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Report to Congressional Requestors

October 1989

EQUAL EMPLOYMENT OPPORTUNITY

Women and Minority Aerospace Managers and Professionals, 1979-86

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Human Resources Division

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October 26, 1989

The Honorable Augustus F. Hawkins, Chairman
Committee on Education and Labor
House of Representatives

The Honorable Matthew G. Martinez, Chairman
Subcommittee on Employment Opportunities
Committee on Education and Labor
House of Representatives

The Honorable Ronald V. Dellums, Chairman
Subcommittee on Military Installations and Facilities,
Committee on Armed Services
House of Representatives

The Honorable Mervyn M. Dymally
House of Representatives

The Honorable Patricia Schroeder
House of Representatives

The Honorable Edward R. Roybal
House of Representatives

As requested in your letter of January 18, 1988, we have examined national data on equal employment opportunity (EEO) among government contractors in the aerospace industry. Over time, the House Committee on Education and Labor, which has oversight responsibility for enforcing EEO laws, has received numerous complaints on EEO matters from aerospace industry employees. A 1988 report by the Committee's majority staff,[1] based on a study done by the Congressional Research Service, noted EEO problems in eight large Los Angeles-area aerospace companies.

In addressing your request, we examined national EEO data on aerospace industry[2] contractors, seeking to learn whether

[1]House Committee on Education and Labor, A Report on EEO and Affirmative Action in the Southern California Aerospace Industry, Serial No. 100-Y, 100th Congress, 2d Session (1988).

[2]In this report, when we refer to the "aerospace industry" we mean only the government contracting portion of it and companies with at least $1 million in contracts.

1. representation of minorities and women in the aerospace industry has changed over time and

2. the representation of minorities and women in aerospace reflects their representation in the labor force.

We also attempted to learn whether minorities and women in aerospace receive pay similar to that received by white men for similar work.

In looking at trends in the employment status of women and minorities,[3] we focused on the 1979-86 period (1986 data were the latest available when we did our review). Our responses to your questions are limited, however, by the adequacy of the data available for the comparisons needed.

Background

The aerospace industry primarily produces aircraft, space vehicles, and missiles, and in 1986 it employed on average 1.27 million workers nationwide. About 62 percent of its products and services that year were purchased by the federal government, up from 49 percent in 1979.[4] Federal aerospace purchases totaled $6.4 billion in 1979, increasing to $27 billion in 1986 and $30.7 billion in 1987.[5]

With respect to EEO, the industry is subject to title VII of the Civil Rights Act of 1964[6] and Executive Order 11246 of 1965.[7] The former prohibits employment practices based on race, color, religion, sex, or national origin; the latter specifies that every government contract must include provisions prohibiting preference in employment on the same bases.

[3]In this report, we discuss three minority groups: blacks, Hispanics, and Asians. As the proportion of Native Americans in aerospace employment was too small to properly analyze (0.6 percent in 1979 and 0.5 percent in 1986), we did not include this group in most discussions of minorities.

[4]Aerospace Industries Association, Aerospace: Facts and Figures, 1987-88.

[5]Federal Procurement Data Center, General Services Administration. Figures are not adjusted for inflation or other factors.

[6]42 U.S.C. 2000e (1988).

[7]41 C.F.R. section 60(1988), reprinted in 42 U.S.C. 2000e.

Written affirmative action plans[8] are required of federal contractors and others with 50 or more employees and contracts of $50,000 or more.[9]

Two government entities monitor and enforce civil rights legislation relating to aerospace companies with federal contracts. The entities are (1) the Equal Employment Opportunity Commission (EEOC), the lead agency, and (2) the Office of Federal Contract Compliance Programs (OFCCP) in the Department of Labor's Employment Standards Administration. Both investigate complaints and review compliance. EEOC investigates individual complaints, while OFCCP investigates systemic or class allegations. They jointly collect legally required EEO information from employers and maintain a nationwide EEO database (discussed below), which we used in this study.

Methodology

For this report, we obtained data from the federal Joint Reporting Committee,[10] the Department of Commerce's Bureau of the Census, and the General Services Administration's Federal Procurement Data Center.

To determine the proportions of minorities and women employed in the aerospace industry in various job categories between 1979 and 1986 (study question 1), we used the Joint Reporting Committee's national EEO database. It represents about one-third of the civilian labor force, which includes all individuals employed, plus those not employed but seeking work. The database contains information on only (1) private employers with 100 or more employees who are subject to title VII of the Civil Rights Act of 1964 (as amended) and (2) federal contractors with 50 or more employees that have government contracts amounting to $50,000 or more. Also, we selected from the database only aerospace companies with $1 million or more in federal contracts. (For details on our sources of data and methods of analyses, see app. I).

[8]An affirmative action plan sets forth actions an organization intends to take to (1) overcome the effects of past and present discriminatory practices, policies, or other barriers to equal employment opportunity and (2) eliminate practices that treat individuals or groups of individuals differently because of their race, color, religion, sex, or national origin. The plan must include a detailed analysis of work force utilization for all occupations and occupational levels. Where there is a clear imbalance in the representation of any group in a job category, the organization must calculate specific goals and timetables and specify actions it will take to eliminate or modify personnel practices, policies, and procedures that adversely affect or otherwise impede full equal employment opportunity for the group.

[9]41 C.F.R. section 60-1.40 (1988).

[10]The federal Joint Reporting Committee consists of representatives of EEOC and the OFCCP, which jointly collect, maintain, and use these EEO data.

To learn whether the representation of minorities and women in aerospace reflected their representation in the labor force (study question 2), we compared them with the remainder of the Joint Committee's national EEO database other than the aerospace establishments we selected for this study.[11] This analysis may favor aerospace companies in that it compares them with similarly sized companies that may not have better EEO profiles, rather than with the full civilian labor force. We could not use the civilian labor force as a comparison group because the Census data on which it is based do not include each minority group, broken out by gender, for each year from 1979 to 1986.

Although the national EEO database contains information on nine broad job categories (managers, professionals, technicians, sales workers, office/clerical workers, craft workers, semiskilled workers, laborers, and service workers) it does not cover specific job titles, e.g., mechanical engineers or accountants. In examining such broad categories, there is a risk of comparing highly specialized "professionals" from the aerospace industry (which may have unusual requirements) with a broad mix of "professionals" in the national EEO database. The labor pools may be dissimilar. We lacked sufficient information on the relevant labor pools, such as engineers, from which aerospace companies draw their employees. Industry representatives cited the scarcity of minorities and women in the hiring pools, particularly in technical fields, as the main reason their representation did not increase during the period.

We made these broad comparisons, however, because (1) these were the categories available, (2) federal oversight agencies use these data in their enforcement of equal employment opportunity, and (3) data were not available from the aerospace industry on the specific job titles, such as electrical engineer or accountant, covered by the broad job categories. While reviewing all nine aerospace job categories available in the EEO database, we focused on managers and professionals.[12] This was primarily because the Committee on Education and Labor had received the most complaints from employees in those categories and expressed the most interest in them.

[11]The data on this remaining EEO database are discussed in app. II and contrasted with Census data, which usually are used in labor force comparisons. The two databases were essentially similar, we found.

[12]Managerial personnel set broad policies, exercise overall responsibility for execution of these policies, and direct individual departments or special phases of a firm's operations. Professional occupations are those requiring either college graduation or experience of such kind and amount as to provide a comparable background. (Source: Joint Reporting Committee)

For both of the first two issues you asked us to address, we used the Joint Committee's EEO database to calculate descriptive statistics (numbers and percentages) on minorities and women from 1979 to 1986 in various broad job categories. In addition to examining all aerospace establishments[13] nationwide, we looked at small, medium, and large aerospace establishments nationwide, and establishments in the two largest local aerospace job markets—Los Angeles and Seattle. We then compared the representation of minorities and women in aerospace jobs with their representation in the national EEO database over time for the nation and for Los Angeles and Seattle. We analyzed the data by racial/ethnic group (whites, blacks, Hispanics, and Asians), by gender, and (at the greatest level of detail available in the database), by racial/ethnic groups of women and men, such as black women and Hispanic men.

Concerning the third study question, regarding pay similarities, we found no nationwide database with which to compare aerospace salaries received by minorities and women and those received by white men for similar work. Consequently, we developed case studies of compensation equity and employment representation in four establishments of the largest aerospace companies, using data on managers and professionals provided by the companies for the period 1979-87. Two limitations of these data should be kept in mind when evaluating the results reported in the next section:

1. The data are not representative of the 372 establishments that we identified as being in the aerospace industry.

2. Even within the four cases, we could not draw conclusions because we were unable to account for employees' education or years of experience, factors that frequently affect salary.

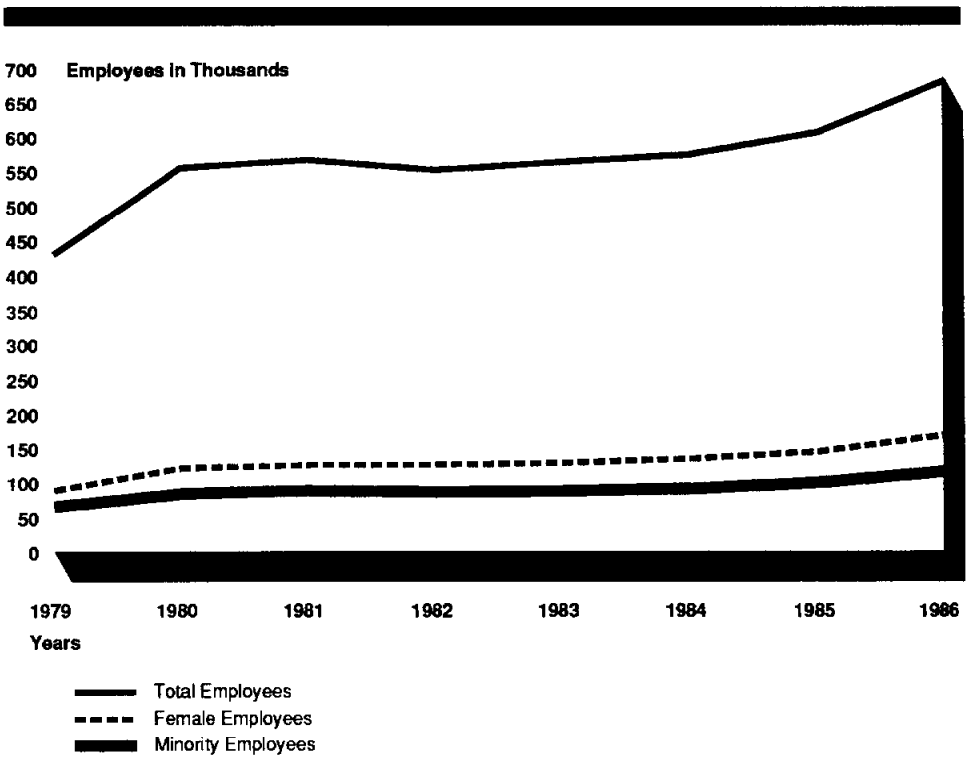
Our results are summarized in this letter and presented in more detail in the appendixes. Because of time limitations, we did not independently verify the data collected from the nationwide databases or the four establishments where we did case studies. Otherwise, our review, done between April and December 1988, was carried out in accordance with generally accepted government auditing standards.

[13]Establishment refers to a particular plant, unit, site, or place of business of a company.

Results

Considering the nine job categories in the EEO database as a whole, minority groups and women increased slightly in aerospace employment nationwide between 1979 and 1986 (see fig. 1).

Figure 1: Total, Minority, and Female Employees in the Aerospace Industry Nationwide (1979-86)



Most Racial/Ethnic Groups Were Less Represented in Aerospace Industry When Compared With the National EEO Database

During the 1979-86 period, blacks, Hispanics, and Asians as groups across all job categories had less representation in the aerospace industry than in the national EEO database (see app. III for details). Asians doubled in representation (although remaining a small percentage), while the other minority groups progressed slightly.

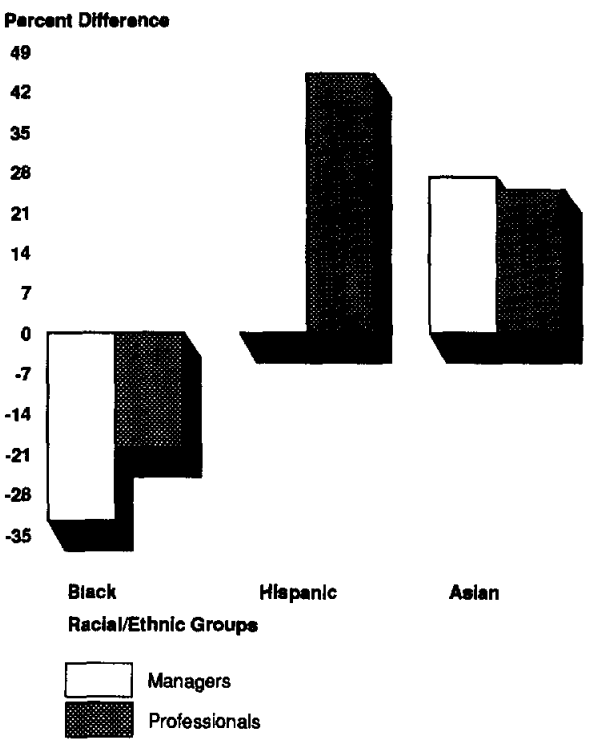
Our other findings on racial/ethnic groups in the aerospace work force during the 1979-86 period include the following:

- As of 1986, of the total aerospace employees nationwide, 83 percent were whites, about 8 percent blacks, about 5 percent Hispanics, about

3 percent Asians, and fewer than 1 percent Native Americans. These percentages had remained relatively the same since 1979.

- Also in 1986, blacks comprised 3.2 percent of aerospace industry managers, less than their representation in the national EEO database workforce—4.7 percent. Asians were more represented (1.9 percent in aerospace, 1.5 percent in the national EEO database), and Hispanics had the same representation—2.5 percent—in both. These proportions changed little over the period.
- Among professionals, blacks, Hispanics, and Asians increased their representation in comparison with their national counterparts. But in 1986, blacks remained at a lower representation, 3.8 percent, than the 4.7 percent in the national EEO database, while Hispanics (3.1 and 2.1 percent) and Asians (5.4 and 4.3 percent) were more represented in aerospace than in the national EEO database. (See fig. 2).

Figure 2: Representation of Aerospace Minority Managers and Professionals Nationwide Compared With the National EEO Database (1986)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Bars above this point indicate higher representation, while bars below indicate less representation than in the national EEO database.

- Size of establishment generally made little difference in EEO patterns for racial/ethnic minorities in management and professional jobs.
- Of minority managers and professionals in our four case studies, Asians were best paid on average relative to white men, ranging from 88 to 96 percent of white men's salaries in 1987, followed by Hispanics (at 80-89 percent) and blacks (74-87 percent). We were unable to account for education and years of experience. (For complete data on the percentage of the average white males' salaries that minority groups earned, along with comments by the companies, see app. IV).

Women Made Some Gains, but Generally Lagged Behind Men

While women in aerospace made some gains between 1979 and 1986, they were less represented as managers and professionals than in the national EEO database and paid less on average than white men in our four case studies. Again, we were unable to account for education or years of experience. (For specifics on women's EEO patterns, see app. V). In aerospace during the period examined:

- Women increased from 21 to 25 percent of the aerospace work force between 1979 and 1986, although they were 45 percent of the workers in the national EEO database (40 percent in 1979).
- Women predominated in office/clerical jobs, holding three-quarters of them in 1986. Women were least represented in managerial, professional, and craft jobs.
- While women's share of managerial and professional jobs almost doubled, they were still a marked minority, achieving 7.3 percent of managerial and 16.3 percent of professional jobs by 1986. Women in the national EEO database achieved 18.7 percent of managerial and 38.1 percent of professional jobs by 1986. (See app. VI for detailed data on aerospace employment by job category, gender, and race/ethnicity).
- All racial/ethnic groups of female aerospace managers and professionals were substantially less represented in relation to the national EEO database. Although women increased in managerial and professional aerospace jobs, white women accounted for most of the increase. The percentage of white women almost doubled from 3.4 to 6.2 percent of managers, while in the national EEO database the percentages were 16.3 and 22.3. Black, Hispanic, and Asian female managers in the aerospace industry each remained at or below 0.5 percent. These groups were at 1.9, 0.8, and 0.5 percent in the national EEO database in 1986. From 1979 to 1986, white females increased from 7.0 to 13.4 percent of professionals in the aerospace industry, but from 32.5 to 39.6 percent of professionals in the national EEO database. Black females increased from 0.5 to 1.1 percent of aerospace professionals, Hispanic females from 0.3 to 0.6

percent, and Asian females from 0.3 to 1.1 percent. In the national EEO database as of 1986, black females were at 2.8 percent of professionals, Hispanic females at 0.9 percent, and Asian females at 1.9 percent.

- The size of the aerospace firm or establishment made little difference in EEO patterns by gender, although women and white women who were managers fared somewhat better in small aerospace establishments.
- Female managers and professionals earned less on average than white men at our four case study firms, although the gap narrowed from 1979 to 1987. In 1987, among managers, females' average salaries ranged from 72 to 83 percent of those for white males; among professionals, from 75 to 82 percent. When we examined average salaries for entry-, middle-, and upper-level managerial women in two establishments, we found that the disparity from white men was less at the entry and middle levels than in the managerial category overall. In both establishments, there were too few upper-level women to make this comparison and too few minority women managers to make the comparison by minority group.

Most Groups of Minority Men Increased in Representation, but Proportions Remained Low

In 1986, white men comprised at least two-thirds of the employees in five of nine aerospace job categories nationwide (managers, craft workers, professionals, salespeople, and technicians). (For specifics on the EEO patterns of male racial/ethnic groups, see app. VII.)

Examining racial/ethnic EEO patterns among men in aerospace for the 1979-86 period, we found that:

- Black, Hispanic, and Asian male managers increased their percentages slightly, but their proportions remained low. In 1986, blacks comprised 2.7 percent of managers, Hispanics 2.2 percent, and Asians 1.7 percent. Compared with managers in the national EEO database, Asian, white, and Hispanic men in the aerospace industry had better representation, while black men were less represented.
- Black and Hispanic males stayed nearly the same, about 2.4 percent of professionals, but the Asian males' share increased by nearly half to 4.3 percent in 1986. Compared with professionals in the national EEO database, all three groups in the aerospace industry were better represented.

At the four aerospace establishments that gave us salary data, the average salaries of male minority managers and professionals were less than those of white men from 1979 to 1987. Average salaries for black male

managers ranged from 75 to 86 percent of those for white male managers in 1987, for Hispanic male managers from 81 to 88 percent, and for Asian male managers from 90 to 97 percent.

Among aerospace professionals, the average salaries of black males ranged from 85 to 91 percent of those for white males in 1987. The range for Hispanic male professionals was 87-92 percent and for Asian male professionals, 95-100 percent.

When we examined average salaries according to levels of managers for minority men in two establishments, we noted that the difference between white men at the entry and middle levels, and in one case at the upper level, was less than that for managers overall. Only one establishment had enough upper-level managers who were minority men to make this comparison.

Local Aerospace Employment: Los Angeles and Seattle

In addition to calculating descriptive statistics for minorities and women, we analyzed employment patterns for aerospace managers and professionals in Los Angeles and Seattle by comparing minority groups and women in these job categories with the Los Angeles and Seattle portions of the national EEO database. In discussing the results of these analyses, we highlight findings that differed from the results of our comparison of the nationwide aerospace industry with the national EEO database. (See app. VIII for a discussion of these results.) Among our findings on the aerospace industry in these markets for this period were the following:

- Los Angeles had higher percentages of minority managers and professionals than the aerospace industry nationwide, but except for Asians Seattle had lower proportions. However, Los Angeles minority managers and professionals were less represented than in the Los Angeles portion of the EEO database. In Seattle, all groups but Hispanic and Asian professionals were less represented than in the Seattle portion of the EEO database. In contrast, when comparing minorities nationwide with the national EEO database, only blacks were less represented as managers and professionals.
- Women comprised a higher percentage of aerospace managers and professionals in Los Angeles than in the aerospace industry nationwide and their percentage had increased at a faster rate. Nevertheless, as we found for national aerospace women, in comparison to the national EEO database Los Angeles aerospace women were less represented relative to

the Los Angeles portion of the national EEO database. In Seattle, the proportion of women declined sharply in the early 1980s but has been gradually increasing since then. Women in Seattle aerospace were also less represented relative to the Seattle portion of the national EEO database.

- In the Los Angeles aerospace industry, the representation of minority female managers and professionals was less than their representation in the national EEO database. These Los Angeles minority women were less represented in relation to their local area at about the same level as national minority women were less represented relative to the national EEO database. Very few minority female managers and professionals were employed in the Seattle aerospace industry in the early years of the period studied, although their numbers increased slightly by 1986. They were less represented than in the Seattle portion of the national EEO database. These Seattle minority women were substantially less represented in relation to their local area than national minority women were in relation to the national EEO database.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, copies will be made available to the Chairman of the EEOC, the Director of the OFCCP, interested congressional committees, and others upon request.

The major contributors to this report are listed in appendix IX.

Sincerely yours,

Linda G. Morra

Linda G. Morra
Director, Select Congressional Studies

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Figures

Abbreviations

EEO	Equal Employment Opportunity
EEOC	Equal Employment Opportunity Commission
OFCCP	Office of Federal Contracts Compliance Program

GAO's Sources of Data and Methods of Analysis

To perform this study, we obtained and analyzed nationwide equal employment opportunity data from files maintained by the federal Joint Reporting Committee. This independent committee consists of representatives of the Equal Employment Opportunity Commission and the Office of Federal Contract Compliance Programs, both of which use the information to monitor EEO compliance.

In addition, we used information from the Bureau of the Census in the Department of Commerce and the Federal Procurement Data Center of the General Services Administration. Our data on salaries were drawn from case studies we conducted of four large aerospace establishments.

Companies in EEO Database Self-Classified

Information in the Joint Reporting Committee's national EEO database is obtained from (1) U.S. employers with 100 or more employees and (2) federal contractors with 50 or more employees and contracts of $50,000 or more. Under title VII of the Civil Rights Act of 1964, as amended, employers must submit annual data on the sex, race, and ethnicity of their employees. Such data are required for nine job categories (managers, professionals, technicians, sales personnel, laborers, and office and clerical, craft, semiskilled, and service workers). Also, employers must identify their type of business, using Department of Commerce standard industrial classifications. The Joint Committee's national EEO database does not fully represent the civilian labor force, which includes all those employed plus those not employed but seeking work. On the basis of 1980 data, the national EEO database represents about one-third of the civilian labor force and about one-half of private employers.

To gather aerospace industry data from the national EEO database, we used a three-step process:

1. We selected only company establishments that had identified themselves in 1986 with either of two standard industrial classifications: aircraft and parts or guided missiles and space vehicles and parts. Because we had to rely on the primary self-classification of the companies, some that performed aerospace-related work but were classified under other categories (such as computers or electronics) were not included in this study as aerospace companies.

2. We then matched employer identification codes with those in the Federal Procurement Data Center's databases for 1986 to determine which establishments were part of companies that received federal contracts totaling at least $1 million.

3. By tracking the 372 company establishments thus selected (referred to in this report as aerospace establishments) from the Joint Reporting Committee's database, we obtained their 1979-86 EEO data.

For some analyses, we stratified the aerospace establishments by number of employees into small (50 to 999 employees), medium (1,000 to 9,999), and large (10,000 or more).

EEO Database Used for Labor Market Comparison

Although usually Bureau of the Census data are drawn upon in analyses of the "labor market", such data were unavailable at the level of detail we required, that is, for men and women of various racial and ethnic groups in various job categories from 1979 to 1986. For our labor market comparison with the aerospace EEO data that we had identified, therefore, we used another source. This was the remainder of the Joint Reporting Committee's national EEO database containing 33.6 million employees nationwide in 1979 and 31.9 million in 1986 (see app. II for specifics on both the Joint Reporting Committee's and Bureau of the Census' work force data for 1980). In this report, we refer to these employees as the "national EEO database." We used the same national EEO database to make labor market comparisons in Los Angeles and Seattle.

The Joint Committee's national EEO database includes information on nine broad job categories, such as managers and professionals, but not on specific job titles, such as mechanical engineers or accountants. Caution must be used when examining comparisons of such broad categories, particularly in the case of an industry such as aerospace, which may have unusual demands for highly specialized workers. For example, one risks comparing specialized "professionals" from aerospace to a broad mix of "professionals" in the national EEO database. In short, the relevant labor pools for aerospace "professionals" may not be the same as for "professionals" in the rest of the national EEO database.

