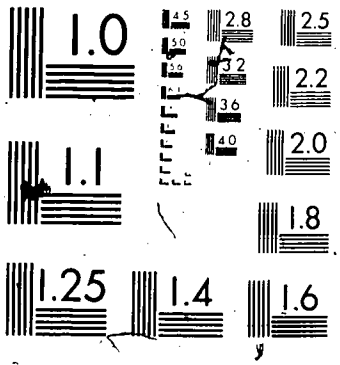


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ABSTRACT

Presented are social, educational, and job-related characteristics of a select group of scientists, engineers and other highly-trained persons in the United States. Eight major fields (computer specialists, engineers, mathematical specialists, life scientists, physical scientists, environmental scientists, psychologists, and social scientists) are used to categorize 17 detailed fields of science or engineering. The report provides highlights of findings, a summary of results, a discussion of the sample and statistical considerations, the questionnaire used, and a section on definitions and explanations. Data for the document were obtained from the 1976 National Survey of Natural and Social Scientists and Engineers sponsored by the National Science Foundation and conducted by the Bureau of the Census. (RE)

CURRENT POPULATION REPORTS

# Special Studies

Series P-23, No. 76
Issued October 1978



# Selected Characteristics of Persons in Fields of Science or Engineering: 1976

U.S. Department of Commerce
BUREAU OF THE CENSUS

CURRENT POPULATION REPORTS

# Special Studies

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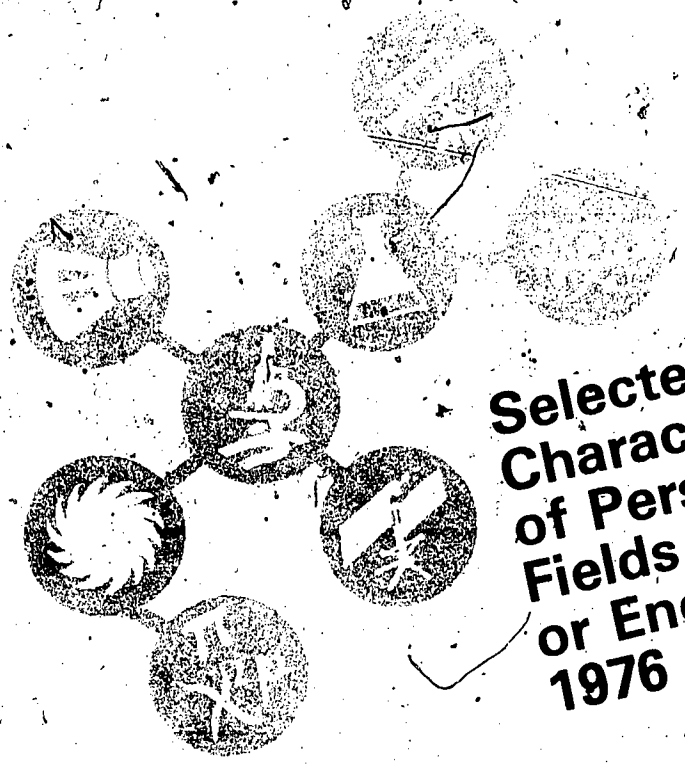

# Selected Characteristics of Persons in Fields of Science or Engineering: 1976

U.S. Department of Commerce
BUREAU OF THE CENSUS

U.S. Department of Commerce
Juanita M. Kreps, Secretary
Courtenay M. Slater,
Chief Economist

BUREAU OF THE CENSUS
Manuel D. Plotkin,
Director

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The principal participants for the National Science Foundation in developing and coordinating the survey were **J. James Brown**, Study Director, Demographic Studies Group, and **Robert R. Trumble**, Head, Scientific and Technical Personnel Studies Section, both members of the Division of Science Resources Studies. Assistance was provided by **Nancy M. Conlon**, Analyst, Manpower Characteristics Studies Group.

At the Bureau of the Census, **Thomas J. Palumbo**, Labor Force Statistics Branch, Population Division, had primary responsibility in planning and conducting the survey. This report was prepared by **Jane H. Haines, Thomas J. Palumbo, Paula L. Vines**, and **Anita Chiera. Mary K. Friday, Ann M. Gifford**, and **Patricia L. Marks**, all of the Population Division, developed the systems and processing procedures and programs. Overall direction was provided by **Murray S. Weitzman**, then Assistant Division Chief (Socioeconomic Statistics Programs), and **Paula J. Schneider**, then Chief, Labor Force Statistics Branch, Population Division.

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## Preface

This report presents the social, educational, and job-related characteristics in 1976 of a select group of the Nation's experienced scientists, engineers, and other highly-trained persons. The statistics are based on the 1976 National Survey of Natural and Social Scientists and Engineers, the third survey in a longitudinal series of biennial surveys that began in 1972. The first survey in the series, the 1972 Professional, Technical, and Scientific Manpower Survey, focused on persons who were identified in the 1970 Census of Population as being in the 1970 experienced civilian labor force and as meeting the Census Bureau criteria for classification in one of 40 groups of scientific, engineering, or related occupations. The scope of the 1974 and 1976 surveys was narrowed to include only those persons from the 1972 survey who met the much stricter criteria of the National Science Foundation for classification to particular fields of science or engineering, based on their 1972 responses. For these reasons, the group profiled in this report is termed "select" or "experienced."

More detailed statistics, based on results from the 1972, 1974, and 1976 surveys, will be issued in future reports of the National Science Foundation or the Bureau of the Census. These reports will present information on such subjects as salary distributions, geographic and occupational mobility, and educational attainment.

After the data from the 1976 survey presented in this report were tabulated, an error was discovered in one of the computer programs that produced the tabulations. The effects of the error were negligible and did not justify the re-tabulation of the data. For more information, see appendix G.

## Related Materials

Statistics from a related survey, the 1972 Professional, Technical, and Scientific Manpower Survey, are found in: U.S. Bureau of the Census, **Characteristics of Persons in Engineering and Scientific Occupations: 1972**, Technical Paper No. 33, U.S. Government Printing Office, Washington, D.C. 1974; and U.S. Bureau of the Census, **Current Population Reports**, P-23, No. 45, "Persons in Engineering, Scientific, and Technical Occupations: 1970 and 1972," U.S. Government Printing Office, Washington, D.C. 1973.

The Census Bureau report based on the results of the 1974 National Survey of Scientists and Engineers is: U.S. Bureau of the Census, **Current Population Reports**, Special Studies P-23, No. 53, "Selected Characteristics of Persons in Fields of Science or Engineering: 1974," U.S. Government Printing Office, Washington, D.C. 1975.

For a list of the National Science Foundations reports based on the above-mentioned 1972 and 1974 surveys, see National Science Foundation, **Characteristics of the National Sample of Scientists and Engineers 1974, Part III** (NSF 76-330) Washington, D.C. 20402; and National Science Foundation, **U.S. Scientists and Engineers: 1974** (NSF 76-329) Washington, D.C. 20402. A National Science Foundation report based on the results of the 1976 National Survey of Natural and Social Scientists and Engineers is: **Science Resource Studies Highlights**, "National Sample of Scientists and Engineers: Changes in Employment, 1972-1974 and 1974-1976" (NSF 77-322), Washington, D.C. 20550.

# Contents



## TEXT TABLES

## Contents—Continued

### DETAILED TABLES



### APPENDIXES



### Symbols

| | |
|---|---|
| — | Represents zero. |
| (NA) | Not applicable. |
| (B) | Based on fewer than 20 sample cases. |
| (Z) | Less than 0.05 percent. |
| D | |

# Selected Characteristics of Persons in Fields of Science or Engineering: 1976

## INTRODUCTION

The National Sample of Scientists and Engineers sponsored by the National Science Foundation as part of its Manpower Characteristics System,[1] is intended to include a series of biennial surveys designed to provide current data on the educational, employment, and career characteristics of experienced persons in scientific and engineering fields. The series began with the 1972 Professional, Technical, and Scientific Manpower Survey.[2] The second survey in the series was the 1974 National Survey of Natural and Social Scientists and Engineers. This report is based on the third survey in the series, the 1976 National Survey of Natural and Social Scientists and Engineers. Unless otherwise noted, data in this report for the year 1974 are based on the 1974 survey; these 1974 data are published in **Current Population Reports**, Special Studies, Series P-23, No. 53, "Selected Characteristics of Persons in Fields of Science or Engineering: 1974."

The panel for the 1974 and 1976 surveys is a subpopulation of participants in the 1972 survey. From characteristics determined in this 1972 survey, persons were classified into 1 of 17 detailed fields of science or engineering or as not being in a field of science or engineering in 1972. The 17 detailed fields are grouped into 8 major fields, as shown in example 1. Only these persons who were classified into 1 of the 17 fields in 1972 were included in the 1974 and 1976 surveys. Respondents in the 1974 survey were then classified into one of the scientific or engineering fields in 1974 or as not being in a field of science and engineering in 1974. Respondents in the 1976 National Survey of Natural and Social Scientists and Engineers were classified in the same manner for the year 1976.

Example 1

- Computer specialists
- Engineers
- Mathematical specialists
  - Mathematicians
  - Statisticians
- Life scientists
  - Agricultural scientists
  - Biologists
  - Medical scientists
- Physical scientists
  - Chemists
  - Physicists and astronomers
  - Other physical scientists
- Environmental scientists
  - Earth scientists
  - Atmospheric scientists
  - Oceanographers
- Psychologists
- Social scientists
  - Economists
  - Sociologists and anthropologists
  - Other social scientists

Fields of science or engineering are categories developed by the National Science Foundation to identify persons who could be classified as scientists or engineers under most definitions. The concept of "field," therefore, is more restrictive than that of "occupation." In general, to be classified into a field, a person needed at least two of the following three characteristics: (1) employment in a specified occupation, (2) attainment of a particular level of education in a specified academic discipline, and (3) self-identification with a specified profession. The occupational classifications in this survey, on the other hand, are based solely on responses to the question "what was your occupation;"[3] in answer to this question, the respondent was directed to enter a code and a description from a list accompanying the questionnaire.

Table 1 of this report describes the sex and age composition of all categories of respondents and nonrespondents in the 1976 survey, and provides a distribution of their 1974 classification by their 1976 classification. The remaining tables in this report are based exclusively on persons who responded in 1976. Tables 1 to 5 present data for the major and detailed science or engineering fields, whereas the text tables and discussion are restricted to the major fields; in this text, therefore, the word "field" will refer to major field of science or engineering. Persons in the category "not in a field of science or engineering" are referred to as "out-of-scope."

[1] For a description of the Manpower Characteristics System, see Robert W. Cain, "Manpower Characteristics System," **Proceedings of the Social Statistics Section**, American Statistical Association, 1972.

[2] For a description of the 1972 survey, see U.S. Bureau of the Census, **Characteristics of Persons in Engineering and Scientific Occupations: 1972**, Technical Paper No. 33, U.S. Government Printing Office, Washington, D.C. 1974.

[3] In the 1972 survey, the question asked "What kind of work were you doing."

## HIGHLIGHTS

Some highlights of this report are summarized under the following subjects:

**1974 and 1976 comparisons.** 1974-76 comparisons reveal very few significant differences between the characteristics of the science and engineering fields in those 2 years. Residential patterns, labor force participation rates, and employment and unemployment levels, for example, were nearly the same. There was some movement, however, into higher salary brackets for most groups and a rather substantial increase of about $5,200 in the median salary of environmental scientists. As expected, there were greater proportions of retired persons in 1976. Also, the movement of persons between groups (i.e., inter-field mobility) over the 2-year period may have had less influence on the composition of the 1976 groups than had been true during the 1972-74 period.

**Field of science or engineering in 1974 and 1976.** About one-fourth or less of the persons in each major 1974 S/E field who responded in the 1976 survey were in a different major field in 1976. The proportions who left science or engineering altogether ranged from 4 to 17 percent.

**Place of residence.** Except for the life scientists, at least three-fourths of the persons in the fields and the out-of-scope resided in metropolitan areas.

**Highest degree held.** Computer specialists and engineers were less likely to hold doctoral degrees than were persons in the other fields.

**Major field of study for highest degree held.** About three-fourths or more of the persons in most fields had majored for their highest degree in a corresponding academic discipline. Computer specialists had more varied academic backgrounds.

**Supplemental training in 1975.** About one-fourth to nearly 60 percent of the persons supplemented their academic backgrounds with some type of non-formal training (for example, on-the-job training) in 1975. Most of the training was provided by employers.

**Employment status in February 1976 and February 1975.** During each of the reference periods—the second week of February 1976 and February 1975—at least 90 percent of the persons in each field participated in the labor force. The unemployment rate for each field was between 1 and 3 percent. At least 90 percent of the employed persons worked full time; the majority of those working part time indicated that this was their preference.

**Industry of employment in February 1976.** Employed computer specialists, engineers, and physical scientists were concentrated in manufacturing industries, whereas large proportions of nearly every other field were employed by educational institutions.

**Primary work activity in February 1976.** About one-fifth or more of the employed scientists and engineers were primarily active in management or administrative duties. From one-fourth to about two-fifths of the employed engineers, and life, physical, and environmental scientists were primarily active in research and development.

**Basic annual salary in February 1976.** All fields except life scientists ($20,893) had median salaries above $21,000; environmental scientists had the highest median salary of $25,289.

**Federal support in February 1976.** The U.S. Government funded at least some of the work of at least 35 percent of the employed persons in nearly every field.

**Job Mobility.** In the 1-year period from February 1975 to February 1976, at least 8 of 10 persons employed at both times were working at the same job; in the 2-year 1974-76 period, this was true for 6 or 7 out of every 10; and in the 4-year 1972-76 period, this was true for 4 to 6 persons out of every 10. Among persons who changed jobs between February 1975 and February 1976, 3 to 7 out of 10 remained in the same occupation.

**Professional experience.** As expected, professional experience was strongly related to age. On the average, persons in the youngest group (computer specialists) had the least experience (a median of 11.3 years), whereas the older environmental scientists and engineers had the most experience (19.4 and 19.1 years, respectively).

**National Interest Topics.** Nearly three-fourths of the environmental scientists and approximately two-thirds of life scientists and psychologists reported that they devoted a significant portion of their professional time to 1 of 11 specified topics of critical national interest. In contrast, only about one-third of the computer specialists reported such involvement.

## SUMMARY OF RESULTS

### Sex, Age, and Field in 1976

**Sex.** There were relatively few women in most of the science and engineering (S/E) fields. Except for psychologists and social scientists, about 85 percent or more of the persons in each of the fields were men (table 1). Engineers and environmental scientists were the most predominately male groups, with men making up approximately 99 percent and 97 percent, respectively, of these fields. The field with the largest proportion of women was psychologists (28 percent), followed by social scientists (19 percent).

The relative paucity of women in most of these fields may be a result of the perception, widespread until recently, of science and engineering as male pursuits. The persons in these fields, it should be noted, were all in the labor force in 1970; thus, the fields do not reflect the characteristics of persons who have entered science or engineering since 1970.

Although not strictly comparable with the figures in this report, the 1976 annual averages of employed persons in selected occupations based on the Current Population Survey[4] (CPS), show that in 1976 women constituted 19.1 percent of the employed computer specialists, 1.8 percent of the employed engineers, 12.1 percent of the employed life and physical scientists, and 24.4 percent of the employed social scientists.

**Age.** The universe for this study includes persons who were at least 16 years old and in the experienced civilian labor force in 1970. At the time of the 1976 survey, therefore, they were all part of the mature or experienced work force. Thus, the age distribution of each field is skewed upward, with relatively few persons under 30 years old (table 1).

Differences in the age structures for the various groups are reflected in the median ages. The median age for all persons, including those out-of-scope and nonrespondents, was 43.7 years as of April 1976. The group with the lowest median age was computer specialists, 36.9 years; the highest median ages were for engineers, 45.8 years, and environmental scientists, 46.0 years. The median ages for the remaining groups ranged from 41.0 to 44.0 years.

**Field of science or engineering in 1974.** The majority of persons in the 1974 fields of science or engineering were in the same field in 1976 (table A). The highest levels of agreement between field in 1974 and field in 1976 were for persons who were engineers and psychologists in 1974 (both about 93 percent). Among persons who were designated as computer specialists in 1974, only about 74 percent were in the same field in 1976; about 6 percent were designated as engineers and 17 percent were out-of-scope. About 8 percent of the 1974 mathematical specialists had moved into the computer specialist field or the engineer field in 1976, and about 5 percent of the 1974 physical scientists were either engineers or life scientists in 1976. Moreover, some proportion of each 1974 field was not in any of the fields of science or engineering in 1976, ranging from about 4 percent for environmental scientists to 17 percent for computer specialists.

The dispersion of the 1974 fields among the 1976 fields is shown in table A. The opposite picture—the composition of the 1976 fields in terms of the 1974 fields—is presented in table 1. About 78 percent or more of each 1976 group was composed of 1974 carryovers, except for computer specialists with 73 percent. Relatively large proportions of persons who were not in a field in 1974 or did not respond to the 1974 survey made their influence felt among the 1976 S/E fields; these made up from about 8 percent to 18 percent of each field except environmental scientists (6 percent). Conversely, about 46 percent of the 1976 out-of-scope came from 1974 S/E fields, with 24 percent entering from the 1974 engineer field.

The differences among the fields in the proportion changing fields between 1974 and 1976 may reflect, among other factors, variations in the degree of specialized training required for each field, differences in the areas of common ground among fields, and differences in the average age and experience levels of the members of the field. For instance, persons from a number of fields—computer specialists, mathematical specialists, physical scientists, and environmental scientists—show some propensity to enter the engineering field, indicative perhaps of the involvement of engineering in the practical applications of scientific principles. Common ground among the life, physical, and environmental sciences may help explain the movement of life and physical scientists into each other's fields and the movement of environmental scientists into life and physical science. Common ground may also explain the reciprocal movements of mathematical specialists and computer specialists. Relatively few engineers changed fields, and only small proportions of persons in other science or engineering fields switched into mathematics, environmental science, psychology, or social science.

For most fields, the greatest proportions of persons who left their 1974 fields moved out of the fields of science or

[4] U.S. Department of Labor, Bureau of Labor Statistics, **Employment and Earnings**, Volume 24, No. 1, January 1977.

**Table A. Scientists or Engineers in 1974 Who Responded in the 1976 Survey, by Field of Science or Engineering in 1976**

| Field of science or engineering in 1974 | Total respondents | | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Percent | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| Computer specialists | 50,471 | 100.0 | 73.5 | 6.3 | 1.9 | (Z) | 0.4 | 0.1 | 0.2 | 0.4 | 17.1 |
| Engineers | 636,268 | 100.0 | 0.6 | 92.5 | 0.1 | 0.1 | 0.6 | 0.1 | (Z) | 0.1 | 5.8 |
| Mathematical specialists | 25,572 | 100.0 | 3.8 | 3.6 | 79.6 | 0.2 | 0.3 | (Z) | 0.1 | 0.5 | 11.9 |
| Life scientists | 69,826 | 100.0 | (Z) | 0.6 | (Z) | 85.6 | 2.9 | 0.2 | 0.2 | 0.3 | 10.1 |
| Physical scientists | 114,136 | 100.0 | 0.4 | 3.7 | 0.1 | 1.5 | 88.4 | 0.7 | - | 0.1 | 5.0 |
| Environmental scientists | 27,157 | 100.0 | 0.2 | 3.3 | - | 1.2 | 2.7 | 88.0 | - | 0.8 | 3.7 |
| Psychologists | 32,070 | 100.0 | 0.1 | 0.2 | - | 0.8 | - | - | 92.6 | 0.7 | 5.5 |
| Social scientists | 44,204 | 100.0 | 0.3 | 0.8 | 0.5 | 0.2 | 0.1 | 0.1 | 1.0 | 80.6 | 16.4 |

- Represents zero.
Z Less than 0.05 percent.

Source: Table 1.

engineering altogether. This outward movement was especially pronounced for the computer specialists and the social scientists, and less so for the mathematical specialists and life scientists. The movement may reflect the versatility of the training and experience of these fields, or, especially in the case of the generally young computer specialists, the mid-career movement of persons into managerial occupations.

Interfield mobility seems to have slowed somewhat between 1974 and 1976 compared with that between 1972 groups and 1974 groups as shown by the 1974 survey results. The 1974-76 diagonal (underlined cells of table A) contains generally higher proportions than its 1972-74 counterpart, and the 1976 out-of-scope proportions are generally lower than the 1974 ones. The trend toward greater stability may be illusory, however, since it could result from differential response rates for the 1976 and 1974 surveys or from the method of classifying persons into fields that substituted the most recent data from a person's 1974 or 1972 responses if 1976 data were not reported.

## Social Characteristics

**Race.** Whites accounted for 93 percent or more of the persons in each field; Whites also made up 97 percent of the out-of-scope cases (table 2). The proportion of Blacks ranged from under 1 percent for engineers and environmental scientists to nearly 4 percent for mathematical specialists. The proportions of Japanese, Chinese, and Koreans ranged among the fields from under 1 percent to about 3 percent. The 1976 survey and 1974 survey racial distributions are nearly identical. This may indicate that there are no substantial differentials among the races in the propensity of experienced scientists and engineers to change field or to move out of S/E.

**Place of residence.** The sample for the National Sample of Scientists and Engineers was originally selected from the 1970 Census of Population records of persons in the 50 States and the District of Columbia; accordingly, all persons in each of the S/E fields and the out-of-scope resided in the United States at the time of the census. In the spring and summer of 1976 when the 1976 National Survey of Natural and Social Scientists and Engineers was conducted, from 97 percent to 99 percent of persons in each group were living in the United States (table 2). This range is identical to the 1974 results, possibly indicating no additional net emigration of these scientists and engineers to foreign residences.

Estimates from the March 1976 Current Population Survey[5] indicate that in March 1976, 24 percent of the total United States population 25 years old and over lived in the Northeast, 26 percent in the North Central, 32 percent in the South, and 18 percent in the West. The 1976 National Survey of Natural and Social Scientists and Engineers showed that, for mature scientists and engineers, the South and the Northeast were the major residential regions, having, in general, either the largest or second largest proportion of persons. Especially noteworthy is that at least three-fourths of the environmental scientists lived in the South and West—almost 46 percent in the South and about 32 percent in the West. Engineers were the most evenly distributed among the four regions, with approximately one-fourth residing in each. For three fields—computer specialists, physical scientists, and psychologists—the Middle Atlantic division led all other divisions as a place of residence in 1976; the leading division for environmental scientists was the West South Central, and for mathematical specialists and social scientists, the South Atlantic (see table 2). Regional distributions of residence in 1974 are similar to those based on the 1976 results, indicating limited net shifts in residential patterns.

**Selected Standard Metropolitan Statistical Areas (SMSA's): 1976.** Science and engineering require the combined talents of many persons. Thus, most scientists and engineers—as many as 75 to 85 percent of the persons in nearly every field—lived in metropolitan areas where such pools of talent are generally more accessible (table 2). Of the U.S. population as a whole, about 68 percent of all persons 25 years old and over lived in metropolitan areas in March 1976.[6] The one exception to the relatively pronounced metropolitan character of the scientific or engineering fields are the life scientists, a group including agricultural scientists; about 40 percent of the life scientists lived in nonmetropolitan areas.

Relatively large proportions of persons in some of the S/E fields lived in particular SMSA's. The Washington, D.C. SMSA, for example, with its concentration of government employment, had approximately 11 percent of the mathematical specialists and 13 percent of the social scientists. It contained only about 1.4 percent of the total U.S. population as of July 1, 1975.[7] The Denver, Colorado SMSA and the Houston, Texas SMSA had between 7 and 9 percent, respectively, of the environmental scientists; and the New York City SMSA had 7 percent of the computer specialists, 7 percent of the social scientists, and 8 percent of the psychologists.

The residential pattern in 1976 of the scientists and engineers is basically the same as the pattern in 1974, indicating no dramatic shifts in migration patterns during this period. However, national estimates of residential patterns of the total metropolitan population indicate that, for the most part, there was a continuation between 1974 and 1975 of large regional shifts in U.S. population.[8] Specifically, migrants have been leaving the larger and older urban centers in the Northeast and the North Central regions and have been moving to metropolitan areas in the South and West. The figures from this survey indicate that such movement has not been as pronounced for experienced scientists and engineers.

[5] **Current Population Reports**, Population Characteristics, Geographical Mobility: March 1975 to March 1976, Series P-20, No. 305.

[6] Ibid.

[7] **Current Population Reports**, Population Estimates and Projections, Estimates of the Population of Counties and Metropolitan Areas: July 1, 1974 and 1975, Series P-25, No. 709.

[8] Ibid.

## Educational Characteristics

**Highest degree held.** The distribution by degree level for particular fields is probably a function of the kinds of work performed by persons in these fields, the industries for which they work, and their age distribution. The computer specialist and engineering fields had a high proportion of bachelor's degrees (62 and 68 percent, respectively) and a low proportion of doctorates (7 and 5 percent, respectively). Employment among persons in these fields was concentrated in manufacturing industries in 1976, whereas the largest proportion in all other S/E fields were employed in educational institutions, in which advanced degrees are nearly always required for employment. Computer specialists are members of a relatively new field and are generally younger than persons in other fields. Engineers, on the other hand, are generally older and entered their field when a degree—even at the bachelor's level—was not as strong a prerequisite as it is today. In addition, the training acquired at the bachelor's level in engineering and computer science may be sufficient for most of the jobs held by persons in these fields, thus decreasing their incentive to pursue advanced degrees. Training beyond that acquired at the bachelor's or even the master's level, however, may be necessary for performance of many of the jobs of fields with high proportions of doctorate holders, such as psychologists.

Specifically, 62 percent of psychologists had a doctorate degree, and only 8 percent had bachelor's degrees. Among life, physical, and social scientists and mathematical specialists, at least 40 percent had doctorate degrees and moderate proportions (from 20 to 34 percent) had bachelor's degrees (table 3).

The definitions of the various fields of science or engineering permitted only engineers and the out-of-scope group to include persons with no degree. That fewer than 4 percent of both the engineers and the out-of-scope actually fell into this category is partly a reflection of the strictness of the criteria used in delineating the core of the nation's scientific and technical manpower.

There appears to have been a slight movement of persons in some groups to higher educational levels between 1974 and 1976. The 1976 computer specialists and engineers for example, had larger proportions at the master's and doctorate levels than was true of the 1974 groups. This upward mobility in educational patterns, however, may be related to variations in the memberships of the groups between 1974 and 1976, or to the fact that persons with advanced degrees may be more likely than other persons to respond to the National Sample Surveys, this tendency, if valid, would introduce some false changes into the educational patterns of the groups over time. Thus, the 1974-76 educational changes do not necessarily reflect an increase in the general educational level of the groups.

**Major field of study of highest degree held.** Most of the scientists and engineers received their academic training in a discipline corresponding to their S/E field.[9] Though this strong positive relationship between field and academic training is partially a reflection of the criteria for classification in a field, it is also a likely result of the requirements of the kinds of work performed by persons in the fields. Except for computer specialists, at least three-fourths of the scientists and engineers had majored in a corresponding discipline (table B). Psychologists, the field with the largest proportion of doctorate holders, also had one of the highest levels of agreement between S/E field and education (92

[9] See the table in appendix B for the list of corresponding major fields of study for each field of science or engineering.

### Table B. Scientists or Engineers in 1976 With a Degree, by Major Field of Study for Highest Degree Held

| Field of science or engineering in 1976 | Total with a degree | | Major field of study for highest degree held | | |
|---|---|---|---|---|---|
| | Number | Percent | Corresponding field of study[1] | Other field of study | Field of study not reported |
| Computer specialists | 50,691 | 100.0 | 13.0 | 85.9 | 1.0 |
| Engineers | 641,226 | 100.0 | 86.5 | 12.7 | 0.9 |
| Mathematical specialists | 24,831 | 100.0 | 80.4 | 19.0 | 0.6 |
| Life scientists | 70,027 | 100.0 | 89.6 | 9.5 | 0.8 |
| Physical scientists | 117,043 | 100.0 | 82.9 | 16.6 | 0.4 |
| Environmental scientists | 26,997 | 100.0 | 76.0 | 23.1 | 0.9 |
| Psychologists | 34,186 | 100.0 | 91.8 | 7.6 | 0.5 |
| Social scientists | 45,582 | 100.0 | 79.4 | 20.1 | 0.5 |

[1] See table in appendix B for a listing of corresponding fields of study.

Source: Table 3.

percent). Computer specialists, in contrast, had varied academic backgrounds; only 13 percent had majored in computer science and systems analysis, whereas 24 percent had majored in the mathematical sciences, 16 percent in engineering, and 26 percent in the category "all other fields." This variety is related, perhaps, to the recent emergence of computer-related subjects in the degree pro[illegible] most colleges and universities. It is also relat[illegible] the surge in demand for computer spe[illegible] late 1950's and throughout the 1960's, a[illegible] y met by an influx of persons from varied acad[illegible] grounds.

Some fields had relatively large proportions of persons who had majored in academic subjects only peripherally related to their 1976 S/E field. This interdisciplinary pattern, in fact, is somewhat similar to the interfield pattern discussed previously and may be related to it. Note, in this regard, that about 12 percent of the environmental scientists had majored either in engineering or physics/astronomy; computer specialists, as mentioned above, came from varied educational backgrounds; about 8 percent of the physical scientists had studied biological science; and 16 percent of the social scientists had majored in "all other fields" (see table 3).

**Supplemental training in 1975.** The amount of scientific and engineering knowledge continues to grow at a rapid pace. To keep abreast of the latest developments in their fields and to ward off the threat of obsolescence, scientists and engineers must continually update and renew their education and training. Thus, the proportions in the groups who received some kind of supplemental training in 1975 ranged rather uniformly from about 25 percent for social scientists to 40 percent for psychologists and for the out-of-scope (table 3). Computer specialists, however, were the notable exception to this range, with 57 percent having received supplemental training in 1975. This exceptional proportion for computer specialists may be related to the small number who had majored in computer science and systems analysis for their highest degree. Also, it may reflect the especially rapid changes in data processing. For almost all groups, such supplemental training was received primarily from employers (table C).

The pattern among the groups in the receipt of supplemental training was about the same for both the 1976 and 1974 groups. A greater proportion of the 1976 psychologists, however, may have received supplemental training in 1975 (40 percent) than was true for the 1974 psychologists in 1973 (35 percent).

## Employment Characteristics

**Employment status in February 1976 and February 1975.** In February 1976, the labor force participation rate of each field (i.e., the number in the labor force divided by the total number in the field) was 90 percent or more (table 4). The comparable figure for the total noninstitutional population 20 years and older for February 1976 was 63 percent,[10] and that for males 20 and over was 80 percent. The relatively high participation rates of the National Sample may reflect, in large part, the selection of National Sample from among persons who were in the experienced civilian labor force in 1970.

The unemployment rate (the number unemployed divided by the total number in the labor force) was between 1 and 2 percent for most of the fields (table D). The national unemployment rate (not seasonally adjusted) for February 1976 was 8.7 percent for the total noninstitutional population, 7.5 percent for the noninstitutional population 20 years and older, 7.2 percent for men 20 years and older, and 3.2 percent for professional and technical workers.[11] This last group is the most comparable to the universe represented by the National Sample.

The fields covered by the National Sample appear to have escaped the worst effects of the recession that began in late 1973 and ran through 1975. Unemployment rates for the 1974, 1975, and 1976 periods, though perhaps somewhat higher than those for 1973, were between 1 and 2 percent for most of the fields. This relative insulation of the fields from recessionary woes may have resulted from a number of factors. The fields, of course, contain skilled and experienced workers and consist mostly of older males. Such persons have traditionally had low unemployment rates.

Among persons who were employed in February 1976, approximately 90 percent or more in each field were working full time (table E). In the civilian labor force as a whole in February 1976, about 85 percent of employed persons 25 years old and over were on full-time schedules; and about 86 percent of the professional and technical workers who were at work were on full-time schedules, as were about 95 percent of the employed managers and administrators except farm.[12] Among the National Sample fields, psychologists had the highest proportion of part-time workers (7 percent). Computer specialists and engineers each had only about 1 percent employed part time. This contrast between the psychologists and the computer specialists and engineers may be related to their respective industry employment patterns. Psychologists are concentrated in educational institutions and health services where the opportunities for part-time employment may be greater than in manufacturing, in which large proportions of computer specialists and engineers are employed.

Among those persons who reported that they were working part time in 1976, the majority in each field indicated that they preferred part-time work (table F). The range of those preferring part-time work went from about 72 percent for engineers to almost 84 percent for computer specialists.

The National Sample of Scientists and Engineers includes only persons who were in selected occupational categories in 1970 and does not include any new entrants into these fields since 1970. Thus, retirement is expected to play an increasingly larger role as a reason for being outside the labor force (table G). Accordingly, larger proportions in each field

[10] U.S. Department of Labor, Bureau of Labor Statistics, **Employment and Earnings**, Vol. 22, No. 9, March 1976.

[11] Ibid.

[12] Ibid.

## Table C. Scientists or Engineers in 1976 With Supplemental Training in 1975, by Type of Supplemental Training

| Type of supplemental training[1] | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL WITH SUPPLEMENTAL TRAINING | | | | | | | | | |
| Number | 28,868 | 246,915 | 6,862 | 23,857 | 36,412 | 9,278 | 13,648 | 11,530 | 62,989 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| On-the-job training | 59.4 | 44.8 | 50.1 | 55.4 | 45.9 | 48.5 | 46.8 | 45.5 | 51.0 |
| Military training applicable to civilian occupations | 1.5 | 2.1 | 2.7 | 1.6 | 1.5 | 1.3 | 2.1 | 2.3 | 2.4 |
| Extension or correspondence courses | 7.0 | 9.7 | 11.8 | 10.5 | 9.4 | 9.5 | 7.1 | 13.1 | 9.6 |
| Employer training programs | 56.8 | 46.0 | 38.6 | 33.8 | 36.7 | 42.1 | 18.8 | 39.7 | 40.6 |
| Adult education center | 11.4 | 10.9 | 7.4 | 12.1 | 11.1 | 12.3 | 11.6 | 12.8 | 11.2 |
| Other training | 23.8 | 20.3 | 25.6 | 27.9 | 23.6 | 22.8 | 51.8 | 30.5 | 27.0 |

[1]Sum of individual categories may exceed 100.0 percent because persons may have received more than one type of training.

Source: Table 3.

## Table D. Scientists or Engineers in the Labor Force by Employment Status, for February 1976 and February 1975

| Employment status | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL IN LABOR FORCE IN FEBRUARY 1976 | | | | | | | | | |
| Number | 48,864 | 613,766 | 23,180 | 65,076 | 108,723 | 25,511 | 32,233 | 41,564 | 148,378 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Employed | 98.6 | 97.9 | 98.1 | 98.4 | 98.5 | 99.1 | 97.3 | 98.4 | 97.9 |
| Unemployed | 1.4 | 2.1 | 1.9 | 1.6 | 1.5 | 0.9 | 2.7 | 1.6 | 2.1 |
| TOTAL IN LABOR FORCE IN FEBRUARY 1975 | | | | | | | | | |
| Number | 48,261 | 608,386 | 23,116 | 64,876 | 108,431 | 25,505 | 31,614 | 41,478 | 145,676 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Employed | 98.8 | 98.4 | 99.1 | 99.0 | 98.6 | 99.5 | 98.4 | 99.3 | 97.8 |
| Unemployed | 1.2 | 1.6 | 0.9 | 1.0 | 1.4 | 0.5 | 1.6 | 0.7 | 2.2 |

Source: Table 4.

## Table E. Employed Scientists or Engineers by Full-Time and Part-Time Work Status, for February 1976 and February 1975

| Work status | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL EMPLOYED IN FEBRUARY 1976 | | | | | | | | | |
| Number | 8,159 | 600,994 | 22,737 | 64,057 | 107,112 | 25,277 | 31,373 | 40,882 | 145,243 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Full time | 98.5 | 98.5 | 96.2 | 95.4 | 96.1 | 97.5 | 91.6 | 95.0 | 95.6 |
| Part time | 1.4 | 1.3 | 3.3 | 3.4 | 2.6 | 1.4 | 7.4 | 4.0 | 3.8 |
| Full or part time not reported | 0.1 | 0.2 | 0.5 | 1.3 | 1.3 | 1.2 | 1.0 | 1.0 | 0.6 |
| TOTAL EMPLOYED IN FEBRUARY 1975 | | | | | | | | | |
| Number | 47,689 | 598,632 | 22,912 | 64,219 | 106,955 | 25,382 | 31,096 | 41,176 | 142,483 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Full time | 96.5 | 97.1 | 94.0 | 93.8 | 94.3 | 95.4 | 89.6 | 93.3 | 95.0 |
| Part time | 1.4 | 1.2 | 4.5 | 3.4 | 2.5 | 2.0 | 7.5 | 4.4 | 3.6 |
| Full or part time not reported | 2.1 | 1.7 | 1.5 | 2.8 | 3.1 | 2.7 | 2.9 | 2.3 | 1.4 |

Source: Table 4.

## Table F. Scientists or Engineers in 1976 Employed Part Time in February 1976, by Desire for Full-Time Work

| Desire for full-time work | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL EMPLOYED PART TIME IN FEBRUARY 1976 | | | | | | | | | |
| Number | 660 | 7,918 | 757 | 2,149 | 2,804 | 349 | 2,318 | 1,637 | 5,477 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Seeking full-time work | 14.7 | 21.7 | 19.3 | 20.1 | 15.9 | 10.0 | 22.0 | 21.5 | 22.[illegible] |
| Not seeking full-time work | 83.5 | 71.8 | 74.8 | 79.4 | 79.9 | 79.1 | 75.1 | 76.9 | 76.[illegible] |
| Not reported | 2.0 | 6.5 | 5.8 | 0.6 | 4.2 | 11.2 | 2.8 | 1.6 | 1.6 |

Source: Table 4.

gave retirement as a reason for nonparticipation in February 1976 than in February 1975 or than in the 1974 results.

**Unemployment during 1975.** About 2 to 5 percent of the persons in each field of science and engineering in 1976 were unemployed at some time during the 1975 calendar year; for the out-of-scope cases, the proportion was about 7 percent (table 4). For those who did experience unemployment, the duration was likely to be a month or more (table H). Within most groups, approximately three-fourths of those who were unemployed during 1975 had looked for work for 4 weeks or more, at least 60 percent had looked for more than 10 weeks, at least 40 percent beyond 14 weeks, and at least 15 percent beyond 26 weeks. The average (mean) duration of unemployment of all persons in 1975, according to the CPS, was 14.1 weeks.[13] The median weeks of unemployment for the unemployed in the National Sample groups in 1975 ranged from 7.9 weeks for computer specialists to 15.8 weeks for life scientists.

Duration of unemployment is a function, among other things, of the state of the economy, the reasons for unemployment, and the resources available for job searching. Differences in durations among the groups, or between the groups and the CPS estimates for the Nation could result from differences in any or all of these factors.

**Occupation of employment in February 1976 and February 1975.** As explained in the Definitions and Explanations Section, occupation was not a prerequisite for classification into a field of science or engineering. It was possible, therefore, for persons in these fields to work in positions not related to science or engineering. Likewise, out-of-scope persons could have worked in positions related to science or engineering.

Social scientists tended to work outside of science or engineering more so than persons in other fields (table 4). For all the groups except social scientists and the out-of-scope, 90 percent or more of the full-time employed reported that they were working in a position related to science and engineering in February 1976 and in February 1975. This was true for only about 83 percent of the social scientists and 62 percent of the out-of-scope. For most of the groups, relatively few of the persons working in non-S/E positions in February 1976 did so because S/E positions were not available (table I). Though it is not clear that S/E positions were available for the remaining persons, many of them apparently worked outside S/E for more or less voluntary reasons. Of the small number of engineers and physical scientists reporting work in non-S/E areas, a notable 40 percent were promoted out of S/E positions, a finding that may be a reflection of a tendency of persons in these fields to become managers and administrators.

Most of the persons working in occupations which did not correspond to their S/E fields were working as managers and administrators, although 8 percent of the physical scientists were in the interdisciplinary occupations of biochemists and biophysicists (table 5). All fields except two—computer

[13] **Employment and Earnings**, op. cit., Vol. 22, No. 7, January 1976.

## Table G. Scientists or Engineers in 1976 Not in the Labor Force in February 1976, by Reasons for Nonparticipation

| Reasons for nonparticipation in the labor force | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL NOT IN LABOR FORCE IN FEBRUARY 1976 | | | | | | | | | |
| Number | 1,827 | 44,783 | 1,651 | 4,951 | 8,320 | 1,486 | 1,953 | 4,017 | 9,181 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Retired | 32.7 | 92.2 | 66.3 | 66.8 | 78.9 | 83.3 | 61.3 | 66.1 | 68.7 |
| Other | 66.4 | 6.1 | 32.9 | 33.0 | 20.1 | 6.7 | 38.0 | 30.2 | 30.3 |
| Not reported | 0.9 | 1.7 | 0.7 | 0.2 | 1.0 | 10.0 | 0.7 | 3.7 | 1.0 |
| TOTAL NOT IN LABOR FORCE IN FEBRUARY 1975 | | | | | | | | | |
| Number | 1,665 | 33,199 | 1,358 | 3,703 | 6,734 | 1,061 | 1,518 | 3,080 | 9,063 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Retired | 24.3 | 91.8 | 60.2 | 63.8 | 76.8 | 88.2 | 50.9 | 63.7 | 58.3 |
| Other | 71.5 | 5.5 | 27.6 | 33.7 | 22.3 | 9.2 | 45.9 | 32.8 | 40.7 |
| Not reported | 4.2 | 2.7 | 12.3 | 2.4 | 0.9 | 2.5 | 3.2 | 3.6 | 1.0 |

Note: Detail may not add to total because of rounding.

