REVIEW OF OCCUPATIONAL
EMPLOYMENT STATISTICS

EMPLOYMENT OF SCIENTIFIC, PROFESSIONAL, AND TECHNICAL PERSONNEL IN STATE GOVERNMENTS

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UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

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UNITED STATES DEPARTMENT OF LABOR
W. Willard Wirtz, Secretary

BUREAU OF LABOR STATISTICS
Arthur M. Ross, Commissioner

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PREFACE

This report presents the major findings of a survey of scientific, professional, and technical employment in State government agencies in January 1964. The Bureau of Labor Statistics of the U.S. Department of Labor made similar surveys in 1959 and 1962. The State government survey series was originally developed under the sponsorship of the National Science Foundation which published the first report. Subsequently it was established as a regular program of the Bureau of Labor Statistics.

The 1964 report was prepared by Arthur Jaffe with the assistance of Jack Golomb under the supervision of William L. Copeland and Michael D. Wertheimer. The study was conducted under the general direction of Robert B. Steffes, Chief of the Bureau's Division of Occupational Employment Statistics and Harold Goldstein, Assistant Commissioner of Manpower and Employment Statistics.

The Bureau of Labor Statistics wishes to express its appreciation to the many State government agencies and individuals whose cooperation made this survey possible; and especially to Cora E. Taylor, who headed the Division of Occupational Employment Statistics when the survey was initiated.

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SECTION 1. INTRODUCTION

During recent years State government agencies have been among the fastest growing activities in the United States. This growth has created rapidly mounting needs at the State government level for highly skilled and professionally trained personnel. To Keep abreast of this growth the Bureau of Labor Statistics conducts surveys covering the employment of scientific, technical, and professional personnel in State government agencies.[1] The latest survey was conducted in the early months of 1964 to obtain occupational employment information as of January of that year. This survey, like those which preceded it, is part of a broad program conducted by the Bureau of Labor Statistics to develop occupational employment statistics covering scientific, professional, and technical employment across a broad spectrum of the total American economy.[2]

Scope of the Study

The 1964 survey covered most State government agencies within each of the 50 States. Excluded from the survey were State educational institutions, since they are covered in studies conducted by the Office of Education of the U.S. Department of Health, Education, and Welfare and by the National Science Foundation. Special schools, such as schools for the mentally retarded, schools for the deaf and the blind, and industrial schools, as well as administrative personnel in State Departments of Education were included in the survey since they are not covered by other studies. Also excluded were personnel in agricultural experiment stations, agricultural extension services, and hospitals affiliated with State universities. Certain other State agencies such as legislative bodies, judicial tribunals, and boards and commissions with regulatory and licensing functions were excluded from the survey because they do not employ scientific and technical personnel. For the sake of brevity, the coverage of the study will be referred to simply as "nonschool employment."

Questionnaires were mailed directly to some 1,850 State government agencies. Virtually all responded. Each respondent was requested to provide information, by occupation, on the total number of persons employed and the number primarily engaged in research. A variety of specific occupations were covered within each of five broad occupational categories--engineers, scientistis, social workers, health-related professionals, and technicians.

Changes in employment by occupation between the present survey and the preceding surveys are difficult to asses because of changes in personnel classification and differences in the interpretation of definitions by respondents. In addition, changes in definitions for various occupations and the introduction of new occupations in the 1964 survey, no doubt, have changed the reporting patterns of many respondents.

Employment of Scientific, Professional, and Technical Personnel

In early 1964, there were 156,800 persons employed by the 50 State governments working as engineers, scientists, social

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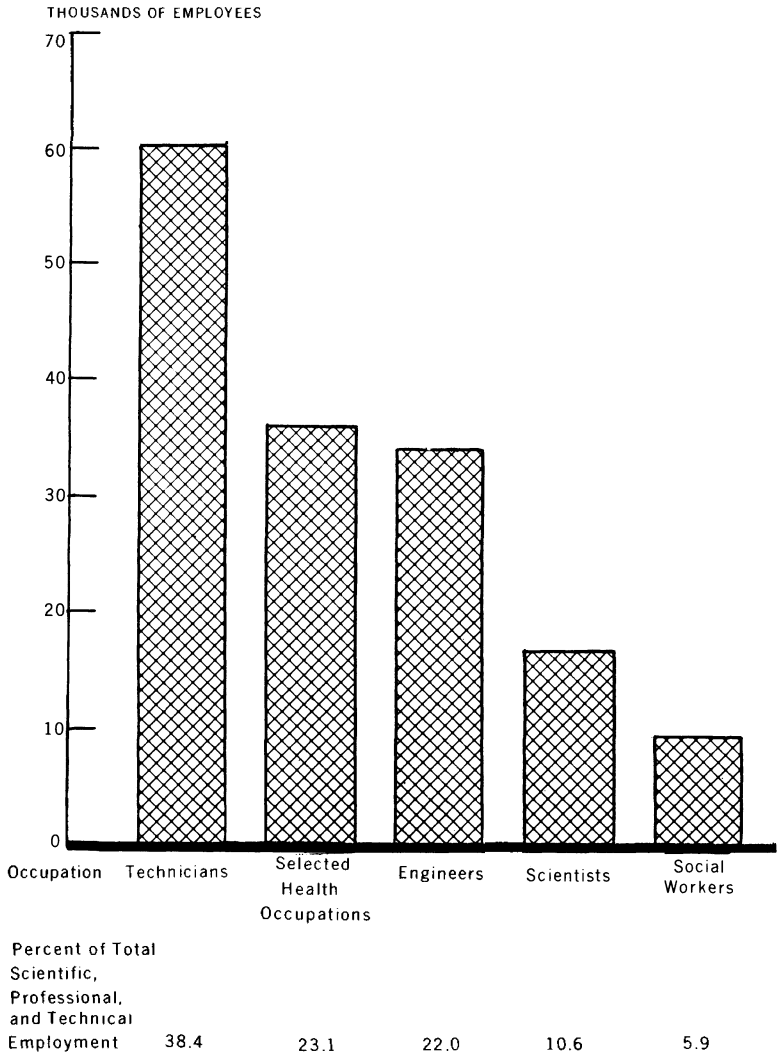
[1] Employment of Scientific and Technical Personnel in State Government Agencies--Report on a 1959 Survey, NSF 61-17 (National Science Foundation); Employment of Scientific and Technical Personnel in State Government Agencies--1962, Bulletin No. 1412 (Bureau of Labor Statistics).

[2] Science and Engineering in American Industry - Final Report on a 1953-1954 Survey, NSF 56-15; Science and Engineering in American Industry - Report on a 1956 Survey, NSF 59-50; Scientific and Technical Personnel in American Industry - Report on a 1959 Survey, NSF 60-62; Scientific and Technical Personnel in Industry - 1960, NSF 61-75; Scientific and Technical Personnel in Industry - 1961, NSF 63-32; Employment of Scientific and Technical Personnel in Industry - 1962, Bulletin No. 1418 (Bureau of Labor Statistics). Forthcoming bulletins will cover similar employment data for 1963-1964 and revised data for 1961 and 1962. Employment in the Atomic Energy Field - A 1960 Occupational Survey, BLS Bulletin No. 1297 and reports under the same title for 1961 and 1962 (obtainable from the Atomic Energy Commission).

Chart 1.

DISTRIBUTION OF SCIENTIFIC, PROFESSIONAL, AND TECHNICAL PERSONNEL IN STATE GOVERNMENTS--JANUARY 1964



workers, selected health-related professionals, and technicians. (See appendix table 1.) These highly skilled State employees represented 13 percent of all State government nonschool employment. A distribution of these persons among the five major occupational groups is shown in Chart 1.

California and New York, which respectively have the highest State government employment totals, significantly exceeded all other States in the total number of personnel employed in the surveyed professional and technical occupations and ranked among the top three in each of the five major occupational groupings. These two States--having 18 percent of total State government nonschool employment--employed 20 percent of the total scientific, professional, and technical personnel employed by all State governments.

Wyoming, Alaska, Vermont, Utah, and Hawaii ranked as the States with the highest ratios (21-25 percent) of scientific, professional, and technical personnel to total State government nonschool employment. The States having the lowest ratios (6-8 percent) were West Virginia, South Dakota, Oklahoma, Indiana, North Carolina, and New Mexico. (See appendix table 2.)

Many factors influence the employment of scientific, professional, and technical personnel in individual States. Among the more important factors are the following: the amount of money made available and the types of service undertaken by the State agencies; whether the services and projects are carried out directly by the State or are contracted to consulting and other firms. Other factors affecting the employment of such personnel include natural resources, major industries, and the extent to whcih local government units assume responsibility for major projects.