Notwithstanding, we used these broad comparisons because (1) these were the categories available, (2) federal oversight agencies use these data in their EEO enforcement activities, and (3) data were unavailable from the aerospace industry on specific job titles, such as electrical engineers or accountants, covered by the broad job categories. Although we obtained data on nine broad job categories, we focused on two—managers and professionals—because the House Committee on Education and Labor received the most complaints from employees in those categories and expressed particular interest in them.

Data on Percentage of Engineers in Aerospace Lacking

We obtained data on the numbers of minorities and women among recent bachelor-level engineering graduates from the American Society of Engineering Councils. Such graduates may be viewed as constituting the pool of entry-level workers for scientific and technical positions in the industry, according to aerospace officials. However, aerospace industry representatives lack data on the proportion of professionals and managers who are engineers. Thus, we could not adjust for representation in the engineering graduate pool.

Local Labor Markets Analyzed

To learn whether the representation of minorities and women in the aerospace industry reflected their representation in the local geographic areas of the national EEO database, we analyzed data for Los Angeles and Seattle (which had the largest concentrations of aerospace employees) the same as we did for the national EEO database. We discuss the results in terms of our findings from similar nationwide analyses. To avoid repetition, however, we present graphic depictions in this report only when the local findings differed from the national results.

Case Studies on Salary Developed

No nationwide salary database exists for us to use in conjunction with EEO and employment classification data. Therefore, the House Committee on Education and Labor asked that we examine compensation equity through case studies of four aerospace establishments located in a large metropolitan area. To do so, we reviewed company-provided compensation and EEO data for all employment categories, but focused our reporting on two categories—managers and professionals.

Discussions with officials of the four companies and review of materials, such as parts of affirmative action plans and descriptions of special programs to assist women and minorities, completed our case study work. Because these case studies were intended as illustrations of EEO issues and not as audits of these companies' EEO compliance, we do not reveal the identity of the companies either directly or indirectly. (Conceivably, companies could be identified indirectly through certain data, such as the number of employees or their location; therefore, we have not presented this information.) The results of these case studies cannot be construed as being representative of the entire aerospace industry.

Analyses Presented

For both of the first two issues we addressed, we used the Joint Committee's EEO database to calculate descriptive statistics; that is, numbers

and percents of minorities and women from 1979 to 1986 in the aerospace industry in various broad job categories. We looked at (1) all establishments nationwide; (2) small, medium, and large aerospace establishments nationwide; and (3) establishments in the two largest local aerospace job markets—Los Angeles and Seattle. We then compared the representation of minorities and women in aerospace jobs with their representation in the remainder of the national EEO database over time, and for the Los Angeles and Seattle portions of the national EEO database. We analyzed the data by racial/ethnic groups (whites, blacks, Hispanics, and Asians), by gender, and (at the greatest level of detail available in the database) by racial/ethnic groups of women and men, such as black women and Hispanic men.

Distribution of Employees in the Nation: EEO Database and Census Data Compared by Gender, Race/Ethnicity, and Job Category

In comparing EEO data for a minority group or industry, one frequently used source of labor market information is Bureau of the Census labor data. However, we did not use Census information because it lacked the level of detail we required for the years covered in our review. Instead, we used the remainder of the Joint Reporting Committee's national EEO database (described in app. I) after we had selected aerospace contractors.

But similarities exist in many categories of both databases, despite several methodological differences between them, as table II.1 shows. For example, the Census data are self-reported by employees working in companies of all sizes, while the Joint Reporting Committee data are employer-reported from companies with more than 100 employees (or 50 employees if federal contractors).

Table II.1: Distribution of Employees in the Nation: EEO Database and Census Data Compared by Gender, Race/Ethnicity, and Job Category (1980)

All figures are percents

	Total		Nonminority		Black		Hispanic		Asian	
	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database
Total employed civilian labor force										
Totals	100.0	100.0	82.2	81.0	9.9	11.6	5.7	5.4	1.6	1.5
Men	57.5	58.8	47.9	48.3	5.0	6.1	3.4	3.3	0.9	0.8
Women	42.5	41.2	34.3	32.7	4.9	5.5	2.3	2.1	0.8	0.7
Officials and managers (11.6%/11.0% of total workforce)[a]										
Totals	100.0	100.0	91.0	92.5	4.2	4.0	3.1	2.2	1.3	1.0
Men	75.0	81.3	68.9	75.9	2.6	2.8	2.3	1.7	1.0	0.7
Women	25.0	18.7	22.1	16.7	1.5	1.3	0.8	0.5	0.4	0.2
Professionals (13.4%/9.3%)										
Totals	100.0	100.0	87.1	89.9	7.0	4.4	3.0	1.9	2.5	3.6
Men	52.0	61.9	46.3	56.5	2.4	1.9	1.5	1.2	1.5	2.1
Women	48.0	38.1	40.8	33.4	4.5	2.5	1.4	0.7	1.0	1.4
Technicians (2.9%/5.4%)										
Totals	100.0	100.0	84.3	84.9	8.3	8.8	3.8	3.5	3.0	2.5
Men	57.3	59.5	49.7	51.9	3.1	3.7	2.3	2.1	1.8	1.5
Women	42.7	40.5	34.5	33.0	5.2	5.1	1.5	1.4	1.2	1.0
Sales workers (8.8%/9.0%)										
Totals	100.0	100.0	88.7	87.8	5.3	7.1	4.2	3.8	1.4	1.0
Men	48.5	47.3	44.0	42.1	1.9	2.8	1.8	1.8	0.6	0.5
Women	51.5	52.8	44.7	45.7	3.4	4.4	2.3	2.1	0.8	0.5
Office and clerical workers (17.0%/15.9%)										
Totals	100.0	100.0	83.0	82.1	9.9	11.2	5.0	4.6	1.6	1.7
Men	22.9	17.2	18.3	13.6	2.6	2.0	1.4	1.0	0.5	0.4
Women	77.1	82.9	64.7	68.5	7.2	9.2	3.6	3.6	1.1	1.3
Craft workers (12.1%/12.3%)										
Totals	100.0	100.0	85.7	85.1	6.8	8.4	5.9	5.2	0.9	0.8
Men	93.5	90.4	80.5	77.8	6.1	7.1	5.4	4.5	0.8	0.6
Women	6.5	9.6	5.2	7.3	0.7	1.4	0.5	0.7	0.1	0.2
Semiskilled workers (15.2%/20.2%)										
Totals	100.0	100.0	75.1	75.0	13.8	16.2	8.9	7.1	1.4	1.2
Men	67.4	67.0	52.1	51.2	8.7	10.3	5.5	4.6	0.6	0.5
Women	32.6	33.0	23.1	23.8	5.1	5.9	3.4	2.5	0.8	0.6

(continued)

	Total		Nonminority		Black		Hispanic		Asian	
	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database	Census labor force	EEO database
Laborers (5.9%/7.9%)										
Totals	100.0	100.0	72.7	66.7	14.4	19.4	10.8	12.2	1.2	1.2
Men	85.4	65.9	62.0	43.6	12.3	12.9	9.3	8.4	1.0	0.6
Women	14.6	34.1	10.7	23.1	2.1	6.5	1.5	3.8	0.2	0.5
Service workers (13.1%/9.1%)										
Totals	100.0	100.0	72.8	67.4	17.4	22.4	7.1	7.9	1.9	1.8
Men	41.1	44.9	29.8	29.0	6.5	10.1	3.5	4.7	0.9	0.9
Women	58.9	55.1	43.0	38.4	10.9	12.4	3.6	3.3	1.0	0.9

Note: This table excludes other racial/ethnic minorities because they accounted for a very small percentage in most categories and we could not perform our study's analyses on them. For this reason and because the numbers in this table have been rounded, some categories may not total 100 percent.

Sources: (1) Bureau of the Census data were obtained from EEOC, which had reconfigured the data from the 12 Census job categories into the nine Joint Reporting Committee job categories. The Census database for 1980 comprises 103.7 million employees. (2) The data on all industries other than the aerospace contractors we selected were drawn from the Joint Reporting Committee's database for 1980, which contains 33.7 million nonaerospace employees.

[a]First percentage in parentheses is according to Census, the second according to the Joint Reporting Committee National EEO database.

Some Progress Made by Most Minorities in Filling Aerospace Industry Jobs

By most measures, the racial/ethnic minority groups we studied (blacks, Hispanics, and Asians) were less represented in the aerospace industry than in the national EEO database in 1986. Each group comprised under 10 percent of the aerospace work force. Except for Asians, there was little improvement in minorities' percentages in that industry between 1979 and 1986, according to our analysis of EEO data from the federal Joint Reporting Committee. The shares accounted for by blacks and Hispanics varied little, while whites' share decreased slightly. Asians doubled in percentage, although it was still low—3.2 percent. During this period, total aerospace employment increased by 58 percent, from 430,383 workers in 1979 to 678,780 in 1986 (see fig. III.1). Among our other findings:

- Racial/ethnic minorities comprised a small percentage of aerospace managers and professionals during the period studied. In 1986, about 8 percent were blacks, about 5 percent Hispanics, and about 3 percent Asians.
- In aerospace management positions, when compared with the national EEO database, blacks were less represented, while Hispanics and Asians were better represented over the period.
- Among aerospace professionals, blacks and Asians increased representation when compared with the national EEO database, although blacks remained less represented and Asians became fully represented.
- Size of establishment generally made little difference in EEO patterns for racial/ethnic minorities in aerospace management and professional jobs.
- Minority managers and professionals in our aerospace case studies in 1987 were paid less than white men in the same jobs. Asians were best paid on average, followed by Hispanics and blacks. In some instances, Asians earned more on average than white males in such jobs.

Aerospace Industry Nationwide: Little Progress for Blacks and Hispanics

In aerospace employment nationwide, the percentage of blacks (8 percent) and Hispanics (5 percent) remained about the same between 1979 and 1986, but the proportion of Asians almost doubled, from 1.7 to 3.2 percent (see figs. III.2 and III.3). Whites comprised 84.8 percent of all aerospace employees in 1979 and 83.0 percent in 1986.

Most aerospace employees worked as either professionals or craft workers in 1986. Whites comprised at least 88 percent of salespeople, managers, and professionals (see table III.1). Minorities were employed in a higher percentage of service, semiskilled, and laborer positions than other positions. These patterns have changed little since 1979, as the

Figure III.1: Total Minority Employment in Aerospace Companies Nationwide (1979-86)

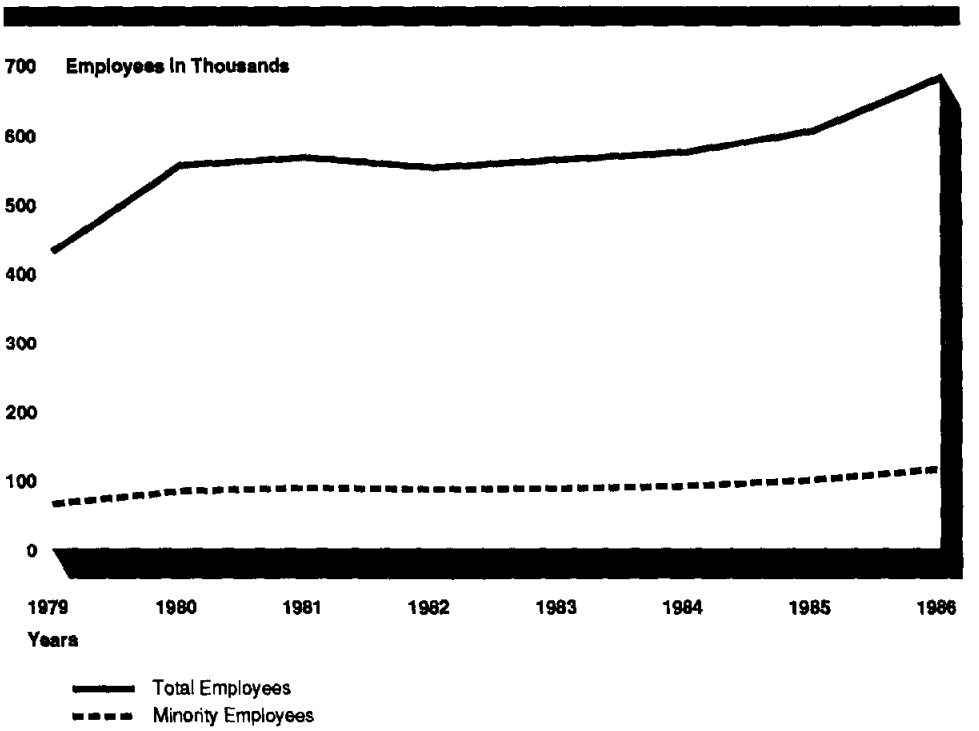


table indicates. Asians showed the most dramatic increases, nearly doubling in representation. Nevertheless, their share of aerospace jobs was small, rising from 1.7 to 3.2 percent. Asians usually were fully represented in comparison with the EEO database in both the nation and two local areas—Los Angeles and Seattle (see table III.2).

Table III.1: Predominant Race/Ethnicity of Aerospace Employees Nationwide, by Job Category (1979 and 1986)

	Percent of all aerospace employees				
Job category	1979	1986	Predominant race/ethnicity	1979	1986
Managers	12	13	White	94	92
Professionals	26	30	White	91	88
Technicians	7	8	White	87	84
Sales workers	<1	<1	White	94	94
Office/clerical	13	12	White	83	79
Craft workers	21	19	White	85	83
Semiskilled workers	17	15	White	72	71
Laborers	2	2	White	74	77
Service workers	1	2	White	65	66

Figure III.2: Racial/Ethnic Groups in Aerospace Employment Nationwide (1979-86)

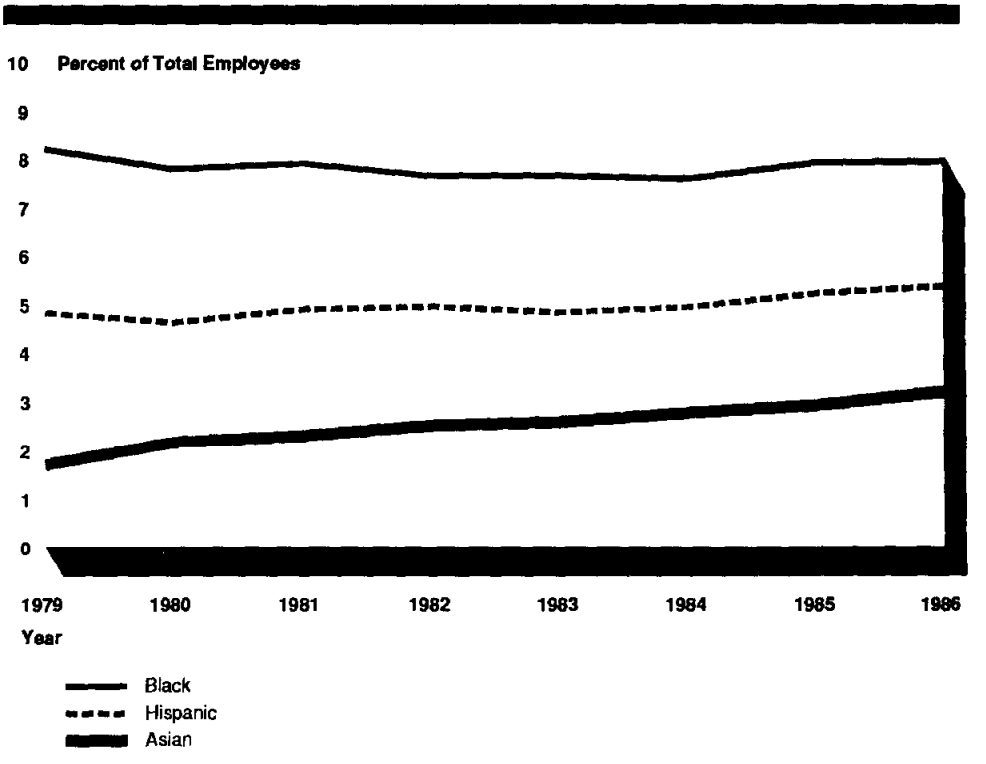


Table III.2: Distribution of Racial/Ethnic Groups in the Nation and Aerospace Industry (1979 and 1986)

	Representation (percent)									
	Nation[a]				Aerospace[b]					
	Population[c]		EEO database		National		Los Angeles		Seattle	
Racial/ethnic group	1979	1986	1979	1986	1979	1986	1979	1986	1979	1986
White	86	85	81	79	85	83	74	71	92	90
Black	12	12	12	12	8	8	12	11	2	4
Hispanic	5	8	5	6	5	5	9	11	2	1
Asian	2	3	1	2	2	3	4	7	3	4

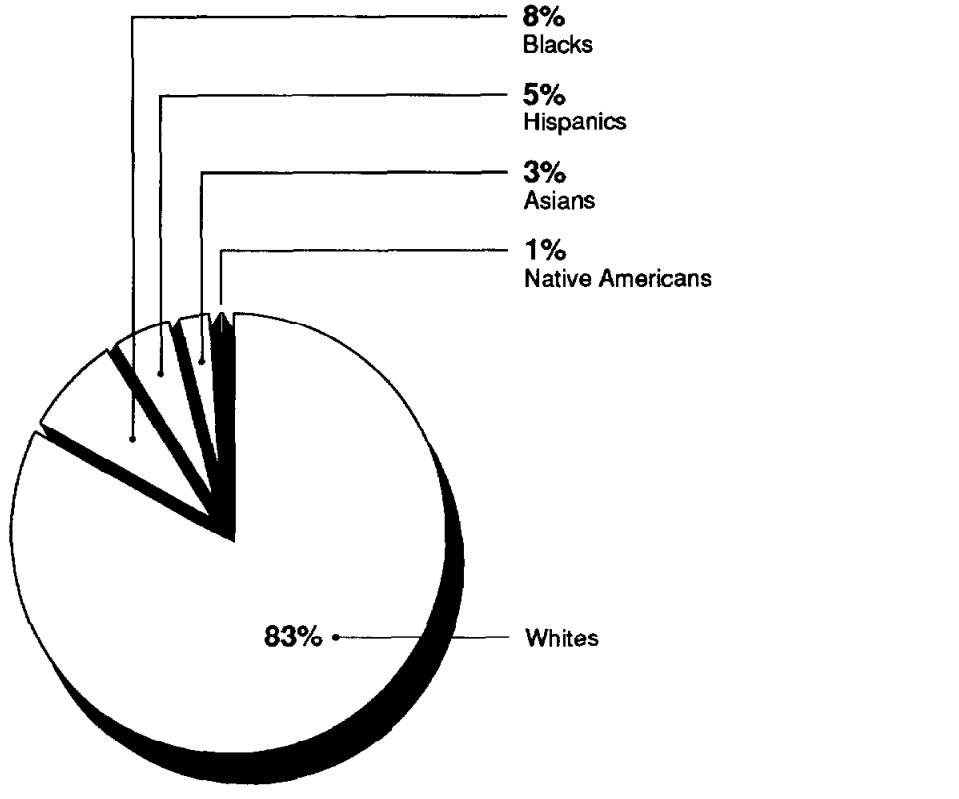
[a]Source: Joint Reporting Committee (EEO data on employees remaining after we selected aerospace establishments)

[b]Source: Joint Reporting Committee (EEO data on aerospace industry employees)

[c]Source: Bureau of the Census (Data are collected from households according to Census criteria for nonmutually exclusive racial and ethnic categories. Data in the Joint Reporting Committee database are collected from employers in mutually exclusive categories.)

Minority managers and professionals comprised less than 13 percent of aerospace employees in each category in 1986 (see fig. III.4)

Figure III.3: Total Aerospace Employment Nationwide, by Racial/Ethnic Group (1986)

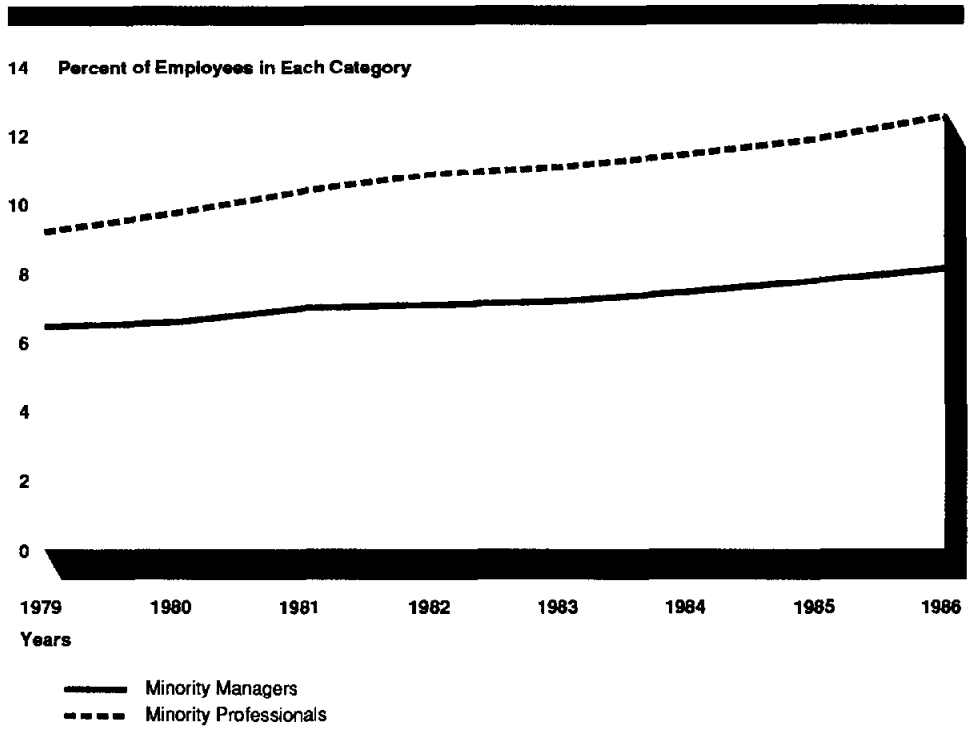


Note: Native Americans comprised less than 1 percent of aerospace employees and are not highlighted in our analyses.

While whites held over 90 percent of managerial positions during the 1979-86 period, the three minority groups we examined each remained at from 1 to 3 percent (see fig. III.5 for a breakout of the three groups). Hispanics in these jobs increased by 18 percent (from 2.1 to 2.5 percent) and blacks by 18 percent (from 2.7 to 3.2 percent). But Asian managers, while they constituted the smallest percentage of the ethnic groups, showed the greatest change. They increased by 73 percent, from 1.1 to 1.9 percent from 1979 to 1986.

About 90 percent of aerospace professionals were white over the 1979-86 period, but their percentage decreased slightly. Blacks and Hispanics each increased slightly, from 2.9 to 3.8 percent for blacks, and from 2.5 to over 3 percent for Hispanics. As with managers, Asian professionals

Figure III.4: Minority Managers and Professionals in Aerospace Employment (1979-86)



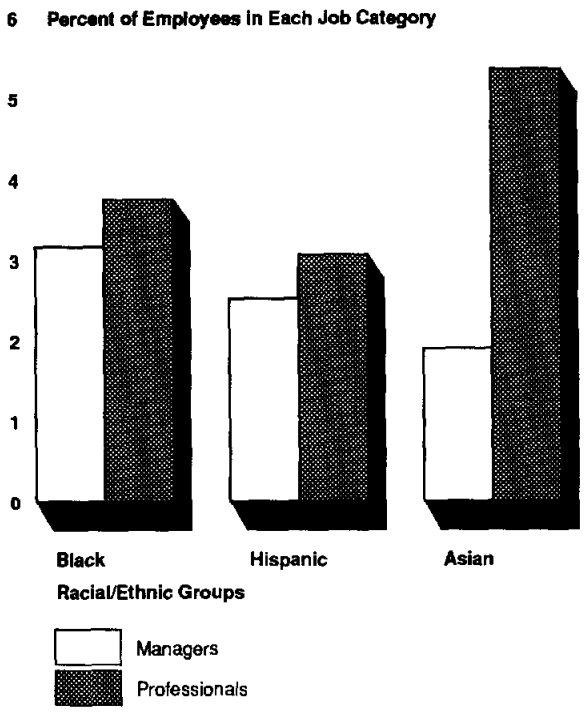
in aerospace experienced the most change relative to 1979, increasing by 64 percent, from 3.3 to 5.4 percent.

Blacks in Aerospace Industry Less Represented in Comparison With National EEO Database

To determine whether aerospace EEO percentages reflected those in the national EEO database, we compared the representation of minorities in the aerospace industry and in all other industries remaining in the Joint Reporting Committee's EEO database. To explain the comparison we performed and to introduce graphic depictions of the results, we present the following brief example, using data for blacks and Asians.

