

Draft Review Guidelines

This draft version of the report gives you an opportunity to review the initial findings and report any concerns you may have. It is also an opportunity to suggest any edits to the text that you would like us to incorporate into the final version.

Please note that the results found in this draft report are preliminary and subject to change. Because of this, we recommend against publishing or publicizing the findings presented below until you have your finalized results.

Consider the environmental impact of printing this report.

Editing Guidelines

- Please provide suggested revisions as one electronic document or digital comments on a single copy of each of the reports. Please send either as a word document or PDF file. Do not make changes in the actual text, as this makes it difficult for us to find and track changes.
- It is only necessary to indicate iterative revisions (for example, capitalizing a word, which we have consistently not capitalized) at the first instance, not at every instance.
- Before sending us suggested revisions, if you have received feedback from multiple people, please be sure that their suggestions do not contradict each other.

Lee College

Environmental Scan and Program Demand Gap Analysis

Main Report






May 2020



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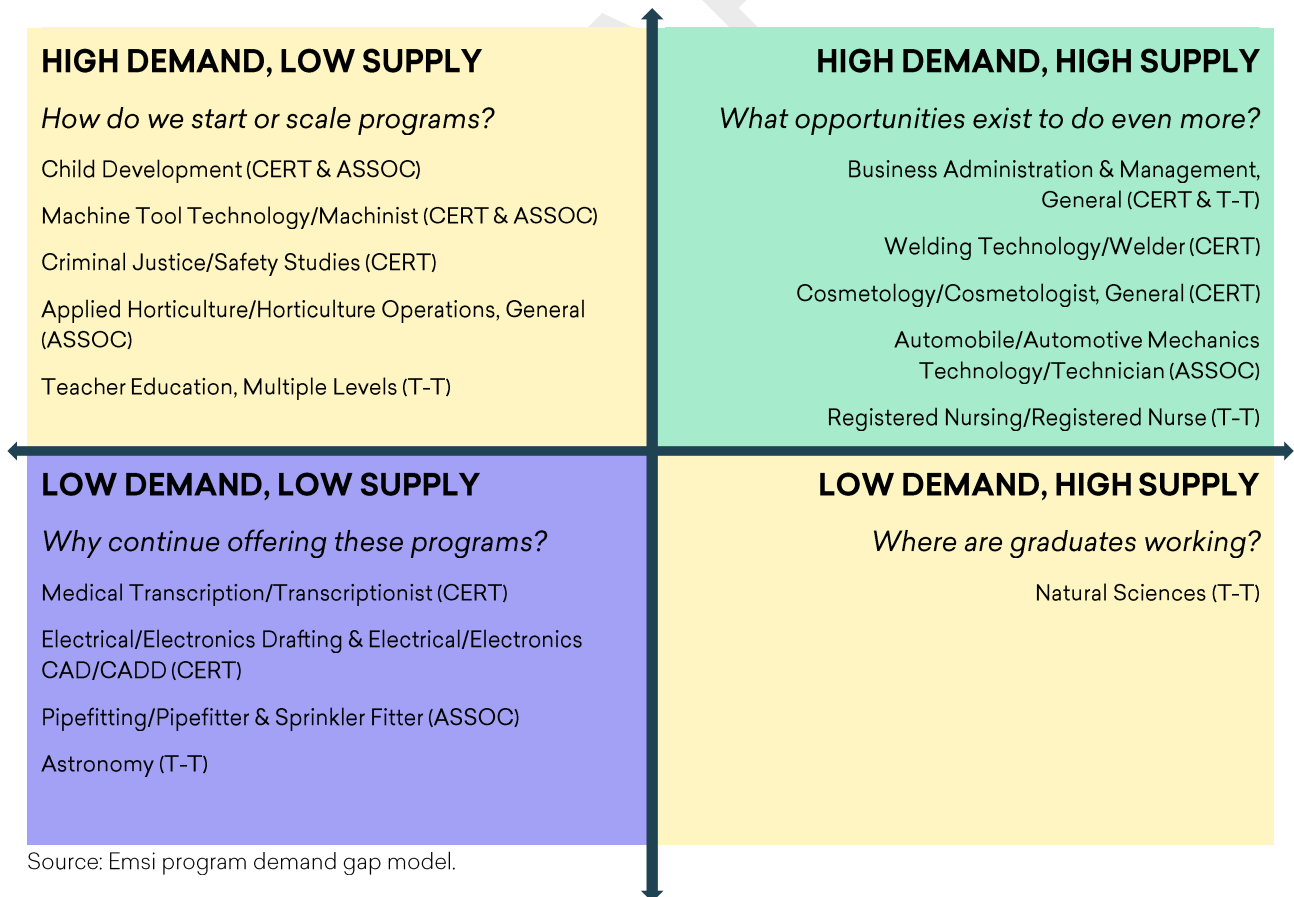


Emsi is a leading provider of labor market data to professionals in higher education, economic development, workforce development, talent acquisition, and site selection. Our data, which cover more than 99% of the U.S. workforce, are compiled from a wide variety of government sources, job postings, and 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

Lee College (Lee) is a public, two-year postsecondary educational institution in Texas. To further its goal of providing the region with well-trained and well-educated residents, Lee continually pursues improvement in various forms. An up-to-date understanding of the regional 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. Lee partnered with Emsi, a leading provider of labor market data, to complete a program demand gap analysis, which assesses regional job openings against educational program completions.

RECOMMENDATIONS

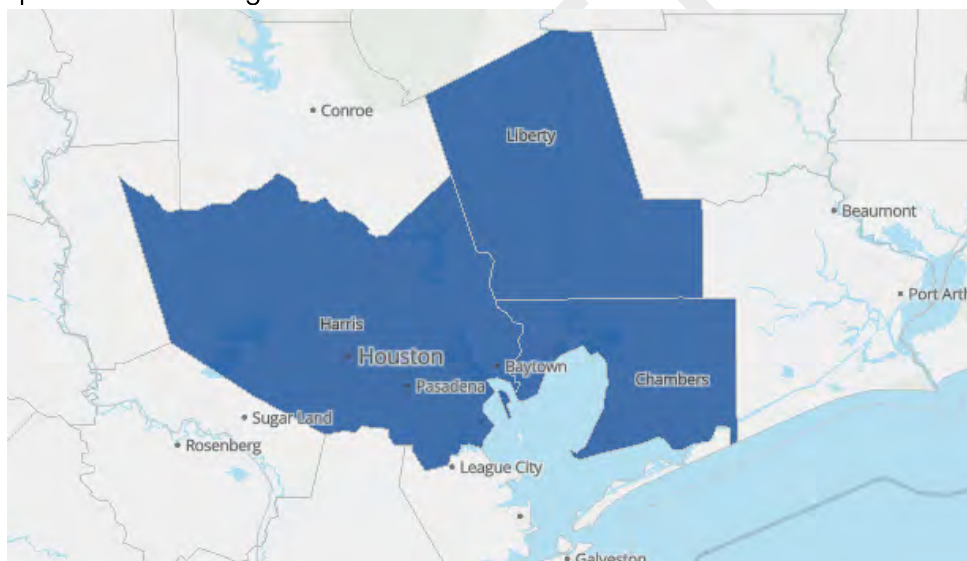


Source: Emsi program demand gap model.

INTRODUCTION

For purposes of the program demand gap analysis, Lee serves a larger region beyond its main campus in Baytown. This region, called the Lee College Service Area, is comprised of three counties in Texas: Chambers, Harris, and Liberty. This report outlines the region's economy and uses the region'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 Lee's program offerings satisfy regional workforce demand. In addition, this report offers recommendations for new program development. In its entirety, the analysis is a starting point for Lee as the college continues to develop programs using data-based decision-making strategies. The following figures and table display key findings of the analyses.

