

# GREATER DUBUQUE REGION SKILLS GAP ANALYSIS

FALL 2015



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# INTRODUCTION

## BACKGROUND

In 2014, Greater Dubuque Development Corporation contracted with a 3<sup>rd</sup> party vendor to develop a regional Skills Gap Analysis to identify both skill and training deficiencies in the local economy. The purpose of the Skills Gap Analysis is to provide economic developers, workforce developers, and educators with information on projected workforce shortages (gaps) and to identify strategies to mitigate these shortages.

The data used in that report was from the 2014 3<sup>rd</sup> quarter data release from Economic Modeling Specialists International (EMSI), a leading provider of historical databases of economic, industry, occupation, demographic, and education completion data. EMSI's primary data sources for this skills gap analysis is the Bureau of Labor Statistics and the National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS).

In 2015, Northeast Iowa Community College obtained access to EMSI Analyst through a statewide grant awarded to Iowa's community colleges through the Department of Labor. The College partnered with Greater Dubuque Development Corporation on the implementation of EMSI Analyst and the development of this 2015 Skills Gap Analysis. Like the former report, this reports utilizes EMSI and IPEDS data as primary sources, based on EMSI's 2015 2<sup>nd</sup> quarter data release.

## DEFINITIONS

The term "Skills gap" has been used to refer to both:

- the available pool of prospective employees compared to the jobs available in a particular occupation, and
- the skills and abilities possessed by current or prospective employees compared to the requirements of available jobs

For clarity, we'll refer to the first challenge as the "Labor Skills Gap" and the second as the "Technical Skills Gap." This report covers the Labor Skills Gap.

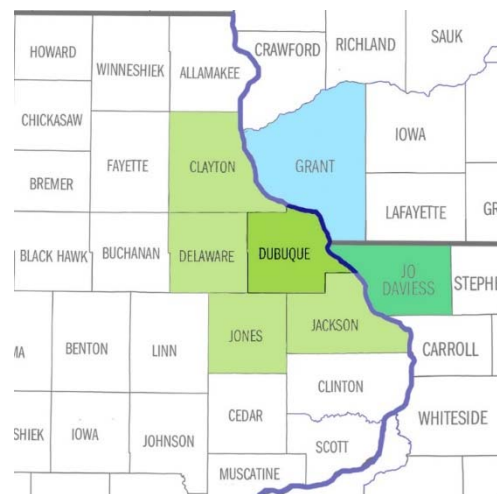
Fundamentally, the goal of this report is to answer the following questions:

- Which occupations are projected to have the greatest number of openings by 2025 in the region (paying over \$16/hr. median wage)?
- What is the difference in projected new jobs and projected completions with appropriate labor skills from local institutions of higher education?

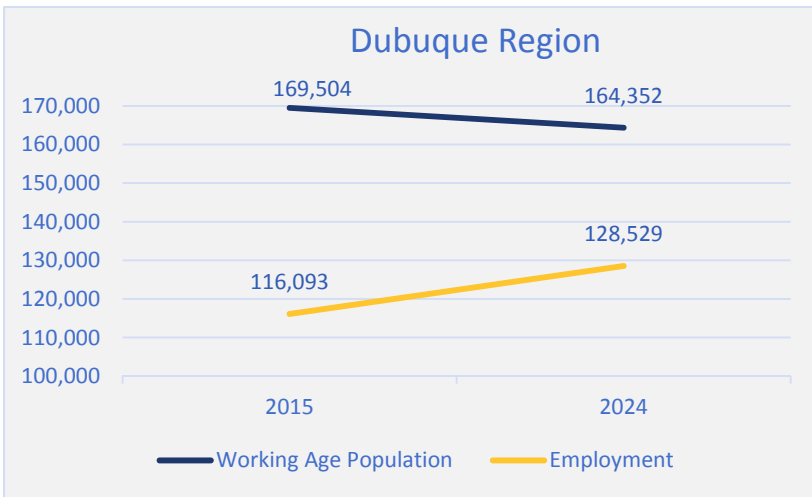
## REGION

This analysis contains data for seven counties:

- Jo Daviess, IL
- Clayton, IA
- Delaware, IA
- Dubuque, IA
- Jackson, IA
- Jones, IA
- Grant, WI



# LABOR MARKET OVERVIEW

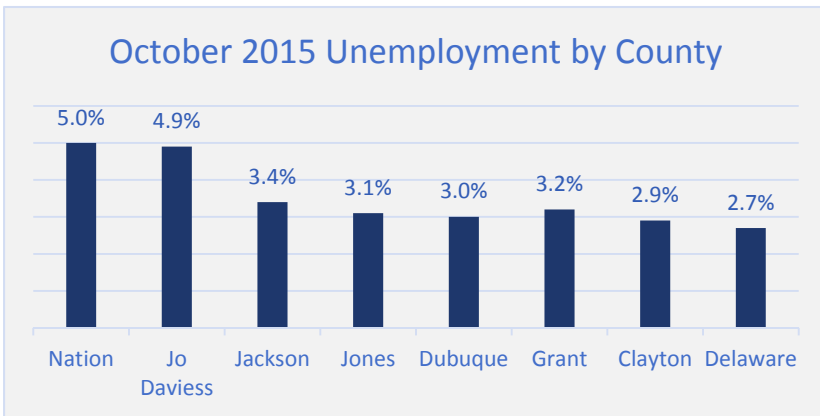


### Employment Growth

Region	2005-2015	2015-2025
Dubuque MSA	10.9%	9.5%
Dubuque Region	6.6%	9.7%
Iowa	6.1%	10.6%
Nation	5.3%	10.3%

### Working Age Population

Region	2005-2015	2015-2025
Dubuque MSA	7.2%	(1.3%)
Dubuque Region	2.2%	(2.5%)
Iowa	5.1%	(1.5%)
Nation	8.5%	0.1%



*Hourly Median Income Explained: Median expresses a “middle” value in a set of data. Average and median can appear the same, but extreme values can skew the data when using average; therefore it poorly represents the majority. For our purposes, median doesn’t include the extreme incomes, like chief executives or less-than-minimum wage employees, because neither is representative of the majority of the population’s earnings.*

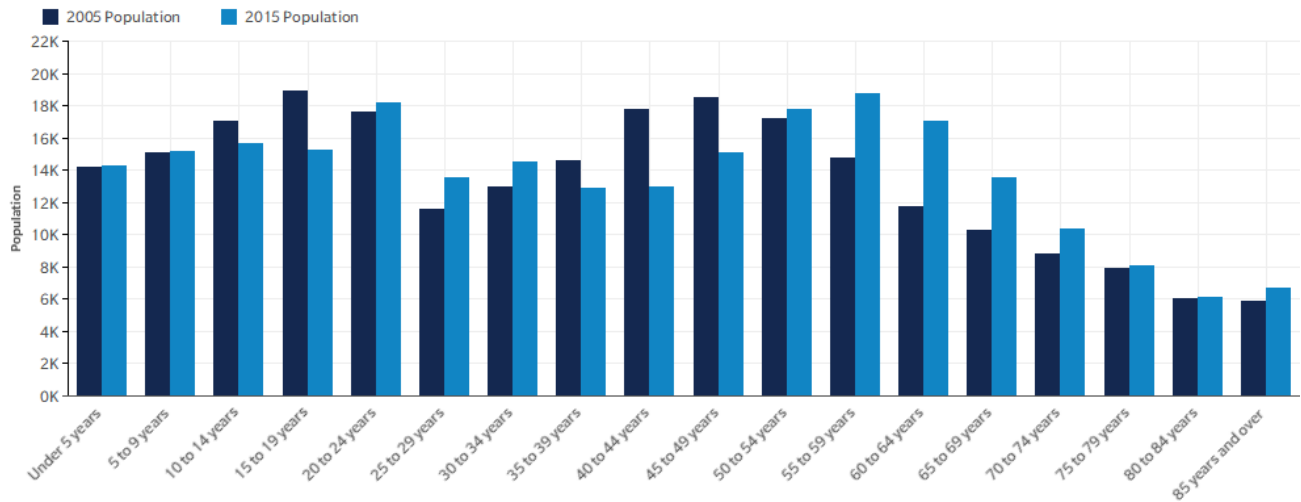
- Employment in the Dubuque MSA is projected to grow by 9.5% over the next ten years, a rate slightly below the projected growth for the region, State of Iowa and the nation.
- The Dubuque MSA working age population (age 15 to 69) is projected to decline 1.3% from 2015-2025, while the regional population is projected to decline 2.5% and the State of Iowa 1.5%; nationally, the working age population is projected to remain flat.
- The unemployment rate in the region remains significantly below the national rate, Jo Daviess the exception .
- The region’s median hourly earnings per worker continues to lag behind the nation (19% below) and State of Iowa (8% below).
- In the Dubuque Region there is a projected decrease of 3% in the working age population from 2015 to 2025, while there is a projected 10% increase in available jobs; this represents approximately 36,000 more available jobs in the region than working age people in 2025.

# DEMOGRAPHIC POPULATION OVERVIEW

Source for Demographic Information from 2005 through 2015:

- Micropolitan Statistical Areas (MSAs) are defined by the Office of Management and Budget as urban areas in the United States centered on an urban cluster with a population between 10,000 and 50,000 people.
- ANY reference to **MSAs** are specific to the **Dubuque region** only.
- ALL demographic data is from the U.S. Census Bureau's Population Estimates program and the U.S. Census Bureau and Bureau of Labor Statistics Current Population Survey. (See appendix A).

