








# Lane Community College

Program Demand Gap Analysis:  
Economic Overview and  
Review of Academic Programs

December 2020

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Emsi is a leading provider of labor market data to professionals in higher education, economic development, workforce development, talent acquisition, and site selection. Our data, which cover more than 99% of the U.S. workforce, are compiled from a wide variety of government sources, job postings, and online profiles and résumés. Our data are used to solve a variety of problems: align programs with regional needs, equip students with career visions, understand regional economic and workforce activity, and find and hire the right talent. We serve clients across the U.S., the UK, and Canada.



# Executive Summary

Lane Community College (LCC) is a public, two-year postsecondary educational institution in Oregon. To further its goal of providing the county with well-trained and well-educated residents, LCC continually pursues improvement in various forms. An up-to-date understanding of the county economy and the demand for skilled labor is vital to the planning efforts of the college as it seeks to adapt its program offerings to the requirements of an ever-changing workforce. LCC partnered with Emsi, a leading provider of labor market data, to complete a program demand gap analysis, which assesses county job openings against educational program completions.

## RECOMMENDATIONS

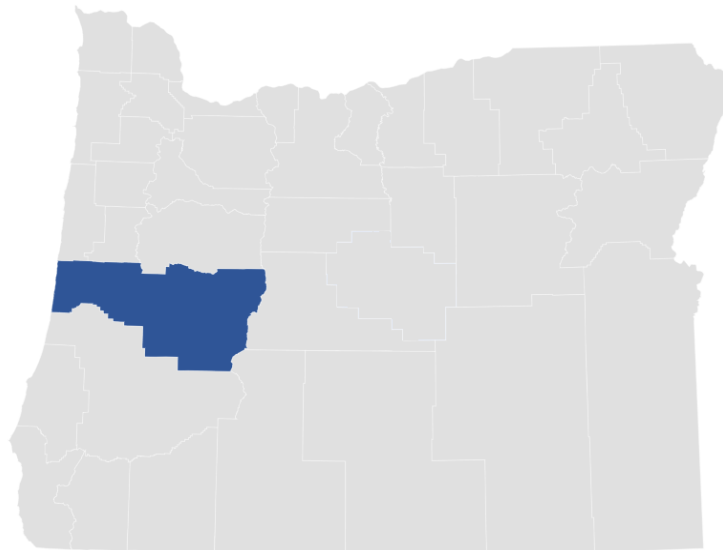
<p><b>HIGH DEMAND, LOW SUPPLY</b></p> <p><i>How can we expand these program opportunities?</i></p> <p>Business Administration &amp; Management, General (ASSOC &amp; T-T)</p> <p>Manufacturing Engineering Technology/Technician (ASSOC)</p> <p>Construction Trades, General (CERT &amp; ASSOC)</p>	<p><b>HIGH DEMAND, HIGH SUPPLY</b></p> <p><i>Can we maintain focus on program quality &amp; student success?</i></p> <p>Health &amp; Medical Administrative Services, Other (CERT)</p> <p>Child Care &amp; Support Services Management (CERT)</p> <p>Registered Nursing/Registered Nurse (ASSOC) &amp; T-T)</p>
<p><b>LOW DEMAND, LOW SUPPLY</b></p> <p><i>Should we discontinue these programs?</i></p> <p>Computer and Information Systems Security/Information Assurance (ASSOC)</p> <p>Airline/Commercial/Professional Pilot &amp; Flight Crew (CERT)</p> <p>Commercial &amp; Advertising Art (T-T)</p>	<p><b>LOW DEMAND, HIGH SUPPLY</b></p> <p><i>Are we connecting these programs to opportunities outside the county?</i></p> <p>Somatic Bodywork and Related Therapeutic Services (NON-CREDIT)</p> <p>Airframe Mechanics &amp; Aircraft Maintenance Technology/Technician (ASSOC)</p>

Source: Emsi program demand gap model.

## INTRODUCTION

For purposes of the program demand gap analysis, LCC serves Lane County in Oregon. This report outlines the county's economy and uses the county's average annual projected job openings between 2019 and 2029 as a measurement of labor market demand. When job openings are compared to the region's supply of educational program completions, the analysis determines how well LCC's program offerings satisfy county workforce demand. In addition, this report offers recommendations for new program development. In its entirety, the analysis is a starting point for LCC as the college continues to develop programs using data-based decision-making strategies. The following figures and table display key findings of the analyses.

Figure 1: Map of Lane County



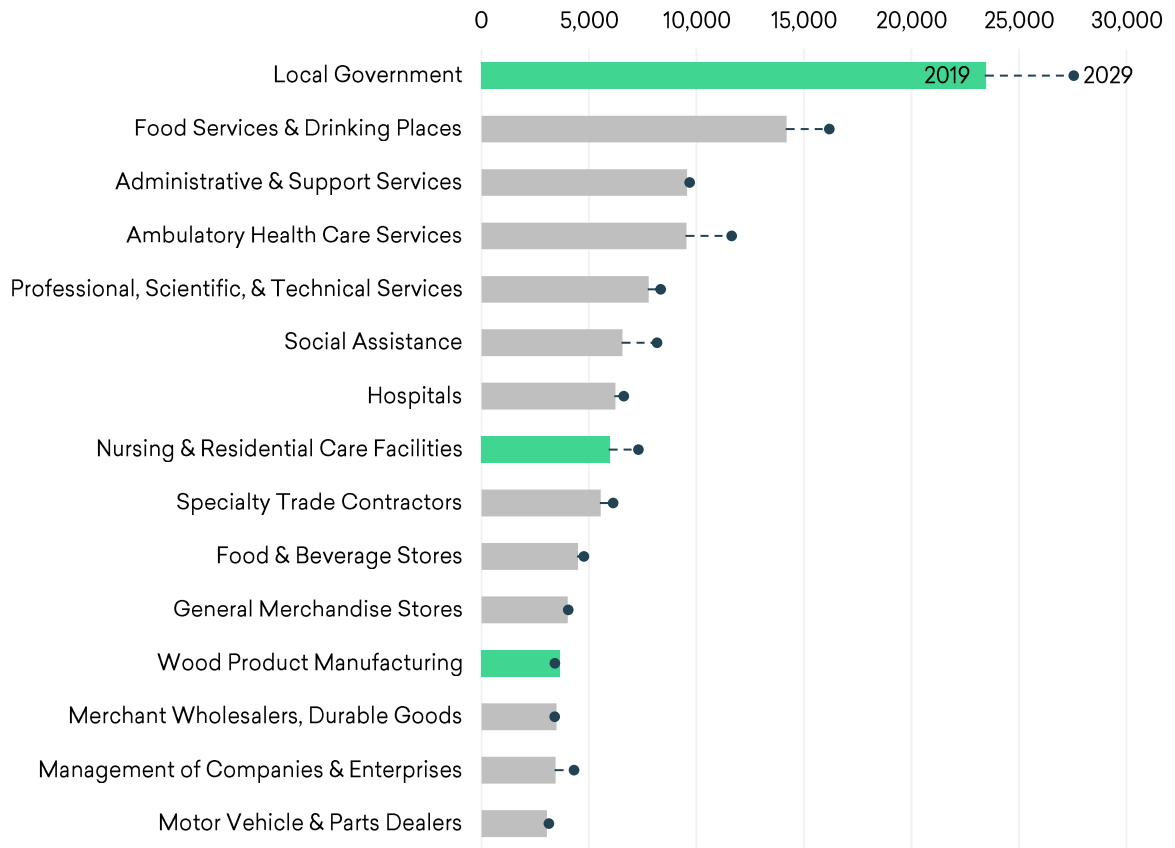
Source: Emsi Analyst. Region provided by LCC.

## ECONOMIC OVERVIEW

Figure 2 displays the top industry subsectors in terms of employment in Lane County, and Figure 3 shows the top industry subsectors in terms of employment concentrations, referred to as location quotients (LQs). High LQs (usually anything greater than 1.2) are an indication

that the county has a comparative advantage or specialization in certain industry subsectors relative to the rest of the nation or potentially to other regions.

Figure 2: Top Industry Subsectors in Lane County by Jobs



Source: Employees & Self-Employed 2020.4.

Figure 3: Top Industry Subsectors in Lane County by Employment Concentration (LQ)



Source: Employees & Self-Employed 2020.4.

Note the green bars in the figures. Across all of Lane County's industry subsectors, three are within the top 15 in terms of jobs with relatively high LQs. The appearance of these industry subsectors provides an indication of their strength in the region's economy and offers the college insight into potential employment opportunities for its students. These industry subsectors, ranked by 2019 jobs, are:

- Local Government
- Nursing & Residential Care Facilities
- Wood Product Manufacturing



## PROGRAM DEMAND GAP ANALYSIS

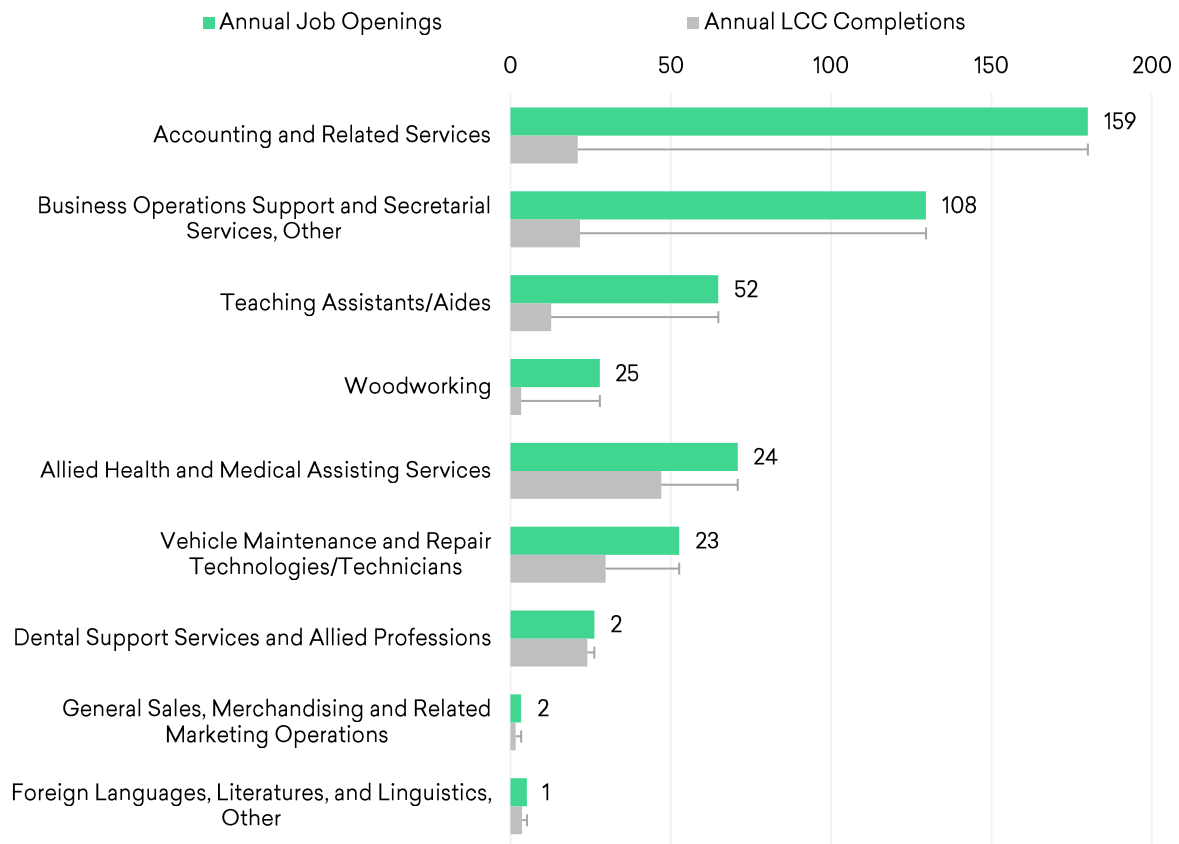
The program demand gap analysis provides results across all of LCC's non-credit, certificate, and degree level programs, which have been classified by their formal CIP code.<sup>1</sup> The analysis connects the college's program completers with the availability of county job openings. For LCC's non-credit programs, the analysis is similar in that it connects the college's completers with the availability of county job openings but without the additional reference to non-credit program completions from other postsecondary educational institutions in Lane County. Furthermore, the analysis focuses on the gaps and surpluses in the programs by award level. A gap or surplus larger than 100 is considered beyond normal labor market fluctuations and therefore an area of consideration for program development.

LCC offers 47 non-credit programs, when grouped by their six-digit CIP codes. Using a customized non-credit program-to-occupation map, the programs are analyzed using similar methods to the program demand gap analysis. Two non-credit programs have a significant gap (Figure 4) and eight have a significant surplus. The non-credit program analysis shows that entry-level jobs in industries related to business are plentiful in Lane County, some of which are associated with high wage rates. Furthermore, not receiving an LCC Certificate of Completion in one of the various non-credit programs at the college with a significant gap does not preclude someone from employment. Industry-specific employment credentials can be obtained during on-the-job training. However, the results of the analysis are an indication of the potential labor market demand for LCC's non-credit programs, whether those programs are for people seeking employment or looking to learn new skills.

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1 CIP refers to the Classification of Instructional Program and was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES).

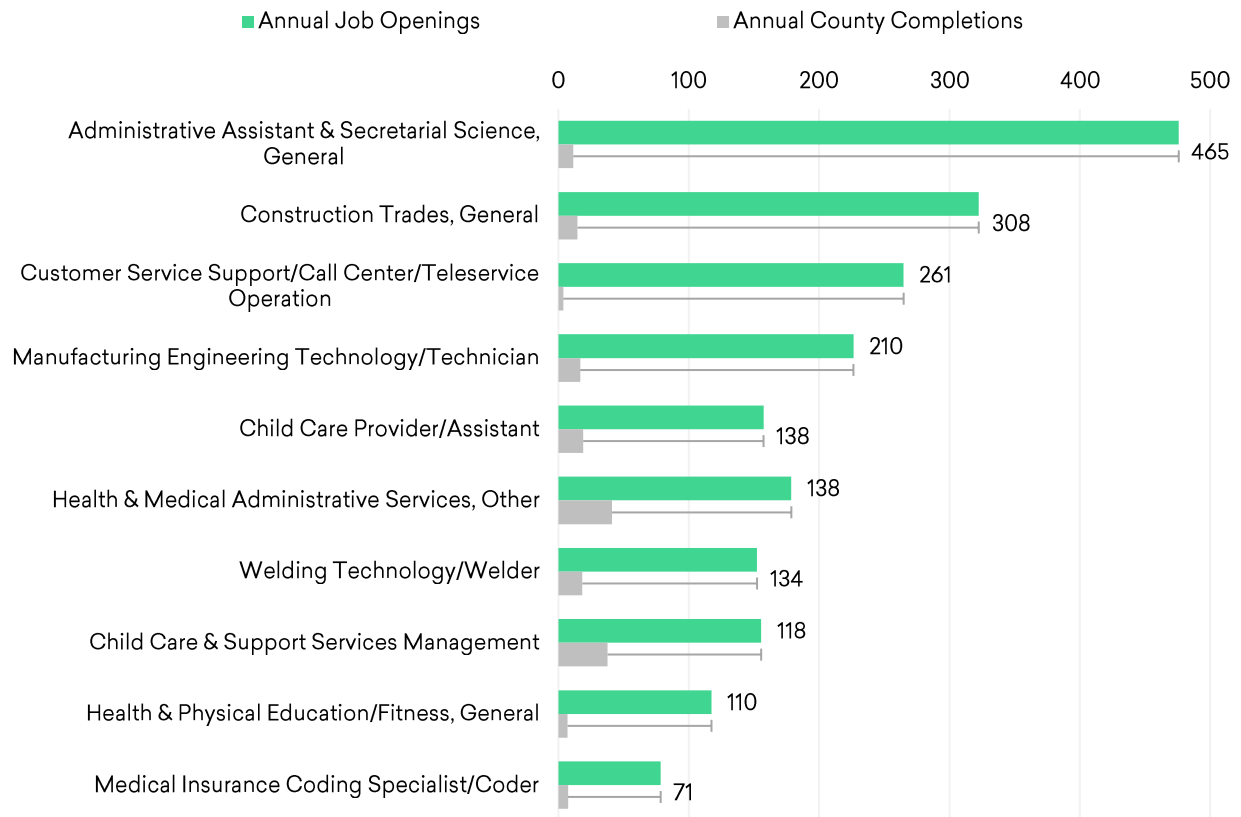
Figure 4: Gaps for Non-Credit Programs



Non-credit programs are grouped by their six-digit CIP code.  
 Source: Emsi program demand gap model.

LCC offers 36 certificate level programs, nine of which have a significant gap above the 100-openings level of significance, as shown in Figure 5. Program expansions at this award level should be given careful consideration if the program awards completers with an LCC certificate and a certification, license, or industry-specific credential required for employment in an occupation. No programs at this award level have a significant surplus.

Figure 5: Top 10 Certificate Level Gaps

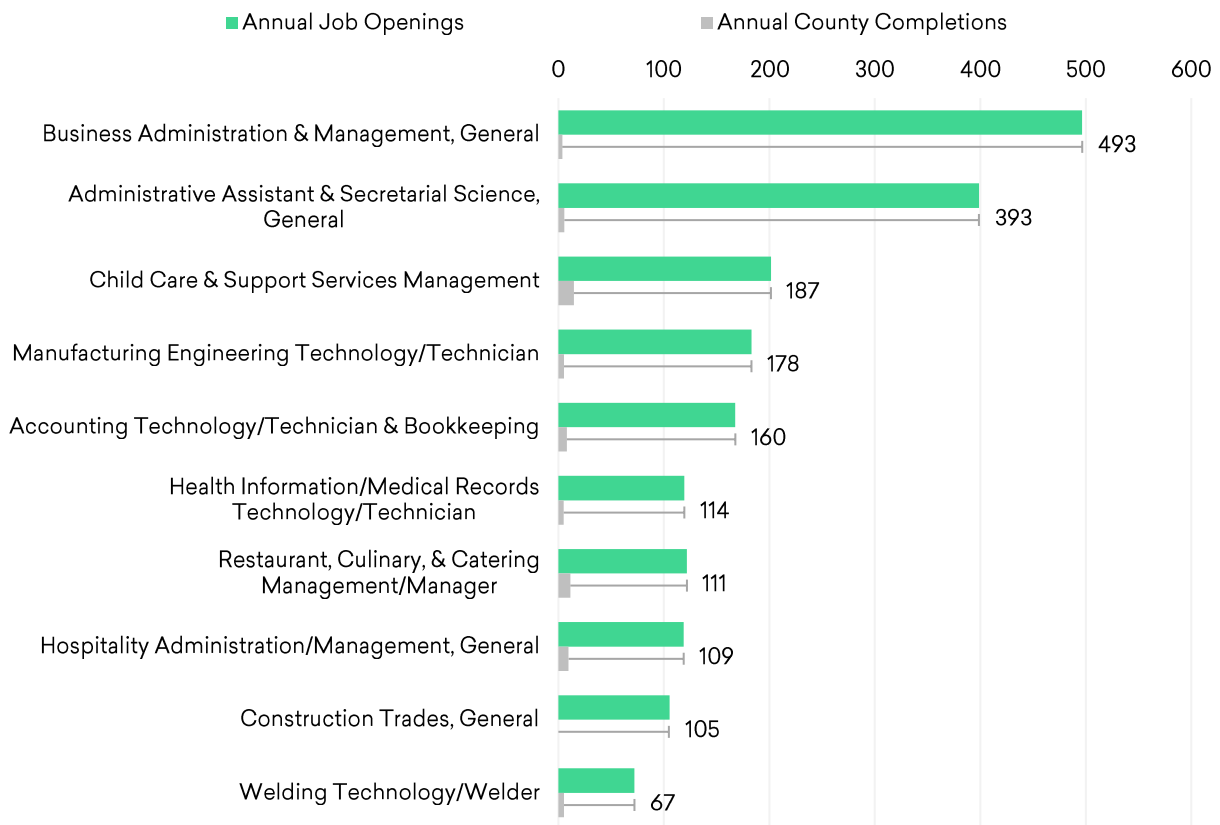


Source: Emsi program demand gap model.

At the associate degree level, nine programs have a significant gap (Figure 6). Several should be considered for a college-wide expansion, some of which are related to other associate degree level programs without a significant 100-openings gap. Specifically, the county's labor market has the most opportunity for occupations related to business professionals working in a variety of industries. For LCC administrators, it is advised that the college engage with the local community on behalf of its students to best discern local need, particularly for the broader business programs. No programs have a significant surplus at this award level.



Figure 6: Top 10 Associate Degree Level Gaps

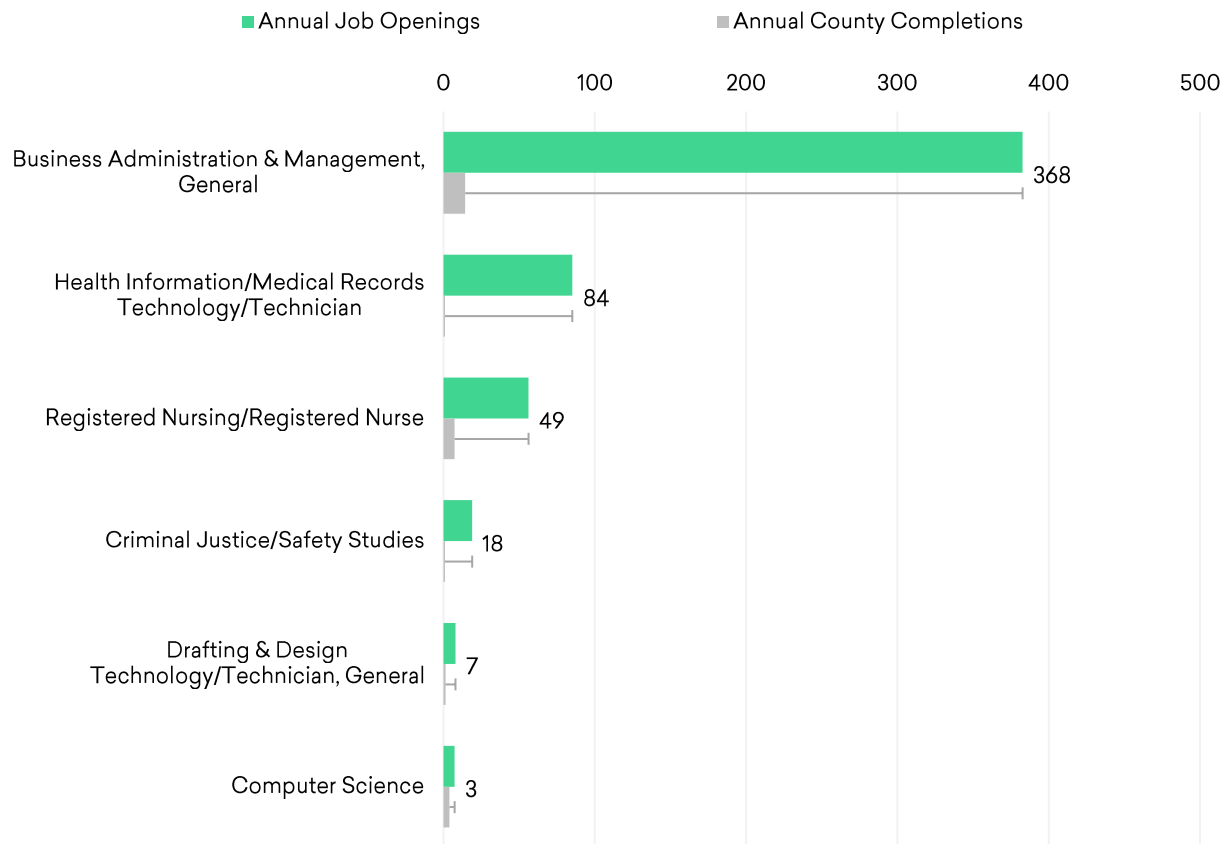


Source: Emsi program demand gap model.

LCC offers 11 transfer-track degree programs. In other words, a program completer could readily transfer into a similar bachelor's degree level program at another postsecondary educational institution in the state. Of these programs, one has a significant gap above the 100-openings level of significance, as shown in Figure 7. This program should be considered for expansion. A program expansion should consider the process by which LCC's students transfer into regional bachelor's degree level programs. Administrative and academic support measures at LCC would enable student success. One program at this award level has a significant surplus. However, since the degrees being earned are associate degrees, not actually bachelor's degrees, this likely does not actually represent a problematic surplus.



Figure 7: Transfer-Track Degree Level Gaps



Source: Emsi program demand gap model.

A liberal arts program expansion is not recommended at this time, but LCC administrators should be aware that students can find success in a variety of business-related occupations. Using Emsi’s Profile Analytics database, many liberal arts program completers are currently employed as retail salespersons, administrative assistants, and customer service representatives, as well as a variety of managers and supervisors. These occupations have a considerable number of job openings in Lane County. The college’s liberal arts program, therefore, serves as a starting point to students’ career goals beyond an associate degree level of education.

## PROGRAM ADDITIONS

Twenty certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, some of which are related to education, training, & library occupations. At the associate degree level, there are fewer opportunities for new programs, considering the college’s current offerings. Nonetheless, LCC should consider new



programs related to healthcare practitioners & technical occupations, whether its focus is on job openings in Lane County or in Oregon. Another 20 programmatic areas of opportunity were identified at the transfer-track degree level, many of which are related to sales & related occupations, a demand which LCC could establish or adjust existing transfer-track degrees to meet. For all award levels, many program additions are related to the college's current program offerings, which indicates an opportunity for a curriculum adjustment to better align with the county's current and projected labor market demand. A selection of these occupations, which have the most county job openings by award level, appear in Table 1.

Table 1: Program Additions by Education Level

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>ANNUAL JOB OPENINGS</b>	<b>ANNUAL COMPL.</b>	<b>GAP</b>	<b>MEDIAN HOURLY WAGE</b>	<b>ED. LEVEL</b>
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	1,173	133	0	133	\$16.12	CERT
Tutors and Teachers and Instructors, All Other	576	45	0	45	\$23.84	CERT
Pharmacy Technicians	528	29	0	29	\$20.76	CERT
Self-Enrichment Teachers	407	30	0	30	\$21.29	CERT
Substitute Teachers, Short-Term	370	25	0	25	\$22.40	CERT
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	298	23	0	23	\$26.49	CERT
Healthcare Support Workers, All Other	211	19	0	19	\$18.35	CERT
Reservation and Transportation Ticket Agents and Travel Clerks	159	12	0	12	\$16.46	CERT
Library Assistants, Clerical	104	11	0	11	\$18.40	CERT
Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	150	10	0	10	\$31.84	CERT
Occupational Therapy Assistants	113	13	0	13	\$34.89	ASSOC
Respiratory Therapists	159	8	0	8	\$24.58	ASSOC
Radiologic Technologists and Technicians	158	6	0	6	\$34.16	ASSOC
Insurance Sales Agents	749	38	0	38	\$21.52	T-T
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	518	37	0	37	\$21.63	T-T
Office and Administrative Support Workers, All Other	587	38	0	38	\$19.45	T-T
Paralegals and Legal Assistants	383	24	0	24	\$20.84	T-T
Buyers and Purchasing Agents	426	23	0	23	\$23.75	T-T

SOC refers to the Standard Occupational Classification system used to classify occupations. Average annual job openings represent regional data from 2019 to 2029. Numbers may not sum due to rounding.

Source: Emsi program demand gap model.



# Introduction

An efficient labor market requires a seamless flow of skilled workers, the postsecondary educational institutions that educate and train them, and the employers that hire them. One factor behind workforce misalignment stems from when the needs of the employers evolve differently than the programs that train their workers. These misalignments may happen at different times and for different reasons:

- Employer training becomes more tailored and comprehensive;
- Businesses come and go, and certain educational programs become more or less pertinent to a specific region;
- Rapid advances in technology and business create curriculum needs that few educational institutions possess; and
- As economic conditions shift, businesses have different hiring requirements of their employees.

In light of these dynamics, an up-to-date understanding of the economy and the demand for skilled labor is vital to the planning efforts of colleges and universities seeking to adapt their program offerings to the requirements of an ever-changing workforce.

To gain better insight into economic conditions and workforce trends, Lane Community College (LCC) partnered with Emsi, a labor market analytics firm, serving higher education, economic and workforce development, talent acquisition, and site selection. In this report, Emsi conducts an overview of the county's economy, provides a program demand gap analysis of LCC program offerings, and makes recommendations for new program development.

The program demand gap analysis is performed by assessing the supply and demand of skilled workers and identifying the educational programs that need to be adapted in order to fill any existing or future gaps. The analysis weighs the educational output of LCC and any other postsecondary educational institutions in the county against the number of job openings related to the college's program offerings to determine whether a deficit or an oversupply of skilled workers exists. The goal of the analysis is to provide LCC with relevant data and information that it can use when solving problems and making decisions about current and future program development.

## IMPORTANT NOTE

This analysis is intended to serve as a starting point for LCC as the college discusses county workforce needs. A deficit (gap) or oversupply (surplus) of workers in a particular occupation category represents a potential problem for the county, making it important for each program and occupation group to be evaluated by the college on a case-by-case basis. The purpose of this analysis is, therefore, to initiate the conversation on evaluating program effectiveness. Once evaluated internally within the college, specific implications may be considered for programs with substantial gaps or surpluses.

It must be noted that our analysis does have its limitations in that only the education supply pipeline is considered. This is due to data availability at the county and institutional levels. However, other sources—unemployed workers, industry trained pipelines, workers migrating to the county, and job changers from other occupational categories—can also be a source of skilled workers. These types of considerations are useful when evaluating specific types of occupations. Publicly available data sources are limited in accounting for this, and consequently these labor sources are unavailable for Emsi analysis. Primary data collection methods (i.e., interviews and surveys) are among the only ways to obtain information on the other sources for skilled workers.

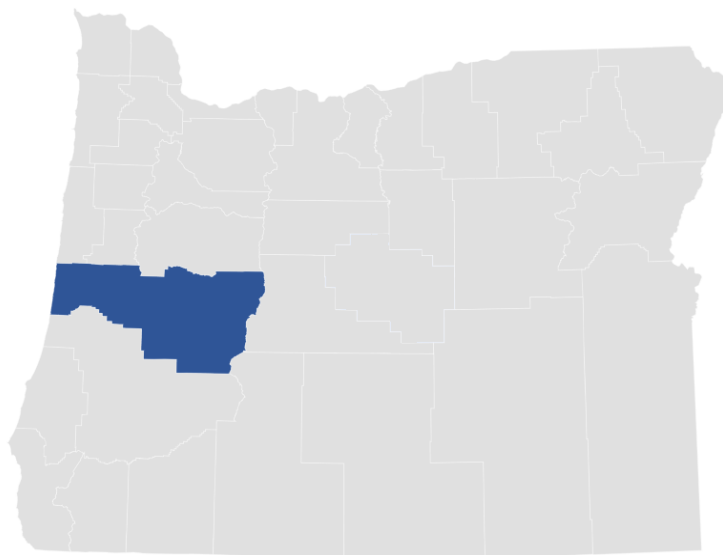




# Economic Overview

Before looking at the results of the program demand gap analysis, LCC should first consider the economic structure of its region, defined in this report as Lane County in Oregon (Figure 2.1). Identifying the driving industries within the county is an important first step for three reasons: 1) it helps LCC understand where the college should logically target its efforts, 2) it helps to reveal whether there are industries that may be overlooked as a result of recent economic growth, and 3) it helps identify the top occupations within those key driving industries.

Figure 2.1: Map of Lane County



Source: Emsi Analyst. Region provided by LCC.

In addition to knowing the industry structure of the county, it is important to have an understanding of the workforce—how connected the county’s workers are to the surrounding community and the educational attainment of workers in the county. To these ends, this chapter provides an overview of Lane County’s industry composition, shows common occupations in the county’s key industries, illustrates worker commuting patterns, and discusses the highest educational attainments of the county’s adult residents. Supporting data tables are found in Appendix 3.



## INDUSTRY COMPOSITION

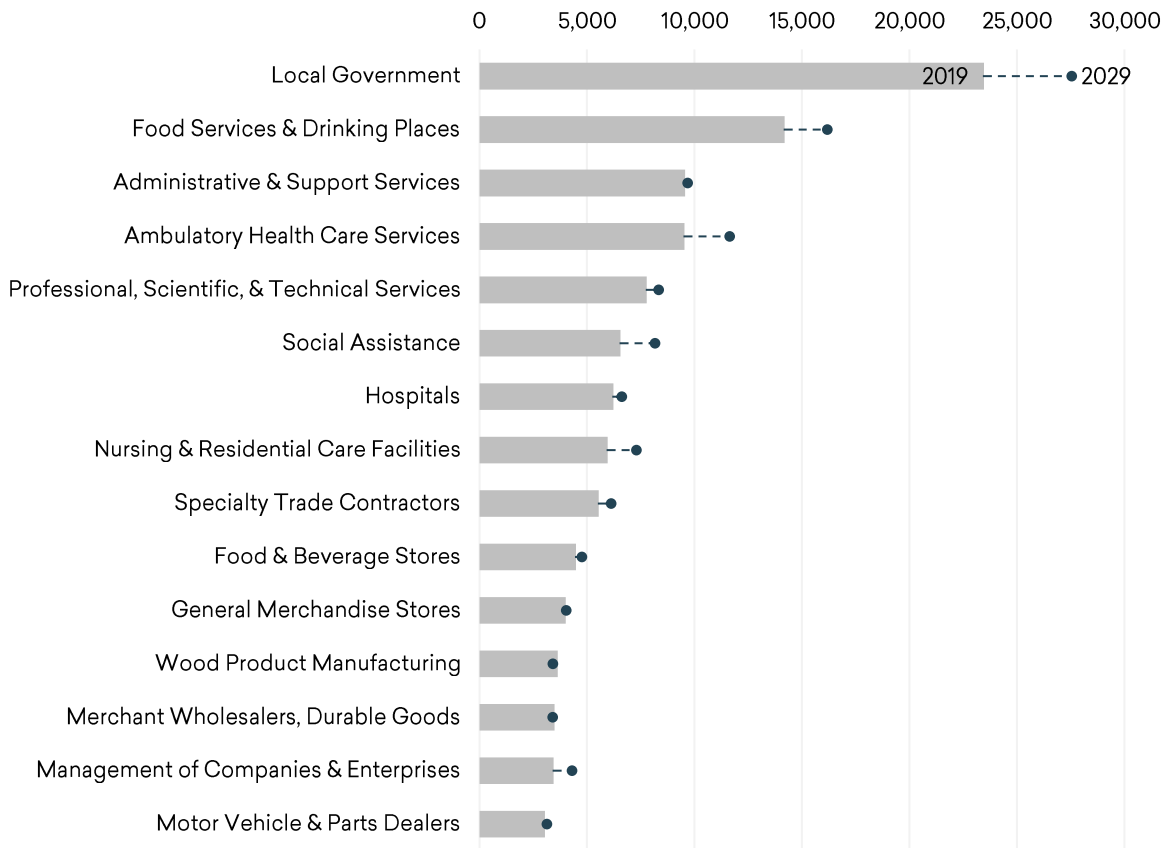
Evaluating current and future employment by industry provides information on the county's economic diversity. Understanding the industry mix is important for drawing connections to the occupations and companies that are in-demand, and students are likely to find employment in the largest county industries. The North American Industry Classification System (NAICS) is the structure used by federal agencies to classify business establishments based on their production process (although the final product or service is usually similar for the firms in a given industry). NAICS applies a six-digit hierarchical coding system to organize nearly 1,000 detailed industries in the U.S. For the analysis in this section, Emsi has aggregated industries into their three-digit NAICS codes, referred to as industry subsectors.<sup>2</sup>

Figure 2.2 presents the 15 largest industry subsectors in Lane County, by their 2019 job counts, and also shows the industry subsectors' projected change over the next decade. The county supported 177,620 jobs in 2019, and by 2029, it is projected to add 15,300 new jobs for a 8.6% job increase. As shown in the figure, Local Government is the largest employer, with 23,460 jobs in 2019 and is expected to remain the top county employer. The Food Services & Drinking Places and Administrative & Support Services industry subsectors are the next largest, with 14,190 and 9,560 jobs in 2019, respectively. As for growth, Local Government is projected to add the most jobs of the top 15 industry subsectors, with a 10-year increase of 4,090 new jobs for a 17.4% job growth. On the other hand, two of the top 15 industry subsectors are expected to contract between 2019 and 2029. They are Wood Product Manufacturing and Merchant Wholesalers, Durable Goods.

