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**Employment of
SCIENTIFIC AND TECHNICAL
PERSONNEL IN
STATE GOVERNMENT AGENCIES, 1962**

Bulletin No. 1412



UNITED STATES DEPARTMENT OF LABOR
W. Willard Wirtz, Secretary
BUREAU OF LABOR STATISTICS
Ewan Clague, Commissioner

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PREFACE

This bulletin summarizes the findings of a survey made by the Bureau of Labor Statistics of the U.S. Department of Labor to obtain information on the employment of scientific and technical personnel by State government agencies in January 1962. The survey was the second of its kind, the first having been made by the Bureau for the National Science Foundation as of January 1959. These surveys represent a series covering employment of scientific and technical personnel in all sectors of the economy. Related surveys conducted by the Bureau of Labor Statistics cover such employment in private industry, local governments, and nonprofit organizations. Scientific and technical employment in colleges and universities and in the Federal Government is surveyed by other U.S. Government agencies.

The present survey covered virtually all State agencies, except educational institutions, employing persons working as scientists, engineers, or technicians. The response to the survey was excellent, with about 98 percent of the 1,670 agencies contacted providing usable information, but certain problems tend to limit the comparability of data obtained from individual States and to make interstate comparisons difficult to interpret. As in all occupational employment surveys, definitions of important items undoubtedly were interpreted differently by the various agency officials. More importantly, the functions performed and the organizational structures differ from State to State. (For a more detailed discussion of definitional and technical problems see Appendix B, Scope and Method of Survey.)

The data collected provide detailed information, by occupation, on the scientific and technical personnel employed by State governments, and the functions they performed in State agencies of different types, as of January 1962. They also provide the basis for a comparison of scientific and technical employment in State governments with data collected in an earlier survey. Part I of the report summarizes the findings of the 1962 survey; Part II is devoted to a consideration of the changes in employment between January 1959 and January 1962.

The 1962 survey was carried out and the report prepared in the Bureau's Division of Occupational Employment Statistics, Cora E. Taylor, Chief, under the general direction of Harold Goldstein, Assistant Commissioner for Manpower and Employment Statistics. William L. Copeland had supervisory responsibility for the project and prepared the report with the assistance of Jack Golomb.

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SUMMARY OF FINDINGS

Approximately 48,000 scientists and engineers and 55,500 technicians were employed by agencies within the 50 State governments in January 1962. Altogether, these workers accounted for slightly more than 9 percent of all State employees outside State educational institutions. From January 1959 to January 1962, their employment increased nearly 20 percent, growing twice as fast as total State government employment over the period.

Of the approximately 34,000 engineers, about 88 percent were civil engineers--most of whom were employed by highway and public works agencies, combined. Employment of engineers increased at a slightly higher rate, between 1959 and 1962, than employment of either scientists or technicians.

Nearly three-fourths of the approximately 14,000 scientists employed by State agencies were in the life science fields--biological, agricultural, and medical. About 43 percent of the 4,514 biological scientists worked in fish and game agencies and 36 percent were in agencies concerned with physical health. The 4,073 agricultural scientists were concentrated in agencies concerned with natural resources (54 percent) and in agriculture agencies (42 percent). Medical scientists, numbering 1,930 were employed primarily in physical health agencies (65 percent) and secondarily in mental health agencies (22 percent).

The remaining scientists--accounting for one-fourth of all scientific personnel--were chemists (1,381), geologists and geophysicists (898), psychologists (517), mathematicians (448), and a group of unclassified scientists (274):

One scientist in every 4 was reported to hold an advanced degree; about 6 percent held the doctorate. Persons whose highest degree was a bachelor's or first professional degree comprised about 60 percent of all scientists. Approximately 14 percent of the scientists had no degree. More than 2,600 scientists held a professional health degree; of these 70 percent were doctors of medicine (M.D.) or doctors of veterinary medicine (D.V.M.).

Slightly more than one-half of the 55,500 technicians employed by State government agencies in January 1962 were classified as engineering technicians, about 22 percent as surveyors, 12 percent as draftsmen, and 10 percent as medical, agricultural and biological technicians. The remainder (less than 5 percent) included about 1,000 physical science aids and about 1,500 technicians who were not classified by occupation. Employment of engineering and physical science technicians showed a greater relative increase (24 percent) between 1959 and 1962 than did other types of technicians.

PART I
EMPLOYMENT OF SCIENTIFIC AND TECHNICAL PERSONNEL,
JANUARY 1962

EMPLOYMENT OF SCIENTIFIC AND TECHNICAL PERSONNEL,
JANUARY 1962

Approximately 103,500 engineers, scientists, and technicians were employed in January 1962 by the 50 State governments to carry out a variety of scientific and technical activities in areas ranging from heavy construction to mental health. About 34,000 of these employees were engineers, 14,000 were scientists, and 55,500 were technicians. (See table 1.) This group includes essentially all scientific and technical personnel employed by State governments in January 1962, except those working for State educational institutions. 1/ Altogether, they accounted for about 6 percent of all State government employees and about 9 percent of all State employees outside educational institutions. In contrast, scientific and technical personnel accounted for only about 3 percent of all employment in private industry (excluding agriculture) in January 1962. 2/

The major factors affecting the employment of scientific and technical personnel by the individual States are the services undertaken by agencies of each State, and the funds appropriated for these services. Although the most populous States employed the greatest numbers of scientific and technical personnel, population affects such employment only indirectly as one of the influences upon the financial resources available and the expenditures necessary to provide certain services to the citizens of each State. However, no direct relationship between population and scientific and technical employment can be assumed.

The detailed data for individual States, shown in the tables in appendix A, are not necessarily comparable from one State to another. Distributions of scientific and technical personnel by occupation and type of agency are affected, for each State, not only by considerations of major natural resources, major industries, climate, and other influences on the services undertaken, but also by State constitutions and laws, policy

1/ See appendix B, Scope and Method of Survey for the coverage.

2/ Scientific and Technical Personnel in Industry, 1962, report on a survey conducted by the U.S. Department of Labor, Bureau of Labor Statistics (in press).

Table 1. Occupational distribution of scientific and technical personnel employed by State governments, January 1962

Occupational group ^{1/}	Number	Percent
All groups.....	103,530	100.0
Engineers.....	33,994	32.8
Civil engineers.....	30,047	29.0
Other engineers.....	3,947	3.8
Scientists.....	14,035	13.6
Biological scientists.....	4,514	4.4
Agricultural scientists.....	4,073	3.9
Medical scientists.....	1,930	1.9
Chemists.....	1,381	1.3
Geologists and geophysicists....	898	.9
Psychologists.....	517	.5
Mathematicians.....	448	.4
Other scientists.....	274	.3
Technicians.....	55,501	53.6
Engineering technicians.....	28,343	27.4
Surveyors.....	12,240	11.8
Draftsmen.....	6,684	6.4
Medical, agricultural, and biological technicians.....	5,671	5.5
Physical science technicians....	1,030	1.0
Other technicians.....	1,533	1.5

^{1/} See questionnaire reproduced in appendix C for definitions of occupations used in this survey.

decisions, choices of organizational structure, and other factors. For example, some States prefer to contract to consulting or other firms work which, in other States, is performed by personnel--including scientists, engineers, and technicians--on State payrolls. The assignment of responsibilities to agencies may also follow different patterns in the various States. Examples of the effect of choices of organization are departments of water supply variously reported as part of public works agencies or of natural resources agencies, and food and drug laws enforced by health agencies or by agricultural agencies.

To assist State officials in reporting employment of scientific and technical personnel, definitions were provided for most of the occupations. Personnel were classified as engineers if they were engaged in engineering work at a level requiring knowledge of the field equivalent at least to that acquired through completion of a 4-year college course. Scientists were defined in a parallel manner. Technicians were described as workers engaged in activities requiring a knowledge of engineering or science comparable to that acquired through about 2 years of post-high school training. The definitions of the occupations covered in this report, as well as other terms used in the survey, are reproduced in appendix C.

Data for January 1962 on the numbers employed in each scientific and technical occupational group, the functions performed, and the agency of employment are presented in summary form in the sections of this report which follow. For a somewhat more descriptive account of the activities of scientific and technical personnel in the various State agencies, see the report on a similar survey conducted in 1959. 3/

ENGINEERS

State governments reported employment of 33,994 engineers in January 1962. Of these, 30,047 (about 88 percent) were reported as civil engineers, a group which also included sanitary, construction, architectural, structural, highway, and other related specialties. The remaining 3,947 included all other types of engineers employed by State governments.

3/ Employment of Scientific and Technical Personnel in State Government Agencies, Report on a 1959 Survey, NSF 61-17, prepared for the National Science Foundation by the U.S. Department of Labor, Bureau of Labor Statistics. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (price 45 cents).

The distribution of engineers by type of agency is shown in table 2. Civil engineers were concentrated in highway agencies (93 percent). Most of these engineers planned, designed, and supervised the construction of highways, public buildings, dams, and other new public works, but some were concerned with maintenance and repair. The "other" engineers were also concentrated in highway and public works agencies, though to a lesser degree.

Survey respondents were asked to classify their scientific and technical employees according to primary activity or function performed. The engineers employed by State governments were distributed by function as follows:

	Engineers		
	All	Civil	Other
All functions ^{1/}	100.0	100.0	100.0
Operations and services.....	47.0	48.4	37.3
Planning.....	25.9	26.5	21.4
Inspection.....	18.4	17.5	24.8
Research.....	2.3	2.0	4.1
Other functions.....	6.4	5.6	12.4

^{1/} For definitions of functions see questionnaire reproduced in appendix C.

Nearly two-thirds of all engineers were classified by their agencies as primarily engaged in the combined areas of operations and services and inspection. Together, these functions comprise the technical activities related to the regular operation of government programs including the enforcement of laws, regulations, and standards, and cover most of the on-going, day-by-day, technical business of the State governments. About one-quarter of the engineers, however, were primarily engaged in planning, which includes technical activity concerned with initiating or improving programs, policies, legislation, and standards, and which is concerned with activities of the future. Another 2 percent of the engineers were engaged in research to advance scientific knowledge in the natural sciences and engineering, also a function that looks largely to the future. The State governments employed about 2 engineers primarily engaged in planning or research for every 5 employed in all other functions.

Table 2. Engineers employed by State governments, by type of agency, January 1962
(Percent distribution)

Agency	Engineers		
	All	Civil ^{1/}	Other ^{2/}
All agencies: Number....	33,994	30,047	3,947
Percent...	100.0	100.0	100.0
Highway and public works.....	90.5	94.4	61.0
Highway.....	88.4	92.8	55.0
Public works.....	2.1	1.6	6.0
Health and welfare.....	3.7	2.9	9.7
Physical health.....	3.3	2.8	7.0
Mental health.....	.2	(^{3/})	1.5
Welfare.....	.2	.1	1.2
Agriculture and conservation.	2.5	1.7	8.9
Natural resources.....	2.1	1.3	8.0
Fish and game.....	.3	.3	.4
Agriculture.....	.1	.1	.5
Other agencies.....	3.3	1.0	20.4

^{1/} Includes sanitary, construction, architectural, structural, highway, and other related specialties.

^{2/} Includes all engineering specialties not classified as civil engineering.

^{3/} Less than 0.05 percent.

Detailed data on the employment of engineers by type of agency, occupation, and by function for each State are presented in the tables in appendix A.

SCIENTISTS

Scientists employed by State governments in January 1962 numbered 14,035 or about 14 percent of all scientific and technical employment in State agencies. About 7 out of 10 of these employees were life scientists and most of the remainder were physical scientists. This distribution is the reverse of that for scientific employment in private industry where physical scientists far outnumber other types of scientists.

Unlike engineers, who were employed almost exclusively in highway and public works agencies, scientists were concentrated in agriculture and conservation (53 percent) and in health and welfare agencies (36 percent). The types of services performed by these agencies determine their need for scientists in certain fields of specialization.

Life Scientists

The three largest scientific occupational groups employed by State governments in January 1962 were biological scientists (4,514), agricultural scientists (4,073), and medical scientists (1,930).^{4/} Together, these groups comprise all scientists dealing with life processes--plant, animal, or human.

The concentrations of life scientists by type of employing agency were very marked, with sharp differences among occupational groups. (See table 3.) Biological scientists were reported chiefly by fish and game agencies and physical health agencies, agricultural scientists by natural resources and agriculture agencies, and medical scientists by health agencies. No life scientists were reported by highway or public works agencies.

^{4/} Persons primarily engaged in patient treatment and care were excluded from the survey. See questionnaire reproduced in appendix C for definitions of the occupations used in this survey.

Table 3. Life scientists employed by State governments, by type of agency, January 1962

(Percent distribution)

Agency	Life scientists			
	All	Biological	Agricultural	Medical
All agencies: Number....	10,517	4,514	4,073	1,930
Percent....	100.0	100.0	100.0	100.0
Agriculture and conservation.	62.7	58.4	96.3	1.8
Natural resources.....	24.1	7.9	53.5	(1/)
Agriculture.....	19.6	7.3	41.5	1.8
Fish and game.....	19.0	43.2	1.3	(1/)
Health and welfare.....	34.8	39.0	1.9	94.5
Physical health.....	27.8	36.0	1.2	64.9
Mental health.....	5.1	2.6	(2/)	21.6
Welfare.....	1.9	.4	.7	8.0
Other agencies.....	2.5	2.6	1.8	3.7

1/ None reported.

2/ Less than 0.05 percent.

Life scientists were also markedly concentrated by function, as shown in the following tabulation:

Life Scientists				
	All'	Biolog- ical	Agricul- tural	Medical
All functions...	100.0	100.0	100.0	100.0
Operations and services.....	53.3	45.0	62.4	53.7
Inspection.....	17.7	14.3	25.5	9.3
Research.....	15.5	27.8	2.2	14.6
Planning.....	9.7	9.2	5.7	19.4
Other functions.....	3.8	3.7	4.2	3.0

As with engineers, most life scientists were concerned with their agencies' regular operations. Unlike engineers, however, a substantial proportion of the biological scientists and of the medical scientists were engaged in research. The proportion of life scientists engaged in planning activities was materially less than that of engineers so engaged.

Detailed data on the employment of life scientists by type of agency, occupation, and by function for each State are presented in the tables in appendix A.

Physical Scientists

State government agencies reported employment of 2,727 physical scientists in January 1962--1,381 chemists, 898 geologists and geophysicists, and 448 mathematicians. ^{5/} The distribution of these scientists by type of agency is shown in table 4.

^{5/} It is likely that some physical scientists were also included among the 274 unclassified scientists. It is believed, for example, that a small number of physicists and metallurgists were included in the unclassified category. On the other hand, it is recognized that all mathematicians are not closely allied with the physical sciences.

Table 4. Physical scientists employed by State governments, by type of agency, January 1962

(Percent distribution)

Agency	Physical scientists			
	All	Chemists	Geologists and geo-physicists	Mathematicians
All agencies: Number...	2,727	1,381	898	448
Percent..	100.0	100.0	100.0	100.0
Agriculture and conservation.	30.7	28.0	45.8	8.9
Natural resources.....	16.0	1.5	45.5	2.0
Agriculture.....	13.8	25.7	.1	4.4
Fish and game.....	.9	.8	.2	2.5
Health and welfare.....	28.7	45.8	(<u>1</u> /)	33.7
Physical health.....	26.0	44.1	(<u>1</u> /)	21.9
Mental health.....	1.5	1.7	(<u>1</u> /)	4.2
Welfare.....	1.2	(<u>1</u> /)	(<u>1</u> /)	7.6
Highway and public works.....	25.9	16.3	42.5	22.1
Highway.....	23.1	14.4	37.4	21.0
Public works.....	2.8	1.9	5.1	1.1
Other agencies.....	14.7	9.9	11.7	35.3

1/ None reported.

As with engineers and the life science specialists, each of the three physical science occupational groups showed marked concentration in particular types of agencies. Agencies concerned with physical health, agriculture, and highways employed 84 percent of all the chemists. Natural resource agencies and highway agencies employed 83 percent of the geologists and geophysicists.

Mathematicians were the only occupational group heavily concentrated (35 percent) in the miscellaneous or "other" agencies category. About two-fifths of the mathematicians--many of them actuaries--in the "other" agencies category were employed in agencies dealing with insurance matters. The remainder of the mathematicians were employed by a wide variety of types of agencies, but with the largest number in physical health and highway agencies.

The distribution of physical scientists by primary function performed is shown below:

	Physical scientists			
	All	Chemists	Geologists and geo- physicists	Mathema- ticians
All functions.....	100.0	100.0	100.0	100.0
Operations and services.	33.2	31.6	35.2	34.1
Research.....	28.6	23.0	37.2	28.6
Inspection.....	22.8	37.7	10.0	2.9
Planning.....	11.5	4.4	15.4	25.7
Other functions.....	3.9	3.3	2.2	8.7

Around a third of each occupational group was engaged in operations and service activities in January 1962. The proportion of chemists primarily engaged in inspection activities, chiefly in agriculture and health agencies, was the highest for any occupational group in the survey. Geologists and geophysicists made up the only occupational group in the survey for whom research was the major function.

Detailed data on the employment of physical scientists by type of agency, occupation, and by function for each State are presented in the tables in appendix A.

Psychologists

There were 517 psychologists employed by State agencies in January 1962. This number does not include psychologists engaged primarily in the care and treatment of patients.

Psychologists were more concentrated in a single type of agency than any other occupational group except civil engineers and agricultural scientists. As shown below, nearly half the psychologists were employed by mental health agencies.

	<u>Percent</u>
All agencies.....	100.0
Health and welfare.....	88.6
Mental health.....	48.2
Physical health.....	24.2
Welfare.....	16.2
Other agencies.....	11.4

About 3 out of 5 psychologists were engaged in operations and services and 1 out of 5 was engaged in research.

The distribution of psychologists by function was as follows:

	<u>Percent</u>
All functions.....	100.0
Operations and services.....	63.2
Research.....	21.5
Planning.....	8.9
Inspection.....	.6
Other functions.....	5.8

Degrees Held by Scientists

This survey obtained for the first time data on the degrees held by scientists employed by State government agencies. The data, summarized in tables 5 and 6, include the numbers of scientists by highest degree, and the numbers of scientists holding health degrees by type of degree. Detailed data by State are presented in the tables in appendix A.