## POPULATION BY AGE FOR DUBUQUE 7 COUNTY REGION



Working Age Population 7 County Region (2005-2015)			
Age Cohort	2015 Pop.	Cohort Change	% Total Pop
15 to 19	15,257	-19%	6%
20 to 24	18,139	3%	7%
25 to 29	13,547	17%	6%
30 to 34	14,477	12%	6%
35 to 39	12,900	-12%	5%
40 to 44	12,982	-27%	5%
45 to 49	15,078	-18%	6%
50 to 54	17,762	4%	7%
55 to 59	18,766	27%	8%
60 to 64	17,034	46%	7%
65 to 69	13,562	32%	6%
<b>Total</b>	<b>169,504</b>	<b>65%</b>	<b>69%</b>

Working Age Population Dubuque MSA (2005-2015)			
Age Cohort	2015 Pop.	Cohort Change	% Total Pop
15 to 19	6,205	-11%	6%
20 to 24	7,175	7%	7%
25 to 29	6,047	21%	6%
30 to 34	6,274	23%	6%
35 to 39	5,292	-8%	5%
40 to 44	5,155	-23%	5%
45 to 49	6,018	-12%	6%
50 to 54	6,757	6%	7%
55 to 59	6,990	31%	7%
60 to 64	6,402	55%	7%
65 to 69	4,883	41%	5%
<b>Total</b>	<b>67,198</b>	<b>130%</b>	<b>67%</b>

## POPULATION BY RACE/ETHNICITY

7 County Region (2005-2015)			
Race/Ethnicity	2015 Pop.	% Chg.	% 2015 Total Pop)
White, Non-Hispanic	231,439	0%	94%
Black, Non-Hispanic	4,311	72%	2%
White, Hispanic	4,243	50%	2%
Two or More Races, Non-Hispanic	2,319	49%	1%
Asian, Non-Hispanic	2,062	65%	1%
Native Hawaiian or Pacific Islander, Non-Hispanic	445	82%	0%
American Indian or Alaskan Native, Non-Hispanic	418	26%	0%
Black, Hispanic	198	136%	0%
American Indian or Alaskan Native, Hispanic	175	130%	0%
Two or More Races, Hispanic	161	89%	0%
Asian, Hispanic	50	163%	0%
Native Hawaiian or Pacific Islander, Hispanic	34	183%	0%
<b>Total</b>	<b>245,855</b>		<b>100%</b>

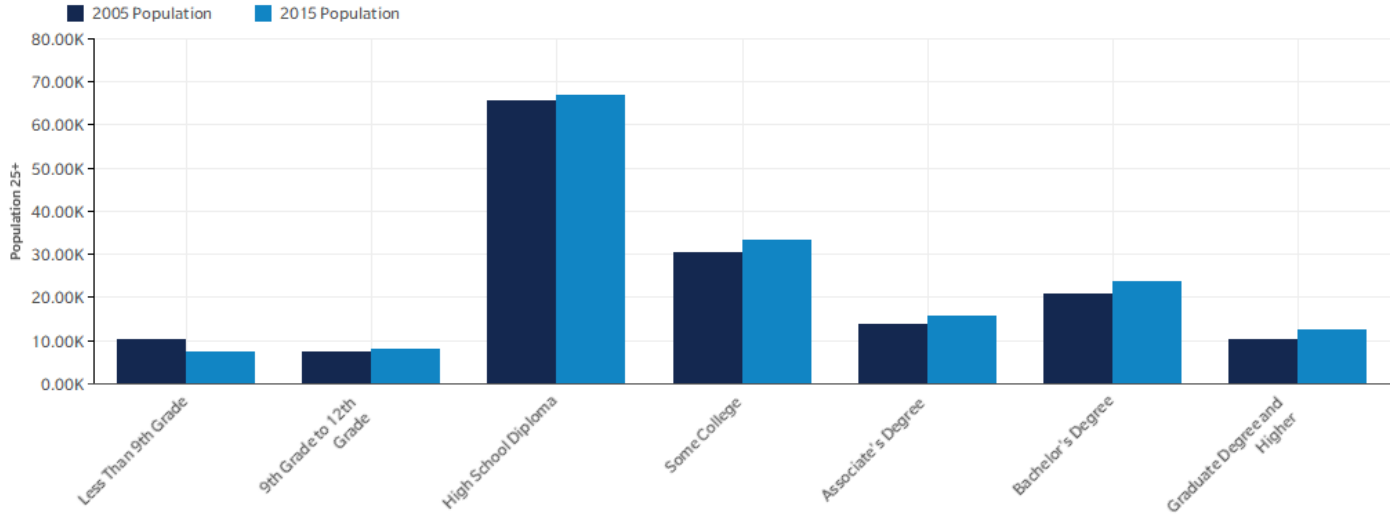
Dubuque MSA (2005-2015)			
Race/Ethnicity	2015 Pop.	% Chg.	% 2015 Total Pop)
White, Non-Hispanic	88,980	3%	92%
Black, Non-Hispanic	2,680	84%	3%
White, Hispanic	1,873	50%	2%
Asian, Non-Hispanic	1,259	79%	1%
Two or More Races, Non-Hispanic	1,213	53%	1%
Native Hawaiian or Pacific Islander, Non-Hispanic	265	55%	0%
American Indian or Alaskan Native, Non-Hispanic	151	18%	0%
Black, Hispanic	116	127%	0%
Two or More Races, Hispanic	84	71%	0%
American Indian or Alaskan Native, Hispanic	81	189%	0%
Asian, Hispanic	31	182%	0%
Native Hawaiian or Pacific Islander, Hispanic	18	100%	0%
<b>Total</b>	<b>96,751</b>		<b>99%</b>

## POPULATION BY GENDER

7 County Region (2005-2015)			
Gender	2015 Population	% Chg.	% Total Pop
Males	124,355	3%	51%
Females	121,500	1%	49%
<b>Total</b>	<b>245,855</b>	<b>2%</b>	<b>100%</b>

Dubuque MSA (2005-2015)			
Gender	2015 Population	% Chg.	% Total Pop
Females	48,774	5%	50%
Males	47,976	8%	50%
<b>Total</b>	<b>96,750</b>	<b>7%</b>	<b>100%</b>

# EDUCATIONAL ATTAINMENT OVERVIEW FOR DUBUQUE 7 COUNTY REGION



7 County Region (2005-2015)			
Education Level	2015 Pop.	% Chg.	% Total Pop.
< 9th Grade	7,381	-38%	4%
9th - 12th Grade	8,059	9%	5%
High School Diploma	66,991	2%	40%
Some College	33,167	9%	20%
Associate's Degree	15,687	12%	9%
Bachelor's Degree	23,690	12%	14%
Graduate and Up	12,422	19%	7%
<b>Total</b>	<b>167,396</b>	<b>6%</b>	<b>100%</b>

Dubuque MSA (2005-2015)			
Education Level	2015 Pop.	% Chg.	% Total Pop.
< 9th Grade	2,445	-38%	4%
9th - 12th Grade	3,196	9%	5%
High School Diploma	23,903	2%	37%
Some College	12,105	9%	19%
Associate's Degree	5,746	12%	9%
Bachelor's Degree	11,397	12%	18%
Graduate and Up	6,115	19%	9%
<b>Total</b>	<b>64,907</b>	<b>6%</b>	<b>100%</b>

# SKILL GAPS BY OCCUPATION

## ORGANIZATIONAL METHOD

- ⚠ All occupations where the 2015 median hourly earnings adjusted to only include an amount > \$16/hr.
- ⚠ Openings greater than 10 openings (Openings represents replacement jobs and BLS employee growth estimates).
- ⚠ Top 60 occupations with a skills gap greater than 0. (Skills gap is the difference between projected openings and graduates).
- ⚠ Sorted by largest skills gap to smallest.
- ⚠ Growth, Replacements, Openings, Graduates, and Skills Gap all represent 2015-2025, 10-year estimates.

2015 Rank	2014 Rank	Trend of gap	Description	2015 Jobs	2025 Jobs	Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings
1 <sup>st</sup>	9 <sup>th</sup>	↑	Operating Engineers and Other Construction Equipment Operators	497	576	79	121	200	0	200	\$21.36
2 <sup>nd</sup>	4 <sup>th</sup>	↑	Electricians	505	599	94	111	205	30	175	\$23.18
3 <sup>rd</sup>	11 <sup>th</sup>	↑	First-Line Supervisors of Production and Operating Workers	756	778	22	131	153	0	153	\$22.28
4 <sup>th</sup>	16 <sup>th</sup>	↑	First-Line Supervisors of Mechanics, Installers, and Repairers	327	364	37	94	131	0	131	\$26.05
5 <sup>th</sup>	—	↑	Inspectors, Testers, Sorters, Samplers, and Weighers	382	416	34	93	126	0	126	\$16.08
6 <sup>th</sup>	8 <sup>th</sup>	↑	Carpenters	639	772	133	93	226	100	126	\$19.24
7 <sup>th</sup>	5 <sup>th</sup>	↓	Industrial Machinery Mechanics	494	597	103	159	262	150	112	\$21.44
8 <sup>th</sup>	19 <sup>th</sup>	↑	Cement Masons and Concrete Finishers	281	363	82	37	118	10	108	\$17.26
9 <sup>th</sup>	—	↑	Dental Hygienists	152	196	44	49	92	0	92	\$32.26
10 <sup>th</sup>	23 <sup>rd</sup>	↑	Pharmacists	215	249	34	58	91	0	91	\$52.12
11 <sup>th</sup>	3 <sup>rd</sup>	↓	Insurance Sales Agents	595	759	164	171	335	250	85	\$18.83
12 <sup>th</sup>	2 <sup>nd</sup>	↓	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,374	1504	130	282	412	330	82	\$23.10
13 <sup>th</sup>	30 <sup>th</sup>	↑	Correctional Officers and Jailers	274	280	6	74	80	0	80	\$22.19
14 <sup>th</sup>	27 <sup>th</sup>	↑	Human Resources Specialists	271	302	31	54	84	10	74	\$22.59
15 <sup>th</sup>	—	↑	Automotive Service Technicians and Mechanics	645	759	114	180	293	220	73	\$16.71
16 <sup>th</sup>	36 <sup>th</sup>	↑	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	133	151	18	39	57	0	57	\$21.10
17 <sup>th</sup>	43 <sup>rd</sup>	↑	Water and Wastewater Treatment Plant and System Operators	127	137	10	46	56	0	56	\$19.61
18 <sup>th</sup>	33 <sup>rd</sup>	↑	Medical and Health Services Managers	307	352	45	81	126	70	56	\$36.18



