

SOUTHWEST TECH SKILLS GAP ANALYSIS

WINTER 2015-16

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INTRODUCTION

Background

This report is in response to the Fall 2015 release of the Greater Dubuque Region Skills Gap Analysis by the Greater Dubuque Development Corp, partnered with Northeast Iowa Community College (NICC). The intent of a Skills Gap Analysis is to identify both skill and training deficiencies in the local economy. This type of report can “provide economic developers, workforce developers, and educators with information on projected workforce shortages (gaps) and to identify strategies to mitigate these shortages.” (GDDC 2015 SGA)

The data used in this report is from the 2015 3rd 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).” Throughout this report, comparisons are provided to the Greater Dubuque Metropolitan Statistical Area (MSA), as it provides a greater scope to the data and because this report was a direct response to the release of the Greater Dubuque Development Corp report.

Southwest Tech has had access to EMSI Analyst since about 2010. The tool is typically used during new program needs assessments, and has also proven valuable during grant development and writing.

Defining the Skills Gap

According to EMSI, “it’s the perceived mismatch between the needs of employers for skilled talent and the skills possessed by the available workforce.”

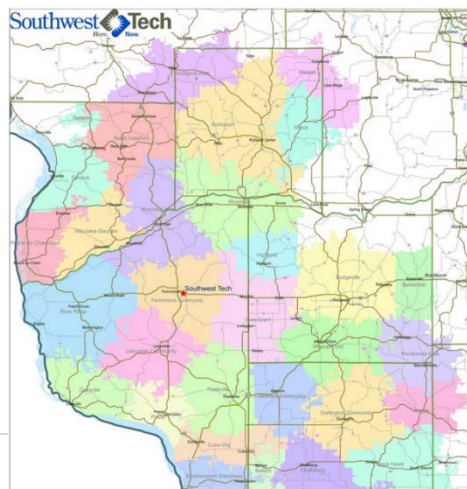
This report will identify for the Southwest Tech District:

- the current and projected demographics, employment growth and educational attainment level for the working age population
- occupations projected to have the greatest number of openings by 2025 (paying a median wage of at least \$16/hr)
- occupations with a skills gap larger than zero

Region

This analysis contains data for 5 counties:

- Crawford County, WI
- Grant County, WI
- Iowa County, WI
- Lafayette County, WI
- Richland County, WI



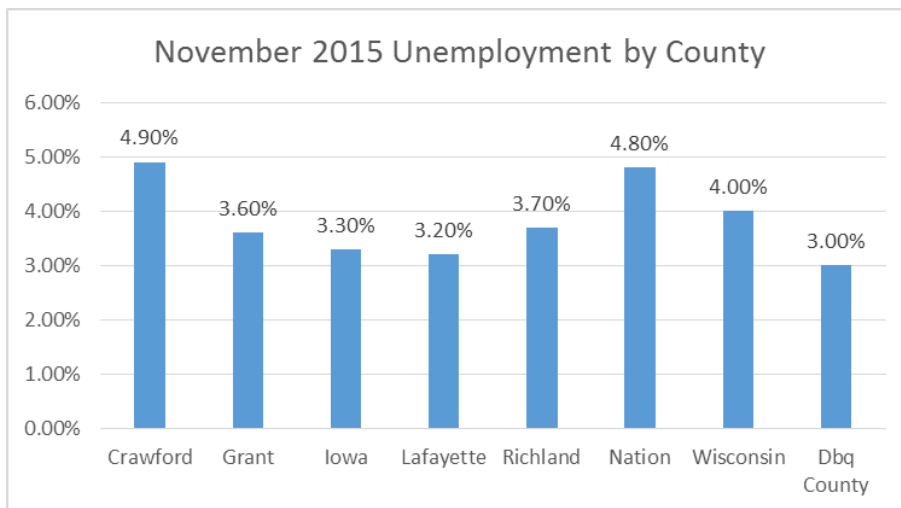
LABOR MARKET OVERVIEW

Employment Growth		
Region	% Change (2005-2015)	% Change (2015-2025)
SWTC District	2.6%	9.0%
Wisconsin	3.8%	9.5%
Nation	9.8%	11.6%
Dubuque MSA	10.9%	11.4%

Working Age Population		
Region	2005-2015	2015-2025
SWTC District	-5.0%	1.0%
Wisconsin	5.0%	-3.0%
Nation	8.5%	0.1%
Dubuque MSA	7.2%	-1.3%

Employment in the Southwest Tech District 5 county region is projected to grow by 9.0% from 2015 to 2025, a rate slower than state, national and the comparison region of the Dubuque MSA.

There is a projected 1% increase in the working age population from 2015-2025 for the Southwest Tech District 5 county region, unlike the projected decrease of 3% for the state of Wisconsin as a whole.



Unemployment Rates are lower than the national, with the exception of Crawford County.

