

# **Largest Number of Job Openings**

All Occupations in 26 Arizona ZIPs

Emsi Q3 2021 Data Set

October 2021

**Estrella Mountain Community College**

3000 North Dysart Road  
Avondale, Arizona 85392

# Parameters

## Regions

26 items selected. See Appendix A for details.

## Timeframe

2015 - 2025

## Datarun

2021.3 – QCEW Employees, Non-QCEW Employees, and Self-Employed

SOC	Description	Avg. Annual Openings	2021 Jobs	Regional Completions (2020)	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1,947	11,665	0	No formal educational credential	None	Short-term on-the-job training
53-7065	Stockers and Order Fillers	1,584	9,784	0	High school diploma or equivalent	None	Short-term on-the-job training
35-3023	Fast Food and Counter Workers	1,078	4,593	0	No formal educational credential	None	Short-term on-the-job training
41-2031	Retail Salespersons	1,052	7,130	627	No formal educational credential	None	Short-term on-the-job training
41-2011	Cashiers	989	5,493	0	No formal educational credential	None	Short-term on-the-job training
53-3032	Heavy and Tractor-Trailer Truck Drivers	973	7,704	0	Postsecondary nondegree award	None	Short-term on-the-job training
43-4051	Customer Service Representatives	838	6,079	731	High school diploma or equivalent	None	Short-term on-the-job training
31-1128	Home Health and Personal Care Aides	740	4,402	0	High school diploma or equivalent	None	Short-term on-the-job training
53-7051	Industrial Truck and Tractor Operators	658	4,409	0	No formal educational credential	None	Short-term on-the-job training
35-3031	Waiters and Waitresses	621	2,977	0	No formal educational credential	None	Short-term on-the-job training
55-9999	Military-only occupations	610	4,927	0	N/A	None	N/A
53-3033	Light Truck Drivers	413	3,002	0	High school diploma or equivalent	None	Short-term on-the-job training
35-2014	Cooks, Restaurant	412	2,270	27	No formal educational credential	Less than 5 years	Moderate-term on-the-job training
43-9061	Office Clerks, General	398	3,197	7	High school diploma or equivalent	None	Short-term on-the-job training

53-7064	Packers and Packagers, Hand	368	2,280	0	No formal educational credential	None	Short-term on-the-job training
35-2011	Cooks, Fast Food	353	2,344	0	No formal educational credential	None	Short-term on-the-job training
11-1021	General and Operations Managers	336	3,575	830	Bachelor's degree	5 years or more	None
29-1141	Registered Nurses	321	4,516	44	Bachelor's degree	None	None
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	315	2,291	0	No formal educational credential	None	Short-term on-the-job training
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	304	2,587	731	High school diploma or equivalent	None	Short-term on-the-job training
49-9071	Maintenance and Repair Workers, General	304	2,507	713	High school diploma or equivalent	None	Moderate-term on-the-job training
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	291	2,128	0	High school diploma or equivalent	Less than 5 years	None
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	283	1,693	27	High school diploma or equivalent	Less than 5 years	None
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	268	2,656	731	High school diploma or equivalent	None	Moderate-term on-the-job training
39-9011	Childcare Workers	249	1,582	2	High school diploma or equivalent	None	Short-term on-the-job training
43-1011	First-Line Supervisors of Office and Administrative Support Workers	248	2,264	735	High school diploma or equivalent	Less than 5 years	None
13-1198	Project Management Specialists and Business Operations Specialists, All Other	243	1,847	1,064	Bachelor's degree	None	None
43-5071	Shipping, Receiving, and Inventory Clerks	241	1,913	0	High school diploma or equivalent	None	Short-term on-the-job training
25-9045	Teaching Assistants, Except Postsecondary	240	2,147	5	Some college, no degree	None	None
35-2021	Food Preparation Workers	239	1,262	0	No formal educational credential	None	Short-term on-the-job training

41-1011	First-Line Supervisors of Retail Sales Workers	238	2,115	104	High school diploma or equivalent	Less than 5 years	None
33-9032	Security Guards	233	1,613	0	High school diploma or equivalent	None	Short-term on-the-job training
43-3031	Bookkeeping, Accounting, and Auditing Clerks	219	1,828	15	Some college, no degree	None	Moderate-term on-the-job training
47-2061	Construction Laborers	216	1,666	0	No formal educational credential	None	Short-term on-the-job training
37-3011	Landscaping and Groundskeeping Workers	213	1,529	0	No formal educational credential	None	Short-term on-the-job training
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	208	1,533	0	High school diploma or equivalent	None	Moderate-term on-the-job training
37-2012	Maids and Housekeeping Cleaners	201	1,357	0	No formal educational credential	None	Short-term on-the-job training
51-2098	Miscellaneous Assemblers and Fabricators	201	1,672	0	High school diploma or equivalent	None	Moderate-term on-the-job training
39-5012	Hairdressers, Hairstylists, and Cosmetologists	177	1,304	60	Postsecondary nondegree award	None	None
25-2021	Elementary School Teachers, Except Special Education	175	2,191	624	Bachelor's degree	None	None
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	171	677	0	No formal educational credential	None	Short-term on-the-job training
43-4171	Receptionists and Information Clerks	166	1,170	3	High school diploma or equivalent	None	Short-term on-the-job training
31-9092	Medical Assistants	160	1,228	0	Postsecondary nondegree award	None	None
49-3023	Automotive Service Technicians and Mechanics	156	1,486	807	Postsecondary nondegree award	None	Short-term on-the-job training
13-1071	Human Resources Specialists	145	1,192	744	Bachelor's degree	None	None
43-6013	Medical Secretaries and Administrative Assistants	144	1,104	0	High school diploma or equivalent	None	Moderate-term on-the-job training

35-3011	Bartenders	142	732	0	No formal educational credential	None	Short-term on-the-job training
53-3031	Driver/Sales Workers	141	1,077	0	High school diploma or equivalent	None	Short-term on-the-job training
47-2031	Carpenters	133	1,078	0	High school diploma or equivalent	None	Apprenticeship
31-1131	Nursing Assistants	132	1,041	6	Postsecondary nondegree award	None	None
39-9032	Recreation Workers	132	737	0	High school diploma or equivalent	None	Short-term on-the-job training
53-7061	Cleaners of Vehicles and Equipment	130	820	0	No formal educational credential	None	Short-term on-the-job training
13-2011	Accountants and Auditors	125	1,271	119	Bachelor's degree	None	None
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	125	1,524	732	Bachelor's degree	None	None
51-9111	Packaging and Filling Machine Operators and Tenders	125	843	0	High school diploma or equivalent	None	Moderate-term on-the-job training
33-3051	Police and Sheriffs Patrol Officers	123	1,509	98	High school diploma or equivalent	None	Moderate-term on-the-job training
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	122	661	0	No formal educational credential	None	Short-term on-the-job training
35-9021	Dishwashers	122	679	0	No formal educational credential	None	Short-term on-the-job training
33-3012	Correctional Officers and Jailers	121	1,317	108	High school diploma or equivalent	None	Moderate-term on-the-job training
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	119	1,005	162	High school diploma or equivalent	5 years or more	None
47-2111	Electricians	116	844	0	High school diploma or equivalent	None	Apprenticeship
43-5061	Production, Planning, and Expediting Clerks	111	849	0	High school diploma or equivalent	None	Moderate-term on-the-job training

25-3031	Substitute Teachers, Short-Term	107	787	0	Bachelor's degree	None	None
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	107	792	0	High school diploma or equivalent	None	Short-term on-the-job training
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	105	613	0	No formal educational credential	None	Short-term on-the-job training
13-1161	Market Research Analysts and Marketing Specialists	104	804	104	Bachelor's degree	None	None
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	103	1,082	939	Bachelor's degree	Less than 5 years	None
13-1151	Training and Development Specialists	102	777	1	Bachelor's degree	Less than 5 years	None
35-2012	Cooks, Institution and Cafeteria	101	621	27	No formal educational credential	None	Short-term on-the-job training
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	100	976	547	High school diploma or equivalent	Less than 5 years	None
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	100	744	0	High school diploma or equivalent	None	Moderate-term on-the-job training
13-1111	Management Analysts	97	861	200	Bachelor's degree	Less than 5 years	None
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	95	746	4	Postsecondary nondegree award	None	Long-term on-the-job training
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	94	947	27	Bachelor's degree	None	None
47-2073	Operating Engineers and Other Construction Equipment Operators	93	677	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	93	794	0	High school diploma or equivalent	Less than 5 years	None
47-2152	Plumbers, Pipefitters, and Steamfitters	92	691	166	High school diploma or equivalent	None	Apprenticeship
13-1031	Claims Adjusters, Examiners, and Investigators	87	802	0	High school diploma or equivalent	None	Long-term on-the-job training
29-2052	Pharmacy Technicians	87	895	5	High school diploma or equivalent	None	Moderate-term on-the-job training