Source: Table 4.

## Table H. Scientists or Engineers in 1976 Reporting Unemployment During Calendar Year 1975, by Duration of Unemployment

| Duration of unemployment | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL UNEMP[illegible] CALENDAR YEA[illegible] | | | | | | | | | |
| Number | 2,299 | 28,918 | 868 | 2,107 | 3,864 | 654 | 1,719 | 1,675 | 11,036 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 to 4 weeks | 25.0 | 15.9 | 15.1 | 26.0 | 14.4 | 16.5 | 12.3 | 15.2 | 20.7 |
| 5 to 10 weeks | 33.1 | 18.7 | 23.2 | 9.6 | 16.6 | 17.[illegible] | 16.1 | 22.4 | 17.3 |
| 11 to 14 weeks | 10.8 | 9.1 | 16.9 | 8.6 | 13.8 | 3.7 | 18.6 | 18.6 | 20.3 |
| 15 to 26 weeks | 9.3 | 15.9 | 16.0 | 24.8 | 12.8 | 11.0 | 15.2 | 21.6 | 12.0 |
| 27 weeks or more | 14.7 | 29.4 | 20.0 | 27.0 | 35.2 | 13.0 | 30.1 | 16.5 | 24.1 |
| Duration not reported | 7.2 | 10.9 | 8.6 | 4.1 | 7.2 | 37.9 | 7.8 | 5.8 | 3.7 |

Note: Detail may not add to total because of rounding.

Source: Table 4.

## Table I. Full-Time Employed Scientists or Engineers Working in Positions Not Related to Science or Engineering, by Reasons: February 1976

| Reasons for being in a position not related to science or engineering | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL NOT IN SCIENCE OR ENGINEERING | | | | | | | | | |
| Number | 1,283 | 19,434 | 1,360 | 2,915 | 1,365 | 371 | 2,113 | 6,102 | 50,161 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Preferred nonscience or nonengineering | 38.1 | 14.7 | 15.0 | 37.9 | 26.7 | 38.3 | 36.5 | 33.1 | 29.6 |
| Promoted out of science or engineering | 24.2 | 39.6 | 21.1 | 17.2 | 47.9 | 13.5 | 9.9 | 9.2 | 18.0 |
| Pay better in nonscience or nonengineering | 5.5 | 8.5 | 6.0 | 14.6 | 2.1 | 6.7 | 6.4 | 3.8 | 11.0 |
| Locational preference | 6.5 | 4.1 | 20.3 | 4.7 | 1.8 | - | 3.8 | 10.0 | 5.3 |
| Science or engineering position not available | 4.0 | 13.9 | 3.9 | 4.9 | 10.0 | 3.0 | 3.0 | 5.5 | 6.8 |
| Other reason | 14.3 | 14.9 | 31.8 | 9.6 | 7.5 | 32.1 | 28.9 | 25.8 | 23.0 |
| Reason not reported | 7.4 | 4.3 | 2.0 | 11.1 | 3.7 | 6.7 | 11.5 | 12.6 | 6.3 |

- Represents zero.

Note: Detail may not add to total because of rounding.

Source: Table 4.

specialists and environmental scientists—had between 12 and 23 percent reporting employment in managerial or administrative positions. The small proportion of computer specialists (about 2 percent) who were managers and administrators may reflect the relatively youthful age structure of this field.

The occupational structure in 1976 of the out-of-scope persons reveals, as expected, a more varied pattern of occupational participation than is found among the fields (table 5). The out-of-scope had the highest proportion of manag[illegible] persons in [illegible] occupations."

[illegible] what greater proportions of most groups were working as managers and administrators in 1976 than in 1974. This trend was expected, because of the gain in work experience over time. Two groups with large 1974-76 gains were social scientists and the out-of-scope, each of which had increases of about 6 percentage points in the proportion of managers and administrators.

Table 5 also provides more detailed information on the subcategories of occupations held by persons in the various fields. The largest specific occupational categories for engineers in 1976 were electrical and electronic (20 percent), mechanical (17 percent), and civil and architectural (12 percent). Among employed mathematical specialists, nearly half were working as mathematicians and about one-fourth as statisticians. Agricultural scientists (30 percent) and biological scientists (26 percent) were the primary occupations for employed life scientists; chemists made up 48 percent of the employed physical scientists. Approximately three-fourths of the employed environmental scientists were earth scientists. Together, economists and other social scientists (e.g., political scientists, urban and regional planners, etc.) comprised at least 50 percent of the employed social scientists.

**Industry of employment in 1976.** The patterns of employment among industries were generally the same for the groups in 1976 as in 1974. In both periods, these patterns were marked by high concentrations, in general, among manufacturing and among the service industries, particularly educational institutions (table 5). The 1976 annual averages from the CPS indicate that among the employed professional and technical workers in 1976, 15 percent worked in manufacturing and about 68 percent in service industries.[14] The 1974 and 1976 patterns for the National Sample groups show that most of the groups had 50 percent or more in these two industries, and, depending upon the group, 40 percent or more were employed in either manufacturing or in educational institutions.

Within specific manufacturing industries, electronic machinery and computing equipment manufacturers employed the largest proportions of computer specialists (24 percent) and engineers (12 percent). The production of chemicals and allied products was most important for physical scientists (25 percent). For all other fields, except environmental scientists, the largest proportions of persons were employed in educational institutions, primarily colleges or universities. Environmental scientists were uniformly distributed by industry, with about 28 percent in mining or petroleum extraction and 17 percent in educational institutions. There were other significant industries of employment for most fields, such as agriculture, forest[illegible] and fisheries for life scientists; heal[illegible] public adm[illegible] [illegible], and services (other than education and health) for the other fields.

**Primary work activity in 1976.** In general, research and development, management and administration, and teaching were the major work activities of the National Sample groups in 1976, a pattern that mirrors that of the 1974 groups (table 5). Between 30 and 42 percent of the engineers and of the life, physical, and environmental scientists were primarily active in research and development (R/D). For engineers the development and design sides of R/D were uppermost, whereas basic or applied research was more important for the latter three groups. All of the groups had nearly 20 percent or more of their employed members primarily involved in management or administration (a fact that agrees well with the relatively large proportions in these groups who reported their occupation in 1976 as administrators or managers). Engineers (34 percent) and the out-of-scope (44 percent) had particularly large proportions who were primarily involved in management or administration. Teaching was the primary activity of nearly one-third of the employed mathematical specialists and social scientists and of one-fourth of the employed psychologists.

Within particular groups, certain other activities were also important. This is true of computer applications for the computer specialists, production and inspection for the engineers, statistical work for the mathematical specialists, and clinical diagnosis for the psychologists.

The primary work activities of one group, computer specialists, have changed significantly since 1974. Nearly 65 percent of employed computer specialists were primarily active in computer applications in 1974; the proportion in 1976 is 40 percent. Management and administration was less prevalent in 1974 (13 percent) than in 1976 (19 percent). In 1974, 6 percent of the employed computer specialists were involved in research and development as a primary activity; the 1976 proportion is 17 percent, with about half involved in development. These changes, though they may [illegible]ly the result of the 1976-74 response differentials [illegible] of the movements of persons among National Sample groups, may reflect an expansion of the scope of the computer field and of the increasing age of this group.

**Basic annual salary.** Basic annual salary refers to salary before deductions for income tax, social security, retirement, etc., but does not include bonuses, overtime, summer teaching, or other payment for secondary jobs. The data on basic annual salary in this report relate to the job held by full-time employed persons in February 1976. The salaries of most of the full-time persons in the National Sample groups who reported salary were between $15,000 and $40,000.

[14] U.S. Department of Labor, Bureau of Labor Statistics, **Employment and Unemployment in 1976**, Special Labor Force Report 199.

Computer specialists had the smallest proportion of persons (11 percent) in the extreme categories of the distribution, 1 percent in the categories under $10,000 and 10 percent in those over $30,000. The proportion earning less than $10,000 was within a range of [illegible] percent to 3 percent for the other groups. At the high end of the salary distribution, fewer than 20 percent of the engineers and life scientists had salaries of $30,000 or more, whereas almost 30 percent of the environmental scientists had salaries in this range. Three groups—environmental scientists, social scientists, and the out-of-scope—had about 7 percent of their full-time employed members with salaries of $40,000 or more; conversely, under 1 percent of the computer specialists had salaries in this range.

Except for life scientists (whose median salary was $20,893) the median 1976 basic annual salaries for the full-time employed members of all the groups were at least $21,000 (table J). In fact, 5 of the 8 fields—engineers, mathematical specialists, physical scientists, environmental scientists, and social scientists—had median incomes at or above $23,000, with the highest median salary being $25,289 for environmental scientists. As noted above, environmental scientists and engineers were older, on the average, than persons in other fields, and, thus, would most likely have had more labor force experience and higher salaries. The figures are at too high a level of aggregation, however, to indicate any consistent relationship, if one exists, between the median salary and the median age or the degree level for the fields. Also, it should be noted that between 6 and 12 percent of the full-time employed persons in each field did not report basic annual salary.

The median earnings in 1975, as estimated by the CPS, for male professionals [illegible] 14 years old and over who [illegible] was [illegible] 0,639. Male year-round full-time workers 25 years old and over with 4 years of college (regardless of occupation) had a median income in 1975 of $17,477, and for those with 5 or more years of college the median was $19,658.[16] These figures are not strictly comparable with the data presented in this report for the National Sample groups, however. The categories "earnings" and "income" include more sources of financial support than are included in the concept of "basic annual salary," and there are other differences between the concepts as well as in the reference periods for the two sets of data. CPS figures for 1975 are cited because 1975 is thought to be the full year most nearly comparable with the reference year for the question on basic annual salaries which was asked early in 1976.

The median salaries of the full-time employed in 1974, based on the 1974 survey, ranged from $18,419 for computer specialists to $20,206 for social scientists (table K). Environmental scientists, who had the highest median in 1976, also had one of the highest median salaries in 1974. The 1976 medians were about $3,700 greater, on the average, than the 1974 medians.

When the 1974 medians for the National Sample groups are expressed in terms of constant or 1975 dollars (i.e., when the effects of price changes are removed from the

[15] Current Population Reports, Money Income in 1975 of Families and Persons in the United States, Series P-60, No. 105.
[16] Ibid.

## Table J. Full-Time Employed Scientists or Engineers Reporting Basic Annual Salary, by Basic Annual Salary: 1976

| Basic annual salary[1] | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL REPORTING BASIC ANNUAL SALARY | | | | | | | | | |
| Number | 44,232 | 523,921 | 20,477 | 56,060 | 93,519 | 21,747 | 26,320 | 35,935 | 116,878 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Less than $8,000 | 0.3 | 0.4 | 0.8 | 1.2 | 0.7 | 0.5 | 0.8 | 1.4 | 1.2 |
| $8,000 to $9,999 | 0.8 | 0.5 | 0.3 | 1.0 | 0.7 | 0.6 | 0.4 | 0.8 | 1.8 |
| $10,000 to $14,999 | 5.4 | 4.1 | 7.0 | 12.0 | 8.0 | 4.3 | 7.3 | 6.3 | 12.2 |
| $15,000 to $19,999 | 26.6 | 21.9 | 21.3 | 28.7 | 20.8 | 17.0 | 24.2 | 18.7 | 22.8 |
| $20,000 to $24,999 | 38.5 | 33.4 | 28.4 | 25.5 | 28.4 | 25.4 | 30.2 | 27.0 | 24.9 |
| $25,000 to $29,999 | 18.1 | 21.4 | 22.6 | 16.9 | 18.7 | 23.0 | 17.5 | 19.8 | 15.6 |
| $30,000 to $39,999 | 9.4 | 13.9 | 15.9 | 11.1 | 18.2 | 22.0 | 14.9 | 18.5 | 14.3 |
| $40,000 to $49,999 | 0.7 | 2.5 | 3.3 | 2.2 | 3.2 | 4.1 | 2.7 | 4.2 | 3.4 |
| $50,000 and over | 0.2 | 1.[illegible] | 0.4 | 1.3 | 1.4 | 3.1 | 1.9 | 3.2 | 3.7 |
| Median salary (dollars) | 21,583 | 23,176 | 23,551 | 20,893 | 23,132 | 25,289 | 22,551 | 24,217 | 22,040 |

[1] Refers to job held in February 1976.

Note: Detail may not add to total because of rounding.

Source: Table 5.

Table K. Median Basic Annual Salaries of Full-Time Employed Persons in the 1974 and 1976 Fields of Science or Engineering in Current and Constant (1975) Dollars, by Field of Science or Engineering

| Field of science or engineering | Basic annual salary in 1976 of 1976 S/E fields in current dollars[1] | Basic annual salary in 1974 of 1974 S/E fields[2] | | Change between the 1974 and 1976 S/E fields | |
|---|---|---|---|---|---|
| | | In current dollars | In constant (1975) dollars[3] | In current dollars | In constant (1975) dollars[3] |
| Computer specialists | $21,583 | $18,419 | $22,308 | $3,164 | -725 |
| Engineers | 23,176 | 19,430 | 23,532 | 3,746 | -356 |
| Mathematical specialists | 23,551 | 19,781 | 23,957 | 3,770 | -406 |
| Life scientists | 20,893 | 17,807 | 21,566 | 3,086 | -673 |
| Physical scientists | 23,132 | 19,544 | 23,670 | 3,588 | -538 |
| Environmental scientists | 25,289 | 20,074 | 24,[illegible] | 5,215 | 977 |
| Psychologists | 22,551 | 19,453 | 23,560 | 3,098 | -1,009 |
| Social scientists | 24,217 | 20,206 | 24,472 | 4,011 | -255 |
| Out-of-scope | 22,040 | 18,353 | 22,228 | 3,687 | -188 |

[1]Refers to job held in February 1976.
[2]Refers to job held in January 1974.
[3]For derivation of constant (1975) dollars, see "Explanations and Definitions".

Source: Table 5 and unpublished tabulations based on the 1974 survey.

1974-76 changes), the 1974-76 comparisons reveal that at least three groups—computer specialists, engineers, and psychologists—experienced a slight decline in real basic annual salary rates between 1974 and 1976 (table K). Although table K shows declines for all other groups except environmental scientists, these apparent declines are not statistically significant. The apparent increase for environmental scientists is also not statistically significant.

These 1974-76 comparions in terms of constant or 1975 dollars must be approached cautiously, however. Problems are introduced into the comparisons by, among other things, the way the basic annual salary data are defined and collected, the nonresponse rates to the 1974 and 1976 surveys in general and to the salary items in particular, and the difficulty of establishing appropriate time periods for the constant-dollar computations. The trends, nevertheless, are also reflected in data from the CPS. In constant 1975 dollars, the CPS figures show that among male year-round full-time workers 14 years old and over, there was a decrease between total money earnings in 1973 and total money earnings in 1975 of $1,193 for professional, technical, and kindred workers, of $1,491 for managers and administrators except farm, and of $790 for all such workers regardless of occupation.[17]

**Federal support.** The importance of the Federal Government to S/E activities in this country is shown clearly by the proportion in each group who received some kind of Federal financial support for their work (table 5). For most groups, between about 35 and 40 percent, with a high of 50 percent for life scientists, received Federal support. Even the lowest groups—computer specialists and the out-of-scope—had nearly 25 percent of their members reporting Federal support. In addition, the proportion of each group supported by Federal funds has remained nearly constant since 1974.

The Department of Defense, was the most important source of Federal support in 1976 among computer specialists, engineers, mathematical specialists, and physical scientists. For life scientists, including agricultural scientists, the Department of Agriculture was the greatest single source of Federal support, as was the Department of Health, Education, and Welfare (HEW) for psychologists and social scientists. The chief support for environmental scientists was more varied, coming from four Government organizations: The National Science Foundation, the Department of the Interior, the Department of Defense, and the Department of Commerce. The 28 percent of the employed psychologists who were supported at least in part by the Department of Health, Education, and Welfare was the largest proportion in any one field to be supported by any one agency.

Some fields received substantial support from departments or agencies other than the primary source cited above. A relatively significant proportion of employed life scientists (16 percent), and employed mathematical specialists and physical scientists (both about 8 percent) were supported by the Department of Health, Education, and Welfare (HEW). The Energy and Research Development Administration also provided support to 9 percent of the employed physical scientists. The National Aeronautics and Space Administration (NASA) was a significant source of support of employed engineers (7 percent), and the National Science Foundation supported about 6 percent of the employed mathematical specialists and physical scientists.

The chief sources of Federal support to the 1976 groups were nearly the same as those for the 1974 groups. A significantly larger proportion of the 1976 psychologists than of the comparable 1974 group, however, received support from

[17]**Current Population Reports**, Series P-60, No. 105, op. cit., and **Current Population Reports**, Money Income in 1973 of Families and Persons in the United States, Series P-60, No. 97.

HEW—28 percent compared with 18 percent. The increased contribution of HEW to psychologists made it, as stated above, the largest single source of any one field; for the 1974 groups, the Department of Defense and the Department of Agriculture jointly held this position, with their support of 21 percent of the engineers and 21 percent of the life scientists, respectively. Another notable difference between the 1974 and 1976 groups was the increased proportion of employed mathematical specialists receiving HEW funds (4 percent in 1974, 9 percent in 1976).

**Job Mobility in 1975 and 1976, 1974 and 1976, and 1972 and 1976.** In general, among persons employed in the 2 years being compared, between 10 and 15 percent changed jobs in the 1-year 1975-76 period, 20 to 30 percent did so in the 2-year 1974-76 period, and about 35 to 50 percent in the 4-year 1972-76 period (table L). The mobility differentials among the time spans may be exaggerated, however, because of the high nonresponse rates, which ranged between 9 and 14 percent, for the 1974-76 and 1972-76 periods. The computer specialists and the out-of-scope group each had one of the highest proportions of job changers in each period. The high rates for the out-of-scope groups may be related to the factors that caused these persons to be outside of the S/E fields. The rates of the computer specialists may be partially accounted for by the relatively youthful average age of this group, the propensity to change jobs being greater among younger workers than among older workers in general.[18]

Job changing was somewhat more prevalent in the 1973-74 period than in the 1975-76 period and was also higher in the 1972-74 period than in the 1974-76 period. However, the out-of-scope were the most likely job-changers in all periods.

Persons who changed jobs between February 1975 and February 1976 were likely to remain within the same detailed occupation group (table M). About 40 percent or

[18] See U.S. Department of Labor, Bureau of Labor Statistics, Job Tenure of American Workers, January 1973, Summary Special Labor Force Report, May 1974.

## Table L. Scientists or Engineers in 1976 by Job Mobility: 1975 to 1976, 1974 to 1976, and 1972 to 1976

| Job mobility | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL EMPLOYED IN FEBRUARY 1975 AND IN FEBRUARY 1976 | | | | | | | | | |
| Number | 46,823 | 584,749 | 22,358 | 62,672 | 105,172 | 24,805 | 30,269 | 40,072 | 139,501 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Job change between 1975 and 1976 | 15.3 | 11.6 | 13.4 | 12.8 | 9.8 | 11.4 | 13.7 | 14.9 | 19.8 |
| Same job in 1975 and 1976 | 83.2 | 86.1 | 84.4 | 85.5 | 88.6 | 85.9 | 84.7 | 83.0 | 77.3 |
| Not reported | 1.5 | 1.3 | 2.1 | 1.7 | 1.6 | 2.7 | 1.6 | 2.1 | 2.8 |
| TOTAL EMPLOYED IN 1974 AND IN FEBRUARY 1976 | | | | | | | | | |
| Number | 45,978 | 567,300 | 21,778 | 60,588 | 100,974 | 24,182 | 29,139 | 37,833 | 131,790 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Job change between 1974 and 1976 | 31.4 | 24.8 | 23.4 | 22.0 | 20.6 | 23.4 | 24.1 | 27.5 | 34.7 |
| Same job in 1974 and 1976 | 59.1 | 63.2 | 66.7 | 68.5 | 69.6 | 62.4 | 67.6 | 63.5 | 51.9 |
| Not reported | 9.5 | 12.0 | 9.9 | 9.4 | 9.8 | 14.2 | 8.3 | 9.0 | 13.5 |
| TOTAL EMPLOYED IN 1972 AND AND IN FEBRUARY 1976 | | | | | | | | | |
| Number | 46,743 | 583,557 | 21,984 | 61,693 | 103,229 | 24,114 | 29,758 | 39,012 | 136,778 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Job change between 1972 and 1976 | 50.3 | 40.0 | 33.9 | 34.5 | 32.8 | 35.8 | 37.7 | 41.4 | 53.8 |
| Same job in 1972 and 1976 | 40.0 | 47.4 | 55.9 | 55.6 | 56.6 | 49.9 | 52.8 | 49.0 | 33.2 |
| Not reported | 9.7 | 12.6 | 10.2 | 9.9 | 10.6 | 14.3 | 9.5 | 9.6 | 13.0 |

Note: Detail may not add to total because of rounding.

Source: Table 5.

## Table M. Scientists or Engineers in 1976 Who Changed Jobs Between February 1975 and February 1976, by Occupational Mobility

| Occupational mobility | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL WITH JOB CHANGE | | | | | | | | | |
| Number | 7,162 | 67,973 | 3,006 | 8,025 | 10,324 | 2,817 | 4,150 | 5,970 | 27,640 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Changed occupation | 32.5 | 27.1 | 26.1 | 22.0 | 24.3 | 15.8 | 24.6 | 24.0 | 50.6 |
| Did not change occupation | 43.0 | 50.5 | 52.1 | 57.8 | 58.1 | 67.8 | 61.7 | 61.5 | 30.7 |
| Not reported | 24.5 | 22.4 | 21.8 | 20.2 | 17.6 | 16.4 | 13.7 | 14.6 | 18.7 |

Note: Detail may not add to total because of rounding.

Source: Table 5.

more, up to the 68 percent for environmental scientists, of the job-changers in each S/E field reported work in the same detailed occupation for both jobs; the out-of-scope figure of 30.7 percent was the smallest of any of the groups. Although there seemed to be differences among the fields in the proportions changing occupations, the large number of not reported cases makes most comparisons unreliable. However, it does appear, as expected, that the out-of-scope group had the highest proportion of persons who left their former occupation group when changing jobs. Comparisons between the figures on occupational changes for the 1974 groups and those for the 1976 groups are also difficult to make, owing to the large proportions in both years who did not report occupation in one or both years.

**Professional experience.** As expected, years of professional experience and age are closely related, older persons in general having more opportunity to gain professional experience than younger ones (table N). Computer specialists, the group with the lowest median age, also had the lowest median for years of professional experience, 11.3 years; the oldest groups, engineers and environmental scientists, had the highest medians for years of professional experience, 19.1 and 19.4 years, respectively. Partially because the National Sample includes only persons who were in the labor force in 1970, most of the persons in each field were seasoned professionals with at least 6 years of experience. The bulk of the members of each group had between 6 and 30 years of professional experience. The upper end of the distributions (persons with 31 years or more experience) contained between 10 and 15 percent of some groups, though only 2 percent of the computer specialists and 6 percent of the psychologists were in these categories. Because professional experience was defined to include time in all professional jobs, including teaching, some of the professional experience of the persons in each group was probably gained in jobs outside of their current groups; this is especially true for many of the computer specialists who had more than 30 years of professional experience.

**National interest topics.** There was considerable diversity among fields in the topics of critical national interest on which their members spent the most time (table 5). Major proportions of the life scientists and psychologists (both at least two-thirds), and environmental scientists (79 percent) reported that they devoted a significant proportion of their time to at least one of the topics; only about one-third of the computer specialists reported such involvement.

The chief topic reported for each S/E field was one of the following: education (primarily teaching), national defense, energy and fuel, environmental protection and pollution control. Teaching was the most significant topic for the mathematical specialists (18 percent) and the social scientists (13 percent), reflecting the large proportions in these fields who worked for educational institutions. National defense was uppermost among engineers and computer specialists; energy and fuel for environmental scientists; environmental protection and pollution control for life and physical scientists; and health and education for psychologists.

The introduction in 1976 of "national defense" as a topic of critical national interest tends to complicate comparisons between the topics reported by the 1976 groups and those of the 1974 groups. Somewhat greater proportions of the 1976 engineers and computer specialists than of the 1974 members of these fields were involved, however, in areas of critical national interest. The opposite was true for the life scientists and psychologists. Education was less important for the social scientists and the psychologists in 1976 than in 1974. Education also decreased considerably for the mathematical specialists (from 32 percent in 1974 to 20 percent in 1976); but almost 13 percent of the 1976 mathematical specialists reported "national defense" as their most significant topic. There is some evidence that food production and technology was more important in 1976 than in 1974 for the life scientists.

## Table N. Scientists or Engineers in 1976 Reporting Years of Professional Experience, by Number of Years

| Years of professional experience | Field of science or engineering in 1976 | | | | | | | | Not in a field of science or engineering in 1976 |
|---|---|---|---|---|---|---|---|---|---|
| | Computer specialists | Engineers | Mathematical specialists | Life scientists | Physical scientists | Environmental scientists | Psychologists | Social scientists | |
| TOTAL REPORTING YEARS OF PROFESSIONAL EXPERIENCE | | | | | | | | | |
| Number | 48,584 | 616,264 | 23,307 | 66,085 | 111,037 | 25,834 | 32,260 | 42,178 | 145,383 |
| Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Less than 1 year | 0.1 | 0.1 | - | 0.2 | 0.1 | 0.1 | 0.1 | 0.4 | 0.6 |
| 1 to 5 years | 4.0 | 2.1 | 4.7 | 7.6 | 6.2 | 5.6 | 11.0 | 7.3 | 7.4 |
| 6 to 10 years | 37.4 | 16.4 | 27.4 | 20.9 | 20.1 | 12.6 | 25.7 | 26.7 | 21.3 |
| 11 to 15 years | 31.3 | 17.2 | 21.2 | 18.8 | 18.1 | 16.4 | 20.4 | 21.0 | 20.7 |
| 16 to 20 years | 16.2 | 19.0 | 16.9 | 17.7 | 15.9 | 18.8 | 15.8 | 12.9 | 18.6 |
| 21 to 25 years | 7.3 | 17.1 | 13.7 | 13.6 | 14.7 | 20.9 | 12.8 | 11.8 | 12.6 |
| 26 to 30 years | 2.1 | 13.5 | 8.3 | 10.9 | 9.8 | 13.0 | 8.0 | 9.8 | 9.2 |
| 31 to 35 years | 1.2 | 6.4 | 3.6 | 4.4 | 6.7 | 5.5 | 2.7 | 4.5 | 4.5 |
| 36 to 40 years | 0.2 | 5.4 | 2.9 | 3.6 | 6.0 | 4.4 | 2.5 | 3.9 | 3.8 |
| 41 years and over | 0.2 | 2.8 | 1.4 | 2.4 | 2.6 | 2.8 | 1.1 | 1.8 | 1.3 |
| Median years | 11.3 | 19.1 | 14.3 | 15.6 | 16.7 | 19.4 | 13.4 | 14.0 | 15.0 |

- Represents zero.

Note: Detail may not add to total because of rounding.

Source: Table 5.

## THE SAMPLE

The 1976 National Survey of Natural and Social Scientists and Engineers was the third survey based on the 1970 population of scientists and engineers to be conducted by the Bureau of the Census for the National Science Foundation. The first survey, the 1972 Professional, Technical, and Scientific Manpower Survey,[19] was conducted among a nationwide sample of approximately 150,000 persons who were recorded in the 1970 Census of Population as being in the experienced civilian labor force in one of 65 engineering, scientific, or related occupations. The survey also included a small sample of persons who had completed 4 or more years of college but were not in any of the specified occupations. Based on responses in the 1972 survey and on criteria established by the National Science Foundation, approximately 50,000 persons from the 1972 survey sample (excluding the small sample of college graduates) were chosen as the sample for the series of longitudinal surveys known as the National Sample of Scientists and Engineers.[20] The 1976 National Survey of Natural and Social Scientists and Engineers was the second survey in this longitudinal series; the 1974 National Survey of Scientists and Engineers was the first.[21]

Questionnaires for the 1976 survey were mailed in February 1976. The final result of all data collection activities was that completed questionnaires were obtained for 85.1 percent of the sample, approximately 42,650 persons. The 14.9 percent for whom completed questionnaires were not received includes persons who refused to participate, the deceased, and persons who returned questionnaires with insufficient information to permit processing.[22]

For each sample case for which a completed questionnaire was obtained, the information from the 1976 survey was matched with the 1974 and 1972 survey data and the 1970 census data for the same person. Weights applied to sample cases in the 1972 survey were then used to weight the resultant matched data file. The use of the 1972 survey weights means that no adjustment for nonresponse was made to the 1976 survey results. Therefore, the 1976 estimates understate the characteristics being estimated for the 1972 survey population. This understatement varies to the extent that the 1976 noninterview rate varies for population subgroups.[23] An accounting for the nonresponses in 1976 by age, sex, and field of science or engineering in 1974 is shown in table 1.

Respondents to the 1976 National Survey of Natural and Social Scientists and Engineers were classified again based

[19] For a description of the 1972 survey and related matters, see U.S. Bureau of the Census, **Characteristics of Persons in Engineering and Scientific Occupations: 1972**, Technical Paper No. 33, U.S. Government Printing Office, Washington, D.C., 1974.

[20] Results from the 1974 survey were published in U.S. Bureau of the Census, "**Current Population Reports**, Special Studies, Series P-23, No. 53, "Selected Characteristics of Persons in Fields of Science or Engineering: 1974," U.S. Government Printing Office, Washington, D.C., 1975.

[21] For a description of the selection process, see appendix D.

[22] For an analysis of response, see appendix E.

[23] For a more complete discussion of the weighting and estimating procedures, see appendix A.

on criteria of the National Science Foundation, into 1 of 17 detailed fields of science and engineering in 1976 or into the category "not in a field of science or engineering in 1976." Except for table 1, the tables of this report are based exclusively on the characteristics of members of the universe represented by these respondents. Because the data in this report are based on a sample survey, they are subject to both sampling and nonsampling errors. The tables in appendix A present the standard errors of the totals and percentages for each of the 17 detailed and 8 major fields of science or engineering and for the category "not in a field of science or engineering in 1976."

## THE QUESTIONNAIRE

Each panel member in the 1976 National Survey of Natural and Social Scientists and Engineers was asked to complete by self-enumeration a four-page questionnaire (reproduced in appendix B). A cover letter was printed on page one of the questionnaire, and a set of reference lists (also reproduced in appendix B) was attached to the questionnaire. The reference lists were used by respondents to self-code answers to inquiries on major field of study (question 1 of the questionnaire), kind of business (question 7), occupation (question 8), and professional identification (question 19).

## DEFINITIONS AND EXPLANATIONS

The definitions for many of the characteristics shown in this report are self-explanatory or can best be understood by reference to the appropriate questionnaire items (see appendix C) or the reference lists in appendix B. An explanation of the other subjects is provided below.

**Fields of science and engineering.** Science or engineering (S/E) fields are categories established by the survey sponsor, the National Science Foundation, to identify persons who could be classified as engineers or scientists under most definitions. In general, to be classified into one of the fields, a person had to have at least two of the following three characteristics: (1) employment in the field, (2) attainment of a specified educational level in an academic discipline related to the field, or (3) self-identification, based upon total education and experience, as being in the field. More detailed information on the criteria for membership in a scientific and technical field is given in appendix D.

The major fields of science and engineering for which data are presented in this report and the detailed fields they comprise are as follows:

- Computer specialists
- Engineers
- Mathematical specialists
  - Mathematicians
  - Statisticians
- Life scientists
  - Agricultural scientists
  - Biologists
  - Medical scientists
- Physical scientists
  - Chemists
  - Physicists and astronomers
  - Other physical scientists
- Environmental scientists
  - Earth scientists
  - Atmospheric scientists
  - Oceanographers
- Psychologists
- Social Scientists
  - Economists
  - Sociologists and anthropologists
  - Other social scientists

**Age in 1976.** The reference period for age in 1976 was April 1976. The age classification is based on the age of the person at his or her last birthday. The median age is that age that divides the distribution into two equal parts, one-half being older than the median age and one-half younger. Median ages were derived from an estimation process that distributed the subject populations into the 5-year age groups given in table 1.

**Race.** The data on race are based on responses in the 1970 Census of Population. The "other races" category includes all races not included in the specific categories listed.

**Divisions of the United States.** The divisions of the United States shown in table 2 comprise the following States:

**New England:** Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

**Middle Atlantic:** New York, New Jersey, Pennsylvania

**East North Central:** Illinois, Indiana, Michigan, Ohio, Wisconsin

**West North Central:** Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

**South Atlantic:** Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

**East South Central:** Alabama, Kentucky, Mississippi, Tennessee

**West South Central:** Arkansas, Louisiana, Oklahoma, Texas

**Mountain:** Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming

**Pacific:** Alaska, California, Hawaii, Oregon, Washington

Outlying areas of the United States include Puerto Rico, Guam, Virgin Islands, American Samoa, and Canal Zone.

**Standard Metropolitan Statistical Areas (SMSA).** In general, a standard metropolitan statistical area is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or twin cities with a combined

population of at least 50,000. The data in this report are restricted to SMSA boundaries as defined for the 1970 Census of Population. For more information, see 1970 Census of Population, Volume 1, Characteristics of the Population, Part 1, United States Summary.

**Highest degree held.** Highest degree held in 1976 refers to the highest academic degree awarded to the respondent in 1975 or earlier. Data on highest degree held were derived as follows: The level and the year of award of the highest degree received by the respondent between January 1972 and the beginning of 1976 (this degree will be referred to as degree "A") were compared with the level and year of award, determined from either the 1974 or 1972 survey, of the previously-designated highest degree held by the respondent (this degree is referred to as degree "B"). If degree "A" was at the same level or at a higher level than degree "B," and if its date of award was later than that of degree "B," degree "A" was designated as the highest degree held in 1976; otherwise, the degree "B" was designated as the highest degree held in 1976.[24]

The "other degree" category includes persons whose highest academic degree was one of the following: RN, LLB, MD, and academic degrees other than those shown in table 3.

Except for engineers, the criteria for the science or engineering fields required that a person possess an academic degree at the bachelor's level or higher. In table 3, therefore, only engineers and persons not in a field of science or engineering in 1976 appear in the "associate degree" and "no degree" categories.

**Major field of study for highest degree held.** The data on major field of study refer to the major subject associated with the highest degree held in 1976 as determined by the method described above. For persons whose highest degree held in 1976 was received after January 1972, the data are derived from question 1, part b of the 1976 questionnaire or from question 2, part b5 of the 1974 questionniare. For persons whose highest degree was awarded in 1971 or earlier, the data on major subject are based on the 1972 survey.

**Employment status.** Employed persons are those who reported that they were employed, either full time or part time, or on postdoctoral appointment during the reference week (February 8-14, 1976 or February 9-15, 1975). If a person did not report whether he or she was employed or on postdoctoral appointment, but the dates of his or her most recent job included February 1976 (or 1975), he or she was also considered employed. The unemployed are persons who marked the "unemployed and seeking work" category (box 4) of item 3a of the 1976 questionnaire. All other persons were classified as "not in the labor force" or as "labor force status not reported."

The statistics on employment status in February 1976 are not strictly comparable with those for February 1975. The editing rules for the 1976 survey rejected the questionnaire of any person who failed to report employment status in 1976, but did permit the respondent to leave status in 1975 unreported. Therefore, the data on employment status in 1975 have a category "employment status not reported," which does not appear for the data on status in 1976.

**Unemployment in 1975.** The data on unemployment in 1975 relate to the occurrence of unemployment during the entire calendar year, rather than just during the reference week.

**Primary work activity in 1976.** The data on primary work activity in 1976 were derived, in general, from answers to question 10 of the 1976 questionnaire. In certain instances of nonresponse to question 10, however, the data were derived from an imputation procedure that used responses to question 11.

**Type of employer.** The data on type of employer in 1976 are based on entirely on responses to question 12 of the 1976 questionnaire.

**Basic annual salary rate.** The statistics on salary refer to the basic annual salary associated with the job held in February 1976. The figures relate to salary before deductions for income tax, social security, retirement, etc., but do not include bonuses, overtime pay, or earnings from secondary jobs. For employees of educational institutions whose salary was for 9 or 10 months, the salary rate was adjusted to a 12-month basis. Median salaries were derived by an estimation process that distributed the subject populations into $1,000 intervals.

**Computation of constant dollar figures.** The adjustment for price changes between 1974 and 1976 was made by converting the median basic annual salaries for each period into 1975 dollars on the basis of the change in the Consumer Price Index. The index figure for 1975 of 161.2 (1967=100) was applied to the basic annual salaries in 1976 of Table L, and the index figure for 1973 or 133.1 (1967=100) was applied to the basic annual salaries in 1974. The 1974 medians in current dollars were then multiplied by the factor 1.21 (i.e. 161.2÷133.1) that represented the change in the price index between the two periods (1975=100). The constant dollar figures, for a number of reasons, are to be regarded as approximations. For further information, see U.S. Bureau of the Census, **Current Population Reports**, Series P-60, Number 104, pps. 76 and 77.

**Job mobility in 1975 and 1976.** Persons who reported being employed in February 1976 and in February 1975 in the 1976 survey were classified in the "job change between 1975 and 1976" category if they reported different jobs in Part

[24] After the data in tables 1-5 were tabulated, an error was discovered in the computer program that made the highest degree held in 1976 determinations. In short, the program incorrectly assigned "1976" as the year of award of the highest degree entered in item 1b of the 1976 questionnaire when the respondent indicated that he or she had not been awarded this degree by marking the "none" box in the "year degree was awarded or will be awarded" section. The influence of this error on the data of this report was negligible and did not justify their recalculation. For a fuller discussion of the problem and of its effect on the published data, see appendix G.

III of the questionnaire. Then, the detailed occupation of the 1976 job was compared with the detailed occupation of the 1975 job, and persons were classified as with same or different occupations or as "occupation change not reported."

**Job mobility in 1974 and 1976.** The data on job mobility between 1974 and 1976 were derived from answers on both the 1974 and 1976 questionnaires. Persons were classified as with a "job change between 1974 and 1976," if they were employed in both 1974 and 1976 and reported in the 1976 survey that their current job began in 1974 or later. Persons were classified as "same job in 1974 and 1976" if the beginning date of their most recent job was in 1973 or earlier, and as "not reported" if they did not report the beginning date of the job.

**Job mobility in 1972 and 1976.** The data on job mobility between 1972 and 1976 were derived from answers on both the 1972 and 1976 questionnaires. Persons were classified as "job change between 1972 and 1976," if they were employed in both 1972 and 1976 and reported in the 1976 survey that the beginning date of their current job was in 1972 or later. Persons were classified as "same job in 1972 and 1976," if the beginning date of this job was in 1971 or earlier, and as "not reported" if they did not report the beginning date of the job.