2015 Rank	2014 Rank	Trend of gap	Description	2015 Jobs	2025 Jobs	Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings
19 <sup>th</sup>	29 <sup>th</sup>	↑	Veterinarians	120	131	11	44	54	0	54	\$41.11
20 <sup>th</sup>	47 <sup>th</sup>	↑	Dispatchers, Except Police, Fire, and Ambulance	101	119	18	32	50	0	50	\$17.76
21 <sup>st</sup>	39 <sup>th</sup>	↑	Highway Maintenance Workers	246	257	11	37	48	0	48	\$20.87
22 <sup>nd</sup>	22 <sup>nd</sup>	↑	Lawyers	191	205	14	32	46	0	46	\$35.67
23 <sup>rd</sup>	7 <sup>th</sup>	↓	First-Line Supervisors of Office and Administrative Support Workers	674	809	135	179	314	270	44	\$20.17
24 <sup>th</sup>	32 <sup>nd</sup>	↑	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	93	108	15	28	43	0	43	\$21.08
25 <sup>th</sup>	35 <sup>th</sup>	↑	First-Line Supervisors of Non-Retail Sales Workers	148	170	22	20	42	0	42	\$28.13
26 <sup>th</sup>	—	↑	Painters, Construction and Maintenance	123	139	16	25	41	0	41	\$17.82
27 <sup>th</sup>	44 <sup>th</sup>	↑	Training and Development Specialists	127	152	25	26	51	10	41	\$20.67
28 <sup>th</sup>	34 <sup>th</sup>	↑	Advertising Sales Agents	65	76	11	29	39	0	39	\$17.46
29 <sup>th</sup>	—	↑	Plumbers, Pipefitters, and Steamfitters	237	291	54	33	87	50	37	\$26.63
30 <sup>th</sup>	—	↑	Librarians	123	131	8	29	36	0	36	\$21.27
31 <sup>st</sup>	31 <sup>st</sup>	↑	Dentists, General	66	83	17	19	36	0	36	\$66.45
32 <sup>nd</sup>	46 <sup>th</sup>	↑	Paralegals and Legal Assistants	136	148	12	23	35	0	35	\$19.85
33 <sup>rd</sup>	—	↑	Special Education Teachers, Kindergarten and Elementary School	145	154	9	26	34	0	34	\$23.22
34 <sup>th</sup>	25 <sup>th</sup>	↑	Brickmasons and Blockmasons	219	275	56	38	93	60	33	\$20.73
35 <sup>th</sup>	42 <sup>nd</sup>	↓	Mental Health Counselors	89	101	12	21	33	0	33	\$18.48
36 <sup>th</sup>	49 <sup>th</sup>	↑	Sheet Metal Workers	93	104	11	21	32	0	32	\$21.68
37 <sup>th</sup>	—	↑	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	65	74	9	22	30	0	30	\$16.36
38 <sup>th</sup>	—	↑	Telecommunications Line Installers and Repairers	58	70	12	18	29	0	29	\$21.41
39 <sup>th</sup>	—	↑	Speech-Language Pathologists	79	95	16	13	29	0	29	\$28.93
40 <sup>th</sup>	—	↑	Compliance Officers	77	90	13	16	29	0	29	\$27.70
41 <sup>st</sup>	—	↑	Surgical Technologists	81	101	20	9	28	0	28	\$17.84
42 <sup>nd</sup>	—	↑	Installation, Maintenance, and Repair Workers, All Other	89	101	12	16	27	0	27	\$18.32
43 <sup>rd</sup>	—	↑	Crane and Tower Operators	56	64	8	20	27	0	27	\$25.33
44 <sup>th</sup>	—	↑	Excavating and Loading Machine and Dragline Operators	120	135	15	13	27	0	27	\$18.88
45 <sup>th</sup>	—	↑	Medical and Clinical Laboratory Technologists	78	84	6	22	27	0	27	\$25.15

2015 Rank	2014 Rank	Trend of gap	Description	2015 Jobs	2025 Jobs	Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings
46 <sup>th</sup>	—	↑	Human Resources Managers	84	97	13	23	36	10	26	\$39.01
47 <sup>th</sup>	—	↑	Chiropractors	49	64	15	11	26	0	26	\$29.57
48 <sup>th</sup>	—	↑	Occupational Therapists	60	76	16	10	25	0	25	\$28.13
49 <sup>th</sup>	—	↑	Meeting, Convention, and Event Planners	43	59	16	7	22	0	22	\$16.36
50 <sup>th</sup>	—	↑	Education Administrators, Elementary and Secondary School	186	197	11	52	62	40	22	\$42.09
51 <sup>st</sup>	—	↓	Education Administrators, Postsecondary	157	175	18	44	62	40	22	\$34.98
52 <sup>nd</sup>	—	↑	Special Education Teachers, Secondary School	99	104	5	17	22	0	22	\$24.84
53 <sup>rd</sup>	37 <sup>th</sup>	↑	Property, Real Estate, and Community Association Managers	57	64	7	15	22	0	22	\$17.02
54 <sup>th</sup>	—	↑	Structural Iron and Steel Workers	41	48	7	14	21	0	21	\$24.49
55 <sup>th</sup>	—	↑	First-Line Supervisors of Farming, Fishing, and Forestry Workers	58	65	7	14	21	0	21	\$28.18
56 <sup>th</sup>	—	↑	Telecommunications Equipment Installers and Repairers, Except Line Installers	54	66	12	9	20	0	20	\$23.48
57 <sup>th</sup>	—	↓	Medical Equipment Repairers	26	38	12	9	20	0	20	\$20.76
58 <sup>th</sup>	—	↑	Fundraisers	62	70	8	13	20	0	20	\$20.24
59 <sup>th</sup>	40 <sup>th</sup>	↑	Physicians and Surgeons, All Other	150	161	11	39	50	30	20	\$107.50
60 <sup>th</sup>	—	↑	Computer, Automated Teller, and Office Machine Repairers	51	59	8	12	19	0	19	\$17.27
<b>Totals for 60 occupations</b>				<b>12,850</b>	<b>14,764</b>	<b>1,914</b>	<b>2,973</b>	<b>4,862</b>	<b>^1,100</b>	<b>3,762</b>	

\*See Appendix B for SOC Code and **full** occupation description.

^The total number of projected graduates is unduplicated; in the line by line occupational skills gaps, some projected graduates are counted for more than one occupation because they would qualify for multiple occupations.

### DEFINITIONS

#### How does EMSI calculate projections?

If you use an EMSI product or service, chances are you've seen some of our labor market projections. We provide detailed job estimates, by industry and occupation, for each of the next 10 years from the current year.

A common question that we get from clients who see these figures is where do EMSI projections come from? The short answer is that we create our projections based on past trends carried forward, and published projections from state and federal sources. If you're after something a little more detailed, read on.

The first step in both our industry and occupation projections is our robust industry data. We first create simple short-, mid-, and long-term trend lines for every industry and county based on the historical data.

Those lines are then averaged and dampened to prevent extreme change. We then incorporate national industry projections (BLS national employment projections) as well as state and regional projections provided by state labor market organizations to adjust these numbers again.

Finally, we take aggregate geography and industry group figures for 10-year percentage change and make sure it matches the corresponding published geography and industry numbers.

EMSI projections will not match the BLS or any other individual state projections at the most detailed level. This can be explained in a variety of ways:

#### Differences in Coverage

EMSI has broken out our labor market data into four different classes of worker that allow our clients to dig into specific elements of their economy. In most states, the first two classes of workers (QCEW Employees and Non-QCEW Employees) are most closely comparable to the industry projections from the published sources. We don't expect our self-employment and proprietors projections to match BLS and state-level projections.

#### We Don't Use BLS/State Occupation Projections

(except for our Annual Job Openings estimates)

Our occupation projections are based off of our industry numbers with our projected, regionalized staffing pattern applied to the figures. As a result, the occupation projections will necessarily differ from BLS occupation numbers.

#### Differences in Methodology

EMSI uses a combination of BLS, state, and internal projection methods. This will naturally differ from the BLS and state projections alone.

#### Release Lag

EMSI projections are based on the most recent available data and published projections, but the BLS and states release only long-term projections on a two-year basis. EMSI's internal projections are more heavily weighted as state/national projections age.

## 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 also affected by county-level EMSI earnings by industry.

## 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.

## Industry Data

EMSI industry data have various sources depending on the class of worker. (1) For QCEW Employees, EMSI primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns and Current Employment Statistics. (2) Non-QCEW employee data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

## State Data Sources

This report uses state data from the following agencies: Illinois Department of Employment Security, Employment Projections; Iowa Workforce Development; Wisconsin Department of Workforce Development, Bureau of Workforce Information

## Class of Worker Explained

EMSI creates data for four distinct job types, or Classes of Worker (CoW): QCEW, Non-QCEW, Self-Employed, and Extended Proprietors. For simplicity, our basic Class of Worker option in Analyst is broken into two groups: Employees (a combo of QCEW and Non-QCEW), and Self-Employed.

## COMPLETE LIST OF REPORT SOURCES

### U.S. DEPARTMENT OF COMMERCE

#### BUREAU OF ECONOMIC ANALYSIS

- State Personal Income and Employment (SPI)
- Local Area Personal Income and Employment (LPI)
- National Income and Product Accounts (NIPA)
- Annual Input-Output (I-O) Accounts
- Benchmark Input-Output (I-O) Accounts
- GDP by State

#### U.S. CENSUS BUREAU

- American Community Survey (ACS)
- County Business Patterns (CBP)
- ZIP Code Business Patterns (ZBP)
- Nonemployer Statistics (NES)
- Quarterly Workforce Indicators (QWI)
- OnTheMap (OTM)
- TIGER/Line File (with additions by DM Solutions Group)
- Population Estimates program
- U.S. National and State Population Projections
- Census 2000 & 2010 Summary Files
- Census of Government —
  - State and Local Government Finances by State
- Journey-to-Work (JtW)
- Consumer Expenditures Survey (CEX)
- Current Population Survey (CPS)

### OTHER SOURCES

#### PRIVATE SOURCES

- Job postings from CareerBuilder
- Infogroup business-level data

#### STATE SOURCES

- State and sub-state [where available] industry projections produced by all 50 individual states.