SECTION 2. ENGINEERS

State agencies employed 34,500 engineers in Januray 1964. (See appendix table 3.) Approximately 25,700 of these engineers (74 percent) were civil engineers employed in State highway

departments. There were 1,200 sanitary engineers, most of whom were employed by State health departments. Almost a third of the engineers (11,000) were employed in the Far West States where California vastly exceeded all other States in this occupational group. Employment of engineers in the Northeast, Middle West, and Southern groupings of States was distributed more equally.

SECTION 3. SCIENTISTS

There were 16,700 scientists employed in a variety of scientific occupations. (See appendix table 4.) One half (8,300) were life scientists--scientists working in the agricultural, biological, and biomedical fields. Agricultural and biological sceinetists were concentrated in State agricultural and conservation agencies where 94 percent of these scientists were employed. Most biomedical scientists (95 percent) were in State health and welfare agencies. (See appendix table 5.)

The remaining half of State governments' scientific personnel consisted of 2,600 physical scientists (chemists, geologists, geophysicists, and other physical scientists), 2,500 psychologists, 2,000 mathematicians and statisticians, and 1,400 social scientists (economists, sociologists, anthropologists, and other social scientists). Among these scientific personnel, psychologists predominated in mental health agencies and economists in such agencies as Departments of Revenue, Commerce, and Labor which collectively dominate the "Miscellaneous" classification of agencies.

SECTION 4. SOCIAL WORKERS

About 9,200 social workers were employed by State government agencies. (See appendix table 6.) The 4,000 psychiatric and medical social workers were employed primarily in State mental institutions. Social workers, not classified as psychiatric or medical (5,200), were engaged principally in welfare activities. New York and California State agencies employed 21 percent of all social workers among the 50 States, a somewhat higher proportion than these two States had of nonschool government employment in all States.

SECTION 5. SELECTED HEALTH-RELATED PROFESSIONS

State governments employed 36,200 health-related professional workers, including 21,600 professional nurses, 4,400 physicians, 3,800 psychiatrists, 3,400 sanitarians, 1,100 veterinarians, 1,000 dentists, and 800 public health officers with M.D.'s. (See appendix table 7.) State agencies dealing with the physical and mental health of the general public were the primary employers of these persons. A significant proportion of physicians (12 percent), dentists (21 percent), and nurses (9 percent), and to a lesser degree psychiatrists (4 percent) and public health officers (2 percent) were employed by State welfare agencies.

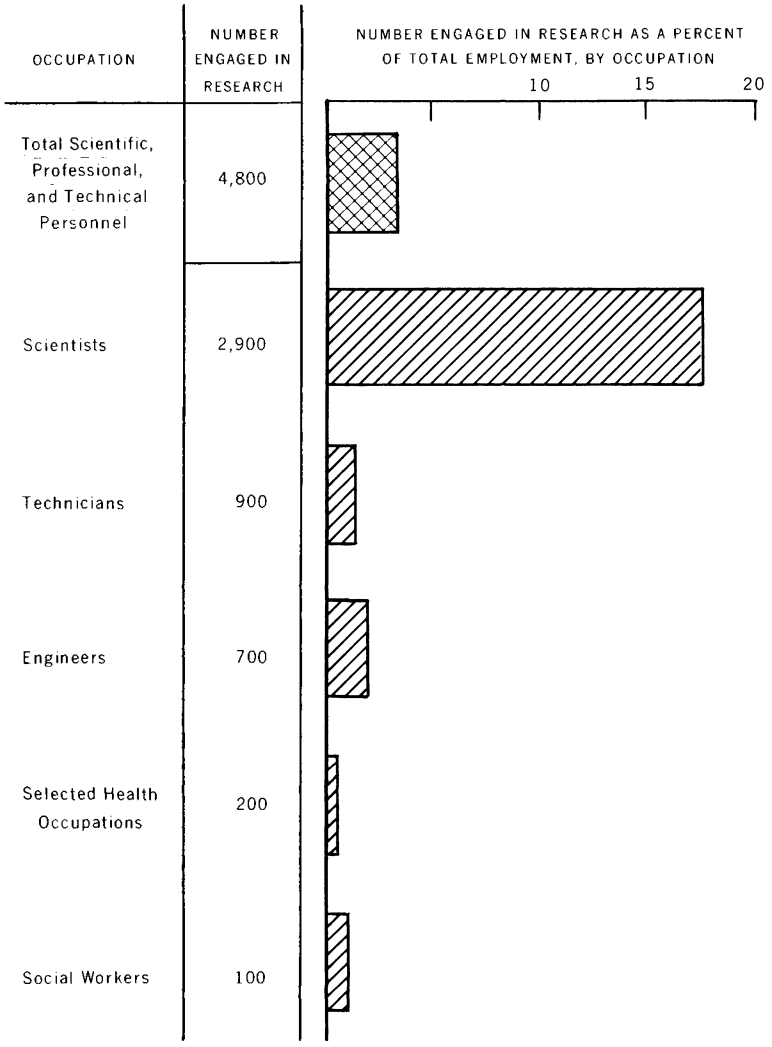
New York, Pennsylvania, California, Massachusetts, and Florida, having 31 percent of total State government noneducational employment, employed 43 percent of the total reported number of persons in these selected health-related professions.

SECTION 6. TECHNICIANS

Of the 60,200 technicians, half were employed as engineering technicians and another third were draftsmen and surveyors who were employed, predominately, by State highway departments. (See appendix tables 8 and 9.) Among the remaining technicians, there were 5,400 in the various physical and life science fields, and 3,700 medical and dental technicians. More than half the physical science technicians worked on highway and public works projects. Significant proportions also were employed in agricultural agencies (16 percent) and physical health agencies (16 percent). Agricultural and biological technicians were concentrated in the fields of agriculture and conservation although biological technicians also were

Chart 2.

DISTRIBUTION OF SCIENTIFIC, PROFESSIONAL, AND TECHNICAL PERSONNEL IN STATE GOVERNMENTS ENGAGED IN RESEARCH ACTIVITIES JANUARY 1964



found in fairly large numbers (26 percent) working in the health field. Medical and dental technicians were concentrated principally in health agencies.

State agencies in the Southern Region employed over 40 percent of the draftsmen, surveyors, and engineering technicians but only 25 percent of the engineers among the 50 States. As a result, in the Southern States the ratio of technicians to total scientists and engineers was significantly higher than in other major sections of the country. The average ratio for all States, other than Southern States, was 9 technicians for each 10 scientists and engineers. In the South this ratio was 19 technicians for each 10 scientists and engineers. The ratios of the number of technicians to each 10 scientists and engineers for other regions of the country were Northeast, 8; Middle West, 12; and Far West, 9.

SECTION 7. SCIENTIFIC, PROFESSIONAL, AND TECHNICAL PERSONNEL ENGAGED IN RESEARCH

Only three percent (4,800) of the scientific, professional, and technical personnel employed by State government agencies were engaged in research. As indicated in Chart 2, the bulk of those whose time was devoted primarily to research were the 2,900 scientists. Research was a significant activity among the biologists, biomedical scientists, economists, geologists, and geophysicists--better than a fourth of these scientists were working in research oriented activities. (See appendix table 10.)

Of the 900 technicians working on research projects, 65 percent were engineering and biological technicians. An additional 27 percent were physical science, medical, and dental technicians. A far greater percentage of all biological technicians (12 percent) were in research work than were other types of technicians.

The remaining 1,000 professional persons engaged in research consisted of 700 engineers (2 percent of all State employed engineers), 100 social workers (1 percent of the social workers on State government payrolls), and 200 in the surveyed health occupations (0.5 percent of the total reported as employed in these selected health occupations). Half the employees in the health occupations were psychiatrists.

Copies of the reporting form and instructions for the 1964 Survey of Scientific and Technical Personnel Employed by State Governments are reproduced following the last appendix table.

APPENDIX 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 having similar names or by personnel having 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 1.