39-3091	Amusement and Recreation Attendants	84	341	0	No formal educational credential	None	Short-term on-the-job training
15-1232	Computer User Support Specialists	83	865	756	Some college, no degree	None	None
25-2022	Middle School Teachers, Except Special and Career/Technical Education	83	1,030	601	Bachelor's degree	None	None
13-1028	Buyers and Purchasing Agents	81	766	0	Bachelor's degree	None	Moderate-term on-the-job training
25-1099	Postsecondary Teachers	79	749	634	Doctoral or professional degree	None	None
25-2011	Preschool Teachers, Except Special Education	79	657	2	Associate's degree	None	None
33-9098	School Bus Monitors and Protective Service Workers, All Other	79	299	0	High school diploma or equivalent	None	Short-term on-the-job training
47-2051	Cement Masons and Concrete Finishers	78	656	0	No formal educational credential	None	Moderate-term on-the-job training
43-3021	Billing and Posting Clerks	77	692	1	High school diploma or equivalent	None	Moderate-term on-the-job training
31-9091	Dental Assistants	72	571	0	Postsecondary nondegree award	None	None
35-2015	Cooks, Short Order	71	383	27	No formal educational credential	None	Short-term on-the-job training
51-3092	Food Batchmakers	71	275	0	High school diploma or equivalent	None	Moderate-term on-the-job training
41-3021	Insurance Sales Agents	69	529	0	High school diploma or equivalent	None	Moderate-term on-the-job training
41-2022	Parts Salespersons	68	513	0	No formal educational credential	None	Moderate-term on-the-job training
39-9031	Exercise Trainers and Group Fitness Instructors	67	333	7	High school diploma or equivalent	None	Short-term on-the-job training
11-2022	Sales Managers	66	744	827	Bachelor's degree	Less than 5 years	None

33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	66	246	0	No formal educational credential	None	Short-term on-the-job training
51-3011	Bakers	66	460	7	No formal educational credential	None	Long-term on-the-job training
41-2021	Counter and Rental Clerks	64	426	0	No formal educational credential	None	Short-term on-the-job training
53-6021	Parking Attendants	64	335	0	No formal educational credential	None	Short-term on-the-job training
11-9111	Medical and Health Services Managers	63	597	44	Bachelor's degree	Less than 5 years	None
13-1081	Logisticians	63	469	0	Bachelor's degree	None	None
21-1012	Educational, Guidance, and Career Counselors and Advisors	63	587	22	Master's degree	None	None
29-1051	Pharmacists	63	835	0	Doctoral or professional degree	None	None
35-3041	Food Servers, Nonrestaurant	63	368	0	No formal educational credential	None	Short-term on-the-job training
11-3031	Financial Managers	61	615	761	Bachelor's degree	5 years or more	None
11-3071	Transportation, Storage, and Distribution Managers	60	590	96	High school diploma or equivalent	5 years or more	None
21-1021	Child, Family, and School Social Workers	59	551	126	Bachelor's degree	None	None
41-9022	Real Estate Sales Agents	59	538	627	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3011	Aircraft Mechanics and Service Technicians	59	601	15	Postsecondary nondegree award	None	None
13-1041	Compliance Officers	58	568	98	Bachelor's degree	None	Moderate-term on-the-job training
25-3097	Tutors and Teachers and Instructors, All Other	58	429	628	Bachelor's degree	None	None
29-2018	Clinical Laboratory Technologists and Technicians	58	609	0	Bachelor's degree	None	None

49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	58	592	294	High school diploma or equivalent	None	Long-term on-the-job training
39-2021	Animal Caretakers	57	305	0	High school diploma or equivalent	None	Short-term on-the-job training
11-9051	Food Service Managers	56	462	27	High school diploma or equivalent	Less than 5 years	None
29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	56	708	0	Doctoral or professional degree	None	Internship/residency
51-4121	Welders, Cutters, Solderers, and Brazers	56	477	162	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9041	Industrial Machinery Mechanics	55	453	32	High school diploma or equivalent	None	Long-term on-the-job training
11-3011	Administrative Services and Facilities Managers	54	565	97	Bachelor's degree	Less than 5 years	None
31-9011	Massage Therapists	54	379	0	Postsecondary nondegree award	None	None
43-5032	Dispatchers, Except Police, Fire, and Ambulance	54	525	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-7081	Refuse and Recyclable Material Collectors	54	338	0	No formal educational credential	None	Short-term on-the-job training
33-2011	Firefighters	53	667	0	Postsecondary nondegree award	None	Long-term on-the-job training
43-6011	Executive Secretaries and Executive Administrative Assistants	52	411	627	High school diploma or equivalent	Less than 5 years	None
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	51	358	28	Bachelor's degree	None	None
27-2022	Coaches and Scouts	51	268	0	Bachelor's degree	None	None
39-3011	Gambling Dealers	51	261	0	High school diploma or equivalent	None	Short-term on-the-job training
29-2061	Licensed Practical and Licensed Vocational Nurses	50	480	6	Postsecondary nondegree award	None	None

51-3022	Meat, Poultry, and Fish Cutters and Trimmers	50	343	0	No formal educational credential	None	Short-term on-the-job training
43-4199	Information and Record Clerks, All Other	48	375	0	High school diploma or equivalent	None	Short-term on-the-job training
21-1093	Social and Human Service Assistants	47	354	633	High school diploma or equivalent	None	Short-term on-the-job training
29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	47	463	0	Postsecondary nondegree award	None	None
11-3021	Computer and Information Systems Managers	45	449	279	Bachelor's degree	5 years or more	None
15-1211	Computer Systems Analysts	44	538	175	Bachelor's degree	None	None
27-1026	Merchandise Displayers and Window Trimmers	43	386	0	High school diploma or equivalent	None	Short-term on-the-job training
43-4061	Eligibility Interviewers, Government Programs	43	358	3	High school diploma or equivalent	None	Moderate-term on-the-job training
43-5011	Cargo and Freight Agents	43	304	0	High school diploma or equivalent	None	Short-term on-the-job training
43-5052	Postal Service Mail Carriers	43	550	0	High school diploma or equivalent	None	Short-term on-the-job training
41-1012	First-Line Supervisors of Non-Retail Sales Workers	42	399	0	High school diploma or equivalent	Less than 5 years	None
51-6011	Laundry and Dry-Cleaning Workers	42	283	0	No formal educational credential	None	Short-term on-the-job training
11-9021	Construction Managers	41	425	82	Bachelor's degree	None	Moderate-term on-the-job training
39-5092	Manicurists and Pedicurists	41	274	56	Postsecondary nondegree award	None	None
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	41	377	0	Bachelor's degree	None	Moderate-term on-the-job training
41-9011	Demonstrators and Product Promoters	41	206	0	No formal educational credential	None	Short-term on-the-job training

43-4151	Order Clerks	41	271	0	Some college, no degree	None	Short-term on-the-job training
11-9141	Property, Real Estate, and Community Association Managers	40	392	0	High school diploma or equivalent	Less than 5 years	None
23-2011	Paralegals and Legal Assistants	40	331	0	Associate's degree	None	None
43-5021	Couriers and Messengers	40	284	0	High school diploma or equivalent	None	Short-term on-the-job training
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	40	262	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-3023	Slaughterers and Meat Packers	39	248	0	No formal educational credential	None	Short-term on-the-job training
51-9198	Helpers--Production Workers	39	218	0	High school diploma or equivalent	None	Short-term on-the-job training
29-1171	Nurse Practitioners	38	302	44	Master's degree	None	None
29-2034	Radiologic Technologists and Technicians	38	398	0	Associate's degree	None	None
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	38	339	0	High school diploma or equivalent	None	Long-term on-the-job training
15-1299	Computer Occupations, All Other	37	351	297	Bachelor's degree	None	Moderate-term on-the-job training
33-9091	Crossing Guards and Flaggers	37	200	0	No formal educational credential	None	Short-term on-the-job training
43-3011	Bill and Account Collectors	37	309	1	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2121	Glaziers	37	241	0	High school diploma or equivalent	None	Apprenticeship
23-1011	Lawyers	36	583	0	Doctoral or professional degree	None	None
29-2053	Psychiatric Technicians	36	294	0	Postsecondary nondegree award	Less than 5 years	Short-term on-the-job training

17-2112	Industrial Engineers	35	341	0	Bachelor's degree	None	None
29-2041	Emergency Medical Technicians and Paramedics	35	352	0	Postsecondary nondegree award	None	None
39-1098	First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services	35	277	56	High school diploma or equivalent	Less than 5 years	None
31-2021	Physical Therapist Assistants	34	212	0	Associate's degree	None	None
41-3031	Securities, Commodities, and Financial Services Sales Agents	34	258	0	Bachelor's degree	None	Moderate-term on-the-job training
47-2141	Painters, Construction and Maintenance	34	323	0	No formal educational credential	None	Moderate-term on-the-job training
49-9099	Installation, Maintenance, and Repair Workers, All Other	34	249	2	High school diploma or equivalent	None	Long-term on-the-job training
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	34	211	0	High school diploma or equivalent	None	Moderate-term on-the-job training
11-9032	Education Administrators, Kindergarten through Secondary	33	376	24	Master's degree	5 years or more	None
25-2012	Kindergarten Teachers, Except Special Education	33	322	2	Bachelor's degree	None	None
43-9021	Data Entry Keyers	33	286	18	High school diploma or equivalent	None	Short-term on-the-job training
53-2011	Airline Pilots, Copilots, and Flight Engineers	33	249	0	Bachelor's degree	Less than 5 years	Moderate-term on-the-job training
25-3021	Self-Enrichment Teachers	32	242	604	High school diploma or equivalent	Less than 5 years	None
51-9199	Production Workers, All Other	32	195	0	High school diploma or equivalent	None	Moderate-term on-the-job training
29-1292	Dental Hygienists	31	298	0	Associate's degree	None	None
41-9099	Sales and Related Workers, All Other	31	215	0	High school diploma or equivalent	None	None
27-2021	Athletes and Sports Competitors	30	163	0	No formal educational credential	None	Long-term on-the-job training