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2 In Emsi data, all establishments in the main NAICS hierarchy are private-sector only. Jobs in Educational Services and Ambulatory Health Care Services, for example, are not associated with local, state, or federal government jobs. Jobs for public school teachers and city firefighters are in Local Government, whereas college professors and forest firefighters are commonly employed by State Government. Mail carriers and transportation security screeners are examples of jobs in Federal Government.

Figure 2.2: Jobs by Industry Subsector in Lane County, 2019 and 2029

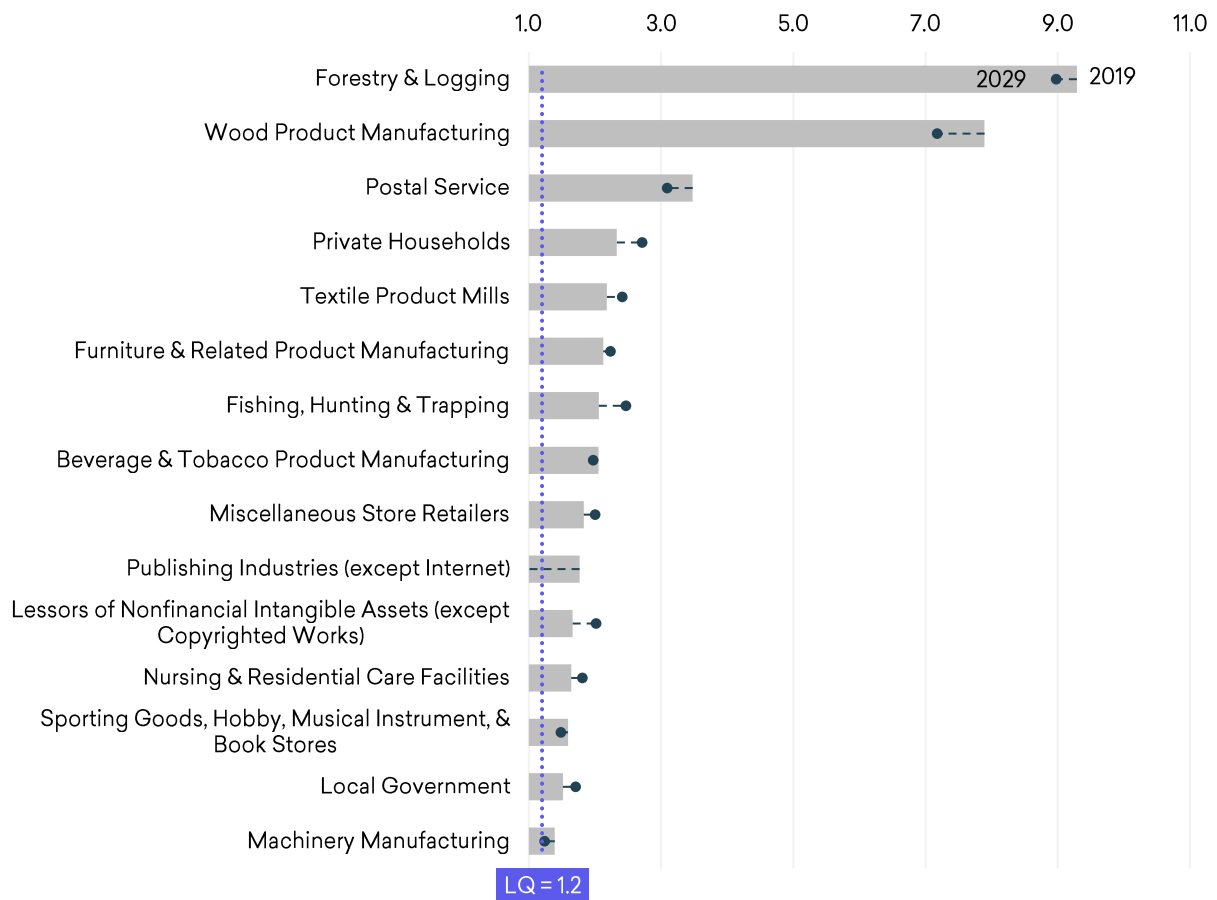


Source: Employees & Self-Employed 2020.4.

The employment concentration of Lane County's industry subsectors is measured by a location quotient (LQ). LQs are used to assess competitiveness by comparing the concentration of employment in an industry in the county against the employment concentration for that same industry in the U.S. An LQ equal to 1.0 means that the percentage of total employment comprised by an industry in Lane County matches the percentage of total employment of that industry in the U.S. An LQ greater than 1.0 means that the industry has a greater employment share relative to that of the U.S. High LQs, which are typically greater than 1.2, are an indication that the county has a comparative advantage or specialization in an industry.



Figure 2.3: Employment Concentration (LQ) by Industry Subsector in Lane County, 2019 and 2029



Source: Employees & Self-Employed 2020.4.

The industry subsectors with the 15 highest LQs in Lane County are shown in Figure 2.3. The Forestry & Logging industry subsector had the highest LQ in 2019 at 9.3. The industry subsector is expected to decrease in employment concentration between 2019 and 2029 but still remain the top industry subsector with the largest LQ. The Wood Product Manufacturing and Postal Service industry subsectors also have relatively large employment concentrations, with LQs of 7.9 and 3.5 in 2019, respectively. As for 10-year growth, Lessors of Nonfinancial Intangible Assets (except Copyrighted Works) is projected to increase in LQ by 21.3% from an LQ of 1.7 to an LQ of 2.0, which is the largest percent increase among the top 15 industry subsectors in the figure. On the other hand, seven industry subsectors are expected to drop in LQ between 2019 and 2029. Publishing Industries (except Internet) has the largest percent decrease (56.9%). Despite the declines, most of the county's top 15 industry subsectors will remain above the 1.2 high-LQ threshold.



## OCCUPATIONS WITHIN KEY INDUSTRY SUBSECTORS

Three industry subsectors are found in both Figures 2.2 and 2.3 because they are large employers and have high LQs. Altogether, the industry subsectors represent 18.6% of Lane County's jobs. These industry subsectors, in descending order of 2019 jobs, are:

- Local Government;
- Nursing & Residential Care Facilities; and
- Wood Product Manufacturing.

Their appearance in the figures provides an indication of their relative strength in Lane County, and thus, we identified the most common occupations within the three industry subsectors, called a staffing pattern.<sup>3</sup> The industry subsectors' staffing patterns provide insight into not only the county's labor market demand, but by extension, the demand for the college's program offerings.

The Local Government industry subsector in the county supported 23,460 jobs in 2019 and had an LQ of 1.5. It is comprised of five industries at the six-digit NAICS code level. The largest industry is the Colleges, Universities, & Professional Schools (Local Government) industry, with 41.0% of jobs in the industry subsector. The top occupation employed by the Local Government industry subsector is postsecondary teachers, which constitutes 9.8% of the industry subsector's jobs. It is followed by teaching assistants, except postsecondary (7.6%) and office clerks, general (4.9%). Out of the top 25 occupations within the industry subsector, the top five highest paying occupations that require an associate degree or below, in terms of median hourly earnings, are:

- firefighters (\$30.66);
- tutors & teachers & instructors, all other (\$23.83);
- substitute teachers, short-term (\$22.40);
- bookkeeping, accounting, & auditing clerks (\$18.20); and
- secretaries & administrative assistants, except legal, medical, & executive (\$17.94).

The top three highest paying occupations that require a bachelor's degree are:

- education administrators, kindergarten through secondary (\$53.47);
- education administrators, postsecondary (\$45.92); and
- police & sheriffs patrol officers (\$35.00).

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3 The top occupations, in terms of the percent of total jobs in an industry, are identified using data from the National Occupational Employment Statistics program, projections from the National Industry-Occupation Employment Matrix, and Emsi's proprietary employment data.

The Nursing & Residential Care Facilities industry subsector in the county supported 5,960 jobs in 2019 and had an LQ of 1.6. It is comprised of six industries at the six-digit NAICS code level. The largest industry is the Assisted Living Facilities for the Elderly industry, with 37.7% of jobs in the industry subsector. The top occupation employed by the Nursing & Residential Care Facilities industry subsector is nursing assistants, which constitutes 14.3% of the industry subsector's jobs. It is followed by registered nurses (5.2%) and licensed practical & licensed vocational nurses (4.3%). Out of the top 25 occupations within the industry subsector, the top five highest paying occupations that require an associate degree or below, in terms of median hourly earnings, are:

- licensed practical & licensed vocational nurses (\$25.50);
- medical assistants (\$19.47);
- sawing machine setters, operators, & tenders, wood (\$19.27);
- psychiatric aides (\$18.46); and
- secretaries & administrative assistants, except legal, medical, & executive (\$17.94).

The top three highest paying occupations that require a bachelor's degree are:

- medical & health services managers (\$45.15);
- registered nurses (\$44.44); and
- general & operations managers (\$38.06).

The Wood Product Manufacturing industry subsector in the county supported 3,640 jobs in 2019 and had an LQ of 7.9. It is comprised of 14 industries at the six-digit NAICS code level. The largest industry is the Sawmills industry, with 33.8% of jobs in the industry subsector. The top occupation employed by the Wood Product Manufacturing industry subsector is industrial truck & tractor operators, which constitutes 5.5% of the industry subsector's jobs. It is followed by laborers & freight, stock, & material movers, hand (4.8%) and helpers-production workers (2.7%). Out of the top 25 occupations within the industry subsector, the top five highest paying occupations that require an associate degree or below, in terms of median hourly earnings, are:

- industrial machinery mechanics (\$24.46);
- carpenters (\$22.80);
- log graders & scalers (\$22.64);
- heavy & tractor-trailer truck drivers (\$22.60); and
- extruding, forming, pressing, & compacting machine setters, operators, & tenders (\$21.26).

The top three highest paying occupations that require a bachelor's degree are:

- general & operations managers (\$38.06);
- sales representatives, wholesale & manufacturing, except technical & scientific products (\$28.17); and

- architectural & civil drafters (\$21.16).

## WORKFORCE COMMUTING PATTERNS

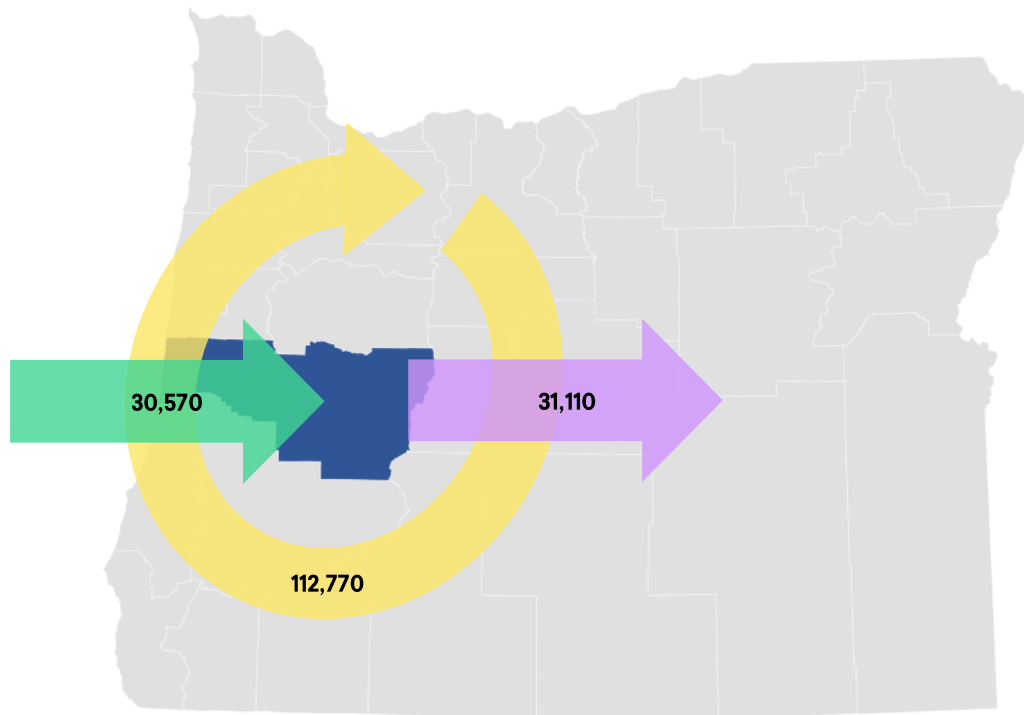
The Longitudinal Employer-Household Dynamics (LEHD) program<sup>4</sup> at the U.S. Census Bureau provides information on the residential and employment locations of workers. Such data show the commuting patterns of county employees. More specifically, the LEHD data demonstrate the extent to which employees commute to Lane County for work and how many residents commute to surrounding communities for work. Workers from outside the county could be filling current employment gaps, or the county’s residents could be out-commuting when there is a surplus of available jobs. The concepts of a “gap” and “surplus” are discussed in greater detail in the first section of Chapter 3.

Figure 2.4 presents the inflow and outflow of jobs to and from Lane County. LEHD data identify 143,340 jobs in the county, with 112,770 jobs filled by residents and 30,570 jobs filled by people living outside the county. In addition, 31,110 jobs are held by the county’s residents outside Lane County. In other words, 31,110 residents commute outside the county for work. The job counts represent primary jobs, as opposed to all jobs, and differ slightly from job counts in the previous sections, which use Emsi’s complete employment data (see industry data in Appendix 2). As shown in the figure, slightly more workers out-commute than in-commute.

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4 LEHD is an innovative program that uses modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys while protecting the confidentiality of people and firms that provide the data.

Figure 2.4: Lane County Job Inflow and Outflow



- 30,570** Employed in but living outside the county
- 112,770** Living and employed in the county Lane County
- 31,110** Living in the county Lane County but employed outside

Source: Census Bureau, Center for Economic Studies.

Table 2.1 provides further insight into the places where the county’s residents work. As shown in the figure, the county’s residents are out-commuting to neighboring counties for work, but the greatest number of residents work in Lane County (78% of all jobs). Table 2.2 also shows commuting patterns, except the data highlight the counties in which the county’s workers reside.

Table 2.1: Counties where Lane County Residents Work

COUNTY OF EMPLOYMENT	JOBS	% JOBS
Lane County, OR	112,770	78%
Multnomah County, OR	5,460	4%
Marion County, OR	4,300	3%
Washington County, OR	3,230	2%
Linn County, OR	2,950	2%

COUNTY OF EMPLOYMENT	JOBS	% JOBS
Douglas County, OR	1,960	1%
Clackamas County, OR	1,950	1%
Benton County, OR	1,930	1%
Deschutes County, OR	1,590	1%
Jackson County, OR	1,000	1%
All Other Counties	6,760	5%
<b>Total Primary Jobs, Residents</b>	<b>143,880</b>	<b>100%</b>

Source: Census Bureau, Center for Economic Studies.

Table 2.2: Counties where Lane County Workers Live

COUNTY OF RESIDENCE	JOBS	% JOBS
Lane County, OR	112,770	79%
Linn County, OR	4,830	3%
Douglas County, OR	3,430	2%
Multnomah County, OR	2,730	2%
Marion County, OR	2,390	2%
Benton County, OR	2,360	2%
Washington County, OR	2,340	2%
Jackson County, OR	1,860	1%
Deschutes County, OR	1,730	1%
Clackamas County, OR	1,600	1%
All Other Locations	7,310	5%
<b>Total Primary Jobs, Lane County Workers</b>	<b>143,340</b>	<b>100%</b>

Source: Census Bureau, Center for Economic Studies.

## EDUCATIONAL ATTAINMENT

Educational attainment data are useful for targeting specific population groups with low education levels. The population and educational attainment numbers in this section are based on Emsi's demographic data and publicly available sources from state and federal agencies. Sources include annual population estimates and population projections from the U.S. Census Bureau and birth and mortality rates from the U.S. Health Department. In addition, demographic information relies on the annual results of the American Community

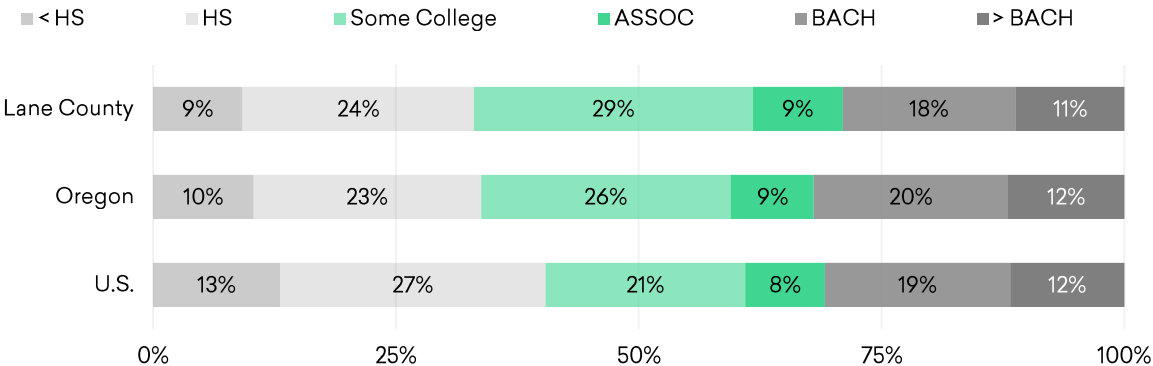
Survey. Educational attainment data cover the population in Lane County aged 25 years or more, referred to as adults, and indicate the highest award level achieved.

Demographic information is presented by gender and the major race and ethnic groups, and educational attainment data are broken out according to the following award categories:

- Less than a high school diploma (<HS);
- High school diploma or equivalent (HS);
- Some college,<sup>5</sup>
- Associate degree (Assoc);
- Bachelor’s degree (Bach);
- Greater than a bachelor’s degree (>Bach).

About 265,070 adults live in Lane County, and Figure 2.5 displays their educational attainments, without reference to gender and the major race and ethnic groups. State and national data are also presented for context. In the county, 33.0% of adults have a high school diploma or less, which is slightly less than the state average (33.8%) and less than the national average (40.4%). Out of all the award categories in the figure, the people who are most likely to seek education and training from LCC are those in the “Less than High School Diploma,” “High School Diploma,” and “Some College” categories. Together, these categories total 163,690 people, or 61.8% of the county’s adults.

Figure 2.5: Highest Educational Attainments of Adults in Lane County, Oregon, and the U.S.

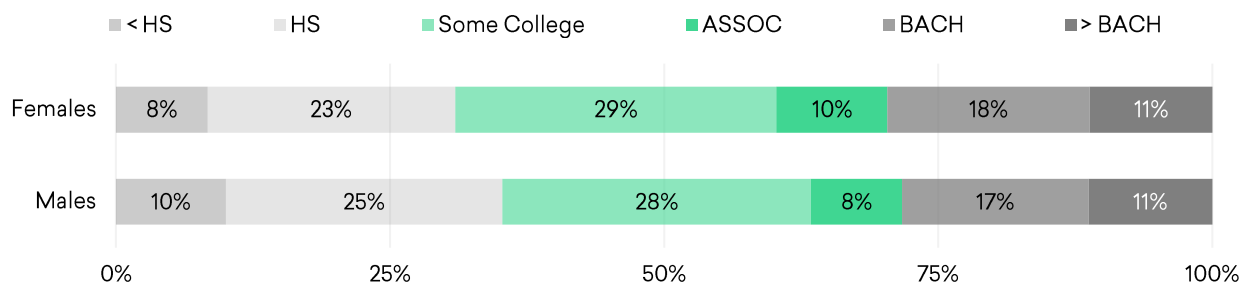


Numbers may not sum due to rounding.  
 Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

5 The “Some College” category includes individuals who attended college but did not successfully obtain a degree and individuals who have received a postsecondary vocational award or professional certification but did not receive an associate or bachelor’s degree.

Between female and male adults in Lane County, there is little variation in the distribution of their award categories. Twenty-nine percent of the county's female adults and 28.0% of the county's male adults have some college education but no degree, which represent 39,990 females and 36,110 males. Ten percent of female adults and 8.0% percent of male adults in the county have an associate degree as their highest award level. This information appears in Figure 2.6.

Figure 2.6: Highest Educational Attainments of Adults in Lane County by Gender



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

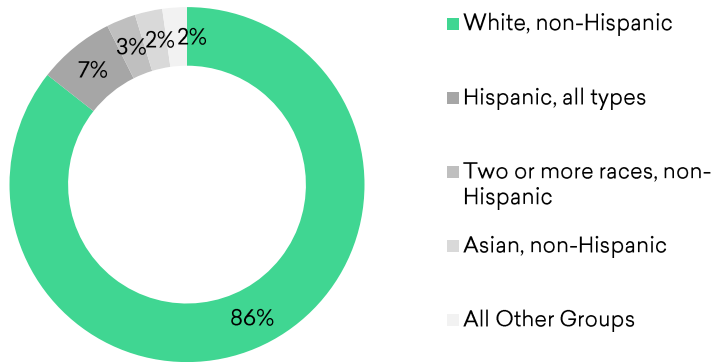
Table 2.3 and Figure 2.7 show the adults in Lane County by the major race and ethnic groups. As shown, 85.6% of the county's adults are White, non-Hispanic. Another 7.1% of adults are Hispanic, all types, and 2.6% are Two or more races, non-Hispanic, the next largest groups. Altogether, less than 5% percent of the county's adults are Asian, non-Hispanic; American Indian or Alaskan Native, non-Hispanic; Black, non-Hispanic; and Native Hawaiian or Pacific Islander, non-Hispanic.

Table 2.3: Adults in Lane County by Major Race and Ethnic Groups

GROUP	POPULATION	% POPULATION
White, non-Hispanic	226,950	85.6%
Hispanic, all types	18,720	7.1%
Two or more races, non-Hispanic	6,950	2.6%
Asian, non-Hispanic	6,510	2.5%
American Indian or Alaskan Native, non-Hispanic	2,740	1.0%
Black, non-Hispanic	2,630	1.0%
Native Hawaiian or Pacific Islander, non-Hispanic	560	0.2%
<b>Total</b>	<b>265,068</b>	<b>100.0%</b>

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Figure 2.7: Adults in Lane County by Major Race and Ethnic Groups

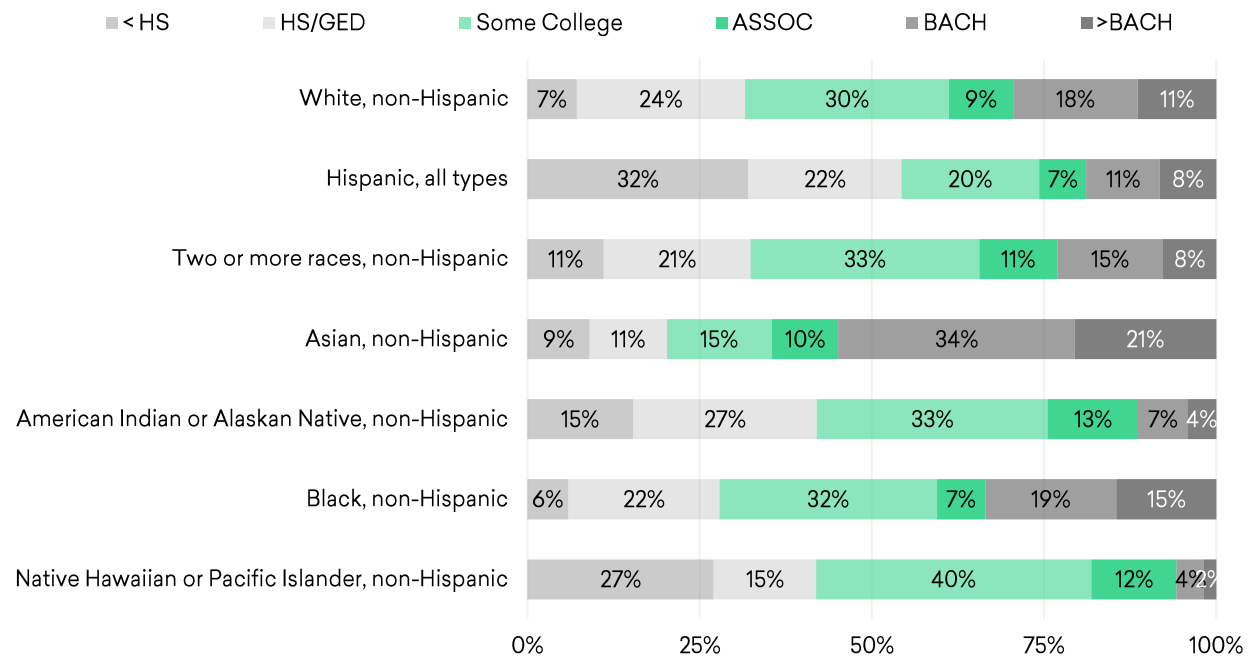


Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Figure 2.8 displays the highest educational attainment of Lane County's adults by their major race and ethnic groups. Asian, non-Hispanic adults have the highest percentage of adults with a postsecondary education (81.3%) among all the groups. However, the group accounts for a relatively small portion of the county's adults. The Two or more races, non-Hispanic group follows with 79.7%. Hispanic, all types adults and American Indian or Alaskan Native, non-Hispanic adults have the lowest levels of educational attainment in the county. For these groups, only 45.7% and 58.0%, respectively, of the adults in the groups have had education beyond high school. Across all groups, these data suggest that there are many opportunities to increase the educational attainments of the county's adults, whether such actions involve outreach to local high schools or supporting LCC students who plan to transfer into a bachelor's degree level program.



Figure 2.8: Highest Educational Attainments of Adults in Lane County by Major Race and Ethnic Groups



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.



# Program Demand Gap Analysis

With the county’s top industry subsectors and workforce in mind, the program demand gap analysis can now be conducted, answering the following question:

*Where are there misalignments between the workforce demand and the supply of college completions?*

This chapter outlines the deficit of LCC’s program completers to the workforce (gap), as well as the oversupply of completions to the workforce (surplus). The occupations directly related or mapped to the significant gaps are also displayed. Figure 3.1, below, provides a high-level overview of LCC’s programs and their alignment with the Lane County workforce.

Figure 3.1: Key Findings on LCC’s Program Alignment with the Lane County Workforce

<p><b>HIGH DEMAND, LOW SUPPLY</b></p> <p><i>How can we expand these program opportunities?</i></p> <p>Business Administration &amp; Management, General (ASSOC &amp; T-T)</p> <p>Manufacturing Engineering Technology/Technician (ASSOC)</p> <p>Construction Trades, General (CERT &amp; ASSOC)</p>	<p><b>HIGH DEMAND, HIGH SUPPLY</b></p> <p><i>Can we maintain focus on program quality &amp; student success?</i></p> <p>Health &amp; Medical Administrative Services, Other (CERT)</p> <p>Child Care &amp; Support Services Management (CERT)</p> <p>Registered Nursing/Registered Nurse (ASSOC) &amp; T-T)</p>
<p><b>LOW DEMAND, LOW SUPPLY</b></p> <p><i>Should we discontinue these programs?</i></p> <p>Computer and Information Systems Security/Information Assurance (ASSOC)</p> <p>Airline/Commercial/Professional Pilot &amp; Flight Crew (CERT)</p> <p>Commercial &amp; Advertising Art (T-T)</p>	<p><b>LOW DEMAND, HIGH SUPPLY</b></p> <p><i>Are we connecting these programs to opportunities outside the county?</i></p> <p>Somatic Bodywork and Related Therapeutic Services (NON-CREDIT)</p> <p>Airframe Mechanics &amp; Aircraft Maintenance Technology/Technician (ASSOC)</p>

Source: Emsi program demand gap model.

**High demand, low supply** programs are those that have a high number of annual job openings but lack of adequate county completers. These programs have large gaps and should be considered for expansion since there is a demand for people with these skill sets. Consideration should be given to the median hourly wage of the program.

**High demand, high supply** programs are those that have a high number of annual job openings as well as a high number of county completers. These programs are satisfying the county's labor market demands and are worth continuing to offer.

**Low demand, low supply** programs are those that lack both annual job openings and completers in Lane County. Since there is not an apparent need for these skill sets in the county workforce, it is worth reevaluating the need for offering these programs.

**Low demand, high supply** programs are those that produce far more county completers than there are annual job openings. Large surpluses could suggest that completers are finding employment outside of the county. It may be beneficial to track where completers are finding work to evaluate the skills being sought by employers to better prepare completers for in-county employment.

## INTERPRETATION

The terms used in the analysis are as follows:

**Gap** Represents a deficit, or when there are more job openings in an occupation than there are completions. If left unaddressed, a gap may lead to missed opportunities for economic growth and put stress on local businesses to find the necessary talent elsewhere. Significant gaps translate into higher human resources costs and decreased efficiencies in the economic system. They also provide an opportunity for postsecondary educational institutions to develop new programs and/or strengthen their current programs.

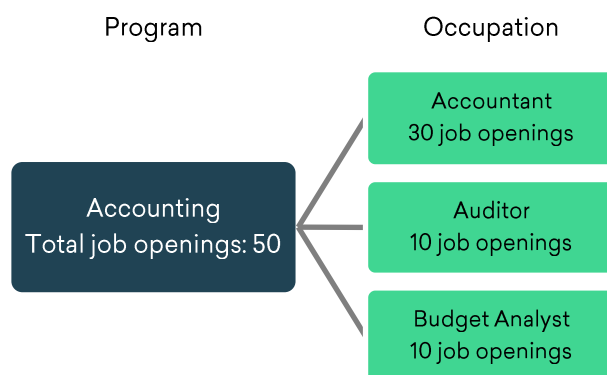
**Surplus** Represents an oversupply, or when there are more completions than there are job openings in an occupation. If left unaddressed, significant surpluses may lead to higher unemployment rates or higher attrition rates—the college could be educating a workforce that is leaving the county after program completion because of a lack of job opportunities.

When reviewing the results of the analysis, consider that not all gaps or surpluses indicate necessary program adjustments. Due to labor market inefficiencies, it is common for most programs to face a certain level of gap or surplus. This means only significant gaps or surpluses should be reviewed or further developed. Given the size and characteristics of Lane County, any gap or surplus within 100 jobs either above or below zero should be considered within the normal range of labor market fluctuations. In the following sections, the program gaps and surpluses are discussed by award level and presented as figures and tables.

The figures show the gap between job demand and the supply of program completions. An explanation of job demand is warranted here, and a more detailed description can be found in Appendix 5. A program's job demand is measured as its total number of annual job

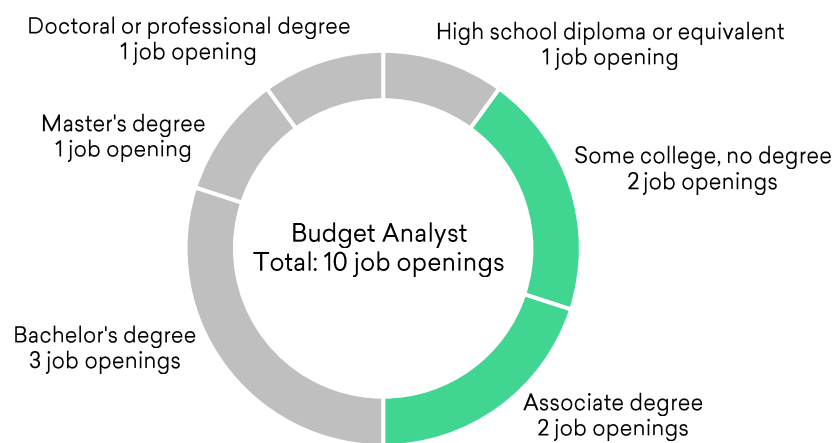
openings, on average, from 2019 to 2029. The total is calculated as the sum of the county job openings for each occupation mapped to the program, as illustrated in Figure 3.2.

Figure 3.2: Example of One Program Mapped to Three Occupations



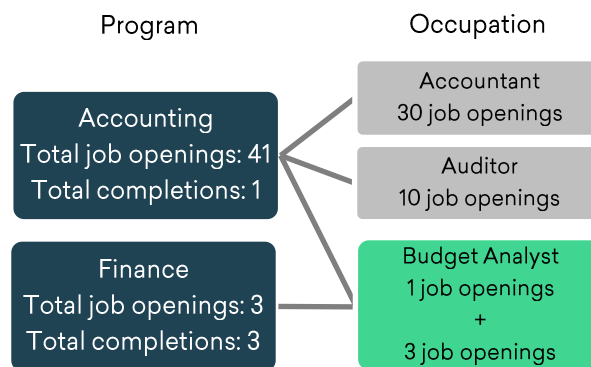
Furthermore, an occupation’s job openings are not a gross measure of job openings available in the county. For every occupation, job openings have been weighted by the program’s award level and one level below and account for the highest educational attainments of those employed in the position. The educational attainments in this chapter (and the following) are for adults less than 34 years, which differ from the previous chapter but better reflect the college’s student population. Figure 3.3 illustrates how this methodology applies to an occupation’s total job openings. For example, four job openings or 40% of total job openings are available to budget analysts at the associate degree level, seeing that there are a total of 10 job openings, 20% of those working in the occupation have an associate degree level of education, and another 20% have some college education and no degree.

Figure 3.3: Example of an Occupation’s Weighted Job Openings by Award Level



Finally, job openings are de-duplicated and scaled across programs, when an occupation is mapped to more than one program. As illustrated in Figure 3.4, budget analysts, which have four total job openings, are mapped to two programs. However, the Finance program is three-times the size of the Accounting program, measured in terms of completions. Thus, one job opening is portioned to the Accounting program and three job openings to the Finance program.

Figure 3.4: Example of Two Programs with One Shared Occupation



Supply is shown as the average number of program completions in the county, by award level, between 2017 and 2019.<sup>6</sup> LCC is not the only postsecondary educational institution in Lane County reporting to IPEDS,<sup>7</sup> the source of the completions data. The gap, then, is the difference between job openings and program completions. Appendix 4 has LCC’s program to occupation map with adjusted employment, and Appendix 5 identifies all the certificate and degree-granting institutions in Lane County.

A great amount of data is presented in the tables. The first set shows the gaps and surpluses across all the programs offered at LCC by award level. The tables include the Classification of Instructional Program (CIP) code and title, the average annual number of job openings associated with the program (which have been de-duplicated using the process outlined in Appendix 5), the average annual program completions from the region and from LCC, and the gap or surplus for Lane County. The programs’ median hourly wage rates are specific to Lane County.

The second set of tables identify the occupations mapped to the programs with a significant gap or surplus, by award level, and show detailed occupational data. The tables include the

6 The average annual completions data for LCC were updated to the years 2018 to 2020 and reviewed for accuracy by LCC.

7 IPEDS refers to the Integrated Postsecondary Education Data System, which gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid program.

CIP code, CIP title, and occupations mapped to the program, by their Standard Occupational Classification (SOC) codes and titles. The county job counts, by occupation, are shown for 2019 and 2029 with the change in jobs and average annual job openings for those years. The occupations' median hourly wage rates are specific to Lane County. See Appendix 6 for a complete list of job projections and Appendix 7 for unemployment information by industry and occupation.

## **NON-CREDIT PROGRAM ANALYSIS**

The results that appear in this section present a view of the non-credit programs projected to have a gap or surplus in Lane County. The methodology and interpretation for non-credit programs differ somewhat from the certificate and associate degree analyses discussed in following sections.

Emsi, with approval from the college, created a crosswalk between the non-credit programs and the types of occupations non-credit program completers are likely to enter. In general, non-credit programs can be designed for self-enrichment, rather than higher education and the development of employable skills. However, LCC confirmed that the non-credit programs they offered were designed with workforce skills in mind. Using the customized program-to-occupation map, the non-credit programs were analyzed using the program demand gap analysis methods, detailed in Appendix 4.

The non-credit program analysis requires further discussion, which affect how its results are interpreted. First, students who take non-credit programs may complete more than one program over an academic year seeing that, typically, non-credit programs require less credit hours than the college's credit programs. Thus, completions data for the non-credit programs may contain duplication, which inflates the number of non-credit program supply.

Second, the completions can fluctuate annually. Emsi uses a three-year average in the program demand gap analysis to normalize the fluctuations, but there could be a gap or surplus between years. In this analysis, non-credit program completions are from academic years 2018 to 2020.