Occupational Distribution of Total Number of Scientific, Professional, and Technical Personnel, Employed by State Governments, and Number Engaged in Research, January 1964

Occupation	Total		Engaged in research	
	Number	Percent	Number	Percent
All occupations	156,830	100.0	4,816	100.0
Engineers	34,537	22.0	744	15.4
Civil engineers	30,958	19.7	659	13.7
Sanitary engineers	1,244	.8	13	.3
Other engineers	2,335	1.5	72	1.5
Scientists	16,686	10.6	2,866	59.5
Chemists	1,431	.9	153	3.2
Geologists and geophysicists	1,047	.7	336	7.0
Other physical scientists	107	.1	11	.2
Agricultural scientists	3,284	2.1	126	2.6
Bio-medical scientists	2,035	1.3	557	11.6
Other life scientists	2,936	1.9	829	17.2
Mathematicians	341	.2	30	.6
Statisticians	1,619	1.0	259	5.4
Economists	692	.4	218	4.5
Sociologists and anthropologists	202	.1	85	1.8
Other social scientists	495	.3	74	1.5
Clinical psychologists	1,978	1.3	140	2.9
Social psychologists	147	.1	23	.5
Other psychologists	372	.2	25	.5
Social workers	9,222	5.9	99	2.1
Medical social workers	448	.3	2	(1/)
Psychiatric social workers	3,534	2.3	80	1.7
Other social workers	5,240	3.3	17	.4
Selected health professions	36,153	23.1	187	3.9
Public health officers (M.D.)	819	.5	28	.6
Psychiatrists (M.D.)	3,795	2.4	91	1.9
All other physicians (M. D. and D.O.)	4,443	2.8	21	.4
Dentists (D.D.S. or D.D.M.)	1,019	.6	3	.1
Professional nurses (R.N.)	21,559	13.7	24	.5
Veterinarians (D.V.M.)	1,083	.7	17	.4
Sanitarians	3,435	2.2	3	.1
Technicians	60,232	38.4	920	19.1
Draftsmen	7,920	5.1	34	.7
Surveyors	11,971	7.6	5	.1
Engineering technicians	30,535	19.5	381	7.9
Physical science technicians	1,539	1.0	123	2.6
Agricultural technicians	1,988	1.3	21	.4
Biological technicians	1,842	1.2	217	4.5
Medical and dental technicians	3,674	2.3	126	2.6
Other technicians	763	.5	13	.3

Note: Because of rounding of percentages, sums of individual parts may not equal totals or 100.0

1/ Less than 0.05.

Table 2.

Scientists, Engineers, Social Workers, Selected Health-Related Professionals, and Technicians Employed by State Government Agencies, by State, January 1964

State	Total All occupations		Scientists	Engineers	Social workers	Selected health-related professionals	Technicians
	Number	Percent of total employment 1/					
Total	156,830	13.0	16,686	34,537	9,222	36,153	60,232
Northeast	36,605	11.5	3,616	7,996	2,818	13,374	8,801
Connecticut	2,611	11.6	261	620	234	604	892
Maine	1,177	12.9	182	301	92	211	391
Massachusetts	5,618	14.2	453	1,303	425	2,191	1,246
New Hampshire	668	11.8	72	343	18	160	75
New Jersey	3,671	12.0	274	1,077	438	1,164	718
New York	12,781	10.9	1,393	2,653	1,174	4,938	2,623
Pennsylvania	7,954	9.9	805	1,183	162	3,616	2,188
Rhode Island	1,179	13.4	97	162	248	373	299
Vermont	946	21.6	79	354	27	117	369
Middle West	34,015	11.7	4,159	7,244	2,357	6,338	13,917
Illinois	5,911	10.6	822	1,556	343	1,403	1,787
Indiana	2,138	8.3	348	624	93	441	632
Iowa	2,944	16.3	191	321	156	340	1,936
Kansas	2,440	14.3	283	427	162	431	1,137
Michigan	4,463	12.0	728	942	400	821	1,572
Minnesota	3,409	15.5	320	543	175	688	1,683
Missouri	3,004	11.1	267	859	174	395	1,309
Nebraska	1,165	10.8	115	229	105	183	533
North Dakota	635	12.7	88	182	23	72	270
Ohio	4,363	9.6	488	666	215	978	2,016
South Dakota	476	8.1	93	150	24	102	107
Wisconsin	3,067	15.8	416	745	487	484	935

See footnote at end of table

Table 2.

Scientists, Engineers, Social Workers, Selected Health-Related Professionals, and Technicians

Employed by State Government Agencies, by State, January 1964 -- Continued

State	Total All occupations		Scientists	Engineers	Social workers	Selected health-related professionals	Technicians
	Number	Percent of total employment 1/					
South	50,527	13.2	4,679	8,308	2,240	10,964	24,336
Alabama	3,580	17.3	195	736	39	460	2,150
Arkansas	1,379	11.0	145	194	58	327	655
Delaware	732	12.9	56	77	45	159	395
Florida	6,451	17.7	649	777	471	1,953	2,601
Georgia	2,712	12.6	301	654	96	280	1,381
Kentucky	3,075	14.1	273	702	107	398	1,595
Louisiana	3,927	11.8	147	493	219	851	2,217
Maryland	3,204	14.9	279	448	257	1,206	1,014
Mississippi	2,368	16.3	249	251	117	534	1,217
North Carolina	2,763	8.4	370	776	86	545	986
Oklahoma	1,606	8.2	281	120	128	447	630
South Carolina	2,062	12.4	191	278	51	640	902
Tennessee	3,516	15.4	301	394	251	793	1,777
Texas	6,851	13.2	454	1,352	161	991	3,893
Virginia	5,151	15.1	608	828	115	1,203	2,397
West Virginia	1,150	6.4	180	228	39	177	526
Far West	35,683	17.0	4,232	10,989	1,807	5,477	13,178
Alaska	974	22.5	178	346	36	72	342
Arizona	1,216	12.7	168	132	41	91	784
California	17,812	18.6	1,651	6,297	731	2,883	6,250
Colorado	1,780	12.9	185	490	80	256	769
Hawaii	1,295	20.9	185	259	162	383	306
Idaho	1,200	19.4	157	113	25	307	598
Montana	1,343	19.8	115	379	33	125	691
Nevada	649	17.4	99	236	26	65	223
New Mexico	1,115	8.5	156	188	65	138	568
Oregon	2,651	15.9	538	782	103	569	659
Utah	1,514	21.0	275	353	137	81	668
Washington	3,133	13.4	445	1,156	275	404	853
Wyoming	1,001	25.2	80	258	93	103	467

1/ Excluding employment in State educational institutions.

Table 3.

Engineers, by Type of Agency, Occupation, and State, January 1964

State	All agencies				Highways and public works			Health and welfare			Other agencies
	Total	Civil	Sanitary	Other	Total	Civil	Sanitary and other	Total	Sanitary	Civil and other	Total
Total.....	34,537	30,958	1,244	2,335	31,238	29,886	1,352	1,385	1,053	332	1,914
Northeast.....	7,996	6,731	362	903	6,958	6,481	477	334	295	39	704
Connecticut.....	620	588	11	21	593	581	12	10	7	3	17
Maine.....	301	282	5	14	276	272	4	10	5	5	15
Massachusetts.....	1,303	1,214	46	43	1,209	1,187	22	48	40	8	46
New Hampshire.....	343	325	8	10	327	324	3	14	8	6	2
New Jersey.....	1,077	983	28	66	924	911	13	30	28	2	123
New York.....	2,653	2,127	146	380	2,226	2,044	182	110	97	13	317
Pennsylvania.....	1,183	914	102	167	914	875	39	100	100	--	169
Rhode Island.....	162	151	8	3	144	142	2	9	7	2	9
Vermont.....	354	147	8	199	345	145	200	3	3	--	6
Middle West.....	7,244	6,466	358	420	6,431	6,170	261	375	296	79	438
Illinois.....	1,556	1,445	48	63	1,445	1,411	34	44	40	4	67
Indiana.....	624	558	47	19	554	551	3	51	46	5	19
Iowa.....	321	291	22	8	261	261	--	38	22	16	22
Kansas.....	427	396	15	16	380	371	9	15	15	--	32
Michigan.....	942	810	42	90	815	765	50	55	27	28	72
Minnesota.....	543	498	25	20	485	483	2	26	25	1	32
Missouri.....	859	817	28	14	813	809	4	30	28	2	16
Nebraska.....	229	217	4	8	212	212	--	4	3	1	13
North Dakota.....	182	148	14	20	159	145	14	16	14	2	7
Ohio.....	666	533	43	90	613	521	92	51	40	11	2
South Dakota.....	150	91	5	54	137	85	52	6	5	1	7
Wisconsin.....	745	662	65	18	557	556	1	39	31	8	149

Table 3..