31-9096	Veterinary Assistants and Laboratory Animal Caretakers	30	169	0	High school diploma or equivalent	None	Short-term on-the-job training
35-1011	Chefs and Head Cooks	30	181	34	High school diploma or equivalent	5 years or more	None
39-3031	Ushers, Lobby Attendants, and Ticket Takers	30	66	0	No formal educational credential	None	Short-term on-the-job training
47-4011	Construction and Building Inspectors	30	211	4	High school diploma or equivalent	5 years or more	Moderate-term on-the-job training
11-3121	Human Resources Managers	29	281	119	Bachelor's degree	5 years or more	None
13-2098	Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other	29	320	126	Bachelor's degree	None	Moderate-term on-the-job training
25-2052	Special Education Teachers, Kindergarten and Elementary School	29	347	4	Bachelor's degree	None	None
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	29	240	1	Associate's degree	None	None
43-9041	Insurance Claims and Policy Processing Clerks	29	225	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-3052	Bus Drivers, Transit and Intercity	29	191	0	High school diploma or equivalent	None	Moderate-term on-the-job training
15-1244	Network and Computer Systems Administrators	28	371	163	Bachelor's degree	None	None
33-1012	First-Line Supervisors of Police and Detectives	28	357	110	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
43-9199	Office and Administrative Support Workers, All Other	28	166	0	High school diploma or equivalent	None	Short-term on-the-job training
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	28	205	0	Postsecondary nondegree award	None	Moderate-term on-the-job training
51-6031	Sewing Machine Operators	28	185	0	No formal educational credential	None	Short-term on-the-job training
53-6031	Automotive and Watercraft Service Attendants	28	165	0	No formal educational credential	None	Short-term on-the-job training

13-1051	Cost Estimators	27	276	82	Bachelor's degree	None	Moderate-term on-the-job training
13-2072	Loan Officers	27	277	1	Bachelor's degree	None	Moderate-term on-the-job training
17-2051	Civil Engineers	27	315	0	Bachelor's degree	None	None
21-1022	Healthcare Social Workers	27	235	28	Master's degree	None	Internship/residency
43-3051	Payroll and Timekeeping Clerks	27	228	15	High school diploma or equivalent	None	Moderate-term on-the-job training
53-7063	Machine Feeders and Offbearers	27	161	0	No formal educational credential	None	Short-term on-the-job training
11-2021	Marketing Managers	26	252	745	Bachelor's degree	5 years or more	None
11-9013	Farmers, Ranchers, and Other Agricultural Managers	26	235	0	High school diploma or equivalent	5 years or more	None
29-1126	Respiratory Therapists	26	291	0	Associate's degree	None	None
39-5094	Skincare Specialists	26	180	56	Postsecondary nondegree award	None	None
43-4031	Court, Municipal, and License Clerks	26	244	0	High school diploma or equivalent	None	Long-term on-the-job training
43-4081	Hotel, Motel, and Resort Desk Clerks	26	146	0	High school diploma or equivalent	None	Short-term on-the-job training
43-5031	Public Safety Telecommunicators	25	230	96	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2211	Sheet Metal Workers	25	216	166	High school diploma or equivalent	None	Apprenticeship
51-4041	Machinists	25	212	28	High school diploma or equivalent	None	Long-term on-the-job training
21-1023	Mental Health and Substance Abuse Social Workers	24	202	28	Master's degree	None	Internship/residency
21-1092	Probation Officers and Correctional Treatment Specialists	24	280	111	Bachelor's degree	None	Short-term on-the-job training

27-3031	Public Relations Specialists	24	204	10	Bachelor's degree	None	None
29-1127	Speech-Language Pathologists	24	240	0	Master's degree	None	Internship/residency
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	24	157	0	High school diploma or equivalent	None	Short-term on-the-job training
49-9098	Helpers--Installation, Maintenance, and Repair Workers	24	155	326	High school diploma or equivalent	None	Short-term on-the-job training
11-1011	Chief Executives	23	245	830	Bachelor's degree	5 years or more	None
11-3051	Industrial Production Managers	23	264	82	Bachelor's degree	5 years or more	None
25-9031	Instructional Coordinators	23	218	2	Master's degree	5 years or more	None
33-9093	Transportation Security Screeners	23	234	0	High school diploma or equivalent	None	Short-term on-the-job training
39-9098	Crematory Operators and Personal Care and Service Workers, All Other	23	133	0	High school diploma or equivalent	None	Short-term on-the-job training
29-1123	Physical Therapists	22	285	0	Doctoral or professional degree	None	None
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	22	162	0	High school diploma or equivalent	Less than 5 years	None
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	22	206	0	High school diploma or equivalent	Less than 5 years	None
43-3071	Tellers	22	172	1	High school diploma or equivalent	None	Short-term on-the-job training
49-3021	Automotive Body and Related Repairers	22	204	513	High school diploma or equivalent	None	Long-term on-the-job training
49-3093	Tire Repairers and Changers	22	140	0	High school diploma or equivalent	None	Short-term on-the-job training
51-3021	Butchers and Meat Cutters	22	173	0	No formal educational credential	None	Long-term on-the-job training
51-8031	Water and Wastewater Treatment Plant and System Operators	22	209	0	High school diploma or equivalent	None	Long-term on-the-job training

51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	22	198	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-3099	Motor Vehicle Operators, All Other	22	89	0	No formal educational credential	None	Short-term on-the-job training
17-2141	Mechanical Engineers	21	223	0	Bachelor's degree	None	None
21-2011	Clergy	21	183	4	Bachelor's degree	None	Moderate-term on-the-job training
29-2056	Veterinary Technologists and Technicians	21	176	0	Associate's degree	None	None
31-9099	Healthcare Support Workers, All Other	21	164	32	High school diploma or equivalent	None	None
33-3021	Detectives and Criminal Investigators	21	290	98	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
41-9021	Real Estate Brokers	21	196	0	High school diploma or equivalent	Less than 5 years	None
43-4131	Loan Interviewers and Clerks	21	183	1	High school diploma or equivalent	None	Short-term on-the-job training
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	21	180	0	High school diploma or equivalent	None	Moderate-term on-the-job training
11-9041	Architectural and Engineering Managers	20	193	0	Bachelor's degree	5 years or more	None
11-9151	Social and Community Service Managers	20	166	88	Bachelor's degree	Less than 5 years	None
15-1212	Information Security Analysts	20	165	259	Bachelor's degree	Less than 5 years	None
41-9041	Telemarketers	20	105	0	No formal educational credential	None	Short-term on-the-job training
47-2221	Structural Iron and Steel Workers	20	143	162	High school diploma or equivalent	None	Apprenticeship
41-2012	Gambling Change Persons and Booth Cashiers	19	49	0	No formal educational credential	None	Short-term on-the-job training
43-3061	Procurement Clerks	19	181	0	High school diploma or equivalent	None	Moderate-term on-the-job training

43-4071	File Clerks	19	145	6	High school diploma or equivalent	None	Short-term on-the-job training
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	19	118	0	High school diploma or equivalent	None	Short-term on-the-job training
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	19	107	0	No formal educational credential	None	Short-term on-the-job training
47-2151	Pipelayers	19	114	4	No formal educational credential	None	Short-term on-the-job training
15-1231	Computer Network Support Specialists	18	204	176	Associate's degree	None	None
17-2071	Electrical Engineers	18	151	0	Bachelor's degree	None	None
19-5011	Occupational Health and Safety Specialists	18	179	0	Bachelor's degree	None	None
21-1015	Rehabilitation Counselors	18	129	25	Master's degree	None	None
27-1024	Graphic Designers	18	168	631	Bachelor's degree	None	None
29-1071	Physician Assistants	18	181	0	Master's degree	None	None
29-1122	Occupational Therapists	18	174	0	Master's degree	None	None
29-2055	Surgical Technologists	18	193	0	Postsecondary nondegree award	None	None
43-4111	Interviewers, Except Eligibility and Loan	18	116	0	High school diploma or equivalent	None	Short-term on-the-job training
51-2041	Structural Metal Fabricators and Fitters	18	132	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-2012	Commercial Pilots	18	132	0	High school diploma or equivalent	None	Moderate-term on-the-job training
13-2061	Financial Examiners	17	142	16	Bachelor's degree	None	Long-term on-the-job training
15-2098	Data Scientists and Mathematical Science Occupations, All Other	17	69	0	Bachelor's degree	None	None
27-2023	Umpires, Referees, and Other Sports Officials	17	98	0	High school diploma or equivalent	None	Moderate-term on-the-job training