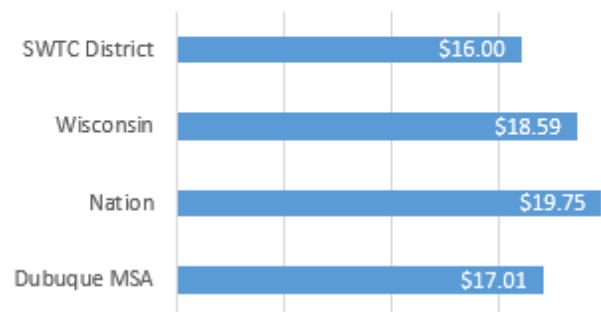
Unemployment Rates not-seasonally adjusted. Source: <http://worknet.wisconsin.gov>

The region's median hourly earnings per worker lags behind not only national and state medians, but also the comparison region of the Dubuque MSA.

Median Earnings: Hourly earnings, excluding benefits, of a worker in that occupation. By default we display the median, which is in the middle of the wage distribution for an occupation: half of the workers make more, half of them make less.

Source: EMSI's proprietary employment data.

Median Hourly Earnings per Worker (2015)

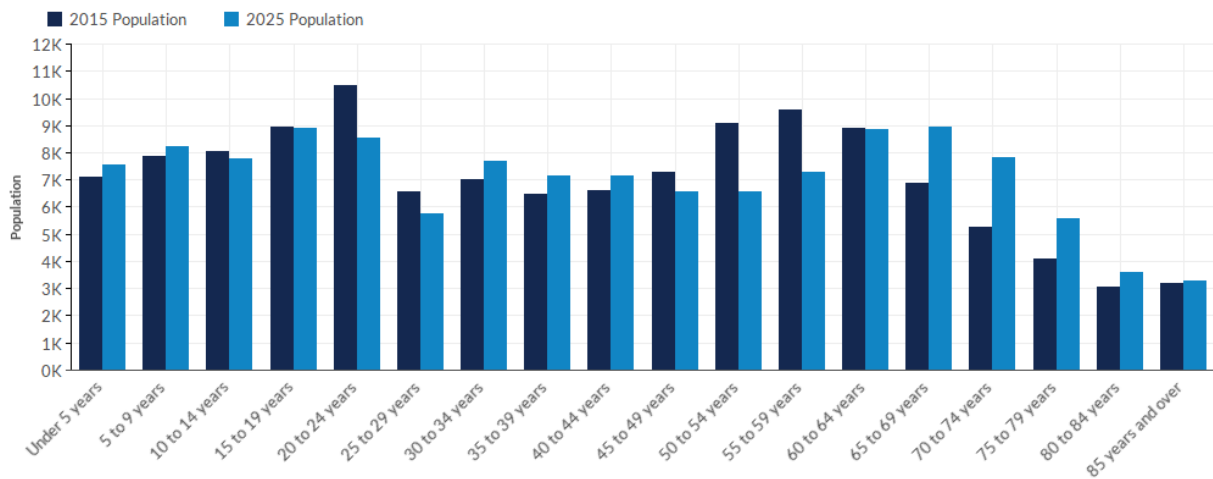
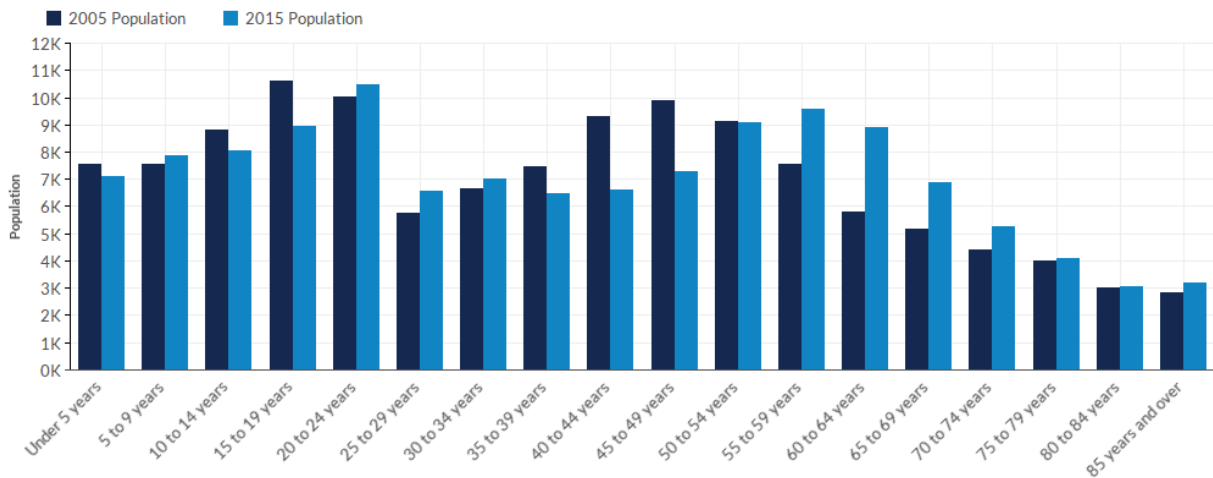


DEMOGRAPHIC POPULATION OVERVIEW

Source for Demographic information from 2005 to 2015 and from 2015 to 2025: EMSI Demographic Data includes annual population estimates and population projections from the US Census Bureau, along with birth and mortality rates from the US Health Department.

