male occupations will the earnings gap between women and men be reduced.

Psychology of Women Quarterly "Factors that Affect Non-traditional Vocational Enrollment Among Women," Betsy Bosak Houser and Chris Garvey, Volume 9, No. 1, March 1985 pp. 105-117.

Subject: This study examines the relationship between a young woman's career choice and several internal and external factors that are likely to affect her choice. In this study, women who made non-traditional choices are compared with ones who made more traditional choices and with women who considered nontraditional careers but chose traditional ones.

Method: Data was collected at 3 secondary schools, 3 community colleges and 3 vocational schools. A total sample of 470 females, half enrolled in female traditional programs, the other half in male traditional programs, were given a questionnaire. Comparisons were made on:

1. potential external or social support influences: attitudes of parents, teachers or friends, and
2. internal personality factors, such as sex role orientation, locus of control and fear of success.

Discussion: The data revealed that the one dimension that most significantly differentiated the nontraditionals from both the traditional and the considereds was the amount of support and encouragement they received from the the important others in their lives. The nontraditionals consistently received more support from male and female friends, family members, teachers and counselors.

The article concludes that for the purpose of improving educational quality and fostering equality of educational opportunity, the attention of both policy makers and education staff members should be

teach women construction skills." Two women construction workers formed it "as a remedy for cultural biases that discourage women from learning mechanical skills most men take for granted." The women found that the apprenticeship programs offered to construction workers, which are supposed to make skilled workers out of inexperienced people through job training and classroom instruction, assume a level of skills that only men have been able to gain.

The participants in the project ranged from teachers and students, child care and social workers, a gardener and a disc jockey. Several were un or underemployed and hoping to break into well-paid blue collar work. The first construction project consisted of building a women's retreat. There were some mistakes in the construction, but overall it was a success and plans are on for two more projects.

Comments: This article makes two points repeated throughout the literature: 1. women need additional training/support besides the apprenticeship programs and 2. quite often, women go into non-traditional jobs from traditional ones (teacher, social worker).

Essence "Breaking Tradition: A Look at Opportunities for Women in Blue Collar Jobs," Patrice Gaines-Carter, April 1984 p. 30.

In this article, Carolyn Tapscott, director of non-traditional work programs at WOW (Wider Opportunities for Women) discusses women entering blue collar positions. "Training programs, jointly sponsored by labor organizations and women's groups, are cropping up around the country in an attempt to feed more women into apprenticeships that prepare them for blue collar jobs. Last fall, several labor unions joined WOW in setting up a project to prepare women for construction-trade apprenticeship programs."

Despite these new programs, women still represent a miniscule segment of blue collar workers. Tapscott spoke of the myth that a woman is not suited for some blue collar jobs because of her physical build. "We've found that many jobs require no more physical strength than housework. Even in those requiring more strength, a woman in good physical condition can perform it."

attainment of those women. The implication for policy makers is that better linkages need to be developed between training institutions and employers if nontraditional training for economically disadvantaged women is to be more effective.

Canadian Journal of Behavioral Science "Sex Bias In Judgements of Occupational Suitability," Rudolf Kalin and David C. Hodgkins, Vol. 16, No. 4 October 1984.

The division of labor in the world has proven to be remarkably resistant to change. There is a substantial way to go before equality is approached in female participation in traditional male occupations (industrial engineer, dentist, physician and professor). The authors argue that sex bias in judgements of occupational suitability is a base for the persistence of this division.

The authors clarify two types of sex bias: (1) denigration of women--lower evaluation regardless of behavior and (2) sex role congruence--reward of sex role appropriate behaviors. It is appropriate to conclude that sex role congruence is an important determinant of occupational suitability judgements. Males and females are considered suitable for in-role and unsuitable for out-of-role occupations.

The authors conclude that sex bias is not inevitable. They say that providing relevant and detailed information, particularly of a personal sort, about job candidates can significantly reduce and even eliminate sex bias.

Social Problems "Craftworkers and Clerks: The Effect of Male Co-Worker Hostility on Women's Satisfaction with Non-Traditional Jobs," Brigid O'Farrell, Sharon L. Harlan, Vol. 29, No. 3 February 1982.

Subject: The authors aim to explore occupational sex segregation by providing new evidence on the relationship between women's perceptions of male co-worker hostility and their satisfaction with non-traditional jobs. Employers assume that women's behavior is influenced more by co-workers' reactions than by other dimensions of the job such as pay, challenging work or advancement opportunities. This perpetuates continually focusing on social relationships on and off the job as an explanation for women's but not men's market behavior.

Organizational Behavior and Human Performance "A Theoretical Approach to Sex Discrimination in Traditionally Masculine Occupations," James R. Terborg and Daniel R. Ilgen, Vo. 13, June 1975, pp. 352-376.

Subject: The authors began by reviewing the relevant theoretical framework.

Sex discrimination is conceptualized as having two components: (1) access-limitations placed on an identifiable subgroup at the time a position is filled--e.g. lower starting salaries, closure of higher skill jobs and failure to recruit. (2) treatment-invalid differential treatment of subgroup members once they gain access--e.g. slower rates of promotion, assignment to less attractive positions, lower and less frequent raises.

According to the authors, full utilization of women in the work force will not be accomplished until more emphasis is placed on research regarding working women which addresses the underlying psychological factors involved in occupational sex discrimination. Three theories of occupational sex discrimination:

1. stereotypes-the most important single process which allegedly has created a barrier to the integration of women into management and scientific positions is the existence of pervasive and persistent sex role stereotypes.

2. attribution-task-relevant behaviors can be attributed to combinations of such factors as luck, effort, ability and task difficulty (male succeeds=skill, female succeeds=luck)

3. equity-makes predictions about members of a dyad in an exchange relationship and not about the behavior of someone outside the dyad who may be in a position to allocate rewards.

The objectives of this study were to examine access sex discrimination on the variables of hiring and starting salary and treatment sex discrimination on the variables of promotion, delegation of work, employee development, employee evaluation, and distribution of monetary rewards.

Method: The authors used an In-Basket exercise as an experimental simulation using 36 male and 7 female undergraduates enrolled in a personnel administration course.

Findings and Conclusions: Access discrimination is demonstrated by female applicants being offered lower starting salaries although rated equally desirable. Treatment discrimination was evidenced by females

job, which surprised me.

Q: Do you think that women miners are concentrated in the lower paying mining positions?

A: Jobs aren't awarded by sex. They're awarded by seniority.

"Management is not sympathetic to women in non-traditional jobs, but they do know the advantageous legal position."

3. Interviewee: a salt miner

"At the mine, most of the belt line crew are women. All they do is put in belts and fix the ones there...it is pretty much a 'ghetto job'. None of the women in the mine are encouraged in anyway to bid for higher paying jobs. There are no women production miners. The few women in maintenance take a lot longer to go up the maintenance ladder than the men do."

Comments: It is evident that women are at a disadvantage in getting the more challenging assignments and working their way up.

Women's Studies International Forum "I'll Never Go Back to Women's Work Again!" Synnova Aga Vol. 7, No. 6 1984, pp. 441-448.

Subject: The article discusses the integration of women in male dominated environments. It is based upon a Norwegian research project on women who during the 1970s entered jobs traditionally reserved for men in industry. The types of jobs the women held were blue collar.

Method: The study took place from 1975-1980. It was implemented through questionnaires, surveys and observation.

Discussion: The following summarizes the major observations of the article.

Getting a job: It was found that not just any woman could get a traditionally male job. 38% of the women interviewed were closely related to or acquainted with someone in the firm. The hiring policy, in practice, consisted of avoiding opposition from the foreman and male employees, not irritating the men by giving good jobs to women or by employing too many women, and in giving the women jobs that were difficult to get men to fill, either because of the type of work, or the relatively low pay.

Training: Women were given jobs the men no longer wanted or because there were not enough men. The women were placed in a restricted number of jobs, usually after a short course of necessary, but not particularly thorough, training. Because they lacked training they

Subject: The purpose of the study was to compare work-related attitudes of men and women holding the same position. Past studies have used the gender model to explain women's work attitudes and behavior, saying women are:

1. less involved and committed to work
2. not interested in intrinsic aspects of work
3. more concerned with friendships
4. more willing to submit to bureaucratic subordination and less concerned with autonomy.

On the other hand, male attitudes and behaviors have been explained by the work performed--a worker's subjective reaction to his job. This is the job model.

According to the authors, the gender model is too simplistic and there are inconsistent findings supporting it. The crucial issue is one of examining the relative importance of the values and expectations that a worker brings into a job vs. that job's particular structure and environment. This lack of knowledge is especially apparent when one attempts to assess the job satisfaction levels of women working in male dominated occupations.

Method: This study was an exploratory analysis of work orientations and job satisfaction levels of women correctional security officers compared to male officers in the same institution. The respondents to a survey of work-related attitudes were compared along several dimensions: background characteristics, reasons for choosing job, attitudes towards inmates, reactions to perceived working conditions, attitudes to co-workers, and levels of general job satisfaction. 40 female and 139 male guards responded.

Findings and Conclusions: The results failed to demonstrate much support for the utilization of gender as a primary explanatory variable of correctional officer job satisfaction. Generally, the findings supported the job model, which suggests that the attitudes of working women are a function of their position in the organizational structure and immediate working conditions.

Social Policy "The Problems of Women Oil Workers," Susann Wilkinson, Spring 1984, pp. 27-29

Subject: This article focuses on the conflict resulting from women's entry into nontraditional occupations. Discussion of an in-progress case

even more on the hiring process. Part Four outlines the history of the SWEC complaint against all fifty state DOTs and the request to have the US DOT investigate the states. Part Five describes the actual experiences of some women in the trades, and includes a photo essay. Part Six is concerned with organizing strategies and uses the examples of specific states as case studies. A list of resources is included at the end of the handbook.

A TERRITORIAL ISSUE: A Study of Women in the Construction Trades. Laurie A. Westley, a project of WOW's Women's Work Force Network and the Center for National Policy Review, Washington, D.C.: Wider Opportunities for Women, 1982.

The basic premise of this document is that, as the title suggests, the issue of women's entrance into the construction trades has a great deal to do with the notions of the proper territories or spheres of women and men. There are nine sections to this report, including the introduction plus two appendices. The introduction offers a history of WOW and the genesis of the study that this report covers. It also includes a brief overview of equal employment opportunity in federal contracts and the goals and timetables concerning the employment of women in construction.

The study monitors four unnamed sites that are representative of other sites. Part of the study included in-depth interviews with women working on construction sites. Individual chapters consider: the impact of goals and timetables for women; the problem of access for women; the question of whether paperwork is really burdensome for contractors; the job site conditions for women; stereotyped attitudes and their effects on women workers; regulatory compliance and enforcement; the entrance of women into the trades; the women's own reflections about their work; and recommendations.

The recommendations include the development of pre-apprenticeship training programs for women; maintenance of the federal goals and timetables; greater enforcement of the regulations; a national technical assistance effort to be established by the OFCCP to focus on recruitment, outreach, and sexual harassment; a greater effort to publicize "sexual harassment guidelines"; a project to provide practical information to women trainees; the placement of at least two women at a worksite; and the development of support groups for women working in the construction

Appendix III

Women in Construction Task Force Subcommittees

"Moving Women into New Jersey's Roadbuilding Industry"

A report prepared by
Stanwick Associates

WOMEN IN CONSTRUCTION TASK FORCE

Compliance Subcommittee

Chairman Phil Littlejohn, Director
Office of Civil Rights, NJDOT

Theresa Cortina, Compliance Supervisor
Office of Civil Rights, NJDOT

Lloyd Jacobs, Staff Specialist
Federal Highway Administration

Inez Killian, Affirmative Action Officer
N.J. Casino Control Commission

George Laufenberg, Business Manager
Carpenter and Millrights Union, #620

Frank Ryan, Equal Employment Opportunity and Safety Coordinator
The Conduit and Foundation Corp.

WOMEN IN CONSTRUCTION TASK FORCE

Job Site Subcommittee

Chairman: Richard Forman, Executive Director
Associated General Contractors of N.J.

Vicky Allen
Division of Civil Rights, NJDOT

Joe Britt, Field Manager
Division of Civil Rights, NJDOT

Mike Kjetsaa, Assistant Chief Engineer
Construction Maintenance, NJDOT

Raymond Pocino, President and Business Manager
Construction and General Laborers Union, Local #172

Pamela Poff, Director
Division on Civil Rights
N.J. Department of Law and Public Safety

Olga Sharma, Chief
Bureau of Program Development
Office of Civil Rights, NJDOT

Ed Wanzer, Supervisor of Technical Assistance
Office of Civil Rights, NJDOT

WOMEN IN CONSTRUCTION TASK FORCE

Recruitment Subcommittee

Chairman: Thomas Rowe, Jr., Director of Training
Operating Engineers Local #825

Robert Briant, Executive Director
Utility and Transportation Contractors of N.J.

Homer Bruno, Assistant Director
N.J. Department of Labor

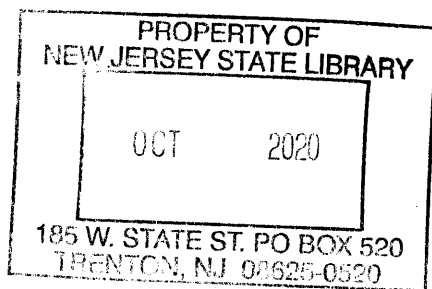
Natalie Havran, Director
Office of Personnel, NJDOT

Audrey Howze, Director
EEO/AA Division
N.J. Department of Personnel

Denise Maloney, New Opportunities Program Coordinator
Passaic County Learning Center

Ed Wanzer, Supervisor of Technical Assistance
Office of Civil Rights, NJDOT

Major Elizabeth Yull, Major
N.J. Department of Defense



Appendix IV

Ohio Executive Order 84-9

"Moving Women into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

STATE OF OHIO
Executive Department

OFFICE OF THE GOVERNOR

Columbus

AMENDED EXECUTIVE ORDER 84 - 9

WHEREAS, the Fourteenth Amendment to the Constitution of the United States requires the State of Ohio to assure that all persons have equal employment opportunity on State public works contracts; and

WHEREAS, by the enactment of Section 4112.02 and related sections of the Ohio Revised Code, the Ohio General Assembly has prohibited employers, labor organizations and joint labor-management committees controlling apprentice training programs from engaging in any unlawful discriminatory practices and has thereby declared the elimination of such discriminatory practices to be the public policy of this State; and

WHEREAS, by the enactment of Section 153.591 of the Ohio Revised Code, the Ohio General Assembly has required that every State contract for the construction, alteration or repair of any public building or public work must contain an antidiscrimination covenant binding upon the contractor, subcontractor, or any person acting on his/her behalf; and

WHEREAS, the above-mentioned State laws, together with the forfeiture and cancellation penalties prescribed in Section 153.60 of the Ohio Revised Code, demonstrate the General Assembly's intention, consistent with the State's constitutional mandate under the Fourteenth Amendment, that public contracts shall be performed only by contractors who comply with Ohio laws prohibiting discrimination and guaranteeing equal opportunity in hiring and employment; and

Services, through the State Equal Employment Opportunity Coordinator, shall establish uniform statewide goals for the utilization of women on state and state-assisted construction contracts. The percentage of female utilization set out in this order is to be expressed in terms of female hours of training and employment as a proportion of the total hours to be worked by the contractor's entire work force in each craft or trade on all projects, both state and non-state, in the State of Ohio during the performance of the contract or subcontract.

Goals for the utilization of women on such State or State-assisted construction projects may exceed but may not fall short of those currently in use by the federal government at the effective date of this Order.

No state contractor's compliance status shall be judged alone by whether or not goals and timetables are met. Rather, each contractor's compliance posture shall be reviewed and determined by examining the contents of the contractor's program and his/her good faith efforts to implement such program to meet the goals herein established.

This Order shall take effect immediately and the Director of the Department of Administrative Services, through the State Equal Employment Opportunity Coordinator, is further directed to promulgate the changes in existing EEO Rules and Regulations necessary to conform to the intent of this Order within 120 days of the filing of this Amended Executive Order 84-9.

Appendix V

"Equal Employment Opportunity in Apprenticeship and Training"
Federal Register, Part IV, May 12, 1978

"Moving Women into New Jersey's Roadbuilding Industry"
A report prepared by
Stanwick Associates

Appendix II

Summary of Relevant Literature

"Moving Women into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

efforts will determine the possibility of economic self-sufficiency for many women.

The authors also discuss the barriers to women's success in the skilled trades. They conclude that fair testing and access to apprenticeship training programs are both key to easier entrance for women into the trades. Finally, the authors argue that the ultimate success of women's endeavors in the nontraditional fields depends on the development of women's advocacy organizations such as their own.

Miscellaneous

Vital Speeches of the Day "Working in a Man's World: Are Women Making Progress?" Carol Crosthwaith, January 1, 1986.

The article was a transcript of a speech delivered October 23, 1985 to the National Council of Jewish Women. Ms. Crosthwaith was asked to give some pointers.

"Women don't need to be like men to succeed--there are strengths to being a woman. Individuals who know how to use the best of masculine and feminine traits will bring the greatest value to their organization. Tips on working in a man's world:

1. Give up thinking you can change other people
2. Don't make an issue of being a woman--don't set yourself apart
3. Stay above any tactics which men or other women may use against you
4. help other women
5. be competent
6. know your strengths and use them"

Comments: Her advice was directed toward professional women as opposed to blue collar women.

The New York Times Magazine "Women vs. Men in the Workforce," Andrew Hacker, December 9, 1984 pp. 124-129.

**FRIDAY, MAY 12, 1978
PART IV**



**DEPARTMENT OF
LABOR**

Office of the Secretary

**EQUAL EMPLOYMENT
OPPORTUNITY IN
APPRENTICESHIP AND
TRAINING**

above as we discuss the amendment on a section-by-section basis.

Background

Regulations published at 29 CFR Part 30 establish policies and procedures to promote equality of opportunity in apprenticeship programs registered with the U.S. Department of Labor or with recognized state apprenticeship agencies. The regulations prohibit discrimination based on race, color, religion, national origin or sex.

They also require the adoption of written affirmative action programs including the development of goals and timetables. But while the present regulations require the elimination of sex-based discrimination, they do not require that the written affirmative action plans cover women. Also, a sponsor currently is not required to establish and attain goals and timetables for women although goals and timetables are required for minorities.

Over the last several years the Department of Labor has received a number of requests to amend 29 CFR Part 30 to make the written affirmative action plan requirement, including goals and timetables, applicable to women. Most recently a group of organizations petitioned the Department of Labor pursuant to 5 U.S.C. 553(e) to initiate rulemaking proceedings to cover women in affirmative action plans relating to registered apprenticeship programs.

The Department of Labor has examined the status of women in apprenticeship programs and has concluded, based on their participation rate, that 29 CFR Part 30 should be amended to require that written affirmative action plans for apprenticeship programs cover women, including the establishment and implementation of goals and timetables.

As the petition for rulemaking states:

The percentage of women in the civilian labor force has steadily increased from 1970 to 1976, when the percentage of the work-force which is female had climbed to a new high of 40.5 percent. However, despite a continuing climb in overall labor force participation, women are generally confined to five low-paying categories of work: clerical, domestic work, teaching, nursing and sales. Women comprised only 4.5 percent of all craft and kindred workers—"The skilled trades"—in 1975. A woman working full-time, year-around, in 1974 as a clerical had a median income of \$4,827; a domestic earned \$2,676; a salesperson \$3,168; and a teacher below the college level, not a year-round worker, could expect \$7,739. In contrast, male craft workers reached a median income of \$12,024. [Footnote and reference omitted.]

Historically, women have had only limited participation in apprenticeship programs, which is how many skilled craftworkers enter their jobs.

In 1976 of the 11 million skilled blue-collar workers, only slightly over a

half million (545,038) were women. Nearly 185,000 of these women were bakers; tailors; upholsterers; and decorators and window dressers; constituting, respectively, 37.2, 32.1, 28.8, and 70.6 percent of total employed. On the other hand, the proportion of women carpenters, electricians, painters, plumbers, machinists, mechanics, stationary engineers, and a few other skilled trades ranged from less than 1 percent to about 3 percent of the total. Although the number of women apprentices increased by 74 percent in one year (1974-75), they still represented only 1.2 percent of the total number of apprentices registered.

Discussion

The following sections have not been significantly affected by the regulations adopted today, other than minor conforming and editorial changes: §§ 30.1, 30.2, 30.7, 30.9, 30.10, 30.12, 30.14, 30.16, 30.17, 30.18 and 30.19. The major change in the sections affected by the regulation is the insertion of appropriate words to show that the written affirmative action plan requirement applies to women as well as to minorities. Section 30.6 has been altered in this manner as well as through minor editorial and conforming changes. Other sections significantly affected by the regulation adopted today will be discussed below.

Section 30.1 This section sets forth the equal opportunity standards applicable to sponsors of apprenticeship programs.

1. Section 30.3(e) provided that a sponsor would not be required to adopt an affirmative action plan under § 30.4 or a selection procedure under § 30.5 if it submitted to the Department satisfactory evidence that it was in compliance with an equal employment opportunity program providing for the selection of apprentices and for affirmative action in apprenticeship which had been approved as meeting the requirements of Title VII of the Civil Rights Act of 1964, as amended, or Executive Order 11246, as amended.

The proposal published in the *FEDERAL REGISTER* on September 30, 1977, (42 FR 52441) proposed the following addition to § 30.3(e): "except to the extent that the goals and timetables in such program are less than would be required under this part." Several comments objected to this proposed addition, claiming that meeting the requirements of Executive Order 11246 or Title VII should adequately protect the rights of women and minorities with regard to apprenticeship. After considering these comments, the Department has decided to adopt the following language as an addition to § 30.3(e):

Provided, That programs approved, modified or renewed subsequent to the effective

date of this regulation will qualify for the exception only if the goals and timetables for both minorities and women for the selection of apprentices provided for in such programs are equal to or greater than the goals required under this part.

Thus the regulation adopted today will permit sponsors with approved equal employment opportunity programs to be exempted from the requirement to adopt an affirmative action plan or a selection procedure during the duration of their currently approved program, provided such programs contain goals and timetables for women as well as for minorities. Programs approved subsequent to the effective date of this amendment will have to be consistent with this part in order for the exemption to be allowed.

2. Section 30.3(f) provided that sponsors of programs with fewer than five apprentices not be required to adopt an affirmative action plan under § 30.4 or a selection procedure under § 30.5. The proposal published in the *FEDERAL REGISTER* on September 30, 1977 (42 FR 52441) proposed the following addition to § 30.3(f): "provided that such program was not adopted to circumvent the requirements of this part." This proposal has been adopted.

Section 30.4 This section sets forth the requirement that program sponsors adopt a written affirmative action plan, including the establishment of goals and timetables. This section previously required the establishment of goals and timetables for minorities only. The regulation adopted today amends this section to require the establishment of goals and timetables for women as well as for minorities. A number of comments addressed the issue of goals. Some of the commentators, particularly some of the unions and joint apprenticeship councils, characterized goals as "quotas", stated that the goal requirement would require the hiring of unqualified persons, stated that women are not capable of or interested in working in the skilled trades, and stated that other workers would be displaced by women because of high unemployment in the skilled trades.

The Department of Labor's experience has demonstrated that goals and timetables are the most concrete and effective system for increasing the representation of women and minorities in employment areas from which they have previously been excluded or have not been represented in proportion to their availability. Initially, contractors subject to the requirements of Executive Order 11246, as amended, were required to implement goals and timetables for minorities only. Thereafter, non-construction contractors were required to establish goals and timetables for women also. Most recently, the Executive Order regulations were amended to require goals and ti-

outreach programs operating specifically to get women into nontraditional jobs. The target population was female heads of households. Each year this project has surpassed its stated goal for placements. It has reported that there is greater interest in apprenticeship by women than there are opportunities. For example, as of April 1977 a yearly average of 150-200 women applied for registered apprenticeship but only 20 were placed.

Advocates For Women—A San Francisco project, funded by the Department of Labor since January 1974, this project serves nine counties in the San Francisco Bay Area. Its goal is to place women in apprenticeship training with an emphasis on construction.

The project reports that 1,100 women apply each year; 125 are placed. The project has had to stop advertising because the interest generated so far exceeds the placements available.

National Urban League, LEAP Apprenticeship Outreach Program For Women—This project was funded by the Department of Labor in May 1974 to provide for greater involvement of women in apprenticeship. It is operated in conjunction with LEAP projects already providing outreach for minorities. It has operated in 15 cities across the country. This project has placed women in more than 15 crafts. The crafts in which women are participating under this project include: Asbestos workers, bricklayers, carpenters (22.8 percent of placements), cement masons, drywall tapers, electricians, ironworkers, laborers (14.9 percent), pipe fitters, roofers, sheet metal workers, tilesetters, and welders.

A number of representatives of outreach programs and women's organizations commented in favor of the proposed regulation, stating that many women are eager to enter apprenticeships but that there are insufficient openings due to lack of affirmative action goals.

Thus the Department's experience indicates that there are women available and interested in entering the skilled trades. However, the longstanding reputation of the trades for excluding women discourages many women from applying for these jobs. A study by two Stanford University psychologists demonstrates that the number of women applying for jobs in the construction trades would substantially increase were there goals for women. In that study, two groups of female job seekers were given three detailed job descriptions and were asked to rate their interest in the jobs on a scale of 1 to 5, from "not interested" to "extremely interested." Two of the three jobs described were traditionally female jobs and one was a construction job. Half of the booklets contained the following statement

under the title of the construction job: "Equal Opportunity for Women. Note: Federal Law Now Requires That Companies Train and Hire a Certain Percentage of Women for the Job of [carpenter] Each Year." The other half of the booklets contained no statement about affirmative action. In the affirmative action group, 33 percent of the women indicated a strong interest in the construction job, twice the percentage indicating a strong interest as in the other group. Seventy percent of the women in the affirmative action group expressed some degree of positive interest in construction jobs, one and one half as many as the other group.

Thus it is clear that women are available for apprenticeship opportunities. Furthermore, if women are to receive a fair number of these opportunities it is necessary to establish specific affirmative action requirements, including goals and timetables.

The Department of Labor recognizes and adheres to the distinction between permissible affirmative action goals and timetables and impermissible quotas. In a March 23, 1973 memorandum, the Departments of Justice and Labor and the Equal Employment Opportunity Commission and the Civil Service Commission distinguished goals and timetables from quotas:

... Quota systems in the past have been used in other contexts as a quantified limitation, the purpose of which is exclusion, but this is not its sole definition. A quota system, applied in the employment context, would impose a fixed number or percentage which must be attained, or which cannot be exceeded; the crucial consideration would be whether the mandatory numbers of persons have been hired or promoted. Under such a quota system, that number would be fixed to reflect the population in the area, or some other numerical base, regardless of the number of potential applicants who meet necessary qualifications. If the employer failed, he would be subject to sanction. It would be no defense that the quota may have been unrealistic to start with, that he had insufficient vacancies, or that there were not enough qualified applicants, although he tried in good faith to obtain them through appropriate recruitment methods.

Any system which requires that consideration of relative abilities and qualifications be subordinated to considerations of race, religion, sex or national origin in determining who is to be hired, promoted, etc., in order to achieve a certain numerical position has the attributes of a quota system which is deemed to be impermissible under the standards set forth herein.

A goal, on the other hand, is a numerical objective, fixed realistically in terms of the number of vacancies expected, and the number of qualified applicants available in the relevant job market. Thus, if through no fault of the employer, he has fewer vacancies than expected, he is not subject to sanction, because he is not expected to displace existing employees or to hire unneeded employees to meet his goal. Similarly, if he has demonstrated every good faith effort

to include persons from the group which was the object of discrimination into the group being considered for selection, but has been unable to do so in sufficient numbers to meet his goal, he is not subject to sanction.

The Department of Labor continues to recognize the distinction between affirmative action and impermissible quotas, and also follows the policy enunciated in the memorandum quoted above.

The Congress and the courts also have recognized and acquiesced in the affirmative action programs (including goals and timetables) required under Executive Order 11246, as amended, which is administered by the Office of Federal Contract Compliance Programs of the Department. When Congress considered the Equal Employment Opportunity Act of 1972 (Pub. L. 92-261), Senator Saxbe made the following statement (118 Cong. Rec. 1385):

The OFCCP's affirmative action programs have tremendous impact and require that 260,000 Government contractors in all industries adopt positive programs to seek out minorities and women for new employment opportunities. To accomplish this objective, the OFCCP has utilized the proven business technique of establishing "goals and timetables" to insure the success of the Executive Order Program. It has been the "goals and timetables" approach which is unique to the OFCCP's efforts in equal employment, coupled with extensive reporting and monitoring procedures that has given the promise of equal employment opportunity a new credibility.

The Executive Order Program should not be confused with the judicial remedies for proven discrimination which unfold on a limited and expensive case-by-case basis. Rather, affirmative action means that all Government contractors must develop programs to insure that all share equally in the jobs generated by the Federal Government's spending. Proof of overt discrimination is not required.

Senator Saxbe's proposed amendment was adopted. (118 Cong. Rec. 1387-1398 (1972).) In addition, 2 days after hearing the comments of Senator Saxbe, quoted above, Congress rejected an amendment offered by Senator Ervin which would have proscribed the adoption of goals by Government contractors. See also *U.S. v. Elevator Constructors (UEC) Local Union No. 5*, 538 F.2d 1012, (3rd Cir. 1976); *Constructors Ass'n of Eastern Pa. v. Shultz*, 442 F.2d 159 (3rd Cir. 1971), cert. denied, 404 U.S. 854 (1971).

Some of the comments which opposed the use of goals for women suggested alternative methods for achieving affirmative action. Alternatives suggested included the use of outreach programs, emphasis on recruitment, and the development of special programs to prepare women with basic skills required to enter apprenticeship programs. As has been discussed above, both outreach programs and re-

al action. Clearly vigorous recruitment is also required but experience has shown that it alone is not enough.

A few comments maintained that the availability of women would vary from one region to another and that this fact should be accounted for in the regulation. It is to be noted that goals are set based on a particular sponsor's labor market area. Thus if the percent of women is lower than the national average in a particular labor market area the entering class goal would be lower as well. Since we have no proof that the female interest in apprenticeship varies significantly from one geographic area to another, there is no reason to make any further distinctions based on region.

Some of the individuals and women's groups who commented in favor of the regulation recommended that the Department adopt workforce parity as the ultimate goal for women in apprenticeship and require that the goal be set at this level in 5 years. The regulation adopted today provides at § 30.5 that the goals and timetables shall be updated annually until workforce parity is achieved.

Section 30.5. This section sets forth the obligations of sponsors in the adoption of a method for the selection of apprentices.

1. Minor changes have been made in this section to make it consistent with the Office of Federal Contract Compliance Programs Guidelines on Employee Selection Procedures, 41 CFR Part 60-3.

2. Changes have been made in § 30.5(b)(XII)(d) and § 30.5(b)(X)(B) to eliminate minimum physical requirements as acceptable qualifications for apprenticeship. Some of those who commented against the proposed regulation suggested that minimum physical requirements be permitted. Minimum physical requirements were eliminated from the proposal and from the regulation adopted today because such requirements have traditionally been used to exclude women and some minority groups from employment opportunities. By minimum physical requirements we are referring to such things as height and weight requirements and arbitrarily applied strength requirements. We note, however, that while a sponsor could not reject applicants on their height, weight, or apparent strength, there is nothing in the regulation adopted today which would prohibit properly job-related performance and physical ability tests. Such tests must meet the requirements of 41 CFR Part 60-3 in order to be acceptable.

3. In the proposal published on September 30, 1977 (42 FR 52441), changes were made in § 30.5(b)(X)(A) to require that a sponsor complete development of its revised selection method along with the rest of its at-

ternative action program within 60 days of the effective date of this amendment. Some comments criticized this provision as not allowing enough time. The provision was changed from 60 to 90 days to make it consistent with § 30.3(c).

Section 30.11. This section sets forth the complaint procedure.

1. A number of comments addressed the provision that allows complaints to be filed with a private review body, stating that such procedures should not be imposed on complainants but should be voluntary. We note that both the proposal and the regulation adopted today do make the use of private review bodies optional, as the complainant has the choice of filing his or her complaint with the Department or the private review body.

2. Section 30.11(b)(3) was added in both the proposal and in the regulation adopted today to require that sponsors provide written notice of the complaint procedure to all applicants for apprenticeship and all apprentices. A number of individuals and groups commented favorably on this addition, stating that it was very important since without it many applicants and apprentices would not know what recourse they had in the event they believed they had been subjected to discrimination.

Section 30.15. This section sets forth procedures to be followed by State Apprenticeship Councils. The proposal and the regulation adopted today require that each State Apprenticeship Council complete development of a revised equal opportunity plan which shall be consistent with this part within 60 days of the effective date of this regulation. The revised State plan must require all State apprenticeship programs registered with the State Apprenticeship Council to comply with the requirements of the revised State plan within 90 days of the effective date of this regulation. Some of the comments criticized the proposal on the basis that these time requirements were too short, others criticized them on the basis that they were too long. It is the Department's decision that the time periods are adequate.

Other Comments

1. Some comments expressed the view that the Department of Labor should withhold a decision until the Supreme Court has ruled in *The Regents of the University of California v. Bakke* case. It, of course, is always difficult to predict with precision how the Supreme Court will rule in a specific case. However, it is not likely that a ruling in that case, a university admission case, would have the type of impact on these regulations that they should be held in abeyance until the Supreme Court has ruled.

2. Some comments stated that the regulation adopted today should not

be implemented in a time of high unemployment in the skilled trades. It is to be noted, however, that this regulation does not require that any current apprentices or other workers be laid off or removed from apprenticeship programs.