Engineers, by Type of Agency, Occupation, and State, January 1964 -- Continued

State	All agencies				Highways and public works			Health and welfare			Other agencies
	Total	Civil	Sanitary	Other	Total	Civil	Sanitary and other	Total	Sanitary	Civil and other	Total
South	8,308	7,507	350	451	7,566	7,339	227	437	305	132	305
Alabama	736	704	17	15	704	691	13	24	17	7	8
Arkansas	194	147	11	36	180	145	35	12	11	1	2
Delaware	77	70	6	1	67	67	--	7	5	2	3
Florida	777	702	54	21	697	684	13	66	53	13	14
Georgia	654	616	13	25	610	607	3	25	13	12	19
Kentucky	702	675	19	8	667	667	--	21	19	2	14
Louisiana	493	417	--	76	436	389	47	14	--	14	43
Maryland	448	383	37	28	399	377	22	37	36	1	12
Mississippi	251	243	5	3	240	239	1	5	5	--	6
North Carolina	776	677	41	58	687	660	27	47	22	25	42
Oklahoma	120	73	11	36	76	65	11	13	11	2	31
South Carolina	278	232	10	36	261	227	34	14	10	4	3
Tennessee	394	359	21	14	357	348	9	27	21	6	10
Texas	1,352	1,246	39	67	1,233	1,228	5	67	39	28	52
Virginia	828	748	59	21	746	739	7	54	41	13	28
West Virginia	228	215	7	6	206	206	--	4	2	2	18
Far West	10,989	10,254	174	561	10,283	9,896	387	239	157	82	467
Alaska	346	332	5	9	309	308	1	5	5	--	32
Arizona	132	110	5	17	109	104	5	6	5	1	17
California	6,297	5,870	64	363	6,016	5,686	330	125	64	61	156
Colorado	490	440	10	40	436	432	4	16	10	6	38
Hawaii	259	249	9	1	203	202	1	11	9	2	45
Idaho	113	97	5	11	103	96	7	6	5	1	4
Montana	379	365	4	10	367	359	8	6	4	2	6
Nevada	236	209	4	23	210	191	19	4	4	--	22
New Mexico	188	165	7	16	165	165	--	8	7	1	15
Oregon	782	740	29	13	722	716	6	17	16	1	43
Utah	353	343	5	5	341	340	1	6	5	1	6
Washington	1,156	1,088	20	48	1,059	1,054	5	26	20	6	71
Wyoming	258	246	7	5	243	243	--	3	3	--	12

Table 4.

Scientists in All Agencies, by Occupation and State, January 1964

State	All scientists	Chemists	Geologists and geophysicists	Agricultural scientists	Biomedical scientists	Biological scientists	Mathematicians	Statisticians	Economists	Sociologists and anthropologists	Psychologists	Other scientists
Total.....	16,686	1,431	1,047	3,284	2,035	2,936	341	1,619	692	202	2,497	602
Northeast.....	3,616	328	105	550	694	323	131	417	209	59	719	81
Connecticut.....	261	23	3	43	53	15	2	47	24	1	40	10
Maine.....	182	13	9	44	7	47	4	19	7	3	27	2
Massachusetts.....	453	49	--	17	112	32	2	19	3	4	215	--
New Hampshire.....	72	9	--	27	2	22	--	3	4	--	5	--
New Jersey.....	274	13	8	14	44	35	24	69	6	6	55	--
New York.....	1,393	108	55	120	389	116	95	143	115	22	198	32
Pennsylvania.....	805	98	22	247	53	34	1	92	47	17	158	36
Rhode Island.....	97	7	--	12	23	13	1	18	1	5	17	--
Vermont.....	79	8	8	26	11	9	2	7	2	1	4	1
Middle West.....	4,159	368	304	553	529	649	89	376	123	41	849	278
Illinois.....	822	82	73	65	221	76	8	64	5	15	197	16
Indiana.....	348	11	8	32	44	46	4	20	10	--	50	123
Iowa.....	191	13	15	16	19	29	1	13	2	7	64	12
Kansas.....	283	44	71	10	19	23	11	21	2	--	63	19
Michigan.....	728	87	51	113	67	169	13	32	50	1	95	50
Minnesota.....	320	26	4	84	45	22	1	55	12	--	65	6
Missouri.....	267	19	28	72	18	46	6	36	11	--	28	3
Nebraska.....	115	13	6	21	2	30	3	5	3	4	21	7
North Dakota.....	88	11	16	5	8	19	--	6	4	--	18	1
Ohio.....	488	31	16	75	40	74	34	41	2	2	165	8
South Dakota.....	93	1	15	--	5	48	--	15	2	2	5	--
Wisconsin.....	416	30	1	60	41	67	8	68	20	10	78	33

Table 4.

Scientists in All Agencies, by Occupation and State, January 1964 -- Continued

State	All scientists	Chemists	Geologists and geophysicists	Agricultural scientists	Biomedical scientists	Biological scientists	Mathematicians	Statisticians	Economists	Sociologists and anthropologists	Psychologists	Other scientists
South	4,679	469	300	1,328	543	769	68	439	106	14	510	133
Alabama	195	13	21	29	46	43	--	15	1	--	20	7
Arkansas	145	16	13	73	5	12	3	5	2	--	13	3
Delaware	56	3	5	4	12	9	3	5	2	2	11	--
Florida	649	89	14	123	73	173	--	55	14	7	70	31
Georgia	301	24	6	83	53	66	5	28	--	--	20	16
Kentucky	273	23	7	86	31	29	6	46	9	--	26	10
Louisiana	147	12	32	1	1	39	--	18	--	--	42	2
Maryland	279	22	4	60	57	18	2	31	2	1	52	30
Mississippi	249	10	11	149	--	31	6	29	5	--	7	1
North Carolina	370	78	28	73	41	50	17	48	4	--	30	1
Oklahoma	281	29	23	116	26	25	--	28	1	--	33	--
South Carolina	191	11	9	80	1	33	4	13	5	1	23	11
Tennessee	301	25	25	35	67	61	3	29	12	2	29	13
Texas	454	30	37	78	65	93	6	40	42	--	59	4
Virginia	608	59	43	278	56	64	13	32	3	1	59	--
West Virginia	180	25	22	60	9	23	--	17	4	--	16	4
Far West	4,232	266	338	853	269	1,195	53	387	254	88	419	110
Alaska	178	6	22	24	9	89	4	19	--	--	5	--
Arizona	168	10	4	--	12	105	1	12	12	--	12	--
California	1,651	144	179	108	133	431	12	162	150	40	228	64
Colorado	185	11	7	56	15	49	8	7	9	3	19	1
Hawaii	185	6	1	69	2	33	4	44	8	--	18	--
Idaho	157	7	11	63	1	26	1	12	5	7	24	--
Montana	115	10	2	23	6	47	1	19	4	--	3	--
Nevada	99	5	5	20	9	35	3	7	3	4	7	1
New Mexico	156	9	32	30	11	16	5	12	8	9	9	15
Oregon	538	21	22	266	25	105	10	22	23	4	36	4
Utah	275	15	24	23	10	151	1	12	--	18	18	3
Washington	445	18	15	156	31	94	2	49	28	3	36	13
Wyoming	80	4	14	15	5	14	1	10	4	--	4	9

Table 5.

Scientists, by Type of Agency and Occupation, January 1964

Occupation	All agencies	Highway and public works	Health and welfare	Agriculture and conservation	Other agencies
All scientists.....	16,686	1,268	6,223	7,108	2,087
Total physical scientists.....	2,585	773	625	916	271
Chemists.....	1,431	254	555	475	147
Geologists and geophysicists.....	1,047	502	15	433	97
Other physical scientists.....	107	17	55	8	27
Total life scientists...	8,255	50	2,157	5,920	128
Agricultural scientists.....	3,284	33	87	3,120	44
Bio-medical scientists	2,035	6	1,933	91	5
Biological scientists.	2,936	11	137	2,709	79
Mathematicians.....	341	108	36	17	180
Statisticians.....	1,619	224	605	155	635
Total social scientists.	1,389	113	485	99	692
Economists.....	692	105	10	66	511
Sociologists and Anthropologists.....	202	--	133	23	46
Other social scientists.....	495	8	342	10	135
Total psychologists.....	2,497	--	2,315	1	181
Clinical.....	1,978	--	1,945	--	33
Social.....	147	--	142	--	5
Other psychologists...	372	--	228	1	143

Table 6.

Social Workers, by Type of Agency, Occupation, and State, January 1964

State	All agencies				Health			Welfare			Other agencies
	Total	Medical	Psychiatric	Other	Total	Medical & psychiatric	Other	Total	Medical & psychiatric	Other	Total
Total	9,222	448	3,534	5,240	3,807	3,571	236	5,077	375	4,702	338
Northeast	2,818	173	1,072	1,573	1,125	1,110	15	1,557	133	1,424	136
Connecticut	234	10	42	182	41	41	--	192	11	181	1
Maine	92	7	31	54	43	32	11	49	6	43	--
Massachusetts	425	29	222	174	239	239	--	180	11	169	6
New Hampshire	18	--	8	10	8	8	--	10	--	10	--
New Jersey	438	48	125	265	133	133	--	222	39	183	83
New York	1,174	44	496	634	514	510	4	634	30	604	26
Pennsylvania	162	14	122	26	122	122	--	20	14	6	20
Rhode Island	248	19	23	206	23	23	--	225	19	206	--
Vermont	27	2	3	22	2	2	--	25	3	22	--
Middle West	2,357	64	953	1,340	1,010	926	84	1,338	90	1,248	9
Illinois	343	28	251	64	255	253	2	88	26	62	--
Indiana	93	2	61	30	61	61	--	32	2	30	--
Iowa	156	1	44	111	65	43	22	91	2	89	--
Kansas	162	5	84	73	74	74	--	88	15	73	--
Michigan	400	8	181	211	182	182	--	218	7	211	--
Minnesota	175	7	79	89	79	79	--	96	7	89	--
Missouri	174	8	62	104	117	65	52	56	4	52	1
Nebraska	105	3	38	64	43	39	4	62	2	60	--
North Dakota	23	--	10	13	10	10	--	13	--	13	--
Ohio	215	2	74	139	53	53	--	162	23	139	--
South Dakota	24	--	6	18	6	6	--	18	--	18	--
Wisconsin	487	--	63	424	65	61	4	414	2	412	8

Table 6.