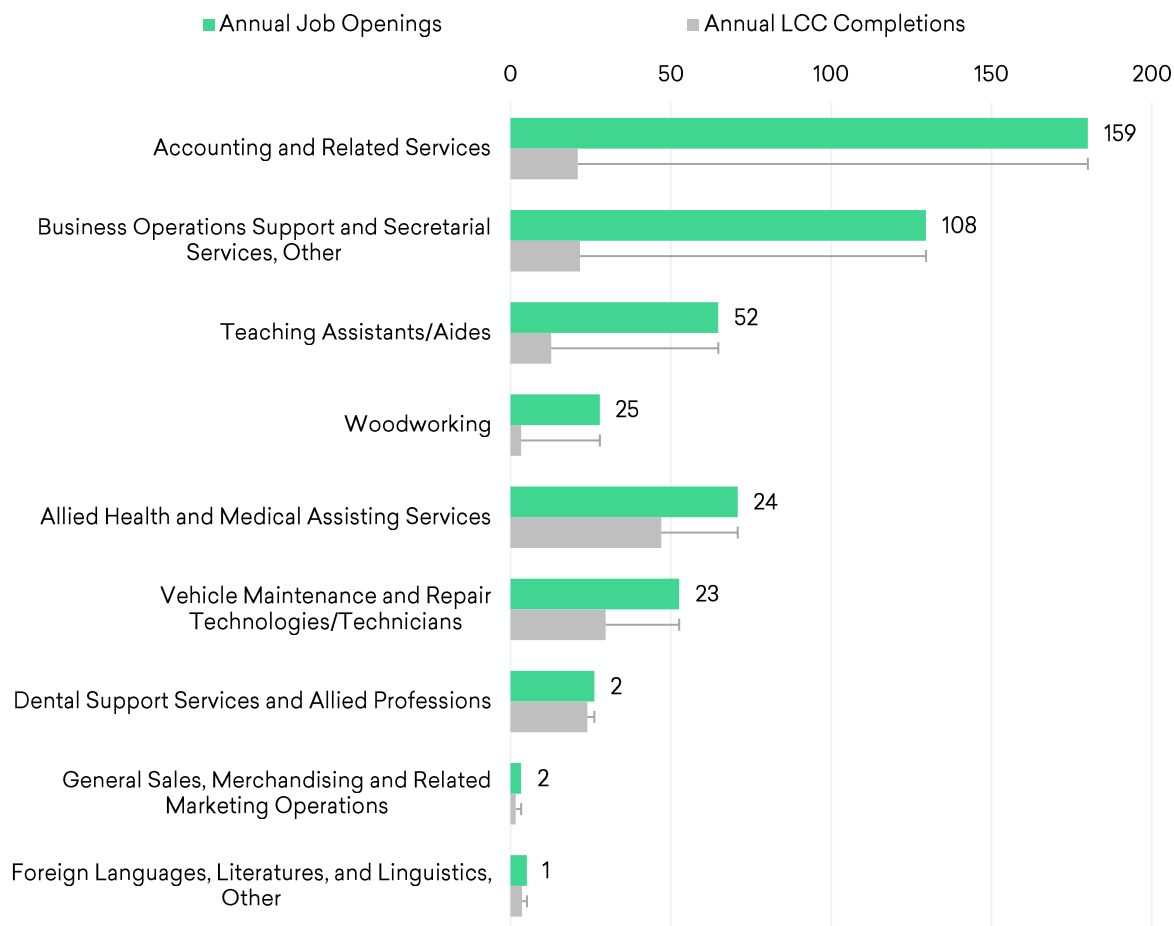
Third, completers of non-credit programs may already be employed (i.e., their employer requires continuing education to keep certain licenses up-to-date). It is up to the college to determine whether a program has a gap or surplus that is worth taking action to correct, based on a variety of sources of information beyond the scope of this report.

Fourth, it is important to contrast the results of the credit program analysis with those of the non-credit program analysis. While the non-credit program-to-occupation map is unique, occupations may be shared between the credit and non-credit programs. In these instances, completions of both the credit and non-credit programs are used to scale job openings. In

other words, it is important to compare a credit program's demand with its supply of non-credit program completions.

Finally, there may be other institutions or organizations in the county, on-line colleges in particular, that offer non-credit programs not analyzed in this report. The gaps and surpluses shown assume there are no other non-credit programs offered in Lane County.

Figure 3.5: LCC's Non-Credit Programs with a Gap



Source: Emsi gap model.

Forty-seven non-credit programs are evaluated in this section, when the programs are classified by their six-digit CIP codes. LCC offers more than 47 non-credit programs, but the programs in the analysis are specific to the education and training needed for employment, as opposed to leisure or self-enrichment programs. Furthermore, the programs are aggregated by their six-digit CIP codes for the purposes of mapping occupations. The programs' job openings consider someone with a high school diploma level of education

and some college education but no degree. Job openings have been weighted and scaled according to the mapped occupations and relative number of completions, respectively.

Of these programs, two have a significant gap above the 100-openings level of significance, as shown in Figure 3.5, and eight non-credit programs have a significant surplus, as shown in Table 3.1. The Accounting & Related Services non-credit program has the largest gap, with a gap of 159, while the Entrepreneurial & Small Business Operations, Other non-credit program has the largest surplus of 566. Programs with a significant gap or surplus have been highlighted in Table 3.1.

Table 3.1: Gaps and Surpluses for LCC's Non-Credit Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL LCC COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.0302	Accounting and Related Services	180	21	159	\$18.20
52.0401	Business Operations Support and Secretarial Services, Other	130	22	108	\$17.94
13.1501	Teaching Assistants/Aides	65	13	52	\$14.65
48.0701	Woodworking	28	3	25	\$18.12
51.0801	Allied Health and Medical Assisting Services	71	47	24	\$19.47
47.0604	Vehicle Maintenance and Repair Technologies/Technicians	53	30	23	\$18.86
51.0601	Dental Support Services and Allied Professions	26	24	2	\$21.05
52.1801	General Sales, Merchandising and Related Marketing Operations	3	2	2	\$28.17
16.9999	Foreign Languages, Literatures, and Linguistics, Other	5	4	1	\$18.67
22.0301	Legal Support Services	1	<1	0	\$18.42
51.2308	Rehabilitation and Therapeutic Professions	1	<1	0	\$41.84
51.2201	Public Health	6	6	(0)	\$19.04
23.0101	English Language and Literature, General	0	1	(1)	\$28.83
52.1601	Taxation	9	10	(1)	\$28.65
43.0301	Homeland Security	0	2	(2)	\$29.87
22.9999	Legal Professions and Studies, Other	0	3	(2)	\$27.46
14.1001	Electrical, Electronics, and Communications Engineering	1	3	(3)	\$45.21
15.0505	Energy Systems Technologies/Technicians	3	7	(4)	\$31.54
11.0601	Data Entry/Microcomputer Applications	1	6	(5)	\$17.21
52.1099	Human Resources Management and Services, Other	3	8	(5)	\$24.61
11.0201	Computer Programming	1	8	(7)	\$37.47
15.1301	Drafting/Design Engineering Technologies/Technicians	1	10	(8)	\$21.16



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL LCC COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
50.0601	Film/Video and Photographic Arts	2	11	(9)	\$21.78
51.0901	Allied Health Diagnostic, Intervention, and Treatment Professions	2	11	(9)	\$39.87
30.1901	Foods, Nutrition, and Related Services	1	11	(10)	\$31.10
48.0501	Precision Metal Working	31	47	(16)	\$22.43
51.1502	Mental and Social Health Services and Allied Professions	1	20	(19)	\$25.05
51.0701	Health and Medical Administrative Services	5	27	(22)	\$45.15
15.0303	Electrical/Electronic Engineering Technologies/Technicians	2	26	(24)	\$27.04
51.1004	Clinical/Medical Laboratory Science/Research and Allied Professions	7	34	(27)	\$33.54
11.0501	Computer Systems Analysis	1	29	(28)	\$31.06
43.9999	Homeland Security, Law Enforcement, Firefighting and Related Protective Services, Other	5	34	(28)	\$23.24
15.0501	Environmental Control Technologies/Technicians	22	54	(33)	\$26.34
46.9999	Construction Trades, Other	82	119	(37)	\$17.57
52.0999	Hospitality Administration/Management, Other	2	44	(42)	\$29.87
19.0201	Work and Family Studies	0	49	(49)	\$31.38
51.2601	Health Aides/Attendants/Orderlies	33	88	(55)	\$17.03
26.0407	Cell/Cellular Biology and Anatomical Sciences	0	76	(76)	\$30.06
52.1501	Real Estate	25	117	(92)	\$23.17
43.0201	Fire Protection	16	136	(120)	\$30.66
51.3902	Practical Nursing, Vocational Nursing and Nursing Assistants	102	271	(169)	\$17.03
31.0505	Sports, Kinesiology, and Physical Education/Fitness	0	203	(203)	\$25.10
11.0801	Computer Software and Media Applications	5	271	(266)	\$24.50
52.0201	Business Administration, Management and Operations	112	528	(417)	\$38.05
19.0701	Human Development, Family Studies, and Related Services	0	442	(442)	\$31.38
51.3501	Somatic Bodywork and Related Therapeutic Services	30	511	(481)	\$26.80
52.0799	Entrepreneurial and Small Business Operations, Other	28	594	(566)	\$29.87

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

The next step in the program demand gap analysis is to assess the occupations mapped to a non-credit program with a significant gap, focusing on the occupations' job openings, job



counts, and median wage rates. Unlike with normal programs, non-credit programs are typically designed to train for very few or even just one occupation. As such, only one occupation is mapped to Accounting & Related Services, the non-credit program with the largest gap. This occupation is bookkeeping, accounting, & auditing clerks, which has a median hourly wage rate of \$18.20 or \$37,856 annually.<sup>8</sup> For context, Oregon's state minimum wage is \$11.25<sup>9</sup> per hour, and the state's living wage is \$13.12 per hour for a household with one working adult and no children.<sup>10</sup> Considering wage rates and annual job openings, program expansion looks promising. However, we are projecting a small (<1%) decline in total jobs for the program's mapped occupation over the next decade, which should be factored into any decision for program expansion. Overall, the data suggest that an expansion of the program is in the best interest of program completers at this time.<sup>11</sup>

While the gaps are important for building or expanding LCC's programs, the surpluses are equally important. An analysis of the surplus programs ensures that the college is educating and training students with the skills the county's workforce requires. Eight non-credit programs have a significant surplus beyond the 100-openings level of significance. The Entrepreneurial & Small Business Operations, Other program has the largest, with a surplus of 566. The Somatic Bodywork & Related Therapeutic Services program also has a significant surplus, with a surplus of 481, followed by the Human Development, Family Studies, & Related Services program, with a surplus of 442. It is possible that LCC completers of the surplus programs are finding employment outside Lane County. It is also possible that these programs are predominantly serving students already employed in the workforce.

This step-by-step analysis of evaluating a program by its occupational job openings, job counts, and wage rates can be applied to the other program in Table 3.1. In general, occupations with high wages are more noteworthy than those with low wages. Also, if occupational forecasts are not positive, program development may not be a priority at this time. Keep in mind that there could be other sources of skilled workers filling the gaps, such as unemployed workers or workers from outside of Lane County.

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8 Annual wages in this report consider 2,080 working hours in a year.

9 Oregon's minimum wage as of January 1, 2020 is \$11.25 per hour. Source: Emsi Complete Employment Data.

10 Living wage calculations provided by Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology. See Appendix 8.

11 Further research must be conducted before making a final determination, such as top employer identification within the region; business surveys to verify the data; resume and job postings analysis to determine trending skills for individuals with similar educations; industry recommendations on curriculum development; and analysis of the strengths, weaknesses, and capacities of similar programs at other regional higher education institutions. Emsi is available to conduct this research; see your Emsi contact for details.

Table 3.2: Occupations Mapped to LCC’s Non-Credit Programs with a Significant Gap

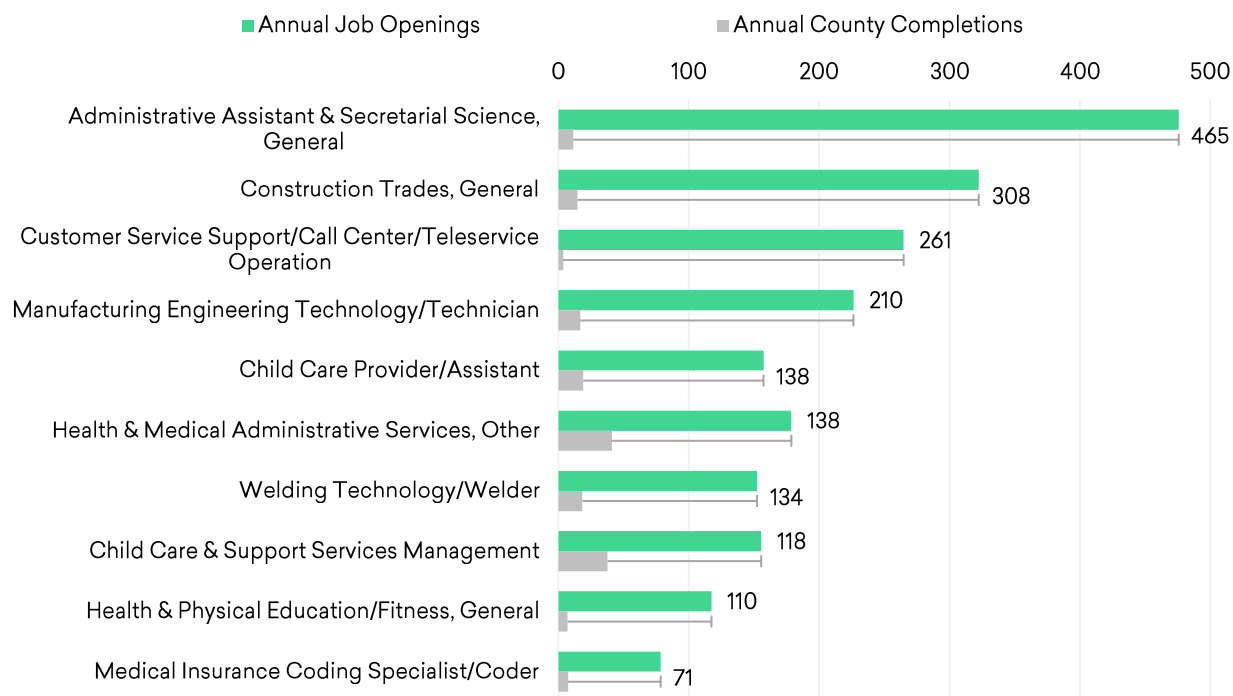
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ACCOUNTING AND RELATED SERVICES (CIP CODE 52.0302)						
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,458	2,435	(23)	180	\$18.20
BUSINESS OPERATIONS SUPPORT AND SECRETARIAL SERVICES, OTHER (CIP CODE 52.0401)						
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	3,111	3,086	(25)	130	\$17.94

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

## CERTIFICATE LEVEL ANALYSIS

Certificates are reported to IPEDS as awards of less than one academic year and awards of at least one but less than two academic years. In this section, LCC’s unique certificate level programs aggregate into 36 programs, when they are classified by their six-digit CIP codes. Average projected annual job openings consider someone with a high school diploma level of education and some college education but no degree. Furthermore, an occupation’s job openings are weighted by the number of other programs mapped to an occupation and scaled according to a program’s completions.

Figure 3.6: LCC’s Top 10 Certificate Level Programs with a Gap



Source: Emsi program demand gap model.



The largest certificate level gap, at 465 job openings, is in the Administrative Assistant & Secretarial Science, General program (Figure 3.6). Within the program, LCC has 11 average annual completions and is the only institution with completers in this program. Table 3.3 shows all the award level's program gaps and surpluses. Programs with a significant gap have been highlighted in Table 3.3. No programs have a significant surplus.

Table 3.3: Gaps and Surpluses for LCC's Certificate Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
52.0401	Administrative Assistant & Secretarial Science, General	476	11	11	465	\$16.97
46.0000	Construction Trades, General	322	15	15	308	\$25.57
52.0411	Customer Service Support/Call Center/Teleservice Operation	265	4	4	261	\$15.47
15.0613	Manufacturing Engineering Technology/Technician	226	17	17	210	\$29.11
19.0709	Child Care Provider/Assistant	157	19	19	138	\$14.31
51.0799	Health & Medical Administrative Services, Other	179	41	41	138	\$25.19
48.0508	Welding Technology/Welder	152	18	18	134	\$21.88
19.0708	Child Care & Support Services Management	156	38	38	118	\$14.42
31.0501	Health & Physical Education/Fitness, General	117	7	7	110	\$15.89
51.0713	Medical Insurance Coding Specialist/Coder	78	7	7	71	\$20.92
19.0706	Child Development	75	19	19	56	\$13.76
22.0301	Legal Administrative Assistant/Secretary	51	1	1	50	\$18.76
12.0501	Baking & Pastry Arts/Baker/Pastry Chef	46	5	5	41	\$14.41
31.0504	Sport & Fitness Administration/Management	47	7	7	40	\$17.30
51.0707	Health Information/Medical Records Technology/Technician	42	10	10	31	\$21.19
51.3901	Licensed Practical/Vocational Nurse Training	50	19	19	31	\$24.28
46.0301	Electrical & Power Transmission Installation/Installer, General	26	2	2	25	\$31.82
15.1001	Construction Engineering Technology/Technician	31	6	6	25	\$29.64
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	32	21	21	11	\$17.07
31.0507	Physical Fitness Technician	14	5	5	9	\$19.39
51.0801	Medical/Clinical Assistant	22	14	14	7	\$19.47
45.0702	Geographic Information Science & Cartography	9	2	2	7	\$22.56

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
10.0203	Recording Arts Technology/Technician	10	4	4	6	\$23.26
43.0110	Juvenile Corrections	6	<1	<1	5	\$36.79
46.0302	Electrician	3	<1	<1	2	\$29.40
15.1301	Drafting & Design Technology/Technician, General	10	8	8	2	\$23.53
11.0101	Computer & Information Sciences, General	3	1	1	2	\$33.82
51.0601	Dental Assisting/Assistant	18	16	16	1	\$21.05
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	14	14	14	1	\$22.25
11.0201	Computer Programming/Programmer, General	18	17	17	1	\$37.26
49.0102	Airline/Commercial/Professional Pilot & Flight Crew	2	1	1	0	\$65.88
11.0401	Information Science/Studies	0	<1	<1	0	\$35.14
11.0202	Computer Programming, Specific Applications	0	<1	<1	(0)	\$38.90
11.0801	Web Page, Digital/Multimedia and Information Resources Design	2	5	5	(3)	\$20.65
52.0999	Hospitality Administration/Management, Other	0	7	7	(7)	\$29.87
11.1002	System, Networking, & LAN/WAN Management/Manager	30	44	44	(14)	\$31.95

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

Several occupations mapped to Administrative Assistant & Secretarial Science, General, such as office clerks, general; receptionists & information clerks; and secretaries & administrative assistants, except legal, medical, & executive (Table 3.4). The median hourly wage for the Administrative Assistant & Secretarial Science, General program is \$16.97, when weighted by the openings and median hourly wages for each occupation mapped to the program. Program expansion looks promising, especially if the program is aimed at secretarial or clerk positions.<sup>12</sup>

This step-by-step analysis of evaluating a program by its occupational job openings, job counts, and wage rates can be applied to the other programs in Table 3.3. In general, occupations with high wages are more noteworthy than those with low wages. Also, if occupational forecasts are not positive, program development may not be a priority at this

<sup>12</sup> As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

time. Keep in mind that there could be other sources of skilled workers filling the gaps, such as unemployed workers or workers from outside Lane County.

Table 3.4: Occupations Mapped to LCC's Certificate Level Programs with a Significant Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ADMINISTRATIVE ASSISTANT & SECRETARIAL SCIENCE, GENERAL (CIP CODE 52.0401)						
43-9061	Office Clerks, General	3,739	3,962	224	286	\$16.66
43-4171	Receptionists & Information Clerks	1,077	1,179	101	87	\$14.78
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,111	3,086	(25)	68	\$17.94
43-6011	Executive Secretaries & Executive Administrative Assistants	429	376	(53)	21	\$27.56
43-4071	File Clerks	115	110	(5)	8	\$16.04
43-9022	Word Processors & Typists	66	55	(11)	4	\$16.88
43-9021	Data Entry Keyers	88	78	(9)	2	\$17.14
CONSTRUCTION TRADES, GENERAL (CIP CODE 46.0000)						
47-2031	Carpenters	1,441	1,524	84	106	\$22.80
47-2111	Electricians	916	1,053	136	41	\$32.78
49-9071	Maintenance & Repair Workers, General	1,578	1,744	165	37	\$17.33
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	29	\$28.17
47-2152	Plumbers, Pipefitters, & Steamfitters	637	726	89	28	\$26.20
51-1011	First-Line Supervisors of Production & Operating Workers	707	726	19	22	\$25.55
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	540	600	59	16	\$27.64
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	391	416	25	11	\$33.22
13-1051	Cost Estimators	316	347	31	11	\$29.15
47-2061	Construction Laborers	1,228	1,352	124	10	\$17.57
11-9021	Construction Managers	468	503	35	6	\$35.41
11-1021	General & Operations Managers	2,761	2,987	226	3	\$38.06
11-1011	Chief Executives	147	159	12	1	\$50.83
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	1	\$29.82
CUSTOMER SERVICE SUPPORT/CALL CENTER/TELESERVICE OPERATION (CIP CODE 52.0411)						
43-4051	Customer Service Representatives	2,328	2,421	93	219	\$15.33
43-4171	Receptionists & Information Clerks	1,077	1,179	101	28	\$14.78
43-4151	Order Clerks	136	147	10	12	\$15.09
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,263	1,315	52	5	\$24.99

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
43-2021	Telephone Operators	2	2	(0)	0	\$18.90
MANUFACTURING ENGINEERING TECHNOLOGY/TECHNICIAN (CIP CODE 15.0613)						
47-2111	Electricians	916	1,053	136	46	\$32.78
49-9071	Maintenance & Repair Workers, General	1,578	1,744	165	42	\$17.33
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	33	\$28.17
51-1011	First-Line Supervisors of Production & Operating Workers	707	726	19	25	\$25.55
15-1232	Computer User Support Specialists	594	686	92	16	\$23.72
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	391	416	25	13	\$33.22
13-1111	Management Analysts	662	749	87	12	\$35.09
11-2022	Sales Managers	390	410	20	8	\$42.62
11-9021	Construction Managers	468	503	35	7	\$35.41
11-3051	Industrial Production Managers	232	240	7	7	\$41.93
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	1,258	1,193	(64)	5	\$38.61
11-1021	General & Operations Managers	2,761	2,987	226	4	\$38.06
11-1011	Chief Executives	147	159	12	2	\$50.83
15-1244	Network and Computer Systems Administrators	229	239	10	1	\$38.01
17-2112	Industrial Engineers	108	127	19	1	\$44.28
17-3023	Electrical and Electronic Engineering Technologists and Technicians	51	53	1	1	\$27.45
17-2141	Mechanical Engineers	140	154	14	1	\$35.28
17-2199	Engineers, All Other	112	117	5	1	\$35.76
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	1	\$29.82
11-9041	Architectural & Engineering Managers	81	84	3	0	\$64.22
CHILD CARE PROVIDER/ASSISTANT (CIP CODE 19.0709)						
25-9045	Teaching Assistants, Except Postsecondary	2,261	2,494	232	97	\$14.65
39-9011	Childcare Workers	1,735	1,832	98	47	\$12.40
21-1093	Social & Human Service Assistants	927	1,040	113	12	\$17.57
21-1021	Child, Family, & School Social Workers	367	378	11	1	\$23.90
HEALTH & MEDICAL ADMINISTRATIVE SERVICES, OTHER (CIP CODE 51.0799)						
43-6013	Medical Secretaries and Administrative Assistants	1,339	1,504	166	67	\$18.20
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,263	1,315	52	61	\$24.99
13-1071	Human Resources Specialists	581	632	51	14	\$24.61



<b>SOC CODE</b>	<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
11-3011	Administrative Services Managers	322	354	33	13	\$43.37
11-9111	Medical & Health Services Managers	490	577	87	8	\$45.15
11-3121	Human Resources Managers	196	216	19	6	\$37.31
13-1041	Compliance Officers	183	205	22	4	\$27.46
27-3031	Public Relations Specialists	165	189	24	3	\$25.09
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	2	\$29.82
11-2031	Public Relations & Fundraising Managers	74	85	10	1	\$39.38
15-2041	Statisticians	11	16	5	0	\$34.56
<b>WELDING TECHNOLOGY/WELDER (CIP CODE 48.0508)</b>						
49-9071	Maintenance & Repair Workers, General	1,578	1,744	165	46	\$17.33
51-4121	Welders, Cutters, Solderers, & Brazers	441	432	(9)	34	\$18.62
47-2152	Plumbers, Pipefitters, & Steamfitters	637	726	89	34	\$26.20
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	540	600	59	20	\$27.64
47-2211	Sheet Metal Workers	122	135	13	11	\$21.76
47-2221	Structural Iron & Steel Workers	41	45	4	4	\$37.79
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	24	21	(3)	2	\$21.43
47-2171	Reinforcing Iron & Rebar Workers	7	6	(1)	0	\$24.95
<b>CHILD CARE &amp; SUPPORT SERVICES MANAGEMENT (CIP CODE 19.0708)</b>						
39-9011	Childcare Workers	1,735	1,832	98	93	\$12.40
25-2011	Preschool Teachers, Except Special Education	823	871	48	29	\$13.12
21-1093	Social & Human Service Assistants	927	1,040	113	24	\$17.57
11-9151	Social & Community Service Managers	398	432	34	6	\$29.67
21-1021	Child, Family, & School Social Workers	367	378	11	3	\$23.90
11-9031	Education and Childcare Administrators, Preschool and Daycare	117	121	4	2	\$26.49
<b>HEALTH &amp; PHYSICAL EDUCATION/FITNESS, GENERAL (CIP CODE 31.0501)</b>						
39-9032	Recreation Workers	464	533	69	54	\$12.32
27-2022	Coaches & Scouts	479	541	62	24	\$16.22
39-9031	Exercise Trainers and Group Fitness Instructors	567	593	25	20	\$18.69
21-1094	Community Health Workers	153	168	15	7	\$20.99
31-2022	Physical Therapist Aides	60	80	20	3	\$12.38
21-1091	Health Education Specialists	62	69	7	3	\$21.54
25-2031	Secondary School Teachers, Except Special & Career/Technical Education	468	528	61	2	\$28.83





<b>SOC CODE</b>	<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
25-2022	Middle School Teachers, Except Special & Career/Technical Education	376	417	41	2	\$30.18
11-9151	Social & Community Service Managers	398	432	34	1	\$29.67
27-2023	Umpires, Referees, & Other Sports Officials	15	18	3	1	\$12.80
27-2021	Athletes & Sports Competitors	11	13	2	1	\$17.25
25-2059	Special Education Teachers, All Other	81	89	8	1	\$41.32
29-1031	Dietitians & Nutritionists	61	69	8	0	\$31.07
11-9039	Education Administrators, All Other	42	50	8	0	\$23.28
29-1125	Recreational Therapists	14	16	2	0	\$25.69
29-9091	Athletic Trainers	7	12	4	0	\$21.99
29-2051	Dietetic Technicians	0	1	1	0	\$20.15
29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	425	478	53	0	\$121.31
29-1128	Exercise Physiologists	14	16	2	0	\$25.06

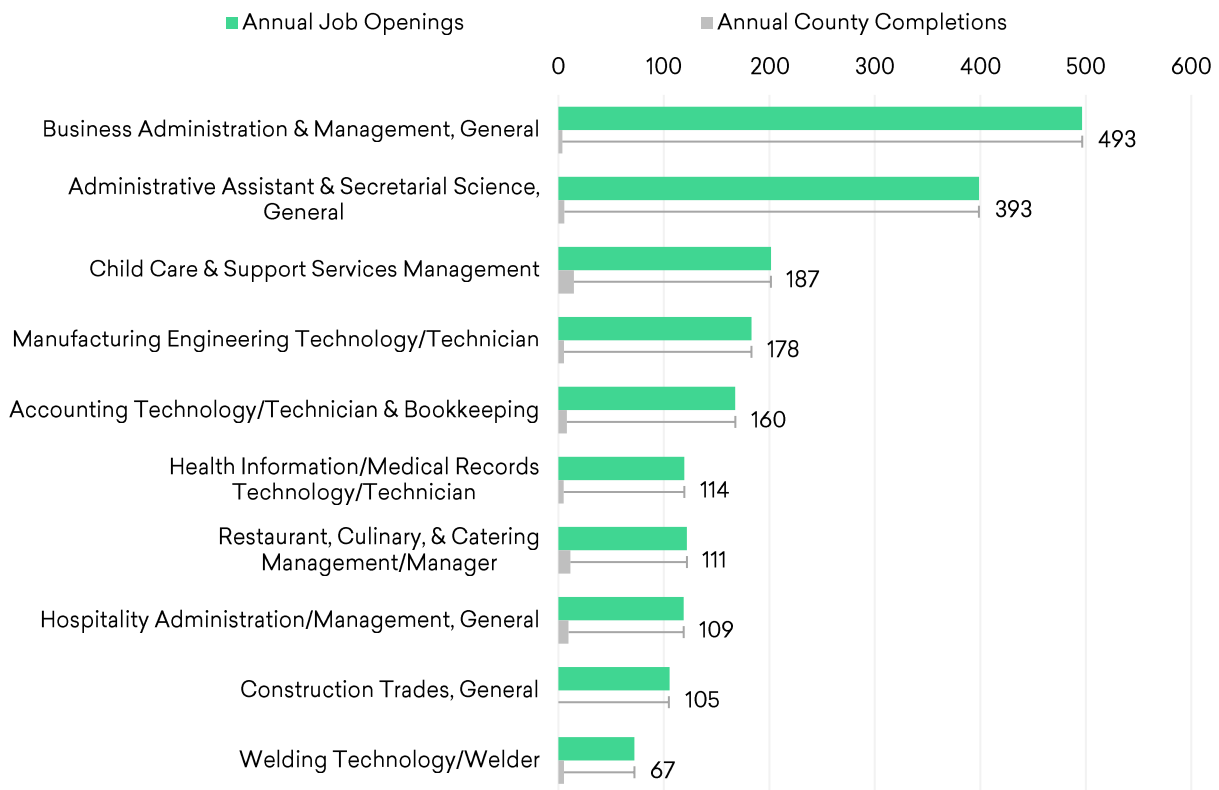
Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

## ASSOCIATE DEGREE LEVEL ANALYSIS

LCC offers 41 programs in which students receive an Associate in Applied Science (AAS), Art (AA), Fine Arts (AFA), or Science (AS) degrees in one of many subject areas, when the programs are classified by their six-digit CIP codes. Like the previous section, job openings consider this award level and one below – an associate degree and some college education in this section. An occupation’s job openings are weighted by the number of other programs mapped to the occupation and scaled according to a program’s completions.



Figure 3.7: LCC's Top 10 Associate Degree Level Programs with a Gap



Source: Emsi program demand gap model.

As shown in Figure 3.7, nine programs have a significant gap above the 100–openings level of significance. The Business Administration & Management, General program has the largest, followed by the Administrative Assistant & Secretarial Science, General and Child Care & Support Services Management programs. As shown in Table 3.5, the Business Administration & Management, General program has 497 average annual job openings, considering the county’s labor market. On average, the college has four annual completions, and is the only postsecondary educational institution in the county with completions in this program at the associate degree level. Programs with a significant gap have been highlighted in Table 3.5. No programs have a significant surplus.

Table 3.5: Gaps and Surpluses for LCC’s Associate Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
52.0201	Business Administration & Management, General	497	4	4	493	\$22.27
52.0401	Administrative Assistant & Secretarial Science, General	399	6	6	393	\$17.33
19.0708	Child Care & Support Services Management	201	15	15	187	\$13.80

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
15.0613	Manufacturing Engineering Technology/Technician	183	5	5	178	\$31.61
52.0302	Accounting Technology/Technician & Bookkeeping	168	8	8	160	\$19.21
51.0707	Health Information/Medical Records Technology/Technician	119	5	5	114	\$19.57
12.0504	Restaurant, Culinary, & Catering Management/Manager	122	11	11	111	\$15.33
52.0901	Hospitality Administration/Management, General	119	10	10	109	\$16.88
46.0000	Construction Trades, General	105	<1	<1	105	\$22.70
48.0508	Welding Technology/Welder	72	5	5	67	\$22.58
47.0604	Automobile/Automotive Mechanics Technology/Technician	81	17	17	64	\$19.84
31.0504	Sport & Fitness Administration/Management	75	13	13	62	\$17.66
03.0199	Natural Resources Conservation & Research, Other	60	2	2	58	\$26.39
43.0104	Criminal Justice/Safety Studies	61	3	3	58	\$33.01
46.0301	Electrical & Power Transmission Installation/Installer, General	67	9	9	58	\$31.92
47.0303	Industrial Mechanics & Maintenance Technology	52	<1	<1	51	\$24.15
15.1001	Construction Engineering Technology/Technician	35	3	3	32	\$29.53
15.0503	Energy Management & Systems Technology/Technician	33	2	2	32	\$25.81
44.0201	Community Organization & Advocacy	42	12	12	30	\$19.93
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	40	18	18	22	\$24.41
47.0605	Diesel Mechanics Technology/Technician	37	16	16	21	\$20.43
51.3801	Registered Nursing/Registered Nurse	85	66	66	19	\$44.64
50.0402	Commercial & Advertising Art	22	10	10	12	\$18.45
03.0103	Environmental Studies	12	<1	<1	12	\$26.39
11.1006	Computer Support Specialist	12	2	2	10	\$19.98
47.0603	Autobody/Collision & Repair Technology/Technician	11	1	1	10	\$18.82
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician	13	3	3	10	\$26.34
11.0201	Computer Programming/Programmer, General	17	8	8	9	\$33.91
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	9	1	1	8	\$20.20
15.1301	Drafting & Design Technology/Technician, General	13	6	6	7	\$22.64



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
10.0203	Recording Arts Technology/Technician	10	3	3	6	\$24.24
11.0202	Computer Programming, Specific Applications	9	5	5	4	\$35.12
11.1002	System, Networking, & LAN/WAN Management/Manager	27	23	23	4	\$32.71
11.0299	Computer Programming, Other	4	2	2	2	\$35.12
03.0205	Water, Wetlands, & Marine Resources Management	2	<1	<1	2	\$27.98
11.1003	Computer and Information Systems Security/Information Assurance	1	<1	<1	0	\$28.44
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	10	10	10	(0)	\$23.40
49.0102	Airline/Commercial/Professional Pilot & Flight Crew	2	4	4	(3)	\$65.88
51.0602	Dental Hygiene/Hygienist	11	14	14	(3)	\$37.88
51.0806	Physical Therapy Technician/Assistant	12	21	21	(10)	\$21.18
47.0607	Airframe Mechanics & Aircraft Maintenance Technology/Technician	8	20	20	(12)	\$29.65

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

Several occupations mapped to Business Administration & Management, General, such as customer service representatives, first-line supervisors of retail sales workers, and first-line supervisors of office & administrative support workers (Table 3.6). The median hourly wage for the Business Administration & Management, General program is \$22.27, when weighted by the openings and median hourly wages for each occupation mapped to the program. While the largest occupational gap for the program, customer service representatives, only has a median hourly wage of \$15.33, there are over 150 annual job openings for mapped occupations with median hourly wages of \$23.00 or higher. Considering this, the data suggest that an expansion of the program is in the best interest of program completers, particularly if the program is preparing students for managerial and supervisory occupations.<sup>13</sup>

Using Table 3.5, this step-by-step process of evaluating occupational gaps by their job openings, job counts, and median hourly wage rates can be applied to the other LCC associate degree level programs with a significant gap. In general, occupations with high wages should be considered more noteworthy than those with low wages. If an occupation's job projections are not positive, then it may not be worth further consideration, in terms of

13 As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

its mapped programs. Also, there could be other sources of skilled workers filling the gaps, such as unemployed workers or workers from outside the county.