3. A number of those favoring the regulation objected to the use of the word "qualified" modifying minorities or women in the section of the Preamble entitled "Proposed Changes." These comments pointed out that the term is not used in the current regulation or the proposed amendment. They advocated as an alternative the use of the word "trainable," claiming that there was a possibility that biased program sponsors may use this language as an excuse to exclude women on the basis that they are not "qualified." As stated previously, the regulation adopted today reflects the Department's determination that apprenticeship, like other entry level jobs, do not require any particular training or qualification other than the capability to be trained. The use of the word "qualified" in the Preamble to the proposed regulation was not intended to signify anything contrary to this position.

4. Neither the proposed regulations nor the regulations adopted today amended 29 CFR 30.5(b)(4)(B) which permits school diplomas as a qualification standard. Comments were invited, however, on the issue of whether the school diploma should be retained as an alternative selection method. A number of comments were received on this issue both in favor and opposed to the retaining of the school diploma as a permissible selection criteria. No change was made in this section because current law is clear that if a high school diploma requirement has an adverse impact on any group, it must be validated. *Grygor v. Duke Power Co.*, 401 U.S. 424 (1971). The current regulation requires such validation in accordance with the Guidelines on Employee Selection Procedures, 41 CFR Part 60-3.

In consideration of the foregoing, 29 CFR Part 30 is hereby amended as set forth below.

Dated: May 9, 1978.

DEBBY G. GAZEN,
Assistant Secretary, Employment and Training Administration.

- Sec. 30.1 Scope and purpose.
- 30.2 Definitions.
- 30.3 Equal opportunity standards.
- 30.4 Affirmative action plan.
- 30.5 Selection of apprentices.
- 30.6 Existing lists of eligible and public notice.
- 30.7 (Reserved).
- 30.8 Records.
- 30.9 Compliance review.
- 30.10 Noncompliance with Federal and State equal opportunity requirements.

nondiscrimination. It includes procedures, methods, and programs for the identification, positive recruitment, training, and motivation of present and potential minority and female (minority and nonminority) apprentices including the establishment of goals and timetables. It is action which will equalize opportunity in apprenticeship so as to allow full utilization of the work potential of minorities and women. The overall result to be sought is equal opportunity in apprenticeship for all individuals participating in or seeking entrance to the Nation's labor force.

(c) *Outreach and positive recruitment.* An acceptable affirmative action plan must also include adequate provision for outreach and positive recruitment that would reasonably be expected to increase minority and female participation in apprenticeship by expanding the opportunity of minorities and women to become eligible for apprenticeship selection. In order to achieve these objectives, sponsors shall undertake activities such as those listed below. It is not contemplated that each sponsor necessarily will include all the listed activities in its affirmative action program. The scope of the affirmative action program will depend on all the circumstances including the size and type of the program and its resources. However, the sponsor will be required to undertake a significant number of appropriate activities in order to enable it to meet its obligations under this part. The affirmative action plan shall set forth the specific steps the sponsor intends to take in the areas listed below. Whenever special circumstances warrant, the Department may provide such financial or other assistance as it deems necessary to implement the requirements of this paragraph.

(1) *Dissemination of information concerning the nature of the apprenticeship, requirements for admission to apprenticeship, availability of apprenticeship opportunities, sources of apprenticeship applications, and the equal opportunity policy of the sponsor.* For programs accepting applications only at specified intervals, such information shall be disseminated at least 30 days in advance of the earliest date for application at each interval. For programs customarily receiving applications throughout the year, such information shall be regularly disseminated but not less than semi-annually. Such information shall be given to the Department, local schools, employment service offices, women's centers, outreach programs and community organizations which can effectively reach minorities and women, and shall be published in newspapers which are circulated in the minority community and among women, as well as in the general areas

in which the program sponsor operates.

(2) *Participation in annual workshops conducted by employment service agencies for the purpose of familiarizing school, employment service and other appropriate personnel with the apprenticeship system and current opportunities therein.*

(3) *Cooperation with local school boards and vocational education systems to develop programs for preparing students to meet the standards and criteria required to qualify for entry into apprenticeship programs.*

(4) *Internal communication of the sponsor's equal opportunity policy in such a manner as to foster understanding, acceptance, and support among the sponsor's various officers, supervisors, employees, and members and to encourage such persons to take the necessary action to aid the sponsor in meeting its obligations under this part.*

(5) *Engaging in programs such as outreach for the positive recruitment and preparation of potential applicants for apprenticeship; where appropriate and feasible, such programs shall provide for pretesting experience and training. If no such programs are in existence the sponsor shall seek to initiate these programs, or, when available, to obtain financial assistance from the Department. In initiating and conducting these programs, the sponsor may be required to work with other sponsors and appropriate community organizations. The sponsor shall also initiate programs to prepare women and encourage women to enter traditionally male programs.*

(6) *To encourage the establishment and utilization of programs of preapprenticeship, preparatory trade training, or others designed to afford related work experience or to prepare candidates for apprenticeship, a sponsor shall make appropriate provision in its affirmative action plan to assure that those who complete such programs are afforded full and equal opportunity for admission into the apprenticeship program.*

(7) *Utilization of journeypersons to assist in the implementation of the sponsor's affirmative action program.*

(8) *Granting advance standing or credit on the basis of previously acquired experience, training, skills, or aptitude for all applicants equally.*

(9) *Admitting to apprenticeship, persons whose age exceeds the maximum age for admission to the program, where such action assists the sponsor in achieving its affirmative action obligations.*

(10) *Other appropriate action to ensure that the recruitment, selection, employment, and training of apprentices during apprenticeship shall be without discrimination because of race, color, religion, national origin, or*

sex (e.g., general publication of apprenticeship opportunities and advantages in advertisements, industry reports, articles, etc.; use of present minority and female apprentices and journeypersons as recruiters; career counseling; periodic auditing of affirmative action programs and activities; and development of reasonable procedures between the sponsor and employers of apprentices to ensure that employment opportunity is being granted, including reporting systems, on-site reviews, briefing sessions, etc.). The affirmative action program shall set forth the specific steps the sponsor intends to take, in the above areas, under this paragraph (c). Whenever special circumstances warrant, the Department may provide such financial or other assistance as it deems necessary to implement the above requirements.

(d) *Goals and timetables.* (1) A sponsor adopting a selection method under § 30.5(b) (1) or (2) which determines on the basis of the analysis described in paragraph (e) of this section that it has deficiencies in terms of underutilization of minorities and/or women (minority and nonminority) in the craft or crafts represented by the program shall include in its affirmative action plan percentage goals and timetables for the admission of minority and/or female (minority and nonminority) applicants into the eligibility pool.

(2) A sponsor adopting a selection method under § 30.5(b) (3) or (4) which determines on the basis of the analysis described in paragraph (e) of this section that it has deficiencies in terms of the underutilization of minorities and/or women in the craft or crafts represented by the program shall include in its affirmative action plan percentage goals and timetables for the selection of minority and female (minority and nonminority) applicants for the apprenticeship program.

(3) "Underutilization" as used in this paragraph refers to the situation where there are fewer minorities and/or women (minority and nonminority) in the particular craft or crafts represented by the program than would reasonably be expected in view of an analysis of the specific factors in subparagraphs (1) through (5) in paragraph (e) of this section. Where, on the basis of the analysis, the sponsor determines that it has no deficiencies, no goals and timetables need be established. However, where no goals and timetables are established, the affirmative action plan shall include a detailed explanation why no goals and timetables have been established.

(4) Where the sponsor fails to submit goals and timetables as part of its affirmative action plan or submits goals and timetables which are unac-

tional joint apprenticeship committee will not be approved by the Department unless such test meets the requirements of this subsection.

(C) *Educational attainments.* All educational attainments or achievements as qualifications for admission to the pool shall be directly related to job performance as shown by a significant statistical relationship between the score required for admission to the pool and performance in the apprenticeship program. In demonstrating such relationship, the sponsor shall meet the requirements of 41 CFR Part 60-3. School records or a passing grade on the general education development tests recognized by the State or local public instruction authority shall be evidence of educational achievement. Education requirements shall be applied uniformly to all applicants.

(iv) *Oral interviews.* Oral interviews shall not be used as a qualification standard for admission into an eligibility pool. However, once an applicant is placed in the eligibility pool, and prior to selection for apprenticeship from the pool, he or she may be required to submit to an oral interview. Oral interviews shall be limited to such objective questions as may be required to determine the fitness of applicants to enter the apprenticeship program, but shall not include questions relating to qualifications previously determined in gaining entrance to the eligibility pool. When an oral interview is used, each interviewer shall record the questions and the general nature of the applicant's answers, and shall prepare a summary of any conclusions. Each applicant rejected from the pool of eligibles on the basis of an oral interview shall be given a written statement of such rejection, the reasons therefor, and the appeal rights available to the applicant.

(v) *Notification of applicants.* All applicants who meet the requirements for admission shall be notified and placed in the eligibility pool. The program sponsor shall give each rejected applicant who is not selected for the pool or the program notice of his or her rejection, including the reasons for the rejection, the requirements for admission to the pool of eligibles, and the appeal rights available to the applicant.

(vi) *Goals and timetables.* The sponsor shall establish where required by § 30.4(d), percentage goals and timetables for the admission of minorities and women (minority and nonminority) into the pool of eligibles, in accordance with the provisions of § 30.4 (d), (e), and (f).

(vii) *Compliance.* A sponsor shall be deemed to be in compliance with its commitments under subdivision (vi) of this subparagraph if it meets its goals or timetables or if it makes a good faith effort to meet these goals and

timetables. In the event of the failure of the sponsor to meet its goals and timetables, it shall be given an opportunity to demonstrate that it has made every "good faith effort" to meet its commitments (see § 30.4(f)). All the actions of the sponsor shall be reviewed and evaluated in determining whether such good faith efforts have been made.

(2) *Random selection from pool of eligible applicants.*—(i) *Selection.* A sponsor may select apprentices from a pool of eligible applicants on a random basis. The method of random selection is subject to approval by the Department. Supervision of the random selection process shall be by an impartial person or persons selected by the sponsor, but not associated with the administration of the apprenticeship program. The time and place of the selection, and the number of apprentices to be selected, shall be announced. The place of the selection shall be open to all applicants and the public. The names of apprentices drawn by this method shall be posted immediately following the selection at the program sponsor's place of business.

(ii) *Requirements.* The sponsor adopting this method of selecting apprentices shall meet the requirements of subdivisions (iii) through (v) of subparagraph (1) of this paragraph relating to the creation of pool of eligibles, oral interviews, and notification of applicants.

(iii) *Goals and timetables.* The sponsor shall establish, where required by § 30.4(d), percentage goals and timetables for admission of minorities and women (minority and nonminority) into the pool of eligibles in accordance with the provisions of sections 30.4 (d), (e), and (f).

(iv) *Compliance.* Determinations as to the sponsor's compliance with its obligations under these regulations shall be in accordance with the provisions of subdivision (vii) of subparagraph (1) of this paragraph (b).

(3) *Selection from pool of current employees.*—(i) *Selection.* A sponsor may select apprentices from an eligibility pool of the workers already employed by the program sponsor in a manner prescribed by a collective bargaining agreement where such exists, or by the sponsor's established promotion policy. The sponsor adopting this method of selecting apprentices shall establish goals and timetables for the selection of minority and female apprentices, unless the sponsor concludes, in accordance with the provisions of § 30.4 (d), (e), and (f) that it does not have deficiencies in terms of underutilization of minorities and/or women (minority and nonminority) in the apprenticeship of journey person crafts represented by the program.

(ii) *Compliance.* Determinations as to the sponsor's compliance with its

obligations under these regulations shall be in accordance with provisions of subdivision (vii) of subparagraph (1) of this paragraph (b).

(4) *Alternative selection methods.*—(i) *Selection.* A sponsor may select apprentices by means of any other method including its present selection method: *Provided,* That the sponsor meets the following requirements:

(A) *Selection method and goals and timetables.* Within 90 days of the effective date of this amendment, the sponsor shall complete development of the revised selection method it proposes to use along with the rest of its written affirmative action program including, where required by § 30.4(d), its percentage goals and timetables for the selection of minority and/or female (minority and nonminority) applicants for apprenticeship and its written analysis, upon which such goals and timetables, or lack thereof, are based. The establishment of goals and timetables shall be in accordance with the provisions of § 30.4 (d), (e), and (f). The sponsor may not implement any such selection method until the Department has approved the selection method as meeting the requirements of item (B) of this subdivision and has approved the remainder of its affirmative action program including its goals and timetables. If the Department fails to act upon the selection method and the affirmative action program within 30 days of its submission, the sponsor then may implement the selection method.

(B) *Qualification standards.* Apprentices shall be selected on the basis of objective and specific qualification standards. Examples of such standards are aptitude tests, school diplomas or equivalent, occupationally essential health requirements, fair interviews, school grades, and previous work experience. Where interviews are used, adequate records shall be kept including a brief summary of each interview and the conclusions on each of the specific factors, e.g., motivation, ambition, and willingness to accept direction which are part of the total judgement. In applying any such standards, the sponsor shall meet the requirements of 41 CFR Part 60-3.

(ii) *Compliance.* Determinations as to the sponsor's compliance with its obligations under these regulations shall be in accordance with the provisions of subdivisions (vii) of subparagraph (1) of this paragraph (b). Where a sponsor, despite its good faith efforts, fails to meet its goals and timetables within a reasonable period of time, the sponsor may be required to make appropriate changes in its affirmative action program to the extent necessary to obtain maximum effectiveness toward the attainment of its goals. The sponsor may also be required to develop and adopt an alter-

gram sponsor involved, and a brief description of the circumstances of the failure to apply the equal opportunity standards provided for in this part.

(2) The complaint must be filed not later than 180 days from the date of the alleged discrimination or specified failure to follow the equal opportunity standards; and, in the case of complaints filed directly with review bodies designated by program sponsors to review such complaints, any referral of such complaint by the complainant to the Department must occur within the time limitation stated above or 30 days from the final decision of such review body, whichever is later. The time may be extended by the Department for good cause shown.

(3) Sponsors are encouraged to establish fair, speedy, and effective procedures for a review body to consider complaints of failure to follow the equal opportunity standards. A private review body established by the program sponsor for this purpose should number three or more responsible persons from the community serving in this capacity without compensation. Members of the review body should not be directly associated with the administration of an apprenticeship program. Sponsors may join together in establishing a review body to serve the needs of programs within the community.

(b) *Processing of complaints.* (IX) When the sponsor has designated a review body for reviewing complaints, the Department, unless the complainant has indicated otherwise or unless the Department has determined that the review body will not effectively enforce the equal opportunity standards, shall upon receiving a complaint refer it to the review body.

(II) The Department shall, within 30 days following the referral of a complaint to the review body, obtain reports from the complainant and the review body as to the disposition of the complaint. If the complaint has been satisfactorily adjusted and there is no other indication of failure to apply equal opportunity standards, the case shall be closed and the parties appropriately informed.

(III) When a complaint has not been resolved by the review body within 90 days or where, despite satisfactory resolution of the particular complaint by the review body, there is evidence that equal opportunity practices of the apprenticeship program are not in accordance with this part, the Department may conduct such compliance review as found necessary, and will take all necessary steps to resolve the complaint.

(2) Where no review body exists, the Department may conduct such compliance review as found necessary in order to determine the facts of the complaint, and obtain such other in-

formation relating to compliance with these regulations as the circumstances warrant.

(3) Sponsors shall provide written notice of the above complaint procedure to all applicants for apprenticeship and all apprentices.

§ 30.12 Adjustments in schedule for compliance review or complaint processing.

If, in the judgment of the Department, a particular situation warrants and requires special processing and either expedited or extended determination, it shall take the steps necessary to permit such determination if it finds that no person or party affected by such determination will be prejudiced by such special processing.

§ 30.13 Sanctions.

(a) Where the Department, as a result of a compliance review or other reason, determines that there is reasonable cause to believe that an apprenticeship program is not operating in accordance with this part and voluntary corrective action has not been taken by the program sponsor, the Department shall institute proceedings to deregister the program or it shall refer the matter to the Equal Employment Opportunity Commission or to the Attorney General with recommendations for the institution of a court action under Title VII of the Civil Rights Act of 1964, as amended, or to the Attorney General for other court action as authorized by law.

(b) Deregistration proceedings shall be conducted in accordance with the following procedures:

(1) The Department shall notify the sponsor, in writing, that a determination of reasonable cause has been made under paragraph (a) of this section and that the apprenticeship program may be deregistered unless, within 15 days of the receipt of the notice, the sponsor requests a hearing. The notification shall specify the facts on which the determination is based.

(2) If within 15 days of the receipt of the notice provided for in subparagraph (1) of this paragraph the sponsor mails a request for a hearing, the Secretary shall convene a hearing in accordance with § 30.16.

(3) The Secretary shall make a final decision on the basis of the record, which shall consist of the compliance review file and other evidence presented and, if a hearing was conducted pursuant to § 30.16, the proposed findings and recommended decision of the hearing officer. The Secretary may allow the sponsor a reasonable time to achieve voluntary corrective action. If the Secretary's decision is that the apprenticeship program is not operating in accordance with this part, the apprenticeship program shall be deregistered. In each case in which deregistration is ordered, the Secretary shall

make public notice of the order and shall notify the sponsor and the complainant, if any.

§ 30.14 Reinstatement of program registration.

Any apprenticeship program deregistered pursuant to this part may be reinstated upon presentation of adequate evidence to the Secretary that the apprenticeship program is operating in accordance with this part.

§ 30.15 State Apprenticeship Councils.

(a) *Adoption of consistent state plans.* (1) The Department shall encourage State Apprenticeship Councils to adopt and implement the requirements of this part.

(2) Within 60 days of the effective date of these regulations, each State Apprenticeship Council shall complete development of a revised equal opportunity plan which shall be consistent with this part. The revised State plan shall require all state apprenticeship programs registered with the State Apprenticeship Council to comply with the requirements of the revised State plan within 90 days of the effective date of these regulations. No State Apprenticeship Council shall continue to be recognized by the Department if it has not adopted within 60 days of the effective date of these regulations a plan implementing the requirements of this part.

(3) The Department retains authority to conduct compliance reviews and complaint investigations to determine whether the state plan or any state apprenticeship program registered with a State Apprenticeship Council is being administered or operated in accordance with this part.

(4) It shall be the responsibility of the State Apprenticeship Council to take the necessary action to bring a noncomplying program into compliance with the state plan. In the event the State Apprenticeship Council fails to fulfill this responsibility, the Secretary may withdraw the recognition for Federal purposes of any or all state apprenticeship programs, in accordance with the procedures of deregistration of programs registered by the Department, or refer the matter to the Equal Employment Opportunity Commission or to the Attorney General with a recommendation for the institution of a court action under Title VII of the Civil Rights Act of 1964, as amended, or to the Attorney General for other court actions as authorized by law.

(5) Each State Apprenticeship Council shall notify the Department of any state apprenticeship program deregistered by it.

(6) Any state apprenticeship program deregistered by a State Apprenticeship Council for noncompliance with requirements of this part may,

Appendix VIII

Trade Trax Tradeswomen, Inc. Newsletter

"Moving Women Into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

TRADE TRAX

A NEWSLETTER FOR WOMEN IN BLUE COLLAR WORK

December 1987-January 1988 Issue 6

PAST COAST TRADES-OPEN CORRECTIONS!!!

Wider Opportunities for Women/Displaced Homemakers Conference

"Spectacular" is a pretty good adjective to describe the conference I was able to attend in November. Washington D.C. was a productive city for the more than six hundred women from around the who met to network, share, attend workshops and seminars geared to helping women become employed and self-sufficient. Women whose lives were drastically changed by the sudden loss of a spouse, either through death or other separation, talked about how they had taken control of their livelihoods through organizing and networking with other displaced homemakers and their supporters. ADVOCATES FOR DISPLACED HOMEMAKERS WERE ADMIRABLE IN THEIR ADVISOR TO THOSE OF US IN THE NEW-TRANSITIONAL JOB FIELD...THAT WE MUST MAKE THE TERM TRADES-OPEN AS PARTICULAR A WORD AS DISPLACED HOMEMAKER. They said that it was only by calling it up as every woman's conference, economic and labor and government meeting, that the phrase Displaced Homemaker has come to be a term everyone recognizes.

TradeS-open, Inc. was represented at a table at the three day event as well as in workshops and at special meetings with TradeS-open, Inc. members in the D.C. area. Biddy Blue-Cox from S.F. Union In Apprenticeship was part of a panel discussing the trials and joys of non-traditional work. The women who are organizing the 1989 TradeS-open Conference to be held in Chicago, IL, were also there and we were all able to meet with the U.S. Dept. of Labor Women's Bureau at their offices to discuss the chance of obtaining funding for the conference. I also facilitated a trades-union poetry workshop, which is how TradeS-open, Inc. was able to attend this event, with all expenses paid via scholarship grant. The sole table needed us almost \$400, so we are scrounging in some ways then one for attending!

We also were able to have tables at two other events on the East Coast in November. I was asked to give two poetry readings and another workshop besides the one in Washington D.C. Susan Eisenberg, poet, Electrician, teacher, and TradeS-open, Inc. member in Boston MA, had her class in Women's History organize this reading at the University of Mass. Dartmouth Campus. Her students shared their vintage poetry and I was proud to read along with them. Don't see using "Smart, Run & Hideback" (my Leszek book) as part of their class study and see we saw important and difficult questions. They're a great bunch of folks! Then in New York... there, the New Bedford Women's Center sponsored another reading, cultural performance, with a local and a wonderful local poet named Dana Elsie Thomas. Music was provided by DEDD, a Bay, Bedford area "Jazz Band" and the book...they're great, and if you're on the East Coast watch for their performance. You'll love them. Thanks to Susan Eisenberg and her class, and Dana Elsie, Director of the Women's Center and Julie Kelly find relief for the center, and all the women/people who helped make this "trades-union" possible for TradeS-open, Inc. and myself!

Also while in Washington D.C. I had an opportunity to meet with the Director of New England Women in the Trades, Bernice Sandler. We spoke about their internal discussion of possible affiliation with TradeS-open, Inc. If everything goes right, they will become the first chapter outside the Bay Area. There are legal, technical aspects to work out and the question of local economy, and I'll keep you updated about it. Through the years there have been inquiries as to starting chapters but this is the first time an already existing group is doing the homework necessary to get the job done. New England Women in the Trades is a vibrant active TradeS-open organization. 1988 looks like another good year for TradeS-open surviving and growing stronger together.

Another topic discussed with the East Coast TradeS-open and advocates organizations was network sharing. It was decided that Trade Trax is a good tool and should be used for national name sharing in more ways than it already does. TradeS-open organizations and agencies helping women in blue-collar jobs are invited to send in short paragraphs about what they are doing and we will print it in Trade and then mail a copy to them and they will send it and send it out to their members. In this way we will be receiving news from other TradeS-open groups around the nation on a regular basis. (Please see page 51) We are not alone and we need to get the information out!

TRADES-OPEN, INC. IS TRAVELING ON!!

San Diego, TAX Editor and TradeS-open, Inc. Director

RAUNOY TRADES-OPEN MEETINGS USUALLY HELD
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DECEMBER-JANUARY TRADE TAX CONTINUED DUE TO OFFICE OVER-LOAD. MEMBERS AND SUBSCRIBERS WILL RECEIVE AN EXTRA MONTH PAST THEIR TAX EXPIRATION DATE. ANY JOB ANNOUNCEMENTS THAT ARE RECEIVED BY DEC. 15 WILL BE ANNOUNCED ON THE OFFICE PHONE TAPES MACHINE. Thank you for understanding.

Jobs Jobs Jobs Jobs Jobs

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\$45,588

City & Co of San Francisco
CONSTRUCTION INSPECTOR
\$39,276 - \$47,628

DUTIES: Responsible for the alteration, maintenance and repair of a variety of plumbing systems of an industrial and institutional nature. Routine and emergency skilled work is typically performed in hospitals, subway stations, sewage plants, office bldgs, and other City structures.

REQUIREMENTS: 1) Completion of a Formal Plumbers' Apprenticeship; AND 2) 2 years full-time verifiable experience as a journey-level plumber within the last 15 years; AND 3) CA Driver's License. Note: Any combination of training & experience equal to completion of a 4 year Plumber's apprenticeship program plus 2 years full-time journey-level experience may substitute for the requirements. Proper verification of experience will be required.



For more information, call Lia Shigemura at 554-4743.

DUTIES: Construction engineering inspection in conjunction with public works projects to assure compliance with contract plans and specifications.

REQUIREMENTS: 4 years of experience in engineering construction inspection work. Notes: 1) Experience as an architect or surveyor may be substituted on a year-to-year basis up to 2 years of required experience; OR 2) A BS in Engineering or Architecture may be substituted for the required experience; 3) Journey level construction and drafting experience will not be qualifying.

For more information, call Lia Shigemura at 554-4743.

WOMEN NEEDED FOR A CAREER IN STEAMFITTING & INDUSTRIAL PIPEFITTING. FOR FURTHER INFORMATION, CALL THE L.A. & VICINITY STEAMFITTERS JOINT APPRENTICESHIP COMMITTEE AT: (213) 323-4475

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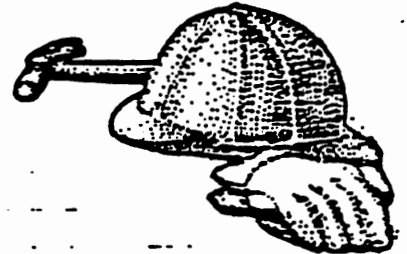
DUTIES: General gardening, turf & irrigation maintenance, semi-skilled construction/maintenance, and manual labor.

IDEAL candidate will have 2+ years experience performing above duties, or 1+ year related college and 1+ year experience.

Work sites are located in Alameda and Contra Costa counties at regional parks and sites.

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415/531-9300, Ext. 250



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TRADE TRAX

Tradesman Inc., Publisher See Bero, Editor
P.O. Box 40644, San Francisco CA 94140 415/821-7334

SUBSCRIPTIONS: Free with membership in Tradesman, Inc. Subscription without membership, \$15/year.

ANNOUNCEMENTS: Announcements from nonprofit organizations are published free on a "space available" basis.

ADVERTISING: Advertising rates are \$16 per column inch (1" deep by 3-3/4" wide). We reserve the right to refuse advertisements.

DEADLINE: Deadline for announcements and advertising is the fifteenth (15th) of the month for publication in the following month's issue.

Women's Solidarity



NATIONAL TRADESWOMEN CONFERENCE PLANNING COMMITTEE

SORRY BUT WE HAVE TO REPORT THAT THE 1986 NATIONAL TRADESWOMEN CONFERENCE IN CHICAGO HAS HAD TO BE POSTPONED UNTIL 1989, DUE TO FUNDING. MORE ABOUT THIS WHEN WE HAVE IT IS PLANNED TO ANNOUNCE.

THE SECOND NATIONAL TRADESWOMEN CONFERENCE
Chicago, Illinois
SPRING - 1989

The National Tradeswomen Conference Planning Committee volunteer core group of women involved in Tradeswomen/Advocate committed to ensuring that the Annual National Tradeswomen Conference began in San Francisco, May 1983 continue on an annual basis.

HELP US BUILD A NATIONAL TRADESWOMEN/ADVOCATE NETWORK!!

WE NEED YOUR SUPPORT

Committees are forming in the following areas:

Publicity	Union Outreach	Special Needs
Artwork	Advertising	Workshop Fees
Fundraising	Site Committee	Women's Issues
Graphics	Regional Committees	Cultural Events

PLEASE CHECK WHICH COMMITTEE YOU ARE INTERESTED IN JOINING. We know how your organization/support group/union/school/etc. to participate.

FINANCIAL CONTRIBUTIONS ARE NEEDED FOR START-UP WORK (TELETYPE PRINTING, POSTAGE, ETC.) Your donation is tax-deductible.

ADD TO RESOURCE LIST.....

ASSOCIATION FOR UNION DEMOCRACY, INC.
WOMEN'S PROJECT, Director Susan Jennik:
Info on union democracy and other on-the-job problems of tradeswomen. YWCA Building,
30 third Ave. Brooklyn NY 11217. (718) 855-6650.

WOMEN UNLIMITED

Dale McCormick, Executive Director
62 Church Street
Gardiner, ME 04345
Phone: (207) 582-2759

WOMEN UNLIMITED is dedicated to expanding employment options for women through direct training, consulting, advocacy, development of support systems, and the encouragement of entrepreneurial ventures. Dale McCormick, is the first woman in the country to complete a carpentry apprenticeship with the International Brotherhood of Carpenters and Joiners. She has had 16 years experience as a carpenter, an expert in energy efficient home building, and a teacher of non-traditional skills to women. WOMEN UNLIMITED offers pre-vocational programs, vocational programs and other services.

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ANEM/WTCP
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Boston, MA 08056
(206) 236-2212

Mail Inset To:
Susan Feliciano
MERC
382 Langview Drive
Lexington, KY 40503
(606) 276-1555

OR CONTACT:

California:
Tradeswomen, Inc.
P.O. Box 48664, S.F. CA 94160
(415) 821-7334
Toni Hayes
(312) 363-4889
or
Lauren Sugerman
Chicago Women in Trades
(312) 942-1446

New York:
Lila Snyder
NEM
(212) 420-0660

Cynthia Long
(718) 438-5256

Barbara Trees
(212) 227-2981

West Virginia:
Lisa Dion
(304) 345-1298

Second Annual Northern New England Tradeswomen Conference

March 25, 26 & 27, 1988

Last year's conference was such a success, we're doing it again! The Second Annual Northern New England Tradeswomen Conference will be held in Plainfield, Vermont, at Goddard College. There are workshops in a variety of areas: legal issues, running your own business, coordinating work and home, health and safety, Work of Mouth Productions will perform their new theater piece, *Pages in Performance: Coffee Break Secrets*. The conference hopes to bring women together from Maine, Vermont, New Hampshire, New York, and Massachusetts to network by trade and region and break down the isolation of being tradeswomen in rural areas. For information on attending, call Linda Siegel at (802) 666-6380, ext. 157 or write to her at Room 22 - City Hall, Burlington, VT 05401.

Dear Tradeswomen Caucus,

It was nice to meet all of you at the "All in a Day's Work" conference. I'm glad we had a chance to talk about plans National Conference, as well as share information about various groups and programs. The abundance of ideas as action we had made it clear we need to continue to talk a network started. I hope the National Conference will be the vehicle for forming a formal network, till then can find ways to keep in touch informally. Enclosed is of all who attended the caucus.

In Sisterhood,

Lauren

(from Lauren Sugerman, Chicago Women in the Tr

"STAY IN TOUCH"

	ORGANIZATION	ADDRESS	CITY/STATE/ZIP	PHONE
Jan Flomene	Oakland Priv. Ind. Council	518-16th Street #400	Oakland, CA	(415) 891-939
Patricia Ann Smith	FREP Inc.-Akron	2261 Francis Lane	Cincinnati, OH 45206	(216) 376-240
Ceraldine E. Harris	FREP Inc.-Dayton	141 West 3rd Street Suite 218	Dayton, OH	(513) 461-273
Sandra George	FREP Inc.-Columbus	63 South 4th Street Suite 328	Columbus, OH 43215	(614) 221-773
Bessie Sandler	Step-up	1 Prospect Avenue St.	Johnsbury, VT 05819	(802) 748-338
Dale McCormick	Women Unlimited	62 Church Street	Gardiner, ME 04345	(207) 582-275
Thalia E. Seplod	ANEM	PO Box 2490	Boston, MA 08056	(203) 235-221
Sandy Frank	Women's Bureau US Dept. of Labor	238 South Dearborn 10th Floor	Chicago, IL 60604	(312) 353-696
Meredith Martin	Ohio Dept of Educ.	63 S. Front Room 707	Columbus, OH 43215	(614) 466-287
Susan Dunlap	Midwest Women's Center	33 West Jackson Room 1813	Chicago, IL 60604	(312) 922-813
Lauren Edwards	ANEM	PO Box 2490	Boston, MA 08056	(202) 235-221
Lauren Sugerman	Chicago Women in Trades	37 South Ashland	Chicago, IL 60607	(312) 942-144
Sue Bore	Trades Women, Inc	PO Box 48664	San Francisco, CA 94160	(415) 821-733

GIFTS

BEW!! EXCITING!! PROFESSIONAL!! FUN!!

THE LITTLE TRADESWOMEN COLORING BOOK...SECOND EDITION. The drawings added to the beautiful ones already there from last years book...Clarity over...the kids will love it, so will you. 34 each plus \$1 postage (CA residents add 13 cents sales tax please.) Send to Tradeswomen, Inc. Box 40664, S.F. CA 94140. Both items available for adults, teens, seniors and...and you too.) For orders over \$5, we discount off regular prices.



Sell in three languages, of course!!!

Gran' New Tradeswomen Item!!!!

Tradeswomen Greeting Cards...just what you're looking for to send to a friend or sister....6 different cards with blank page inside to write your own message. California artist and Shoemakerette apprentice VICKIE HAMLIN has drawn beautiful, strong tradeswomen! \$3 for a set of six, with envelopes. Send name, address, zip and check to Tradeswomen, Inc. P.O. Box 40664 S.F. CA 94140. (Please include sales tax if CA resident....33 cents)

Libro de Pintar para Mujeres 小女工着色書
Pinturas de Oficio
Little Tradeswomen Colorias Book

(This drawing is from one of the cards in the set, by Vickie. All proceeds from their sale go to Tradeswomen, Inc. Thank Vickie!!!)



T-SHIRTS FOR TRADESWOMEN
\$10 each (includes shipping) - \$105 each

"WOMEN WORKING" - Blue shirt with yellow text. Tradeswomen logo on left chest. \$10.00 each.

NAME	ADDRESS	CITY	STATE	ZIP

"WOMEN ON THE TRAIL" - Blue, long-sleeved, crew-neck shirt. \$10.00 each.