27-2042	Musicians and Singers	17	128	2	No formal educational credential	None	Long-term on-the-job training
43-4121	Library Assistants, Clerical	17	114	0	High school diploma or equivalent	None	Short-term on-the-job training
43-6012	Legal Secretaries and Administrative Assistants	17	141	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-5097	Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters	17	92	0	High school diploma or equivalent	Less than 5 years	Long-term on-the-job training
49-2092	Electric Motor, Power Tool, and Related Repairers	17	117	2	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
51-7011	Cabinetmakers and Bench Carpenters	17	139	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	17	99	0	High school diploma or equivalent	None	Moderate-term on-the-job training
13-1121	Meeting, Convention, and Event Planners	16	120	82	Bachelor's degree	None	None
17-3023	Electrical and Electronic Engineering Technologists and Technicians	16	124	13	Associate's degree	None	None
25-2058	Special Education Teachers, Secondary School	16	179	1	Bachelor's degree	None	None
27-3091	Interpreters and Translators	16	135	0	Bachelor's degree	None	None
43-3041	Gambling Cage Workers	16	91	0	High school diploma or equivalent	None	Short-term on-the-job training
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	16	188	0	High school diploma or equivalent	None	Short-term on-the-job training
47-4051	Highway Maintenance Workers	16	122	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-5112	Printing Press Operators	16	123	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6021	Pressers, Textile, Garment, and Related Materials	16	116	0	No formal educational credential	None	Short-term on-the-job training
17-3022	Civil Engineering Technologists and Technicians	15	134	0	Associate's degree	None	None

33-1021	First-Line Supervisors of Firefighting and Prevention Workers	15	205	0	Postsecondary nondegree award	Less than 5 years	Moderate-term on-the-job training
39-1013	First-Line Supervisors of Gambling Services Workers	15	71	0	High school diploma or equivalent	Less than 5 years	None
49-9043	Maintenance Workers, Machinery	15	136	28	High school diploma or equivalent	None	Long-term on-the-job training
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	15	110	0	High school diploma or equivalent	None	Moderate-term on-the-job training
13-1141	Compensation, Benefits, and Job Analysis Specialists	14	134	1	Bachelor's degree	Less than 5 years	None
15-1257	Web Developers and Digital Interface Designers	14	140	36	Associate's degree	None	None
19-3031	Clinical, Counseling, and School Psychologists	14	195	26	Doctoral or professional degree	None	Internship/residency
33-1011	First-Line Supervisors of Correctional Officers	14	171	108	High school diploma or equivalent	Less than 5 years	None
33-1099	Miscellaneous First-Line Supervisors, Protective Service Workers	14	107	0	High school diploma or equivalent	Less than 5 years	None
47-2071	Paving, Surfacing, and Tamping Equipment Operators	14	87	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-2091	Avionics Technicians	14	135	6	Associate's degree	None	None
49-2098	Security and Fire Alarm Systems Installers	14	108	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	14	97	0	High school diploma or equivalent	None	Moderate-term on-the-job training
15-1241	Computer Network Architects	13	151	173	Bachelor's degree	5 years or more	None
17-3098	Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other	13	110	48	Associate's degree	None	None
21-1029	Social Workers, All Other	13	123	3	Bachelor's degree	None	None
21-1091	Health Education Specialists	13	103	3	Bachelor's degree	None	None

25-4031	Library Technicians	13	80	0	Postsecondary nondegree award	None	None
29-2057	Ophthalmic Medical Technicians	13	104	0	Postsecondary nondegree award	None	None
31-9093	Medical Equipment Preparers	13	101	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2081	Drywall and Ceiling Tile Installers	13	140	0	No formal educational credential	None	Moderate-term on-the-job training
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	13	73	0	No formal educational credential	None	Moderate-term on-the-job training
51-3099	Food Processing Workers, All Other	13	107	0	No formal educational credential	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	13	94	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	13	79	0	High school diploma or equivalent	None	Moderate-term on-the-job training
11-3061	Purchasing Managers	12	135	14	Bachelor's degree	5 years or more	None
11-3131	Training and Development Managers	12	111	1	Bachelor's degree	5 years or more	None
17-2161	Nuclear Engineers	12	44	129	Bachelor's degree	None	None
25-2057	Special Education Teachers, Middle School	12	156	1	Bachelor's degree	None	None
25-4022	Librarians and Media Collections Specialists	12	117	0	Bachelor's degree	Less than 5 years	None
29-1021	Dentists, General	12	196	0	Doctoral or professional degree	None	None
29-2032	Diagnostic Medical Sonographers	12	147	0	Associate's degree	None	None
31-2011	Occupational Therapy Assistants	12	79	0	Associate's degree	None	None
31-9095	Pharmacy Aides	12	78	5	High school diploma or equivalent	None	Short-term on-the-job training

39-9041	Residential Advisors	12	64	0	High school diploma or equivalent	None	Short-term on-the-job training
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	12	84	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	12	105	51	Postsecondary nondegree award	None	Long-term on-the-job training
49-2097	Audiovisual Equipment Installers and Repairers	12	107	2	Postsecondary nondegree award	None	Short-term on-the-job training
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	12	78	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	12	90	0	High school diploma or equivalent	None	Moderate-term on-the-job training
17-3026	Industrial Engineering Technologists and Technicians	11	66	39	Associate's degree	None	None
21-2021	Directors, Religious Activities and Education	11	90	1	Bachelor's degree	Less than 5 years	None
23-1012	Judicial Law Clerks	11	102	0	Doctoral or professional degree	None	None
29-1031	Dietitians and Nutritionists	11	119	0	Bachelor's degree	None	Internship/residency
39-7018	Tour and Travel Guides	11	45	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2044	Tile and Stone Setters	11	83	0	No formal educational credential	None	Long-term on-the-job training
47-2161	Plasterers and Stucco Masons	11	89	0	No formal educational credential	None	Long-term on-the-job training
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	11	66	0	High school diploma or equivalent	None	Short-term on-the-job training
47-4098	Miscellaneous Construction and Related Workers	11	64	4	High school diploma or equivalent	None	Moderate-term on-the-job training
49-2011	Computer, Automated Teller, and Office Machine Repairers	11	97	10	Some college, no degree	None	Short-term on-the-job training

51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	11	83	9	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9011	Chemical Equipment Operators and Tenders	11	63	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	11	72	0	High school diploma or equivalent	None	Long-term on-the-job training
13-2052	Personal Financial Advisors	10	102	1	Bachelor's degree	None	Long-term on-the-job training
15-1245	Database Administrators and Architects	10	112	173	Bachelor's degree	None	None
17-2199	Engineers, All Other	10	113	129	Bachelor's degree	None	None
17-3011	Architectural and Civil Drafters	10	83	0	Associate's degree	None	None
19-4092	Forensic Science Technicians	10	78	129	Bachelor's degree	None	Moderate-term on-the-job training
29-9098	Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers,	10	113	0	Postsecondary nondegree award	None	None
39-6011	Baggage Porters and Bellhops	10	51	0	High school diploma or equivalent	None	Short-term on-the-job training
45-2041	Graders and Sorters, Agricultural Products	10	38	0	No formal educational credential	None	Short-term on-the-job training
45-2099	Agricultural Workers, All Other	10	54	0	No formal educational credential	None	Short-term on-the-job training
49-3091	Bicycle Repairers	10	69	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4192	Layout Workers, Metal and Plastic	10	75	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9161	Computer Numerically Controlled Tool Operators	10	82	1	High school diploma or equivalent	None	Moderate-term on-the-job training
53-5011	Sailors and Marine Oilers	10	63	0	No formal educational credential	None	Moderate-term on-the-job training
15-2031	Operations Research Analysts	9	76	0	Bachelor's degree	None	None

17-2011	Aerospace Engineers	9	119	0	Bachelor's degree	None	None
27-3043	Writers and Authors	9	71	12	Bachelor's degree	None	Long-term on-the-job training
29-2051	Dietetic Technicians	9	68	0	Associate's degree	None	None
31-9094	Medical Transcriptionists	9	59	0	Postsecondary nondegree award	None	None
31-9097	Phlebotomists	9	66	0	Postsecondary nondegree award	None	None
35-9099	Food Preparation and Serving Related Workers, All Other	9	40	0	No formal educational credential	None	Short-term on-the-job training
39-3099	Entertainment Attendants and Related Workers, All Other	9	40	0	High school diploma or equivalent	None	Short-term on-the-job training
39-5011	Barbers	9	64	60	Postsecondary nondegree award	None	None
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	9	66	0	No formal educational credential	None	Short-term on-the-job training
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	9	45	0	High school diploma or equivalent	Less than 5 years	None
45-2091	Agricultural Equipment Operators	9	52	0	No formal educational credential	None	Moderate-term on-the-job training
47-5081	Helpers--Extraction Workers	9	42	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	9	39	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9196	Paper Goods Machine Setters, Operators, and Tenders	9	25	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-2021	Air Traffic Controllers	9	81	0	Associate's degree	None	Long-term on-the-job training
11-1031	Legislators	8	91	10	Bachelor's degree	Less than 5 years	None
13-1131	Fundraisers	8	57	3	Bachelor's degree	None	None