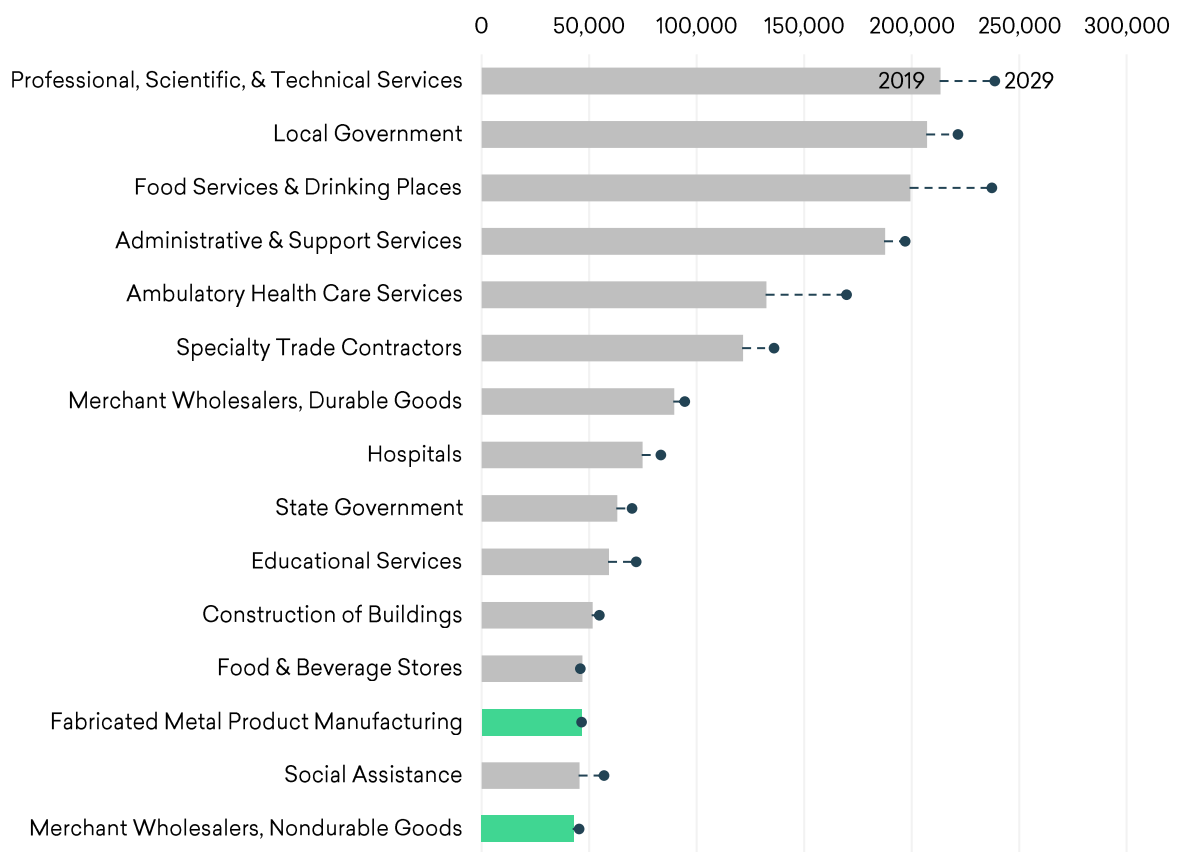
Figure 1: Map of the Lee College Service Area



Source: Emsi Analyst. Region provided by Lee.

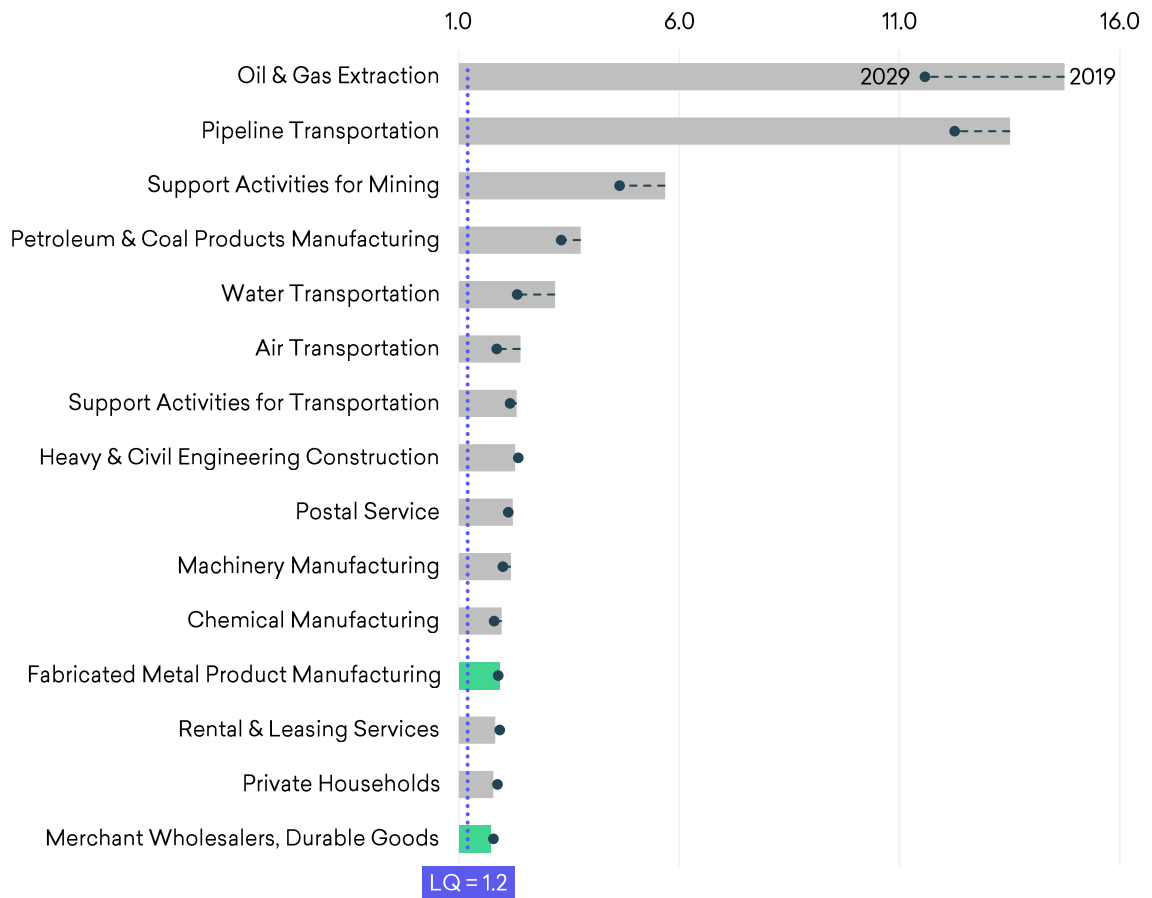
Figure 2 displays the top industry subsectors in terms of employment in the Lee College Service Area, and Figure 3 shows the top industry subsectors in terms of employment concentrations, referred to as location quotients (LQs). High LQs (usually anything greater than 1.2) are an indication that the region 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 the Lee College Service Area by Jobs



Green colored bars represent industry subsectors that are both strong in jobs and high in LQ.
 Source: Employees & Self-Employed 2020.2.

Figure 3: Top Industry Subsectors in the Lee College Service Area by Employment Concentration (LQ)



Green colored bars represent industry subsectors that are both strong in jobs and high in LQ.
 Source: Employees & Self-Employed 2020.2.