NAME	ADDRESS	CITY	STATE	ZIP

NOV. 11, 1985
CA. RESIDENTS ONLY
\$10.00 each
\$10.00 each
TOTAL ORDERED \$



WOMEN WORKING - Blue shirt with yellow text. Tradeswomen logo on left chest. \$10.00 each.



WOMEN ON THE TRAIL - Blue, long-sleeved, crew-neck shirt. \$10.00 each.

"Women Working" and Tradeswomen hard hat symbol stickers 30 cents each or sets of 10 for \$4. Please add 6% sales tax in CA.

Send name, address, zip and check to Tradeswomen, Inc. P.O. Box 40664, S.F. CA 94140

ORDER SLIP

Please use t-shirt, and pin order blanks for ordering these items. For ordering cards and coloring books and stickers:

- Coloring books, 34 each plus \$1 postage
- Greeting Cards, \$3 a set including postage
- Stickers, 30 cents each or \$4 set of 10

TOTAL \$

ADD 6% sales tax if CA resident. Make check out to Tradeswomen, Inc. send to P.O. Box 40664, San Francisco CA 94140

GIFT MEMBERSHIPS ALSO AVAILABLE FOR \$25 use membership blank and identify it as a gift sub.....

TRADESWOMEN GREETING CARDS

Shoemakerette Apprentice, and Tradeswomen, Inc. member Vickie Hamlin's greeting cards are going like crazy. They are not just for holiday mail. They can be used all year to send to your favorite tradeswoman or tradeswoman supporter. Some people tell us they are buying an extra set to frame and hang by their work lockers or at home! Please see the gift section of TRAX to order yours now.

JOIN TRADESWOMEN, INC.

INDIVIDUAL MEMBERSHIP WITH FREE SUBSCRIPTIONS

- Employee Individuals \$35/year
- Unemployed Individuals \$20/year

NAME (please print)

BUSINESSES, INSTITUTIONS, AND GROUPS

- Membership with free sub \$50/year
- Tradeswomen Magazine sub \$25/year
- Trade Trax News! sub \$15/year

PHONE ()

ADDRESS

CITY

STATE

ZIP

MAIL THIS FORM AND CHECK TO: TRADESWOMEN, INC. P.O. BOX 40664, SAN FRANCISCO CA 94140
.....and know that you are supporting a non-profit membership organization that provides peer support and advocacy for women working in nontraditional blue-collar job. THANK YOU.....

11-87 Women win cash awards in sex harassment cases

SAN FRANCISCO — The state's civil rights agency awarded \$126,000 yesterday to two women in sexual harassment cases and said employers would be held responsible for harassment by co-workers that was not promptly investigated and punished. The Fair Employment and Housing Commission awarded Rockwell International Corp. employee Beulah Dexter \$30,000 for emotional distress and \$34,000 in punitive damages. In the second case, a former waitress in a Napa restaurant, Evalini Slabough, was awarded \$34,000 for back pay, emotional distress and punitive damages in her case against Wayne Sutton, manager of Alfredo's Restaurant.

WOMEN'S MARITIME ASSOCIATION NEWSLETTER

307 Third Ave. #743
Seattle, WA 98104-2333
THANKS TO THIS SISTER NEWSLETTER FOR WOMEN IN THE MARITIME INDUSTRY...They reprinted Tradeswomen, Inc. ad in their publication and we have received many inquiries due to their networking.



Tradeswomen Magazine

A Quarterly Magazine for Women in Blue-Collar Work

The only national newspaper for women working in nontraditional, blue-collar jobs. Written by working women and for their benefit.

Features: stories, interviews, practical information, news items, perspectives, poems, essays, book reviews, letters and readers' comments.

One year/4 issues \$12.00

TRADESWOMEN, INC.
P.O. Box 40664, San Francisco CA 94140

LOS ANGELES

L.A. AREA MEMBER SENDS OTHER TRADESWOMEN TO NETWORK SHARE, MEET, COLLABORATE, COMPLAIN ETC. This is the reason call for tradeswomen in the L.A. area. Please contact Connie Strickland at 3279 E. Raymond Ave. ALHAMBRA CA 91801, (818)790-1143. Don't let her close this yearbook to great tradeswomen networking! As Connie writes on her dedication from "TALKING THE TALK"

Appendix VI

Judgment

Tradeswomen, Inc.

vs

**Division of Apprenticeship Standards
State of California**

"Moving Women into New Jersey's Roadbuilding Industry"

A report prepared by

Stanwick Associates

ENDORSED
FILED
San Francisco County Superior Court
FEB 11 1983
CARL M. OLSEN, Clerk
BY MARTIN P. ANANI
DEPUTY CLERK

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE CITY AND COUNTY OF SAN FRANCISCO

TRADESWOMEN, INC., DEBORAH
GROSSBERG, JUDI PARKS, and
MARCIA PERKINS,

Petitioners,

vs.

CHIEF, DIVISION OF APPRENTICESHIP
STANDARDS; INTERGROUP RELATIONS
COORDINATOR, DIVISION OF APPREN-
TICESHIP STANDARDS; DIRECTOR OF
INDUSTRIAL RELATIONS AND
ADMINISTRATOR OF APPRENTICESHIP;
CALIFORNIA DIVISION OF APPRENTICE-
SHIP STANDARDS,

Respondents.

NO. 788-965

PEREMPTORY WRIT OF MANDATE

TO: CHIEF, CALIFORNIA DIVISION OF APPRENTICESHIP STANDARDS;
INTERGROUP RELATIONS COORDINATOR, DIVISION OF APPRENTICESHIP
STANDARDS; DIRECTOR OF INDUSTRIAL RELATIONS AND ADMINISTRATOR
OF APPRENTICESHIP; and CALIFORNIA DIVISION OF APPRENTICESHIP
STANDARDS:

1 John M. Rea, Chief Counsel
2 Gary O'Mara, Graduate Legal Assistant
3 Department of Industrial Relations
4 State of California
5 525 Golden Gate Avenue, Room 614
6 San Francisco, California 94102
7 Telephone: (415) 557-3917

8 Department of Industrial Relations

9 SUPERIOR COURT OF THE STATE OF CALIFORNIA
10 FOR THE CITY AND COUNTY OF SAN FRANCISCO

11 TRADESWOMEN, INC., DEBORAH GROSSBERG,
12 JUDI PARKS, and MARCIA PERKINS,

13 Petitioners,

14 vs.

15 EDWARD WALLACE, in his official capacity
16 as Chief, Division of Apprenticeship
17 Standards; WILLIE Y. HUFF, in his
18 official capacity as Intergroup Relations
19 Coordinator, Division of Apprenticeship
20 Standards; DONALD VIAL, in his official
21 capacity as Director of Industrial
22 Relations and Administrator of Appren-
23 ticeship, CALIFORNIA DIVISION OF
24 APPRENTICESHIP STANDARDS; CALIFORNIA
25 APPRENTICESHIP COUNCIL,

26 Respondents.

27 JUDGMENT

28 Petitioners, Tradeswoman, Inc., Deborah Grossberg, Judi
29 Parks, and Marcia Perkins and respondents Division of
30 Apprentice Standards, Department of Industrial Relations of the
31 State of California; Donald Vial, in his official capacity as

1 public or any specific segment thereof, but rather relate only to
2 the internal management of enforcement activities by respondent
3 agencies.

4 **II. NON-ADMISSION**

5 By entering into this Stipulated Judgment respondents
6 do not admit, and plaintiffs do not contend that, this judgment
7 shall be construed as an admission that any respondent has
8 failed to perform his or its mandatory or discretionary duties
9 to enforce the relevant provisions of the Labor Code, the
10 regulations of the California Apprenticeship Council, or the
11 Cal Plan to the fullest extent. Respondents expressly deny any
12 failure to perform; petitioners allege the same. Entry of this
13 Stipulated Judgment signifies only that petitioners and
14 respondent agree that given the burden, expense, and hazards of
15 litigating that question, that the scarce resources of both
16 parties would be better turned to extending and enforcing
17 equal opportunity and affirmative action protections of the law.

18 **III. DEFINITIONS**

19 For purposes of this Stipulated Judgment definition set
20 forth in the Cal Plan in §2 are applicable. Those definitions
21 are set forth in the Cal Plan, which is Attachment D hereto and
22 incorporated by reference herein.

23 **IV. RECORD KEEPING**

24 The Division of Apprenticeship Standards ("DAS") shall
25 maintain records on computer tapes of each apprenticeship
26 program sponsor with 5 or more apprentices registered with the
27 DAS, and shall report out the information on form 742 on a yearl

1 female apprentices active in the program at the end of the pre
2 ceding compliance review year;

3 4. The total number of females and the total number of
4 males indentured into the program during the compliance review
5 year;

6 5. An indication as to whether a Program Sponsor has
7 deemed to be in compliance;

8 6. The number of additional female apprentices the
9 program would have to register to meet its intake goals for
10 women for the compliance review year;

11 7. In each year after the initial reporting year, the
12 printout shall also include the number of females short (if any)
13 of the program sponsor's goals the program sponsor was in the
14 preceding years for which this reporting method has been
15 utilized; and

16 8. Whether the program is presently operating under a
17 "good faith" exemption despite its failure to meet its goal for
18 female apprentices.

19 A copy of the master list shall be delivered to counsel
20 for petitioners, Equal Rights Advocates, Inc., the Employment
21 Law Center, and any other counsel designated by petitioners,
22 within 10 days of its completion.

23 V. YEARLY COMPLIANCE REVIEW AND AUDIT OF SELECTION PROCEDURE

24 A. Schedule

25 DAS shall conduct an annual compliance review of each
26 apprenticeship program with five or more apprentices. The
27 review will be based on intake of apprentices during the

1 met its goals, should maintain its recruitment and outreach acti-
2 vities toward women at the same level, should distribute required
3 outreach notices, and continue to comply with its own affirmative
4 action plan.

5 Each program sponsor which has met its goals for women in
6 the compliance year under review, but (at the point when the
7 compliance review is underway) lacks sufficient women applicants
8 on its list or in its eligible pool to meet the goal it is
9 attempting to meet that year, shall be sent a letter addressing
10 recruitment. The letter shall be in the form outlined in
11 Attachment "A." (It shall not be sent to programs which maintain
12 neither a list nor a pool of eligibles.) The term "sufficient
13 female applicants" means a number such that no special remedial
14 actions steps (such as dual lists) should be necessary for women
15 to progress through the selection process so that the program
16 meets its goal. "Sufficient female applicants" is a percentage
17 of female applicants of all applicants, which is equal to or
18 greater than the percentage goal for women's entry into the
19 program for that year.

20 Each sponsor which has not met its goal for women for the
21 compliance review year shall be issued a letter of direction in
22 conformity with Attachment "B" hereto.

23 Within 30 days after DAS sends a letter of direction to
24 a sponsor which requires a change in conduct, DAS shall contact
25 the sponsor. If the sponsor agrees to incorporate DAS direc-
26 tives, which DAS finds appropriate to the program sponsor's
27 shortcomings and labor market situation, then DAS shall require

1 adverse impact, it shall so notify the program sponsor by letter
2 in the format set out in Attachment C.

3 If the program sponsor agrees to amend its affirmative
4 action plan in accordance with the directive letter from DAS and
5 follows its plan the next time it selects for its new list of
6 candidates, and the selection criteria or qualification standards
7 in the revised plan ultimately has an adverse impact, then DAS
8 will make a determination that the program sponsor has
9 demonstrated a good faith effort. When that program sponsor
10 establishes any future lists, DAS will require the program sponsor
11 to follow the amendments to its affirmative action plan which
12 specify that the sponsor shall modify and/or make adjustments to
13 its future list to remove the effect of adverse impact. If a
14 program sponsor refuses to either validate, or agree to adjust or
15 correct any adverse impact as specified in its affirmative
16 action plan, then the Chief of DAS will send the sponsor a "show
17 cause" letter to initiate sanctions pursuant to Section 13 of the
18 Cal Plan.

19
20 V. D. Review Activities for Year-Round and Two-Year List
Programs During Transition Year 1983

21 In order to readjust the year over which compliance is
22 measured to one ending in December 31 of each year, DAS will do
23 its compliance review of all programs by a desk audit covering
24 apprentice activity between April 1, 1982 and December 31, 1982.
25 The desk audit shall consist of a review of the DAS form 742 and
26 a determination of whether the program sponsor has submitted
27 changes to its affirmative action plan in conformance with the

- 1 1. The master list described in section IV
2 providing information relating to the intake of apprentices by
3 program sponsors (this list shall be created no later than of
4 each year and shall be delivered to counsel for petitioners);
- 5 2. All form DAS 742's or their equivalents;
- 6 3. The complete files of all program sponsors
7 including, but not limited to, form DAS 740A or its equivalent;
- 8 4. Written records of all steps taken by DAS
9 consultants in regard to all program sponsors under the
10 consultant's jurisdiction, in compliance with section V of this
11 stipulated judgment;
- 12 5. All written complaints filed by respondents
13 against program sponsors for failure to meet goals and time-
14 tables for female intake of apprentices, use of unvalidated
15 selection procedures with an adverse impact on women, or
16 refusing or failing to comply with any other obligations placed
17 on program sponsors by DAS in the course of enforcing the Cal
18 Plan; and
- 19 6. All determinations issued by the Administrator
20 of Apprenticeship or the California Apprenticeship Council
21 regarding any written complaints against program sponsors for
22 failing to meet goals and timetables for female intake of
23 apprentices, use of unvalidated selection procedures with an
24 adverse impact on women, or refusing or failing to comply with
25 obligations placed on program sponsors by DAS in the course of
26 enforcing the Cal Plan.
- 27 F. Any entitlements to attorneys fees as costs for

1 to resolve such dispute.

2 Any party may also seek amendment or modification of
3 provision of this stipulated judgment by order of the court
4 following an appropriately noticed motion.

5 XI. ATTORNEYS' FEES

6 The parties agree that the issue of the responsibility
7 for attorneys' fees, if any, by respondents is not settled or
8 any way determined by this stipulated judgment. Both attorney
9 fees for the litigation to date, and any fees for monitoring
10 compliance, remains for determination after entry of this
11 stipulated judgment.

12 XII. TERM OF THE STIPULATED JUDGMENT AND ADDITIONAL PARTY

13 The term of this stipulated judgment shall be 5 years
14 from the date a final order is filed entering judgment. The
15 court shall retain jurisdiction over this action until the
16 expiration of this stipulated judgment. This stipulation of
17 judgment permits, but is not contingent upon, acceptance of
18 obligations herein by respondent CALIFORNIA APPRENTICESHIP
19 COUNCIL.

20
21 DATED: _____

22
23 _____
JUDGE OF THE SUPERIOR COURT

24 STIPULATION

25
26 Petitioners TRADESWOMAN, INC., DEBORAH GROSSBERG, JUDI
27 PARKS, and MARCIA PERKINS, and respondents EDWARD WALLACE, in

1 such cases they will follow the federal Uniform Guidelines on
2 Employee Selection Procedures, 41 C.F.R. Part 60-3 (including
3 questions and answers explaining the Guidelines).

4 VI. Sanctions

5 The procedure for sanctions is that described in
6 Section 13 of the Cal Plan.

7 Respondents will, within one month, request an opinion
8 by the Attorney General whether existing regulations permit the
9 Administrator to award, as part of a remedy, "make whole" relief,
10 including backpay and attorneys fees. Should the Attorney
11 General's opinion confirm such authority, then the Administrator
12 will order such remedies, in his/her discretion, as necessary to
13 carry out the Cal Plan. Should the opinion find such remedies
14 not authorized, respondents shall not be obliged to order such
15 remedies unless and until further regulations are filed with the
16 Secretary of State, which contain such authority.

17
18 VII. Regulatory Efforts

19 Respondent California Apprenticeship Council will agree,
20 in the event the Attorney General's opinion is that no authority
21 exists under existing regulations to assess order "make whole"
22 relief, including backpay and attorneys fees, to propose
23 suitable regulations or legislation.

24 VIII. TRAINING AND OUTREACH

25 (A) Training Within Existing Budgetary Limitations.

26 Not later than one year from the date of entry of the
27 judgment in this matter, respondent DAS will have trained all

1 the Department of Social Services, of Education and the
2 Chancellors of the California Community Colleges, and the
3 Employment Development Department branch responsible for admi-
4 nistering job training and placement services, a system wide
5 policy of actively promoting the training of women in non-
6 traditional occupations which have apprenticeship programs. For
7 this purpose, "non-traditional occupations" needs of appren-
8 ticeable job classification with more than 70% male participants
9 according to Department of Labor Statistics.

10 DAS' local offices will have available the phone numbers
11 of all active program sponsors, and will encourage public
12 knowledge of those numbers by all appropriate means.

13

14 IX. IMPLEMENTATION AND MONITORING OF STIPULATED JUDGMENT

15 A. All parties to this stipulated judgment shall
16 cooperate with each other to insure that the objectives of this
17 judgment in seeking equal employment opportunities and non-
18 discrimination for women in registered apprenticeship training
19 programs are met.

20 B. The Intergroup Relations Coordinator shall be
21 responsible for implementation of this Section IX of the stipu-
22 lated judgment.

23 C. Commencing not later than the week the parties
24 receive notice that the judgment has been entered, and every six
25 months thereafter, petitioners and their counsel shall have a
26 right to meet with the Chief of DAS, the Intergroup Relations
27 Coordinator, and other responsible DAS and DIR officials for

Appendix VII

National Tradeswomen Advocacy Organizations

"Moving Women into New Jersey's Roadbuilding Industry"

A report prepared by

Stanwick Associates

NATIONAL TRADESWOMEN ADVOCACY ORGANIZATIONS

ACCESS For Women

New York City Technical College of the
City University of New York
300 Jay Street
Brooklyn, NY 11201-2983
(718) 643-3221

ACCESS trains women for non-traditional jobs in many areas. The organization has produced a video which is being prepared for large scale distribution. The video is directed at teenage women and attempts to break down stereotypes about women and non-traditional work.

Apprenticeship And Nontraditional Employment For Women (ANEW)

Construction Trades Building
3000 NE 4th Avenue
Renton, WA 98056
(206) 235-2212

ANEW is a six-year-old organization formed to prepare women for apprenticeship programs and work in the trades. The organization was started by concerned community women, employers and union representatives. It serves poor women who are eligible for JTPA funds. ANEW runs two five-month pre-apprenticeship courses per year. Each can accept forty-seven women.

Bexar County Women's Center

2300 W. Commerce
Suite 201
San Antonio, TX 78207
(512) 225-4387

This center offers on-the-job training for disadvantaged teenaged females. It does not currently offer training in the construction trades.

Non-traditional Employment For Women (NEW)

105 East 22nd Street
Room 710
New York, NY 10010
(212) 420-0660

NEW is a nine-year-old employment and training program for women who want to become blue collar workers. Among its other programs, NEW holds several nine-week-long pre-apprenticeship programs a year which prepare women for the construction trades. NEW won a suit in 1987 against New York's Battery Park City Authority for systematically excluding women from laborer positions for which they are qualified.

Options, Inc.

215 South Broad Street
Philadelphia, PA 19107
(215) 735-2202

Options is a career counseling organization which primarily serves professional women.

PREP, Inc.

2261 Francis Lane
Cincinnati, OH 45206
(513) 221-4700

PREP, Inc., founded in 1968, is a national organization headquartered in Cincinnati, Ohio, dedicated to helping women and minorities strengthen their numbers in non-traditional trades. In Ohio, it runs an eight-week course to prepare women for apprenticeship and work in the vertical and highway construction trades. It is funded in Ohio with a JTPA grant. It also runs programs in California, New York, and Louisiana. One of its Ohio locations provides services to counties in Indiana and Kentucky as well.

jobs in construction, maintenance, mechanics, electronics, and other trades. They assist women in southern New Jersey and in Pennsylvania. The group maintains a telephone hot line, publishes a newsletter, Inroads, provides a referral and resource service, and provides speakers.

Wider Opportunities for Women (WOW)

1325 G Street NW
Lower Level
Washington, DC 20005
(202) 638-3143

WOW was founded in 1964 to expand employment opportunities for women. It provides direct assistance to women seeking to enter the job market and has been a pioneer in the development of employment programs for women in non-traditional occupations. In the late 1970s, WOW was one of the plaintiffs in a suit against the Department of Labor regarding the non-enforcement of Executive Order 11246 which requires equal employment opportunity and affirmative action for women workers. This suit resulted in the establishment of the national goals and timetables for women in the construction industry.

Women's Action Alliance

370 Lexington Avenue
Room 603
New York, NY 10017
(212) 532-8330

The Women's Action Alliance was founded in 1971. It is a national organization that works on many projects to further the goal of women's equality. Among other services, it provides publications on sex equity in education. It is currently completing a project on the kinds of training women are receiving from JTPA-funded projects.

Women In Apprenticeship, Inc.

1095 Market Street
Room 712
San Francisco, CA 94103
(415) 864-3255

Women in Apprenticeship, Inc. is an affiliate of PREP, Inc., although it

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Appendix IX

Focus Groups Summary

"Moving Women into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

**Fall 1990
Purdue University**

**DISTRIBUTION OF WOMEN
BY CLASS AND ETHNIC CLASSIFICATION**

		AMERICAN INDIAN		BLACK NON- HISPANIC		HISPANIC		ORIENTAL AMERICAN		INT'L. STUDENTS		CAUCASIAN		TOTALS*
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
FR	1	1	.3	31	8.5	13	3.6	20	5.5	4	1.0	297	81.1	366
	2	-	-	-	-	1	20.0	-	-	-	-	4	80.0	5
SO	3	2	.7	35	12.3	7	2.4	9	3.2	4	1.4	228	80.0	285
	4	-	-	8	14.6	2	3.6	2	3.6	1	1.8	42	76.4	55
JR	5	-	-	12	4.9	9	3.6	11	4.5	3	1.2	212	85.8	247
	6	-	-	6	7.8	1	1.3	1	1.3	6	7.8	63	81.8	77
SR	7	-	-	14	7.5	2	1.1	9	4.8	2	1.1	160	85.5	187
	8	-	-	3	4.0	2	2.6	2	2.6	-	-	69	90.8	76
TOTALS		3	.2	109	8.4	37	2.9	54	4.2	20	1.5	1075	82.8	*1298

GRAND TOTAL *1298

*Does not include Agricultural Engineering Students

Source: Office of the Registrar 9/90
Purdue University

I N T R O D U C T I O N

This report summarizes key findings from three focus groups held October 26 and October 27, 1987 in Edison, New Jersey. The purpose of the groups was to determine the barriers that women face when they seek non-traditional employment, as well as the problems those already in such employment face. All three groups were moderated by Mr. Jeffrey C. Henne, President of The Jeffrey Henne Group. The focus group outline was developed by Mr. Henne with consultation from Ms. Kathy A. Stanwick of Stanwick Associates.

The first group was recruited randomly by Schlesinger Associates, Inc. of Edison, New Jersey. This group consisted of ten women who had indicated on the telephone that they were at least somewhat interested in non-traditional employment.

Approximately one-third of this group were in their late teens or early twenties, another third were in their late twenties or early thirties and the rest were in their late thirties or early forties. Three of these women were college graduates, and a fourth had attended college. The remainder all had high school educations, except one woman, who had attended a trade school.

The two remaining groups were conducted with women who already worked in non-traditional jobs. The first of these was composed of ten women, all of whom worked for the New Jersey Department of Transportation. The second group consisted of four women, each of whom was a unionized construction worker. Each of these groups was recruited by The Jeffrey Henne Group from lists supplied by Stanwick Associates.

All participants were informed during recruiting that the purpose of the discussion was research, and that their comments would be recorded and reported to a client. All participants were paid a small financial incentive to attend.

SUMMARY OF FINDINGS

GENERAL POPULATION FOCUS GROUP

Definition of Non-Traditional Employment

When asked to list non-traditional employment opportunities for women, these participants listed a variety of jobs, including: mechanics, construction workers, truck drivers, welders, train conductors, pilots, professional sports players, carpenters, electricians, chauffeurs, bus drivers, cab drivers, electricians and president of the United States.

When asked what it was about these jobs that made them non-traditional, one participant said: "They are more male," and another felt they required "manual labor" or "physical endurance." Many participants felt these jobs were more "time-consuming." As one participant explained:

Well, when men have jobs, they can basically work 12 hours straight. Usually when women have a job, they have to work a certain number of hours because they have to take care of the children and the family. So if a woman has one of those jobs, the children are either grown, or they have someone to watch their children, or they don't have any.

Many participants agreed that family considerations were a primary reason for not pursuing non-traditional employment.

When asked to list the stereotypes that most people have about women in non-traditional employment, these women listed adjectives such as: "loose," "single women," "butch," "tough women," "daring," "stupid," and "looked down on." One participant, who was a schoolteacher, explained what she meant by this last comment:

A schoolteacher who decided to become a truckdriver would be looked down on...probably by her colleagues. (They would think): 'Why would you want to do that when you have such a prestigious job? You're a professional, why would you want to become a worker like that?'

Several spoke of the competition women face from other men on the job. One woman, who had been a bus driver, told the following story:

When I drove the bus, I was the only woman bus driver he had...The men felt very competitive. They would race back at night to try to beat me back at the garage. It was just stupid.

I love machinery and I'd love to sit in a bulldozer or operate a crane...Big equipment is what I would love to maneuver. Part of that, I think, is psychology, I always like to be in control, and sitting behind a bulldozer would really give me a sense of power. Because of the way that I was brought up, the generation that I come from, women did not go into something like that. It's always been a fantasy of mine...since I was a teenager, but not something that I would actively pursue...

Barriers to Pursuing Non-Traditional Employment

Many of the women in the group who were 30 years of age or older indicated that one of the main reasons they had not pursued non-traditional employment was their family obligations. This was also one of the main reasons that one of the younger participants gave as a reason for not becoming a mechanic:

Right now, I have to worry about the kids. When they're old enough, then I'm going to go into the field...If there was a childcare center in my sort of field with the mechanics, maybe I just might go into it.

Two of the younger women wanted to be truck drivers, and saw their age (one was 19 and the other 21 years of age), relative lack of experience and the price of a truck to be major barriers preventing them from becoming truck drivers. Both, however, were determined that they would one day be driving trucks.

Most of the women in the group who were 30 years of age or older felt they were too old. As one participant related:

Lately, I've been saying to myself, 'why not?', and once again, I kind of come up with the same answer that I'm really too old. I'll be driving down the Parkway, and I'll see these guys, and I'll think 'I don't know if I could physically do that.' I could have maybe ten years ago.

Another woman, who was a 35 year old teacher, asked a friend how to get into construction, and was told that she was ten years older than she should be to get into that field.

Many of the women who were over 30 years of age felt that opportunities were available for girls in high school that were not available 15 years ago. As one woman related:

When I was in high school,...you went to the guidance counselor, they would say, 'Well, do you want to go to college or business?' That was it. There were two

salary and meeting new people...I'd like to have the training and also, I think I have a very good mind and I'd like to use it, but I don't mind using my hands and everything, but I want to start with a good salary and move up.

Others, especially those working part-time, were not as concerned with taking what they saw as a temporary cut in pay while they learned a trade or for their first year of employment.

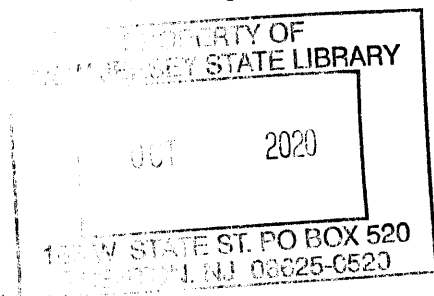
Some spoke of what they saw as a common practice in New Jersey -- working under someone else's "book" -- a practice that allows someone else to by-pass apprenticeship and regular promotional steps in the union. Many indicated that this was a common practice for young men just learning a trade, but that it was much more difficult for a woman to use this technique.

Communication Channels

Most participants were unaware of how to find a non-traditional job. Some suggested that they might look in the classified ad section of the newspaper. As one woman suggested:

I'm thinking that if I happen to open a classified page in the newspaper, and I saw that the state was offering a training program, pay as you train...and it was what I was looking for, I would consider it.

Others suggested direct mail, public service announcements or advertising on cable television stations.



thought they might be losing their hearing from being around machinery all day.

Problems of Working with Men

Working in fields that are primarily dominated by men presented unique situations for many of the women in these focus groups. Most women in both worker's groups spoke of a "male attitude": the idea that women cannot do the job as well as a man. One DOT employee spoke of this:

We're coping with...the attitude that 'because you're a woman, you can't do the job,' or 'you aren't good enough,' or 'you'll never be good enough;' and they feel they've forgotten more than you could ever learn about the job that you're doing.

Many spoke of a period of "testing" before the men on a crew accepted a woman:

With a lot of the guys...a lot of them will basically challenge you when you first come on a job site. Like I worked on a construction site for a summer, and the first couple of days out there, they basically challenge you to find out if you really are knowledgeable about what you're doing, or are you just a body out there pretending that you know what you're doing and you're basically a sidewalk superintendent...They all basically put you through a little test, but once you pass that test, you're one of the guys.

In both workers groups, many agreed that once they "passed" the initial challenges of male colleagues, their work and expertise were usually accepted. Some spoke of the necessity of challenging the men, of letting them know that they were not "...going to take anything from them...", before the men started to accept them.

In both groups, there was a sense of pride among many of the women that they had transcended these hurdles, and that they were accepted. In both groups, however, several women spoke of the "loneliness" of being the only females on a crew. One DOT employee spoke eloquently on this subject:

It gets lonely out there. Occasionally, if you're out there and there are contractors out there, and he has 40 guys, and it's raining and it's wet, and you're cold and tired, you know, you'd just like someone to just talk to. Just to say, this guy is giving me a hard time...You always have to act like one of the guys, but you don't always feel like one of the guys. You do feel female,

In the unionized construction worker group, one of the women, who was white, spoke of how the state dealt with sexual harassment complaints from black employees differently than white employees:

I had a (sexual advance) from a guy, it was three pages, I took it to the state...and they wouldn't do anything because I wasn't black...If I was black they would have grabbed the company...and squeezed...Equal opportunity (personnel) are all black on top, so when they come out, and if you're white, they say, 'Well...we'll solve the problem,' and they rip it up. If you're black, they say, 'We're going to fight, we're going to go all the way to the top with this'...If you're not a black female, then they don't want anything to do with you. They want something that is going to make the papers.'

Most participants in both workers groups knew that New Jersey has the lowest percentage of women working in non-traditional employment in the nation. Several DOT employees felt the reason for this low percentage, in part, was that New Jersey is a "union state," and that "...a lot of unions in construction are very male, and closed groups."

Communication Channels

Participants in both workers groups felt that one of the best ways of communicating to potential job applicants was through existing organizations. One DOT employee thought this might also be a way to help with the state's image problem:

I think going to the high schools, colleges, churches, places that you can talk to people. I guess maybe to dispel this negative attitude about the state, and I guess basically trying to instill more self-confidence (in the women).

Most also thought that the importance of role models could not be emphasized enough:

There is a perception that females who work on construction jobs are 200 pounds overweight and they're smelly. They are terrible to work with, and, my gosh, you wouldn't want to be seen with one. Another perception is the perfect model out there just holding the flag and not knowing what she is doing. There are different perceptions that have to, through time, be corrected.

Another DOT employee added:

Getting Into the Field

When asked why they were in the fields they were in, participants listed a variety of reasons, including better pay, better advancement potential, it was what they were trained for and other friends or family members encouraged them. Some spoke of the "challenge" of the work:

With me, it wasn't the money as much as the opportunity...With my job, I just keep learning and learning. The more I learn, the more there is to learn. That's what is exciting.

Another DOT employee liked working for the state because of the benefits that she received:

Starting salary with the state isn't necessarily competitive with the private sector, but you're talking different types of work also. With a (private sector job), you're working five days a week, 52 weeks a year. You don't get vacation, no holidays, no sick time.

Most participants in both groups said they would not want to do anything else other than what they were doing, and for the most part, they were very fulfilled. Many had worked as secretaries, as waitresses or doing just general office work.

In the unionized construction worker group, some participants felt that more women were not employed in non-traditional jobs because they would get frustrated, because of the crudeness, and because of the relative lack of security. As one participant said:

A lot of the girls in the office were saying they like the convenience, it's almost like a warm cuddly feeling of knowing they have this nine-to-five job five days a week. They'll never get laid off, they have a paycheck coming in every week, whereas here I am, three weeks without any kind of money, doing a mortgage, but I'm not going off the wall. I know some people who would be going off the wall totally.

Impact on Family Life

Several participants spoke of the compromises working in non-traditional employment forced them to make with regard to their family life. As one DOT employee said:

Sometimes because of the long hours -- some days, I don't get to see my kids at all. It is difficult juggling between family life and work life...I think being out in the field and the long distance I travel to my job site

than I am, yet they're sitting at a desk for five dollars an hour when I'm out there making twenty...I don't have too many friends that are girlfriends. I get along much better with men than I do with women, and I've found that in this field, that most of the women get along better with men than they do with women, because there are no pretenses and you don't have to be somebody that you're not.

All of those who worked in non-traditional employment were aware that the state had the lowest percentage of female workers, and many were aware of the Women in Construction Task Force. Some had harsh words for the Task Force, believing that it would, in the end, not achieve anything, describing it as a paper shuffling organization.

Commissioner Hazel Gluck was known to those women attending these groups, and they are aware that the Commissioner is seeking to increase the number of women working in non-traditional employment in the state. DOT employees raised some serious flags, however, suggesting that there was an "undercurrent" present on jobsites about favored treatment women might be getting because of the Commissioner. All agreed that a larger female workforce was a worthwhile goal, but found themselves the butt of jokes by their male counterparts because of new or anticipated hiring priorities. This is potentially a severely damaging side effect that the state should be very cognizant of as this program continues.