13-2021	Property Appraisers and Assessors	8	91	0	Bachelor's degree	None	Long-term on-the-job training
13-2071	Credit Counselors	8	70	1	Bachelor's degree	None	Moderate-term on-the-job training
17-2081	Environmental Engineers	8	74	128	Bachelor's degree	None	None
19-2041	Environmental Scientists and Specialists, Including Health	8	77	130	Bachelor's degree	None	None
19-3051	Urban and Regional Planners	8	77	0	Master's degree	None	None
25-2032	Career/Technical Education Teachers, Secondary School	8	97	0	Bachelor's degree	Less than 5 years	None
25-3011	Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	8	47	0	Bachelor's degree	None	None
27-2099	Miscellaneous Entertainers and Performers, Sports and Related Workers	8	48	2	No formal educational credential	None	Short-term on-the-job training
27-4011	Audio and Video Technicians	8	63	0	Postsecondary nondegree award	None	Short-term on-the-job training
27-4021	Photographers	8	64	600	High school diploma or equivalent	None	Moderate-term on-the-job training
29-1215	Family Medicine Physicians	8	168	0	Doctoral or professional degree	None	Internship/residency
29-1248	Surgeons, Except Ophthalmologists	8	80	0	Doctoral or professional degree	None	Internship/residency
29-2081	Opticians, Dispensing	8	80	0	High school diploma or equivalent	None	Long-term on-the-job training
31-2022	Physical Therapist Aides	8	55	0	High school diploma or equivalent	None	Short-term on-the-job training
39-2011	Animal Trainers	8	38	0	High school diploma or equivalent	None	Moderate-term on-the-job training
43-2099	Communications Equipment Operators, All Other	8	39	0	High school diploma or equivalent	None	Short-term on-the-job training
43-5041	Meter Readers, Utilities	8	58	0	High school diploma or equivalent	None	Short-term on-the-job training

47-2181	Roofers	8	70	0	No formal educational credential	None	Moderate-term on-the-job training
47-3013	Helpers--Electricians	8	39	0	High school diploma or equivalent	None	Short-term on-the-job training
49-9052	Telecommunications Line Installers and Repairers	8	60	0	High school diploma or equivalent	None	Long-term on-the-job training
53-5021	Captains, Mates, and Pilots of Water Vessels	8	60	56	Postsecondary nondegree award	Less than 5 years	None
53-6051	Transportation Inspectors	8	67	828	High school diploma or equivalent	None	Moderate-term on-the-job training
53-7199	Material Moving Workers, All Other	8	42	0	No formal educational credential	None	Short-term on-the-job training
11-2031	Public Relations and Fundraising Managers	7	66	24	Bachelor's degree	5 years or more	None
11-9031	Education and Childcare Administrators, Preschool and Daycare	7	78	2	Bachelor's degree	Less than 5 years	None
13-2031	Budget Analysts	7	79	15	Bachelor's degree	None	None
13-2053	Insurance Underwriters	7	63	0	Bachelor's degree	None	Moderate-term on-the-job training
15-1251	Computer Programmers	7	80	163	Bachelor's degree	None	None
17-2072	Electronics Engineers, Except Computer	7	81	0	Bachelor's degree	None	None
17-3027	Mechanical Engineering Technologists and Technicians	7	50	513	Associate's degree	None	None
19-3039	Psychologists, All Other	7	63	22	Master's degree	None	Internship/residency
21-1099	Community and Social Service Specialists, All Other	7	42	3	Bachelor's degree	None	None
21-2099	Religious Workers, All Other	7	46	1	Bachelor's degree	None	None
27-1025	Interior Designers	7	61	0	Bachelor's degree	None	None
27-1029	Designers, All Other	7	51	0	Bachelor's degree	None	None
29-2035	Magnetic Resonance Imaging Technologists	7	83	0	Associate's degree	Less than 5 years	None

39-3012	Gambling and Sports Book Writers and Runners	7	18	0	High school diploma or equivalent	None	Short-term on-the-job training
39-6012	Concierges	7	37	0	High school diploma or equivalent	None	Moderate-term on-the-job training
41-9031	Sales Engineers	7	41	0	Bachelor's degree	None	Moderate-term on-the-job training
43-5051	Postal Service Clerks	7	83	0	High school diploma or equivalent	None	Short-term on-the-job training
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	7	54	0	High school diploma or equivalent	None	Short-term on-the-job training
47-2231	Solar Photovoltaic Installers	7	33	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-3019	Helpers, Construction Trades, All Other	7	39	0	No formal educational credential	None	Short-term on-the-job training
47-4041	Hazardous Materials Removal Workers	7	41	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3041	Farm Equipment Mechanics and Service Technicians	7	66	0	High school diploma or equivalent	None	Long-term on-the-job training
49-3043	Rail Car Repairers	7	23	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	7	57	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9051	Electrical Power-Line Installers and Repairers	7	50	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	7	55	0	High school diploma or equivalent	None	Short-term on-the-job training
51-3093	Food Cooking Machine Operators and Tenders	7	37	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	7	51	0	High school diploma or equivalent	None	Moderate-term on-the-job training

51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	7	43	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-8011	Nuclear Power Reactor Operators	7	<10	0	High school diploma or equivalent	None	Long-term on-the-job training
53-7011	Conveyor Operators and Tenders	7	43	0	No formal educational credential	None	Short-term on-the-job training
13-2041	Credit Analysts	6	54	16	Bachelor's degree	None	None
13-2081	Tax Examiners and Collectors, and Revenue Agents	6	61	15	Bachelor's degree	None	Moderate-term on-the-job training
13-2082	Tax Preparers	6	49	15	High school diploma or equivalent	None	Moderate-term on-the-job training
17-3012	Electrical and Electronics Drafters	6	47	9	Associate's degree	None	None
17-3013	Mechanical Drafters	6	50	0	Associate's degree	None	None
17-3031	Surveying and Mapping Technicians	6	39	0	High school diploma or equivalent	None	Moderate-term on-the-job training
19-1042	Medical Scientists, Except Epidemiologists	6	53	1	Doctoral or professional degree	None	None
19-4011	Agricultural and Food Science Technicians	6	36	0	Associate's degree	None	Moderate-term on-the-job training
19-4021	Biological Technicians	6	45	1	Bachelor's degree	None	None
21-1013	Marriage and Family Therapists	6	37	28	Master's degree	None	Internship/residency
21-1094	Community Health Workers	6	52	3	High school diploma or equivalent	None	Short-term on-the-job training
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	6	39	600	Bachelor's degree	None	Long-term on-the-job training
29-1131	Veterinarians	6	96	0	Doctoral or professional degree	None	None
31-1132	Orderlies	6	51	0	High school diploma or equivalent	None	Short-term on-the-job training

37-2021	Pest Control Workers	6	36	0	High school diploma or equivalent	None	Moderate-term on-the-job training
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	6	37	0	High school diploma or equivalent	None	Moderate-term on-the-job training
39-3019	Gambling Service Workers, All Other	6	25	0	High school diploma or equivalent	None	Short-term on-the-job training
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	6	18	0	High school diploma or equivalent	None	Short-term on-the-job training
43-9071	Office Machine Operators, Except Computer	6	34	0	High school diploma or equivalent	None	Short-term on-the-job training
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	6	44	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3092	Recreational Vehicle Service Technicians	6	39	0	High school diploma or equivalent	None	Long-term on-the-job training
51-4051	Metal-Refining Furnace Operators and Tenders	6	41	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	6	34	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-6098	Aircraft Service Attendants and Transportation Workers, All Other	6	46	0	High school diploma or equivalent	None	Short-term on-the-job training
11-9033	Education Administrators, Postsecondary	5	51	0	Master's degree	Less than 5 years	None
15-2041	Statisticians	5	38	44	Master's degree	None	None
19-2031	Chemists	5	38	129	Bachelor's degree	None	None
19-4031	Chemical Technicians	5	27	129	Associate's degree	None	Moderate-term on-the-job training
19-4042	Environmental Science and Protection Technicians, Including Health	5	38	1	Associate's degree	None	None
19-4099	Life, Physical, and Social Science Technicians, All Other	5	24	0	Associate's degree	None	None
21-1019	Counselors, All Other	5	39	3	Master's degree	None	None

23-2093	Title Examiners, Abstractors, and Searchers	5	44	0	High school diploma or equivalent	None	Moderate-term on-the-job training
25-9099	Educational Instruction and Library Workers, All Other	5	30	0	Bachelor's degree	None	None
27-1011	Art Directors	5	38	600	Bachelor's degree	5 years or more	None
27-2041	Music Directors and Composers	5	37	0	Bachelor's degree	Less than 5 years	None
27-3041	Editors	5	43	0	Bachelor's degree	Less than 5 years	None
29-9091	Athletic Trainers	5	52	7	Bachelor's degree	None	None
39-4021	Funeral Attendants	5	18	0	High school diploma or equivalent	None	Short-term on-the-job training
41-3011	Advertising Sales Agents	5	32	0	High school diploma or equivalent	None	Moderate-term on-the-job training
43-9022	Word Processors and Typists	5	32	6	High school diploma or equivalent	None	Short-term on-the-job training
43-9111	Statistical Assistants	5	32	15	Bachelor's degree	None	None
47-2021	Brickmasons and Blockmasons	5	50	0	High school diploma or equivalent	None	Apprenticeship
47-3012	Helpers--Carpenters	5	28	0	No formal educational credential	None	Short-term on-the-job training
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	5	40	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4193	Plating Machine Setters, Operators, and Tenders, Metal and Plastic	5	46	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6052	Tailors, Dressmakers, and Custom Sewers	5	32	0	No formal educational credential	None	Moderate-term on-the-job training
51-7021	Furniture Finishers	5	33	0	High school diploma or equivalent	None	Short-term on-the-job training
51-8021	Stationary Engineers and Boiler Operators	5	34	0	High school diploma or equivalent	None	Long-term on-the-job training