### U.S. DEPARTMENT OF LABOR

#### BUREAU OF LABOR STATISTICS

- Quarterly Census of Employment and Wages (QCEW)
- Current Employment Statistics (CES)
- Current Population Survey (CPS)
- Local Area Unemployment Statistics (LAUS)
- National Industry-Occupation Employment Matrix (10-year, current/projected)
- Occupational Employment Statistics (OES)
- Occupational Education and Training Projections

#### EMPLOYMENT AND TRAINING ADMINISTRATION

- Characteristics of the Insured Unemployed
- National O\*NET Consortium, O\*NET Production Database

#### U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATION STATISTICS

- Integrated Postsecondary Education Data System (IPEDS)
- Office of Educational Research and Improvement for the CIP – SOC crosswalk, Classification of Instructional Programs Crosswalk to Standard Occupational Classification

#### U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NATIONAL CENTER FOR HEALTH STATISTICS

- Health, United States

#### U.S. POSTAL SERVICE

- Address Information Systems (AIS) Products, Delivery Statistics
- AIS Products, 5-Digit ZIP Product
- AIS Products, City State Product

#### U.S. RAILROAD RETIREMENT BOARD

- Annual Railroad Retirement Act and Railroad Unemployment Insurance Act Statistical Tables

### U.S. DEPARTMENT OF ENERGY

#### OAK RIDGE NATIONAL LABORATORY

- County-to-County Distance Matrix (Skim Tree)

## APPENDIX B

### STANDARD OCCUPATION CODES AND DEFINITIONS

O*NET SOC Code	Title	Description
13-2011.01	Accountants	Analyze financial information and prepare financial reports to determine or maintain record of assets, liabilities, profit and loss, tax liability, or other financial activities within an organization.
13-2011.00	Accountants and Auditors	Examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data.
29-1141.01	Acute Care Nurses	Provide advanced nursing care for patients with acute conditions such as heart attacks, respiratory distress syndrome, or shock. May care for pre- and post-operative patients or perform advanced, invasive diagnostic or therapeutic procedures.
11-3011.00	Administrative Services Managers	Plan, direct, or coordinate one or more administrative services of an organization, such as records and information management, mail distribution, facilities planning and maintenance, custodial operations, and other office support services.
29-1141.02	Advanced Practice Psychiatric Nurses	Provide advanced nursing care for patients with psychiatric disorders. May provide psychotherapy under the direction of a psychiatrist.
41-3011.00	Advertising Sales Agents	Sell or solicit advertising space, time, or media in publications, signage, TV, radio, or the Internet. Includes individuals who obtain leases for outdoor advertising sites or persuade retailers to use sales promotion display items.
29-1069.01	Allergists and Immunologists	Diagnose, treat, and help prevent allergic diseases and disease processes affecting the immune system.
29-1071.01	Anesthesiologist Assistants	Assist anesthesiologists in the administration of anesthesia for surgical and non-surgical procedures. Monitor patient status and provide patient care during surgical treatment.
11-9013.03	Aquacultural Managers	Direct and coordinate, through subordinate supervisory personnel, activities of workers engaged in fish hatchery production for corporations, cooperatives, or other owners.
11-9041.00	Architectural and Engineering Managers	Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields.
13-2011.02	Auditors	Examine and analyze accounting records to determine financial status of establishment and prepare financial reports concerning operating procedures.
49-3021.00	Automotive Body and Related Repairers	Repair and refinish automotive vehicle bodies and straighten vehicle frames.
17-2141.02	Automotive Engineers	Develop new or improved designs for vehicle structural members, engines, transmissions, or other vehicle systems, using computer-assisted design technology. Direct building, modification, or testing of vehicle or components.
49-3023.01	Automotive Master Mechanics	Repair automobiles, trucks, buses, and other vehicles. Master mechanics repair virtually any part on the vehicle or specialize in the transmission system.
49-3023.00	Automotive Service Technicians and Mechanics	Diagnose, adjust, repair, or overhaul automotive vehicles.
49-3023.02	Automotive Specialty Technicians	Repair only one system or component on a vehicle, such as brakes, suspension, or radiator.

O*NET SOC Code	Title	Description
11-9041.01	Biofuels/Biodiesel Technology and Product Development Managers	Define, plan, or execute biofuels/biodiesel research programs that evaluate alternative feedstock and process technologies with near-term commercial potential.
47-2021.00	Brickmasons and Blockmasons	Lay and bind building materials, such as brick, structural tile, concrete block, cinder block, glass block, and terra-cotta block, with mortar and other substances to construct or repair walls, partitions, arches, sewers, and other structures.
11-9199.11	Brownfield Redevelopment Specialists and Site Managers	Plan and direct cleanup and redevelopment of contaminated properties for reuse. Does not include properties sufficiently contaminated to qualify as Superfund sites.
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines.
13-1199.04	Business Continuity Planners	Develop, maintain, or implement business continuity and disaster recovery strategies and solutions, including risk assessments, business impact analyses, strategy selection, and documentation of business continuity and disaster recovery procedures. Plan, conduct, and debrief regular mock-disaster exercises to test the adequacy of existing plans and strategies, updating procedures and plans regularly. Act as a coordinator for continuity efforts after a disruption event.
15-1199.08	Business Intelligence Analysts	Produce financial and market intelligence by querying data repositories and generating periodic reports. Devise methods for identifying data patterns and trends in available information sources.
13-1199.00	Business Operations Specialists, All Other	All business operations specialists not listed separately.
47-2031.00	Carpenters	Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms; building frameworks, including partitions, joists, studding, and rafters; and wood stairways, window and door frames, and hardwood floors. May also install cabinets, siding, drywall and batt or roll insulation. Includes brattice builders who build doors or brattices (ventilation walls or partitions) in underground passageways.
47-2051.00	Cement Masons and Concrete Finishers	Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, roads, or curbs using a variety of hand and power tools. Align forms for sidewalks, curbs, or gutters; patch voids; and use saws to cut expansion joints.
19-4031.00	Chemical Technicians	Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials for research and development of new products or processes, quality control, maintenance of environmental standards, and other work involving experimental, theoretical, or practical application of chemistry and related sciences.
21-1021.00	Child, Family, and School Social Workers	Provide social services and assistance to improve the social and psychological functioning of children and their families and to maximize the family well-being and the academic functioning of children. May assist parents, arrange adoptions, and find foster homes for abandoned or abused children. In schools, they address such problems as teenage pregnancy, misbehavior, and truancy. May also advise teachers.
29-1011.00	Chiropractors	Assess, treat, and care for patients by manipulation of spine and musculoskeletal system. May provide spinal adjustment or address sacral or pelvic misalignment.
17-2051.00	Civil Engineers	Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.
13-1031.00	Claims Adjusters, Examiners, and Investigators	Review settled claims to determine that payments and settlements are made in accordance with company practices and procedures. Confer with legal counsel on claims requiring litigation. May also settle insurance claims.

O*NET SOC Code	Title	Description
13-1031.01	Claims Examiners, Property and Casualty Insurance	Review settled insurance claims to determine that payments and settlements have been made in accordance with company practices and procedures. Report overpayments, underpayments, and other irregularities. Confer with legal counsel on claims requiring litigation.
21-2011.00	Clergy	Conduct religious worship and perform other spiritual functions associated with beliefs and practices of religious faith or denomination. Provide spiritual and moral guidance and assistance to members.
19-2041.01	Climate Change Analysts	Research and analyze policy developments related to climate change. Make climate-related recommendations for actions such as legislation, awareness campaigns, or fundraising approaches.
29-1141.04	Clinical Nurse Specialists	Plan, direct, or coordinate the daily patient care activities in a clinical practice. Ensure adherence to established clinical policies, protocols, regulations, and standards.
19-3031.02	Clinical Psychologists	Diagnose or evaluate mental and emotional disorders of individuals through observation, interview, and psychological tests, and formulate and administer programs of treatment.
19-3031.00	Clinical, Counseling, and School Psychologists	Diagnose and treat mental disorders; learning disabilities; and cognitive, behavioral, and emotional problems, using individual, child, family, and group therapies. May design and implement behavior modification programs.
13-1141.00	Compensation, Benefits, and Job Analysis Specialists	Conduct programs of compensation and benefits and job analysis for employer. May specialize in specific areas, such as position classification and pension programs.
11-9199.02	Compliance Managers	Plan, direct, or coordinate activities of an organization to ensure compliance with ethical or regulatory standards.
13-1041.00	Compliance Officers	Examine, evaluate, and investigate eligibility for or conformity with laws and regulations governing contract compliance of licenses and permits, and perform other compliance and enforcement inspection and analysis activities not classified elsewhere.
11-3021.00	Computer and Information Systems Managers	Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.
15-1143.00	Computer Network Architects	Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Perform network modeling, analysis, and planning. May also design network and computer security measures. May research and recommend network and data communications hardware and software.
15-1152.00	Computer Network Support Specialists	Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption.
51-4012.00	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	Develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment, or systems.
15-1199.00	Computer Occupations, All Other	All computer occupations not listed separately.
15-1131.00	Computer Programmers	Create, modify, and test the code, forms, and script that allow computer applications to run. Work from specifications drawn up by software developers or other individuals. May assist software developers by analyzing user needs and designing software solutions. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information.



O*NET SOC Code	Title	Description
15-1121.00	Computer Systems Analysts	Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software.
15-1199.02	Computer Systems Engineers/Architects	Design and develop solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions.
15-1151.00	Computer User Support Specialists	Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.
49-2011.00	Computer, Automated Teller, and Office Machine Repairers	Repair, maintain, or install computers, word processing systems, automated teller machines, and electronic office machines, such as duplicating and fax machines.
51-4011.00	Computer-Controlled Machine Tool Operators, Metal and Plastic	Operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic work pieces.
47-4011.00	Construction and Building Inspectors	Inspect structures using engineering skills to determine structural soundness and compliance with specifications, building codes, and other regulations. Inspections may be general in nature or may be limited to a specific area, such as electrical systems or plumbing.
47-2031.01	Construction Carpenters	Construct, erect, install, and repair structures and fixtures of wood, plywood, and wallboard, using carpenter's hand tools and power tools.
11-9021.00	Construction Managers	Plan, direct, or coordinate, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields, such as carpentry or plumbing.
13-1041.06	Coroners	Direct activities such as autopsies, pathological and toxicological analyses, and inquests relating to the investigation of deaths occurring within a legal jurisdiction to determine cause of death or to fix responsibility for accidental, violent, or unexplained deaths.
33-3012.00	Correctional Officers and Jailers	Guard inmates in penal or rehabilitative institutions in accordance with established regulations and procedures. May guard prisoners in transit between jail, courtroom, prison, or other point. Includes deputy sheriffs and police who spend the majority of their time guarding prisoners in correctional institutions.
13-1051.00	Cost Estimators	Prepare cost estimates for product manufacturing, construction projects, or services to aid management in bidding on or determining price of product or service. May specialize according to particular service performed or type of product manufactured.
19-3031.03	Counseling Psychologists	Assess and evaluate individuals' problems through the use of case history, interview, and observation and provide individual or group counseling services to assist individuals in achieving more effective personal, social, educational, and vocational development and adjustment.
53-7021.00	Crane and Tower Operators	Operate mechanical boom and cable or tower and cable equipment to lift and move materials, machines, or products in many directions.
13-2041.00	Credit Analysts	Analyze credit data and financial statements of individuals or firms to determine the degree of risk involved in extending credit or lending money. Prepare reports with credit information for use in decision making.
29-1141.03	Critical Care Nurses	Provide advanced nursing care for patients in critical or coronary care units.