DOT employees spoke of the general disdain in which most state residents look upon state workers, and suggested that a public relations program be mounted to counter these attitudes.

Finally, those in the focus group of unionized construction workers raised some serious allegations about harassment charges being handled differently by state personnel, depending on whether or not the woman making the charges was black or white. If substantiated, these are issues that need to be addressed as the Department pursues its policy of hiring more women. However, it should also be remembered that only four women were participating in this group, and anything that was said in this group could reflect the viewpoint of these four women and these four women only.

Appendix X

New Jersey Programs for Women and Non-Traditional Employment

"Moving Women into New Jersey's Roadbuilding Industry"

**A report prepared by
Stanwick Associates**

New Jersey Programs for Women and Non-Traditional Employment

Both the Department of Education's Sex Equity office and the New Jersey Division on Women of the Department of Community Affairs fund programs and centers which provide career training and other services for women in New Jersey. Generally, these programs are targeted toward single parent households. To find out more about these programs contact:

Elizabeth Stambolian
~~Sex-Equity-Coordinator~~
NJ Department of Education
West State Street
Trenton, NJ 08625

Darryl Johnson
Division on Women
NJ Department of Community
Affairs
363 West State Street
Trenton, NJ 08625

Some programs which focus on preparing women for non-traditional employment (not necessarily construction-related jobs) include:

Carpenter's Pre-Apprenticeship Training Program

Edison Job Corps
500 Plainfield Avenue
Edison, NJ 08817
(201) 985-4800 ext. 456
Contact: William Bennett

This program trains disadvantaged youth, ages 16-22. It is primarily a residential program, set up by the United Brotherhood of Carpenters and Joiners of America. Students receive intensive training, lasting 6 months- two years. GED (General Equivalency Diploma) and ESL (English as Second Language) lessons are available. Those who complete the pre-apprenticeship are placed in apprenticeship programs in locals throughout the state.

Career Development Center for Women

Bergen County Technical Institute
280 Hackensack Avenue,
Hackensack, NJ 07601
(201) 343-5609
Contact: Rena Grasso

PEP (Publicity/Editing/Publications)
Rider College Business and Marketing Education
2083 Lawrenceville Road
Lawrenceville, NJ 08638-3099
(609) 896-5312

This project monitors the secondary school implementation of programs which encourage young girls to make nontraditional career choices.

SERVE (Sex Equity Resources in Vocational Education)
New Jersey Vocational Education Resource Center
Crest Way
Aberdeen, NJ 07747
(201) 290-1900

This project is designed to sensitize vocational education teachers to the needs of young women. It teaches equitable teaching strategies and provides technical assistance to educators, community groups and businesses. The project has completed a video tape called "Mythbusters" aimed at encourage young women (ages 14 - 16) to pursue careers in non-traditional fields.

TIDE (Toward Individual Development Through Equity)
VOW (Vocational Opportunities for Women)
Jersey City State College
Center for Occupational Education
Jersey City, NJ 07305
1-800-27-ASTEP
TIDE Director: Pat Mitchell
VOW Director: Carole Uciferri

Provides career guidance to single parent homemakers. The hotline refers women to nontraditional jobs and training opportunities throughout the state.

WIN (Women in Non-Traditional Jobs)
Gloucester County Vocational Technical School
Tanyard Road, Box 186
Sewell, New Jersey 08080
(609) 468-1445
Director: Meredith Flynn

Offers women training in skilled trades such as metal work, auto repair and carpentry.

WITT (Women in Trades and Technology)
Trenton State College
Hillwood Lakes, CN 4700
Trenton, New Jersey 08650
(609) 771-3470
Director: Sally Hubbs

Project WITT develops and disseminates strategies for recruiting and retaining women in nontraditional vocational education programs, particularly those in technology-related fields.

WORC (Women's Opportunity to Re-train for Careers)
Women's Center
Jersey City State College
2039 Kennedy Blvd.
Jersey City, NJ 07305
(201) 547-3189
Director: Adrienne Scerbak

The project will run a pilot pre-apprenticeship program in March-May 1988. The pilot will focus on providing carpentry skills. The project will also test recruitment methods, develop curricula, and identify faculty for heavy construction-oriented pre-apprenticeship programs.

APPENDIX E:

**NSF DATA ON WOMEN,
ENGINEERING AND SCIENCE**

Educating Professionals For Leadership In A Global Economy

***Self-Study and Strategic Plan
1992***

**Prepared for the Commission on Higher
Education of the Middle States
Association of Colleges and Schools**



**New Jersey
Institute of
Technology**

III

ENVIRONMENTAL ANALYSIS

Introduction

Over the past several decades, the role of higher education has broadened dramatically. Today's colleges and universities are meeting challenges previously unimagined. They are serving not only their historically traditional clientele, but the underrepresented, the immigrant and the older adult. In addition, many universities appear to be shifting from basic to applied research because of rapidly developing technologies and issues of national competitiveness. And increasingly, they are addressing local, state and even national economic development needs. Higher education has indeed come to serve as a nexus point where numerous societal issues are addressed.

As a public, technological, urban university, NJIT has assumed these roles with particular enthusiasm. To perform them effectively requires a full understanding of the context in which the university operates. Environmental analysis is thus at the core of strategic planning. To prepare for the current planning cycle, trends at the national, state and local levels were studied. Trends at other higher education institutions were also analyzed. We examined our relationship with our colleagues in Newark, as well as with other colleges and universities statewide; we then looked at critical data for a comparable group of technological universities nationwide. A number of external factors were identified as likely to have a strong impact upon NJIT's future and these have been carefully considered in the planning process.

Demographics: The Implications of Workforce 2000

To increase the number of women and minorities pursuing careers in science and technology is a matter of equity and economics. By 1995, eight of the ten fastest growing occupations will be science and engineering-based. In the last decade of this century, the demand for jobs requiring scientific or technical skills will increase by 28%. By the year 2010, the United States could face a shortage of a half million or more technically trained professionals. *X the*

Overwhelmingly, the scientific and engineering workforce, and even more the U.S. science and engineering professoriate, have been white men. Yet, women and minorities will comprise approximately 75% of the new entrants to the workforce between now and the year 2000. That year, minorities will account for 30% of all U.S. eighteen-year-olds and 40% of the elementary and secondary school population.

Unfortunately, women earn only about 30% of all science, mathematics and engineering degrees although they constitute 52% of the population. For Blacks and Hispanics, the comparable figures are 8% and 20%. Higher education institutions, most especially those in the business of educating scientists and engineers, have a responsibility to recruit and effectively educate more students from these pools.

The Science and Engineering Pipeline: A Special Problem

United States students consistently rank near the bottom in international comparisons of

Table 3.1
National Critical Technologies

OFFICE OF SCIENCE AND TECHNOLOGY POLICY NATIONAL CRITICAL TECHNOLOGIES	DEPARTMENT OF COMMERCE EMERGING TECHNOLOGIES	DEPARTMENT OF DEFENSE CRITICAL TECHNOLOGIES
MATERIALS • Materials synthesis and processing • Electronic and photonic materials • Ceramics • Composites • High-performance metals and alloys	• Advanced materials • Advanced semiconductor devices • Superconductors } Advanced materials	• Composite materials • Semiconductor materials and microelectronic circuits • Superconductors } Composite materials
MANUFACTURING • Flexible computer integrated manufacturing • Intelligent processing equipment • Micro- and nanofabrication • Systems management technologies	• Flexible computer integrated manufacturing • Artificial Intelligence	• Machine intelligence and robotics
INFORMATION AND COMMUNICATIONS • Software • Microelectronics and optoelectronics • High-performance computing and networking • High-definition imaging and displays • Sensors and signal processing • Data storage and peripherals • Computer simulation and modeling • Computational fluid dynamics	• High-performance computing • Advanced semiconductor devices • Optoelectronics • High-performance computing • Digital imaging • Sensor technology • High-density data storage • High-performance computing	• Software producibility • Semiconductor materials and • Photonics • Parallel computer architectures • Data fusion • Signal processing • Passive sensors • Sensitive radars • Machine intelligence and robotics • Photonics • Simulation and modeling
BIOTECHNOLOGY AND LIFE SCIENCES • Applied molecular biology • Medical technology	• Biotechnology • Medical devices and diagnostics	• Biotechnology materials and processes
AERONAUTICS AND SURFACE TRANSPORTATION • Aeronautics • Surface transportation technologies		• Air-breathing propulsion
ENERGY AND ENVIRONMENT • Energy Technologies • Pollution minimization, remediation, and waste management		

Technologies in boldface identify areas of research activity at NJIT

Table B-1. Total employed scientists and engineers by field and gender: 1976-88

Field and gender	1976	1978	1980	1982	1984	1986	1988 1/
Total scientists and engineers.....	2,331,200	2,609,800	2,860,400	3,253,100	3,995,500	4,626,500	5,286,400
Men.....	2,131,600	2,367,600	2,544,800	2,864,100	3,482,900	3,927,800	4,417,400
Women.....	199,700	242,200	315,600	388,900	512,600	698,600	867,900
Total scientists.....	959,500	1,071,000	1,184,500	1,405,700	1,781,400	2,186,300	2,567,800
Men.....	781,300	857,600	918,000	1,075,100	1,343,300	1,586,700	1,821,500
Women.....	178,200	213,400	266,500	330,600	438,100	599,600	745,700
Physical scientists.....	188,900	208,300	215,200	227,400	254,100	288,400	312,000
Men.....	172,700	189,800	194,500	205,100	225,800	250,100	265,500
Women.....	16,200	18,500	20,800	22,300	28,300	38,300	46,500
Mathematical scientists.....	48,600	53,700	64,300	79,400	100,400	131,000	168,600
Men.....	37,100	40,500	46,400	54,000	78,500	97,100	123,600
Women.....	11,500	13,100	18,000	25,300	21,900	33,900	44,900
Computer specialists.....	119,000	177,000	207,800	299,000	436,800	562,600	708,300
Men.....	98,400	136,800	149,900	220,300	322,700	400,000	489,300
Women.....	20,600	40,200	57,900	78,700	114,100	162,500	218,700
Environmental scientists.....	54,800	68,900	77,600	87,200	98,100	111,300	113,400
Men.....	50,900	61,700	66,800	74,800	87,800	98,400	101,000
Women.....	3,900	7,200	10,700	12,400	10,300	12,900	12,300
Life scientists.....	213,500	244,100	287,500	337,100	353,300	411,800	458,600
Men.....	179,600	204,500	234,400	268,500	270,700	309,000	330,800
Women.....	33,900	39,600	53,100	68,600	82,600	102,800	127,700
Psychologists.....	112,500	121,700	128,100	138,400	209,500	253,500	275,900
Men.....	76,900	79,700	79,400	83,000	121,100	138,400	143,900
Women.....	35,600	42,000	48,700	55,400	88,400	115,200	132,000
Social scientists.....	222,300	197,400	204,000	237,200	329,200	427,800	531,000
Men.....	165,700	144,600	146,700	169,300	236,800	293,800	367,300
Women.....	56,600	52,800	57,200	67,900	92,400	134,000	163,700
Total engineers.....	1,371,700	1,538,800	1,675,900	1,847,200	2,214,100	2,440,100	2,718,600
Men.....	1,350,300	1,510,000	1,626,700	1,789,000	2,139,600	2,341,100	2,596,000
Women.....	21,400	28,800	49,200	58,300	74,500	99,000	122,200
Astronautical/aeronautical.....	56,800	62,000	69,500	80,800	97,200	110,500	119,400
Men.....	56,400	61,400	68,300	78,700	94,900	106,200	114,200
Women.....	400	600	1,200	2,100	2,200	4,300	5,300
Chemical.....	77,500	84,200	94,500	107,700	140,100	149,000	148,500
Men.....	75,000	81,700	90,000	101,600	131,300	137,800	136,000
Women.....	2,500	2,500	4,500	6,100	8,800	11,200	12,500
Civil.....	188,200	211,700	232,100	258,200	312,700	346,300	355,900
Men.....	182,800	208,400	226,300	252,200	303,400	333,400	346,600
Women.....	5,400	3,300	5,800	6,100	9,300	12,900	9,300
Electrical/electronics.....	283,000	341,500	383,100	437,700	500,700	574,500	640,900
Men.....	281,400	338,000	375,400	428,600	488,500	555,500	616,900
Women.....	1,600	3,500	7,600	9,100	12,200	18,900	23,800
Mechanical.....	276,200	299,300	322,600	357,900	445,600	492,600	497,800
Men.....	273,900	295,200	316,000	350,800	434,600	478,600	480,900
Women.....	2,300	4,100	6,600	7,100	11,000	14,000	16,900
Other engineers.....	490,000	540,100	574,100	604,900	717,800	767,200	956,100
Men.....	480,900	525,400	550,600	577,100	686,900	729,600	901,400
Women.....	9,100	14,700	23,500	27,800	31,000	37,700	54,400

1/ 1988 data are model generated rather than survey generated estimates and therefore trends (especially short term) should be treated with caution.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table 8-2. Scientists and engineers employed in science/engineering jobs by field and gender: 1976-86

Field and gender	1976	1978	1980	1982	1984	1986
Total scientists and engineers.....	2,122,100	2,364,400	2,542,700	2,866,700	3,465,100	3,919,900
Men.....	1,947,200	2,153,000	2,269,900	2,552,500	3,070,400	3,393,700
Women.....	174,900	211,300	272,800	314,200	394,600	526,200
Total scientists.....	843,800	937,500	1,032,800	1,147,500	1,402,900	1,676,400
Men.....	689,100	753,800	806,200	887,700	1,078,200	1,242,800
Women.....	154,700	183,700	226,600	259,900	324,700	433,600
Physical scientists.....	154,900	168,200	166,300	210,500	234,000	264,900
Men.....	143,600	155,700	151,700	190,000	208,000	229,500
Women.....	11,300	12,500	14,500	20,500	26,000	35,400
Mathematical scientists.....	43,800	48,000	57,300	68,300	87,000	103,900
Men.....	33,700	36,700	42,100	45,500	68,200	78,900
Women.....	10,000	11,400	15,200	22,800	18,800	25,000
Computer specialists.....	116,000	171,400	196,700	216,100	340,400	437,200
Men.....	95,400	131,300	147,600	158,700	251,600	308,700
Women.....	20,600	40,000	49,100	57,400	88,800	128,400
Environmental scientists.....	46,600	56,900	63,100	82,700	89,900	97,300
Men.....	44,000	51,600	54,700	71,100	80,800	87,200
Women.....	2,600	5,300	8,400	11,700	9,100	10,100
Life scientists.....	198,200	227,800	267,300	298,000	294,100	340,500
Men.....	167,700	191,800	218,400	239,000	226,000	257,100
Women.....	30,500	36,000	48,900	59,000	68,100	83,300
Psychologists.....	103,700	107,400	112,500	105,600	151,900	172,800
Men.....	71,600	71,100	70,400	66,400	92,900	99,500
Women.....	32,000	36,300	42,100	39,300	59,000	73,300
Social scientists.....	180,500	157,800	169,700	166,200	205,600	259,800
Men.....	133,200	115,700	121,300	117,000	150,800	181,800
Women.....	47,300	42,200	48,300	49,200	54,900	78,000
Total engineers.....	1,278,300	1,426,900	1,509,900	1,719,100	2,062,200	2,243,500
Men.....	1,258,100	1,399,300	1,463,600	1,664,800	1,992,200	2,150,900
Women.....	20,200	27,700	46,200	54,300	70,000	92,600
Astronautical/aeronautical.....	55,700	61,100	65,000	77,200	91,800	104,200
Men.....	55,300	60,500	63,800	75,100	89,600	100,300
Women.....	400	600	1,200	2,100	2,200	3,900
Chemical.....	76,400	81,900	89,000	101,100	127,500	131,500
Men.....	74,100	79,400	84,500	95,300	119,200	121,200
Women.....	2,500	2,500	4,500	5,700	8,300	10,300
Civil.....	182,800	205,200	217,000	243,700	293,000	319,100
Men.....	178,100	201,900	211,500	237,900	284,400	307,200
Women.....	4,800	3,300	5,500	5,900	8,500	11,900
Electrical/electronics.....	267,900	327,000	357,400	413,500	475,000	540,800
Men.....	266,500	323,600	350,200	405,400	463,800	523,200
Women.....	1,400	3,500	7,200	8,100	11,200	17,600
Mechanical.....	272,800	296,500	308,800	334,400	414,000	453,700
Men.....	270,600	292,300	302,200	327,700	403,300	440,100
Women.....	2,200	4,200	6,600	6,700	10,700	13,600
Other engineers.....	422,700	455,200	472,700	549,200	660,900	694,200
Men.....	413,500	441,600	451,400	523,400	631,900	658,900
Women.....	8,900	13,600	21,200	25,800	29,100	35,300

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-3. Scientists and engineers employed in nonscience/engineering jobs, by field and gender: 1976-86

field and gender	1976	1978	1980	1982	1984	1986
Total scientists and engineers.....	209,100	245,400	317,700	386,400	530,400	706,600
Men.....	184,400	214,600	274,900	311,600	412,500	534,100
Women.....	24,800	30,900	42,800	74,700	118,000	172,400
Total scientists.....	115,700	133,500	151,700	258,200	378,500	509,900
Men.....	92,200	103,900	111,800	187,400	265,100	343,900
Women.....	23,500	29,800	39,900	70,700	113,400	166,000
Physical scientists.....	34,000	40,100	48,900	16,900	20,100	23,500
Men.....	29,100	34,100	42,800	15,100	17,800	20,600
Women.....	4,900	6,000	6,300	1,800	2,300	2,900
Mathematical scientists.....	4,800	5,700	7,000	11,100	13,400	27,100
Men.....	3,400	3,800	4,300	8,500	10,300	18,200
Women.....	1,500	1,700	2,800	2,500	3,100	8,900
Computer specialists.....	3,000	5,600	11,100	82,900	96,400	125,400
Men.....	3,000	5,500	2,300	61,600	71,100	91,300
Women.....	0	200	8,800	21,300	25,300	34,100
Environmental scientists.....	8,200	12,000	14,500	4,500	8,200	14,000
Men.....	6,900	10,100	12,100	3,700	7,000	11,200
Women.....	1,300	1,900	2,300	700	1,200	2,800
Life scientists.....	15,300	16,300	20,200	39,100	59,200	71,300
Men.....	11,900	12,700	16,000	29,500	44,700	51,900
Women.....	3,400	3,600	4,200	9,600	14,500	19,500
Psychologists.....	8,800	14,300	15,600	32,800	57,600	80,700
Men.....	5,300	8,600	9,000	16,600	28,200	38,900
Women.....	3,600	5,700	6,600	16,100	29,400	41,900
Social scientists.....	41,800	39,600	34,300	71,000	123,600	168,000
Men.....	32,500	28,900	25,400	52,300	86,000	112,000
Women.....	9,300	10,600	8,900	18,700	37,500	56,000
Total engineers.....	93,400	111,900	166,000	128,100	151,900	196,600
Men.....	92,200	110,700	163,100	124,200	147,400	190,200
Women.....	1,200	1,100	3,000	4,000	4,500	6,400
Astronautical/aeronautical.....	1,100	900	4,500	3,600	5,400	6,300
Men.....	1,100	900	4,500	3,600	5,300	5,900
Women.....	0	0	0	0	0	400
Chemical.....	1,100	2,300	5,500	6,600	12,600	17,500
Men.....	900	2,300	5,500	6,300	12,100	16,600
Women.....	0	0	0	400	500	900
Civil.....	5,400	6,500	15,100	14,500	19,700	27,200
Men.....	4,700	6,500	14,800	14,300	19,000	26,200
Women.....	600	0	300	200	800	1,000
Electrical/electronics.....	15,100	14,500	25,700	24,200	25,700	33,700
Men.....	14,900	14,400	25,200	23,200	24,700	32,300
Women.....	200	0	400	1,000	1,000	1,300
Mechanical.....	3,400	2,800	13,800	23,500	31,600	38,900
Men.....	3,300	2,900	13,800	23,100	31,300	38,500
Women.....	100	0	0	400	300	400
Other engineers.....	67,300	84,900	101,400	55,700	56,900	73,000
Men.....	67,400	83,800	99,200	53,700	55,000	70,700
Women.....	200	1,100	2,300	2,000	1,900	2,400

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-4. Employed doctoral scientists and engineers by field and gender: 1977-87

Field and gender	1977	1979	1981	1983	1985	1987
Total scientists and engineers.	285,055	314,257	343,956	369,320	400,358	419,118
Men.....	257,465	280,857	302,971	320,494	341,873	352,386
Women.....	27,590	33,400	40,985	48,826	58,485	66,732
Total scientists.....	240,005	263,915	286,917	307,775	334,505	351,350
Men.....	212,696	231,040	246,685	260,025	277,508	286,346
Women.....	27,309	32,875	40,232	47,750	56,997	65,004
Physical scientists.....	57,531	60,222	63,110	63,986	67,480	68,647
Men.....	54,594	57,086	59,346	59,811	62,809	63,163
Women.....	2,937	3,136	3,764	4,175	4,671	5,484
Mathematical scientists.....	14,609	15,250	15,569	16,379	16,758	16,699
Men.....	13,560	14,104	14,259	14,964	15,199	15,074
Women.....	1,049	1,146	1,310	1,415	1,559	1,625
Computer specialists.....	5,767	6,684	9,064	12,164	14,964	18,571
Men.....	5,534	6,318	8,363	10,898	13,345	16,693
Women.....	233	366	701	1,266	1,619	1,878
Environmental scientists.....	13,001	14,575	15,909	16,467	17,288	17,811
Men.....	12,560	13,968	15,054	15,553	16,199	16,510
Women.....	441	607	855	914	1,089	1,301
Life scientists.....	70,537	78,857	84,912	92,802	101,838	107,378
Men.....	61,437	67,528	71,593	76,573	82,146	85,269
Women.....	9,100	11,329	13,319	16,229	19,692	22,109
Psychologists.....	33,652	37,848	42,829	46,645	52,182	56,378
Men.....	26,055	28,690	31,103	32,962	35,573	37,274
Women.....	7,597	9,158	11,726	13,683	16,609	19,104
Social scientists.....	44,908	50,479	55,524	59,332	63,995	65,866
Men.....	38,956	43,346	46,967	49,264	52,237	52,363
Women.....	5,952	7,133	8,557	10,068	11,758	13,503
Total engineers.....	45,050	50,342	57,039	61,545	65,853	67,768
Men.....	44,769	49,817	56,286	60,469	64,365	66,040
Women.....	281	525	753	1,076	1,488	1,728
Astronautical/aeronautical...	1,987	2,364	2,519	3,684	3,827	5,005
Men.....	1,967	2,340	2,480	3,614	3,732	4,884
Women.....	20	24	39	70	95	121
Chemical.....	5,603	6,166	7,146	6,992	7,122	6,923
Men.....	5,575	6,117	7,092	6,895	7,021	6,783
Women.....	28	49	54	97	101	140
Civil.....	4,066	5,157	6,089	5,317	6,396	6,479
Men.....	4,051	5,101	6,003	5,245	6,305	6,316
Women.....	15	56	86	72	91	163
Electrical/electronics.....	8,284	8,597	10,630	12,696	14,248	12,601
Men.....	8,246	8,528	10,493	12,460	13,901	12,236
Women.....	38	69	137	236	347	365
Mechanical.....	4,648	5,245	5,370	5,657	6,594	6,711
Men.....	4,629	5,213	5,330	5,603	6,536	6,613
Women.....	19	32	40	54	58	98
Other engineers.....	20,462	22,813	25,285	27,199	27,666	30,049
Men.....	20,301	22,518	24,888	26,652	26,870	29,208
Women.....	161	295	397	547	796	841

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-5. Primary work activity for scientists and engineers employed in science/engineering jobs by field:
1976-86

Field and primary work activity	1976	1978	1980	1982	1984	1986
Total scientists and engineers.....	2,122,100	2,364,400	2,542,700	2,866,600	3,465,100	3,919,900
Research.....	209,000	230,800	262,700	314,300	340,900	376,000
Basic research.....	65,300	72,200	87,100	103,000	119,300	129,100
Applied research.....	143,700	158,600	175,600	211,300	221,600	246,900
Development.....	430,200	486,400	550,200	655,300	758,300	846,900
Management of R&D.....	212,700	242,100	237,600	253,600	335,500	371,700
Management other than R&D.....	386,600	416,700	421,100	448,800	583,100	628,400
Teaching.....	152,200	161,600	173,500	211,000	286,000	336,600
Production/inspection.....	223,200	285,100	319,600	380,000	477,200	512,800
Statistical work/computing.....	101,100	176,700	212,100	235,400	305,500	384,500
Total scientists.....	843,800	937,500	1,032,800	1,147,500	1,402,900	1,676,400
Research.....	159,300	178,600	202,100	241,800	251,600	277,400
Basic research.....	59,700	67,300	80,000	94,600	108,700	116,900
Applied research.....	99,600	111,300	122,100	147,200	142,900	160,500
Development.....	61,300	79,800	88,600	110,200	131,200	166,100
Management of R&D.....	83,800	92,000	92,900	96,400	121,800	144,400
Management other than R&D.....	130,100	142,200	149,500	139,000	179,800	209,600
Teaching.....	131,500	139,600	150,000	183,300	240,200	283,400
Production/inspection.....	43,400	53,900	64,500	78,300	99,600	114,300
Statistical work/computing.....	66,500	119,100	145,700	162,400	215,600	275,500
Physical scientists.....	154,900	168,200	166,300	210,500	234,000	264,900
Research.....	48,800	53,700	53,300	64,000	62,300	68,900
Basic research.....	18,300	18,900	19,100	22,300	23,500	27,500
Applied research.....	30,500	34,800	34,200	41,700	38,800	41,400
Development.....	21,300	27,500	27,300	34,000	35,100	43,600
Management of R&D.....	26,800	26,200	24,400	39,300	36,800	42,300
Management other than R&D.....	13,400	13,200	12,200	17,600	22,200	19,300
Teaching.....	16,200	18,900	19,700	27,800	36,400	44,200
Production/inspection.....	16,000	17,500	18,400	24,500	27,900	29,600
Statistical work/computing.....	3,100	3,400	3,500	4,800	5,500	6,500
Mathematical scientists.....	43,800	48,000	57,300	68,300	87,000	103,900
Research.....	6,000	6,100	6,900	8,700	9,800	11,600
Basic research.....	2,100	2,800	3,100	3,200	4,400	5,100
Applied research.....	3,900	3,300	3,800	5,500	5,400	6,500
Development.....	2,400	2,500	3,000	3,500	4,500	5,600
Management of R&D.....	6,500	6,500	7,200	8,900	13,300	13,800
Management other than R&D.....	5,900	5,800	6,700	5,700	8,700	9,400
Teaching.....	15,800	18,100	20,900	28,300	36,700	43,200
Production/inspection.....	1,200	900	1,200	800	1,900	2,600
Statistical work/computing.....	3,900	5,700	8,600	12,100	10,600	14,300
Computer specialists.....	116,000	171,400	196,700	216,100	340,400	437,200
Research.....	1,900	4,700	5,200	6,600	10,500	13,800
Basic research.....	400	700	800	1,100	2,700	3,500
Applied research.....	1,500	4,000	4,400	5,500	7,800	10,300
Development.....	25,400	28,000	32,700	43,200	64,200	87,300
Management of R&D.....	8,400	12,000	12,400	13,400	24,500	27,200
Management other than R&D.....	15,600	18,100	18,200	15,500	32,500	35,500
Teaching.....	3,500	4,200	4,600	5,500	12,800	16,300
Production/inspection.....	3,700	4,200	4,900	6,200	8,800	15,400
Statistical work/computing.....	38,200	82,400	100,000	107,600	160,800	206,000
Environmental scientists.....	46,600	56,900	63,100	82,700	89,900	97,300
Research.....	17,100	21,100	23,700	28,200	27,400	28,900
Basic research.....	5,600	5,000	5,800	7,700	10,700	9,700
Applied research.....	11,500	16,100	17,900	20,500	16,700	19,200
Development.....	3,400	5,700	7,000	9,100	7,000	6,200
Management of R&D.....	5,900	5,600	5,800	7,500	5,400	7,300
Management other than R&D.....	6,000	6,800	7,000	9,800	9,500	11,300
Teaching.....	2,400	3,100	3,300	5,100	6,900	8,200
Production/inspection.....	2,600	4,300	4,900	8,500	20,800	20,600
Statistical work/computing.....	2,000	3,800	4,400	5,400	5,800	6,300

Table B-5. - Continued

Field and primary work activity	1976	1978	1980	1982	1984	1986
Life scientists.....	198,200	227,800	267,300	298,000	294,100	340,500
Research.....	55,700	66,900	82,400	98,700	97,500	108,200
Basic research.....	24,500	31,500	40,500	49,200	50,400	55,000
Applied research.....	31,200	35,400	41,900	49,500	47,100	53,200
Development.....	6,700	10,200	12,100	13,600	13,100	14,600
Management of R&D.....	18,400	20,400	21,800	22,500	23,000	28,700
Management other than R&D.....	38,400	42,700	48,900	50,700	44,100	51,900
Teaching.....	28,100	34,400	38,700	45,200	52,800	58,700
Production/inspection.....	14,000	18,900	25,800	31,600	31,600	35,600
Statistical work/computing.....	3,200	6,900	8,400	8,100	7,400	9,100
Psychologists.....	103,700	107,400	112,500	105,600	151,900	172,800
Research.....	6,700	6,200	7,600	8,200	12,000	15,300
Basic research.....	3,100	3,300	4,000	3,700	6,700	6,800
Applied research.....	3,600	2,900	3,600	4,500	5,300	8,500
Development.....	1,200	2,100	2,100	1,900	1,600	2,300
Management of R&D.....	4,200	5,800	5,800	4,200	6,100	7,100
Management other than R&D.....	12,300	18,000	17,800	11,100	20,600	25,500
Teaching.....	20,900	21,400	23,600	26,400	33,600	38,200
Production/inspection.....	1,800	2,900	3,200	2,500	2,100	2,600
Statistical work/computing.....	1,100	2,300	2,800	2,300	2,900	2,800
Social scientists.....	180,500	157,800	169,700	166,200	205,600	259,800
Research.....	23,100	20,000	22,900	27,500	32,200	30,800
Basic research.....	5,600	5,100	6,600	7,500	10,400	9,300
Applied research.....	17,500	14,900	16,300	20,000	21,800	21,500
Development.....	1,000	3,800	4,300	4,800	5,700	6,400
Management of R&D.....	13,500	15,500	15,500	12,500	12,700	17,900
Management other than R&D.....	38,500	37,600	38,800	28,500	42,200	56,900
Teaching.....	44,600	39,600	39,200	45,100	61,000	74,600
Production/inspection.....	4,100	5,300	6,000	4,300	6,400	7,900
Statistical work/computing.....	15,100	14,500	17,900	22,000	22,700	30,500
Total engineers.....	1,278,300	1,426,900	1,509,900	1,719,000	2,062,200	2,243,500
Research.....	49,700	52,200	60,600	72,400	89,200	98,600
Basic research.....	5,600	4,900	7,100	8,400	10,600	12,200
Applied research.....	44,100	47,300	53,500	64,000	78,600	86,400
Development.....	368,900	406,600	461,600	545,100	627,000	680,800
Management of R&D.....	128,900	150,100	144,700	157,300	213,700	227,300
Management other than R&D.....	256,500	274,500	271,600	309,800	403,300	418,700
Teaching.....	20,700	22,000	23,500	27,700	45,800	53,100
Production/inspection.....	179,800	231,200	255,100	301,600	377,700	398,500
Statistical work/computing.....	34,600	57,600	66,400	73,000	89,900	108,900
Astronautical/aeronautical.....	55,700	61,100	65,000	77,200	91,800	104,200
Research.....	5,500	5,000	5,600	7,100	7,900	9,600
Basic research.....	900	200	500	800	800	1,500
Applied research.....	4,600	4,800	5,100	6,300	7,100	8,100
Development.....	20,100	20,800	22,800	29,600	36,400	39,700
Management of R&D.....	13,800	12,500	12,100	14,900	19,200	20,600
Management other than R&D.....	4,900	6,500	6,700	7,400	10,000	9,400
Teaching.....	1,000	1,300	1,300	1,100	2,100	2,400
Production/inspection.....	4,400	6,400	7,100	7,600	8,200	10,800
Statistical work/computing.....	1,800	3,400	4,300	4,400	4,700	5,700