51-9022	Grinding and Polishing Workers, Hand	5	38	0	No formal educational credential	None	Moderate-term on-the-job training
51-9071	Jewelers and Precious Stone and Metal Workers	5	26	600	High school diploma or equivalent	None	Long-term on-the-job training
11-9081	Lodging Managers	4	33	0	High school diploma or equivalent	Less than 5 years	None
11-9121	Natural Sciences Managers	4	38	264	Bachelor's degree	5 years or more	None
11-9161	Emergency Management Directors	4	38	98	Bachelor's degree	5 years or more	None
13-1032	Insurance Appraisers, Auto Damage	4	29	0	Postsecondary nondegree award	None	Moderate-term on-the-job training
13-1075	Labor Relations Specialists	4	38	2	Bachelor's degree	Less than 5 years	None
17-1022	Surveyors	4	33	0	Bachelor's degree	None	Internship/residency
17-2061	Computer Hardware Engineers	4	29	3	Bachelor's degree	None	None
17-3021	Aerospace Engineering and Operations Technologists and Technicians	4	34	21	Associate's degree	None	None
19-1012	Food Scientists and Technologists	4	28	129	Bachelor's degree	None	None
19-4061	Social Science Research Assistants	4	25	1	Bachelor's degree	None	None
19-4071	Forest and Conservation Technicians	4	29	0	Associate's degree	None	None
23-1023	Judges, Magistrate Judges, and Magistrates	4	78	0	Doctoral or professional degree	5 years or more	Short-term on-the-job training
23-2099	Legal Support Workers, All Other	4	41	0	Associate's degree	None	None
25-2051	Special Education Teachers, Preschool	4	45	4	Bachelor's degree	None	None
27-1012	Craft Artists	4	26	600	No formal educational credential	None	Long-term on-the-job training
27-1019	Artists and Related Workers, All Other	4	24	3	No formal educational credential	None	Long-term on-the-job training
29-1011	Chiropractors	4	90	0	Doctoral or professional degree	None	None

29-1041	Optometrists	4	64	0	Doctoral or professional degree	None	None
29-1298	Acupuncturists and Healthcare Diagnosing or Treating Practitioners, All Other	4	43	0	Master's degree	None	None
29-2031	Cardiovascular Technologists and Technicians	4	51	0	Associate's degree	None	None
33-3011	Bailiffs	4	39	98	High school diploma or equivalent	None	Moderate-term on-the-job training
33-9021	Private Detectives and Investigators	4	34	98	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
33-9031	Gambling Surveillance Officers and Gambling Investigators	4	23	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
37-3013	Tree Trimmers and Pruners	4	30	0	High school diploma or equivalent	None	Short-term on-the-job training
39-4031	Morticians, Undertakers, and Funeral Arrangers	4	27	0	Associate's degree	None	Long-term on-the-job training
41-9012	Models	4	<10	0	No formal educational credential	None	None
43-2011	Switchboard Operators, Including Answering Service	4	26	0	High school diploma or equivalent	None	Short-term on-the-job training
43-4041	Credit Authorizers, Checkers, and Clerks	4	34	1	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2022	Stonemasons	4	32	0	High school diploma or equivalent	None	Apprenticeship
47-2131	Insulation Workers, Floor, Ceiling, and Wall	4	25	0	No formal educational credential	None	Short-term on-the-job training
47-4031	Fence Erectors	4	29	0	No formal educational credential	None	Moderate-term on-the-job training
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	4	26	2	Associate's degree	None	Moderate-term on-the-job training
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	4	29	2	Postsecondary nondegree award	Less than 5 years	Moderate-term on-the-job training

49-9031	Home Appliance Repairers	4	32	6	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9062	Medical Equipment Repairers	4	29	0	Associate's degree	None	Moderate-term on-the-job training
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	4	40	21	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	4	31	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6093	Upholsterers	4	30	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-7099	Woodworkers, All Other	4	15	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-8013	Power Plant Operators	4	26	0	High school diploma or equivalent	None	Long-term on-the-job training
53-2031	Flight Attendants	4	24	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
53-4031	Railroad Conductors and Yardmasters	4	37	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-5031	Ship Engineers	4	25	0	Postsecondary nondegree award	Less than 5 years	None
53-6061	Passenger Attendants	4	20	0	High school diploma or equivalent	None	Short-term on-the-job training
53-7072	Pump Operators, Except Wellhead Pumpers	4	17	0	High school diploma or equivalent	None	Moderate-term on-the-job training
11-9039	Education Administrators, All Other	3	18	7	Bachelor's degree	Less than 5 years	None
11-9071	Gambling Managers	3	18	0	High school diploma or equivalent	Less than 5 years	None
17-1011	Architects, Except Landscape and Naval	3	36	0	Bachelor's degree	None	Internship/residency
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	3	22	0	Bachelor's degree	None	None

19-1023	Zoologists and Wildlife Biologists	3	25	1	Bachelor's degree	None	None
19-2021	Atmospheric and Space Scientists	3	20	129	Bachelor's degree	None	None
19-5012	Occupational Health and Safety Technicians	3	27	0	High school diploma or equivalent	None	Moderate-term on-the-job training
27-1021	Commercial and Industrial Designers	3	27	600	Bachelor's degree	None	None
27-1023	Floral Designers	3	23	0	High school diploma or equivalent	None	Moderate-term on-the-job training
27-2011	Actors	3	19	2	Some college, no degree	None	Long-term on-the-job training
27-2012	Producers and Directors	3	29	2	Bachelor's degree	Less than 5 years	None
27-3042	Technical Writers	3	24	0	Bachelor's degree	Less than 5 years	Short-term on-the-job training
27-3099	Media and Communication Workers, All Other	3	12	10	High school diploma or equivalent	None	Short-term on-the-job training
29-1129	Therapists, All Other	3	30	0	Bachelor's degree	None	None
29-1211	Anesthesiologists	3	39	0	Doctoral or professional degree	None	Internship/residency
29-1221	Pediatricians, General	3	59	0	Doctoral or professional degree	None	Internship/residency
29-2091	Orthotists and Prosthetists	3	21	0	Master's degree	None	Internship/residency
31-1133	Psychiatric Aides	3	12	22	High school diploma or equivalent	None	Short-term on-the-job training
33-2021	Fire Inspectors and Investigators	3	21	96	Postsecondary nondegree award	5 years or more	Moderate-term on-the-job training
37-3019	Grounds Maintenance Workers, All Other	3	14	0	No formal educational credential	None	Short-term on-the-job training
41-3041	Travel Agents	3	18	0	High school diploma or equivalent	None	Moderate-term on-the-job training

43-3099	Financial Clerks, All Other	3	20	0	High school diploma or equivalent	None	Short-term on-the-job training
47-2132	Insulation Workers, Mechanical	3	20	0	High school diploma or equivalent	None	Apprenticeship
47-2171	Reinforcing Iron and Rebar Workers	3	15	162	High school diploma or equivalent	None	Apprenticeship
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	3	17	0	No formal educational credential	None	Short-term on-the-job training
47-4021	Elevator and Escalator Installers and Repairers	3	21	28	High school diploma or equivalent	None	Apprenticeship
47-5041	Continuous Mining Machine Operators	3	12	0	No formal educational credential	None	Moderate-term on-the-job training
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	3	22	519	Postsecondary nondegree award	None	Long-term on-the-job training
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	3	25	513	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3022	Automotive Glass Installers and Repairers	3	22	513	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3051	Motorboat Mechanics and Service Technicians	3	18	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9044	Millwrights	3	25	28	High school diploma or equivalent	None	Apprenticeship
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	3	22	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4111	Tool and Die Makers	3	24	0	Postsecondary nondegree award	None	Long-term on-the-job training
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	3	21	162	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4194	Tool Grinders, Filers, and Sharpeners	3	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training