Table 3.6: Occupations Mapped to LCC's Associate Degree Level Programs with a Significant Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
BUSINESS ADMINISTRATION & MANAGEMENT, GENERAL (CIP CODE 52.0201)						
43-4051	Customer Service Representatives	2,328	2,421	93	151	\$15.33
41-1011	First-Line Supervisors of Retail Sales Workers	1,890	1,969	79	99	\$18.79
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,263	1,315	52	58	\$24.99
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,111	3,086	(25)	55	\$17.94
11-1021	General & Operations Managers	2,761	2,987	226	32	\$38.06
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	19	\$28.17
11-3031	Financial Managers	623	732	109	19	\$45.51
13-1071	Human Resources Specialists	581	632	51	16	\$24.61
13-1198	Project Management Specialists and Business Operations Specialists, All Other	1,330	1,418	88	12	\$26.37
15-1232	Computer User Support Specialists	594	686	92	6	\$23.72
13-1161	Market Research Analysts & Marketing Specialists	435	537	102	6	\$23.17
11-3121	Human Resources Managers	196	216	19	5	\$37.31
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	4	\$29.82
13-2011	Accountants & Auditors	920	1,021	100	4	\$28.65
13-1111	Management Analysts	662	749	87	4	\$35.09
11-2022	Sales Managers	390	410	20	3	\$42.62
11-2021	Marketing Managers	191	217	26	2	\$39.36
11-3021	Computer & Information Systems Managers	326	342	16	1	\$48.54
11-1011	Chief Executives	147	159	12	1	\$50.83
ADMINISTRATIVE ASSISTANT & SECRETARIAL SCIENCE, GENERAL (CIP CODE 52.0401)						
43-9061	Office Clerks, General	3,739	3,962	224	249	\$16.66
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,111	3,086	(25)	85	\$17.94
43-4171	Receptionists & Information Clerks	1,077	1,179	101	31	\$14.78
43-6011	Executive Secretaries & Executive Administrative Assistants	429	376	(53)	20	\$27.56
43-4071	File Clerks	115	110	(5)	7	\$16.04
43-9022	Word Processors & Typists	66	55	(11)	4	\$16.88
43-9021	Data Entry Keyers	88	78	(9)	3	\$17.14

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
CHILD CARE & SUPPORT SERVICES MANAGEMENT (CIP CODE 19.0708)						
39-9011	Childcare Workers	1,735	1,832	98	129	\$12.40
25-2011	Preschool Teachers, Except Special Education	823	871	48	42	\$13.12
21-1093	Social & Human Service Assistants	927	1,040	113	22	\$17.57
11-9151	Social & Community Service Managers	398	432	34	4	\$29.67
21-1021	Child, Family, & School Social Workers	367	378	11	2	\$23.90
11-9031	Education and Childcare Administrators, Preschool and Daycare	117	121	4	2	\$26.49
MANUFACTURING ENGINEERING TECHNOLOGY/TECHNICIAN (CIP CODE 15.0613)						
11-1021	General & Operations Managers	2,761	2,987	226	46	\$38.06
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	28	\$28.17
51-1011	First-Line Supervisors of Production & Operating Workers	707	726	19	25	\$25.55
47-2111	Electricians	916	1,053	136	21	\$32.78
49-9071	Maintenance & Repair Workers, General	1,578	1,744	165	14	\$17.33
15-1232	Computer User Support Specialists	594	686	92	9	\$23.72
11-9021	Construction Managers	468	503	35	7	\$35.41
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	6	\$29.82
13-1111	Management Analysts	662	749	87	5	\$35.09
11-3051	Industrial Production Managers	232	240	7	4	\$41.93
11-2022	Sales Managers	390	410	20	4	\$42.62
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	391	416	25	3	\$33.22
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	1,258	1,193	(64)	3	\$38.61
17-3023	Electrical and Electronic Engineering Technologists and Technicians	51	53	1	3	\$27.45
17-2141	Mechanical Engineers	140	154	14	1	\$35.28
11-1011	Chief Executives	147	159	12	1	\$50.83
17-2112	Industrial Engineers	108	127	19	1	\$44.28
15-1244	Network and Computer Systems Administrators	229	239	10	1	\$38.01
17-2199	Engineers, All Other	112	117	5	1	\$35.76
11-9041	Architectural & Engineering Managers	81	84	3	1	\$64.22
ACCOUNTING TECHNOLOGY/TECHNICIAN & BOOKKEEPING (CIP CODE 52.0302)						
43-3031	Bookkeeping, Accounting, & Auditing Clerks	2,458	2,435	(23)	145	\$18.20
43-3051	Payroll & Timekeeping Clerks	138	150	12	8	\$23.00

<b>SOC CODE</b>	<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
13-2011	Accountants & Auditors	920	1,021	100	8	\$28.65
13-2082	Tax Preparers	138	142	3	5	\$25.29
43-4011	Brokerage Clerks	19	21	1	1	\$23.22
43-9111	Statistical Assistants	1	2	0	0	\$22.17
<b>HEALTH INFORMATION/MEDICAL RECORDS TECHNOLOGY/TECHNICIAN (CIP CODE 51.0707)</b>						
43-6013	Medical Secretaries and Administrative Assistants	1,339	1,504	166	86	\$18.20
29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	447	499	52	20	\$23.13
15-1232	Computer User Support Specialists	594	686	92	9	\$23.72
43-9021	Data Entry Keyers	88	78	(9)	2	\$17.14
15-1231	Computer Network Support Specialists	216	239	23	1	\$25.27
15-1211	Computer Systems Analysts	240	274	34	1	\$31.06
<b>RESTAURANT, CULINARY, &amp; CATERING MANAGEMENT/MANAGER (CIP CODE 12.0504)</b>						
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	1,204	1,359	154	99	\$14.86
11-9051	Food Service Managers	394	427	33	12	\$16.00
35-1011	Chefs & Head Cooks	150	174	25	11	\$18.84
35-2013	Cooks, Private Household	1	1	0	0	\$16.39
<b>HOSPITALITY ADMINISTRATION/MANAGEMENT, GENERAL (CIP CODE 52.0901)</b>						
43-4171	Receptionists & Information Clerks	1,077	1,179	101	54	\$14.78
43-4081	Hotel, Motel, & Resort Desk Clerks	299	297	(3)	25	\$12.17
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	11	\$29.82
11-9051	Food Service Managers	394	427	33	10	\$16.00
13-1121	Meeting, Convention, & Event Planners	141	154	13	5	\$21.97
39-7018	Tour & Travel Guides	48	52	4	5	\$16.91
11-9081	Lodging Managers	99	100	0	4	\$29.28
39-1098	First-Line Supervisors of Personal Service and Entertainment Workers, Except Gambling Services	247	289	42	3	\$19.97
39-1013	First-Line Supervisors of Gambling Service Workers	15	16	1	1	\$25.18
11-9071	Gambling Managers	6	7	2	0	\$24.88
39-6012	Concierges	2	5	3	0	\$15.23
<b>CONSTRUCTION TRADES, GENERAL (CIP CODE 46.0000)</b>						
47-2031	Carpenters	1,441	1,524	84	43	\$22.80
47-2061	Construction Laborers	1,228	1,352	124	37	\$17.57



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
11-1021	General & Operations Managers	2,761	2,987	226	6	\$38.06
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	3	\$28.17
47-2152	Plumbers, Pipefitters, & Steamfitters	637	726	89	3	\$26.20
51-1011	First-Line Supervisors of Production & Operating Workers	707	726	19	3	\$25.55
47-2111	Electricians	916	1,053	136	3	\$32.78
13-1051	Cost Estimators	316	347	31	2	\$29.15
49-9071	Maintenance & Repair Workers, General	1,578	1,744	165	2	\$17.33
11-9021	Construction Managers	468	503	35	1	\$35.41
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	540	600	59	1	\$27.64
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	1	\$29.82
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	391	416	25	0	\$33.22
11-1011	Chief Executives	147	159	12	0	\$50.83

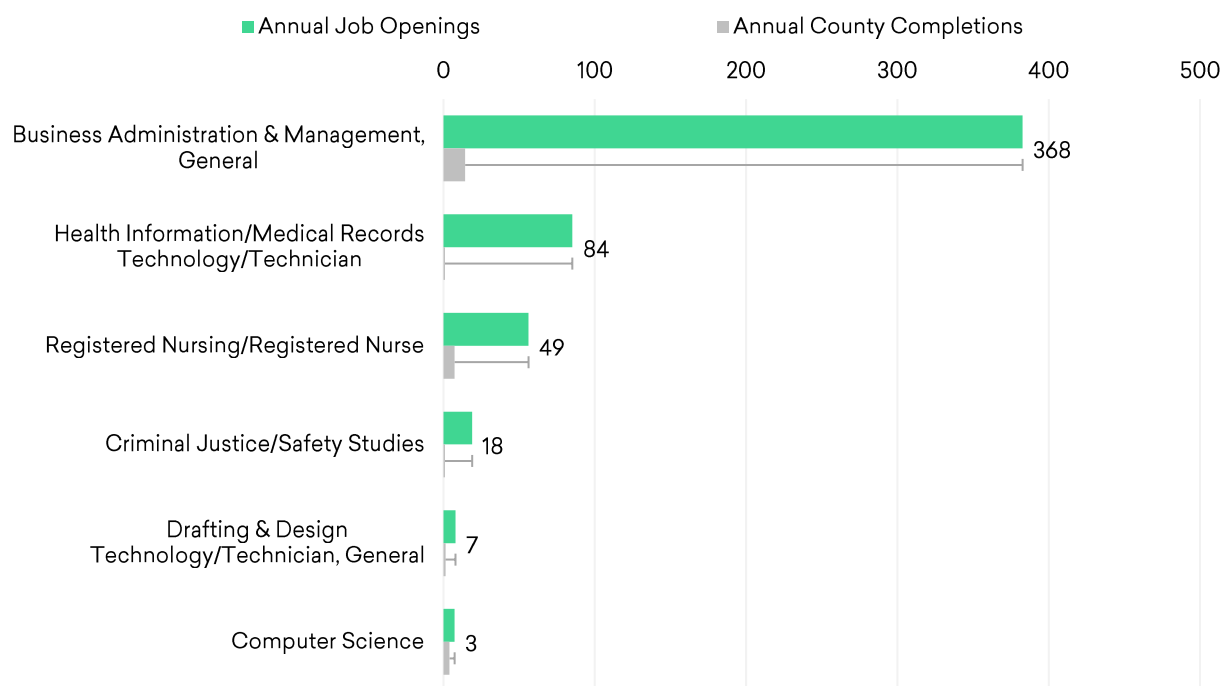
Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

## TRANSFER-TRACK DEGREE LEVEL ANALYSIS

The analysis in this section evaluates LCC's associate degree level programs whose graduates are intended to transfer on and culminate their education with a bachelor's degree. The programs are referred to as transfer-track degree level programs, and a program completer could readily transfer into a similar bachelor's degree level program. At LCC, there are 11 such transfer-track degree level programs, when the programs are classified by their six-digit CIP codes. LCC is one of several postsecondary educational institutions in the county, and some other institutions offer bachelor's degree level programs. Job openings at this award level consider someone with a bachelor's degree or associate degree level of education. An occupation's job openings are weighted by the number of other programs mapped to the occupation and scaled according to a program's completions.



Figure 3.8: LCC's Transfer-Track Degree Level Programs with a Gap



LCC programs award completers with an associate degree, but the demand for jobs considers a bachelor's degree level of education.

Source: Emsi program demand gap model.

Figure 3.8 shows the programs with a significant gap. The Business Administration & Management, General program has the largest, followed by the Health Information/Medical Records Technology/Technician and Registered Nursing/Registered Nurse programs. As shown in Table 3.7, there are 368 average annual job openings in the region for occupations related to the Business Administration & Management, General program. On average, the college graduates four annual completers, and combined with the other postsecondary educational institutions in the county, there are a total of 14 annual completers. However, as LCC does not actually offer bachelor's degrees, it is important to remember that LCC's transfer-track students are more than likely feeding into the 10 annual bachelor's degree completions we see from other postsecondary institutions in the region. Programs with a significant gap or surplus have been highlighted in Table 3.7.

Table 3.7: Gaps and Surpluses for LCC's Transfer-Track Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
52.0201	Business Administration & Management, General	383	14	4	368	\$22.94
51.0707	Health Information/Medical Records Technology/Technician	85	1	1	84	\$19.16
51.3801	Registered Nursing/Registered Nurse	56	7	7	49	\$45.56

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			COUNTY	LCC		
43.0104	Criminal Justice/Safety Studies	19	1	1	18	\$33.46
15.1301	Drafting & Design Technology/Technician, General	8	1	1	7	\$22.59
11.0701	Computer Science	7	4	4	3	\$35.44
11.1002	System, Networking, & LAN/WAN Management/Manager	4	4	4	0	\$32.63
11.0202	Computer Programming, Specific Applications	3	2	2	0	\$37.56
52.0302	Accounting Technology/Technician & Bookkeeping	2	2	2	0	\$22.48
50.0402	Commercial & Advertising Art	1	3	3	(1)	\$15.39
52.0101	Business/Commerce, General	323	612	45	(288)	\$34.20

LCC programs award completers with an associate degree, but the demand for jobs considers a bachelor's degree level of education. Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

While Business Administration & Management, General was already examined at the associate degree level, this gives us a unique opportunity to examine the shift in occupation mapping when considering a program at the associate degree level versus a program being considered at the bachelor's degree level. We see a bachelor's degree in Business Administration & Management, General significantly de-emphasizes customer service and somewhat reduces first-line supervisory occupations, but in-turn emphasizes sales representative and human resources occupations. Much like at the associate degree level, program expansion at the transfer-track degree level looks promising. However, there is a significant shift in occupational openings, which can offer insight into new additions or modifications to the existing program.<sup>14</sup>

Table 3.8: Occupations Mapped to LCC's Transfer-Track Degree Level Programs with a Significant Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
BUSINESS ADMINISTRATION & MANAGEMENT, GENERAL (CIP CODE 52.0201)						
43-4051	Customer Service Representatives	2,328	2,421	93	86	\$15.33
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,486	1,532	46	84	\$28.17
41-1011	First-Line Supervisors of Retail Sales Workers	1,890	1,969	79	67	\$18.79

<sup>14</sup> As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,263	1,315	52	60	\$24.99
13-1071	Human Resources Specialists	581	632	51	39	\$24.61
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,111	3,086	(25)	14	\$17.94
11-3121	Human Resources Managers	196	216	19	10	\$37.31
13-2011	Accountants & Auditors	920	1,021	100	6	\$28.65
15-1232	Computer User Support Specialists	594	686	92	4	\$23.72
11-3031	Financial Managers	623	732	109	3	\$45.51
11-3021	Computer & Information Systems Managers	326	342	16	2	\$48.54
11-1021	General & Operations Managers	2,761	2,987	226	2	\$38.06
13-1198	Project Management Specialists and Business Operations Specialists, All Other	1,330	1,418	88	1	\$26.37
11-2021	Marketing Managers	191	217	26	1	\$39.36
13-1111	Management Analysts	662	749	87	1	\$35.09
13-1161	Market Research Analysts & Marketing Specialists	435	537	102	1	\$23.17
11-2022	Sales Managers	390	410	20	0	\$42.62
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,268	1,339	72	0	\$29.82
11-1011	Chief Executives	147	159	12	0	\$50.83

LCC programs award completers with an associate degree, but the demand for jobs considers a bachelor's degree level of education. Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

## LIBERAL ARTS TRANSFER STUDENTS

A number of students attend LCC with the intention of transferring to a four-year institution to receive a bachelor's degree. Although these students study any number of topics at the college, a large portion of them receive an Associate of Arts in Liberal Arts. In fact, over the past three years, 1,232 students, on average, have completed such a program, which accounts for 25.5% of LCC's annual production of certificates, including non-credit awards, and degrees.

Once liberal arts students leave LCC, their educational and career track is difficult to predict. They could attend a nearby four-year institution, and they could study any number of different programs that will ultimately determine their future careers. What can be shown is that over the next 10 years, jobs that require a bachelor's degree are projected to be in high demand. In any given year between 2019 and 2029, 5,120 job openings will require a bachelor's degree level of education.

This section shows the top occupations mapped to liberal arts programs, using Emsi's Profile Analytics database, which contains more than 125 million profiles of people in the U.S. from all the major professional social media websites. To identify the top occupations, the Profile Analytics database is filtered in several ways. First, profiles include people who have an associate degree or a bachelor's degree level of education. Second, the profiles list liberal arts as the person's program of study. Liberal arts programs are classified as CIP codes 24.01, 30.00, and 30.99 at the four-digit level. Finally, the database includes profiles most recently updated, from as early as 2010. Using these search parameters, 263,200 profiles are found in the database, and the occupations in Table 3.9 represent the most common jobs of the liberal arts alumni.

As shown in the table, a considerable number of job openings are for retail salespersons, secretaries & administrative assistants, and customer service representatives. Together, the three occupations account for 48.5% of all the liberal arts program's job openings. The profiles data also include various kinds of managers and supervisors, which are occupations with relatively higher wage rates. A liberal arts program expansion is not warranted at this time, but LCC administrators should be aware that liberal arts graduates can find success in a variety of business-related occupations beyond retail sales and customer service.

Table 3.9: Occupations Related to Liberal Arts Programs

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
41-2031	Retail Salespersons	5,050	5,127	77	752	\$13.04
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,197	3,118	(79)	364	\$17.94
43-4051	Customer Service Representatives	2,341	2,321	(20)	315	\$15.33
11-1021	General & Operations Managers	2,759	2,980	221	274	\$38.05
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,483	1,490	8	159	\$28.17
13-1198	Project Management Specialists and Business Operations Specialists, All Other	1,328	1,412	84	141	\$26.37
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,269	1,310	41	141	\$24.99
21-1093	Social & Human Service Assistants	1,007	1,195	188	151	\$17.57
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	1,279	1,353	75	108	\$29.87
25-3097	Teachers & Instructors, All Other	576	695	120	86	\$23.84
13-1111	Management Analysts	661	738	77	74	\$35.09
13-1071	Human Resources Specialists	599	649	50	68	\$24.61
11-3031	Financial Managers	628	732	104	63	\$45.51
15-1232	Computer User Support Specialists	615	673	58	59	\$23.72
41-9022	Real Estate Sales Agents	567	594	27	59	\$23.17

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
43-6011	Executive Secretaries & Executive Administrative Assistants	431	381	(50)	46	\$27.56
11-2022	Sales Managers	390	406	16	37	\$42.61
27-3031	Public Relations Specialists	166	194	28	22	\$25.09
11-2021	Marketing Managers	194	218	24	21	\$39.36
11-1011	Chief Executives	156	173	17	14	\$50.83

Source: Emsi gap model.

## SUMMARY

Between the non-credit, certificate, associate, and transfer-track degree levels, there are a total of 21 programs associated with significant workforce gaps. Four programs have significant gaps at multiple levels: Administrative Assistant & Secretarial Science, General at certificate and associate; Construction Trades, General at certificate and associate; Child Care & Support Services Management at certificate and associate; and Business Administration & Management, General at associate and transfer-track levels.

At the non-credit level, two programs have a gap above the 100-job level of significance and eight have a significant surplus. The non-credit program analysis shows that entry-level jobs in industries related to business are plentiful in Lane County, some of which are associated with high wage rates. Furthermore, not receiving an LCC Certificate of Completion in one of the various non-credit programs at the college with a significant gap does not preclude someone from employment. Industry-specific employment credentials can be obtained during on-the-job training. However, the results of the analysis are an indication of the potential labor market demand for LCC's non-credit programs, whether those programs are for people seeking employment or looking to learn new skills. The non-credit level programs with the top three largest gaps are:

- Accounting & Related Services (gap of 159; median hourly wage \$18.20).
- Business Operations Support & Secretarial Services, Other (gap of 108; median hourly wage \$17.94).
- Teaching Assistants/Aides (gap of 52; median hourly wage \$14.65).

At the certificate level, nine programs have a gap above the 100-job level of significance and none have a significant surplus. Program expansions at this award level should be given careful consideration if the program awards completers with an LCC certificate and a certification, license, or industry-specific credential required for employment in an occupation. The certificate level programs with the top three largest gaps are:

- Administrative Assistant & Secretarial Science, General (gap of 465; median hourly wage \$16.97)
- Construction Trades, General (gap of 308; median hourly wage \$25.57)
- Customer Service Support/Call Center/Teleservice Operation (gap of 261; median hourly wage \$15.47)

At the associate degree level, nine programs have a significant gap above the 100-job level of significance, and some are recommended for further program development.

Specifically, the county's labor market has the most opportunity for occupations related to business professionals working in a variety of industries. For LCC administrators, it is advised that the college engage with the local community on behalf of its students to best discern local need, particularly for the broader business programs. No programs have a significant surplus at this award level. The associate degree programs with the top three largest gaps are:

- Business Administration & Management, General (gap of 493; median hourly wage \$22.27)
- Administrative Assistant & Secretarial Science, General (gap of 393; median hourly wage \$17.33)
- Child Care & Support Services Management (gap of 187; median hourly wage \$13.80)

The transfer-track degree level program analysis identifies job opportunities within LCC's associate degree level programs but with job openings at the bachelor's degree level. A program expansion should consider the process by which LCC's students transfer into regional bachelor's degree level programs. Administrative and academic support measures at LCC would enable student success. At this award level, one program has a significant gap above the 100-job level of significance and one program has a significant surplus of program completions. However, since the degrees being earned are associate degrees, not actually bachelor's degrees, this likely does not actually represent a problematic surplus. The transfer-track degree level programs with the three largest gaps are:

- Business Administration & Management, General (gap of 368; median hourly wage \$22.94)
- Health Information/Medical Records Technology/Technician (gap of 84; median hourly wage \$19.16)
- Registered Nursing/Registered Nurse (gap of 49; median hourly wage \$45.56)

A liberal arts program expansion is not recommended at this time, but LCC administrators should be aware that students can find success in a variety of business-related occupations. Using the Profile Analytics database, many liberal arts program completers are currently employed as administrative assistants and customer service representatives, as well as a variety of managers and supervisors. These occupations have a considerable number of job

openings in Lane County, and the college's liberal arts program serves as a starting point to students' future career goals.





# New Program Additions

Thus far, the analysis has centered around programs offered by LCC. This chapter looks at workforce gaps that exist within occupations that the college does not currently train for and provides new program recommendations. For each award level, a table shows the occupations' current employment, projected percentage growth over the next decade, average annual projected job openings, average annual completers, gap, and median hourly wage rates. In addition, the figure in the certificate level section details the current annual wage rates for those employed in a selection of occupations.

Recommendations are based solely on the gap and whether or not the occupation looks promising (job growth, wages, etc.). These are initial findings and should serve as a starting point for further research. LCC's administration will still need to undergo steps before deciding whether these programs would be a good fit for the college and the county. This future work could include surveying local employers, analyzing skills and similar programs offered elsewhere, calculating program specific economic impacts, and looking at capacity and capital requirements for building these programs.

## ADDITIONS AT THE CERTIFICATE LEVEL

Twenty occupations have been identified as certificate level programmatic areas of opportunity, as shown in Table 4.1. The select occupations present unmet annual job openings within Lane County (i.e. they have a gap), their median hourly wage rates are greater than \$15.00, and the occupations typically require some college education but no degree for entry-level positions.

As shown, there is diversity in the types of occupations in the table, with a limited number of job openings in the county for some. The most represented occupational groups in the table are education, training, & library occupations (SOC 25-0000), healthcare practitioners & technical (SOC 29-0000), and office & administrative support (SOC 43-0000). Each group has four occupations and about 1,500 jobs, 970 jobs, and 510 jobs, respectively, in the county in 2019. Some of LCC's current offerings, such as its certificate level Administrative Assistant & Secretarial Science, General program, may already be teaching the skills needed for employment as one of the various occupations in the table.





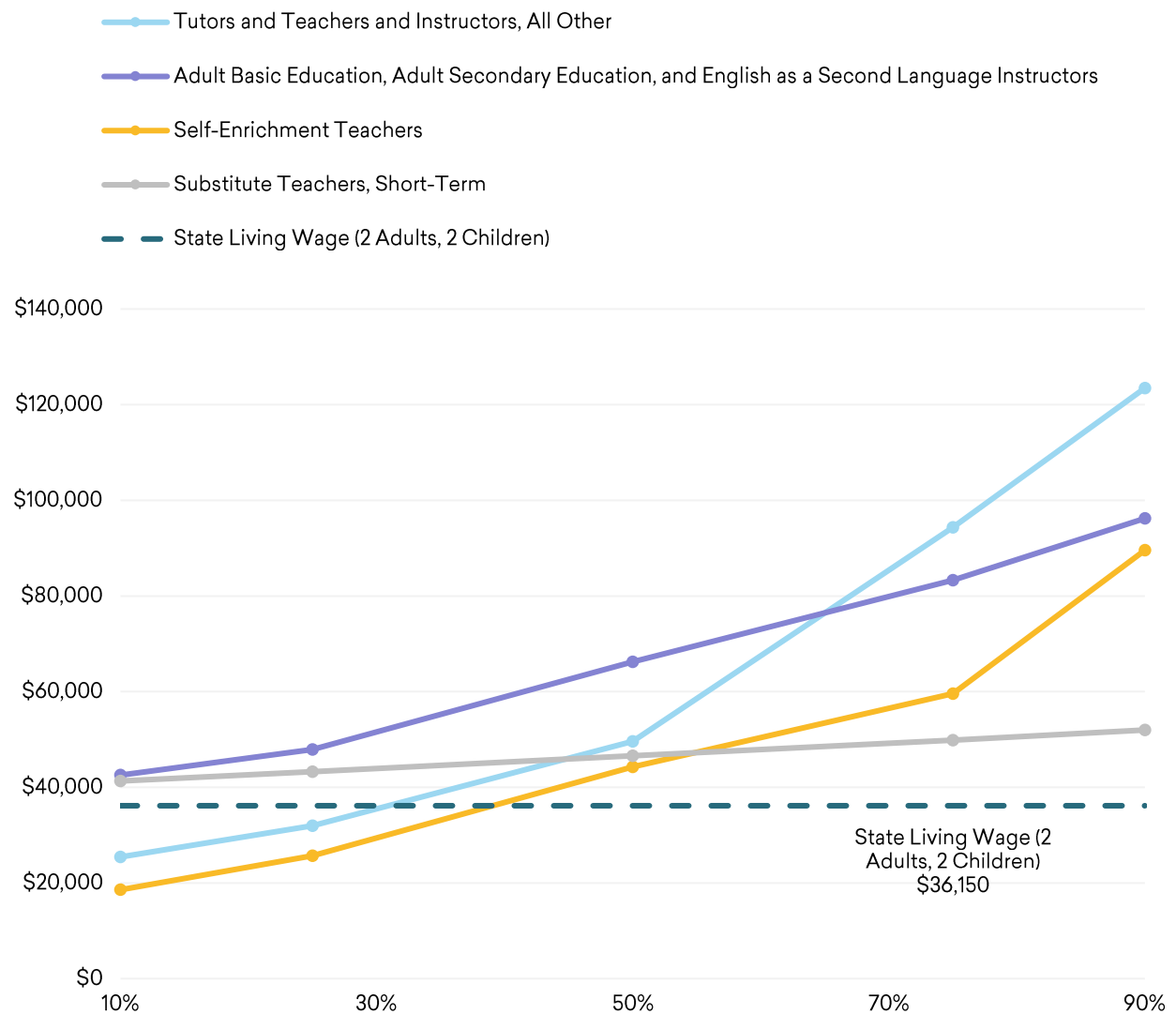
Table 4.1: LCC's Programmatic Areas of Opportunity at the Certificate Level

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>% JOB CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>ANNUAL COMPL.</b>	<b>GAP</b>	<b>MEDIAN HOURLY WAGE</b>
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	1,173	20.6%	133	0	133	\$16.12
Tutors and Teachers and Instructors, All Other	576	20.8%	45	0	45	\$23.84
Pharmacy Technicians	528	11.3%	29	0	29	\$20.76
Self-Enrichment Teachers	407	18.6%	30	0	30	\$21.29
Substitute Teachers, Short-Term	370	8.8%	25	0	25	\$22.40
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	298	7.7%	23	0	23	\$26.49
Healthcare Support Workers, All Other	211	10.1%	19	0	19	\$18.35
Reservation and Transportation Ticket Agents and Travel Clerks	159	4.0%	12	0	12	\$16.46
Library Assistants, Clerical	104	12.5%	11	0	11	\$18.40
Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	150	6.6%	10	0	10	\$31.84
Ophthalmic Medical Technicians	150	10.8%	9	0	9	\$20.92
Dispatchers, Except Police, Fire, and Ambulance	119	8.4%	9	0	9	\$20.23
Veterinary Technologists and Technicians	147	21.5%	9	0	9	\$15.55
Human Resources Assistants, Except Payroll and Timekeeping	126	1.2%	8	0	8	\$17.74
Orderlies	89	6.0%	8	0	8	\$15.31
Surgical Technologists	144	9.2%	7	0	7	\$24.29
Dental Laboratory Technicians	60	21.4%	6	0	6	\$17.21
Phlebotomists	57	18.4%	5	0	5	\$18.41
Miscellaneous Entertainers and Performers, Sports and Related Workers	81	11.2%	5	0	5	\$19.14
Medical Equipment Repairers	67	9.4%	4	0	4	\$24.61

Numbers may not sum due to rounding.  
 Source: Emsi program demand gap model.



Figure 4.1: Percentile Wage Rates of Education, Training, & Library Occupations Identified as New Program Opportunities



Source: Employees & Self-Employed 2019.2.

The annual wage rates of the education, training, & library occupations from Table 4.1 are shown in Figure 4.1, with an emphasis on low and high wage-earners. For those people in Lane County employed as tutors & teachers & instructors, all other, annual wage rates are the highest, but only above the 65<sup>th</sup> percentile. Notably, the difference between the lowest wage earners in the occupation (10<sup>th</sup> percentile) and the highest (90<sup>th</sup> percentile) is about \$95,000. Data on percentile wage rates highlight the occupations that should be incorporated into a new or existing LCC program, for the benefit of students first coming into the county's labor market or those looking to change career paths.

## ADDITIONS AT THE ASSOCIATE DEGREE LEVEL

Fewer occupations, compared to the previous section, have been identified as associate degree level programmatic areas of opportunity (Table 4.2). There are not as many occupations that specifically require such an education, and most have been considered in the previous chapter’s analysis. Of the six occupations in the table, five are related to healthcare practitioners & technical occupations (SOC 29-0000), with about 490 jobs in the county.

Table 4.2: LCC’s Programmatic Areas of Opportunity at the Associate Degree Level

SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL JOB OPENINGS	ANNUAL COMPL.	GAP	MEDIAN HOURLY WAGE
Occupational Therapy Assistants	113	40.3%	13	0	13	\$34.89
Respiratory Therapists	159	19.4%	8	0	8	\$24.58
Radiologic Technologists and Technicians	158	7.8%	6	0	6	\$34.16
Magnetic Resonance Imaging Technologists	107	(13.2%)	3	0	3	\$46.23
Diagnostic Medical Sonographers	51	14.9%	2	0	2	\$44.01
Nuclear Medicine Technologists	15	5.7%	0	0	0	\$45.18

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

## ADDITIONS AT THE TRANSFER-TRACK DEGREE LEVEL

As shown in Table 4.3, 20 occupations have been identified as transfer-track degree level programmatic areas of opportunity. The select occupations present unmet annual job openings within Lane County (i.e. they have a gap), their median hourly wage rates are greater than \$19.00, and the occupations typically require a bachelor’s degree level of education for entry-level positions.

The table shows a diverse set of occupations, with a limited number of job openings in the county for some. The most represented occupational group in the table are sales & related occupations (SOC 41-0000), with six occupations and about 2,240 jobs in the county in 2019. The second most represented occupation group is business & financial operations and is followed by education, training, & library. Some of LCC’s current offerings, such as its transfer-track degree level Business Administration & Management, General program, may already be teaching the skills needed for employment as one of the various sales & related or business & financial occupations in the table.

Table 4.3: LCC's Programmatic Areas of Opportunity at the Transfer-Track Degree Level

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>% JOB CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>ANNUAL COMPL.</b>	<b>GAP</b>	<b>MEDIAN HOURLY WAGE</b>
Insurance Sales Agents	749	(4.2%)	38	0	38	\$21.52
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	518	9.8%	37	0	37	\$21.63
Office and Administrative Support Workers, All Other	587	13.6%	38	0	38	\$19.45
Paralegals and Legal Assistants	383	(10.6%)	24	0	24	\$20.84
Buyers and Purchasing Agents	426	(3.0%)	23	0	23	\$23.75
Securities, Commodities, and Financial Services Sales Agents	273	(1.1%)	16	0	16	\$26.12
Loan Officers	346	(1.2%)	16	0	16	\$30.14
Real Estate Brokers	264	4.8%	14	0	14	\$22.18
Production, Planning, and Expediting Clerks	223	19.9%	14	0	14	\$21.44
Educational Instruction and Library Workers, All Other	274	20.8%	15	0	15	\$21.14
Claims Adjusters, Examiners, and Investigators	212	8.0%	12	0	12	\$27.57
Personal Financial Advisors	219	4.9%	12	0	12	\$44.88
Education Administrators, Postsecondary	266	27.9%	13	0	13	\$45.92
First-Line Supervisors of Non-Retail Sales Workers	280	(4.8%)	12	0	12	\$28.43
Civil Engineers	222	(2.7%)	11	0	11	\$38.38
Social Workers, All Other	357	15.5%	24	0	24	\$26.07
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	158	(9.2%)	8	0	8	\$35.30
Medical Transcriptionists	93	(13.4%)	8	0	8	\$19.42
Instructional Coordinators	159	17.1%	8	2	6	\$28.38
Designers, All Other	80	1.7%	5	0	5	\$22.88

Numbers may not sum due to rounding.  
Source: Emsi program demand gap model.

## SUMMARY

Twenty certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, some of which are related to education, training, & library occupations. At the associate degree level, there are fewer opportunities for new programs, considering the college's current offerings. Nonetheless, LCC should consider new programs related to healthcare practitioners & technical occupations, whether its focus is on

job openings in Lane County or in Oregon. Twenty transfer-track degree level programmatic areas of opportunity were identified in the program demand gap analysis, many of which are related to sales & related occupations, a demand which LCC could establish or adjust existing transfer-track degrees to meet. For all award levels, many program additions are related to the college's current program offerings, which indicates an opportunity for a curriculum adjustment to better align with the county's current and projected labor market demand.



## APPENDIX 1: Glossary of Terms

**Associate Degree** A degree granted for the successful completion of a sub-baccalaureate program of study, usually requiring at least two years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work-study program. For the program demand gap analysis, degrees of greater than two years but less than four, as defined by IPEDS, are included in the associate degree category.

**Certificate** A formal award certifying the satisfactory completion of a postsecondary education program. Certificates can be awarded at any level of postsecondary education and include awards below the associate degree level. For the program demand gap analysis, this includes awards of less than one year and greater than one year but less than two, as defined by IPEDS.

**Gap** represents a deficit, or when there are more job openings in a particular occupation than there are completions from higher education institutions in the county, region, state, etc. If left unaddressed, a gap may lead to missed opportunities for economic growth and put stress on local businesses to find the necessary talent elsewhere. Significant gaps translate into higher human resources costs and decreased efficiencies in the economic system. They also provide an opportunity for educational institutions to develop new programs and/or strengthen their current programs.

**Industry Jobs** Emsi industry data have various sources depending on the class of worker. Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, Bureau of Economic Analysis (BEA) State and Local Personal Income reports, the National Industry–Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. Self-Employed class of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. The Extended Proprietor class of worker is not included in the analysis. Projections for QCEW and non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

**IPEDS** The Integrated Postsecondary Education Data System (IPEDS) aggregates interrelated surveys conducted annually by the U.S. Department of Education’s National Center for Education Statistics (NCES). IPEDS gathers information from every educational institution in the U.S. that participates in the federal student financial aid programs authorized by Title IV of the Higher Education Act of 1965. These educational institutions include research universities, state colleges and universities, private religious and liberal arts colleges, for-profit institutions, community and technical colleges, non-degree-granting institutions such as beauty colleges, and others.



**Job Openings** Job openings are a combination of job growth, which occurs when an employer experiences greater demand for its products and hires new employees to increase production, and replacement needs, which occurs when employees leave the workforce or change occupations. Throughout the program demand gap analysis, they represent the average number of projected openings between 2019 and 2029. Job openings are calculated for each occupation mapped to a program and are de-duplicated across programs mapped to the same occupation using Emsi's weighting methodology. For each award level, the number of openings is reported for that educational level and one education level below it.

**Location Quotient (LQ)** A comparative statistic used to calculate the relative employment concentration of an industry or occupation against the employment of the industry in a larger geographic region (i.e. a county's LQ relative to the U.S.). Industries with a higher location quotient (usually greater than 1.2) indicate that the smaller geographic region has a comparative advantage or specialization in the production of that good or service or has a high degree of specialization within its workforce.

**NAICS** The North American Industry Classification System (NAICS) organizes North American business establishments to better collect, analyze, and publish statistical data related to the business economy. NAICS is intended to classify an establishment's activity regardless of its ownership (public or private sector) or legal form of organization (proprietorship, partnership, corporation, for-profit, nonprofit, etc.). However, due to the realities of available data, Emsi treats establishments with public and private sector ownership differently. In Emsi data, all establishments in the main NAICS hierarchy are private sector only. Jobs in Educational Services and Ambulatory Health Care Service, for example, are not associated with local, state, or federal government jobs. Jobs for public school teachers and city firefighters are in Local Government, whereas college professors and forest firefighters are commonly employed by State Government. Mail carriers and transportation security screeners are examples of jobs in Federal Government. Thus, Emsi does not use the standard NAICS classification, which is similar to Current Employment Statistics (CES), Occupational Employment Statistics (OES), and BEA data sources.