Social Workers, by Type of Agency, Occupation, and State, January 1964 -- Continued

State	All agencies				Health			Welfare			Other agencies
	Total	Medical	Psychiatric	Other	Total	Medical & psychiatric	Other	Total	Medical & psychiatric	Other	Total
South	2,240	102	722	1,416	834	771	63	1,341	44	1,297	65
Alabama	39	6	25	8	30	26	4	4	--	4	5
Arkansas	58	2	13	43	15	13	2	43	2	41	--
Delaware	45	4	4	37	10	7	3	35	1	34	--
Florida	471	--	94	377	95	88	7	376	6	370	--
Georgia	96	7	2	87	22	8	14	74	1	73	--
Kentucky	107	15	54	38	69	69	--	30	--	30	8
Louisiana	219	13	119	87	141	127	14	78	5	73	--
Maryland	257	29	78	150	109	107	2	148	--	148	--
Mississippi	117	2	6	109	9	6	3	59	--	59	49
North Carolina	86	4	19	63	29	23	6	56	--	56	1
Oklahoma	128	8	34	86	17	17	--	109	23	86	2
South Carolina	51	6	33	12	36	36	--	15	3	12	--
Tennessee	251	2	61	188	61	61	--	190	2	188	--
Texas	161	--	109	52	108	108	--	53	1	52	--
Virginia	115	4	55	56	59	59	--	56	--	56	--
West Virginia	39	--	16	23	24	16	8	15	--	15	--
Far West	1,807	109	787	911	838	764	74	841	108	733	128
Alaska	36	2	6	28	8	8	--	28	--	28	--
Arizona	41	1	19	21	20	20	--	21	--	21	--
California	731	43	566	122	576	576	--	154	32	122	1
Colorado	80	8	38	34	46	46	--	34	--	34	--
Hawaii	162	17	21	124	43	37	6	107	--	107	12
Idaho	25	5	9	11	14	14	--	11	--	11	--
Montana	33	1	2	30	3	3	--	30	--	30	--
Nevada	26	4	6	16	12	10	2	14	--	14	--
New Mexico	65	2	3	60	18	4	14	47	1	46	--
Oregon	103	3	23	77	3	3	--	79	2	77	21
Utah	137	3	16	118	19	17	2	94	2	92	24
Washington	275	10	74	191	76	26	50	199	58	141	--
Wyoming	93	10	4	79	--	--	--	23	13	10	70

Table 7.

Selected Health Professions in All Agencies, by Occupation and State, January 1964

State	All health professions	Public health officers	Psychiatrists	Physicians, all other	Dentists	Professional nurses (R.N.)	Veterinarians	Sanitarians
Total.....	36,153	819	3,795	4,443	1,019	21,559	1,083	3,435
Northeast.....	13,374	173	1,958	1,582	300	8,533	175	653
Connecticut.....	604	10	49	62	13	386	2	82
Maine.....	211	5	8	28	4	138	6	22
Massachusetts.....	2,191	24	290	279	31	1,501	10	56
New Hampshire.....	160	1	7	16	3	126	1	6
New Jersey.....	1,164	11	122	239	35	681	20	56
New York.....	4,938	80	1,155	386	128	2,938	47	204
Pennsylvania.....	3,616	40	276	506	76	2,465	84	169
Rhode Island.....	373	1	39	56	9	221	3	44
Vermont.....	117	1	12	10	1	77	2	14
Middle West.....	6,338	89	634	949	222	3,789	153	502
Illinois.....	1,403	31	87	282	42	908	20	33
Indiana.....	441	0	25	93	23	247	1	52
Iowa.....	340	3	54	27	6	186	11	53
Kansas.....	431	6	42	99	9	233	6	36
Michigan.....	821	14	126	80	27	456	34	84
Minnesota.....	688	15	23	69	22	463	24	72
Missouri.....	395	4	42	58	20	238	2	31
Nebraska.....	183	1	29	34	8	107	--	4
North Dakota.....	72	1	10	16	4	29	3	9
Ohio.....	978	9	149	143	39	542	17	79
South Dakota.....	102	1	2	15	1	69	8	6
Wisconsin.....	484	4	45	33	21	311	27	43

Table 7.

Selected Health Professions in All Agencies, by Occupation and State, January 1964 -- Continued

State	All health professions	Public health officers	Psychiatrists	Physicians, all other	Dentists	Professional nurses (R.N.)	Veterinarians	Sanitarians
South	10,964	401	660	1,120	319	6,232	305	1,927
Alabama	460	26	25	5	10	228	26	140
Arkansas	327	13	29	38	4	193	6	44
Delaware	159	4	15	26	12	87	1	14
Florida	1,953	98	82	102	48	1,141	65	417
Georgia	280	1	14	75	12	149	7	22
Kentucky	398	2	28	113	21	208	5	21
Louisiana	851	34	35	85	10	445	16	226
Maryland	1,206	43	111	83	22	766	31	150
Mississippi	534	31	13	27	5	330	3	125
North Carolina	545	--	47	79	38	296	49	36
Oklahoma	447	15	19	33	9	251	35	85
South Carolina	640	26	27	52	8	364	15	148
Tennessee	793	39	24	70	20	480	6	154
Texas	991	16	123	162	31	558	15	86
Virginia	1,203	53	63	124	51	638	22	252
West Virginia	177	--	5	46	18	98	3	7
Far West	5,477	156	543	792	178	3,005	450	353
Alaska	72	5	3	2	--	50	--	12
Arizona	91	7	6	9	3	53	5	8
California	2,883	62	343	541	113	1,624	168	32
Colorado	256	3	24	35	5	156	20	13
Hawaii	383	8	28	21	5	186	20	115
Idaho	307	5	2	17	2	109	146	26
Montana	125	3	5	12	2	48	38	17
Nevada	65	4	3	8	5	32	5	8
New Mexico	138	13	4	6	5	77	2	31
Oregon	569	25	87	53	18	346	20	20
Utah	81	6	9	12	2	33	2	17
Washington	404	10	26	64	16	235	13	40
Wyoming	103	5	3	12	2	56	11	14

Table 8.

Technicians in All Agencies, by Occupation and State, January 1964

State	Total technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Agricultural technicians	Biological technicians	Medical and dental technicians	Other technicians
Total	60,232	7,920	11,971	30,535	1,539	1,988	1,842	3,674	763
Northeast	8,801	927	1,616	4,210	227	250	203	1,138	230
Connecticut	892	157	250	358	6	46	12	61	2
Maine	391	29	60	209	27	26	4	27	9
Massachusetts	1,246	111	172	621	55	54	24	205	4
New Hampshire	75	8	3	30	12	5	--	16	1
New Jersey	718	96	104	333	28	29	24	94	10
New York	2,623	310	794	799	81	67	135	279	158
Pennsylvania	2,188	152	133	1,441	8	10	--	398	46
Rhode Island	299	28	65	147	10	--	--	49	--
Vermont	369	36	35	272	--	13	4	9	--
Middle West	13,917	2,887	2,611	6,266	555	413	305	718	162
Illinois	1,787	335	331	801	57	44	101	96	22
Indiana	632	81	90	323	24	--	--	98	16
Iowa	1,936	554	316	883	17	35	91	33	7
Kansas	1,137	63	--	904	72	20	14	55	9
Michigan	1,572	241	306	649	166	25	19	148	18
Minnesota	1,683	687	383	475	3	78	1	49	7
Missouri	1,309	122	230	839	76	31	3	4	4
Nebraska	533	55	296	79	59	3	14	25	2
North Dakota	270	52	36	136	31	1	2	9	3
Ohio	2,016	595	326	834	1	54	53	115	38
South Dakota	107	19	45	7	--	--	--	26	10
Wisconsin	935	83	252	336	49	122	7	60	26

Table 8.