Table B-5. - Continued

Field and primary work activity	1976	1978	1980	1982	1984	1986
Chemical.....	76,400	81,900	89,000	2,400	127,500	131,500
Research.....	4,400	3,200	4,300	800	8,400	8,300
Basic research.....	200	300	400	100	1,000	1,100
Applied research.....	4,200	2,900	3,900	700	7,400	7,200
Development.....	24,600	27,300	31,300	300	44,100	42,500
Management of R&D.....	8,600	9,000	9,000	0	14,400	18,400
Management other than R&D.....	19,300	16,800	16,900	200	26,800	24,400
Teaching.....	500	1,200	1,300	1,200	1,800	2,800
Production/inspection.....	9,900	13,600	15,200	0	22,200	20,500
Statistical work/computing.....	1,300	2,600	3,100	0	3,400	4,700
Civil.....	182,800	205,200	217,000	243,700	293,000	319,100
Research.....	2,900	3,100	3,900	4,500	6,700	7,300
Basic research.....	300	300	500	400	300	900
Applied research.....	2,600	2,800	3,400	4,100	6,400	6,400
Development.....	30,000	27,400	34,300	42,400	46,300	43,700
Management of R&D.....	6,000	8,500	8,400	8,800	13,200	10,300
Management other than R&D.....	57,400	64,800	64,600	70,300	91,500	103,400
Teaching.....	2,200	2,800	2,700	3,300	5,500	6,000
Production/inspection.....	37,500	38,400	42,200	50,400	65,300	69,500
Statistical work/computing.....	5,800	7,800	9,300	10,400	12,500	14,000
Electrical/electronics.....	267,900	327,000	357,400	413,500	475,000	540,800
Research.....	11,800	14,000	16,700	20,200	21,100	27,200
Basic research.....	1,400	1,400	2,100	2,700	2,000	3,300
Applied research.....	10,400	12,600	14,600	17,500	19,100	23,900
Development.....	101,400	121,800	140,800	168,800	185,700	209,700
Management of R&D.....	38,300	48,700	47,900	51,800	69,800	76,900
Management other than R&D.....	40,100	41,800	42,900	52,900	71,600	74,600
Teaching.....	4,400	5,100	5,800	6,800	9,900	12,700
Production/inspection.....	27,400	44,200	50,900	61,200	72,300	81,100
Statistical work/computing.....	6,300	10,800	12,700	14,500	17,500	22,700
Mechanical.....	272,800	296,500	308,800	334,400	414,000	453,700
Research.....	8,300	9,200	10,100	11,800	14,900	16,700
Basic research.....	700	700	900	1,300	2,400	2,400
Applied research.....	7,600	8,500	9,200	10,500	12,500	14,300
Development.....	106,700	113,000	124,700	143,000	167,400	187,300
Management of R&D.....	28,700	31,500	30,100	32,200	46,700	48,500
Management other than R&D.....	56,300	59,100	57,300	58,300	75,600	79,800
Teaching.....	5,300	5,400	5,300	5,800	9,100	8,900
Production/inspection.....	29,700	37,600	41,600	45,800	61,500	67,200
Statistical work/computing.....	3,100	7,200	7,700	6,900	8,200	11,800
Other engineers.....	422,700	455,200	472,700	647,800	660,900	694,200
Research.....	16,800	17,700	20,000	28,000	30,200	29,500
Basic research.....	2,100	2,000	2,700	3,100	4,100	3,000
Applied research.....	14,700	15,700	17,300	24,900	26,100	26,500
Development.....	86,100	96,300	107,700	161,000	147,100	157,900
Management of R&D.....	33,500	39,900	37,200	49,600	50,400	52,600
Management other than R&D.....	78,500	85,500	83,200	120,700	127,800	127,100
Teaching.....	7,300	6,200	7,100	9,500	17,400	20,300
Production/inspection.....	70,900	91,000	98,100	136,600	148,200	149,400
Statistical work/computing.....	16,300	25,800	29,300	36,800	43,600	50,000

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-6. Primary work activity for employed doctoral scientists and engineers by field: 1977-87

Field and primary work activity	1977	1979	1981	1983	1985	1987
Total scientists and engineers....	285,055	314,257	343,956	369,320	400,358	419,118
Research.....	79,995	84,678	101,691	104,511	110,539	135,384
Basic research.....	43,551	47,908	55,181	57,137	61,451	63,230
Applied research.....	36,444	36,770	46,510	47,374	49,088	72,154
Development.....	13,188	15,009	18,361	20,277	21,976	18,909
Management of R&D.....	30,783	43,084	32,709	31,418	34,938	33,897
Management other than R&D.....	29,913	29,230	27,806	30,395	34,694	33,850
Teaching.....	90,830	92,242	105,150	108,236	111,717	109,730
Consulting.....	6,149	9,012	12,065	12,746	14,164	13,804
Sales/professional services 1/..	15,233	21,126	25,757	29,820	36,496	32,644
Rprt/stat/comput/activities.....	NA	NA	NA	NA	NA	11,891
Other 1/.....	18,964	19,876	20,417	31,917	35,834	29,009
Total scientists.....	240,005	263,915	286,917	307,775	334,505	351,350
Research.....	69,683	74,739	88,180	89,528	95,556	115,587
Basic research.....	41,892	45,953	52,404	54,038	57,833	59,716
Applied research.....	27,791	28,786	35,776	35,490	37,723	55,871
Development.....	6,349	7,185	8,487	10,514	11,185	9,083
Management of R&D.....	22,135	30,565	22,489	20,881	24,003	22,792
Management other than R&D.....	24,003	24,915	22,869	25,440	29,842	29,402
Teaching.....	82,029	82,909	94,416	96,403	99,237	97,938
Consulting.....	4,538	6,415	8,231	8,999	10,459	9,910
Sales/professional services 1/..	14,568	20,029	24,271	28,568	34,252	32,500
Rprt/stat/comput/activities.....	NA	NA	NA	NA	NA	10,527
Other 1/.....	16,700	17,158	17,974	27,442	30,571	23,611
Physical scientists.....	57,531	60,222	63,110	63,986	67,480	68,647
Research.....	22,271	21,135	26,515	25,569	26,253	30,750
Basic research.....	12,168	12,087	13,848	14,049	14,349	13,158
Applied research.....	10,103	9,048	12,667	11,520	11,904	17,592
Development.....	2,543	2,796	3,075	3,484	3,647	3,779
Management of R&D.....	8,464	12,644	8,785	8,793	9,370	8,184
Management other than R&D.....	4,718	3,523	3,165	3,052	3,627	2,750
Teaching.....	14,724	14,450	15,570	14,652	15,170	15,213
Consulting.....	407	761	1,112	925	1,206	1,390
Sales/professional services 1/..	1,088	1,205	1,437	1,641	2,026	531
Rprt/stat/comput/activities....	NA	NA	NA	NA	NA	959
Other 1/.....	3,316	3,708	3,451	5,870	6,181	5,091
Mathematical scientists.....	14,609	15,250	15,569	16,379	16,758	16,699
Research.....	2,912	3,138	2,969	2,913	3,452	3,838
Basic research.....	1,830	2,073	1,741	1,767	2,323	2,835
Applied research.....	1,082	1,065	1,228	1,146	1,129	1,003
Development.....	408	492	395	490	573	161
Management of R&D.....	298	443	282	531	357	307
Management other than R&D.....	1,082	1,281	1,042	965	1,343	1,110
Teaching.....	9,088	8,865	9,596	9,701	9,445	9,347
Consulting.....	145	369	458	599	473	308
Sales/professional services 1/..	78	249	300	261	213	22
Rprt/stat/comput/activities....	NA	NA	NA	NA	NA	808
Other 1/.....	598	413	527	919	902	798
Computer specialists.....	5,767	6,684	9,064	12,164	14,964	18,571
Research.....	777	909	1,515	1,508	1,970	3,415
Basic research.....	283	435	620	615	1,005	1,391
Applied research.....	494	474	895	893	965	2,024
Development.....	1,812	2,131	3,008	3,892	4,106	3,067
Management of R&D.....	735	971	808	1,114	1,734	2,292
Management other than R&D.....	667	681	890	938	1,128	1,348
Teaching.....	1,192	1,094	1,546	2,361	2,828	2,809
Consulting.....	155	301	554	678	914	825
Sales/professional services 1/..	65	151	217	375	461	3
Rprt/stat/comput/activities....	NA	NA	NA	NA	NA	3,287
Other 1/.....	364	446	526	1,298	1,823	1,525

Table B-6. - Continued

Field and primary work activity	1977	1979	1981	1983	1985	1987
Environmental scientists.....	13,001	14,575	15,909	16,467	17,288	17,811
Research.....	4,674	5,242	6,036	6,399	6,501	7,567
Basic research.....	2,499	2,704	3,307	3,287	3,559	3,599
Applied research.....	2,175	2,538	2,729	3,112	2,942	3,968
Development.....	200	370	286	329	313	141
Management of R&D.....	1,631	2,361	2,380	1,825	2,058	1,937
Management other than R&D.....	1,448	1,193	1,166	1,304	1,400	1,647
Teaching.....	3,510	2,975	3,606	3,435	3,393	3,418
Consulting.....	364	838	1,045	1,198	1,407	1,402
Sales/professional services 1/	137	216	381	242	315	88
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	630
Other 1/.....	1,037	1,380	1,009	1,735	1,901	981
Life scientists.....	70,537	78,857	84,912	92,802	101,838	107,378
Research.....	27,868	31,905	37,962	39,491	42,865	51,701
Basic research.....	19,954	23,413	27,223	28,784	30,990	31,225
Applied research.....	7,914	8,492	10,739	10,707	11,875	20,476
Development.....	817	855	1,049	1,532	1,725	1,418
Management of R&D.....	7,340	9,246	6,711	6,165	7,328	7,310
Management other than R&D.....	6,206	6,613	5,416	6,806	8,335	8,233
Teaching.....	18,992	19,292	21,733	22,452	22,430	21,701
Consulting.....	1,037	1,441	1,535	1,981	2,383	2,258
Sales/professional services 1/	3,017	4,264	5,264	6,223	7,325	6,720
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	1,636
Other 1/.....	5,260	5,241	5,242	8,152	9,447	6,401
Psychologists.....	33,652	37,848	42,829	46,645	52,182	56,378
Research.....	3,705	4,535	4,970	4,704	4,765	6,107
Basic research.....	1,937	2,546	2,464	2,344	2,316	2,884
Applied research.....	1,768	1,989	2,506	2,360	2,449	3,223
Development.....	204	271	404	313	423	364
Management of R&D.....	1,609	1,620	1,060	903	1,043	1,030
Management other than R&D.....	4,297	5,002	4,745	4,705	5,152	5,695
Teaching.....	10,805	10,330	12,477	12,708	13,184	13,839
Consulting.....	1,481	1,499	2,051	2,084	2,118	1,576
Sales/professional services 1/	9,573	12,964	15,128	18,488	22,044	24,677
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	597
Other 1/.....	1,978	1,627	1,994	2,740	3,453	2,493
Social scientists.....	44,908	50,479	55,524	59,332	63,995	65,866
Research.....	7,476	7,875	8,213	8,944	9,750	12,209
Basic research.....	3,221	2,695	3,201	3,192	3,291	4,624
Applied research.....	4,255	5,180	5,012	5,752	6,459	7,585
Development.....	365	270	270	474	398	153
Management of R&D.....	2,058	3,280	2,463	1,550	2,113	1,732
Management other than R&D.....	5,585	6,622	6,445	7,670	8,257	8,619
Teaching.....	23,718	25,903	29,888	31,094	32,787	31,611
Consulting.....	949	1,206	1,476	1,534	1,958	2,151
Sales/professional services 1/	610	980	1,544	1,338	1,868	459
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	2,610
Other 1/.....	4,147	4,343	5,225	6,728	6,864	6,322
Total engineers.....	45,050	50,342	57,039	61,545	65,853	67,768
Research.....	10,312	9,939	13,511	14,983	14,983	19,797
Basic research.....	1,659	1,955	2,777	3,099	3,618	3,514
Applied research.....	8,653	7,984	10,734	11,884	11,365	16,283
Development.....	6,839	7,824	9,874	9,763	10,791	9,826
Management of R&D.....	8,648	12,519	10,220	10,537	10,935	11,105
Management other than R&D.....	5,910	4,315	4,937	4,955	5,452	4,448
Teaching.....	8,801	9,333	10,734	11,833	12,480	11,792
Consulting.....	1,611	2,597	3,834	3,747	3,705	3,894
Sales/professional services 1/..	665	1,097	1,486	1,252	2,244	144
Rprt/stat/comput/activities.....	NA	NA	NA	NA	NA	1,364
Other 1/.....	2,264	2,718	2,443	4,475	5,263	5,398

Table B-6. - Continued

Field and primary work activity	1977	1979	1981	1983	1985	1987
Astronautical/aeronautical.....	1,987	2,364	2,519	3,684	3,827	5,005
Research.....	586	733	763	994	1,045	1,327
Basic research.....	104	293	175	273	300	231
Applied research.....	482	440	588	721	745	1,096
Development.....	324	521	314	806	805	1,025
Management of R&D.....	454	574	620	798	931	1,446
Management other than R&D.....	195	86	218	156	176	224
Teaching.....	336	310	387	517	335	436
Consulting.....	0	0	40	138	127	207
Sales/professional services 1/	25	61	84	79	125	51
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	114
Other 1/.....	67	79	93	196	283	175
Chemical.....	5,603	6,166	7,146	6,992	7,122	6,923
Research.....	1,187	1,035	2,125	2,054	1,995	2,503
Basic research.....	199	175	278	374	446	488
Applied research.....	988	860	1,847	1,680	1,549	2,015
Development.....	865	1,122	1,480	914	1,161	818
Management of R&D.....	1,301	1,809	1,192	1,110	1,214	968
Management other than R&D.....	903	662	432	587	542	390
Teaching.....	713	620	963	1,078	904	1,110
Consulting.....	182	217	387	227	225	195
Sales/professional services 1/	147	124	212	185	425	0
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	103
Other 1/.....	305	577	355	837	656	836
Civil.....	4,066	5,157	6,089	5,317	6,396	6,479
Research.....	565	705	704	580	822	1,234
Basic research.....	55	36	134	189	298	276
Applied research.....	510	669	570	391	524	958
Development.....	285	252	514	318	530	224
Management of R&D.....	377	432	443	180	470	228
Management other than R&D.....	710	624	770	598	668	781
Teaching.....	1,470	1,633	2,164	2,132	2,231	2,369
Consulting.....	347	1,073	983	934	788	871
Sales/professional services 1/	60	165	233	113	318	8
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	60
Other 1/.....	252	273	278	462	569	704
Electrical/electronics.....	8,284	8,597	10,630	12,696	14,248	12,601
Research.....	1,418	1,327	1,976	2,455	2,344	2,737
Basic research.....	218	100	273	330	493	494
Applied research.....	1,200	1,227	1,703	2,125	1,851	2,243
Development.....	1,832	1,454	2,429	2,551	2,943	2,966
Management of R&D.....	1,631	2,534	2,128	2,817	2,899	2,197
Management other than R&D.....	959	826	836	1,144	1,273	760
Teaching.....	1,897	1,842	2,313	2,447	3,028	2,153
Consulting.....	84	123	377	380	422	468
Sales/professional services 1/	106	186	242	247	423	26
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	224
Other 1/.....	357	305	329	655	916	1,070
Mechanical.....	4,648	5,245	5,370	5,657	6,594	6,711
Research.....	931	778	1,219	836	1,214	1,850
Basic research.....	134	172	344	156	376	244
Applied research.....	797	606	875	680	838	1,606
Development.....	598	853	1,015	1,055	1,264	838
Management of R&D.....	826	1,023	660	597	896	697
Management other than R&D.....	579	392	379	491	529	411
Teaching.....	1,267	1,582	1,501	1,867	2,025	2,109
Consulting.....	164	364	378	342	340	330
Sales/professional services 1/	61	178	132	65	113	0
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	88
Other 1/.....	222	75	86	404	213	388

Table B-6. - Continued

Field and primary work activity	1977	1979	1981	1983	1985	1987
Other engineers.....	20,462	22,813	25,285	27,199	27,666	30,049
Research.....	5,625	5,361	6,724	8,064	7,563	10,146
Basic research.....	949	1,179	1,573	1,777	1,705	1,781
Applied research.....	4,676	4,182	5,151	6,287	5,858	8,365
Development.....	2,935	3,622	4,122	4,119	4,088	3,955
Management of R&D.....	4,059	6,147	5,177	5,035	4,525	5,569
Management other than R&D....	2,564	1,725	2,302	1,979	2,264	1,882
Teaching.....	3,118	3,346	3,406	3,792	3,957	3,615
Consulting.....	834	820	1,669	1,726	1,803	1,823
Sales/professional services 1/	266	383	583	563	840	59
Rprt/stat/comput/activities...	NA	NA	NA	NA	NA	775
Other 1/.....	1,061	1,409	1,302	1,921	2,626	2,225

1/ Sales/professional services in 1987 is redefined to only professional services, sales is now included with other.

NOTE: Because of rounding, components may not add to totals. NA = Not Available.

SOURCE: National Science Foundation, SRS.

Table B-7. Types of employers for scientists and engineers employed in science/engineering jobs by field: 1976-86

Field and type of employer	1976	1978	1980	1982	1984	1986
Total scientists and engineers.....	2,122,100	2,364,400	2,542,700	2,866,600	3,465,100	3,919,900
Business and industry.....	1,312,500	1,562,300	1,684,600	1,899,300	2,312,700	2,589,300
Educational institutions.....	267,800	281,800	304,700	362,700	500,600	572,700
Federal Government.....	211,100	218,300	234,300	270,200	290,800	334,200
State and local government.....	126,600	131,600	141,500	157,100	177,800	221,900
Nonprofit organizations.....	79,000	78,900	87,900	98,700	128,100	143,900
Other.....	125,100	91,500	89,700	78,600	55,100	57,900
Total scientists.....	843,800	937,500	1,032,800	1,147,500	1,402,900	1,676,400
Business and industry.....	357,900	442,300	491,700	516,100	654,400	797,900
Educational institutions.....	230,100	246,000	265,400	316,800	423,400	481,800
Federal Government.....	105,200	109,500	119,900	141,500	130,000	153,500
State and local government.....	54,600	58,900	67,000	74,000	79,400	110,900
Nonprofit organizations.....	57,500	59,900	67,700	75,700	94,200	109,600
Other.....	38,500	20,900	21,100	23,400	21,500	22,700
Physical scientists.....	154,900	168,200	166,300	210,500	234,000	264,900
Business and industry.....	86,800	98,400	96,800	124,400	131,200	146,700
Educational institutions.....	30,600	32,500	33,800	46,600	59,500	68,700
Federal Government.....	20,500	20,500	19,700	23,400	23,800	28,600
State and local government.....	5,000	5,600	5,700	5,900	7,900	8,300
Nonprofit organizations.....	6,800	6,700	6,300	8,100	9,300	8,500
Other.....	5,200	4,500	4,000	2,100	2,300	4,100
Mathematical scientists.....	43,800	48,000	57,300	68,300	87,000	103,900
Business and industry.....	12,100	14,500	18,700	18,600	30,700	35,600
Educational institutions.....	19,500	22,400	26,100	34,800	44,300	52,800
Federal Government.....	9,300	7,900	8,500	10,500	8,300	10,700
State and local government.....	1,100	1,100	1,400	1,500	1,100	1,800
Nonprofit organizations.....	800	1,200	1,600	1,800	1,900	2,400
Other.....	1,000	900	1,000	1,100	700	600
Computer specialists.....	116,000	171,400	196,700	216,100	340,400	437,200
Business and industry.....	85,800	132,900	153,400	170,500	264,700	341,300
Educational institutions.....	6,000	10,700	11,900	13,300	25,700	32,500
Federal Government.....	8,700	13,200	14,500	15,100	24,100	32,100
State and local government.....	5,000	6,100	7,000	7,700	10,400	15,200
Nonprofit organizations.....	5,600	6,200	7,100	6,100	10,600	10,400
Other.....	4,900	2,300	2,800	3,400	4,900	5,700
Environmental scientists.....	46,600	56,900	63,100	82,700	89,900	97,300
Business and industry.....	25,800	33,400	37,900	51,400	51,600	55,500
Educational institutions.....	5,000	7,600	7,700	10,300	14,900	16,500
Federal Government.....	9,300	11,200	12,300	14,500	14,900	16,800
State and local government.....	1,800	2,900	3,200	4,000	5,400	5,600
Nonprofit organizations.....	1,500	700	700	800	1,200	1,000
Other.....	3,200	1,100	1,300	1,700	1,900	1,900
Life scientists.....	198,200	227,800	267,300	298,000	294,100	340,500
Business and industry.....	64,100	71,300	85,000	82,400	84,300	102,800
Educational institutions.....	59,600	74,100	87,100	104,200	121,900	136,500
Federal Government.....	37,300	39,800	46,400	54,800	37,900	40,200
State and local government.....	19,900	24,100	27,100	32,400	23,300	30,800
Nonprofit organizations.....	11,300	14,500	17,900	20,000	22,300	25,800
Other.....	6,000	4,000	3,800	4,200	4,400	4,400
Psychologists.....	103,700	107,400	112,500	105,600	151,900	172,800
Business and industry.....	21,000	33,900	33,900	22,300	34,000	39,700
Educational institutions.....	41,700	43,500	44,900	46,900	69,400	72,800
Federal Government.....	5,000	2,000	2,000	2,800	4,400	5,400
State and local government.....	6,700	6,500	6,700	7,300	10,000	14,200
Nonprofit organizations.....	19,100	18,200	21,700	23,600	32,500	39,100
Other.....	10,200	3,300	3,300	2,700	1,600	1,600

Table B-7. - Continued

Field and type of employer	1976	1978	1980	1982	1984	1986
Social scientists.....	180,500	157,800	169,700	166,200	205,600	259,800
Business and industry.....	62,300	57,800	66,000	46,400	58,000	76,200
Educational institutions.....	67,800	55,300	53,800	60,800	87,700	102,000
Federal Government.....	15,100	14,900	16,400	20,500	16,600	19,700
State and local government.....	15,200	12,500	15,900	15,200	21,200	35,100
Nonprofit organizations.....	12,500	12,400	12,500	15,200	16,200	22,500
Other.....	7,600	4,900	5,100	8,100	5,900	4,300
Total engineers.....	1,278,300	1,426,900	1,509,900	1,719,000	2,062,200	2,243,500
Business and industry.....	954,600	1,120,000	1,192,900	1,383,200	1,658,300	1,791,400
Educational institutions.....	37,700	35,800	39,300	45,800	77,200	90,900
Federal Government.....	105,900	108,800	114,400	128,700	160,800	180,700
State and local government.....	72,000	72,700	74,500	83,200	98,400	111,000
Nonprofit organizations.....	21,500	19,000	20,200	23,000	33,800	34,200
Other.....	86,600	70,600	68,600	55,100	33,700	35,300
Astronautical/aeronautical.....	55,700	61,100	65,000	77,200	91,800	104,200
Business and industry.....	39,900	43,900	46,500	57,500	69,200	77,400
Educational institutions.....	1,800	1,600	2,100	2,000	2,900	3,600
Federal Government.....	11,100	10,700	11,300	12,900	15,800	17,500
State and local government.....	700	900	800	400	100	400
Nonprofit organizations.....	700	900	900	1,000	2,200	2,800
Other.....	1,500	3,100	3,400	3,400	1,600	2,500
Chemical.....	76,400	81,900	89,000	101,000	127,500	131,500
Business and industry.....	68,400	72,100	78,500	91,500	115,000	114,200
Educational institutions.....	900	1,800	2,700	2,400	3,800	5,400
Federal Government.....	2,600	2,900	2,900	2,900	4,700	6,600
State and local government.....	1,100	800	800	800	900	1,700
Nonprofit organizations.....	1,100	900	1,000	1,300	2,100	2,500
Other.....	2,300	3,400	3,100	2,100	1,000	1,100
Civil.....	182,800	205,200	217,000	243,700	293,000	319,100
Business and industry.....	85,100	120,300	129,500	147,300	179,900	195,700
Educational institutions.....	5,300	4,100	4,200	5,200	9,100	8,800
Federal Government.....	21,500	21,000	22,400	24,000	28,500	31,600
State and local government.....	50,000	49,200	50,600	56,000	67,200	74,600
Nonprofit organizations.....	2,000	1,100	1,100	1,500	1,300	1,800
Other.....	18,900	9,500	9,200	9,700	7,000	6,600
Electrical/electronics.....	267,900	327,000	357,400	413,500	475,000	540,800
Business and industry.....	210,600	261,300	288,500	338,300	391,200	439,800
Educational institutions.....	10,400	9,100	10,100	12,200	18,800	24,600
Federal Government.....	27,600	29,600	31,800	38,200	44,500	52,700
State and local government.....	4,000	3,800	3,800	4,500	4,600	6,000
Nonprofit organizations.....	3,900	5,800	6,300	7,300	7,900	8,800
Other.....	11,400	17,400	16,900	13,000	8,000	8,900
Mechanical.....	272,800	296,500	308,800	334,400	414,000	453,700
Business and industry.....	227,900	255,000	266,400	292,300	361,100	394,500
Educational institutions.....	8,500	8,300	8,500	9,400	15,500	17,000
Federal Government.....	15,300	15,400	16,300	17,800	24,100	28,700
State and local government.....	3,100	2,800	2,900	3,100	3,000	3,600
Nonprofit organizations.....	6,300	3,000	3,100	3,500	5,200	5,500
Other.....	11,700	12,000	11,600	8,300	5,100	4,400
Other engineers.....	422,700	455,200	472,700	549,200	660,900	694,200
Business and industry.....	322,700	367,400	383,500	456,300	541,900	569,800
Educational institutions.....	10,700	10,900	11,700	14,600	27,100	31,500
Federal Government.....	27,800	29,200	29,700	32,900	43,200	43,600
State and local government.....	13,000	15,200	15,600	18,400	22,600	24,700
Nonprofit organizations.....	7,400	7,300	7,800	8,400	15,100	12,800
Other.....	40,800	25,200	24,400	18,600	11,000	11,800

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-8. Types of employers for doctoral scientists and engineers by field: 1977-87

Field and type of employer	1977	1979	1981	1983	1985	1987
Total scientists and engineers....	285,055	314,257	343,956	369,320	400,358	419,118
Business and industry.....	71,562	82,858	99,126	113,463	125,767	131,699
Educational institutions.....	163,768	174,483	187,011	196,050	211,611	218,697
Federal Government.....	21,389	23,946	25,124	25,793	26,337	27,532
State and local government....	5,308	6,123	6,558	7,717	8,217	9,223
Nonprofit organizations.....	10,195	12,454	12,601	11,894	13,617	15,464
Other.....	12,833	14,393	13,536	14,403	14,809	16,503
Total scientists.....	240,005	263,915	286,917	307,775	334,505	351,350
Business and industry.....	48,694	56,341	67,338	78,963	87,909	94,552
Educational institutions.....	147,851	157,409	168,969	175,730	189,914	194,987
Federal Government.....	17,870	20,375	21,321	21,950	22,530	23,926
State and local government....	4,924	5,882	6,201	7,334	7,855	8,697
Nonprofit organizations.....	8,644	10,438	10,263	9,973	11,903	13,290
Other.....	12,022	13,470	12,825	13,825	14,394	15,898
Physical scientists.....	57,531	60,222	63,110	63,986	67,480	68,647
Business and industry.....	23,006	24,989	27,409	28,748	30,281	30,741
Educational institutions.....	27,118	27,300	28,225	27,931	29,700	30,310
Federal Government.....	3,945	4,598	4,342	4,307	4,044	4,322
State and local government....	276	279	358	246	344	448
Nonprofit organizations.....	2,042	1,985	2,093	1,751	2,286	2,167
Other.....	1,144	1,071	683	1,003	825	659
Mathematical scientists.....	14,609	15,250	15,569	16,379	16,758	16,699
Business and industry.....	1,312	1,469	1,616	2,027	1,911	1,838
Educational institutions.....	12,223	12,550	12,719	13,244	13,560	13,674
Federal Government.....	604	817	852	790	853	848
State and local government....	51	51	2	21	34	26
Nonprofit organizations.....	261	294	263	211	293	151
Other.....	158	69	117	86	107	162
Computer specialists.....	5,767	6,684	9,064	12,164	14,964	18,571
Business and industry.....	3,058	3,669	5,228	6,819	8,351	11,383
Educational institutions.....	2,128	2,404	3,010	4,031	5,288	5,558
Federal Government.....	251	336	355	490	692	797
State and local government....	81	7	152	336	248	258
Nonprofit organizations.....	159	163	276	345	329	444
Other.....	90	105	43	143	56	131
Environmental scientists.....	13,001	14,575	15,909	16,467	17,288	17,811
Business and industry.....	3,103	4,246	4,705	5,154	5,254	5,168
Educational institutions.....	6,285	6,146	6,741	6,682	7,222	7,483
Federal Government.....	2,417	2,716	3,075	3,102	3,309	3,363
State and local government....	506	655	604	819	666	913
Nonprofit organizations.....	520	614	623	555	678	702
Other.....	170	198	161	155	159	182
Life scientists.....	70,537	78,857	84,912	92,802	101,838	107,378
Business and industry.....	9,734	11,145	13,123	16,444	19,165	20,455
Educational institutions.....	46,865	51,673	55,762	58,906	63,595	66,415
Federal Government.....	6,372	7,167	7,225	7,771	7,962	8,709
State and local government....	1,452	1,551	1,670	1,710	2,166	1,944
Nonprofit organizations.....	2,401	2,970	3,150	3,258	3,884	4,256
Other.....	3,713	4,351	3,982	4,713	5,066	5,599
Psychologists.....	33,652	37,848	42,829	46,645	52,182	56,378
Business and industry.....	5,528	7,077	10,122	13,020	15,530	17,381
Educational institutions.....	18,512	19,846	21,675	22,182	24,893	25,369
Federal Government.....	1,220	1,080	1,211	1,191	1,049	1,388
State and local government....	1,336	1,680	1,715	2,148	1,916	2,197
Nonprofit organizations.....	1,272	1,725	1,679	1,773	2,084	2,501
Other.....	5,784	6,440	6,427	6,331	6,710	7,542

Table B-8. - Continued

Field and type of employer	1977	1979	1981	1983	1985	1987
Social scientists.....	44,908	50,479	55,524	59,332	63,995	65,866
Business and industry.....	2,953	3,746	5,135	6,751	7,417	7,586
Educational institutions.....	34,720	37,490	40,837	42,754	45,656	46,178
Federal Government.....	3,061	3,661	4,261	4,299	4,621	4,499
State and local government...	1,222	1,659	1,700	2,054	2,481	2,911
Nonprofit organizations.....	1,989	2,687	2,179	2,080	2,349	3,069
Other.....	963	1,236	1,412	1,394	1,471	1,623
Total engineers.....	45,050	50,342	57,039	61,545	65,853	67,768
Business and industry.....	22,868	26,517	31,788	34,500	37,858	37,147
Educational institutions.....	15,917	17,074	18,042	20,320	21,697	23,710
Federal Government.....	3,519	3,571	3,803	3,843	3,807	3,606
State and local government....	384	241	357	383	362	526
Nonprofit organizations.....	1,551	2,016	2,338	1,921	1,714	2,174
Other.....	811	923	711	578	415	605
Astronautical/aeronautical.....	1,987	2,364	2,519	3,684	3,827	5,005
Business and industry.....	799	907	1,127	1,928	2,095	3,177
Educational institutions.....	561	783	675	865	732	907
Federal Government.....	381	407	425	511	627	550
State and local government...	0	0	0	1	0	0
Nonprofit organizations.....	63	134	176	305	271	327
Other.....	183	133	116	74	102	44
Chemical.....	5,603	6,166	7,146	6,992	7,122	6,923
Business and industry.....	4,099	4,540	5,342	4,788	5,097	4,690
Educational institutions.....	1,180	1,129	1,380	1,722	1,778	1,941
Federal Government.....	210	260	258	174	183	164
State and local government...	8	0	23	0	0	0
Nonprofit organizations.....	96	191	143	202	64	75
Other.....	10	46	0	106	0	53
Civil.....	4,066	5,157	6,089	5,317	6,396	6,479
Business and industry.....	1,199	1,822	2,555	1,895	2,426	1,931
Educational institutions.....	2,211	2,722	2,887	3,138	3,409	3,802
Federal Government.....	279	249	145	79	295	387
State and local government...	244	131	192	146	162	262
Nonprofit organizations.....	13	0	69	16	14	49
Other.....	120	233	241	43	90	48
Electrical/electronics.....	8,284	8,597	10,630	12,696	14,248	12,601
Business and industry.....	3,915	4,687	6,187	7,615	8,566	7,600
Educational institutions.....	3,290	2,930	3,592	3,960	4,672	3,979
Federal Government.....	620	719	524	776	756	637
State and local government...	13	17	60	62	46	35
Nonprofit organizations.....	320	184	264	218	186	254
Other.....	126	60	3	65	22	96
Mechanical.....	4,648	5,245	5,370	5,657	6,594	6,711
Business and industry.....	2,108	2,419	2,645	2,596	3,094	2,641
Educational institutions.....	2,038	2,235	2,138	2,578	2,973	3,544
Federal Government.....	319	338	322	353	308	311
State and local government...	0	1	2	0	0	8
Nonprofit organizations.....	183	228	263	107	194	179
Other.....	0	24	0	23	25	28
Other engineers.....	20,462	22,813	25,285	27,199	27,666	30,049
Business and industry.....	10,748	12,142	13,932	15,678	16,580	17,108
Educational institutions.....	6,637	7,275	7,370	8,057	8,133	9,537
Federal Government.....	1,710	1,598	2,129	1,950	1,638	1,557
State and local government...	119	92	80	174	154	221
Nonprofit organizations.....	876	1,279	1,423	1,073	985	1,290
Other.....	372	427	351	267	176	336

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-9. Total employed scientists and engineers by field and racial/ethnic group: 1976-88