# Table 1. FIELD OF SCIENCE OR ENGINEERING IN 1976 OF PERSONS IN THE NATIONAL SAMPLE

(Detail may not add to total because of rounding.

| Line No. | Sex, age in 1976, and field in 1974 | Total, National Sample of Scientists and Engineers | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Computer specialists | Engineers | Mathematical specialists | | | Life scientists | | | |
| | | | | | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| 1 | Total persons | 1,400,143 | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | Male | 94.4 | 87.6 | 99.6 | 86.5 | 87.7 | 83.3 | 87.5 | 99.6 | 82.2 | 72.8 |
| 4 | Female | 5.6 | 12.4 | 0.4 | 13.5 | 12.3 | 16.7 | 12.5 | 0.4 | 17.8 | 27.2 |
| 5 | Under 30 years | 5.5 | 8.6 | 4.5 | 4.8 | 5.2 | 3.6 | 4.6 | 3.4 | 6.1 | 2.6 |
| 6 | 30 to 34 years | 16.3 | 31.9 | 12.6 | 22.6 | 23.3 | 20.7 | 16.0 | 11.7 | 19.5 | 15.2 |
| 7 | 35 to 39 years | 17.0 | 25.3 | 15.5 | 19.6 | 20.8 | 16.6 | 17.9 | 17.1 | 18.9 | 16.4 |
| 8 | 40 to 44 years | 15.1 | 16.3 | 15.0 | 14.9 | 14.9 | 14.8 | 15.8 | 16.9 | 14.5 | 17.4 |
| 9 | 45 to 49 years | 14.3 | 9.8 | 15.6 | 14.8 | 15.5 | 13.2 | 14.1 | 15.7 | 13.8 | 11.2 |
| 10 | 50 to 54 years | 13.0 | 4.8 | 15.4 | 8.0 | 7.0 | 10.4 | 12.2 | 14.9 | 10.4 | 11.5 |
| 11 | 55 to 59 years | 8.3 | 2.3 | 9.5 | 6.4 | 6.0 | 7.5 | 8.8 | 9.2 | 7.5 | 12.6 |
| 12 | 60 to 64 years | 5.4 | 0.7 | 6.1 | 4.8 | 3.7 | 7.7 | 5.8 | 6.0 | 5.0 | 7.7 |
| 13 | 65 to 69 years | 3.2 | 0.2 | 3.7 | 3.3 | 2.8 | 4.6 | 3.1 | 3.5 | 2.5 | 4.5 |
| 14 | 70 and over | 1.8 | 0.1 | 2.1 | 0.9 | 0.8 | 1.0 | 1.7 | 1.6 | 2.0 | 0.9 |
| 15 | Median age (years) | 43.7 | 36.9 | 45.8 | 41.0 | 40.2 | 43.1 | 43.7 | 45.3 | 41.9 | 44.5 |
| | FIELD OF SCIENCE OR ENGINEERING IN 1974 | | | | | | | | | | |
| 16 | Total persons | 1,400,143 | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 17 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 18 | Computer specialists | 3.9 | 73.1 | 0.5 | 3.9 | 5.0 | 1.0 | (Z) | (Z) | - | - |
| 19 | Engineers | 49.1 | 7.7 | 89.4 | 3.2 | 3.0 | 3.5 | 0.7 | 0.4 | 1.0 | 0.7 |
| 20 | Mathematical specialists | 2.0 | 1.9 | 0.1 | 81.9 | 80.5 | 85.5 | 0.1 | - | 0.1 | 0.3 |
| 21 | Mathematicians | 1.4 | 1.8 | 0.1 | 58.2 | 79.9 | 2.6 | (Z) | - | (Z) | - |
| 22 | Statisticians | 0.6 | (Z) | (Z) | 23.7 | 0.7 | 82.9 | 0.1 | - | 0.1 | 0.3 |
| 23 | Life scientists | 5.4 | - | 0.1 | 0.1 | - | 0.4 | 85.4 | 87.9 | 85.8 | 77.0 |
| 24 | Agricultural scientists | 2.1 | - | (Z) | - | - | - | 33.1 | 82.5 | 4.4 | 0.3 |
| 25 | Biologists | 2.6 | (Z) | (Z) | (Z) | - | 0.2 | 41.8 | 5.2 | 78.0 | 13.9 |
| 26 | Medical scientists | 0.8 | - | (Z) | 0.1 | - | 0.2 | 10.5 | 0.2 | 3.4 | 62.8 |
| 27 | Physical scientists | 8.6 | 1.0 | 0.6 | 0.4 | 0.6 | - | 2.5 | 0.7 | 3.5 | 3.4 |
| 28 | Chemists | 6.2 | 0.3 | 0.3 | 0.3 | 0.4 | - | 2.2 | 0.6 | 3.2 | 2.7 |
| 29 | Physicists and astronomers | 2.0 | 0.6 | 0.2 | 0.1 | 0.1 | - | 0.1 | - | 0.2 | 0.3 |
| 30 | Other physical scientists | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | - | 0.2 | 0.1 | 0.1 | 0.4 |
| 31 | Environmental scientists | 2.1 | 0.1 | 0.1 | - | - | - | 0.5 | 0.9 | 0.3 | - |
| 32 | Earth scientists | 1.8 | 0.1 | 0.1 | - | - | - | 0.3 | 0.8 | (Z) | - |
| 33 | Atmospheric scientists | 0.2 | 0.1 | (Z) | - | - | - | (Z) | (Z) | - | - |
| 34 | Oceanographers | 0.1 | - | (Z) | - | - | - | 0.1 | - | 0.3 | - |
| 35 | Psychologists | 2.5 | (Z) | (Z) | - | - | - | 0.4 | - | 0.1 | 2.0 |
| 36 | Social scientists | 3.4 | 0.2 | 0.1 | 0.9 | 0.3 | 2.5 | 0.2 | 0.3 | - | 0.3 |
| 37 | Economists | 1.4 | 0.1 | (Z) | 0.7 | 0.1 | 2.3 | 0.1 | 0.3 | - | - |
| 38 | Sociologists and anthropologists | 0.8 | (Z) | - | - | - | - | (Z) | - | - | 0.1 |
| 39 | Other social scientists | 1.2 | 0.1 | (Z) | 0.2 | 0.2 | 0.2 | (Z) | (Z) | - | 0.1 |
| 40 | Not in a field in 1974 | 10.6 | 12.7 | 4.6 | 6.4 | 6.8 | 5.5 | 7.1 | 7.0 | 5.6 | 12.8 |
| 41 | Did not report in 1974 | 12.3 | 3.1 | 4.5 | 3.2 | 3.9 | 1.6 | 3.3 | 2.7 | 3.6 | 3.6 |

# OF SCIENTISTS AND ENGINEERS, BY FIELD OF SCIENCE OR ENGINEERING IN 1974, AGE IN 1976, AND SEX

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Did not report in 1976 | Line No. |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 214,677 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 92.5 | 90.6 | 97.6 | 96.0 | 96.8 | 96.5 | 97.6 | 100.0 | 72.3 | 81.1 | 91.1 | 75.9 | 74.1 | 91.3 | 92.6 | 3 |
| 7.5 | 9.4 | 2.4 | 4.0 | 3.2 | 3.5 | 2.4 | - | 27.7 | 18.9 | 8.9 | 24.1 | 25.9 | 8.7 | 7.4 | 4 |
| 4.1 | 3.7 | 5.2 | 4.5 | 4.0 | 4.2 | 1.2 | 6.2 | 5.6 | 4.1 | 2.9 | 3.3 | 5.8 | 7.1 | 8.2 | 5 |
| 15.9 | 15.7 | 16.9 | 15.3 | 10.0 | 9.2 | 11.4 | 19.9 | 20.9 | 21.8 | 17.9 | 24.6 | 24.1 | 19.2 | 20.0 | 6 |
| 17.8 | 15.9 | 23.2 | 19.6 | 13.3 | 12.4 | 11.1 | 32.9 | 17.3 | 15.5 | 14.6 | 17.2 | 15.4 | 16.9 | 19.4 | 7 |
| 15.2 | 14.7 | 16.4 | 16.4 | 18.9 | 19.4 | 18.2 | 11.9 | 13.7 | 12.6 | 11.9 | 13.5 | 12.8 | 16.1 | 14.6 | 8 |
| 13.6 | 13.5 | 13.7 | 15.3 | 19.0 | 20.3 | 13.9 | 10.3 | 14.6 | 12.6 | 12.2 | 12.9 | 12.8 | 13.3 | 12.4 | 9 |
| 12.6 | 13.5 | 10.0 | 11.9 | 14.0 | 14.6 | 13.7 | 4.2 | 13.0 | 11.6 | 15.0 | 10.9 | 8.5 | 11.2 | 10.1 | 10 |
| 9.1 | 10.4 | 5.3 | 9.8 | 10.6 | 9.2 | 21.5 | 7.0 | 6.6 | 8.9 | 9.0 | 8.4 | 9.1 | 7.7 | 6.1 | 11 |
| 6.4 | 6.9 | 5.2 | 4.4 | 5.5 | 5.3 | 7.8 | 3.3 | 4.1 | 5.9 | 6.5 | 5.1 | 5.6 | 5.0 | 4.3 | 12 |
| 3.4 | 3.8 | 2.4 | 2.3 | 3.8 | 4.4 | 0.7 | 1.7 | 2.4 | 4.2 | 5.5 | 2.5 | 3.8 | 2.5 | 2.7 | 13 |
| 1.8 | 1.9 | 1.8 | 0.5 | 1.0 | 0.9 | 0.4 | 2.6 | 1.8 | 2.9 | 4.5 | 1.5 | 2.1 | 1.0 | 2.2 | 14 |
| 44.0 | 45.0 | 41.4 | 43.3 | 46.0 | 46.2 | 47.9 | 38.6 | 42.3 | 43.4 | 46.1 | 41.8 | 41.8 | 42.1 | 40.8 | 15 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 214,677 | 16 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 17 |
| 0.2 | 0.1 | 0.4 | 0.6 | 0.1 | 0.2 | - | - | 0.4 | 0.5 | 0.6 | 0.5 | 0.4 | 5.5 | 2.2 | 18 |
| 3.4 | 2.2 | 6.0 | 8.8 | 1.9 | 1.8 | 1.2 | 4.8 | 0.6 | 1.2 | 1.7 | - | 1.4 | 23.6 | 24.0 | 19 |
| 0.1 | - | 0.2 | - | (Z) | 0.1 | - | - | 0.1 | 0.3 | 0.5 | 0.4 | - | 1.9 | 1.1 | 20 |
| 0.1 | - | 0.2 | - | (Z) | 0.1 | - | - | - | - | - | - | - | 1.4 | 0.8 | 21 |
| - | - | - | - | - | - | - | - | 0.1 | 0.3 | 0.5 | 0.4 | - | 0.6 | 0.2 | 22 |
| 1.7 | 2.0 | 0.3 | 5.3 | 0.6 | 0.7 | - | - | 0.5 | 0.5 | 0.5 | 0.7 | 0.4 | 4.5 | 2.6 | 23 |
| 0.3 | 0.2 | - | 2.9 | 0.6 | 0.7 | - | - | - | 0.2 | 0.4 | - | 0.1 | 1.7 | 1.1 | 24 |
| 1.2 | 1.4 | 0.1 | 2.0 | - | - | - | - | 0.2 | 0.1 | - | 0.1 | 0.3 | 1.6 | 1.1 | 25 |
| 0.3 | 0.3 | 0.3 | 0.4 | - | - | - | - | 0.3 | 0.2 | 0.1 | 0.6 | 0.1 | 1.2 | 0.4 | 26 |
| 86.2 | 89.1 | 81.6 | 67.3 | 3.1 | 2.9 | 4.8 | 2.6 | - | 0.2 | 0.2 | - | 0.2 | 3.6 | 3.2 | 27 |
| 63.9 | 88.6 | 0.6 | 6.6 | 0.3 | 0.3 | 0.4 | - | - | - | - | - | - | 2.5 | 2.3 | 28 |
| 18.9 | 0.2 | 77.5 | 12.7 | 1.4 | 1.1 | 2.9 | 1.6 | - | 0.1 | 0.2 | - | 0.1 | 0.9 | 0.8 | 29 |
| 3.4 | 0.3 | 3.5 | 48.1 | 1.4 | 1.4 | 1.5 | 1.0 | - | 0.1 | - | - | 0.2 | 0.3 | 0.1 | 30 |
| 0.6 | 0.1 | 0.6 | 8.6 | 88.5 | 88.4 | 90.3 | 86.2 | - | 0.5 | - | - | 1.3 | 0.6 | 1.1 | 31 |
| 0.5 | 0.1 | 0.2 | 8.3 | 73.5 | 88.1 | 3.3 | 2.4 | - | 0.4 | - | - | 1.1 | 0.6 | 0.9 | 32 |
| 0.1 | - | 0.4 | 0.2 | 10.3 | 0.1 | 85.2 | - | - | 0.1 | - | - | 0.2 | (Z) | 0.1 | 33 |
| (Z) | (Z) | - | 0.2 | 4.7 | 0.2 | 1.8 | 83.8 | - | - | - | - | - | (Z) | (Z) | 34 |
| - | - | - | - | - | - | - | - | 86.8 | 0.6 | - | 0.1 | 1.6 | 1.1 | 1.3 | 35 |
| (Z) | (Z) | - | 0.2 | 0.2 | 0.2 | - | - | 1.3 | 78.2 | 82.0 | 86.6 | 69.3 | 4.6 | 1.7 | 36 |
| - | - | - | - | - | - | - | - | - | 32.6 | 81.0 | 0.1 | 2.8 | 1.6 | 0.9 | 37 |
| - | - | - | - | - | - | - | - | - | 20.4 | - | 85.2 | 2.9 | 0.7 | 0.3 | 38 |
| (Z) | (Z) | - | 0.2 | 0.2 | 0.2 | - | - | 1.3 | 25.2 | 1.0 | 1.3 | 63.6 | 2.2 | 0.6 | 39 |
| 3.7 | 3.3 | 4.1 | 7.6 | 2.7 | 2.9 | 2.3 | 0.9 | 5.8 | 12.9 | 9.5 | 7.8 | 19.3 | 49.2 | 6.7 | 40 |
| 4.0 | 3.3 | 6.8 | 1.5 | 2.8 | 2.8 | 1.5 | 5.6 | 4.5 | 5.1 | 4.9 | 4.0 | 6.1 | 5.3 | 56.2 | 41 |

# Table 2. SELECTED SOCIAL CHARACTERISTICS

(Detail may not add to total because of rounding.

| Line No. | Selected social characteristics | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | RACE | | | | | | | | | |
| 1 | All races | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | White | 96.3 | 96.7 | 93.2 | 93.7 | 92.1 | 96.2 | 98.6 | 94.4 | 96.0 |
| 4 | Black | 1.6 | 0.7 | 3.8 | 4.2 | 2.7 | 1.4 | 0.4 | 2.3 | 1.3 |
| 5 | Japanese, Chinese, or Korean | 1.3 | 2.2 | 2.5 | 1.8 | 4.2 | 1.7 | 0.8 | 2.6 | 1.4 |
| 6 | All other races | 0.8 | 0.5 | 0.5 | 0.3 | 1.1 | 0.7 | 0.2 | 0.8 | 1.3 |
| | RESIDENCE IN 1976 | | | | | | | | | |
| 7 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 8 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 9 | United States | 99.2 | 99.3 | 98.8 | 99.2 | 97.8 | 99.1 | 99.6 | 98.6 | 99.7 |
| 10 | Northeast | 31.7 | 26.5 | 22.5 | 21.3 | 25.7 | 18.6 | 9.4 | 21.8 | 31.9 |
| 11 | New England | 8.0 | 7.9 | 5.8 | 6.3 | 4.7 | 5.4 | 3.3 | 6.1 | 8.4 |
| 12 | Middle Atlantic | 23.6 | 18.6 | 16.7 | 15.0 | 21.0 | 13.2 | 6.1 | 15.7 | 23.5 |
| 13 | North Central | 19.7 | 23.5 | 20.8 | 21.5 | 19.0 | 26.0 | 25.4 | 27.7 | 21.6 |
| 14 | East North Central | 14.7 | 17.6 | 15.9 | 16.8 | 13.6 | 16.2 | 12.2 | 19.5 | 15.0 |
| 15 | West North Central | 5.0 | 5.8 | 4.9 | 4.7 | 5.4 | 9.8 | 13.1 | 8.2 | 6.6 |
| 16 | South | 27.8 | 26.1 | 36.7 | 34.5 | 42.2 | 30.6 | 34.7 | 28.0 | 28.7 |
| 17 | South Atlantic | 16.5 | 13.2 | 24.1 | 21.3 | 31.4 | 16.6 | 17.0 | 16.2 | 17.0 |
| 18 | East South Central | 3.3 | 4.1 | 3.9 | 4.3 | 2.9 | 5.7 | 7.8 | 4.4 | 4.9 |
| 19 | West South Central | 8.1 | 8.8 | 8.7 | 9.0 | 7.9 | 8.3 | 9.9 | 7.4 | 6.8 |
| 20 | West | 19.9 | 23.2 | 18.8 | 21.8 | 11.0 | 24.0 | 30.0 | 21.1 | 17.6 |
| 21 | Mountain | 3.2 | 4.8 | 5.8 | 6.9 | 2.9 | 7.0 | 11.4 | 4.9 | 2.7 |
| 22 | Pacific | 16.7 | 18.4 | 13.0 | 15.0 | 8.1 | 16.9 | 18.7 | 16.2 | 14.9 |
| 23 | Outlying areas of the United States | 0.1 | (Z) | - | - | - | (Z) | 0.1 | (Z) | - |
| 24 | Foreign country | 0.8 | 0.7 | 1.2 | 0.8 | 2.2 | 0.8 | 0.3 | 1.4 | 0.3 |
| 25 | Not reported | - | - | - | - | - | - | - | - | - |
| | SELECTED SMSA'S OF RESIDENCE IN 1976 | | | | | | | | | |
| 26 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 27 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 28 | Metropolitan areas | 85.1 | 81.1 | 75.9 | 73.3 | 82.6 | 57.4 | 39.2 | 64.4 | 82.4 |
| 29 | Anaheim-Santa Ana-Garden Grove, Calif. | 1.6 | 2.0 | 0.8 | 1.1 | 0.3 | 0.9 | 0.2 | 1.2 | 1.8 |
| 30 | Los Angeles-Long Beach, Calif. | 4.9 | 4.9 | 2.4 | 2.8 | 1.4 | 1.8 | 0.2 | 2.2 | 4.9 |
| 31 | San Diego, Calif. | 1.1 | 0.9 | 0.8 | 0.9 | 0.6 | 0.7 | (Z) | 1.4 | 0.1 |
| 32 | San Francisco-Oakland, Calif. | 2.2 | 2.0 | 1.6 | 1.4 | 2.2 | 2.4 | 1.5 | 2.7 | 3.4 |
| 33 | San Jose, Calif. | 2.2 | 1.8 | 1.3 | 1.8 | - | 0.8 | 0.5 | 0.9 | 1.0 |
| 34 | Denver, Colo. | 0.6 | 1.3 | 0.9 | 1.1 | 0.3 | 0.7 | 0.8 | 0.7 | 0.6 |
| 35 | Washington, D.C.-Md.-Va. | 6.0 | 3.1 | 11.4 | 7.3 | 21.9 | 3.9 | 2.8 | 4.2 | 6.2 |
| 36 | Atlanta, Ga. | 1.3 | 0.7 | 0.5 | 0.4 | 0.7 | 0.6 | 0.3 | 0.5 | 1.4 |
| 37 | Chicago, Ill. | 4.2 | 3.3 | 3.2 | 2.4 | 5.2 | 2.6 | 0.9 | 3.1 | 5.4 |
| 38 | New Orleans, La. | 0.4 | 0.7 | 0.2 | 0.2 | 0.2 | 0.3 | - | 0.4 | 0.7 |
| 39 | Baltimore, Md. | 1.3 | 1.2 | 2.0 | 2.5 | 0.6 | 0.8 | 0.1 | 1.1 | 1.9 |
| 40 | Boston, Mass. | 2.8 | 2.3 | 1.8 | 1.7 | 2.1 | 0.9 | - | 1.3 | 2.1 |
| 41 | Detroit, Mich. | 1.7 | 2.2 | 1.4 | 1.6 | 1.0 | 0.6 | (Z) | 1.0 | 0.6 |
| 42 | Minneapolis-St. Paul, Minn. | 1.1 | 1.5 | 0.7 | 0.5 | 1.1 | 1.4 | 2.0 | 0.8 | 1.8 |
| 43 | St. Louis, Mo.-Ill. | 0.9 | 1.3 | 0.9 | 1.0 | 0.5 | 0.4 | 0.1 | 0.7 | 0.5 |
| 44 | Newark, N.J. | 1.8 | 1.6 | 1.1 | 0.5 | 2.7 | 0.9 | 0.1 | 1.5 | 1.3 |
| 45 | Paterson-Clifton-Passaic, N.J. | 0.9 | 0.9 | 0.5 | 0.1 | 1.3 | 0.6 | (Z) | 1.1 | 0.3 |
| 46 | New York, N.Y. | 6.5 | 3.2 | 4.2 | 4.5 | 3.3 | 3.3 | 0.6 | 3.4 | 10.2 |
| 47 | Rochester, N.Y. | 1.0 | 0.8 | 1.1 | 0.9 | 1.7 | 0.3 | (Z) | 0.3 | 0.7 |
| 48 | Cincinnati, Ohio-Ky.-Ind. | 0.9 | 0.9 | 0.8 | 0.9 | 0.4 | 0.7 | 0.4 | 1.1 | 0.6 |
| 49 | Cleveland, Ohio | 0.8 | 1.1 | 0.3 | 0.4 | - | 0.6 | 0.1 | 0.8 | 1.1 |
| 50 | Philadelphia, Pa.-N.J. | 2.6 | 3.3 | 1.8 | 1.9 | 1.7 | 1.7 | 0.4 | 2.2 | 3.6 |
| 51 | Pittsburgh, Pa. | 1.5 | 1.8 | 0.8 | 0.9 | 0.5 | 0.4 | 0.2 | 0.4 | 0.7 |
| 52 | Dallas, Texas | 1.5 | 1.1 | 1.5 | 1.7 | 1.2 | 0.3 | 0.1 | 0.4 | 0.5 |
| 53 | Houston, Texas | 2.2 | 2.2 | 1.4 | 1.3 | 1.4 | 0.6 | 0.1 | 0.8 | 1.2 |
| 54 | Seattle-Everett, Wash. | 1.8 | 1.9 | 1.0 | 1.0 | 1.0 | 0.5 | 0.4 | 0.7 | 0.4 |
| 55 | Other metropolitan areas | 31.0 | 33.0 | 31.6 | 32.5 | 29.1 | 28.7 | 27.3 | 29.5 | 29.6 |
| 56 | Nonmetropolitan areas | 14.0 | 18.1 | 22.8 | 25.8 | 15.2 | 41.6 | 60.2 | 34.1 | 17.3 |
| 57 | Outlying areas of the United States or foreign countries | 0.8 | 0.7 | 1.2 | 0.8 | 2.2 | 0.9 | 0.4 | 1.4 | 0.3 |
| 58 | Not reported | 0.1 | 0.1 | (Z) | 0.1 | - | 0.1 | 0.1 | 0.2 | - |

# BY FIELD OF SCIENCE OR ENGINEERING: 1976

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 94.3 | 93.7 | 95.6 | 96.2 | 98.1 | 98.4 | 98.5 | 91.8 | 97.9 | 96.0 | 95.9 | 95.9 | 96.0 | 96.5 | 3 |
| 1.6 | 2.0 | 0.4 | 1.1 | 0.1 | - | 0.4 | 1.9 | 1.6 | 1.7 | 1.4 | 2.4 | 1.7 | 1.4 | 4 |
| 3.3 | 3.3 | 3.7 | 2.7 | 1.4 | 1.1 | 1.1 | 6.3 | 0.2 | 1.6 | 2.0 | 1.6 | 1.3 | 1.6 | 5 |
| 0.8 | 1.0 | 0.3 | - | 0.4 | 0.4 | - | - | 0.2 | 0.7 | 0.8 | - | 1.0 | 0.5 | 6 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 7 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 8 |
| 99.0 | 99.3 | 98.1 | 97.6 | 97.7 | 97.3 | 100.0 | 98.2 | 99.1 | 98.4 | 98.4 | 98.0 | 98.6 | 99.3 | 9 |
| 30.7 | 31.4 | 29.2 | 28.1 | 10.1 | 8.6 | 16.4 | 20.8 | 31.9 | 26.2 | 23.3 | 29.7 | 26.9 | 28.1 | 10 |
| 7.3 | 6.7 | 9.0 | 8.7 | 4.3 | 2.8 | 7.8 | 19.1 | 7.6 | 6.7 | 5.2 | 10.1 | 6.3 | 8.7 | 11 |
| 23.4 | 24.7 | 20.2 | 19.4 | 5.9 | 5.7 | 8.6 | 1.7 | 24.3 | 19.4 | 18.2 | 19.7 | 20.6 | 19.4 | 12 |
| 23.8 | 27.1 | 15.3 | 16.6 | 10.2 | 10.1 | 14.7 | 1.1 | 24.6 | 22.8 | 21.4 | 24.5 | 23.1 | 26.0 | 13 |
| 18.3 | 20.8 | 11.8 | 14.2 | 6.2 | 6.3 | 8.0 | 1.1 | 17.8 | 15.7 | 14.7 | 17.7 | 15.6 | 18.6 | 14 |
| 5.5 | 6.3 | 3.5 | 2.4 | 3.9 | 3.8 | 6.7 | - | 6.8 | 7.0 | 6.6 | 6.9 | 7.5 | 7.4 | 15 |
| 25.8 | 26.1 | 23.9 | 30.5 | 45.5 | 45.8 | 42.5 | 46.4 | 22.1 | 30.6 | 39.5 | 21.7 | 26.8 | 25.9 | 16 |
| 15.6 | 14.9 | 15.6 | 25.4 | 12.5 | 8.9 | 26.1 | 38.4 | 12.7 | 22.7 | 29.6 | 14.7 | 20.3 | 14.6 | 17 |
| 3.5 | 3.7 | 3.0 | 2.5 | 2.7 | 2.8 | 2.9 | 1.7 | 3.2 | 3.4 | 4.5 | 2.6 | 2.8 | 3.9 | 18 |
| 6.7 | 7.4 | 5.3 | 2.6 | 30.2 | 34.2 | 13.5 | 6.3 | 6.2 | 4.5 | 5.4 | 4.4 | 3.7 | 7.4 | 19 |
| 18.7 | 14.8 | 29.8 | 22.5 | 32.0 | 32.9 | 26.4 | 29.8 | 20.6 | 18.9 | 14.7 | 22.0 | 21.7 | 19.3 | 20 |
| 5.1 | 3.8 | 8.2 | 9.3 | 16.9 | 19.0 | 10.0 | - | 4.4 | 4.7 | 4.2 | 7.1 | 3.8 | 3.8 | 21 |
| 13.6 | 11.0 | 21.5 | 13.2 | 15.0 | 13.9 | 16.4 | 29.8 | 16.2 | 14.2 | 10.0 | 14.9 | 18.0 | 15.5 | 22 |
| (Z) | (Z) | (Z) | - | 0.1 | 0.1 | - | 0.9 | (Z) | - | - | - | - | 0.2 | 23 |
| 1.0 | 0.6 | 1.8 | 2.4 | 2.2 | 2.6 | - | 0.9 | 0.8 | 1.6 | 1.6 | 2.0 | 1.4 | 0.5 | 24 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | 25 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 26 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 27 |
| 78.5 | 78.5 | 78.8 | 77.3 | 77.4 | 77.4 | 81.7 | 66.7 | 80.1 | 77.4 | 80.8 | 72.1 | 77.2 | 78.6 | 28 |
| 1.1 | 1.0 | 1.2 | 1.1 | 1.1 | 1.4 | - | - | 1.6 | 0.6 | 0.1 | 0.4 | 1.3 | 1.5 | 29 |
| 2.8 | 2.3 | 4.6 | 2.2 | 4.1 | 4.2 | 3.7 | 4.1 | 3.5 | 2.4 | 1.7 | 1.8 | 3.4 | 3.6 | 30 |
| 1.2 | 0.5 | 3.1 | 1.9 | 1.1 | 0.4 | - | 14.5 | 1.3 | 0.8 | 0.2 | 1.1 | 1.2 | 0.7 | 31 |
| 3.1 | 2.6 | 4.9 | 1.9 | 2.5 | 2.7 | 2.6 | - | 2.1 | 3.6 | 2.6 | 2.1 | 5.5 | 2.4 | 32 |
| 1.3 | 0.8 | 2.6 | 2.8 | 1.1 | 1.2 | 1.1 | - | 1.3 | 0.5 | 0.4 | 0.5 | 0.7 | 1.4 | 33 |
| 1.0 | 0.8 | 1.1 | 3.1 | 7.6 | 8.7 | 3.4 | - | 0.9 | 0.8 | 0.7 | 1.6 | 0.5 | 0.9 | 34 |
| 4.3 | 2.7 | 7.7 | 10.3 | 6.3 | 4.4 | 14.1 | 18.7 | 4.5 | 13.0 | 21.1 | 4.1 | 9.9 | 3.5 | 35 |
| 0.5 | 0.5 | 0.4 | 0.5 | 0.2 | 0.1 | 0.8 | - | 0.7 | 0.7 | 0.6 | 1.1 | 0.5 | 1.0 | 36 |
| 3.9 | 4.6 | 1.9 | 3.3 | 0.8 | 0.8 | 1.5 | - | 4.2 | 2.2 | 2.1 | 3.3 | 1.6 | 4.3 | 37 |
| 0.5 | 0.5 | 0.4 | - | 3.4 | 4.0 | 0.4 | 0.8 | 0.2 | 0.3 | 0.5 | 0.4 | 0.1 | 0.3 | 38 |
| 1.6 | 1.4 | 2.1 | 1.3 | 0.5 | 0.4 | 0.4 | 2.4 | 1.2 | 1.0 | 1.5 | 0.3 | 0.8 | 1.1 | 39 |
| 2.7 | 1.8 | 4.9 | 4.7 | 1.4 | 1.0 | 5.1 | - | 2.2 | 1.7 | 1.7 | 2.4 | 1.3 | 2.4 | 40 |
| 1.3 | 1.4 | 1.1 | 1.2 | 0.3 | 0.3 | 0.8 | - | 0.9 | 0.8 | 1.3 | 0.2 | 0.5 | 1.8 | 41 |
| 1.5 | 1.8 | 0.7 | 0.8 | 0.4 | 0.5 | 0.4 | - | 1.1 | 1.5 | 1.6 | 0.7 | 1.9 | 1.7 | 42 |
| 1.0 | 1.2 | 0.6 | 0.2 | 0.3 | 0.3 | 0.8 | - | 0.9 | 0.7 | 0.6 | 0.6 | 0.7 | 1.4 | 43 |
| 2.5 | 3.0 | 1.2 | 2.2 | 0.3 | 0.3 | 0.4 | - | 0.9 | 0.5 | 0.7 | 0.4 | 0.3 | 1.2 | 44 |
| 1.3 | 1.5 | 0.7 | 0.6 | - | - | - | - | 0.6 | 1.0 | 1.5 | 0.6 | 0.8 | 1.6 | 45 |
| 3.9 | 3.6 | 5.0 | 3.6 | 1.4 | 1.2 | 2.6 | 0.8 | 8.1 | 6.8 | 7.7 | 5.8 | 6.5 | 5.3 | 46 |
| 1.7 | 1.8 | 1.6 | 1.6 | - | - | - | - | 0.7 | 0.2 | 0.1 | 0.3 | 0.3 | 0.6 | 47 |
| 1.0 | 1.3 | 0.1 | 0.4 | 0.1 | 0.2 | - | - | 0.7 | 0.6 | 1.4 | 0.1 | 0.2 | 0.7 | 48 |
| 1.0 | 1.3 | 0.4 | 0.2 | 0.1 | - | 1.2 | - | 1.2 | 0.5 | 0.5 | 1.0 | 0.3 | 1.0 | 49 |
| 3.6 | 4.5 | 1.8 | 0.7 | 0.5 | 0.5 | 0.8 | - | 4.2 | 2.7 | 1.5 | 3.3 | 3.6 | 3.2 | 50 |
| 1.3 | 1.4 | 1.2 | 1.5 | 1.5 | 1.8 | - | - | 1.7 | 1.0 | 1.8 | 0.5 | 0.4 | 0.9 | 51 |
| 0.8 | 0.8 | 0.9 | 0.4 | 3.9 | 3.4 | 8.7 | - | 1.2 | 0.4 | 0.6 | 0.4 | 0.1 | 1.5 | 52 |
| 1.3 | 1.4 | 1.1 | 0.8 | 9.0 | 10.8 | 0.7 | - | 1.1 | 0.7 | 1.1 | 1.0 | 0.1 | 1.7 | 53 |
| 0.5 | 0.5 | 0.6 | 0.4 | 0.5 | 0.2 | 0.8 | 3.6 | 0.6 | 1.1 | 0.2 | 1.3 | 2.0 | 1.3 | 54 |
| 31.8 | 33.5 | 27.1 | 29.6 | 28.8 | 28.8 | 31.5 | 21.8 | 32.6 | 31.4 | 26.9 | 36.8 | 32.7 | 31.6 | 55 |
| 20.3 | 20.7 | 19.3 | 20.1 | 20.3 | 19.9 | 17.9 | 31.6 | 18.8 | 20.9 | 17.7 | 25.7 | 21.4 | 20.5 | 56 |
| 1.0 | 0.7 | 1.9 | 2.4 | 2.3 | 2.7 | - | 1.8 | 0.9 | 1.6 | 1.6 | 2.0 | 1.4 | 0.7 | 57 |
| 0.1 | 0.1 | 0.1 | 0.2 | (Z) | - | 0.4 | - | 0.2 | 0.1 | - | 0.1 | 0.1 | 0.2 | 58 |

## Table 3. SELECTED EDUCATIONAL CHARACTERISTICS

(Detail may not add to total because of rounding.)

| Line No. | Selected educational characteristics | Field of science or engineering, in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | HIGHEST DEGREE HELD | | | | | | | | | |
| 1 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | With a degree | 100.0 | 97.4 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 4 | Associate | - | 1.5 | - | - | - | - | - | - | - |
| 5 | Bachelor's | 62.2 | 68.1 | 28.6 | 25.7 | 36.1 | 30.4 | 54.0 | 15.8 | 17.6 |
| 6 | Master's | 30.6 | 22.3 | 30.1 | 30.2 | 29.9 | 22.2 | 20.0 | 24.3 | 21.1 |
| 7 | Doctorate | 7.0 | 5.3 | 40.7 | 43.7 | 33.2 | 45.6 | 25.8 | 59.5 | 50.6 |
| 8 | Other degree | 0.2 | 0.2 | 0.5 | 0.4 | 0.8 | 1.8 | 0.1 | 0.4 | 10.8 |
| 9 | No degree | - | 2.6 | - | - | - | - | - | - | - |
| | MAJOR FIELD OF STUDY FOR HIGHEST DEGREE HELD | | | | | | | | | |
| 10 | Total, with a degree | 50,691 | 641,226 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 11 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 12 | Computer science and systems analysis | 13.0 | 0.2 | 0.7 | 0.8 | 0.4 | (Z) | (Z) | - | - |
| 13 | Engineering | 16.2 | 86.5 | 1.3 | 1.2 | 1.5 | 0.8 | 0.6 | 1.0 | 0.5 |
| 14 | Mathematical sciences | 23.7 | 1.1 | 80.4 | 90.4 | 54.8 | 0.4 | 0.5 | 0.1 | 1.3 |
| 15 | Agricultural sciences | 0.3 | 0.2 | 1.3 | 0.1 | 4.4 | 34.1 | 81.3 | 7.0 | 0.9 |
| 16 | Biological sciences | 1.3 | 0.2 | 0.7 | - | 2.4 | 50.2 | 13.1 | 81.0 | 43.1 |
| 17 | Medical sciences | 0.7 | 0.2 | 0.7 | 0.3 | 1.8 | 5.3 | - | 1.4 | 33.3 |
| 18 | Chemistry | 1.2 | 1.2 | 0.3 | 0.2 | 0.7 | 1.4 | 0.1 | 1.7 | 4.0 |
| 19 | Physics and astronomy | 4.6 | 2.1 | 1.2 | 1.6 | 0.2 | 0.9 | 0.1 | 1.2 | 2.1 |
| 20 | Earth, space, and marine sciences | 1.2 | 0.4 | 0.1 | 0.1 | - | 0.1 | - | 0.3 | - |
| 21 | Psychology | 2.0 | 0.1 | 0.5 | - | 1.9 | 0.8 | - | 0.6 | - |
| 22 | Economics | 3.0 | 0.2 | 3.0 | - | 10.7 | 0.3 | 0.7 | (Z) | - |
| 23 | Sociology and anthropology | 0.7 | (Z) | 0.7 | - | 2.7 | 0.1 | 0.1 | (Z) | 0.3 |
| 24 | Other social sciences | 2.3 | 0.3 | 0.5 | - | 1.8 | 0.2 | 0.3 | (Z) | 0.3 |
| 25 | Business and commerce | 2.6 | 1.0 | 0.1 | - | 0.5 | 0.1 | 0.2 | 0.1 | - |
| 26 | All other fields | 26.1 | 5.5 | 7.7 | 4.6 | 15.4 | 4.5 | 2.5 | 4.9 | 8.1 |
| 27 | Field not reported | 1.0 | 0.9 | 0.6 | 0.6 | 0.8 | 0.8 | 0.4 | 0.7 | 2.7 |
| | SUPPLEMENTAL TRAINING IN 1975[1] | | | | | | | | | |
| 28 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 29 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 30 | With supplemental training in 1975 | 56.9 | 37.5 | 27.6 | 26.9 | 29.6 | 34.1 | 43.5 | 26.5 | 35.1 |
| 31 | On-the-job training | 33.8 | 16.8 | 13.8 | 14.1 | 13.1 | 18.9 | 30.8 | 11.6 | 11.9 |
| 32 | Military training applicable to civilian occupations | 0.8 | 0.8 | 0.7 | 1.0 | 0.2 | 0.5 | 0.7 | 0.3 | 0.9 |
| 33 | Extension or correspondence courses | 4.0 | 3.6 | 3.3 | 3.4 | 2.8 | 3.6 | 4.8 | 1.9 | 6.3 |
| 34 | Employer training programs | 32.3 | 17.2 | 10.7 | 9.8 | 12.9 | 11.5 | 18.3 | 7.4 | 7.8 |
| 35 | Adult education center | 6.5 | 4.1 | 2.0 | 1.9 | 2.4 | 4.1 | 4.0 | 3.9 | 5.3 |
| 36 | Other training | 13.6 | 7.6 | 7.1 | 7.7 | 5.4 | 9.5 | 10.0 | 7.7 | 14.5 |
| 37 | No supplemental training in 1975 | 28.3 | 42.6 | 53.6 | 54.3 | 51.8 | 47.5 | 38.9 | 54.3 | 47.1 |
| 38 | Not reported | 14.7 | 19.9 | 18.8 | 18.9 | 18.6 | 18.4 | 17.7 | 19.2 | 17.8 |

[1] Sum of types of training may exceed total with training because of multiple response.