O*NET SOC Code	Title	Description
51-9021.00	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	Set up, operate, or tend machines to crush, grind, or polish materials, such as coal, glass, grain, stone, food, or rubber.
13-1199.03	Customs Brokers	Prepare customs documentation and ensure that shipments meet all applicable laws to facilitate the import and export of goods. Determine and track duties and taxes payable and process payments on behalf of client. Sign documents under a power of attorney. Represent clients in meetings with customs officials and apply for duty refunds and tariff reclassifications. Coordinate transportation and storage of imported goods.
29-2011.01	Cytogenetic Technologists	Analyze chromosomes found in biological specimens such as amniotic fluids, bone marrow, and blood to aid in the study, diagnosis, or treatment of genetic diseases.
29-2011.02	Cytotechnologists	Stain, mount, and study cells to detect evidence of cancer, hormonal abnormalities, and other pathological conditions following established standards and practices.
15-1199.07	Data Warehousing Specialists	Design, model, or implement corporate data warehousing activities. Program and configure warehouses of database information and provide support to warehouse users.
15-1141.00	Database Administrators	Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases.
15-1199.06	Database Architects	Design strategies for enterprise database systems and set standards for operations, programming, and security. Design and construct large relational databases. Integrate new systems with existing warehouse structure and refine system performance and functionality.
31-9091.00	Dental Assistants	Assist dentist, set up equipment, prepare patient for treatment, and keep records.
29-2021.00	Dental Hygienists	Clean teeth and examine oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop x rays, or apply fluoride or sealants.
29-1021.00	Dentists, General	Examine, diagnose, and treat diseases, injuries, and malformations of teeth and gums. May treat diseases of nerve, pulp, and other dental tissues affecting oral hygiene and retention of teeth. May fit dental appliances or provide preventive care.
29-1069.02	Dermatologists	Diagnose, treat, and help prevent diseases or other conditions of the skin.
29-2032.00	Diagnostic Medical Sonographers	Produce ultrasonic recordings of internal organs for use by physicians.
29-1031.00	Dietitians and Nutritionists	Plan and conduct food service or nutritional programs to assist in the promotion of health and control of disease. May supervise activities of a department providing quantity food services, counsel individuals, or conduct nutritional research.
21-2021.00	Directors, Religious Activities and Education	Plan, direct, or coordinate programs designed to promote the religious education or activities of a denominational group. May provide counseling and guidance relative to marital, health, financial, and religious problems.
43-5032.00	Dispatchers, Except Police, Fire, and Ambulance	Schedule and dispatch workers, work crews, equipment, or service vehicles for conveyance of materials, freight, or passengers, or for normal installation, service, or emergency repairs rendered outside the place of business. Duties may include using radio, telephone, or computer to transmit assignments and compiling statistics and reports on work progress.
15-1199.12	Document Management Specialists	Implement and administer enterprise-wide document management systems and related procedures that allow organizations to capture, store, retrieve, share, and destroy electronic records and documents.

O*NET SOC Code	Title	Description
47-2081.00	Drywall and Ceiling Tile Installers	Apply plasterboard or other wallboard to ceilings or interior walls of buildings. Apply or mount acoustical tiles or blocks, strips, or sheets of shock-absorbing materials to ceilings and walls of buildings to reduce or reflect sound. Materials may be of decorative quality. Includes lathers who fasten wooden, metal, or rockboard lath to walls, ceilings or partitions of buildings to provide support base for plaster, fire-proofing, or acoustical material.
11-9032.00	Education Administrators, Elementary and Secondary School	Plan, direct, or coordinate the academic, administrative, or auxiliary activities of public or private elementary or secondary level schools.
11-9033.00	Education Administrators, Postsecondary	Plan, direct, or coordinate research, instructional, student administration and services, and other educational activities at postsecondary institutions, including universities, colleges, and junior and community colleges.
25-9099.00	Education, Training, and Library Workers, All Other	All education, training, and library workers not listed separately.
21-1012.00	Educational, Guidance, School, and Vocational Counselors	Counsel individuals and provide group educational and vocational guidance services.
17-2071.00	Electrical Engineers	Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.
47-2111.00	Electricians	Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems.
25-2021.00	Elementary School Teachers, Except Special Education	Teach students basic academic, social, and other formative skills in public or private schools at the elementary level.
43-4061.00	Eligibility Interviewers, Government Programs	Determine eligibility of persons applying to receive assistance from government programs and agency resources, such as welfare, unemployment benefits, social security, and public housing.
13-1199.01	Energy Auditors	Conduct energy audits of buildings, building systems, or process systems. May also conduct investment grade audits of buildings or systems.
41-3099.01	Energy Brokers	Buy or sell energy products on the behalf of residential or commercial customers or utilities. Negotiate and oversee contracts for energy sales.
13-1041.01	Environmental Compliance Inspectors	Inspect and investigate sources of pollution to protect the public and environment and ensure conformance with Federal, State, and local regulations and ordinances.
19-2041.02	Environmental Restoration Planners	Collaborate with field and biology staff to oversee the implementation of restoration projects and to develop new products. Process and synthesize complex scientific data into practical strategies for restoration, monitoring or management.
19-2041.00	Environmental Scientists and Specialists, Including Health	Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action based on data derived from measurements or observations of air, food, soil, water, and other sources.
13-1041.03	Equal Opportunity Representatives and Officers	Monitor and evaluate compliance with equal opportunity laws, guidelines, and policies to ensure that employment practices and contracting arrangements give equal opportunity without regard to race, religion, color, national origin, sex, age, or disability.

O*NET SOC Code	Title	Description
53-7032.00	Excavating and Loading Machine and Dragline Operators	Operate or tend machinery equipped with scoops, shovels, or buckets, to excavate and load loose materials.
51-9041.00	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	Set up, operate, or tend machines, such as glass forming machines, plodder machines, and tuber machines, to shape and form products, such as glassware, food, rubber, soap, brick, tile, clay, wax, tobacco, or cosmetics.
11-9013.02	Farm and Ranch Managers	Plan, direct, or coordinate the management or operation of farms, ranches, greenhouses, aquacultural operations, nurseries, timber tracts, or other agricultural establishments. May hire, train, or supervise farm workers or contract for services to carry out the day-to-day activities of the managed operation. May engage in or supervise planting, cultivating, harvesting, financial, or marketing activities.
49-3041.00	Farm Equipment Mechanics and Service Technicians	Diagnose, adjust, repair, or overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.
11-9013.00	Farmers, Ranchers, and Other Agricultural Managers	Plan, direct, or coordinate the management or operation of farms, ranches, greenhouses, aquacultural operations, nurseries, timber tracts, or other agricultural establishments. May hire, train, and supervise farm workers or contract for services to carry out the day-to-day activities of the managed operation. May engage in or supervise planting, cultivating, harvesting, and financial and marketing activities.
13-2051.00	Financial Analysts	Conduct quantitative analyses of information affecting investment programs of public or private institutions.
13-2061.00	Financial Examiners	Enforce or ensure compliance with laws and regulations governing financial and securities institutions and financial and real estate transactions. May examine, verify, or authenticate records.
11-3031.00	Financial Managers	Plan, direct, or coordinate accounting, investing, banking, insurance, securities, and other financial activities of a branch, office, or department of an establishment.
11-3031.02	Financial Managers, Branch or Department	Direct and coordinate financial activities of workers in a branch, office, or department of an establishment, such as branch bank, brokerage firm, risk and insurance department, or credit department.
13-2099.01	Financial Quantitative Analysts	Develop quantitative financial products used to inform individuals or financial institutions engaged in saving, lending, investing, borrowing, or managing risk. Investigate methods for financial analysis to create mathematical models used to develop improved analytical tools or advanced financial investment instruments.
13-2099.00	Financial Specialists, All Other	All financial specialists not listed separately.
45-1011.07	First-Line Supervisors of Agricultural Crop and Horticultural Workers	Directly supervise and coordinate activities of agricultural crop or horticultural workers.
45-1011.08	First-Line Supervisors of Animal Husbandry and Animal Care Workers	Directly supervise and coordinate activities of animal husbandry or animal care workers.

O*NET SOC Code	Title	Description
45-1011.06	First-Line Supervisors of Aquacultural Workers	Directly supervise and coordinate activities of aquacultural workers.
47-1011.00	First-Line Supervisors of Construction Trades and Extraction Workers	Directly supervise and coordinate activities of construction or extraction workers.
45-1011.00	First-Line Supervisors of Farming, Fishing, and Forestry Workers	Directly supervise and coordinate the activities of agricultural, forestry, aquacultural, and related workers.
53-1021.00	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	Directly supervise and coordinate the activities of helpers, laborers, or material movers.
37-1011.00	First-Line Supervisors of Housekeeping and Janitorial Workers	Directly supervise and coordinate work activities of cleaning personnel in hotels, hospitals, offices, and other establishments.
37-1012.00	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	Directly supervise and coordinate activities of workers engaged in landscaping or groundskeeping activities. Work may involve reviewing contracts to ascertain service, machine, and workforce requirements; answering inquiries from potential customers regarding methods, material, and price ranges; and preparing estimates according to labor, material, and machine costs.
45-1011.05	First-Line Supervisors of Logging Workers	Directly supervise and coordinate activities of logging workers.
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers	Directly supervise and coordinate the activities of mechanics, installers, and repairers.
41-1012.00	First-Line Supervisors of Non-Retail Sales Workers	Directly supervise and coordinate activities of sales workers other than retail sales workers. May perform duties such as budgeting, accounting, and personnel work, in addition to supervisory duties.
43-1011.00	First-Line Supervisors of Office and Administrative Support Workers	Directly supervise and coordinate the activities of clerical and administrative support workers.
51-1011.00	First-Line Supervisors of Production and Operating Workers	Directly supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators.