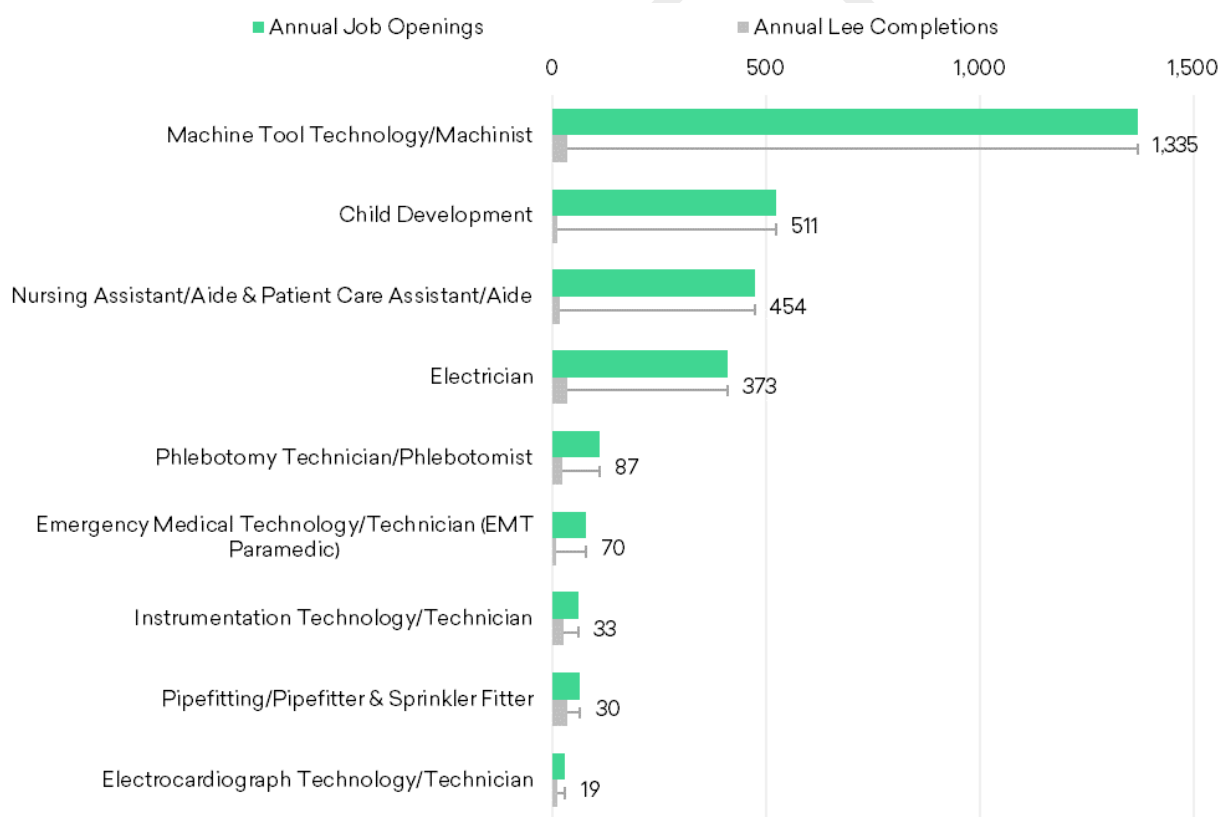
Note the green bars in the figures. Across all of the Lee College Service Area’s industry subsectors, two are within the top 15 in terms of jobs with relatively high LQs. The appearance of these industry subsectors provides an indication of their strength in the region’s economy and offers the college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

- Fabricated Metal Product Manufacturing
- Merchant Wholesalers, Durable Goods

PROGRAM DEMAND GAP ANALYSIS

The program demand gap analysis provides results across all of Lee’s non-credit, certificate, and degree level programs, which have been classified by their formal CIP code.¹ The analysis connects the college’s program completers with the availability of regional job openings. For Lee’s non-credit programs, the analysis is similar in that it connects the college’s completers with the availability of regional job openings but without the additional reference to non-credit program completions from other postsecondary educational institutions in the Lee College Service Area. Furthermore, the analysis focuses on the gaps and surpluses in the programs by award level. A gap or surplus larger than 1,000 is considered beyond normal labor market fluctuations and therefore an area of consideration for program development.

Figure 4: Lee’s Non-Credit Programs with Gaps



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

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).

Lee offers eleven non-credit programs, when grouped by their six-digit CIP codes. The non-credit programs can be designed for self-enrichment; however, Lee offers them with workforce skills in mind. Using a customized non-credit program-to-occupation map, the programs are analyzed using similar methods to the program demand gap analysis. One non-credit program has a significant gap (Figure 4). However, the Lee College Service Area is quite large, and completion of any one of the non-credit programs could lead to successful regional employment. The non-credit program analysis provides Lee administrators with opportunities for local student recruiting and curriculum re-alignment.

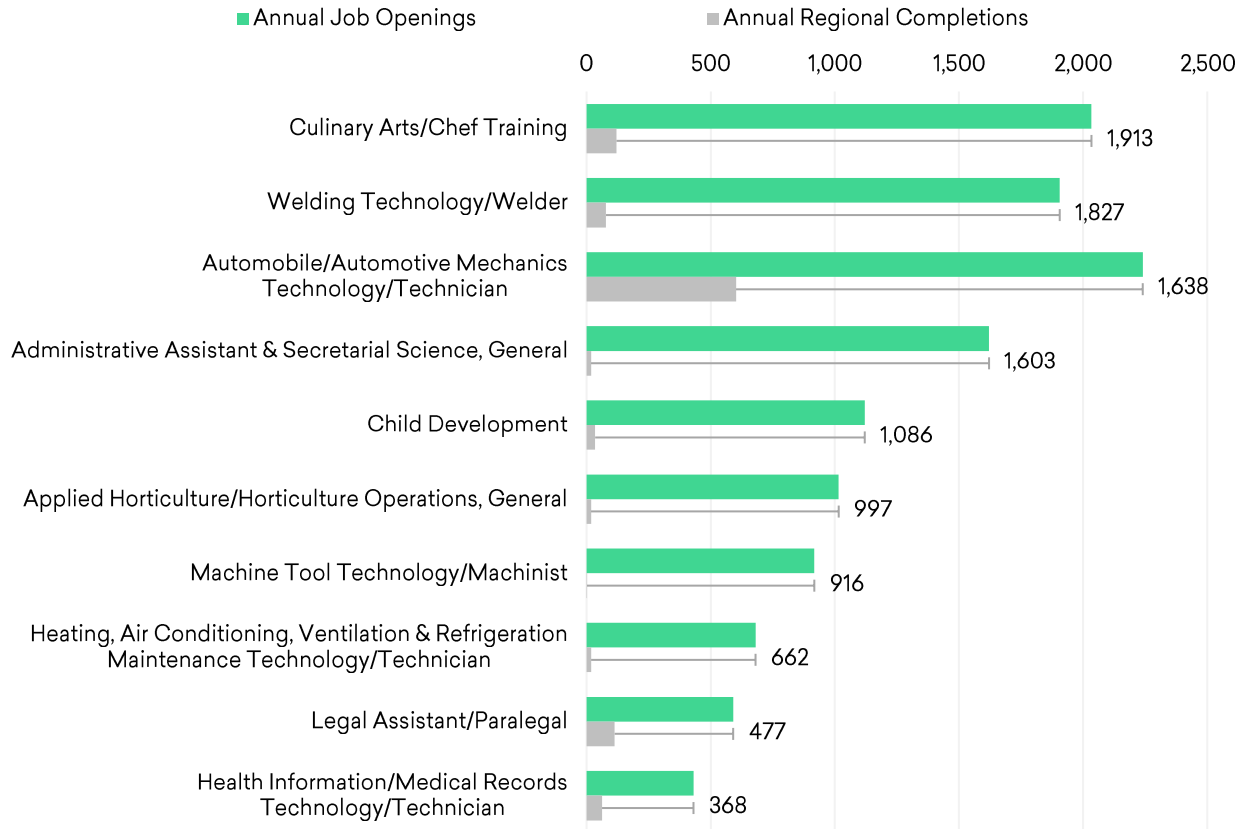
Figure 5: Top 10 Certificate Level Gaps



Source: Emsi program demand gap model.

Lee offers 40 certificate level programs, thirteen of which have a significant gap above the 1,000-openings level of significance, the top 10 of which are shown in Figure 5. Program expansions are recommended at this award level for programs that award completers with a Lee certificate and a certification, license, or industry-specific credential required for employment in an occupation. Such is the case with the college's Welding Technology/Welder program. No programs at this award level have a significant surplus.