In the national EEO database, Asian employees in 1979 comprised 1.4 percent, increasing to 2.2 percent by 1986. In the aerospace industry, however, Asians were at 1.7 percent in 1979, increasing to 3.2 percent by 1986 (see fig. III.6). On the other hand, blacks comprised 11.7 percent of the national EEO database in 1979 and 12.3 percent in 1986, but in aerospace jobs, their representation decreased from 8.2 to 7.9 percent.

Figure III.5: Minority Managers and Professionals in Aerospace Employment, by Racial/Ethnic Group (1979-86)



To view the relative difference between the aerospace industry and the national EEO database for these two groups, we calculated the percentage differences between blacks and Asians in aerospace and the corresponding groups in the national EEO database. For example, if blacks comprised 5 percent of aerospace employees, but 10 percent of the national EEO database, the relative difference would be 50 percent less representation in aerospace.

Consistently, blacks in the nine job categories overall in our example were less represented in the aerospace industry than in the national EEO database by about 33 percent between 1979 and 1986, as figure III.7 shows. Asians, conversely, were better represented by up to 43 percent in this period.

In the most recent year for which data were available, 1986, blacks in aerospace were less represented as both managers and professionals in relation to the national EEO database, but especially so as managers (see

Figure III.6: Example: Black and Asian Employees in the Aerospace Industry Nationwide and in the National EEO Database (1979-86)

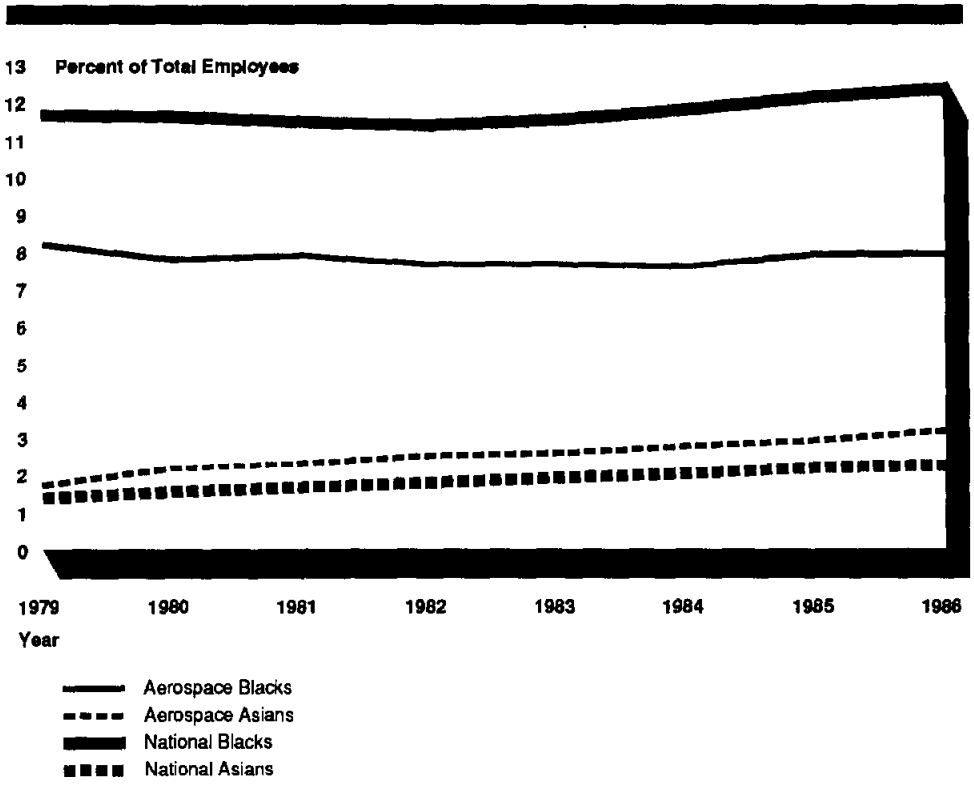
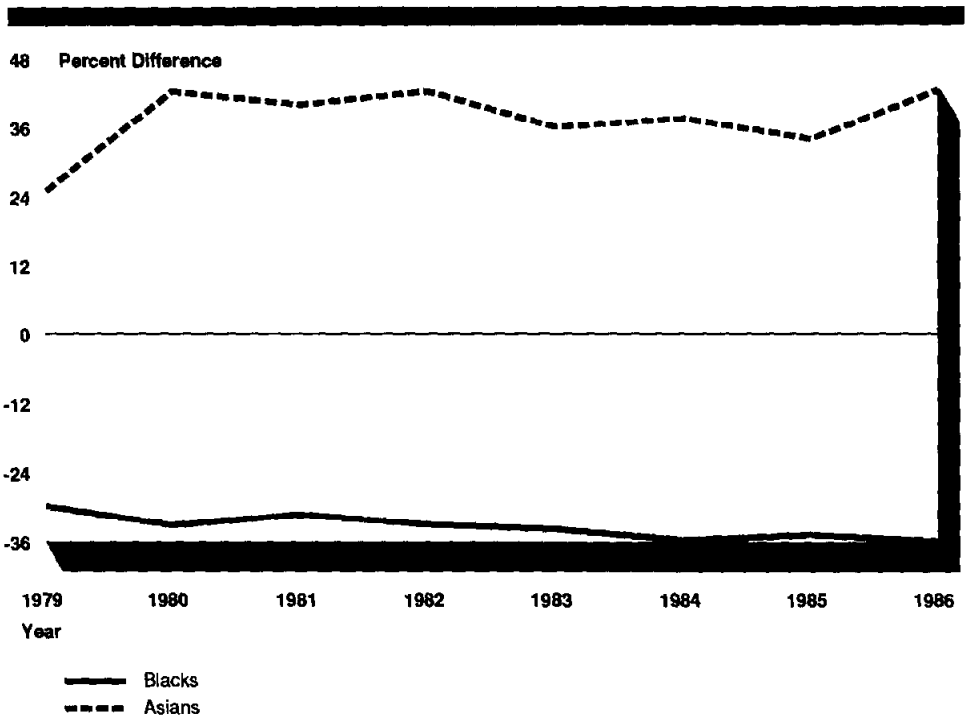


fig. III.8). Asians were fully represented as both managers and professionals. As managers, Hispanics had the same representation as in the national EEO database, while as professionals they held a higher representation.

In aerospace management jobs, 1979-86, whites were about equivalent to their national EEO database representation. Hispanics were close to equivalence, especially in 1979, 1982, and after 1984 (see fig. III.9). Throughout the period, black managers were consistently less represented in the aerospace industry than in the national EEO database, by about 33 percent. Asian managers in aerospace, however, were represented at some 25 percent above their counterparts in the national EEO database.

As professionals, whites' representation in aerospace jobs was equivalent to their representation in the national EEO database, while blacks were below and Asians and Hispanics above, as shown in figure III.10. Black representation as professionals increased relative to the national

Figure III.7: Example: Blacks and Asians in the Aerospace Industry Nationwide Compared With the National EEO Database (1979-86)

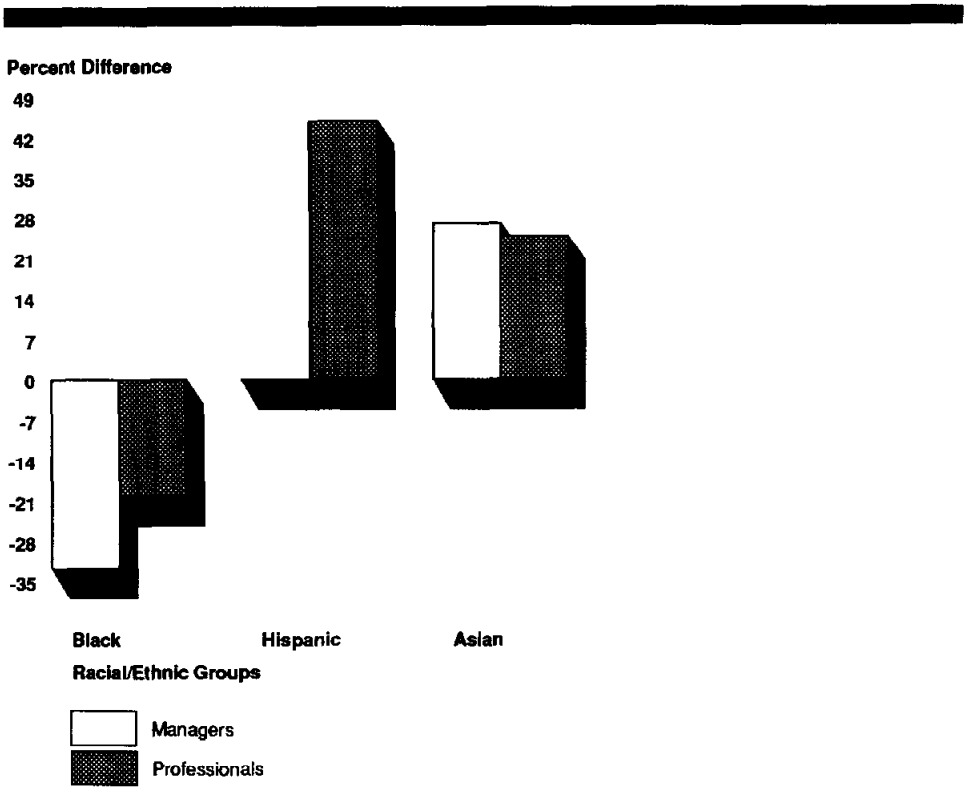


Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry.

EEO database, from 29 percent below in 1979 to 20 percent below in 1984, where it remained until 1986. Asian professionals showed the most dramatic increase, moving from 2 percent below the national EEO database level in 1979 to about 25 percent above in 1986. Hispanic professionals were the best represented ethnic group relative to the national EEO database, increasing from about 38 in 1979 to 45 percent above by 1986.

Industry representatives said that the numbers of minority aerospace professionals and managers have not increased more because of their scarcity in the hiring pool. In particular, they believed minorities were in short supply in technical fields, such as engineering. In 1979, 7.3 percent of engineering graduates with a bachelor's degree were minorities, increasing to 11.7 percent by 1986 (3 percent black, 2 percent Hispanic, and 6 percent Asian in 1986), according to the American Society of Engineering Councils. But industry representatives were unable to supply

Figure III.8: Minority Managers and Professionals in the Aerospace Industry Compared With the National EEO Database, by Racial/Ethnic Group (1986)

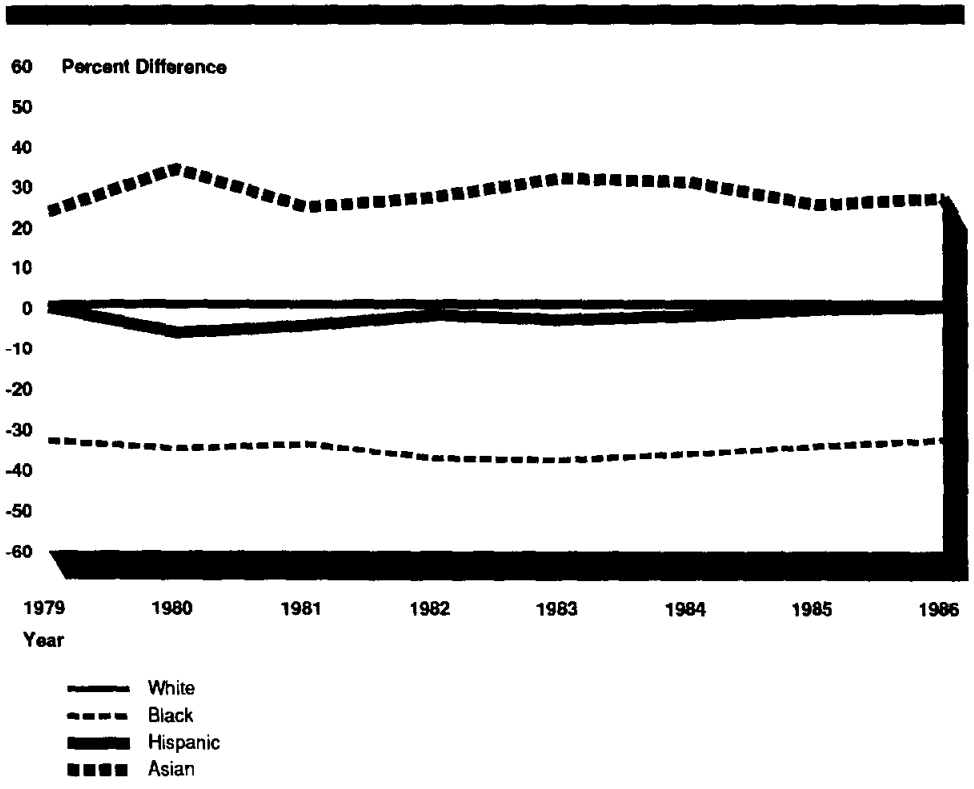


Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Bars above this point indicate higher representation, while bars below indicate less representation than in the national EEO database.

information on the proportion of aerospace professionals and managers who were engineers. Thus, we could not account for this factor in examining the proportion of minorities in aerospace relative to the national EEO database.

If this information were available, we could determine the representation of aerospace minority professionals relative to the engineering labor pool. For example, if in 1986, professionals consisted of 60 percent engineers and 40 percent nonengineers, and 3 percent of engineers were black and 12 percent of nonengineers were black (the percent of blacks in the general population), we then could calculate the estimated rate of black professionals as follows. Representation of black professionals = (60 percent engineers x 3 percent blacks) + (40 percent nonengineers x 12 percent blacks) = 6.6 percent blacks. (This example is simplified for discussion purposes and does not include all relevant factors.)

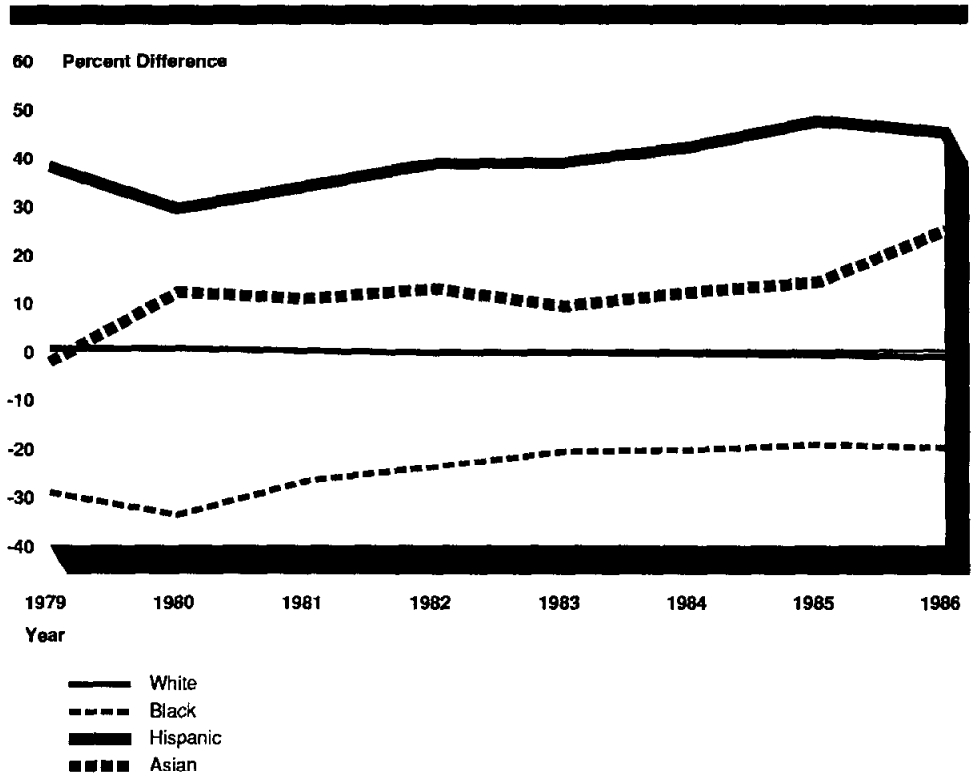
Figure III.9: Racial/Ethnic Groups as Managers in the Aerospace Industry Compared With the National EEO Database (1979-86)



Note: On this chart, zero indicates the point which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate the minority group is more or less represented in the aerospace industry.

We then could compare this to the data for aerospace professionals, in this case 3.8 percent in 1986, and conclude that the proportion of blacks among aerospace professionals was lower than expected according to adjusted labor pool data. On the other hand, if technical fields, such as engineering, with a lower proportion of blacks comprised the vast majority of professionals or managers, 3.8 percent might have represented a higher proportion than would be expected by comparison with adjusted labor pool data.

Figure III.10: Racial/Ethnic Groups as Professionals in the Aerospace Industry Compared With the National EEO Database (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry

EEO in Small, Medium, and Large-Sized Companies

When we examined national EEO patterns for aerospace establishments by size—small (50-999 employees), medium (1,000-9,999), and large (10,000 or more)—we found few differences in their EEO patterns for managers and professionals.[1] This was true for all categories—the four racial/ethnic groups, as well as managers and professionals. The percentages of representation of the racial groups were similar to those for the entire nation. Where there were differences based on size, the small and medium establishments differed from the large. Generally, the large establishments reflected the EEO pattern of the aerospace industry overall.

Regardless of size of establishment, minority groups among managers fell into a range of about 1 to 3 percent. Greatest in order of managerial

[1]There were 272 small establishments with a total of 76,475 employees, 82 medium establishments with 289,272 employees, and 18 large establishments with 313,033 employees. These three groups made up 11, 43, and 46 percent, respectively, of the employees in the aerospace database.

representation among both large-size firms and for the industry altogether were blacks, Hispanics, and Asians. In small and medium-size firms, the order was Hispanics, blacks, and Asians. All ethnic groups of managers increased over time in all sizes of firms, except for Hispanics in medium-size establishments, who experienced a slight decline. Asians in large establishments and blacks in small establishments increased most rapidly of all ethnic groups from 1979 to 1986.

Minority groups among professionals in small, medium, and large establishments did not vary much; they made up 5 percent or less of each group. Asian professionals in large and small establishments had the highest percentage, followed by blacks and Hispanics in large establishments. Hispanic professionals in medium-size establishments and black professionals in small establishments had the lowest percentage. All racial groups of professionals in the various size establishments increased from 1979 to 1986.

Salary Patterns: Asians Closest to White Males

Consistently across both managerial and professional job categories and for the entire 1979-87 period, Asians in our four case study establishments earned on average the salary closest to that of their white male counterparts. They were followed by Hispanics and blacks. In fact, in some cases Asians earned slightly more than the white male average salary level (see table III.3 for comparisons of salaries for 1987, the most recent year for which data were available; table IV.1 provides these data for 1979-87). Explanations provided by company officials for these differences are included in appendix IV.

Table III.3: Case Study Examples: Average Salaries of Racial/Ethnic Groups Compared With Average White Males' Salaries (1987)

	Salaries as a percentage of white male salaries (averages)					
	Blacks		Hispanics		Asians	
Aerospace establishment	Managers	Professionals	Managers	Professionals	Managers	Professionals
A	76	81	80	86	96	95
B	77	83	81	84	88	95
C[a]	84	82	88	85	94	94
D	74	87	85	89	95	95

[a]As 1987 data were unavailable, 1986 data were provided.

Asian managers earned average salaries ranging from 85 to 102 percent of those for white male managers in 1979, Hispanics earned between 78 and 86 percent, and blacks earned from 71 to 84 percent. As of 1987 (1986 in one case because of missing data for 1987), Asian managers

earned average salaries ranging from 88 to 96 percent of white males. During the period, these salaries decreased relative to white males' average salaries in two of the establishments and increased in the two other cases. Hispanic managers in 1987 (1986 for one case) earned a range of from 80 to 88 percent of the white males' average salaries across the four cases, increasing relative to the white males' average salaries in three cases and remaining the same in the other. Black managers' average salaries ranged from 74 to 84 percent of white males' in 1987 (1986 for one case), having decreased relative to white males in two cases, remained the same in one, and increased in one.

Asian professionals earned on average 93 percent of white male professionals' salaries in 1979 in each of the four cases, increasing in each case to a range of 94 to 96 percent by 1987. Hispanic professionals earned between 82 and 88 percent of white males' average salaries in 1979, increasing in three of the four establishments; the 1987 (1986 for one case) range was 84-89 percent. Black professionals earned a range of from 80 to 83 percent of white males' average salaries in 1979, increasing to a range of from 81 to 87 percent in 1987.

Case Study Examples of Salaries of Women and Racial/Ethnic Minorities Compared With White Males' Salaries

We performed case studies in which we examined salary data at four establishments of four of the nation's largest aerospace contractors. To preserve the identity of these companies, we do not provide information that could be unique to any particular establishment, such as the number of employees or location. For the years 1979-1987 at each establishment, we present in tabular form the percentages of white males' average salaries that each minority group earned (see tables IV.1 and IV.2).

This appendix also includes summaries of the possible reasons proffered by aerospace company officials for the differences shown in the tables among women and minorities and of the special programs these companies have initiated to improve employment opportunities for women and minorities.

Comments From Companies Profiled

The four aerospace firms on whose establishments we performed the case studies reviewed our preliminary findings and provided explanations for their EEO and salary profiles. As they did not perform studies of individuals' salaries and there were too many variables that could have influenced the data, the companies were reluctant to draw conclusions. They did, however, identify some major factors that may affect salary differences among minority groups:

1. Dramatic changes in the work force population during the period of review; i.e., as the work force increases, average salaries decrease and vice versa;

2. Women and minorities having less education and experience than white men;

3. Occupation-related education and work experience at the time of hire;

4. Employees' time with the company and time in current pay grade;

5. Employees' performance level; and

6. Limited availability of women, blacks, and Hispanics in technical fields before 1979.

Table IV.1: Case Study Examples of Salaries of Women and Racial/Ethnic Minorities Compared With White Males' Salaries
(Managers and Professionals, 1979-87)

		Salaries as a percentage of white males' salaries (average)							
		Women		Blacks		Hispanics		Asians	
Establishment	Year	Mgr	Prof	Mgr	Prof	Mgr	Prof	Mgr	Prof
A	1979	72	73	77	80	79	84	[a]	93
	1980	74	74	78	80	81	86	[a]	94
	1981	74	76	80	82	82	86	[a]	94
	1982	72	77	80	83	81	87	[a]	99
	1983	72	78	80	85	83	88	[a]	98
	1984	73	76	78	84	82	87	[a]	96
	1985	75	75	75	84	81	84	[a]	95
	1986	74	77	74	84	80	87	90	93
	1987	76	76	76	81	80	86	96	95
B	1979	64	74	71	81	78	82	85	93
	1980	66	74	72	81	77	82	85	94
	1981	66	75	73	80	78	82	87	93
	1982	67	75	73	82	77	82	88	94
	1983	69	77	73	85	80	85	86	95
	1984	68	78	73	84	80	84	86	94
	1985	69	77	73	84	78	85	87	93
	1986	71	78	74	83	80	84	87	94
	1987	72	79	77	83	81	84	88	95
C	1979	78	76	84	83	86	86	102	93
	1980	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
	1981	77	75	80	81	82	84	99	90
	1982	78	77	82	83	82	85	100	91
	1983	79	78	83	84	85	85	101	93
	1984	81	76	83	83	87	85	97	94
	1985	81	75	83	81	87	85	93	94
	1986	83	75	84	82	88	85	94	94
	1987	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
D	1979	77	80	82	82	85	88	95	93
	1980	75	80	82	82	87	89	96	92
	1981	76	81	81	83	87	89	93	94
	1982	75	79	79	84	88	89	93	95
	1983	73	80	78	84	87	89	91	94
	1984	73	79	78	84	85	89	89	94
	1985	76	81	76	88	86	91	97	97
	1986	78	83	78	86	87	91	98	96
	1987	77	82	74	87	85	89	95	95

[a]The category had too few employees (fewer than 25) for a reliable statistic.

[b]Salary data unavailable from the company.