51-6062	Textile Cutting Machine Setters, Operators, and Tenders	3	25	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6099	Textile, Apparel, and Furnishings Workers, All Other	3	13	0	High school diploma or equivalent	None	Short-term on-the-job training
51-8091	Chemical Plant and System Operators	3	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9193	Cooling and Freezing Equipment Operators and Tenders	3	19	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-1041	Aircraft Cargo Handling Supervisors	3	18	0	High school diploma or equivalent	Less than 5 years	None
53-2022	Airfield Operations Specialists	3	18	0	High school diploma or equivalent	None	Long-term on-the-job training
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	3	18	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-4011	Locomotive Engineers	3	29	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
53-4041	Subway and Streetcar Operators	3	21	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-6011	Bridge and Lock Tenders	3	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
53-7021	Crane and Tower Operators	3	21	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
53-7121	Tank Car, Truck, and Ship Loaders	3	<10	0	No formal educational credential	None	Short-term on-the-job training
11-3111	Compensation and Benefits Managers	2	15	1	Bachelor's degree	5 years or more	None
17-1012	Landscape Architects	2	19	0	Bachelor's degree	None	Internship/residency
17-1021	Cartographers and Photogrammetrists	2	16	0	Bachelor's degree	None	None
17-2021	Agricultural Engineers	2	13	0	Bachelor's degree	None	None
17-2031	Bioengineers and Biomedical Engineers	2	14	0	Bachelor's degree	None	None

17-2041	Chemical Engineers	2	14	129	Bachelor's degree	None	None
17-2131	Materials Engineers	2	18	0	Bachelor's degree	None	None
17-2171	Petroleum Engineers	2	<10	128	Bachelor's degree	None	None
17-3019	Drafters, All Other	2	15	0	Associate's degree	None	None
17-3025	Environmental Engineering Technologists and Technicians	2	18	0	Associate's degree	None	None
19-1013	Soil and Plant Scientists	2	16	130	Bachelor's degree	None	None
19-1029	Biological Scientists, All Other	2	14	1	Bachelor's degree	None	None
19-1031	Conservation Scientists	2	20	128	Bachelor's degree	None	None
19-1041	Epidemiologists	2	17	1	Master's degree	None	None
19-2099	Physical Scientists, All Other	2	16	133	Bachelor's degree	None	None
19-3094	Political Scientists	2	10	1	Master's degree	None	None
19-3099	Social Scientists and Related Workers, All Other	2	18	0	Bachelor's degree	None	None
19-4045	Geological and Hydrologic Technicians	2	15	129	Associate's degree	None	Moderate-term on-the-job training
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	2	45	0	Doctoral or professional degree	5 years or more	Short-term on-the-job training
25-2059	Special Education Teachers, All Other	2	16	0	Bachelor's degree	None	None
25-4012	Curators	2	14	601	Master's degree	None	None
25-4013	Museum Technicians and Conservators	2	16	730	Bachelor's degree	None	None
27-1014	Special Effects Artists and Animators	2	14	631	Bachelor's degree	None	None
27-1022	Fashion Designers	2	<10	2	Bachelor's degree	None	None
27-1027	Set and Exhibit Designers	2	16	602	Bachelor's degree	None	None
27-2031	Dancers	2	<10	6	No formal educational credential	None	Long-term on-the-job training

27-3023	News Analysts, Reporters, and Journalists	2	15	10	Bachelor's degree	None	None
27-4014	Sound Engineering Technicians	2	16	2	Postsecondary nondegree award	None	Short-term on-the-job training
27-4031	Camera Operators, Television, Video, and Film	2	19	0	Bachelor's degree	None	None
27-4098	Lighting Technicians and Media and Communication Equipment Workers, All Other	2	14	0	High school diploma or equivalent	None	Short-term on-the-job training
29-1124	Radiation Therapists	2	21	0	Associate's degree	None	None
29-1125	Recreational Therapists	2	21	600	Bachelor's degree	None	None
29-1128	Exercise Physiologists	2	17	7	Bachelor's degree	None	None
29-1151	Nurse Anesthetists	2	14	44	Master's degree	None	None
29-1216	General Internal Medicine Physicians	2	34	0	Doctoral or professional degree	None	Internship/residency
29-1223	Psychiatrists	2	27	22	Doctoral or professional degree	None	Internship/residency
29-2033	Nuclear Medicine Technologists	2	26	0	Associate's degree	None	None
33-9011	Animal Control Workers	2	17	0	High school diploma or equivalent	None	Moderate-term on-the-job training
35-2019	Cooks, All Other	2	12	0	No formal educational credential	None	Moderate-term on-the-job training
39-4011	Embalmers	2	<10	0	Associate's degree	None	Long-term on-the-job training
39-5093	Shampooers	2	14	56	No formal educational credential	None	Short-term on-the-job training
43-4011	Brokerage Clerks	2	11	16	High school diploma or equivalent	None	Moderate-term on-the-job training
43-4141	New Accounts Clerks	2	13	1	High school diploma or equivalent	None	Moderate-term on-the-job training
43-9081	Proofreaders and Copy Markers	2	<10	0	Bachelor's degree	None	None

45-2011	Agricultural Inspectors	2	13	0	Bachelor's degree	None	Moderate-term on-the-job training
45-4022	Logging Equipment Operators	2	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2011	Boilermakers	2	11	0	High school diploma or equivalent	None	Apprenticeship
47-2041	Carpet Installers	2	18	0	No formal educational credential	None	Short-term on-the-job training
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	11	0	No formal educational credential	None	Moderate-term on-the-job training
47-2082	Tapers	2	18	0	No formal educational credential	None	Moderate-term on-the-job training
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	2	16	0	No formal educational credential	None	Short-term on-the-job training
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	11	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-3052	Motorcycle Mechanics	2	16	0	Postsecondary nondegree award	None	Short-term on-the-job training
49-9011	Mechanical Door Repairers	2	12	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9063	Musical Instrument Repairers and Tuners	2	15	0	High school diploma or equivalent	None	Apprenticeship
49-9069	Precision Instrument and Equipment Repairers, All Other	2	12	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9094	Locksmiths and Safe Repairers	2	11	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9096	Riggers	2	13	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2021	Coil Winders, Tapers, and Finishers	2	<10	2	High school diploma or equivalent	None	Moderate-term on-the-job training

51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2	16	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4071	Foundry Mold and Coremakers	2	11	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	13	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4199	Metal Workers and Plastic Workers, All Other	2	13	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-5111	Prepress Technicians and Workers	2	11	0	Postsecondary nondegree award	None	None
51-5113	Print Binding and Finishing Workers	2	11	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	2	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	2	14	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-8099	Plant and System Operators, All Other	2	13	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	2	14	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9082	Medical Appliance Technicians	2	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9083	Ophthalmic Laboratory Technicians	2	13	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9123	Painting, Coating, and Decorating Workers	2	<10	0	No formal educational credential	None	Moderate-term on-the-job training
51-9151	Photographic Process Workers and Processing Machine Operators	2	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
51-9162	Computer Numerically Controlled Tool Programmers	2	16	0	Postsecondary nondegree award	None	Moderate-term on-the-job training

53-4022	Railroad Brake, Signal, and Switch Operators and Locomotive Firers	2	12	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-6041	Traffic Technicians	2	15	0	High school diploma or equivalent	None	Moderate-term on-the-job training
11-2011	Advertising and Promotions Managers	1	<10	0	Bachelor's degree	Less than 5 years	None
11-9131	Postmasters and Mail Superintendents	1	<10	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
11-9171	Funeral Home Managers	1	12	0	Associate's degree	Less than 5 years	None
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	1	<10	0	Bachelor's degree	Less than 5 years	None
15-1221	Computer and Information Research Scientists	1	<10	142	Master's degree	None	None
15-2011	Actuaries	1	<10	0	Bachelor's degree	None	Long-term on-the-job training
17-2121	Marine Engineers and Naval Architects	1	<10	0	Bachelor's degree	None	None
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	1	<10	128	Bachelor's degree	None	None
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	1	<10	14	Associate's degree	None	None
19-1021	Biochemists and Biophysicists	1	<10	138	Doctoral or professional degree	None	None
19-1022	Microbiologists	1	<10	1	Bachelor's degree	None	None
19-1032	Foresters	1	<10	0	Bachelor's degree	None	None
19-2012	Physicists	1	<10	129	Doctoral or professional degree	None	None
19-2042	Geoscientists, Except Hydrologists and Geographers	1	11	128	Bachelor's degree	None	None
19-2043	Hydrologists	1	12	128	Bachelor's degree	None	None
19-3011	Economists	1	11	0	Master's degree	None	None
19-3091	Anthropologists and Archeologists	1	<10	1	Master's degree	None	None
19-3092	Geographers	1	<10	0	Bachelor's degree	None	None

19-3093	Historians	1	<10	2	Master's degree	None	None
19-4051	Nuclear Technicians	1	<10	129	Associate's degree	None	Moderate-term on-the-job training
23-1022	Arbitrators, Mediators, and Conciliators	1	16	0	Bachelor's degree	Less than 5 years	Moderate-term on-the-job training
25-2023	Career/Technical Education Teachers, Middle School	1	<10	0	Bachelor's degree	Less than 5 years	None
25-4011	Archivists	1	<10	601	Master's degree	None	None
25-9044	Teaching Assistants, Postsecondary	1	<10	0	Bachelor's degree	None	None
27-2032	Choreographers	1	<10	6	High school diploma or equivalent	5 years or more	Long-term on-the-job training
27-3011	Broadcast Announcers and Radio Disc Jockeys	1	<10	10	Bachelor's degree	None	None
27-3092	Court Reporters and Simultaneous Captioners	1	<10	0	Postsecondary nondegree award	None	Short-term on-the-job training
27-4012	Broadcast Technicians	1	<10	0	Associate's degree	None	Short-term on-the-job training
27-4032	Film and Video Editors	1	<10	0	Bachelor's degree	None	None
29-1022	Oral and Maxillofacial Surgeons	1	13	0	Doctoral or professional degree	None	Internship/residency
29-1023	Orthodontists	1	16	0	Doctoral or professional degree	None	Internship/residency
29-1029	Dentists, All Other Specialists	1	13	0	Doctoral or professional degree	None	Internship/residency
29-1081	Podiatrists	1	14	0	Doctoral or professional degree	None	Internship/residency
29-1161	Nurse Midwives	1	<10	44	Master's degree	None	None
29-1181	Audiologists	1	<10	0	Doctoral or professional degree	None	None
29-1218	Obstetricians and Gynecologists	1	17	0	Doctoral or professional degree	None	Internship/residency