Figure 6: Top 10 Associate Degree Level Gaps

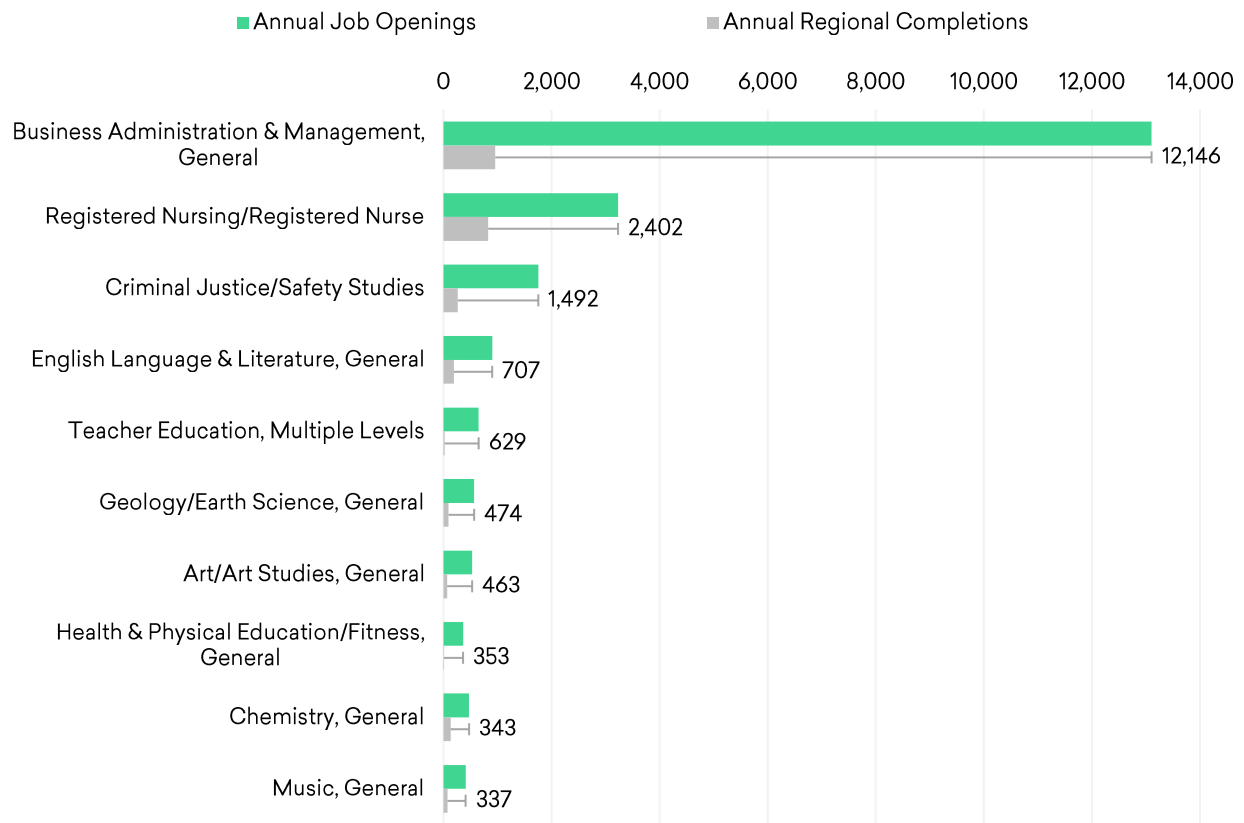


Source: Emsi program demand gap model.

At the associate degree level, five programs have a significant gap (Figure 6). Several should be considered for a college-wide expansion. Furthermore, if the associate degree level program is associated with a formal industry-specific certificate, permit, or license required for employment, it is also recommended for expansion.

Lee offers 22 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, three have a significant gap above the 1,000-openings level of significance, as shown in Figure 7. These programs should be considered for expansion. A program expansion should consider the process by which Lee's students transfer into regional bachelor's degree level programs. Administrative and academic support measures at Lee would enable student success. No programs at this award level have a significant surplus.

Figure 7: Top 10 Transfer-Track Degree Level Gaps



Lee's 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.

A liberal arts program expansion is not recommended at this time, but Lee 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 the Lee College Service Area. 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

Fifty certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, most of which are related to construction & extraction occupations. At the associate degree level, there are fewer opportunities for new programs, considering the college's current offerings. Nonetheless, Lee should consider new programs related to healthcare practitioners & technical occupations, whether its focus is on job openings in the Lee College Service Area or Texas. Another 50 programmatic areas of opportunity were identified at the transfer-track degree level, many of which are related to business & financial operations occupations, a demand which Lee 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 region's current and projected labor market demand. A selection of these occupations, which have the most regional job openings by award level, appear in Table 1.

Table 1: Program Additions by Education Level

SOC TITLE	2019 JOBS	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE	ED. LEVEL
Construction Laborers	34,711	2,814	0	2,814	\$15.29	CERT
Industrial Truck & Tractor Operators	15,861	1,423	0	1,423	\$17.04	CERT
Carpenters	18,848	1,401	3	1,399	\$18.94	CERT
Shipping, Receiving, & Traffic Clerks	12,835	959	0	959	\$16.47	CERT
Operating Engineers & Other Construction Equipment Operators	8,645	873	0	873	\$20.21	CERT
First-Line Supervisors of Production & Operating Workers	11,854	777	1	776	\$33.35	CERT
Roustabouts, Oil & Gas	6,449	629	3	626	\$18.15	CERT
First-Line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	7,847	609	0	609	\$29.44	CERT
Service Unit Operators, Oil, Gas, & Mining	5,378	547	3	544	\$23.95	CERT
Bus & Truck Mechanics & Diesel Engine Specialists	6,301	463	13	450	\$23.80	CERT
Dental Hygienists	2,108	121	43	78	\$34.17	ASSOC
Respiratory Therapists	2,213	119	65	54	\$29.44	ASSOC
Radiologic Technologists	3,684	159	113	46	\$31.99	ASSOC
Postsecondary Teachers, General	19,286	768	0	768	\$40.88	T-T
Insurance Sales Agents	12,383	714	22	693	\$22.13	T-T

SOC TITLE	2019 JOBS	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE	ED. LEVEL
Securities, Commodities, & Financial Services Sales Agents	9,778	649	52	597	\$25.85	T-T
Civil Engineers	8,678	498	36	461	\$50.97	T-T
Buyers & Purchasing Agents	9,594	478	23	456	\$29.27	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.

DRAFT





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, Lee College (Lee) 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 environmental scan of the region's economy, provides a program demand gap analysis of Lee 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 Lee and other postsecondary educational institutions in the region 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 Lee 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 Lee as the college discusses regional workforce needs. A deficit (gap) or oversupply (surplus) of workers in a particular occupation category represents a potential problem for the region, 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.

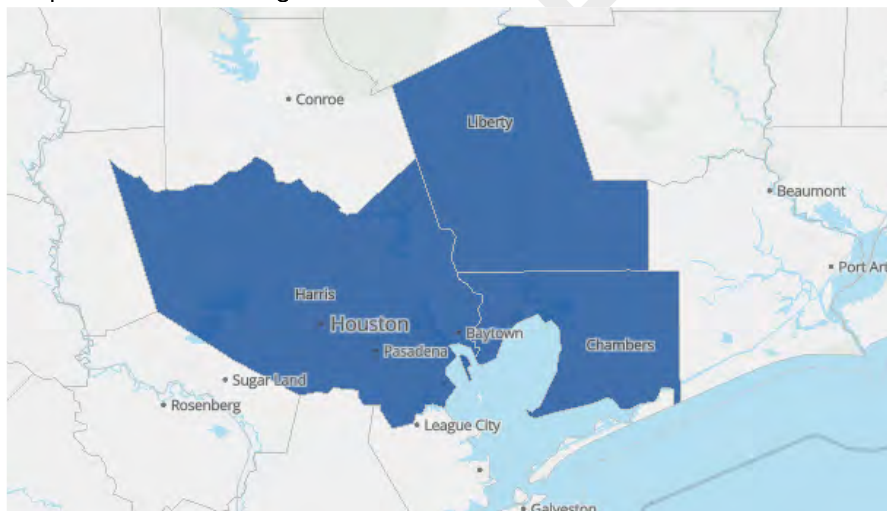
It must be noted that our analysis does have its limitations in that only the education supply pipeline is considered. This is due to data availability at the region and institutional levels. However, other sources—unemployed workers, industry trained pipelines, workers migrating to the region, and job 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.