Technicians in All Agencies, by Occupation and State, January 1964 -- Continued

State	Total technicians	Draftsmen	Surveyors	Engineering technicians	Physical science technicians	Agricultural technicians	Biological technicians	Medical and dental technicians	Other technicians
South	24,336	2,473	4,586	14,476	509	343	568	1,215	166
Alabama	2,150	93	1,504	458	22	14	11	47	1
Arkansas	655	31	251	308	21	24	--	20	--
Delaware	395	28	69	231	11	1	24	24	7
Florida	2,601	189	248	1,806	61	46	67	160	24
Georgia	1,381	152	190	919	14	18	36	29	23
Kentucky	1,595	104	122	1,112	4	13	154	67	19
Louisiana	2,217	278	517	1,246	3	6	--	160	7
Maryland	1,014	154	112	589	26	52	43	29	9
Mississippi	1,217	97	--	1,048	36	14	--	17	5
North Carolina	986	40	96	729	--	--	26	82	13
Oklahoma	630	134	368	89	2	--	6	21	10
South Carolina	902	48	203	545	2	55	17	24	8
Tennessee	1,777	113	83	1,470	32	5	5	41	28
Texas	3,893	512	309	2,581	3	26	58	395	9
Virginia	2,397	464	464	1,073	240	14	63	78	1
West Virginia	526	36	50	272	32	55	58	21	2
Far West	13,178	1,633	3,158	5,583	248	982	766	603	205
Alaska	342	41	33	139	45	--	74	5	5
Arizona	784	70	334	270	5	9	80	11	5
California	6,250	757	1,240	2,792	32	561	470	340	58
Colorado	769	83	62	466	2	86	19	34	17
Hawaii	306	79	43	126	--	10	8	32	8
Idaho	598	48	162	289	2	22	34	34	7
Montana	691	117	6	488	--	52	11	12	5
Nevada	223	34	40	116	--	7	--	16	10
New Mexico	568	95	263	160	10	16	--	17	7
Oregon	659	53	367	34	15	85	17	72	16
Utah	668	86	316	88	123	31	--	11	13
Washington	853	91	240	314	2	98	50	12	46
Wyoming	467	79	52	301	12	5	3	7	8

Table 9.

Technicians by Type of Agency and Occupation, January 1964

Occupation	All agencies	Highway and public works	Health and welfare	Agriculture and conservation	Other agencies
All technicians.....	60,232	50,127	4,693	4,247	1,165
Draftsmen.....	7,920	7,501	36	208	175
Surveyors.....	11,971	11,710	2	227	32
Engineering technicians	30,535	29,885	190	180	280
Physical science technicians.....	1,539	894	309	248	88
Agricultural technicians.....	1,988	10	52	1,916	10
Biological technicians.	1,842	--	486	1,334	22
Medical and dental technicians.....	3,674	--	3,526	103	45
Other technicians.....	763	127	92	31	513

Table 10.

Scientists, Engineers, Social Workers, Selected Health-Related Professionals, and Technicians Primarily Engaged in Research, by State, January 1964

State	Number engaged in research						Number engaged in research as percent of total number in occupation					
	All occupations	Scientists	Engineers	Social workers	Selected health related professionals	Technicians	All occupations	Scientists	Engineers	Social workers	Selected health related professionals	Technicians
Total	4,816	2,866	744	99	187	920	3.1	17.2	2.2	1.1	0.5	1.5
Northeast	1,308	819	109	28	111	241	3.6	22.6	1.4	1.0	.8	2.7
Connecticut	63	36	17	--	2	8	2.4	13.8	2.7	--	.3	.9
Maine	45	44	--	--	--	1	3.8	24.2	--	--	--	.3
Massachusetts	65	26	5	2	21	11	1.2	5.7	.4	.5	1.0	.9
New Hampshire	23	18	--	--	--	5	3.4	25.0	--	--	--	6.7
New Jersey	93	49	6	14	1	23	2.5	17.9	.6	3.2	.1	3.2
New York	831	552	68	12	87	112	6.5	39.6	2.6	1.0	1.8	4.3
Pennsylvania	168	78	9	--	--	81	2.1	9.7	.8	--	--	3.7
Rhode Island	16	12	4	--	--	--	1.4	12.4	2.5	--	--	--
Vermont	4	4	--	--	--	--	.4	5.1	--	--	--	--
Middle West	1,310	790	254	54	12	200	3.9	19.0	3.5	2.3	0.2	1.4
Illinois	454	242	56	50	6	100	7.7	29.4	3.6	14.6	.4	5.6
Indiana	16	14	--	--	2	--	.7	4.0	--	--	.5	--
Iowa	17	16	--	--	--	1	.6	8.4	--	--	--	.1
Kansas	205	115	89	--	--	1	8.4	40.6	20.8	--	--	.1
Michigan	230	119	55	--	1	55	5.2	16.3	5.8	--	.1	3.5
Minnesota	79	49	12	--	--	18	2.3	15.3	2.2	--	--	1.1
Missouri	77	67	4	--	2	4	2.6	25.1	.5	--	.5	.3
Nebraska	20	15	1	4	--	--	1.7	13.0	.4	3.8	--	--
North Dakota	22	16	3	--	--	3	3.5	18.2	1.6	--	--	1.1
Ohio	107	70	26	--	--	11	2.5	14.3	3.9	--	--	.5
South Dakota	25	20	5	--	--	--	5.3	21.5	3.3	--	--	--
Wisconsin	58	47	3	--	1	7	1.9	11.3	.4	--	.2	.7

Table 10.

Scientists, Engineers, Social Workers, Selected Health-Related Professionals, and Technicians Primarily Engaged in Research, by State, January 1964 -- Continued

State	Number engaged in research						Number engaged in research as percent of total number in occupation					
	All occupations	Scientists	Engineers	Social workers	Selected health related professionals	Technicians	All occupations	Scientists	Engineers	Social workers	Selected health related professionals	Technicians
South	1,170	614	161	4	32	359	2.3	13.1	1.9	0.2	0.3	1.5
Alabama	23	22	1	--	--	--	.6	11.3	.1	--	--	--
Arkansas	41	28	9	--	--	4	3.0	19.3	4.6	--	--	.6
Delaware	7	5	1	--	--	1	1.0	8.9	1.3	--	--	.3
Florida	251	116	21	1	10	103	3.9	17.9	2.7	.2	.5	4.0
Georgia	40	20	11	--	1	8	1.5	6.6	1.7	--	.4	.6
Kentucky	54	12	17	1	2	22	1.8	4.4	2.4	.9	.5	1.4
Louisiana	189	16	33	2	1	137	4.8	10.9	6.7	.9	.1	6.2
Maryland	37	17	6	--	5	9	1.2	6.1	1.3	--	.4	.9
Mississippi	29	14	9	--	--	6	1.2	5.6	3.6	--	--	.5
North Carolina	27	22	3	--	--	2	1.0	5.9	.4	--	--	.2
Oklahoma	57	34	23	--	--	--	3.5	12.1	19.2	--	--	--
South Carolina	19	19	--	--	--	--	.9	9.9	--	--	--	--
Tennessee	84	69	2	--	3	10	2.4	22.9	.5	--	.4	.6
Texas	131	111	10	--	5	5	1.9	24.4	.7	--	.5	.1
Virginia	141	76	14	--	5	46	2.7	12.5	1.7	--	.4	1.9
West Virginia	40	33	1	--	--	6	3.5	18.3	.4	--	--	1.1
Far West	1,028	643	220	13	32	120	2.9	15.2	2.0	0.7	0.6	0.9
Alaska	13	8	4	--	--	1	1.3	4.5	1.2	--	--	.3
Arizona	12	11	1	--	--	--	1.0	6.5	.8	--	--	--
California	498	364	107	5	22	--	2.8	22.0	1.7	.7	.8	--
Colorado	54	25	25	1	2	1	3.0	13.5	5.1	1.3	.8	.1
Hawaii	108	19	27	--	3	59	8.3	10.3	10.4	--	.8	19.3
Idaho	26	4	1	--	--	21	2.2	2.5	.9	--	--	3.5
Montana	31	14	2	--	--	15	2.3	12.2	.5	--	--	2.2
Nevada	2	2	--	--	--	--	.3	2.0	--	--	--	--
New Mexico	20	20	--	--	--	--	1.8	12.8	--	--	--	--
Oregon	100	83	8	--	1	8	3.8	15.4	1.0	--	.2	1.2
Utah	19	6	9	--	1	3	1.3	2.2	2.5	--	1.2	.4
Washington	135	77	36	7	3	12	4.3	17.3	3.1	2.5	.7	1.4
Wyoming	10	10	--	--	--	--	1.0	12.5	--	--	--	--

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON, D.C. 20210

In reply please
refer to No. 341

Gentlemen:

The Bureau of Labor Statistics is conducting a survey to provide data on the 1964 employment of scientific and technical personnel by the 50 State governments.

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, technicians, and other selected specialists, and in formulating policies and programs to strengthen our resources of such personnel. We hope the results will also be useful to State governments in evaluating their own scientific manpower needs and policies.

Two labeled questionnaires are enclosed for your use. Please return one in the enclosed envelope, which requires no postage, and retain the other for your files.