29-2092	Hearing Aid Specialists	1	10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
29-9092	Genetic Counselors	1	<10	0	Master's degree	None	None
31-2012	Occupational Therapy Aides	1	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
33-2022	Forest Fire Inspectors and Prevention Specialists	1	<10	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
33-3031	Fish and Game Wardens	1	<10	0	Bachelor's degree	None	Moderate-term on-the-job training
37-2019	Building Cleaning Workers, All Other	1	<10	0	No formal educational credential	None	Short-term on-the-job training
39-3021	Motion Picture Projectionists	1	<10	0	No formal educational credential	None	Short-term on-the-job training
39-3092	Costume Attendants	1	<10	2	High school diploma or equivalent	None	Short-term on-the-job training
43-2021	Telephone Operators	1	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
43-4021	Correspondence Clerks	1	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
43-9031	Desktop Publishers	1	<10	0	Associate's degree	None	Short-term on-the-job training
45-3031	Fishing and Hunting Workers	1	<10	0	No formal educational credential	None	Moderate-term on-the-job training
45-4011	Forest and Conservation Workers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
45-4021	Fallers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
45-4023	Log Graders and Scalers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2043	Floor Sanders and Finishers	1	<10	0	No formal educational credential	None	Moderate-term on-the-job training

47-2072	Pile Driver Operators	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-3016	Helpers--Roofers	1	<10	0	No formal educational credential	None	Short-term on-the-job training
47-5013	Service Unit Operators, Oil and Gas	1	<10	0	No formal educational credential	None	Moderate-term on-the-job training
47-5044	Loading and Moving Machine Operators, Underground Mining	1	0	0	No formal educational credential	None	Short-term on-the-job training
47-5051	Rock Splitters, Quarry	1	<10	0	No formal educational credential	None	Short-term on-the-job training
47-5071	Roustabouts, Oil and Gas	1	<10	0	No formal educational credential	None	Moderate-term on-the-job training
47-5098	Underground Mining Machine Operators and Extraction Workers, All Other	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9061	Camera and Photographic Equipment Repairers	1	<10	2	High school diploma or equivalent	None	Long-term on-the-job training
49-9064	Watch and Clock Repairers	1	<10	0	High school diploma or equivalent	None	Long-term on-the-job training
49-9081	Wind Turbine Service Technicians	1	<10	28	Postsecondary nondegree award	None	Long-term on-the-job training
49-9092	Commercial Divers	1	<10	56	Postsecondary nondegree award	None	Moderate-term on-the-job training
49-9095	Manufactured Building and Mobile Home Installers	1	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
49-9097	Signal and Track Switch Repairers	1	11	2	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2031	Engine and Other Machine Assemblers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2051	Fiberglass Laminators and Fabricators	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training

51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4052	Pourers and Casters, Metal	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4061	Model Makers, Metal and Plastic	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6041	Shoe and Leather Workers and Repairers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6051	Sewers, Hand	1	<10	0	No formal educational credential	None	Moderate-term on-the-job training
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6092	Fabric and Apparel Patternmakers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-8012	Power Distributors and Dispatchers	1	<10	0	High school diploma or equivalent	None	Long-term on-the-job training
51-8092	Gas Plant Operators	1	<10	0	High school diploma or equivalent	None	Long-term on-the-job training
51-9031	Cutters and Trimmers, Hand	1	<10	0	No formal educational credential	None	Short-term on-the-job training
51-9081	Dental Laboratory Technicians	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9141	Semiconductor Processing Technicians	1	<10	4	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9191	Adhesive Bonding Machine Operators and Tenders	1	11	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9194	Etchers and Engravers	1	<10	600	High school diploma or equivalent	None	Moderate-term on-the-job training

51-9197	Tire Builders	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-4099	Rail Transportation Workers, All Other	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-5022	Motorboat Operators	1	<10	0	Postsecondary nondegree award	Less than 5 years	None
53-7041	Hoist and Winch Operators	1	<10	0	No formal educational credential	None	Short-term on-the-job training
53-7071	Gas Compressor and Gas Pumping Station Operators	1	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-7073	Wellhead Pumpers	1	<10	0	High school diploma or equivalent	Less than 5 years	Moderate-term on-the-job training
13-1074	Farm Labor Contractors	0	0	0	No formal educational credential	Less than 5 years	Short-term on-the-job training
15-2021	Mathematicians	0	<10	0	Master's degree	None	None
19-1011	Animal Scientists	0	<10	1	Bachelor's degree	None	None
19-1099	Life Scientists, All Other	0	<10	134	Bachelor's degree	None	None
19-2011	Astronomers	0	0	129	Doctoral or professional degree	None	None
19-2032	Materials Scientists	0	<10	130	Bachelor's degree	None	None
19-3022	Survey Researchers	0	<10	0	Master's degree	None	None
19-3032	Industrial-Organizational Psychologists	0	<10	22	Master's degree	None	Internship/residency
19-3041	Sociologists	0	<10	1	Master's degree	None	None
25-9021	Farm and Home Management Educators	0	<10	0	Master's degree	None	None
29-1024	Prosthodontists	0	<10	0	Doctoral or professional degree	None	Internship/residency

33-3041	Parking Enforcement Workers	0	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
33-3052	Transit and Railroad Police	0	<10	98	High school diploma or equivalent	None	Moderate-term on-the-job training
35-2013	Cooks, Private Household	0	<10	27	Postsecondary nondegree award	Less than 5 years	None
39-5091	Makeup Artists, Theatrical and Performance	0	<10	58	Postsecondary nondegree award	None	None
45-2021	Animal Breeders	0	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
45-4029	Logging Workers, All Other	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2053	Terrazzo Workers and Finishers	0	<10	0	High school diploma or equivalent	None	Apprenticeship
47-2142	Paperhangers	0	<10	0	No formal educational credential	None	Long-term on-the-job training
47-5011	Derrick Operators, Oil and Gas	0	0	0	No formal educational credential	None	Short-term on-the-job training
47-5012	Rotary Drill Operators, Oil and Gas	0	<10	0	No formal educational credential	None	Moderate-term on-the-job training
47-5043	Roof Bolters, Mining	0	0	0	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9045	Refractory Materials Repairers, Except Brickmasons	0	<10	28	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2061	Timing Device Assemblers and Adjusters	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4062	Patternmakers, Metal and Plastic	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-6042	Shoe Machine Operators and Tenders	0	<10	0	High school diploma or equivalent	None	Short-term on-the-job training

51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	0	<10	0	High school diploma or equivalent	None	Short-term on-the-job training
51-7031	Model Makers, Wood	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
51-7032	Patternmakers, Wood	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
53-7031	Dredge Operators	0	<10	0	High school diploma or equivalent	None	Moderate-term on-the-job training
99-9999	Unclassified Occupation	0	0	0	N/A	None	N/A

# Appendix A - Regions

Code	Description
85033	Phoenix, AZ (in Maricopa county)
85035	Phoenix, AZ (in Maricopa county)
85037	Phoenix, AZ (in Maricopa county)
85043	Phoenix, AZ (in Maricopa county)
85305	Glendale, AZ (in Maricopa county)
85307	Glendale, AZ (in Maricopa county)
85309	Luke Air Force Base, AZ (in Maricopa county)
85322	Arlington, AZ (in Maricopa county)
85323	Avondale, AZ (in Maricopa county)
85326	Buckeye, AZ (in Maricopa county)
85335	El Mirage, AZ (in Maricopa county)
85337	Gila Bend, AZ (in Maricopa county)
85338	Goodyear, AZ (in Maricopa county)
85340	Litchfield Park, AZ (in Maricopa county)
85353	Tolleson, AZ (in Maricopa county)
85354	Tonopah, AZ (in Maricopa county)
85355	Waddell, AZ (in Maricopa county)
85361	Wittmann, AZ (in Maricopa county)
85374	Surprise, AZ (in Maricopa county)
85375	Sun City West, AZ (in Maricopa county)
85379	Surprise, AZ (in Maricopa county)
85388	Surprise, AZ (in Maricopa county)
85390	Wickenburg, AZ (in Maricopa county)
85392	Avondale, AZ (in Maricopa county)
85395	Goodyear, AZ (in Maricopa county)
85396	Buckeye, AZ (in Maricopa county)

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.