Environmental Scan

Before looking at the results of the program demand gap analysis, Lee should first consider the economic structure of its region, referred to in this report as the Lee College Service Area and defined as Chambers, Harris, and Liberty Counties in Texas (Figure 2.1). Identifying the driving industries within the region is an important first step for four reasons: 1) it helps Lee 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, 3) it helps identify the top occupations within those key driving industries, and 4) it provides the college a deeper understanding of the region's population characteristics and the socioeconomic background of current and future Lee students.

Figure 2.1: Map of the Lee College Service Area



Source: Emsi Analyst. Region provided by Lee.

In addition to knowing the industry structure of the region, it is important to have an understanding of the workforce—how connected the region's workers are to the surrounding community and the educational attainment of workers in the region. To these ends, this chapter provides an overview of the region's historical and projected population, socioeconomic indicators, total jobs and jobs within its industries, commuting patterns, and the highest educational attainments of its adult residents. Supporting data tables are found in Appendix 3.



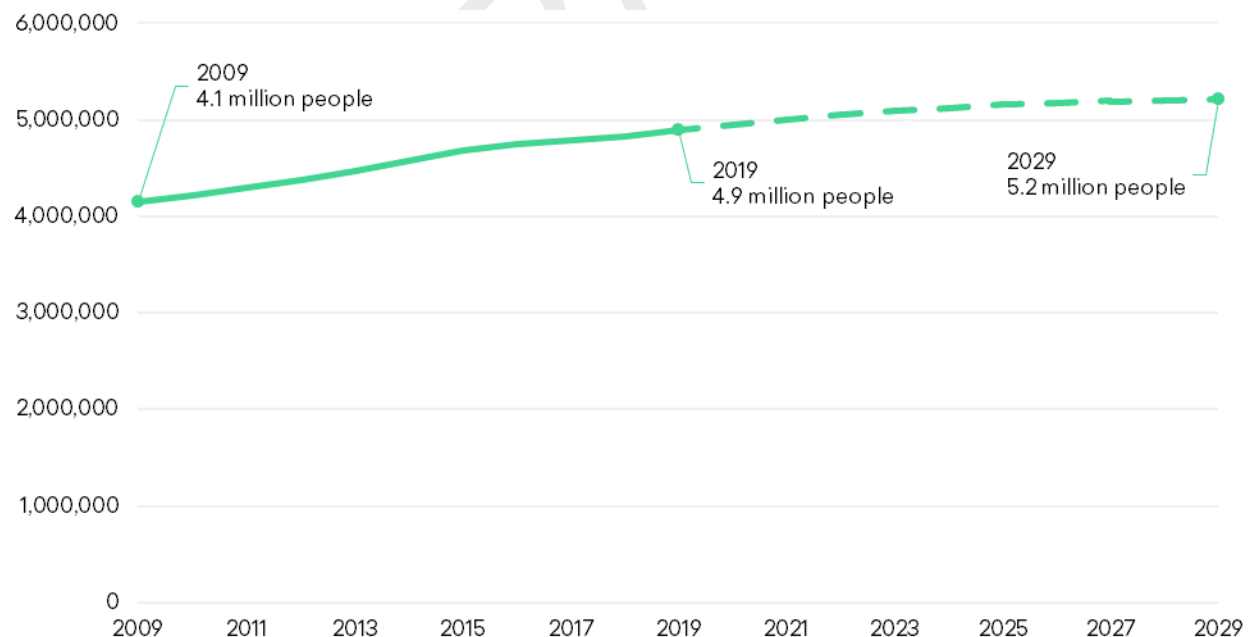
POPULATION PROFILE

Population can be used to anticipate the future demands of a regional labor market. For example, it is important to know if employers are adding new jobs because they need more workers or if there is a significant need for workers to fill vacancies left by retirees and those changing careers. Emsi's job openings, discussed in greater detail in the next chapter, reflect both job growth and replacement needs.

In this section, population data for the region, state, and U.S. are shown. The data are based on Emsi's data and publicly available sources from state and federal agencies, including annual population estimates and population projections from the U.S. Census Bureau and birth and mortality rates from the U.S. Health Department. Historical and projected changes in the regional population are presented in the following figures.

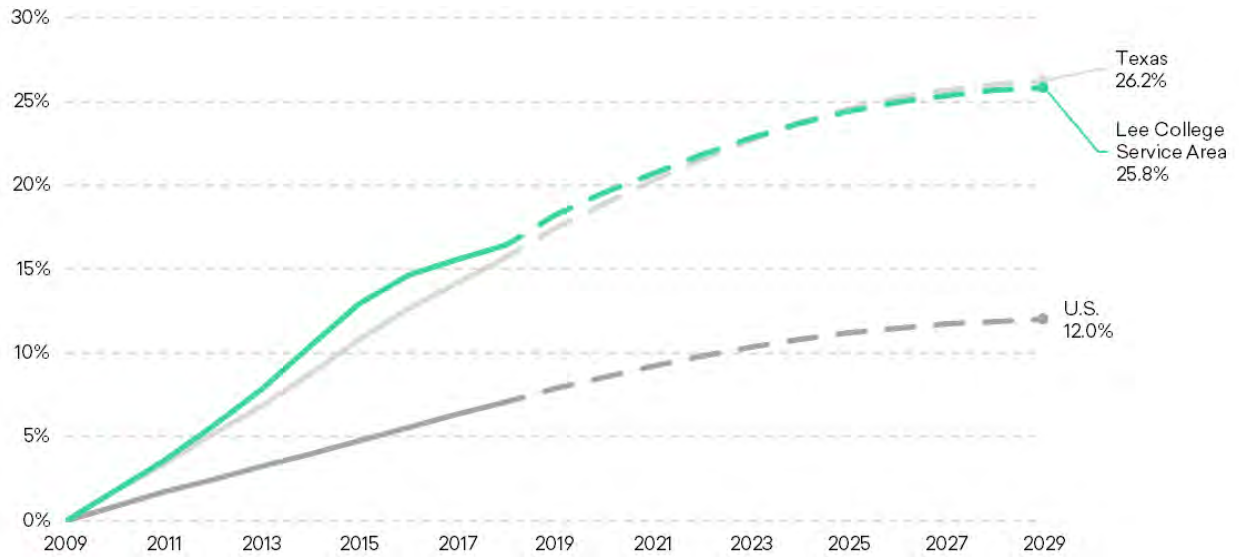
In 2009, 4.1 million people lived in the Lee College Service Area, and 5.2 million people are projected to live in the region by 2029 (Figure 2.2). Using 2009 as the base year, this reflects a 25.8% growth rate (Figure 2.3). Texas' population is projected to increase by 26.2% over the same 20-year period, and the population in the U.S. is projected to increase by 12.0%. Figure 2.4 shows the year-over-year changes in population, by percent, for the region, state, and U.S., and those three regions grew by 1.1%, 1.3%, and 0.6% from 2019 to 2020, respectively.

Figure 2.2: Historical and Projected Population in the Lee College Service Area, 2009 to 2029