Table IV.2: Case Study Examples of Salaries of Men and Women, by Racial/Ethnic Group Compared With White Males' Salaries
(Managers and Professionals, 1979-87)

		Managers							Professionals						
		Women				Men			Women				Men		
Establishment	Year	Wh	Bl	Hisp	As	Bl	Hisp	As	Wh	Bl	Hisp	As	Bl	Hisp	As
A	1979	73	[a]	[a]	[a]	77	80	[a]	74	68	72	[a]	83	86	95
	1980	75	[a]	[a]	[a]	79	82	[a]	74	70	73	75	84	88	97
	1981	75	[a]	[a]	[a]	81	83	[a]	77	76	76	78	85	88	97
	1982	73	[a]	[a]	[a]	82	83	[a]	77	76	77	76	86	90	101
	1983	73	[a]	[a]	[a]	82	84	[a]	78	78	78	80	87	90	100
	1984	75	[a]	[a]	[a]	79	83	[a]	77	77	76	76	87	90	100
	1985	76	[a]	[a]	[a]	76	82	[a]	77	77	75	77	88	90	99
	1986	76	[a]	[a]	[a]	77	81	[a]	78	76	76	74	87	91	98
	1987	77	[a]	[a]	[a]	77	81	[a]	76	73	72	76	85	90	100
B	1979	66	58	[a]	[a]	76	81	86	74	69	[a]	76	87	85	96
	1980	69	59	[a]	[a]	77	80	87	75	70	[a]	76	86	86	98
	1981	69	61	[a]	[a]	78	82	90	75	72	[a]	80	86	85	97
	1982	71	61	[a]	[a]	79	81	90	76	72	72	80	88	86	97
	1983	71	62	[a]	[a]	78	83	89	77	73	76	81	91	88	98
	1984	71	62	[a]	[a]	79	84	88	78	74	74	82	90	88	98
	1985	72	63	[a]	[a]	79	83	88	79	74	73	83	91	89	98
	1986	74	63	[a]	[a]	81	85	89	79	75	72	84	91	89	98
	1987	76	64	[a]	74	84	84	90	79	74	75	84	91	87	98
C	1979	78	[a]	[a]	[a]	84	87	105	77	73	73	74	85	88	96
	1980	[b]	[a,b]	[a,b]	[a,b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
	1981	79	[a]	[a]	[a]	81	84	102	77	74	72	75	85	87	93
	1982	81	[a]	[a]	[a]	83	84	105	78	76	75	76	86	89	95
	1983	81	[a]	[a]	[a]	84	87	104	79	77	74	78	87	88	96
	1984	83	[a]	[a]	[a]	84	88	100	78	77	73	79	87	90	96
	1985	84	[a]	[a]	[a]	84	88	97	76	74	73	77	86	90	97
	1986	85	[a]	[a]	[a]	85	89	[a]	76	74	72	78	86	90	97
	1987	87	[a]	[a]	[a]	86	88	97	76	73	70	77	86	90	95
D	1979	77	[a]	[a]	[a]	82	86	[a]	80	75	[a]	[a]	84	89	94
	1980	75	[a]	[a]	[a]	82	87	98	81	77	79	80	83	91	94
	1981	76	[a]	[a]	[a]	82	88	95	81	75	81	82	85	90	96
	1982	75	[a]	[a]	[a]	80	91	[a]	79	74	79	79	87	90	96
	1983	73	[a]	[a]	[a]	78	89	[a]	80	75	81	77	88	91	97
	1984	74	[a]	[a]	[a]	79	87	91	80	75	79	77	87	91	96
	1985	77	[a]	[a]	[a]	77	88	100	81	76	80	83	92	93	99
	1986	79	[a]	[a]	[a]	80	88	100	83	80	82	84	88	93	97
	1987	78	[a]	[a]	[a]	75	87	96	82	77	79	82	91	92	97

[a]The category had too few employees (fewer than 25) for a reliable statistic.

[b]Salary data unavailable from company

EEO Programs Established by Companies

The four case study companies expressed concern about the availability for hire of individuals with the requisite skills for aerospace industry employment. In their attempt to bolster the pool of qualified candidates, the companies established various training and outreach programs. These involved: company employees voluntarily teaching high school students technical and computer skills; companies selecting top high school students for 4-year college scholarships; and students earning college credits for working at the companies.

One company established specific programs, such as company-sponsored self-support and networking organizations, to encourage and promote minorities and women. Company officials set aside a specific number of positions for black and Hispanic participants in management education and development programs and specified that certain vacancies should be targeted for black and Hispanic applicants.

Women's Employment in Aerospace Industry Shows Little Change

Over the 1979-86 period, men predominated in the aerospace industry. While aerospace women made some gains, they were less represented in most job categories than in the national EEO database and as managers and professionals on average paid less than men. For example:

- Women comprised 25 percent of the aerospace work force in 1986 (up from 21 percent in 1979). Women were 45 percent of workers in the remainder of the national EEO database (40 percent in 1979).
- Only in aerospace office/clerical jobs did women predominate, holding three-quarters of such jobs in 1986. Women held the lowest representation in managerial, professional, and craft jobs.
- Although women's share of managerial and professional jobs in aerospace almost doubled between 1979 and 1986, they were still a marked minority, achieving 7.3 percent of managerial jobs and 16.3 percent of professional jobs.
- The size of the aerospace establishment made little difference in EEO patterns by gender, although white female managers fared somewhat better in small aerospace establishments than in medium or large establishments.
- At the four aerospace establishments providing salary data, women managers and professionals earned less on average than their white male counterparts, even though women's salaries improved over the 1979-86 period studied.

Overview of Aerospace Job Categories

The total number of female employees in the aerospace industry increased slightly over the 1979-86 period (see fig. V.1). In 1979, women held 21 percent of aerospace industry jobs but were 40 percent of the overall national EEO database. Although women constituted 25 percent of aerospace employees in 1986, they were 45 percent of the national EEO database (see fig. V.2).

Figure V.1: Total Employment and Female Employment in the Aerospace Industry Nationwide (1979-86)

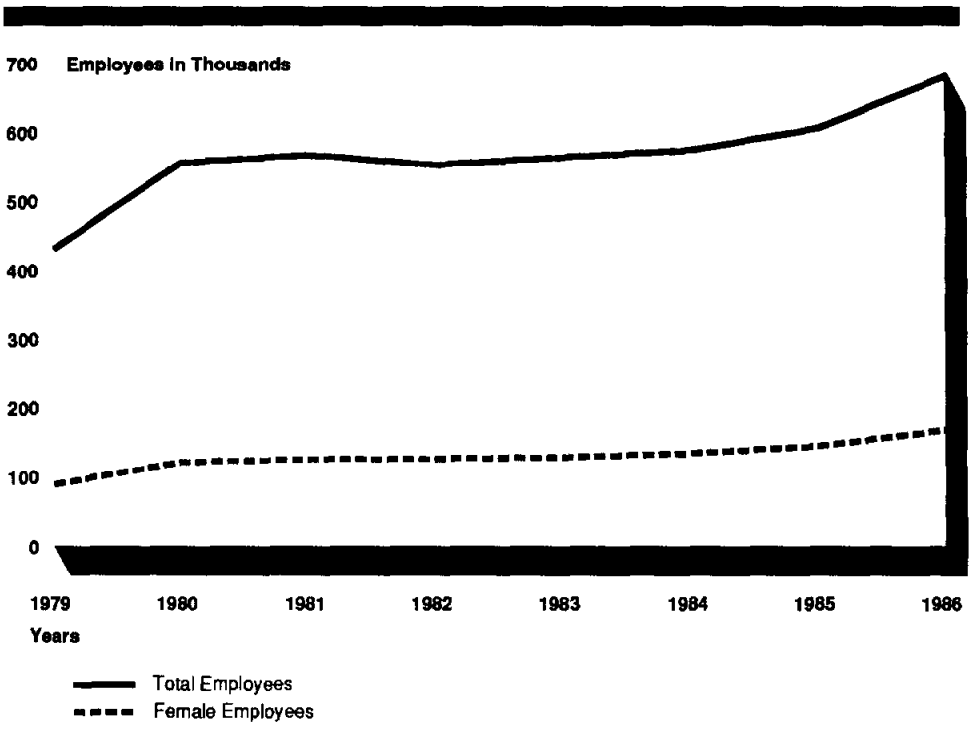
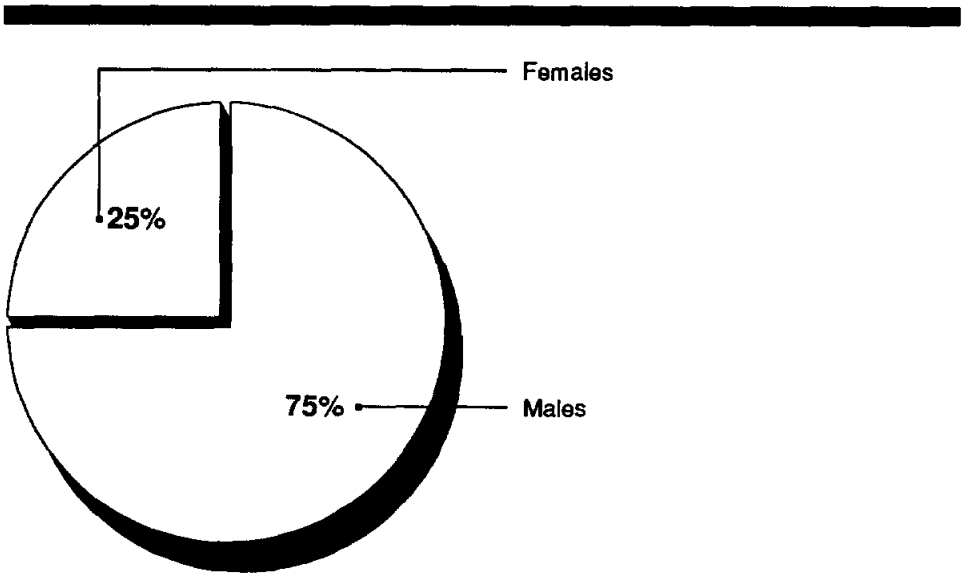


Figure V.2: Total Aerospace Employment Nationwide, by Gender (1986)



Looking at all aerospace jobs in 1986, only in office/clerical jobs did women predominate, holding three-fourths of such jobs (see tables V.1 and V.2). Women held the lowest percentages in managerial, professional, and craft jobs (7.3, 16.3, and 9.9 percent respectively). (For a more detailed breakdown by nine major job categories for 1979 and 1986, see app. VI).

Table V.1: Predominant Gender of Aerospace Employees Nationwide, by Job Category (1979 and 1986)

	Percent of all aerospace employees		Predominant	Percent	
Job category	1979	1986	gender	1979	1986
Managers	12	13	Male	96	93
Professionals	26	30	Male	92	84
Technicians	7	8	Male	83	77
Sales workers	<1	<1	Male	80	71
Office/clerical workers	13	12	Female	71	76
Craft workers	21	19	Male	93	90
Semiskilled workers	17	15	Male	70	66
Laborers	2	2	Male	60	57
Service workers	1	2	Male	83	78

Table V.2: Female Employment in Aerospace (1979 and 1986)

	Percent of all aerospace employees		Difference	
Job category	1979	1986	1979-86	Percent increase
All	21.0	25.0	4.0	19
Managers	3.9	7.3	3.4	87
Professionals	8.2	16.3	8.1	99
Technicians	17.1	22.8	5.7	33
Sales workers	20.3	29.2	8.9	44
Office/clerical workers	70.6	76.1	5.5	8
Craft workers	7.1	9.9	2.8	39
Semiskilled workers	30.5	33.9	3.4	11
Laborers	40.5	43.0	2.5	6
Service workers	16.7	21.9	5.2	31

Women Managers Few in Aerospace

Women's share of management and professional jobs in the aerospace industry almost doubled between 1979 and 1986. Still, they were a marked minority, increasing from 3.9 to 7.3 percent of managers and from 8.2 to 16.3 percent of professionals over the period (see fig. V.3). The percentages of female managers and professionals were small in contrast with those for men in 1986, as seen in figure V.4.

Figure V.3: Female Managers and Professionals in the Aerospace Industry (1979-86)

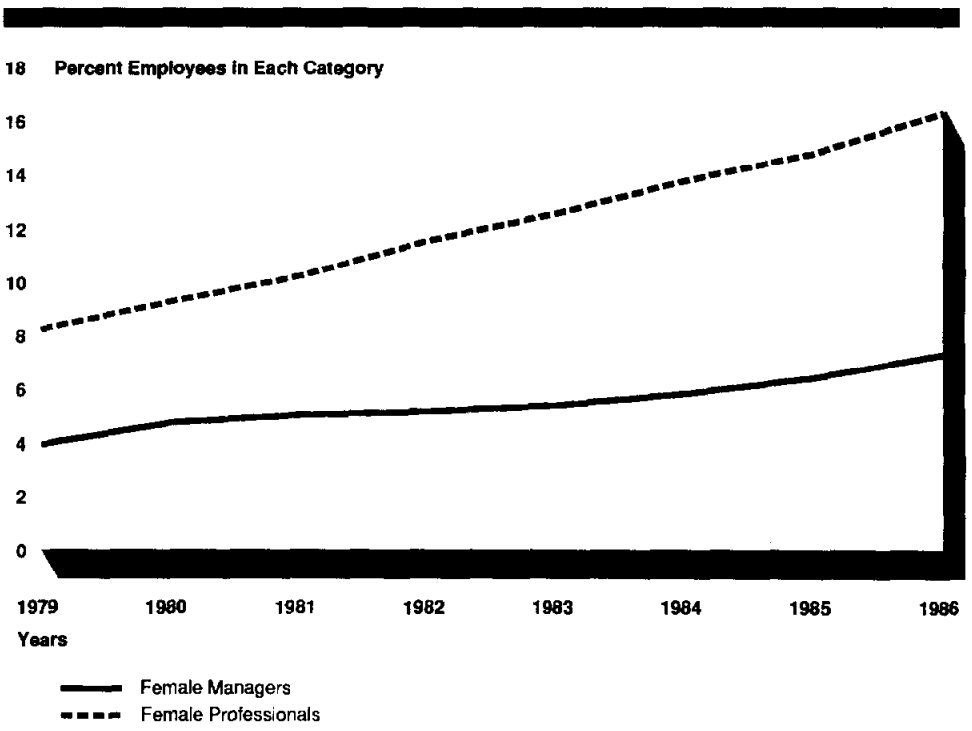
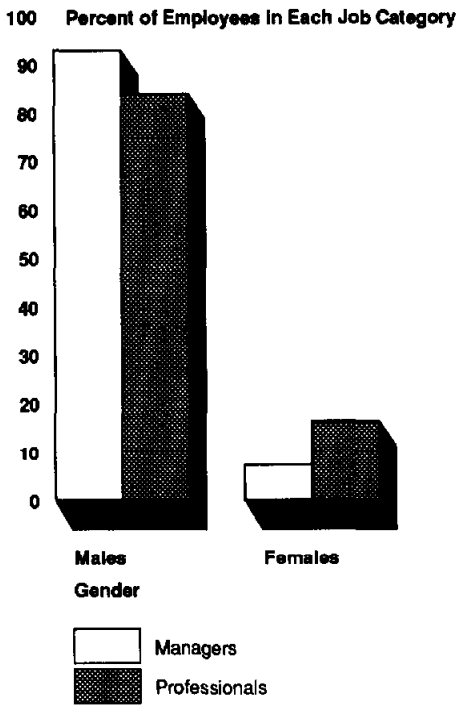
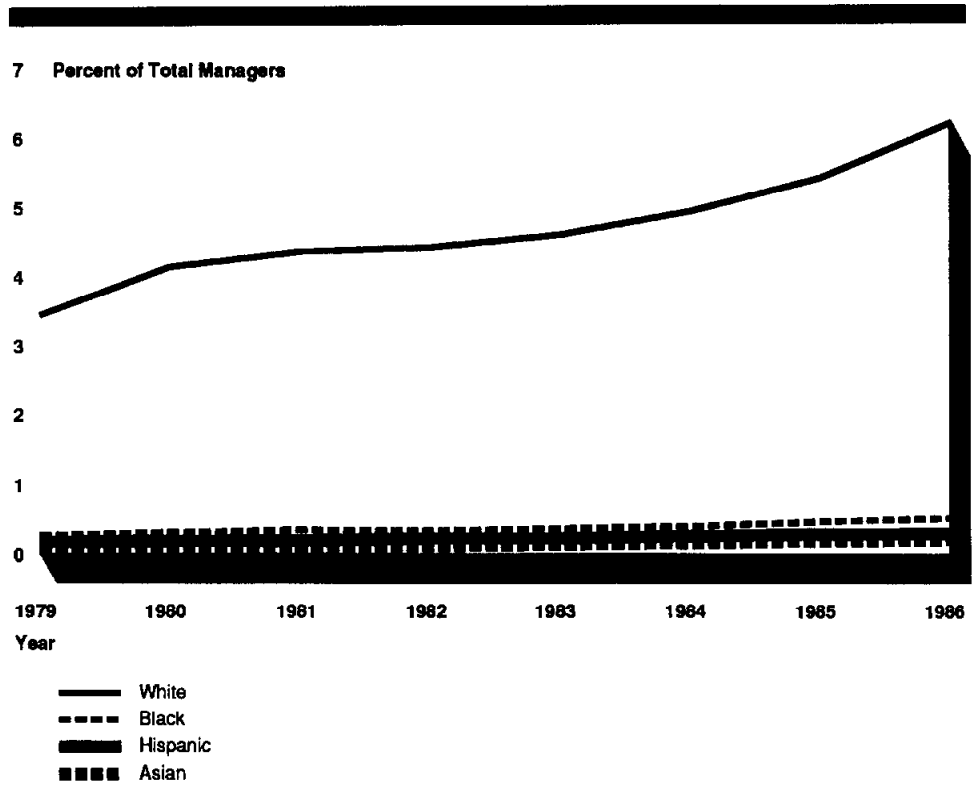


Figure V.4: Managers and Professionals in the Aerospace Industry, by Gender (1986)



Between 1979 and 1986, men consistently occupied over 90 percent of managerial positions in the aerospace industry nationwide, decreasing slightly over the period, while women's share of managerial jobs increased from 3.9 to 7.3 percent, as table V.2 shows. This increase was due primarily to an increase in white women in such jobs. Among female aerospace managers, white representation increased from 3.4 percent in 1979 to 6.2 percent in 1986. All minority women had collectively achieved about 1 percent by 1986. Black, Hispanic, and Asian females each held less than 0.5 percent of managerial jobs during that time (see fig. V.5).

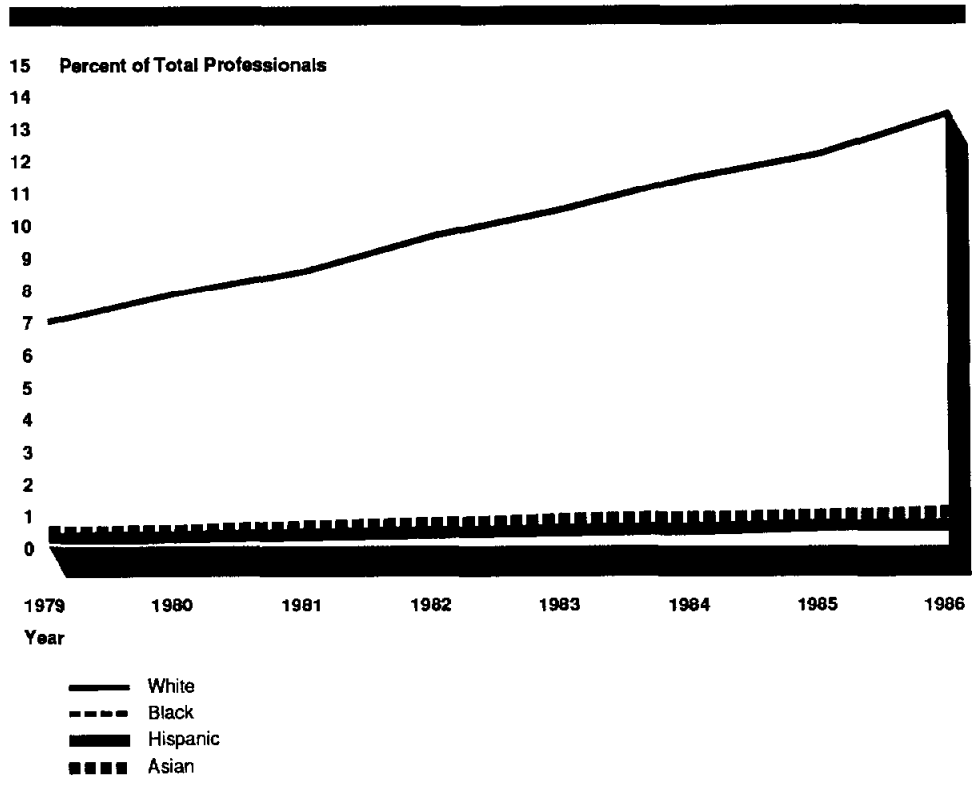
Figure V.5: Female Managers in the Aerospace Industry, by Racial/Ethnic Group (1979-86)



Somewhat More Women Employed as Professionals in Aerospace

Female professionals almost doubled their proportion in the aerospace industry between 1979 and 1986, from 8.2 to 16.3 percent. The proportions of white, black, and Hispanic females in professional jobs in 1986 each doubled, although the percentages remained small. White women reached 13.4 percent, black and Asian women achieved about 1 percent each, as figure V.6 shows, while Hispanics remained below 1 percent.

Figure V.6: Female Professionals in the Aerospace Industry, by Racial/Ethnic Group (1979-86)



Comparison With National EEO Database

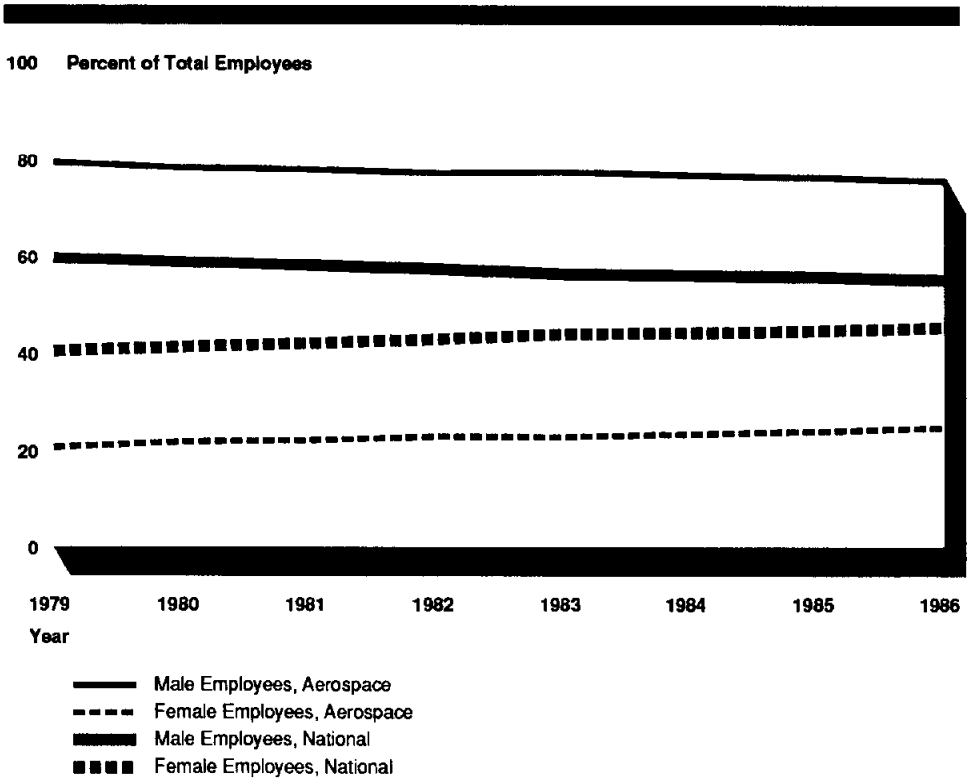
Compared with the national EEO database, women as a whole were less represented in the aerospace industry, while men as a whole were better represented. These differences, which remained stable from 1979 to 1986, were similar for managerial and professional jobs.

Among managers, women were considerably less represented in 1979 than in the national EEO database, but their proportion increased slightly by 1986. Women were considerably less represented among aerospace professionals in 1979, but moved somewhat closer to the nationwide EEO database share by 1986. Although industry representatives asserted that there are relatively fewer women professionals and managers in aerospace because of their scarcity in the hiring pool, we could not verify this. Data on the percentage of women engineers were available, but information on the proportion of engineers among aerospace managers and professionals was not.

Aerospace Women Lag National EEO Database by About Half

In the national EEO database, the ratio of male to female employees in 1979 was 60:40; it sloped steadily toward 50:50 by 1986. In the aerospace industry, however, the balance between male and female employees began at about 80:20 and appeared to be changing at a much slower pace, reaching 75:25 in 1986 (see fig. V.7).