For all Demographic information, *Source: OCEW Employees, Non-OCEW Employees, Self-Employed & Extended Proprietors - EMSI 2015.3 Class of Worker*

POPULATION BY AGE FOR SOUTHWEST TECH 5 COUNTY REGION



Working Age Population 5 County Region (2005 - 2015)			
Age Cohort	2015 Pop	% Cohort Change	% Total Pop
15 to 19 years	8,942	(16%)	7%
20 to 24 years	10,465	5%	8%
25 to 29 years	6,584	14%	5%
30 to 34 years	7,006	5%	6%
35 to 39 years	6,480	(13%)	5%
40 to 44 years	6,608	(29%)	5%
45 to 49 years	7,302	(26%)	6%
50 to 54 years	9,062	(1%)	7%
55 to 59 years	9,585	27%	8%
60 to 64 years	8,881	53%	7%
65 to 69 years	6,889	33%	5%
Total from Working Age Pop	87,804	52%	69%

Working Age Population Dubuque MSA (2005 - 2015)			
Age Cohort	2015 Pop	% Cohort Change	% Total Pop
15 to 19 years	6,762	(3%)	7%
20 to 24 years	6,777	1%	7%
25 to 29 years	6,287	26%	6%
30 to 34 years	6,257	23%	6%
35 to 39 years	5,282	(8%)	5%
40 to 44 years	5,197	(23%)	5%
45 to 49 years	5,910	(14%)	6%
50 to 54 years	6,838	8%	7%
55 to 59 years	6,912	29%	7%
60 to 64 years	6,227	51%	6%
65 to 69 years	4,827	39%	5%
Total from Working Age Pop	67,276	129%	69%

Working Age Population 5 County Region (2015 - 2025)			
Age Cohort	2025 Pop	% Cohort Change	% Total Pop
15 to 19 years	8,914	0%	7%
20 to 24 years	8,530	(18%)	7%
25 to 29 years	5,771	(12%)	5%
30 to 34 years	7,702	10%	6%
35 to 39 years	7,139	10%	6%
40 to 44 years	7,138	8%	6%
45 to 49 years	6,583	(10%)	5%
50 to 54 years	6,581	(27%)	5%
55 to 59 years	7,275	(24%)	6%
60 to 64 years	8,863	0%	7%
65 to 69 years	8,954	30%	7%
Total from Working Age Pop	83,450	(33%)	66%

Working Age Population Dubuque MSA (2015 - 2025)			
Age Cohort	2025 Pop	% Cohort Change	% Total Pop
15 to 19 years	6,693	(1%)	7%
20 to 24 years	6,258	(8%)	6%
25 to 29 years	5,490	(13%)	5%
30 to 34 years	6,053	(3%)	6%
35 to 39 years	6,561	24%	7%
40 to 44 years	6,270	21%	6%
45 to 49 years	5,299	(10%)	5%
50 to 54 years	5,218	(24%)	5%
55 to 59 years	5,911	(14%)	6%
60 to 64 years	6,637	7%	7%
65 to 69 years	6,250	29%	6%
Total from Working Age Pop	66,640	8%	67%

Based on the EMSI data provided above, the population of the working age, defined as ages between 15 and 69 years, is projected to decrease between 2015 and 2025. In the 5 County Southwest Tech District this will be a significantly larger decrease than in the comparison group of the Dubuque MSA during that same period of time.

POPULATION BY RACE/ETHNICITY

5 County Region (2005 - 2015)				Dubuque MSA (2005 - 2015)			
Race/Ethnicity	2015 Pop	% Change	% 2015 Total Pop	Race/Ethnicity	2015 Pop	% Change	% 2015 Total Pop
White, Non-Hispanic	120,469	(1%)	95%	White, Non-Hispanic	88,857	3%	92%
White, Hispanic	2,210	72%	2%	White, Hispanic	2,841	95%	3%
Black, Non-Hispanic	1,291	53%	1%	Black, Non-Hispanic	1,865	50%	2%
Two or More Races, Non-Hispanic	1,043	61%	1%	Two or More Races, Non-Hispanic	1,275	61%	1%
Asian, Non-Hispanic	858	46%	1%	Asian, Non-Hispanic	1,368	95%	1%
American Indian or Alaskan Native, Non-Hispanic	295	50%	0%	American Indian or Alaskan Native, Non-Hispanic	292	71%	0%
American Indian or Alaskan Native, Hispanic	116	190%	0%	American Indian or Alaskan Native, Hispanic	160	25%	0%
Two or More Races, Hispanic	71	82%	0%	Two or More Races, Hispanic	115	125%	0%
Native Hawaiian or Pacific Islander, Non-Hispanic	31	55%	0%	Native Hawaiian or Pacific Islander, Non-Hispanic	98	100%	0%
Black, Hispanic	59	211%	0%	Black, Hispanic	83	196%	0%
Asian, Hispanic	41	215%	0%	Asian, Hispanic	46	318%	0%
Native Hawaiian or Pacific Islander, Hispanic	4	100%	0%	Native Hawaiian or Pacific Islander, Hispanic	11	22%	0%
Total	126,487	1%	100%	Total	97,010	7%	100%