**New Program Additions** New program additions are workforce gaps that exist for occupations the institution does not currently train for, based on the mapping of the institution's current programs. The award level recommended for the occupations is determined based by the level of education of workers currently employed in the occupation.

**Program Completions** For the program demand gap analysis, program completions are the average number of students, over a three-year period, who receive an award or degree for a program of study, as reported to IPEDS. An average over three years is used to control for upward or downward spikes in completions in any one year.

**SOC** The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of about 775 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form about 450 broad occupations, about 95 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together. There are a few minor differences between Emsi and standard SOC codes. Primarily, Emsi does not use detailed SOC codes for military occupations due to lack of good data and aggregates the occupations into one code, 55-9999. And, Emsi uses a single aggregate code (25-1099) for all postsecondary teachers due to lack of solid data and to remain consistent with the NIOEM, which uses a similar code. Emsi currently uses the OES's SOC 2017.

**Staffing Patterns** show the occupational makeup of an industry in percentages. For example, a simplified staffing pattern of the Hospitals industry subsector might show that 20% of its jobs are occupied by nurses, 15% by nursing assistants, 10% by general practitioners, 10% by surgeons, five percent by information technology support staff, five percent by janitors, one percent by chief executives, etc. Data are compiled from several sources, including Occupational Employment Statistics, NIOEM, and the American Community Survey. For the Self-Employed class of worker, the primary source is the American Community Survey with a small amount of information from Occupational Employment Statistics.

**Surplus** Represents an oversupply, or when there are more completers from regional educational institutions than there are job openings in a particular occupation. If left unaddressed, significant surpluses may lead to higher unemployment rates or higher attrition rates—the institution could be educating a workforce that is leaving the region after program completion because of a lack of job opportunities. In the tables, values in parentheses represent a surplus.

**Transfer-Track** degrees are not a formal award level according to IPEDS. They are associate degrees, as defined by IPEDS, that prepare students to pursue a baccalaureate degree, as opposed to a two-year terminal degree. Transfer-track degrees are usually awarded as Associate of Arts (AA) or Associate of Science (AS) degrees, compared to terminal associate degrees, usually awarded as Associate of Applied Science (AAS) or Associate of Applied Arts (AAA) degrees.



## APPENDIX 2: About Emsi Data

### LABOR MARKET INFORMATION

Traditional labor market information (LMI) helps us to identify those occupations with good jobs and projected growth in the coming decade. This provides a robust, market-driven foundation upon which to build out programmatic recommendations. Emsi's data then allows us to map these occupations back to programs that train for them, and to extrapolate other occupational outcomes for potential graduates. Emsi data are used to calculate the projected number of annual job openings from 2019 to 2029. These projections account for openings due to job growth and openings due to replacement needs, such as when an employee retires or leaves the position. To capture a complete picture of industry employment, Emsi gathers and integrates economic, labor market, demographic, and educational data from over 40 government and private-sector sources. In doing so, Emsi creates a comprehensive and current database that includes both published data and detailed estimates, with full coverage of the U.S.

More specifically, Emsi combines covered employment data from the Quarterly Census of Employment and Wages (QCEW-produced by the Department of Labor) with total employment data in Regional Economic Information System (REIS-published by the BEA). The data are augmented with County Business Patterns (CBP) and Non-Employer Statistics (NES) published by the Census Bureau. Job projections are based on the latest-available Emsi industry data, 15-year past local trends in each industry, growth rates in statewide and, where available, sub-state area industry projections published by individual state agencies and, in part, growth rates in national projections from the Bureau of Labor Statistics (BLS).

Through this combination of data sources, Emsi is able to fill gaps in individual sources (such as suppressions), yielding a composite database that leverages the strengths of all its sources. Finally, Emsi's database is updated quarterly, providing the most up-to-date integrated information possible.

### JOB POSTING ANALYTICS

Job postings are online advertisements for jobs, posted by companies trying to attract applicants. Analyzing job postings for information on the labor market can yield valuable insight, such as skills that employers are requesting, the companies that are posting jobs, where those jobs are located, and greater specificity in job titles. In addition, job postings also have virtually no lag time, as they can be collected from sites soon after being posted. However, not all jobs are posted online, and in some cases, companies post far more

positions than they intend to hire in an effort to cast a broad net for talent. Many factors can influence the number of postings that appear on the web for a particular job or company, including:

- Fluctuating prices of job postings;
- Building waiting lists of potential hires should positions become vacant;
- The hiring of new employees immediately or in six months;
- Postings left online after positions have been filled; and
- Duplicate postings for a given position.

It can be helpful to think of LMI as measuring the actions of all employers, whereas job postings analyses measure the intentions of those who post jobs. For postsecondary educational institutions, job postings indicate what is currently in demand across county or regional employers, including emerging needs. As such, job postings information can be used to help tailor program curricula so that graduates will be competitive in the job market. The sources collect about 100 million job postings per month from more than 90,000 companies. Emsi de-duplicates these postings down to approximately 8 million unique job postings per month. In the process, geographies are assigned to the postings as well as company names, job locations, skills, and so on.

## APPENDIX 3: Additional Jobs Data

### INDUSTRY COMPOSITION

Table A3.1: Current and Projected Jobs by Industry Subsector in Lane County, 2019 and 2029

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
903	Local Government	23,461	27,549	4,087	17.4%
722	Food Services & Drinking Places	14,195	16,179	1,983	14.0%
561	Administrative & Support Services	9,563	9,682	119	1.2%
621	Ambulatory Health Care Services	9,534	11,636	2,102	22.0%
541	Professional, Scientific, & Technical Services	7,780	8,335	554	7.1%
624	Social Assistance	6,560	8,164	1,604	24.4%
622	Hospitals	6,223	6,618	395	6.3%
623	Nursing & Residential Care Facilities	5,957	7,298	1,341	22.5%
238	Specialty Trade Contractors	5,551	6,122	572	10.3%
445	Food & Beverage Stores	4,486	4,762	276	6.1%
452	General Merchandise Stores	4,016	4,033	17	0.4%
321	Wood Product Manufacturing	3,643	3,411	(232)	(6.4%)
423	Merchant Wholesalers, Durable Goods	3,489	3,403	(85)	(2.4%)
551	Management of Companies & Enterprises	3,447	4,302	856	24.8%
441	Motor Vehicle & Parts Dealers	3,048	3,133	85	2.8%
901	Federal Government	2,861	2,975	115	4.0%
531	Real Estate	2,858	2,945	87	3.1%
236	Construction of Buildings	2,777	3,168	391	14.1%
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	2,632	2,666	34	1.3%
611	Educational Services	2,618	2,956	338	12.9%
424	Merchant Wholesalers, Nondurable Goods	2,477	2,528	50	2.0%
812	Personal & Laundry Services	2,461	2,790	329	13.4%
814	Private Households	2,176	2,582	406	18.7%
311	Food Manufacturing	2,007	2,087	81	4.0%
811	Repair & Maintenance	1,959	1,908	(52)	(2.6%)
721	Accommodation	1,940	1,967	27	1.4%
524	Insurance Carriers & Related Activities	1,926	2,233	307	15.9%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
453	Miscellaneous Store Retailers	1,922	2,107	185	9.6%
444	Building Material & Garden Equipment & Supplies Dealers	1,880	2,036	156	8.3%
522	Credit Intermediation & Related Activities	1,856	1,735	(121)	(6.5%)
902	State Government	1,726	728	(998)	(57.8%)
333	Machinery Manufacturing	1,693	1,516	(176)	(10.4%)
713	Amusement, Gambling, & Recreation Industries	1,691	1,739	48	2.9%
511	Publishing Industries (except Internet)	1,492	681	(811)	(54.4%)
484	Truck Transportation	1,375	1,395	21	1.5%
332	Fabricated Metal Product Manufacturing	1,134	1,128	(7)	(0.6%)
111	Crop Production	1,123	1,521	397	35.4%
711	Performing Arts, Spectator Sports, & Related Industries	1,123	1,185	63	5.6%
448	Clothing & Clothing Accessories Stores	1,115	1,018	(97)	(8.7%)
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	1,017	894	(123)	(12.1%)
447	Gasoline Stations	1,012	1,142	130	12.8%
325	Chemical Manufacturing	979	1,011	32	3.3%
237	Heavy & Civil Engineering Construction	969	1,010	41	4.3%
337	Furniture & Related Product Manufacturing	936	984	48	5.1%
446	Health & Personal Care Stores	929	1,075	145	15.6%
454	Nonstore Retailers	906	1,081	176	19.4%
339	Miscellaneous Manufacturing	779	775	(4)	(0.5%)
113	Forestry & Logging	772	697	(76)	(9.8%)
485	Transit & Ground Passenger Transportation	748	913	164	22.0%
492	Couriers & Messengers	742	908	166	22.4%
336	Transportation Equipment Manufacturing	720	669	(51)	(7.1%)
312	Beverage & Tobacco Product Manufacturing	642	703	60	9.4%
115	Support Activities for Agriculture & Forestry	547	559	12	2.2%
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	539	556	17	3.1%
532	Rental & Leasing Services	509	521	12	2.3%
443	Electronics & Appliance Stores	488	317	(171)	(35.0%)
442	Furniture & Home Furnishings Stores	475	430	(46)	(9.6%)
334	Computer & Electronic Product Manufacturing	475	370	(105)	(22.2%)
562	Waste Management & Remediation Services	450	529	79	17.5%
326	Plastics & Rubber Products Manufacturing	438	544	106	24.2%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
488	Support Activities for Transportation	428	468	40	9.3%
425	Wholesale Electronic Markets & Agents & Brokers	371	444	73	19.6%
323	Printing & Related Support Activities	365	260	(105)	(28.8%)
322	Paper Manufacturing	291	296	5	1.7%
512	Motion Picture & Sound Recording Industries	290	325	35	12.2%
515	Broadcasting (except Internet)	287	260	(27)	(9.5%)
314	Textile Product Mills	286	304	17	6.1%
517	Telecommunications	267	257	(10)	(3.6%)
327	Nonmetallic Mineral Product Manufacturing	221	203	(17)	(7.9%)
112	Animal Production & Aquaculture	220	217	(3)	(1.5%)
212	Mining (except Oil & Gas)	203	168	(35)	(17.3%)
493	Warehousing & Storage	199	215	16	8.1%
482	Rail Transportation	196	194	(2)	(1.0%)
221	Utilities	148	147	(1)	(0.6%)
712	Museums, Historical Sites, & Similar Institutions	127	155	28	22.1%
519	Other Information Services	118	163	45	38.3%
481	Air Transportation	97	81	(16)	(16.7%)
331	Primary Metal Manufacturing	94	98	4	4.5%
335	Electrical Equipment, Appliance, & Component Manufacturing	93	94	1	0.9%
518	Data Processing, Hosting, & Related Services	80	112	31	38.9%
114	Fishing, Hunting & Trapping	72	82	10	13.5%
315	Apparel Manufacturing	69	90	22	31.6%
491	Postal Service	55	68	13	24.4%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	42	49	8	18.4%
213	Support Activities for Mining	40	68	28	68.9%
486	Pipeline Transportation	20	19	(1)	(5.8%)
316	Leather & Allied Product Manufacturing	10	11	0	3.4%
525	Funds, Trusts, & Other Financial Vehicles	5	14	9	159.0%
487	Scenic & Sightseeing Transportation	5	3	(2)	(46.3%)
211	Oil & Gas Extraction	0	0	0	0
313	Textile Mills	0	0	0	0.0%
324	Petroleum & Coal Products Manufacturing	0	0	0	0.0%
483	Water Transportation	0	0	0	0



NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
521	Monetary Authorities-Central Bank	0	0	0	0
<b>Total</b>		<b>177,546</b>	<b>192,774</b>	<b>15,222</b>	<b>8.6%</b>

Source: Employees & Self-Employed 2020.4.

Table A3.2: Employment Concentration (LQ) by Industry Subsector in Lane County, 2019 and 2029

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
113	Forestry & Logging	9.29	8.98
321	Wood Product Manufacturing	7.89	7.18
491	Postal Service	3.48	3.09
814	Private Households	2.33	2.71
314	Textile Product Mills	2.18	2.41
337	Furniture & Related Product Manufacturing	2.13	2.23
114	Fishing, Hunting & Trapping	2.06	2.47
312	Beverage & Tobacco Product Manufacturing	2.05	1.97
453	Miscellaneous Store Retailers	1.83	2.00
511	Publishing Industries (except Internet)	1.77	0.76
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	1.66	2.02
623	Nursing & Residential Care Facilities	1.64	1.81
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	1.59	1.49
903	Local Government	1.52	1.71
333	Machinery Manufacturing	1.39	1.24
441	Motor Vehicle & Parts Dealers	1.36	1.33
551	Management of Companies & Enterprises	1.34	1.53
445	Food & Beverage Stores	1.34	1.40
624	Social Assistance	1.34	1.38
444	Building Material & Garden Equipment & Supplies Dealers	1.32	1.34
111	Crop Production	1.30	1.71
452	General Merchandise Stores	1.23	1.25
711	Performing Arts, Spectator Sports, & Related Industries	1.19	1.15
531	Real Estate	1.19	1.13
454	Nonstore Retailers	1.16	1.11
236	Construction of Buildings	1.15	1.16
622	Hospitals	1.13	1.11

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
311	Food Manufacturing	1.12	1.09
621	Ambulatory Health Care Services	1.10	1.08
339	Miscellaneous Manufacturing	1.10	1.05
722	Food Services & Drinking Places	1.09	1.10
811	Repair & Maintenance	1.07	0.99
325	Chemical Manufacturing	1.06	1.05
424	Merchant Wholesalers, Nondurable Goods	1.04	1.03
812	Personal & Laundry Services	1.02	1.05
423	Merchant Wholesalers, Durable Goods	1.00	0.94
447	Gasoline Stations	0.99	1.05
212	Mining (except Oil & Gas)	0.98	0.78
515	Broadcasting (except Internet)	0.97	0.90
485	Transit & Ground Passenger Transportation	0.96	0.96
443	Electronics & Appliance Stores	0.92	0.66
561	Administrative & Support Services	0.91	0.85
562	Waste Management & Remediation Services	0.90	0.93
115	Support Activities for Agriculture & Forestry	0.89	0.80
442	Furniture & Home Furnishings Stores	0.88	0.76
721	Accommodation	0.87	0.84
238	Specialty Trade Contractors	0.85	0.85
713	Amusement, Gambling, & Recreation Industries	0.85	0.78
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	0.83	0.79
482	Rail Transportation	0.82	0.78
446	Health & Personal Care Stores	0.80	0.89
492	Couriers & Messengers	0.80	0.85
532	Rental & Leasing Services	0.80	0.76
237	Heavy & Civil Engineering Construction	0.80	0.71
323	Printing & Related Support Activities	0.77	0.64
448	Clothing & Clothing Accessories Stores	0.76	0.79
322	Paper Manufacturing	0.74	0.78
484	Truck Transportation	0.73	0.70
332	Fabricated Metal Product Manufacturing	0.70	0.68
712	Museums, Historical Sites, & Similar Institutions	0.66	0.70



NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
541	Professional, Scientific, & Technical Services	0.66	0.62
522	Credit Intermediation & Related Activities	0.65	0.58
425	Wholesale Electronic Markets & Agents & Brokers	0.64	0.78
524	Insurance Carriers & Related Activities	0.62	0.66
611	Educational Services	0.58	0.56
326	Plastics & Rubber Products Manufacturing	0.56	0.69
901	Federal Government	0.55	0.57
315	Apparel Manufacturing	0.53	0.92
512	Motion Picture & Sound Recording Industries	0.53	0.54
488	Support Activities for Transportation	0.50	0.48
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	0.49	0.47
327	Nonmetallic Mineral Product Manufacturing	0.48	0.44
112	Animal Production & Aquaculture	0.47	0.47
334	Computer & Electronic Product Manufacturing	0.41	0.33
336	Transportation Equipment Manufacturing	0.39	0.34
486	Pipeline Transportation	0.36	0.31
517	Telecommunications	0.34	0.39
316	Leather & Allied Product Manufacturing	0.32	0.33
519	Other Information Services	0.31	0.32
525	Funds, Trusts, & Other Financial Vehicles	0.30	0.62
902	State Government	0.29	0.12
221	Utilities	0.25	0.24
331	Primary Metal Manufacturing	0.22	0.24
335	Electrical Equipment, Appliance, & Component Manufacturing	0.22	0.21
518	Data Processing, Hosting, & Related Services	0.21	0.24
481	Air Transportation	0.18	0.13
493	Warehousing & Storage	0.15	0.13
487	Scenic & Sightseeing Transportation	0.12	0.06
213	Support Activities for Mining	0.11	0.16
211	Oil & Gas Extraction	0.00	0.00
313	Textile Mills	0.00	0.00
324	Petroleum & Coal Products Manufacturing	0.00	0.00
483	Water Transportation	0.00	0.00





NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
521	Monetary Authorities-Central Bank	0.00	0.00

Source: Employees & Self-Employed 2020.4.

## INDUSTRY STAFFING PATTERNS

The following tables show the staffing patterns of the industry subsectors discussed in Chapter 2. The Entry Ed Level Column describes the typical award level required for an entry level position in the occupation. “None” or “<HS/GED” indicates that the occupation typically requires no formal educational credential; “HS/GED” refers to a high school diploma or its equivalent, a General Equivalency Development or General Equivalency Diploma test; “Cert” refers to a postsecondary nondegree award or some college education with no degree; and “Doctoral” refers to a doctoral or professional degree level of education. The other education classifications are straightforward.

Table A3.3: Employment Projections in Lane County for the Top 25 Occupations Related to the Local Government Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Postsecondary Teachers	2,290	3,069	369	9.8%	\$33.54	BACH
Teaching Assistants, Except Postsecondary	1,778	1,974	287	7.6%	\$14.65	CERT
Office Clerks, General	1,159	1,388	493	4.9%	\$16.66	CERT
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,045	1,148	364	4.5%	\$17.94	CERT
Elementary School Teachers, Except Special Education	960	1,046	98	4.1%	\$31.59	BACH
Police and Sheriffs Patrol Officers	566	669	54	2.4%	\$35.00	BACH
Secondary School Teachers, Except Special and Career/Technical Education	398	449	40	1.7%	\$28.83	BACH
Firefighters	370	415	32	1.6%	\$30.66	CERT
Maintenance and Repair Workers, General	367	450	180	1.6%	\$17.33	HS/GED
Office and Administrative Support Workers, All Other	367	456	82	1.6%	\$19.45	BACH
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	355	381	187	1.5%	\$16.12	CERT
Middle School Teachers, Except Special and Career/Technical Education	324	357	32	1.4%	\$30.18	BACH
Bookkeeping, Accounting, and Auditing Clerks	304	341	293	1.3%	\$18.20	CERT

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB OPENINGS</b>	<b>% JOBS IN INDUSTRY</b>	<b>MEDIAN HOURLY WAGE</b>	<b>ENTRY ED LEVEL</b>
Fast Food and Counter Workers	290	335	1,465	1.2%	\$12.02	HS/GED
Substitute Teachers, Short-Term	287	320	48	1.2%	\$22.40	CERT
Tutors and Teachers and Instructors, All Other	266	323	86	1.1%	\$23.83	CERT
Education Administrators, Postsecondary	245	302	32	1.0%	\$45.92	BACH
Educational Instruction and Library Workers, All Other	242	288	34	1.0%	\$21.14	BACH
Bus Drivers, Transit and Intercity	230	251	53	1.0%	\$26.08	HS/GED
Computer User Support Specialists	228	310	59	1.0%	\$23.72	BACH
Education Administrators, Kindergarten through Secondary	210	227	23	0.9%	\$53.47	BACH
Educational, Guidance, and Career Counselors and Advisors	207	262	49	0.9%	\$23.32	MAST
Information and Record Clerks, All Other	203	240	51	0.9%	\$16.37	CERT
Project Management Specialists and Business Operations Specialists, All Other	201	236	141	0.9%	\$26.37	BACH
Home Health and Personal Care Aides	1,670	2,159	1,408	28.0%	\$13.30	CERT

Source: Employees & Self-Employed 2020.4.

Table A3.4: Employment Projections in Lane County for the Top 25 Occupations Related to the Nursing & Residential Care Facilities Industry Subsector

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB OPENINGS</b>	<b>% JOBS IN INDUSTRY</b>	<b>MEDIAN HOURLY WAGE</b>	<b>ENTRY ED LEVEL</b>
Nursing Assistants	852	981	220	14.3%	\$17.03	CERT
Registered Nurses	310	350	248	5.2%	\$44.44	BACH
Licensed Practical and Licensed Vocational Nurses	255	302	61	4.3%	\$25.50	CERT
Cooks, Institution and Cafeteria	218	259	101	3.7%	\$13.62	HS/GED
Maids and Housekeeping Cleaners	212	254	324	3.6%	\$12.20	HS/GED
Food Servers, Nonrestaurant	211	262	70	3.5%	\$12.62	CERT
Social and Human Service Assistants	153	183	151	2.6%	\$17.57	BACH
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	144	179	111	2.4%	\$21.04	MAST
Recreation Workers	90	109	93	1.5%	\$12.32	CERT
Psychiatric Aides	85	99	22	1.4%	\$18.46	CERT
Maintenance and Repair Workers, General	83	103	180	1.4%	\$17.33	HS/GED
Medical and Health Services Managers	81	95	53	1.4%	\$45.15	BACH

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB OPENINGS</b>	<b>% JOBS IN INDUSTRY</b>	<b>MEDIAN HOURLY WAGE</b>	<b>ENTRY ED LEVEL</b>
Medical Assistants	77	100	164	1.3%	\$19.47	CERT
Mental Health and Substance Abuse Social Workers	66	80	42	1.1%	\$15.80	BACH
Fast Food and Counter Workers	64	75	1,465	1.1%	\$12.02	HS/GED
Social and Community Service Managers	63	74	64	1.1%	\$29.60	BACH
Food Preparation Workers	59	66	224	1.0%	\$12.58	CERT
Receptionists and Information Clerks	54	70	168	0.9%	\$14.78	CERT
General and Operations Managers	51	63	274	0.9%	\$38.06	BACH
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	50	62	187	0.8%	\$16.12	CERT
Residential Advisors	47	66	23	0.8%	\$17.30	CERT
Waiters and Waitresses	47	59	570	0.8%	\$11.93	CERT
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	46	48	364	0.8%	\$17.94	CERT
Sawing Machine Setters, Operators, and Tenders, Wood	369	364	45	10.1%	\$19.27	HS/GED
Miscellaneous Assemblers and Fabricators	216	177	102	5.9%	\$14.15	HS/GED

Source: Employees & Self-Employed 2020.4.

Table A3.5: Employment Projections in Lane County for the Top Occupations Related to the Wood Product Manufacturing Industry Subsector

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>JOB OPENINGS</b>	<b>% JOBS IN INDUSTRY</b>	<b>MEDIAN HOURLY WAGE</b>	<b>ENTRY ED LEVEL</b>
Industrial Truck and Tractor Operators	202	198	79	5.5%	\$19.66	HS/GED
Laborers and Freight, Stock, and Material Movers, Hand	174	174	264	4.8%	\$13.36	HS/GED
Helpers--Production Workers	98	93	64	2.7%	\$14.71	HS/GED
Woodworkers, All Other	98	96	14	2.7%	\$14.42	HS/GED
Heavy and Tractor-Trailer Truck Drivers	80	78	245	2.2%	\$22.60	HS/GED
Adhesive Bonding Machine Operators and Tenders	74	60	16	2.0%	\$17.60	HS/GED
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	71	68	159	2.0%	\$28.17	BACH
Industrial Machinery Mechanics	69	68	54	1.9%	\$24.46	HS/GED
Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	68	56	24	1.9%	\$21.26	HS/GED
Carpenters	67	66	169	1.8%	\$22.80	HS/GED
Production Workers, All Other	66	62	65	1.8%	\$15.50	HS/GED



SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
General and Operations Managers	65	63	274	1.8%	\$38.06	BACH
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	59	54	7	1.6%	\$20.28	HS/GED
Tool Grinders, Filers, and Sharpeners	57	54	8	1.6%	\$19.75	HS/GED
Log Graders and Scalers	47	47	9	1.3%	\$22.64	HS/GED
Inspectors, Testers, Sorters, Samplers, and Weighers	46	37	52	1.2%	\$17.97	HS/GED
Office Clerks, General	44	40	493	1.2%	\$16.66	CERT
Architectural and Civil Drafters	43	36	9	1.2%	\$21.16	BACH
Maintenance and Repair Workers, General	42	42	180	1.2%	\$17.33	HS/GED

Source: Employees & Self-Employed 2020.4.

## WORKFORCE COMMUTING PATTERNS

Table A3.6: Lane County Job Inflow and Outflow

COMMUTING PATTERN	JOBS	COMMUTE SHARE
<b>EMPLOYMENT PATTERNS</b>		
Employed in Lane County	143,340	100%
Employed in Lane County but living outside	30,570	21%
Employed and living in Lane County	112,770	79%
<b>RESIDENTIAL PATTERNS</b>		
Living in Lane County	143,880	100%
Living in Lane County but employed outside	31,110	22%
Living and employed in Lane County	112,770	78%

Source: Census Bureau, Center for Economic Studies.

## EDUCATIONAL ATTAINMENT

Table A3.7: Highest Educational Attainments of Adults in Lane County

EDUCATION LEVEL	2014 ADULTS	2014 % ADULTS	2019 ADULTS	2019 % ADULTS	CHANGE
Less than high school diploma or equivalent	20,684	9%	24,301	9%	3,617
High school diploma or equivalent	57,488	24%	63,273	24%	5,785
Some college	69,594	29%	76,116	29%	6,523

Associate degree	23,090	10%	24,554	9%	1,464
Bachelor's degree	42,844	18%	47,030	18%	4,186
Graduate degree or higher	28,367	12%	29,795	11%	1,428
<b>Total</b>	<b>242,066</b>	<b>100%</b>	<b>265,068</b>	<b>100%</b>	<b>23,003</b>

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Table A3.8: Highest Educational Attainments of Adults in Lane County by Gender

EDUCATION LEVEL	ADULT MALES	% ADULT MALES	ADULT FEMALES	% ADULT FEMALES
Less than high school diploma or equivalent	12,872	10%	11,429	8%
High school diploma or equivalent	32,444	25%	30,829	23%
Some college	36,125	28%	39,991	29%
Associate degree	10,723	8%	13,831	10%
Bachelor's degree	21,848	17%	25,182	18%
Graduate degree and higher	14,507	11%	15,288	11%
<b>Total</b>	<b>129,108</b>	<b>100%</b>	<b>136,939</b>	<b>100%</b>

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Table A3.9: Highest Educational Attainments of Adults in Lane County by Major Race and Ethnic Groups

GROUP		<HS	HS	SOME COLLEGE	ASSOC	BACH	>BACH
White, non-Hispanic	Adults	16,224	55,488	67,113	21,243	41,016	25,867
	% Adults	7%	24%	30%	9%	18%	11%
Black, non-Hispanic	Adults	155	580	832	185	500	382
	% Adults	6%	22%	32%	7%	19%	15%
American Indian or Alaskan native, non-Hispanic	Adults	421	731	919	360	196	116
	% Adults	15%	27%	33%	13%	7%	4%
Asian, non-Hispanic	Adults	587	733	989	630	2,234	1,340
	% Adults	9%	11%	15%	10%	34%	21%
Native Hawaiian or Pacific Islander, non-Hispanic	Adults	151	83	223	69	22	10
	% Adults	27%	15%	40%	12%	4%	2%
Two or more races, non-Hispanic	Adults	770	1,480	2,306	787	1,059	543
	% Adults	11%	21%	33%	11%	15%	8%
	Adults	5,992	4,177	3,733	1,279	2,002	1,537

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Hispanic, all types	% Adults	32%	22%	20%	7%	11%	8%
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Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

## APPENDIX 4: Program to Occupation Map

Table A4.1 displays the crosswalk between educational programs (CIP codes) and occupations (SOC codes) that Emsi uses to complete the program demand gap analysis. Also listed are the adjustment factors which are applied to the annual job openings for each occupation in each program, described in Appendix 5. Table A4.2 follows, which is the non-credit program to occupation map.

Table A4.1: Program to Occupation Map with Employment Adjustment Factors

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
03.0103	Environmental Studies	11-2021	Marketing Managers	18	18	66
		11-2022	Sales Managers	21	21	64
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		11-1011	Chief Executives	23	22	55
		11-1021	General & Operations Managers	43	37	46
		13-1041	Compliance Officers	22	23	53
		13-1111	Management Analysts	15	14	56
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		15-1299	Computer Occupations, All Other	39	41	50
		17-2081	Environmental Engineers	10	7	59
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70
		19-4042	Environmental Science and Protection Technicians, Including Health	44	40	45
21-1093	Social & Human Service Assistants	37	34	49		

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		23-1011	Lawyers	1	1	7
		19-5011	Occupational Health and Safety Specialists	29	23	49
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39
03.0199	Natural Resources Conservation & Research, Other	11-2021	Marketing Managers	18	18	66
		11-2022	Sales Managers	21	21	64
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		11-1011	Chief Executives	23	22	55
		11-1021	General & Operations Managers	43	37	46
		13-1041	Compliance Officers	22	23	53
		13-1111	Management Analysts	15	14	56
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		15-1299	Computer Occupations, All Other	39	41	50
		17-2081	Environmental Engineers	10	7	59
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70
		19-4042	Environmental Science and Protection Technicians, Including Health	44	40	45
		21-1093	Social & Human Service Assistants	37	34	49
		23-1011	Lawyers	1	1	7
		19-5011	Occupational Health and Safety Specialists	29	23	49
		43-6014	Secretaries & Administrative	55	47	39





CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Assistants, Except Legal, Medical, & Executive			
03.0205	Water, Wetlands, & Marine Resources Management	11-9121	Natural Sciences Managers	4	4	52
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		17-2081	Environmental Engineers	10	7	59
		19-1023	Zoologists & Wildlife Biologists	0	0	62
		19-1031	Conservation Scientists	0	0	83
		33-3031	Fish & Game Wardens	59	50	36
10.0203	Recording Arts Technology/Technician	25-4022	Librarians and Media Collections Specialists	21	24	36
		27-4011	Audio and Video Technicians	52	43	42
		27-4012	Broadcast Technicians	52	43	42
		27-4014	Sound Engineering Technicians	52	43	42
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	15-1299	Computer Occupations, All Other	39	41	50
		27-1011	Art Directors	33	27	57
		27-1014	Special Effects Artists and Animators	33	27	57
		27-1024	Graphic Designers	22	25	67
11.0101	Computer & Information Sciences, General	11-3021	Computer & Information Systems Managers	19	21	60
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1211	Computer Systems Analysts	13	14	63
		15-1212	Information Security Analysts	22	26	60
		15-1251	Computer Programmers	21	21	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1257	Web Developers and Digital Interface Designers	25	27	64
		15-1245	Database Administrators and Architects	15	17	59



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		15-1244	Network and Computer Systems Administrators	30	36	58
		15-1241	Computer Network Architects	23	32	60
		15-1232	Computer User Support Specialists	43	45	49
		15-1231	Computer Network Support Specialists	43	45	49
		15-1299	Computer Occupations, All Other	39	41	50
		43-9021	Data Entry Keyers	60	48	34
11.0201	Computer Programming/Programmer, General	11-3021	Computer & Information Systems Managers	19	21	60
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1211	Computer Systems Analysts	13	14	63
		15-1251	Computer Programmers	21	21	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1257	Web Developers and Digital Interface Designers	25	27	64
		15-1231	Computer Network Support Specialists	43	45	49
		15-1299	Computer Occupations, All Other	39	41	50
11.0202	Computer Programming, Specific Applications	11-3021	Computer & Information Systems Managers	19	21	60
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1211	Computer Systems Analysts	13	14	63
		15-1251	Computer Programmers	21	21	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1257	Web Developers and Digital Interface Designers	25	27	64
		15-1299	Computer Occupations, All Other	39	41	50
11.0299	Computer Programming, Other	11-3021	Computer &	19	21	60

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Information Systems Managers			
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1211	Computer Systems Analysts	13	14	63
		15-1251	Computer Programmers	21	21	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1257	Web Developers and Digital Interface Designers	25	27	64
		15-1299	Computer Occupations, All Other	39	41	50
11.0401	Information Science/Studies	11-3021	Computer & Information Systems Managers	19	21	60
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1212	Information Security Analysts	22	26	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1299	Computer Occupations, All Other	39	41	50
		19-1029	Biological Scientists, All Other	0	0	62
		43-9111	Statistical Assistants	50	40	36
11.0701	Computer Science	11-3021	Computer & Information Systems Managers	19	21	60
		15-1221	Computer and Information Research Scientists	11	8	40
		15-1211	Computer Systems Analysts	13	14	63
		15-1212	Information Security Analysts	22	26	60
		15-1251	Computer Programmers	21	21	60
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1257	Web Developers and Digital Interface Designers	25	27	64



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		15-1245	Database Administrators and Architects	15	17	59
		15-1244	Network and Computer Systems Administrators	30	36	58
		15-1241	Computer Network Architects	23	32	60
		15-1232	Computer User Support Specialists	43	45	49
		15-1231	Computer Network Support Specialists	43	45	49
		15-1299	Computer Occupations, All Other	39	41	50
		15-2041	Statisticians	6	8	50
		17-2061	Computer Hardware Engineers	12	14	57
11.0801	Web Page, Digital/Multimedia and Information Resources Design	27-1024	Graphic Designers	22	25	67
		15-1257	Web Developers and Digital Interface Designers	25	27	64
11.1002	System, Networking, & LAN/WAN Management/Manager	15-1212	Information Security Analysts	22	26	60
		15-1244	Network and Computer Systems Administrators	30	36	58
		15-1241	Computer Network Architects	23	32	60
		15-1231	Computer Network Support Specialists	43	45	49
		15-1299	Computer Occupations, All Other	39	41	50
		49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	70	50	24
11.1003	Computer and Information Systems Security/Information Assurance	15-1232	Computer User Support Specialists	43	45	49
		11-3021	Computer and Information Systems Managers	19	21	60
		15-1244	Network and Computer Systems Administrators	30	36	58
11.1006	Computer Support Specialist	15-1232	Computer User Support Specialists	43	45	49
		15-1231	Computer Network Support Specialists	43	45	49
		49-2011	Computer, Automated Teller, & Office Machine Repairers	59	55	36



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
12.0501	Baking & Pastry Arts/Baker/Pastry Chef	35-1011	Chefs & Head Cooks	56	46	29
		51-3011	Bakers	62	42	20
12.0504	Restaurant, Culinary, & Catering Management/Manager	11-9051	Food Service Managers	64	44	25
		35-1011	Chefs & Head Cooks	56	46	29
		35-1012	First-Line Supervisors of Food Preparation & Serving Workers	70	47	18
		35-2013	Cooks, Private Household	65	31	8
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	17-3012	Electrical & Electronics Drafters	38	56	56
		17-3023	Electrical and Electronic Engineering Technologists and Technicians	59	56	36
		17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians	59	53	35
		17-3098	Calibration Technologists and Technicians and Engineering Technicians, Except Drafters, All Other	59	53	35
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		51-2028	Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	69	39	15
		49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	73	43	16
15.0503	Energy Management & Systems Technology/Technician	11-3051	Industrial Production Managers	38	28	48
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		17-3098	Calibration Technologists and Technicians and Engineering Technicians, Except Drafters, All Other	59	53	35
		27-1021	Commercial &	25	26	65



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Industrial Designers			
		43-5041	Meter Readers, Utilities	74	46	21
		49-9099	Installation, Maintenance, and Repair Workers, All Other	71	40	16
		51-8011	Nuclear Power Reactor Operators	53	49	42
		51-8012	Power Distributors & Dispatchers	53	49	42
		51-8013	Power Plant Operators	53	49	42
		51-8021	Stationary Engineers & Boiler Operators	65	38	25
		51-8092	Gas Plant Operators	67	48	27
		51-8099	Plant & System Operators, All Other	67	48	27
15.0613	Manufacturing Engineering Technology/Technician	11-2022	Sales Managers	21	21	64
		11-3051	Industrial Production Managers	38	28	48
		11-9021	Construction Managers	41	28	48
		11-9041	Architectural & Engineering Managers	7	9	59
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		11-1011	Chief Executives	23	22	55
		11-1021	General & Operations Managers	43	37	46
		13-1111	Management Analysts	15	14	56
		15-1256	Software Developers and Software Quality Assurance Analysts and Testers	10	11	60
		15-1244	Network and Computer Systems Administrators	30	36	58
		15-1232	Computer User Support Specialists	43	45	49
		17-2112	Industrial Engineers	13	12	70
		17-2141	Mechanical Engineers	11	12	69
		17-2199	Engineers, All Other	11	12	62
		17-3023	Electrical and Electronic Engineering	59	56	36