Figure V.7: Example: The Aerospace Industry Nationwide and the National EEO Database, by Gender (1979-86)

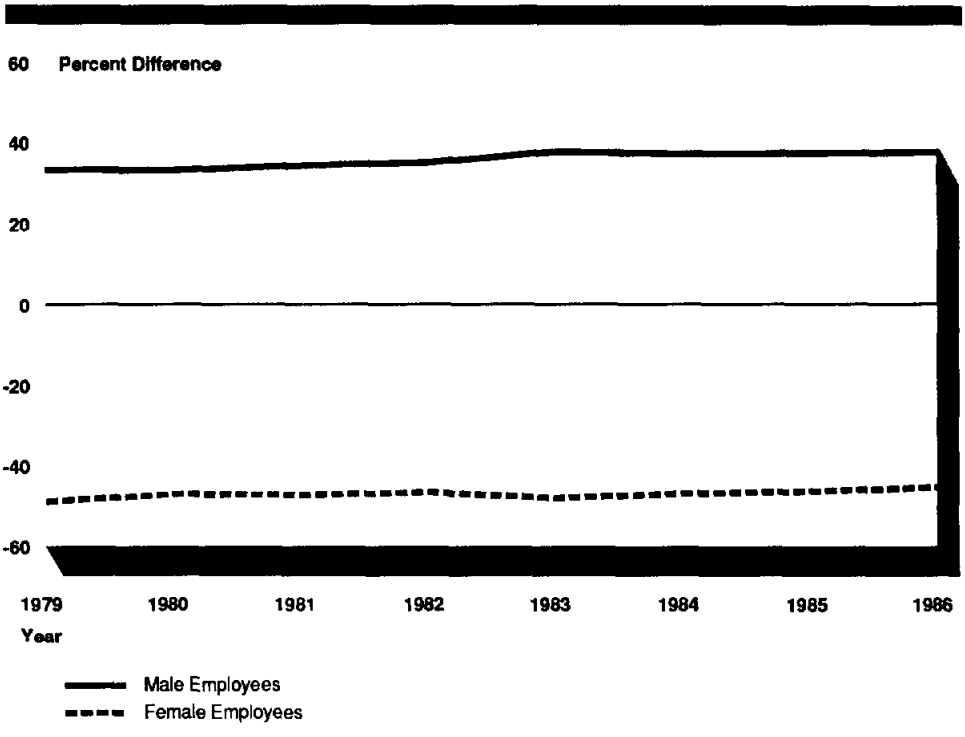


To view the relative difference between the aerospace industry and all other women and men in the nation, we calculated the percentage of difference between the aerospace industry and the corresponding groups in the national EEO database. For example, if women comprised 5 percent of the aerospace industry, but 10 percent of the national EEO database, the relative difference would be less representation by 50 percent.

Consistently, women in the nine job categories were less represented in the aerospace industry than in the national EEO database by about

50 percent between 1979 and 1986, as figure V.8 shows with the same data as in fig. V.7.

Figure V.8: Male and Female Representation in the Aerospace Industry Compared With the National EEO Database (1979-86)

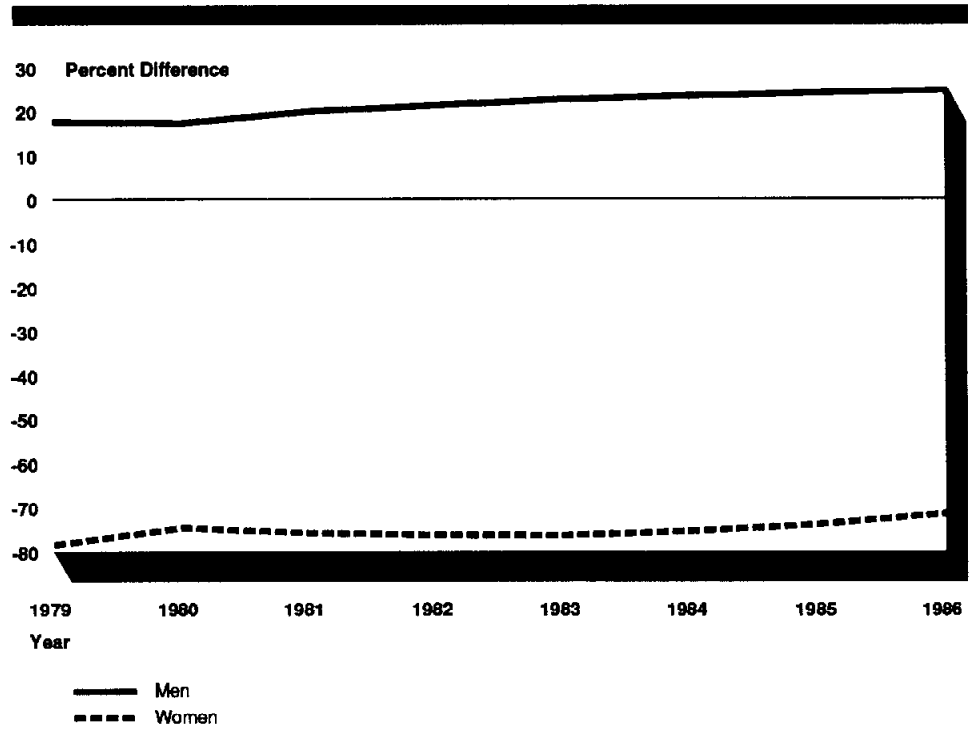


Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry.

In Aerospace Management, Women's Share Improved

Over the period 1979-86, the aerospace industry employed female managers to a lesser degree and male managers to a greater degree than they were employed in the national EEO database. Over that time, female representation among aerospace managers relative to managers nationally improved from 78 percent below to 71 percent below. (Fig. V.9 provides the relative representation of male and female managers and professionals for 1979 to 1986.)

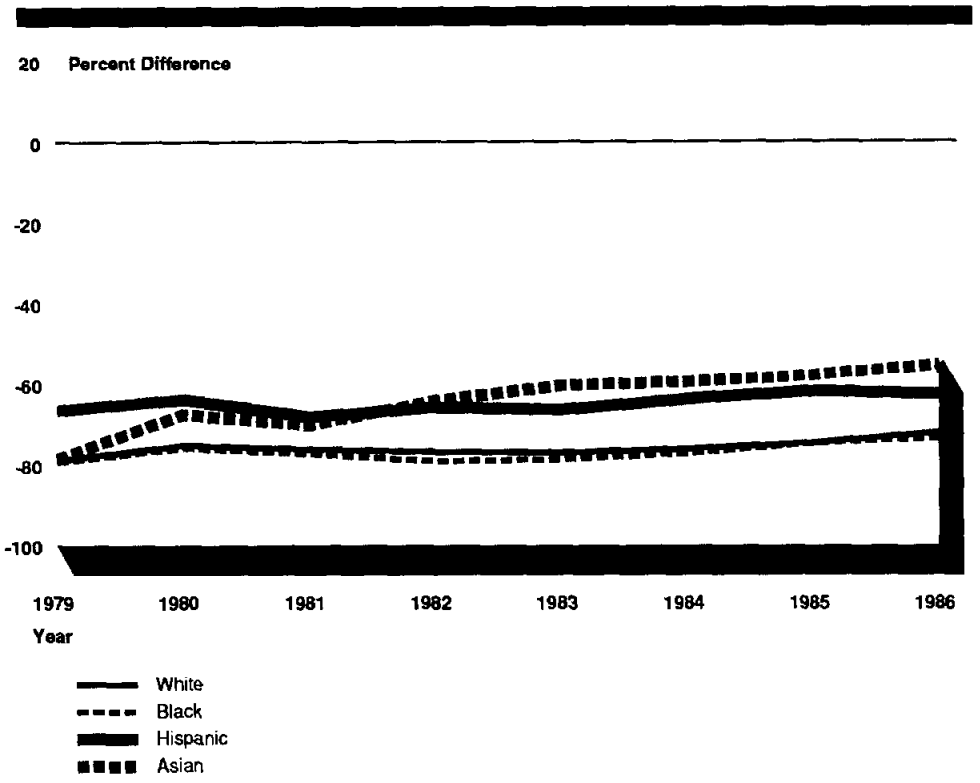
Figure V.9: Male and Female Managers in the Aerospace Industry Compared With the National EEO Database (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry.

Representation of all racial/ethnic groups of female aerospace managers was far below national EEO database levels, ranging from 60 to 80 percent below over the 1979-86 period. Asian women made the greatest gains in representation relative to the national EEO database, moving from about 79 percent below in 1979 to about 55 below in 1986. Hispanic female managers in aerospace were close to this, but remained stable over time at about 65 percent below. The representation of white and black females in management was similar, both improving slightly from about 79 percent below the national EEO database in 1979 to about 72 percent below in 1986 (see fig. V.10).

Figure V.10: Female Managers in the Aerospace Industry Compared With the National EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines less than zero indicate less representation in the aerospace industry.

For Female Professionals, Some Recent Improvement in Relative Status

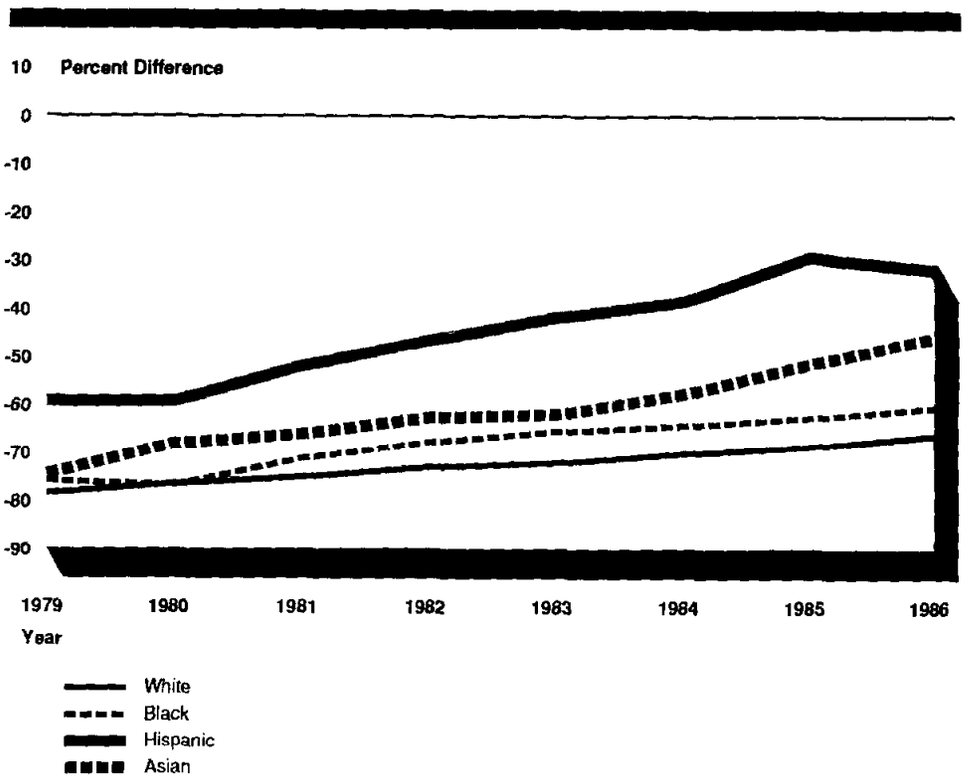
Female professionals in the aerospace industry increased their representation when compared with the national EEO database to a greater degree than did female managers over the period studied. In 1979, female professionals were less represented by about 78 percent in relation to the national EEO database; in 1986, by 64 percent.

The representation of racial/ethnic groups of women among aerospace professionals for 1979-86 was far below that of corresponding groups in the national EEO database. All female racial/ethnic groups of professionals, however, moved closer to their representation among female professionals nationally since 1980.

In order of magnitude of their differences from the national EEO database and their change over time, the groups of female professionals were: Hispanics, who moved from about 59 percent below to about 32 percent below; Asians, who went from about 75 percent below to

46 percent below; and blacks and whites, who both moved from about 76 percent below to about 61 and 66 percent below, respectively (see fig. V.11).

Figure V.11: Female Professionals in the Aerospace Industry Compared With the National EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry.

One factor unique to the aerospace industry that could provide insight into the percentages of women among professionals is the availability of women in technical fields, such as engineering. But without an accurate estimate of the proportion of engineers among the professionals in our data, no definitive comparison could be made.

Industry representatives asserted that there have been fewer female professionals and managers because of their scarcity in the hiring pool. In particular, women are believed to be scarce in technical fields, such as engineering. In 1979, 9 percent of engineering graduates with a bachelor's degree were women, increasing to 14 percent by 1986, according to

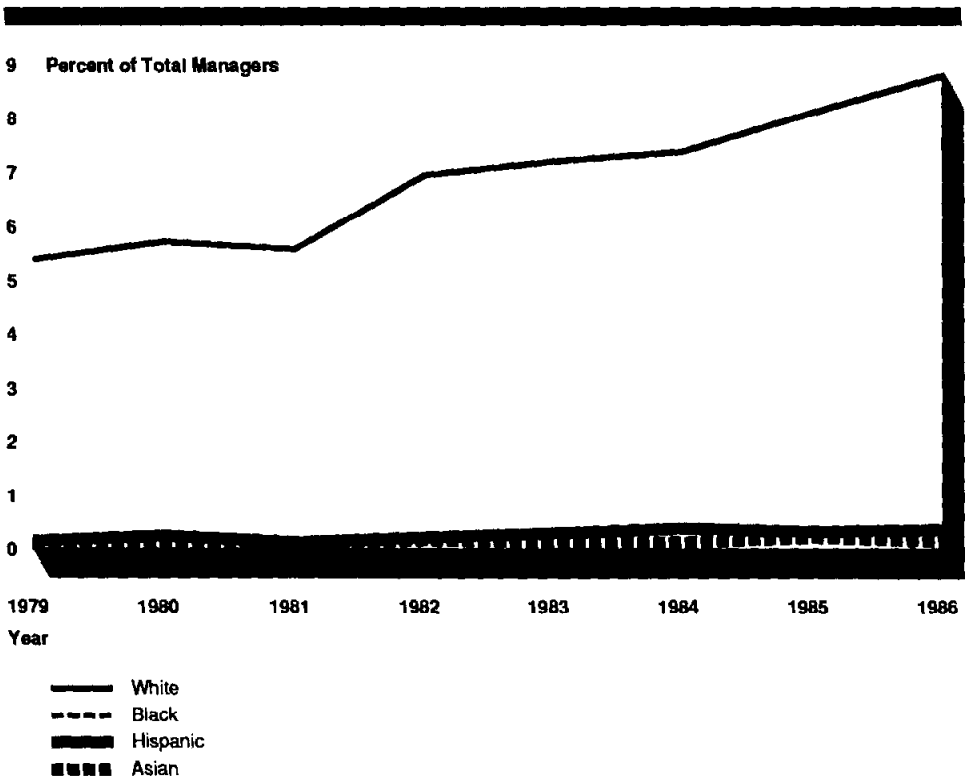
the American Society of Engineering Councils. But industry representatives were unable to provide data on the percentage of engineers among aerospace professionals and managers. Thus, we could not account for this factor in examining the proportion of women in the aerospace industry relative to their availability in the labor market. Without such information, we could not determine how aerospace female professionals are represented relative to the engineering pool.

Women in Small, Medium, and Large Aerospace Companies

Whether an aerospace company establishment was small (50-999 employees), medium (1,000-9,999), or large (10,000 or more) made little difference in its patterns of employing women. Nor did any of these groups differ greatly from the profile for the aerospace industry overall.

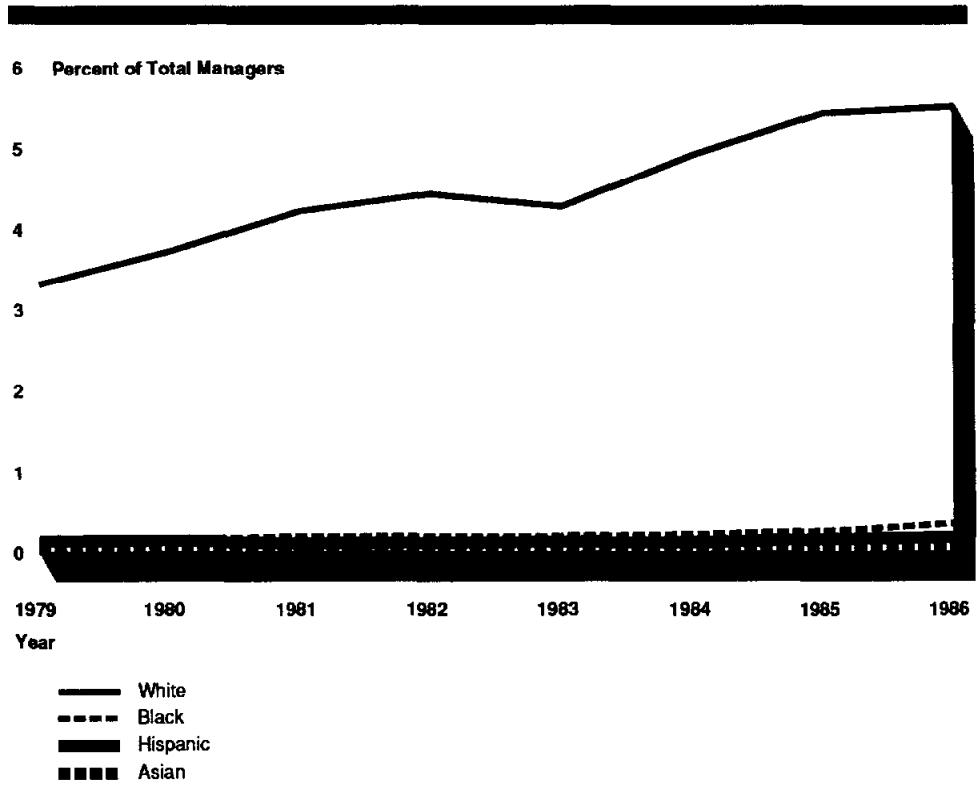
When compared with the profiles of the entire aerospace industry and of medium and large establishments, the percentage of white female managers in small establishments (see fig. V.12) was higher in both 1979 (about 5.0 percent versus 3.4 percent) and 1986 (about 9 percent versus about 6 percent). The percentage of minority women was generally lower in small establishments. The percentage of white female managers in medium-size establishments was similar to that in large firms and the industry overall. Medium-size establishments had a somewhat lower proportion of minority women in management (see fig. V.13). All establishments, however, no matter the size, had fewer than 1 percent of each racial/ethnic group of minority women.

Figure V.12: Female Managers in Small Aerospace Establishments, by Racial/ Ethnic Group (1979-86)



Note: Small establishments are those employing 50-999 people.

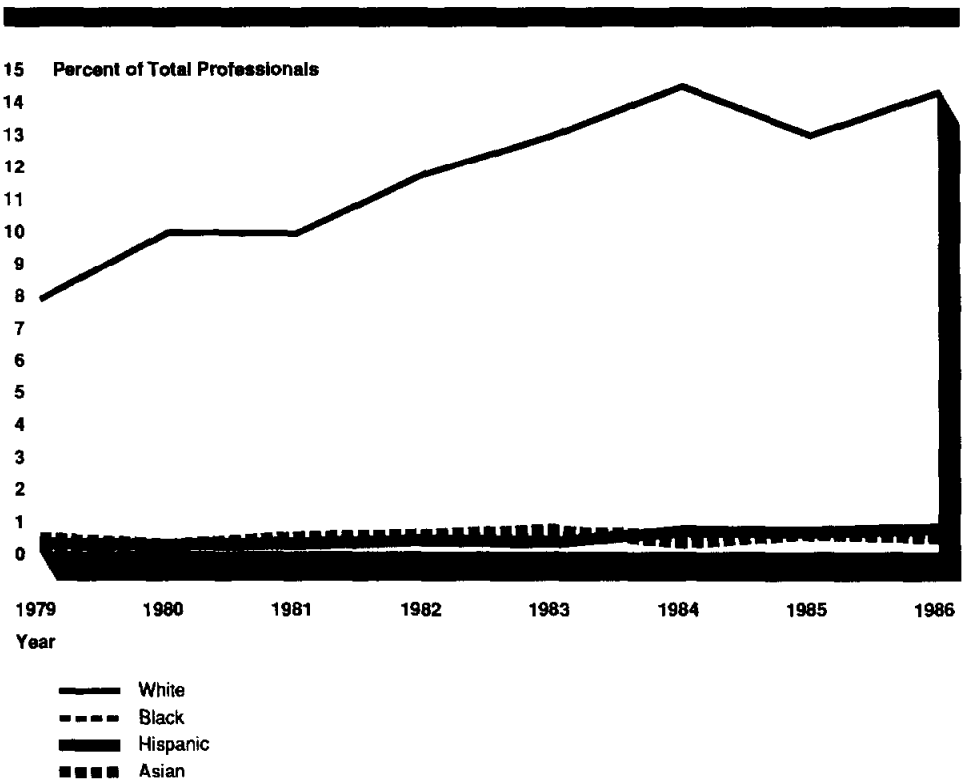
Figure V.13: Female Managers in Medium-Size Aerospace Establishments, by Racial/Ethnic Group (1979-86)



Note: Medium-size establishments are those employing 1,000-9,999 people.

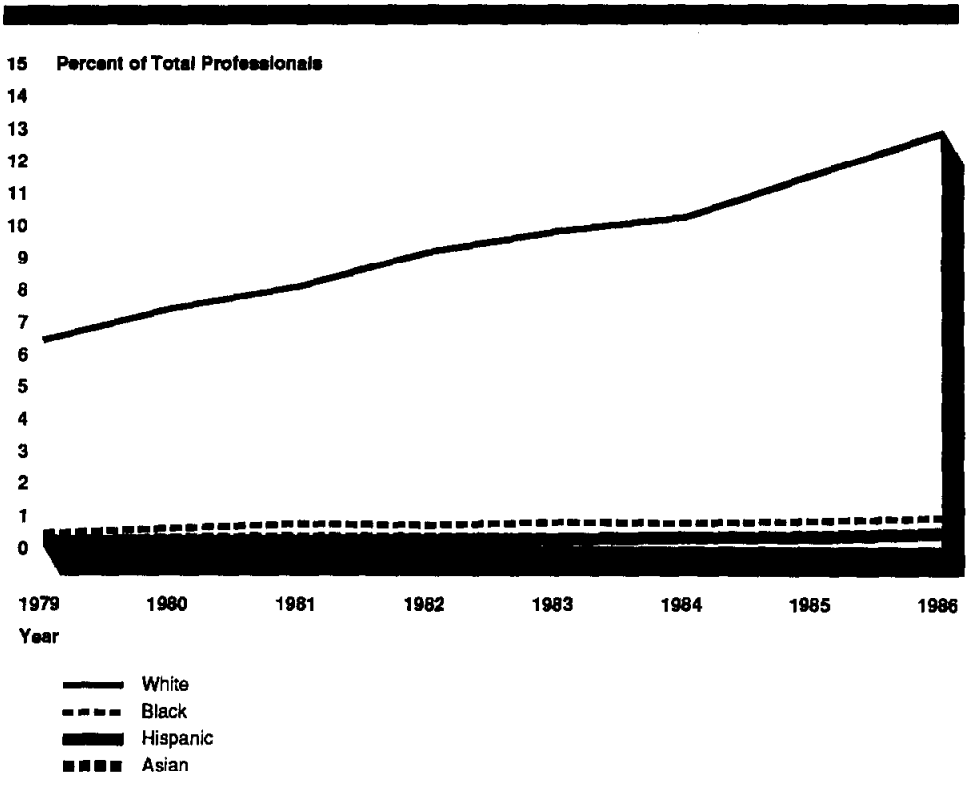
In professional jobs, the pattern for female racial/ethnic groups was similar across the different size aerospace firms and to the pattern for the overall industry. The only exceptions were that (1) the percentages of minority female professionals in medium-size establishments were extremely low from 1979 to 1982 and (2) the pattern for white female professionals in small establishments (see figs. V.14 and V.15) varied more over time than in the other size establishments or overall.

Figure V.14: Female Professionals in Small Aerospace Establishments, by Racial/Ethnic Group (1979-86)



Note: Small establishments are those employing 50-999 people.

Figure V.15: Female Professionals in Medium-Size Aerospace Establishments, by Racial/Ethnic Group (1979-86)



Note: Medium-size establishments are those employing 1,000-9,999 people.

Average Pay Less for Female Managers and Professionals, Case Studies Suggest

Limited case study data showed that female aerospace managers and professionals were paid considerably less on average than their white male counterparts (see table V.3). In our four case study establishments, female managers received 64-78 percent of the average white male salary in 1979, increasing to 72-83 percent in 1987 (see table IV.1). Women's average pay relative to white male average salaries increased in three of the four cases over the period, remaining the same in the fourth. Representatives of these four establishments provided explanations for these differences in salary, which appear in appendix IV.