## BY FIELD OF SCIENCE OR ENGINEERING: 1976

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 96.9 | 3 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | 3.4 | 4 |
| 34.1 | 39.4 | 16.3 | 41.5 | 42.7 | 45.7 | 37.4 | 7.6 | 8.1 | 21.6 | 25.2 | 13.8 | 22.6 | 55.3 | 5 |
| 18.5 | 17.8 | 19.5 | 23.1 | 28.3 | 28.2 | 30.7 | 24.4 | 29.5 | 28.8 | 24.4 | 19.7 | 38.5 | 27.9 | 6 |
| 47.3 | 42.6 | 64.2 | 35.3 | 28.9 | 26.0 | 31.6 | 68.1 | 62.1 | 49.2 | 49.6 | 66.4 | 38.6 | 7.9 | 7 |
| 0.2 | 0.2 | (Z) | - | 0.1 | 0.1 | 0.4 | - | 0.2 | 0.4 | 0.8 | 0.1 | 0.3 | 2.6 | 8 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | 3.1 | 9 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 152,747 | 10 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 11 |
| (Z) | - | 0.1 | - | (Z) | 0.1 | - | - | - | 0.1 | 0.1 | - | 0.1 | 1.0 | 12 |
| 3.2 | 2.6 | 2.4 | 15.3 | 5.3 | 5.1 | 5.4 | 7.8 | 0.4 | 0.4 | 0.6 | 0.1 | 0.4 | 28.4 | 13 |
| 0.5 | 0.3 | 0.7 | 2.6 | 1.9 | 1.5 | 4.9 | 1.7 | 0.1 | 0.3 | 0.1 | - | 0.6 | 6.1 | 14 |
| 0.9 | 0.8 | - | 6.6 | 2.2 | 2.6 | 0.7 | - | - | 0.3 | 0.8 | - | - | 3.8 | 15 |
| 8.2 | 11.1 | 0.2 | 3.8 | 1.1 | 0.8 | - | 7.7 | 0.3 | 0.2 | - | 0.1 | 0.3 | 4.5 | 16 |
| 0.7 | 0.8 | 0.3 | 1.3 | - | - | - | - | 0.1 | 0.1 | 0.1 | - | 0.2 | 2.7 | 17 |
| 58.2 | 80.3 | 1.1 | 7.8 | 1.1 | 0.7 | 3.9 | 0.9 | - | 0.1 | 0.1 | - | 0.1 | 4.1 | 18 |
| 24.8 | 1.0 | 92.7 | 45.8 | 6.8 | 5.1 | 19.7 | 4.4 | (Z) | 0.1 | 0.1 | - | 0.1 | 2.4 | 19 |
| 0.7 | 0.2 | 0.6 | 8.2 | 76.0 | 79.2 | 56.6 | 69.4 | - | 0.1 | 0.1 | - | 0.1 | 0.8 | 20 |
| 0.1 | (Z) | 0.1 | - | (Z) | 0.1 | - | - | 1.8 | 2.1 | - | 0.4 | 5.4 | 3.7 | 21 |
| (Z) | 0.1 | - | - | 0.3 | 0.4 | - | - | - | 36.0 | 87.8 | 0.1 | 4.7 | 4.2 | 22 |
| (Z) | - | (Z) | - | (Z) | (Z) | - | - | 0.1 | 22.9 | 0.3 | 92.6 | 4.7 | 1.6 | 23 |
| (Z) | (Z) | (Z) | - | 0.4 | 0.3 | 0.8 | 1.1 | 0.6 | 20.5 | 3.6 | 1.4 | 48.9 | 4.0 | 24 |
| 0.3 | 0.4 | (Z) | - | 0.1 | 0.1 | 0.4 | - | - | 0.1 | 0.3 | 0.1 | - | 5.6 | 25 |
| 2.0 | 1.8 | 1.1 | 8.7 | 3.7 | 3.0 | 7.1 | 6.1 | 6.0 | 16.3 | 5.3 | 4.6 | 34.3 | 24.7 | 26 |
| 0.4 | 0.4 | 0.5 | - | 0.9 | 1.0 | 0.4 | 0.9 | 0.5 | 0.5 | 0.9 | 0.6 | 0.2 | 2.2 | 27 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 28 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 29 |
| 31.1 | 32.3 | 24.7 | 43.9 | 34.4 | 35.3 | 29.4 | 31.6 | 39.9 | 25.3 | 21.0 | 18.0 | 33.9 | 40.0 | 30 |
| 14.3 | 15.3 | 9.6 | 22.2 | 16.7 | 17.3 | 11.4 | 18.2 | 18.7 | 11.5 | 10.5 | 7.6 | 14.8 | 20.4 | 31 |
| 0.5 | 0.4 | 0.7 | - | 0.4 | 0.3 | 1.5 | 0.6 | 0.8 | 0.6 | 0.4 | 0.1 | 1.0 | 1.0 | 32 |
| 2.9 | 2.6 | 3.2 | 5.5 | 3.3 | 3.0 | 6.2 | 1.7 | 2.8 | 3.3 | 1.5 | 2.0 | 6.0 | 3.8 | 33 |
| 11.4 | 11.5 | 9.3 | 20.6 | 14.5 | 14.5 | 14.8 | 13.0 | 7.5 | 10.0 | 8.9 | 4.3 | 14.5 | 16.3 | 34 |
| 3.5 | 4.1 | 1.7 | 2.6 | 4.2 | 4.7 | 2.0 | 1.5 | 4.6 | 3.2 | 1.4 | 2.3 | 5.6 | 4.5 | 35 |
| 7.3 | 7.4 | 6.9 | 8.9 | 7.8 | 8.1 | 6.4 | 6.5 | 20.7 | 7.7 | 5.0 | 5.0 | 12.1 | 10.8 | 36 |
| 49.9 | 48.5 | 56.0 | 41.4 | 45.0 | 44.7 | 45.8 | 48.2 | 41.8 | 53.9 | 57.5 | 61.4 | 45.9 | 42.2 | 37 |
| 19.0 | 19.2 | 19.3 | 14.8 | 20.6 | 20.0 | 25.1 | 20.3 | 18.3 | 20.8 | 21.6 | 20.6 | 20.2 | 17.8 | 38 |

# Table 4. SELECTED EMPLOYMENT STATUS CHARACTERISTICS

(Detail may not add to total because of rounding.

| Line No. | Selected employment status characteristics | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | **EMPLOYMENT STATUS IN FEBRUARY 1976** | | | | | | | | | |
| 1 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | In labor force | 96.4 | 93.2 | 93.4 | 94.0 | 91.7 | 92.9 | 93.7 | 92.3 | 92.8 |
| 4 | Employed | 95.0 | 91.3 | 91.6 | 91.7 | 91.2 | 91.5 | 92.8 | 91.0 | 89.7 |
| 5 | Full time | 93.6 | 89.9 | 88.1 | 88.4 | 87.3 | 87.2 | 90.8 | 84.9 | 85.9 |
| 6 | Part time | 1.3 | 1.2 | 3.0 | 2.8 | 3.7 | 3.1 | 1.5 | 4.3 | 3.2 |
| 7 | Seeking full-time work | 0.2 | 0.3 | 0.6 | 0.7 | 0.2 | 0.6 | 0.4 | 0.9 | 0.4 |
| 8 | Not seeking full-time work | 1.1 | 0.9 | 2.3 | 2.0 | 3.1 | 2.4 | 1.1 | 3.3 | 2.8 |
| 9 | Not reported | (Z) | 0.1 | 0.2 | 0.1 | 0.4 | (Z) | - | (Z) | - |
| 10 | Full or part time not reported | 0.1 | 0.2 | 0.4 | 0.5 | 0.2 | 1.2 | 0.5 | 1.8 | 0.6 |
| 11 | Unemployed | 1.4 | 1.9 | 1.8 | 2.3 | 0.5 | 1.5 | 1.0 | 1.4 | 3.0 |
| 12 | Not in labor force | 3.6 | 6.8 | 6.6 | 6.0 | 8.3 | 7.1 | 6.3 | 7.7 | 7.2 |
| 13 | Retired | 1.2 | 6.3 | 4.4 | 3.7 | 6.3 | 4.7 | 6.1 | 3.9 | 4.0 |
| 14 | Other | 2.4 | 0.4 | 2.2 | 2.3 | 2.0 | 2.3 | 0.1 | 3.8 | 3.2 |
| 15 | Not reported | (Z) | 0.1 | (Z) | 0.1 | - | (Z) | (Z) | - | - |
| | **EMPLOYMENT STATUS IN FEBRUARY 1975** | | | | | | | | | |
| 16 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 17 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 18 | In labor force | 95.2 | 92.4 | 93.1 | 93.7 | 91.6 | 92.6 | 93.2 | 92.5 | 91.7 |
| 19 | Employed | 94.1 | 90.9 | 92.3 | 92.5 | 91.6 | 91.7 | 93.1 | 91.1 | 90.1 |
| 20 | Full time | 90.8 | 88.3 | 86.7 | 87.2 | 85.5 | 86.0 | 89.9 | 83.2 | 85.6 |
| 21 | Part time | 1.3 | 1.1 | 4.1 | 4.0 | 4.5 | 3.1 | 1.4 | 4.7 | 2.1 |
| 22 | Seeking full-time work | 0.2 | 0.2 | 0.8 | 1.1 | - | 0.5 | 0.2 | 0.9 | 0.1 |
| 23 | Not seeking full-time work | 1.1 | 0.8 | 3.0 | 2.9 | 3.2 | 2.5 | 1.2 | 3.7 | 2.0 |
| 24 | Not reported | (Z) | 0.1 | 0.4 | 0.1 | 1.3 | (Z) | - | 0.1 | - |
| 25 | Full or part time not reported | 2.0 | 1.6 | 1.4 | 1.3 | 1.6 | 2.6 | 1.8 | 3.3 | 2.4 |
| 26 | Unemployed | 1.1 | 1.5 | 0.8 | 1.1 | - | 0.9 | 0.1 | 1.4 | 1.6 |
| 27 | Not in labor force | 3.3 | 5.0 | 5.5 | 5.0 | 6.7 | 5.3 | 4.9 | 5.7 | 5.0 |
| 28 | Retired | 0.8 | 4.6 | 3.3 | 2.6 | 5.0 | 3.4 | 4.8 | 2.6 | 2.3 |
| 29 | Other | 2.3 | 0.3 | 1.5 | 1.5 | 1.5 | 1.8 | (Z) | 2.9 | 2.7 |
| 30 | Not reported | 0.1 | 0.1 | 0.7 | 0.9 | 0.2 | 0.1 | (Z) | 0.2 | - |
| 31 | Employment status not reported | 1.5 | 2.6 | 1.4 | 1.3 | 1.7 | 2.1 | 1.9 | 1.8 | 3.2 |
| | **FULL-TIME EMPLOYMENT IN SCIENCE OR ENGINEERING IN 1976** | | | | | | | | | |
| 32 | Total employed full time February 1976 | 47,443 | 591,736 | 21,875 | 15,804 | 6,071 | 61,091 | 23,887 | 28,839 | 8,365 |
| 33 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 34 | In science or engineering | 96.2 | 95.0 | 92.1 | 92.4 | 91.6 | 93.4 | 90.1 | 95.3 | 96.5 |
| 35 | Not in science or engineering | 2.7 | 3.3 | 6.2 | 5.9 | 7.1 | 4.8 | 7.7 | 3.2 | 1.7 |
| 36 | Preferred nonscience or nonengineering | 1.0 | 0.5 | 0.9 | 0.7 | 1.5 | 1.8 | 3.8 | 0.3 | 1.4 |
| 37 | Promoted out of science or engineering | 0.7 | 1.3 | 1.3 | 1.8 | - | 0.8 | 1.4 | 0.6 | - |
| 38 | Pay better in nonscience or nonengineering | 0.1 | 0.3 | 0.4 | 0.5 | - | 0.7 | 0.3 | 1.3 | - |
| 39 | Locational preference | 0.2 | 0.1 | 1.3 | 1.1 | 1.8 | 0.2 | 0.6 | - | - |
| 40 | Science or engineering position not available | 0.1 | 0.5 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | - |
| 41 | Other reason | 0.4 | 0.5 | 2.0 | 1.4 | 3.4 | 0.5 | 0.4 | 0.6 | 0.2 |
| 42 | Reason not reported | 0.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.5 | 1.2 | 0.1 | 0.2 |
| 43 | Not reported | 1.1 | 1.7 | 1.6 | 1.8 | 1.3 | 1.8 | 2.2 | 1.5 | 1.7 |
| | **FULL-TIME EMPLOYMENT IN SCIENCE OR ENGINEERING IN 1975** | | | | | | | | | |
| 44 | Total employed full time February 1975 | 46,013 | 581,188 | 21,538 | 15,588 | 5,950 | 60,254 | 23,663 | 28,255 | 8,336 |
| 45 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 46 | In science or engineering | 97.5 | 95.9 | 93.4 | 93.5 | 93.3 | 93.9 | 90.1 | 95.9 | 98.2 |
| 47 | Not in science or engineering | 2.1 | 3.0 | 4.9 | 5.2 | 4.3 | 4.4 | 7.1 | 3.0 | 1.6 |
| 48 | Preferred nonscience or nonengineering | 0.6 | 0.5 | 0.6 | 0.4 | 1.3 | 1.5 | 2.9 | 0.4 | 1.6 |
| 49 | Promoted out of science or engineering | 0.2 | 1.2 | 1.6 | 2.2 | - | 0.7 | 1.2 | 0.5 | - |
| 50 | Pay better in nonscience or nonengineering | 0.2 | 0.3 | 0.4 | 0.5 | - | 0.7 | 0.2 | 1.2 | - |
| 51 | Locational preference | 0.1 | 0.1 | 0.3 | 0.4 | - | 0.4 | 1.0 | - | - |
| 52 | Science or engineering position not available | 0.4 | 0.3 | 0.3 | 0.4 | - | 0.2 | 0.2 | 0.2 | - |
| 53 | Other reason | 0.3 | 0.4 | 1.6 | 1.1 | 3.0 | 0.4 | 0.4 | 0.6 | - |
| 54 | Reason not reported | 0.3 | 0.1 | 0.2 | 0.2 | - | 0.5 | 1.2 | 0.1 | - |
| 55 | Not reported | 0.5 | 1.1 | 1.6 | 1.3 | 2.4 | 1.6 | 2.8 | 1.1 | 0.3 |
| | **UNEMPLOYMENT IN CALENDAR YEAR 1975** | | | | | | | | | |
| 56 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 57 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 58 | Unemployed in calendar year 1975 | 4.5 | 4.4 | 3.5 | 4.2 | 1.7 | 3.0 | 1.4 | 3.9 | 4.4 |
| 59 | 1 to 4 weeks | 1.1 | 0.7 | 0.5 | 0.6 | 0.4 | 0.8 | 0.4 | 0.8 | 1.9 |
| 60 | 5 to 10 weeks | 1.5 | 0.8 | 0.8 | 0.8 | 0.8 | 0.3 | 0.1 | 0.5 | - |
| 61 | 11 to 14 weeks | 0.5 | 0.4 | 0.6 | 0.7 | 0.2 | 0.3 | - | 0.4 | 0.3 |
| 62 | 15 to 26 weeks | 0.4 | 0.7 | 0.6 | 0.8 | - | 0.7 | 0.7 | 0.8 | 0.7 |
| 63 | 27 weeks or more | 0.7 | 1.3 | 0.7 | 0.9 | 0.3 | 0.8 | (Z) | 1.2 | 1.5 |
| 64 | Median weeks of unemployment | 7.9 | 14.6 | 11.7 | 12.7 | 7.2 | 15.8 | 16.2 | 15.9 | 14.2 |
| 65 | Duration not reported | 0.3 | 0.5 | 0.3 | 0.4 | - | 0.1 | 0.1 | 0.2 | - |
| 66 | Not unemployed in calendar year 1975 | 92.5 | 89.7 | 92.4 | 92.1 | 93.2 | 91.9 | 93.1 | 91.3 | 90.3 |
| 67 | Not reported | 3.0 | 5.9 | 4.1 | 3.7 | 5.1 | 5.1 | 5.5 | 4.8 | 5.4 |

# BY FIELD OF SCIENCE OR ENGINEERING: 1976

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 92.9 | 91.8 | 95.2 | 97.3 | 94.5 | 94.9 | 91.6 | 94.2 | 94.3 | 91.2 | 90.6 | 93.0 | 90.7 | 94.2 | 3 |
| 91.5 | 90.4 | 93.8 | 96.9 | 93.6 | 94.0 | 91.6 | 92.3 | 91.8 | 89.7 | 89.6 | 90.4 | 89.3 | 92.2 | 4 |
| 87.9 | 87.2 | 88.8 | 94.3 | 91.3 | 91.5 | 90.9 | 87.3 | 84.1 | 85.2 | 86.8 | 84.6 | 84.0 | 88.2 | 5 |
| 2.4 | 2.0 | 3.4 | 2.6 | 1.3 | 1.5 | 0.7 | - | 6.8 | 3.6 | 2.2 | 5.5 | 3.8 | 3.5 | 6 |
| 0.4 | 0.3 | 0.6 | 0.2 | 0.1 | 0.1 | 0.3 | - | 1.5 | 0.8 | 0.4 | 1.4 | 0.8 | 0.8 | 7 |
| 1.9 | 1.6 | 2.6 | 2.4 | 1.0 | 1.2 | 0.4 | - | 5.1 | 2.8 | 1.9 | 4.1 | 2.9 | 2.7 | 8 |
| 0.1 | 0.1 | 0.1 | - | 0.1 | 0.2 | - | - | 0.2 | 0.1 | - | - | 0.1 | 0.1 | 9 |
| 1.2 | 1.1 | 1.6 | - | 1.1 | 1.0 | - | 5.0 | 0.9 | 0.9 | 0.6 | 0.3 | 1.5 | 0.5 | 10 |
| 1.4 | 1.4 | 1.4 | 0.4 | 0.9 | 0.9 | - | 1.9 | 2.5 | 1.5 | 1.0 | 2.6 | 1.4 | 2.0 | 11 |
| 7.1 | 8.2 | 4.8 | 2.7 | 5.5 | 5.1 | 8.4 | 5.8 | 5.7 | 8.8 | 9.4 | 7.0 | 9.3 | 5.8 | 12 |
| 5.6 | 6.4 | 3.9 | 2.1 | 4.6 | 4.1 | 8.0 | 4.9 | 3.5 | 5.8 | 8.0 | 2.3 | 5.7 | 4.[illegible] | 13 |
| 1.4 | 1.7 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | - | 2.2 | 2.7 | 1.3 | 4.5 | 2.9 | [illegible]8 | 14 |
| 0.1 | (Z) | 0.2 | 0.2 | 0.6 | 0.6 | - | 0.9 | (Z) | 0.3 | 0.1 | 0.2 | 0.7 | [illegible].1 | 15 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 16 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 17 |
| 92.6 | 91.8 | 94.3 | 97.2 | 94.5 | 95.2 | 89.5 | 94.2 | 92.5 | 91.0 | 90.7 | 92.4 | 90.4 | 92.5 | 18 |
| 91.4 | 90.5 | 92.9 | 96.3 | 94.0 | 94.7 | 89.5 | 94.2 | 91.0 | 90.3 | 90.3 | 91.0 | 90.0 | 90.4 | 19 |
| 86.2 | 85.8 | 86.5 | 91.0 | 89.6 | 90.8 | 85.2 | 82.2 | 81.5 | 84.2 | 86.7 | 82.4 | 82.8 | 86.0 | 20 |
| 2.3 | 1.8 | 3.5 | 4.3 | 1.9 | 2.0 | 1.1 | 1.0 | 6.8 | 4.0 | 2.2 | 6.8 | 4.2 | 3.2 | 21 |
| 0.5 | 0.4 | 0.7 | 1.9 | 0.4 | 0.4 | - | 1.0 | 1.0 | 0.9 | 0.2 | 1.5 | 1.1 | 0.6 | 22 |
| 1.7 | 1.3 | 2.7 | 2.4 | 1.2 | 1.4 | 0.4 | - | 5.4 | 2.9 | 1.8 | 5.1 | 2.6 | 2.2 | 23 |
| 0.1 | 0.1 | 0.2 | - | 0.3 | 0.2 | 0.8 | - | 0.4 | 0.2 | 0.1 | 0.1 | 0.5 | 0.4 | 24 |
| 2.9 | 3.0 | 2.8 | 1.0 | 2.5 | 1.9 | 3.2 | 11.0 | 2.6 | 2.1 | 1.4 | 1.9 | 3.0 | 1.2 | 25 |
| 1.3 | 1.3 | 1.4 | 0.9 | 0.5 | 0.6 | - | - | 1.5 | 0.7 | 0.5 | 1.4 | 0.4 | 2.0 | 26 |
| 5.8 | 6.6 | 3.9 | 1.8 | 3.9 | 3.1 | 9.4 | 4.9 | 4.4 | 6.8 | 7.6 | 5.1 | 6.9 | 5.8 | 27 |
| 4.4 | 5.0 | 3.1 | 1.4 | 3.5 | 2.6 | 9.0 | 4.9 | 2.3 | 4.3 | 6.0 | 1.6 | 4.2 | 3.4 | 28 |
| 1.3 | 1.5 | 0.8 | 0.2 | 0.4 | 0.4 | 0.4 | - | 2.0 | 2.2 | 1.5 | 3.5 | 2.2 | 2.3 | 29 |
| 0.1 | 0.1 | - | 0.2 | 0.1 | 0.1 | - | - | 0.1 | 0.2 | 0.2 | - | 0.5 | 0.1 | 30 |
| 1.6 | 1.6 | 1.8 | 0.9 | 1.6 | 1.7 | 1.1 | 0.9 | 3.1 | 2.2 | 1.6 | 2.5 | 2.7 | 1.8 | 31 |
| 102,917 | 73,058 | 24,432 | 5,427 | 24,635 | 20,478 | 2,930 | 1,226 | 28,747 | 38,843 | 15,388 | 8,719 | 14,737 | 138,901 | 32 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 33 |
| 97.4 | 97.3 | 97.2 | 99.0 | 97.0 | 96.4 | 99.5 | 100.0 | 90.7 | 82.6 | 83.1 | 86.6 | 79.7 | 61.5 | 34 |
| 1.3 | 1.5 | 1.2 | 0.3 | 1.5 | 1.8 | - | - | 7.4 | 15.7 | 15.1 | 12.4 | 18.3 | 36.1 | 35 |
| 0.4 | 0.3 | 0.6 | - | 0.6 | 0.7 | - | - | 2.7 | 5.2 | 5.5 | 4.3 | [illegible] | 10.7 | 36 |
| 0.6 | 0.8 | 0.3 | 0.3 | 0.2 | 0.2 | - | - | 0.7 | 1.4 | 2.5 | 0.4 | [illegible] | 6.5 | 37 |
| (Z) | (Z) | - | - | 0.1 | 0.1 | - | - | 0.5 | 0.6 | 0.4 | 1.8 | 0.1 | 4.0 | 38 |
| (Z) | (Z) | - | - | - | - | - | - | 0.3 | 1.6 | 0.9 | 0.9 | 2.7 | 1.9 | 39 |
| 0.1 | 0.2 | 0.1 | - | (Z) | 0.1 | - | - | 0.2 | 0.9 | 0.8 | 0.1 | 1.4 | 2.4 | 40 |
| 0.1 | 0.1 | (Z) | - | 0.5 | 0.6 | - | - | 2.1 | 4.1 | 3.1 | 4.8 | 4.6 | 8.3 | 41 |
| (Z) | 0.1 | 0.1 | - | 0.1 | 0.1 | - | - | 0.8 | 2.0 | 2.0 | - | 3.1 | 2.3 | 42 |
| 1.3 | 1.2 | 1.6 | 0.6 | 1.5 | 1.7 | 0.5 | - | 2.0 | 1.7 | 1.8 | 1.0 | 2.0 | 2.4 | 43 |
| 100,903 | 71,873 | 23,794 | 5,236 | 24,202 | 20,303 | 2,745 | 1,154 | 27,872 | 38,402 | 15,375 | 8,496 | 14,530 | 135,424 | 44 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 45 |
| 97.9 | 97.8 | 98.4 | 98.2 | 97.9 | 97.5 | 100.0 | 100.0 | 92.9 | 84.5 | 85.3 | 88.2 | 81.2 | 62.6 | 46 |
| 1.4 | 1.4 | 1.2 | 1.3 | 1.4 | 1.6 | - | - | 5.8 | 13.6 | 12.7 | 10.1 | 16.5 | 32.3 | 47 |
| 0.3 | 0.3 | 0.6 | - | 0.6 | 0.7 | - | - | 2.2 | 4.6 | 4.2 | 3.8 | 5.5 | 10.1 | 48 |
| 0.6 | 0.7 | 0.3 | 0.3 | 0.2 | 0.2 | - | - | 0.7 | 1.1 | 1.8 | 0.3 | 0.9 | 5.6 | 49 |
| (Z) | (Z) | 0.1 | - | (Z) | 0.1 | - | - | 0.5 | 0.4 | 0.4 | 1.0 | 0.1 | 3.7 | 50 |
| 0.1 | 0.1 | - | - | - | - | - | - | 0.2 | 1.3 | 0.9 | 1.0 | 2.0 | 1.7 | 51 |
| 0.2 | 0.2 | 0.2 | 1.0 | (Z) | 0.1 | - | - | 0.6 | 0.8 | 1.5 | - | 0.4 | 2.1 | 52 |
| (Z) | 0.1 | - | - | 0.5 | 0.6 | - | - | 1.5 | 3.2 | 1.4 | 3.3 | 5.1 | 6.7 | 53 |
| 0.1 | 0.1 | 0.1 | - | - | - | - | - | 0.2 | 2.1 | 2.5 | 0.8 | 2.6 | 2.3 | 54 |
| 0.7 | 0.8 | 0.4 | 0.4 | 0.7 | 0.9 | - | - | 1.3 | 1.9 | 2.0 | 1.7 | 1.8 | 5.1 | 55 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 56 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 57 |
| 3.3 | 3.3 | 3.4 | 3.0 | 2.4 | 2.3 | 3.6 | 1.0 | 5.0 | 3.7 | 1.9 | 7.6 | 3.2 | 7.0 | 58 |
| 0.5 | 0.5 | 0.3 | 0.5 | 0.4 | 0.4 | 0.4 | - | 0.6 | 0.6 | 0.2 | 1.9 | 0.2 | 1.5 | 59 |
| 0.5 | 0.4 | 0.8 | 0.9 | 0.4 | 0.5 | - | 1.0 | 0.8 | 0.8 | 0.2 | 1.9 | 0.8 | 1.2 | 60 |
| 0.5 | 0.5 | 0.4 | 0.5 | 0.1 | 0.1 | - | - | 0.9 | 0.7 | 0.2 | 2.1 | 0.3 | 1.4 | 61 |
| 0.4 | 0.4 | 0.5 | 0.2 | 0.3 | 0.3 | - | - | 0.8 | 0.8 | 0.4 | 1.0 | 1.1 | 0.8 | 62 |
| 1.2 | 1.2 | 1.3 | 0.6 | 0.3 | 0.4 | - | - | 1.5 | 0.6 | 0.7 | 0.6 | 0.5 | 1.7 | 63 |
| 15.5 | 16.1 | 16.9 | 9.7 | 8.9 | 9.5 | (B) | (B) | 13.8 | 12.0 | 22.3 | 9.9 | 15.5 | 11.8 | 64 |
| 0.2 | 0.3 | 0.1 | 0.2 | 0.9 | 0.6 | 3.3 | - | 0.4 | 0.2 | 0.3 | - | 0.3 | 0.4 | 65 |
| 92.2 | 92.3 | 91.4 | 94.2 | 92.8 | 92.7 | 92.9 | 93.8 | 90.2 | 90.7 | 92.7 | 88.5 | 90.0 | 87.8 | 66 |
| 4.5 | 4.4 | 5.2 | 2.8 | 4.8 | 4.9 | 3.5 | 5.2 | 4.8 | 5.6 | 5.5 | 3.9 | 6.7 | 5.2 | 67 |

# Table 5. SELECTED JOB-RELATED CHARACTERISTICS

(Detail may not add to total because of rounding.

| Line No. | Selected job-related characteristics | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | OCCUPATION IN 1976 | | | | | | | | | |
| 1 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | Computer specialists, total | 95.3 | 0.5 | 1.8 | 2.4 | 0.4 | (Z) | - | (Z) | - |
| 4 | Computer systems analysts | 53.1 | 0.2 | 0.5 | 0.7 | - | (Z) | - | (Z) | - |
| 5 | Computer scientists | 13.3 | (Z) | 0.6 | 0.8 | - | - | - | - | - |
| 6 | Other computer specialists | 28.9 | 0.3 | 0.8 | 1.0 | 0.4 | - | - | - | - |
| 7 | Engineers, total | 0.5 | 79.0 | 0.8 | 1.1 | - | 0.2 | 0.4 | 0.1 | - |
| 8 | Aeronautical and astronautical | - | 3.4 | 0.1 | 0.2 | - | - | - | - | - |
| 9 | Agricultural | - | 0.5 | - | - | - | (Z) | (Z) | - | - |
| 10 | Chemical | - | 4.9 | - | - | - | - | - | - | - |
| 11 | Civil and architectural | - | 12.0 | - | - | - | (Z) | 0.1 | - | - |
| 12 | Electrical and electronic | 0.3 | 19.8 | 0.1 | 0.2 | - | - | - | - | - |
| 13 | Industrial | 0.1 | 3.7 | - | - | - | - | - | - | - |
| 14 | Mechanical | - | 17.2 | - | - | - | - | - | - | - |
| 15 | Metallurgical and materials | - | 2.1 | - | - | - | (Z) | (Z) | - | - |
| 16 | Mining, petroleum, and geological | - | 1.6 | - | - | - | - | - | - | - |
| 17 | Nuclear | - | 0.8 | - | - | - | - | - | - | - |
| 18 | Environmental and sanitary | - | 1.8 | - | - | - | - | - | - | - |
| 19 | Operations research/systems | (Z) | 1.7 | 0.5 | 0.7 | - | (Z) | - | 0.1 | - |
| 20 | Other engineering fields | 0.1 | 9.4 | 0.1 | 0.1 | - | 0.1 | 0.3 | (Z) | - |
| 21 | Mathematicians and statisticians, total | 0.2 | 0.4 | 74.0 | 69.4 | 86.0 | (Z) | 0.1 | - | - |
| 22 | Mathematicians | 0.2 | (Z) | 46.7 | 64.2 | 1.6 | - | - | - | - |
| 23 | Statisticians and actuaries | - | (Z) | 23.9 | 0.6 | 84.0 | (Z) | 0.1 | - | - |
| 24 | Operations research analysts | (Z) | 0.4 | 3.4 | 4.6 | 0.4 | - | - | - | - |
| 25 | Life scientists, total | - | (Z) | - | - | - | 79.9 | 75.6 | 80.8 | 88.5 |
| 26 | Agricultural scientists | - | (Z) | - | - | - | 29.5 | 75.4 | 1.7 | - |
| 27 | Biological scientists | - | - | - | - | - | 26.3 | 0.1 | 54.3 | 0.1 |
| 28 | Biochemists and biophysicists | - | - | - | - | - | 2.2 | - | 4.6 | - |
| 29 | Medical scientists | - | (Z) | - | - | - | 12.4 | - | 0.6 | 88.4 |
| 30 | Other life scientists | - | - | - | - | - | 9.5 | 0.1 | 19.6 | - |
| 31 | Physical scientists, total | - | 0.1 | 0.1 | 0.2 | - | 0.4 | 0.1 | 0.7 | - |
| 32 | Chemists | - | (Z) | - | - | - | 0.3 | 0.1 | 0.5 | - |
| 33 | Physicists and astronomers | - | (Z) | - | - | - | - | - | - | - |
| 34 | Other physical scientists | - | (Z) | 0.1 | 0.2 | - | 0.1 | - | 0.2 | - |
| 35 | Environmental scientists, total | - | (Z) | 0.1 | - | 0.2 | 0.2 | 0.3 | 0.1 | - |
| 36 | Earth scientists | - | (Z) | 0.1 | - | 0.2 | 0.2 | 0.3 | 0.1 | - |
| 37 | Atmospheric scientists, meteorologists | - | (Z) | - | - | - | (Z) | (Z) | - | - |
| 38 | Oceanographers | - | (Z) | - | - | - | (Z) | - | (Z) | - |
| 39 | Psychologists | - | - | - | - | - | - | - | - | - |
| 40 | Social scientists, total | - | (Z) | - | - | - | 0.1 | 0.1 | 0.1 | - |
| 41 | Economists | - | (Z) | - | - | - | (Z) | 0.1 | - | - |
| 42 | Sociologists and anthropologists | - | - | - | - | - | (Z) | - | 0.1 | - |
| 43 | Other social scientists | - | - | - | - | - | - | - | - | - |
| 44 | Health occupations | - | (Z) | - | - | - | 0.1 | - | 0.2 | 0.4 |
| 45 | Technicians and technologists, except medical | - | 0.6 | - | - | - | 0.5 | 0.1 | 0.9 | - |
| 46 | Teachers[1] | (Z) | 0.1 | 1.1 | 1.6 | - | 1.2 | 0.5 | 2.0 | 0.1 |
| 47 | Administrators and managers | 1.0 | 14.6 | 18.7 | 21.4 | 12.0 | 13.9 | 19.8 | 11.1 | 7.0 |
| 48 | Other occupations | - | 1.4 | 0.7 | 1.0 | - | 1.2 | 1.2 | 1.6 | - |
| 49 | Not reported | 2.1 | 3.4 | 2.6 | 3.1 | 1.4 | 2.3 | 1.7 | 2.3 | 2.9 |
| | INDUSTRY IN 1976 | | | | | | | | | |
| 50 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 51 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 52 | Agriculture, forestry, and fisheries | 0.1 | 0.4 | 1.4 | 0.1 | 4.8 | 22.7 | 50.7 | 7.0 | 0.1 |
| 53 | Mining and petroleum extraction | 0.6 | 1.5 | 0.3 | 0.4 | - | - | - | - | - |
| 54 | Construction | 0.1 | 3.9 | 0.7 | 0.2 | 1.7 | 0.2 | 0.2 | 0.3 | - |
| 55 | Manufacturing, total | 44.4 | 50.1 | 15.2 | 14.9 | 15.9 | 6.9 | 5.4 | 7.8 | 8.0 |
| 56 | Primary metal industries | 1.6 | 2.1 | 0.4 | 0.3 | 0.6 | 0.2 | - | 0.4 | - |
| 57 | Fabricated metal industries | 0.8 | 2.8 | 0.5 | 0.6 | 0.2 | 0.1 | - | 0.1 | - |
| 58 | Machinery, except electrical and electronic | 0.8 | 3.9 | 0.2 | 0.2 | - | 0.1 | - | 0.1 | - |
| 59 | Electrical machinery, equipment, and supplies | 1.5 | 3.7 | 0.8 | 1.2 | - | 0.1 | 0.2 | (Z) | - |
| 60 | Electronic machinery and computing equipment | 23.6 | 11.5 | 4.0 | 4.7 | 2.3 | (Z) | 0.1 | (Z) | - |
| 61 | Aircraft and aircraft parts | 2.5 | 6.3 | 1.6 | 1.6 | 1.7 | 0.1 | - | (Z) | 0.3 |
| 62 | Motor vehicles and motor vehicle equipment | 1.5 | 3.1 | 1.3 | 1.4 | 1.1 | (Z) | - | - | 0.1 |
| 63 | Ordnance | 1.8 | 4.1 | 1.5 | 1.9 | 0.5 | - | - | - | - |
| 64 | Chemicals and allied products | 3.0 | 5.0 | 3.0 | 1.5 | 6.8 | 3.8 | 2.0 | 4.7 | 6.1 |
| 65 | Petroleum refining and related industries | 2.5 | 2.6 | 0.4 | 0.4 | 0.6 | 0.1 | 0.1 | 0.1 | - |
| 66 | Other manufacturing | 4.8 | 4.9 | 1.4 | 1.0 | 2.2 | 2.5 | 3.1 | 2.2 | 1.5 |
| 67 | Transportation, communications, and other public utilities | 4.4 | 5.5 | 3.0 | 3.1 | 2.8 | 0.4 | 0.4 | 0.4 | - |
| 68 | Wholesale and retail trade | 1.9 | 0.6 | 0.3 | 0.4 | 0.2 | 0.8 | 1.8 | 0.3 | - |
| 69 | Finance, insurance, and real estate | 7.7 | 0.4 | 0.7 | 0.5 | 1.2 | 0.3 | 0.4 | 0.4 | - |
| 70 | Educational institutions, total | 7.8 | 3.3 | 47.1 | 55.0 | 26.6 | 41.6 | 21.4 | 54.1 | 53.7 |
| 71 | College or university | 6.6 | 2.8 | 38.4 | 45.6 | 19.8 | 29.8 | 20.2 | 41.5 | 15.2 |
| 72 | Other | 1.2 | 0.5 | 8.6 | 9.4 | 6.7 | 11.8 | 1.2 | 12.6 | 38.5 |
| 73 | Health services | 1.3 | 0.3 | 1.3 | 0.4 | 3.8 | 5.0 | - | 3.9 | 22.9 |
| 74 | Services, except education and health, total | 14.9 | 20.2 | 13.7 | 12.9 | 15.9 | 9.5 | 5.2 | 13.1 | 8.5 |
| 75 | Engineering and architectural services | 2.7 | 14.0 | 1.4 | 1.6 | 0.8 | 0.2 | 0.4 | 0.1 | - |
| 76 | Research institutions | 4.4 | 4.5 | 9.1 | 8.9 | 9.5 | 8.1 | 3.9 | 11.3 | 8.1 |
| 77 | Other | 7.9 | 1.7 | 3.2 | 2.3 | 5.6 | 1.2 | 0.9 | 1.7 | 0.4 |
| 78 | Public administration | 8.3 | 5.9 | 10.1 | 5.2 | 22.5 | 6.1 | 8.5 | 5.5 | 1.7 |
| 79 | Federal | 3.8 | 2.5 | 5.4 | 2.7 | 12.3 | 3.8 | 5.5 | 3.0 | 1.3 |
| 80 | Other | 4.5 | 3.5 | 4.7 | 2.5 | 10.2 | 2.4 | 2.9 | 2.5 | 0.4 |
| 81 | Military | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.1 | (Z) | 0.1 | - |
| 82 | Other industries | 6.1 | 4.6 | 3.2 | 3.4 | 2.5 | 4.1 | 4.1 | 4.9 | 1.2 |
| 83 | Not reported | 1.9 | 3.1 | 2.7 | 3.1 | 1.7 | 2.3 | 2.0 | 2.1 | 3.9 |

See footnotes at end of table.

## BY FIELD OF SCIENCE OR ENGINEERING: 1976

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 0.3 | (Z) | 1.2 | - | 0.1 | 0.1 | 0.4 | - | 0.5 | (Z) | - | - | 0.1 | 6.4 | 3 |
| 0.2 | - | 0.6 | - | (Z) | 0.1 | - | - | 0.2 | - | - | - | - | 1.3 | 4 |
| (Z) | - | (Z) | - | - | - | - | - | - | - | - | - | - | 0.1 | 5 |
| 0.1 | (Z) | 0.5 | - | (Z) | - | 0.4 | - | 0.4 | (Z) | - | - | 0.1 | 5.0 | 6 |
| 1.7 | 1.2 | 3.7 | 0.2 | 1.2 | 1.5 | - | - | (Z) | - | - | - | - | 4.2 | 7 |
| (Z) | - | 0.1 | - | - | - | - | - | - | - | - | - | - | 0.1 | 8 |
| (Z) | (Z) | - | - | - | - | - | - | - | - | - | - | - | (Z) | 9 |
| 0.4 | 0.6 | (Z) | - | - | - | - | - | - | - | - | - | - | 0.2 | 10 |
| - | - | - | - | 0.1 | 0.2 | - | - | - | - | - | - | - | 0.5 | 11 |
| 0.4 | - | 1.9 | - | (Z) | 0.1 | - | - | (Z) | - | - | - | - | 0.9 | 12 |
| (Z) | (Z) | 0.1 | - | 0.1 | 0.1 | - | - | - | - | - | - | - | 0.4 | 13 |
| (Z) | - | 0.1 | - | - | - | - | - | - | - | - | - | - | 0.8 | 14 |
| 0.2 | 0.2 | 0.2 | - | 0.2 | 0.3 | - | - | - | - | - | - | - | 0.1 | 15 |
| 0.1 | 0.1 | 0.1 | - | 0.6 | 0.8 | - | - | - | - | - | - | - | (Z) | 16 |
| 0.1 | - | 0.2 | 0.2 | - | - | - | - | - | - | - | - | - | 0.1 | 17 |
| (Z) | (Z) | (Z) | - | - | - | - | - | - | - | - | - | - | 0.1 | 18 |
| (Z) | (Z) | 0.1 | - | - | - | - | - | - | - | - | - | - | 0.3 | 19 |
| 0.3 | 0.2 | 0.8 | - | 0.1 | 0.1 | - | - | - | - | - | - | - | 0.7 | 20 |
| 0.1 | 0.1 | 0.3 | - | (Z) | 0.1 | - | - | 0.2 | 0.3 | 0.6 | 0.3 | - | 0.8 | 21 |
| (Z) | - | 0.1 | - | - | - | - | - | - | 0.1 | 0.3 | - | - | 0.2 | 22 |
| (Z) | - | 0.1 | - | (Z) | 0.1 | - | - | 0.1 | 0.1 | 0.2 | 0.2 | - | 0.3 | 23 |
| 0.1 | 0.1 | 0.1 | - | - | - | - | - | (Z) | 0.1 | 0.1 | 0.1 | - | 0.3 | 24 |
| 8.1 | 11.2 | 0.7 | 0.2 | (Z) | 0.1 | - | - | 0.3 | 0.4 | 0.2 | 1.3 | - | 0.7 | 25 |
| (Z) | (Z) | - | - | - | - | - | - | - | (Z) | 0.1 | - | - | 0.1 | 26 |
| 0.1 | 0.1 | 0.1 | - | - | - | - | - | - | - | - | - | - | 0.1 | 27 |
| 7.5 | 10.7 | 0.4 | - | - | - | - | - | - | - | - | - | - | 0.1 | 28 |
| 0.2 | 0.2 | 0.2 | 0.2 | - | - | - | - | 0.3 | 0.3 | - | 1.3 | - | 0.3 | 29 |
| 0.1 | 0.1 | - | - | (Z) | 0.1 | - | - | - | (Z) | 0.1 | - | - | 0.1 | 30 |
| 70.1 | 67.6 | 74.2 | 84.7 | 0.1 | 0.1 | - | - | - | - | - | - | - | 0.8 | 31 |
| 47.5 | 67.0 | 0.3 | 0.5 | (Z) | 0.1 | - | - | - | - | - | - | - | 0.4 | 32 |
| 17.7 | 0.1 | 73.5 | - | - | - | - | - | - | - | - | - | - | 0.1 | 33 |
| 4.8 | 0.5 | 0.4 | 84.1 | (Z) | 0.1 | - | - | - | - | - | - | - | 0.3 | 34 |
| 0.2 | 0.1 | 0.6 | - | 86.7 | 86.0 | 92.7 | 84.9 | (Z) | - | - | - | - | 0.1 | 35 |
| 0.1 | 0.1 | 0.2 | - | 71.3 | 85.7 | - | 0.9 | - | - | - | - | - | 0.1 | 36 |
| 0.1 | - | 0.3 | - | 10.7 | 0.1 | 90.7 | - | (Z) | - | - | - | - | (Z) | 37 |
| (Z) | - | 0.1 | - | 4.7 | 0.2 | 2.0 | 84.1 | - | - | - | - | - | (Z) | 38 |
| - | - | - | - | - | - | - | - | 78.6 | (Z) | - | 0.1 | - | 0.2 | 39 |
| 0.1 | 0.1 | - | - | (Z) | - | - | 0.8 | 0.6 | 69.8 | 71.8 | 75.2 | 64.7 | 0.4 | 40 |
| 0.1 | 0.1 | - | - | - | - | - | - | (Z) | 28.1 | 71.4 | - | 0.9 | 0.1 | 41 |
| (Z) | (Z) | - | - | (Z) | - | - | 0.8 | - | 17.0 | - | 74.4 | 0.2 | (Z) | 42 |
| - | - | - | - | - | - | - | - | 0.6 | 24.7 | 0.4 | 0.7 | 63.6 | 0.2 | 43 |
| 0.2 | 0.2 | 0.1 | - | - | - | - | - | 0.3 | 0.2 | - | 0.3 | 0.2 | 3.7 | 44 |
| 0.1 | 0.1 | (Z) | - | - | - | - | - | - | - | - | - | - | 5.9 | 45 |
| 0.7 | 0.5 | 0.8 | 2.0 | 0.6 | 0.7 | - | - | 3.7 | 2.8 | 2.6 | 2.7 | 2.9 | 6.6 | 46 |
| 16.1 | 16.8 | 15.4 | 9.9 | 8.7 | 8.7 | 6.5 | 13.3 | 11.8 | 23.2 | 21.6 | 17.8 | 28.1 | 46.2 | 47 |
| 0.4 | 0.4 | 0.3 | - | 0.1 | 0.1 | - | - | 1.2 | 1.1 | 1.3 | 1.1 | 0.9 | 21.0 | 48 |
| 2.0 | 1.7 | 2.7 | 2.9 | 2.4 | 2.7 | 0.4 | 1.0 | 2.6 | 2.2 | 1.8 | 1.2 | 3.1 | 3.1 | 49 |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 50 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 51 |
| 1.1 | 1.1 | (Z) | 5.9 | 1.5 | 1.7 | 0.8 | - | - | 1.2 | 2.0 | 1.2 | 0.5 | 2.5 | 52 |
| 0.4 | 0.5 | 0.2 | 0.9 | 27.8 | 33.4 | - | - | - | 0.1 | 0.2 | - | 0.1 | 0.5 | 53 |
| 0.1 | (Z) | 0.1 | - | 0.4 | 0.5 | - | - | 0.6 | 0.2 | 0.4 | - | 0.1 | 3.8 | 54 |
| 42.7 | 52.1 | 18.6 | 26.9 | 11.6 | 13.2 | 4.6 | 2.0 | 2.4 | 9.2 | 12.9 | 4.1 | 8.6 | 35.0 | 55 |
| 1.2 | 1.5 | 0.2 | 1.0 | 0.6 | 0.8 | - | - | - | 0.9 | 1.4 | - | 1.0 | 1.4 | 56 |
| 0.6 | 0.8 | 0.1 | - | - | - | - | - | 0.1 | 0.3 | 0.6 | - | 0.2 | 2.3 | 57 |
| 0.1 | 0.1 | 0.4 | - | - | - | - | - | - | 0.1 | - | 0.2 | 0.3 | 2.2 | 58 |
| 1.3 | 0.8 | 2.3 | 2.5 | - | - | - | - | 0.3 | 0.2 | 0.3 | - | 0.2 | 1.7 | 59 |
| 3.3 | 1.9 | 6.9 | 5.4 | 0.6 | 0.7 | - | - | 0.4 | 1.7 | 2.1 | 0.3 | 2.2 | 8.8 | 60 |
| 1.0 | 0.7 | 1.5 | 3.3 | - | - | - | - | 0.3 | 1.0 | 0.4 | 1.1 | 1.5 | 2.4 | 61 |
| 0.9 | 0.9 | 0.8 | 0.9 | - | - | - | - | (Z) | 0.5 | 0.6 | 1.4 | - | 2.2 | 62 |
| 1.2 | 0.8 | 2.2 | 1.3 | 0.2 | 0.1 | 0.8 | 0.7 | 0.1 | 0.1 | - | - | 0.2 | 1.0 | 63 |
| 24.5 | 33.9 | 0.9 | 6.1 | 1.0 | 0.7 | 3.4 | - | 0.5 | 0.7 | 1.7 | - | 0.1 | 4.1 | 64 |
| 2.5 | 3.3 | 0.6 | 0.4 | 8.6 | 10.3 | - | - | (Z) | 0.4 | 1.1 | - | - | 1.5 | 65 |
| 6.1 | 7.3 | 2.8 | 6.0 | 0.6 | 0.6 | 0.4 | 1.3 | 0.6 | 3.2 | 4.7 | 1.1 | 2.9 | 7.4 | 66 |
| 1.1 | 1.0 | 1.2 | 2.4 | 1.4 | 1.3 | 2.7 | - | 0.2 | 1.3 | 2.9 | 0.3 | 0.2 | 4.2 | 67 |
| 0.3 | 0.4 | 0.1 | - | (Z) | 0.1 | - | - | 1.0 | 0.8 | 1.4 | 1.0 | - | 4.5 | 68 |
| 0.1 | 0.1 | 0.1 | 0.3 | - | - | - | - | 1.3 | 3.3 | 5.2 | 3.7 | 1.3 | 3.9 | 69 |
| 23.7 | 19.3 | 37.8 | 17.5 | 17.3 | 16.1 | 20.2 | 29.0 | 50.0 | 48.5 | 37.8 | 72.7 | 45.1 | 11.6 | 70 |
| 19.5 | 15.0 | 33.9 | 14.3 | 15.8 | 14.5 | 19.3 | 28.1 | 29.7 | 43.6 | 36.2 | 65.8 | 37.8 | 6.7 | 71 |
| 4.1 | 4.3 | 3.9 | 3.2 | 1.5 | 1.6 | 0.8 | 0.9 | 20.3 | 5.0 | 1.6 | 6.9 | 7.3 | 4.9 | 72 |
| 2.3 | 2.8 | 1.3 | 0.9 | (Z) | 0.1 | - | - | 22.9 | 2.3 | 0.1 | 2.6 | 4.3 | 3.8 | 73 |
| 16.4 | 11.4 | 29.8 | 23.1 | 17.9 | 14.6 | 28.6 | 48.1 | 12.4 | 10.4 | 10.2 | 6.8 | 12.7 | 12.7 | 74 |
| 0.9 | 0.4 | 2.4 | 0.2 | 2.6 | 2.9 | - | 2.9 | 0.1 | 0.6 | 0.8 | 0.2 | 0.8 | 4.2 | 75 |
| 14.1 | 9.4 | 26.0 | 21.6 | 11.9 | 8.2 | 23.4 | 45.2 | 4.3 | 4.9 | 4.9 | 4.6 | 5.1 | 2.1 | 76 |
| 1.5 | 1.6 | 1.3 | 1.3 | 3.5 | 3.4 | 5.1 | - | 7.9 | 4.9 | 4.6 | 2.0 | 6.8 | 6.4 | 77 |
| 4.0 | 3.7 | 2.5 | 15.3 | 13.2 | 10.2 | 33.0 | 17.9 | 4.0 | 17.8 | 21.5 | 4.9 | 21.5 | 7.5 | 78 |
| 1.8 | 1.6 | 1.6 | 5.2 | 7.3 | 4.8 | 24.5 | 8.6 | 1.2 | 8.8 | 14.3 | 1.9 | 7.2 | 2.3 | 79 |
| 2.3 | 2.1 | 1.0 | 10.2 | 5.9 | 5.4 | 8.5 | 9.3 | 2.8 | 9.0 | 7.2 | 3.0 | 14.3 | 5.2 | 80 |
| 0.1 | (Z) | 0.1 | - | 0.1 | 0.2 | - | - | 0.1 | (Z) | - | - | 0.1 | 0.5 | 81 |
| 5.4 | 5.4 | 5.2 | 5.7 | 6.3 | 6.0 | 9.7 | 2.9 | 2.1 | 3.0 | 3.5 | 1.3 | 3.5 | 6.7 | 82 |
| 2.3 | 2.1 | 3.0 | 1.1 | 2.3 | 2.7 | 0.4 | - | 3.0 | 1.8 | 1.8 | 1.5 | 2.0 | 2.8 | 83 |