About 14 percent of the 14,035 scientists employed by State governments in January 1962 were reported to hold no degree (table 5). This compares with approximately 40 percent of State employed engineers who held no degree. ^{6/} Close to two-thirds of the scientists without a degree were in agriculture and conservation agencies; about 40 percent of these were reported by California agencies and about 9 percent by Michigan agencies as working primarily in forest management.

TECHNICIANS

State government agencies employed 55,501 technicians in January 1962. Employment was reported separately for 5 occupational groups--engineering technicians; surveyors; draftsmen; medical, agricultural, and biological technicians; physical science technicians--and a residual group of "other" technicians who were not further classified. The distribution of technician employment by type of agency for each occupational group is shown in table 7.

About 85 percent of all technicians were classified in three occupational groups; engineering technicians (51 percent), surveyors (22 percent), and draftsmen (12 percent). These groups were concentrated very heavily (91 percent or more) in highway agencies.

The medical, agricultural, and biological technicians were divided equally between agriculture and conservation agencies and health and welfare agencies, with a very small number reported by "other" agencies. About half of the physical science technicians were reported by highway agencies, and most of the remainder were employed in natural resource agencies and in physical health agencies in approximately the same numbers.

Most technicians act as assistants to scientists or engineers. Overall, there were about 115 workers for every 100 scientists and engineers employed by State agencies in 1962. This is a much higher ratio than in private industry, where there are only 69 technicians per 100 scientists and engineers, on the average. However, only in highway agencies did the State-employed technicians exceed the number of scientists and engineers (149 to 100). In health and welfare agencies, the average was 54 technicians per 100 scientists and engineers, and in agriculture and conservation agencies, it was 48 per 100.

^{6/} Data on the educational attainment of engineers were collected in the 1959 survey. See footnote 3.

Table 5. Scientists employed by State governments, by highest degree held and type of agency, January 1962

(Percent distribution)

Agency	All scientists	Ph.D. degree	Master's degree	Bachelor's or first professional degree <u>1/</u>	No degree
All agencies: Number...	14,035	887	2,765	8,463	1,920
Percent..	100.0	100.0	100.0	100.0	100.0
Highway and public works...	5.9	1.1	3.5	7.4	4.9
Health and welfare.....	35.5	58.0	45.2	31.7	27.8
Agriculture and conservation.	53.1	27.4	43.1	56.2	65.4
Other agencies.....	5.5	13.5	8.2	4.7	1.9

1/ Includes M.D., D.D.S., D.V.M., and other professional health degrees.

Table 6. Scientists holding health degrees, by type of degree and State government agency, January 1962

(Percent distribution)

Agency	All scientists with health degrees	M.D.	D.V.M.	D.D.S.	Other
All agencies: Number...	2,640	1,093	793	202	552
Percent..	100.0	100.0	100.0	100.0	100.0
Health and welfare.....	67.6	98.2	7.9	82.7	87.2
Agriculture and conservation.	31.1	(<u>1/</u>)	90.8	17.3	12.1
Other agencies.....	1.3	<u>1.8</u>	1.3	(<u>1/</u>)	.7

1/ None reported.

Table 7. Technicians employed by State governments, by type of agency, January 1962

(Percent distribution)

Agency	All technicians	Engineering technicians	Surveyors	Draftsmen	Medical, agricultural, and biological technicians	Physical science technicians	Other
All agencies: Number....	55,501	28,343	12,240	6,684	5,671	1,030	1,533
Percent....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Highway and public works.....	84.0	95.9	98.6	92.8	(<u>1</u> /)	49.3	40.9
Highway.....	82.7	94.5	98.3	91.1	(<u>1</u> /)	49.0	31.6
Public works.....	1.3	1.4	.3	1.7	(<u>1</u> /)	.3	9.3
Agriculture and conservation.	7.2	1.1	1.2	3.7	49.0	18.4	20.4
Natural resources.....	3.1	1.0	1.0	3.3	13.0	14.5	14.4
Agriculture.....	2.2	(<u>1</u> /)	(<u>1</u> /)	.1	20.0	3.9	3.2
Fish and game.....	1.9	.1	.2	.3	16.0	(<u>1</u> /)	2.8
Health and welfare.....	6.1	.5	(<u>1</u> /)	(<u>1</u> /)	49.5	21.2	14.9
Physical health.....	4.4	.4	(<u>1</u> /)	(<u>1</u> /)	36.4	16.5	7.2
Mental health.....	1.1	(<u>1</u> /)	(<u>1</u> /)	(<u>1</u> /)	8.9	2.5	5.5
Welfare.....	.6	.1	(<u>1</u> /)	(<u>1</u> /)	4.2	2.2	2.2
Other agencies.....	2.7	2.5	.2	3.5	1.5	11.1	23.8

1/ Less than 0.05 percent.

PART II
CHANGES IN SCIENTIFIC AND TECHNICAL EMPLOYMENT,
1959 to 1962

CHANGES IN SCIENTIFIC AND TECHNICAL EMPLOYMENT, 1959 to 1962

Scientific and technical employment in State government agencies in January 1962 was nearly 20 percent greater than in January 1959. This represents an average annual rate of increase of slightly more than 6 percent over the 3-year period; this is not to suggest, however, that the growth rate was even over the period.

Table 8 compares the growth in employment of scientists, engineers, and technicians with the overall growth in State government employment. Since the survey did not cover scientific and technical employment in State educational agencies, comparison is also made with total State employment excepting that in educational institutions. During the 3-year period under consideration, noneducational State government employment increased nearly 7 percent--about 2.3 percent per year, on the average. This annual rate is somewhat less than two-fifths of the rate of growth shown by scientific and technical employment only.

Table 9 presents data reported for January 1959 and that reported for January 1962 by broad occupational classes. The changes in employment by detailed occupation are the net result of widely diverse changes reported by individual States for the two periods. Because it has not been practical to recontact each reporting agency to investigate the reasons for the changes, no assessment can be made of the relative influences of changes in personnel classification, changes in the interpretation of definitions, and true changes in the numbers of persons working in the different occupational categories. Nevertheless, changes in the size of the gross groupings shown in table 9 are believed to reasonably represent the correct order of magnitude.

Table 8. Change in State government employment, January 1959 to January 1962

Employee group	Number		Percent change
	January 1959	January 1962	
All State government employment <u>1/</u>	1,533,000	1,686,400	10.0
State employment, except educational <u>1/</u>	1,048,300	1,120,900	6.9
All scientific and technical employees <u>2/</u>	86,246	103,013	19.4
Engineers.....	28,172	33,994	20.7
Scientists <u>2/</u>	11,276	13,518	19.9
Technicians.....	46,798	55,501	18.6

1/ Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings Statistics for the United States, 1909-62 (Bulletin 1312-1, 1963).

2/ Psychologists are excluded because a change in definition resulted in noncomparable data for 1959 and 1962.

Table 9. Change in employment of scientific and technical personnel in State governments, by occupational group, January 1959 and January 1962

Occupational group	Number		Percent change
	January 1959	January 1962	
All scientific and technical occupations <u>1/</u>	86,246	103,013	19.4
Engineers.....	28,172	33,994	20.7
Civil engineers.....	26,082	30,047	15.2
Other engineers.....	2,090	3,947	88.8
Scientists <u>1/</u>	11,276	13,518	19.9
Life scientists.....	8,846	10,517	18.9
Other scientists.....	2,430	3,001	23.5
Technicians.....	46,798	55,501	18.6
Engineering and physical science technicians.....	23,781	29,373	23.5
Other technicians.....	23,017	26,128	13.5

1/ Psychologists are excluded because a change in definition resulted in noncomparable data for 1959 and 1962.

APPENDIX A
STATISTICAL TABLES

Most of the tables included in this appendix present data for each State. However, caution is urged in making State-by-State comparisons of employment without acquiring an intimate knowledge of individual State programs, practices, and classification systems. For example, wide differences exist in the types of programs undertaken by States in any given year, in practices such as the hiring of scientific and technical workers or the use of outside consulting services, and in functions performed by agencies with similar names or by personnel with the same occupational titles. Although State tables are presented by region for the reader's convenience, statistics by region are not likely to be comparable, for the reasons cited.

Table A-1. Engineers, scientists, and technicians, by type of agency and State, January 1962

State	All agencies	Highway and public works			Health and welfare				Agriculture and conservation				Other agencies
		Total	Highway	Public works	Total	Physical health	Mental health	Welfare	Total	Fish and game	Agriculture	Natural resources	
Total.....	103,530	78,199	76,670	1,529	9,638	7,404	1,521	713	12,292	3,159	3,710	5,423	3,401
Northeast.....	20,331	14,594	14,225	369	2,619	1,833	571	215	1,926	264	552	1,110	1,192
Connecticut.....	1,463	1,204	1,180	24	159	80	68	11	61	3	58	--	39
Maine.....	716	429	412	17	100	64	36	--	180	51	44	85	7
Massachusetts.....	2,498	1,766	1,766	--	525	326	191	8	154	43	4	107	53
New Hampshire.....	444	360	354	6	44	44	--	--	32	22	3	7	8
New Jersey.....	1,800	1,132	1,112	20	353	218	32	103	216	45	26	145	99
New York.....	6,761	4,464	4,464	--	749	744	--	5	731	--	265	466	817
Pennsylvania.....	5,652	4,629	4,352	277	415	185	228	2	463	81	123	259	145
Rhode Island.....	467	266	254	12	150	89	12	49	39	14	16	9	12
Vermont.....	530	344	331	13	124	83	4	37	50	5	13	32	12
Middle West.....	23,638	18,168	17,972	196	1,950	1,295	563	92	2,649	316	720	1,613	871
Illinois.....	3,038	2,366	2,359	7	230	211	--	19	101	24	31	46	341
Indiana.....	1,316	878	849	29	273	178	91	4	100	--	--	100	65
Iowa.....	1,479	1,222	1,213	9	39	35	4	--	210	--	33	177	8
Kansas.....	1,638	1,397	1,369	28	71	67	--	4	156	13	64	79	14
Michigan.....	3,629	2,765	2,738	27	324	228	92	4	452	--	107	345	88
Minnesota.....	2,294	1,696	1,696	--	162	94	47	21	391	86	71	234	45
Missouri.....	2,145	1,798	1,798	--	91	90	--	1	173	74	65	34	83
Nebraska.....	1,014	801	786	15	72	31	19	22	78	47	12	19	63
North Dakota.....	570	339	327	12	83	78	5	--	145	24	103	18	3
Ohio.....	4,323	3,414	3,362	52	430	125	305	--	441	--	94	347	38
South Dakota.....	261	139	123	16	25	25	--	--	91	48	30	13	6
Wisconsin.....	1,931	1,353	1,352	1	150	133	--	17	311	--	110	201	117
South.....	33,778	27,136	26,548	588	3,128	2,677	140	311	2,886	656	1,089	1,141	628
Alabama.....	2,798	2,449	2,423	26	142	128	14	--	172	40	41	91	35
Arkansas.....	733	546	546	--	31	31	--	--	130	20	75	35	26
Delaware.....	291	234	234	--	26	23	3	--	29	6	10	13	2
Florida.....	1,833	1,062	1,049	13	342	338	1	3	376	37	203	136	53
Georgia.....	2,451	2,156	2,156	--	184	177	--	7	63	25	27	11	48
Kentucky.....	2,379	1,867	1,842	25	185	126	9	50	284	60	2	222	43
Louisiana.....	2,401	2,052	1,743	309	150	150	--	--	176	71	62	43	23
Maryland.....	1,478	1,131	1,084	47	269	194	75	--	50	10	--	40	28
Mississippi.....	1,350	1,063	1,055	13	14	14	--	--	223	11	75	137	45
North Carolina.....	2,024	1,582	1,537	45	191	191	--	--	220	40	128	52	31
Oklahoma.....	612	423	411	12	121	106	6	9	41	--	11	30	27
South Carolina.....	1,369	1,071	1,068	3	99	70	28	1	134	17	56	61	65
Tennessee.....	2,461	1,939	1,938	1	353	349	3	1	160	73	33	54	9
Texas.....	6,900	5,908	5,840	68	613	389	--	224	247	100	121	26	132
Virginia.....	3,438	2,605	2,587	18	383	383	--	--	415	58	236	121	35
West Virginia.....	1,260	1,043	1,035	8	25	8	1	16	166	88	9	69	26
Far West.....	25,783	18,301	17,925	376	1,941	1,599	247	95	4,831	1,923	1,349	1,559	710
Alaska.....	635	353	334	19	111	110	1	--	159	110	--	49	12
Arizona.....	823	644	639	5	71	71	--	--	101	56	29	16	7
California.....	13,059	9,692	9,692	--	765	548	192	25	2,165	773	649	743	437
Colorado.....	1,077	816	745	71	61	61	--	--	170	36	122	12	30
Hawaii.....	863	398	351	47	303	264	38	1	153	33	97	23	9
Idaho.....	759	364	357	7	74	67	7	--	321	71	219	31	--
Montana.....	993	815	789	26	29	29	--	--	143	42	61	40	6
Nevada.....	575	428	411	17	35	26	9	--	94	48	21	25	18
New Mexico.....	838	672	612	60	73	67	--	6	86	36	34	16	7
Oregon.....	2,053	1,214	1,160	54	95	87	--	8	602	247	40	315	142
Utah.....	959	763	711	52	41	40	--	1	149	137	--	12	6
Washington.....	2,285	1,484	1,482	2	266	218	--	48	499	193	41	265	36
Wyoming.....	864	658	642	16	17	11	--	6	189	141	36	12	--

Table A-2. Engineers, by type of agency and State, January 1962

State	All agencies	Highway and public works			Health and welfare				Agriculture and conservation				Other agencies
		Total	Highway	Public works	Total	Physical health	Mental health	Welfare	Total	Fish and game	Agri-culture	Natural re-sources	
Total.....	33,994	30,775	30,048	727	1,257	1,119	72	66	854	109	39	706	1,108
Northeast.....	7,846	6,840	6,662	178	373	317	41	15	245	21	--	224	388
Connecticut.....	643	628	613	15	9	8	--	1	1	1	--	--	5
Maine.....	299	270	258	12	14	12	2	--	10	3	--	7	5
Massachusetts...	772	685	685	--	39	32	7	--	6	--	--	6	42
New Hampshire...	342	328	322	6	13	13	--	--	1	1	--	--	--
New Jersey.....	1,064	909	893	16	55	46	--	9	56	1	--	55	44
New York.....	3,084	2,658	2,658	--	122	120	--	2	67	--	--	67	237
Pennsylvania....	1,237	981	870	111	106	74	32	--	102	15	--	87	48
Rhode Island....	107	93	86	7	9	8	--	1	1	--	--	1	4
Vermont.....	298	288	277	11	6	4	--	2	1	--	--	1	3
Middle West.....	7,257	6,531	6,433	98	326	295	17	14	171	17	19	135	229
Illinois.....	1,550	1,441	1,438	3	45	39	--	6	8	--	--	8	56
Indiana.....	474	418	400	18	38	37	1	--	8	--	--	8	10
Iowa.....	347	310	308	2	24	22	2	--	10	--	--	10	3
Kansas.....	467	413	399	14	20	16	--	4	27	--	18	9	7
Michigan.....	975	852	835	17	58	49	8	1	17	--	1	16	48
Minnesota.....	592	508	508	--	25	25	--	--	39	1	--	38	20
Missouri.....	794	758	758	--	20	20	--	--	8	6	--	2	8
Nebraska.....	279	253	249	4	5	5	--	--	10	7	--	3	11
North Dakota....	168	155	148	7	8	7	1	--	3	--	--	3	2
Ohio.....	896	826	802	24	44	39	5	--	13	--	--	13	13
South Dakota....	76	64	56	8	7	7	--	--	3	3	--	--	2
Wisconsin.....	639	533	532	1	32	29	--	3	25	--	--	25	49
South.....	8,868	8,170	7,950	220	329	283	14	32	140	18	20	102	229
Alabama.....	531	499	495	4	19	17	2	--	8	--	--	8	5
Arkansas.....	177	160	160	--	9	9	--	--	2	2	--	--	6
Delaware.....	70	64	64	--	4	4	--	--	2	--	--	2	--
Florida.....	642	587	578	9	44	42	--	2	5	--	4	1	6
Georgia.....	920	898	898	--	14	14	--	--	5	--	--	5	3
Kentucky.....	711	657	632	25	27	21	1	5	11	1	--	10	16
Louisiana.....	546	495	415	80	12	12	--	--	28	2	--	26	11
Maryland.....	560	516	495	21	29	27	2	--	6	4	--	2	9
Mississippi.....	247	225	215	10	7	7	--	--	3	1	1	1	12
North Carolina..	821	732	705	27	28	28	--	--	44	1	15	28	17
Oklahoma.....	168	137	130	7	14	7	6	1	3	--	--	3	14
South Carolina..	877	825	823	2	16	14	1	1	--	--	--	--	36
Tennessee.....	332	303	303	--	24	22	1	1	5	1	--	4	--
Texas.....	1,393	1,259	1,235	24	63	41	--	22	4	2	--	2	67
Virginia.....	745	697	691	6	16	16	--	--	9	4	--	5	23
West Virginia...	128	116	111	5	3	2	1	--	5	--	--	5	4
Far West.....	10,023	9,234	9,003	231	229	224	--	5	298	53	--	245	262
Alaska.....	256	234	225	9	6	6	--	--	11	3	--	8	5
Arizona.....	116	92	87	5	10	10	--	--	12	4	--	8	2
California.....	6,027	5,559	5,559	--	120	119	--	1	137	5	--	132	211
Colorado.....	408	380	327	53	10	10	--	--	13	3	--	10	5
Hawaii.....	192	181	150	31	9	8	--	1	--	--	--	--	2
Idaho.....	116	107	100	7	5	5	--	--	4	2	--	2	--
Montana.....	319	307	297	10	7	7	--	--	1	--	--	1	4
Nevada.....	187	167	159	8	4	4	--	--	13	3	--	10	3
New Mexico.....	112	92	61	31	6	6	--	--	12	--	--	12	2
Oregon.....	724	658	617	41	23	22	--	1	26	12	--	14	17
Utah.....	236	228	202	26	4	3	--	1	3	1	--	2	1
Washington.....	1,080	988	986	2	21	20	--	1	61	19	--	42	10
Wyoming.....	250	241	233	8	4	4	--	--	5	1	--	4	--