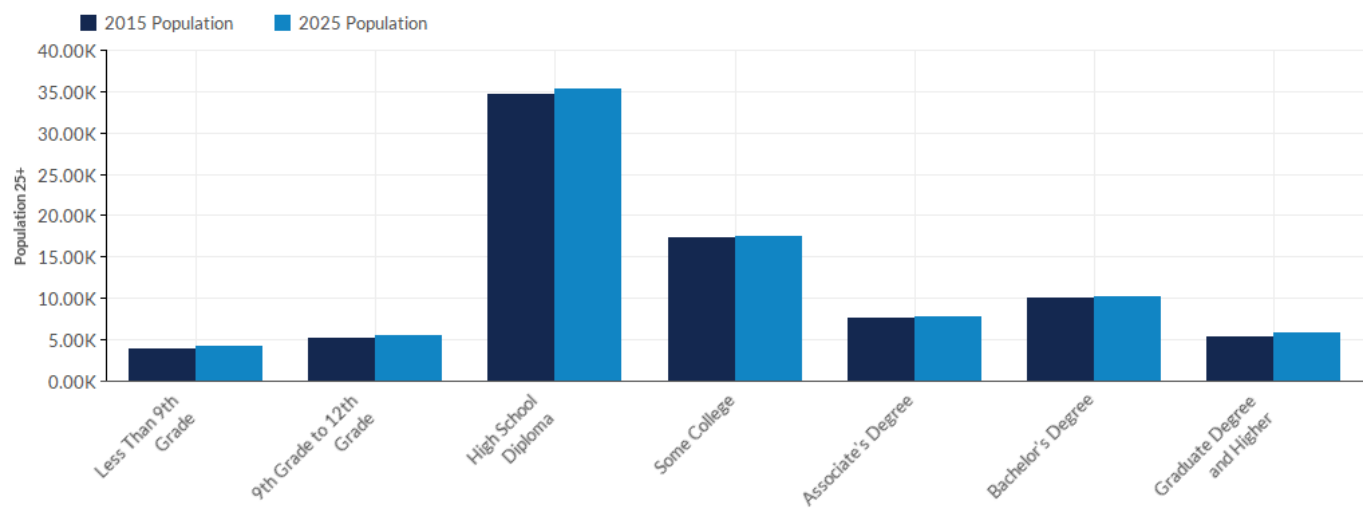
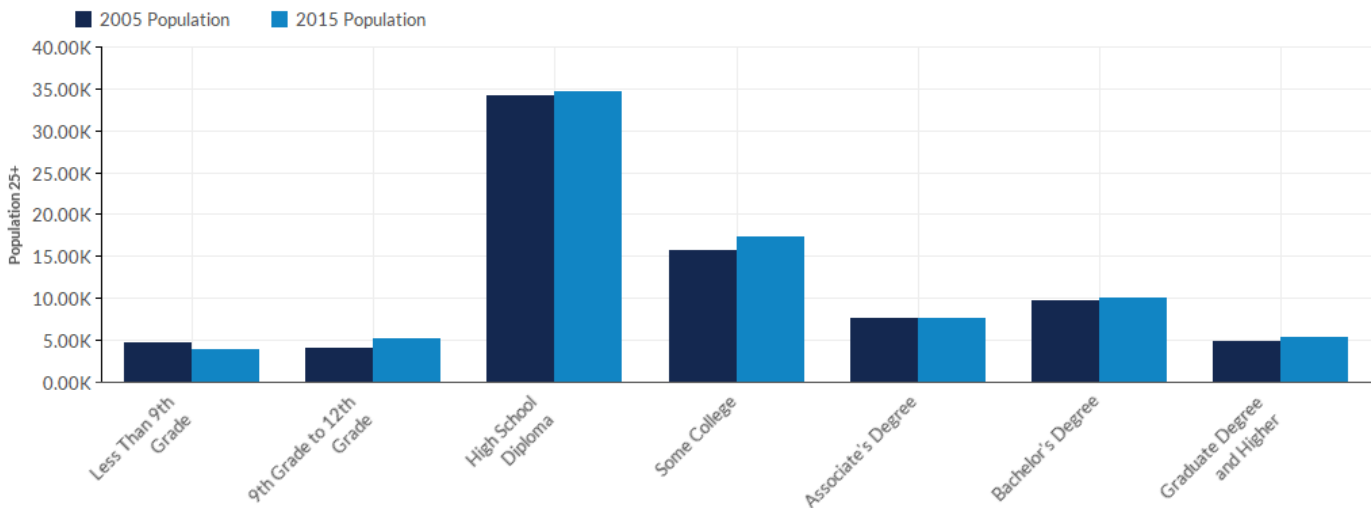
5 County Region (2015 - 2025)				Dubuque MSA (2015 - 2025)			
Race/Ethnicity	2025 Pop	% Change	% 2025 Total Pop	Race/Ethnicity	2025 Pop	% Change	% 2025 Total Pop
White, Non-Hispanic	119,938	0%	94%	White, Non-Hispanic	90,372	2%	90%
White, Hispanic	2,703	22%	2%	White, Hispanic	3,434	21%	3%
Black, Non-Hispanic	1,530	19%	1%	Black, Non-Hispanic	2,179	17%	2%
Two or More Races, Non-Hispanic	1,285	23%	1%	Two or More Races, Non-Hispanic	1,702	24%	2%
Asian, Non-Hispanic	1,035	21%	1%	Asian, Non-Hispanic	1,529	20%	2%
American Indian or Alaskan Native, Non-Hispanic	331	12%	0%	American Indian or Alaskan Native, Non-Hispanic	334	14%	0%
American Indian or Alaskan Native, Hispanic	150	29%	0%	American Indian or Alaskan Native, Hispanic	173	8%	0%
Two or More Races, Hispanic	91	28%	0%	Two or More Races, Hispanic	169	47%	0%
Native Hawaiian or Pacific Islander, Non-Hispanic	76	29%	0%	Native Hawaiian or Pacific Islander, Non-Hispanic	135	38%	0%
Black, Hispanic	53	29%	0%	Black, Hispanic	104	25%	0%
Asian, Hispanic	47	52%	0%	Asian, Hispanic	69	50%	0%
Native Hawaiian or Pacific Islander, Hispanic	4	0%	0%	Native Hawaiian or Pacific Islander, Hispanic	9	(18%)	0%
Total	127,244	1%	100%	Total	100,209	3%	100%