# Table 5. SELECTED JOB-RELATED CHARACTERISTICS

(Detail may not add to total because of rounding.

| Line No. | Selected job-related characteristics | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | PRIMARY WORK ACTIVITY IN 1976 | | | | | | | | | |
| 1 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | Research and development, total | 17.0 | 30.1 | 12.7 | 13.8 | 9.7 | 27.7 | 23.7 | 29.4 | 33.0 |
| 4 | Basic research | 0.8 | 0.6 | 4.5 | 5.4 | 2.1 | 12.0 | 3.7 | 15.9 | 21.4 |
| 5 | Applied research | 1.3 | 3.1 | 4.7 | 4.3 | 5.6 | 12.3 | 15.4 | 11.0 | 8.4 |
| 6 | Development | 9.7 | 12.7 | 2.4 | 2.8 | 1.3 | 3.4 | 4.5 | 2.6 | 3.2 |
| 7 | Design | 5.1 | 13.8 | 1.1 | 1.3 | 0.7 | 0.1 | 0.2 | (Z) | - |
| 8 | Management or administration, total | 19.3 | 33.7 | 22.0 | 22.4 | 21.0 | 29.2 | 42.2 | 19.2 | 28.2 |
| 9 | Research and development | 7.3 | 11.6 | 9.3 | 8.9 | 10.3 | 11.0 | 9.8 | 11.4 | 12.9 |
| 10 | Other | 12.1 | 22.2 | 12.7 | 13.5 | 10.7 | 18.2 | 32.4 | 7.8 | 15.3 |
| 11 | Teaching and training | 3.9 | 2.3 | 37.1 | 45.8 | 14.7 | 24.0 | 7.0 | 36.9 | 26.2 |
| 12 | Production and inspection | 4.4 | 15.1 | 4.0 | 3.8 | 4.5 | 7.2 | 11.3 | 5.6 | 1.8 |
| 13 | Quality control | 1.3 | 3.7 | 1.7 | 1.4 | 2.5 | 1.8 | 1.0 | 2.8 | 0.8 |
| 14 | Operations | 1.6 | 9.1 | 1.7 | 1.7 | 1.7 | 4.0 | 8.3 | 1.4 | 1.0 |
| 15 | Distribution-sales | 1.6 | 2.4 | 0.6 | 0.7 | 0.3 | 1.4 | 2.0 | 1.4 | - |
| 16 | Consulting | 8.3 | 5.3 | 2.1 | 1.3 | 4.0 | 2.6 | 4.1 | 1.7 | 1.8 |
| 17 | Clinical diagnosis | 0.1 | 0.1 | - | - | - | 0.6 | 0.3 | 0.6 | 1.3 |
| 18 | Consulting | 8.2 | 5.2 | 2.1 | 1.3 | 4.0 | 2.0 | 3.8 | 1.1 | 0.6 |
| 19 | Report writing, statistical work and computer applications | 42.1 | 4.3 | 17.9 | 8.2 | 42.9 | 3.3 | 4.6 | 2.6 | 2.1 |
| 20 | Report writing | 1.9 | 2.2 | 1.2 | 0.5 | 3.1 | 2.3 | 3.0 | 2.1 | 1.4 |
| 21 | Statistical work | 0.8 | 0.9 | 12.5 | 2.1 | 39.3 | 0.7 | 1.5 | 0.3 | - |
| 22 | Computer applications | 39.4 | 1.1 | 4.2 | 5.6 | 0.5 | 0.3 | 0.2 | 0.2 | 0.7 |
| 23 | Other activities | 1.9 | 4.4 | 0.8 | 1.2 | - | 2.7 | 4.1 | 1.8 | 1.5 |
| 24 | Not reported | 3.1 | 4.8 | 3.4 | 3.5 | 3.3 | 3.2 | 2.9 | 2.8 | 5.4 |
| | TYPE OF EMPLOYER IN 1976 | | | | | | | | | |
| 25 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 26 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 27 | Business or industry | 70.8 | 69.0 | 24.4 | 23.9 | 25.6 | 20.1 | 26.6 | 17.0 | 13.1 |
| 28 | Educational institutions, total | 7.6 | 4.4 | 46.8 | 54.7 | 26.4 | 42.8 | 22.7 | 54.8 | 56.4 |
| 29 | Junior or 2-year college, technical institute | 0.3 | 0.4 | 6.9 | 9.1 | 1.2 | 3.7 | 0.8 | 6.1 | 3.4 |
| 30 | Medical school | 0.3 | (Z) | 1.3 | - | 4.7 | 8.8 | - | 6.5 | 41.1 |
| 31 | 4-year college or university, other than medical school | 6.8 | 3.8 | 37.9 | 45.0 | 19.7 | 29.7 | 21.8 | 40.9 | 12.0 |
| 32 | Elementary or secondary school system | 0.1 | 0.1 | 0.7 | 0.6 | 0.9 | 0.6 | 0.1 | 1.2 | - |
| 33 | Hospital or clinic | 0.7 | 0.1 | 0.2 | - | 0.8 | 2.0 | - | 1.3 | 9.9 |
| 34 | Nonprofit organization | 2.8 | 1.6 | 2.4 | 2.4 | 2.6 | 2.1 | 0.5 | 2.9 | 3.4 |
| 35 | U.S. military service/commissioned corps | 0.3 | 0.4 | 0.5 | 0.4 | 0.6 | 0.2 | (Z) | 0.1 | 1.2 |
| 36 | Government, total | 12.5 | 16.1 | 21.1 | 14.6 | 37.7 | 28.4 | 46.0 | 19.3 | 11.1 |
| 37 | U.S. Government | 7.3 | 9.3 | 15.3 | 11.7 | 24.5 | 20.1 | 34.6 | 12.1 | 7.9 |
| 38 | State government | 2.0 | 3.1 | 3.0 | 1.2 | 7.8 | 6.5 | 8.5 | 5.3 | 2.4 |
| 39 | Local or other government | 3.2 | 3.7 | 2.8 | 1.7 | 5.4 | 1.7 | 1.9 | 1.9 | 0.9 |
| 40 | International agency | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | - |
| 41 | Self-employed | 1.2 | 3.3 | 1.0 | 0.3 | 2.8 | 1.1 | 1.8 | 0.8 | 0.1 |
| 42 | Other | 1.7 | 1.7 | 0.8 | 0.7 | 1.0 | 1.1 | 0.4 | 1.5 | 1.1 |
| 43 | Not reported | 2.3 | 3.4 | 2.8 | 2.9 | 2.3 | 2.2 | 1.8 | 2.1 | 3.6 |
| | BASIC ANNUAL SALARY RATE OF FULL-TIME EMPLOYED[2] | | | | | | | | | |
| 44 | Total employed full time in February 1976 | 47,443 | 591,736 | 21,875 | 15,804 | 6,071 | 61,091 | 23,887 | 28,839 | 8,365 |
| 45 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 46 | With salary reported | 93.2 | 88.5 | 93.6 | 93.0 | 95.2 | 91.8 | 92.8 | 91.1 | 91.1 |
| 47 | Less than $8,000 | 0.3 | 0.4 | 0.8 | 0.7 | 0.9 | 1.1 | 0.8 | 1.7 | - |
| 48 | $8,000 to $9,999 | 0.7 | 0.4 | 0.3 | 0.3 | 0.2 | 1.0 | 0.7 | 1.2 | 0.8 |
| 49 | $10,000 to $14,999 | 5.0 | 3.7 | 6.5 | 6.4 | 6.8 | 11.0 | 12.2 | 10.5 | 9.2 |
| 50 | $15,000 to $19,999 | 24.8 | 19.4 | 20.0 | 20.4 | 18.7 | 26.4 | 33.4 | 24.5 | 12.6 |
| 51 | $20,000 to $24,999 | 35.9 | 29.6 | 26.6 | 26.4 | 27.2 | 23.4 | 23.5 | 23.8 | 21.8 |
| 52 | $25,000 to $29,999 | 16.9 | 19.0 | 21.2 | 21.4 | 20.6 | 15.5 | 14.3 | 15.3 | 19.3 |
| 53 | $30,000 to $39,999 | 8.8 | 12.3 | 14.9 | 14.5 | 15.8 | 10.2 | 6.3 | 11.0 | 18.3 |
| 54 | $40,000 to $49,999 | 0.7 | 2.2 | 3.1 | 2.4 | 4.7 | 2.0 | 0.6 | 1.8 | 6.8 |
| 55 | $50,000 and over | 0.2 | 1.5 | 0.4 | 0.4 | 0.2 | 1.2 | 0.8 | 1.2 | 2.4 |
| 56 | Median salary (dollars) | 21,583 | 23,176 | 23,551 | 23,528 | 23,636 | 20,893 | 19,856 | 21,184 | 25,170 |
| 57 | Salary not reported | 6.8 | 11.5 | 6.4 | 7.0 | 4.8 | 8.2 | 7.2 | 8.9 | 8.9 |
| | JOB MOBILITY | | | | | | | | | |
| 58 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 59 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 60 | Employed in February 1975 | 97.2 | 97.3 | 98.3 | 98.1 | 98.9 | 97.8 | 98.3 | 97.6 | 96.0 |
| 61 | Job change between 1975 and 1976 | 14.9 | 11.3 | 13.2 | 13.7 | 12.0 | 12.5 | 10.9 | 13.8 | 13.2 |
| 62 | Different occupation | 4.8 | 3.1 | 3.5 | 3.5 | 3.4 | 2.8 | 2.3 | 3.5 | 1.5 |
| 63 | Same occupation | 6.4 | 5.7 | 6.9 | 7.0 | 6.5 | 7.2 | 6.9 | 6.9 | 9.2 |
| 64 | Occupation change not reported | 3.6 | 2.5 | 2.9 | 3.2 | 2.1 | 2.5 | 1.6 | 3.2 | 2.5 |
| 65 | Same job in 1975 and 1976 | 80.9 | 83.7 | 83.0 | 82.4 | 84.7 | 83.7 | 85.6 | 82.5 | 82.3 |
| 66 | Not reported | 1.5 | 2.3 | 2.1 | 2.1 | 2.2 | 1.6 | 2.3 | 1.4 | 0.6 |
| 67 | Not employed or employment status not reported in February 1975 | 2.8 | 2.7 | 1.7 | 1.9 | 1.1 | 2.2 | 1.2 | 2.4 | 4.0 |
| 68 | Employed in January 1974 | 95.5 | 94.4 | 95.8 | 95.3 | 97.1 | 94.6 | 96.7 | 92.7 | 95.6 |
| 69 | Job change between 1974 and 1976 | 30.0 | 23.4 | 22.4 | 21.7 | 24.2 | 20.9 | 20.3 | 20.8 | 22.5 |
| 70 | Same job in 1974 and 1976 | 56.4 | 59.7 | 63.9 | 63.9 | 64.0 | 64.8 | 66.2 | 64.0 | 63.7 |
| 71 | Not reported | 9.1 | 11.3 | 9.5 | 9.7 | 8.9 | 8.9 | 10.2 | 7.8 | 9.3 |
| 72 | Not employed or employment status not reported in January 1974 | 4.5 | 5.6 | 4.2 | 4.7 | 2.9 | 5.4 | 3.3 | 7.3 | 4.4 |
| 73 | Employed in 1972 | 97.1 | 97.1 | 96.7 | 97.5 | 94.6 | 96.3 | 97.8 | 95.1 | 96.4 |
| 74 | Job change between 1972 and 1976 | 48.8 | 38.8 | 32.8 | 31.3 | 36.7 | 33.3 | 33.7 | 32.5 | 34.9 |
| 75 | Same job in 1972 and 1976 | 38.8 | 46.1 | 54.0 | 56.1 | 48.7 | 53.5 | 53.7 | 54.3 | 50.0 |
| 76 | Not reported | 9.4 | 12.2 | 9.9 | 10.1 | 9.2 | 9.5 | 10.4 | 8.3 | 11.4 |
| 77 | Not employed or employment status not reported in 1972 | 2.9 | 2.9 | 3.3 | 2.5 | 5.4 | 3.7 | 2.2 | 4.9 | 3.6 |

See footnotes at end of table.

## BY FIELD OF SCIENCE OR ENGINEERING: 1976—Continued

For meaning of symbols, see text)

| Field of science or engineering in 1976—Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 42.0 | 41.5 | 43.3 | 43.1 | 29.4 | 27.3 | 31.4 | 58.8 | 8.2 | 11.5 | 12.9 | 14.4 | 8.4 | 7.5 | 3 |
| 13.8 | 12.5 | 19.0 | 8.3 | 8.8 | 7.6 | 10.3 | 25.0 | 2.7 | 4.2 | 2.1 | 10.8 | 2.3 | 0.9 | 4 |
| 15.8 | 15.0 | 16.1 | 25.7 | 14.9 | 13.8 | 15.7 | 30.0 | 4.9 | 6.7 | 9.8 | 3.3 | 5.6 | 1.3 | 5 |
| 11.6 | 13.6 | 6.4 | 7.5 | 5.0 | 5.4 | 3.0 | 2.8 | 0.3 | 0.5 | 0.8 | 0.2 | 0.4 | 3.1 | 6 |
| 0.8 | 0.3 | 1.9 | 1.6 | 0.8 | 0.6 | 2.4 | 1.0 | 0.7 | 0.2 | 0.1 | 0.2 | 0.2 | 2.2 | 7 |
| 25.1 | 25.9 | 22.9 | 24.9 | 27.1 | 27.8 | 22.5 | 26.1 | 22.4 | 29.2 | 29.5 | 19.6 | 34.7 | 43.6 | 8 |
| 16.7 | 16.7 | 16.5 | 17.6 | 11.0 | 10.2 | 11.9 | 21.2 | 7.9 | 10.1 | 12.4 | 6.6 | 9.9 | 6.4 | 9 |
| 8.4 | 9.1 | 6.4 | 7.3 | 16.1 | 17.6 | 10.6 | 4.9 | 14.5 | 19.1 | 17.0 | 13.0 | 24.8 | 37.2 | 10 |
| 14.1 | 11.4 | 22.1 | 12.4 | 11.1 | 11.3 | 11.4 | 7.5 | 27.5 | 33.6 | 26.5 | 53.6 | 29.0 | 8.0 | 11 |
| 9.4 | 12.3 | 1.8 | 4.3 | 6.6 | 6.9 | 7.4 | - | 1.7 | 3.6 | 4.5 | 0.8 | 4.4 | 14.6 | 12 |
| 7.1 | 9.5 | 1.1 | 1.4 | 2.1 | 2.5 | 0.4 | - | 0.8 | 0.4 | 0.1 | 0.3 | 0.6 | 2.3 | 13 |
| 1.6 | 1.9 | 0.6 | 3.0 | 3.9 | 4.3 | 3.0 | - | 0.1 | 2.2 | 2.2 | 0.1 | 3.4 | 5.4 | 14 |
| 0.6 | 0.9 | 0.1 | - | 0.6 | 0.1 | 4.0 | - | 0.8 | 1.0 | 2.2 | 0.3 | 0.3 | 6.9 | 15 |
| 2.0 | 2.2 | 1.3 | 2.9 | 7.2 | 7.9 | 4.8 | - | 21.9 | 4.5 | 4.0 | 1.1 | 6.9 | 4.0 | 16 |
| 0.4 | 0.5 | - | - | (Z) | 0.1 | - | - | 15.3 | 0.6 | 0.1 | - | 1.5 | 1.1 | 17 |
| 1.7 | 1.7 | 1.3 | 2.9 | 7.1 | 7.9 | 4.8 | - | 6.6 | 3.8 | 3.9 | 1.1 | 5.4 | 3.0 | 18 |
| 2.6 | 1.6 | 4.1 | 4.8 | 7.9 | 7.2 | 14.3 | [illegible] | 2.3 | 9.8 | 14.5 | 7.6 | 6.2 | 7.9 | 19 |
| 1.4 | 1.3 | 1.4 | 3.5 | 4.4 | 5.0 | 1.2 | 1.[illegible] | 1.0 | 4.4 | 6.4 | 3.1 | 3.1 | 2.4 | 20 |
| 0.3 | 0.2 | 0.3 | 0.9 | 2.4 | 1.2 | 11.4 | 2.0 | 1.0 | 4.9 | 7.8 | 3.0 | 3.2 | 1.8 | 21 |
| 0.7 | 0.1 | 2.4 | 0.4 | 1.1 | 1.1 | 1.7 | - | 0.4 | 0.5 | 0.3 | 1.5 | - | 3.7 | 22 |
| 2.1 | 2.5 | 0.6 | 4.5 | 6.2 | 6.4 | 6.5 | 1.9 | 11.2 | 4.0 | 3.7 | 1.2 | 5.9 | 8.2 | 23 |
| 2.9 | 2.6 | 3.8 | 3.0 | 4.6 | 5.2 | 1.8 | 2.0 | 4.2 | 3.8 | 4.4 | 1.8 | 4.4 | 6.1 | 24 |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 25 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 26 |
| 52.7 | 61.7 | 29.2 | 38.0 | 42.6 | 48.0 | 18.7 | 8.9 | 8.6 | 18.3 | 25.6 | 13.2 | 14.0 | 56.4 | 27 |
| 24.3 | 19.9 | 38.2 | 18.8 | 17.2 | 16.1 | 17.8 | 34.4 | 49.1 | 47.6 | 37.8 | 72.7 | 43.0 | 11.6 | 28 |
| 1.7 | 1.4 | 2.8 | 2.0 | 1.3 | 1.4 | 0.4 | 0.9 | 2.2 | 2.7 | 1.5 | 4.8 | 2.6 | 2.0 | 29 |
| 2.6 | 3.3 | 0.9 | 1.7 | (Z) | 0.1 | - | - | 2.7 | 0.9 | - | 1.9 | 1.1 | 1.1 | 30 |
| 19.7 | 15.0 | 34.4 | 15.1 | 15.7 | 14.4 | 17.4 | 33.6 | 30.0 | 43.2 | 35.7 | 66.0 | 37.2 | 6.5 | 31 |
| 0.2 | 0.2 | 0.3 | - | 0.1 | 0.2 | - | - | 14.2 | 0.9 | 0.1 | - | 2.2 | 2.0 | 32 |
| 0.9 | 1.2 | 0.4 | - | (Z) | 0.1 | - | - | 14.3 | 1.0 | - | 1.4 | 1.7 | 2.0 | 33 |
| 3.6 | 2.3 | 7.1 | 4.5 | 1.5 | 0.9 | 4.7 | 2.6 | 6.5 | 4.3 | 1.9 | 3.4 | 7.3 | 1.9 | 34 |
| 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | - | 0.2 | (Z) | - | - | 0.1 | 0.5 | 35 |
| 14.1 | 11.0 | 18.8 | 13.7 | 27.4 | 21.7 | 56.8 | 52.1 | 10.2 | 23.2 | 28.7 | 7.4 | 27.0 | 11.6 | 36 |
| 10.5 | 7.4 | 16.7 | 23.3 | 19.7 | 15.0 | 45.5 | 36.4 | 3.6 | 13.1 | 20.6 | 3.7 | 11.0 | 4.6 | 37 |
| 1.5 | 1.7 | 0.6 | 2.2 | 3.4 | 3.6 | 3.3 | 0.9 | 3.7 | 4.9 | 3.3 | 1.0 | 8.8 | 3.5 | 38 |
| 2.1 | 1.9 | 1.4 | 8.2 | 4.3 | 3.1 | 8.1 | 14.7 | 2.9 | 5.2 | 4.8 | 2.7 | 7.1 | 3.5 | 39 |
| 0.1 | - | - | 1.9 | (Z) | (Z) | - | - | (Z) | 0.8 | 1.8 | 0.1 | 0.1 | 0.1 | 40 |
| 1.1 | 1.3 | 0.6 | 0.5 | 7.6 | 9.1 | - | 1.0 | 7.2 | 1.5 | 1.7 | 0.2 | 2.1 | 10.5 | 41 |
| 1.1 | 0.7 | 2.4 | 1.3 | 1.0 | 1.0 | 1.3 | - | 1.8 | 1.3 | 0.9 | 0.3 | 2.4 | 2.1 | 42 |
| 2.1 | 1.9 | 3.1 | 1.1 | 2.5 | 2.9 | 0.4 | 1.0 | 2.2 | 2.0 | 2.2 | 1.3 | 2.4 | 3.4 | 43 |
| 102,917 | 73,058 | 24,432 | 5,427 | 24,635 | 20,478 | 2,930 | 1,226 | 28,747 | 38,843 | 15,388 | 8,719 | 14,737 | 138,901 | 44 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 45 |
| 90.9 | 90.1 | 92.5 | 94.5 | 88.3 | 86.5 | 96.7 | 98.1 | 91.6 | 92.5 | 91.3 | 96.0 | 91.7 | 84.1 | 46 |
| 0.7 | 0.7 | 0.6 | 0.2 | 0.4 | 0.5 | - | - | 0.7 | 1.3 | 1.2 | 1.3 | 1.3 | 1.0 | 47 |
| 0.6 | 0.7 | 0.4 | 0.7 | 0.5 | 0.7 | - | - | 0.4 | 0.8 | - | 0.3 | 1.9 | 1.5 | 48 |
| 7.3 | 8.2 | 4.6 | 7.0 | 3.8 | 4.3 | 1.7 | - | 6.7 | 5.9 | 4.6 | 8.5 | 5.6 | 10.2 | 49 |
| 18.9 | 20.7 | 14.2 | 15.5 | 15.0 | 15.2 | 12.0 | 18.1 | 22.2 | 17.3 | 9.4 | 20.8 | 23.6 | 19.2 | 50 |
| 25.8 | 24.8 | 28.3 | 28.2 | 22.4 | 21.0 | 30.3 | 27.1 | 27.7 | 25.0 | 22.4 | 26.4 | 26.9 | 21.0 | 51 |
| 16.9 | 16.1 | 19.2 | 18.2 | 20.3 | 19.1 | 24.0 | 31.1 | 16.1 | 18.3 | 21.9 | 18.1 | 14.7 | 13.1 | 52 |
| 16.6 | 14.8 | 20.5 | 22.9 | 19.4 | 18.2 | 26.4 | 21.8 | 13.6 | 17.1 | 20.7 | 16.7 | 13.7 | 12.0 | 53 |
| 2.9 | 3.1 | 2.7 | 1.4 | 3.6 | 4.1 | 1.8 | - | 2.5 | 3.9 | 5.6 | 2.7 | 2.8 | 2.9 | 54 |
| 1.3 | 1.1 | 2.0 | 0.5 | 2.8 | 3.3 | 0.5 | - | 1.8 | 2.9 | 5.5 | 1.3 | 1.2 | 3.1 | 55 |
| 23,132 | 22,512 | 24,729 | 24,126 | 25,289 | 25,226 | 25,662 | 25,404 | 22,551 | 24,217 | 26,252 | 23,238 | 22,540 | 22,040 | 56 |
| 9.1 | 9.9 | 7.5 | 5.5 | 11.7 | 13.5 | 3.3 | 1.9 | 8.4 | 7.5 | 8.7 | 4.0 | 8.3 | 15.9 | 57 |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 58 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 59 |
| 98.2 | 98.3 | 97.6 | 99.3 | 98.1 | 98.4 | 96.0 | 99.0 | 96.5 | 98.0 | 98.5 | 97.4 | 97.8 | 96.0 | 60 |
| 9.6 | 8.8 | 11.7 | 11.7 | 11.1 | 12.3 | 4.3 | 7.9 | 13.2 | 14.6 | 14.1 | 18.4 | 12.8 | 19.0 | 61 |
| 2.3 | 1.6 | 3.9 | 4.9 | 1.8 | 1.9 | 0.4 | 1.9 | 3.3 | 3.5 | 2.7 | 2.5 | 4.9 | 9.6 | 62 |
| 5.6 | 5.4 | 6.4 | 4.5 | 7.6 | 8.3 | 2.7 | 6.0 | 8.2 | 9.0 | 9.3 | 12.4 | 6.6 | 5.8 | 63 |
| 1.7 | 1.8 | 1.3 | 2.2 | 1.8 | 2.0 | 1.2 | - | 1.8 | 2.1 | 2.1 | 3.5 | 1.4 | 3.6 | 64 |
| 87.0 | 88.0 | 84.3 | 85.6 | 84.3 | 82.9 | 91.3 | 90.2 | 81.7 | 81.3 | 82.0 | 76.8 | 83.3 | 74.3 | 65 |
| 1.5 | 1.5 | 1.6 | 2.0 | 2.7 | 3.1 | 0.4 | 0.9 | 1.6 | 2.1 | 2.4 | 2.3 | 1.7 | 2.7 | 66 |
| 1.8 | 1.7 | 1.4 | 0.7 | 1.9 | 1.6 | 4.0 | 1.0 | 3.5 | 2.0 | 1.5 | 2.6 | 2.2 | 4.0 | 67 |
| 94.3 | 94.8 | 92.0 | 97.9 | 95.7 | 95.8 | 98.4 | 87.4 | 92.9 | 92.5 | 94.1 | 92.3 | 91.1 | 90.7 | 68 |
| 19.4 | 18.3 | 21.4 | 24.6 | 22.3 | 23.8 | 17.8 | 8.7 | 23.4 | 25.4 | 26.0 | 26.1 | 24.5 | 31.5 | 69 |
| 65.6 | 65.8 | 65.0 | 65.7 | 59.7 | 57.3 | 70.6 | 74.8 | 62.8 | 58.8 | 59.1 | 57.5 | 59.2 | 47.1 | 70 |
| 9.2 | 10.6 | 5.6 | 7.6 | 13.6 | 14.7 | 9.9 | 3.9 | 7.7 | 8.4 | 9.0 | 8.8 | 7.4 | 12.2 | 71 |
| 5.7 | 5.2 | 8.0 | 2.1 | 4.3 | 4.2 | 1.6 | 12.6 | 7.1 | 7.5 | 5.9 | 7.7 | 8.9 | 9.3 | 72 |
| 96.4 | 96.8 | 95.5 | 95.1 | 95.4 | 95.2 | 100.0 | 88.0 | 94.9 | 95.4 | 96.8 | 94.2 | 94.8 | 94.2 | 73 |
| 31.6 | 29.9 | 34.1 | 42.6 | 34.2 | 33.9 | 35.7 | 34.9 | 35.8 | 39.5 | 39.7 | 37.6 | 40.5 | 50.6 | 74 |
| 54.6 | 55.7 | 53.5 | 45.0 | 47.6 | 46.5 | 54.4 | 49.1 | 50.1 | 46.7 | 47.4 | 48.4 | 45.4 | 31.3 | 75 |
| 10.2 | 11.2 | 7.8 | 7.6 | 13.6 | 14.8 | 9.9 | 3.9 | 9.0 | 9.2 | 9.7 | 8.2 | 9.1 | 12.2 | 76 |
| 3.6 | 3.2 | 4.5 | 4.9 | 4.6 | 4.8 | - | 12.0 | 5.1 | 4.6 | 3.2 | 5.8 | 5.2 | 5.8 | 77 |

# Table 5. SELECTED JOB-RELATED CHARACTERISTICS

(Detail may not add to total because of roundink.

| Line No. | Selected job-related characteristics | Field of science or engineering in 1976 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Mathematical specialists | | | Life scientists | | | |
| | | Computer specialists | Engineers | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biologists | Medical scientists |
| | PROFESSIONAL IDENTIFICATION IN 1976 | | | | | | | | | |
| 1 | Total persons | 50,691 | 658,5[illegible] | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 2 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | Computer specialists | 93.0 | 0.2 | 2.9 | 3.5 | 1.4 | (Z) | (Z) | - | - |
| 4 | Engineers | 0.3 | 81.3 | 2.2 | 2.7 | 0.8 | 0.1 | 0.1 | 0.1 | 0.1 |
| 5 | Mathematicians and statisticians | 0.6 | 0.4 | 75.2 | 70.5 | 87.1 | 0.1 | 0.1 | 0.1 | - |
| 6 | Life scientists | - | (Z) | 0.1 | - | 0.2 | 81.9 | 77.2 | 84.6 | 85.6 |
| 7 | Physical scientists | 0.2 | 0.2 | 0.6 | 0.5 | 1.0 | 0.3 | 0.1 | 0.6 | - |
| 8 | Environmental scientists | (Z) | (Z) | (Z) | 0.1 | - | 0.1 | 0.3 | (Z) | - |
| 9 | Psychologists | - | (Z) | 0.1 | - | 0.2 | - | - | - | - |
| 10 | Social scientists | - | (Z) | 0.3 | 0.2 | 0.6 | 0.1 | (Z) | 0.1 | - |
| 11 | Administrators and managers | 2.0 | 10.9 | 11.9 | 15.4 | 2.8 | 9.7 | 15.4 | 6.9 | 4.3 |
| 12 | Other | 0.1 | 0.5 | 1.9 | 2.6 | - | 2.4 | 1.6 | 2.8 | 3.0 |
| 13 | Not reported | 3.8 | 6.4 | 4.9 | 4.4 | 5.9 | 5.3 | 5.2 | 4.8 | 7.0 |
| | YEARS OF PROFESSIONAL EXPERIENCE | | | | | | | | | |
| 14 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 15 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 16 | With years of professional experience reported | 95.8 | 93.6 | 93.9 | 94.2 | 92.9 | 94.4 | 94.4 | 94.5 | 93.8 |
| 17 | Less than 1 year | 0.1 | 0.1 | - | - | - | 0.2 | 0.1 | 0.3 | - |
| 18 | 1 to 5 years | 3.8 | 1.9 | 4.4 | 4.5 | 4.2 | 7.2 | 3.6 | 10.1 | 6.8 |
| 19 | 6 to 10 years | 35.8 | 15.3 | 25.7 | 24.6 | 28.5 | 19.7 | 14.5 | 24.1 | 18.8 |
| 20 | 11 to 15 years | 30.0 | 16.1 | 19.9 | 21.5 | 15.7 | 17.7 | 17.1 | 18.5 | 16.5 |
| 21 | 16 to 20 years | 15.5 | 17.8 | 15.8 | 16.8 | 13.4 | 16.7 | 20.4 | 13.9 | 16.2 |
| 22 | 21 to 25 years | 7.0 | 16.0 | 12.8 | 12.4 | 13.9 | 12.8 | 15.9 | 11.2 | 10.4 |
| 23 | 26 to 30 years | 2.0 | 12.7 | 7.8 | 7.6 | 8.2 | 10.3 | 13.3 | 8.0 | 10.3 |
| 24 | 31 to 35 years | 1.1 | 6.0 | 3.4 | 3.0 | 4.3 | 4.1 | 3.5 | 4.0 | 6.4 |
| 25 | 36 to 40 years | 0.2 | 5.1 | 2.7 | 2.2 | 4.0 | 3.4 | 4.2 | 2.5 | 4.6 |
| 26 | 41 years and over | 0.2 | 2.6 | 1.3 | 1.6 | 0.6 | 2.2 | 1.8 | 2.1 | 3.9 |
| 27 | Median years of professional experience | 11.3 | 19.1 | 14.3 | 14.2 | 14.5 | 15.6 | 18.0 | 13.6 | 16.7 |
| 28 | Years of professional experience not reported | 4.2 | 6.4 | 6.1 | 5.8 | 7.1 | 5.6 | 5.6 | 5.5 | 6.2 |
| | FEDERAL SUPPORT IN 1976[3] | | | | | | | | | |
| 29 | Total employed in February 1976 | 48,159 | 600,994 | 22,737 | 16,389 | 6,348 | 64,057 | 24,408 | 30,912 | 8,737 |
| 30 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 31 | With Federal support | 26.1 | 37.7 | 36.3 | 31.0 | 50.0 | 50.0 | 57.4 | 42.9 | 54.6 |
| 32 | Department of Agriculture | 0.5 | 1.0 | 2.1 | 0.2 | 7.2 | 22.2 | 46.8 | 8.6 | 1.9 |
| 33 | Department of Commerce | 0.5 | 0.7 | 2.0 | 0.9 | 4.7 | 1.3 | 0.3 | 2.4 | - |
| 34 | Department of Defense | 14.0 | 21.4 | 15.7 | 18.5 | 8.2 | 2.3 | 1.0 | 2.8 | 4.2 |
| 35 | Department of Health, Education, and Welfare | 3.5 | 1.2 | 8.7 | 3.0 | 23.5 | 15.5 | 0.9 | 17.5 | 49.[illegible] |
| 36 | Department of Housing and Urban Development | 0.6 | 1.9 | 0.6 | 0.2 | 1.6 | 0.2 | 0.1 | 0.3 | - |
| 37 | Department of the Interior | 0.5 | 1.3 | 0.5 | 0.7 | 0.2 | 5.3 | 7.5 | 5.1 | - |
| 38 | Department of Justice | 0.8 | 0.3 | 1.1 | 0.4 | 2.9 | 0.7 | (Z) | 0.9 | 1.7 |
| 39 | Department of Labor | 0.4 | 0.2 | 1.6 | 0.6 | 4.2 | (Z) | (Z) | (Z) | - |
| 40 | Department of Transportation | 1.7 | 5.4 | 1.9 | 1.7 | 2.6 | 0.4 | (Z) | 0.7 | 0.3 |
| 41 | Agency for International Development | 0.2 | 0.1 | 0.5 | 0.3 | 1.0 | 0.5 | 0.5 | 0.6 | 0.1 |
| 42 | Energy Research and Development Administration | 1.8 | 3.9 | 1.4 | 1.8 | 0.6 | 1.1 | 0.1 | 2.2 | 0.3 |
| 43 | Environmental Protection Agency | 0.8 | 2.6 | 0.8 | 0.6 | 1.4 | 1.7 | 1.2 | 2.4 | 0.8 |
| 44 | NASA | 4.5 | 6.7 | 2.1 | 2.6 | 1.0 | 1.0 | 0.1 | 1.5 | 1.6 |
| 45 | National Science Foundation | 0.9 | 1.0 | 4.8 | 5.1 | 4.3 | 3.8 | 1.1 | 6.2 | 2.7 |
| 46 | Nuclear Regulatory Commission | 0.3 | 0.6 | 0.3 | 0.4 | 0.2 | 0.1 | - | 0.2 | - |
| 47 | Other Department or Agency | 2.0 | 1.9 | 1.5 | 0.7 | 3.7 | 2.3 | 1.1 | 3.3 | 2.5 |
| 48 | Agency not known or not reported | 1.1 | 0.8 | 0.6 | 0.5 | 0.4 | 1.1 | 0.5 | 1.3 | 1.6 |
| 49 | No Federal support | 67.4 | 55.2 | 55.4 | 59.3 | 45.4 | 43.3 | 38.3 | 49.1 | 36.7 |
| 50 | Federal support not known | 3.6 | 2.8 | 5.1 | 6.2 | 2.3 | 3.5 | 1.7 | 4.7 | 4.6 |
| 51 | Not reported | 3.0 | 4.2 | 3.2 | 3.5 | 2.3 | 3.2 | 2.6 | 3.[illegible] | 4.1 |
| | NATIONAL INTEREST TOPICS[4] | | | | | | | | | |
| 52 | Total persons | 50,691 | 658,549 | 24,831 | 17,873 | 6,958 | 70,027 | 26,315 | 33,975 | 9,738 |
| 53 | Percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 54 | Health | 2.3 | 1.0 | 6.0 | 2.0 | 16.1 | 16.7 | 0.8 | 18.9 | 51.6 |
| 55 | Education, total | 3.0 | 1.4 | 19.9 | 24.1 | 9.2 | 11.8 | 3.2 | 16.5 | 18.3 |
| 56 | Teaching | 1.9 | 1.2 | 18.8 | 23.3 | 7.1 | 10.3 | 2.8 | 15.3 | 13.1 |
| 57 | Other | 1.0 | 0.2 | 1.2 | 0.8 | 2.1 | 1.5 | 0.4 | 1.2 | 5.2 |
| 58 | Environmental protection, pollution control | 1.0 | 12.6 | 1.9 | 1.6 | 2.9 | 21.0 | 32.6 | 17.7 | 1.5 |
| 59 | Space | 3.3 | 4.3 | 1.8 | 2.4 | 0.2 | 0.2 | (Z) | 0.4 | 0.1 |
| 60 | National defense | 12.1 | 16.6 | 12.7 | 14.6 | 7.7 | 0.5 | 0.4 | 0.7 | 0.2 |
| 61 | Crime prevention and control | 0.9 | 0.3 | 0.3 | 0.2 | 0.6 | 0.1 | (Z) | (Z) | 0.1 |
| 62 | Food production and technology | 0.9 | 1.5 | 1.5 | 0.2 | 4.7 | 17.7 | 32.6 | 11.0 | 0.4 |
| 63 | Energy and fuel | 5.2 | 13.4 | 3.4 | 4.3 | 1.3 | 0.6 | 0.8 | 0.7 | - |
| 64 | Other mineral resources | 0.1 | 1.0 | 0.6 | 0.8 | - | 0.1 | 0.3 | - | - |
| 65 | Community development and services | 2.2 | 3.0 | 1.8 | 1.4 | 3.0 | 1.2 | 1.8 | 1.0 | - |
| 66 | Housing | 0.2 | 1.9 | 0.3 | 0.2 | 0.7 | 0.2 | 0.5 | - | - |
| 67 | Not applicable | 55.9 | 29.0 | 36.2 | 35.0 | 39.1 | 18.2 | 16.1 | 20.4 | 15.7 |
| 68 | Not reported | 13.4 | 14.0 | 13.6 | 13.2 | 14.6 | 11.8 | 10.9 | 12.5 | 11.9 |

[1]College or university teachers of science or engineering are excluded from teachers and included in occupation corresponding to subject taught.
[2]Refers to salary for job held during the week of February 8-14, 1976.
[3]Sum of individual agencies' support may exceed total with Federal support because of multiple response.
[4]Area of national concern in which persons devoted the largest proportion of professional time.