Table A-3. Engineers in all agencies, by occupation and State, January 1962

State	All engineers	Civil engineers	Other engineers
Total.....	33,994	30,047	3,947
Northeast.....	7,846	6,503	1,343
Connecticut.....	643	621	22
Maine.....	299	215	84
Massachusetts.....	772	750	22
New Hampshire.....	342	326	16
New Jersey.....	1,064	677	387
New York.....	3,084	2,724	360
Pennsylvania.....	1,237	952	285
Rhode Island.....	107	93	14
Vermont.....	298	145	153
Middle West.....	7,257	6,799	458
Illinois.....	1,550	1,493	57
Indiana.....	474	455	19
Iowa.....	347	338	9
Kansas.....	467	441	26
Michigan.....	975	839	136
Minnesota.....	592	534	58
Missouri.....	794	782	12
Nebraska.....	279	269	10
North Dakota.....	168	160	8
Ohio.....	896	833	63
South Dakota.....	76	60	16
Wisconsin.....	639	595	44
South.....	8,868	8,255	613
Alabama.....	531	518	13
Arkansas.....	177	170	7
Delaware.....	70	68	2
Florida.....	642	619	23
Georgia.....	920	913	7
Kentucky.....	711	671	40
Louisiana.....	546	458	88
Maryland.....	560	500	60
Mississippi.....	247	161	86
North Carolina.....	821	771	50
Oklahoma.....	168	141	27
South Carolina.....	877	829	48
Tennessee.....	332	326	6
Texas.....	1,393	1,302	91
Virginia.....	745	697	48
West Virginia.....	128	111	17
Far West.....	10,023	8,490	1,533
Alaska.....	256	244	12
Arizona.....	116	92	24
California.....	6,027	5,225	802
Colorado.....	408	103	305
Hawaii.....	192	181	11
Idaho.....	116	105	11
Montana.....	319	82	237
Nevada.....	187	174	13
New Mexico.....	112	80	32
Oregon.....	724	695	29
Utah.....	236	217	19
Washington.....	1,080	1,046	34
Wyoming.....	250	246	4

Table A-4. Engineers in highway agencies, by occupation and State, January 1962

State	All engineers	Civil engineers	Other engineers
Total.....	30,048	27,878	2,170
Northeast.....	6,662	5,809	853
Connecticut.....	613	613	--
Maine.....	258	193	65
Massachusetts.....	685	669	16
New Hampshire.....	322	319	3
New Jersey.....	893	597	296
New York.....	2,658	2,500	158
Pennsylvania.....	870	708	162
Rhode Island.....	86	76	10
Vermont.....	277	134	143
Middle West.....	6,433	6,299	134
Illinois.....	1,438	1,418	20
Indiana.....	400	397	3
Iowa.....	308	308	--
Kansas.....	399	391	8
Michigan.....	835	766	69
Minnesota.....	508	503	5
Missouri.....	758	755	3
Nebraska.....	249	249	--
North Dakota.....	148	143	5
Ohio.....	802	788	14
South Dakota.....	56	50	6
Wisconsin.....	532	531	1
South.....	7,950	7,735	215
Alabama.....	495	495	--
Arkansas.....	460	159	1
Delaware.....	64	64	--
Florida.....	578	573	5
Georgia.....	898	898	--
Kentucky.....	632	616	16
Louisiana.....	415	373	42
Maryland.....	495	464	31
Mississippi.....	215	137	78
North Carolina.....	705	704	1
Oklahoma.....	130	130	--
South Carolina.....	823	816	7
Tennessee.....	303	303	--
Texas.....	1,235	1,235	--
Virginia.....	691	666	25
West Virginia.....	111	102	9
Far West.....	9,003	8,035	968
Alaska.....	225	225	--
Arizona.....	87	86	1
California.....	5,559	5,096	463
Colorado.....	327	50	277
Hawaii.....	150	150	--
Idaho.....	100	98	2
Montana.....	297	72	225
Nevada.....	159	159	--
New Mexico.....	61	61	--
Oregon.....	617	617	--
Utah.....	202	202	--
Washington.....	986	986	--
Wyoming.....	233	233	--

Table A-5: Engineers in public works agencies (except highway), by occupation and State, January 1962

State	All engineers	Civil engineers	Other engineers
Total	727	489	238
Northeast	178	104	74
Connecticut	15	3	12
Maine	12	5	7
Massachusetts	--	--	--
New Hampshire	6	3	3
New Jersey	16	6	10
New York	--	--	--
Pennsylvania	111	75	36
Rhode Island	7	6	1
Vermont	11	6	5
Middle West	98	62	36
Illinois	3	1	2
Indiana	18	16	2
Iowa	2	2	--
Kansas	14	11	3
Michigan	17	5	12
Minnesota	--	--	--
Missouri	--	--	--
Nebraska	4	4	--
North Dakota	7	7	--
Ohio	24	10	14
South Dakota	8	5	3
Wisconsin	1	1	--
South	220	169	51
Alabama	4	2	2
Arkansas	--	--	--
Delaware	--	--	--
Florida	9	3	6
Georgia	--	--	--
Kentucky	25	15	10
Louisiana	80	72	8
Maryland	21	13	8
Mississippi	10	10	--
North Carolina	27	19	8
Oklahoma	7	5	2
South Carolina	2	1	1
Tennessee	--	--	--
Texas	24	20	4
Virginia	6	6	--
West Virginia	5	3	2
Far West	231	154	77
Alaska	9	4	5
Arizona	5	2	3
California	--	--	--
Colorado	53	36	17
Hawaii	31	28	3
Idaho	7	5	2
Montana	10	9	1
Nevada	8	1	7
New Mexico	31	16	15
Oregon	41	33	8
Utah	26	11	15
Washington	2	2	--
Wyoming	8	7	1

Table A-6. Engineers in health and welfare agencies, by occupation and State, January 1962

State	All engineers	Civil engineers	Other engineers
Total.....	1,257	873	384
Northeast.....	373	267	106
Connecticut.....	9	--	9
Maine.....	14	12	2
Massachusetts.....	39	38	1
New Hampshire.....	13	3	10
New Jersey.....	55	11	44
New York.....	122	119	3
Pennsylvania.....	106	74	32
Rhode Island.....	9	7	2
Vermont.....	6	3	3
Middle West.....	326	227	99
Illinois.....	45	39	6
Indiana.....	38	33	5
Iowa.....	24	22	2
Kansas.....	20	20	--
Michigan.....	58	30	28
Minnesota.....	25	1	24
Missouri.....	20	20	--
Nebraska.....	5	3	2
North Dakota.....	8	8	--
Ohio.....	44	29	15
South Dakota.....	7	--	7
Wisconsin.....	32	22	10
South.....	329	245	84
Alabama.....	19	15	4
Arkansas.....	9	9	--
Delaware.....	4	4	--
Florida.....	44	39	5
Georgia.....	14	10	4
Kentucky.....	27	20	7
Louisiana.....	12	12	--
Maryland.....	29	20	9
Mississippi.....	7	7	--
North Carolina.....	28	18	10
Oklahoma.....	14	3	11
South Carolina.....	16	8	8
Tennessee.....	24	22	2
Texas.....	63	41	22
Virginia.....	16	15	1
West Virginia.....	3	2	1
Far West.....	229	134	95
Alaska.....	6	6	--
Arizona.....	10	--	10
California.....	120	64	56
Colorado.....	10	10	--
Hawaii.....	9	1	8
Idaho.....	5	--	5
Montana.....	7	--	7
Nevada.....	4	2	2
New Mexico.....	6	3	3
Oregon.....	23	22	1
Utah.....	4	3	1
Washington.....	21	20	1
Wyoming.....	4	3	1

Table A-7. Engineers in agriculture and conservation agencies, by occupation and State, January 1962

	All engineers	Civil engineers	Other engineers
Total.....	854	502	352
Northeast.....	245	183	62
Connecticut.....	1	1	--
Maine.....	10	4	6
Massachusetts.....	6	3	3
New Hampshire.....	1	1	--
New Jersey.....	56	55	1
New York.....	67	40	27
Pennsylvania.....	102	77	25
Rhode Island.....	1	1	--
Vermont.....	1	1	--
Middle West.....	171	110	61
Illinois.....	8	4	4
Indiana.....	8	8	--
Iowa.....	10	4	6
Kansas.....	27	19	8
Michigan.....	17	14	3
Minnesota.....	39	21	18
Missouri.....	8	6	2
Nebraska.....	10	8	2
North Dakota.....	3	--	3
Ohio.....	13	1	12
South Dakota.....	3	3	--
Wisconsin.....	25	22	3
South.....	140	69	71
Alabama.....	8	5	3
Arkansas.....	2	2	--
Delaware.....	2	--	2
Florida.....	5	--	5
Georgia.....	5	5	--
Kentucky.....	11	8	3
Louisiana.....	28	--	28
Maryland.....	6	3	3
Mississippi.....	3	1	2
North Carolina.....	44	28	16
Oklahoma.....	3	1	2
South Carolina.....	--	--	--
Tennessee.....	5	1	4
Texas.....	4	4	--
Virginia.....	9	8	1
West Virginia.....	5	3	2
Far West.....	298	140	158
Alaska.....	11	4	7
Arizona.....	12	4	8
California.....	137	53	84
Colorado.....	13	6	7
Hawaii.....	--	--	--
Idaho.....	4	2	2
Montana.....	1	--	1
Nevada.....	13	11	2
New Mexico.....	12	--	12
Oregon.....	26	20	6
Utah.....	3	1	2
Washington.....	61	36	25
Wyoming.....	5	3	2

Table A - 8. Engineers in all agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	33,994	769	8,810	6,246	15,989	2,180
Northeast.....	7,846	72	2,080	2,608	2,250	836
Connecticut.....	643	4	94	59	112	374
Maine.....	299	--	42	17	235	5
Massachusetts.....	772	5	356	64	318	29
New Hampshire.....	342	1	135	19	176	11
New Jersey.....	1,064	1	50	318	592	103
New York.....	3,084	29	1,084	1,479	408	84
Pennsylvania.....	1,237	24	267	596	316	34
Rhode Island.....	107	--	37	9	61	--
Vermont.....	298	8	15	47	32	196
Middle West.....	7,257	334	1,496	1,558	3,611	258
Illinois.....	1,550	90	459	707	234	60
Indiana.....	474	1	53	46	364	10
Iowa.....	347	5	18	112	203	9
Kansas.....	467	86	51	46	237	47
Michigan.....	975	71	86	336	454	28
Minnesota.....	592	16	248	111	211	6
Missouri.....	794	11	296	117	347	23
Nebraska.....	279	3	22	29	217	8
North Dakota.....	168	5	43	18	80	22
Ohio.....	896	36	32	6	786	36
South Dakota.....	76	5	25	3	43	--
Wisconsin.....	639	5	163	27	435	9
South.....	8,868	139	1,719	1,405	5,226	379
Alabama.....	531	5	115	64	347	--
Arkansas.....	177	5	44	12	116	--
Delaware.....	70	1	4	--	65	--
Florida.....	642	15	195	44	385	3
Georgia.....	920	14	152	34	720	--
Kentucky.....	711	7	210	84	352	58
Louisiana.....	546	34	68	24	159	261
Maryland.....	560	3	36	261	257	3
Mississippi.....	247	5	67	7	164	4
North Carolina.....	821	2	131	116	564	8
Oklahoma.....	168	20	25	16	106	1
South Carolina.....	877	--	285	79	490	23
Tennessee.....	332	--	9	241	68	14
Texas.....	1,393	13	88	144	1,117	1
Virginia.....	745	15	232	227	271	--
West Virginia.....	128	--	58	52	15	3
Far West.....	10,023	224	3,515	675	4,902	707
Alaska.....	256	--	157	8	86	5
Arizona.....	116	5	11	1	99	--
California.....	6,027	99	2,794	457	2,103	574
Colorado.....	408	22	106	13	228	39
Hawaii.....	192	5	95	17	63	12
Idaho.....	116	2	11	10	88	5
Montana.....	319	35	52	85	101	46
Nevada.....	187	9	88	9	81	--
New Mexico.....	112	5	13	28	65	1
Oregon.....	724	30	15	5	661	13
Utah.....	236	5	99	27	93	12
Washington.....	1,080	3	60	4	1,013	--
Wyoming.....	250	4	14	11	221	--

Table A-9. Engineers in highway agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	30,048	650	7,914	5,229	14,317	1,938
Northeast.....	6,662	59	1,786	2,348	1,682	787
Connecticut.....	613	4	82	50	104	373
Maine.....	258	--	29	5	224	--
Massachusetts.....	685	--	326	31	313	15
New Hampshire.....	322	--	130	11	170	11
New Jersey.....	893	--	38	270	482	103
New York.....	2,658	26	957	1,375	222	78
Pennsylvania.....	870	21	185	563	90	11
Rhode Island.....	86	--	30	3	53	--
Vermont.....	277	8	9	40	24	196
Middle West.....	6,433	296	1,277	1,375	3,317	168
Illinois.....	1,438	60	436	679	208	55
Indiana.....	400	--	20	22	358	--
Iowa.....	308	5	14	90	199	--
Kansas.....	399	80	36	29	215	39
Michigan.....	835	71	50	299	407	8
Minnesota.....	508	16	227	107	158	--
Missouri.....	758	10	286	104	341	17
Nebraska.....	249	3	12	26	200	8
North Dakota.....	148	5	36	18	70	19
Ohio.....	802	36	9	1	734	22
South Dakota.....	56	5	21	--	30	--
Wisconsin.....	532	5	130	--	397	--
South.....	7,950	120	1,528	1,178	4,808	316
Alabama.....	495	1	103	56	335	--
Arkansas.....	160	5	40	8	107	--
Delaware.....	64	1	3	--	60	--
Florida.....	578	7	188	10	373	--
Georgia.....	898	14	145	25	714	--
Kentucky.....	632	7	191	66	335	33
Louisiana.....	415	34	31	--	90	260
Maryland.....	495	3	17	231	244	--
Mississippi.....	215	5	66	--	144	--
North Carolina.....	705	--	99	101	500	5
Oklahoma.....	130	20	20	--	90	--
South Carolina.....	823	--	276	69	478	--
Tennessee.....	303	--	2	241	46	14
Texas.....	1,235	12	62	123	1,037	1
Virginia.....	691	11	230	200	250	--
West Virginia.....	111	--	55	48	5	3
Far West.....	9,003	175	3,323	328	4,510	667
Alaska.....	225	--	150	5	70	--
Arizona.....	87	1	7	--	79	--
California.....	5,559	93	2,729	192	1,971	574
Colorado.....	327	21	81	--	194	31
Hawaii.....	150	1	73	11	56	9
Idaho.....	100	2	10	4	84	--
Montana.....	297	35	49	80	87	46
Nevada.....	159	5	84	8	62	--
New Mexico.....	61	5	3	2	51	--
Oregon.....	617	3	--	--	614	--
Utah.....	202	5	90	19	81	7
Washington.....	986	--	35	--	951	--
Wyoming.....	233	4	12	7	210	--

Table A-10. Engineers in public works agencies (except highway), by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	727	34	216	106	267	104
Northeast.....	178	1	55	29	67	26
Connecticut.....	15	--	9	--	6	--
Maine.....	12	--	4	--	5	3
Massachusetts.....	--	--	--	--	--	--
New Hampshire.....	6	1	2	2	1	--
New Jersey.....	16	--	--	13	3	--
New York.....	--	--	--	--	--	--
Pennsylvania.....	111	--	34	10	44	23
Rhode Island.....	7	--	4	--	3	--
Vermont.....	11	--	2	4	5	--
Middle West.....	98	--	47	22	15	14
Illinois.....	3	--	2	--	1	--
Indiana.....	18	--	13	4	--	1
Iowa.....	2	--	1	1	--	--
Kansas.....	14	--	13	1	--	--
Michigan.....	17	--	5	11	1	--
Minnesota.....	--	--	--	--	--	--
Missouri.....	--	--	--	--	--	--
Nebraska.....	4	--	--	--	4	--
North Dakota.....	7	--	5	--	2	--
Ohio.....	24	--	4	2	5	13
South Dakota.....	8	--	3	3	2	--
Wisconsin.....	1	--	1	--	--	--
South.....	220	--	60	20	109	31
Alabama.....	4	--	2	2	--	--
Arkansas.....	--	--	--	--	--	--
Delaware.....	--	--	--	--	--	--
Florida.....	9	--	2	6	1	--
Georgia.....	--	--	--	--	--	--
Kentucky.....	25	--	--	--	--	25
Louisiana.....	80	--	27	4	49	--
Maryland.....	21	--	13	1	7	--
Mississippi.....	10	--	1	6	3	--
North Carolina.....	27	--	3	--	21	3
Oklahoma.....	7	--	3	1	2	1
South Carolina.....	2	--	--	--	--	2
Tennessee.....	--	--	--	--	--	--
Texas.....	24	--	9	--	15	--
Virginia.....	6	--	--	--	6	--
West Virginia.....	5	--	--	--	5	--
Far West.....	231	33	54	35	76	33
Alaska.....	9	--	--	--	4	5
Arizona.....	5	--	2	--	3	--
California.....	--	--	--	--	--	--
Colorado.....	53	1	19	3	29	1
Hawaii.....	31	4	18	6	--	3
Idaho.....	7	--	--	--	2	5
Montana.....	10	--	1	--	9	--
Nevada.....	8	4	1	1	2	--
New Mexico.....	31	--	5	15	10	1
Oregon.....	41	24	2	2	--	13
Utah.....	26	--	6	6	9	5
Washington.....	2	--	--	2	--	--
Wyoming.....	8	--	--	--	8	--