Table V.3: Case Study Examples of Average Salaries of Female Aerospace Managers and Professionals Compared With Average White Males' Salaries, by Racial Ethnic Group (1987)

	Female salaries as percentage of white male salaries (averages)									
	Managers					Professionals				
Establishment	All females	White	Black	Hispanic	Asian	All females	White	Black	Hispanic	Asian
A	76	77	[a]	[a]	[a]	76	76	73	72	76
B	72	76	64	[a]	74	79	79	74	75	84
C[b]	83[b]	87	[a]	[a]	[a]	75[b]	76	73	70	77
D	77	78	[a]	[a]	[a]	82	82	77	79	82

[a]A category had less than 25 employees, too small to be statistically reliable.

[b]1986 data

We were unable to account for education and experience but did obtain more detailed information on the managerial category from two of the companies. When we examined the average managerial salaries by entry, middle-, and upper-levels (categories supplied by the companies), we found that the disparity from white men was less at the entry and middle levels than in the managerial category overall. In neither of the two case studies were there enough upper-level female managers to perform a reliable analysis. The establishments had too few (fewer than 25) minority female upper-level managers to discuss each group separately or even as all minority women.

Professional salaries for women in all four establishments in 1979 were about 75 percent of the average white male professionals' salaries. Over the period, there was a slight improvement. By 1987, women's percentage of white males' average salaries ranged from 75 to 82 percent. At one establishment, female professionals' salaries increased by 12 percent. Female professionals' salaries had improved relatively little in two cases, while decreasing in one.

Black professional women in 1979 earned a range of 68 to 75 percent of the average white male professionals' salaries. Over the period, this improved slightly to a range of 73 to 77 percent. There were too few Hispanic women in two establishments in 1979 to calculate a statistically reliable percent, but in the two remaining establishments, they earned 72 to 73 percent of the average white male professionals' salaries. This range changed to 70 to 79 percent for the four establishments by 1987. Of the two establishments in 1979 with enough Asian female professionals, the range was 74 to 76 percent of the average white

males' salaries. By 1987, all four establishments had a range of 76 to 84 percent of the average white male professionals' salaries.

Aerospace Employment by Job Category, Gender, and Race/Ethnicity (1979 and 1986)

	Distribution of workers (percent)									
	Male					Female				
Job category	All[a]	White	Black	Hispanic	Asian	All[a]	White	Black	Hispanic	Asian
1979										
Managers	96.1	90.1	2.4	1.9	1.0	3.9	3.4	.3	.2	[b]
Professionals	91.8	83.8	2.4	2.2	3.0	8.2	7.0	.5	.3	.3
Technicians	82.9	72.5	4.6	3.7	1.7	17.1	14.2	1.6	.9	.4
Sales workers	79.7	76.4	[b]	[b]	[b]	20.3	17.6	[b]	[b]	[b]
Office/clerical workers	29.5	24.3	3.0	1.7	.3	70.6	58.8	6.4	3.7	1.1
Craft workers	92.9	79.9	7.2	4.8	.6	7.1	5.5	1.2	.3	<.1
Semiskilled workers	69.5	51.5	11.2	5.8	.7	30.5	20.2	6.6	3.0	.5
Laborers	59.5	42.7	9.4	6.8	.4	40.5	31.2	5.4	3.3	.5
Service workers	83.3	55.3	20.3	6.3	1.0	16.7	9.7	5.7	1.2	[b]
1986										
Managers	92.7	85.7	2.7	2.2	1.7	7.3	6.2	.5	.3	.2
Professionals	83.7	74.1	2.6	2.4	4.3	16.3	13.4	1.1	.6	1.1
Technicians	77.2	66.1	4.2	3.9	2.7	22.8	18.3	2.0	1.5	.9
Sales workers	70.8	67.6	2.0	[b]	[b]	29.2	26.6	[b]	[b]	[b]
Office/clerical workers	23.9	18.4	3.0	1.8	.6	76.1	61.1	7.7	5.1	1.8
Craft workers	90.1	75.5	7.4	5.4	1.4	9.9	7.4	1.7	.6	.1
Semiskilled workers	66.1	49.1	9.2	5.7	1.6	33.9	21.9	6.3	4.0	1.3
Laborers	57.0	43.3	8.0	4.4	.9	43.0	33.9	5.0	2.9	1.0
Service workers	78.1	52.8	16.3	7.6	1.1	21.9	13.0	6.3	2.2	.4

[a]Includes Native Americans, although they are not displayed in this table.

[b]Category had less than 25 employees, too few to be statistically reliable.

Male Minority Groups Made Gains in Aerospace Employment

In 1986, white men comprised at least two-thirds of the employees in five of nine aerospace job categories nationwide. In order of magnitude, these were: managers, craft workers, professionals, sales workers, and technicians (see table VII.1). In a sixth category, service workers, white males were in a slight majority. In comparison with their share of the national EEO database, all groups of men generally were better represented in aerospace jobs.

Table VII.1: Predominant Gender and Race/Ethnicity for the Aerospace Industry Nationwide (1979 and 1986)

Job category	Percent of all aerospace employees 1979	1986	Predominant gender and race/ethnicity	Percent of job category 1979	1986
Managers	12	13	White males	90	86
Professionals	26	30	White males	84	74
Technicians	7	8	White males	73	66
Sales workers	<1	<1	White males	76	68
Office/clerical workers	13	12	White females	59	61
Craft workers	21	19	White males	80	76
Semiskilled workers	17	1	White males	51	49
Laborers	2	2	White males	43	43
Service workers	1	2	White males	55	53

Examining racial/ethnic EEO patterns among men in aerospace for the 1979-86 period, we also found that:

- Among managers, black, Hispanic, and Asian men increased their percentages slightly, but their numbers remained small.
- Among professionals, black and Hispanic men stayed about the same. Asian men's percentage increased by nearly half, but their numbers remained small.
- Compared with managers in the national EEO database, Asian, white, and Hispanic men had higher levels of representation as managers; black men were less represented.
- The average salaries of minority male managers and professionals were generally lower than the average salaries of white men in these positions during the 1979 to 1987 period.
- Representation of Hispanic, Asian, and black male professionals in the national EEO database increased. But as aerospace professionals, the representation of these groups increased at a greater rate.
- Only among professionals in small aerospace establishments did the size of the establishment seem to be related to EEO variations. In comparison with large establishments and the aerospace industry overall, all male

minorities remained a lower percentage than the national EEO database, but the percentage of Hispanic men increased.

Overview of Aerospace Job Categories

Among male managers in aerospace, the proportion of whites decreased from 90.1 percent in 1979 to 85.7 percent in 1986. Blacks, Hispanics, and Asians each remained below 3 percent of managers, yet their percentages increased slightly over the period (each less than 1 percent), as fig. VII.1 shows. When viewed relative to 1979, Asians experienced the most change, a 66-percent increase. Hispanics increased 15.5 percent and blacks 10 percent, while whites decreased 4.9 percent. For male professionals in aerospace, the proportion of whites decreased from 83.8 to 74.1 percent from 1979 to 1986; blacks and Hispanics remained relatively unchanged at about 2.5 percent (see fig. VII.2). Asians increased by 43 percent relative to 1979, from 3 to 4.3 percent.

Figure VII.1: Minority Male Managers in the Aerospace Industry, by Racial/Ethnic Group (1979-86)

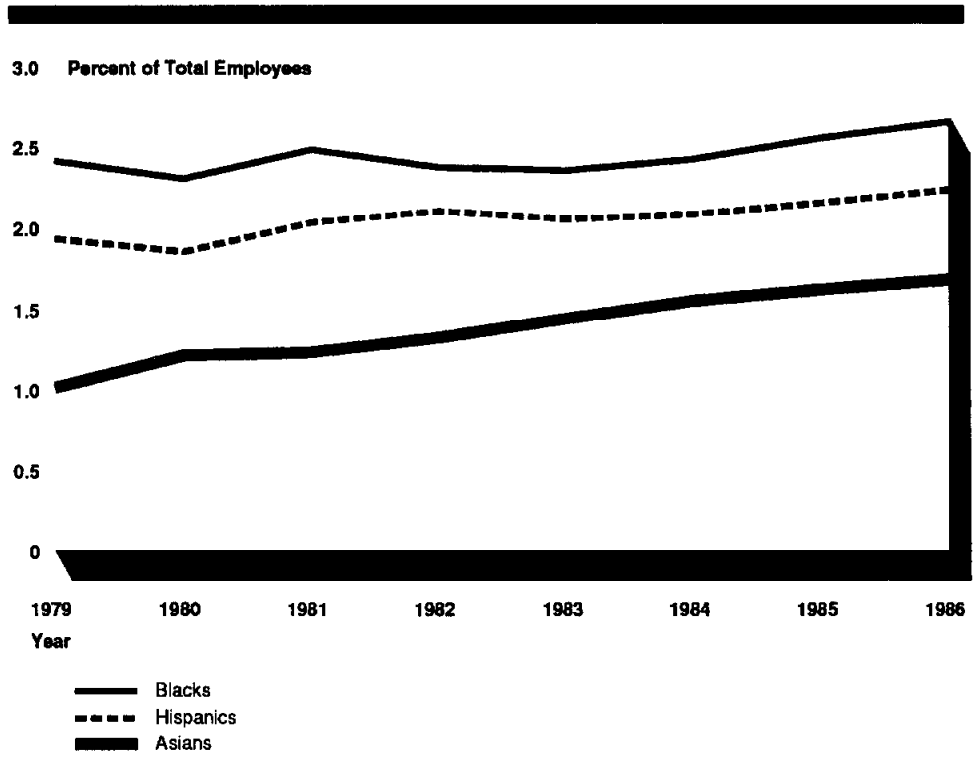
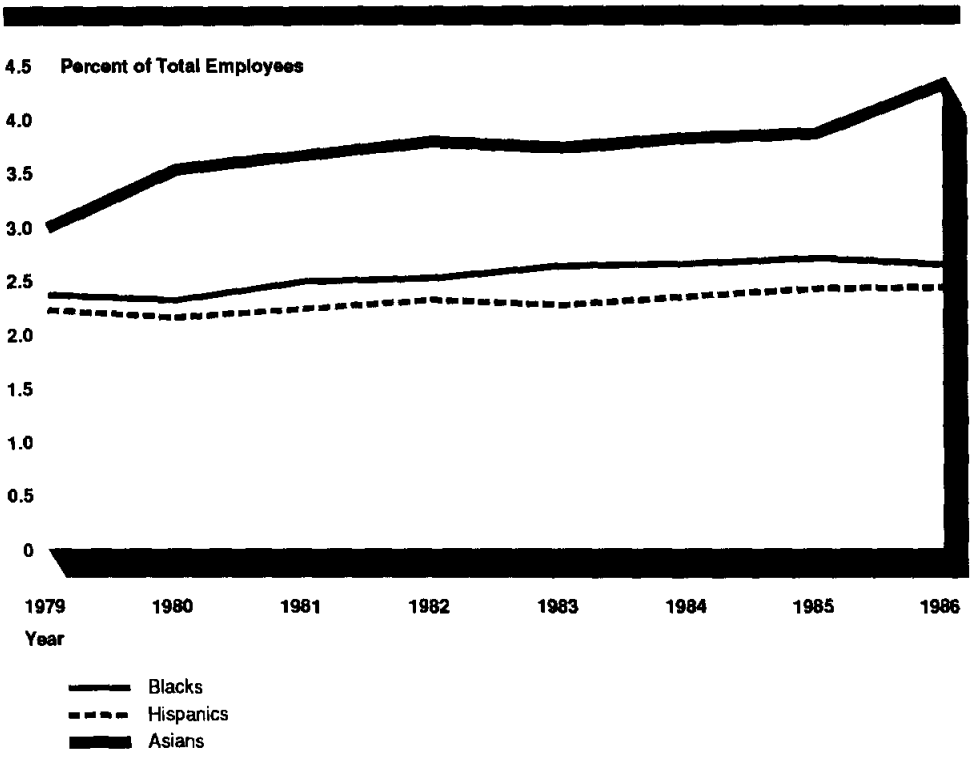


Figure VII.2: Minority Male Professionals in the Aerospace Industry, by Racial/Ethnic Group (1979-86)



Comparison With National EEO Database

Between 1979 and 1986, men consistently held a higher representation in aerospace employment by about 40 percent, compared with the national EEO database. Among managers, men were more highly represented relative to the national EEO database and became more so over time. Black men were somewhat less represented in managerial jobs, but became less so. Asian, white, and Hispanic men were better represented as managers in the aerospace industry when compared with the national EEO database.

Male professionals were better represented in the aerospace industry in 1979 than in the national EEO database and increasingly so by 1986. All male professional groups were better represented relative to the national EEO database—Hispanics having the highest relative percentage, followed by Asians, whites, and blacks.

In Aerospace Management, Males' Share of Jobs Increasingly Exceeded National Pattern

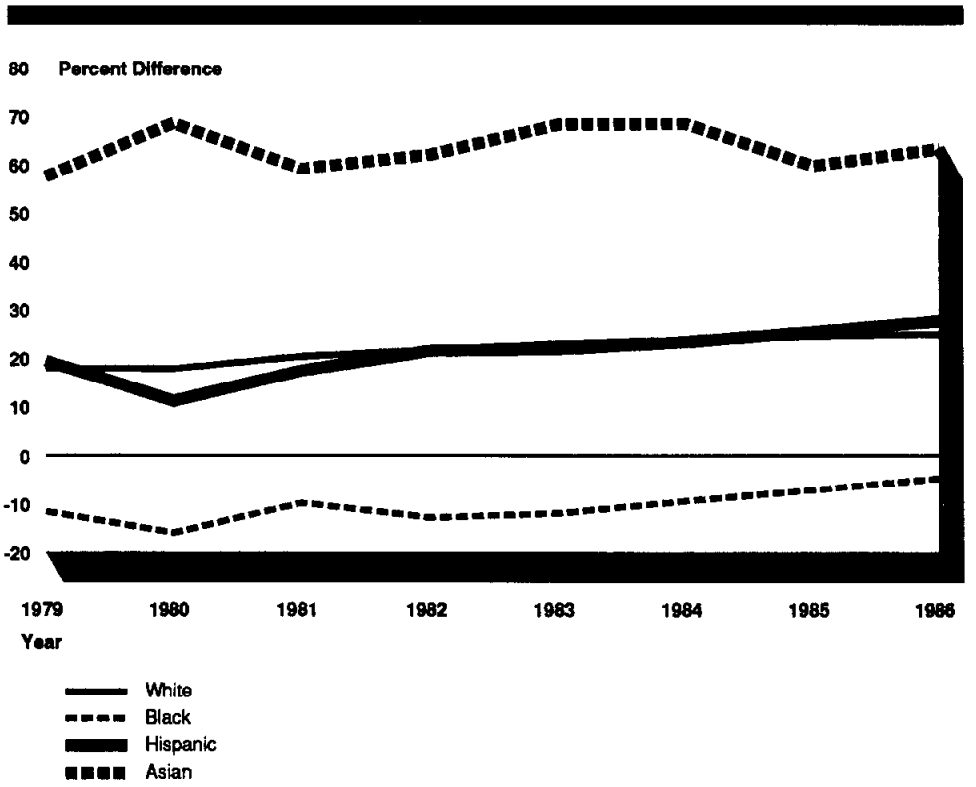
Men were employed as managers in the aerospace industry to a greater degree than in the national EEO database over the 1979-86 period. Male representation in aerospace management compared with the national EEO database increased over that time, moving from about 18 to about 25 percent above the national EEO database.

Except for blacks, all racial/ethnic groups of men in aerospace management were better represented than in the national EEO database (see fig. VII.3). Asians were highest at about 63 percent over for the 1979-86 period, while whites and Hispanics were similar, moving from about 18 to about 26 percent above. Black males' share of aerospace management jobs moved closer to their share of such jobs in the national EEO database, increasing from about 12 percent below in 1979 to about 5 percent below in 1986.

Among Male Aerospace Professionals, Racial/Ethnic Differences Even More Marked Than Nationally

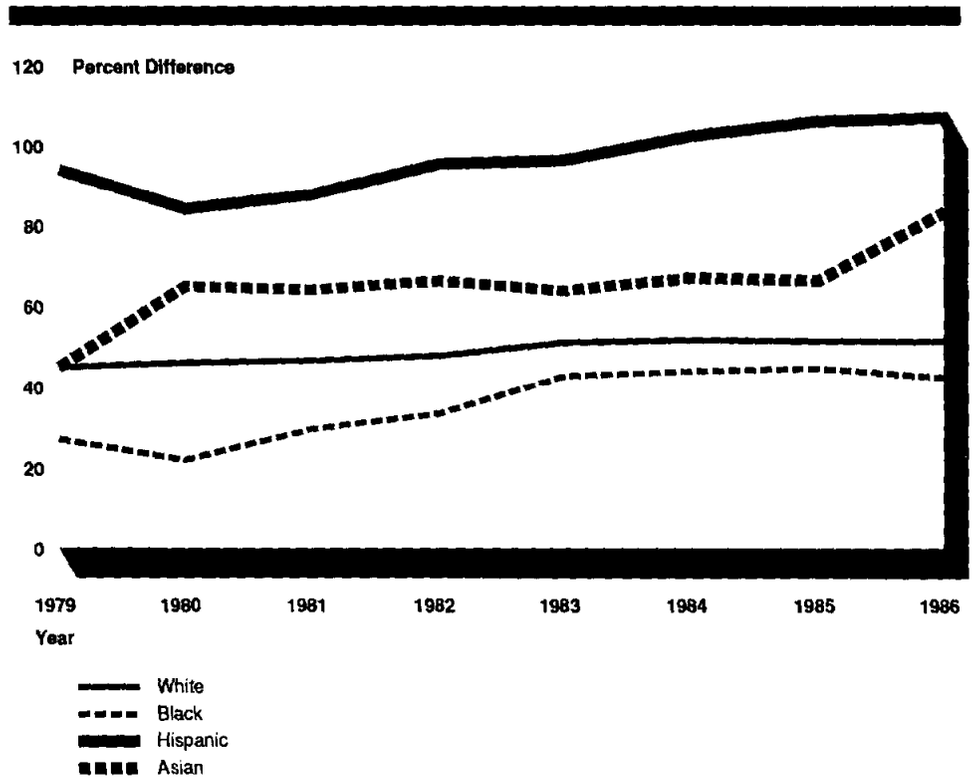
Aerospace employed 45 percent more male professionals in 1979 than did the industries in the national EEO database, increasing to 53 percent above in 1986. Among professionals, all male racial/ethnic groups were better represented in aerospace than in the national EEO database, and all the groups except whites increased in this difference substantially between 1979 and 1986 (see fig. VII.4).

Figure VII.3: Male Managers in the Aerospace Industry Compared With the National EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lines above and below zero indicate more or less representation in the aerospace industry.

Figure VII.4: Male Professionals in the Aerospace Industry Compared With the National EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the national EEO database. Plotted lives above zero indicate more representation in the aerospace industry.

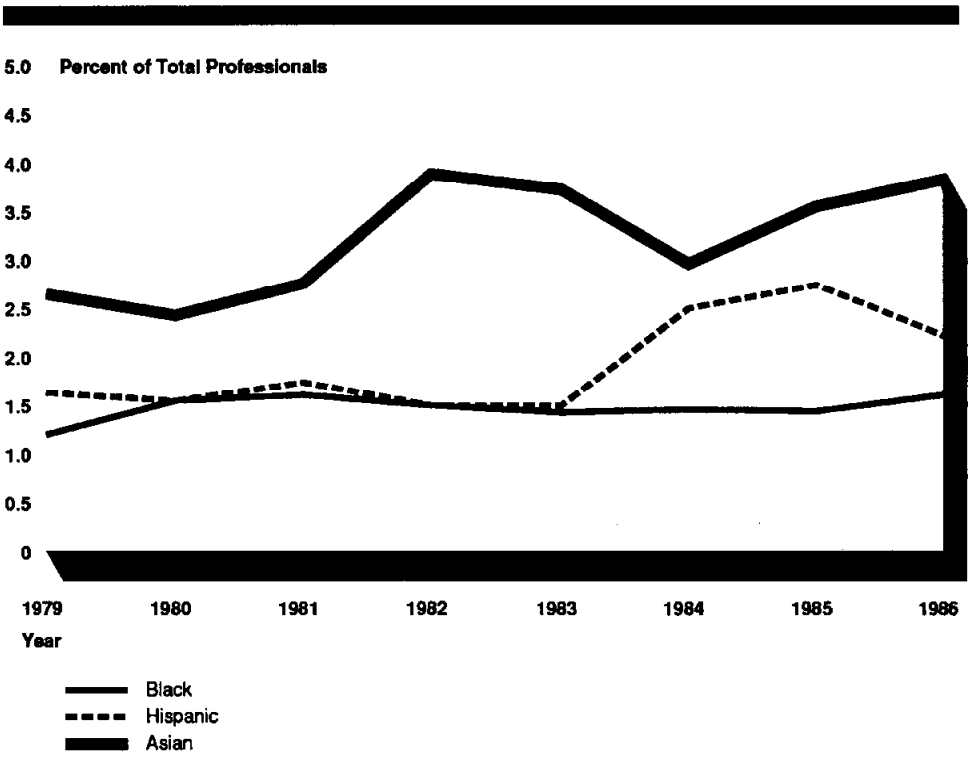
Asian male professionals were represented about 45 percent more in aerospace than in the national EEO database in 1979; by 1986, the difference had widened to 83 percent. Blacks, whose aerospace representation was closest of the male groups to their representation in the national EEO database, widened that difference from about 27 percent above in 1979 to 42 percent above in 1986. Hispanics, the most highly represented of the male groups when compared with the national EEO database, increased their difference from about 94 percent above in 1979 to about 107 percent above in 1986.

EEO in Small, Medium, and Large Companies

In both small and medium-size aerospace establishments, the percentages of minority male professionals differed from the profile for the industry overall, and the profile for large firms, which was similar to the overall profile. The pattern for minority men in small establishments (see fig. VII.5) differed as follows:

- The percentages of all male minority professionals were lower than in the overall industry or large establishments.
- Blacks and Hispanics were similar in proportion until 1983, when the percentage of Hispanics increased.
- The percentages of male Asian and Hispanic professionals in small establishments were more variable over time than in the large companies or the aerospace industry overall.

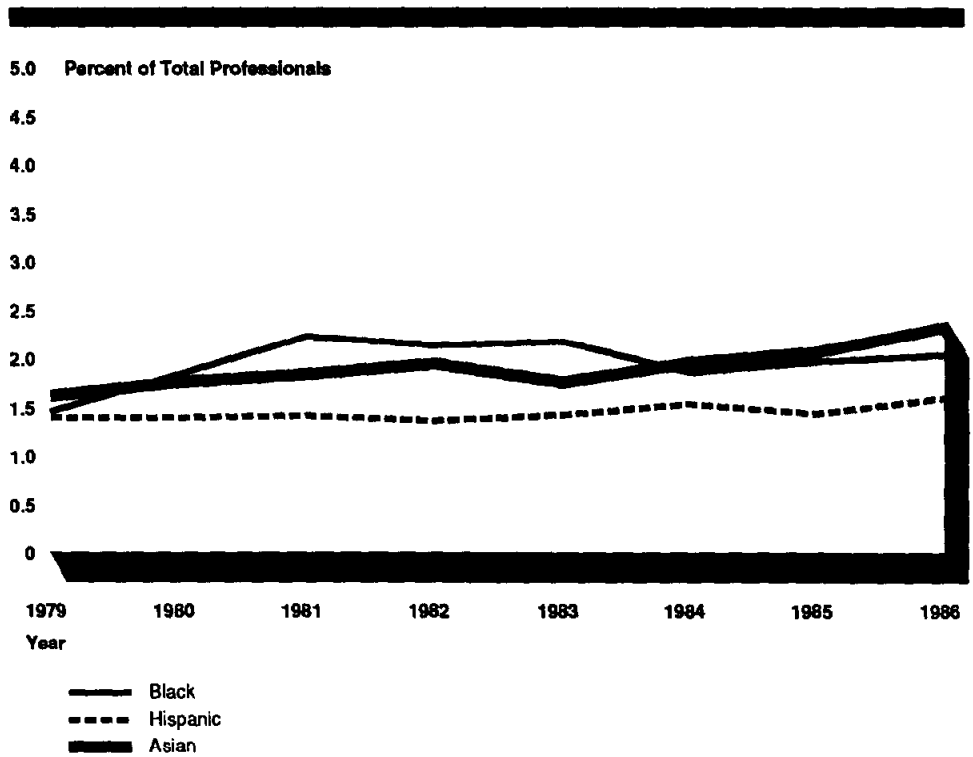
Figure VII.5: Male Professionals in Small Aerospace Establishments, by Racial/Ethnic Group (1979-86)



Note: Small establishments are those employing 50-999 people.