Field and racial/ethnic group	1976	1978	1980	1982	1984	1986	1988 1/
Total scientists and engineers...	2,331,200	2,609,800	2,860,400	3,253,100	3,995,500	4,626,500	5,286,400
White.....	2,141,900	2,416,500	2,644,900	2,992,000	3,641,200	4,190,400	4,761,900
Black.....	38,100	47,700	57,600	71,500	90,500	114,900	139,200
Asian.....	106,600	108,800	121,000	134,600	186,500	226,800	268,100
Other.....	44,600	36,800	36,900	55,000	77,300	94,400	117,200
Total scientists.....	959,500	1,071,000	1,184,500	1,405,700	1,781,400	2,186,300	2,567,800
White.....	870,900	989,800	1,097,000	1,294,200	1,623,800	1,973,100	2,299,400
Black.....	21,400	26,900	30,500	40,000	53,400	73,700	94,800
Asian.....	48,500	38,800	41,500	48,000	69,100	94,000	117,100
Other.....	18,700	15,500	15,500	23,500	35,100	45,500	56,500
Physical scientists.....	188,900	208,300	215,200	227,400	254,100	288,400	312,000
White.....	172,400	194,500	201,200	212,700	230,700	261,800	279,500
Black.....	3,200	3,500	3,400	3,500	6,100	6,200	6,500
Asian.....	7,600	8,700	8,800	8,200	12,500	15,400	20,600
Other.....	5,700	1,600	1,800	3,000	4,800	5,000	5,400
Mathematical scientists.....	48,600	53,700	64,300	79,400	100,400	131,000	168,600
White.....	44,200	49,400	59,200	72,300	88,900	115,500	145,700
Black.....	2,600	2,800	2,900	3,600	4,700	6,800	9,500
Asian.....	1,600	1,500	2,100	2,700	4,700	5,900	9,200
Other.....	200	0	100	800	2,100	2,800	4,200
Computer specialists.....	119,000	177,000	207,800	299,000	436,800	562,600	708,300
White.....	110,700	164,500	192,000	272,300	392,600	497,100	625,300
Black.....	1,600	3,200	4,700	8,900	12,100	18,900	26,000
Asian.....	4,000	8,400	9,900	13,100	24,600	36,100	46,900
Other.....	2,700	900	1,200	4,700	7,500	10,500	10,100
Environmental scientists.....	54,800	68,900	77,600	87,200	98,100	111,300	113,400
White.....	48,300	60,400	70,000	80,900	94,200	105,800	107,100
Black.....	2,000	700	700	600	600	1,000	1,000
Asian.....	3,200	1,900	2,500	3,600	1,800	2,100	1,600
Other.....	1,300	5,900	4,400	2,100	1,500	2,400	3,700
Life scientists.....	213,500	244,100	287,500	337,100	* 353,300	411,800	458,600
White.....	200,700	229,100	270,300	316,900	329,300	377,900	413,900
Black.....	4,900	5,700	6,700	8,000	6,700	8,800	9,500
Asian.....	5,300	6,300	7,100	7,800	10,400	15,000	20,100
Other.....	2,600	3,000	3,400	4,400	6,900	10,100	15,100
Psychologists.....	112,500	121,700	128,100	138,400	209,500	253,500	275,900
White.....	105,100	115,300	121,600	130,400	196,000	234,100	256,000
Black.....	3,800	3,800	3,800	4,500	7,300	9,100	10,100
Asian.....	1,000	700	1,200	1,200	2,000	5,200	4,600
Other.....	2,600	1,900	1,500	2,300	4,200	5,100	5,200
Social scientists.....	222,300	197,400	204,000	237,200	329,200	427,800	531,000
White.....	189,400	176,700	182,800	208,700	292,100	380,800	472,000
Black.....	3,300	7,200	8,300	10,900	15,900	22,900	32,300
Asian.....	25,800	11,300	10,000	11,300	13,100	14,200	14,200
Other.....	3,800	2,200	2,900	6,300	8,100	9,900	12,500
Total engineers.....	1,371,700	1,538,800	1,675,900	1,847,300	2,214,100	2,440,100	2,718,600
White.....	1,271,000	1,426,700	1,547,800	1,697,800	2,017,400	2,217,300	2,462,500
Black.....	16,700	20,800	27,000	31,500	37,100	41,300	44,400
Asian.....	58,100	70,000	79,500	86,700	117,500	132,800	151,000
Other.....	25,900	21,300	21,600	31,300	42,100	48,700	60,700
Astronautical/aeronautical.....	56,800	62,000	69,500	80,800	97,200	110,500	119,400
White.....	54,100	57,800	65,000	76,000	90,200	100,800	106,900
Black.....	300	1,000	1,100	1,200	1,200	1,600	1,600
Asian.....	1,600	2,000	2,200	2,600	4,900	6,600	9,300
Other.....	800	1,200	1,200	1,000	900	1,500	1,600

Table B-9. - Continued

Field and racial/ethnic group	1976	1978	1980	1982	1984	1986	1988 1/
Chemical.....	77,500	84,200	94,500	107,700	140,100	149,000	148,500
White.....	72,200	78,300	86,400	97,700	125,100	133,900	136,000
Black.....	1,500	300	800	1,000	1,500	2,000	1,700
Asian.....	2,400	4,000	5,800	7,300	10,300	10,100	8,000
Other.....	1,400	1,600	1,500	1,700	3,200	3,000	2,800
Civil.....	188,200	211,700	232,100	258,200	312,700	346,300	355,900
White.....	165,700	191,300	209,100	231,100	275,000	308,600	316,100
Black.....	1,600	2,700	3,900	3,700	4,800	5,200	6,200
Asian.....	14,800	14,800	16,000	17,700	23,800	24,500	25,400
Other.....	6,100	2,900	3,100	5,700	9,100	8,000	8,200
Electrical/electronics.....	283,000	341,500	383,100	437,700	500,700	574,500	640,900
White.....	262,500	310,700	346,500	397,200	447,700	512,100	570,700
Black.....	2,900	5,800	8,100	9,700	11,400	11,900	11,000
Asian.....	13,800	20,200	23,300	23,800	31,100	37,900	44,000
Other.....	3,800	4,800	5,200	7,000	10,500	12,600	15,200
Mechanical.....	276,200	299,300	322,600	357,900	445,600	492,600	497,800
White.....	258,700	280,200	302,000	332,800	412,100	452,600	455,700
Black.....	2,400	2,300	2,700	3,800	4,800	6,700	7,100
Asian.....	9,700	12,800	13,900	15,600	21,300	24,600	26,300
Other.....	5,400	4,000	4,000	5,700	7,400	8,700	8,700
Other engineers.....	490,000	540,100	574,100	605,000	717,800	767,200	956,100
White.....	457,800	508,400	538,800	563,000	667,300	709,300	877,100
Black.....	8,000	8,700	10,400	12,100	13,400	13,900	16,800
Asian.....	15,800	16,200	18,300	19,700	26,100	29,100	38,000
Other.....	8,400	6,800	6,600	10,200	11,000	14,900	24,200

1/ 1988 data are model generated rather than survey generated estimates and therefore trends (especially short term) should be treated with caution.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-10. Scientists and engineers employed in science/engineering jobs by field and racial/ethnic group:
1976-86

Field and racial/ethnic group	1976	1978	1980	1982	1984	1986
Total scientists and engineers.....	2,122,100	2,364,400	2,542,700	2,866,700	3,465,100	3,919,900
White.....	1,949,700	2,189,600	2,349,700	2,638,200	3,159,500	3,556,200
Black.....	34,900	43,000	50,900	59,000	73,600	87,900
Asian.....	98,500	102,800	112,000	122,500	169,400	199,000
Other.....	39,000	29,000	30,100	47,000	62,600	76,800
Total scientists.....	843,800	937,500	1,032,800	1,147,500	1,402,900	1,676,400
White.....	764,200	868,500	957,900	1,058,300	1,281,900	1,521,000
Black.....	19,400	23,200	26,000	30,000	39,000	50,600
Asian.....	43,100	35,700	37,500	40,700	57,500	72,300
Other.....	17,100	10,100	11,400	18,500	24,500	32,500
Physical scientists.....	154,900	168,200	166,300	210,500	234,000	264,900
White.....	141,200	157,600	155,600	197,700	213,100	240,400
Black.....	2,400	2,500	2,400	2,900	4,800	5,400
Asian.....	6,400	7,300	7,100	7,400	11,500	14,500
Other.....	4,900	800	1,200	2,500	4,600	4,600
Mathematical scientists.....	43,800	48,000	57,300	68,300	87,000	103,900
White.....	39,400	44,100	52,600	61,800	76,300	91,300
Black.....	2,500	2,400	2,500	3,400	4,400	6,100
Asian.....	1,700	1,500	2,100	2,500	4,500	4,200
Other.....	200	0	100	600	1,800	2,300
Computer specialists.....	116,000	171,400	196,700	216,100	340,400	437,200
White.....	108,000	159,100	181,500	196,000	305,000	388,200
Black.....	1,500	3,200	4,300	6,200	9,900	13,200
Asian.....	3,900	8,200	9,700	10,400	20,800	27,600
Other.....	2,600	900	1,200	3,500	4,700	8,200
Environmental scientists.....	46,600	56,900	63,100	82,700	89,900	97,300
White.....	40,700	51,600	57,700	76,700	56,100	93,600
Black.....	1,800	1,000	800	400	600	400
Asian.....	2,900	1,600	2,000	3,600	1,700	1,900
Other.....	1,200	2,700	2,600	2,000	31,500	1,400
Life scientists.....	198,200	227,800	267,300	298,000	294,100	340,500
White.....	186,100	213,200	250,700	280,400	273,800	313,100
Black.....	4,700	5,300	6,400	7,500	5,400	7,100
Asian.....	5,400	6,300	6,900	6,500	9,300	12,900
Other.....	2,000	3,000	3,300	3,600	5,600	7,400
Psychologists.....	103,700	107,400	112,500	105,600	151,900	172,800
White.....	97,100	102,400	107,400	100,700	143,000	161,800
Black.....	3,700	3,400	3,400	2,400	5,100	6,000
Asian.....	700	700	1,000	1,000	1,400	1,400
Other.....	2,200	900	700	1,500	2,400	3,600
Social scientists.....	180,500	157,800	169,700	166,200	205,600	259,800
White.....	151,600	140,500	152,600	145,100	184,700	232,600
Black.....	2,900	5,500	6,400	7,200	8,900	12,300
Asian.....	22,100	10,300	8,700	9,300	8,100	9,700
Other.....	3,900	1,500	2,000	4,600	3,900	5,200
Total engineers.....	1,278,300	1,426,900	1,509,900	1,719,100	2,062,200	2,243,500
White.....	1,185,500	1,321,100	1,391,700	1,579,800	1,877,600	2,035,200
Black.....	15,500	19,800	24,900	29,000	34,500	37,300
Asian.....	55,400	67,100	74,600	81,700	112,000	126,700
Other.....	21,900	18,900	18,700	28,600	38,100	44,300
Astronautical/aeronautical.....	55,700	61,100	65,000	77,200	91,800	104,200
White.....	52,900	56,800	60,500	72,700	86,000	94,900
Black.....	300	1,000	1,200	1,100	1,000	1,400
Asian.....	1,700	2,100	2,100	2,600	4,100	6,500
Other.....	800	1,200	1,200	800	700	1,400

Table 8-10. - Continued

Field and racial/ethnic group	1976	1978	1980	1982	1984	1986
Chemical.....	76,400	81,900	89,000	101,100	127,500	131,500
White.....	71,100	76,000	81,300	91,800	113,700	119,200
Black.....	1,500	300	400	900	1,200	900
Asian.....	2,400	4,000	5,700	6,800	10,000	9,200
Other.....	1,400	1,600	1,600	1,600	2,600	2,200
Civil.....	182,800	205,200	217,000	243,700	293,000	319,100
White.....	162,500	185,000	194,900	218,500	258,100	284,300
Black.....	1,800	2,700	3,800	3,600	4,500	4,800
Asian.....	14,800	14,500	15,200	16,500	23,000	23,300
Other.....	3,700	3,000	3,100	5,100	7,400	6,700
Electrical/electronics.....	267,900	327,000	357,400	413,500	475,000	540,800
White.....	248,800	297,900	323,600	375,100	424,800	481,800
Black.....	2,600	5,700	7,500	8,800	10,600	11,000
Asian.....	12,700	19,500	22,100	23,100	29,400	36,000
Other.....	3,800	3,900	4,200	6,500	10,200	12,000
Mechanical.....	272,800	296,500	308,800	334,400	414,000	453,700
White.....	255,300	277,400	288,900	310,800	382,300	416,000
Black.....	2,200	2,100	2,500	3,400	4,500	6,400
Asian.....	9,600	12,800	13,600	14,600	20,000	23,400
Other.....	5,700	4,200	3,800	5,600	7,200	7,900
Other engineers.....	422,700	455,200	472,700	549,200	660,900	694,200
White.....	394,900	428,000	442,500	510,900	612,700	639,000
Black.....	7,100	8,000	9,500	11,200	12,700	12,800
Asian.....	14,200	14,200	15,900	18,100	25,500	28,300
Other.....	6,500	5,000	4,800	9,000	10,000	14,100

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-11. Employed doctoral scientists and engineers by field and racial/ethnic groups: 1977-87

Field and racial/ethnic groups	1977	1979	1981	1983	1985	1987
Total scientists and engineers.....	285,055	314,257	343,953	369,320	400,358	419,118
White.....	258,255	284,965	309,123	328,455	355,125	372,985
Black.....	2,709	3,227	4,224	4,948	5,716	6,359
Asian.....	16,275	22,912	27,350	29,740	34,533	36,397
Other.....	7,816	3,153	3,256	6,177	4,984	3,377
Total scientists.....	240,005	263,915	286,917	307,775	334,505	351,350
White.....	219,636	243,008	261,912	278,722	302,526	319,091
Black.....	2,588	3,125	3,954	4,538	5,203	5,704
Asian.....	11,229	15,037	18,328	19,259	22,651	23,645
Other.....	6,552	2,745	2,723	5,256	4,125	2,910
Physical scientists.....	57,531	60,222	63,110	63,986	67,480	68,647
White.....	51,963	54,618	56,245	56,521	59,598	60,751
Black.....	543	403	579	690	522	620
Asian.....	3,441	4,719	5,769	5,684	6,561	6,788
Other.....	1,584	482	517	1,091	799	488
Mathematical scientists.....	14,609	15,250	15,569	16,379	16,758	16,699
White.....	13,218	13,729	13,975	14,531	14,921	14,940
Black.....	120	144	167	178	166	166
Asian.....	799	1,110	1,155	1,378	1,368	1,482
Other.....	472	267	272	292	303	111
Computer specialists.....	5,767	6,684	9,064	12,164	14,964	18,571
White.....	5,014	6,059	8,056	11,012	13,064	16,219
Black.....	15	4	27	43	85	200
Asian.....	613	561	868	944	1,634	1,838
Other.....	125	60	113	165	181	314
Environmental scientists.....	13,001	14,575	15,909	16,467	17,288	17,811
White.....	12,125	13,813	14,996	15,476	15,774	16,587
Black.....	24	65	34	33	98	222
Asian.....	572	539	744	770	1,133	943
Other.....	280	158	135	188	283	59
Life scientists.....	70,537	78,857	84,912	92,802	101,838	107,378
White.....	64,243	71,861	77,089	83,378	92,002	96,955
Black.....	769	883	1,013	1,142	1,419	1,456
Asian.....	3,980	5,417	6,257	6,750	7,412	8,207
Other.....	1,545	696	553	1,532	* 4,005	760
Psychologists.....	33,652	37,848	42,829	46,645	52,182	56,378
White.....	31,943	36,480	9,825	44,237	49,508	53,655
Black.....	467	594	809	983	1,190	1,266
Asian.....	313	412	583	640	756	858
Other.....	929	362	31,612	785	728	599
Social scientists.....	44,908	50,479	55,524	59,332	63,995	65,866
White.....	41,130	46,448	50,542	53,567	57,659	59,984
Black.....	650	1,032	1,325	1,469	1,723	1,774
Asian.....	1,511	2,279	2,952	3,093	3,787	3,529
Other.....	1,617	720	705	1,203	826	579
Total engineers.....	45,050	50,342	57,039	61,545	65,853	67,768
White.....	38,619	41,957	47,211	49,733	52,599	53,894
Black.....	121	102	270	410	513	655
Asian.....	5,046	7,875	9,022	10,481	11,882	12,752
Other.....	1,264	408	536	921	859	467
Astronautical/aeronautical.....	1,987	2,364	2,519	3,684	3,827	5,005
White.....	1,793	2,122	2,232	3,128	3,295	4,092
Black.....	0	2	10	21	27	34
Asian.....	138	232	269	482	503	869
Other.....	56	8	8	53	2	10

Table B-11. - Continued

Field and racial/ethnic groups	1977	1979	1981	1983	1985	1987
Chemical.....	5,603	6,166	7,146	6,992	7,122	6,923
White.....	4,674	4,953	5,553	5,384	5,130	4,988
Black.....	12	10	37	13	66	72
Asian.....	721	1,200	1,554	1,502	1,923	1,814
Other.....	196	3	2	93	3	49
Civil.....	4,066	5,157	6,089	5,317	6,396	6,479
White.....	3,255	3,875	4,785	4,190	5,063	5,182
Black.....	5	1	24	24	85	23
Asian.....	718	1,204	1,226	1,059	1,182	1,254
Other.....	88	77	54	44	66	20
Electrical/electronics.....	8,284	8,597	10,630	12,696	14,248	12,601
White.....	7,229	7,252	8,931	10,310	11,386	9,744
Black.....	45	15	40	75	90	209
Asian.....	833	1,272	1,552	2,093	2,553	2,525
Other.....	177	58	107	218	219	123
Mechanical.....	4,648	5,245	5,370	5,657	6,594	6,711
White.....	3,793	4,057	4,313	4,382	5,069	5,124
Black.....	5	22	10	91	81	127
Asian.....	771	1,165	1,045	1,157	1,354	1,412
Other.....	79	1	2	27	90	48
Other engineers.....	20,462	22,813	25,285	27,199	27,666	30,049
White.....	17,875	19,698	21,397	22,339	22,656	24,764
Black.....	54	52	149	186	164	190
Asian.....	1,865	2,802	3,376	4,188	4,367	4,878
Other.....	668	261	363	486	479	217

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-12. Employment status of Hispanic 1/ scientists and engineers by field: 1982-88 2/

Field	Total employed				Employed in science/engineering jobs			
	1982	1984	1986	1988 2/	1982	1984	1986	1988 2/
Total scientists and engineers.....	70,000	86,600	93,400	95,900	58,400	69,500	74,900	NA
Total scientists.....	28,100	38,800	46,100	43,800	20,300	26,400	31,200	NA
Physical scientists.....	3,600	4,300	4,800	5,200	3,000	3,900	4,600	NA
Mathematical scientists.....	1,400	2,700	3,100	3,900	1,300	2,600	2,600	NA
Computer specialists.....	4,600	8,200	9,300	8,700	3,300	5,400	6,100	NA
Environmental scientists.....	1,400	1,800	1,800	2,100	1,300	1,800	1,600	NA
Life scientists.....	6,700	7,300	9,900	10,100	5,200	5,700	7,100	NA
Psychologists.....	2,300	4,200	5,900	4,700	1,200	1,300	2,700	NA
Social scientists.....	8,000	10,200	11,400	9,000	5,000	5,600	6,600	NA
Total engineers.....	41,900	47,800	47,200	52,100	38,000	43,100	43,700	NA
Astronautical/aeronautical.....	1,600	1,300	1,500	1,400	1,300	1,000	1,400	NA
Chemical.....	3,000	2,900	2,700	2,600	2,500	2,800	2,500	NA
Civil.....	8,000	8,100	7,300	7,100	7,600	7,500	7,100	NA
Electrical/electronics.....	9,000	11,300	12,200	13,600	8,600	10,200	11,400	NA
Industrial.....	2,700	3,400	2,500	3,400	2,300	2,800	2,300	NA
Materials.....	300	100	400	800	300	100	400	NA
Mechanical.....	7,000	9,200	9,000	8,500	6,200	7,700	7,900	NA
Mining.....	100	100	100	200	100	100	100	NA
Nuclear.....	200	100	100	100	200	100	100	NA
Petroleum.....	900	1,000	700	800	800	1,000	700	NA
Other engineers.....	9,200	10,400	10,700	13,600	8,000	9,900	9,900	NA

1/ Data includes members of all racial groups.

2/ 1988 data are model generated rather than survey generated estimates and therefore trends (especially short term) should be treated with caution.

NOTE: Because of rounding, components may not add to totals. NA = Not Available.

SOURCE: National Science Foundation, SRS.

Table B-13. Employment status of Hispanic 1/ doctoral scientists and engineers by field: 1981-87

Field	Total employed				Employed in science/engineering			
	1981	1983	1985	1987	1981	1983	1985	1987
Total scientists and engineers...	4,847	5,428	5,897	6,949	NA	4,689	5,386	NA
Total scientists.....	4,057	4,466	5,115	5,865	NA	3,968	4,740	NA
Physical scientists.....	854	884	943	1,027	NA	760	922	NA
Mathematical scientists.....	213	198	264	266	NA	192	264	NA
Computer specialists.....	115	232	226	329	NA	232	226	NA
Environmental scientists.....	173	208	250	287	NA	194	224	NA
Life scientists.....	1,241	1,267	1,382	1,562	NA	1,177	1,345	NA
Psychologists.....	630	703	976	1,016	NA	612	871	NA
Social scientists.....	831	974	1,074	1,378	NA	801	888	NA
Total engineers.....	790	962	782	1,084	NA	721	646	NA
Astronautical/aeronautical.....	6	3	18	22	NA	3	18	NA
Chemical.....	24	114	68	102	NA	108	65	NA
Civil.....	103	72	80	112	NA	72	80	NA
Electrical/electronics.....	83	216	172	117	NA	118	153	NA
Materials.....	187	170	65	110	NA	167	63	NA
Mechanical.....	33	78	62	69	NA	78	62	NA
Nuclear.....	8	9	17	19	NA	9	17	NA
Systems design engineers.....	111	149	163	206	NA	47	51	NA
Other engineers.....	235	151	137	327	NA	119	137	NA

1/ Data includes members of all racial groups.

NOTE: Because of rounding, components may not add to totals. NA = Not Available.

SOURCE: National Science Foundation, SRS.

Table 8-14. Selected employment characteristics of scientists and engineers by field, gender, and racial/ethnic group: 1986

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			Science/engineering employment rate			Science/engineering underemployment rate			Science/engineering underutilization rate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Percent														
Total scientists & engineers 1/....	94.5	94.6	93.9	1.5	1.3	2.7	84.7	86.4	75.3	2.6	1.9	6.3	4.1	3.2	8.9
White.....	94.3	94.4	93.8	1.5	1.3	2.6	84.9	86.4	75.9	2.5	1.9	6.1	3.9	3.1	8.5
Black.....	97.2	97.6	96.4	3.8	2.8	6.0	76.5	79.1	70.2	5.5	3.7	9.7	9.1	6.4	15.2
Asian.....	96.3	97.0	93.1	1.8	1.9	1.6	87.7	90.7	72.0	2.2	1.8	4.1	3.9	3.6	5.6
Native American.....	96.0	95.9	96.8	1.2	1.3	3/	79.3	80.5	69.4	2.4	1.1	13.1	3.6	2.4	13.1
Hispanic 2/.....	95.2	96.1	92.2	2.1	2.2	1.7	80.2	83.8	66.5	4.8	2.5	13.4	6.7	4.6	14.8
Total scientists.....	95.3	95.9	94.0	1.9	1.6	2.7	76.7	78.3	72.3	4.3	3.3	7.0	6.1	4.8	9.5
White.....	95.2	95.8	93.8	1.8	1.5	2.6	77.1	78.6	73.0	4.2	3.3	6.7	5.9	4.7	9.1
Black.....	97.0	97.2	96.7	3.7	1.6	6.5	68.7	69.7	67.2	7.5	5.2	10.8	10.9	6.7	16.7
Asian.....	96.1	97.5	93.2	2.3	2.8	1.1	76.9	81.7	66.3	3.5	3.0	4.6	5.8	5.8	5.7
Native American.....	96.6	96.7	96.4	2.1	2.7	3/	68.2	68.5	67.3	5.0	2.1	14.7	7.0	4.8	14.7
Hispanic 2/.....	94.9	96.5	91.9	3.0	3.8	1.4	67.5	71.0	61.2	8.2	4.0	15.9	10.9	7.6	17.0
Physical scientists.....	93.6	94.1	90.8	1.4	1.2	3.1	91.9	91.8	92.4	1.9	1.6	3.5	3.3	2.8	6.5
White.....	93.5	94.0	90.2	1.4	1.1	3.1	91.8	91.6	93.4	1.7	1.5	3.0	3.1	2.7	6.0
Black.....	98.1	98.4	97.6	2.6	2.0	4.2	87.2	89.3	81.8	4.6	3.1	8.5	7.1	5.0	12.3
Asian.....	93.0	93.5	91.9	1.2	1.3	0.9	94.4	94.8	93.5	2.5	2.2	3.3	3.6	3.4	4.1
Native American.....	80.7	80.7	3/	3/	3/	3/	100.0	100.0	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	94.1	97.3	83.1	3.2	1.3	10.7	96.8	96.7	97.4	1.8	1.7	2.6	5.0	3.0	13.0
Mathematical scientists.....	94.6	95.4	92.6	1.3	0.8	2.7	79.3	81.3	73.8	3.3	2.0	7.1	4.6	2.8	9.6
White.....	94.2	95.0	92.1	1.3	0.7	2.7	79.0	81.2	73.0	3.1	1.8	6.8	4.3	2.5	9.3
Black.....	98.4	98.4	98.5	1.2	(3)	3.4	90.0	90.5	89.0	4.2	5.5	1.8	5.4	5.5	5.1
Asian.....	97.9	98.4	94.8	2.3	2.6	3/	70.3	69.3	77.0	3.9	3.3	7.5	6.1	5.9	7.5
Native American.....	100.0	100.0	100.0	3/	3/	3/	39.7	66.7	13.8	44.0	3/	86.2	44.0	3/	86.2
Hispanic 2/.....	97.6	97.7	97.4	0.9	1.4	3/	82.6	92.3	67.0	3.6	1.5	6.9	4.4	2.9	6.9
Computer specialists.....	98.5	99.4	96.5	0.8	0.6	1.6	77.7	77.2	79.0	2.5	2.5	2.5	3.3	3.0	4.0
White.....	98.6	99.4	96.6	0.8	0.5	1.6	78.1	77.5	79.7	2.4	2.4	2.2	3.2	3.0	3.8
Black.....	99.2	100.0	98.0	1.2	0.3	2.7	70.1	69.8	70.6	4.2	2.7	6.6	5.4	3.0	9.2
Asian.....	97.6	99.3	92.7	0.6	0.5	1.0	76.6	76.9	75.5	2.7	2.5	3.4	3.3	3.0	4.3
Native American.....	100.0	100.0	100.0	1.9	2.2	3/	52.4	47.8	75.4	3/	3/	3/	1.9	2.2	3/
Hispanic 2/.....	96.4	100.0	89.3	0.9	1.3	3/	65.7	69.9	56.5	5.5	6.6	3.1	6.3	7.8	3.1
Environmental scientists.....	94.5	94.8	92.1	4.4	3.9	8.2	87.4	88.6	78.6	5.6	4.8	11.6	9.7	8.5	18.8
White.....	94.4	94.7	91.9	4.5	4.0	8.4	88.5	89.8	78.5	5.5	4.6	11.7	9.7	8.4	19.1
Black.....	97.5	97.1	100.0	0.6	0.2	2.8	41.3	31.9	100.0	4.4	5.1	3/	5.0	5.4	2.8
Asian.....	97.3	97.1	100.0	2.6	2.9	3/	89.6	91.2	71.7	8.8	9.7	3/	11.2	12.2	3/
Native American.....	93.8	93.0	100.0	(3)	(3)	3/	74.2	77.9	50.0	15.5	10.2	50.0	15.5	10.2	50.0
Hispanic 2/.....	95.0	94.5	100.0	4.8	5.3	3/	84.5	85.4	76.6	9.0	8.9	9.6	13.3	13.7	9.6
Life scientists.....	93.0	94.1	90.0	2.1	1.7	3.4	82.7	83.2	81.1	4.7	3.1	9.6	6.7	4.7	12.6
White.....	92.8	93.9	89.5	2.1	1.6	3.4	82.9	83.1	82.1	4.4	3.1	8.5	6.4	4.7	11.6
Black.....	98.5	98.8	97.9	3.8	1.4	7.4	80.9	83.4	76.9	7.3	3.4	13.7	10.9	4.8	20.1
Asian.....	94.0	96.1	90.7	2.6	2.1	3.3	85.7	90.4	77.6	7.5	3.2	14.7	9.9	5.2	17.5
Native American.....	100.0	100.0	100.0	3/	3/	3/	63.3	75.3	41.5	0.7	3/	2.0	0.7	3/	2.0
Hispanic 2/.....	92.2	94.2	89.5	0.8	1.3	3/	71.3	74.6	66.5	16.2	5.7	31.5	16.9	6.9	31.5

Table B-14. - Continued

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			Science/engineering employment rate			Science/engineering underemployment rate			Science/engineering underutilization rate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Percent														
Psychologists.....	95.1	94.9	95.3	2.5	2.2	3.0	68.2	71.9	63.6	5.7	4.7	6.8	8.1	6.8	9.6
White.....	95.0	94.7	95.4	2.3	1.8	3.0	69.1	71.7	65.7	5.8	4.8	7.0	8.0	6.6	9.8
Black.....	94.5	97.0	93.3	3.6	1.5	4.6	66.6	80.4	59.3	4.9	3/	7.5	8.3	1.5	11.7
Asian.....	99.0	100.0	98.8	4.3	23.0	3/	28.0	95.2	16.2	3/	3/	3/	4.3	23.0	3/
Native American.....	100.0	100.0	100.0	8.5	11.2	3/	94.3	92.3	100.0	11.5	3/	44.6	19.1	11.2	44.6
Hispanic 2/.....	96.1	96.3	95.9	4.3	4.8	3.8	46.3	40.9	51.0	7.1	5.3	8.7	11.1	9.8	12.2
Social scientists.....	95.4	95.8	94.6	2.4	2.3	2.7	60.7	61.9	58.2	7.2	5.4	11.1	9.4	7.5	13.6
White.....	95.3	95.8	94.3	2.0	2.0	2.1	61.1	62.3	58.1	6.9	5.2	10.9	8.8	7.1	12.8
Black.....	95.0	93.7	96.8	6.8	3.4	11.2	53.7	50.8	57.8	13.1	9.8	17.9	19.0	12.8	27.1
Asian.....	96.1	97.8	92.9	6.4	9.6	3/	68.4	74.7	57.0	3.0	4.3	0.5	9.2	13.5	0.5
Native American.....	95.0	100.0	81.1	3/	3/	3/	49.0	34.0	100.0	7.5	9.7	3/	7.5	9.7	3/
Hispanic 2/.....	95.0	95.6	93.8	5.8	8.7	3/	57.6	57.9	56.9	7.7	0.6	20.9	13.1	9.2	20.9
Total engineers.....	93.8	93.8	93.6	1.2	1.2	2.5	91.9	91.9	93.5	1.0	1.0	2.3	2.2	2.1	4.8
White.....	93.5	93.5	93.5	1.2	1.1	2.5	91.8	91.7	93.5	1.0	0.9	2.4	2.1	2.0	4.9
Black.....	97.7	98.0	94.8	4.0	4.2	2.0	90.3	90.2	90.9	2.0	1.9	2.3	5.8	6.0	4.3
Asian.....	96.5	96.7	93.0	1.5	1.4	3.7	95.4	95.4	94.7	1.2	1.1	1.9	2.7	2.5	5.5
Native American.....	95.6	95.5	100.0	0.4	0.4	3/	87.8	87.8	87.5	0.4	0.5	3/	0.9	0.9	3/
Hispanic 2/.....	95.6	95.8	93.4	1.2	1.0	3.2	92.6	92.5	93.5	1.4	1.5	0.8	2.6	2.5	4.0
Aeronautical/astronautical.....	94.7	94.5	98.7	0.4	0.4	1.3	94.3	94.4	91.1	0.6	0.5	3.5	1.0	0.9	4.8
White.....	94.3	94.1	98.6	0.5	0.4	1.4	94.2	94.3	91.0	0.4	0.3	3.1	0.9	0.7	4.5
Black.....	100.0	100.0	100.0	3/	3/	3/	86.4	87.3	75.7	7.6	6.3	24.3	7.6	6.3	24.3
Asian.....	99.6	99.6	100.0	3/	3/	3/	98.2	98.1	100.0	0.8	0.8	3/	0.8	0.8	3/
Native American.....	86.7	86.7	3/	3/	3/	3/	100.0	100.0	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	100.0	100.0	100.0	3/	3/	3/	92.9	92.5	100.0	6.0	6.4	3/	6.0	6.4	3/
Chemical.....	89.1	89.1	89.8	2.6	2.5	4.0	88.2	87.9	92.3	1.9	1.8	3.2	4.5	4.3	7.1
White.....	88.6	88.6	89.1	2.6	2.5	3.6	89.1	88.7	94.1	1.8	1.8	2.3	4.3	4.2	5.8
Black.....	99.0	100.0	94.3	1.9	0.9	6.6	43.6	40.7	59.0	6.2	3.4	21.0	8.0	4.3	26.2
Asian.....	95.8	96.1	93.5	4.2	3.7	8.6	91.3	91.9	86.3	1.7	1.4	4.2	5.9	5.1	12.5
Native American.....	74.9	74.1	100.0	3/	3/	3/	10.9	7.1	100.0	6.8	7.1	3/	6.8	7.1	3/
Hispanic 2/.....	99.7	99.6	100.0	6.8	7.7	2.2	92.0	93.8	83.7	0.6	0.7	3/	7.3	8.4	3/
Civil.....	92.3	92.2	95.0	1.7	1.6	3.6	92.1	92.1	92.4	1.2	1.0	6.3	2.9	2.6	9.7
White.....	92.1	92.0	94.7	1.3	1.3	3.2	92.1	92.1	91.4	1.3	1.0	7.1	2.6	2.3	10.0
Black.....	98.3	98.6	90.4	17.2	17.7	5.7	91.7	91.3	100.0	1.3	1.2	2.4	18.2	18.6	8.0
Asian.....	93.3	93.1	97.9	1.3	1.1	6.3	95.2	95.0	100.0	0.7	0.7	3/	1.9	1.8	6.3
Native American.....	97.9	97.9	3/	3/	3/	3/	95.7	95.7	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	92.2	92.5	87.9	2.0	0.7	20.9	97.3	97.2	100.0	1.7	1.8	3/	3.6	2.5	20.9
Electrical/electronics.....	93.5	93.7	90.0	1.1	1.1	1.0	94.1	94.2	93.0	0.8	0.8	0.3	1.8	1.8	1.3
White.....	93.2	93.3	90.9	1.0	1.0	0.7	94.1	94.1	92.8	0.7	0.8	(3)	1.7	1.8	0.7
Black.....	96.1	97.5	73.2	3.1	3.3	3/	92.1	91.8	100.0	2.0	2.1	(3)	5.1	5.3	3/
Asian.....	96.5	97.3	85.5	1.3	1.1	4.5	95.1	95.3	92.7	0.7	0.6	2.8	2.0	1.7	7.1
Native American.....	94.6	94.6	3/	3/	3/	3/	90.4	90.4	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	94.5	95.0	84.9	1.4	1.5	3/	93.4	94.0	80.1	0.3	0.3	3/	1.7	1.8	3/