Table A-11. Engineers in health and welfare agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	1,257	19	183	380	639	36
Northeast.....	373	3	34	90	240	6
Connecticut.....	9	--	--	8	--	1
Maine.....	14	--	4	8	2	--
Massachusetts.....	39	1	15	19	4	--
New Hampshire.....	13	--	2	6	5	--
New Jersey.....	55	1	2	35	17	--
New York.....	122	1	3	7	106	5
Pennsylvania.....	106	--	4	2	100	--
Rhode Island.....	9	--	1	4	4	--
Vermont.....	6	--	3	1	2	--
Middle West.....	326	--	46	103	149	28
Illinois.....	45	--	6	23	16	--
Indiana.....	38	--	7	19	4	8
Iowa.....	24	--	2	20	2	--
Kansas.....	20	--	--	16	4	--
Michigan.....	58	--	9	--	29	20
Minnesota.....	25	--	2	--	23	--
Missouri.....	20	--	3	13	4	--
Nebraska.....	5	--	1	1	3	--
North Dakota.....	8	--	1	--	7	--
Ohio.....	44	--	6	1	37	--
South Dakota.....	7	--	1	--	6	--
Wisconsin.....	32	--	8	10	14	--
South.....	329	7	67	126	127	2
Alabama.....	19	3	6	4	6	--
Arkansas.....	9	--	4	--	5	--
Delaware.....	4	--	--	--	4	--
Florida.....	44	4	5	28	5	2
Georgia.....	14	--	5	8	1	--
Kentucky.....	27	--	7	9	11	--
Louisiana.....	12	--	4	6	2	--
Maryland.....	29	--	5	24	--	--
Mississippi.....	7	--	--	--	7	--
North Carolina.....	28	--	4	11	13	--
Oklahoma.....	14	--	1	4	9	--
South Carolina.....	16	--	6	3	7	--
Tennessee.....	24	--	5	--	19	--
Texas.....	63	--	15	12	36	--
Virginia.....	16	--	--	15	1	--
West Virginia.....	3	--	--	2	1	--
Far West.....	229	9	36	61	123	--
Alaska.....	6	--	--	--	6	--
Arizona.....	10	4	1	--	5	--
California.....	120	5	15	38	62	--
Colorado.....	10	--	2	7	1	--
Hawaii.....	9	--	3	--	6	--
Idaho.....	5	--	1	4	--	--
Montana.....	7	--	2	4	1	--
Nevada.....	4	--	1	--	3	--
New Mexico.....	6	--	2	2	2	--
Oregon.....	23	--	5	--	18	--
Utah.....	4	--	2	1	1	--
Washington.....	21	--	2	1	18	--
Wyoming.....	4	--	--	4	--	--

Table A-12. Engineers in agriculture and conservation agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	854	28	248	122	425	31
Northeast.....	245	6	59	28	150	2
Connecticut.....	1	--	--	--	1	--
Maine.....	10	--	5	1	3	1
Massachusetts.....	6	3	2	1	--	--
New Hampshire.....	1	--	1	--	--	--
New Jersey.....	56	--	--	--	56	--
New York.....	67	--	16	9	41	1
Pennsylvania.....	102	3	35	16	48	--
Rhode Island.....	1	--	--	--	1	--
Vermont.....	1	--	--	1	--	--
Middle West.....	171	6	55	12	78	20
Illinois.....	8	--	2	--	2	4
Indiana.....	8	--	6	1	--	1
Iowa.....	10	--	1	--	--	9
Kansas.....	27	6	2	--	18	1
Michigan.....	17	--	5	8	4	--
Minnesota.....	39	--	14	--	25	--
Missouri.....	8	--	6	--	2	--
Nebraska.....	10	--	2	--	8	--
North Dakota.....	3	--	--	--	--	3
Ohio.....	13	--	6	1	6	--
South Dakota.....	3	--	--	--	3	--
Wisconsin.....	25	--	11	2	10	2
South.....	140	11	49	21	56	3
Alabama.....	8	1	3	2	2	--
Arkansas.....	2	--	--	--	2	--
Delaware.....	2	--	1	--	1	--
Florida.....	5	4	--	--	1	--
Georgia.....	5	--	2	1	2	--
Kentucky.....	11	--	6	4	1	--
Louisiana.....	28	--	6	12	9	1
Maryland.....	6	--	--	--	4	2
Mississippi.....	3	--	--	--	3	--
North Carolina.....	44	2	22	2	18	--
Oklahoma.....	3	--	1	--	2	--
South Carolina.....	--	--	--	--	--	--
Tennessee.....	5	--	2	--	3	--
Texas.....	4	--	1	--	3	--
Virginia.....	9	4	2	--	3	--
West Virginia.....	5	--	3	--	2	--
Far West.....	298	5	85	61	141	6
Alaska.....	11	--	3	3	5	--
Arizona.....	12	--	--	1	11	--
California.....	137	--	46	43	48	--
Colorado.....	13	--	2	2	3	6
Hawaii.....	--	--	--	--	--	--
Idaho.....	4	--	--	2	2	--
Montana.....	1	--	--	--	1	--
Nevada.....	13	--	2	--	11	--
New Mexico.....	12	--	3	7	2	--
Oregon.....	26	3	5	3	15	--
Utah.....	3	--	1	--	2	--
Washington.....	61	2	21	--	38	--
Wyoming.....	5	--	2	--	3	--

Table A-13. Engineers in all agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Engineers.....	33,994	769	8,810	6,246	15,989	2,180
Civil.....	30,047	607	7,964	5,268	14,518	1,690
Other.....	3,947	162	846	978	1,471	490
Percent distribution						
Engineers.....	100.0	2.3	25.9	18.4	47.0	6.4
Civil.....	100.0	2.0	26.5	17.5	48.4	5.6
Other.....	100.0	4.1	21.4	24.8	37.3	12.4

Table A-14. Engineers in highway agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Engineers.....	30,048	650	7,914	5,229	14,317	1,938
Civil.....	27,878	540	7,394	4,847	13,506	1,591
Other.....	2,170	110	520	382	811	347
Percent distribution						
Engineers.....	100.0	2.2	26.3	17.4	47.6	6.4
Civil.....	100.0	1.9	26.5	17.4	48.5	5.7
Other.....	100.0	5.1	24.0	17.6	37.4	16.0

Table A-15. Engineers in public works agencies (except highway), by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Engineers.....	727	34	216	106	267	104
Civil.....	489	30	165	57	195	42
Other.....	238	4	51	49	72	62
Percent distribution						
Engineers.....	100.0	4.7	29.7	14.6	36.7	14.3
Civil.....	100.0	6.1	33.7	11.7	39.9	8.6
Other.....	100.0	1.7	21.4	20.6	30.3	26.1

Table A-16. Engineers in health and welfare agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Engineers.....	1,257	19	183	380	639	36
Civil.....	873	12	146	263	424	28
Other.....	384	7	37	117	215	8
Percent distribution						
Engineers.....	100.0	1.5	14.6	30.2	50.8	2.9
Civil.....	100.0	1.4	16.7	30.1	48.6	3.2
Other.....	100.0	1.8	9.6	30.5	56.0	2.1

Table A-17, Engineers in agriculture and conservation agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Engineers.....	854	28	248	122	425	31
Civil.....	502	8	157	38	290	9
Other.....	352	20	91	84	135	22
Percent distribution						
Engineers.....	100.0	3.3	29.0	14.3	49.8	3.6
Civil.....	100.0	1.6	31.3	7.6	57.7	1.8
Other.....	100.0	5.7	25.9	23.9	38.3	6.2

Table A-18. Scientists in all agencies, by type of agency and State, January 1962

State	All agencies	Highway and public works			Health and welfare				Agriculture and conservation				Other agencies
		Total	Highway	Public works	Total	Physical health	Mental health	Welfare	Total	Fish and game	Agri-culture	Natural re-sources	
Total.....	14,035	825	730	95	4,986	3,836	825	325	7,447	2,027	2,439	2,981	777
Northeast.....	2,787	120	116	4	1,436	974	348	114	981	190	256	535	250
Connecticut.....	190	12	12	--	113	57	52	4	58	--	58	--	7
Maine.....	207	5	5	--	57	37	20	--	145	47	32	66	--
Massachusetts....	504	--	--	--	384	205	174	5	112	19	--	93	8
New Hampshire....	50	3	3	--	14	14	--	--	30	21	2	7	3
New Jersey.....	288	2	2	--	206	107	17	82	69	44	17	8	11
New York.....	788	32	32	--	380	377	--	3	214	--	11	203	162
Pennsylvania.....	564	65	62	3	157	86	71	--	286	43	117	126	56
Rhode Island.....	95	--	--	--	66	56	10	--	29	11	13	5	--
Vermont.....	101	1	--	1	59	35	4	20	38	5	6	27	3
Middle West.....	2,735	198	182	16	853	639	175	39	1,451	232	462	757	233
Illinois.....	347	31	28	3	122	109	--	13	51	17	11	23	143
Indiana.....	219	7	7	--	140	109	27	4	64	--	--	64	8
Iowa.....	67	6	--	6	9	9	--	--	49	--	29	20	3
Kansas.....	164	52	52	--	39	39	--	--	70	--	26	44	3
Michigan.....	487	24	21	3	121	108	13	--	335	--	92	243	7
Minnesota.....	415	8	8	--	95	48	30	17	302	78	68	156	10
Missouri.....	192	30	30	--	39	38	--	1	102	46	33	23	21
Nebraska.....	83	7	7	--	27	15	12	--	40	32	4	4	9
North Dakota....	145	7	6	1	45	44	1	--	93	19	60	14	--
Ohio.....	326	12	11	1	159	67	92	--	147	--	62	85	8
South Dakota....	67	4	2	2	9	9	--	--	54	40	8	6	--
Wisconsin.....	223	10	10	--	48	44	--	4	144	--	69	75	21
South.....	3,890	240	188	52	1,478	1,280	74	124	2,014	475	802	737	158
Alabama.....	192	15	15	--	67	65	2	--	99	22	26	51	11
Arkansas.....	131	12	12	--	10	10	--	--	107	17	55	35	2
Delaware.....	39	--	--	--	16	13	3	--	23	6	10	7	--
Florida.....	495	6	4	2	190	188	1	1	282	34	143	105	17
Georgia.....	129	2	2	--	63	57	--	6	43	20	18	5	21
Kentucky.....	224	12	12	--	108	78	6	24	95	27	--	68	9
Louisiana.....	110	9	9	--	21	21	--	--	75	57	5	13	5
Maryland.....	215	--	--	--	166	123	43	--	42	6	--	36	7
Mississippi.....	292	59	59	--	7	7	--	--	199	10	60	129	27
North Carolina...	265	31	14	17	91	91	--	--	131	39	86	6	12
Oklahoma.....	67	6	6	0	33	25	--	8	24	--	8	16	4
South Carolina...	153	2	2	--	44	27	17	--	94	16	29	49	13
Tennessee.....	278	15	15	--	148	146	2	--	115	36	33	46	--
Texas.....	594	23	--	23	343	258	--	85	207	98	100	9	21
Virginia.....	582	33	26	7	170	170	--	--	375	42	224	109	4
West Virginia....	124	15	12	3	1	1	--	--	103	45	5	53	5
Far West.....	4,623	267	244	23	1,219	943	228	48	3,001	1,130	919	952	136
Alaska.....	143	15	15	--	12	11	1	--	115	97	--	18	1
Arizona.....	134	6	6	--	48	48	--	--	75	45	23	7	5
California.....	1,888	136	136	--	559	364	177	18	1,140	319	327	494	53
Colorado.....	143	8	--	8	29	29	--	--	105	28	76	1	1
Hawaii.....	434	9	8	1	290	256	34	--	130	20	96	14	5
Idaho.....	344	10	10	--	37	30	7	--	297	69	201	27	--
Montana.....	131	1	--	1	16	16	--	--	112	42	52	18	2
Nevada.....	93	--	--	--	23	14	9	--	67	43	15	9	3
New Mexico.....	131	8	8	--	52	46	--	6	67	36	27	4	4
Oregon.....	496	29	26	3	52	50	--	2	354	154	38	162	61
Utah.....	180	36	26	10	20	20	--	--	124	122	--	2	--
Washington.....	404	--	--	--	73	55	--	18	330	105	34	191	1
Wyoming.....	102	9	9	--	8	4	--	4	85	50	30	5	--

Table A-19. Scientists in all agencies, by occupation and State, January 1962

State	All scientists	Chemists	Geologists and geophysicists	Mathematicians	Medical scientists	Agricultural scientists	Biological scientists	Psychologists	Other scientists
Total.....	14,035	1,381	898	448	1,930	4,073	4,514	517	274
Northeast.....	2,787	325	93	125	515	648	812	189	80
Connecticut.....	190	21	5	5	1	58	74	24	2
Maine.....	207	10	31	5	26	69	60	5	1
Massachusetts.....	504	42	--	10	215	91	78	68	--
New Hampshire.....	50	11	--	1	6	9	23	--	--
New Jersey.....	288	17	7	19	124	32	78	8	3
New York.....	788	171	28	66	42	103	348	10	20
Pennsylvania.....	564	43	22	16	66	233	65	67	52
Rhode Island.....	95	5	--	3	12	5	69	1	--
Vermont.....	101	5	--	--	23	48	17	6	2
Middle West.....	2,735	327	311	113	257	695	882	77	73
Illinois.....	347	63	69	28	17	22	145	--	3
Indiana.....	219	16	7	4	36	29	75	13	39
Iowa.....	67	11	9	1	5	12	19	--	10
Kansas.....	164	38	71	2	6	20	15	--	12
Michigan.....	487	70	49	16	--	142	202	7	1
Minnesota.....	415	32	5	10	30	188	111	36	3
Missouri.....	192	21	46	9	22	31	59	1	3
Nebraska.....	83	9	4	3	16	6	40	4	1
North Dakota.....	145	13	21	--	9	59	38	5	--
Ohio.....	326	24	20	16	87	96	79	4	--
South Dakota.....	67	--	9	--	2	8	47	--	1
Wisconsin.....	223	30	1	24	27	82	52	7	--
South.....	3,890	430	220	93	619	1,161	1,105	176	86
Alabama.....	192	24	21	5	8	58	74	2	--
Arkansas.....	131	14	3	6	1	83	21	--	3
Delaware.....	39	--	4	1	6	13	13	1	1
Florida.....	495	75	16	6	16	168	152	57	5
Georgia.....	129	29	4	4	40	--	43	5	4
Kentucky.....	224	24	7	2	47	80	52	7	5
Louisiana.....	110	18	21	--	6	5	55	5	--
Maryland.....	215	24	2	10	65	35	68	9	2
Mississippi.....	292	16	11	3	15	161	35	--	51
North Carolina.....	265	53	19	16	24	51	90	4	8
Oklahoma.....	67	18	19	2	6	--	13	9	--
South Carolina.....	153	17	8	3	28	41	29	26	1
Tennessee.....	278	20	16	8	66	47	118	1	2
Texas.....	594	23	26	15	176	114	190	50	--
Virginia.....	582	62	28	10	115	259	105	--	3
West Virginia.....	124	13	15	2	--	46	47	--	1
Far West.....	4,623	299	274	117	539	1,569	1,715	75	35
Alaska.....	143	6	15	2	6	13	101	--	--
Arizona.....	134	6	6	3	24	24	63	7	1
California.....	1,888	199	149	49	242	641	580	16	12
Colorado.....	143	15	1	7	3	68	41	--	8
Hawaii.....	434	--	1	12	147	70	178	26	--
Idaho.....	344	3	8	3	16	212	98	4	--
Montana.....	131	8	2	3	5	63	49	1	--
Nevada.....	93	6	2	1	8	20	49	7	--
New Mexico.....	131	7	12	4	20	27	56	4	1
Oregon.....	496	24	24	20	22	208	181	4	13
Utah.....	180	5	28	8	7	--	132	--	--
Washington.....	404	17	14	4	37	194	133	5	--
Wyoming.....	102	3	12	1	2	29	54	1	--

Table A - 20. Scientists in highway and public works agencies, by occupation and State, January 1962

State	All scientists	Chemists	Geologists and geophysicists	Mathematicians	Other scientists
Total.....	825	225	382	99	119
Northeast.....	120	29	23	23	45
Connecticut.....	12	7	5	--	--
Maine.....	5	--	5	--	--
Massachusetts.....	--	--	--	--	--
New Hampshire.....	3	2	--	1	--
New Jersey.....	2	--	--	1	1
New York.....	32	10	12	10	--
Pennsylvania.....	65	9	1	11	44
Rhode Island.....	--	--	--	--	--
Vermont.....	1	1	--	--	--
Middle West.....	198	94	80	17	7
Illinois.....	31	26	3	2	--
Indiana.....	7	5	2	--	--
Iowa.....	6	2	--	--	4
Kansas.....	52	22	30	--	--
Michigan.....	24	6	15	2	1
Minnesota.....	8	8	--	--	--
Missouri.....	30	10	10	9	1
Nebraska.....	7	4	3	--	--
North Dakota.....	7	--	7	--	--
Ohio.....	12	6	6	--	--
South Dakota.....	4	--	3	--	1
Wisconsin.....	10	5	1	4	--
South.....	240	79	85	19	57
Alabama.....	15	6	4	5	--
Arkansas.....	12	1	3	5	3
Delaware.....	--	--	--	--	--
Florida.....	6	3	3	--	--
Georgia.....	2	2	--	--	--
Kentucky.....	12	6	5	1	--
Louisiana.....	9	2	7	--	--
Maryland.....	--	--	--	--	--
Mississippi.....	59	6	2	--	51
North Carolina.....	31	19	12	--	--
Oklahoma.....	6	2	4	--	--
South Carolina.....	2	--	--	2	--
Tennessee.....	15	12	3	--	--
Texas.....	23	--	22	1	--
Virginia.....	33	10	15	5	3
West Virginia.....	15	10	5	--	--
Far West.....	267	23	194	40	10
Alaska.....	15	2	13	--	--
Arizona.....	6	2	3	--	1
California.....	136	7	113	15	1
Colorado.....	8	--	--	--	8
Hawaii.....	9	0	1	8	--
Idaho.....	10	1	8	1	--
Montana.....	1	--	1	--	--
Nevada.....	--	--	--	--	--
New Mexico.....	8	--	8	--	--
Oregon.....	29	9	13	7	--
Utah.....	36	2	26	8	--
Washington.....	--	--	--	--	--
Wyoming.....	9	--	8	1	--

Table A -21. Scientists in health and welfare agencies, by occupation and State, January 1962