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Technologists and Technicians			
		41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	40	31	51
		47-2111	Electricians	72	47	19
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-9071	Maintenance & Repair Workers, General	70	45	19
		51-1011	First-Line Supervisors of Production & Operating Workers	63	37	25
15.1001	Construction Engineering Technology/Technician	11-9021	Construction Managers	41	28	48
		13-1051	Cost Estimators	42	38	49
		17-3011	Architectural & Civil Drafters	37	55	57
		17-3022	Civil Engineering Technologists and Technicians	59	53	35
		17-3031	Surveying & Mapping Technicians	69	52	25
		47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	66	33	18
		47-4011	Construction & Building Inspectors	51	44	42
15.1301	Drafting & Design Technology/Technician, General	17-3011	Architectural & Civil Drafters	37	55	57
		17-3012	Electrical & Electronics Drafters	38	56	56
		17-3013	Mechanical Drafters	38	56	56
		17-3019	Drafters, All Other	38	56	56
		27-1021	Commercial & Industrial Designers	25	26	65
		51-9162	Computer Numerically Controlled Tool Programmers	73	48	18
19.0706	Child Development	11-9031	Education and Childcare Administrators, Preschool and Daycare	23	23	41
		21-1021	Child, Family, & School Social Workers	14	13	56
		21-1093	Social & Human Service Assistants	37	34	49



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		25-2011	Preschool Teachers, Except Special Education	48	46	44
		25-9021	Farm and Home Management Educators	31	28	43
		39-9011	Childcare Workers	66	46	21
19.0708	Child Care & Support Services Management	11-9031	Education and Childcare Administrators, Preschool and Daycare	23	23	41
		11-9151	Social & Community Service Managers	19	17	55
		21-1021	Child, Family, & School Social Workers	14	13	56
		21-1093	Social & Human Service Assistants	37	34	49
		25-2011	Preschool Teachers, Except Special Education	48	46	44
		39-9011	Childcare Workers	66	46	21
19.0709	Child Care Provider/Assistant	21-1021	Child, Family, & School Social Workers	14	13	56
		21-1093	Social & Human Service Assistants	37	34	49
		25-9045	Teaching Assistants, Except Postsecondary	59	42	33
		39-9011	Childcare Workers	66	46	21
22.0301	Legal Administrative Assistant/Secretary	23-1012	Judicial Law Clerks	4	4	12
		43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43
		43-4021	Correspondence Clerks	65	43	24
		43-4031	Court, Municipal, & License Clerks	49	45	44
		43-4071	File Clerks	67	50	27
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43
		43-6012	Legal Secretaries and Administrative Assistants	54	48	41
		43-9061	Office Clerks, General	65	51	29
31.0501	Health & Physical Education/Fitness, General	11-9039	Education Administrators, All Other	23	23	41





CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		11-9151	Social & Community Service Managers	19	17	55
		21-1091	Health Education Specialists	34	32	49
		21-1094	Community Health Workers	34	32	49
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
		25-2059	Special Education Teachers, All Other	13	12	49
		27-2021	Athletes & Sports Competitors	56	36	34
		27-2022	Coaches & Scouts	59	37	30
		27-2023	Umpires, Referees, & Other Sports Officials	64	37	26
		29-1031	Dietitians & Nutritionists	20	12	45
		29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	0	0	0
		29-1125	Recreational Therapists	14	13	77
		29-1128	Exercise Physiologists	9	13	41
		29-2051	Dietetic Technicians	59	56	37
		29-9091	Athletic Trainers	22	21	50
		31-2022	Physical Therapist Aides	28	54	68
		39-9031	Exercise Trainers and Group Fitness Instructors	53	42	39
		39-9032	Recreation Workers	60	44	32
31.0504	Sport & Fitness Administration/Management	11-9039	Education Administrators, All Other	23	23	41
		13-1011	Agents & Business Managers of Artists, Performers, & Athletes	39	30	51
		27-2021	Athletes & Sports Competitors	56	36	34
		27-2022	Coaches & Scouts	59	37	30
		27-2023	Umpires, Referees, & Other Sports Officials	64	37	26



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		39-9031	Exercise Trainers and Group Fitness Instructors	53	42	39
31.0507	Physical Fitness Technician	11-9039	Education Administrators, All Other	23	23	41
		25-2059	Special Education Teachers, All Other	13	12	49
		29-1128	Exercise Physiologists	9	13	41
		29-9091	Athletic Trainers	22	21	50
		39-9031	Exercise Trainers and Group Fitness Instructors	53	42	39
43.0104	Criminal Justice/Safety Studies	11-9161	Emergency Management Directors	27	36	59
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		13-1041	Compliance Officers	22	23	53
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		13-2098	Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other	11	11	63
		15-1212	Information Security Analysts	22	26	60
		21-1021	Child, Family, & School Social Workers	14	13	56
		21-1092	Probation Officers & Correctional Treatment Specialists	18	19	66
		33-1011	First-Line Supervisors of Correctional Officers	60	53	34
		33-1012	First-Line Supervisors of Police & Detectives	47	50	45
		33-2021	Fire Inspectors & Investigators	66	42	29
		33-3011	Bailiffs	65	51	32
		33-3012	Correctional Officers & Jailers	67	51	30
		33-3021	Detectives & Criminal Investigators	26	30	55

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		33-3051	Police & Sheriff's Patrol Officers	44	47	51
		33-3052	Transit & Railroad Police	44	47	51
		33-9021	Private Detectives & Investigators	32	29	54
		43-5031	Public Safety Telecommunicators	63	52	31
44.0201	Community Organization & Advocacy	11-9151	Social & Community Service Managers	19	17	55
		13-1131	Fundraisers	22	20	56
		21-1021	Child, Family, & School Social Workers	14	13	56
		21-1093	Social & Human Service Assistants	37	34	49
		21-1094	Community Health Workers	34	32	49
		21-1099	Community & Social Service Specialists, All Other	34	32	49
		43-4061	Eligibility Interviewers, Government Programs	34	37	56
45.0702	Geographic Information Science & Cartography	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		15-1299	Computer Occupations, All Other	39	41	50
		17-1021	Cartographers & Photogrammetrists	19	21	70
		17-3031	Surveying & Mapping Technicians	69	52	25
		19-2099	Physical Scientists, All Other	0	0	42
		19-3051	Urban & Regional Planners	2	2	41
		19-3092	Geographers	16	16	47
		19-4099	Life, Physical, & Social Science Technicians, All Other	44	40	45
46.0000	Construction Trades, General	11-9021	Construction Managers	41	28	48
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		11-1011	Chief Executives	23	22	55



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		11-1021	General & Operations Managers	43	37	46
		13-1051	Cost Estimators	42	38	49
		41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	40	31	51
		47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	66	33	18
		47-2031	Carpenters	64	26	9
		47-2061	Construction Laborers	60	24	7
		47-2111	Electricians	72	47	19
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-9071	Maintenance & Repair Workers, General	70	45	19
		51-1011	First-Line Supervisors of Production & Operating Workers	63	37	25
46.0301	Electrical & Power Transmission Installation/Installer, General	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	66	33	18
		47-2111	Electricians	72	47	19
		47-3013	Helpers--Electricians	66	25	6
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	70	50	24
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		49-2095	Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	74	48	19
		49-2098	Security & Fire Alarm Systems Installers	71	42	19
		49-9051	Electrical Power-Line Installers & Repairers	73	52	22
		49-9052	Telecommunications Line Installers &	76	48	17



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Repairers			
		49-9097	Signal & Track Switch Repairers	71	40	16
46.0302	Electrician	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	66	33	18
		47-2111	Electricians	72	47	19
		47-3013	Helpers--Electricians	66	25	6
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2098	Security & Fire Alarm Systems Installers	71	42	19
		49-9097	Signal & Track Switch Repairers	71	40	16
47.0303	Industrial Mechanics & Maintenance Technology	17-3026	Industrial Engineering Technologists and Technicians	59	53	35
		17-3098	Calibration Technologists and Technicians and Engineering Technicians, Except Drafters, All Other	59	53	35
		47-4021	Elevator and Escalator Installers and Repairers	74	39	20
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		49-9041	Industrial Machinery Mechanics	70	47	20
		49-9043	Maintenance Workers, Machinery	67	45	22
		49-9044	Millwrights	75	43	17
		49-9045	Refractory Materials Repairers, Except Brickmasons	70	47	20
		49-9071	Maintenance & Repair Workers, General	70	45	19
		49-9081	Wind Turbine Service Technicians	71	40	16
		49-9098	Helpers--Installation, Maintenance, & Repair Workers	61	26	7
		51-4041	Machinists	73	43	17
47.0603	Autobody/Collision & Repair Technology/Technician	13-1032	Insurance Appraisers, Auto Damage	33	32	58

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2093	Electrical & Electronics Installers & Repairers, Transportation Equipment	74	48	19
		49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	71	48	19
		49-3021	Automotive Body & Related Repairers	67	36	14
		49-3022	Automotive Glass Installers & Repairers	81	35	4
		49-3023	Automotive Service Technicians & Mechanics	67	43	17
		49-9071	Maintenance & Repair Workers, General	70	45	19
		51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	69	31	9
		53-6051	Transportation Inspectors	75	52	21
47.0604	Automobile/Automotive Mechanics Technology/Technician	17-3027	Mechanical Engineering Technologists and Technicians	59	53	35
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2093	Electrical & Electronics Installers & Repairers, Transportation Equipment	74	48	19
		49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	71	48	19
		49-3021	Automotive Body & Related Repairers	67	36	14
		49-3022	Automotive Glass Installers & Repairers	81	35	4
		49-3023	Automotive Service Technicians & Mechanics	67	43	17
		49-9071	Maintenance & Repair Workers, General	70	45	19
		53-6051	Transportation Inspectors	75	52	21
47.0605	Diesel Mechanics Technology/Technician	49-3023	Automotive Service Technicians & Mechanics	67	43	17
		49-3031	Bus & Truck Mechanics & Diesel	69	46	19



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Engine Specialists			
		49-9098	Helpers--Installation, Maintenance, & Repair Workers	61	26	7
		53-6051	Transportation Inspectors	75	52	21
47.0607	Airframe Mechanics & Aircraft Maintenance Technology/Technician	17-3021	Aerospace Engineering and Operations Technologists and Technicians	59	53	35
		49-3011	Aircraft Mechanics & Service Technicians	76	58	21
		51-2011	Aircraft Structure, Surfaces, Rigging, & Systems Assemblers	74	34	10
		53-6051	Transportation Inspectors	75	52	21
48.0508	Welding Technology/Welder	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	66	33	18
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
		47-2171	Reinforcing Iron & Rebar Workers	59	19	6
		47-2211	Sheet Metal Workers	75	35	12
		47-2221	Structural Iron & Steel Workers	74	37	11
		49-9071	Maintenance & Repair Workers, General	70	45	19
		51-4121	Welders, Cutters, Solderers, & Brazers	71	38	12
		51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	71	38	12
49.0102	Airline/Commercial/Professional Pilot & Flight Crew	53-2011	Airline Pilots, Copilots, & Flight Engineers	18	19	70
		53-2012	Commercial Pilots	18	19	70
50.0402	Commercial & Advertising Art	11-2011	Advertising & Promotions Managers	12	13	78
		27-1011	Art Directors	33	27	57
		27-1013	Fine Artists, Including Painters, Sculptors, & Illustrators	33	27	57
		27-1014	Special Effects Artists and Animators	33	27	57
		27-1019	Artists & Related Workers, All Other	33	27	57
		27-1021	Commercial &	25	26	65

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
			Industrial Designers			
		27-1024	Graphic Designers	22	25	67
		27-1027	Set & Exhibit Designers	23	25	65
		27-4021	Photographers	46	40	48
		41-3011	Advertising Sales Agents	27	23	63
		43-9031	Desktop Publishers	44	38	46
51.0601	Dental Assisting/Assistant	31-9091	Dental Assistants	68	65	28
51.0602	Dental Hygiene/Hygienist	29-1292	Dental Hygienists	17	58	79
43.0104	Criminal Justice/Safety Studies	11-9161	Emergency Management Directors	27	36	59
51.0707	Health Information/Medical Records Technology/Technician	15-1211	Computer Systems Analysts	13	14	63
		15-1232	Computer User Support Specialists	43	45	49
		15-1231	Computer Network Support Specialists	43	45	49
		29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	52	54	42
		43-6013	Medical Secretaries and Administrative Assistants	55	49	39
		43-9021	Data Entry Keyers	60	48	34
51.0713	Medical Insurance Coding Specialist/Coder	29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	52	54	42
		31-9092	Medical Assistants	65	67	32
		43-3021	Billing & Posting Clerks	60	50	34
		43-6013	Medical Secretaries and Administrative Assistants	55	49	39
		43-9021	Data Entry Keyers	60	48	34
		43-9041	Insurance Claims & Policy Processing Clerks	54	47	41
51.0799	Health & Medical Administrative Services, Other	11-2031	Public Relations & Fundraising Managers	9	10	70
		11-3011	Administrative Services Managers	41	35	48





CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		11-3121	Human Resources Managers	31	28	51
		11-9111	Medical & Health Services Managers	26	30	50
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		13-1041	Compliance Officers	22	23	53
		13-1071	Human Resources Specialists	25	24	60
		15-2041	Statisticians	6	8	50
		27-3031	Public Relations Specialists	15	15	67
		43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43
		43-6013	Medical Secretaries and Administrative Assistants	55	49	39
51.0801	Medical/Clinical Assistant	31-9092	Medical Assistants	65	67	32
51.0806	Physical Therapy Technician/Assistant	31-2021	Physical Therapist Assistants	28	54	68
		31-2022	Physical Therapist Aides	28	54	68
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	29-2041	Emergency Medical Technicians & Paramedics	60	67	37
		33-1021	First-Line Supervisors of Fire Fighting & Prevention Workers	64	61	31
		33-2011	Firefighters	58	63	39
		33-9092	Lifeguards, Ski Patrol, & Other Recreational Protective Service Workers	80	38	10
		53-3011	Ambulance Drivers & Attendants, Except Emergency Medical Technicians	78	49	14
51.3801	Registered Nursing/Registered Nurse	11-9111	Medical & Health Services Managers	26	30	50
		29-1141	Registered Nurses	5	30	87
		29-1151	Nurse Anesthetists	1	1	13
		29-1161	Nurse Midwives	1	0	7
		29-1171	Nurse Practitioners	1	0	7

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
51.3901	Licensed Practical/Vocational Nurse Training	29-2061	Licensed Practical & Licensed Vocational Nurses	78	73	20
		31-1131	Nursing Assistants	72	55	17
52.0101	Business/Commerce, General	11-2022	Sales Managers	21	21	64
		11-3011	Administrative Services Managers	41	35	48
		11-3051	Industrial Production Managers	38	28	48
		11-3071	Transportation, Storage, & Distribution Managers	58	40	32
		11-9021	Construction Managers	41	28	48
		11-9151	Social & Community Service Managers	19	17	55
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		11-1011	Chief Executives	23	22	55
		11-1021	General & Operations Managers	43	37	46
		13-1051	Cost Estimators	42	38	49
		13-1111	Management Analysts	15	14	56
		13-1121	Meeting, Convention, & Event Planners	29	27	60
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
15-1299	Computer Occupations, All Other	39	41	50		
52.0201	Business Administration & Management, General	11-2021	Marketing Managers	18	18	66
		11-2022	Sales Managers	21	21	64
		11-3021	Computer & Information Systems Managers	19	21	60
		11-3031	Financial Managers	32	29	52
		11-3121	Human Resources Managers	31	28	51
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		11-1011	Chief Executives	23	22	55
		11-1021	General & Operations Managers	43	37	46
		13-1071	Human Resources Specialists	25	24	60
		13-1111	Management Analysts	15	14	56
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67
		13-1198	Project Management Specialists and Business Operations Specialists, All Other	28	25	52
		13-2011	Accountants & Auditors	9	12	66
		15-1232	Computer User Support Specialists	43	45	49
		41-1011	First-Line Supervisors of Retail Sales Workers	61	45	31
		41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	40	31	51
		43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43
		43-4051	Customer Service Representatives	67	46	26
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39
52.0302	Accounting Technology/Technician & Bookkeeping	13-2011	Accountants & Auditors	9	12	66
		13-2082	Tax Preparers	38	32	42
		43-3031	Bookkeeping, Accounting, & Auditing Clerks	62	50	32
		43-3051	Payroll & Timekeeping Clerks	54	48	42
		43-4011	Brokerage Clerks	49	44	41
		43-9111	Statistical Assistants	50	40	36
52.0401	Administrative Assistant & Secretarial Science, General	43-4071	File Clerks	67	50	27
		43-4171	Receptionists & Information Clerks	71	53	24



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39
		43-9021	Data Entry Keyers	60	48	34
		43-9022	Word Processors & Typists	57	48	37
		43-9061	Office Clerks, General	65	51	29
52.0411	Customer Service Support/Call Center/Teleservice Operation	43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43
		43-2021	Telephone Operators	73	55	19
		43-4051	Customer Service Representatives	67	46	26
		43-4151	Order Clerks	65	43	24
		43-4171	Receptionists & Information Clerks	71	53	24
52.0901	Hospitality Administration/Management, General	11-9051	Food Service Managers	64	44	25
		11-9071	Gambling Managers	53	43	38
		11-9081	Lodging Managers	41	36	49
		11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
		13-1121	Meeting, Convention, & Event Planners	29	27	60
		39-1013	First-Line Supervisors of Gambling Service Workers	63	50	33
		39-1098	First-Line Supervisors of Personal Service and Entertainment Workers, Except Gambling Services	61	50	33
		39-6012	Concierges	66	47	25
		39-7018	Tour & Travel Guides	68	52	26
		43-4081	Hotel, Motel, & Resort Desk Clerks	69	49	25
		43-4171	Receptionists & Information Clerks	71	53	24



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
52.0999	Hospitality Administration/Management, Other	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49

Source: Emsi program demand gap model.

Table A4.2: Non-Credit Program to Occupation Map with Employment Adjustment Factors

CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
11.0201	Computer Programming	15-1251	Computer Programmers	21	21	60
11.0501	Computer Systems Analysis	15-1211	Computer Systems Analysts	13	14	63
11.0601	Data Entry/Microcomputer Applications	43-9021	Data Entry Keyers	60	48	34
11.0801	Computer Software and Media Applications	15-1257	Web Developers and Digital Interface Designers	25	27	64
13.1501	Teaching Assistants/Aides	25-9045	Teaching Assistants, Except Postsecondary	59	42	33
14.1001	Electrical, Electronics, and Communications Engineering	17-2071	Electrical Engineers	11	12	60
15.0303	Electrical/Electronic Engineering Technologies/Technicians	17-3023	Electrical and Electronic Engineering Technologists and Technicians	59	56	36
15.0501	Environmental Control Technologies/Technicians	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	73	43	16
15.1301	Drafting/Design Engineering Technologies/Technicians	17-3011	Architectural and Civil Drafters	37	55	57
15.0505	Energy Systems Technologies/Technicians	17-3098	Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other	59	53	35
16.9999	Foreign Languages, Literatures, and Linguistics, Other	27-3091	Interpreters and Translators	41	38	46
19.0201	Work and Family Studies	25-9021	Farm and Home Management Educators	31	28	43
30.1901	Foods, Nutrition, and Related Services	29-1031	Dietitians and Nutritionists	20	12	45
19.0701	Human Development, Family Studies, and Related	25-9021	Farm and Home Management Educators	31	28	43



CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
	Services					
22.0301	Legal Support Services	43-6012	Legal Secretaries and Administrative Assistants	54	48	41
22.9999	Legal Professions and Studies, Other	13-1041	Compliance Officers	22	23	53
23.0101	English Language and Literature, General	25-2031	Secondary School Teachers, Except Special and Career/Technical Education	6	7	58
26.0407	Cell/Cellular Biology and Anatomical Sciences	19-1029	Biological Scientists, All Other	0	0	62
31.0505	Sports, Kinesiology, and Physical Education/Fitness	29-1128	Exercise Physiologists	9	13	41
43.0201	Fire Protection	33-2011	Firefighters	58	63	39
43.0301	Homeland Security	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
43.9999	Homeland Security, Law Enforcement, Firefighting and Related Protective Services, Other	33-1099	Miscellaneous First-Line Supervisors, Protective Service Workers	57	46	36
46.9999	Construction Trades, Other	47-2061	Construction Laborers	60	24	7
47.0604	Vehicle Maintenance and Repair Technologies/Technicians	49-3023	Automotive Service Technicians and Mechanics	67	43	17
48.0501	Precision Metal Working	51-4041	Machinists	73	43	17
48.0701	Woodworking	51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	72	28	4
50.0601	Film/Video and Photographic Arts	27-2012	Producers and Directors	19	18	69
51.0601	Dental Support Services and Allied Professions	31-9091	Dental Assistants	68	65	28
51.0701	Health and Medical Administrative Services	11-9111	Medical and Health Services Managers	26	30	50
51.0801	Allied Health and Medical Assisting Services	31-9092	Medical Assistants	65	67	32
51.0901	Allied Health Diagnostic, Intervention, and Treatment Professions	29-2031	Cardiovascular Technologists and Technicians	25	55	69
51.1004	Clinical/Medical Laboratory Science/Research and Allied Professions	29-2018	Clinical Laboratory Technologists and Technicians	37	43	56
51.1502	Mental and Social Health Services and Allied Professions	29-2053	Psychiatric Technicians	52	55	43
51.3902	Practical Nursing, Vocational Nursing and Nursing Assistants	31-1131	Nursing Assistants	72	55	17



CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
51.2201	Public Health	21-1099	Community and Social Service Specialists, All Other	34	32	49
51.2308	Rehabilitation and Therapeutic Professions	29-1123	Physical Therapists	3	4	22
51.2601	Health Aides/Attendants/Orderlies	31-1131	Nursing Assistants	72	55	17
51.3501	Somatic Bodywork and Related Therapeutic Services	31-9011	Massage Therapists	60	62	35
52.0201	Business Administration, Management and Operations	11-1021	General and Operations Managers	43	37	46
52.0302	Accounting and Related Services	43-3031	Bookkeeping, Accounting, and Auditing Clerks	62	50	32
52.0401	Business Operations Support and Secretarial Services, Other	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	55	47	39
52.0799	Entrepreneurial and Small Business Operations, Other	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
52.0999	Hospitality Administration/Management, Other	11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	32	26	49
52.1099	Human Resources Management and Services, Other	13-1071	Human Resources Specialists	25	24	60
52.1501	Real Estate	41-9022	Real Estate Sales Agents	40	38	52
52.1601	Taxation	13-2011	Accountants and Auditors	9	12	66
52.1801	General Sales, Merchandising and Related Marketing Operations	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	40	31	51

Source: Emsi program demand gap model.



## APPENDIX 5: Methodology

This appendix focuses on describing and understanding the methodology used in the program demand gap analysis. This requires data on both occupation demand (e.g., annual job openings) and education supply (e.g., number of postsecondary degree completions). These are then compared through an education “gap” analysis to determine whether an education program is potentially producing a surplus or shortage of workforce talent relative to the number of job openings. In this way, it is possible to see how the institution’s current programs are satisfying the county’s workforce needs.

### SUPPLY AND DEMAND MODEL

Emsi builds a model using demand-side data (average annual projected job openings) and supply-side data (postsecondary education output) to compare workforce demand with education supply. The purpose of this analysis is to find the difference or “gap” between the annual job openings for an occupation and the number of people completing postsecondary degrees for that occupation, whether at LCC or at another postsecondary institution in the county, making it possible to identify talent shortages or surpluses.

The first step involves the link between annual job openings for a SOC code and the number of completions for an education program, defined by its CIP code. The BLS provides information on the occupations that completers of specific CIP codes are more likely to enter. Specific connections have been refined through previous engagements with postsecondary institutions and state departments of labor. Some programs have direct occupational ties. For example, a physical therapist assistant is a specific occupation that requires specialized postsecondary training. In this case, one CIP code (Physical Therapy Technician/Assistant) maps to only one SOC code (physical therapist assistants). This provides an easy comparison of annual job openings for physical therapist assistants to the number of people completing the relevant program to see whether a talent shortage or surplus exists.

Unfortunately, this one-to-one mapping of a CIP code to a SOC code is not always the case. More often than not, an educational program maps to multiple occupations and an occupation maps to multiple educational programs at multiple award levels. For this reason, Emsi has pioneered a method of de-duplicating job openings, such that the potential sources of demand are not double-represented for any occupation. The details of this process are outlined in this chapter, under “De-duplication of Annual Openings.”



## OCCUPATION DEMAND

### *Educational Level Adjustments*

To capture occupation demand, Emsi uses a proprietary employment dataset that reflects total employment. Emsi uses the QCEW data source, which measures employment covered by unemployment insurance (UI). According to the BLS, “employment covered by these UI programs represents about 97% of all wage and salary civilian employment in the country.” Through a proprietary process, Emsi removes BLS local area employment suppressions to yield the best employment data available at local levels, using Emsi’s Employees & Self-Employed 2020.4 datarun.

In the datarun, Emsi calculates the number of county job openings for the occupations that require different levels of education for entry-level positions.<sup>15</sup> The BLS also provides educational attainment data of current workers, ages 16 years to 34 years, for each SOC code, broken out by their highest level of education attained. The data are presented as the percentage of workers in the SOC code with educational attainment ranging from less than a high school diploma to a doctoral degree level of education. Using these data, Emsi adjusts the annual job opening estimates for each SOC code to only incorporate the percentage of workers that correspond with LCC’s program offerings.

For example, as shown in Table A5.1, three occupations are mapped to Accounting: accountants, auditors, and budget analysts. Among accountants, the majority of job openings (80%) are available to program completers with a master’s degree or bachelor’s degree level of education, less so for auditors. The weighted average of job openings, in the last row of the table, is calculated for each program and at each award level where LCC has produced completions over the past three years. Not accounting for these dynamics in educational attainments would bias the programs’ demands by over-counting potential job opportunities for the completers.<sup>16</sup>

Table A5.1: Example of Educational Level Adjustments for a Program

<b>PROGRAM</b>	<b>OCCUPATION</b>	<b>ASSOC AND ONE LEVEL BELOW</b>	<b>BACH AND ONE LEVEL BELOW</b>	<b>MAST AND ONE LEVEL BELOW</b>	<b>PHD AND ONE LEVEL BELOW</b>
Accounting	Accountant	10%	65%	80%	25%
	Auditor	5%	70%	75%	20%
	Budget analyst	15%	70%	80%	30%

15 See Appendix 1 for a description of the sources and processes of Emsi data.

16 Given the changing dynamics and need for more education in the existing workforce (i.e., skills-biased technology change in many occupations and industry sectors), this assumption is considered conservative.

<b>Weighted average</b>	<b>10%</b>	<b>68%</b>	<b>78%</b>	<b>25%</b>
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### ***De-Duplication of Annual Openings***

Most programs are designed to train people for multiple occupational types, many of which are simultaneously linked with other educational programs. This presents a complexity when comparing supply and demand for any one program. For instance, the Accounting program is mapped to three different occupations: accountants, auditors, and budget analysts. If we focus on one of the occupations for this list—accountants—it is also mapped to three different educational programs, for example, Business, Medical Office Administration, and Commerce.

To ensure that double-counting does not occur, it is necessary to either realign the program groupings to eliminate the mapping of occupations to multiple programs or to determine what proportion of job openings should be compared with program completions. Emsi takes the second approach in this analysis, which has the advantage of maintaining program titles and descriptions in roughly the same format of the completion data originally delivered to Emsi. Emsi also uses a formula that favors programs with the largest completions, attributing a greater proportion of job openings to programs with a large number of completions by award level. This method utilizes the assumption that the higher output programs are likely feeding a higher degree of demand in Lane County.<sup>17</sup> Appendix 4 contains the detailed mapping of each CIP code to all relevant occupations, by their six-digit SOC codes. A result of de-duplication is that in a region where a unique program, Commercial & Advertising Art for example, is larger than Graphic Design, it is assumed that completers of the Commercial & Advertising Art program will be offered a proportional, therefore larger number of job openings than students from the Graphic Design program.

Emsi also provides an alternative program demand gap analysis, which does not de-duplicate the average number of projected annual job openings based on the size of each program. Rather, the total number of job openings available for completers at each award level for each program is provided without further modification. Due to this modification, these numbers have not been de-duplicated, unlike the job openings shown in Chapter 3. As a result, job openings overstate the occupational demand for all postsecondary program completers. While these figures have not been provided in this analysis, they are available upon request.

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<sup>17</sup> Note this adjustment is performed on a program-by-program basis without consideration of individual colleges or training providers. Therefore, a single program offered at one large institution has no advantage over a group of similar programs offered at several smaller educational providers given that the aggregate output of the smaller schools is near the output of the single larger school.

## EDUCATION OUTPUT

There are several educational institutions in Lane County, some of which have programs similar to those offered at LCC. Hence, completers at LCC will be competing for some jobs with completers from other county institutions. Emsi determined education output by CIP codes and identified the number of completers for every award level within those CIP codes. To find the output for all public and private educational institutions in Lane County, Emsi uses data from the Integrated Postsecondary Educational System (IPEDS).<sup>18</sup> These data are publicly available through the National Center for Educational Statistics. Completions data are averaged for a three-year period, 2017 through 2019, to smooth out any bumps in enrollment that may be unique to a particular academic year. Data gathered for LCC from IPEDS were reviewed for accuracy by LCC and updated with 2020 completions data.

The following tables display the completion breakdown by institution in Lane County at the award levels offered by LCC. LCC is one of several institutions in the county. Using a three-year average, LCC grants 4,389 certificates and 366 associate degrees every year, which is 98.6% and 89.8% of the totals, respectively.

Table A5.2: Certificate Level Completions in Lane County by Postsecondary Institution

<b>INSTITUTION</b>	<b>3-YEAR AVERAGE</b>	<b>% TOTAL</b>
Lane Community College*	4,389	98.6%
Northwest College-Eugene	57	1.3%
Springfield College of Beauty	5	0.1%
<b>Total</b>	<b>4,452</b>	<b>100%</b>

\* Includes non-credit completers.  
Source: IPEDS.

Table A5.3: Associate Degree Level Completions in Lane County by Postsecondary Institution

<b>INSTITUTION</b>	<b>3-YEAR AVERAGE</b>	<b>% TOTAL</b>
Lane Community College	366	89.8%
Northwest College-Eugene	32	7.8%
Springfield College of Beauty	5	1.3%
New Hope Christian College-Eugene	3	0.7%

<sup>18</sup> These data come with inherent weaknesses. Primarily, numbers are only available for institutions that participate in or are applicants for any federal financial assistance program authorized by the Higher Education Act (HEA). Also, IPEDS does not collect data on non-credit courses and programs. Nevertheless, this system is the best source for collecting information on a broad range of educational institutions.



<b>INSTITUTION</b>	<b>3-YEAR AVERAGE</b>	<b>% TOTAL</b>
Northwest Christian University	2	0.4%
<b>Total</b>	<b>408</b>	<b>100%</b>

Source: IPEDS.

Table A5.4: Bachelor's Degree Level Completions in Lane County by Postsecondary Institution

<b>INSTITUTION</b>	<b>3-YEAR AVERAGE</b>	<b>% TOTAL</b>
University of Oregon	5,070	95.4%
Northwest Christian University	151	2.8%
Lane Community College*	74	1.4%
New Hope Christian College-Eugene	18	0.3%
<b>Total</b>	<b>5,314</b>	<b>100%</b>

\* Lane does not offer bachelor's degrees. The count here is reflective of the college's transfer-track completers.  
Source: IPEDS.