# BY FIELD OF SCIENCE OR ENGINEERING: 1976—Continued

For meaning of symbols, see text)

| Field of science or engineering in 1976--Continued | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Earth scientists | Atmospheric scientists | Oceanographers | Psychologists | Total | Economists | Sociologists and anthropologists | Other social scientists | Not in a field of science or engineering in 1976 | Line No. |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 1 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 2 |
| 0.1 | (Z) | 0.2 | - | 0.1 | 0.1 | 0.4 | - | - | 0.3 | 0.4 | 0.6 | 0.2 | 6.8 | 3 |
| 1.8 | 1.2 | 3.6 | 1.0 | 1.3 | 1.5 | 0.4 | - | 0.2 | 0.4 | 0.5 | - | 0.4 | 8.0 | 4 |
| (Z) | - | (Z) | - | 0.5 | 0.6 | - | - | 0.1 | 0.1 | 0.2 | - | - | 1.2 | 5 |
| 8.3 | 11.5 | 0.2 | 1.3 | 0.3 | 0.4 | - | - | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1.5 | 6 |
| 73.1 | 70.2 | 79.9 | 83.3 | 1.5 | 0.7 | 6.3 | 3.6 | - | 0.2 | - | - | 0.4 | 2.3 | 7 |
| 0.1 | 0.1 | 0.1 | 1.1 | 86.0 | 86.7 | 82.9 | 83.3 | - | - | - | - | - | 0.4 | 8 |
| - | - | - | - | - | - | - | - | 86.0 | 0.1 | - | 0.1 | 0.1 | 0.2 | 9 |
| (Z) | - | (Z) | - | - | - | - | - | 0.4 | 74.7 | 74.9 | 82.5 | 69.9 | 1.3 | 10 |
| 10.6 | 11.0 | 9.3 | 10.3 | 5.4 | 5.2 | 5.6 | 7.8 | 7.0 | 15.1 | 13.0 | 11.9 | 19.1 | 43.2 | 11 |
| 1.0 | 0.9 | 1.2 | 1.0 | 0.7 | 0.8 | 0.4 | - | 1.5 | 2.6 | 2.4 | 1.8 | 3.4 | 28.5 | 12 |
| 5.0 | 5.1 | 5.3 | 1.9 | 4.2 | 4.1 | 4.1 | 5.2 | 4.8 | 6.5 | 8.6 | 3.0 | 6.5 | 6.5 | 13 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 14 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 15 |
| 94.9 | 95.2 | 93.8 | 94.8 | 95.7 | 95.6 | 97.0 | 94.8 | 94.4 | 92.5 | 92.1 | 95.7 | 91.1 | 92.3 | 16 |
| 0.1 | (Z) | 0.1 | 0.3 | 0.1 | 0.1 | 0.4 | - | 0.1 | 0.3 | 0.1 | - | 0.8 | 0.6 | 17 |
| 5.9 | 5.3 | 7.8 | 5.8 | 5.3 | 5.5 | 0.7 | 13.7 | 10.4 | 6.8 | 4.7 | 9.3 | 7.5 | 6.8 | 18 |
| 19.0 | 17.7 | 23.3 | 18.6 | 12.1 | 11.3 | 15.5 | 15.9 | 24.3 | 24.7 | 22.3 | 30.4 | 23.8 | 19.7 | 19 |
| 17.1 | 16.5 | 18.8 | 18.1 | 15.7 | 15.7 | 11.7 | 25.2 | 19.2 | 19.5 | 18.9 | 20.0 | 19.8 | 19.1 | 20 |
| 15.1 | 15.0 | 14.7 | 19.4 | 18.0 | 17.9 | 18.3 | 18.6 | 14.9 | 11.9 | 10.9 | 11.5 | 13.3 | 17.1 | 21 |
| 13.9 | 14.3 | 12.7 | 13.9 | 20.0 | 20.2 | 22.3 | 11.0 | 12.0 | 10.9 | 11.8 | 7.7 | 11.9 | 11.6 | 22 |
| 9.3 | 10.0 | 6.7 | 11.2 | 12.4 | 13.3 | 10.4 | 2.9 | 7.5 | 9.0 | 11.5 | 8.2 | 7.0 | 8.5 | 23 |
| 6.3 | 7.2 | 4.1 | 4.2 | 5.2 | 4.7 | 10.9 | 1.4 | 2.6 | 4.1 | 4.9 | 5.8 | 2.3 | 4.1 | 24 |
| 5.6 | 6.6 | 3.7 | 1.7 | 4.2 | 4.2 | 6.0 | 0.9 | 2.4 | 3.6 | 4.7 | 1.8 | 3.6 | 3.5 | 25 |
| 2.4 | 2.6 | 2.0 | 1.8 | 2.6 | 2.7 | 0.8 | 5.1 | 1.1 | 1.6 | 2.3 | 0.9 | 1.4 | 1.2 | 26 |
| 16.7 | 17.8 | 14.4 | 16.3 | 19.4 | 19.6 | 20.9 | 13.3 | 13.4 | 14.0 | 15.0 | 11.9 | 13.2 | 15.0 | 27 |
| 5.1 | 4.8 | 6.2 | 5.2 | 4.3 | 4.4 | 3.0 | 5.2 | 5.6 | 7.5 | 7.9 | 4.3 | 8.9 | 7.7 | 28 |
| 107,112 | 75,733 | 25,804 | 5,575 | 25,277 | 21,027 | 2,954 | 1,296 | 31,373 | 40,882 | 15,889 | 9,317 | 15,676 | 145,243 | 29 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 30 |
| 37.1 | 27.3 | 61.4 | 57.3 | 38.2 | 28.8 | 81.3 | 93.1 | 37.5 | 40.2 | 39.9 | 31.5 | 45.6 | 23.7 | 31 |
| 1.7 | 2.0 | 0.3 | 5.0 | 3.2 | 3.5 | 2.0 | - | 0.2 | 5.6 | 9.5 | 4.6 | 2.3 | 1.4 | 32 |
| 1.6 | 0.9 | 2.6 | 5.1 | 6.8 | 1.8 | 32.9 | 27.7 | 0.4 | 1.8 | 3.2 | 0.5 | 1.2 | 0.8 | 33 |
| 11.6 | 5.7 | 27.2 | 19.7 | 7.3 | 4.5 | 14.5 | 35.6 | 5.0 | 5.8 | 6.0 | 1.9 | 8.0 | 8.2 | 34 |
| 8.0 | 10.1 | 3.4 | 1.6 | 0.5 | 0.6 | - | - | 27.6 | 14.1 | 3.3 | 16.9 | 23.3 | 5.6 | 35 |
| 0.1 | 0.1 | 0.1 | 0.5 | 0.6 | 0.6 | 0.4 | - | 0.1 | 2.7 | 2.8 | 1.0 | 3.7 | 1.4 | 36 |
| 1.4 | 1.2 | 0.5 | 7.6 | 11.4 | 12.2 | 3.9 | 16.0 | 0.1 | 1.6 | 1.6 | 1.9 | 1.4 | 1.1 | 37 |
| 0.5 | 0.7 | 0.2 | 0.4 | 0.6 | 0.7 | - | - | 3.3 | 2.8 | 0.6 | 3.2 | 4.7 | 1.4 | 38 |
| 0.1 | 0.2 | - | 0.2 | - | - | - | - | 1.4 | 4.0 | 5.0 | 0.3 | 5.4 | 1.1 | 39 |
| 1.0 | 1.0 | 1.1 | 0.9 | 1.1 | 1.0 | - | 4.9 | 0.8 | 1.8 | 2.3 | 0.4 | 2.2 | 2.6 | 40 |
| 0.1 | 0.1 | - | - | 0.2 | 0.2 | - | - | 0.2 | 1.0 | 1.2 | 1.1 | 0.7 | 0.2 | 41 |
| 8.7 | 5.4 | 18.2 | 9.8 | 2.6 | 1.9 | 8.3 | 1.7 | 0.1 | 0.8 | 0.9 | 0.6 | 0.7 | 1.6 | 42 |
| 2.2 | 2.6 | 1.0 | 2.0 | 2.1 | 0.9 | 8.8 | 7.3 | 0.1 | 1.2 | 1.0 | 0.2 | 1.9 | 1.1 | 43 |
| 4.3 | 1.8 | 10.7 | 9.8 | 3.5 | 2.1 | 13.4 | 4.7 | 0.5 | 0.9 | 1.4 | 0.2 | 0.8 | 2.9 | 44 |
| 6.0 | 4.1 | 12.2 | 4.2 | 7.5 | 4.8 | 17.8 | 27.4 | 2.1 | 2.2 | 2.0 | 4.2 | 1.2 | 0.7 | 45 |
| 0.5 | 0.5 | 0.8 | 0.4 | 0.2 | 0.3 | - | - | - | 0.1 | 0.1 | - | 0.1 | 0.2 | 46 |
| 2.1 | 1.9 | 2.2 | 4.3 | 1.8 | 1.6 | 0.8 | 6.5 | 4.0 | 5.2 | 8.8 | 2.2 | 3.3 | 2.4 | 47 |
| 0.6 | 0.4 | 0.7 | 2.1 | 0.3 | 0.4 | - | - | 2.3 | 1.0 | 1.7 | 0.8 | 0.4 | 1.3 | 48 |
| 57.0 | 66.6 | 32.9 | 37.8 | 56.6 | 65.4 | 16.7 | 5.0 | 51.3 | 52.3 | 52.9 | 63.7 | 45.0 | 68.2 | 49 |
| 2.9 | 3.4 | 1.7 | 2.5 | 1.3 | 1.4 | 0.8 | - | 7.2 | 3.6 | 3.1 | 2.5 | 4.7 | 3.5 | 50 |
| 3.0 | 2.7 | 3.9 | 2.4 | 3.9 | 4.4 | 1.3 | 2.0 | 4.0 | 3.9 | 4.1 | 2.2 | 4.7 | 4.6 | 51 |
| 117,043 | 83,788 | 27,502 | 5,754 | 26,997 | 22,370 | 3,223 | 1,404 | 34,186 | 45,582 | 17,726 | 10,309 | 17,546 | 157,559 | 52 |
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 53 |
| 8.7 | 10.9 | 3.3 | 3.5 | 1.0 | 1.1 | - | 0.9 | 28.1 | 7.6 | 2.8 | 13.1 | 9.1 | 6.1 | 54 |
| 8.0 | 6.5 | 12.6 | 8.0 | 4.2 | 3.4 | 9.9 | 4.1 | 23.9 | 15.5 | 11.4 | 23.8 | 14.6 | 5.7 | 55 |
| 7.1 | 5.5 | 12.1 | 7.0 | 3.9 | 3.3 | 8.1 | 4.1 | 14.2 | 12.6 | 10.6 | 21.4 | 9.4 | 3.8 | 56 |
| 0.9 | 1.0 | 0.4 | 1.0 | 0.3 | 0.1 | 1.8 | - | 9.7 | 2.9 | 0.8 | 2.5 | 5.2 | 1.9 | 57 |
| 13.1 | 16.1 | 3.2 | 17.6 | 15.6 | 11.6 | 27.6 | 50.7 | 0.5 | 4.6 | 5.7 | 4.5 | 3.5 | 7.5 | 58 |
| 2.8 | 0.6 | 8.5 | 7.0 | 2.0 | 1.3 | 7.7 | - | 0.3 | 0.3 | 0.7 | - | 0.1 | 1.3 | 59 |
| 8.6 | 3.5 | 22.6 | 15.5 | 4.5 | 2.6 | 11.0 | 19.3 | 2.5 | 4.4 | 2.9 | 2.2 | 7.2 | 7.2 | 60 |
| 0.5 | 0.5 | 0.3 | 1.4 | - | - | - | - | 2.7 | 3.3 | 0.5 | 5.6 | 4.9 | 1.3 | 61 |
| 3.9 | 5.2 | 0.1 | 3.4 | 0.6 | 0.5 | 0.8 | 1.8 | 0.1 | 3.5 | 6.9 | 1.1 | 1.1 | 3.4 | 62 |
| 9.0 | 7.1 | 14.1 | 11.9 | 40.2 | 48.0 | 2.7 | 2.6 | 0.7 | 2.6 | 5.5 | 0.7 | 0.8 | 6.8 | 63 |
| 1.1 | 1.3 | 0.4 | 2.7 | 9.1 | 10.8 | 1.1 | 0.8 | - | 0.5 | 0.5 | - | 0.8 | 0.5 | 64 |
| 0.7 | 0.7 | 0.4 | 0.9 | 1.0 | 1.1 | 1.1 | - | 6.9 | 10.4 | 6.0 | 7.2 | 16.0 | 5.2 | 65 |
| 0.2 | 0.2 | 0.4 | - | 0.5 | 0.6 | - | - | 0.5 | 1.3 | 1.7 | 0.5 | 1.4 | 2.1 | 66 |
| 28.6 | 32.5 | 18.7 | 19.2 | 10.7 | 8.5 | 25.8 | 11.3 | 20.9 | 31.9 | 35.5 | 29.3 | 29.7 | 39.0 | 67 |
| 14.7 | 14.9 | 15.4 | 9.0 | 10.5 | 10.4 | 12.2 | 8.7 | 12.9 | 14.4 | 19.8 | 11.4 | 10.6 | 14.0 | 68 |

# Appendix A. Weighting and Estimating Procedures and Standard Errors of Totals and Percentages

## WEIGHTING AND ESTIMATING PROCEDURES

As mentioned earlier, the estimates for this report were prepared by a ratio estimation procedure, using the weights derived for the 1972 survey. Therefore, no adjustment was made for nonresponse in the 1976 survey. The weighting procedure for the 1972 survey involved first, the preparation of preliminary estimates by weighting the results for each sample person by the reciprocal of the probability of selection. As a second step, these weights were adjusted by applying a factor for each age, sex, and race cell within each of the sample's occupational categories from the 1970 census. Within each of the cells, the factor was computed as the ratio of the 1970 census count to the preliminary estimate. The final weight was the factor multiplied by the original weight of each person. To the extent that the correlation between the data being tabulated and the estimated count of persons in the cells is positive, the ratio estimate procedure will improve the reliability of the estimate.

## RELIABILITY OF THE ESTIMATES

There are two types of possible errors associated with estimates based on data from a sample survey—sampling and nonsampling error. The following is a description of the sampling and nonsampling errors associated with the survey data.

**Sampling errors.** The particular sample used for this survey is one of a large number of possible samples of the same size that could have been selected using the same sample design. Even if the same schedules, instructions, and enumerators were used, estimates from each of the different samples would differ from each other. The deviation of a sample estimate from the average of all possible samples is defined as the sampling error. The standard error of a survey estimate attempts to provide a measure of this variation among the estimates from the possible samples, and thus, is a measure of the precision with which an estimate from the sample approximates the average result of all possible samples.

As calculated for this report, the standard error also partially measures the variation in the estimates due to response and enumerator errors (nonsampling errors), but it does not measure, as such, any systematic biases in the data. Therefore, the accuracy of the estimates depends on both the sampling and nonsampling errors, measured by the standard error, and biases and some additional nonsampling errors not measured by the standard error.

The sample estimate and its estimated standard error enable one to construct interval estimates that include the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these surveyed under identical conditions: and an estimate and its estimated standard error were calculated from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples;

2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples;

3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average result of all possible samples may or may not be contained in any particular computed interval. However, for a particular sample one can say with specified confidence that the average result of all possible samples is included within the constructed interval.

A number of approximations and generalizations have been used so that these standard errors would be applicable to a wide variety of characteristics and still be prepared at a moderate cost. Thus, the standard errors in the following tables provide an indication of the order of magnitude, rather than precise measurements of the standard errors.

There are two sets of standard error tables shown: The table A series should be used for estimating standard errors on absolute numbers (total number of persons having a certain characteristic); the table B series should be used to obtain the standard error on a percentage.

The standard errors for estimating numbers or percents not shown in either set of tables may be approximated by linear interpolation. For example, of the 17,873 mathematicians, 30.2 percent have the Master's degree as the highest degree held in 1976. The standard error of this percent as computed from table A.6 is 1.9 percentage points. Based on

these data, it may be concluded that the expected proportion of mathematicians with a Master's degree as the highest degree held in 1976 lies within the interval 26.4 percent to 34.0 percent with 95 percent confidence.

The figures in these tables are not directly applicable to standard errors of differences between two sample estimates. The standard error of the estimated difference between two estimates may be approximated by the square root of the sum of the squares of the standard error of each estimate. This approximation will yield the exact result when the two characteristics are uncorrelated. If the two characteristics are positively (negatively) correlated, the approximation will overestimate (underestimate) the standard error of the difference.

For example, of the 17,873 mathematicians in 1976, 43.4 percent have the Ph.D. as the highest degree held in 1976. The standard error of this percent as computed from table A.6 is 2.1 percentage points. The standard error of the difference between the above percentages (i.e., 43.3 - 30.2 = 13.2 percent) is then approximately

$$\sqrt{(1.9)^2 + (2.1)^2} = 2.8 \text{ percent}$$

Based on these data, it may be concluded with 95 percent confidence that the average estimate of the difference of the percentages derived from all possible samples lies within the interval 7.6 percent to 18.8 percent.

The figures in these tables are not directly applicable to standard errors of estimated medians. The sampling variability of an estimated median depends upon the size of the base as well as on the distribution from which the median is determined. An approximate method for measuring the reliability of a median is to determine an interval about the estimated median, such that there is a stated degree of confidence that the median based on all possible samples lies within the interval. The following procedure may be used to estimate confidence limits of a median based on sample data: (1) from the appropriate standard error table B, determine the standard error of a 50 percent characteristic using the appropriate base; (2) add to and subtract from 50 percent the standard error determined in step (1); and (3) using the distribution for which the median is to be determined, read off the 68-percent confidence interval corresponding to the two points established in step (2). A 95-percent confidence interval may be determined by finding the values corresponding to 50 percent plus or minus twice the standard error in step (1). The procedure is illustrated by the following example.

The data for 1976 indicate that the estimate of the median age for engineers is 45.8 years. The distribution is shown in the table below.

From standard error table 2A the standard error of a 50 percent characteristic with a base of 658,549 is 0.5 percentage points. From the table of cumulative age distribution the percentage points that correspond to 45 years is 47.6 percent and to 50 years is 63.2 percent. The lower confidence limit corresponding to 49.5 percent (50 percent minus 0.5 percent) is found by linear interpolation between 45 years and 50 years to be 45.6 years, i.e.,

Table for Distribution of Engineers by Age in 1976

| Age (years) | Percentage | Cumulative distribution |
|---|---|---|
| Under 30..... | 4.5 | 4.5 |
| 30 to 34..... | 12.6 | 17.1 |
| 35 to 39..... | 15.5 | 32.6 |
| 40 to 44..... | 15.0 | 47.6 |
| 45 to 49..... | 15.6 | 63.2 |
| 50 to 54..... | 15.4 | 78.6 |
| 55 to 59..... | 9.5 | 88.1 |
| 60 to 64..... | 6.1 | 94.2 |
| 65 to 69..... | 3.7 | 97.9 |
| 70 and over... | 2.1 | 100.0 |

$$45 + (50\text{-}45) \times \frac{49.5\text{-}47.6}{63.2\text{-}47.6} = 45.6$$

Similarly, the upper confidence limit corresponding to 50.5 percent (50 percent plus 0.5 percent) is found to be 45.9 years. Consequently, the 68 percent confidence interval, as shown by the data, is from 45.6 years to 45.9 years. Similarly, we could conclude that the 95 percent confidence interval is from 45.4 years (the distribution point corresponding to 49.0 percent) to 46.1 years (corresponding to 51.0 percent).

**Nonsampling errors.** In general, nonsampling errors can be attributed to many sources: Inability to obtain information about all cases, definitional difficulties, differences in the interpretation of questions, inability or unwillingness to provide correct information on the part of the respondents, mistakes in recording or coding the data, and other errors of collection, response, processing, coverage, and estimation for missing data. As can be seen from the above list, nonsampling errors are not unique to sample surveys, since they can, and do, occur in complete censuses as well.

The primary source of nonsampling error in estimates based on the 1976 survey is probably the high nonresponse rate. An adjustment in the estimation procedure for the 23 percent noninterview rate in the 1972 survey was made, but there still remains some unknown bias in the 1976 estimates due to differences in the characteristics of the weighted interviewed persons and noninterviewed persons. Further, since no adjustment was made for the additional 14.9 percent noninterview rate in 1976, estimates are on the average 14.9 percent lower than what they would have been had there been no additional nonresponse in 1976. For some characteristics, the estimates will be much more than 14.9 percent too low, because a relatively high proportion of noninterviews have this characteristic.

# Standard Errors of Totals and Percentages for Computer Specialists, Life Scientists, Physical Scientists, and Chemists

Table 1A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 970 | 190 |
| 2,910 | 340 |
| 5,820 | 480 |
| 9,700 | 620 |
| 14,550 | 750 |
| 20,370 | 870 |
| 27,160 | 990 |
| 34,920 | 1,100 |
| 43,650 | 1,200 |
| 53,350 | 1,290 |
| 64,020 | 1,300 |
| 75,660 | 1,440 |
| 88,270 | 1,480 |
| 101,850 | 1,510 |
| 117,043 | 1,520 |

Table 1B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 970 | 2.0 | 2.9 | 4.5 | 6.2 | 8.2 | 8.9 | 10.3 |
| 2,910 | 1.2 | 1.7 | 2.6 | 3.6 | 4.7 | 5.1 | 5.9 |
| 5,820 | .8 | 1.2 | 1.8 | 2.5 | 3.4 | 3.6 | 4.2 |
| 9,700 | .6 | .9 | 1.4 | 1.9 | 2.6 | 2.8 | 3.2 |
| 14,550 | .5 | .7 | 1.2 | 1.6 | 2.1 | 2.3 | 2.7 |
| 20,370 | .4 | .6 | 1.0 | 1.3 | 1.8 | 1.9 | 2.2 |
| 27,160 | .4 | .5 | .8 | 1.2 | 1.6 | 1.7 | 1.9 |
| 34,920 | .3 | .5 | .7 | 1.0 | 1.4 | 1.5 | 1.7 |
| 43,650 | .3 | .4 | .7 | .9 | 1.2 | 1.3 | 1.5 |
| 53,350 | .3 | .4 | .6 | .8 | 1.1 | 1.2 | 1.4 |
| 64,020 | .3 | .4 | .6 | .8 | 1.0 | 1.1 | 1.3 |
| 75,660 | .2 | .3 | .5 | .7 | .9 | 1.0 | 1.2 |
| 88,270 | .2 | .3 | .5 | .6 | .9 | .9 | 1.1 |
| 101,850 | .2 | .3 | .4 | .6 | .8 | .9 | 1.0 |
| 117,043 | .2 | .3 | .4 | .6 | .7 | .8 | .9 |

# Standard Errors of Totals and Percentages for Engineers, and Persons Not in a Field of Science or Engineering in 1976

Table 2A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 5,480 | 560 |
| 16,440 | 970 |
| 32,880 | 1,360 |
| 54,800 | 1,750 |
| 82,200 | 2,130 |
| 115,080 | 2,490 |
| 153,440 | 2,840 |
| 197,280 | 3,180 |
| 246,600 | 3,490 |
| 301,400 | 3,790 |
| 361,680 | 4,060 |
| 427,440 | 4,310 |
| 498,680 | 4,520 |
| 575,400 | 4,700 |
| 658,548 | 4,840 |

Table 2B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 5,480 | 1.0 | 1.4 | 2.2 | 3.1 | 4.1 | 4.5 | 5.1 |
| 16,440 | .6 | .8 | 1.3 | 1.8 | 2.4 | 2.6 | 3.0 |
| 32,880 | .4 | .6 | .9 | 1.3 | 1.7 | 1.8 | 2.1 |
| 54,800 | .3 | .5 | .7 | 1.0 | 1.3 | 1.4 | 1.6 |
| 82,200 | .3 | .4 | .6 | .8 | 1.1 | 1.1 | 1.3 |
| 115,080 | .2 | .3 | .5 | .7 | .9 | 1.0 | 1.1 |
| 153,440 | .2 | .3 | .4 | .6 | .8 | .8 | 1.0 |
| 197,280 | .2 | .2 | .4 | .5 | .7 | .7 | .9 |
| 246,600 | .2 | .2 | .3 | .5 | .6 | .7 | .8 |
| 301,400 | .14 | .2 | .3 | .4 | .6 | .6 | .7 |
| 361,680 | .13 | .2 | .3 | .4 | .5 | .5 | .6 |
| 427,440 | .12 | .2 | .3 | .3 | .5 | .5 | .6 |
| 498,680 | .11 | .2 | .2 | .3 | .4 | .5 | .5 |
| 575,400 | .10 | .10 | .2 | .3 | .4 | .4 | .5 |
| 658,548 | .09 | .09 | .2 | .3 | .4 | .4 | .5 |

# Standard Errors of Totals and Percentages for Mathematical Specialists

Table 3A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 200 | 70 |
| 600 | 130 |
| 1,200 | 190 |
| 2,000 | 240 |
| 3,000 | 300 |
| 4,200 | 350 |
| 5,600 | 390 |
| 7,200 | 440 |
| 9,000 | 480 |
| 11,000 | 510 |
| 13,200 | 540 |
| 15,600 | 570 |
| 18,200 | 590 |
| 21,000 | 600 |
| 24,831 | 600 |

Table 3B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 200 | 3.9 | 5.5 | 8.6 | 11.8 | 15.8 | 17.1 | 19.7 |
| 600 | 2.3 | 3.2 | 5.0 | 6.8 | 9.1 | 9.9 | 11.4 |
| 1,200 | 1.6 | 2.3 | 3.5 | 4.8 | 6.4 | 7.0 | 8.1 |
| 2,000 | 1.2 | 1.7 | 2.7 | 3.7 | 5.0 | 5.4 | 6.2 |
| 3,000 | 1.0 | 1.4 | 2.2 | 3.1 | 4.1 | 4.4 | 5.1 |
| 4,200 | .9 | 1.2 | 1.9 | 2.6 | 3.4 | 3.7 | 4.3 |
| 5,600 | .7 | 1.0 | 1.6 | 2.2 | 3.0 | 3.2 | 3.7 |
| 7,200 | .7 | .9 | 1.4 | 2.0 | 2.6 | 2.8 | 3.3 |
| 9,000 | .6 | .8 | 1.3 | 1.8 | 2.4 | 2.5 | 2.9 |
| 11,000 | .5 | .7 | 1.2 | 1.6 | 2.1 | 2.3 | 2.7 |
| 13,200 | .5 | .7 | 1.1 | 1.5 | 1.9 | 2.1 | 2.4 |
| 15,600 | .4 | .6 | 1.0 | 1.3 | 1.8 | 1.9 | 2.2 |
| 18,200 | .4 | .6 | .9 | 1.2 | 1.7 | 1.8 | 2.1 |
| 21,000 | .4 | .5 | .8 | 1.2 | 1.5 | 1.7 | 1.9 |
| 24,831 | .4 | .5 | .8 | 1.1 | 1.4 | 1.5 | 1.8 |

# Standard Errors of Totals and Percentages for Mathematicians, Agricultural Scientists, Environmental Scientists, Earth Scientists, Physicists and Astronomers, and Economists

Table 4A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 220 | 80 |
| 660 | 140 |
| 1,320 | 200 |
| 2,200 | 260 |
| 3,300 | 320 |
| 4,620 | 370 |
| 6,160 | 430 |
| 7,920 | 480 |
| 9,900 | 530 |
| 12,100 | 570 |
| 14,520 | 620 |
| 17,160 | 660 |
| 20,020 | 690 |
| 23,100 | 720 |
| 27,502 | 750 |

Table 4B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 220 | 3.9 | 5.4 | 8.5 | 11.7 | 15.5 | 16.8 | 19.4 |
| 660 | 2.2 | 3.1 | 4.9 | 6.7 | 9.0 | 9.7 | 11.2 |
| 1,320 | 1.6 | 2.2 | 3.5 | 4.8 | 6.3 | 6.9 | 7.9 |
| 2,200 | 1.2 | 1.7 | 2.7 | 3.7 | 4.9 | 5.3 | 6.1 |
| 3,300 | 1.0 | 1.4 | 2.2 | 3.0 | 4.0 | 4.3 | 5.0 |
| 4,620 | .8 | 1.2 | 1.8 | 2.5 | 3.4 | 3.7 | 4.2 |
| 6,160 | .7 | 1.0 | 1.6 | 2.2 | 2.9 | 3.2 | 3.7 |
| 7,920 | .6 | .9 | 1.4 | 1.9 | 2.6 | 2.8 | 3.2 |
| 9,900 | .6 | .8 | 1.3 | 1.7 | 2.3 | 2.5 | 2.9 |
| 12,100 | .5 | .7 | 1.1 | 1.6 | 2.1 | 2.3 | 2.6 |
| 14,520 | .5 | .7 | 1.0 | 1.4 | 1.9 | 2.1 | 2.4 |
| 17,160 | .4 | .6 | 1.0 | 1.3 | 1.8 | 1.9 | 2.2 |
| 20,020 | .4 | .6 | .9 | 1.2 | 1.6 | 1.8 | 2.0 |
| 23,100 | .4 | .5 | .8 | 1.1 | 1.5 | 1.6 | 1.9 |
| 27,502 | .3 | .5 | .8 | 1.0 | 1.4 | 1.5 | 1.7 |

# Standard Errors of Totals and Percentages for Statisticians

Table 5A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 50 | 30 |
| 150 | 50 |
| 300 | 80 |
| 500 | 100 |
| 750 | 130 |
| 1,050 | 150 |
| 1,400 | 180 |
| 1,800 | 200 |
| 2,250 | 220 |
| 2,750 | 250 |
| 3,300 | 270 |
| 3,900 | 290 |
| 4,550 | 320 |
| 5,250 | 340 |
| 6,958 | 390 |

Table 5B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 50 | 6.8 | 9.6 | 14.9 | 20.5 | 27.3 | 29.6 | 34.2 |
| 150 | 3.9 | 5.5 | 8.6 | 11.8 | 15.8 | 17.1 | 19.7 |
| 300 | 2.8 | 3.9 | 6.1 | 8.4 | 11.2 | 12.1 | 13.9 |
| 500 | 2.2 | 3.0 | 4.7 | 6.5 | 8.6 | 9.4 | 10.8 |
| 750 | 1.8 | 2.5 | 3.8 | 5.3 | 7.1 | 7.6 | 8.8 |
| 1,050 | 1.5 | 2.1 | 3.3 | 4.5 | 6.0 | 6.5 | 7.5 |
| 1,400 | 1.3 | 1.8 | 2.8 | 3.9 | 5.2 | 5.6 | 6.5 |
| 1,800 | 1.1 | 1.6 | 2.5 | 3.4 | 4.6 | 4.9 | 5.7 |
| 2,250 | 1.0 | 1.4 | 2.2 | 3.1 | 4.1 | 4.4 | 5.1 |
| 2,750 | .9 | 1.3 | 2.0 | 2.8 | 3.7 | 4.0 | 4.6 |
| 3,300 | .8 | 1.2 | 1.8 | 2.5 | 3.4 | 3.6 | 4.2 |
| 3,900 | .8 | 1.1 | 1.7 | 2.3 | 3.1 | 3.4 | 3.9 |
| 4,550 | .7 | 1.0 | 1.6 | 2.1 | 2.9 | 3.1 | 3.6 |
| 5,250 | .7 | .9 | 1.5 | 2.0 | 2.7 | 2.9 | 3.3 |
| 6,958 | .6 | .8 | 1.3 | 1.7 | 2.3 | 2.5 | 2.9 |

# Standard Errors of Totals and Percentages for Medical Scientists, and Sociologists and Anthropologists

Table 6A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 80 | 50 |
| 240 | 100 |
| 480 | 140 |
| 800 | 180 |
| 1,200 | 220 |
| 1,680 | 260 |
| 2,240 | 290 |
| 2,880 | 330 |
| 3,600 | 370 |
| 4,400 | 400 |
| 5,280 | 430 |
| 6,240 | 460 |
| 7,280 | 490 |
| 8,400 | 510 |
| 10,309 | 540 |

Table 6B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 80 | 7.3 | 10.3 | 16.0 | 22.0 | 29.4 | 31.8 | 36.7 |
| 240 | 4.2 | 5.9 | 9.2 | 12.7 | 17.0 | 18.4 | 21.2 |
| 480 | 3.0 | 4.2 | 6.5 | 9.0 | 12.0 | 13.0 | 15.0 |
| 800 | 2.3 | 3.3 | 5.1 | 7.0 | 9.3 | 10.1 | 11.6 |
| 1,200 | 1.9 | 2.7 | 4.1 | 5.7 | 7.6 | 8.2 | 9.5 |
| 1,680 | 1.6 | 2.2 | 3.5 | 4.8 | 6.4 | 6.9 | 8.0 |
| 2,240 | 1.4 | 1.9 | 3.0 | 4.2 | 5.6 | 6.0 | 6.9 |
| 2,880 | 1.2 | 1.7 | 2.7 | 3.7 | 4.9 | 5.3 | 6.1 |
| 3,600 | 1.1 | 1.5 | 2.4 | 3.3 | 4.4 | 4.7 | 5.5 |
| 4,400 | 1.0 | 1.4 | 2.2 | 3.0 | 4.0 | 4.3 | 5.0 |
| 5,280 | .9 | 1.3 | 2.0 | 2.7 | 3.6 | 3.9 | 4.5 |
| 6,240 | .8 | 1.2 | 1.8 | 2.5 | 3.3 | 3.6 | 4.2 |
| 7,280 | .8 | 1.1 | 1.7 | 2.3 | 3.1 | 3.3 | 3.9 |
| 8,400 | .7 | 1.0 | 1.6 | 2.2 | 2.9 | 3.1 | 3.6 |
| 10,309 | .6 | .9 | 1.4 | 1.9 | 2.6 | 2.8 | 3.2 |

# Standard Errors of Totals and Percentages for Atmospheric Scientists

**Table 7A. Standard Errors of Totals**

| Size of estimate | Estimated standard error |
|---|---|
| 20 | 20 |
| 60 | 40 |
| 120 | 50 |
| 200 | 70 |
| 300 | 80 |
| 420 | 100 |
| 560 | 120 |
| 720 | 130 |
| 900 | 150 |
| 1,100 | 170 |
| 1,320 | 180 |
| 1,560 | 200 |
| 1,820 | 220 |
| 2,100 | 240 |
| 3,223 | 300 |

**Table 7B. Standard Errors of Percentages**

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 20 | 11.4 | 16.1 | 25.0 | 34.5 | 46.0 | 49.8 | 57.5 |
| 60 | 6.6 | 9.3 | 14.5 | 19.9 | 26.5 | 28.7 | 33.2 |
| 120 | 4.7 | 6.6 | 10.2 | 14.1 | 18.8 | 20.3 | 23.5 |
| 200 | 3.6 | 5.1 | 7.9 | 10.9 | 14.5 | 15.7 | 18.2 |
| 300 | 3.0 | 4.2 | 6.5 | 8.9 | 11.9 | 12.8 | 14.8 |
| 420 | 2.5 | 3.5 | 5.5 | 7.5 | 10.0 | 10.9 | 12.5 |
| 560 | 2.2 | 3.0 | 4.7 | 6.5 | 8.7 | 9.4 | 10.9 |
| 720 | 1.9 | 2.7 | 4.2 | 5.7 | 7.7 | 8.3 | 9.6 |
| 900 | 1.7 | 2.4 | 3.7 | 5.1 | 6.9 | 7.4 | 8.6 |
| 1,100 | 1.5 | 2.2 | 3.4 | 4.6 | 6.2 | 6.7 | 7.7 |
| 1,320 | 1.4 | 2.0 | 3.1 | 4.2 | 5.7 | 6.1 | 7.1 |
| 1,560 | 1.3 | 1.8 | 2.8 | 3.9 | 5.2 | 5.6 | 6.5 |
| 1,820 | 1.2 | 1.7 | 2.6 | 3.6 | 4.8 | 5.2 | 6.0 |
| 2,100 | 1.1 | 1.6 | 2.4 | 3.4 | 4.5 | 4.9 | 5.6 |
| 3,223 | .9 | 1.3 | 2.0 | 2.7 | 3.6 | 3.9 | 4.5 |

# Standard Errors of Totals and Percentages for Oceanographers

**Table 8A. Standard Errors of Totals**

| Size of estimate | Estimated standard error |
|---|---|
| 10 | 10 |
| 30 | 20 |
| 60 | 30 |
| 100 | 40 |
| 150 | 50 |
| 210 | 60 |
| 280 | 70 |
| 360 | 90 |
| 450 | 100 |
| 550 | 120 |
| 660 | 130 |
| 780 | 150 |
| 910 | 170 |
| 1,050 | 190 |
| 1,404 | 240 |

**Table 8B. Standard Errors of Percentages**

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 10 | 12.9 | 18.2 | 28.3 | 39.0 | 52.0 | 56.3 | 65.0 |
| 30 | 7.5 | 10.5 | 16.4 | 22.5 | 30.0 | 32.5 | 37.5 |
| 60 | 5.3 | 7.4 | 11.6 | 15.9 | 21.2 | 23.0 | 26.5 |
| 100 | 4.1 | 5.8 | 9.0 | 12.3 | 16.5 | 17.8 | 20.6 |
| 150 | 3.3 | 4.7 | 7.3 | 10.1 | 13.4 | 14.5 | 16.8 |
| 210 | 2.8 | 4.0 | 6.2 | 8.5 | 11.4 | 12.3 | 14.2 |
| 280 | 2.4 | 3.4 | 5.4 | 7.4 | 9.8 | 10.6 | 12.3 |
| 360 | 2.2 | 3.0 | 4.7 | 6.5 | 8.7 | 9.4 | 10.8 |
| 450 | 1.9 | 2.7 | 4.2 | 5.8 | 7.8 | 8.4 | 9.7 |
| 550 | 1.7 | 2.5 | 3.8 | 5.3 | 7.0 | 7.6 | 8.8 |
| 660 | 1.6 | 2.2 | 3.5 | 4.8 | 6.4 | 6.9 | 8.0 |
| 780 | 1.5 | 2.1 | 3.2 | 4.4 | 5.9 | 6.4 | 7.4 |
| 910 | 1.4 | 1.9 | 3.0 | 4.1 | 5.5 | 5.9 | 6.8 |
| 1,050 | 1.3 | 1.8 | 2.8 | 3.8 | 5.1 | 5.5 | 6.3 |
| 1,404 | 1.1 | 1.5 | 2.4 | 3.3 | 4.4 | 4.8 | 5.5 |

# Standard Errors of Totals and Percentages for Psychologists and Social Scientists

Table 9A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 370 | 130 |
| 1,110 | 230 |
| 2,220 | 320 |
| 3,700 | 410 |
| 5,550 | 500 |
| 7,770 | 580 |
| 10,360 | 660 |
| 13,320 | 740 |
| 16,650 | 810 |
| 20,350 | 870 |
| 24,420 | 920 |
| 28,860 | 970 |
| 33,670 | 1,010 |
| 38,850 | 1,030 |
| 45,582 | 1,050 |

Table 9B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 370 | 3.6 | 5.0 | 7.8 | 10.8 | 14.3 | 15.5 | 17.9 |
| 1,110 | 2.1 | 2.9 | 4.5 | 6.2 | 8.3 | 9.0 | 10.4 |
| 2,220 | 1.5 | 2.0 | 3.2 | 4.4 | 5.9 | 6.3 | 7.3 |
| 3,700 | 1.1 | 1.6 | 2.5 | 3.4 | 4.5 | 4.9 | 5.7 |
| 5,550 | .9 | 1.3 | 2.0 | 2.8 | 3.7 | 4.0 | 4.6 |
| 7,770 | .8 | 1.1 | 1.7 | 2.3 | 3.1 | 3.4 | 3.9 |
| 10,360 | .7 | .9 | 1.5 | 2.0 | 2.7 | 2.9 | 3.4 |
| 13,320 | .6 | .8 | 1.3 | 1.8 | 2.4 | 2.6 | 3.0 |
| 16,650 | .5 | .7 | 1.2 | 1.6 | 2.1 | 2.3 | 2.7 |
| 20,350 | .5 | .7 | 1.1 | 1.5 | 1.9 | 2.1 | 2.4 |
| 24,420 | .4 | .6 | 1.0 | 1.3 | 1.8 | 1.9 | 2.2 |
| 28,860 | .4 | .6 | .9 | 1.2 | 1.6 | 1.8 | 2.0 |
| 33,670 | .4 | .5 | .8 | 1.1 | 1.5 | 1.6 | 1.9 |
| 38,850 | .3 | .5 | .8 | 1.0 | 1.4 | 1.5 | 1.7 |
| 45,582 | .3 | .5 | .7 | 1.0 | 1.3 | 1.4 | 1.6 |

# Standard Errors of Totals and Percentages for Biologists and Other Physical Scientists

Table 10A. Standard Errors of Totals

| Size of estimate | Estimated standard error |
|---|---|
| 280 | 90 |
| 840 | 170 |
| 1,680 | 240 |
| 2,800 | 310 |
| 4,200 | 380 |
| 5,880 | 450 |
| 7,840 | 520 |
| 10,080 | 590 |
| 12,600 | 660 |
| 15,400 | 730 |
| 18,480 | 800 |
| 21,840 | 870 |
| 25,480 | 940 |
| 29,400 | 1,010 |
| 33,975 | 1,090 |

Table 10B. Standard Errors of Percentages

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 280 | 3.5 | 4.9 | 7.7 | 10.6 | 14.1 | 15.3 | 17.7 |
| 840 | 2.0 | 2.9 | 4.4 | 6.1 | 8.2 | 8.8 | 10.2 |
| 1,680 | 1.4 | 2.0 | 3.1 | 4.3 | 5.8 | 6.2 | 7.2 |
| 2,800 | 1.1 | 1.6 | 2.4 | 3.4 | 4.5 | 4.8 | 5.6 |
| 4,200 | .9 | 1.3 | 2.0 | 2.7 | 3.6 | 3.9 | 4.6 |
| 5,880 | .8 | 1.1 | 1.7 | 2.3 | 3.1 | 3.3 | 3.9 |
| 7,840 | .7 | .9 | 1.5 | 2.0 | 2.7 | 2.9 | 3.3 |
| 10,080 | .6 | .8 | 1.3 | 1.8 | 2.4 | 2.5 | 2.9 |
| 12,600 | .5 | .7 | 1.1 | 1.6 | 2.1 | 2.3 | 2.6 |
| 15,400 | .5 | .7 | 1.0 | 1.4 | 1.9 | 2.1 | 2.4 |
| 18,480 | .4 | .6 | .9 | 1.3 | 1.7 | 1.9 | 2.2 |
| 21,840 | .4 | .6 | .9 | 1.2 | 1.6 | 1.7 | 2.0 |
| 25,480 | .4 | .5 | .8 | 1.1 | 1.5 | 1.6 | 1.9 |
| 29,400 | .3 | .5 | .8 | 1.0 | 1.4 | 1.5 | 1.7 |
| 33,975 | .3 | .4 | .7 | 1.0 | 1.3 | 1.4 | 1.6 |

# Standard Errors of Totals and Percentages for Other Social Scientists

**Table 11A. Standard Errors of Totals**

| Size of estimate | Estimated standard error |
|---|---|
| 140 | 90 |
| 420 | 160 |
| 840 | 220 |
| 1,400 | 290 |
| 2,100 | 350 |
| 2,940 | 400 |
| 3,920 | 460 |
| 5,040 | 510 |
| 6,300 | 560 |
| 7,700 | 600 |
| 9,240 | 630 |
| 10,920 | 660 |
| 12,740 | 680 |
| 14,700 | 690 |
| 17,546 | 680 |

**Table 11B. Standard Errors of Percentages**

| Base of percent | Estimated percent | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 or 99 | 2 or 98 | 5 or 95 | 10 or 90 | 20 or 80 | 25 or 75 | 50 |
| 140 | 6.6 | 9.3 | 14.4 | 19.9 | 26.5 | 28.7 | 33.1 |
| 420 | 3.8 | 5.4 | 8.3 | 11.5 | 15.3 | 16.6 | 19.1 |
| 840 | 2.7 | 3.8 | 5.9 | 8.1 | 10.8 | 11.7 | 13.5 |
| 1,400 | 2.1 | 2.9 | 4.6 | 6.3 | 8.4 | 9.1 | 10.5 |
| 2,100 | 1.7 | 2.4 | 3.7 | 5.1 | 6.8 | 7.4 | 8.6 |
| 2,940 | 1.4 | 2.0 | 3.2 | 4.3 | 5.8 | 6.3 | 7.2 |
| 3,920 | 1.2 | 1.8 | 2.7 | 3.8 | 5.0 | 5.4 | 6.3 |
| 5,040 | 1.1 | 1.5 | 2.4 | 3.3 | 4.4 | 4.8 | 5.5 |
| 6,300 | 1.0 | 1.4 | 2.2 | 3.0 | 3.9 | 4.3 | 4.9 |
| 7,700 | .9 | 1.3 | 1.9 | 2.7 | 3.6 | 3.9 | 4.5 |
| 9,240 | .8 | 1.1 | 1.8 | 2.4 | 3.3 | 3.5 | 4.1 |
| 10,920 | .7 | 1.0 | 1.6 | 2.2 | 3.0 | 3.2 | 3.7 |
| 12,740 | .7 | 1.0 | 1.5 | 2.1 | 2.8 | 3.0 | 3.5 |
| 14,700 | .6 | .9 | 1.4 | 1.9 | 2.6 | 2.8 | 3.2 |
| 17,546 | .6 | .8 | 1.3 | 1.8 | 2.4 | 2.6 | 3.0 |

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*Please read* instructions carefully before answering questions.