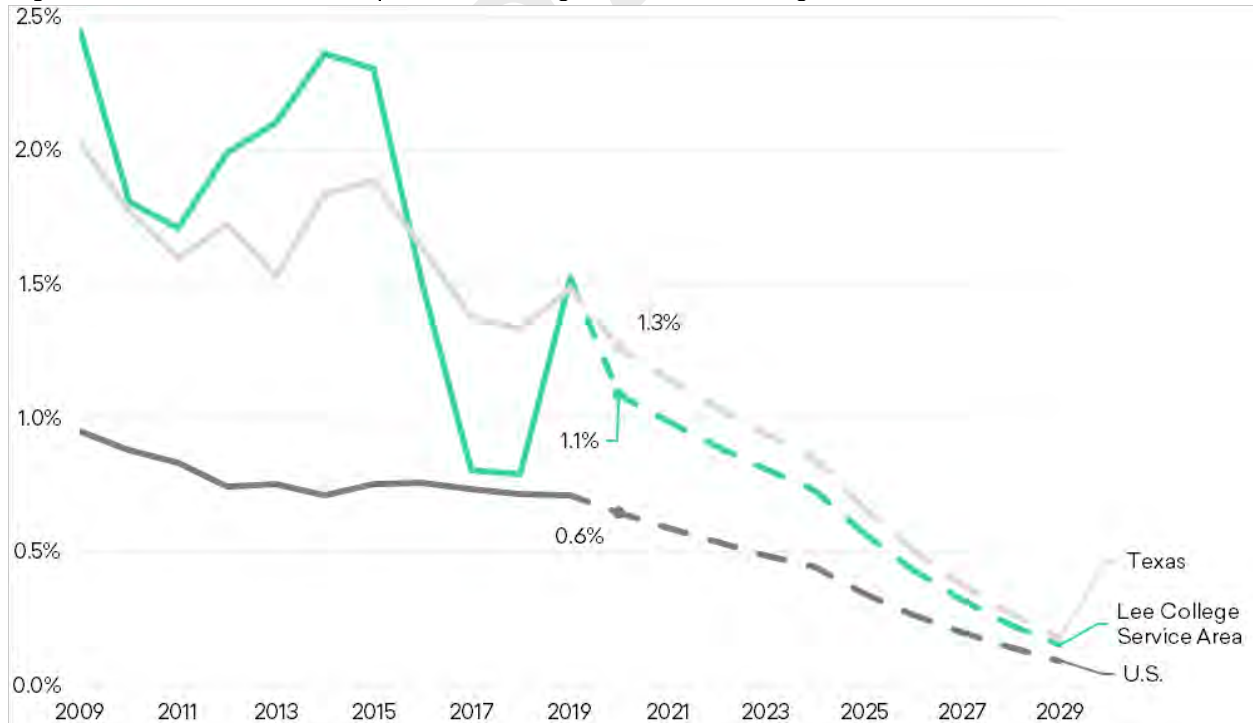
Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 2.3: Percent Population Change from 2009 in the Lee College Service Area, Texas, and the U.S.



Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 2.4: Annual Percent Population Change in the Lee College Service Area, Texas, and the U.S.



Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

SOCIOECONOMIC INDICATORS

Data shown in Table 2.1 reflect unemployment rate, median household income, per capita income, and poverty by census county subdivision in the Lee College Service Area. Household income, reported as a median annual value, includes the income of all individuals in a household 15 years and over, whether they are related to the householder or not. The unemployment rate is an annual estimate.² Per capita income is calculated as the mean income for every person in the region divided by the aggregate income of the total population. Finally, data on poverty are also presented in this section. The percentages represent the share of people below the federal poverty income threshold, which varies by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. Detailed rates on children, who are under 18 years, and seniors, who are over 65 years, are also shown. The data come directly from American Community Survey five-year estimates. As shown in Table 2.1, the data by census county subdivision in the Lee College Service Area highlight socioeconomic differences across the region. For example, Mont Belvieu CCD in Chambers County has the highest median household income at \$96,148. It is also the census county subdivision with the lowest unemployment rate in the region (5.2%). Anahuac CCD in Chambers County has by far the highest rate of poverty among all people (23.1%).

Table 2.1: Income, Unemployment, and Poverty Characteristics for Census County Subdivisions in the Lee College Service Area

CENSUS COUNTY SUBDIVISION	UNEMPLOYMENT RATE	MEDIAN HOUSEHOLD INCOME	PER CAPITA INCOME	% POVERTY		
				ALL PEOPLE	CHILDREN	SENIORS
Chambers County	6.1%	\$76,850	\$34,372	12.7%	16.5%	10.0%
Anahuac CCD	7.6%	\$50,523	\$24,781	23.1%	28.2%	10.5%
Mont Belvieu CCD	5.2%	\$96,148	\$38,221	11.0%	16.1%	10.5%
Winnie-Stowell CCD	8.9%	\$46,537	\$26,869	8.9%	4.3%	7.9%
Harris County	6.1%	\$60,146	\$31,901	16.2%	24.2%	11.3%
Baytown CCD	10.3%	\$53,526	\$25,077	17.3%	24.3%	12.8%
Houston CCD	6.0%	\$55,855	\$31,437	18.1%	27.6%	12.6%
Northeast Harris CCD	7.0%	\$70,140	\$31,248	10.2%	12.3%	8.8%
Northwest Harris CCD	5.4%	\$80,849	\$36,070	8.9%	12.3%	6.7%
Pasadena CCD	9.0%	\$50,617	\$21,008	18.5%	27.6%	10.7%

2 Note that the unemployment in the table differs from the monthly percentage of workers unemployed presented in Appendix 7.

CENSUS COUNTY SUBDIVISION	UNEMPLOYMENT RATE	MEDIAN HOUSEHOLD INCOME	PER CAPITA INCOME	% POVERTY		
				ALL PEOPLE	CHILDREN	SENIORS
Southeast Harris CCD	6.1%	\$80,236	\$36,446	9.4%	14.9%	7.7%
Liberty County	6.9%	\$49,850	\$22,757	14.9%	21.0%	11.2%
Cleveland CCD	6.2%	\$44,057	\$21,066	19.6%	28.2%	15.4%
Daisetta CCD	7.8%	\$55,865	\$27,451	10.1%	11.3%	6.5%
Hardin-Rye CCD	5.5%	\$46,432	\$25,738	16.4%	20.5%	14.2%
Liberty-Dayton CCD	7.5%	\$53,683	\$23,195	11.6%	15.8%	8.3%

Children are under 18 years and seniors are over 65 years. Poverty rate reflects the percentage of people whose income was below the poverty level within the 12 months preceding the data collection period.

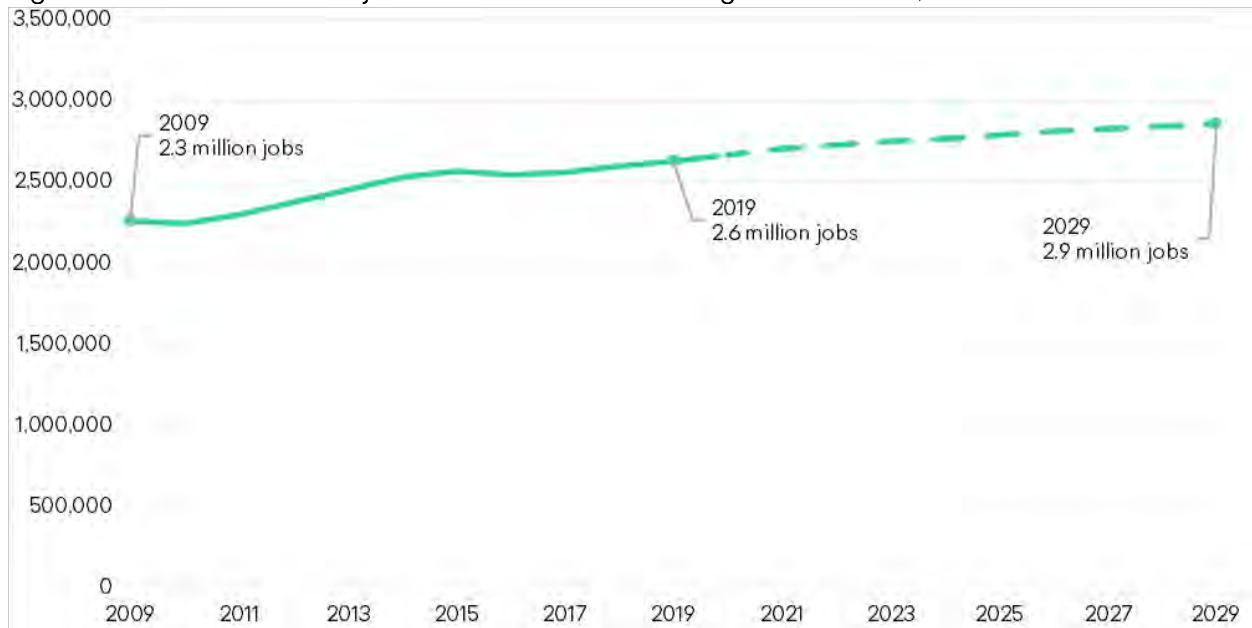
Source: American Community Survey five-year estimates from the U.S. Census Bureau Data API.