## APPENDIX 6: Employment Projections

Table A6.1: Employment Projections in Lane County by Occupation, 2019 and 2029

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Fast Food & Counter Workers	6,383	7,407	1,024	16.0%	1,465	\$12.02
Home Health & Personal Care Aides	5,064	8,426	3,361	66.4%	1,408	\$13.30
Cashiers	4,075	4,131	56	1.4%	785	\$11.98
Retail Salespersons	5,050	5,127	77	1.5%	752	\$13.04
Waiters & Waitresses	2,688	2,951	263	9.8%	570	\$11.93
Office Clerks, General	3,835	3,976	142	3.7%	493	\$16.66
Janitors & Cleaners, Except Maids & Housekeeping Cleaners	2,767	3,124	357	12.9%	428	\$12.96
Stockers & Order Fillers	2,779	2,843	64	2.3%	381	\$13.94
Postsecondary Teachers, General	2,461	3,511	1,050	42.7%	369	\$33.25
Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	3,197	3,118	(79)	(2.5%)	364	\$17.94
Childcare Workers	1,911	2,181	270	14.1%	341	\$12.49
Maids & Housekeeping Cleaners	2,025	2,311	286	14.1%	324	\$12.19
Customer Service Representatives	2,341	2,321	(20)	(0.8%)	315	\$15.33
Cooks, Restaurant	1,725	2,092	367	21.3%	307	\$13.41
Bookkeeping, Accounting, & Auditing Clerks	2,479	2,440	(39)	(1.6%)	293	\$18.20
Teaching Assistants, Except Postsecondary	2,355	2,605	250	10.6%	287	\$14.65
General & Operations Managers	2,759	2,980	221	8.0%	274	\$38.05
Laborers & Freight, Stock, & Material Movers, Hand	1,789	1,862	72	4.0%	264	\$13.36
Landscaping & Groundskeeping Workers	1,700	1,884	184	10.8%	251	\$13.62
Registered Nurses	3,452	3,959	506	14.7%	248	\$44.45
Heavy & Tractor-Trailer Truck Drivers	2,108	2,104	(4)	(0.2%)	245	\$22.60
Food Preparation Workers	1,147	1,280	133	11.6%	224	\$12.58
Nursing Assistants	1,499	1,824	325	21.7%	220	\$17.03
First-Line Supervisors of Retail Sales Workers	1,886	1,951	65	3.4%	218	\$18.78
First-Line Supervisors of Food Preparation & Serving Workers	1,206	1,370	164	13.6%	215	\$14.86
Passenger Vehicle Drivers, Except Bus Drivers, Transit & Intercity	1,173	1,414	242	20.6%	187	\$16.12
Maintenance & Repair Workers, General	1,587	1,752	165	10.4%	180	\$17.33

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Medical Secretaries & Administrative Assistants	1,342	1,515	174	12.9%	178	\$18.20
Bartenders	916	998	82	8.9%	177	\$11.84
Security Guards	981	1,245	264	26.9%	173	\$14.37
Carpenters	1,442	1,540	98	6.8%	169	\$22.80
Receptionists & Information Clerks	1,094	1,214	120	11.0%	168	\$14.78
Medical Assistants	1,146	1,387	241	21.1%	164	\$19.47
Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	1,483	1,490	8	0.5%	159	\$28.17
Construction Laborers	1,222	1,354	132	10.8%	157	\$17.57
Social & Human Service Assistants	1,007	1,195	188	18.7%	151	\$17.57
Project Management Specialists & Business Operations Specialists, All Other	1,328	1,412	84	6.3%	141	\$26.37
First-Line Supervisors of Office & Administrative Support Workers	1,269	1,310	41	3.3%	141	\$24.99
Preschool Teachers, Except Special Education	1,062	1,276	214	20.2%	139	\$13.13
Electricians	915	1,058	143	15.7%	130	\$32.77
Light Truck Drivers	921	1,004	82	8.9%	120	\$17.08
Driver/Sales Workers	1,022	1,006	(16)	(1.6%)	117	\$12.89
Farmworkers & Laborers, Crop, Nursery, & Greenhouse	563	687	124	22.0%	116	\$12.45
Interviewers, Except Eligibility & Loan	912	925	12	1.3%	115	\$14.58
Substance Abuse, Behavioral Disorder, & Mental Health Counselors	727	966	240	33.0%	111	\$21.04
Personal Service Managers, All Other; Entertainment & Recreation Managers, Except Gambling; & Managers, All Other	1,279	1,353	75	5.8%	108	\$29.87
Accountants & Auditors	932	1,039	107	11.5%	103	\$28.65
Hairdressers, Hairstylists, & Cosmetologists	792	811	19	2.4%	103	\$12.40
Miscellaneous Assemblers & Fabricators	915	821	(95)	(10.4%)	102	\$14.15
Cooks, Institution & Cafeteria	588	692	104	17.7%	101	\$13.62
Exercise Trainers & Group Fitness Instructors	574	603	29	5.0%	101	\$18.69
Elementary School Teachers, Except Special Education	1,126	1,228	102	9.1%	98	\$31.59
Cleaners of Vehicles & Equipment	602	648	46	7.7%	96	\$12.67
Shipping, Receiving, & Inventory Clerks	964	936	(27)	(2.8%)	95	\$15.70
Software Developers & Software Quality Assurance Analysts & Testers	1,252	1,105	(147)	(11.8%)	93	\$38.61

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Recreation Workers	469	552	83	17.7%	93	\$12.32
Dishwashers	515	561	46	8.8%	91	\$11.83
Tutors & Teachers & Instructors, All Other	576	695	120	20.8%	86	\$23.84
Plumbers, Pipefitters, & Steamfitters	633	713	79	12.5%	84	\$26.20
Office & Administrative Support Workers, All Other	587	667	80	13.6%	82	\$19.45
Coaches & Scouts	479	540	62	12.9%	81	\$16.22
Automotive Service Technicians & Mechanics	779	791	12	1.5%	80	\$18.86
Industrial Truck & Tractor Operators	700	691	(9)	(1.2%)	79	\$19.66
Automotive & Watercraft Service Attendants	508	530	22	4.4%	79	\$12.02
First-Line Supervisors of Production & Operating Workers	715	739	24	3.4%	78	\$25.55
Insurance Sales Agents	749	718	(32)	(4.2%)	77	\$21.52
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, & Travel	518	568	51	9.8%	76	\$21.63
Management Analysts	661	738	77	11.6%	74	\$35.09
Packaging & Filling Machine Operators & Tenders	590	612	22	3.7%	73	\$15.63
Counter & Rental Clerks	537	560	23	4.3%	73	\$15.20
Parts Salespersons	576	583	7	1.2%	71	\$16.04
Food Servers, Nonrestaurant	344	432	88	25.6%	70	\$12.62
Animal Caretakers	319	417	98	30.9%	70	\$12.71
Human Resources Specialists	599	649	50	8.3%	68	\$24.61
First-Line Supervisors of Construction Trades & Extraction Workers	537	599	62	11.6%	68	\$27.64
Production Workers, All Other	564	533	(31)	(5.5%)	65	\$15.51
Social & Community Service Managers	541	656	115	21.2%	64	\$29.67
Dental Assistants	472	540	68	14.5%	64	\$21.05
Helpers--Production Workers	428	422	(6)	(1.5%)	64	\$14.71
Financial Managers	628	732	104	16.6%	63	\$45.51
Farmers, Ranchers, & Other Agricultural Managers	498	590	92	18.5%	63	\$20.34
Licensed Practical & Licensed Vocational Nurses	545	685	140	25.6%	61	\$25.50
Market Research Analysts & Marketing Specialists	439	537	98	22.3%	60	\$23.17
Computer User Support Specialists	615	673	58	9.5%	59	\$23.72
Real Estate Sales Agents	567	594	27	4.8%	59	\$23.17



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Painters, Construction & Maintenance	478	537	59	12.3%	59	\$18.10
Billing & Posting Clerks	453	513	60	13.2%	59	\$19.80
Self-Enrichment Teachers	407	482	76	18.6%	59	\$21.29
Packers & Packagers, Hand	386	387	1	0.2%	57	\$12.20
Dining Room & Cafeteria Attendants & Bartender Helpers	274	329	54	19.7%	57	\$11.88
Food Batchmakers	338	366	28	8.3%	56	\$15.93
Machine Feeders & Offbearers	442	394	(48)	(10.9%)	55	\$16.09
Police & Sheriff's Patrol Officers	626	700	73	11.7%	54	\$35.00
Industrial Machinery Mechanics	555	572	17	3.0%	54	\$24.46
Cooks, Fast Food	357	373	16	4.4%	54	\$11.85
Hotel, Motel, & Resort Desk Clerks	299	312	13	4.3%	54	\$12.17
Medical & Health Services Managers	493	592	99	20.1%	53	\$45.15
Welders, Cutters, Solderers, & Brazers	446	461	15	3.4%	53	\$18.62
Bus Drivers, Transit & Intercity	356	405	49	13.9%	53	\$26.08
Logging Equipment Operators	350	315	(35)	(10.1%)	53	\$25.30
Crematory Operators & Personal Care & Service Workers, All Other	264	344	81	30.6%	53	\$14.71
Inspectors, Testers, Sorters, Samplers, & Weighers	432	391	(41)	(9.5%)	52	\$17.97
Food Service Managers	395	431	36	9.1%	52	\$16.00
Pharmacy Technicians	528	587	59	11.3%	51	\$20.76
Information & Record Clerks, All Other	395	421	26	6.5%	51	\$16.37
Bakers	357	370	14	3.8%	51	\$12.57
Hosts & Hostesses, Restaurant, Lounge, & Coffee Shop	181	222	41	22.7%	51	\$11.97
Massage Therapists	342	407	65	19.0%	50	\$26.80
Educational, Guidance, & Career Counselors & Advisors	335	429	94	28.2%	49	\$23.30
Military occupations	469	373	(97)	(20.6%)	48	\$20.50
Substitute Teachers, Short-Term	370	403	33	8.8%	48	\$22.40
Musicians & Singers	381	386	5	1.3%	47	\$15.05
Executive Secretaries & Executive Administrative Assistants	431	381	(50)	(11.6%)	46	\$27.56
Farmworkers, Farm, Ranch, & Aquacultural Animals	209	272	63	30.0%	46	\$13.32
Buyers & Purchasing Agents	426	413	(13)	(3.0%)	45	\$23.75
Tellers	415	323	(92)	(22.2%)	45	\$15.87



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Sawing Machine Setters, Operators, & Tenders, Wood	384	379	(5)	(1.4%)	45	\$19.27
Social Workers, All Other	357	412	55	15.5%	44	\$26.07
Machinists	413	415	2	0.5%	43	\$22.43
Roofers	378	398	20	5.3%	43	\$18.95
Mental Health & Substance Abuse Social Workers	320	390	70	21.7%	42	\$15.80
Construction Managers	468	507	38	8.2%	41	\$35.41
Child, Family, & School Social Workers	379	407	28	7.4%	41	\$23.90
Secondary School Teachers, Except Special & Career/Technical Education	466	522	56	12.1%	40	\$28.83
Bus & Truck Mechanics & Diesel Engine Specialists	399	413	13	3.3%	40	\$22.50
First-Line Supervisors of Mechanics, Installers, & Repairers	391	417	27	6.8%	40	\$33.22
Clergy	369	353	(16)	(4.4%)	40	\$20.36
Installation, Maintenance, & Repair Workers, All Other	328	353	25	7.6%	40	\$19.05
Mobile Heavy Equipment Mechanics, Except Engines	394	379	(15)	(3.8%)	39	\$25.43
Training & Development Specialists	303	345	42	13.8%	39	\$23.43
Medical Dosimetrists, Medical Records Specialists, & Health Technologists & Technicians, All Other	449	501	51	11.4%	38	\$23.13
Property, Real Estate, & Community Association Managers	437	468	31	7.2%	38	\$18.85
Paralegals & Legal Assistants	383	343	(40)	(10.6%)	38	\$20.84
Woodworking Machine Setters, Operators, & Tenders, Except Sawing	280	265	(15)	(5.4%)	38	\$18.12
School Bus Monitors & Protective Service Workers, All Other	142	157	15	10.4%	38	\$18.03
Computer Occupations, All Other	451	458	6	1.4%	37	\$29.32
Sales Managers	390	406	16	4.1%	37	\$42.61
Mixing & Blending Machine Setters, Operators, & Tenders	307	307	0	0.0%	37	\$15.15
Cost Estimators	314	347	33	10.6%	36	\$29.15
First-Line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	298	320	23	7.7%	36	\$26.49
Cabinetmakers & Bench Carpenters	303	316	12	4.1%	35	\$16.51
Educational Instruction & Library Workers, All Other	274	331	57	20.8%	34	\$21.14
Amusement & Recreation Attendants	131	149	18	14.1%	34	\$11.96
Graphic Designers	317	323	6	1.8%	33	\$20.49



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Operating Engineers & Other Construction Equipment Operators	262	278	16	6.1%	33	\$26.87
First-Line Supervisors of Personal Service & Entertainment Workers, Except Gambling Services	245	305	59	24.1%	33	\$19.96
Gambling Change Persons & Booth Cashiers	164	175	12	7.1%	33	\$11.51
Firefighters	396	430	34	8.7%	32	\$30.66
Middle School Teachers, Except Special & Career/Technical Education	358	397	38	10.7%	32	\$30.16
Administrative Services Managers	324	361	37	11.4%	32	\$43.37
Education Administrators, Postsecondary	266	341	74	27.9%	32	\$45.92
Library Technicians	187	198	11	6.0%	31	\$20.47
Lawyers	663	609	(54)	(8.1%)	30	\$37.41
Heating, Air Conditioning, & Refrigeration Mechanics & Installers	230	275	44	19.1%	30	\$26.34
Production, Planning, & Expediting Clerks	223	267	44	19.9%	30	\$21.44
Loan Officers	346	341	(4)	(1.2%)	29	\$30.14
Loan Interviewers & Clerks	280	282	2	0.8%	29	\$20.33
Rehabilitation Counselors	246	270	24	9.9%	29	\$17.36
Healthcare Social Workers	204	263	59	29.0%	29	\$36.73
Postal Service Mail Carriers	357	343	(14)	(3.8%)	27	\$22.45
Computer & Information Systems Managers	327	335	8	2.5%	27	\$48.54
First-Line Supervisors of Non-Retail Sales Workers	280	267	(13)	(4.8%)	27	\$28.43
Real Estate Brokers	264	277	13	4.8%	27	\$22.18
Healthcare Support Workers, All Other	211	232	21	10.1%	27	\$18.35
Cooks, Short Order	185	191	6	3.3%	27	\$12.53
Securities, Commodities, & Financial Services Sales Agents	273	270	(3)	(1.1%)	26	\$26.12
Clinical, Counseling, & School Psychologists	230	303	73	31.6%	26	\$35.80
Writers & Authors	229	243	14	6.0%	26	\$21.10
Cement Masons & Concrete Finishers	211	232	21	9.9%	26	\$20.72
Butchers & Meat Cutters	188	196	8	4.4%	25	\$16.43
Chefs & Head Cooks	151	180	29	19.2%	25	\$18.85
Demonstrators & Product Promoters	148	147	(1)	(0.5%)	25	\$13.62
Lifeguards, Ski Patrol, & Other Recreational Protective Service Workers	93	103	10	10.4%	25	\$12.17



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Physical Therapists	289	383	94	32.7%	24	\$41.84
Structural Metal Fabricators & Fitters	246	219	(27)	(11.1%)	24	\$19.37
Extruding, Forming, Pressing, & Compacting Machine Setters, Operators, & Tenders	231	213	(18)	(7.9%)	24	\$21.26
First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	192	211	20	10.4%	24	\$19.00
First-Line Supervisors of Housekeeping & Janitorial Workers	167	196	28	16.9%	24	\$18.57
Agricultural Equipment Operators	116	142	26	22.8%	24	\$31.77
Education Administrators, Kindergarten through Secondary	256	278	22	8.6%	23	\$53.47
Coating, Painting, & Spraying Machine Setters, Operators, & Tenders	188	200	12	6.2%	23	\$18.05
Refuse & Recyclable Material Collectors	164	166	2	1.3%	23	\$18.09
Residential Advisors	106	146	39	36.9%	23	\$17.30
Bill & Account Collectors	199	170	(29)	(14.4%)	22	\$18.26
Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	197	180	(18)	(8.9%)	22	\$16.79
Sewing Machine Operators	176	185	9	5.2%	22	\$12.38
Public Relations Specialists	166	194	28	16.8%	22	\$25.09
Psychiatric Aides	155	183	28	18.3%	22	\$18.46
Cooks, All Other	151	154	2	1.5%	22	\$14.50
Motor Vehicle Operators, All Other	133	128	(5)	(3.6%)	22	\$11.75
Computer Systems Analysts	242	268	26	10.8%	21	\$31.06
Claims Adjusters, Examiners, & Investigators	212	229	17	8.0%	21	\$27.57
Marketing Managers	194	218	24	12.2%	21	\$39.36
Education & Childcare Administrators, Preschool & Daycare	180	228	48	26.7%	21	\$26.71
Community Health Workers	158	179	21	13.4%	21	\$20.99
First-Line Supervisors of Farming, Fishing, & Forestry Workers	136	142	6	4.6%	21	\$25.41
Pharmacists	386	409	23	6.0%	20	\$68.30
Web Developers & Digital Interface Designers	237	240	3	1.1%	20	\$24.50
Computer Network Support Specialists	220	233	13	5.9%	20	\$25.27
Human Resources Managers	199	221	22	11.2%	20	\$37.32
Compliance Officers	184	206	23	12.3%	20	\$27.46
Biological Technicians	159	180	21	13.0%	20	\$20.55

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Reservation & Transportation Ticket Agents & Travel Clerks	159	165	6	4.0%	20	\$16.46
Community & Social Service Specialists, All Other	155	170	15	9.9%	20	\$19.04
Manicurists & Pedicurists	127	163	36	28.6%	20	\$10.25
Agricultural Workers, All Other	92	121	29	31.3%	20	\$15.09
Ushers, Lobby Attendants, & Ticket Takers	79	81	2	2.5%	20	\$12.41
Physicians, All Other; & Ophthalmologists, Except Pediatric	424	481	57	13.4%	19	\$121.31
Clinical Laboratory Technologists & Technicians	318	297	(22)	(6.8%)	19	\$33.54
Industrial Production Managers	233	242	10	4.3%	19	\$41.93
Personal Financial Advisors	219	229	11	4.9%	19	\$44.88
Dental Hygienists	206	244	38	18.7%	19	\$37.88
Automotive Body & Related Repairers	173	187	14	8.4%	19	\$19.72
Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	165	159	(6)	(3.7%)	19	\$17.78
Instructional Coordinators	159	186	27	17.1%	19	\$28.38
Labor Relations Specialists	152	174	22	14.6%	19	\$13.98
Adult Basic Education, Adult Secondary Education, & English as a Second Language Instructors	150	160	10	6.6%	19	\$31.84
Insurance Claims & Policy Processing Clerks	146	175	29	19.8%	19	\$27.79
Librarians & Media Collections Specialists	144	170	27	18.5%	19	\$30.81
Meeting, Convention, & Event Planners	142	157	16	11.0%	19	\$21.97
Sales & Related Workers, All Other	141	141	0	0.0%	19	\$18.36
Occupational Therapy Assistants	113	158	45	40.3%	19	\$34.89
Court, Municipal, & License Clerks	194	189	(4)	(2.3%)	18	\$23.36
Printing Press Operators	187	152	(35)	(18.5%)	18	\$17.19
Photographers	185	164	(21)	(11.4%)	18	\$17.60
Editors	183	144	(39)	(21.4%)	18	\$26.49
Computer Numerically Controlled Tool Operators	180	168	(12)	(6.7%)	18	\$20.23
New Accounts Clerks	169	134	(34)	(20.4%)	18	\$17.48
Highway Maintenance Workers	158	157	(2)	(1.0%)	18	\$25.21
Directors, Religious Activities & Education	154	141	(13)	(8.4%)	18	\$11.80
Fence Erectors	144	147	3	1.9%	18	\$15.83



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Payroll & Timekeeping Clerks	142	151	9	6.4%	18	\$23.00
Order Clerks	139	145	6	4.2%	18	\$15.09
Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	139	140	0	0.0%	18	\$17.06
Laundry & Dry-Cleaning Workers	117	128	12	9.9%	18	\$12.48
Library Assistants, Clerical	104	117	13	12.5%	18	\$18.40
Food Preparation & Serving Related Workers, All Other	91	105	14	15.0%	18	\$12.12
Network & Computer Systems Administrators	229	231	2	0.8%	17	\$38.01
Civil Engineers	222	216	(6)	(2.7%)	17	\$38.38
Tile & Stone Setters	142	161	19	13.1%	17	\$17.63
Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	133	144	12	8.7%	17	\$18.79
Medical Equipment Preparers	132	142	10	7.6%	17	\$18.85
Physician Assistants	167	215	48	28.9%	16	\$56.49
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	158	143	(14)	(9.2%)	16	\$35.30
Computer, Automated Teller, & Office Machine Repairers	158	141	(18)	(11.3%)	16	\$18.16
Speech-Language Pathologists	150	215	65	43.0%	16	\$41.07
Veterinary Technologists & Technicians	147	178	32	21.5%	16	\$15.55
Tax Preparers	138	137	(1)	(0.8%)	16	\$25.29
Financial & Investment Analysts, Financial Risk Specialists, & Financial Specialists, All Other	133	161	28	21.1%	16	\$30.18
Adhesive Bonding Machine Operators & Tenders	132	114	(18)	(13.8%)	16	\$17.60
Material Moving Workers, All Other	125	124	(2)	(1.2%)	16	\$17.13
Sheet Metal Workers	123	137	14	11.3%	16	\$21.76
Construction & Building Inspectors	122	128	7	5.5%	16	\$32.55
Advertising Sales Agents	121	109	(12)	(10.2%)	16	\$22.00
Logisticians	132	146	14	10.5%	15	\$31.46
Life, Physical, & Social Science Technicians, All Other	130	127	(3)	(2.1%)	15	\$21.31
Human Resources Assistants, Except Payroll & Timekeeping	126	127	1	1.2%	15	\$17.74
File Clerks	122	112	(10)	(8.4%)	15	\$16.04
Fundraisers	120	131	11	9.4%	15	\$20.14
Skincare Specialists	113	125	13	11.4%	15	\$14.18



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Counselors, All Other	96	127	31	31.8%	15	\$25.91
Special Education Teachers, Secondary School	163	173	10	6.4%	14	\$26.21
Chief Executives	156	173	17	10.7%	14	\$50.83
Couriers & Messengers	151	142	(9)	(5.8%)	14	\$15.44
Ophthalmic Medical Technicians	150	166	16	10.8%	14	\$20.92
Surgical Technologists	144	157	13	9.2%	14	\$24.29
Social Scientists & Related Workers, All Other	132	118	(14)	(10.7%)	14	\$36.52
Door-To-Door Sales Workers, News & Street Vendors, & Related Workers	132	103	(29)	(22.1%)	14	\$12.89
Art Directors	112	119	7	6.6%	14	\$24.02
Woodworkers, All Other	112	107	(5)	(4.7%)	14	\$14.42
Paving, Surfacing, & Tamping Equipment Operators	110	110	0	0.0%	14	\$26.02
Tailors, Dressmakers, & Custom Sewers	109	95	(15)	(13.3%)	14	\$13.39
Interpreters & Translators	98	123	26	26.2%	14	\$18.67
Logging Workers, All Other	96	77	(19)	(20.0%)	14	\$22.29
Computer Programmers	196	161	(35)	(17.9%)	13	\$37.47
Architects, Except Landscape & Naval	154	161	7	4.8%	13	\$30.36
Occupational Therapists	136	181	45	32.9%	13	\$43.71
Dispatchers, Except Police, Fire, & Ambulance	119	129	10	8.4%	13	\$20.23
Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	112	113	1	1.2%	13	\$15.38
Recreational Vehicle Service Technicians	108	117	9	8.4%	13	\$20.76
Tree Trimmers & Pruners	85	95	10	12.0%	13	\$24.42
Helpers--Pipelayers, Plumbers, Pipefitters, & Steamfitters	77	89	12	15.4%	13	\$13.83
Crossing Guards & Flaggers	75	77	1	1.9%	13	\$13.00
Marriage & Family Therapists	65	108	43	65.7%	13	\$27.36
Veterinary Assistants & Laboratory Animal Caretakers	57	76	19	32.4%	13	\$14.65
Respiratory Therapists	159	190	31	19.4%	12	\$24.58
Emergency Medical Technicians & Paramedics	148	163	15	10.2%	12	\$19.13
Psychologists, All Other	144	161	18	12.4%	12	\$37.52
Mechanical Engineers	141	155	14	10.2%	12	\$35.28
Nurse Practitioners	108	157	49	44.8%	12	\$58.90

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Telecommunications Equipment Installers & Repairers, Except Line Installers	102	107	5	5.0%	12	\$31.60
Medical Transcriptionists	93	81	(13)	(13.4%)	12	\$19.42
Travel Agents	77	84	7	9.3%	12	\$12.29
Fishing & Hunting Workers	66	74	8	11.4%	12	\$19.47
Physical Therapist Aides	59	84	25	42.0%	12	\$12.38
Physical Therapist Assistants	47	84	37	77.7%	12	\$30.10
Postal Service Mail Sorters, Processors, & Processing Machine Operators	136	121	(14)	(10.5%)	11	\$20.41
Information Security Analysts	112	134	22	19.6%	11	\$42.23
Industrial Engineers	111	133	21	19.2%	11	\$44.27
Media & Communication Workers, All Other	101	97	(4)	(3.8%)	11	\$12.11
Lodging Managers	100	102	2	2.0%	11	\$29.29
Music Directors & Composers	98	94	(3)	(3.5%)	11	\$22.39
Motorcycle Mechanics	95	104	8	8.9%	11	\$16.00
Data Entry Keyers	95	81	(14)	(15.0%)	11	\$17.21
Excavating & Loading Machine & Dragline Operators, Surface Mining	93	91	(2)	(2.5%)	11	\$20.02
Orderlies	89	95	5	6.0%	11	\$15.31
Miscellaneous Entertainers & Performers, Sports & Related Workers	81	90	9	11.2%	11	\$19.14
Building Cleaning Workers, All Other	76	83	7	8.7%	11	\$15.50
Forest & Conservation Workers	73	55	(18)	(25.0%)	11	\$16.70
Radiologic Technologists & Technicians	158	170	12	7.8%	10	\$34.16
Transportation, Storage, & Distribution Managers	110	121	11	9.6%	10	\$38.95
Eligibility Interviewers, Government Programs	109	101	(8)	(7.8%)	10	\$20.52
Drywall & Ceiling Tile Installers	107	99	(7)	(6.8%)	10	\$28.17
Water & Wastewater Treatment Plant & System Operators	106	109	3	2.4%	10	\$30.67
Tire Repairers & Changers	94	92	(1)	(1.2%)	10	\$15.44
Merchandise Displayers & Window Trimmers	92	98	6	6.8%	10	\$15.72
Producers & Directors	86	93	7	7.9%	10	\$21.78
Miscellaneous First-Line Supervisors, Protective Service Workers	78	93	15	19.8%	10	\$23.24
Textile, Apparel, & Furnishings Workers, All Other	74	72	(2)	(2.7%)	10	\$14.63

<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Helpers--Installation, Maintenance, & Repair Workers	70	79	9	13.2%	10	\$14.66
Audio & Video Technicians	69	86	17	25.0%	10	\$18.79
Telemarketers	68	53	(14)	(21.2%)	10	\$15.51
Dental Laboratory Technicians	60	72	13	21.4%	10	\$17.21
Tour & Travel Guides	48	54	5	10.7%	10	\$16.96
Dentists, General	182	208	26	14.3%	9	\$94.65
Health Information Technologists, Medical Registrars, Surgical Assistants, & Healthcare Practitioners & Technical Workers, All Other	118	134	17	14.4%	9	\$17.91
Special Education Teachers, All Other	93	104	11	11.8%	9	\$41.32
Biological Scientists, All Other	88	90	2	2.3%	9	\$30.06
Architectural & Civil Drafters	87	83	(5)	(5.4%)	9	\$21.16
Public Safety Telecommunicators	81	89	8	10.1%	9	\$27.85
Crushing, Grinding, & Polishing Machine Setters, Operators, & Tenders	79	76	(3)	(3.6%)	9	\$19.31
Pressers, Textile, Garment, & Related Materials	75	69	(7)	(8.9%)	9	\$11.47
Fine Artists, Including Painters, Sculptors, & Illustrators	74	81	7	9.2%	9	\$8.64
Cutting & Slicing Machine Setters, Operators, & Tenders	72	69	(2)	(2.9%)	9	\$11.49
Religious Workers, All Other	70	65	(5)	(7.6%)	9	\$11.88
Log Graders & Scalers	55	53	(2)	(3.2%)	9	\$22.64
Parking Attendants	44	55	11	25.2%	9	\$12.18
Engineers, All Other	109	114	5	4.3%	8	\$35.80
Aircraft Mechanics & Service Technicians	93	92	(1)	(1.2%)	8	\$33.66
Therapists, All Other	80	107	26	32.6%	8	\$20.71
Designers, All Other	80	81	1	1.7%	8	\$22.88
Legal Secretaries & Administrative Assistants	78	56	(22)	(28.1%)	8	\$18.42
Paper Goods Machine Setters, Operators, & Tenders	77	75	(2)	(2.2%)	8	\$21.47
Public Relations & Fundraising Managers	75	90	14	19.2%	8	\$39.38
Urban & Regional Planners	75	82	7	9.4%	8	\$36.39
Forest & Conservation Technicians	74	63	(11)	(15.3%)	8	\$24.21
Drafters, All Other	73	72	(1)	(1.0%)	8	\$19.79
Interior Designers	71	78	8	11.0%	8	\$24.65





<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Upholsterers	70	74	3	4.8%	8	\$15.52
Word Processors & Typists	70	59	(11)	(15.2%)	8	\$17.00
Stationary Engineers & Boiler Operators	69	74	5	7.9%	8	\$25.85
Kindergarten Teachers, Except Special Education	68	77	9	12.7%	8	\$19.71
Medical Equipment Repairers	67	73	6	9.4%	8	\$24.61
Outdoor Power Equipment & Other Small Engine Mechanics	66	74	8	11.7%	8	\$21.84
Health Education Specialists	63	71	8	12.6%	8	\$21.54
Meat, Poultry, & Fish Cutters & Trimmers	63	61	(2)	(2.6%)	8	\$14.42
Correctional Officers & Jailers	60	72	12	19.8%	8	\$36.79
Phlebotomists	57	68	11	18.4%	8	\$18.41
Tool Grinders, Filers, & Sharpeners	57	55	(2)	(2.8%)	8	\$19.74
Passenger Attendants	51	60	9	16.9%	8	\$22.26
Helpers--Carpenters	48	55	7	14.1%	8	\$14.62
Gambling & Sports Book Writers & Runners	47	51	3	6.9%	8	\$14.58
Animal Trainers	42	50	8	18.7%	8	\$11.65
Costume Attendants	37	29	(8)	(21.2%)	8	\$22.97
Family Medicine Physicians	168	187	19	11.2%	7	\$88.77
Cardiovascular Technologists & Technicians	123	128	5	3.9%	7	\$39.87
Veterinarians	122	141	19	15.6%	7	\$37.06
Probation Officers & Correctional Treatment Specialists	96	70	(26)	(26.7%)	7	\$31.79
Postal Service Clerks	92	86	(6)	(6.4%)	7	\$22.67
Civil Engineering Technologists & Technicians	84	66	(19)	(21.9%)	7	\$30.43
First-Line Supervisors of Police & Detectives	83	94	11	12.8%	7	\$49.90
Floral Designers	81	67	(14)	(17.5%)	7	\$12.80
Special Education Teachers, Kindergarten & Elementary School	79	88	9	11.5%	7	\$34.08
Architectural & Engineering Managers	79	87	8	10.0%	7	\$64.22
Furnace, Kiln, Oven, Drier, & Kettle Operators & Tenders	71	65	(6)	(8.9%)	7	\$20.28
Transportation Security Screeners	70	76	6	8.6%	7	\$18.37
Foresters	68	57	(11)	(16.5%)	7	\$33.27
Credit Counselors	64	77	13	20.4%	7	\$21.94
Surveying & Mapping Technicians	59	59	0	0.0%	7	\$23.75



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Molders, Shapers, & Casters, Except Metal & Plastic	57	61	4	6.7%	7	\$15.82
Medical Scientists, Except Epidemiologists	52	70	18	35.5%	7	\$49.94
Security & Fire Alarm Systems Installers	50	53	3	6.0%	7	\$28.72
Fallers	47	36	(10)	(22.2%)	7	\$54.63
Agricultural & Food Science Technicians	43	51	8	17.9%	7	\$19.81
Electronics Engineers, Except Computer	84	87	2	2.7%	6	\$41.97
Career/Technical Education Teachers, Secondary School	80	84	4	5.4%	6	\$22.57
Property Appraisers & Assessors	77	79	2	2.7%	6	\$25.94
Legal Support Workers, All Other	77	65	(12)	(16.1%)	6	\$26.58
Electrical Engineers	72	79	7	9.8%	6	\$45.21
Opticians, Dispensing	67	74	7	11.0%	6	\$17.29
Electrical & Electronics Repairers, Commercial & Industrial Equipment	66	66	0	0.0%	6	\$27.61
Title Examiners, Abstractors, & Searchers	66	60	(6)	(8.9%)	6	\$34.20
Locksmiths & Safe Repairers	66	49	(17)	(25.7%)	6	\$17.93
Dietitians & Nutritionists	63	76	12	19.5%	6	\$31.10
Control & Valve Installers & Repairers, Except Mechanical Door	63	63	0	0.0%	6	\$27.64
Electrical Power-Line Installers & Repairers	62	64	2	3.2%	6	\$50.06
Purchasing Managers	58	62	4	7.1%	6	\$39.62
Environmental Scientists & Specialists, Including Health	58	48	(11)	(18.5%)	6	\$31.17
Social Science Research Assistants	57	45	(12)	(20.9%)	6	\$24.64
Switchboard Operators, Including Answering Service	54	44	(11)	(19.6%)	6	\$13.50
Automotive Glass Installers & Repairers	53	57	4	8.2%	6	\$18.01
Financial Clerks, All Other	52	56	4	7.2%	6	\$21.29
Electrical & Electronic Engineering Technologists & Technicians	51	55	4	8.5%	6	\$27.04
Motorboat Mechanics & Service Technicians	51	54	4	7.6%	6	\$16.37
Compensation, Benefits, & Job Analysis Specialists	47	54	8	16.1%	6	\$23.95
Barbers	47	52	5	11.7%	6	\$13.55
Jewelers & Precious Stone & Metal Workers	47	45	(3)	(5.3%)	6	\$13.25
Fashion Designers	46	56	10	21.5%	6	\$27.59



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Stonemasons	46	53	7	14.4%	6	\$16.57
Pest Control Workers	44	42	(1)	(2.5%)	6	\$19.36
Structural Iron & Steel Workers	41	48	7	17.0%	6	\$37.34
Actors	41	47	5	12.4%	6	\$17.49
Acupuncturists & Healthcare Diagnosing or Treating Practitioners, All Other	112	109	(3)	(3.0%)	5	\$34.86
Magnetic Resonance Imaging Technologists	107	93	(14)	(13.2%)	5	\$46.23
Occupational Health & Safety Specialists	76	83	7	9.5%	5	\$34.84
Aircraft Structure, Surfaces, Rigging, & Systems Assemblers	67	59	(8)	(11.3%)	5	\$12.73
Database Administrators & Architects	55	62	6	11.4%	5	\$44.89
Operations Research Analysts	54	69	15	27.1%	5	\$37.14
Calibration Technologists & Technicians & Engineering Technicians, Except Drafters, All Other	53	54	1	1.7%	5	\$31.54
Riggers	51	53	2	4.4%	5	\$23.16
Home Appliance Repairers	51	45	(6)	(11.5%)	5	\$20.37
Power Plant Operators	50	51	1	1.8%	5	\$48.97
Credit Analysts	50	51	2	3.4%	5	\$29.52
Broadcast Announcers & Radio Disc Jockeys	49	40	(9)	(18.9%)	5	\$14.11
Millwrights	47	50	3	6.7%	5	\$43.73
Computer Numerically Controlled Tool Programmers	47	48	1	1.4%	5	\$26.43
Lighting Technicians & Media & Communication Equipment Workers, All Other	47	47	0	0.0%	5	\$17.14
Special Effects Artists & Animators	47	47	0	0.0%	5	\$12.89
Industrial Engineering Technologists & Technicians	47	46	(1)	(1.9%)	5	\$26.38
Mail Clerks & Mail Machine Operators, Except Postal Service	47	42	(4)	(9.1%)	5	\$15.16
Craft Artists	46	47	0	0.0%	5	\$5.63
Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	46	40	(6)	(13.3%)	5	\$31.69
Airline Pilots, Copilots, & Flight Engineers	45	43	(2)	(4.9%)	5	\$86.24
News Analysts, Reporters, & Journalists	45	41	(4)	(9.2%)	5	\$22.76
Education Administrators, All Other	44	52	7	16.6%	5	\$23.29
Soil & Plant Scientists	44	45	2	4.3%	5	\$32.24
Bicycle Repairers	44	45	1	2.4%	5	\$16.27



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Insulation Workers, Floor, Ceiling, & Wall	43	38	(4)	(9.5%)	5	\$18.46
Glaziers	42	45	3	8.1%	5	\$31.86
Coin, Vending, & Amusement Machine Servicers & Repairers	40	39	(1)	(2.6%)	5	\$22.34
Pipelayers	39	44	4	11.3%	5	\$30.63
Telecommunications Line Installers & Repairers	38	42	4	10.7%	5	\$24.36
Helpers, Construction Trades, All Other	36	38	2	5.6%	5	\$14.80
Ophthalmic Laboratory Technicians	35	42	7	18.7%	5	\$18.02
Crane & Tower Operators	35	37	1	4.1%	5	\$37.02
Hazardous Materials Removal Workers	31	37	6	19.9%	5	\$18.62
Gambling Cage Workers	31	33	3	8.2%	5	\$12.49
Graders & Sorters, Agricultural Products	24	30	6	24.4%	5	\$12.74
Psychiatrists	103	116	13	12.5%	4	\$98.39
Chiropractors	82	93	11	13.5%	4	\$34.72
Tax Examiners & Collectors, & Revenue Agents	57	46	(11)	(18.9%)	4	\$11.73
Landscape Architects	55	55	0	0.0%	4	\$30.16
Zoologists & Wildlife Biologists	54	33	(22)	(40.0%)	4	\$33.30
Diagnostic Medical Sonographers	51	59	8	14.9%	4	\$44.01
First-Line Supervisors of Fire Fighting & Prevention Workers	46	51	5	11.3%	4	\$40.22
Computer Network Architects	45	49	4	9.5%	4	\$46.67
Commercial Pilots	43	38	(5)	(12.6%)	4	\$49.85
Electric Motor, Power Tool, & Related Repairers	43	38	(6)	(13.0%)	4	\$30.86
Food Processing Workers, All Other	43	38	(6)	(12.8%)	4	\$18.91
Sales Engineers	41	36	(5)	(12.1%)	4	\$31.70
Commercial & Industrial Designers	40	41	1	1.6%	4	\$22.45
Farm Equipment Mechanics & Service Technicians	40	39	(1)	(1.7%)	4	\$11.72
Natural Sciences Managers	39	42	2	5.3%	4	\$46.16
Procurement Clerks	39	41	2	4.7%	4	\$19.89
Carpet Installers	39	35	(3)	(8.6%)	4	\$16.17
Textile Knitting & Weaving Machine Setters, Operators, & Tenders	39	32	(7)	(17.6%)	4	\$20.55
Set & Exhibit Designers	38	41	4	9.9%	4	\$18.91
Petroleum Pump System Operators, Refinery Operators, & Gaugers	37	38	1	1.4%	4	\$32.78



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Chemists	36	41	5	14.9%	4	\$37.88
Mechanical Drafters	36	36	0	0.0%	4	\$25.61
Pump Operators, Except Wellhead Pumpers	36	36	0	0.0%	4	\$16.68
Morticians, Undertakers, & Funeral Arrangers	36	36	0	0.0%	4	\$12.43
Insurance Underwriters	34	40	7	19.9%	4	\$11.41
Office Machine Operators, Except Computer	33	26	(7)	(21.1%)	4	\$14.86
Weighers, Measurers, Checkers, & Samplers, Recordkeeping	32	31	(1)	(2.4%)	4	\$15.53
Maintenance Workers, Machinery	31	35	4	14.5%	4	\$12.36
Septic Tank Servicers & Sewer Pipe Cleaners	30	36	6	19.9%	4	\$22.37
Film & Video Editors	29	36	7	24.8%	4	\$17.47
Occupational Therapy Aides	29	35	6	19.8%	4	\$11.45
Helpers--Painters, Paperhangers, Plasterers, & Stucco Masons	25	28	3	12.4%	4	\$16.43
Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders	24	26	2	8.8%	4	\$18.41
Food Cooking Machine Operators & Tenders	22	25	3	13.9%	4	\$17.60
Baggage Porters & Bellhops	21	27	7	31.1%	4	\$13.42
Models	17	21	4	26.4%	4	\$15.81
Locker Room, Coatroom, & Dressing Room Attendants	16	18	2	13.5%	4	\$11.27
Nurse Anesthetists	48	55	7	14.0%	3	\$160.13
Surveyors	45	45	0	0.0%	3	\$33.68
Health & Safety Engineers, Except Mining Safety Engineers & Inspectors	41	40	(1)	(2.3%)	3	\$26.71
Detectives & Criminal Investigators	38	39	0	0.0%	3	\$40.05
Environmental Engineers	38	34	(5)	(12.8%)	3	\$37.16
Railroad Conductors & Yardmasters	38	30	(7)	(18.8%)	3	\$24.98
Financial Examiners	37	35	(3)	(7.2%)	3	\$29.86
Budget Analysts	36	39	3	8.2%	3	\$31.48
Cargo & Freight Agents	31	31	0	0.0%	3	\$22.97
Special Education Teachers, Middle School	30	34	4	13.0%	3	\$38.06
Textile Cutting Machine Setters, Operators, & Tenders	29	30	0	0.0%	3	\$11.27
Materials Scientists	29	29	0	0.0%	3	\$49.59
Radio, Cellular, & Tower Equipment Installers & Repairs	29	29	0	0.0%	3	\$16.11