POPULATION BY GENDER

5 County Region (2005 - 2015)				Dubuque MSA (2005 - 2015)			
Gender	2015 Pop	% Change	% 2015 Total Pop	Gender	2015 Pop	% Change	% 2015 Total Pop
Females	61,699	0%	49%	Females	48,997	6%	51%
Males	64,788	2%	51%	Males	48,013	8%	49%
Total	126,487	1%	100%	Total	97,010	7%	100%

5 County Region (2015 - 2025)				Dubuque MSA (2015 - 2025)			
Gender	2025 Pop	% Change	% 2025 Total Pop	Gender	2025 Pop	% Change	% 2025 Total Pop
Females	65,370	1%	51%	Females	50,395	3%	50%
Males	61,873	0%	49%	Males	49,814	4%	50%
Total	127,244	1%	100%	Total	100,209	3%	100%

EDUCATION ATTAINMENT OVERVIEW FOR SOUTHWEST TECH 5 COUNTY REGION



5 County Region (2005 - 2015)				Dubuque MSA (2005 - 2015)			
Education Level	2015 Pop	% Change	% 2015 Total Pop	Education Level	2015 Pop	% Change	% 2015 Total Pop
Less Than 9th Grade	3,893	-17%	5%	Less Than 9th Grade	2,447	-31%	4%
9th Grade to 12th Grade	5,196	26%	6%	9th Grade to 12th Grade	3,210	26%	5%
High School Diploma	34,606	1%	41%	High School Diploma	23,918	6%	37%
Some College	17,249	10%	21%	Some College	12,117	10%	19%
Associate's Degree	7,674	1%	9%	Associate's Degree	5,740	28%	9%
Bachelor's Degree	10,011	3%	12%	Bachelor's Degree	11,410	18%	18%
Graduate Degree and Higher	5,395	9%	6%	Graduate Degree and Higher	6,115	27%	9%
Total	84,025	4%	100%	Total	64,957	10%	100%

5 County Region (2015 - 2025)				Dubuque MSA (2015 - 2025)			
Education Level	2025 Pop	% Change	% 2025 Total Pop	Education Level	2025 Pop	% Change	% 2025 Total Pop
Less Than 9th Grade	4,152	7%	5%	Less Than 9th Grade	2,524	3%	4%
9th Grade to 12th Grade	5,576	7%	6%	9th Grade to 12th Grade	3,508	9%	5%
High School Diploma	35,292	2%	41%	High School Diploma	25,336	6%	37%
Some College	17,457	1%	20%	Some College	12,235	1%	18%
Associate's Degree	7,759	1%	9%	Associate's Degree	6,233	9%	9%
Bachelor's Degree	10,270	3%	12%	Bachelor's Degree	11,977	5%	18%
Graduate Degree and Higher	5,753	7%	7%	Graduate Degree and Higher	6,419	5%	9%
Total	86,258	3%	100%	Total	68,233	5%	100%

SKILLS GAPS BY OCCUPATION

Identified in the table below are 60 occupations with the highest projected skills gap for the five counties comprising Southwest Tech's district between 2015 and 2025. Of these 60 occupations, Southwest Tech already offers programs educating graduates towards 18 of those occupations. This analysis indicates a continued need to identify strategies to fulfil training needs in various high-gap occupational areas.