We would greatly appreciate your careful attention to the following:

1. It is important that we receive your reply even if your organization does not employ scientists, engineers, technicians, or any of the other specialists indicated on the questionnaire.

2. Where precise information is not available, please make estimates.

We shall be extremely grateful for your very early response--within the next few days, if possible. If you have any questions regarding coverage or the interpretation of the questionnaire, please call Mr. Jack Golomb of our Washington staff (Area Code 202, 961-2465) or write to me.

Sincerely yours,

Ewan Clague

Ewan Clague
Commissioner

Enclosures

B.L.S. No. 2645 (Revised June 1, 1964)

Budget Bureau No. 44-R1181.1
Approval expires June 30, 1965

A SURVEY OF SCIENTIFIC AND TECHNICAL PERSONNEL EMPLOYED BY STATE GOVERNMENTS 1964

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 which will disclose information concerning individual agencies without their permission.

If you employ **ENGINEERS, SCIENTISTS, SOCIAL WORKERS,** persons in any of the **SELECTED HEALTH PROFESSIONS** listed under item 5.00 on page 2, or **TECHNICIANS,** please complete the entire questionnaire, supplying as much information as possible. Reasonable estimates will be satisfactory if precise data are not available. PLEASE NOTE.—*Even if you do not have employees in these occupational categories, please complete this page.*

Data should apply, if possible, to the pay period which includes January 12, 1964.

If additional copies of the questionnaire would be helpful, they may be obtained upon request.

Mail completed questionnaire to:

COMMISSIONER OF LABOR STATISTICS
U.S. DEPARTMENT OF LABOR
Washington, D. C. 20210

IDENTIFICATION OF REPORTING UNIT

REPORTING UNIT
(See definition 1)

This questionnaire should cover the **REPORTING UNIT** identified at left, unless a special letter is enclosed asking you to omit certain subdivisions.

Please complete and return one copy of this report in the enclosed envelope. The extra copy is for your files.

(Change address if incorrect)

Terms in HEAVY CAPITALS are defined on Pages 3, 4, and 5. Please read definitions carefully.

January 1964

1. Total employment, by major occupational group:

1.00	Enter the **TOTAL NUMBER OF PAID EMPLOYEES** of the **REPORTING UNIT**—definition 2; include both full- and part-time employees	_____
2.00	**ENGINEERS**—Enter here and on line 2.00, column 2, page 2—(definition 3)	_____
3.00	**SCIENTISTS**—Enter here and on line 3.00, column 2, page 2—(definition 6)	_____
4.00	**SOCIAL WORKERS**—Enter here and on line 4.00, column 5, page 2—(definition 18)	_____
5.00	**SELECTED HEALTH PROFESSIONS**—Enter here and on line 5.00, column 5, page 2—(definition 19)	_____
6.00	**TECHNICIANS** (exclude skilled craftsmen)—Enter here and on line 6.00, column 5, page 2—(definition 21)	_____
7.00	All other employees (line 1.00 minus lines 2.00, 3.00, 4.00, 5.00, and 6.00)	_____

IF YOU EMPLOY ANY **SCIENTISTS, ENGINEERS, TECHNICIANS, SOCIAL WORKERS,** OR PERSONS IN **SELECTED HEALTH PROFESSIONS** (ENTRIES ON LINES 2.00, 3.00, 4.00, 5.00 AND 6.00), PLEASE COMPLETE THE REMAINDER OF THIS FORM. COMPLETE ONLY THIS PAGE IF ENTRIES ON LINES 2.00, 3.00, 4.00, 5.00 AND 6.00 ARE ALL ZERO.

Person to be contacted if questions arise concerning this report:

Name _____ Telephone No. _____

Title _____

2. **OCCUPATION AND FUNCTION.** Please enter below the total number of employees in each listed occupation and the number primarily engaged in **RESEARCH** in January 1964.

OCCUPATION (A person working in a combination of the listed occupations—such as a biochemist—should be counted in the occupation with which his work is most closely associated. Count each employee in only one occupation.)	TOTAL (Entries on lines 2.00 and 3.00 should be the same as the corresponding entries on page 1.) PLEASE DO NOT LEAVE BLANKS. ENTER "0" WHERE APPLICABLE.	Employed primarily in **RESEARCH**—definition 22 PLEASE DO NOT LEAVE BLANKS. ENTER "0" WHERE APPLICABLE.	OCCUPATION (A person working in a combination of the listed occupations—such as a worker doing both drafting and surveying — should be counted in the occupation with which his work is most closely associated. Count each employee in only one occupation.)	TOTAL (Entries on lines 4.00, 5.00 and 6.00 should be the same as the corresponding entries on page 1.) PLEASE DO NOT LEAVE BLANKS. ENTER "0" WHERE APPLICABLE.	Employed primarily in **RESEARCH**—definition 22 PLEASE DO NOT LEAVE BLANKS. ENTER "0" WHERE APPLICABLE.
(1)	(2)	(3)	(4)	(5)	(6)
2.00 Total **ENGINEERS**—definition 3			4.00 Total **SOCIAL WORKERS**—definition 18		
2.01 **CIVIL**—definition 4			4.01 Medical—(see definition 18)		
2.02 **SANITARY** (exclude sanitarians—see line 5.07)—definition 5.			4.02 Psychiatric—(see definition 18)		
2.09 Other engineers			4.09 Other social workers—(see definition 18)		
3.00 Total **SCIENTISTS**—definition 6			5.00 Total **SELECTED HEALTH PROFESSIONS**—definition 19		
3.10 Total **PHYSICAL SCIENTISTS**—definition 7			5.01 Public health officers (M.D.)		
3.11 Chemists			5.02 Psychiatrists (M.D.)		
3.12 Geologists and geophysicists			5.03 Physicians, all other (M.D. and D.O.)		
3.19 Other physical scientists (please specify) _____			5.04 Dentists (D.D.S. or D.D.M.)		
3.20 Total **LIFE SCIENTISTS**—definition 8			5.05 Professional Nurses (R.N.)		
3.21 **AGRICULTURAL SCIENTISTS**—definition 9			5.06 Veterinarians (D.V.M.)		
3.22 **BIO-MEDICAL SCIENTISTS**—definition 10			5.07 **SANITARIANS**—definition 20		
3.29 **BIOLOGICAL SCIENTISTS** except **AGRICULTURAL** and **BIO-MEDICAL**—definition 11			6.00 Total **TECHNICIANS**—definition 21		
3.30 Total **MATHEMATICIANS** and **STATISTICIANS**			6.01 Draftsmen		
3.31 **MATHEMATICIANS**—definition 12			6.02 Surveyors		
3.32 **STATISTICIANS**—definition 13			6.03 Engineering technicians (except draftsmen and surveyors)		
3.40 Total **SOCIAL SCIENTISTS**—(except psychologists and social workers—see lines 3.50 and 4.00)—definition 14			6.04 Physical science technicians (working in chemistry, geology, physics, etc.)		
3.41 Anthropologists			6.05 Agricultural technicians		
3.42 **ECONOMISTS**—definition 15			6.06 Biological technicians		
3.43 **SOCIOLOGISTS**—definition 16			6.07 Medical and dental technicians (include serology technicians, encephalographers, etc.)		
3.49 Other social scientists—(please specify) _____			6.09 Other **TECHNICIANS** (please specify) _____		
3.50 Total **PSYCHOLOGISTS**—(include practitioners)—definition 17					
3.51 Clinical—(see definition 17)					
3.52 Social—(see definition 17)					
3.59 Other psychologists—(see definition 17)					

7.00 Please list major organizational divisions or sections of the **REPORTING UNIT** and give the total number of paid employees in each.

Name of sub-unit	Total number of paid employees January 1964

NOTE: We would appreciate receiving copies of pamphlets or other printed material describing the work performed by scientific and technical personnel in the **REPORTING UNIT.**

DEFINITIONS

1. **REPORTING UNIT**—The State government agency or other State unit identified on the front page of this questionnaire. Include all the subdivisions and organizational units within that State agency, except for the exclusions specifically listed in this definition. Exclude State universities and colleges, agricultural experiment stations, agricultural extension services, and hospitals affiliated with State universities. However, include all other State agencies which are located at State colleges and universities.

2. **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 employees on State payrolls who work with 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 and practitioners (medical doctors, nurses, etc.), 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, and personnel on the payroll of contracting firms.

3. **ENGINEERS**—Count as engineers all persons actually engaged in chemical, civil, electrical, mechanical, metallurgical and all other types of professional engineering work at a level which requires knowledge of engineering 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 engineers in research, planning, inspection, administration, technical writing, and other positions which require them to use the indicated level of knowledge in their work. Exclude personnel trained in engineering but now employed in positions not requiring the use of such training. Include architectural engineers but exclude architects. Also exclude stationary engineers. Draftsmen and engineering aides should be counted in the **TECHNICIANS** category.