TOTAL JOBS

Job counts and the changes in jobs over time provide insight into the Lee College Service Area as an attractive region for job seekers, employers, and economic developers. Figure 2.5 shows regional jobs from 2009 to 2029. In addition, Figures 2.6 and 2.7 present data on jobs in the Lee College Service Area for the same time period but highlight the region's job change, using 2009 as a base year and showing year-over-year job change, respectively.

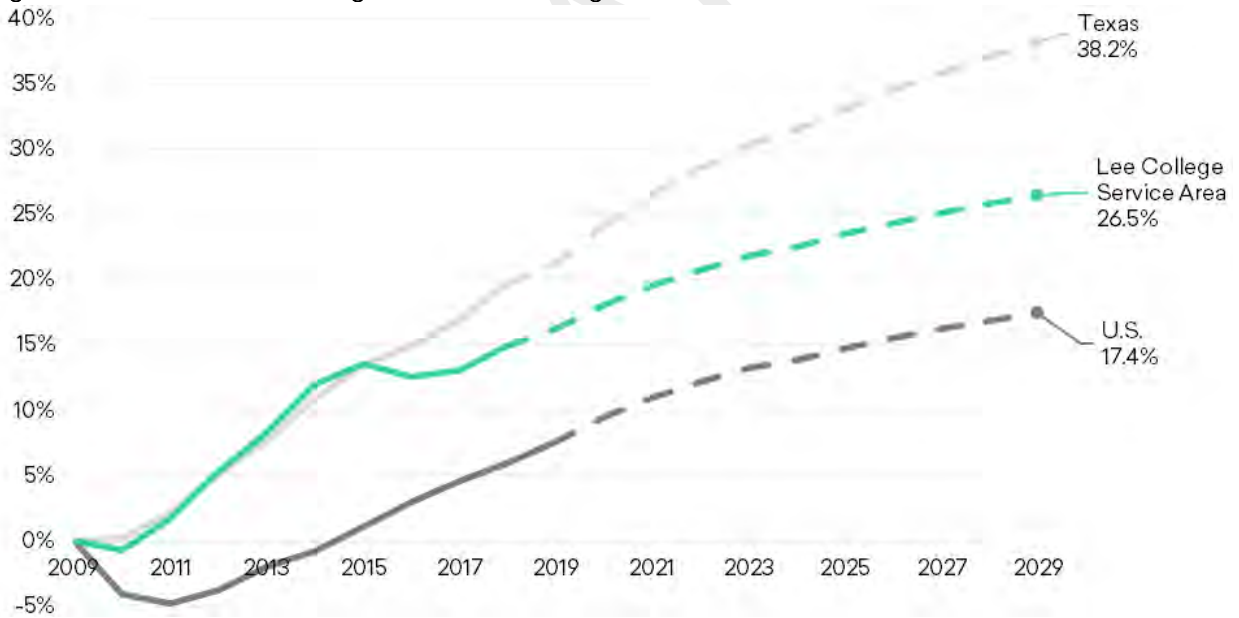
As shown in Figure 2.5, the Lee College Service Area supported 2.3 million jobs in 2009. By 2019, that number increased to 2.6 million jobs, for a 16% job growth. For context, Texas supported 14.1 million jobs in 2019. In addition, the region is projected to add another 231.1 thousand jobs by 2029, for a 9% job growth.

Figure 2.5: Historical and Projected Jobs in the Lee College Service Area, 2009 to 2029



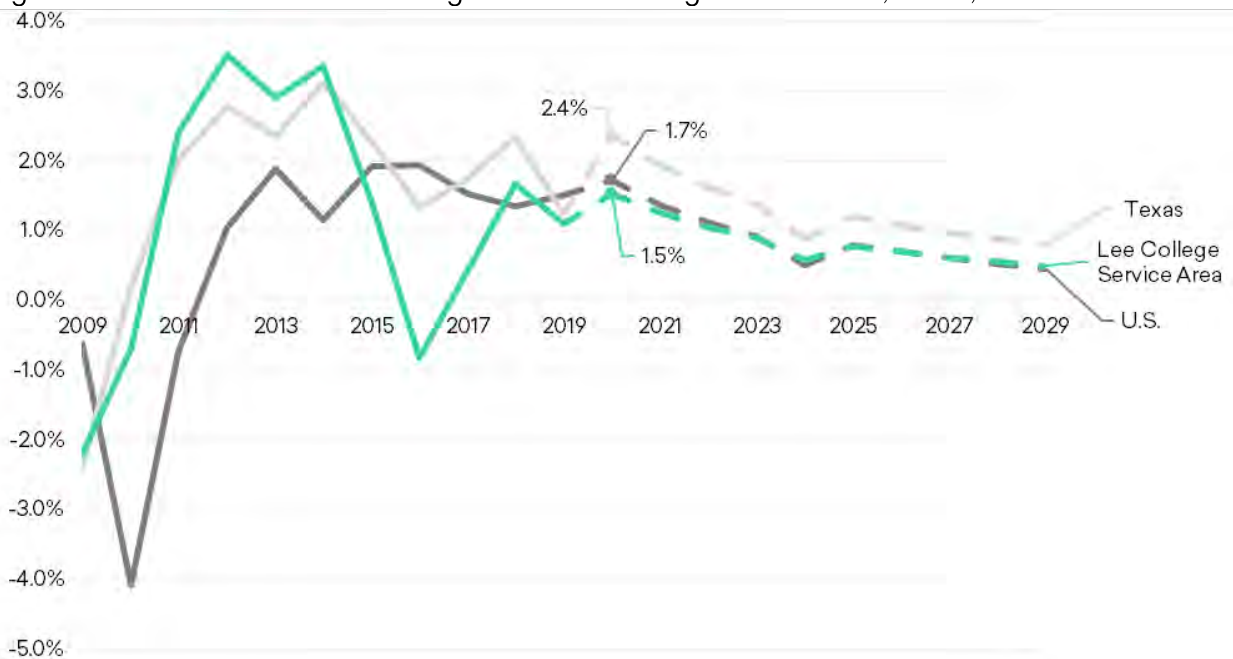
Source: Emsi Employees & Self-Employed 2020.2.

Figure 2.6: Percent Job Change in the Lee College Service Area, Texas, and the U.S.



Source: Emsi Employees & Self-Employed 2020.2.

Figure 2.7: Annual Percent Job Change in the Lee College Service Area, Texas, and U.S.



Source: Emsi Employees & Self-Employed 2020.2.

Figure 2.6 displays the historical and projected job change, by percent, for the region, state, and U.S. between 2009 and 2029, with 2009 serving as the base year. The Lee College Service Area's job decline in the years following the 2008 Recession was not as drastic as the job decline the U.S. experienced as a whole. Using Emsi's job projections, job growth from 2009 to 2029 in the Lee College Service Area, Texas, and the U.S. is expected to be 26.5%, 38.2%, and 17.4%, respectively.

The regions' year-over-year job changes follow similar patterns (Figure 2.7). With the 2008 Recession, regional jobs decreased by about 2.2%, followed by a significant spike in 2011. After another decrease in 2016, the Lee College Service Area's year-over-year job change has remained positive. Jobs in the region are projected to increase by 1.5% between 2019 and 2020, and jobs in Texas and the U.S. are projected to increase by 2.4% and 1.7%, respectively.