State	All scientists	Chemists	Mathematicians	Medical scientists	Agricultural scientists	Biological scientists	Psychologists	Other scientists
Total.....	4,986	632	151	1,823	79	1,760	458	83
Northeast.....	1,436	230	28	504	40	474	150	10
Connecticut.....	113	14	--	1	--	74	24	--
Maine.....	57	10	5	26	--	11	5	--
Massachusetts.....	384	36	10	213	3	54	68	--
New Hampshire.....	14	7	--	5	--	2	--	--
New Jersey.....	206	12	10	124	10	40	8	2
New York.....	380	128	--	35	12	197	--	8
Pennsylvania.....	157	14	--	65	--	40	38	--
Rhode Island.....	66	5	3	12	--	45	1	--
Vermont.....	59	4	--	23	15	11	6	--
Middle West.....	853	99	51	244	10	334	71	44
Illinois.....	122	10	19	17	--	76	--	--
Indiana.....	140	11	2	36	3	42	13	33
Iowa.....	9	--	--	4	1	4	--	--
Kansas.....	39	6	2	6	2	14	--	9
Michigan.....	121	38	6	--	--	72	5	--
Minnesota.....	95	1	7	24	1	25	36	1
Missouri.....	39	3	--	22	--	13	1	--
Nebraska.....	27	3	--	13	--	6	4	1
North Dakota.....	45	13	--	7	1	19	5	--
Ohio.....	159	11	12	87	1	44	4	--
South Dakota.....	9	--	--	2	--	7	--	--
Wisconsin.....	48	3	3	26	1	12	3	--
South.....	1,478	125	31	578	24	537	164	19
Alabama.....	67	4	--	8	--	53	2	--
Arkansas.....	10	5	--	1	--	4	--	--
Delaware.....	16	--	1	6	--	7	1	1
Florida.....	190	11	--	16	1	100	57	5
Georgia.....	63	11	2	40	--	6	4	--
Kentucky.....	108	16	1	47	10	24	6	4
Louisiana.....	21	8	--	6	--	2	5	--
Maryland.....	166	22	6	65	1	61	9	2
Mississippi.....	7	7	--	--	--	--	--	--
North Carolina.....	91	7	1	24	1	50	4	4
Oklahoma.....	33	3	2	6	--	13	9	--
South Carolina.....	44	6	--	9	--	12	16	1
Tennessee.....	148	8	8	59	2	68	1	2
Texas.....	343	12	6	176	9	90	50	--
Virginia.....	170	4	4	115	--	47	--	--
West Virginia.....	1	1	--	--	--	--	--	--
Far West.....	1,219	178	41	497	5	415	73	10
Alaska.....	12	1	--	6	--	5	--	--
Arizona.....	48	4	2	24	--	11	7	--
California.....	559	135	27	205	3	164	16	9
Colorado.....	29	11	2	3	--	13	--	--
Hawaii.....	290	--	--	146	--	118	26	--
Idaho.....	37	1	2	14	--	16	4	--
Montana.....	16	2	--	5	--	8	1	--
Nevada.....	23	3	--	8	--	5	7	--
New Mexico.....	52	5	4	20	2	16	4	1
Oregon.....	52	7	4	20	--	19	2	--
Utah.....	20	3	--	7	--	10	--	--
Washington.....	73	6	--	37	--	25	5	--
Wyoming.....	8	--	--	2	--	5	1	--

Table A-22. Scientists in agriculture and conservation agencies, by occupation and State, January 1962

State	All scientists	Chemists	Geologists and geophysicists	Mathematicians	Medical scientists	Agricultural scientists	Biological scientists	Other scientists
Total.....	7,447	387	411	40	36	3,922	2,636	15
Northeast.....	981	18	54	1	--	600	306	2
Connecticut.....	58	--	--	--	--	58	--	--
Maine.....	145	--	26	--	--	69	49	1
Massachusetts.....	112	--	--	--	--	88	24	--
New Hampshire.....	30	--	--	--	--	9	21	--
New Jersey.....	69	1	7	1	--	22	38	--
New York.....	214	9	--	--	--	85	120	--
Pennsylvania.....	286	8	21	--	--	233	24	--
Rhode Island.....	29	--	--	--	--	5	24	--
Vermont.....	38	--	--	--	--	31	6	1
Middle West.....	1,451	103	147	12	8	679	495	7
Illinois.....	51	12	--	--	--	22	17	--
Indiana.....	64	--	5	--	--	26	33	--
Iowa.....	49	9	9	--	--	11	15	5
Kansas.....	70	10	41	--	--	18	1	--
Michigan.....	335	25	34	4	--	142	130	--
Minnesota.....	302	17	5	1	6	187	86	--
Missouri.....	102	5	18	--	--	31	46	2
Nebraska.....	40	2	1	--	--	3	34	--
North Dakota.....	93	--	14	--	2	58	19	--
Ohio.....	147	4	14	--	--	95	34	--
South Dakota.....	54	--	6	--	--	8	40	--
Wisconsin.....	144	19	--	7	--	78	40	--
South.....	2,014	186	131	11	26	1,121	538	1
Alabama.....	99	14	17	--	--	58	10	--
Arkansas.....	107	7	--	--	--	83	17	--
Delaware.....	23	--	4	--	--	13	6	--
Florida.....	282	57	12	1	--	160	52	--
Georgia.....	43	13	3	--	--	--	27	--
Kentucky.....	95	--	--	--	--	69	26	--
Louisiana.....	75	3	14	--	75	5	53	--
Maryland.....	42	--	2	--	--	33	7	--
Mississippi.....	199	--	9	1	--	155	34	--
North Carolina.....	131	25	7	9	--	50	40	--
Oklahoma.....	24	9	15	--	--	--	--	--
South Carolina.....	94	10	8	--	19	41	16	--
Tennessee.....	115	--	13	--	7	45	50	--
Texas.....	207	3	4	--	--	105	95	--
Virginia.....	375	45	13	--	--	259	58	--
West Virginia.....	103	--	10	--	--	45	47	1
Far West.....	3,001	80	79	16	2	1,522	1,297	5
Alaska.....	115	3	2	1	--	13	96	--
Arizona.....	75	--	3	1	--	19	52	--
California.....	1,140	43	36	6	--	637	416	2
Colorado.....	105	4	1	4	--	68	28	--
Hawaii.....	130	--	--	--	--	70	60	--
Idaho.....	297	1	--	--	2	212	82	--
Montana.....	112	6	1	1	--	63	41	--
Nevada.....	67	3	1	--	--	20	43	--
New Mexico.....	67	2	4	--	--	21	40	--
Oregon.....	354	4	11	--	--	176	160	3
Utah.....	124	--	2	--	--	--	122	--
Washington.....	330	11	14	3	--	194	108	--
Wyoming.....	85	3	4	--	--	29	49	--

Table A - 23. Scientists in all agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	14,035	2,568	1,437	2,511	6,953	566
Northeast.....	2,787	591	285	351	1,458	102
Connecticut.....	190	19	24	82	53	12
Maine.....	207	58	22	25	99	3
Massachusetts.....	504	45	54	57	305	43
New Hampshire.....	50	4	8	6	31	1
New Jersey.....	288	33	32	15	197	11
New York.....	788	357	83	20	320	8
Pennsylvania.....	564	59	22	98	364	21
Rhode Island.....	95	8	16	40	29	2
Vermont.....	101	8	24	8	60	1
Middle West.....	2,735	641	245	400	1,304	145
Illinois.....	347	145	27	35	128	12
Indiana.....	219	36	40	21	117	5
Iowa.....	67	3	6	15	37	6
Kansas.....	164	77	8	56	22	1
Michigan.....	487	95	51	88	164	89
Minnesota.....	415	103	21	59	225	7
Missouri.....	192	43	28	24	94	3
Nebraska.....	83	15	6	13	45	4
North Dakota.....	145	18	8	22	97	--
Ohio.....	326	75	36	37	177	1
South Dakota.....	67	19	3	5	40	--
Wisconsin.....	223	12	11	25	158	17
South.....	3,890	551	494	919	1,821	105
Alabama.....	192	38	22	41	84	7
Arkansas.....	131	5	8	38	44	36
Delaware.....	39	12	3	5	18	1
Florida.....	495	102	54	158	171	10
Georgia.....	129	11	33	33	42	10
Kentucky.....	224	17	33	46	128	--
Louisiana.....	110	31	1	4	73	1
Maryland.....	215	36	53	19	106	1
Mississippi.....	292	13	28	59	189	3
North Carolina.....	265	10	41	91	111	12
Oklahoma.....	67	20	6	11	30	--
South Carolina.....	153	16	12	12	102	11
Tennessee.....	278	35	27	1	208	7
Texas.....	594	134	82	216	161	1
Virginia.....	582	41	80	182	278	1
West Virginia.....	124	30	11	3	76	4
Far West.....	4,623	785	413	841	2,370	214
Alaska.....	143	17	11	20	95	--
Arizona.....	134	20	12	17	85	--
California.....	1,888	430	139	278	1,021	20
Colorado.....	143	39	12	47	44	1
Hawaii.....	434	35	40	153	205	1
Idaho.....	344	26	12	124	103	79
Montana.....	131	15	12	16	48	40
Nevada.....	93	2	8	14	69	--
New Mexico.....	131	38	12	25	51	5
Oregon.....	496	55	75	45	265	56
Utah.....	180	33	42	46	53	6
Washington.....	404	64	13	20	307	--
Wyoming.....	102	11	25	36	24	6

Table A-24. Scientists in highway and public works agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	825	146	188	190	270	31
Northeast.....	120	12	34	41	22	11
Connecticut.....	12	--	--	12	--	--
Maine.....	5	--	--	5	--	--
Massachusetts.....	--	--	--	--	--	--
New Hampshire.....	3	2	1	--	--	--
New Jersey.....	2	--	2	--	--	--
New York.....	32	--	22	10	--	--
Pennsylvania.....	65	10	9	14	21	11
Rhode Island.....	--	--	--	--	--	--
Vermont.....	1	--	--	--	1	--
Middle West.....	198	69	10	80	32	7
Illinois.....	31	2	3	26	--	--
Indiana.....	7	--	--	--	7	--
Iowa.....	6	--	--	--	--	6
Kansas.....	52	31	--	21	--	--
Michigan.....	24	21	1	2	--	--
Minnesota.....	8	1	--	7	--	--
Missouri.....	30	--	5	10	15	--
Nebraska.....	7	--	--	7	--	--
North Dakota.....	7	--	1	6	--	--
Ohio.....	12	11	--	--	--	1
South Dakota.....	4	2	--	1	1	--
Wisconsin.....	10	1	--	--	9	--
South.....	240	38	57	35	105	5
Alabama.....	15	--	9	6	--	--
Arkansas.....	12	--	7	3	1	1
Delaware.....	--	--	--	--	--	--
Florida.....	6	--	2	3	1	--
Georgia.....	2	2	--	--	--	--
Kentucky.....	12	--	1	11	--	--
Louisiana.....	9	9	--	--	--	--
Maryland.....	--	--	--	--	--	--
Mississippi.....	59	--	16	--	43	--
North Carolina.....	31	--	1	5	25	--
Oklahoma.....	6	6	--	--	--	--
South Carolina.....	2	--	--	--	2	--
Tennessee.....	15	15	--	--	--	--
Texas.....	23	4	2	--	17	--
Virginia.....	33	2	19	5	7	--
West Virginia.....	15	--	--	2	9	4
Far West.....	267	27	87	34	111	8
Alaska.....	15	--	--	15	--	--
Arizona.....	6	1	--	--	5	--
California.....	136	4	69	--	63	--
Colorado.....	8	3	2	--	2	1
Hawaii.....	9	1	7	--	--	1
Idaho.....	10	--	--	1	9	--
Montana.....	1	--	1	--	--	--
Nevada.....	--	--	--	--	--	--
New Mexico.....	8	8	--	--	--	--
Oregon.....	29	2	7	1	18	1
Utah.....	36	6	1	15	9	5
Washington.....	--	--	--	--	--	--
Wyoming.....	9	2	--	2	5	--

Table A - 25. Scientists in health and welfare agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	4,986	1,102	587	669	2,429	199
Northeast.....	1,436	388	124	144	717	63
Connecticut.....	113	15	6	37	46	9
Maine.....	57	1	7	--	47	2
Massachusetts.....	384	30	43	51	219	41
New Hampshire.....	14	--	6	6	2	--
New Jersey.....	206	31	25	10	131	9
New York.....	380	283	3	--	94	--
Pennsylvania.....	157	25	8	--	124	--
Rhode Island.....	66	--	8	39	17	2
Vermont.....	59	3	18	1	37	--
Middle West.....	853	195	119	70	374	95
Illinois.....	122	14	17	2	89	--
Indiana.....	140	26	26	13	70	5
Iowa.....	9	--	4	5	--	--
Kansas.....	39	2	--	31	6	--
Michigan.....	121	21	13	--	--	87
Minnesota.....	95	52	3	1	38	1
Missouri.....	39	--	17	3	18	1
Nebraska.....	27	12	4	2	9	--
North Dakota.....	45	6	--	10	29	--
Ohio.....	159	58	23	--	78	--
South Dakota.....	9	3	1	1	4	--
Wisconsin.....	48	1	11	2	33	1
South.....	1,478	176	250	299	725	28
Alabama.....	67	13	6	--	44	4
Arkansas.....	10	--	--	--	10	--
Delaware.....	16	3	--	1	12	--
Florida.....	190	62	12	49	57	10
Georgia.....	63	3	19	15	26	--
Kentucky.....	108	4	26	35	43	--
Louisiana.....	21	1	--	3	16	1
Maryland.....	166	30	51	15	69	1
Mississippi.....	7	--	--	--	7	--
North Carolina.....	91	3	24	45	10	9
Oklahoma.....	33	2	6	--	25	--
South Carolina.....	44	8	4	2	30	--
Tennessee.....	148	9	18	--	119	2
Texas.....	343	38	62	111	131	1
Virginia.....	170	--	22	22	126	--
West Virginia.....	1	--	--	1	--	--
Far West.....	1,219	343	94	156	613	13
Alaska.....	12	--	--	--	12	--
Arizona.....	48	7	5	7	29	--
California.....	559	300	22	42	195	--
Colorado.....	29	2	4	--	23	--
Hawaii.....	290	7	18	81	184	--
Idaho.....	37	10	8	--	16	3
Montana.....	16	--	4	1	11	--
Nevada.....	23	--	3	6	14	--
New Mexico.....	52	7	11	1	33	--
Oregon.....	52	--	14	9	24	5
Utah.....	20	--	5	1	13	1
Washington.....	73	10	--	4	59	--
Wyoming.....	8	--	--	4	--	4

Table A - 26. Scientists in agriculture and conservation agencies, by primary function and State, January 1962

State	All functions	Research	Planning	Inspection	Operations and services	Other
Total.....	7,447	1,094	541	1,541	4,008	263
Northeast.....	981	139	75	140	617	10
Connecticut.....	58	--	18	33	4	3
Maine.....	145	57	15	20	52	1
Massachusetts.....	112	13	10	2	85	2
New Hampshire.....	30	1	1	--	27	1
New Jersey.....	69	2	4	--	62	1
New York.....	214	30	8	1	174	1
Pennsylvania.....	286	23	5	76	182	--
Rhode Island.....	29	8	8	1	12	--
Vermont.....	38	5	6	7	19	1
Middle West.....	1,451	234	105	237	857	18
Illinois.....	51	--	4	7	29	11
Indiana.....	64	10	13	8	33	--
Iowa.....	49	3	2	9	35	--
Kansas.....	70	44	6	4	16	--
Michigan.....	335	51	37	85	162	--
Minnesota.....	302	50	15	44	187	6
Missouri.....	102	34	5	9	54	--
Nebraska.....	40	--	1	4	34	1
North Dakota.....	93	12	7	6	68	--
Ohio.....	147	6	13	36	92	--
South Dakota.....	54	14	2	3	35	--
Wisconsin.....	144	10	--	22	112	--
South.....	2,014	333	142	553	943	43
Alabama.....	99	25	7	25	40	2
Arkansas.....	107	5	1	35	31	35
Delaware.....	23	9	3	4	6	1
Florida.....	282	39	29	104	110	--
Georgia.....	43	5	7	16	15	--
Kentucky.....	95	13	4	--	78	--
Louisiana.....	75	21	1	1	52	--
Maryland.....	42	6	2	--	34	--
Mississippi.....	199	13	5	52	129	--
North Carolina.....	131	7	9	41	74	--
Oklahoma.....	24	12	--	9	3	--
South Carolina.....	94	8	8	10	68	--
Tennessee.....	115	11	9	1	89	5
Texas.....	207	90	10	103	4	--
Virginia.....	375	39	39	152	145	--
West Virginia.....	103	30	8	--	65	--
Far West.....	3,001	388	219	611	1,591	192
Alaska.....	115	17	11	5	82	--
Arizona.....	75	12	7	10	46	--
California.....	1,140	123	41	198	758	20
Colorado.....	105	33	6	47	19	--
Hawaii.....	130	23	14	72	21	--
Idaho.....	297	16	4	123	78	76
Montana.....	112	15	6	15	36	40
Nevada.....	67	--	5	7	55	--
New Mexico.....	67	23	1	24	14	5
Oregon.....	354	36	51	34	184	49
Utah.....	124	27	36	30	31	--
Washington.....	330	54	12	16	248	--
Wyoming.....	85	9	25	30	19	2

Table A-27. Scientists in all agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Scientists.....	14,035	2,568	1,437	2,511	6,953	566
Chemists.....	1,381	318	61	519	437	46
Geologists and geophysicists....	898	334	138	90	316	20
Mathematicians.....	448	128	115	13	153	39
Medical scientists.....	1,930	282	374	179	1,037	58
Agricultural scientists.....	4,073	91	233	1,037	2,539	173
Biological scientists.....	4,514	1,256	415	644	2,033	166
Psychologists.....	517	111	46	3	327	30
Other scientists.....	274	48	55	26	111	34
Percent distribution						
Scientists.....	100.0	18.3	10.2	17.9	49.6	4.0
Chemists.....	100.0	23.0	4.4	37.7	31.6	3.3
Geologists and geophysicists....	100.0	37.2	15.4	10.0	35.2	2.2
Mathematicians.....	100.0	28.6	25.7	2.9	34.1	8.7
Medical scientists.....	100.0	14.6	19.4	9.3	53.7	3.0
Agricultural scientists.....	100.0	2.2	5.7	25.5	62.4	4.2
Biological scientists.....	100.0	27.8	9.2	14.3	45.0	3.7
Psychologists.....	100.0	21.5	8.9	.6	63.2	5.8
Other scientists.....	100.0	17.5	20.1	9.5	40.5	12.4