4. **CIVIL ENGINEERS**—Count as civil engineers all personnel engaged in architectural, construction, highway, and all other civil engineering specialties, except sanitary engineering, which is reported separately. Include city planners if their work is essentially engineering (per definition 3, above).

5. **SANITARY ENGINEERS**—Count as sanitary engineers those engineers who conceive, design, appraise, direct, and manage engineering works and projects developed, as a whole or in part, for the protection and promotion of the public health, particularly as it relates to the improvement of man's environment. Also, count those engineers who investigate and correct engineering works and other projects that are capable of injury to the public health by being or becoming faulty in conception, design, direction, or management. Examples of areas of work are water supply, treatment, and distribution; collection, treatment, and disposal of community wastes; control of water and atmospheric pollution; milk and food sanitation; housing and institutional sanitation; and prevention of radiation exposure. Do not include sanitarians; they are to be reported on line 5.07.

6. **SCIENTISTS**—Count as scientists all persons actually engaged in scientific work at a level which requires a knowledge of physical, mathematical, statistical, biological, agricultural, social, economic, political, psychological or other 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 degree in the field. Include scientists in research, planning, inspection, administration, technical service, technical writing, technical drawing and exhibit design, data collection, and all other positions which require them

to use the indicated level of scientific knowledge in their work. Exclude personnel trained in these science fields but now employed in positions not requiring the use of such training. Medical doctors, dentists, veterinarians, and **SANITARIANS** should be counted in **SELECTED HEALTH PROFESSIONS;** see definition 19. (See definitions 7 to 17 for specific categories of scientists.)

7. **PHYSICAL SCIENTISTS**—Count as physical scientists all chemists, physicists, metallurgists, geologists, geophysicists, and all other physical and earth scientists.

8. **LIFE SCIENTISTS**—Count as life scientists all personnel actually engaged in scientific work requiring a knowledge of agricultural, medical, or biological sciences. (See definitions 9, 10, and 11 for specific categories of life scientists.)

9. **AGRICULTURAL SCIENTISTS**—Count as agricultural scientists all scientists who spend the greatest amount of their time in understanding and improving agricultural productivity. These scientists work in such fields as agronomy, animal husbandry, dairy technology, food technology, forestry, horticulture, farm or range management, and soil culture. Veterinarians should be reported in **SELECTED HEALTH PROFESSIONS** (see definition 19).

10. **BIO-MEDICAL SCIENTISTS**—Count as bio-medical scientists those persons engaged in such biological sciences as anatomy, bacteriology, microbiology, pathology, pharmacology, and physiology. Exclude physicians, dentists, public health specialists, pharmacists, and other health personnel. They should be counted in **SELECTED HEALTH PROFESSIONS** (see definition 19). Exclude plant pathologists and plant physiologists. They should be counted in **BIOLOGICAL SCIENTISTS** (see definition 11).

11. **BIOLOGICAL SCIENTISTS** except **AGRICULTURAL** and **BIO-MEDICAL** — Count in this category all biological scientists who are not counted as either agricultural or bio-medical scientists. Include botanists, ecologists, entomologists, plant pathologists, plant physiologists, zoologists, etc.

12. **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 amount of their time in the development and application of mathematical techniques. Include actuaries and mathematical analysts. Include statisticians and computer programmers only if they specialize in mathematical techniques. Statisticians engaged primarily in the application of statistical techniques should be included in the **STATISTICIANS** category. Exclude accountants.

13. **STATISTICIANS**—Count as statisticians all persons other than those reported as mathematicians, who are primarily engaged in the recurrent application of statistical techniques which involve the *use* of mathematical-statistical theory equivalent to that taught at the college level, regardless of type of college degree held. Statistical techniques include the design of surveys or experiments as well as the collection, organization, interpretation, or analysis of numerical data. Such data may represent either complete enumeration or statistical samples. Persons covered in the framework of this definition may be employed in social science fields such as economics, political science, demography, or psychology; in engineering fields; or in physical or life science fields, such as biology, agriculture, pharamcology, or medicine. Do *not* include statisticians who are engaged solely in the development of mathematical theory associated with the general application of statistical techniques—these persons should be reported in **MATHEMATICIANS.** Exclude accountants.

14. **SOCIAL SCIENTISTS**—Count as social scientists all persons actually engaged in social *scientific* work at a level which requires a knowledge of social, economic, political, or cultural 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. Include anthropologists, archivists, criminologists, demographers, economists, historians, penologists, political scientists, sociologists, etc. Include those engaged in research, planning, administration, technical service, technical writing, and all other positions which require them to use the indicated level of knowledge in their work. Exclude psychologists (see lines 3.50, 3.51, 3.52 and 3.59) and social workers (see lines 4.00, 4.01, 4.02, 4.09).

15. **ECONOMISTS**—Count as economists those social scientists who analyze, forecast, or interpret economic conditions and trends. Their work will normally include the study of economic factors and their interrelationships. Examples of such factors are: employment, taxes, revenues, and wage rates. Exclude accountants.

16. **SOCIOLOGISTS**—Count as sociologists those social scientists who study the groups which man forms—families, tribes, communities, villages, and states, and a great variety of social, religious, professional, business, and other organizations which have arisen out of living together. Sociologists study the behaviour of these groups, trace their origin and growth, and analyze the influence of group activities on individual members. They may specialize in certain areas of study such as intergroup relations, the effects of urban living, or social organization.

17. **PSYCHOLOGISTS**—Count as psychologists all persons concerned with the investigation, application, or establishment of principles of human behavior. *Clinical psychologists* . . . Count as clinical psychologists those psychologists who interview patients, give diagnostic tests, and provide individual and group psychotherapy to maladjusted or disturbed people. Their research functions are concerned with psychotherapy, personality development, and adjustment. These people generally work in mental hospitals or clinics. *Social psychologists* . . . Count in this category the psychologists employed in the study of the social forces of groups, cultures, and society that affect individual behavior. *Psychologists, all other* . . . Include in this category such groups as the comparative (animal), counseling, developmental, educational, experimental, industrial, and physiological psychologists.

18. **SOCIAL WORKERS**—Count in this category all persons actually working as social workers who either have a master's degree in social work (M.S.W.) or are working at a level requiring knowledge equivalent to that which would be acquired in obtaining the M.S.W. degree. *Medical social workers* are those providing administration, supervision, and services in hospitals and their outpatient departments, clinics, and health programs; and those administering and providing staff consultation and conducting research with respect to medical and public health social work programs. *Psychiatric*

social workers are those providing administration, supervision and services in mental hospitals, clinics, mental health demonstration programs, community mental health centers, and mental retardation services and those administering, consulting, and providing staff assistance and conducting research with respect to psychiatric social work and mental health programs. *Social workers, all other* are those engaged in the provision of social services (excluding medical and psychiatric) in important related agencies such as welfare, education and correction.

19. **SELECTED HEALTH PROFESSIONS**—Include in this category physicians, dentists, psychiatrists, registered nurses, veterinarians, public health officers, and sanitarians, whether engaged in practice, research, or other activities. Exclude school nurses, practical nurses, auxiliary nursing workers, nursing aides, orderlies and attendants. Please note definition 2, **TOTAL NUMBER OF PAID EMPLOYEES,** regarding exclusion of certain part-time employees.

20. **SANITARIANS**—Count as sanitarians persons concerned with health and sanitation standards and regulations and other environmental health programs. Include those persons who plan and supervise the administration of sanitation laws and regulations, develop and conduct sanitation tests, and inspect and investigate sanitation conditions and facilities. Do not include sanitary engineers; they are to be reported on line 2.02.

21. **TECHNICIANS**—Count as technicians all persons actually engaged in technical work at a level which requires knowledge of engineering, mathematical, medical, dental, biological or other natural sciences comparable to the knowledge acquired through technical institutes, junior colleges, 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 aides, laboratory technicians, and assistants, serology technicians, conservationist aides, electronic technicians, X-ray technicians, and museum technicians. Computer programmers who meet the above definition of technician should be reported on line 6.09 "other technicians." Exclude personnel whose positions require knowledge or training consistent with definitions for scientists, engineers, and mathematicians. Exclude skilled workers and craftsmen such as electricians, machinists, plumbers, and radio and T.V. repairmen.

22. **RESEARCH**—Enter in columns 3 and 6 on page 2 the number of persons included in columns 1 and 4 who spend the greatest amount of their time performing or supervising basic and applied investigation in order to advance knowledge in the natural and social sciences, engineering, or the health professions. 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 amount of their time in quality control, routine testing, routine gathering of statistics, or other nontechnical activities or technical services. Include those social scientists who spend the greatest amount of their time in analyzing and testing data.

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