Answer as accurately as you can by printing your reply clearly or by entering an "X" in the box next to the appropriate reply.

When the instructions for a question direct you to enter a code and description from a list, please refer to the reference list attached to this questionnaire.

**A. Is the information shown in the mailing label above correct?**

☐ YES

☐ NO – *Please enter the correct information*

Name

Number and street

City or town 010 | State (if USA) 011 | ZIP code

Foreign country

**B. Is this mailing address the same address as your place of residence?**

☐ SAME

☐ DIFFERENT – *Please enter your city and State or foreign country of residence.*

City or town | State (if USA) | ZIP code

Foreign country

Dear Friend:

Thank you for your continued cooperation in the National Sample of Scientists and Engineers, a series of biennial surveys sponsored by the National Science Foundation and conducted by the Bureau of the Census. From this series, a comprehensive picture of the development and utilization of America's scientists and engineers is being obtained. And, since the surveys include a sample of persons from various other fields, in addition to science and engineering, a valuable measure of the employment and skills among the highly educated population in general has been gained. Statistical data from these surveys are used for planning and analysis by Federal and State manpower agencies, private businesses, nonprofit research organizations, industrial and trade associations, and universities. Your cooperation, of course, has been an essential element in the success of this program.

To extend the value of past surveys, the National Science Foundation has asked the Bureau to survey this sample of persons once again to collect current employment information and related data. This is the most reliable and least costly way to learn, for example, how the employment of highly trained persons is affected by fluctuations in the economy. For the survey to be successful and yield truly representative information, it is important that each person fill out and return the questionnaire.

Please complete the questions which follow on pages 2 through 4 and return your questionnaire in the enclosed preaddressed envelope. For some questions you are instructed to enter a code and description from Reference List A, B, or C. These lists are attached to the questionnaire.

This information is being collected under the authority of the National Science Foundation Act of 1950, as amended. The information you provide is confidential and may be seen only by sworn employees of the Bureau of the Census. The information cannot be used for anything but statistical purposes and cannot be given to any other Government agency, private concern, or individual. The data will be released only in the form of statistical summaries from which it will be impossible to identify information about any particular person. Your response is entirely voluntary and your failure to provide some or all of the requested information will in no way adversely affect you.

Thank you for your cooperation,

Sincerely,

Vincent P. Barabba

VINCENT P. BARABBA
Director
Bureau of the Census

Enclosure

## PART I – EDUCATION AND TRAINING

**1. EDUCATION FROM 1972 TO THE PRESENT**

a. Since January 1972 have you attended any college, university, or other post high school institution?

012 1 ☐ Yes – *Continue with 1b* 2 ☐ No – *Skip to question 2*

b. List below each institution from which you have obtained (since January 1972) or are currently obtaining formal training beyond the high school level, and give the other information requested. Begin with the most recent and work back through January 1972. Use a separate row for each degree granted or worked for. Designate degrees by abbreviation (e.g.) A.A., B.A., M.A., Ph.D., LL.B., M.D., etc.).

| | College, university, or other post high school institution (*Enter Name and State or foreign country*) | Type of degree worked for, if any (*Enter Ph.D., M.A., B.A., A.A., etc. or mark "None" box*) | Major field of study (*Enter code and description from Reference List A*) | Year degree was awarded or will be awarded. (*Enter year or mark "None" box*) |
|---|---|---|---|---|
| MOST RECENT | 013 Name ____ State or foreign country ____ | 014 ____ OR x ☐ None | 015 ☐☐☐ ← Code Description ____ | 016 19 ____ OR x ☐ None |
| 2ND TO LAST | 017 Name ____ State or foreign country ____ | 018 ____ OR x ☐ None | 019 ☐☐☐ ← Code Description ____ | 020 19 ____ OR x ☐ None |
| 3RD TO LAST | 021 Name ____ State or foreign country ____ | 022 ____ OR x ☐ None | 023 ☐☐☐ ← Code Description ____ | 024 19 ____ OR x ☐ None |

**2. OTHER TRAINING RECEIVED IN 1974 OR 1975**

Aside from formal education, which of the following types of training did you receive in 1974 or 1975? *Mark the appropriate year for each type of training you have received.*

| | 025 1974 | 026 1975 |
|---|---|---|
| 1. On-the-job training | 1 ☐ | 1 ☐ |
| 2. Military training applicable to civilian occupations | 2 ☐ | 2 ☐ |
| 3. Extension or correspondence courses | 3 ☐ | 3 ☐ |
| 4. Courses at employer's training facility | 4 ☐ | 4 ☐ |
| 5. Courses at adult education center | 5 ☐ | 5 ☐ |
| 6. Other training | 6 ☐ | 6 ☐ |
| 7. None | 7 ☐ | 7 ☐ |

## PART II – EMPLOYMENT STATUS

**PLEASE NOTE** that in items 3a–5 information is requested for both the current year, as of the week of February 8–14, 1976, and last year, as of the week of February 9–15, 1975. Please answer applicable questions in column (A), then in column (B).

| | Week of February 8–14, 1976 (A) | Week of February 9–15, 1975 (B) |
|---|---|---|
| **3a. What was your employment status as of the week indicated?** | 027 1 ☐ Employed full time – *Skip to 4a*<br>2 ☐ Employed part time – *Answer 3b*<br>3 ☐ On post doctoral appointment (fellowship, traineeship, research associate, etc.) – *Skip to 4a*<br>4 ☐ Unemployed and seeking work – *Go to column (B)*<br>5 ☐ Not employed and not seeking work – *Skip to 5* | 028 1 ☐ Employed full time – *Skip to 4a*<br>2 ☐ Employed part time – *Answer 3b*<br>3 ☐ On post doctoral appointment (fellowship, traineeship, research associate, etc.) – *Skip to 4a*<br>4 ☐ Unemployed and seeking work – *Go to Part III*<br>5 ☐ Not employed and not seeking work – *Skip to 5* |
| **b. If you worked part time, were you seeking full-time work?** | 029 1 ☐ Yes 2 ☐ No } *Continue with 4a* | 030 1 ☐ Yes 2 ☐ No } *Continue with 4a* |
| **4a. Were you working in a position related to science or engineering?** | 031 1 ☐ Yes – *Go to top of column (B)*<br>2 ☐ No – *Answer 4b* | 032 1 ☐ Yes – *Go to Part III*<br>2 ☐ No – *Answer 4b* |
| **b. What was the most important reason for taking this position?** | 033 *MARK ONLY ONE BOX*<br>1 ☐ Preferred nonscience or nonengineering position<br>2 ☐ Promoted out of science or engineering position<br>3 ☐ Pay was better in nonscience or nonengineering position<br>4 ☐ Locational preference<br>5 ☐ Science or engineering position not available<br>6 ☐ Other – *Specify* ____<br>*(Go to top of column B)* | 034 *MARK ONLY ONE BOX*<br>1 ☐ Preferred nonscience or nonengineering position<br>2 ☐ Promoted out of science or engineering position<br>3 ☐ Pay was better in nonscience or nonengineering position<br>4 ☐ Locational preference<br>5 ☐ Science or engineering position not available<br>6 ☐ Other – *Specify* ____<br>*(Go to Part III)* |
| **5. If you were not employed and not seeking work, were you principally . . . . . .** | 035 *MARK ONLY ONE BOX*<br>1 ☐ Retired<br>2 ☐ Other – *Specify* ____<br>*(Go to top of column B)* | 036 *MARK ONLY ONE BOX*<br>1 ☐ Retired<br>2 ☐ Other – *Specify* ____<br>*(Go to Part III)* |

## PART III – JOB ACTIVITIES

**INSTRUCTIONS FOR COMPLETING QUESTIONS 6–16b**

a. Complete column (A) for questions 6–16b for the job held during the week of February 8–14, 1976 or for your most recent prior job held.

b. Column (B) should be completed only if the job you had during the week of February 9–15, 1975 differed from the job described in column (A). If the job was the same, mark the "YES" box at the top of column (B). **NOTE:** Consider a change of jobs to have occurred if (1) you changed employers; or (2) you remained with the same employer but there were significant changes in duties, levels of responsibility, or occupation; or (3) you worked at a different institution while on sabbatical leave from a college or university.

c. If you held more than one job during the weeks mentioned above, please report only the job at which you worked the greatest number of hours.

| | Job held during week of February 8–14, 1976 or most recent prior job (A) | Job held during week of February 9–15, 1975<br>Was this the same job as entered in column (A)?<br>037 1 ☐ Yes – *Do not complete column (B)*<br>2 ☐ No – *Complete column (B)*<br>(B) |
|---|---|---|
| **6. Where did you work?** *Write in city and State or foreign country of company, business, agency, or other employer.* | 038 ☐☐☐<br>City ____<br>040 ☐☐☐<br>State or foreign country ____ | 039 ☐☐☐<br>City ____<br>041 ☐☐☐<br>State or foreign country ____ |

## PART III – JOB ACTIVITIES – Continued

| | Job held during week of February 8–14, 1976 or most recent prior job (A) | Job held during week of February 9–15, 1975 (B) |
|---|---|---|
| **7. What kind of business was this?** *Enter code and description from Reference List B.* | 042 ☐☐☐ ← CODE<br>Description _____ | 043 ☐☐☐ ← CODE<br>Description _____ |
| **8. What was your occupation?** *Enter code and description from Reference List C.* | 044 ☐☐☐ ← CODE<br>Description _____ | 045 ☐☐☐ ← CODE<br>Description _____ |
| **9. What work activities were related to this position?** *Mark all activities in which you spent time.* | 046<br>1 ☐ Management or administration of research and development<br>2 ☐ Management or administration of other than research and development<br>3 ☐ Teaching and training – preparing and teaching courses, guiding and counseling students or trainees<br>4 ☐ Basic research<br>5 ☐ Applied research<br>6 ☐ Development – product, process, and technical development | 047<br>1 ☐ Management or administration of research and development<br>2 ☐ Management or administration of other than research and development<br>3 ☐ Teaching and training – prepaling and teaching courses, guiding and counseling students or trainees<br>4 ☐ Basic research<br>5 ☐ Applied research<br>6 ☐ Development – product, process, and technical development |
| | 048<br>7 ☐ Report and technical writing, editing, information retrieval<br>8 ☐ Clinical diagnosis<br>9 ☐ Design – of equipment, processes, models<br>10 ☐ Quality control, testing, evaluation, or inspection | 049<br>7 ☐ Report and technical writing, editing, information retrieval<br>8 ☐ Clinical diagnosis<br>9 ☐ Design – of equipment, processes, models<br>10 ☐ Quality control, testing, evaluation, or inspection |
| | 050<br>11 ☐ Operations – production, maintenance, construction, installation<br>12 ☐ Distribution – sales, traffic, purchasing, customer and public relations<br>13 ☐ Statistical work – survey work, forecasting, statistical analysis | 051<br>11 ☐ Operations – production, maintenance, construction, installation<br>12 ☐ Distribution – sales, traffic, purchasing, customer and public relations<br>13 ☐ Statistical work – survey work, forecasting, statistical analysis |
| | 052<br>14 ☐ Consulting<br>15 ☐ Computer applications<br>16 ☐ Other activities – *Specify* _____ | 053<br>14 ☐ Consulting<br>15 ☐ Computer applications<br>16 ☐ Other activities – *Specify* _____ |
| **10. Among all the activities marked above which was your primary and which was your major secondary activity?** *Fill in the appropriate code numbers (1 to 16) from question 9.* | CODE<br>054 _____ Primary<br>056 _____ Secondary | CODE<br>055 _____ Primary<br>057 _____ Secondary |
| **11. What percent of working time did you devote to each of the following activities?** | 058 _____ % Management or administration of research and development<br>060 _____ % Management or administration of other than research and development | 059 _____ % Management or administration of research and development<br>061 _____ % Management or administration of other than research and development |
| ***PLEASE NOTE*** | | |
| **Basic research** is study directed toward gaining scientific knowledge primarily for its own sake. | 062 _____ % Basic research | 063 _____ % Basic research |
| **Applied research** is study directed toward gaining scientific knowledge in an effort to meet a recognized need. | 064 _____ % Applied research | 065 _____ % Applied research |
| **Development** is direction of the knowledge gained from research toward production of useful materials, devices, systems, and methods. | 066 _____ % Development | 067 _____ % Development |
| | 068 _____ % Design | 069 _____ % Design |
| | 070 _____ % Teaching | 071 _____ % Teaching |
| | 072 _____ % Consulting | 073 _____ % Consulting |
| ***Entries in each column should sum to 100%.*** | 074 _____ % Other – *Specify* _____<br>100% TOTAL | 075 _____ % Other – *Specify* _____<br>100% TOTAL |
| **12. Which category best describes the type of organization of your principal employment or post doctoral appointment?** | 076 *MARK ONLY ONE BOX*<br>01 ☐ Business or industry<br>02 ☐ Junior college, 2-year college, technical institute<br>03 ☐ Medical school<br>04 ☐ 4-year college or university, other than medical school<br>05 ☐ Elementary or secondary school system<br>06 ☐ Hospital or clinic<br>07 ☐ Non-profit organization, other than hospital, clinic, or educational institution<br>08 ☐ U.S. military service, active duty, or Commissioned Corps, e.g., USPHS, NOAA<br>09 ☐ U.S. Government, civilian employee<br>10 ☐ State government<br>11 ☐ Local or other government – *Specify* _____<br>12 ☐ International agency<br>13 ☐ Self-employed<br>14 ☐ Other – *Specify* _____ | 077 *MARK ONLY ONE BOX*<br>01 ☐ Business or industry<br>02 ☐ Junior college, 2-year college, technical institute<br>03 ☐ Medical school<br>04 ☐ 4-year college or university, other than medical school<br>05 ☐ Elementary or secondary school system<br>06 ☐ Hospital or clinic<br>07 ☐ Non-profit organization, other than hospital, clinic, or educational institution<br>08 ☐ U.S. military service, active duty, or Commissioned Corps, e.g., USPHS, NOAA<br>09 ☐ U.S. Government, civilian employee<br>10 ☐ State government<br>11 ☐ Local or other government – *Specify* _____<br>12 ☐ International agency<br>13 ☐ Self-employed<br>14 ☐ Other – *Specify* _____ |

## PART III – JOB ACTIVITIES – Continued

| | Job held during week of February 8–14, 1976 or most recent prior job (A) | Job held during week of February 9–15, 1975 (B) |
|---|---|---|
| 13. Between what dates did you hold this position? *Enter month and year* | 075 From 079 To OR Present ☐ | 080 From 081 To |
| 14. What was the basic salary associated with this position? If you were on a post doctoral appointment, include stipend plus allowances. (Basic salary refers to salary before deductions for income tax, social security, retirement, etc. but does not include bonuses, overtime, summer teaching, or other payment for secondary jobs.) | 082 $ _____ .00<br>084 1 ☐ Per year 2 ☐ Per month 3 ☐ Per week<br>If academically employed, mark whether salary is for –<br>086 1 ☐ 9–10 months 2 ☐ 11–12 months | 083 $ _____ .00<br>085 1 ☐ Per year 2 ☐ Per month 3 ☐ Per week<br>If academically employed, mark whether salary is for –<br>087 1 ☐ 9–10 months 2 ☐ 11–12 months |
| 15. During the previous year (1975 for Column A, 1974 for Column B), what was the basic salary associated with this position? | 088 1 ☐ Did not hold this job in 1975 – *Skip to 16a*<br>090 $ _____ .00 in 1975<br>092 1 ☐ Per year 2 ☐ Per month 3 ☐ Per week<br>If academically employed, mark whether salary is for –<br>094 1 ☐ 9–10 months 2 ☐ 11–12 months | 089 1 ☐ Did not hold this job in 1974 – *Skip to 16a*<br>091 $ _____ .00 in 1974<br>093 1 ☐ Per year 2 ☐ Per month 3 ☐ Per week<br>If academically employed, mark whether salary is for –<br>095 1 ☐ 9–10 months 2 ☐ 11–12 months |
| 16a. Was ANY of your work supported or sponsored by U.S. Government funds? | 096 1 ☐ Yes – *Continue with 16b*<br>2 ☐ No<br>3 ☐ Don't know } *Skip to 17a* | 097 1 ☐ Yes – *Continue with 16b*<br>2 ☐ No<br>3 ☐ Don't know } *Skip to 17a* |
| b. Which of the following agencies or departments were supporting the work? *Mark as many as apply* | 098 1 ☐ Department of Housing and Urban Development<br>2 ☐ Department of the Interior<br>3 ☐ Department of Labor<br>4 ☐ Department of Defense<br>5 ☐ Department of Commerce<br>6 ☐ Department of Agriculture | 099 1 ☐ Department of Housing and Urban Development<br>2 ☐ Department of the Interior<br>3 ☐ Department of Labor<br>4 ☐ Department of Defense<br>5 ☐ Department of Commerce<br>6 ☐ Department of Agriculture |
| | 100 7 ☐ Department of Transportation<br>8 ☐ Department of Justice<br>Department of Health, Education, and Welfare<br>9 ☐ NIH (National Institutes of Health)<br>10 ☐ Alcohol and Drug Abuse Mental Health Administration | 101 7 ☐ Department of Transportation<br>8 ☐ Department of Justice<br>Department of Health, Education and Welfare<br>9 ☐ NIH (National Institutes of Health)<br>10 ☐ Alcohol and Drug Abuse Mental Health Administration |
| | 102 11 ☐ Office of Education<br>12 ☐ Other H.E.W. – *Specify* _____<br>13 ☐ NASA (National Aeronautic and Space Administration) | 103 11 ☐ Office of Education<br>12 ☐ Other H.E.W. – *Specify* _____<br>13 ☐ NASA (National Aeronautic and Space Administration) |
| | 104 14 ☐ NSF (National Science Foundation)<br>15 ☐ EPA (Environmental Protection Agency)<br>16 ☐ ERDA (Energy Research and Development Administration) | 105 14 ☐ NSF (National Science Foundation)<br>15 ☐ EPA (Environmental Protection Agency)<br>16 ☐ ERDA (Energy Research and Development Administration) |
| | 106 17 ☐ Nuclear Regulatory Commission<br>18 ☐ AID (Agency for International Development)<br>19 ☐ Other agency or department – *Specify* _____ | 107 17 ☐ Nuclear Regulatory Commission<br>18 ☐ AID (Agency for International Development)<br>19 ☐ Other agency or department – *Specify* _____ |
| | 108 20 ☐ Don't know source agency | 109 20 ☐ Don't know source agency |

## PART IV – OTHER INFORMATION

| | |
|---|---|
| 17a. At anytime during calendar year 1975 were you without a job AND actively seeking employment? | 110 1 ☐ Yes – *Continue with 17b*<br>2 ☐ No – *Skip to question 18* |
| b. For how many weeks were you seeking employment? | 111 1 ☐ 1 to 4 weeks 2 ☐ 5 to 10 weeks 3 ☐ 11 to 14 weeks 4 ☐ 15 to 26 weeks 5 ☐ 27 weeks or more |
| 18. How many years of professional experience, including teaching, have you had? *Enter number of years* | 112 _____ Years |
| 19. Based on your total education and experience, what do you regard yourself as professionally? *Enter code and description from Reference List C.* | 113 ☐☐☐ ← CODE<br>Description _____ |
| 20. Listed at the right are selected topics of critical national interest. If you devote a significant proportion of your professional time to any of these problem areas, please mark the box for the one on which you spend the MOST time. | 114 *MARK ONLY ONE BOX*<br>01 ☐ Health Education:<br>02 ☐ Teaching<br>03 ☐ Other<br>04 ☐ Environment protection, pollution control<br>05 ☐ Space<br>06 ☐ National defense<br>07 ☐ Crime prevention and control<br>08 ☐ Food production and technology<br>09 ☐ Energy and fuel<br>10 ☐ Other mineral resources<br>11 ☐ Community development and services<br>12 ☐ Housing planning, design, construction<br>13 ☐ Does not apply |

21. In the event that it is necessary to contact you to clarify some of the information you provided, may we contact you by telephone?

☐ Yes – *Enter number(s) on which you can be reached* →
☐ No

| Area code | Telephone number | Area code | Telephone number |
|---|---|---|---|
| | | | |

22. Please enter the name of a person at an address other than yours through whom you can be reached.

| Name | Address (Number and street) | City | State or foreign country | ZIP code |
|---|---|---|---|---|
| | | | | |

23. Print your name here _____ Date prepared _____

## REFERENCE LIST A – MAJOR FIELDS OF STUDY

This list is to be used in answering question 1b about the field(s) in which you have obtained study or training. It is divided into two sections: Section I is a list of fields of academic study generally leading to bachelor's or higher degrees; Section II is a list of fields of study and training below those generally leading to a bachelor's degree.

Please scan the entire list, choose the appropriate answer for the question and then enter the code and description in the appropriate section of question 1b. If none of the categories listed below adequately describes what you were studying or being trained in, use the "Other" category (code 600 or 625) and enter a brief description of what you were studying in the space provided on the questionnaire.

### Section I – FIELDS OF ACADEMIC STUDY LEADING TO BACHELOR'S OR HIGHER DEGREES

| Code | Description |
|---|---|
| | **Biological and Agricultural Sciences and Related Fields** |
| 501 | Agriculture, business |
| 502 | Agriculture, general |
| 503 | Agronomy, field crops |
| 504 | Anatomy and histology |
| 505 | Animal physiology |
| 506 | Animal science |
| 507 | Bacteriology, virology, mycology, parasitology |
| 508 | Biochemistry |
| 509 | Biology, general |
| 510 | Biophysics |
| 511 | Botany, general |
| 512 | Dairy science (dairy husbandry) |
| 513 | Entomology |
| 514 | Farm management |
| 515 | Fish and game or wildlife management |
| 516 | Food science (food technology and processing, dairy manufacturing and technology; food industry) |
| 517 | Forestry |
| 518 | Genetics |
| 519 | Horticulture |
| 520 | Immunology |
| 521 | Microbiology |
| 522 | Plant pathology |
| 523 | Plant physiology |
| 524 | Soil science (soil management, soil conservation) |
| 525 | Zoology, general |
| 526 | Biological and agricultural sciences, other fields |
| | **Education** |
| 527 | Biological sciences education |
| 528 | Mathematics education |
| 529 | Physical sciences education |
| 530 | Trade and industrial training |
| 531 | Education, other fields |
| | **Engineering** |
| 532 | Aerospace, aeronautical, astronautical, and related fields |
| 533 | Agricultural |
| 534 | Architectural |
| 535 | Chemical, petroleum refining |
| 536 | Civil, construction, transportation |
| 537 | Electrical, electronics |
| 538 | Engineering sciences, mechanics, physics |
| 539 | Engineering technology |
| 540 | Environmental/sanitary engineering |
| 541 | General or unified |
| 542 | Industrial |
| 543 | Mechanical |
| 544 | Metallurgical, materials, ceramics |
| 545 | Mining, mineral, geological |
| 546 | Naval architecture and marine engineering |
| 547 | Nuclear |
| 548 | Operations research/systems engineering |
| 549 | Petroleum |
| 550 | Engineering, other fields |
| | **Health Fields** |
| 551 | Medicine or premedicine, and clinical medical sciences |
| 552 | Nursing (4 year or longer program) |
| 553 | Pathology |
| 554 | Pharmacology |
| 555 | Pharmacy |
| 556 | Health professions, other fields (4 year or longer program) |

| Code | Description |
|---|---|
| | **Mathematical Sciences** |
| 557 | Mathematics |
| 558 | Statistics and actuarial sciences |
| 559 | Computer sciences and systems analysis |
| 560 | Operations research/management science |
| | **Physical Sciences** |
| 560 | Astronomy |
| 561 | Chemistry |
| 563 | Geography |
| 563 | Meteorology |
| 564 | Physics |
| 565 | Physical sciences, general |
| 566 | Geology and geophysics |
| 567 | Oceanography |
| 568 | Physical sciences, other fields |
| | **Psychology** |
| 569 | Clinical |
| 570 | Educational |
| 571 | General psychology |
| 572 | Psychology, other fields |
| | **Social Sciences** |
| 573 | Anthropology |
| 574 | Area studies, regional studies |
| 575 | Economics, agricultural |
| 576 | Economics, except agricultural |
| 577 | Foreign service programs |
| 578 | Geography |
| 579 | History |
| 580 | Industrial relations |
| 581 | International relations |
| 582 | Political science or government |
| 583 | Public administration |
| 584 | Social sciences/general |
| 585 | Social work, social administration, social welfare |
| 586 | Sociology |
| 587 | Social sciences, other fields |
| | **Arts, Humanities, and Other Specialties** |
| 588 | Arts, general |
| 589 | Business and commerce, including accounting, hotel and restaurant administration, and secretarial studies |
| 590 | English and journalism |
| 591 | Fine and applied arts, all fields |
| 592 | Foreign language and literature, all fields |
| 593 | Geography |
| 594 | Home economics, all fields |
| 595 | Law or prelaw |
| 596 | Library science |
| 597 | Military science, including merchant marine deck officer |
| 598 | Philosophy, all fields |
| 599 | Religion and theology, all fields |
| 600 | Other *(Describe briefly under the applicable item on the questionnaire.)* |

### Section II – FIELDS OF ACADEMIC STUDY AND OCCUPATIONAL TRAINING RELATED TO PROGRAMS BELOW THE BACCALAUREATE

| Code | Description |
|---|---|
| | **Data Processing-related fields of study or training** |
| 601 | Computer programming |
| 602 | Computer operating |
| 603 | All other data processing fields of study or training |
| | **Engineering-related fields of study or training** |
| 604 | Drafting and design, all fields |
| 605 | Aeronautical technology |
| 606 | Architectural or building technology |
| 607 | Chemical technology |
| 608 | Civil technology |
| 609 | Electrical and electronics technology |
| 610 | Industrial technology |
| 611 | Mechanical technology |
| 612 | All other engineering-related fields of study or training |
| | **Science-related fields of study or training** |
| [illegible] | Agriculture |
| [illegible] | Forestry |
| 615 | Other science-related fields of study or training |

| Code | Description |
|---|---|
| | **Other fields of study or training** |
| 616 | Business and commerce-related fields of study or training |
| 617 | Craft (skilled) occupations-related fields of study or training (such as carpentry, bricklaying, tool and die making, etc.) |
| 618 | Educational-related fields of study or training |
| 619 | Home economics |
| 620 | Nursing and other health service-related fields of study or training |
| 621 | Operative occupations-related fields of study or training (such as machine operation, driving, inspecting, etc.) |
| 622 | Police technology or law enforcement |
| 623 | Sales and marketing-related fields of study or training |
| 624 | Service occupations-related fields of study or training (such as cook, beautician, firefighter, etc.) |
| 625 | All other fields of study or training *(Describe briefly under the applicable item on the questionnaire.)* |

PLEASE DETACH BEFORE RETURNING YOUR COMPLETED QUESTIONNAIRE

## REFERENCE LIST B – KINDS OF BUSINESSES

This list is to be used in answering question 7 about the kind(s) of business or industry for which you worked. Please scan the entire list, choose the appropriate answer for the question and enter the code and description from this list. If none of the categories listed below adequately describes the kind of business for which you worked, use the "Other" category (code 731).

| Code | Description |
|---|---|
| | **Manufacturing** |
| 701 | Aircraft, aircraft engines, aircraft parts |
| 702 | Chemicals and allied products |
| 703 | Electrical machinery, equipment and supplies for the generation, storage, transformation, transmission, and utilization of electrical energy |
| 704 | Electronic apparatus, radio, television and communication equipment and parts |
| 705 | Electronic computers, accounting, calculating and office machinery and equipment |
| 706 | Fabricated metal products (except ordnance, machinery and transportation equipment) |
| 707 | Machinery (except electrical) including engines and turbines, farming and construction machinery, mining, metalworking and other manufacturing and service industry machines |
| 708 | Motor vehicles and motor vehicle equipment including trucks, buses, automobiles, railroad engines and cars |
| 709 | Ordnance, including manufacture of arms, ammunition, tanks, and complete guided missiles, space vehicles and equipment |
| 710 | Petroleum refining and related industries |
| 711 | Primary metal industries, including smelting, refining, rolling, drawing, alloying, and manufacture of castings, forgings and other basic metal products |
| 712 | Professional and scientific equipment and supplies |
| 713 | Other manufacturing including printing and publishing |
| | **Educational Institutions** |
| 714 | College or university (offering at least a bachelor's degree) |
| 715 | Junior college or technical institute |
| 716 | Medical school |
| 717 | Other educational institutions |
| | **Health Services** |
| 718 | Hospital or clinic |
| 719 | Other medical and health services |
| | **Other Kinds of Business** |
| 720 | Agriculture, forestry, and fisheries |
| 721 | Business, personal, and professional services |
| 722 | Construction |
| 723 | Engineering or architectural services |
| 724 | Finance, insurance, or real estate |
| 725 | Mining and petroleum extraction |
| 726 | Private, nonprofit organizations other than educational institutions and hospitals |
| 727 | Professional and technical societies |
| 728 | Research institutions |
| 729 | Retail and wholesale trade |
| 730 | Transportation, communication, or other public utilities |
| 731 | Other *(Describe briefly under the applicable item on the questionnaire.)* |
| | Public Administration (Include only uniquely governmental activities, such as the U.S. Postal Service, U.S. Air Force, State court, Department of Motor Vehicles, city building inspection, or city public welfare. For example, if you work for the U.S. Postal Service use code 733, Federal public administration; on the other hand, if you work at a Veterans' Administration Hospital, use code 718, Hospital or clinic; if you work at a State university, use code 714, College or university; if you work for a county road building agency, use code 722, Construction; if you work in a Defense Department research laboratory, use code 728, Research institution.) |
| 732 | Uniformed military service |
| 733 | Federal public administration |
| 734 | State public administration |
| 735 | Local public administration (city, county, etc.) |
| 737 | Regional government |
| 736 | Other government |

## REFERENCE LIST C – OCCUPATIONS

This list is to be used in answering questions 8 and 19 about your occupational classification. Please scan the entire list, choose the appropriate entry and enter the code and description from this list. If you cannot find exactly the right entry, please choose the one that comes nearest to it. If none of the entries is at all appropriate, use the "Other" category (code 475) and enter a brief description in the space provided on the questionnaire.

| Code | Description |
|---|---|
| | **Engineers**, including college professors and instructors |
| 401 | Engineer, aeronautical and astronautical |
| 402 | Engineer, agricultural |
| 403 | Engineer, chemical |
| 404 | Engineer, civil and architectural |
| 405 | Engineer, electrical and electronic |
| 406 | Engineer, industrial |
| 407 | Engineer, mechanical |
| 408 | Engineer, metallurgical and materials |
| 409 | Engineer, mining, petroleum, and geological |
| 410 | Engineer, nuclear |
| 411 | Engineer, environmental and sanitary |
| 412 | Engineer, operations research/systems |
| 413 | Engineer, other fields *(Describe briefly under the applicable item on the questionnaire.)* |
| | **Computer Specialist**, including college professors and instructors |
| 414 | Computer programmer |
| 415 | Computer systems analyst |
| 416 | Computer scientist |
| 417 | Other computer specialist *(Describe briefly under the applicable item on the questionnaire.)* |
| | **Mathematicians and Statisticians**, including college professors and instructors |
| 418 | Actuary |
| 419 | Mathematician |
| 420 | Statistician |
| 421 | Operations research analyst |
| | **Physical Scientists**, including college professors and instructors |
| 422 | Chemist |
| 423 | Earth scientists including geologists, geophysicists, etc. |
| 424 | Physicist, astronomer |
| 425 | Atmospheric scientist, meteorologist |
| 426 | Oceanographer |
| 427 | Other physical scientist *(Describe)* |
| | **Biological Scientists**, including college professors and instructors |
| 428 | Agricultural scientists, including foresters and conservationists |
| 429 | Biological scientist |
| 430 | Biochemist |
| 431 | Biophysicist |
| 432 | Medical scientist, excluding persons who are primarily medical practitioners; see Health Occupations |
| 433 | Other biological scientist *(Describe)* |
| | **Social scientists**, including college professors and instructors |
| 434 | Economist |
| 435 | Psychologist |
| 436 | Sociologist or anthropologist |
| 437 | Other social scientist *(Describe briefly under the applicable item on the questionnaire.)* |
| | **Health Occupations**, including persons who are primarily practitioners. Persons engaged primarily in medical research, teaching, and similar activities use code 432, Medical scientist. |
| 438 | Physician or surgeon |
| 439 | Technician, dental |
| 440 | Technician, medical |
| 441 | Other health occupation *(Describe briefly under the applicable item on the questionnaire.)* |
| | **Technicians and Technologists**, except medical |
| 442 | Designer, electronic parts and machine tools |
| 443 | Designer, industrial |
| 444 | Designer, other |
| 445 | Draftsman |
| 446 | Surveyor |
| 447 | Technician, biological and agricultural |
| 448 | Technician, electrical and electronic |
| 449 | Technician, construction, highways, and architectural |
| 450 | Technician, mechanical |
| 451 | Technician, other engineering |
| 452 | Technician, physical science |
| 453 | Technician, other fields *(Describe briefly under the applicable item on the questionnaire.)* |
| | **Teachers** |
| 454 | Teacher, elementary school |
| 455 | Teacher, secondary school |
| 456 | Teacher, college and university, excluding engineering and science *(Engineering and science teachers see codes 401–437 above.)* |
| | **Administrators, Managers, and Officials**, excluding farm |
| 476 | Urban and regional planner |
| 457 | College president or dean |
| 458 | Administrator or manager, scientific and technical research and development |
| 459 | Administrator or manager, production and operations |
| 460 | Administrator, manager, or official, all other, excluding self-employed |
| 461 | Self-employed proprietor |
| | **All Other Occupations** |
| 462 | Accountant |
| 463 | Attorney or judge |
| 464 | Sales worker |
| 465 | Clerical worker (such as bookkeeper, secretary, etc.) |
| 466 | Clergy |
| 467 | Craft worker (such as baker, carpenter, electrician, mechanic, repair worker) |
| 468 | Farmer (owner, manager, tenant, or farm laborer) |
| 469 | Fire fighter or police |
| 470 | Laborer, except farm |
| 471 | Librarian |
| 472 | Merchant or shopkeeper, self-employed |
| 473 | Operative (such as assembler, factory worker, miner, welder, truck driver, etc.) |
| 474 | Postal worker |
| 475 | Other occupations, not specified above *(Describe briefly under the applicable item on the questionnaire.)* |

## CORRESPONDING MAJOR FIELDS OF STUDY, BY FIELD OF SCIENCE OR ENGINEERING IN 1976

(Codes are from reference list A of this appendix)

| Fields of science or engineering in 1976 | Corresponding major fields of study |
|---|---|
| Computer specialists | 559 |
| Engineers | 532-550 |
| Mathematical specialists | 500, 557, 558 |
| Life scientists | 501-526, 551, 554-556 |
| Physical scientists | 560, 561, 565, 568 |
| Environmental scientists | 563, 566, 567 |
| Psychologists | 569-572 |
| Social scientists | 573-577, 580-584, 586, 587, 593 |

# Appendix C.
## SOURCE OF DATA

| Table number | Characteristic | Item number on 1976 questionnaire[1] | Source code[2] on 1976 questionnaire |
|---|---|---|---|
| 1 | Sex | (From the 1972 survey response, if available; otherwise, from the 1970 census response) | |
| 1 | Age in 1976* | (From the 1970 census response) | |
| 1 | Field of science or engineering in 1974* | (From the 1972 or 1974 survey responses) | |
| 2 | Race* | (From the 1970 census response) | |
| 2 | Place of residence in 1976 | A or B, page 1 | 010, 011 |
| 2 | Selected SMSA's of residence: 1976* | A or B, page 1 | 010, 011 |
| 3 | Highest degree held* | 1b; otherwise from 1972 survey response | 014, 016, 018, 020, 022, 024 |
| 3 | Major field of study for highest degree held* | 1b; otherwise from 1972 survey response | 015, 019, 023 |
| 3 | Supplemental training in 1975 | 2 | 026 |
| 4 | Employment status: February 1976* | Part II, column A; and Part III, column A: 13 | 027, 029, 031, 035, 078, 079 |
| 4 | Employment status: February 1975* | Part II, column B; and Part III, column B: 13 | 028, 030, 032, 036, 080, 081 |
| 4 | Full-time employment in science or engineering: February 1976 | Part II, column A: 3a, 4a, 4b | 027, 031, 033 |
| 4 | Full-time employment in science or engineering: February 1975 | Part II, column B: 3a, 4a, 4b | 028, 032, 034 |
| 4 | Unemployment in 1975* | Part IV, 17a, 17b | 110, 111 |
| 5 | Occupation in 1976 | Part III, column A: 8 | 044 |
| 5 | Industry in 1976 | Part III, column A: 7 | 042 |

See footnotes at end of table.