Table B-14. - Continued

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			Science/engineering employment rate			Science/engineering underemployment rate			Science/engineering underutilization rate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Percent														
Industrial.....	96.1	96.0	97.0	1.1	1.1	1.4	82.2	81.6	91.6	1.2	1.1	3.0	2.3	2.2	4.3
White.....	95.8	95.8	96.7	1.1	1.1	1.6	81.3	80.8	91.1	1.1	1.0	2.8	2.2	2.1	4.3
Black.....	100.0	100.0	100.0	1.9	2.4	3/	93.4	91.7	100.0	4.9	6.2	(3)	6.7	8.4	3/
Asian.....	100.0	100.0	100.0	1.5	1.6	3/	96.5	97.4	81.3	1.1	3/	18.7	2.6	1.6	18.7
Native American.....	100.0	100.0	100.0	3/	3/	3/	100.0	100.0	100.0	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	95.0	95.9	74.0	3/	3/	3/	93.1	92.9	100.0	4.0	4.2	3/	4.0	4.2	3/
Materials.....	94.0	94.1	92.7	1.7	0.7	17.4	88.3	88.1	92.0	0.9	0.9	0.8	2.6	1.6	18.0
White.....	93.8	93.8	93.2	1.7	0.7	20.5	87.8	87.3	99.0	0.8	0.8	1.0	2.4	1.4	21.3
Black.....	99.0	100.0	97.1	0.3	0.5	3/	72.4	100.0	16.1	3/	3/	3/	0.3	0.5	3/
Asian.....	95.6	97.0	77.0	2.3	2.0	6.9	97.1	97.0	100.0	3.4	3.6	(3)	5.6	5.5	6.9
Native American.....	100.0	100.0	100.0	3/	3/	3/	100.0	100.0	100.0	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	96.3	93.3	100.0	0.5	1.0	3/	96.1	92.8	100.0	3/	3/	3/	0.5	1.0	3/
Mechanical.....	91.2	91.1	93.2	1.3	1.3	2.5	92.1	92.0	96.5	1.1	1.1	1.8	2.4	2.4	4.3
White.....	90.7	90.7	92.5	1.3	1.3	2.5	91.9	91.8	96.6	1.0	1.0	1.9	2.3	2.3	4.3
Black.....	97.4	97.1	100.0	1.2	0.6	6.4	95.6	95.9	93.0	0.6	0.7	3/	1.8	1.2	6.4
Asian.....	97.1	97.0	100.0	1.8	1.9	3/	95.3	95.2	100.0	2.5	2.5	3/	4.2	4.3	3/
Native American.....	100.0	100.0	3/	3/	3/	3/	89.0	89.0	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	94.7	94.6	100.0	0.2	0.2	-3.0	87.3	87.2	90.3	1.4	1.2	9.7	1.6	1.3	9.7
Mining.....	93.7	93.6	96.0	2.2	2.2	1.0	86.1	85.6	97.6	1.6	1.6	0.7	3.8	3.8	1.7
White.....	94.1	94.0	95.7	2.2	2.2	1.0	85.7	85.2	97.4	1.6	1.6	0.8	3.7	3.8	1.8
Black.....	4.8	4.8	3/	3/	3/	3/	3/	3/	3/	100.0	100.0	3/	100.0	100.0	3/
Asian.....	97.9	97.9	3/	3/	3/	3/	100.0	100.0	3/	3/	3/	3/	3/	3/	3/
Native American.....	100.0	100.0	3/	64.3	64.3	3/	100.0	100.0	3/	3/	3/	3/	64.3	64.3	3/
Hispanic 2/.....	100.0	100.0	100.0	6.9	9.6	3/	100.0	100.0	100.0	3/	3/	3/	6.9	9.6	3/
Nuclear.....	97.8	98.1	89.0	1.0	1.0	1.4	97.5	97.5	98.1	0.4	0.3	0.5	1.4	1.4	1.8
White.....	97.7	98.1	88.4	1.0	1.0	0.8	97.4	97.4	97.9	0.3	0.3	0.5	1.3	1.3	1.4
Black.....	98.9	98.8	100.0	1.4	3/	17.2	100.0	100.0	100.0	3/	3/	3/	1.4	3/	17.2
Asian.....	98.7	98.9	76.9	0.5	0.5	3/	99.2	99.2	100.0	0.6	0.6	3/	1.1	1.1	3/
Native American.....	100.0	100.0	3/	3/	3/	3/	100.0	100.0	3/	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	95.7	100.0	81.0	2.2	2.7	3/	85.2	81.7	100.0	2.3	2.8	3/	4.4	5.5	3/
Petroleum.....	95.3	95.3	95.2	3.4	3.2	6.9	92.9	93.5	84.6	2.0	1.9	4.4	5.4	5.0	11.0
White.....	95.6	95.6	96.0	3.0	2.7	7.6	92.7	93.0	86.4	2.2	2.0	5.0	5.1	4.6	12.2
Black.....	98.2	98.1	100.0	5.5	5.9	3/	92.2	100.0	3/	3/	3/	3/	5.5	5.9	3/
Asian.....	72.5	68.5	83.3	5.5	7.9	3/	90.1	100.0	70.0	3/	3/	3/	5.5	7.9	3/
Native American.....	92.0	91.9	100.0	3/	3/	3/	100.0	100.0	100.0	3/	3/	3/	3/	3/	3/
Hispanic 2/.....	87.1	85.9	100.0	1.4	1.6	3/	98.7	98.6	100.0	1.3	1.4	3/	2.7	3.0	3/

Table B-14. - Continued

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			Science/engineering employment rate			Science/engineering underemployment rate			Science/engineering underutilization rate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	-----Percent-----														
Other engineers.....	98.3	98.4	96.4	0.7	0.6	0.8	92.7	92.6	95.0	0.8	0.8	1.5	1.5	1.4	2.4
White.....	98.2	98.3	96.0	0.6	0.5	0.9	92.4	92.4	94.2	0.8	0.8	1.8	1.4	1.3	2.7
Black.....	99.2	99.0	100.0	0.4	0.5	3/	93.7	92.3	100.0	0.9	1.1	3/	1.3	1.6	3/
Asian.....	99.2	99.3	98.2	0.7	0.6	1.2	96.5	96.3	98.7	0.8	0.9	3/	1.5	1.5	1.2
Native American.....	100.0	100.0	100.0	1.6	1.7	3/	94.4	95.4	72.9	3/	3/	3/	1.6	1.7	3/
Hispanic 2/.....	99.1	99.5	95.8	0.0	0.0	3/	92.3	91.4	100.0	1.6	1.7	3/	1.6	1.8	3/

1/ Detail will not average to total because racial and ethnic categories are not mutually exclusive and total employed includes other and no report.

2/ Includes members of all racial groups.

3/ Too few cases to estimate.

SOURCE: National Science Foundation, SRS.

Table B-15. Average monthly salary offers to bachelor's-degree candidates in selected fields: 1977/78 - 1988/89

Curriculum	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
Business.....	NA	\$1,153	\$1,250	\$1,380	\$1,503	\$1,518	\$1,583	\$1,655	\$1,725	\$1,778	\$1,926	\$2,033
Humanities.....	871	983	1,074	1,204	1,283	1,380	1,477	1,461	1,608	1,688	1,655	1,778
Social sciences.....	930	1,020	1,131	1,246	1,391	1,432	1,537	1,615	1,762	1,894	1,942	1,983
Engineering:												
Chemical.....	1,513	1,642	1,801	2,030	2,256	2,228	2,285	2,369	2,438	2,487	2,584	2,746
Civil.....	1,288	1,402	1,554	1,775	1,925	1,869	1,897	1,969	2,011	2,037	2,119	2,228
Electrical.....	1,367	1,520	1,690	1,882	2,064	2,128	2,213	2,283	2,364	2,410	2,474	2,555
Mechanical.....	1,404	1,536	1,703	1,908	2,098	2,096	2,190	2,259	2,322	2,359	2,451	2,545
Petroleum.....	1,653	1,793	1,987	2,221	2,539	2,568	2,464	2,583	2,750	2,568	2,672	2,749
Agricultural sciences.....	965	1,046	1,192	1,287	1,391	1,375	1,418	1,474	1,597	1,649	1,686	1,808
Biological sciences....	1,036	1,017	1,159	1,268	1,375	1,419	1,402	1,433	1,589	1,818	1,754	1,750
Chemistry.....	1,191	1,332	1,459	1,637	1,751	1,712	1,756	1,897	1,948	2,131	2,192	2,225
Computer sciences.....	1,266	1,401	1,558	1,726	1,908	1,941	2,046	2,082	2,216	2,197	2,276	2,353
Mathematics.....	1,185	1,324	1,475	1,624	1,777	1,799	1,950	2,047	2,037	2,162	2,237	2,232

SOURCE: CPS Salary Survey, Formal Report (Bethlehem, Pa.: College Placement Council), annual series

Table B-16. Number of job offers to bachelor's-degree candidates in selected fields: 1977/78 - 1988/89

Curriculum	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89
Business.....	NA	16,229	15,432	14,011	14,139	10,347	12,385	12,219	10,951	9,642	9,699	9,192
Humanities.....	1,010	658	581	675	651	715	760	686	660	854	288	300
Social sciences.....	2,008	1,947	1,783	1,629	1,517	1,387	1,748	1,820	1,540	1,441	1,226	2,635
Engineering:												
Chemical.....	5,293	6,310	7,029	7,428	3,986	1,156	2,096	2,263	1,422	1,070	1,139	1,760
Civil.....	3,529	4,424	4,181	4,416	2,326	892	1,164	1,383	1,299	817	894	1,085
Electrical.....	8,599	10,742	11,120	10,768	9,976	8,285	10,330	10,969	6,963	4,527	3,920	3,279
Mechanical.....	8,082	10,030	10,637	10,673	7,338	3,883	4,959	5,815	3,552	2,460	2,466	3,037
Petroleum.....	663	717	762	1,445	1,090	307	415	422	333	60	154	117
Agricultural sciences.....	657	257	551	490	469	297	339	246	161	124	135	162
Biological sciences....	313	244	222	215	169	149	120	145	73	73	74	69
Chemistry.....	340	379	427	409	262	147	193	169	149	36	67	133
Computer sciences.....	1,803	2,268	2,569	2,876	3,227	2,572	3,773	3,796	2,644	1,894	1,389	1,702
Mathematics.....	679	756	823	729	708	517	533	565	413	352	304	245

SOURCE: CPS Salary Survey, Formal Report (Bethlehem, Pa.: College Placement Council), annual series

Table B-17. High technology recruitment: 1961-89

Year	Index
	(1961 = 100)
1961	100
1962	120
1963	98
1964	88
1965	132
1966	159
1967	124
1968	98
1969	86
1970	60
1971	44
1972	63
1973	97
1974	101
1975	69
1976	88
1977	115
1978	140
1979	145
1980	139
1981	136
1982	104
1983	102
1984	134
1985	113
1986	109
1987	117
1988	113
1989 1/.....	103

1/ Second quarter data.

SOURCE: National Science Foundation, SRS, and Deutsch, Shea, and Evans, High Technology Recruitment Index Year End Review and Forecast, (New York, 1983), and unpublished data

Table B-18. Total and scientist/engineer employment by industry: 1980, 1988, and projected to 2000

Industry	Number of Jobs					Annual rate of change	
	1980	1988	Projected 2000			1980-88	1988-2000
			Low	Mid	High		
(Thousands) (Percent)							
Total private:							
All occupations.....	65,812	77,102	78,624	83,655	88,808	2.0	0.7
All science/engineering.....	1,366	1,858	2,305	2,483	2,650	3.9	2.4
Engineers.....	992	1,275	1,535	1,659	1,774	3.2	2.2
Aeronautical/astronautical.....	27	65	88	95	100	11.6	3.2
Chemical.....	45	45	48	52	55	0.0	1.1
Civil.....	79	101	106	114	122	3.1	1.0
Electrical/electronics.....	273	413	532	575	616	5.3	2.8
Industrial.....	133	125	152	165	177	-0.8	2.3
Mechanical.....	198	208	251	271	290	0.6	2.2
Other 2/.....	237	318	360	388	414	3.7	1.7
Scientists.....	374	583	770	824	875	5.7	2.9
Life.....	19	34	35	37	39	7.5	0.9
Mathematical.....	45	81	102	109	117	7.5	2.5
Physical.....	108	121	117	125	130	1.4	0.2
Social.....	26	27	32	35	36	0.3	2.3
Computer specialists.....	175	321	484	518	552	7.9	4.1
Goods-producing:							
All occupations.....	25,658	25,250	23,412	25,159	26,865	-0.2	0.0
All science/engineering.....	852	1,054	1,220	1,325	1,419	2.7	1.9
Engineers.....	686	829	980	1,066	1,142	2.4	2.1
Aeronautical/astronautical.....	23	56	76	83	87	11.9	3.2
Chemical.....	33	36	37	40	43	0.8	1.0
Civil.....	25	17	16	18	19	-4.9	0.3
Electrical/electronics.....	168	250	306	334	359	5.1	2.4
Industrial.....	123	109	131	143	154	-1.5	2.3
Mechanical.....	137	143	172	187	201	0.5	2.3
Other 2/.....	176	218	242	262	280	2.7	1.5
Scientists.....	167	225	240	259	276	3.8	1.2
Life.....	11	20	20	21	22	7.6	0.5
Mathematical.....	13	17	18	19	22	3.6	1.0
Physical.....	86	80	71	75	78	-0.9	-0.6
Social.....	1	1	2	3	3	8.6	6.3
Computer specialists.....	56	106	130	141	151	8.3	2.4
Durable goods:							
All occupations.....	12,187	11,437	10,686	11,643	12,547	-0.8	0.1
All science/engineering.....	580	797	961	1,051	1,131	4.1	2.3
Engineers.....	515	683	827	905	972	3.6	2.4
Aeronautical/astronautical.....	23	56	76	83	87	11.9	3.2
Chemical.....	6	8	9	10	10	3.6	1.8
Civil.....	5	7	7	7	8	2.5	0.8
Electrical/electronics.....	154	239	293	320	344	5.6	2.5
Industrial.....	107	92	112	123	133	-1.8	2.4
Mechanical.....	102	114	140	153	165	1.4	2.4
Other 2/.....	118	167	192	210	226	4.4	1.9
Scientists.....	65	114	134	147	158	7.4	2.1
Life.....	1	4	4	4	4	20.7	0.4
Mathematical.....	10	16	17	18	20	6.8	1.0
Physical.....	17	14	14	15	16	-2.7	0.7
Social.....	1	1	1	1	1	3.8	0.9
Computer specialists.....	36	80	99	109	117	10.3	2.6

Table B-18. - Continued

Industry	Number of Jobs					Annual rate of change	
	1980	1988	Projected 2000			1980-88	1988-2000 1/
			Low	Mid	High		
----- (Thousands) -----							
----- (Percent) -----							
Durable goods:							
All occupations.....	8,098	7,967	7,206	7,624	8,005	-0.2	-0.4
All science/engineering.....	166	184	200	213	225	1.3	1.2
Engineers.....	90	97	109	116	122	0.8	1.5
Aeronautical/astronautical.....	0	0	0	0	0	3/	3/
Chemical.....	27	27	28	29	31	-0.2	0.9
Civil.....	1	2	2	2	2	3.2	0.2
Electrical/electronics.....	5	7	8	9	9	2.9	2.4
Industrial.....	16	15	17	19	20	-0.6	1.6
Mechanical.....	24	24	27	29	31	-0.2	1.7
Other 2/.....	17	23	27	29	30	4.0	2.0
Scientists.....	75	87	91	97	102	1.9	0.8
Life.....	10	16	17	17	18	6.4	0.5
Mathematical.....	3	1	1	1	2	-14.7	1.1
Physical.....	47	48	46	49	51	0.2	0.1
Social.....	0	0	0	1	1	3/	3/
Computer specialists.....	15	22	27	29	31	4.9	2.3
Mining:							
All occupations.....	1,027	721	572	598	621	-4.3	-1.6
All science/engineering.....	55	48	33	33	33	-1.6	-3.0
Engineers.....	29	27	19	19	20	-1.1	-2.5
Aeronautical/astronautical.....	0	0	0	0	0	3/	3/
Chemical.....	1	1	0	0	0	6.0	3/
Civil.....	1	1	1	1	1	2.8	-2.7
Electrical/electronics.....	2	1	1	1	1	-10.6	-2.4
Industrial.....	0	1	0	0	0	3/	3/
Mechanical.....	1	2	1	1	1	2.1	-2.6
Other 2/.....	24	21	16	16	16	-1.2	-2.5
Scientists.....	26	22	14	14	14	-2.1	-3.6
Life.....	0	0	0	0	0	3/	3/
Mathematical.....	0	0	0	0	0	3/	3/
Physical.....	21	18	11	11	11	-2.0	-4.2
Social.....	0	0	1	1	1	3/	3/
Computer specialists.....	4	3	2	2	2	-3.0	-2.6
Construction:							
All occupations.....	4,346	5,125	4,948	5,294	5,692	2.1	0.3
All science/engineering.....	53	25	26	28	30	-8.9	1.1
Engineers.....	52	24	25	26	28	-9.3	0.8
Aeronautical/astronautical.....	0	0	0	0	0	3/	3/
Chemical.....	0	1	1	1	1	3/	0.8
Civil.....	18	8	7	8	9	-9.9	0.3
Electrical/electronics.....	7	4	4	5	5	-6.9	1.7
Industrial.....	0	1	1	1	1	3/	1.2
Mechanical.....	10	4	4	4	5	-11.3	1.3
Other 2/.....	17	7	7	8	8	-10.7	0.7
Scientists.....	1	1	1	2	2	2.4	4.4
Life.....	0	0	0	0	0	3/	3/
Mathematical.....	0	0	0	0	0	3/	3/
Physical.....	0	0	0	0	0	3/	3/
Social.....	0	0	0	1	1	3/	3/
Computer specialists.....	1	1	1	2	2	2.4	2.0

Table B-18. - Continued

Industry	Number of Jobs					Annual rate of change	
	1980	1988	Projected 2000			1980-88	1988-2000 1/
			Low	Mid	High		
	(Thousands)					(Percent)	
Services-producing:							
All occupations.....	40,154	51,852	55,212	58,496	61,944	3.2	1.0
All science/engineering.....	514	804	1,085	1,158	1,230	5.8	3.1
Engineers.....	306	446	555	593	632	4.8	2.4
Aeronautical/astronautical.....	4	9	12	12	13	10.1	2.8
Chemical.....	12	9	11	11	12	-2.9	1.6
Civil.....	54	84	90	96	103	5.7	1.1
Electrical/electronics.....	105	163	226	241	257	5.7	3.3
Industrial.....	10	16	20	22	23	6.3	2.5
Mechanical.....	61	65	78	84	89	0.8	2.2
Other 2/.....	61	100	118	126	134	6.3	2.0
Scientists.....	207	359	530	565	599	7.1	3.9
Life.....	8	14	15	16	17	7.3	1.4
Mathematical.....	32	64	84	89	95	8.8	2.8
Physical.....	23	41	46	50	52	7.9	1.6
Social.....	25	25	30	32	34	0.0	2.1
Computer specialists.....	119	215	354	377	401	7.6	4.8
Communications/transportation/utilities:							
All occupations.....	5,146	5,548	5,213	5,548	5,904	0.9	0.0
All science/engineering.....	95	112	124	132	140	2.1	1.4
Engineers.....	82	79	83	88	93	-0.4	0.9
Aeronautical/astronautical.....	1	1	1	1	1	-7.6	1.5
Chemical.....	1	1	1	1	1	1.0	1.2
Civil.....	5	7	6	7	7	4.4	-0.9
Electrical/electronics.....	43	39	44	46	49	-1.1	1.4
Industrial.....	4	5	5	5	6	0.9	0.9
Mechanical.....	7	6	6	6	6	-3.0	0.5
Other 2/.....	20	21	21	22	24	0.4	0.5
Scientists.....	13	32	41	44	46	12.2	2.6
Life.....	0	1	1	1	1	3/	2.2
Mathematical.....	1	2	2	2	2	8.3	-0.4
Physical.....	0	2	2	2	2	3/	-0.7
Social.....	0	2	2	2	2	3/	1.9
Computer specialists.....	11	26	35	37	39	10.7	3.1
Trade:							
All occupations.....	20,310	25,138	25,911	27,551	29,201	2.7	0.8
All science/engineering.....	66	77	105	114	122	1.9	3.3
Engineers.....	40	41	55	59	63	0.4	3.0
Aeronautical/astronautical.....	0	0	0	0	0	3/	3/
Chemical.....	3	1	1	1	1	-10.8	1.9
Civil.....	0	0	0	0	0	3/	3/
Electrical/electronics.....	16	16	22	23	25	-0.2	3.3
Industrial.....	0	0	0	0	0	3/	3/
Mechanical.....	18	12	16	17	18	-4.7	2.8
Other 2/.....	3	12	16	17	18	17.3	2.8
Scientists.....	26	36	51	55	59	4.0	3.6
Life.....	0	2	2	2	3	3/	1.6
Mathematical.....	0	0	0	0	0	3/	3/
Physical.....	1	3	3	3	3	16.8	1.3
Social.....	0	0	0	1	1	3/	3/
Computer specialists.....	25	32	46	49	53	2.9	3.8

Table B-18. - Continued

Industry	Number of Jobs					Annual rate
	1980	1988	Projected 2000			1980-88
			Low	Mid	High	
			(Thousands)			(Perc)
Financial services:						
All occupations.....	5,160	6,676	7,461	7,864	8,339	3.3
All science/engineering.....	52	122	165	174	185	11.3
Engineers.....	5	15	20	21	22	13.9
Aeronautical/astronautical.....	0	0	0	0	0	3/
Chemical.....	0	0	0	0	0	3/
Civil.....	0	0	0	0	0	3/
Electrical/electronics.....	0	0	0	0	0	3/
Industrial.....	0	0	0	0	0	3/
Mechanical.....	0	0	0	0	0	3/
Other 2/.....	5	15	20	21	22	13.9
Scientists.....	46	107	145	154	163	11.0
Life.....	0	0	0	0	0	3/
Mathematical.....	16	35	43	45	48	9.9
Physical.....	0	0	0	0	0	3/
Social.....	2	7	9	9	10	17.6
Computer specialists.....	28	65	94	99	105	11.1
Business & related services:						
All occupations.....	9,538	14,490	16,628	17,533	18,500	5.4
All science/engineering.....	301	494	691	738	784	6.4
Engineers.....	179	310	378	426	454	7.1
Aeronautical/astronautical.....	3	8	11	12	12	13.9
Chemical.....	9	8	9	9	10	-1.6
Civil.....	49	77	84	90	96	5.8
Electrical/electronics.....	46	108	161	172	183	11.3
Industrial.....	5	11	15	16	17	9.6
Mechanical.....	35	47	57	61	65	3.5
Other 2/.....	32	52	62	66	70	6.0
Scientists.....	122	183	292	312	330	5.3
Life.....	7	11	12	13	13	5.1
Mathematical.....	15	27	39	42	45	7.6
Physical.....	22	37	42	45	47	6.8
Social.....	23	17	20	21	22	-4.1
Computer specialists.....	54	92	179	192	204	6.8

1/ As projected in the mid scenario.

2/ The "other" engineering category includes a number of smaller fields which are combined in this report to space limitations. None of these fields individually accounts for more than about 5 percent of the engineering jobs.

3/ Base number is 0 or too small to estimate.

NOTE: Because of rounding, detail may not add to totals. Percentages are calculated from unrounded data. Macroeconomic assumptions for the low, mid and high scenarios are described in appendix table A-5.

The standard industrial classification numbers are:

Goods-producing	
Durable goods.....	24,25,32-39
Nondurable goods.....	20-23,26-31
Mining.....	10-14
Construction.....	15-17
Services-producing	
Communications/transportation/utilities.....	40-49
Trade.....	50-59
Financial services.....	60-67
Business and related services.....	70-79,81,83,89

SOURCE: National Science Foundation, SRS.

Table B-19. Bachelor's and first-professional degrees awarded by field: 1960-88

Year	Total Fields	Science/engineering fields						Total other fields
		Total	Physical sciences 1/	Engineering	Mathematical sciences 2/	Life sciences	Social sciences 3/	
1960	394,889	120,937	16,057	37,808	11,437	24,141	31,494	273,392
1961	401,784	121,660	15,500	35,866	13,127	23,900	33,267	280,041
1962	420,485	127,469	15,894	34,735	14,610	25,200	37,030	293,015
1963	450,592	135,964	16,276	33,458	16,128	27,801	42,308	314,001
1964	502,104	153,361	17,527	35,226	18,677	31,611	50,320	348,020
1965	538,930	164,936	17,916	36,795	19,668	34,842	55,715	373,189
1966	555,613	173,471	17,186	35,815	20,182	36,864	63,424	382,152
1967	594,862	187,849	17,794	36,188	21,530	39,408	72,929	407,135
1968	671,591	212,174	19,442	37,614	24,084	43,260	87,774	459,071
1969	769,683	244,519	21,591	41,553	28,263	48,713	104,399	525,020
1970	833,322	264,122	21,551	44,772	29,089	52,129	116,561	569,060
1971	884,386	271,176	21,549	45,387	27,306	51,461	125,473	615,000
1972	937,884	281,228	20,887	46,003	27,250	53,484	133,604	656,001
1973	980,707	295,391	20,809	46,989	27,528	59,486	140,579	685,313
1974	1,008,654	305,062	21,287	43,530	26,570	68,226	145,449	703,527
1975	987,922	294,920	20,896	40,065	23,385	72,710	137,864	693,067
1976	997,504	292,174	21,559	39,114	21,749	77,301	132,451	705,309
1977	993,008	288,543	22,618	41,581	20,729	78,472	125,143	704,465
1978	997,165	288,167	23,175	47,411	19,925	77,138	120,518	708,947
1979	1,000,562	288,625	23,363	53,720	20,670	75,085	115,787	711,915
1980	1,010,777	291,983	23,661	59,240	22,686	71,617	114,779	718,797
1981	1,019,246	294,867	24,175	64,068	26,406	68,086	112,132	724,359
1982	1,036,597	302,118	24,372	67,791	32,139	65,041	112,775	734,449
1983	1,054,242	307,225	23,497	72,954	37,235	63,237	110,302	747,040
1984	1,061,245	314,666	23,759	76,531	45,777	59,613	108,986	746,559
1985	1,066,439	321,739	23,847	77,871	54,388	57,812	107,821	744,718
1986	1,074,785	323,950	21,862	77,061	58,583	56,465	109,979	750,806
1987	1,075,149	318,942	20,155	74,705	56,553	56,215	111,314	756,217
1988	1,076,448	308,760	17,817	70,406	51,018	54,280	115,239	767,689

As a percent of fields

1960	100.0	30.6	4.1	9.6	2.9	6.1	8.0	69.3
1961	100.0	30.3	3.9	8.9	3.3	5.9	8.3	69.3
1962	100.0	30.3	3.8	8.3	3.5	6.0	8.8	69.3
1963	100.0	30.2	3.6	7.4	3.6	6.2	9.4	69.3
1964	100.0	30.5	3.5	7.0	3.7	6.3	10.0	69.3
1965	100.0	30.6	3.3	6.8	3.6	6.5	10.3	69.3
1966	100.0	31.2	3.1	6.4	3.6	6.6	11.4	68.3
1967	100.0	31.6	3.0	6.1	3.6	6.6	12.3	68.3
1968	100.0	31.6	2.9	5.6	3.6	6.4	13.1	68.3
1969	100.0	31.8	2.8	5.4	3.7	6.3	13.6	68.3
1970	100.0	31.7	2.6	5.4	3.5	6.3	14.0	68.3
1971	100.0	30.7	2.4	5.1	3.1	5.8	14.2	69.3
1972	100.0	30.0	2.2	4.9	2.9	5.7	14.2	70.3
1973	100.0	30.1	2.1	4.8	2.8	6.1	14.3	69.3
1974	100.0	30.2	2.1	4.3	2.6	6.8	14.4	69.3
1975	100.0	29.9	2.1	4.1	2.4	7.4	14.0	70.3
1976	100.0	29.3	2.2	3.9	2.2	7.7	13.3	70.3
1977	100.0	29.1	2.3	4.2	2.1	7.9	12.6	70.3
1978	100.0	28.9	2.3	4.8	2.0	7.7	12.1	71.3
1979	100.0	28.8	2.3	5.4	2.1	7.5	11.6	71.3
1980	100.0	28.9	2.3	5.9	2.2	7.1	11.4	71.3
1981	100.0	28.9	2.4	6.3	2.6	6.7	11.0	71.3
1982	100.0	29.1	2.4	6.5	3.1	6.3	10.9	70.3
1983	100.0	29.1	2.2	6.9	3.5	6.0	10.5	70.3
1984	100.0	29.7	2.2	7.2	4.3	5.6	10.3	70.3
1985	100.0	30.2	2.2	7.3	5.1	5.4	10.1	69.3
1986	100.0	30.1	2.0	7.2	5.5	5.3	10.2	69.3
1987	100.0	29.7	1.9	6.9	5.3	5.2	10.4	70.3
1988	100.0	28.7	1.7	6.5	4.7	5.0	10.7	71.3

1/ Including earth and environmental sciences.

2/ Including statistics and computer specialties.

3/ Excluding history and including psychology.

4/ Including first-professional degrees such as M.D., D.D.S., D.V.M., and J.D. degrees.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS; National Center for Education Statistics, Department of Education

Table B-20. Master's degrees awarded by field: 1960-88

Year	Total Fields	Science/engineering fields						Total other fields 4/
		Total	Physical sciences 1/	Engineering	Mathematical sciences 2/	Life sciences	Social sciences 3/	
1960	74,497	20,012	3,387	7,159	1,765	3,751	3,950	54,485
1961	78,269	22,786	3,799	8,178	2,238	4,085	4,486	55,483
1962	84,889	25,146	3,929	8,909	2,680	4,672	4,956	59,743
1963	91,418	27,367	4,132	9,635	3,323	4,718	5,559	64,051
1964	101,122	30,271	4,567	10,827	3,603	5,357	5,917	70,851
1965	112,195	33,835	4,918	12,056	4,294	5,978	6,589	78,360
1966	140,772	38,083	4,992	13,678	5,010	6,666	7,737	102,689
1967	157,892	41,800	5,412	13,885	5,733	7,465	9,305	116,092
1968	177,150	45,425	5,508	15,188	6,081	8,315	10,333	131,725
1969	194,414	48,425	5,911	15,243	6,735	8,809	11,727	145,989
1970	209,387	49,318	5,948	15,597	7,107	8,590	12,076	160,069
1971	231,486	50,624	6,386	16,347	6,789	8,320	12,782	180,862
1972	252,774	53,567	6,307	16,802	7,186	8,914	14,358	199,207
1973	264,525	54,234	6,274	16,758	7,146	9,080	14,976	210,291
1974	278,259	54,175	6,087	15,393	7,116	9,605	15,974	224,084
1975	293,651	53,852	5,830	15,434	6,637	9,618	16,333	239,799
1976	313,001	54,747	5,485	16,170	6,466	9,823	16,803	258,254
1977	318,241	56,731	5,345	16,889	6,496	10,707	17,294	261,510
1978	312,816	56,237	5,576	17,015	6,421	10,711	16,514	256,579
1979	302,075	54,456	5,464	16,193	6,101	10,719	15,979	247,619
1980	299,095	54,391	5,233	16,846	6,515	10,278	15,519	244,704
1981	296,798	54,811	5,300	17,373	6,787	9,731	15,620	241,987
1982	296,580	57,025	5,526	18,594	7,666	9,824	15,415	239,555
1983	290,931	58,868	5,288	19,721	8,160	9,720	15,979	232,063
1984	285,462	59,569	5,568	20,352	8,939	9,330	15,380	225,893
1985	287,210	61,278	5,802	21,206	9,989	8,757	15,524	225,932
1986	289,823	62,526	5,910	21,314	11,241	8,572	15,489	227,297
1987	290,532	63,018	5,638	22,281	11,808	8,831	14,460	227,514
1988	300,901	63,897	5,650	22,891	12,600	8,559	14,197	236,194

As a percent of fields

Year	Total Fields	Total	Physical sciences 1/	Engineering	Mathematical sciences 2/	Life sciences	Social sciences 3/	Total other fields 4/
1960	100.0	26.9	4.5	9.6	2.4	5.0	5.3	73.1
1961	100.0	29.1	4.9	10.4	2.9	5.2	5.7	70.9
1962	100.0	29.6	4.6	10.5	3.2	5.5	5.8	70.4
1963	100.0	29.9	4.5	10.5	3.6	5.2	6.1	70.1
1964	100.0	29.9	4.5	10.7	3.6	5.3	5.9	70.1
1965	100.0	30.2	4.4	10.7	3.8	5.3	5.9	69.8
1966	100.0	27.1	3.5	9.7	3.6	4.7	5.5	72.9
1967	100.0	26.5	3.4	8.8	3.6	4.7	5.9	73.5
1968	100.0	25.6	3.1	8.6	3.4	4.7	5.8	74.4
1969	100.0	24.9	3.0	7.8	3.5	4.5	6.0	75.1
1970	100.0	23.6	2.8	7.4	3.4	4.1	5.8	76.4
1971	100.0	21.9	2.8	7.1	2.9	3.6	5.5	78.1
1972	100.0	21.2	2.5	6.6	2.8	3.5	5.7	78.8
1973	100.0	20.5	2.4	6.3	2.7	3.4	5.7	79.5
1974	100.0	19.5	2.2	5.5	2.6	3.5	5.7	80.5
1975	100.0	18.3	2.0	5.3	2.3	3.3	5.6	81.7
1976	100.0	17.5	1.8	5.2	2.1	3.1	5.4	82.5
1977	100.0	17.8	1.7	5.3	2.0	3.4	5.4	82.2
1978	100.0	18.0	1.8	5.4	2.1	3.4	5.3	82.0
1979	100.0	18.0	1.8	5.4	2.0	3.5	5.3	82.0
1980	100.0	18.2	1.7	5.6	2.2	3.4	5.2	81.8
1981	100.0	18.5	1.8	5.9	2.3	3.3	5.3	81.5
1982	100.0	19.2	1.9	6.3	2.6	3.3	5.2	80.8
1983	100.0	20.2	1.8	6.8	2.8	3.3	5.5	79.8
1984	100.0	20.9	2.0	7.1	3.1	3.3	5.4	79.1
1985	100.0	21.3	2.0	7.4	3.5	3.0	5.4	78.7
1986	100.0	21.6	2.0	7.4	3.9	3.0	5.3	78.4
1987	100.0	21.7	1.9	7.7	4.1	3.0	5.0	78.3
1988	100.0	21.2	1.9	7.6	4.2	2.8	4.7	78.5

1/ Including earth and environmental sciences.