O*NET SOC Code	Title	Description
53-1031.00	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	Directly supervise and coordinate activities of transportation and material-moving machine and vehicle operators and helpers.
13-2099.04	Fraud Examiners, Investigators and Analysts	Obtain evidence, take statements, produce reports, and testify to findings regarding resolution of fraud allegations. May coordinate fraud detection and prevention activities.
17-2141.01	Fuel Cell Engineers	Design, evaluate, modify, or construct fuel cell components or systems for transportation, stationary, or portable applications.
13-1131.00	Fundraisers	Organize activities to raise funds or otherwise solicit and gather monetary donations or other gifts for an organization. May design and produce promotional materials. May also raise awareness of the organization's work, goals, and financial needs.
51-9051.00	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	Operate or tend heating equipment other than basic metal, plastic, or food processing equipment. Includes activities, such as annealing glass, drying lumber, curing rubber, removing moisture from materials, or boiling soap.
11-1021.00	General and Operations Managers	Plan, direct, or coordinate the operations of public or private sector organizations. Duties and responsibilities include formulating policies, managing daily operations, and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing, or administrative services.
15-1199.05	Geographic Information Systems Technicians	Assist scientists, technologists, or related professionals in building, maintaining, modifying, or using geographic information systems (GIS) databases. May also perform some custom application development or provide user support.
15-1199.04	Geospatial Information Scientists and Technologists	Research or develop geospatial technologies. May produce databases, perform applications programming, or coordinate projects. May specialize in areas such as agriculture, mining, health care, retail trade, urban planning, or military intelligence.
49-9099.01	Geothermal Technicians	Perform technical activities at power plants or individual installations necessary for the generation of power from geothermal energy sources. Monitor and control operating activities at geothermal power generation facilities and perform maintenance and repairs as necessary. Install, test, and maintain residential and commercial geothermal heat pumps.
13-1041.04	Government Property Inspectors and Investigators	Investigate or inspect government property to ensure compliance with contract agreements and government regulations.
21-1091.00	Health Educators	Provide and manage health education programs that help individuals, families, and their communities maximize and maintain healthy lifestyles. Collect and analyze data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies, and environments. May serve as a resource to assist individuals, other healthcare workers, or the community, and may administer fiscal resources for health education programs.
21-1022.00	Healthcare Social Workers	Provide individuals, families, and groups with the psychosocial support needed to cope with chronic, acute, or terminal illnesses. Services include advising family care givers, providing patient education and counseling, and making referrals for other services. May also provide care and case management or interventions designed to promote health, prevent disease, and address barriers to access to healthcare.

O*NET SOC Code	Title	Description
49-9021.01	Heating and Air Conditioning Mechanics and Installers	Install, service, or repair heating and air conditioning systems in residences or commercial establishments.
49-9021.00	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.
53-3032.00	Heavy and Tractor-Trailer Truck Drivers	Drive a tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW). May be required to unload truck. Requires commercial drivers' license.
47-4051.00	Highway Maintenance Workers	Maintain highways, municipal and rural roads, airport runways, and rights-of-way. Duties include patching broken or eroded pavement, repairing guard rails, highway markers, and snow fences. May also mow or clear brush from along road or plow snow from roadway.
29-2011.03	Histotechnologists and Histologic Technicians	Prepare histologic slides from tissue sections for microscopic examination and diagnosis by pathologists. May assist in research studies.
29-1069.03	Hospitalists	Provide inpatient care predominantly in settings such as medical wards, acute care units, intensive care units, rehabilitation centers, or emergency rooms. Manage and coordinate patient care throughout treatment.
43-4161.00	Human Resources Assistants, Except Payroll and Timekeeping	Compile and keep personnel records. Record data for each employee, such as address, weekly earnings, absences, amount of sales or production, supervisory reports, and date of and reason for termination. May prepare reports for employment records, file employment records, or search employee files and furnish information to authorized persons.
11-3121.00	Human Resources Managers	Plan, direct, or coordinate human resources activities and staff of an organization.
13-1071.00	Human Resources Specialists	Perform activities in the human resource area. Includes employment specialists who screen, recruit, interview, and place workers.
19-2041.03	Industrial Ecologists	Apply principles and processes of natural ecosystems to develop models for efficient industrial systems. Use knowledge from the physical and social sciences to maximize effective use of natural resources in the production and use of goods and services. Examine societal issues and their relationship with both technical systems and the environment.
49-9041.00	Industrial Machinery Mechanics	Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.
15-1121.01	Informatics Nurse Specialists	Apply knowledge of nursing and informatics to assist in the design, development, and ongoing modification of computerized health care systems. May educate staff and assist in problem solving to promote the implementation of the health care system.
15-1122.00	Information Security Analysts	Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses.
15-1199.09	Information Technology Project Managers	Plan, initiate, and manage information technology (IT) projects. Lead and guide the work of technical staff. Serve as liaison between business and technical aspects of projects. Plan project stages and assess business implications for each stage. Monitor progress to assure deadlines, standards, and cost targets are met.
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers	Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.

O*NET SOC Code	Title	Description
49-9099.00	Installation, Maintenance, and Repair Workers, All Other	All installation, maintenance, and repair workers not listed separately.
25-9031.00	Instructional Coordinators	Develop instructional material, coordinate educational content, and incorporate current technology in specialized fields that provide guidelines to educators and instructors for developing curricula and conducting courses. Includes educational consultants and specialists, and instructional material directors.
25-9031.01	Instructional Designers and Technologists	Develop instructional materials and products and assist in the technology-based redesign of courses. Assist faculty in learning about, becoming proficient in, and applying instructional technology.
13-1031.02	Insurance Adjusters, Examiners, and Investigators	Investigate, analyze, and determine the extent of insurance company's liability concerning personal, casualty, or property loss or damages, and attempt to effect settlement with claimants. Correspond with or interview medical specialists, agents, witnesses, or claimants to compile information. Calculate benefit payments and approve payment of claims within a certain monetary limit.
43-9041.00	Insurance Claims and Policy Processing Clerks	Process new insurance policies, modifications to existing policies, and claims forms. Obtain information from policyholders to verify the accuracy and completeness of information on claims forms, applications and related documents, and company records. Update existing policies and company records to reflect changes requested by policyholders and insurance company representatives.
43-9041.01	Insurance Claims Clerks	Obtain information from insured or designated persons for purpose of settling claim with insurance carrier.
43-9041.02	Insurance Policy Processing Clerks	Process applications for, changes to, reinstatement of, and cancellation of insurance policies. Duties include reviewing insurance applications to ensure that all questions have been answered, compiling data on insurance policy changes, changing policy records to conform to insured party's specifications, compiling data on lapsed insurance policies to determine automatic reinstatement according to company policies, canceling insurance policies as requested by agents, and verifying the accuracy of insurance company records.
41-3021.00	Insurance Sales Agents	Sell life, property, casualty, health, automotive, or other types of insurance. May refer clients to independent brokers, work as an independent broker, or be employed by an insurance company.
13-2053.00	Insurance Underwriters	Review individual applications for insurance to evaluate degree of risk involved and determine acceptance of applications.
11-9199.03	Investment Fund Managers	Plan, direct, or coordinate investment strategy or operations for a large pool of liquid assets supplied by institutional investors or individual investors.
13-2099.03	Investment Underwriters	Manage communications or negotiations between corporate issuers of securities and clients regarding private equity investments. Underwrite the issuance of securities to provide capital for client growth. Negotiate and structure the terms of mergers or acquisitions.
25-2012.00	Kindergarten Teachers, Except Special Education	Teach elemental natural and social science, personal hygiene, music, art, and literature to kindergarten students. Promote physical, mental, and social development. May be required to hold State certification.
23-1011.00	Lawyers	Represent clients in criminal and civil litigation and other legal proceedings, draw up legal documents, or manage or advise clients on legal transactions. May specialize in a single area or may practice broadly in many areas of law.
25-4021.00	Librarians	Administer libraries and perform related library services. Work in a variety of settings, including public libraries, educational institutions, museums, corporations, government agencies, law firms, non-profit organizations, and healthcare providers. Tasks may include selecting, acquiring, cataloguing, classifying, circulating, and maintaining library materials; and furnishing reference, bibliographical, and readers' advisory services. May perform in-depth, strategic research, and synthesize, analyze, edit, and filter information. May set up or work with databases and information systems to catalogue and access information.



O*NET SOC Code	Title	Description
29-2061.00	Licensed Practical and Licensed Vocational Nurses	Care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.
13-1041.02	Licensing Examiners and Inspectors	Examine, evaluate, and investigate eligibility for, conformity with, or liability under licenses or permits.
43-4131.00	Loan Interviewers and Clerks	Interview loan applicants to elicit information; investigate applicants' backgrounds and verify references; prepare loan request papers; and forward findings, reports, and documents to appraisal department. Review loan papers to ensure completeness, and complete transactions between loan establishment, borrowers, and sellers upon approval of loan.
13-2072.00	Loan Officers	Evaluate, authorize, or recommend approval of commercial, real estate, or credit loans. Advise borrowers on financial status and payment methods. Includes mortgage loan officers and agents, collection analysts, loan servicing officers, and loan underwriters.
13-1081.00	Logisticians	Analyze and coordinate the logistical functions of a firm or organization. Responsible for the entire life cycle of a product, including acquisition, distribution, internal allocation, delivery, and final disposal of resources.
13-1081.02	Logistics Analysts	Analyze product delivery or supply chain processes to identify or recommend changes. May manage route activity including invoicing, electronic bills, and shipment tracing.
13-1081.01	Logistics Engineers	Design or analyze operational solutions for projects such as transportation optimization, network modeling, process and methods analysis, cost containment, capacity enhancement, routing and shipment optimization, or information management.
11-3071.03	Logistics Managers	Plan, direct, or coordinate purchasing, warehousing, distribution, forecasting, customer service, or planning services. Manage logistics personnel and logistics systems and direct daily operations.
11-9199.08	Loss Prevention Managers	Plan and direct policies, procedures, or systems to prevent the loss of assets. Determine risk exposure or potential liability, and develop risk control measures.
29-1122.01	Low Vision Therapists, Orientation and Mobility Specialists, and Vision Rehabilitation Therapists	Provide therapy to patients with visual impairments to improve their functioning in daily life activities. May train patients in activities such as computer use, communication skills, or home management skills.
51-4041.00	Machinists	Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.
49-9043.00	Maintenance Workers, Machinery	Lubricate machinery, change parts, or perform other routine machinery maintenance.
13-1111.00	Management Analysts	Conduct organizational studies and evaluations, design systems and procedures, conduct work simplification and measurement studies, and prepare operations and procedures manuals to assist management in operating more efficiently and effectively. Includes program analysts and management consultants.
11-9199.00	Managers, All Other	All managers not listed separately.
13-1161.00	Market Research Analysts and Marketing Specialists	Research market conditions in local, regional, or national areas, or gather information to determine potential sales of a product or service, or create a marketing campaign. May gather information on competitors, prices, sales, and methods of marketing and distribution.