ORGANIZATIONAL METHOD

Using the same methodology as the Fall 2015 Greater Dubuque Region Skills Gap Analysis, the following filters have been applied to the data table below:

- All occupations where the 2015 median hourly earnings adjusted to only include an amount greater than \$16/hour
- Openings greater than 10 openings (openings represent replacement jobs and BLS employee growth estimates)
- Top 60 occupations with a skills gap greater than zero (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 (Graduates are the Regional Completions from 2014)
- Occupations aligned with current Southwest Tech programs are highlighted in red, as defined by the generally accepted CIP-SOC Crosswalk provided by the National Center for Education Statistics: <http://nces.ed.gov/ipeds/cipcode/resources.aspx?y=55>

SOC	Description	2015 Jobs	2025 Jobs	2015 - 2025 Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings	Typical Entry Level Education
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,242	1,334	92	268	360	0	360	\$17.12	Postsecondary non-degree award
29-1141	Registered Nurses	832	1,023	191	185	376	44	332	\$28.59	Associate's degree
13-2052	Personal Financial Advisors	374	564	190	83	273	0	273	\$26.43	Bachelor's degree
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	661	721	60	142	202	0	202	\$23.20	High school diploma or equivalent
11-1021	General and Operations Managers	573	635	62	115	177	0	177	\$33.49	Bachelor's degree
49-9071	Maintenance and Repair Workers, General	573	628	55	120	175	0	175	\$16.75	High school diploma or equivalent
13-2011	Accountants and Auditors	374	419	45	125	170	36	134	\$26.34	Bachelor's degree
41-3021	Insurance Sales Agents	390	390	0	134	134	0	134	\$18.75	High school diploma or equivalent
41-3031	Securities, Commodities, and Financial Services Sales Agents	228	266	38	75	113	0	113	\$20.64	Bachelor's degree
47-2111	Electricians	250	281	31	77	108	0	108	\$19.95	High school diploma or equivalent
11-3031	Financial Managers	203	259	56	45	101	0	101	\$34.07	Bachelor's degree
51-1011	First-Line Supervisors of Production and Operating Workers	383	419	36	64	100	0	100	\$22.13	Postsecondary non-degree award
49-9041	Industrial Machinery Mechanics	137	183	46	50	96	0	96	\$21.87	High school diploma or equivalent
99-9999	Unclassified Occupation	182	220	38	52	90	0	90	\$16.92	N/A
41-9021	Real Estate Brokers	278	336	58	30	88	0	88	\$17.52	High school diploma or equivalent
25-2021	Elementary School Teachers, Except Special Education	627	683	56	153	209	122	87	\$24.03	Bachelor's degree
41-3099	Sales Representatives, Services, All Other	194	213	19	65	84	0	84	\$21.64	High school diploma or equivalent
11-1011	Chief Executives	181	217	36	45	81	0	81	\$41.71	Bachelor's degree
29-2061	Licensed Practical and Licensed Vocational Nurses	202	262	60	59	119	41	78	\$18.44	Postsecondary non-degree award
13-1111	Management Analysts	229	266	37	43	80	2	78	\$27.03	Bachelor's degree
55-9999	Military occupations	341	325	(16)	94	78	0	78	\$16.53	N/A
25-3021	Self-Enrichment Education Teachers	176	212	36	36	72	0	72	\$17.23	High school diploma or equivalent

SOC	Description	2015 Jobs	2025 Jobs	2015 - 2025 Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings	Typical Entry Level Education
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	175	195	20	51	71	0	71	\$26.42	High school diploma or equivalent
51-4041	Machinists	195	227	32	49	81	11	70	\$17.65	High school diploma or equivalent
33-3051	Police and Sheriff's Patrol Officers	293	304	11	95	106	37	69	\$20.98	High school diploma or equivalent
47-2051	Cement Masons and Concrete Finishers	132	178	46	21	67	0	67	\$17.89	Less than high school
33-3012	Correctional Officers and Jailers	217	223	6	59	65	0	65	\$19.32	High school diploma or equivalent
51-4121	Welders, Cutters, Solderers, and Brazers	217	247	30	66	96	31	65	\$16.49	High school diploma or equivalent
13-1161	Market Research Analysts and Marketing Specialists	236	258	22	42	64	0	64	\$21.71	Bachelor's degree
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	146	165	19	36	55	0	55	\$16.81	High school diploma or equivalent
43-5052	Postal Service Mail Carriers	175	141	(34)	89	55	0	55	\$22.04	High school diploma or equivalent
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	113	132	19	35	54	0	54	\$18.00	High school diploma or equivalent
13-2072	Loan Officers	131	139	8	45	53	0	53	\$32.28	Bachelor's degree
51-9199	Production Workers, All Other	125	142	17	35	52	0	52	\$16.04	High school diploma or equivalent
29-1131	Veterinarians	92	105	13	36	49	0	49	\$31.97	Doctoral or professional degree
27-1024	Graphic Designers	172	169	(3)	64	61	12	49	\$17.13	Bachelor's degree
47-2073	Operating Engineers and Other Construction Equipment Operators	159	166	7	42	49	0	49	\$21.33	High school diploma or equivalent
51-7011	Cabinetmakers and Bench Carpenters	69	101	32	14	46	0	46	\$18.24	High school diploma or equivalent
49-9099	Installation, Maintenance, and Repair Workers, All Other	126	146	20	26	46	0	46	\$16.29	High school diploma or equivalent