## SOURCE OF DATA—Continued

| Table number | Characteristic | Item number on 1976 questionnaire[1] | Source code[2] on 1976 questionnaire |
|---|---|---|---|
| 5 | Primary work activity in 1976* | Part III, column A: 9, 10, 11 | 054, 058-072 |
| 5 | Type of employer: 1976* | Part III, column A: 12 | 076 |
| 5 | Basic annual salary: 1976* | Part III, column A: 14 | 082, 084, 086 |
| 5 | Job mobility: 1975-1976* | | |
| | a) Job change | a) Part III, column B: 6 | a) 037 |
| | b) Occupation change | b) Part III, column A, B: 8 | b) 044, 045 |
| 5 | Job mobility: 1974 to 1976* | 1974 survey response; and Part III, column A: 13 | 078 |
| 5 | Job mobility: 1972 to 1976* | 1972 survey response; and Part III, column A: 13 | 078 |
| 5 | Professional identification in 1976 | 19 | 113 |
| 5 | Years of professional experience | 18 | 112 |
| 5 | Federal support: 1976 | Part III, column A: 16a, 16b | 096, 098, 100, 102, 104, 106, 108 |
| 5 | National interest topics | 20 | 114 |

*For more information, see appropriate subject in section of text on "Definitions and Explanations."

[1]The 1976 National Survey of Natural and Social Scientists and Engineers questionnaire is reprinted in appendix A.

[2]Source codes refer to sections of the 1976 questionnaire denoted by a 3-digit number inside a circle, e.g., 012 for the "Educational Attainment" section of page 2.

# Appendix D. Criteria for Fields of Science or Engineering in 1976

## CRITERIA FOR MEMBERSHIP IN A FIELD OF SCIENCE OR ENGINEERING IN 1976

Respondents in the 1976 National Survey of Natural and Social Scientists and Engineers were classified into a specific field of science and engineering in 1976 if they met, in relation to the specific field, any one of the criteria given below. Classification by these criteria proceeded such that all respondents were initially examined by the first criterion; those not placed into a field by the first criterion, were then examined by the second; those not categorized by the second, were examined by the third; and so on, until only those remained who met none of the criteria were classified as "not in a field of science or engineering in 1976." A respondent who failed to report the 1976 status of any item examined by these criteria was judged by his or her most recent entry for the item, be it from the 1974 or 1972 surveys. The academic degree levels and major fields of study used in these criteria refer to the highest degree held. The coincident and related occupations and professions are shown in the table in this appendix. Occupation of employment refers to the most recent job for which occupation was reported.

## THE CRITERIA

A member of a field of science or engineering in 1976 is an individual who (1) had earned a master's degree or higher[1] in a coincident field of study and who regarded himself, based on his total education and experience, as having a coincident profession; or (2) had earned a Ph.D. in any field of social or natural science,[2] and was employed in a coincident occupation; or (3) had earned a bachelor's degree or higher in a coincident field of study, and was employed in a coincident occupation; or (4) had earned a bachelor's degree or higher in any field of study, was employed in a coincident occupation, and regarded himself as having a coincident profession; or (5) whose highest degree[3] was in a coincident field of study[4], and who was employed as a college president, college dean, or manager or administrator of research or development, production or operations[5] or (6) had earned a bachelor's degree or higher in a coincident field of study,[6] was employed in a related occupation, and regarded himself as having a coincident profession; or (7) had earned a bachelor's degree in a coincident field of study since 1969 and who regarded himself as having a coincident profession; or (8) had earned a bachelor's degree or higher in any field or science[7] and was employed as a college president, college dean, or administrator or manager of research or development, production or operations[8] and who regarded himself as having a coincident profession; or (9) whose highest degree[9] was in a related field of study and who was employed in a coincident occupation and who regarded himself professionally to be a college president, dean, or administrator or manager of research or development, production or operations.[10] The field "engineers" also includes any individual who failed to meet any of the above 9 criteria but who had completed a minimum of two years of a program of study leading to a bachelor's degree in engineering or a related field of study before 1968, and was employed as an engineer, and regarded himself professionally to be an engineer or a manager or administrator of research or development, production, or operations;[11] or who earned an associate degree before 1968, and was employed as an engineer, and regarded himself professionally to be an engineer or a manager or administrator of research or development, production, or operations.[12]

Some respondents to the 1976 survey reported "operations research analyst"[13] as their occupation or profession. The National Science Foundation determined that certain of the above criteria should classify these persons as either "mathematicians" or "engineers." Such an individual, therefore, is classified by criteria 3 or 7 as a "mathematician" if he, depending upon the criterion specified, was either employed as or regarded himself professionally as an "operations research analyst" and met the educational requirement of the specified criterion as it related to mathematicians. Likewise, the individual was classified by criteria 3, 4, or 7 as an "engineer" if, depending on the criterion specified, his occupation and/or profession was "operations research analyst" instead of "engineer," and he met all the other requirements of the specified criterion as these related to engineers.[14] In addition, an individual is classified as an engineer if he met none of the above criteria, but had earned a bachelor's degree in a field of study other than one coincident to a field of science or engineering, was employed as a college president, dean, manager or administrator of research or development, production or operations,[15] and regarded himself professionally as an "operations research analyst."

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[1] Engineers could meet this requirement with a bachelor's degree or higher.

[2] Codes 501-587 and 593 from list A of appendix B.

[3] At the bachelor's level or higher.

[4] Certain coincident fields of study are common to two fields of science or engineering. Therefore, persons meeting criterion 5 with field of study represented by codes 508 or 526 of list A of appendix B were classified exclusively as "biologists;" those with codes 565 or 568, were classified exclusively as "other physical scientists" and those with code 581, were classified exclusively as "economists."

[5] Codes 457-459 and 476 of list C of appendix B.

[6] In addition to a coincident field of study, engineers could have earned a bachelor's degree or higher in codes 508, 529, 557, 559-561, 563-568 of list A of appendix B.

[7] For all fields except economists, codes 501-587 and 593 of list A of appendix B; for economists, codes 557, 558, 573-587, and 593 of list A of appendix B.

[8] Codes 457-459, and 476 of list C of appendix B.

[9] At the bachelor's level or higher.

[10] Codes 457-459 and [illegible] of list C of appendix B.

[11] and [12] Codes 45[illegible] 459 of list C of appendix B.

[13] Code 421 of list [illegible] appendix B.

[14] In this instance alone, "Operations research/management science" (code 500 of List A of appendix B) was considered to be a coincident field of study for engineers.

[15] Codes 457-459 and 476 of list C of appendix B.

# COINCIDENT AND RELATED MAJOR FIELDS OF STUDY, OCCUPATIONS, AND PROFESSIONS, BY FIELD OF SCIENCE OR ENGINEERING IN 1976

(Codes are from reference lists A and C of appendix B)

| Field of science or engineering in 1976 | Major field of study | | Occupation and profession | |
|---|---|---|---|---|
| | Coincident | Related | Coincident | Related |
| Computer specialists | 559 | 501-526, 532-558, 560-568 | 415-417 | 401-413, 415-417, 419-438 |
| Engineers | 532-550 | 508, 529, 557, 559-561, 563-568 | 401-413 | 457-459, 476 |
| Mathematical specialists: | | | | |
| Mathematicians | 557 | 532-550, 558-568, 576 | 419 | 401-413, 415-417, 419-438 |
| Statisticians | 558 | 518, 532, 535-545, 548, 550, 557, 559-572, 575, 576, 586, 587 | 420 | 401-413, 415-417, 419-438 |
| Life scientists: | | | | |
| Agricultural scientists | 501-503, 506, 512, 514-517, 519, 523, 524, 526 | 504, 505, 507-511, 513, 518, 520-522, 525, 532-568 | 428 | 401-413, 415-417, 419-433, 438 |
| Biologists | 504, 505, 507-511, 513, 518, 520-522, 525, 526, 554 | 501-503, 506, 512, 514-517, 519, 523, 524, 532-553, 555-568 | 429, 431, 433 | 401-413, 415-417, 419-433, 438 |
| Medical scientists | 555, 556 | 501, 526, 532-550, 557-573 | 432 | 401-413, 415-417, 419-438 |
| Physical scientists: | | | | |
| Chemists | 508, 561 | 501-507, 509-526, 532-560, 562-568 | 422, 430 | 401-413, 415-417, 419-433, 438 |
| Physicists and astronomers | 560, 564 | 508, 509, 535-541, 543-546, 550, 557-559, 561-563, 565-568 | 424 | 401-413, 415-417, 419-433, 438 |
| Other physical scientists | 565, 568 | 501-526, 532-564, 566, 567 | 427 | 401-413, 415-417, 419-433, 438 |
| Environmental scientists: | | | | |
| Earth scientists | 565, 566, 568 | 501-526, 532-564, 567 | 423 | 401-413, 415-417, 419-433, 438 |
| Atmospheric scientists | 563 | 501-526, 532-562, 564-568 | 425 | 401-413, 415-417, 419-433, 438 |
| Oceanographers | 567 | 501-526, 532-566, 568 | 426 | 401-413, 415-417, 419-433, 438 |
| Psychologists | 569-572 | 509, 551, 552, 556-558, 573, 586 | 435 | 401-413, 415-417, 419-438 |
| Social scientists: | | | | |
| Economists | 575, 576, 581 | 501, 557-559, 574, 577-580, 582, 583, 589, 595 | 434 | 434-437 |
| Sociologists and anthropologists | 573, 586 | 569, 572, 574, 577, 579, 587, 593 | 436 | 401-413, 415-417, 419-438 |
| Other social scientists | 574, 577, 581-584, 587, 593 | None | 437 | 434-437 |

# Appendix E. Sample Selection

The 156,116 sample cases for the 1972 Professional, Technical, and Scientific Manpower Survey were separated into two segments. The "target" segment consisted of 150,358 persons who were recorded by the 1970 Census of Population as being in one of 40 groups of scientific, engineering, or related occupations in the 1970 experienced civilian labor force. The "residual" segment consisted of 5,758 persons who were recorded by the 1970 census as having four or more years of college and as being in the 1970 experienced civilian labor force in occupations other than the 40 groups of target occupations.

The sample selection for the National Sample of Scientists and Engineers focused exclusively on the "target" segment. From this "target" segment, 115,557 persons responded in the 1972 survey. Based on criteria established by the survey sponsor, the National Science Foundation, these respondents were classified as "in-scope," that is, in one of the fields of science or engineering in 1972, or as "out-of-scope," that is, not in a field of science or engineering in 1972. The in-scope cases, numbering 50,093 persons, became the sample for the 1974 National Survey of Scientists and Engineers, the 1976 National Survey of Natural and Social Scientists and Engineers, and all subsequent surveys in the National Sample of Scientists and Engineers.

The table in this appendix presents a distribution of the 1972 respondents from the 40 groups of census occupations in the "target" segment, according to their field of science or engineering in 1972.

FIELD OF SCIENCE OR ENGINEERING IN

(Un-

| Line number | 1970 census occupation[1] | Total | Field of science or engineering in 1972 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Computer specialists | Engineers | Mathematical specialists | | | Life scientists | | | |
| | | | | | Total | Mathematicians | Statisticians | Total | Agricultural scientists | Biological scientists | Medical scientists |
| 1 | Total target occupations | 115,557 | 3,391 | 25,797 | 2,185 | 1,604 | 581 | 4,891 | 2,025 | 2,139 | 727 |
| 2 | Operations and computer specialists | 14,820 | 2,809 | 780 | 189 | 163 | 26 | 32 | 9 | 17 | 6 |
| 3 | Computer programmers | 4,515 | 732 | 101 | 67 | 61 | 6 | 8 | 2 | 5 | 1 |
| 4 | Computer systems analysts | 4,596 | 1,453 | 185 | 59 | 50 | 9 | 11 | 4 | 5 | 2 |
| 5 | Computer specialists, n.e.c. | 991 | 215 | 116 | 17 | 16 | 1 | 3 | 1 | 1 | 1 |
| 6 | Operations and systems analysts | 4,718 | 409 | 378 | 46 | 36 | 10 | 10 | 2 | 6 | 2 |
| 7 | Engineers | 39,572 | 202 | 22,036 | 89 | 72 | 17 | 67 | 29 | 31 | 7 |
| 8 | Aeronautical and astronautical engineers | 4,715 | 23 | 2,985 | 23 | 21 | 2 | 6 | 2 | 3 | 1 |
| 9 | Chemical engineers | 4,308 | 14 | 3,233 | 5 | 5 | - | 9 | 2 | 6 | 1 |
| 10 | Civil engineers | 4,872 | 7 | 2,905 | 4 | 3 | 1 | 8 | 6 | 1 | 1 |
| 11 | Electrical and electronic engineers | 5,429 | 68 | 3,301 | 11 | 10 | 1 | 2 | 1 | - | 1 |
| 12 | Industrial engineers | 4,767 | 23 | 1,634 | 23 | 12 | 11 | 14 | 5 | 8 | 1 |
| 13 | Mechanical engineers | 4,761 | 13 | 2,824 | 5 | 5 | - | 3 | 1 | 2 | - |
| 14 | Metallurgical and materials engineers | 1,231 | 1 | 824 | - | - | - | 7 | 3 | 3 | 1 |
| 15 | Mining and petroleum engineers | 1,193 | - | 803 | - | - | - | 3 | 1 | 1 | 1 |
| 16 | Sales engineers | 4,060 | 14 | 1,328 | 1 | 1 | - | 3 | 1 | 2 | - |
| 17 | Engineers, n.e.c., and engineering teachers | 4,236 | 39 | 2,199 | 17 | 15 | 2 | 12 | 7 | 5 | - |
| 18 | Mathematical specialists | 4,579 | 155 | 139 | 1,679 | 1,218 | 461 | 22 | 4 | 12 | 6 |
| 19 | Actuaries and statisticians | 2,032 | 16 | 62 | 405 | 34 | 371 | 13 | 4 | 6 | 3 |
| 20 | Mathematicians | 2,527 | 139 | 77 | 1,274 | 1,184 | 90 | 9 | - | 6 | 3 |
| 21 | Life scientists | 6,611 | 4 | 71 | 6 | 1 | 5 | 3,713 | 1,718 | 1,683 | 312 |
| 22 | Agricultural scientists | 1,358 | - | 33 | 3 | - | 3 | 606 | 517 | 86 | 3 |
| 23 | Foresters and conservationists[2] | 1,369 | 1 | 17 | - | - | - | 1,037 | 1,018 | 17 | 2 |
| 24 | Biological scientists | 3,884 | 3 | 21 | 3 | 1 | 2 | 2,070 | 183 | 1,580 | 307 |
| 25 | Physical scientists | 10,560 | 37 | 803 | 37 | 34 | 3 | 203 | 40 | 98 | 65 |
| 26 | Chemists | 4,883 | 9 | 334 | 7 | 5 | 2 | 138 | 28 | 67 | 43 |
| 27 | Physicists | 2,888 | 18 | 323 | 15 | 15 | - | 38 | 2 | 15 | 21 |
| 28 | Other physical scientists | 2,789 | 10 | 146 | 15 | 14 | 1 | 27 | 10 | 16 | 1 |
| 29 | Social scientists | 10,116 | 87 | 217 | 60 | 27 | 33 | 73 | 21 | 24 | 28 |
| 30 | Economists | 4,564 | 63 | 170 | 44 | 15 | 29 | 30 | 19 | 7 | 4 |
| 31 | Psychologists | 3,030 | 2 | 5 | 3 | 1 | 2 | 23 | - | 6 | 17 |
| 32 | Other social scientists | 2,522 | 2 | 42 | 13 | 11 | 2 | 20 | 2 | 11 | 7 |
| 33 | Engineering and science technicians | 11,956 | 23 | 506 | 11 | 8 | 3 | 91 | 34 | 41 | 16 |
| 34 | Agricultural, biological, and chemical technicians, ex. health | 2,105 | 2 | 34 | 2 | 2 | - | 50 | 19 | 23 | 8 |
| 35 | Draftsmen | 2,434 | - | 126 | - | - | - | 2 | 2 | - | - |
| 36 | Electrical and electronic engineering technicians | 2,025 | 8 | 79 | 2 | 1 | 1 | 2 | - | 1 | 1 |
| 37 | Industrial and mechanical engineering technicians, and numerical control tool programmers | 1,327 | 8 | 99 | 5 | 3 | 2 | - | - | - | - |
| 38 | Surveyors | 2,010 | - | 73 | 1 | 1 | - | 10 | 9 | 1 | - |
| 39 | Mathematical technicians and engineering and science technicians, n.e.c. | 2,055 | 5 | 95 | 1 | 1 | - | 27 | 4 | 16 | 7 |
| 40 | Personnel and labor relations workers | 2,506 | 5 | 50 | 7 | 6 | 1 | 14 | 7 | 4 | 3 |
| 41 | Health specialties teachers | 1,055 | - | 5 | - | - | - | 220 | 5 | 22 | 193 |
| 42 | Trade, industrial, and technical teachers | 122 | 1 | 1 | - | - | - | 2 | - | - | 2 |
| 43 | Miscellaneous teachers | 659 | 1 | 18 | 3 | 3 | - | 6 | 1 | 2 | 3 |
| 44 | Teachers, subject not specified | 2,018 | 7 | 125 | 33 | 27 | 6 | 123 | 24 | 78 | 21 |
| 45 | Technicians, n.e.c. | 1,234 | 3 | 17 | 1 | 1 | - | 5 | 2 | 2 | 1 |
| 46 | Research workers, not specified | 1,984 | 14 | 233 | 33 | 18 | 15 | 178 | 55 | 80 | 43 |
| 47 | School administrators, college[2] | 1,138 | 4 | 28 | 4 | 3 | 1 | 36 | 10 | 20 | 6 |
| 48 | Managers and administrators, n.e.c.[2] | 6,627 | 59 | 768 | 33 | 23 | 10 | 106 | 66 | 25 | 15 |

- Represents zero. n.e.c. Not elsewhere classified.

[1] For detailed information on the composition of the census occupational categories, see U.S. Bureau of the Census, Characteristics page 120) for categories with line numbers 33-48, and appendix E for categories with line numbers 2-32.

[2] Excludes persons with fewer than four years of college.

## 1972, BY 1970 CENSUS OCCUPATION

weighted)

| Field of science or engineering in 1972 | | | | | | | | | | | | | Not in a field of science or engineering in 1972 | Line number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical scientists | | | | Environmental scientists | | | | Psychologists | Social scientists | | | | | |
| Total | Chemists | Physicists and astronomers | Other physical scientists | Total | Atmospheric scientists | Earth scientists | Oceanographers | | Total | Economists | Sociologists and anthropologists | Other social scientists | | |
| 6,248 | 3,644 | 2,128 | 476 | 2,095 | 150 | 1,898 | 47 | 2,488 | 2,998 | 1,216 | 696 | 1,086 | 65,464 | 1 |
| 61 | 18 | 35 | 8 | 19 | 2 | 17 | - | 22 | 106 | 50 | 12 | 44 | 10,802 | 2 |
| 15 | 3 | 9 | 3 | 6 | 1 | 5 | - | 9 | 5 | 4 | - | 1 | 3,572 | 3 |
| 18 | 4 | 11 | 3 | 5 | 1 | 4 | - | 6 | 34 | 18 | 4 | 12 | 2,825 | 4 |
| 7 | 1 | 6 | - | 5 | - | 5 | - | - | 4 | 1 | 1 | 2 | 624 | 5 |
| 21 | 10 | 9 | 2 | 3 | - | 3 | - | 7 | 63 | 27 | 7 | 29 | 3,781 | 6 |
| 410 | 270 | 126 | 14 | 71 | 6 | 65 | - | 21 | 69 | 31 | 8 | 30 | 16,607 | 7 |
| 46 | 12 | 31 | 3 | 4 | 1 | 3 | - | 3 | 10 | 3 | - | 7 | 1,615 | 8 |
| 192 | 173 | 16 | 3 | 4 | 2 | 2 | - | 2 | 3 | 2 | 1 | - | 846 | 9 |
| 2 | 2 | - | - | 14 | - | 14 | - | 1 | 6 | 2 | - | 4 | 1,925 | 10 |
| 36 | 7 | 27 | 2 | 2 | 1 | 1 | - | - | 4 | 2 | - | 2 | 2,005 | 11 |
| 37 | 27 | 8 | 2 | 4 | 2 | 2 | - | 7 | 27 | 15 | 2 | 10 | 2,998 | 12 |
| 6 | - | 6 | - | 1 | - | 1 | - | 1 | 3 | 1 | 1 | 1 | 1,905 | 13 |
| 18 | 14 | 4 | - | 1 | - | 1 | - | 1 | 1 | - | - | 1 | 378 | 14 |
| 6 | 3 | 3 | - | 33 | - | 33 | - | - | 1 | - | 1 | - | 347 | 15 |
| 12 | 7 | 4 | 1 | 2 | - | 2 | - | 2 | 5 | 2 | 1 | 2 | 2,693 | 16 |
| 55 | 25 | 27 | 3 | 6 | - | 6 | - | 4 | 9 | 4 | 2 | 3 | 1,895 | 17 |
| 50 | 21 | 25 | 4 | 8 | - | 8 | - | 25 | 75 | 36 | 10 | 29 | 2,426 | 18 |
| 14 | 9 | 3 | 2 | 1 | - | 1 | - | 15 | 56 | 27 | 7 | 22 | 1,470 | 19 |
| 36 | 12 | 22 | 2 | 7 | - | 7 | - | 10 | 19 | 9 | 3 | 7 | 956 | 20 |
| 291 | 91 | 7 | 193 | 53 | 5 | 44 | 4 | 48 | 46 | 19 | 10 | 17 | 2,379 | 21 |
| 43 | 7 | - | 36 | 12 | 2 | 10 | - | - | 25 | 16 | 2 | 7 | 636 | 22 |
| 14 | 2 | - | 12 | 9 | - | 8 | 1 | - | 3 | 1 | - | 2 | 288 | 23 |
| 234 | 82 | 7 | 145 | 32 | 3 | 26 | 3 | 48 | 18 | 2 | 8 | 8 | 1,455 | 24 |
| 4,634 | 2,707 | 1,753 | 174 | 1,815 | 123 | 1,660 | 32 | 8 | 25 | 5 | 8 | 12 | 2,998 | 25 |
| 2,692 | 2,641 | 13 | 38 | 13 | 1 | 11 | 1 | 2 | 8 | 2 | 4 | 2 | 1,680 | 26 |
| 1,822 | 37 | 1,709 | 76 | 27 | 2 | 23 | 2 | 6 | 8 | 2 | 4 | 2 | 631 | 27 |
| 120 | 29 | 31 | 60 | 1,775 | 120 | 1,626 | 29 | - | 9 | 1 | - | 8 | 687 | 28 |
| 54 | 29 | 9 | 16 | 10 | - | 10 | - | 2,108 | 2,111 | 924 | 541 | 646 | 5,416 | 29 |
| 23 | 18 | 3 | 2 | 3 | - | 3 | - | 10 | 992 | 917 | 5 | 70 | 3,229 | 30 |
| 7 | 2 | - | 5 | - | - | - | - | 2,082 | 117 | - | 17 | 100 | 791 | 31 |
| 24 | 9 | 6 | 9 | 7 | - | 7 | - | 16 | 1,002 | 7 | 519 | 476 | 1,396 | 32 |
| 211 | 188 | 13 | 10 | 15 | 1 | 14 | - | 5 | 11 | 2 | 5 | 4 | 11,083 | 33 |
| 158 | 150 | 2 | 6 | 3 | - | 3 | - | - | 2 | - | 1 | 1 | 1,854 | 34 |
| 2 | - | - | 2 | 3 | - | 3 | - | 2 | - | - | - | - | 2,299 | 35 |
| 5 | 4 | 1 | - | 1 | 1 | - | - | - | 2 | 1 | 1 | - | 1,926 | 36 |
| 6 | 5 | 1 | - | - | - | - | - | - | 2 | 1 | - | 1 | 1,207 | 37 |
| 1 | 1 | - | - | - | - | - | - | - | 2 | - | 1 | 1 | 1,923 | 38 |
| 39 | 28 | 9 | 2 | 8 | - | 8 | - | 3 | 3 | - | 2 | 1 | 1,874 | 39 |
| 12 | 8 | 3 | 1 | 1 | - | 1 | - | 20 | 53 | 9 | 4 | 40 | 2,344 | 40 |
| 19 | 9 | 3 | 7 | 1 | - | 1 | - | 28 | 11 | 1 | 2 | 8 | 771 | 41 |
| - | - | - | - | - | - | - | - | 1 | 1 | - | - | 1 | 116 | 42 |
| 8 | 2 | - | 6 | 13 | 2 | 11 | - | 1 | 49 | 1 | 2 | 46 | 560 | 43 |
| 98 | 47 | 42 | 9 | 25 | - | 23 | 2 | 61 | 127 | 32 | 46 | 49 | 1,419 | 44 |
| 8 | 6 | 2 | - | 2 | 1 | 1 | - | 1 | 3 | - | 1 | 2 | 1,194 | 45 |
| 259 | 158 | 77 | 24 | 37 | 7 | 21 | 9 | 68 | 111 | 27 | 25 | 59 | 1,051 | 46 |
| 16 | 9 | 4 | 3 | 5 | - | 5 | - | 35 | 53 | 17 | 6 | 30 | 957 | 47 |
| 117 | 81 | 29 | 7 | 20 | 3 | 17 | - | 36 | 147 | 62 | 16 | 69 | 5,341 | 48 |

of Persons in Engineering and Scientific Occupations: 1972, Technical Paper No. 33, 1974, appendix A (especially list A,

# Appendix F. Analysis of Response

The table in this appendix presents response rates of various components of the sample for the 1976 National Survey of Natural and Social Scientists and Engineers. The characteristics presented here are based on the 1970 census or on the 1976 survey. Since the percentages in the table are based on a complete count of the sample cases, no reference to the standard error tables is necessary.

Men were more likely than women to respond in the 1976 survey. About 88 percent of the men in the survey panel responded, compared with about 85 percent of women.

Response rates increased steadily by age from a rate of 75 percent for panel members under 25 years old to 89 percent for the age group 55 to 59 years old. After peaking for the 55 to 59 years of age group, however, the response rate made slight declines in the groups above 60, dropping to 86 percent for persons 65 years and older. Since nonrespondents include deceased persons, this slight decrease in rates is expected. Overall, except for the two youngest age groups, over 80 percent of each age category responded in the 1976 survey; even the youngest groups, however, had rates of 75 percent and above.

There were only slight differences in response rates for 1976 among the various fields of science or engineering in 1974. The highest response rate, 94 percent, was that for physical scientists. The lowest rate was approximately 91 percent for computer specialists.

## PERCENT DISTRIBUTION—ANALYSIS OF RESPONSE IN THE 1976 NATIONAL SURVEY OF NATURAL AND SOCIAL SCIENTISTS AND ENGINEERS, BY FIELD OF SCIENCE OR ENGINEERING IN 1974, AGE IN 1976, AND SEX

| Sex, age in 1976, and field of science or engineering in 1974 | Response in 1976 | | | |
|---|---|---|---|---|
| | Total | | Respondents | Nonrespondents |
| | Number | Percent | | |
| Total | 50,093 | 100.0 | 85.1 | 14.9 |
| SEX | | | | |
| Male | 46,877 | 100.0 | 88.3 | 11.7 |
| Female | 3,216 | 100.0 | 85.4 | 14.6 |
| AGE IN 1976 | | | | |
| Under 25 years | 8 | 100.0 | 75.0 | 25.0 |
| 25 to 29 years | 2,278 | 100.0 | 77.8 | 22.2 |
| 30 to 34 years | 8,094 | 100.0 | 81.3 | 18.7 |
| 35 to 39 years | 8,743 | 100.0 | 83.0 | 17.0 |
| 40 to 44 years | 7,883 | 100.0 | 85.3 | 14.7 |
| 45 to 49 years | 7,365 | 100.0 | 87.4 | 12.6 |
| 50 to 54 years | 6,515 | 100.0 | 88.6 | 11.4 |
| 55 to 59 years | 4,214 | 100.0 | 89.1 | 10.9 |
| 60 to 64 years | 2,638 | 100.0 | 88.6 | 11.4 |
| 65 to 69 years | 1,545 | 100.0 | 87.7 | 12.3 |
| 70 years and over | 810 | 100.0 | 81.6 | 18.4 |
| FIELD OF SCIENCE OR ENGINEERING IN 1974 | | | | |
| Respondents in 1974 | 44,158 | 100.0 | 92.5 | 7.5 |
| Total in-scope in 1974 | 39,473 | 100.0 | 92.8 | 7.2 |
| Computer specialists | 2,291 | 100.0 | 91.3 | 8.7 |
| Engineers | 20,814 | 100.0 | 92.5 | 7.5 |
| Mathematical specialists | 1,612 | 100.0 | 92.7 | 7.3 |
| Life scientists | 4,026 | 100.0 | 93.8 | 6.2 |
| Physical scientists | 4,824 | 100.0 | 94.4 | 5.6 |
| Environmental scientists | 1,867 | 100.0 | 92.8 | 7.2 |
| Psychologists | 1,989 | 100.0 | 91.8 | 8.2 |
| Social scientists | 2,050 | 100.0 | 92.1 | 7.9 |
| Total out-of-scope in 1974 | 4,685 | 100.0 | 90.5 | 9.5 |
| Nonrespondents in 1974 | 5,935 | 100.0 | 30.0 | 70.0 |

# Appendix G. Highest Degree Held in 1976 Revisions

After the data in tables 1-5 of this report were tabulated, an error was found in the computer program that determined the highest degree held (HDH) in 1976 of each survey respondent. Because of the role of the 1976 HDH in establishing a respondent's field of science or engineering in 1976, the error could have introduced inaccuracies into the data on field of science or engineering in 1976, on highest degree held in 1976, and on other characteristics related to these two items. To measure the effects of the error, selected tabulations of the 1976 survey response were recalculated to correct for the error. The table in this appendix compares the data on field of science or engineering in 1976 and highest degree held in 1976 presented in this report (in the table these are referred to as "published data") with the recalculated or "revised" data on these two characteristics. The differences between the published and the revised data are negligible and did not justify the recalculation and representation of the data in tables 1-5 of this report.

# FIELD OF SCIENCE OR ENGINEERING IN 1976, BY HIGHEST DEGREE HELD IN 1976, BY PUBLISHED AND REVISED DATA, BY NUMBER AND PERCENT CHANGE

| Field of science or engineering in 1976 | Highest degree held in 1976 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Doctorate | Prof./medical | Master's | Bachelor's | Associate | Other | No degree |
| **Total, fields of science or engineering** | | | | | | | | |
| Published data (a) | 1,027,906 | 187,114 | 3,085 | 237,719 | 572,654 | 9,910 | 101 | 17,323 |
| Revised data (b) | 1,028,869 | 184,749 | 2,909 | 234,373 | 579,054 | 9,873 | 101 | 17,810 |
| Change (b-a) | +963 | -2,365 | -176 | -3,346 | +6,400 | -37 | - | +487 |
| Percent change | +0.1 | -1.3 | -5.7 | -1.4 | +1.1 | -0.4 | - | +2.8 |
| **Computer specialists** | | | | | | | | |
| Published | 50,691 | 3,565 | 114 | 15,507 | 31,505 | - | - | - |
| Revised | 50,290 | 3,074 | 97 | 14,868 | 32,251 | - | - | - |
| Change | -401 | -491 | -17 | -639 | +746 | - | - | - |
| Percent change | -0.8 | -13.8 | -14.9 | -4.1 | +2.4 | - | - | - |
| **Engineers** | | | | | | | | |
| Published | 658,549 | 34,701 | 1,097 | 146,721 | 448,697 | 9,910 | 101 | 17,323 |
| Revised | 659,666 | 33,784 | 938 | 143,827 | 453,334 | 9,873 | 101 | 17,810 |
| Change | +1,117 | -917 | -159 | -2,894 | +4,637 | -37 | - | +487 |
| Percent change | +0.2 | -2.6 | -14.5 | -2.0 | +1.0 | -0.4 | - | +2.8 |
| **Mathematical specialists** | | | | | | | | |
| Published | 24,831 | 10,118 | 134 | 7,470 | 7,109 | - | - | - |
| Revised | 24,983 | 9,950 | 134 | 7,674 | 7,224 | - | - | - |
| Change | +152 | -168 | - | +204 | +115 | - | - | - |
| Percent change | +0.6 | -1.7 | - | +2.7 | +1.6 | - | - | - |
| **Mathematicians** | | | | | | | | |
| Published | 17,873 | 7,804 | 76 | 5,392 | 4,600 | - | - | - |
| Revised | 18,024 | 7,637 | 76 | 5,612 | 4,699 | - | - | - |
| Change | +151 | -167 | - | +220 | +99 | - | - | - |
| Percent change | +0.8 | -2.1 | - | +4.1 | +2.2 | - | - | - |
| **Statisticians** | | | | | | | | |
| Published | 6,958 | 2,313 | 58 | 2,078 | 2,509 | - | - | - |
| Revised | 6,958 | 2,313 | 58 | 2,062 | 2,525 | - | - | - |
| Change | - | - | - | -16 | +16 | - | - | - |
| Percent change | - | - | - | -0.8 | +0.6 | - | - | - |
| **Life scientists** | | | | | | | | |
| Published | 70,027 | 31,935 | 1,227 | 15,569 | 21,297 | - | - | - |
| Revised | 70,092 | 31,869 | 1,227 | 15,505 | 21,491 | - | - | - |
| Change | +65 | -66 | - | -64 | +194 | - | - | - |
| Percent change | +0.1 | -0.2 | - | -0.4 | +0.9 | - | - | - |
| **Agricultural scientists** | | | | | | | | |
| Published | 26,315 | 6,787 | 36 | 5,272 | 14,220 | - | - | - |
| Revised | 26,315 | 6,787 | 36 | 5,209 | 14,284 | - | - | - |
| Change | - | - | - | -63 | +64 | - | - | - |
| Percent change | - | - | - | -1.2 | +0.4 | - | - | - |
| **Biologists** | | | | | | | | |
| Published | 33,975 | 20,225 | 143 | 8,242 | 5,365 | - | - | - |
| Revised | 34,039 | 20,158 | 143 | 8,289 | 5,448 | - | - | - |
| Change | +64 | -67 | - | +47 | +83 | - | - | - |
| Percent change | +0.2 | -0.3 | - | +0.6 | +1.5 | - | - | - |
| **Medical scientists** | | | | | | | | |
| Published | 9,738 | 4,924 | 1,048 | 2,055 | 1,711 | - | - | - |
| Revised | 9,738 | 4,924 | 1,048 | 2,007 | 1,759 | - | - | - |
| Change | - | - | - | -48 | +48 | - | - | - |
| Percent change | - | - | - | -2.3 | +2.8 | - | - | - |
| **Physical scientists** | | | | | | | | |
| Published | 117,043 | 55,336 | 199 | 21,611 | 39,897 | - | - | - |
| Revised | 117,091 | 55,102 | 199 | 21,398 | 40,393 | - | - | - |
| Change | +48 | -234 | - | -213 | +496 | - | - | - |
| Percent change | (Z) | -0.4 | - | -1.0 | +1.2 | - | - | - |
| **Chemists** | | | | | | | | |
| Published | 83,788 | 35,655 | 187 | 14,916 | 33,029 | - | - | - |
| Revised | 83,812 | 35,486 | 187 | 14,763 | 33,376 | - | - | - |
| Change | +24 | -169 | - | -153 | +347 | - | - | - |
| Percent change | (Z) | -0.5 | - | -1.0 | +1.1 | - | - | - |

See footnotes at end of table.

# FIELD OF SCIENCE OR ENGINEERING IN 1976, BY HIGHEST DEGREE HELD IN 1976, BY PUBLISHED AND REVISED DATA, BY NUMBER AND PERCENT CHANGE—Continued

| Field of science or engineering in 1976 | Highest degree held in 1976 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Doctorate | Prof./medical | Master's | Bachelor's | Associate | Other | No degree |
| **Physicists and astronomers** | | | | | | | | |
| Published | 27,502 | 17,649 | 12 | 5,362 | 4,477 | - | - | - |
| Revised | 27,525 | 17,584 | 12 | 5,302 | 4,626 | - | - | - |
| Change | +23 | -65 | - | -60 | +149 | - | - | - |
| Percent change | +0.1 | -0.4 | - | -1.1 | +3.3 | - | - | - |
| **Other physical scientists** | | | | | | | | |
| Published | 5,754 | 2,031 | - | 1,332 | 2,390 | - | - | - |
| Revised | 5,754 | 2,031 | - | 1,332 | 2,390 | - | - | - |
| Change | - | - | - | - | - | - | - | - |
| Percent change | - | - | - | - | - | - | - | - |
| **Environmental scientists** | | | | | | | | |
| Published | 26,897 | 7,799 | 36 | 7,632 | 11,529 | - | - | - |
| Revised | 26,980 | 7,740 | 36 | 7,537 | 11,666 | - | - | - |
| Change | -17 | -59 | - | -95 | +137 | - | - | - |
| Percent change | -0.1 | -0.8 | - | -1.2 | +1.2 | - | - | - |
| **Earth scientists** | | | | | | | | |
| Published | 22,370 | 5,826 | 24 | 6,301 | 10,219 | - | - | - |
| Revised | 22,370 | 5,810 | 24 | 6,230 | 10,306 | - | - | - |
| Change | - | -16 | - | -71 | +87 | - | - | - |
| Percent change | - | -0.3 | - | -1.1 | +0.9 | - | - | - |
| **Atmospheric scientists** | | | | | | | | |
| Published | 3,223 | 1,017 | 12 | 989 | 1,204 | - | - | - |
| Revised | 3,223 | 1,005 | 12 | 964 | 1,241 | - | - | - |
| Change | - | -12 | - | -25 | +37 | - | - | - |
| Percent change | - | -1.2 | - | -2.5 | +3.1 | - | - | - |
| **Oceanographers** | | | | | | | | |
| Published | 1,404 | 956 | - | 342 | 106 | - | - | - |
| Revised | 1,387 | 925 | - | 343 | 119 | - | - | - |
| Change | -17 | -31 | - | +1 | +13 | - | - | - |
| Percent change | -1.2 | -3.2 | - | +0.3 | +12.3 | - | - | - |
| **Psychologists** | | | | | | | | |
| Published | 34,186 | 21,244 | 79 | 10,098 | 2,765 | - | - | - |
| Revised | 34,203 | 21,050 | 79 | 10,267 | 2,808 | - | - | - |
| Change | +17 | -194 | - | +169 | +43 | - | - | - |
| Percent change | (Z) | -0.9 | - | +1.7 | +1.6 | - | - | - |
| **Social scientists** | | | | | | | | |
| Published | 45,582 | 22,417 | 199 | 13,111 | 9,855 | - | - | - |
| Revised | 45,565 | 22,181 | 199 | 13,297 | 9,887 | - | - | - |
| Change | -17 | -236 | - | +186 | +32 | - | - | - |
| Percent change | (Z) | -1.1 | - | +1.4 | +0.3 | - | - | - |
| **Economists** | | | | | | | | |
| Published | 17,726 | 8,798 | 135 | 4,322 | 4,471 | - | - | - |
| Revised | 17,709 | 8,698 | 135 | 4,389 | 4,488 | - | - | - |
| Change | -17 | -100 | - | +67 | +17 | - | - | - |
| Percent change | -0.1 | -1.1 | - | +1.6 | +0.4 | - | - | - |
| **Sociologists and anthropologists** | | | | | | | | |
| Published | 10,309 | 6,845 | 14 | 2,031 | 1,420 | - | - | - |
| Revised | 10,309 | 6,790 | 14 | 2,085 | 1,420 | - | - | - |
| Change | - | -55 | - | +54 | - | - | - | - |
| Percent change | - | -0.8 | - | +2.7 | - | - | - | - |
| **Other social scientists** | | | | | | | | |
| Published | 17,546 | 6,774 | 51 | 6,758 | 3,964 | - | - | - |
| Revised | 17,546 | 6,693 | 51 | 6,823 | 3,980 | - | - | - |
| Change | - | -81 | - | +65 | +16 | - | - | - |
| Percent change | - | -1.2 | - | +1.0 | +0.4 | - | - | - |
| **Not in a field of science or engineering in 1976** | | | | | | | | |
| Published | 157,559 | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) |
| Revised | 156,597 | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) |
| Change | -962 | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) |
| Percent change | -0.6 | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) | (NA) |

- No cases reported. Z Less than 0.05 percent. NA Not available.