2/ Including statistics and computer specialties.

3/ Excluding history and including psychology.

4/ Including first-professional degrees such as M.D., D.D.S., D.V.M., and J.D. degrees.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS; National Center for Education Statistics, Department of Education

Table B-21. Doctoral degrees awarded by field: 1960-88

Year	Total Fields	Science/engineering fields						Total other fields 4/
		Total	Physical sciences 1/	Engineering	Mathematical sciences 2/	Life sciences	Social sciences 3/	
1960	9,733	6,263	1,861	794	291	1,660	1,657	3,470
1961	10,413	6,721	1,993	940	332	1,682	1,774	3,692
1962	11,500	7,438	2,097	1,216	388	1,867	1,870	4,062
1963	12,728	8,219	2,427	1,357	483	1,976	1,976	4,509
1964	14,325	9,224	2,527	1,664	588	2,219	2,226	5,101
1965	16,340	10,476	2,865	2,074	685	2,539	2,313	5,864
1966	17,949	11,458	3,059	2,301	769	2,711	2,618	6,491
1967	20,403	12,982	3,503	2,604	830	2,966	3,079	7,421
1968	22,936	14,448	3,681	2,855	971	3,511	3,430	8,488
1969	25,743	16,039	3,935	3,265	1,070	3,815	3,954	9,704
1970	29,498	17,743	4,403	3,434	1,225	4,165	4,516	11,755
1971	31,867	18,949	4,501	3,498	1,238	4,557	5,120	12,918
1972	33,041	19,007	4,257	3,503	1,281	4,454	5,473	14,034
1973	33,755	19,001	4,078	3,364	1,233	4,503	5,793	14,754
1974	33,047	18,313	3,765	3,147	1,211	4,304	5,853	14,734
1975	32,951	18,358	3,710	3,002	1,147	4,402	6,070	14,593
1976	32,946	17,864	3,506	2,834	1,003	4,361	6,124	15,082
1977	31,716	17,416	3,415	2,643	964	4,266	6,099	14,300
1978	30,875	17,048	3,234	2,423	959	4,369	6,038	13,827
1979	31,237	17,245	3,320	2,490	979	4,501	5,927	13,992
1980	31,017	17,199	3,149	2,479	962	4,715	5,873	13,818
1981	31,353	17,633	3,210	2,528	960	4,786	6,123	13,720
1982	31,096	17,630	3,351	2,646	940	4,844	5,820	13,466
1983	31,216	17,976	3,439	2,781	987	4,756	6,000	13,240
1984	31,277	18,107	3,459	2,913	993	4,877	5,841	13,170
1985	31,211	18,323	3,533	3,166	998	4,902	5,701	12,888
1986	31,770	18,859	3,679	3,376	1,128	4,806	5,846	12,911
1987	32,278	19,312	3,840	3,712	1,190	4,813	5,732	12,966
1988	33,456	20,257	4,046	4,190	1,263	5,121	5,615	13,199

As a percent of fields								
1960	100.0	64.3	19.1	8.2	3.0	17.1	17.0	35.7
1961	100.0	64.5	19.1	9.0	3.2	16.2	17.0	35.5
1962	100.0	64.7	18.2	10.6	3.4	16.2	16.3	35.3
1963	100.0	64.6	19.1	10.7	3.8	15.5	15.5	35.4
1964	100.0	64.4	17.6	11.6	4.1	15.5	15.5	35.6
1965	100.0	64.1	17.5	12.7	4.2	15.5	14.2	35.9
1966	100.0	63.8	17.0	12.8	4.3	15.1	14.6	36.2
1967	100.0	63.6	17.2	12.8	4.1	14.5	15.1	36.4
1968	100.0	63.0	16.0	12.4	4.2	15.3	15.0	37.0
1969	100.0	62.3	15.3	12.7	4.2	14.8	15.4	37.7
1970	100.0	60.1	14.9	11.6	4.2	14.1	15.3	39.9
1971	100.0	59.5	14.1	11.0	3.9	14.3	16.1	40.5
1972	100.0	57.5	12.9	10.6	3.9	13.5	16.6	42.5
1973	100.0	56.3	12.1	10.0	3.7	13.3	17.2	43.7
1974	100.0	55.4	11.4	9.5	3.7	13.0	17.7	44.6
1975	100.0	55.7	11.3	9.1	3.5	13.4	18.4	44.3
1976	100.0	54.2	10.6	8.6	3.0	13.2	18.6	45.8
1977	100.0	54.9	10.8	8.3	3.0	13.5	19.2	45.1
1978	100.0	55.2	10.5	7.8	3.1	14.2	19.6	44.8
1979	100.0	55.2	10.6	8.0	3.1	14.4	19.0	44.8
1980	100.0	55.5	10.2	8.0	3.1	15.2	18.9	44.5
1981	100.0	56.2	10.2	8.1	3.1	15.3	19.5	43.8
1982	100.0	56.7	10.8	8.5	3.0	15.6	18.7	43.3
1983	100.0	57.6	11.0	8.9	3.2	15.2	19.2	42.4
1984	100.0	57.9	11.1	9.3	3.2	15.6	18.7	42.1
1985	100.0	58.7	11.3	10.1	3.2	15.7	18.3	41.3
1986	100.0	59.4	11.6	10.6	3.6	15.1	18.4	40.6
1987	100.0	59.8	11.9	11.5	3.7	14.9	17.8	40.2
1988	100.0	60.5	12.1	12.5	3.8	15.3	16.8	39.5

1/ Including earth and environmental sciences.

2/ Including statistics and computer specialties.

3/ Excluding history and including psychology.

4/ Including first-professional degrees such as M.D., D.D.S., D.V.M., and J.D. degrees.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-22. Percent of recent science/engineering (S/E) degree recipients employed in S/E jobs by degree and field: 1976 and 1986

Field	Degree			
	Bachelor's		Master's	
	1976	1986	1976	1986
	Percent			
Total.....	44.7	63.8	77.4	84.3
Physical sciences....	58.9	68.0	67.5	85.7
Mathematics.....	45.9	73.6	61.5	89.7
Computer sciences....	90.0	89.2	85.4	90.0
Engineering.....	83.4	89.1	93.1	94.6
Life sciences.....	49.7	56.7	75.9	80.6
Social sciences.....	20.7	30.5	66.7	55.8

Note: Individuals enrolled full time in graduate school are excluded. Data for 1976 include 1974 and 1975 S/E graduates. Data for 1986 include 1984 and 1985 S/E graduates.

SOURCE: National Science Foundation, SRS.

Table B-23. Number of 1984 and 1985 science/engineering (S/E) degree recipients working as computer specialists in 1986, by field

Field	Degree			
	Bachelor's		Master's	
	1984	1985	1984	1985
	Number			
Total.....	35,600	41,900	8,000	8,800
Physical sciences.....	700	200	100	100
Mathematics.....	3,900	3,600	400	400
Computer sciences.....	24,200	29,800	6,000	6,800
Engineering.....	3,700	3,100	1,200	1,100
Environmental sciences..	100	100	100	100
Life sciences.....	400	400	(1)	100
Social sciences.....	1,900	4,000	200	200
Psychology.....	600	600	(1)	100

(1) Too few cases to report.

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation, SRS.

Table B-24. Selected employment characteristics of recent science/engineering bachelor's and master's degree recipients by field and gender: 1986

Field and gender	Labor force participation rate		Unemployment rate		Science/engineering employment rate	
	Bachelor's	Master's	Bachelor's	Master's	Bachelor's	Master's
Total science/engineering.....	98.1	97.9	3.5	2.1	63.8	84.3
Men.....	98.6	99.0	3.4	1.7	69.9	86.8
Women.....	97.2	95.2	3.7	3.2	52.9	77.6
Total sciences.....	97.6	97.3	3.9	2.6	52.6	78.6
Men.....	98.0	98.9	4.0	2.2	56.1	81.1
Women.....	97.1	94.8	3.9	3.3	48.5	74.5
Physical sciences.....	97.0	96.4	2.0	1.4	68.0	85.7
Men.....	98.1	99.2	2.0	1.4	71.6	85.7
Women.....	95.6	2/	2.1	2/	62.8	2/
Chemistry.....	95.3	97.7	2.7	1.3	75.5	90.9
Men.....	96.1	2/	2.3	2/	78.6	2/
Women.....	94.6	2/	3.1	2/	72.3	2/
Physics/astronomy.....	98.6	2/	2.4	2/	80.2	2/
Men.....	100.0	2/	2.8	2/	78.8	2/
Women.....	2/	2/	2/	2/	2/	2/
Other physical sciences.....	100.0	2/	0.2	2/	39.1	2/
Men.....	100.0	2/	0.2	2/	46.7	2/
Women.....	100.0	2/	0.1	2/	29.2	2/
Mathematics/statistics.....	98.0	97.6	1.9	1.5	73.6	89.7
Men.....	98.2	99.4	2.3	1.4	71.4	88.9
Women.....	97.7	94.5	1.6	1.6	75.7	91.1
Computer science.....	99.7	98.4	2.7	0.4	89.2	90.0
Men.....	99.6	99.0	2.9	0.5	88.7	89.5
Women.....	99.8	96.6	2.5	0.9	89.9	91.6
Environmental sciences.....	97.9	98.6	4.4	6.1	60.8	92.5
Men.....	98.0	99.6	4.7	5.8	60.9	93.8
Women.....	97.6	2/	3.2	2/	60.5	2/
Life sciences.....	95.8	97.4	4.9	4.2	56.7	80.6
Men.....	96.6	98.8	3.8	4.0	60.7	82.3
Women.....	94.9	96.0	6.1	4.4	52.6	78.9
Biology.....	94.7	97.5	6.2	4.0	51.1	77.9
Men.....	95.0	99.6	4.9	5.0	53.1	76.2
Women.....	94.5	95.9	7.3	3.2	49.5	79.2
Agricultural sciences.....	98.0	97.2	2.3	4.6	67.8	85.7
Men.....	99.0	97.8	2.4	2.7	71.2	89.8
Women.....	96.2	2/	2.2	2/	61.9	2/
Psychology.....	95.6	96.5	5.3	4.4	26.1	67.3
Men.....	98.5	2/	8.4	2/	28.0	2/
Women.....	94.3	94.7	3.8	2.9	25.2	69.6
Social sciences.....	98.0	96.0	4.4	3.4	30.5	55.8
Men.....	97.4	97.8	4.4	2.6	32.8	57.8
Women.....	98.8	94.0	4.4	4.4	27.5	53.2
Economics.....	100.0	94.2	5.8	3.5	39.6	57.7
Men.....	100.0	94.7	5.7	2.7	37.9	49.8
Women.....	100.0	2/	6.1	2/	43.9	2/
Sociology/anthropology.....	96.0	94.8	10.9	4.9	31.0	39.6
Men.....	96.7	2/	10.0	2/	33.2	(2)
Women.....	95.5	95.0	11.5	7.0	29.4	47.7
Other social sciences.....	97.2	97.4	0.6	2.8	23.5	60.6
Men.....	94.9	100.0	1.2	3.1	27.4	68.5
Women.....	100.0	93.7	1/	2.4	19.2	48.9

Table B-24. - Continued

Field and gender	Labor force participation rate		Unemployment rate		Science/engineering employment rate	
	Bachelor's	Master's	Bachelor's	Master's	Bachelor's	Master's
Total engineering.....	99.3	99.0	2.4	1.2	89.1	94.6
Men.....	99.5	99.1	2.4	1.0	89.3	94.2
Women.....	97.7	97.9	1.9	2.8	88.2	97.6
Aero/astronautical.....	99.1	2/	1.9	2/	86.0	2/
Men.....	99.0	2/	2.1	2/	87.5	2/
Women.....	2/	2/	2/	2/	2/	2/
Chemical.....	98.9	99.0	3.2	3.3	85.8	94.8
Men.....	99.7	98.8	3.4	1.9	86.2	94.7
Women.....	96.7	2/	2.9	2/	84.8	2/
Civil.....	99.5	98.5	2.3	1.0	92.7	95.5
Men.....	99.7	99.0	2.5	0.4	92.1	95.7
Women.....	97.9	2/	1.1	2/	96.6	2/
Electric/electronics.....	99.1	99.7	2.0	1/	91.9	96.8
Men.....	99.4	99.7	2.1	1/	92.2	96.5
Women.....	96.2	2/	1.3	2/	89.5	2/
Industrial.....	98.9	99.9	0.4	2.3	87.3	83.3
Men.....	100.0	2/	0.5	2/	88.8	2/
Women.....	95.2	2/	(1)	2/	81.8	2/
Materials.....	96.7	2/	2.2	2/	88.9	2/
Men.....	96.8	2/	1.5	2/	87.5	2/
Women.....	2/	2/	2/	2/	2/	2/
Mechanical.....	100.0	99.7	2.6	1.3	90.3	96.5
Men.....	100.0	99.7	2.6	1.4	89.7	96.6
Women.....	100.0	2/	2.8	2/	95.6	2/
Mining.....	97.5	2/	5.7	2/	81.8	2/
Men.....	97.0	2/	6.6	2/	83.7	2/
Women.....	2/	2/	2/	2/	2/	2/
Nuclear.....	2/	2/	2/	2/	2/	2/
Men.....	2/	2/	2/	2/	2/	2/
Women.....	2/	2/	2/	2/	2/	2/
Petroleum.....	100.0	2/	8.5	2/	88.3	2/
Men.....	100.0	2/	7.2	2/	90.4	2/
Women.....	2/	2/	2/	2/	2/	2/
Other engineering.....	99.1	97.4	2.2	2.1	81.2	90.4
Men.....	99.1	97.7	2.5	2.1	80.8	89.2
Women.....	99.5	2/	0.4	2/	83.8	2/

1/ No unemployment reported.

2/ No rate computed for groups with less than 1,500 in labor force.

NOTE: Combined 1984/1985 graduates, exclusive of full-time graduate students.

SOURCE: National Science Foundation, SRS.

Table B-25. Selected characteristics of physically disabled scientists and engineers: 1986

Field	Total population	Visual	Auditory	Ambulatory	Other
Total scientists and engineers	94,200	21,100	16,500	20,500	36,100
Scientists	40,400	9,700	7,600	9,800	13,400
Physical scientists	7,600	2,500	1,100	1,400	2,600
Mathematical scientists	1,600	300	400	500	500
Computer specialists	9,200	1,800	2,700	3,000	1,700
Environmental scientists	3,000	200	400	1,300	1,100
Life scientists	6,300	1,300	1,200	1,700	2,100
Psychologists	6,100	1,100	1,400	1,200	2,400
Social scientists	6,600	2,600	400	700	2,900
Engineers	53,800	11,400	8,900	10,800	22,700

Labor force status					
Field	Total population	Labor force	Total employed	Employed in S/E	Unemployed seeking
Total scientists and engineers	94,200	71,400	70,300	63,400	1,100
Scientists	40,400	34,500	34,200	29,400	300
Physical scientists	7,600	5,300	5,300	5,100	(1)
Mathematical scientists	1,600	1,600	1,500	1,300	100
Computer specialists	9,200	9,100	9,100	7,800	(1)
Environmental scientists	3,000	2,000	2,000	1,900	(1)
Life scientists	6,300	5,700	5,600	5,100	100
Psychologists	6,100	5,400	5,400	3,600	(1)
Social scientists	6,600	5,500	5,300	4,500	100
Engineers	53,800	36,900	36,100	34,000	800

(1) Too few cases to estimate.

NOTE: Because of rounding, components may not add to totals. S/E = Science/engineering.

SOURCE: National Science Foundation, SRS.

NATIONAL AND PURDUE TRENDS IN ENGINEERING ENROLLMENT FULL TIME UNDERGRADUATE STUDENTS

Year	National Enrollment			Purdue Enrollment		
	Total No.	No.	Women %	Total No.	No.	Women %
1972	194,727	4,487	2.3	4,262	87	2.0
1973	186,705	6,064	3.2	4,275	145	3.4
1974	201,099	9,828	4.9	4,474	246	5.5
1975	231,379	15,852	6.9	5,000	465	9.3
1976	256,835	21,936	8.5	5,890	646	11.0
1977	289,248	28,773	9.9	6,255	828	13.2
1978	311,237	34,518	11.1	6,600	995	15.1
1979	340,488	42,027	12.3	6,860	1,143	16.7
1980	356,117	48,944	13.4	6,767	1,231	18.2
1981	387,557	56,049	14.5	6,730	1,269	18.9
1982	403,390	62,328	15.5	6,605	1,383	20.0
1983	406,144	64,649	15.9	6,587	1,339	20.3
1984	394,635	62,659	15.9	6,478	1,312	20.3
1985	384,191	61,602	16.0	6,464	1,330	20.6
1986	369,520	57,612	15.6	6,382	1,334	20.9
1987	356,998	55,471	15.5	6,291	1,290	20.5
1988	346,169	54,772	15.8	6,296	1,369	21.7
1989	338,529	54,538	16.1	6,380	1,365	21.4
1990	-----	-----	----	6,379	1,324	20.8

Source: Engineering Manpower Commission
American Association of Engineering
Societies, Inc.

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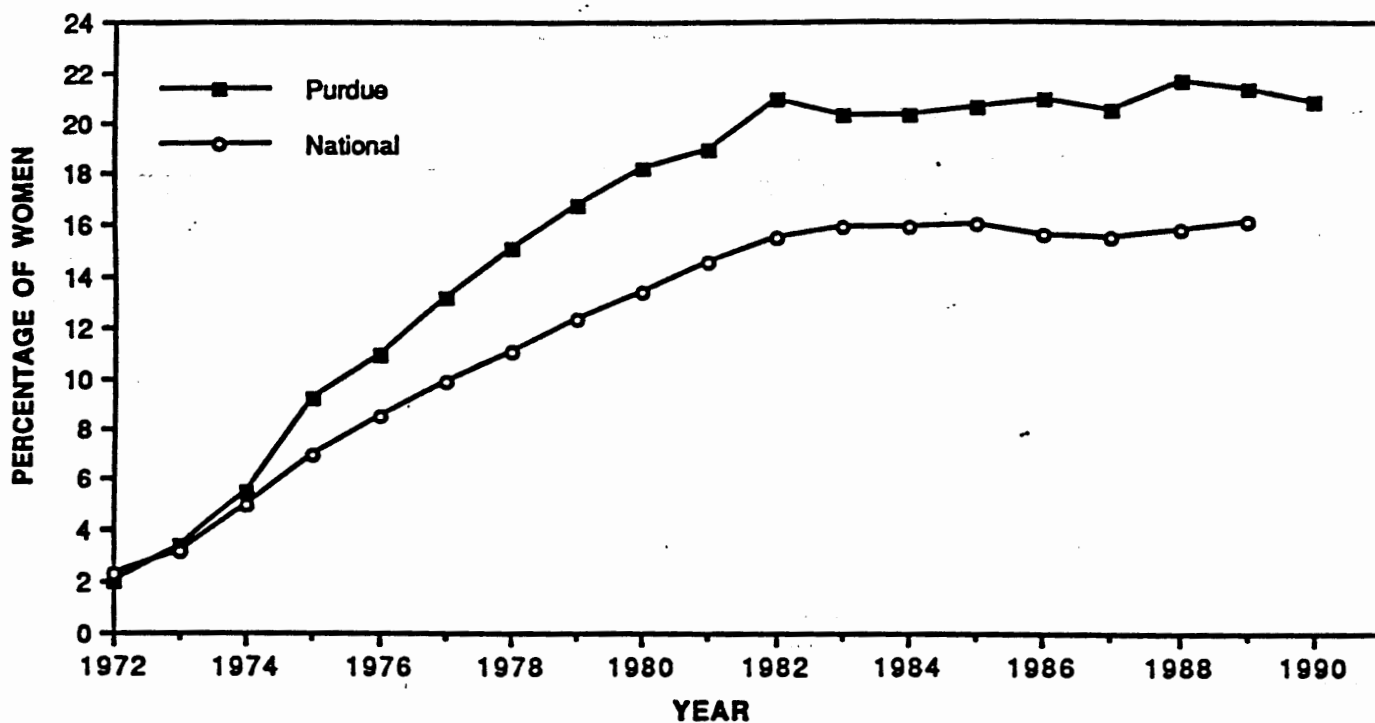
NATIONAL AND PURDUE TRENDS IN ENGINEERING ENROLLMENT FRESHMAN STUDENTS

Year	National Enrollment			Purdue Enrollment		
	Total No.	No.	Women %	Total No.	No.	Women %
1972	52,100	1,542	3.0	990	26	2.6
1973	51,925	2,417	4.7	1,111	64	5.8
1974	63,444	4,266	6.7	1,259	113	9.0
1975	75,343	6,730	8.9	1,550	223	14.4
1976	82,250	8,545	10.4	1,752	236	13.5
1977	88,780	9,921	11.2	1,582	265	16.8
1978	95,805	11,789	12.3	1,749	329	18.8
1979	103,724	14,031	13.5	1,696	343	20.2
1980	110,149	16,004	14.5	1,514	345	22.8
1981	115,280	18,238	15.8	1,578	318	20.2
1982	115,303	19,155	16.6	1,498	396	26.4
1983	109,638	18,689	17.0	1,523	364	27.2
1984	105,249	17,356	16.5	1,547	371	24.0
1985	103,225	17,037	16.5	1,612	366	22.7
1986	99,238	15,155	15.3	1,679	361	21.5
1987	95,453	15,004	15.7	1,659	351	21.2
1988	98,009	15,837	16.2	1,641	395	24.1
1989	95,420	15,532	16.3	1,625	354	21.8
1990	-----	-----	----	1,620	366	22.6

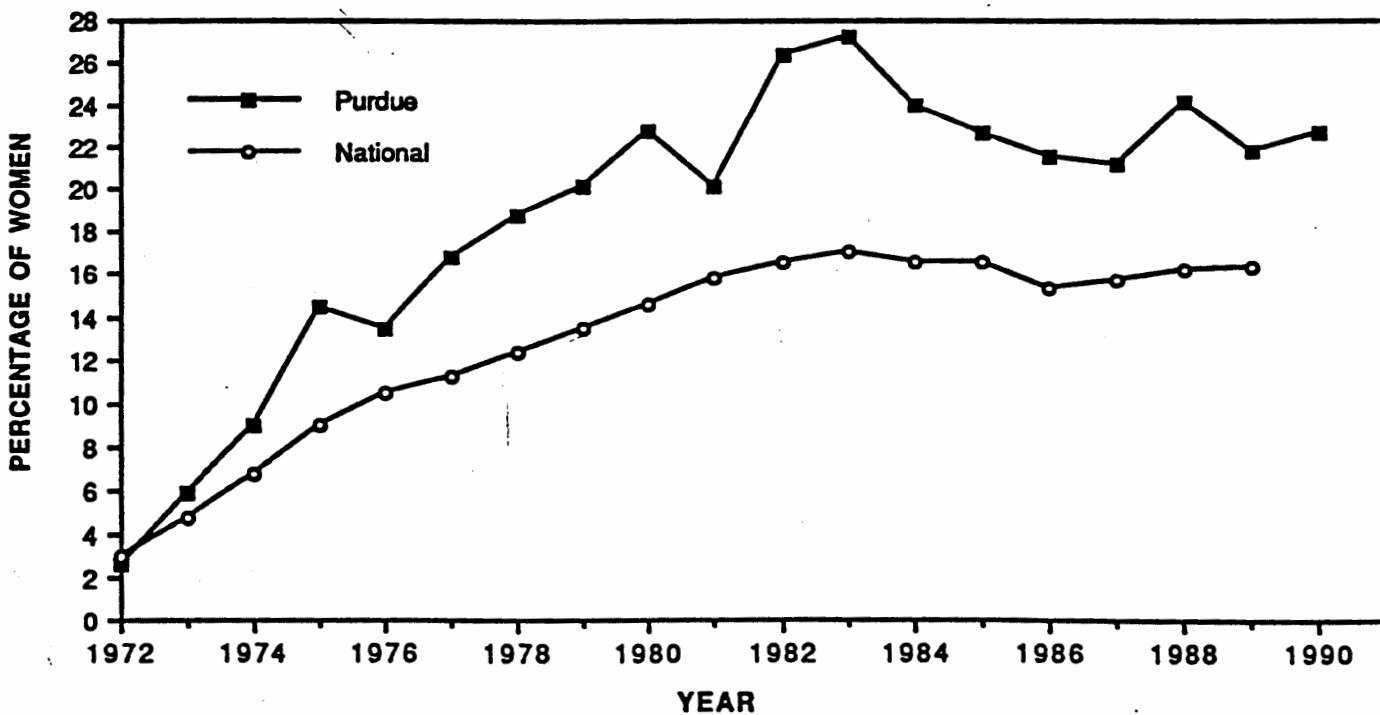
Source: Engineering Manpower Commission
American Association of Engineering
Societies, Inc.

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NATIONAL AND PURDUE TRENDS IN ENGINEERING ENROLLMENT FULL TIME UNDERGRADUATE STUDENTS



NATIONAL AND PURDUE TRENDS IN ENGINEERING ENROLLMENT FRESHMAN STUDENTS



WOMEN IN ENGINEERING B.S. DEGREES CONFERRED

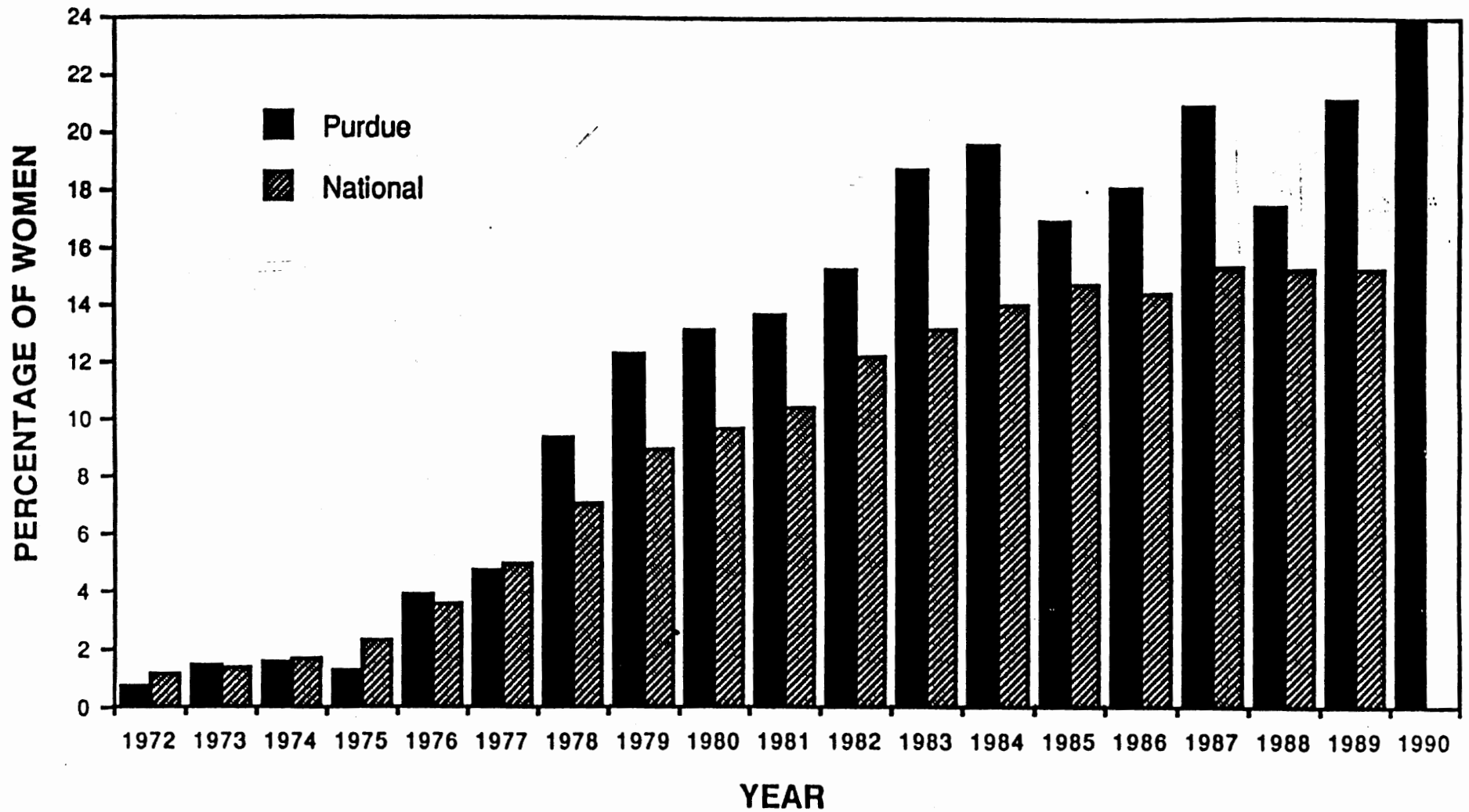
Year	National			Purdue*		
	Total No.	No.	Women %	Total No.	No.	Women %
1971-72	44,190	525	1.2	939	7	0.7
1972-73	43,429	624	1.4	952	14	1.5
1973-74	41,407	744	1.7	918	15	1.6
1974-75	38,210	878	2.3	896	12	1.3
1975-76	37,970	1,376	3.6	816	32	3.9
1976-77	40,078	1,961	4.9	912	43	4.7
1977-78	46,091	3,280	7.1	931	88	9.4
1978-79	52,598	4,716	8.9	1,116	137	12.3
1979-80	58,742	5,680	9.7	1,300	171	13.2
1980-81	62,935	6,557	10.4	1,298	178	13.7
1981-82	66,990	8,140	12.2	1,301	200	15.3
1982-83	72,471	9,566	13.2	1,432	269	18.7
1983-84	76,931	10,761	14.0	1,353	266	19.6
1984-85	77,892	11,493	14.7	1,264	214	16.9
1985-86	78,178	11,264	14.4	1,315	238	18.1
1986-87	75,735	11,675	15.4	1,258	263	20.9
1987-88	71,386	10,940	15.3	1,175	206	17.5
1988-89	68,824	10,529	15.3	1,142	242	21.2
1989-90	—	—	—	1,128	271	24.0

*Purdue's numbers do not include degrees received in Agricultural Engineering

Source: Engineering Manpower Commission
American Association of Engineering
Societies, Inc.

Office of the Registrar 12/90
Purdue University

NATIONAL AND PURDUE WOMEN IN ENGINEERING B.S. DEGREES CONFERRED



**Fall 1990
Purdue University**

**DISTRIBUTION OF WOMEN
BY CLASS AND ETHNIC CLASSIFICATION**

		AMERICAN INDIAN		BLACK NON- HISPANIC		HISPANIC		ORIENTAL AMERICAN		INT'L. STUDENTS		CAUCASIAN		TOTALS*
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
FR	1	1	.3	31	8.5	13	3.6	20	5.5	4	1.0	297	81.1	366
	2	-	-	-	-	1	20.0	-	-	-	-	4	80.0	5
SO	3	2	.7	35	12.3	7	2.4	9	3.2	4	1.4	228	80.0	285
	4	-	-	8	14.6	2	3.6	2	3.6	1	1.8	42	76.4	55
JR	5	-	-	12	4.9	9	3.6	11	4.5	3	1.2	212	85.8	247
	6	-	-	6	7.8	1	1.3	1	1.3	6	7.8	63	81.8	77
SR	7	-	-	14	7.5	2	1.1	9	4.8	2	1.1	160	85.5	187
	8	-	-	3	4.0	2	2.6	2	2.6	-	-	69	90.8	76
TOTALS		3	.2	109	8.4	37	2.9	54	4.2	20	1.5	1075	82.8	*1298

GRAND TOTAL *1298

*Does not include Agricultural Engineering Students

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