Table A-28. Scientists in highway agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Scientists.....	730	136	174	186	212	22
Chemists.....	199	38	2	124	35	--
Geologists and geophysicists....	336	80	87	56	105	8
Mathematicians.....	94	8	63	6	14	3
Other scientists.....	101	10	22	--	58	11
Percent distribution						
Scientists.....	100.0	18.6	23.8	25.5	29.1	3.0
Chemists.....	100.0	19.1	1.0	62.3	17.6	--
Geologists and geophysicists....	100.0	23.8	25.9	16.7	31.2	2.4
Mathematicians.....	100.0	8.5	67.0	6.4	14.9	3.2
Other scientists.....	100.0	9.9	21.8	--	57.4	10.9

Table A-29. Scientists in public works agencies (except highway), by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Scientists.....	95	10	14	4	58	9
Chemists.....	26	--	--	1	22	3
Geologists and geophysicists.....	46	6	11	2	26	1
Mathematicians.....	5	1	1	--	3	--
Other scientists.....	18	3	2	1	7	5
Percent distribution						
Scientists.....	100.0	5.3	39.9	5.3	46.1	3.4
Chemists.....	100.0	--	--	25.6	67.4	7.0
Geologists and geophysicists.....	100.0	5.3	45.0	1.2	47.9	.6
Mathematicians.....	100.0	3.3	86.7	--	10.0	--
Other scientists.....	100.0	21.1	10.5	5.3	36.8	26.3

Table A-30. Scientists in health and welfare agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Scientists.....	4,986	1,102	587	669	2,429	199
Chemists.....	632	233	31	113	220	35
Mathematicians.....	151	60	23	--	58	10
Medical scientists.....	1,823	277	354	147	994	51
Agricultural scientists.....	79	6	14	11	47	1
Biological scientists.....	1,760	395	108	377	796	84
Psychologists.....	458	107	44	--	291	16
Other scientists.....	83	24	13	21	23	2
Percent distribution						
Scientists.....	100.0	22.1	11.8	13.4	48.7	4.0
Chemists.....	100.0	36.9	4.9	17.9	34.8	5.5
Mathematicians.....	100.0	39.8	15.2	--	38.4	6.6
Medical scientists.....	100.0	15.2	19.4	8.1	54.5	2.8
Agricultural scientists.....	100.0	7.6	17.7	13.9	59.5	1.3
Biological scientists.....	100.0	22.4	6.1	21.4	45.3	4.8
Psychologists.....	100.0	23.4	9.6	--	63.5	3.5
Other scientists.....	100.0	28.9	15.7	25.3	27.7	2.4

Table A-31. Scientists in agriculture and conservation agencies, by primary function and occupation, January 1962

Occupation	All functions	Research	Planning	Inspection	Operations and services	Other
Number employed						
Scientists.....	7,447	1,094	541	1,541	4,008	263
Chemists.....	387	23	14	228	121	1
Geologists and geophysicists..	411	171	28	30	171	11
Mathematicians.....	40	11	3	--	25	1
Medical scientists.....	36	--	1	3	26	6
Agricultural scientists.....	3,922	34	207	1,024	2,438	169
Biological scientists.....	2,636	804	286	254	1,219	73
Other scientists.....	15	1	2	2	8	2
Percent distribution						
Scientists.....	100.0	14.7	7.3	20.7	53.8	3.5
Chemists.....	100.0	5.9	3.6	58.9	31.3	.3
Geologists and geophysicists..	100.0	41.6	6.8	7.3	41.6	2.7
Mathematicians.....	100.0	27.5	7.5	--	62.5	2.5
Medical scientists.....	100.0	--	2.8	8.3	72.2	16.7
Agricultural scientists.....	100.0	2.1	5.3	26.1	62.2	4.3
Biological scientists.....	100.0	30.5	10.8	9.6	46.3	2.8
Other scientists.....	100.0	6.7	13.3	13.3	53.4	13.3

Table A-32. Scientists in all agencies, by highest academic degree and State, January 1962

State	All scientists	Degree			
		Doctor's	Master's	Bachelor's	None
Total.....	14,035	887	2,765	8,463	1,920
Northeast.....	2,787	275	499	1,625	388
Connecticut.....	190	23	7	112	48
Maine.....	207	17	40	143	7
Massachusetts.....	504	12	107	184	201
New Hampshire.....	50	--	11	30	9
New Jersey.....	288	34	81	158	15
New York.....	788	128	116	521	23
Pennsylvania.....	564	53	102	351	58
Rhode Island.....	95	2	17	68	8
Vermont.....	101	6	18	58	19
Middle West.....	2,735	212	560	1,705	258
Illinois.....	347	67	66	192	22
Indiana.....	219	16	36	149	18
Iowa.....	67	10	17	21	19
Kansas.....	164	14	40	102	8
Michigan.....	487	40	117	319	11
Minnesota.....	445	24	41	227	123
Missouri.....	192	12	61	101	18
Nebraska.....	83	10	23	41	9
North Dakota.....	145	7	28	102	8
Ohio.....	326	4	38	267	17
South Dakota.....	67	1	17	48	1
Wisconsin.....	223	7	76	136	4
South.....	3,890	158	843	2,560	329
Alabama.....	192	4	20	160	8
Arkansas.....	131	--	28	77	26
Delaware.....	39	5	8	26	--
Florida.....	495	27	132	309	27
Georgia.....	129	6	28	88	7
Kentucky.....	224	3	34	171	16
Louisiana.....	110	6	37	67	--
Maryland.....	215	17	48	145	5
Mississippi.....	292	4	34	200	54
North Carolina.....	265	11	74	174	6
Oklahoma.....	67	10	26	27	4
South Carolina.....	153	15	31	103	4
Tennessee.....	278	4	103	154	17
Texas.....	594	25	120	332	117
Virginia.....	582	15	54	477	36
West Virginia.....	124	6	66	50	2
Far West.....	4,623	242	863	2,573	945
Alaska.....	143	6	26	80	31
Arizona.....	134	11	34	81	8
California.....	1,888	118	268	868	634
Colorado.....	143	2	43	59	39
Hawaii.....	434	20	133	238	43
Idaho.....	344	23	51	251	19
Montana.....	131	3	50	77	1
Nevada.....	93	7	14	60	12
New Mexico.....	131	4	20	104	3
Oregon.....	496	24	120	308	44
Utah.....	180	2	36	78	64
Washington.....	404	18	53	287	46
Wyoming.....	102	4	15	82	1

Table A-33. Scientists with health degrees, by type of degree and State, January 1962

State	All health degrees	M. D.	D. D. S.	D. V. M.	Other
Total.....	2,640	1,093	202	793	552
Northeast.....	528	299	61	81	87
Connecticut.....	34	27	--	2	5
Maine.....	38	22	2	6	8
Massachusetts.....	136	71	27	4	34
New Hampshire.....	7	4	1	2	--
New Jersey.....	120	51	18	18	33
New York.....	53	40	1	9	3
Pennsylvania.....	109	60	10	37	2
Rhode Island.....	16	14	1	--	1
Vermont.....	15	10	1	3	1
Middle West.....	44	184	22	187	47
Illinois.....	17	11	5	1	--
Indiana.....	34	26	6	2	--
Iowa.....	5	3	1	1	--
Kansas.....	14	6	1	7	--
Michigan.....	44	5	1	38	--
Minnesota.....	54	18	1	24	11
Missouri.....	24	10	2	8	4
Nebraska.....	10	5	1	--	4
North Dakota.....	59	7	1	51	--
Ohio.....	107	82	2	22	1
South Dakota.....	9	--	--	8	1
Wisconsin.....	63	11	1	25	26
South.....	786	403	74	138	171
Alabama.....	20	6	2	12	--
Arkansas.....	4	--	--	4	--
Delaware.....	4	3	--	--	1
Florida.....	231	104	17	58	52
Georgia.....	37	24	3	2	8
Kentucky.....	42	21	6	3	12
Louisiana.....	4	--	--	4	--
Maryland.....	71	63	2	--	6
Mississippi.....	8	5	--	3	--
North Carolina.....	43	12	2	1	28
Oklahoma.....	18	6	--	--	12
South Carolina.....	35	8	1	19	7
Tennessee.....	61	24	7	1	29
Texas.....	69	40	7	7	15
Virginia.....	137	87	27	23	--
West Virginia.....	2	--	--	1	1
Far West.....	886	207	45	387	247
Alaska.....	10	6	--	1	3
Arizona.....	29	19	1	8	1
California.....	337	84	4	176	73
Colorado.....	3	2	--	1	--
Hawaii.....	29	20	--	9	--
Idaho.....	197	11	--	124	62
Montana.....	43	4	35	--	4
Nevada.....	10	2	--	5	3
New Mexico.....	32	17	2	5	8
Oregon.....	50	8	1	18	23
Utah.....	5	2	1	--	2
Washington.....	111	29	1	13	68
Wyoming.....	30	3	--	27	--

Table A-34. Technicians, by type of agency and State, January 1962

State	All agencies	Highway and public works			Health and welfare				Agriculture and conservation				Other agencies
		Total	Highway	Public works	Total	Physical health	Mental health	Welfare	Total	Fish and game	Agri-culture	Natural re-sources	
Total.....	55,501	46,599	45,892	707	3,395	2,449	624	322	3,991	1,023	1,232	1,736	1,516
Northeast.....	9,698	7,634	7,447	187	810	542	182	86	700	53	296	351	554
Connecticut.....	630	564	555	9	37	15	16	6	2	2	--	--	27
Maine.....	210	154	149	5	29	15	14	--	25	1	12	12	2
Massachusetts...	1,222	1,031	1,081	--	102	89	10	3	36	24	4	8	3
New Hampshire...	52	29	29	--	17	17	--	--	1	--	1	--	5
New Jersey.....	448	221	217	4	92	65	15	12	91	--	9	82	44
New York.....	2,839	1,774	1,774	--	247	247	--	--	450	--	254	196	418
Pennsylvania.....	3,351	3,583	3,420	163	152	25	125	2	75	23	6	46	41
Rhode Island....	265	173	168	5	75	25	2	48	9	3	3	3	8
Vermont.....	131	55	54	1	59	44	--	15	11	--	7	4	6
Middle West.....	13,646	11,439	11,357	82	771	361	371	39	1,027	67	239	721	409
Illinois.....	1,141	894	893	1	63	63	--	--	42	7	20	15	142
Indiana.....	623	453	442	11	95	32	63	--	28	--	--	28	47
Iowa.....	1,065	906	905	1	6	4	2	--	151	--	4	147	2
Kansas.....	1,007	932	918	14	12	12	--	--	59	13	20	26	4
Michigan.....	2,167	1,839	1,832	7	145	71	71	3	100	--	14	86	33
Minnesota.....	1,287	1,180	1,180	--	42	21	17	4	50	7	3	40	15
Missouri.....	1,159	1,010	1,010	--	32	32	--	--	63	22	32	9	54
Nebraska.....	652	541	530	11	40	11	7	22	28	8	8	12	43
North Dakota....	257	177	173	4	30	27	3	--	49	5	43	1	1
Ohio.....	3,101	2,576	2,549	27	227	19	208	--	281	--	32	249	17
South Dakota....	118	71	65	6	9	9	--	--	34	5	22	7	4
Wisconsin.....	1,069	810	810	--	70	60	--	10	142	--	41	101	47
South.....	21,020	18,726	18,410	316	1,321	1,114	52	155	732	163	267	302	241
Alabama.....	2,075	1,935	1,913	22	56	46	10	--	65	18	15	32	19
Arkansas.....	425	374	374	--	12	12	--	--	21	1	20	--	18
Delaware.....	182	170	170	--	6	6	--	--	4	--	--	4	2
Florida.....	696	469	467	2	108	103	--	--	39	3	56	30	30
Georgia.....	1,402	1,256	1,256	--	107	106	--	1	15	5	9	1	24
Kentucky.....	1,444	1,198	1,198	--	50	27	2	21	178	32	2	144	18
Louisiana.....	1,745	1,548	1,319	229	117	117	--	--	73	12	57	4	7
Maryland.....	703	615	589	26	74	44	30	--	2	--	--	2	12
Mississippi.....	811	784	781	3	--	--	--	--	21	--	14	7	6
North Carolina..	938	819	818	1	72	72	--	--	45	--	27	13	2
Oklahoma.....	377	280	275	5	74	74	--	--	14	--	3	11	9
South Carolina..	339	244	243	1	39	29	10	--	40	1	27	12	16
Tennessee.....	1,851	1,621	1,620	1	181	181	--	--	40	36	--	4	9
Texas.....	4,913	4,626	4,605	21	207	90	--	117	36	--	21	15	44
Virginia.....	2,111	1,875	1,870	5	197	197	--	--	31	12	12	7	8
West Virginia...	1,008	912	912	--	21	5	--	--	16	58	43	4	17
Far West.....	11,137	8,800	8,678	122	493	432	19	42	1,532	740	430	362	312
Alaska.....	236	104	94	10	93	93	--	--	33	10	--	23	6
Arizona.....	573	546	546	--	13	13	--	--	14	7	6	1	--
California.....	5,144	3,997	3,997	--	86	65	15	6	888	449	322	117	173
Colorado.....	526	428	418	10	22	22	--	--	52	5	46	1	24
Hawaii.....	237	208	193	15	4	--	4	--	23	13	1	9	2
Idaho.....	299	247	247	--	32	32	--	--	20	--	18	2	--
Montana.....	543	507	492	15	6	6	--	--	30	--	9	21	--
Nevada.....	295	261	252	9	8	8	--	--	14	2	6	6	12
New Mexico.....	595	572	543	29	15	15	--	--	7	--	7	--	1
Oregon.....	833	527	517	10	20	15	--	5	222	31	2	139	64
Utah.....	543	499	483	16	17	17	--	--	22	14	--	8	5
Washington.....	801	496	496	--	172	143	--	29	108	69	7	32	25
Wyoming.....	512	408	400	8	5	3	--	2	99	90	6	3	--

Table A-35. Technicians in all agencies, by occupation and State, January 1962

State	Total technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Medical, agricultural, and biological technicians	Other technicians
Total.....	55,501	6,684	12,240	28,343	1,030	5,671	1,533
Northeast.....	9,698	1,021	1,776	5,266	201	1,098	336
Connecticut.....	630	58	162	355	--	37	18
Maine.....	210	30	62	67	--	37	14
Massachusetts.....	1,222	269	373	391	--	118	71
New Hampshire.....	52	2	27	2	2	10	9
New Jersey.....	448	36	41	147	97	87	40
New York.....	2,889	377	844	999	52	542	75
Pennsylvania.....	3,851	188	244	3,159	7	163	90
Rhode Island.....	265	44	16	113	27	47	18
Vermont.....	131	17	7	33	16	57	1
Middle West.....	13,646	1,734	3,054	6,789	344	1,400	325
Illinois.....	1,141	334	101	532	47	95	32
Indiana.....	623	57	58	349	11	88	60
Iowa.....	1,065	163	327	450	4	119	2
Kansas.....	1,007	87	808	9	13	41	49
Michigan.....	2,167	176	61	1,498	224	185	23
Minnesota.....	1,287	375	339	495	--	64	14
Missouri.....	1,159	97	63	889	16	73	21
Nebraska.....	652	39	359	192	2	46	14
North Dakota.....	257	52	27	99	12	64	3
Ohio.....	3,101	258	660	1,699	10	420	54
South Dakota.....	118	25	45	5	5	34	4
Wisconsin.....	1,069	71	206	572	--	171	49
South.....	21,020	1,924	4,867	11,730	297	1,582	620
Alabama.....	2,075	189	1,432	325	13	65	51
Arkansas.....	425	16	59	291	10	33	16
Delaware.....	182	12	62	97	1	3	7
Florida.....	696	155	156	187	52	124	22
Georgia.....	1,402	1	178	799	19	92	313
Kentucky.....	1,444	107	781	333	111	77	35
Louisiana.....	1,745	39	377	1,138	--	176	15
Maryland.....	703	95	36	480	5	73	14
Mississippi.....	811	77	--	661	--	19	54
North Carolina.....	938	99	400	347	--	91	1
Oklahoma.....	377	106	150	--	26	73	22
South Carolina.....	339	118	30	113	--	48	30
Tennessee.....	1,851	60	192	1,379	--	214	6
Texas.....	4,796	360	458	3,828	34	111	5
Virginia.....	2,228	434	426	1,033	3	315	17
West Virginia.....	1,008	56	130	719	23	68	12
Far West.....	11,137	2,005	2,543	4,558	188	1,591	252
Alaska.....	236	31	5	101	67	28	4
Arizona.....	573	72	254	223	--	23	1
California.....	5,144	811	717	2,684	37	814	81
Colorado.....	526	55	337	39	--	57	38
Hawaii.....	237	64	29	115	--	18	11
Idaho.....	299	85	75	55	32	52	--
Montana.....	543	186	2	317	--	24	14
Nevada.....	295	32	27	201	--	1	34
New Mexico.....	595	282	98	193	--	22	--
Oregon.....	833	137	339	130	2	195	30
Utah.....	543	92	205	156	44	30	16
Washington.....	801	104	405	36	6	227	23
Wyoming.....	512	54	50	308	--	100	--

Table A-36. Technicians in highway agencies, by occupation and State, January 1962