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Plant & System Operators, All Other	28	28	0	0.0%	3	\$22.05
Traffic Technicians	28	27	(1)	(2.4%)	3	\$48.86
Shoe & Leather Workers & Repairers	26	24	(2)	(7.4%)	3	\$13.25
Timing Device Assemblers & Adjusters	26	23	(2)	(9.0%)	3	\$11.51
Brickmasons & Blockmasons	25	26	1	5.3%	3	\$20.28
Pharmacy Aides	25	26	0	0.0%	3	\$16.77
Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	25	24	(0)	0.0%	3	\$18.24
Training & Development Managers	22	26	4	18.8%	3	\$45.01
Private Detectives & Investigators	22	25	3	12.5%	3	\$17.62
Curators	22	24	2	7.8%	3	\$24.91
Miscellaneous Construction & Related Workers	21	23	2	10.5%	3	\$17.72
Audiovisual Equipment Installers & Repairers	21	21	0	0.0%	3	\$17.01
Chemical Technicians	20	24	5	23.8%	3	\$23.39
Pesticide Handlers, Sprayers, & Applicators, Vegetation	19	21	2	11.7%	3	\$24.97
Umpires, Referees, & Other Sports Officials	17	21	3	20.1%	3	\$14.18
First-Line Supervisors of Gambling Service Workers	14	16	2	11.1%	3	\$25.16
Psychiatric Technicians	6	25	19	328.8%	3	\$25.05
Teaching Assistants, Postsecondary	0	20	19	4349.2%	3	\$10.40
Optometrists	69	69	0	0.0%	2	\$46.15
Anesthesiologists	51	56	5	9.5%	2	\$264.32
General Internal Medicine Physicians	51	53	2	3.2%	2	\$122.44
Data Scientists & Mathematical Science Occupations, All Other	34	30	(4)	(11.2%)	2	\$34.42
Audiologists	31	37	6	20.5%	2	\$48.13
Anthropologists & Archeologists	28	14	(14)	(50.3%)	2	\$38.49
Locomotive Engineers	27	22	(5)	(19.9%)	2	\$21.63
Nuclear Engineers	26	28	2	9.6%	2	\$56.50
Musical Instrument Repairers & Tuners	26	22	(3)	(12.5%)	2	\$11.61
Marine Engineers & Naval Architects	25	29	4	17.3%	2	\$55.56
Tapers	25	21	(4)	(16.6%)	2	\$27.02
Tank Car, Truck, & Ship Loaders	24	16	(8)	(34.3%)	2	\$20.27
Computer Hardware Engineers	23	24	0	0.0%	2	\$48.51



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Aerospace Engineers	22	27	5	22.7%	2	\$53.18
Technical Writers	22	21	(2)	(7.2%)	2	\$49.10
Statisticians	20	27	7	36.3%	2	\$32.79
Food Scientists & Technologists	20	21	1	4.0%	2	\$35.66
Credit Authorizers, Checkers, & Clerks	20	19	(1)	(4.9%)	2	\$18.51
Hydrologists	20	18	(2)	(9.6%)	2	\$39.50
Brokerage Clerks	19	21	1	7.1%	2	\$23.22
Court Reporters & Simultaneous Captioners	19	21	2	11.5%	2	\$23.13
Bailiffs	19	20	1	6.5%	2	\$25.16
Dredge Operators	19	18	(1)	(3.8%)	2	\$61.75
Transportation Inspectors	19	17	(1)	(7.4%)	2	\$29.70
Precision Instrument & Equipment Repairers, All Other	18	20	2	9.9%	2	\$20.34
Air Traffic Controllers	18	19	2	10.0%	2	\$64.49
Environmental Science & Protection Technicians, Including Health	18	19	0	0.0%	2	\$19.94
Geoscientists, Except Hydrologists & Geographers	18	19	1	8.0%	2	\$13.20
Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	18	18	0	0.0%	2	\$21.68
Slaughterers & Meat Packers	18	15	(3)	(19.1%)	2	\$11.32
Conveyor Operators & Tenders	17	19	2	12.0%	2	\$20.23
Rail Car Repairers	17	17	0	0.0%	2	\$33.93
Print Binding & Finishing Workers	17	15	(2)	(11.6%)	2	\$13.85
Meter Readers, Utilities	17	14	(2)	(14.6%)	2	\$27.82
Prepress Technicians & Workers	17	14	(3)	(19.5%)	2	\$13.56
Agricultural Inspectors	17	13	(4)	(23.9%)	2	\$26.72
Metal Workers & Plastic Workers, All Other	17	13	(4)	(21.1%)	2	\$14.06
Mechanical Door Repairers	16	18	3	16.6%	2	\$11.73
Textile Winding, Twisting, & Drawing Out Machine Setters, Operators, & Tenders	16	15	(1)	(6.8%)	2	\$11.50
Physical Scientists, All Other	15	18	2	15.8%	2	\$33.03
Hoist & Winch Operators	15	14	(1)	(6.6%)	2	\$35.16
Plating Machine Setters, Operators, & Tenders, Metal & Plastic	15	14	(1)	(4.6%)	2	\$15.22
Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	14	20	5	38.4%	2	\$12.40



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Shampooers	14	18	3	21.8%	2	\$7.88
Advertising & Promotions Managers	14	16	2	15.5%	2	\$34.26
Animal Control Workers	14	15	2	11.1%	2	\$24.71
Agents & Business Managers of Artists, Performers, & Athletes	12	17	5	44.5%	2	\$16.38
Tool & Die Makers	11	14	3	24.6%	2	\$30.92
Athletes & Sports Competitors	11	13	2	16.6%	2	\$17.25
Earth Drillers, Except Oil & Gas; & Explosives Workers, Ordnance Handling Experts, & Blasters	11	12	1	6.8%	2	\$24.21
Shoe Machine Operators & Tenders	10	12	2	16.5%	2	\$14.50
Helpers--Electricians	2	10	8	417.5%	2	\$15.22
Surgeons, Except Ophthalmologists	36	39	2	6.4%	1	\$242.59
Administrative Law Judges, Adjudicators, & Hearing Officers	31	23	(8)	(26.5%)	1	\$50.99
Pediatricians, General	24	26	2	7.1%	1	\$150.28
Judges, Magistrate Judges, & Magistrates	24	18	(7)	(26.8%)	1	\$81.22
Economists	22	14	(8)	(36.2%)	1	\$38.03
Radiation Therapists	20	22	2	9.1%	1	\$51.56
Chemical Engineers	16	19	3	16.2%	1	\$50.41
Postmasters & Mail Superintendents	16	14	(2)	(14.1%)	1	\$33.45
Nuclear Medicine Technologists	15	16	1	5.7%	1	\$45.18
Computer & Information Research Scientists	15	13	(2)	(11.1%)	1	\$49.47
Conservation Scientists	15	13	(1)	(8.5%)	1	\$30.79
Exercise Physiologists	14	16	2	11.4%	1	\$25.10
Materials Engineers	14	14	0	0.0%	1	\$37.77
Power Distributors & Dispatchers	14	13	(1)	(7.1%)	1	\$43.78
Physicists	13	15	2	17.3%	1	\$29.74
Recreational Therapists	12	16	4	36.0%	1	\$25.30
Special Education Teachers, Preschool	12	15	3	28.7%	1	\$32.66
Rail-Track Laying & Maintenance Equipment Operators	12	11	(1)	(11.1%)	1	\$31.50
Mechanical Engineering Technologists & Technicians	11	12	1	8.9%	1	\$23.00
Artists & Related Workers, All Other	11	12	1	6.2%	1	\$10.36
Biochemists & Biophysicists	10	14	4	34.1%	1	\$32.42
Emergency Management Directors	10	12	2	25.1%	1	\$36.92



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Avionics Technicians	10	12	1	13.6%	1	\$29.74
Aircraft Service Attendants & Transportation Workers, All Other	10	12	2	24.7%	1	\$16.10
Subway & Streetcar Operators	10	11	1	5.9%	1	\$33.22
Electrical & Electronics Drafters	10	11	1	12.5%	1	\$27.81
Judicial Law Clerks	10	11	1	10.7%	1	\$25.04
Captains, Mates, & Pilots of Water Vessels	10	9	(1)	(9.0%)	1	\$37.28
Sound Engineering Technicians	9	12	3	36.8%	1	\$18.21
Petroleum Engineers	9	11	2	23.7%	1	\$66.25
Career/Technical Education Teachers, Middle School	9	10	1	8.0%	1	\$18.40
Occupational Health & Safety Technicians	9	10	1	14.0%	1	\$17.31
Camera Operators, Television, Video, & Film	9	10	2	19.5%	1	\$13.56
Layout Workers, Metal & Plastic	9	9	0	0.0%	1	\$27.06
Parking Enforcement Workers	9	9	0	0.0%	1	\$23.86
Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	9	9	0	0.0%	1	\$18.91
Painting, Coating, & Decorating Workers	9	9	0	0.0%	1	\$16.10
Grounds Maintenance Workers, All Other	9	9	0	0.0%	1	\$13.56
Forging Machine Setters, Operators, & Tenders, Metal & Plastic	9	7	(2)	(26.2%)	1	\$17.01
Railroad Brake, Signal, & Switch Operators & Locomotive Firers	9	5	(4)	(40.3%)	1	\$32.71
Museum Technicians & Conservators	8	11	3	38.7%	1	\$18.36
Cooling & Freezing Equipment Operators & Tenders	8	10	2	18.1%	1	\$21.21
Environmental Engineering Technologists & Technicians	8	9	1	18.2%	1	\$26.53
Cleaning, Washing, & Metal Pickling Equipment Operators & Tenders	8	9	1	12.9%	1	\$13.38
Furniture Finishers	8	8	0	0.0%	1	\$12.42
Sewers, Hand	8	7	(1)	(12.9%)	1	\$9.72
Signal & Track Switch Repairers	8	5	(3)	(39.2%)	1	\$35.98
Survey Researchers	8	5	(4)	(44.6%)	1	\$24.94
Athletic Trainers	7	12	5	71.8%	1	\$21.99
Compensation & Benefits Managers	7	9	1	18.3%	1	\$45.93
Actuaries	7	9	3	37.0%	1	\$41.04
Floor Layers, Except Carpet, Wood, & Hard Tiles	7	8	1	8.6%	1	\$20.15



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Camera & Photographic Equipment Repairers	7	8	1	8.8%	1	\$11.67
Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	7	7	0	0.0%	1	\$42.07
Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	7	6	(1)	(9.1%)	1	\$20.43
Photographic Process Workers & Processing Machine Operators	7	6	(1)	(19.1%)	1	\$16.42
Dancers	7	6	(1)	(10.7%)	1	\$15.19
Broadcast Technicians	6	9	3	59.7%	1	\$20.47
Gambling Dealers	6	9	3	46.2%	1	\$16.58
Fiberglass Laminators & Fabricators	6	9	3	50.0%	1	\$14.91
Nurse Midwives	6	8	2	34.0%	1	\$54.82
Elevator & Escalator Installers & Repairers	6	7	2	31.2%	1	\$46.79
Bioengineers & Biomedical Engineers	6	7	1	22.3%	1	\$37.71
Gambling Managers	6	7	2	29.0%	1	\$24.91
Boilermakers	6	5	(1)	(11.4%)	1	\$31.59
Electrical & Electronics Installers & Repairers, Transportation Equipment	6	5	(1)	(9.7%)	1	\$29.42
Underground Mining Machine Operators & Extraction Workers, All Other	6	5	(1)	(11.5%)	1	\$25.13
Reinforcing Iron & Rebar Workers	6	5	(1)	(17.8%)	1	\$20.54
Watch & Clock Repairers	6	5	(1)	(16.8%)	1	\$11.84
Desktop Publishers	6	4	(2)	(30.4%)	1	\$19.97
Farm & Home Management Educators	5	10	6	128.0%	1	\$31.38
Legislators	5	9	4	77.7%	1	\$12.64
Roustabouts, Oil & Gas	5	8	3	66.8%	1	\$19.08
Plasterers & Stucco Masons	5	6	1	25.9%	1	\$18.69
Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	5	5	0	0.0%	1	\$38.07
Airfield Operations Specialists	4	6	1	31.2%	1	\$20.04
Orthotists & Prosthetists	4	5	0	0.0%	1	\$30.20
Microbiologists	4	5	1	24.7%	1	\$23.80
Etchers & Engravers	4	5	1	19.3%	1	\$13.81
Ambulance Drivers & Attendants, Except Emergency Medical Technicians	4	5	0	0.0%	1	\$13.06
Choreographers	3	4	1	17.2%	1	\$18.64
Concierges	2	5	3	193.0%	1	\$15.27



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Chemical Equipment Operators & Tenders	0	4	3	1615.9%	1	\$17.13
First-Line Supervisors of Correctional Officers	0	3	3	1392.6%	1	\$38.17
Life Scientists, All Other	8	4	(4)	(48.4%)	0	\$37.20
Obstetricians & Gynecologists	7	8	1	18.1%	0	\$108.78
Arbitrators, Mediators, & Conciliators	5	6	1	18.4%	0	\$31.10
Transit & Railroad Police	5	5	0	0.0%	0	\$34.47
Rail Yard Engineers, Dinkey Operators, & Hostlers	5	3	(2)	(45.4%)	0	\$21.96
Podiatrists	4	5	1	20.7%	0	\$52.03
Oral & Maxillofacial Surgeons	4	4	0	0.0%	0	\$100.00
Sailors & Marine Oilers	4	3	(1)	(20.6%)	0	\$23.44
Communications Equipment Operators, All Other	4	3	(1)	(20.4%)	0	\$19.59
Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	4	2	(2)	(42.2%)	0	\$18.57
Epidemiologists	3	4	0	0.0%	0	\$35.19
Hearing Aid Specialists	3	4	0	0.0%	0	\$26.20
Semiconductor Processing Technicians	3	4	1	24.8%	0	\$19.92
Coil Winders, Tapers, & Finishers	3	4	0	0.0%	0	\$15.12
Sociologists	3	3	0	0.0%	0	\$50.79
Atmospheric & Space Scientists	3	3	0	0.0%	0	\$44.78
Ship Engineers	3	3	0	0.0%	0	\$39.01
Proofreaders & Copy Markers	3	3	0	0.0%	0	\$15.45
Forensic Science Technicians	3	2	(0)	0.0%	0	\$33.26
Solar Photovoltaic Installers	3	2	(0)	0.0%	0	\$23.97
Aircraft Cargo Handling Supervisors	2	4	1	60.2%	0	\$19.83
Animal Breeders	2	3	1	33.0%	0	\$21.45
Cartographers & Photogrammetrists	2	2	0	0.0%	0	\$29.61
Gas Compressor & Gas Pumping Station Operators	2	2	0	0.0%	0	\$28.63
Service Unit Operators, Oil & Gas	2	2	0	0.0%	0	\$20.22
Historians	2	2	0	0.0%	0	\$20.13
Wind Turbine Service Technicians	2	2	0	0.0%	0	\$19.58
Telephone Operators	2	2	0	0.0%	0	\$18.90
Paperhangers	2	2	0	0.0%	0	\$16.86



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Helpers--Extraction Workers	2	2	0	0.0%	0	\$16.14
Orthodontists	2	1	(0)	0.0%	0	\$97.98
Fire Inspectors & Investigators	2	1	(0)	0.0%	0	\$45.81
Electronic Equipment Installers & Repairers, Motor Vehicles	2	1	(0)	0.0%	0	\$24.16
Floor Sanders & Finishers	2	1	(1)	(39.5%)	0	\$17.72
Model Makers, Wood	2	1	(0)	0.0%	0	\$16.91
Chemical Plant & System Operators	1	3	1	75.9%	0	\$24.45
Genetic Counselors	1	2	0	0.0%	0	\$43.67
Gas Plant Operators	1	2	0	0.0%	0	\$36.87
Forest Fire Inspectors & Prevention Specialists	1	2	0	0.0%	0	\$32.82
Insulation Workers, Mechanical	1	2	1	94.1%	0	\$24.75
Geological & Hydrologic Technicians	1	2	1	110.1%	0	\$24.06
Statistical Assistants	1	2	0	0.0%	0	\$22.21
Medical Appliance Technicians	1	2	1	150.9%	0	\$19.87
Entertainment Attendants & Related Workers, All Other	1	2	0	0.0%	0	\$12.09
Dentists, All Other Specialists	1	1	0	0.0%	0	\$61.58
Industrial-Organizational Psychologists	1	1	0	0.0%	0	\$39.26
Insurance Appraisers, Auto Damage	1	1	0	0.0%	0	\$30.70
Political Scientists	1	1	0	0.0%	0	\$29.01
Motorboat Operators	1	1	0	0.0%	0	\$28.26
Bridge & Lock Tenders	1	1	0	0.0%	0	\$23.90
Rail Transportation Workers, All Other	1	1	0	0.0%	0	\$23.31
Gambling Service Workers, All Other	1	1	0	0.0%	0	\$22.81
Makeup Artists, Theatrical & Performance	1	1	0	0.0%	0	\$22.39
Commercial Divers	1	1	0	0.0%	0	\$21.47
Patternmakers, Wood	1	1	0	0.0%	0	\$16.88
Archivists	1	1	0	0.0%	0	\$16.51
Cooks, Private Household	1	1	0	0.0%	0	\$16.39
Extruding & Forming Machine Setters, Operators, & Tenders, Synthetic & Glass Fibers	1	1	0	0.0%	0	\$16.18
Motion Picture Projectionists	1	1	0	0.0%	0	\$12.26
Funeral Home Managers	1	1	0	0.0%	0	\$11.75



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Engine & Other Machine Assemblers	1	0	(1)	(100.0%)	0	\$17.27
Manufactured Building & Mobile Home Installers	1	0	(0)	0.0%	0	\$14.43
Flight Attendants	0	3	3	4047.9%	0	\$36.37
Dietetic Technicians	0	3	3	2625.3%	0	\$21.59
Aerospace Engineering & Operations Technologists & Technicians	0	1	1	1197.8%	0	\$28.28
Prosthodontists	0	0	0	0.0%	0	\$82.67
Nuclear Power Reactor Operators	0	0	0	0.0%	0	\$43.50
Agricultural Engineers	0	0	0	0.0%	0	\$36.47
Farm Labor Contractors	0	0	0	0.0%	0	\$33.08
Mathematicians	0	0	0	0.0%	0	\$32.58
Continuous Mining Machine Operators	0	0	0	0.0%	0	\$32.05
Pile Driver Operators	0	0	0	0.0%	0	\$28.53
Animal Scientists	0	0	0	0.0%	0	\$28.23
Loading & Moving Machine Operators, Underground Mining	0	0	0	0.0%	0	\$27.39
Geographers	0	0	0	0.0%	0	\$26.79
Electro-Mechanical & Mechatronics Technologists & Technicians	0	0	0	0.0%	0	\$24.26
Wellhead Pumpers	0	0	0	0.0%	0	\$23.57
Fabric & Apparel Patternmakers	0	0	0	0.0%	0	\$21.23
Rock Splitters, Quarry	0	0	0	0.0%	0	\$21.03
Terrazzo Workers & Finishers	0	0	0	0.0%	0	\$20.40
Gambling Surveillance Officers & Gambling Investigators	0	0	0	0.0%	0	\$16.91
Correspondence Clerks	0	0	0	0.0%	0	\$16.32
Helpers--Brickmasons, Blockmasons, Stonemasons, & Tile & Marble Setters	0	0	0	0.0%	0	\$15.98
Helpers--Roofers	0	0	0	0.0%	0	\$15.18
Refractory Materials Repairers, Except Brickmasons	0	0	0	0.0%	0	\$14.35
Funeral Attendants	0	0	0	0.0%	0	\$13.81
Grinding & Polishing Workers, Hand	0	0	0	0.0%	0	\$10.70
Cutters & Trimmers, Hand	0	0	0	0.0%	0	\$9.86
Mining & Geological Engineers, Including Mining Safety Engineers	0	0	0	0.0%	0	\$0.00
Astronomers	0	0	0	0.0%	0	\$0.00
Nuclear Technicians	0	0	0	0.0%	0	\$0.00



<b>SOC TITLE</b>	<b>2019 JOBS</b>	<b>2029 JOBS</b>	<b>CHANGE</b>	<b>% CHANGE</b>	<b>ANNUAL JOB OPENINGS</b>	<b>MEDIAN HOURLY WAGE</b>
Fish & Game Wardens	0	0	0	0.0%	0	\$0.00
Embalmers	0	0	0	0.0%	0	\$0.00
Derrick Operators, Oil & Gas	0	0	0	0.0%	0	\$0.00
Rotary Drill Operators, Oil & Gas	0	0	0	0.0%	0	\$0.00
Roof Bolters, Mining	0	0	0	0.0%	0	\$0.00
Metal-Refining Furnace Operators & Tenders	0	0	0	0.0%	0	\$0.00
Pourers & Casters, Metal	0	0	0	0.0%	0	\$0.00
Model Makers, Metal & Plastic	0	0	0	0.0%	0	\$0.00
Patternmakers, Metal & Plastic	0	0	0	0.0%	0	\$0.00
Foundry Mold & Coremakers	0	0	0	0.0%	0	\$0.00
Textile Bleaching & Dyeing Machine Operators & Tenders	0	0	0	0.0%	0	\$0.00
Tire Builders	0	0	0	0.0%	0	\$0.00

Source: Employees & Self-Employed 2020.4.

## APPENDIX 7: Unemployment

Data on unemployment give researchers an idea of where skills mismatches may exist in the county. Unemployment data can also provide important context when identifying the training programs that are best suited to transitioning unemployed workers into in-demand occupations.

The tables and figures present the number of people unemployed by two-digit industry sector and by two-digit occupational group<sup>19</sup> in Lane County. Data reflect July 2020 and follow the same methodology used by federal statistical agencies to determine the number of workers in an industry or occupation who are not currently employed. The unemployment rate is not provided because it is difficult to accurately determine the size of the labor force in an industry or occupation every month. Rather than the unemployment rate, the percent of all unemployed workers in the county, state, and U.S. are provided.

Table A7.1: Unemployed Workers by Industry Sector in Lane County with State and National Comparisons

NAICS CODE	NAICS TITLE	COUNTY UNEMPLOYED	COUNTY % UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
72	Accommodation & Food Services	3,034	21%	21%	16%
62	Health Care & Social Assistance	2,084	15%	12%	11%
44	Retail Trade	1,872	13%	11%	12%
31	Manufacturing	1,266	9%	10%	11%
56	Administrative & Support & Waste Management & Remediation Services	1,172	8%	7%	10%
23	Construction	983	7%	8%	8%
81	Other Services (except Public Administration)	656	5%	5%	4%
42	Wholesale Trade	450	3%	3%	3%
61	Educational Services	424	3%	4%	3%
54	Professional, Scientific, & Technical Services	423	3%	4%	4%
71	Arts, Entertainment, & Recreation	376	3%	3%	3%
48	Transportation & Warehousing	302	2%	3%	4%
90	Government	274	2%	2%	2%
53	Real Estate & Rental & Leasing	273	2%	2%	2%

<sup>19</sup> Unemployment by industry data is only available at the two-digit level whereas the industry data reported elsewhere in this analysis is at the three-digit level.

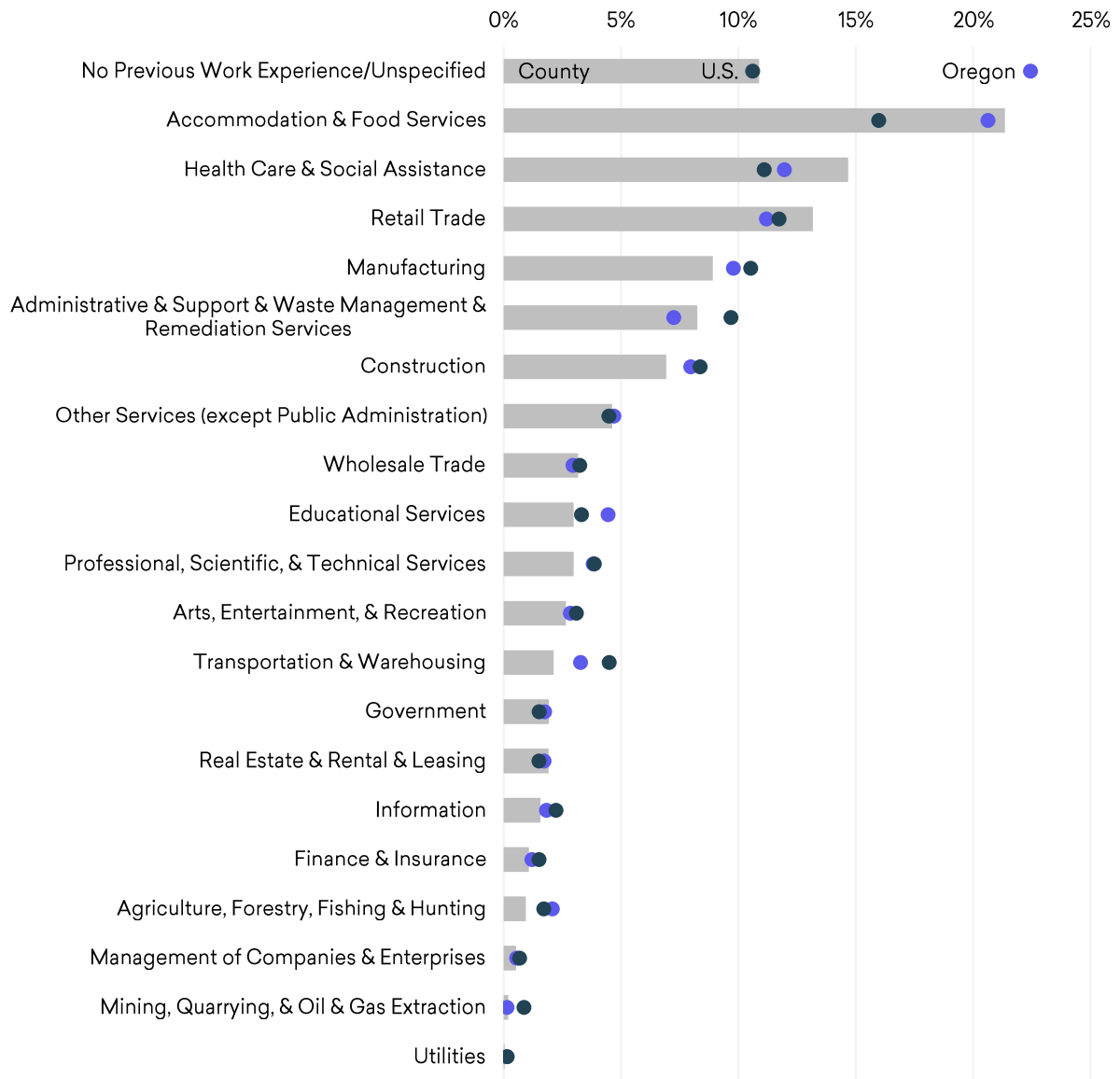
<b>NAICS CODE</b>	<b>NAICS TITLE</b>	<b>COUNTY UNEMPLOYED</b>	<b>COUNTY% UNEMPLOYED</b>	<b>STATE% UNEMPLOYED</b>	<b>U.S.% UNEMPLOYED</b>
51	Information	223	2%	2%	2%
52	Finance & Insurance	153	1%	1%	2%
11	Agriculture, Forestry, Fishing & Hunting	135	1%	2%	2%
55	Management of Companies & Enterprises	75	1%	1%	1%
21	Mining, Quarrying, & Oil & Gas Extraction	27	0%	0%	1%
22	Utilities	6	0%	0%	0%
72	Accommodation & Food Services	3,034	21%	21%	16%

Source: Emsi Total Unemployment (July 2020).





Figure A7.1: Unemployed Workers by Industry Sector in Lane County with State and National Comparisons



Source: Emsi Total Unemployment (July 2020).

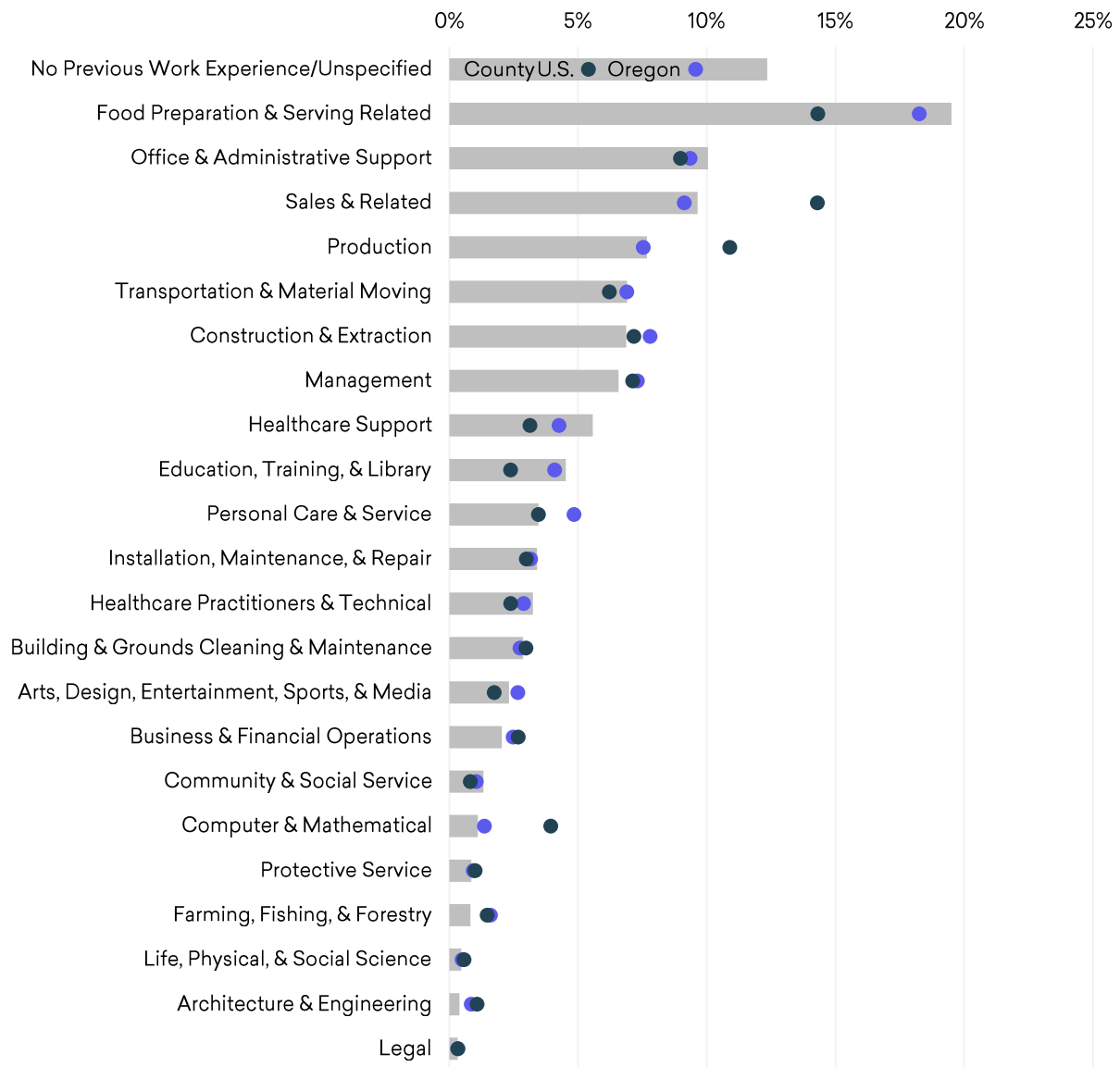
Table A7.2: Unemployed Workers by Occupational Group in Lane County with State and National Comparisons

<b>SOC CODE</b>	<b>SOC TITLE</b>	<b>COUNTY UNEMPLOYED</b>	<b>COUNTY % UNEMPLOYED</b>	<b>STATE % UNEMPLOYED</b>	<b>U.S. % UNEMPLOYED</b>
35-0000	Food Preparation & Serving Related	2,772	20%	18%	14%
43-0000	Office & Administrative Support	1,428	10%	9%	9%
41-0000	Sales & Related	1,371	10%	9%	14%
51-0000	Production	1,091	8%	8%	11%
53-0000	Transportation & Material Moving	982	7%	7%	6%
47-0000	Construction & Extraction	976	7%	8%	7%
11-0000	Management	934	7%	7%	7%
31-0000	Healthcare Support	791	6%	4%	3%
25-0000	Education, Training, & Library	643	5%	4%	2%
39-0000	Personal Care & Service	492	3%	5%	3%
49-0000	Installation, Maintenance, & Repair	484	3%	3%	3%
29-0000	Healthcare Practitioners & Technical	462	3%	3%	2%
37-0000	Building & Grounds Cleaning & Maintenance	407	3%	3%	3%
27-0000	Arts, Design, Entertainment, Sports, & Media	329	2%	3%	2%
13-0000	Business & Financial Operations	289	2%	2%	3%
21-0000	Community & Social Service	188	1%	1%	1%
15-0000	Computer & Mathematical	157	1%	1%	4%
33-0000	Protective Service	122	1%	1%	1%
45-0000	Farming, Fishing, & Forestry	117	1%	2%	1%
19-0000	Life, Physical, & Social Science	66	0%	0%	1%
17-0000	Architecture & Engineering	56	0%	1%	1%
23-0000	Legal	47	0%	0%	0%

Source: Emsi Total Unemployment (July 2020).



Figure A7.2: Unemployed Workers by Occupational Group in Lane County with State and National Comparisons



Source: Emsi Total Unemployment (July 2020).



## APPENDIX 8: Living Wage

As shown in the following tables, the living wage is the hourly rate that an individual must earn to support his or her family as a sole income provider working full-time or 2,080 hours annually. Part-time is defined as less than 35 hours per week of work. State minimum wage rates are the same for all individuals, regardless of the number of dependents in the household. Values are reported per adult in the household. The poverty rate is typically reported as gross annual income and has been adjusted to an hourly wage rate.

Table A8.1: Living Wage Calculations for Lane County

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	No children	\$11.94	\$5.84	\$11.25
	One child	\$25.07	\$7.91	\$11.25
	Two children	\$30.97	\$9.99	\$11.25
	Three children	\$40.53	\$12.07	\$11.25
Two adults, one working	No children	\$19.53	\$7.91	\$11.25
	One child	\$23.67	\$9.99	\$11.25
	Two children	\$26.48	\$12.07	\$11.25
	Three children	\$30.67	\$14.14	\$11.25
Two adults	No children	\$9.76	\$3.96	\$11.25
	One child	\$13.81	\$5.00	\$11.25
	Two children	\$16.95	\$6.03	\$11.25
	Three children	\$20.79	\$7.07	\$11.25

Source: Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology, <http://livingwage.mit.edu>. Minimum wage provided by the U.S. Department of Labor.

Table A8.2: Living Wage Calculations for the State

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	No children	\$13.12	\$5.84	\$11.25
	One child	\$25.93	\$7.91	\$11.25
	Two children	\$31.82	\$9.99	\$11.25
	Three children	\$41.74	\$12.07	\$11.25
Two adults, one working	No children	\$20.64	\$7.91	\$11.25
	One child	\$24.53	\$9.99	\$11.25
	Two children	\$27.34	\$12.07	\$11.25
	Three children	\$31.88	\$14.14	\$11.25
Two adults	No children	\$10.32	\$3.96	\$11.25
	One child	\$14.24	\$5.00	\$11.25
	Two children	\$17.38	\$6.03	\$11.25
	Three children	\$21.39	\$7.07	\$11.25

Source: Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology, <http://livingwage.mit.edu>. Minimum wage provided by the U.S. Department of Labor.