In medium-size companies, the percentages of all minority groups among male professionals (see fig. VII.6) were similar, but lower than the pattern for the industry overall. Toward the end of the 1979-86 period, however, Asian male professionals, who were below their black male counterparts in representation, began to increase, as they did in large and small companies and the industry overall.

Figure VII.6: Male Professionals in Medium-Size Aerospace Establishments, by Racial/Ethnic Group (1979-86)



Note. Medium-size establishments are those employing 1,000-9,999 people.

Salary Patterns

Male minorities in managerial and professional positions in the four case studies generally earned less on average than white male managers and professionals. Blacks were paid least, on average, followed by Hispanics in both job categories. Consistently, across both job categories and for the entire time, Asians earned the average salaries closest to those of the white men. (Data for 1987 appear in table VII.2; a complete breakout by racial/ethnic group, gender, job category, and year is provided in appendix IV).

Table VII.2: Case Study Examples of Average Salaries of Male Managers and Professionals Compared With White Male Salaries, by Racial/Ethnic Group (1987)

	Salary as percentage of white male salary (averages)					
	Managers			Professionals		
Establishment	Black	Hispanic	Asian	Black	Hispanic	Asian
A	77	81	[a]	85	90	100
B	84	84	90	91	87	98
C	86	88	97	86	90	95
D	75	87	96	91	92	97

[a]This category had fewer than 25 employees, which made it too small to be statistically reliable.

For managers, average salaries for black men ranged from 76 to 84 percent of those for white men in 1979, and from 75 to 86 percent in 1987. The range for Hispanic male managers in 1979 was from 80 to 87 percent of the average salaries of white male managers, rising slightly to a range of from 81 to 88 percent in 1987. Asian male managers in two establishments earned average salaries in 1979 ranging from 86 to 105 percent of the average salaries of white male managers; as of 1987 in three establishments the range was from 90 to 97 percent.

The average salaries of black male professionals ranged from 83 to 87 percent of the average salaries of white men in 1979, increasing to a range of from 85 to 91 percent in 1987. The range in 1979 for Hispanic male professionals was 85 to 89 percent, rising to a range of from 87 to 92 percent in 1987. Asian male professionals in 1979 earned, on average, from 94 to 96 percent of the white men's average salaries, increasing to a range of from 95 to 100 percent in 1987. When we examined average salaries according to levels of minority male managers in two establishments, in one case the difference from white men at the entry and middle levels and upper level was less than that for managers overall. In fact, the average salaries for some groups exceeded those of white men. Only one establishment had enough upper-level managers who were minority men to make this comparison.

Local Aerospace Labor Markets: Los Angeles and Seattle

Although some aerospace positions are recruited nationally, most hiring takes place in local labor markets. We examined employment of managers and professionals in Los Angeles and Seattle (areas with the two largest numbers of aerospace employees in the national EEO database) in some detail. For these job categories, we discuss Los Angeles and Seattle data in two ways: (1) descriptions of the EEO profiles of local aerospace industries and (2) comparisons with respective local portions of the national EEO database. In this appendix, our discussions focus on the results of those analyses in which Los Angeles and Seattle differed from the patterns for the national EEO database.

Los Angeles had 114,248 aerospace employees in 1979 and 162,563 in 1986; Seattle had 1,599 aerospace employees in 1979 and 65,002 in 1986. In both areas, the industry experienced considerable growth in the time period covered, 42 percent in Los Angeles and nearly 4,000 percent in Seattle. Nationwide, aerospace employment increased by 58 percent during this time. Among our main findings were the following:

- Minority groups of managers and professionals held higher percentages of jobs in the Los Angeles aerospace industry than in the aerospace industry nationwide. Minority managers and professionals, except Asians, held lower percentages of jobs in the Seattle aerospace industry than their counterparts in the aerospace industry nationwide.
- Female managers and professionals in the Los Angeles aerospace industry held higher percentages than their counterparts in the aerospace industry nationwide and increased over the period at a faster rate. The percentages of female managers and professionals in the Seattle aerospace industry declined sharply in the early years, before improving in the later years.
- Black male managers in Los Angeles aerospace, compared with the Los Angeles portion of the EEO database, were better represented than black aerospace managers compared with the national EEO database. In contrast, Asians and Hispanics were less represented in Los Angeles than nationally. Male minority professionals' representation was similar to the same group in the nation.
- Asian managers and Hispanic and black managers and professionals also were less represented in relation to the Seattle portion of the EEO database than in the nationwide comparison.

In Aerospace Industry, Minorities a Higher Percentage in Los Angeles Than in Seattle or the Nation

Compared with employment patterns in the aerospace industry nationally, Los Angeles and Seattle presented a few differences in EEO profiles. Minority groups comprised a higher percentage in the Los Angeles aerospace industry than aerospace nationwide, but increased their share of jobs at a slower rate over the 1979-86 period. Asians and Hispanics in that area held about twice as high a percentage of positions in the local aerospace industry than in the nationwide aerospace industry.

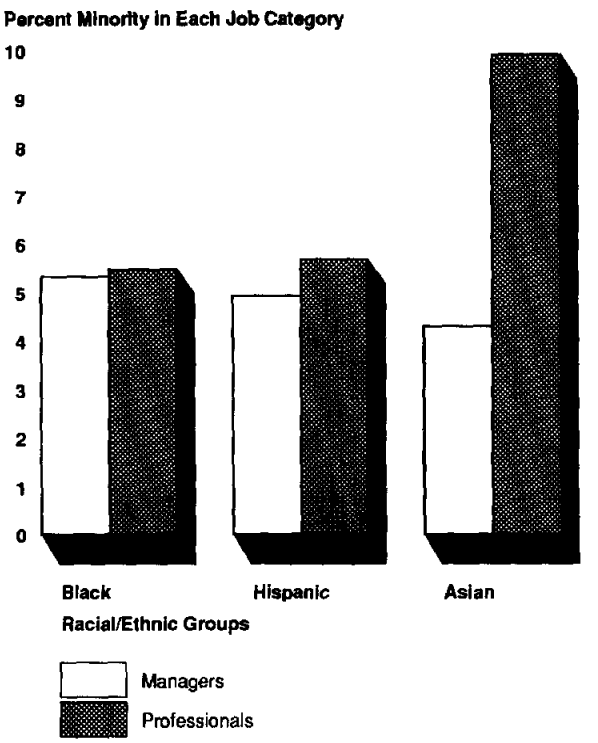
Blacks and Hispanics in the Seattle aerospace industry comprised a smaller percentage than in the aerospace industry nationwide. Of minorities, Asians held the highest percentage in Seattle and increased the most among managers and professionals. The percentage of Hispanic managers and professionals in Seattle's aerospace industry decreased from 1979 to 1986.

In Los Angeles Aerospace Industry, Ethnic Managers and Professionals Gradually Increased Representation

In Los Angeles aerospace as in the aerospace industry nationally, the percentages of racial and ethnic groups in management jobs increased from 1979 to 1986. Although all three minority groups held higher percentages locally in Los Angeles than nationally, their share increased less rapidly over time. Asian and Hispanic managers consistently held about twice as high a percentage in Los Angeles aerospace as in the aerospace industry nationwide, with Asians showing the largest relative increase (see figs. VIII.1 and III.5). Only blacks, however, consistently exceeded 5 percent of Los Angeles aerospace managers.

Among aerospace professionals, all racial and ethnic groups also held higher percentages in Los Angeles than in the industry nationwide (see figs. VIII.1 and III.5). Black and Hispanic professionals reversed their nationwide standing, with Hispanics holding a slightly higher percentage than blacks in Los Angeles. Both sets of professionals increased at about the same rate between 1979 and 1986 in both the Los Angeles aerospace industry and the industry nationwide. Asians held the highest percentage of the minority groups in both managerial and professional positions, but they increased more rapidly in the nationwide aerospace industry than in Los Angeles' aerospace industry.

Figure VIII.1: Racial/Ethnic Managers and Professionals in the Los Angeles Aerospace Industry (1986)

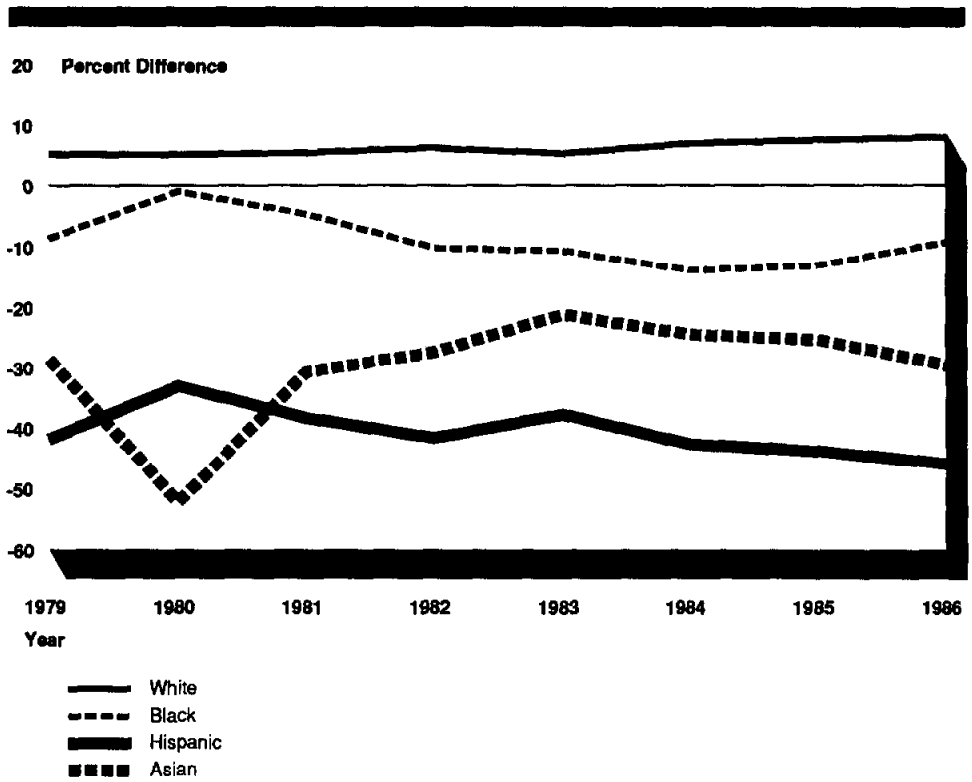


Aerospace Minorities Less Represented in Los Angeles Than in the Nation in Comparison With the National EEO Database

A quite different picture was revealed when the Los Angeles aerospace industry was compared with the Los Angeles portion of the national EEO database for 1979-86. Among aerospace managers, in Los Angeles, the least represented group relative to the local EEO data was Hispanics, followed by Asians, blacks, and whites (see fig. VIII.2). In the aerospace industry nationwide, when aerospace managers were compared with the national EEO database (see fig. III.9) the order was blacks, both whites and Hispanics, then Asians. In addition, although Los Angeles aerospace black managers were closer to their local EEO data representation than were aerospace blacks nationwide to the national EEO database, Los Angeles blacks, Asians, and Hispanics were less represented.

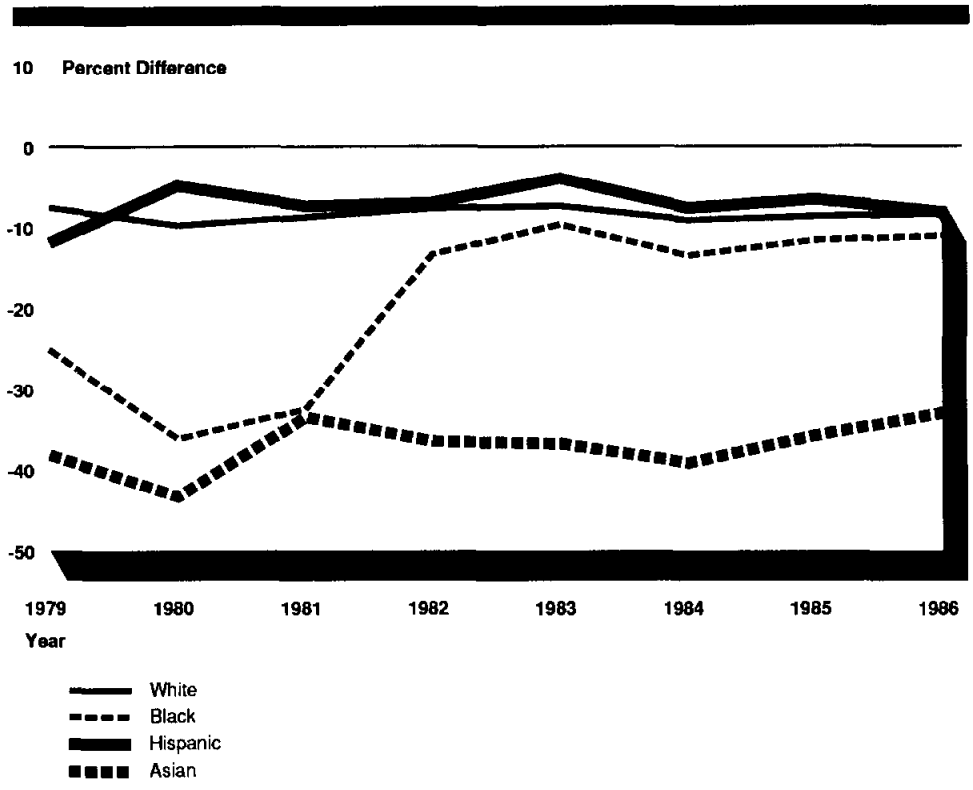
Racial and ethnic professionals in the Los Angeles aerospace industry were less represented in relation to the local portion of the EEO database (see fig. VIII.3) than their counterparts in the aerospace industry nationwide (see fig. III.10).

Figure VIII.2: Racial/Ethnic Groups as Managers in the Los Angeles Aerospace Industry Compared With the Los Angeles Portion of the EEO Database (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines above and below zero indicate more or less representation.

Figure VIII.3: Racial/Ethnic Groups as Professionals in the Los Angeles Aerospace Industry Compared With the Los Angeles Portion of the EEO Database (1979-86)

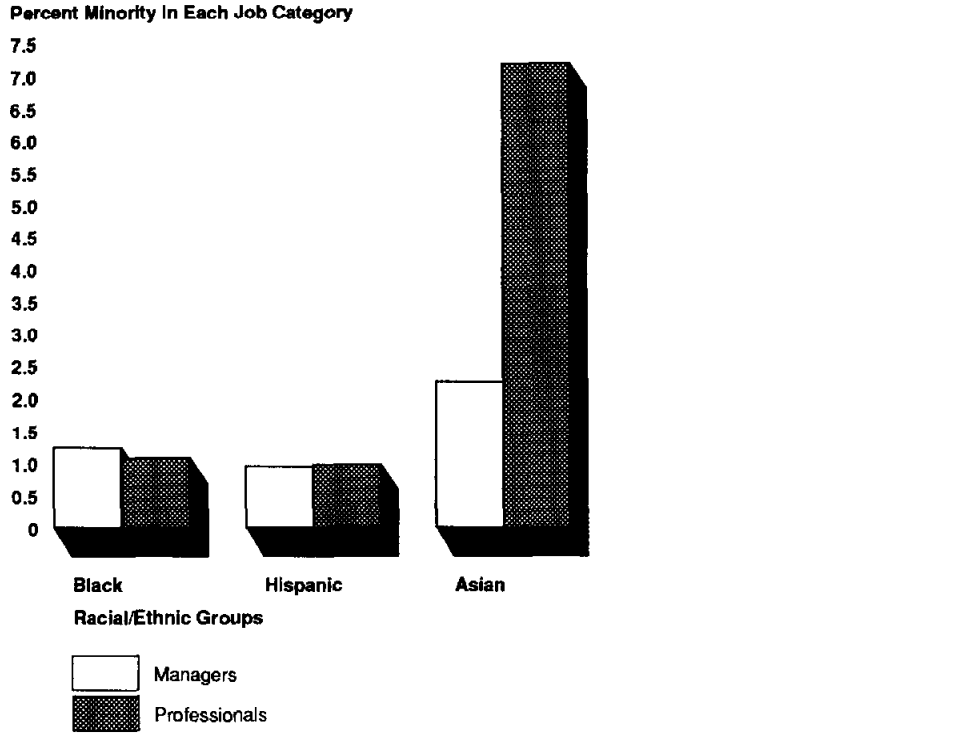


Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines below zero indicate less representation.

In Seattle Aerospace Industry, Few Ethnic Minority Managers and Professionals

EEO patterns for racial/ethnic groups among Seattle aerospace managers for our study period were somewhat similar to the profiles already discussed for the aerospace industry generally and the national EEO database. The percentage of all minorities was small. There were, however, some differences. Blacks and Hispanics held lower percentages in the Seattle aerospace industry than in the industry nationwide. Among Seattle aerospace industry managers, professionals, and all job categories combined, Asians held the highest percentages. Although there were no Asian managers in the Seattle aerospace industry in 1979, they comprised 2.2 percent of that industry's managers in 1986. Asian managers started at 1.1 in the aerospace industry nationwide, reaching 1.9 percent by 1986 (see figs. VIII.4 and III.5).

Figure VIII.4: Racial/Ethnic Groups as Managers and Professionals in the Seattle Aerospace Industry (1986)

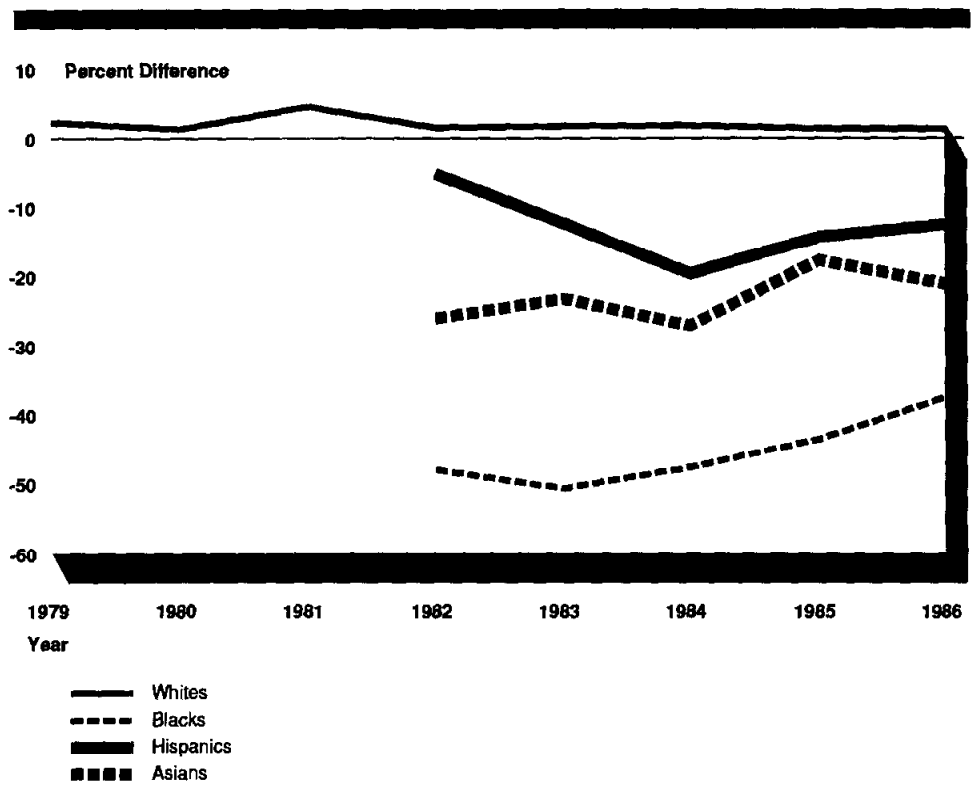


Asian professionals held an even higher percentage than managers in the Seattle aerospace industry, starting in 1979 at 4.4 percent and ending at 7.2 percent in 1986, while they were 3.3 and 5.4 percent in the nationwide aerospace industry at these times (see figs. VIII.4 and III.5).

Comparison With Local Seattle Labor Market: Minorities Less Represented in Seattle Aerospace Industry Than in the Nation

Even though Asians in the Seattle aerospace industry held a high percentage of positions in relation to other minorities, Asian managers were less represented in relation to the local portion of the EEO database than were Asians in the aerospace industry nationwide in comparison with the national EEO database (see figs. VIII.5 and III.9). In contrast to Asian managers, Asian professionals in the Seattle aerospace industry held a higher representation relative to the Seattle portion of the national EEO database, just as national aerospace Asians did relative to the national EEO database. Hispanic and black professionals in Seattle were less represented when this comparison was made than their national aerospace counterparts were in relation to the national EEO database (see figs. VIII.6 and III.10).

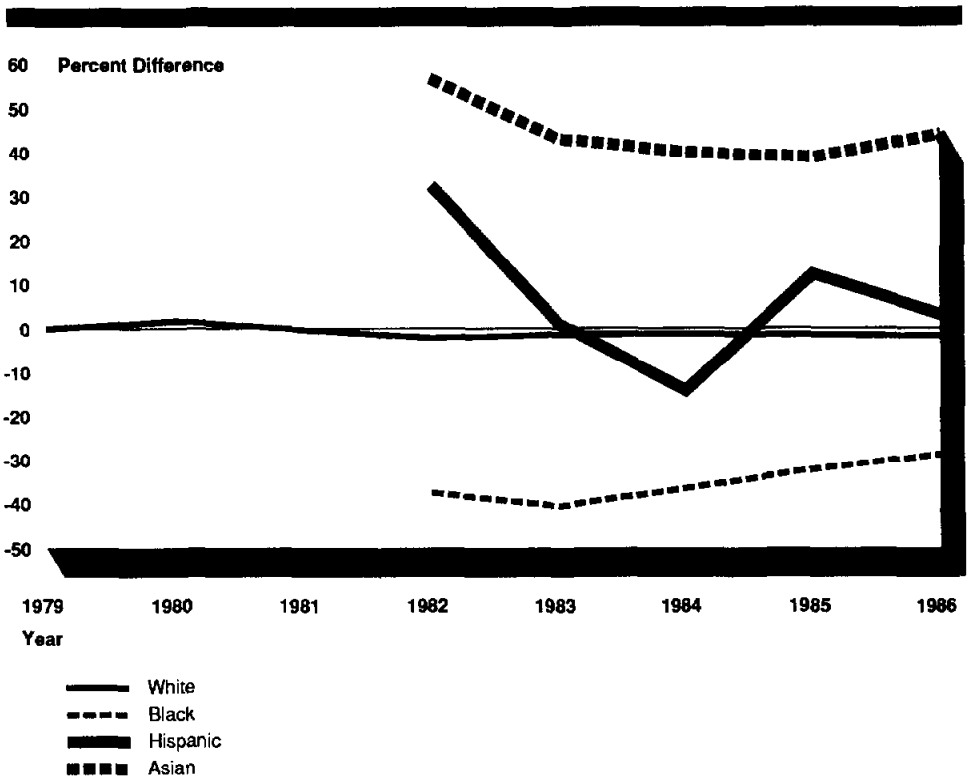
Figure VIII.5: Racial/Ethnic Groups as Managers in the Seattle Aerospace Industry Compared With the Seattle Portion of the EEO Database (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines above and below zero indicate more or less representation.

Note: Results of this analysis for minorities from 1979 through 1981 are not included because the numbers were too small (fewer than 25) to calculate reliable statistics.

Figure VIII.6: Racial/Ethnic Groups as Professionals in the Seattle Aerospace Industry Compared With the Seattle Portion of the EEO Database (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines above or below zero indicate more or less representation.

Note: Data for minorities are not provided for 1979-81 because the numbers were too small (fewer than 25) to calculate reliable statistics

Los Angeles Women Outpace Those Nationally, Seattle Women Lag

When we examined the employment of women in aerospace jobs in Los Angeles and Seattle and also compared them with women in both the national aerospace industry and the local portion of the EEO database for the 1979-86 period, we found the following:

- In the Los Angeles aerospace industry, women held a somewhat higher percentage of jobs and increased at a faster rate relative to the industry nationwide. The percentage of female professionals was slightly higher and increased more rapidly than the aerospace industry nationwide. Female managers and professionals were closer to their representation in the Los Angeles portion of the EEO database than women in the aerospace industry nationwide were to the national EEO database.
- In the Seattle aerospace industry, the percentage of female managers declined (primarily from 1981 to 1982), while in the aerospace industry

nationwide the percentage gradually increased. From 1981 to 1982, the percentages of white female managers and all female professionals decreased by about a quarter, while in the aerospace industry nationwide these groups doubled. In the early part of the period studied, very few minority female managers and professionals were employed in the Seattle aerospace industry. In relation to the local portion of the national EEO database, the Seattle aerospace industry differed from the industry nationwide in that Hispanic and Asian managers and Hispanic professionals were less represented. Overall, women were less represented in the Seattle aerospace industry than they were in the industry nationwide.