State	All technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Other technicians
Total	45,892	6,088	12,037	26,778	505	484
Northeast	7,447	918	1,695	4,635	128	71
Connecticut.....	555	55	162	338	--	--
Maine.....	149	25	62	62	--	--
Massachusetts.....	1,081	267	373	376	--	65
New Hampshire.....	29	2	27	--	--	--
New Jersey.....	217	14	41	77	82	3
New York.....	1,774	355	780	609	30	--
Pennsylvania.....	3,420	145	229	3,046	--	--
Rhode Island.....	168	39	14	112	--	3
Vermont.....	54	16	7	15	16	--
Middle West	11,357	1,559	2,986	6,513	234	65
Illinois.....	893	296	100	497	--	--
Indiana.....	442	50	50	342	--	--
Iowa.....	905	154	317	434	--	--
Kansas.....	918	62	808	--	5	43
Michigan.....	1,882	156	55	1,456	215	--
Minnesota.....	1,180	355	333	482	--	10
Missouri.....	1,010	89	56	851	14	--
Nebraska.....	530	30	344	156	--	--
North Dakota.....	173	50	25	98	--	--
Ohio.....	2,549	238	653	1,658	--	--
South Dakota.....	65	20	45	--	--	--
Wisconsin.....	810	59	200	539	--	12
South	18,410	1,790	4,835	11,391	59	336
Alabama.....	1,913	175	1,425	313	--	--
Arkansas.....	374	14	59	291	10	--
Delaware.....	170	12	62	96	--	--
Florida.....	467	150	156	161	--	--
Georgia.....	1,256	--	178	793	--	285
Kentucky.....	1,198	93	781	324	--	--
Louisiana.....	1,319	25	368	926	--	--
Maryland.....	589	85	32	467	--	5
Mississippi.....	781	76	--	659	--	46
North Carolina.....	818	80	400	338	--	--
Oklahoma.....	275	100	150	--	25	--
South Carolina.....	243	115	28	100	--	--
Tennessee.....	1,620	51	192	1,377	--	--
Texas.....	4,605	333	454	3,818	--	--
Virginia.....	1,870	430	422	1,018	--	--
West Virginia.....	912	51	128	710	23	--
Far West	8,678	1,821	2,521	4,239	85	12
Alaska.....	94	22	--	63	9	--
Arizona.....	546	71	254	221	--	--
California.....	3,997	749	712	2,524	--	12
Colorado.....	418	50	337	31	--	--
Hawaii.....	193	54	28	111	--	--
Idaho.....	247	85	75	55	32	--
Montana.....	492	175	--	317	--	--
Nevada.....	252	29	27	196	--	--
New Mexico.....	543	277	95	171	--	--
Oregon.....	517	78	339	100	--	--
Utah.....	483	83	203	153	44	--
Washington.....	496	95	401	--	--	--
Wyoming.....	400	53	50	297	--	--

Table A-37. Technicians in public works agencies (except highway), by occupation and State, January 1962

State	All technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Other technicians
Total.....	707	116	31	414	3	143
Northeast.....	187	14	3	96	2	72
Connecticut.....	9	--	--	9	--	--
Maine.....	5	1	--	--	--	4
Massachusetts.....	--	--	--	--	--	--
New Hampshire.....	--	--	--	--	--	--
New Jersey.....	4	--	--	--	--	4
New York.....	--	--	--	--	--	--
Pennsylvania.....	163	11	1	85	2	64
Rhode Island.....	5	2	2	1	--	--
Vermont.....	1	--	--	1	--	--
Middle West.....	82	28	9	35	--	10
Illinois.....	1	1	--	--	--	--
Indiana.....	11	3	7	1	--	--
Iowa.....	1	1	--	--	--	--
Kansas.....	14	14	--	--	--	--
Michigan.....	7	--	--	7	--	--
Minnesota.....	--	--	--	--	--	--
Missouri.....	--	--	--	--	--	--
Nebraska.....	11	1	--	10	--	--
North Dakota.....	4	2	2	--	--	--
Ohio.....	27	5	--	12	--	10
South Dakota.....	6	1	--	5	--	--
Wisconsin.....	--	--	--	--	--	--
South.....	316	41	11	226	--	38
Alabama.....	22	8	--	--	--	14
Arkansas.....	--	--	--	--	--	--
Delaware.....	--	--	--	--	--	--
Florida.....	2	2	--	--	--	--
Georgia.....	--	--	--	--	--	--
Kentucky.....	--	--	--	--	--	--
Louisiana.....	229	9	8	203	--	9
Maryland.....	26	9	3	10	--	4
Mississippi.....	3	1	--	1	--	1
North Carolina.....	1	--	--	--	--	1
Oklahoma.....	5	1	--	--	--	4
South Carolina.....	1	--	--	--	--	1
Tennessee.....	1	1	--	--	--	--
Texas.....	21	10	--	9	--	2
Virginia.....	5	--	--	3	--	2
West Virginia.....	--	--	--	--	--	--
Far West.....	122	33	8	57	1	23
Alaska.....	10	--	--	10	--	--
Arizona.....	--	--	--	--	--	--
California.....	--	--	--	--	--	--
Colorado.....	10	2	--	2	--	6
Hawaii.....	15	8	1	4	--	2
Idaho.....	--	--	--	--	--	--
Montana.....	15	11	2	--	--	2
Nevada.....	9	1	--	2	--	6
New Mexico.....	29	4	3	22	--	--
Oregon.....	10	3	--	6	1	--
Utah.....	16	4	2	3	--	7
Washington.....	--	--	--	--	--	--
Wyoming.....	8	--	--	8	--	--

Table A--38. Technicians in health and welfare agencies, by occupation and State, January 1962

State	All technicians	Engineering technicians	Physical science technicians	Medical, agricultural, and biological technicians	Other technicians
Total.....	3,395	143	218	2,806	228
Northeast.....	810	26	63	676	45
Connecticut.....	37	--	--	37	--
Maine.....	29	3	--	24	2
Massachusetts.....	102	14	--	84	4
New Hampshire.....	17	--	--	9	8
New Jersey.....	92	--	15	77	--
New York.....	247	--	22	204	21
Pennsylvania.....	152	--	--	151	1
Rhode Island.....	75	--	26	41	8
Vermont.....	59	9	--	49	1
Middle West.....	771	58	25	585	103
Illinois.....	63	22	--	41	--
Indiana.....	95	--	--	74	21
Iowa.....	6	--	--	4	2
Kansas.....	12	--	--	12	--
Michigan.....	145	--	1	121	23
Minnesota.....	42	11	--	31	--
Missouri.....	32	--	--	32	--
Nebraska.....	40	18	2	11	9
North Dakota.....	30	--	12	18	--
Ohio.....	227	7	10	174	36
South Dakota.....	9	--	--	8	1
Wisconsin.....	70	--	--	59	11
South.....	1,321	21	31	1,211	58
Alabama.....	56	5	--	41	10
Arkansas.....	12	--	--	12	--
Delaware.....	6	--	--	--	6
Florida.....	108	--	24	82	2
Georgia.....	107	--	7	92	8
Kentucky.....	50	5	--	44	1
Louisiana.....	117	--	--	111	6
Maryland.....	74	--	--	73	1
Mississippi.....	--	--	--	--	--
North Carolina.....	72	--	--	72	--
Oklahoma.....	74	--	--	70	4
South Carolina.....	39	--	--	31	8
Tennessee.....	181	2	--	179	--
Texas.....	90	--	--	90	--
Virginia.....	314	9	--	293	12
West Virginia.....	21	--	--	21	--
Far West.....	493	38	99	334	22
Alaska.....	93	20	58	15	--
Arizona.....	13	2	--	10	1
California.....	86	--	37	41	8
Colorado.....	22	5	--	13	4
Hawaii.....	4	--	--	4	--
Idaho.....	32	--	--	32	--
Montana.....	6	--	--	5	1
Nevada.....	8	--	--	--	8
New Mexico.....	15	--	--	15	--
Oregon.....	20	--	--	20	--
Utah.....	17	--	--	17	--
Washington.....	172	11	4	157	--
Wyoming.....	5	--	--	5	--

Table A-39. Technicians in physical health agencies, by occupation and State, January 1962

State	All technicians	Engineering technicians	Medical, agricultural, and biological technicians	Physical science technicians	Other technicians
Total.....	2,449	109	2,061	169	110
Northeast.....	542	23	457	27	35
Connecticut.....	15	--	15	--	--
Maine.....	15	--	15	--	--
Massachusetts.....	89	14	71	--	4
New Hampshire.....	17	--	9	--	8
New Jersey.....	65	--	65	--	--
New York.....	247	--	204	22	21
Pennsylvania.....	25	--	24	--	1
Rhode Island.....	25	--	20	5	--
Vermont.....	44	9	34	--	1
Middle West.....	361	36	287	23	15
Illinois.....	63	22	41	--	--
Indiana.....	32	--	20	--	12
Iowa.....	4	--	4	--	--
Kansas.....	12	--	12	--	--
Michigan.....	71	--	69	1	1
Minnesota.....	21	11	10	--	--
Missouri.....	32	--	32	--	--
Nebraska.....	11	--	11	--	--
North Dakota.....	27	--	15	12	--
Ohio.....	19	3	6	10	--
South Dakota.....	9	--	8	--	1
Wisconsin.....	60	--	59	--	1
South.....	1,114	12	1,032	31	39
Alabama.....	46	5	33	--	8
Arkansas.....	12	--	12	--	--
Delaware.....	6	--	--	--	6
Florida.....	108	--	82	24	2
Georgia.....	106	--	91	7	8
Kentucky.....	27	5	22	--	--
Louisiana.....	117	--	111	--	6
Maryland.....	44	--	43	--	1
Mississippi.....	--	--	--	--	--
North Carolina.....	72	--	72	--	--
Oklahoma.....	74	--	70	--	4
South Carolina.....	29	--	25	--	4
Tennessee.....	181	2	179	--	--
Texas.....	90	--	90	--	--
Virginia.....	197	--	197	--	--
West Virginia.....	5	--	5	--	--
Far West.....	432	38	285	88	21
Alaska.....	93	20	15	58	--
Arizona.....	13	2	10	--	1
California.....	65	--	32	26	7
Colorado.....	22	5	13	--	4
Hawaii.....	--	--	--	--	--
Idaho.....	32	--	32	--	--
Montana.....	6	--	5	--	1
Nevada.....	8	--	--	--	8
New Mexico.....	15	--	15	--	--
Oregon.....	15	--	15	--	--
Utah.....	17	--	17	--	--
Washington.....	143	11	128	4	--
Wyoming.....	3	--	3	--	--

Table A-40. Technicians in agriculture and conservation agencies, by occupation and State, January 1962

State	Total technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Medical, agricultural, and biological technicians	Other technicians
Total.....	3,991	248	151	312	190	2,777	313
Northeast.....	700	55	76	119	1	420	29
Connecticut.....	2	--	--	--	--	--	2
Maine.....	25	4	--	2	--	13	6
Massachusetts.....	36	2	--	--	--	34	--
New Hampshire.....	1	--	--	--	--	1	--
New Jersey.....	91	12	--	70	--	9	--
New York.....	450	17	64	15	--	338	16
Pennsylvania.....	75	20	12	28	1	12	2
Rhode Island.....	9	--	--	--	--	6	3
Vermont.....	11	--	--	4	--	7	--
Middle West.....	1,027	73	45	78	27	768	36
Illinois.....	42	2	--	2	--	32	6
Indiana.....	28	3	1	5	--	14	5
Iowa.....	151	8	10	16	4	113	--
Kansas.....	59	8	--	9	8	29	5
Michigan.....	100	13	4	11	8	64	--
Minnesota.....	50	11	6	--	--	33	--
Missouri.....	63	5	7	3	2	40	6
Nebraska.....	28	1	11	2	--	14	--
North Dakota.....	49	--	--	--	--	46	3
Ohio.....	281	8	3	21	--	245	4
South Dakota.....	34	3	--	--	5	26	--
Wisconsin.....	142	11	3	9	--	112	7
South.....	732	50	16	45	159	352	110
Alabama.....	65	5	7	7	13	18	15
Arkansas.....	21	--	--	--	--	21	--
Delaware.....	4	--	--	1	1	1	1
Florida.....	89	1	--	16	24	39	9
Georgia.....	15	1	--	--	6	--	8
Kentucky.....	178	1	--	2	111	30	34
Louisiana.....	73	3	1	4	--	65	--
Maryland.....	2	1	1	--	--	--	--
Mississippi.....	21	--	--	--	--	14	7
North Carolina.....	45	17	--	9	--	19	--
Oklahoma.....	14	4	--	--	1	3	6
South Carolina.....	40	1	1	--	--	17	21
Tennessee.....	40	--	--	--	--	35	5
Texas.....	36	11	4	--	--	21	--
Virginia.....	31	--	--	3	3	22	3
West Virginia.....	58	5	2	3	--	47	1
Far West.....	1,532	70	14	70	3	1,237	138
Alaska.....	33	8	5	7	--	13	--
Arizona.....	14	1	--	--	--	13	--
California.....	888	35	5	22	--	769	57
Colorado.....	52	3	--	1	--	44	4
Hawaii.....	23	1	--	--	--	14	8
Idaho.....	20	--	--	--	--	20	--
Montana.....	30	--	--	--	--	19	11
Nevada.....	14	1	--	3	--	1	9
New Mexico.....	7	--	--	--	--	7	--
Oregon.....	222	9	--	23	1	160	29
Utah.....	22	3	--	--	--	12	7
Washington.....	108	8	4	11	2	70	13
Wyoming.....	99	1	--	3	--	95	--

Table A-41. Technicians, scientists and engineers, and ratio of technicians to scientists and engineers, by type of agency, January 1962

Agency	Technicians	Scientists and engineers	Average number of technicians per 100 scientists and engineers
Total.....	55,501	48,029	115.6
Highway and public works.....	46,599	31,600	147.5
Highway.....	45,892	30,778	149.1
Public works.....	707	822	86.0
Health and welfare.....	3,395	6,243	54.4
Physical health.....	2,449	4,955	49.4
Mental health.....	624	897	69.6
Welfare.....	322	391	82.4
Agriculture and conservation.....	3,991	8,301	48.1
Fish and game.....	1,023	2,136	47.9
Agriculture.....	1,232	2,478	49.7
Natural resources.....	1,736	3,687	47.1
Other agencies.....	1,516	1,885	80.4

APPENDIX B

SCOPE AND METHOD OF SURVEY

This appendix provides a brief report on the scope and methodology of the survey, and on some of the problems encountered in conducting it. This information serves as a background for interpreting the data presented.

Coverage of the Survey

This is the second survey of scientific and technical personnel in State government agencies conducted by the Bureau of Labor Statistics of the U.S. Department of Labor. ^{1/} The survey covered all State government agencies, within each of the 50 States, which were judged at all likely to employ persons working as scientists, engineers, or technicians, with the exception of educational institutions which are covered by data collected by the Office of Education of the U.S. Department of Health, Education, and Welfare.

The State agencies excluded from this survey as not likely to employ scientific or technical personnel are of three general types--legislative bodies, judicial bodies, and boards and commissions with regulatory and licensing functions. However, the overriding criterion was the apparent nature of the functions of each individual agency. The mailing list of agencies was compiled from current State directories and similar listings, and telephone directories were used where necessary to obtain precise agency names and addresses. The complete mailing list included 1,670 agencies.

Conduct of the Survey

The questionnaire used in this survey (appendix C) was developed in consultation with the National Science Foundation and with the advice and cooperation of a number of State officials. It was based on the questionnaire used in 1959 for the same type of survey, in order to obtain reasonable comparability.

^{1/} See Employment of Scientific and Technical Personnel in State Government Agencies, Report on a 1959 Survey, NSF 61-17, prepared for the National Science Foundation by the U.S. Department of Labor, Bureau of Labor Statistics.

However, some revisions were made in order to eliminate items that yielded inadequate or unsatisfactory data in 1959, or were considered unnecessarily burdensome to the respondent, and to supplement and improve the quality of the data obtained in 1962. Modifications included: Addition of separate reporting items for engineering technicians and physical science technicians; addition of items on educational attainment of scientists; addition of an instruction to exclude practitioners from the data reported for psychologists; omission of separate reporting items for electrical and electronic engineers, mechanical engineers, physicists, and metallurgists; omission of items for educational attainment data on engineers; and omission of certain items regarding scientific and technical personnel in research.

A preliminary draft of the questionnaire was tested by visits to several State personnel departments and to several agencies known to employ scientific and technical workers. Their comments were useful in developing the final questionnaire. The questionnaires were mailed directly to the State agencies. In several instances, additional copies of the questionnaire were requested by the agencies for collecting data from their subunits.

The organizational structure of several States was not clear from directories and other available information. Often it appeared that a questionnaire was being sent to one or more subunits of an agency which was itself receiving a questionnaire. In such cases, in order to avoid duplicate reporting, the higher organizational unit was asked by special letter not to include data on any subunits which were receiving separate questionnaires; these subunits were specifically identified in the letters. The letters were mechanically reproduced in conjunction with the printing of the address labels. There were 124 such letters sent in the first mailing.

The questionnaires were mailed in July 1962. Of the 1,670 agencies contacted, 1,130 responded to this initial request. In August 1962, followup letters to the remaining 540 agencies yielded 378 additional responses. The final mail followup was sent in September 1962 to the 162 agencies which had not yet replied.

After the final mailing, 60 agencies still had not replied. Of these, 20 were known to be employers of large numbers of scientific and technical personnel; they were contacted by telephone or telegram. At the close of the survey, 1,630 (or 98 percent) of the 1,670 agencies on the initial mailing list had provided all or part of the information sought. Investigation of available data on the 40 agencies not responding and not contacted by telephone led to the finding that 35 of them probably employed no scientific and technical personnel and that the remaining 5 probably employed very few.

Insofar as possible, reporting errors were eliminated by editing and checking procedures and through correspondence with agencies whose reports appeared to involve serious inconsistencies or misinterpretation of questions or definitions.

In most cases where some schedule items were either unanswered or only partially answered, the missing data were imputed on the basis of information given in other parts of the schedule or on the basis of responses for similar agencies in the same geographic area. In other cases, correspondence was initiated in order to obtain the missing information.

Definitions

The brief definitions of important items printed on the questionnaire (appendix C) were made reasonably comparable to those used in the 1962 survey of scientific and technical personnel employed in private industry. Necessary modifications were developed in consultation with officials of State personnel departments and State agencies employing scientific and technical personnel. The definitions were tested in several State agencies before the final questionnaire was printed. The objective was to formulate definitions which would accurately and clearly describe the information and also be consistent with standard personnel records.

Comparability Limitations

State-by-State comparisons of the statistics of scientific and technical personnel in State government employment should not be attempted without considerable supplemental information. Wide differences exist among State agencies with similar titles, with regard to the nature and scope of services provided, organizational structure, recordkeeping procedures, personnel practices,

occupational titles, and many other characteristics. Some variation in interpretation and application of the definitions was therefore inevitable. Also contributing to reduced State-by-State comparability is the fact that functions performed by State governments in some States are performed by local governments or contracted to private industry in other States. 2/

Comparison of the 1959 and the 1962 data must be analyzed with considerable caution, especially with respect to individual State data. Attempts were made to verify the reports of those agencies which indicated very large changes in the number of scientific and technical personnel they employed over the 3-year period. The reported differences were often found to be valid, reflecting significant changes in agency activities. However, in some cases, the changes resulted from differing interpretation of the definitions in 1959 and in 1962.