SOC	Description	2015 Jobs	2025 Jobs	2015 - 2025 Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings	Typical Entry Level Education
29-1051	Pharmacists	129	138	9	36	45	0	45	\$54.37	Doctoral or professional degree
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	120	126	6	39	45	0	45	\$17.66	Postsecondary non-degree award
43-5061	Production, Planning, and Expediting Clerks	132	140	8	36	44	0	44	\$18.46	High school diploma or equivalent
51-2041	Structural Metal Fabricators and Fitters	60	83	23	30	53	11	42	\$16.53	High school diploma or equivalent
25-3099	Teachers and Instructors, All Other	90	113	23	18	41	0	41	\$19.15	Bachelor's degree
47-2152	Plumbers, Pipefitters, and Steamfitters	155	165	10	31	41	2	39	\$20.18	High school diploma or equivalent
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	89	105	16	24	40	4	36	\$21.48	High school diploma or equivalent
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	61	73	12	24	36	0	36	\$18.74	High school diploma or equivalent
11-9199	Managers, All Other	647	770	123	166	289	255	34	\$21.36	High school diploma or equivalent
15-1151	Computer User Support Specialists	134	150	16	25	41	8	33	\$19.35	Some college, no degree
51-8031	Water and Wastewater Treatment Plant and System Operators	84	87	3	30	33	0	33	\$18.47	High school diploma or equivalent
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	48	61	13	20	33	0	33	\$17.64	High school diploma or equivalent
21-2011	Clergy	70	82	12	20	32	0	32	\$18.63	Bachelor's degree
23-1011	Lawyers	114	120	6	25	31	0	31	\$39.05	Doctoral or professional degree
13-2021	Appraisers and Assessors of Real Estate	135	152	17	14	31	0	31	\$17.16	Bachelor's degree
29-1123	Physical Therapists	60	73	13	17	30	0	30	\$33.81	Doctoral or professional degree
11-9033	Education Administrators, Postsecondary	92	97	5	25	30	0	30	\$38.46	Master's degree

SOC	Description	2015 Jobs	2025 Jobs	2015 - 2025 Growth	Replacements	Openings	Graduates	Skills Gap	Median Hourly Earnings	Typical Entry Level Education
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	365	380	15	107	122	92	30	\$23.91	Bachelor's degree
43-5032	Dispatchers, Except Police, Fire, and Ambulance	63	72	9	20	29	0	29	\$16.25	High school diploma or equivalent
49-3041	Farm Equipment Mechanics and Service Technicians	108	115	7	38	45	17	28	\$20.10	High school diploma or equivalent
15-1131	Computer Programmers	100	91	(9)	36	27	0	27	\$31.13	Bachelor's degree
Totals for Top 60 occupations:		14,258	14,753	1,828	3,646	5,474	725	4,749		

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 (OCEW Employees and Non- OCEW 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.

Source: <http://kb.economicmodeling.com/how-does-ems-i-calculate-its-projections/>

COMPLETE LIST OF EMSI SOURCES

<http://kb.economicmodeling.com/how-does-emsi-calculate-its-projections/>

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
- 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)

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 (ETA)

- 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

Oak Ridge National Laboratory

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

Private sources

- Job postings from CareerBuilder
- Infogroup business-level data

Note: In addition to our federal sources, we use state and (where available) sub-state industry projections produced by all 50 individual states.

APPENDIX B

STANDARD OCCUPATION CODES (SOC) AND DESCRIPTIONS

- Only those occupations listed in the skills gap analysis in this report are described
- Sorted numerically by SOC

O*NET-SOC 2010 Code	O*NET-SOC 2010 Title	O*NET-SOC 2010 Description
11-1011.00	Chief Executives	Determine and formulate policies and provide overall direction of companies or private and public sector organizations within guidelines set up by a board of directors or similar governing body. Plan, direct, or coordinate operational activities at the highest level of management with the help of subordinate executives and staff managers.
11-1011.03	Chief Sustainability Officers	Communicate and coordinate with management, shareholders, customers, and employees to address sustainability issues. Enact or oversee a corporate sustainability strategy.
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.
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.
11-3031.01	Treasurers and Controllers	Direct financial activities, such as planning, procurement, and investments for all or part of an organization.
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.
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.
11-9199.00	Managers, All Other	All managers not listed separately.
11-9199.01	Regulatory Affairs Managers	Plan, direct, or coordinate production activities of an organization to ensure compliance with regulations and standard operating procedures.
11-9199.02	Compliance Managers	Plan, direct, or coordinate activities of an organization to ensure compliance with ethical or regulatory standards.
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.
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.

11-9199.07	Security Managers	Direct an organization's security functions, including physical security and safety of employees, facilities, and assets.
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.
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.
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.
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.
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.
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.
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.
13-2011.02	Auditors	Examine and analyze accounting records to determine financial status of establishment and prepare financial reports concerning operating procedures.
13-2021.00	Appraisers and Assessors of Real Estate	Appraise real property and estimate its fair value. May assess taxes in accordance with prescribed schedules.
13-2021.01	Assessors	Appraise real and personal property to determine its fair value. May assess taxes in accordance with prescribed schedules.
13-2021.02	Appraisers, Real Estate	Appraise real property to determine its value for purchase, sales, investment, mortgage, or loan purposes.
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.
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.