Los Angeles Aerospace: Proportion of Female Managers and Professionals Changed Slightly Since 1979

Although the proportion of female aerospace managers increased in both Los Angeles (see fig. VIII.7) and the nationwide aerospace industry (see fig. V.3) between 1979 and 1986, in Los Angeles this group consistently showed a slightly higher percentage and more rapid rise. Women increased from about 6 percent of the Los Angeles aerospace industry in 1979 to about 11 percent in 1986, compared with an increase of from 4 to 7 percent in the nationwide aerospace industry.

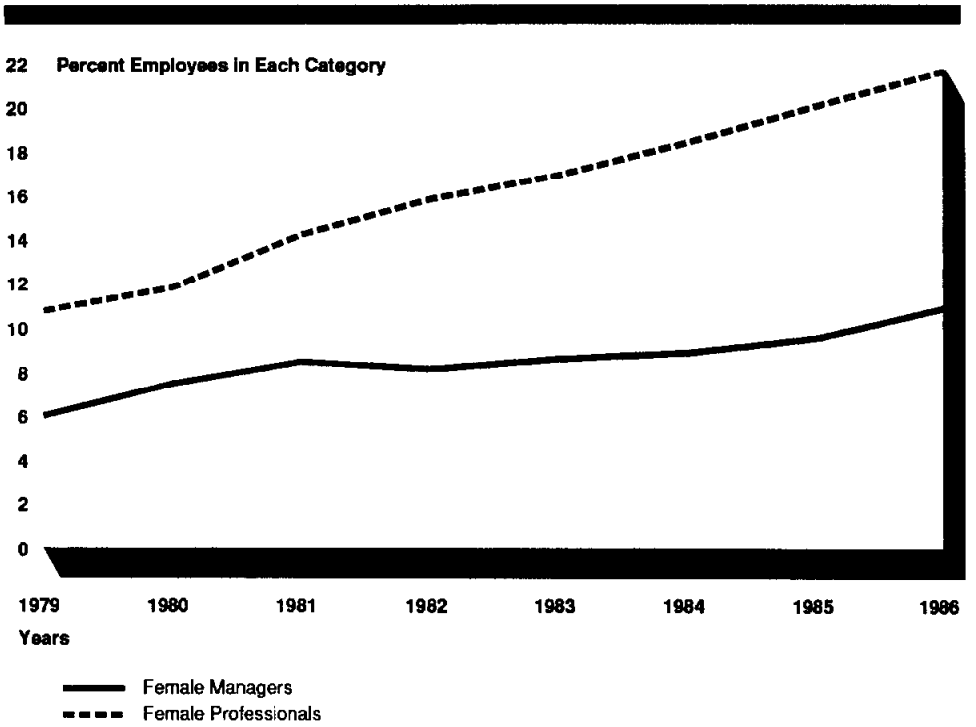
Among aerospace professionals in Los Angeles, the female profile was similar to that for female professionals in aerospace nationwide (see figs. VIII.7 and V.3). The percentage of Los Angeles female professionals was slightly higher, however, and increased a little more rapidly over time. The pattern for racial/ethnic women among Los Angeles aerospace professionals did not differ from that for these groups in the aerospace industry nationwide.

Los Angeles Aerospace Compared With the Los Angeles Portion of the EEO Database

In management jobs, the pattern of gender differences between the Los Angeles aerospace industry and the Los Angeles portion of the EEO database was similar to the pattern for the nationwide comparison (aerospace industry nationwide compared with national EEO database). Female aerospace managers in Los Angeles, however, were slightly closer to their local EEO database representation (about 75 percent below in 1979, 66 percent below in 1986) than were female managers in the nationwide group (about 79 percent below in 1979, 72 percent below in 1986).

Employment of racial/ethnic groups of women in Los Angeles aerospace management when compared to the local portion of the EEO database

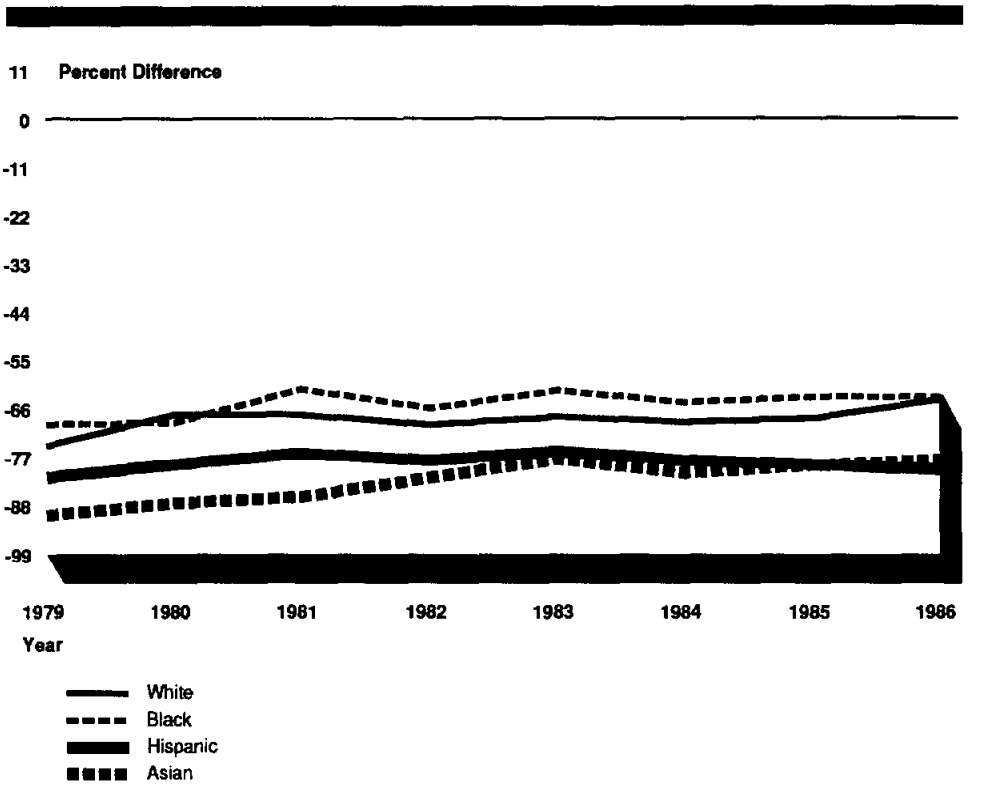
Figure VIII.7: Female Managers and Professionals in the Los Angeles Aerospace Industry (1979-86)



(see fig. VIII.8) was similar to the pattern seen for the nationwide aerospace industry (see fig. V.10), in that all aerospace groups were between 60 and 90 percent below their representation in the EEO database. The order in which the groups were less represented in the aerospace industry varied between Los Angeles and the nation. In Los Angeles in both 1979 and 1986, Asian women were least represented, followed by Hispanics, whites and blacks. In the aerospace industry nationwide, Asians, whites, and blacks were all similarly less represented in 1979, with Hispanics being slightly less represented. In 1986, whites and blacks were the least represented, followed by Hispanics and Asians.

Female professionals in the Los Angeles aerospace industry were slightly better represented relative to the Los Angeles portion of the EEO database (71 percent below in 1979, 53 percent below in 1986) than in the similar nationwide comparison. In the latter, their nationwide aerospace industry share was 78 percent below their national EEO database share in 1979, and 64 percent below in 1986). Compared to the national pattern, the Los Angeles women moved more quickly toward full representation.

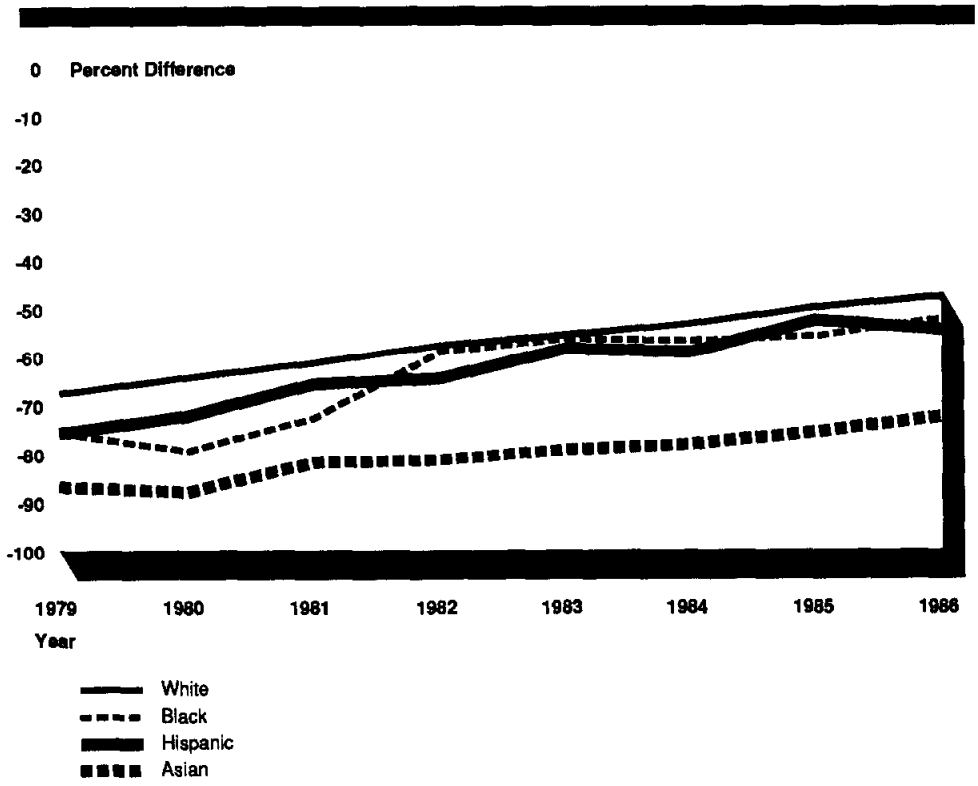
Figure VIII.8: Female Managers in the Los Angeles Aerospace Industry Compared With the Los Angeles Portion of the EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines below zero indicate less representation in the Los Angeles aerospace industry.

Although all racial and ethnic groups among female professionals were substantially less represented in both the Los Angeles (see fig. VIII.9) and nationwide aerospace industries (see fig. V.11), the patterns varied. In order, from least to best representation for Los Angeles were Asians, Hispanics and blacks, and whites; for the nation, the order was whites, blacks, Asians, and Hispanics. White and black female professionals were somewhat better represented in the Los Angeles aerospace industry than in the similar nationwide comparison (aerospace industry nationwide compared with national EEO database), while Hispanics and Asians were less represented.

Figure VIII.9: Female Professionals in the Los Angeles Aerospace Industry Compared With the Los Angeles Portion of the EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines above or below zero indicate more or less representation in the Los Angeles aerospace industry.

Note: Results of this analysis for minorities from 1979 through 1981 are not included because the numbers were too small (fewer than 25) to calculate reliable statistics.

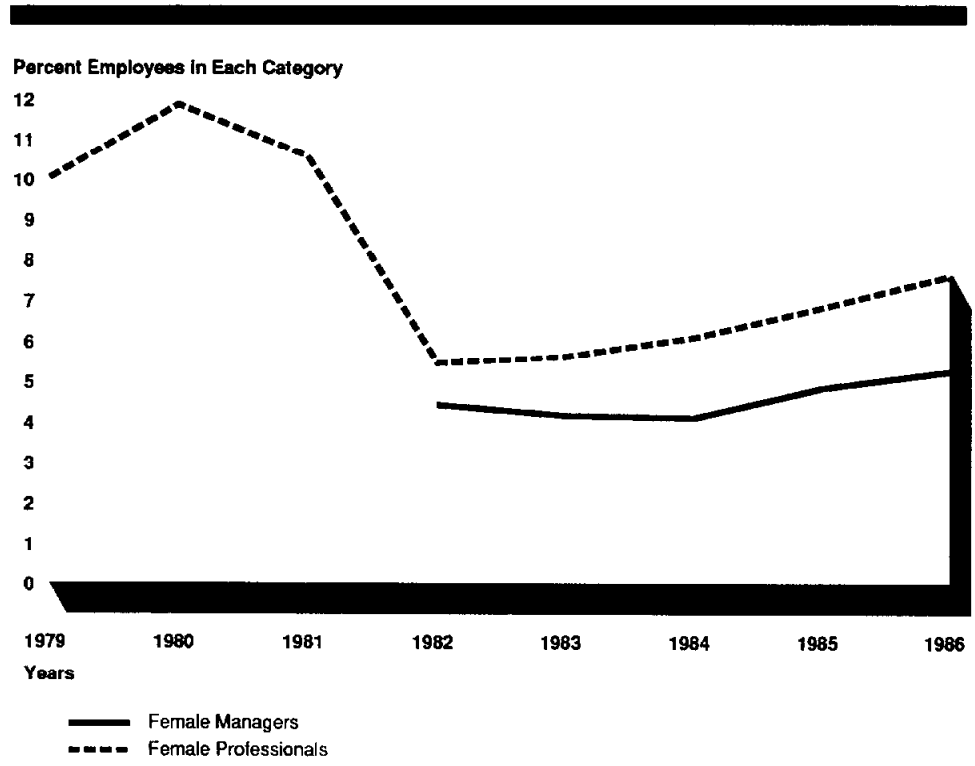
Seattle Female Aerospace Managers and Professionals: Percentages Lower Than in National Aerospace Industry

In the Seattle aerospace industry, women as both managers and professionals declined in percentage between 1979 and 1986, even as their counterparts increased nationally. This phenomenon may be related to the rapid increase in the Seattle aerospace labor force by about 4,000 percent over the period. Of the 63,403 employees added to the aerospace industry from 1979 to 1986, 49,030 were men (37 percent of the increase).

In both Seattle and the nation, women remained under 10 percent of managers in the aerospace industry. Female managers in Seattle aerospace declined from 8.4 to 5.3 percent; this represented a 37 percent relative difference between 1979 and 1986. In contrast, in the national

aerospace industry female managers increased from 3.9 to 7.3 percent, an 87 percent increase (see figs. VIII.10 and V.3).

Figure VIII.10: Female Managers and Professionals in the Seattle Aerospace Industry (1979-86)



Note: Data for female managers are not provided for 1979-81 because the numbers were too small (fewer than 25) to calculate reliable statistics.

White women held about 9 percent of aerospace management jobs in Seattle in 1979, only to drop by more than half to 4 percent in 1982. Nationally, white women held about 3 percent of such jobs in 1979 (see fig. V.5) and doubled, increasing to about 6 percent by 1986. No minority female managers were employed in Seattle until 1982, and although they increased, no minority group reached one-third of 1 percent by 1986. Nationwide, the representation of minority women increased more rapidly, especially for Asians.

Among aerospace professionals in Seattle, women experienced a relative decline of 20 percent over the time studied (from 10 to 8 percent), while nationally they increased steadily, essentially doubling from 8 to 16 percent (see fig. V.3). As with female managers, the greatest decline in the

percentage of female professionals in Seattle occurred between 1981 and 1982, when they decreased from 10.6 to 5.5 percent.

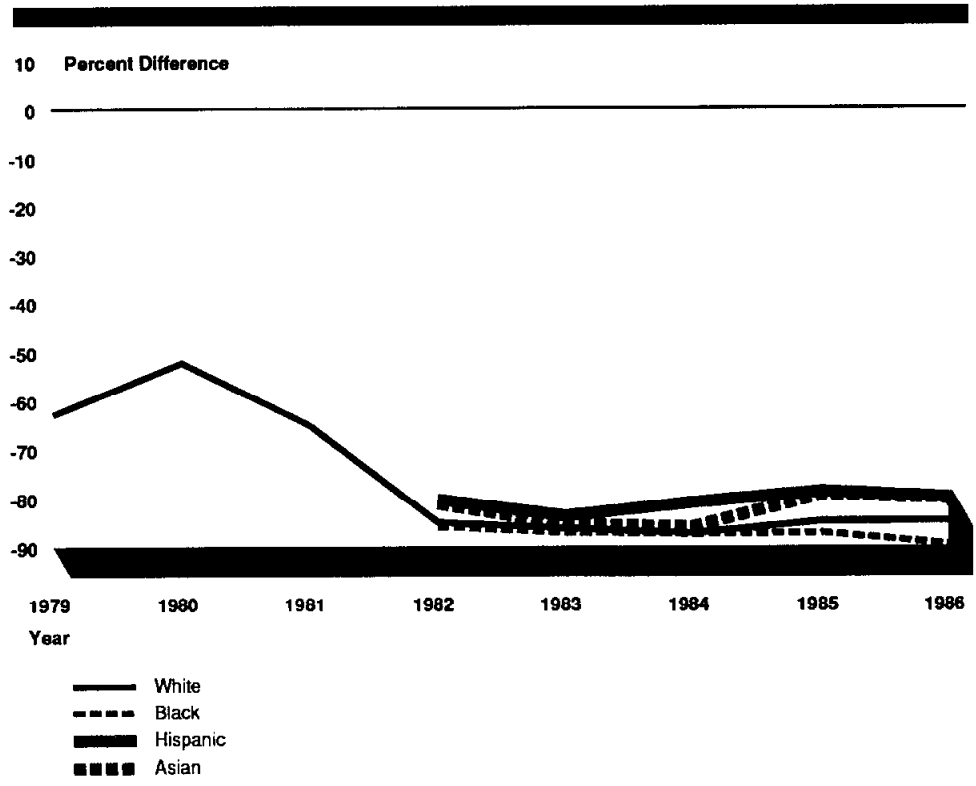
Female members of racial and ethnic groups among professionals in the Seattle aerospace industry also differed from the national industry patterns. White female professionals peaked in 1980 at almost 12 percent, but declined rapidly by 60 percent to 4.8 percent in 1982. White female professionals in aerospace nationwide steadily increased, nearly doubling between 1979 and 1986 from about 7 to 13 percent (see fig. V.6). As in the manager category, female minority professionals in Seattle were nonexistent until 1981, when the first blacks and Asians were employed; the first Hispanics were employed in 1982. But no minority group in Seattle reached 1 percent of aerospace professionals during the 1979-86 period. Asians increased the most, to 0.8 percent, while the others reached about 0.1 percent. Nationwide, blacks and Asians in aerospace each reached 1 percent.

Comparisons With Local Seattle Portion of the EEO Database

Female racial/ethnic managers and professionals in Seattle differed more from the Seattle portion of the EEO database than their percentage in the nationwide aerospace industry differed from the national EEO database. Few female racial/ethnic aerospace managers were employed in Seattle from 1979 to 1981, and they were less represented in comparison with the Seattle portion of the EEO database. All minority groups were less represented by about 90 percent in 1981 and 1983. White female managers, comprising the vast majority of female managers in the Seattle aerospace industry, were 52 percent below the Seattle portion of the local portion of the EEO database in 1980. By 1984, the percentage was 87 percent below; by 1986 the percentage improved slightly. (See figs. VIII.11 and V.10.)

In the early part of the period, female racial/ethnic professionals showed a pattern similar to female racial/ethnic managers. Minorities generally were underrepresented by 80 to 90 percent. White women were about 57 percent below in 1980, declining rapidly to a low of 88 percent below in 1982, with some recovery by 1986. Asians were the best represented minority group among female professionals in 1986, followed by blacks, Hispanics, and whites.

Figure VIII.11: Female Managers in the Seattle Aerospace Industry Compared With the Seattle Portion of the EEO Database, by Racial/Ethnic Group (1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines below zero indicate less representation in the Seattle aerospace industry.

Note: Data for minorities are not provided for 1979-81 because the numbers were too small (fewer than 25) to calculate reliable statistics

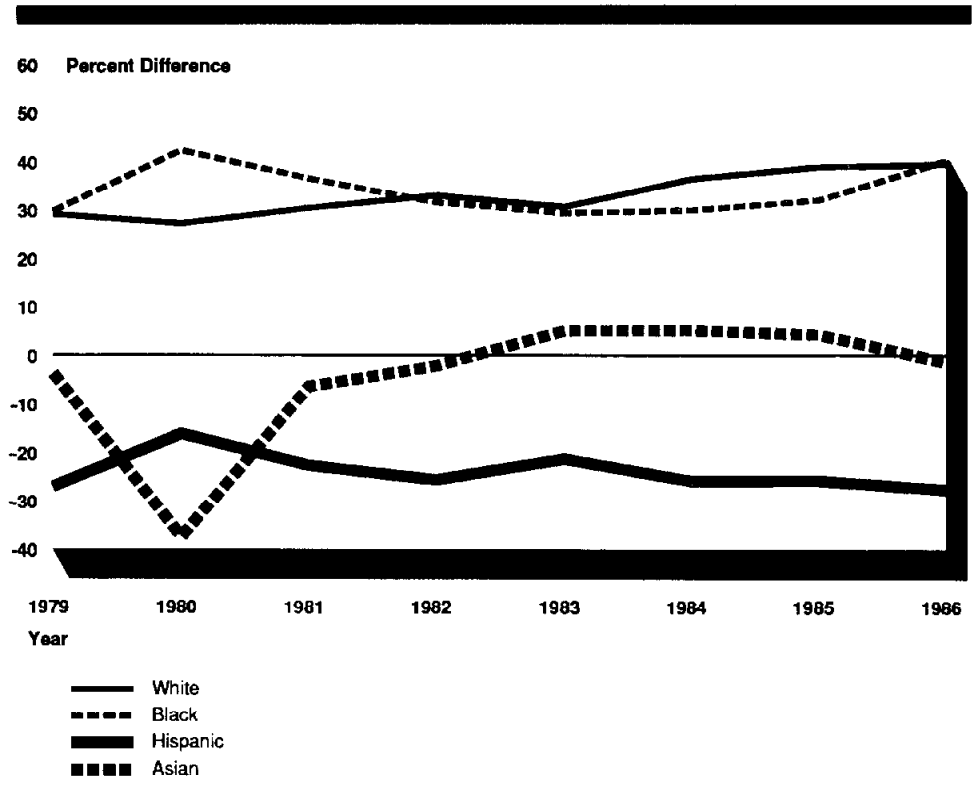
Local EEO Patterns for Men Generally Reflect Those Nationally

Minority male managers in Los Angeles differed from the corresponding groups at the national level (see fig. VII.1) in several ways. Although all racial and ethnic groups among male managers held higher percentages in the Los Angeles aerospace industry, they increased less rapidly between 1979 and 1986 than in the aerospace industry nationwide. Asian and Hispanic men comprised about twice the percentage as managers in the Los Angeles industry and in the nationwide aerospace industry. Asians showed the largest relative increase, but no group reached 5 percent.

Local Labor Market Comparison

Compared with the local portion of the EEO database, the percentage of minority male managers in Los Angeles aerospace differed from that of the national aerospace industry in that blacks and whites had a higher

Figure VIII.12: Male Managers in the Los Angeles Aerospace Industry Compared With the Los Angeles Portion of the EEO Database, by Racial/Ethnic Group
(1979-86)



Note: On this chart, zero indicates the point at which an aerospace group would have the same representation as in the local portion of the EEO database. Plotted lines above or below zero indicate more or less representation in the Los Angeles aerospace industry.

representation and Asians and Hispanics had a lower representation. (See fig. VII.3 for the nation.)

Among minority men in professional jobs, the Los Angeles aerospace industry pattern was similar to that of the aerospace industry nationwide, except there were fewer whites and slightly more Asians in Los Angeles than nationwide. Male professionals in both the Los Angeles aerospace industry and the national aerospace industry held a higher representation than in, respectively, the Los Angeles and nationwide portions of the EEO database. Both were about 45 percent above the EEO database, with very little change over the 1979-86 period.

In Los Angeles, white and black managers in the aerospace industry were highly represented in relation to the local portion of the EEO database and similar in their percentage differences. The remaining two groups were less represented, Asians only slightly and Hispanics more

so, except for 1980. Compared with the Los Angeles portion of the EEO database, blacks and whites held a higher representation and Asians and Hispanics, a lower representation than did these same groups nationally when compared with the national EEO database (see fig. VIII.12).

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