O*NET SOC Code	Title	Description
11-2021.00	Marketing Managers	Plan, direct, or coordinate marketing policies and programs, such as determining the demand for products and services offered by a firm and its competitors, and identify potential customers. Develop pricing strategies with the goal of maximizing the firm's profits or share of the market while ensuring the firm's customers are satisfied. Oversee product development or monitor trends that indicate the need for new products and services.
17-2141.00	Mechanical Engineers	Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.
29-2012.00	Medical and Clinical Laboratory Technicians	Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.
29-2011.00	Medical and Clinical Laboratory Technologists	Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.
11-9111.00	Medical and Health Services Managers	Plan, direct, or coordinate medical and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations.
49-9062.00	Medical Equipment Repairers	Test, adjust, or repair biomedical or electromedical equipment.
13-1121.00	Meeting, Convention, and Event Planners	Coordinate activities of staff, convention personnel, or clients to make arrangements for group meetings, events, or conventions.
21-1023.00	Mental Health and Substance Abuse Social Workers	Assess and treat individuals with mental, emotional, or substance abuse problems, including abuse of alcohol, tobacco, and/or other drugs. Activities may include individual and group therapy, crisis intervention, case management, client advocacy, prevention, and education.
21-1014.00	Mental Health Counselors	Counsel with emphasis on prevention. Work with individuals and groups to promote optimum mental and emotional health. May help individuals deal with issues associated with addictions and substance abuse; family, parenting, and marital problems; stress management; self-esteem; and aging.
25-2022.00	Middle School Teachers, Except Special and Career/Technical Education	Teach students in one or more subjects in public or private schools at the middle, intermediate, or junior high level, which falls between elementary and senior high school as defined by applicable laws and regulations.
49-9044.00	Millwrights	Install, dismantle, or move machinery and heavy equipment according to layout plans, blueprints, or other drawings.
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and surface mining.
27-2041.04	Music Composers and Arrangers	Write and transcribe musical scores.
27-2041.01	Music Directors	Direct and conduct instrumental or vocal performances by musical groups, such as orchestras or choirs.
27-2041.00	Music Directors and Composers	Conduct, direct, plan, and lead instrumental or vocal performances by musical groups, such as orchestras, bands, choirs, and glee clubs. Includes arrangers, composers, choral directors, and orchestrators.
27-2042.00	Musicians and Singers	Play one or more musical instruments or sing. May perform on stage, for on-air broadcasting, or for sound or video recording.

O*NET SOC Code	Title	Description
27-2042.02	Musicians, Instrumental	Play one or more musical instruments in recital, in accompaniment, or as members of an orchestra, band, or other musical group.
15-1142.00	Network and Computer Systems Administrators	Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures.
29-1069.04	Neurologists	Diagnose, treat, and help prevent diseases and disorders of the nervous system.
29-1069.05	Nuclear Medicine Physicians	Diagnose and treat diseases using radioactive materials and techniques. May monitor radionuclide preparation, administration, and disposition.
29-1171.00	Nurse Practitioners	Diagnose and treat acute, episodic, or chronic illness, independently or as part of a healthcare team. May focus on health promotion and disease prevention. May order, perform, or interpret diagnostic tests such as lab work and x rays. May prescribe medication. Must be registered nurses who have specialized graduate education.
11-9013.01	Nursery and Greenhouse Managers	Plan, organize, direct, control, and coordinate activities of workers engaged in propagating, cultivating, and harvesting horticultural specialties, such as trees, shrubs, flowers, mushrooms, and other plants.
29-9011.00	Occupational Health and Safety Specialists	Review, evaluate, and analyze work environments and design programs and procedures to control, eliminate, and prevent disease or injury caused by chemical, physical, and biological agents or ergonomic factors. May conduct inspections and enforce adherence to laws and regulations governing the health and safety of individuals. May be employed in the public or private sector. Includes environmental protection officers.
29-1122.00	Occupational Therapists	Assess, plan, organize, and participate in rehabilitative programs that help build or restore vocational, homemaking, and daily living skills, as well as general independence, to persons with disabilities or developmental delays.
31-2011.00	Occupational Therapy Assistants	Assist occupational therapists in providing occupational therapy treatments and procedures. May, in accordance with State laws, assist in development of treatment plans, carry out routine functions, direct activity programs, and document the progress of treatments. Generally requires formal training.
13-1199.06	Online Merchants	Conduct retail activities of businesses operating exclusively online. May perform duties such as preparing business strategies, buying merchandise, managing inventory, implementing marketing activities, fulfilling and shipping online orders, and balancing financial records.
47-2073.00	Operating Engineers and Other Construction Equipment Operators	Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. May repair and maintain equipment in addition to other duties.
15-2031.00	Operations Research Analysts	Formulate and apply mathematical modeling and other optimizing methods to develop and interpret information that assists management with decision making, policy formulation, or other managerial functions. May collect and analyze data and develop decision support software, service, or products. May develop and supply optimal time, cost, or logistics networks for program evaluation, review, or implementation.
29-1069.06	Ophthalmologists	Diagnose, treat, and help prevent diseases and injuries of the eyes and related structures.
47-2141.00	Painters, Construction and Maintenance	Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. May remove old paint to prepare surface prior to painting. May mix colors or oils to obtain desired color or consistency.

O*NET SOC Code	Title	Description
51-9122.00	Painters, Transportation Equipment	Operate or tend painting machines to paint surfaces of transportation equipment, such as automobiles, buses, trucks, trains, boats, and airplanes. Includes painters in auto body repair facilities.
23-2011.00	Paralegals and Legal Assistants	Assist lawyers by investigating facts, preparing legal documents, or researching legal precedent. Conduct research to support a legal proceeding, to formulate a defense, or to initiate legal action.
29-1069.07	Pathologists	Diagnose presence and stage of diseases using laboratory techniques and patient specimens. Study the nature, cause, and development of diseases. May perform autopsies.
47-2071.00	Paving, Surfacing, and Tamping Equipment Operators	Operate equipment used for applying concrete, asphalt, or other materials to road beds, parking lots, or airport runways and taxiways, or equipment used for tamping gravel, dirt, or other materials. Includes concrete and asphalt paving machine operators, form tampers, tamping machine operators, and stone spreader operators.
13-2052.00	Personal Financial Advisors	Advise clients on financial plans using knowledge of tax and investment strategies, securities, insurance, pension plans, and real estate. Duties include assessing clients' assets, liabilities, cash flow, insurance coverage, tax status, and financial objectives.
29-1051.00	Pharmacists	Dispense drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.
29-1069.08	Physical Medicine and Rehabilitation Physicians	Diagnose and treat disorders requiring physiotherapy to provide physical, mental, and occupational rehabilitation.
31-2021.00	Physical Therapist Assistants	Assist physical therapists in providing physical therapy treatments and procedures. May, in accordance with State laws, assist in the development of treatment plans, carry out routine functions, document the progress of treatment, and modify specific treatments in accordance with patient status and within the scope of treatment plans established by a physical therapist. Generally requires formal training.
29-1123.00	Physical Therapists	Assess, plan, organize, and participate in rehabilitative programs that improve mobility, relieve pain, increase strength, and improve or correct disabling conditions resulting from disease or injury.
29-1071.00	Physician Assistants	Provide healthcare services typically performed by a physician, under the supervision of a physician. Conduct complete physicals, provide treatment, and counsel patients. May, in some cases, prescribe medication. Must graduate from an accredited educational program for physician assistants.
29-1069.00	Physicians and Surgeons, All Other	All physicians and surgeons not listed separately.
47-2152.01	Pipe Fitters and Steamfitters	Lay out, assemble, install, or maintain pipe systems, pipe supports, or related hydraulic or pneumatic equipment for steam, hot water, heating, cooling, lubricating, sprinkling, or industrial production or processing systems.
47-2151.00	Pipelayers	Lay pipe for storm or sanitation sewers, drains, and water mains. Perform any combination of the following tasks: grade trenches or culverts, position pipe, or seal joints.
47-2152.02	Plumbers	Assemble, install, or repair pipes, fittings, or fixtures of heating, water, or drainage systems, according to specifications or plumbing codes.
47-2152.00	Plumbers, Pipefitters, and Steamfitters	Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinklerfitters.
33-3051.00	Police and Sheriff's Patrol Officers	Maintain order and protect life and property by enforcing local, tribal, State, or Federal laws and ordinances. Perform a combination of the following duties: patrol a specific area; direct traffic; issue traffic summonses; investigate accidents; apprehend and arrest suspects, or serve legal processes of courts.
33-3051.01	Police Patrol Officers	Patrol assigned area to enforce laws and ordinances, regulate traffic, control crowds, prevent crime, and arrest violators.

O*NET SOC Code	Title	Description
29-1069.09	Preventive Medicine Physicians	Apply knowledge of general preventive medicine and public health issues to promote health care to groups or individuals, and aid in the prevention or reduction of risk of disease, injury, disability, or death. May practice population-based medicine or diagnose and treat patients in the context of clinical health promotion and disease prevention.
43-5061.00	Production, Planning, and Expediting Clerks	Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule. Duties include reviewing and distributing production, work, and shipment schedules; conferring with department supervisors to determine progress of work and completion dates; and compiling reports on progress of work, inventory levels, costs, and production problems.
11-9141.00	Property, Real Estate, and Community Association Managers	Plan, direct, or coordinate the selling, buying, leasing, or governance activities of commercial, industrial, or residential real estate properties. Includes managers of homeowner and condominium associations, rented or leased housing units, buildings, or land (including rights-of-way).
27-3031.00	Public Relations Specialists	Engage in promoting or creating an intended public image for individuals, groups, or organizations. May write or select material for release to various communications media.
13-1023.00	Purchasing Agents, Except Wholesale, Retail, and Farm Products	Purchase machinery, equipment, tools, parts, supplies, or services necessary for the operation of an establishment. Purchase raw or semi-finished materials for manufacturing.
29-2034.00	Radiologic Technologists	Take x rays and CAT scans or administer nonradioactive materials into patient's blood stream for diagnostic purposes. Includes technologists who specialize in other scanning modalities.
29-1069.10	Radiologists	Examine and diagnose disorders and diseases using x-rays and radioactive materials. May treat patients.
41-9022.00	Real Estate Sales Agents	Rent, buy, or sell property for clients. Perform duties, such as study property listings, interview prospective clients, accompany clients to property site, discuss conditions of sale, and draw up real estate contracts. Includes agents who represent buyer.
53-1021.01	Recycling Coordinators	Supervise curbside and drop-off recycling programs for municipal governments or private firms.
49-9021.02	Refrigeration Mechanics and Installers	Install and repair industrial and commercial refrigerating systems.
29-1141.00	Registered Nurses	Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required.
11-9199.01	Regulatory Affairs Managers	Plan, direct, or coordinate production activities of an organization to ensure compliance with regulations and standard operating procedures.
13-1041.07	Regulatory Affairs Specialists	Coordinate and document internal regulatory processes, such as internal audits, inspections, license renewals, or registrations. May compile and prepare materials for submission to regulatory agencies.
29-1126.00	Respiratory Therapists	Assess, treat, and care for patients with breathing disorders. Assume primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technicians. Initiate and conduct therapeutic procedures; maintain patient records; and select, assemble, check, and operate equipment.
13-2099.02	Risk Management Specialists	Analyze and manage risk management issues by identifying, measuring, and making decisions on operational or enterprise risks for an organization.
47-2031.02	Rough Carpenters	Build rough wooden structures, such as concrete forms, scaffolds, tunnel, bridge, or sewer supports, billboard signs, and temporary frame shelters, according to sketches, blueprints, or oral instructions.