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.
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.
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.
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.
25-2021.00	Elementary School Teachers, Except Special Education	Teach students basic academic, social, and other formative skills in public or private schools at the elementary level.
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.
25-3021.00	Self-Enrichment Education Teachers	Teach or instruct courses other than those that normally lead to an occupational objective or degree. Courses may include self-improvement, nonvocational, and nonacademic subjects. Teaching may or may not take place in a traditional educational institution.
25-3099.00	Teachers and Instructors, All Other	All teachers and instructors not listed separately.
25-3099.02	Tutors	Provide non-classroom, academic instruction to students on an individual or small-group basis for proactive or remedial purposes.
27-1024.00	Graphic Designers	Design or create graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.
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.
29-1123.00	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.
29-1131.00	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.

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.
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.
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.
29-1141.03	Critical Care Nurses	Provide advanced nursing care for patients in critical or coronary care units.
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.
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.
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.
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.
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.
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.
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.
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.
41-3031.02	Sales Agents, Financial Services	Sell financial services, such as loan, tax, and securities counseling to customers of financial institutions and business establishments.
41-3031.03	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.
41-3099.00	Sales Representatives, Services, All Other	All services sales representatives not listed separately.

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.
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.
41-9021.00	Real Estate Brokers	Operate real estate office, or work for commercial real estate firm, overseeing real estate transactions. Other duties usually include selling real estate or renting properties and arranging loans.
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.
43-5052.00	Postal Service Mail Carriers	Sort mail for delivery. Deliver mail on established route by vehicle or on foot.
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.
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.
45-1011.05	First-Line Supervisors of Logging Workers	Directly supervise and coordinate activities of logging workers.
45-1011.06	First-Line Supervisors of Aquacultural Workers	Directly supervise and coordinate activities of aquacultural workers.
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.
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.

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.
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.
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.
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.
47-2152.02	Plumbers	Assemble, install, or repair pipes, fittings, or fixtures of heating, water, or drainage systems, according to specifications or plumbing codes.
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers	Directly supervise and coordinate the activities of mechanics, installers, and repairers.
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.
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.
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.
49-9021.01	Heating and Air Conditioning Mechanics and Installers	Install, service, or repair heating and air conditioning systems in residences or commercial establishments.
49-9021.02	Refrigeration Mechanics and Installers	Install and repair industrial and commercial refrigerating systems.
49-9041.00	Industrial Machinery Mechanics	Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.
49-9071.00	Maintenance and Repair Workers, General	Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.
49-9099.00	Installation, Maintenance, and Repair Workers, All Other	All installation, maintenance, and repair workers not listed separately.

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.
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.
51-2041.00	Structural Metal Fabricators and Fitters	Fabricate, position, align, and fit parts of structural metal products.
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.
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.
51-4121.06	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.
51-4121.07	Solderers and Brazers	Braze or solder together components to assemble fabricated metal parts, using soldering iron, torch, or welding machine and flux.
51-7011.00	Cabinetmakers and Bench Carpenters	Cut, shape, and assemble wooden articles or set up and operate a variety of woodworking machines, such as power saws, jointers, and mortisers to surface, cut, or shape lumber or to fabricate parts for wood products.
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.
51-9012.00	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	Set up, operate, or tend continuous flow or vat-type equipment; filter presses; shaker screens; centrifuges; condenser tubes; precipitating, fermenting, or evaporating tanks; scrubbing towers; or batch stills. These machines extract, sort, or separate liquids, gases, or solids from other materials to recover a refined product. Includes dairy processing equipment operators.
51-9023.00	Mixing and Blending Machine Setters, Operators, and Tenders	Set up, operate, or tend machines to mix or blend materials, such as chemicals, tobacco, liquids, color pigments, or explosive ingredients.
51-9195.00	Molders, Shapers, and Casters, Except Metal and Plastic	Mold, shape, form, cast, or carve products such as food products, figurines, tile, pipes, and candles consisting of clay, glass, plaster, concrete, stone, or combinations of materials.
51-9195.03	Stone Cutters and Carvers, Manufacturing	Cut or carve stone according to diagrams and patterns.

51-9195.04	Glass Blowers, Molders, Benders, and Finishers	Shape molten glass according to patterns.
51-9195.05	Potters, Manufacturing	Operate production machines such as pug mill, jigger machine, or potter's wheel to process clay in manufacture of ceramic, pottery and stoneware products.
51-9195.07	Molding and Casting Workers	Perform a variety of duties such as mixing materials, assembling mold parts, filling molds, and stacking molds to mold and cast a wide range of products.
51-9199.00	Production Workers, All Other	All production workers not listed separately.
51-9199.01	Recycling and Reclamation Workers	Prepare and sort materials or products for recycling. Identify and remove hazardous substances. Dismantle components of products such as appliances.
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.