In addition, the activity classification of some agencies was changed from "other" in 1959 to a different category in 1962. However, the impact of this change on comparability was slight because of the relatively small number of scientific and technical personnel in the agencies affected.

The 1959 and 1962 statistics on psychologists are not comparable, because the 1962 questionnaire specifically excluded practitioners and the 1959 questionnaire did not.

Classification of Data

Agency Grouping. For purposes of this report, State agencies were grouped into categories as follows:

Highway, public works, and related agencies

Highways--Departments of public roads; intrastate bridge and turnpike authorities; etc.

Public Works--Departments of public works, engineering and water resources; divisions of flood control; dam authorities; etc.

2/ A survey of scientific and technical personnel in local governments will be conducted in 1964 by the Bureau of Labor Statistics. Data from the two surveys will yield some degree of State-by-State comparability for State and local governments combined.

Health, welfare, and related agencies

Physical health--Departments of health, boards of pharmacy, boards of water pollution; etc.

Mental health--Departments of mental health; mental health boards; etc.

Welfare--Departments of welfare; charity boards, youth services; etc.

Agriculture, conservation and related agencies

Agriculture--Departments of agriculture; milk control commissions; livestock sanitary boards; etc.

Fish and game--Departments of fish and game; fishery products laboratories; etc.

Natural resources--Departments of conservation; forests and parks; mines; geological surveys; etc.

Other--Types of agencies not classifiable into the above categories. Examples: Departments of Commerce; Labor; Budget; Banking; Taxation; Archives.

Classification was not precise for those agencies which conducted activities extending into two or more of the categories listed above. In such cases, the classification was based on the agency's primary activities as indicated by the schedule or other available information. The adverse effect on the quality of the statistics was negligible, however, since there were very few cases which had to be handled on this basis.

Regional Groupings. The following regional groups of States were established for convenience in presenting some of the data for this survey:

Northeast. New England and Middle Atlantic States (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont).

South. South Atlantic, East South Central, and West South Central States (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia).

Middle West. East North Central and West North Central States (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin).

Far West. Mountain and Pacific States (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming).

APPENDIX C
QUESTIONNAIRE AND COVERING LETTERS

A SURVEY OF SCIENTIFIC AND TECHNICAL PERSONNEL EMPLOYED BY STATE GOVERNMENTS 1962

Conducted by the
U.S. DEPARTMENT OF LABOR
Bureau of Labor Statistics

All information supplied on this form will be used for statistical purposes only and will not be published in a manner that will disclose information concerning individual agencies without their express permission.

If you employ scientists, engineers, or technicians, please complete the entire questionnaire, supplying as much information as possible. *PLEASE NOTE.—Even if you do not employ any scientists, engineers, or technicians, please answer item 1 below.* Reasonable estimates will be satisfactory. Please enter "O" where appropriate, or "not available" if such is the case, rather than leave a question unanswered. Data

should apply, if possible, to the pay period ending nearest January 15, 1962.

If extra copies of the questionnaire would be helpful, they may be obtained on request.

Mail completed questionnaire to:

COMMISSIONER OF LABOR STATISTICS
U.S. DEPARTMENT OF LABOR
Washington 25, D.C.

IDENTIFICATION OF REPORTING UNIT

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Your reply to this questionnaire should be restricted, if possible, to the unit identified at left. Some agencies may receive questionnaires for each of their divisions. If it is not feasible to supply data for each division, please indicate in item 5 on page 3 the divisions or other units covered by this report.

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(Change address if incorrect)

Terms in HEAVY CAPITALS are defined on Pages 4 and 5. Please read definitions carefully.

January 1962

- 1. **A. Total employment:** Enter the **TOTAL NUMBER OF PAID EMPLOYEES** of the **REPORTING UNIT** (include both full- and part-time employees) _____
- b. SCIENTISTS AND ENGINEERS:** Enter the total number of persons included in 1A above who were working as **SCIENTISTS** or **ENGINEERS** _____
- c. TECHNICIANS:** Enter the total number of persons included in 1A above who were working as **TECHNICIANS** _____
- d. All other employees (1A minus 1b and 1c)** _____

IF YOU EMPLOY ANY SCIENTISTS, ENGINEERS, OR TECHNICIANS (entries in 1b or 1c), PLEASE COMPLETE ENTIRE FORM. COMPLETE ONLY THIS PAGE IF ANSWERS TO BOTH 1b AND 1c ARE ZERO.

Name and title of person to be addressed if questions arise concerning this report:

..... Telephone No.

TERMS IN HEAVY CAPITALS ARE DEFINED. PLEASE READ DEFINITIONS CAREFULLY

2. Please enter below the total number of persons on the payroll(s) of the **REPORTING UNIT** working as **SCIENTISTS** or **ENGINEERS** in January 1962. The sum of the entries in lines I and II of column (1) should equal the entry for January 1962 in question 1b on page 1. In the remaining columns and lines enter the number of **SCIENTISTS** and **ENGINEERS** engaged in the individual occupations shown and distribute them according to the functions in which they spent the greatest proportion of their time. Count each person only once. If you cannot supply all the detail requested, enter as much information as you can.

OCCUPATION <small>(Personnel working in borderline specializations, such as biochemistry, should be classified in the listed occupations with which their work is most closely identified.)</small>	TOTAL EMPLOYED IN ALL FUNCTIONS (1)	PRIMARY FUNCTION—JANUARY 1962 <small>(Classify individuals according to the function occupying the greatest proportion of their time.)</small>				
		RESEARCH <small>(includes product or process development)</small>	PLANNING	INSPECTION	OPERATIONS AND SERVICES	ALL OTHER FUNCTIONS
		(2)	(3)	(4)	(5)	(6)
I. Total ENGINEERS						
a. CIVIL						
b. All other ENGINEERS						
II. Total SCIENTISTS						
c. Chemists						
d. Geologists and geophysicists						
e. MATHEMATICIANS						
f. MEDICAL SCIENTISTS <small>(exclude practitioners)</small>						
g. AGRICULTURAL SCIENTISTS						
h. BIOLOGICAL SCIENTISTS						
i. Psychologists (exclude practitioners)						
j. All other SCIENTISTS (please specify occupation)						

3. A. How many of the total number of **SCIENTISTS** have the following degrees? Count only one degree for each scientist. If a scientist has more than one degree, count only the degree listed first in the order below:

Total SCIENTISTS (same as item 2, line II, col. (1))	=====
a. Ph. D. degree	-----
b. Master's degree	-----
c. Bachelor's or first professional degree (e.g., B.S., B.A., M.D., D.D.S., etc.)	-----
d. No degree	-----

B. Of the degrees listed above for **SCIENTISTS**, how many are professional health degrees as specified below?

a. M.D. degree	-----
b. D.D.S. degree	-----
c. D.V.M. degree	-----
d. Other professional health degrees	-----

4. Of the **TOTAL NUMBER OF PAID EMPLOYEES** in January 1962, how many were employed as **TECHNICIANS**?

Total TECHNICIANS (same as item 1c, page 1)	=====
a. Draftsmen	-----
b. Surveyors	-----
c. Engineering technicians (except draftsmen and surveyors)	-----
d. Physical science technicians	-----
e. Medical, agricultural and biological technicians	-----
f. All other TECHNICIANS	-----

5. Please list any major organizational divisions or sections of the **REPORTING UNIT** and give the total number of scientists and engineers employed by each.

Name of sub-unit	Total number of SCIENTISTS and ENGINEERS employed, January 1962

6. Please give a brief description of the work performed by scientific and technical personnel employed by the **REPORTING UNIT**. (Descriptive pamphlets or other printed material will be especially helpful.)

DEFINITIONS

REPORTING UNIT.—The State government agency or division of such agency to which this questionnaire is addressed and all the subdivisions and organizational units within that agency or its division, except for the exclusions specifically listed in this definition. **Include** State hospitals, clinics, prisons, and other institutions under the jurisdiction of the reporting unit. **Exclude** State universities and colleges, agricultural experiment stations, agricultural extension services, or hospitals affiliated with State universities. However, **include** other State agencies which are located at State universities.

TOTAL NUMBER OF PAID EMPLOYEES.—All permanent and temporary employees paid by the reporting unit, except for the exclusions specifically listed in this definition. **Include** both employees under civil service systems and employees outside civil service. **Include** employees on State payrolls who work for local and county agencies. All classified, unclassified, and contract employees, exempt employees, laborers, and others paid directly by the reporting unit should be included. Consultants (whether paid by project, fee, or other basis) should be included only if they were employed full time during the reporting period or if it is known that their part-time employment by the reporting unit was their primary employment. **Exclude** unpaid personnel, part-time consultants primarily employed elsewhere, or personnel on the payroll of contracting firms.

SCIENTISTS.—Count as scientists all persons actually engaged in scientific work at a level which requires a knowledge of physical, engineering, mathematical, biological, agricultural, medical, psychological, and other natural sciences equivalent at least to that acquired through completion of a 4-year college course with a major in these fields, regardless of whether they hold a college degree in the field. **Include** scientists in research, planning, inspection, administration, technical service, technical writing, technical drawing and exhibit design, data collecting, and all other positions which require them to use the indicated level of scientific knowledge in their work. **Exclude** persons trained in science but currently employed in positions not requiring the use of such training. **Exclude** social scientists.

ENGINEERS.—Count as engineers all persons actually engaged in chemical, civil, electrical, mechanical, metallurgical, and all other types of engineering work at a level which requires knowledge of engineering, physical, life, or mathematical sciences equivalent at least to that acquired through completion of a 4-year college course with a major in one of these fields, regardless of whether they hold a college degree in the field. **Include** those persons in research, planning, inspection, administration, technical service, technical writing, and other positions which require them to use the indicated level of knowledge in their work. **Exclude** persons trained in engineering, but currently employed in positions not requiring the use of such training. **Include** architectural engineers but **exclude** architects. Also **exclude** stationary engineers. (Draftsmen and engineering aids should be counted as technicians.)

TECHNICIANS.—Count as technicians all persons actually engaged in technical work at a level requiring knowledge of physical, engineering, mathematical, biological, or other natural sciences comparable to the knowledge acquired through technical institute, junior college, or other formal post-high school training less extensive than 4-year college training, or through equivalent on-the-job training or experience. Some typical job titles are: draftsmen, surveyors, engineering aids, laboratory technicians and assistants, conservationist aids, electronic technicians, X-ray technicians, and museum technicians. **Exclude** personnel engaged primarily in care of patients. **Exclude** also skilled workers and craftsmen such as machinists, plumbers, and electricians.

CIVIL ENGINEERS.—**Include** sanitary, construction, architectural, structural, highway engineers, and all other civil engineering specialties. Also **include** city planning engineers.

MATHEMATICIANS.—Count as mathematicians only those persons whose position requires knowledge of mathematics equivalent at least to that acquired through a 4-year college course with a major in mathematics and who spend the greatest proportion of their time in development or application of mathematical techniques. **Include** actuaries and mathematical analysts. **Include** statisticians and programmers for computers only if they specialize in mathematical techniques. **Exclude** accountants.

MEDICAL SCIENTISTS.—Count as medical scientists only those physicians, dentists, public health specialists, pharmacists, and members of other scientific professions concerned with the understanding of human diseases and improvement of human health, who spend the greatest proportion of their time in clinical investigation and other research, technical writing, and related activities. **Exclude** persons who spend the greatest proportion of their time in providing care to patients, dispensing drugs or services, diagnosis, etc. Persons working as pathologists, microbiologists, pharmacologists, etc. should be excluded from the figures on medical scientists and included in the figures on biological scientists.

AGRICULTURAL SCIENTISTS.—Count as agricultural scientists all persons who spend the greatest proportion of their time in understanding and improving agricultural productivity, such as those working in agronomy, animal husbandry, forestry, horticulture, range management, soil culture, and veterinary science. **Exclude** veterinarians who are primarily engaged in providing care to animals.

BIOLOGICAL SCIENTISTS.—Count as biological scientists all persons who work in sciences which deal with life processes, other than those classified as agricultural and medical sciences. **Include** pathologists, microbiologists, pharmacologists, bacteriologists, toxicologists, botanists, zoologists, etc.

RESEARCH.—Enter in column (2) of item 2 the number of scientists and engineers included in column (1) who spend the greatest proportion of their time performing or supervising basic and applied investigation to advance scientific knowledge in the natural sciences (including medicine and psychology) and engineering. Also include those persons primarily engaged in technical development activities concerned with solving nonroutine problems encountered in applying research findings or other general scientific knowledge to specific projects or processes. **Exclude** persons who spend the greatest proportion of their time in quality control, routine testing, market research, routine gathering of statistics, or other nontechnical activities or technical services.

PLANNING.—Enter in column (3) of item 2 the number of scientists and engineers included in column (1) who primarily perform or supervise technical activities concerned with formulating, initiating, or improving governmental programs, policies, legislation, or standards. **Include** scientists and engineers engaged in such activities as preliminary engineering and design of new highways, developing health programs, initiating conservation projects, devising new construction programs, etc.

INSPECTION.—Enter in column (4) of item 2 the number of scientists and engineers included in column (1) who primarily perform or supervise technical activities which deal with the enforcement of governmental laws, regulations, standards, or programs. **Include** scientists and engineers engaged in such activities as testing and analysis of soils and material used in road construction, of food and fertilizers for composition and compliance with State regulations, of drugs, medicines, and cosmetics for deterioration and adulteration, etc. **Also include** those who inspect private hospitals, warehouses, restaurants, etc. for compliance with State regulations.

OPERATIONS AND SERVICES.—Enter in column (5) of item 2 the number of scientists and engineers included in column (1) who spend the greatest proportion of their time performing or supervising technical activities primarily related to the regular operation of government programs other than inspection. **Include** scientists and engineers engaged in such activities as managing forests and parks; purchasing materials; letting contracts; constructing and maintaining highways, hospitals, and other public works; controlling insects; field exploration for minerals, fuels, and other natural resources; operating fish hatcheries; etc.

ALL OTHER FUNCTIONS.—Enter in column (6) of item 2 the number of scientists and engineers included in column (1) who spend the greatest proportion of their time performing functions other than those listed in columns (2) through (5).

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

In reply please
refer to No. 341

Gentlemen:


The Bureau of Labor Statistics is conducting a survey to provide data on the 1962 employment of scientific and technical personnel by the 50 State governments. The information requested is comparable to that obtained in a similar survey conducted in 1959.

The findings of this survey--together with similar studies of other segments of our economy--will be used in assessing the country's present and future needs for scientists, engineers, and technicians and in formulating policies and programs to strengthen our resources of scientific and technical personnel. We hope the results will also be useful to State governments in evaluating their own scientific manpower needs and policies.

Your cooperation in providing the information requested in the enclosed questionnaire is of great importance to the success of this undertaking. Questionnaires are being mailed only to a selected group of agencies in each State, and separate replies are needed from all of these agencies, even those which do not employ any scientists, engineers, or technicians. Please include in your return data for all organizational units within the particular department or agency to which the questionnaire is addressed except those units which your questionnaire indicates should be excluded. A duplicate copy of each questionnaire is enclosed for your files.

We shall be extremely grateful for a prompt response to this survey. If you have any questions regarding coverage or the interpretation of the questionnaire, please call Mr. Harold Liebling of our Washington staff (EXecutive 3-2420, extension 2607) or write to me.

Sincerely yours,


Ewan Clague
Commissioner of Labor Statistics

Enclosures

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

In reply please
refer to No. 341

Gentlemen:

Several weeks ago we wrote you regarding a Bureau of Labor Statistics survey of scientific and technical personnel employed by State Governments. Since we have not yet received a reply, we are writing again to request your cooperation.

This survey is part of a comprehensive program of studies of scientific and technical personnel being undertaken by the Federal Government. The findings of these studies will be used in assessing the country's present and future needs for such personnel and in formulating scientific manpower policies and programs.


Information about your agency is important to the success of this survey. Even if you do not employ scientists, engineers, or technicians, it is important that the questionnaire be returned to us. (If this is the case, only the first page need be filled in.)

Reasonable estimates will be satisfactory. If information is not available on all items covered by the questionnaire, please supply as much as possible. For your convenience, we are enclosing additional copies of the form.

If your agency is included in the report of another agency or department, please advise us.

We shall be extremely grateful for a prompt response to this survey. If you have any questions regarding coverage or interpretation of the questionnaire, please call Mr. Harold Liebling of our Washington staff (EXecutive 3-2420, extension 2607) or write to me.

Very truly yours,


Ewan Clague
Commissioner of Labor Statistics

Enclosures

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

In reply please
refer to No. 341

Gentlemen:

In early July, we wrote you regarding a survey of scientific and technical personnel employed by State governments. In August we wrote you again on this matter. According to our records, we have not yet received your reply.

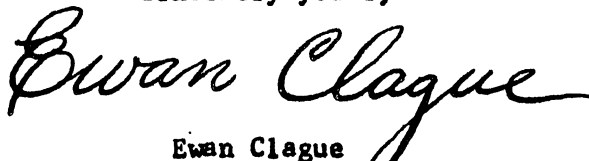
We are aware, of course, of the pressing obligations of your own work. However, because of the Federal Government's vital need for data on the country's manpower needs and resources, we are contacting you once again to urge you to complete and mail the questionnaire. A report from your organization is very important even if you do not employ scientists, engineers, or technicians. (If this is the case, only the first page need be filled in.)

Reasonable estimates will be satisfactory. If information is not available on all items covered by the questionnaire, please supply as much as possible. For your convenience, we are enclosing additional copies of the form. Please return one in the enclosed envelope and retain one for your files.

If your agency is included in the report of another agency or department, please advise us.

We shall be extremely grateful for a prompt reply. If you have any questions regarding coverage or interpretation of the questionnaire, please call Mr. Harold Liebling of our Washington staff (EXecutive 3-2420, extension 2607) or write to me.

Sincerely yours,



Ewan Clague
Commissioner of Labor Statistics

Enclosures