O*NET SOC Code	Title	Description
41-3031.02	Sales Agents, Financial Services	Sell financial services, such as loan, tax, and securities counseling to customers of financial institutions and business establishments.
41-3031.01	Sales Agents, Securities and Commodities	Buy and sell securities in investment and trading firms and develop and implement financial plans for individuals, businesses, and organizations.
41-9031.00	Sales Engineers	Sell business goods or services, the selling of which requires a technical background equivalent to a baccalaureate degree in engineering.
11-2022.00	Sales Managers	Plan, direct, or coordinate the actual distribution or movement of a product or service to the customer. Coordinate sales distribution by establishing sales territories, quotas, and goals and establish training programs for sales representatives. Analyze sales statistics gathered by staff to determine sales potential and inventory requirements and monitor the preferences of customers.
41-3099.00	Sales Representatives, Services, All Other	All services sales representatives not listed separately.
41-4012.00	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	Sell goods for wholesalers or manufacturers to businesses or groups of individuals. Work requires substantial knowledge of items sold.
41-4011.00	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Sell goods for wholesalers or manufacturers where technical or scientific knowledge is required in such areas as biology, engineering, chemistry, and electronics, normally obtained from at least 2 years of post-secondary education.
19-3031.01	School Psychologists	Investigate processes of learning and teaching and develop psychological principles and techniques applicable to educational problems.
15-1199.10	Search Marketing Strategists	Employ search marketing tactics to increase visibility and engagement with content, products, or services in Internet-enabled devices or interfaces. Examine search query behaviors on general or specialty search engines or other Internet-based content. Analyze research, data, or technology to understand user intent and measure outcomes for ongoing optimization.
25-2031.00	Secondary School Teachers, Except Special and Career/Technical Education	Teach students in one or more subjects, such as English, mathematics, or social studies at the secondary level in public or private schools. May be designated according to subject matter specialty.
41-3031.03	Securities and Commodities Traders	Buy and sell securities and commodities to transfer debt, capital, or risk. Establish and negotiate unit prices and terms of sale.
41-3031.00	Securities, Commodities, and Financial Services Sales Agents	Buy and sell securities or commodities in investment and trading firms, or provide financial services to businesses and individuals. May advise customers about stocks, bonds, mutual funds, commodities, and market conditions.
13-1199.02	Security Management Specialists	Conduct security assessments for organizations, and design security systems and processes. May specialize in areas such as physical security, personnel security, and information security. May work in fields such as health care, banking, gaming, security engineering, or manufacturing.

O*NET SOC Code	Title	Description
11-9199.07	Security Managers	Direct an organization's security functions, including physical security and safety of employees, facilities, and assets.
47-2211.00	Sheet Metal Workers	Fabricate, assemble, install, and repair sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings. Work may involve any of the following: setting up and operating fabricating machines to cut, bend, and straighten sheet metal; shaping metal over anvils, blocks, or forms using hammer; operating soldering and welding equipment to join sheet metal parts; or inspecting, assembling, and smoothing seams and joints of burred surfaces. Includes sheet metal duct installers who install prefabricated sheet metal ducts used for heating, air conditioning, or other purposes.
33-3051.03	Sheriffs and Deputy Sheriffs	Enforce law and order in rural or unincorporated districts or serve legal processes of courts. May patrol courthouse, guard court or grand jury, or escort defendants.
27-2042.01	Singers	Sing songs on stage, radio, television, or motion pictures.
11-9151.00	Social and Community Service Managers	Plan, direct, or coordinate the activities of a social service program or community outreach organization. Oversee the program or organization's budget and policies regarding participant involvement, program requirements, and benefits. Work may involve directing social workers, counselors, or probation officers.
15-1132.00	Software Developers, Applications	Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. May supervise computer programmers.
15-1133.00	Software Developers, Systems Software	Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. May design embedded systems software. Apply principles and techniques of computer science, engineering, and mathematical analysis.
15-1199.01	Software Quality Assurance Engineers and Testers	Develop and execute software test plans in order to identify software problems and their causes.
47-1011.03	Solar Energy Installation Managers	Direct work crews installing residential or commercial solar photovoltaic or thermal systems.
41-4011.07	Solar Sales Representatives and Assessors	Contact new or existing customers to determine their solar equipment needs, suggest systems or equipment, or estimate costs.
51-4121.07	Solderers and Brazers	Braze or solder together components to assemble fabricated metal parts, using soldering iron, torch, or welding machine and flux.
25-2052.00	Special Education Teachers, Kindergarten and Elementary School	Teach elementary school subjects to educationally and physically handicapped students. Includes teachers who specialize and work with audibly and visually handicapped students and those who teach basic academic and life processes skills to the mentally impaired.
25-2054.00	Special Education Teachers, Secondary School	Teach secondary school subjects to educationally and physically handicapped students. Includes teachers who specialize and work with audibly and visually handicapped students and those who teach basic academic and life processes skills to the mentally impaired.
29-1127.00	Speech-Language Pathologists	Assess and treat persons with speech, language, voice, and fluency disorders. May select alternative communication systems and teach their use. May perform research related to speech and language problems.
29-1069.11	Sports Medicine Physicians	Diagnose, treat, and help prevent injuries that occur during sporting events, athletic training, and physical activities.



O*NET SOC Code	Title	Description
11-3071.02	Storage and Distribution Managers	Plan, direct, or coordinate the storage or distribution operations within an organization or the activities of organizations that are engaged in storing or distributing materials or products.
47-2221.00	Structural Iron and Steel Workers	Raise, place, and unite iron or steel girders, columns, and other structural members to form completed structures or structural frameworks. May erect metal storage tanks and assemble prefabricated metal buildings.
51-2041.00	Structural Metal Fabricators and Fitters	Fabricate, position, align, and fit parts of structural metal products.
11-9199.04	Supply Chain Managers	Direct or coordinate production, purchasing, warehousing, distribution, or financial forecasting services or activities to limit costs and improve accuracy, customer service, or safety. Examine existing procedures or opportunities for streamlining activities to meet product distribution needs. Direct the movement, storage, or processing of inventory.
29-2055.00	Surgical Technologists	Assist in operations, under the supervision of surgeons, registered nurses, or other surgical personnel. May help set up operating room, prepare and transport patients for surgery, adjust lights and equipment, pass instruments and other supplies to surgeons and surgeon's assistants, hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments.
13-1199.05	Sustainability Specialists	Address organizational sustainability issues, such as waste stream management, green building practices, and green procurement plans.
15-1143.01	Telecommunications Engineering Specialists	Design or configure voice, video, and data communications systems. Supervise installation and post-installation service and maintenance.
49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers	Install, set-up, rearrange, or remove switching, distribution, routing, and dialing equipment used in central offices or headends. Service or repair telephone, cable television, Internet, and other communications equipment on customers' property. May install communications equipment or communications wiring in buildings.
49-9052.00	Telecommunications Line Installers and Repairers	Install and repair telecommunications cable, including fiber optics.
13-1151.00	Training and Development Specialists	Design and conduct training and development programs to improve individual and organizational performance. May analyze training needs.
17-2051.01	Transportation Engineers	Develop plans for surface transportation projects, according to established engineering standards and state or federal construction policy. Prepare designs, specifications, or estimates for transportation facilities. Plan modifications of existing streets, highways, or freeways to improve traffic flow.
11-3071.01	Transportation Managers	Plan, direct, or coordinate the transportation operations within an organization or the activities of organizations that provide transportation services.
11-3071.00	Transportation, Storage, and Distribution Managers	Plan, direct, or coordinate transportation, storage, or distribution activities in accordance with organizational policies and applicable government laws or regulations. Includes logistics managers.
11-3031.01	Treasurers and Controllers	Direct financial activities, such as planning, procurement, and investments for all or part of an organization.
29-1069.12	Urologists	Diagnose, treat, and help prevent benign and malignant medical and surgical disorders of the genitourinary system and the renal glands.



O*NET SOC Code	Title	Description
29-1131.00	Veterinarians	Diagnose, treat, or research diseases and injuries of animals. Includes veterinarians who conduct research and development, inspect livestock, or care for pets and companion animals.
15-1199.11	Video Game Designers	Design core features of video games. Specify innovative game and role-play mechanics, story lines, and character biographies. Create and maintain design documentation. Guide and collaborate with production staff to produce games as designed.
51-8031.00	Water and Wastewater Treatment Plant and System Operators	Operate or control an entire process or system of machines, often through the use of control boards, to transfer or treat water or wastewater.
15-1199.03	Web Administrators	Manage web environment design, deployment, development and maintenance activities. Perform testing and quality assurance of web sites and web applications.
15-1134.00	Web Developers	Design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. May integrate Web sites with other computer applications. May convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content.
51-4121.06	Welders, Cutters, and Welder Fitters	Use hand-welding or flame-cutting equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.
51-4121.00	Welders, Cutters, Solderers, and Brazers	Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.
51-4122.00	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.
13-1022.00	Wholesale and Retail Buyers, Except Farm Products	Buy merchandise or commodities, other than farm products, for resale to consumers at the wholesale or retail level, including both durable and nondurable goods. Analyze past buying trends, sales records, price, and quality of merchandise to determine value and yield. Select, order, and authorize payment for merchandise according to contractual agreements. May conduct meetings with sales personnel and introduce new products. Includes assistant wholesale and retail buyers of nonfarm products.
11-9199.09	Wind Energy Operations Managers	Manage wind field operations, including personnel, maintenance activities, financial activities, and planning.
11-9199.10	Wind Energy Project Managers	Lead or manage the development and evaluation of potential wind energy business opportunities, including environmental studies, permitting, and proposals. May also manage construction of projects.