INDUSTRY COMPOSITION

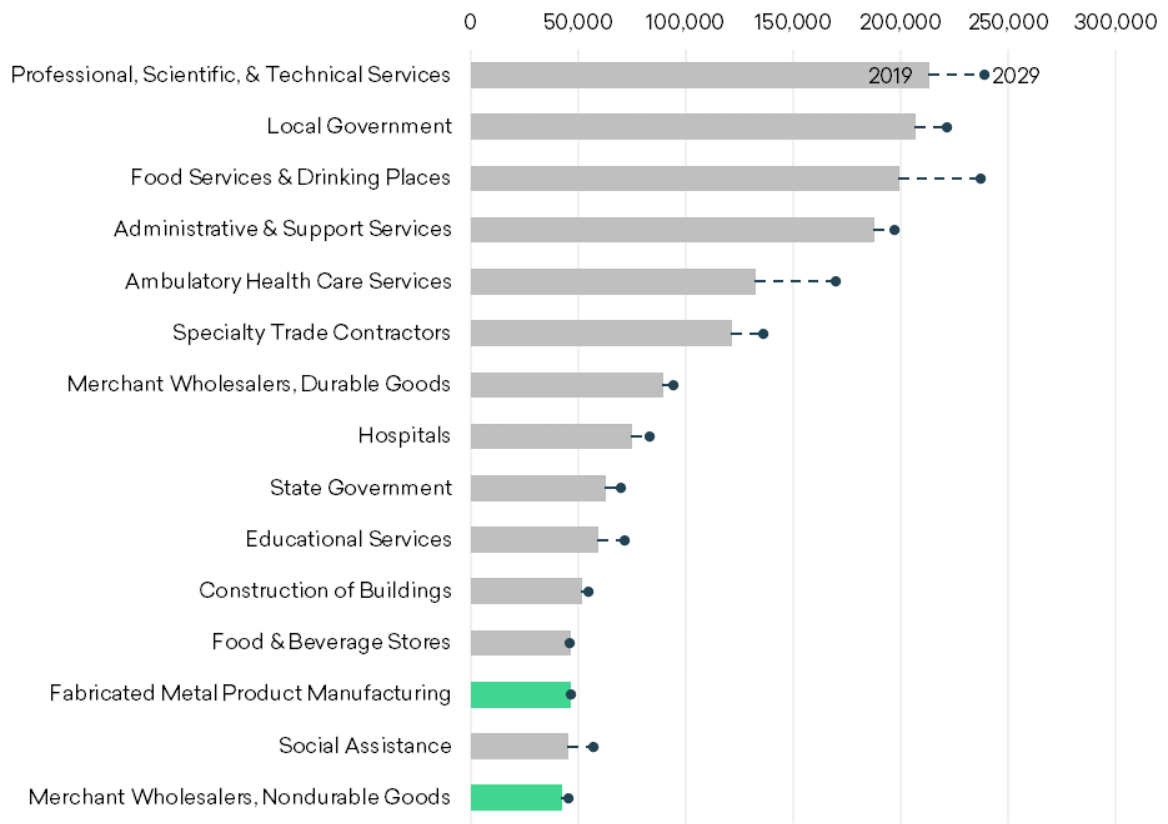
Evaluating current and future employment by industry provides information on the region's economic diversity. Understanding the industry mix is important for drawing connections to the occupations and companies that are in-demand, and students are likely to find employment in the largest regional industries. 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.³

Figure 2.8 presents the 15 largest industry subsectors in the Lee College Service Area, by their 2019 job counts, and also shows the industry subsectors' projected change over the next decade. The region supported 2.6 million jobs in 2019, and by 2029, it is projected to add 231,089 thousand new jobs for a 8.8% job increase. As shown in the figure, the Professional, Scientific, & Technical Services industry subsector is the largest employer, with 213,460 jobs in 2019. It is also expected to remain the top regional employer over the next decade. The Local Government and Food Services & Drinking Places industry subsectors are the next largest, with 207,240 and 199,520 jobs in 2019, respectively. As for growth, the Food Services & Drinking Places industry subsector is projected to add the most jobs of the top 15 industry subsectors, with a 10-year increase of 37,830 thousand new jobs for a 19% job growth. On the other hand, there are several industry subsectors that are not expected to experience significant growth between 2019 and 2029. For example, the Food & Beverage Stores and Fabricated Metal Product Manufacturing subsectors are projected to have approximately the same regional job count in 2029 as they did in 2019.

3 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.

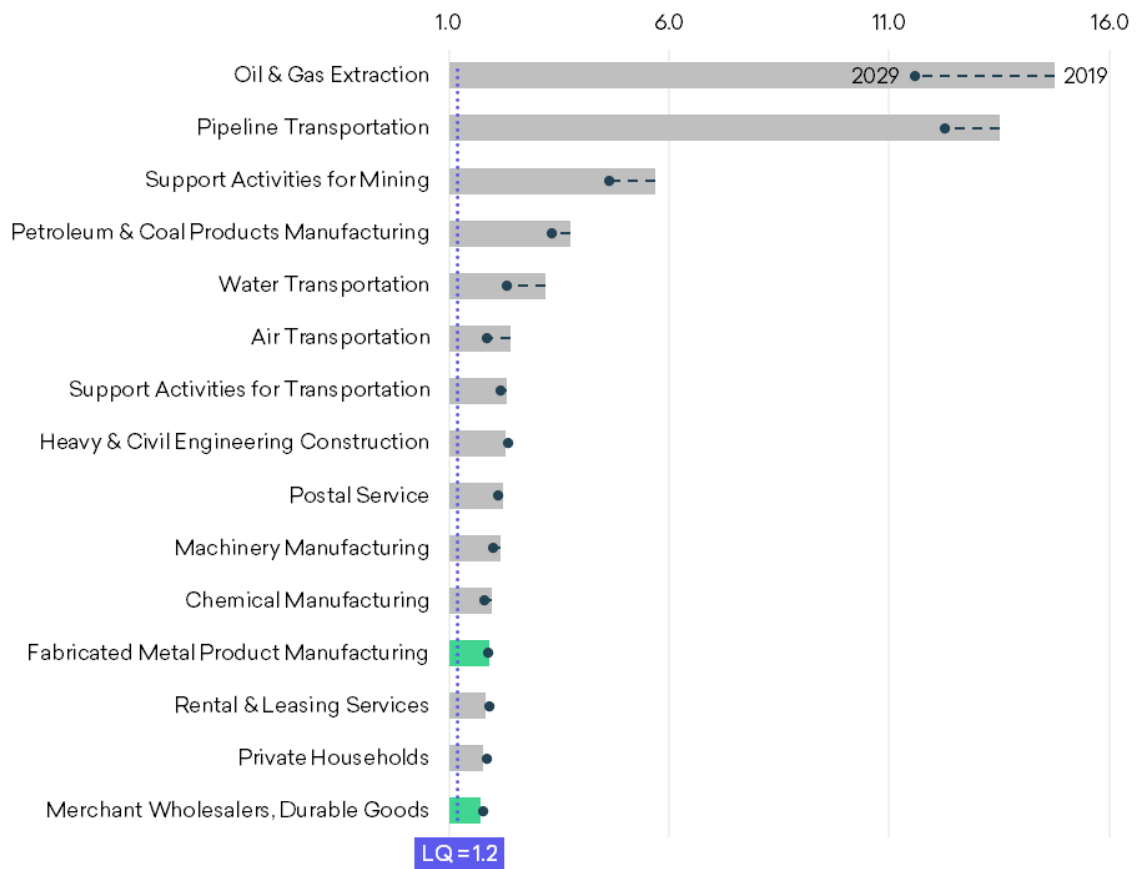
Figure 2.8: Jobs by Industry Subsector in the Lee College Service Area, 2019 and 2029



Green colored bars represent industry subsectors that are both strong in jobs and high in LQ.
 Source: Employees & Self-Employed 2020.2.

The employment concentration of the Lee College Service Area’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 region 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 the Lee College Service Area 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 region has a comparative advantage or specialization in an industry.

Figure 2.9: Employment Concentration (LQ) by Industry Subsector in the Lee College Service Area, 2019 and 2029



Green colored bars represent industry subsectors that are both strong in jobs and high in LQ. Source: Employees & Self-Employed 2020.2.

The industry subsectors with the 15 highest LQs in the Lee College Service Area are shown in Figure 2.9. The Oil & Gas Extraction industry subsector had the highest LQ in 2019 at 14.7. The industry subsector is expected to decrease in employment concentration between 2019 and 2029 but still remain among the top two industry subsectors with the largest LQs. The Pipeline Transportation; Support Activities for Mining; and Petroleum & Coal Products Manufacturing industry subsectors also have relatively large employment concentrations, with LQs of 13.5, 5.7, and 3.8 in 2019, respectively. As for 10-year growth, Rental & Leasing Services is projected to increase in LQ by 5.6% from an LQ of 1.8 to an LQ of 1.9, which is the largest percent increase among the top 15 industry subsectors in the figure. On the other hand, eleven industry subsectors are expected to drop in LQ between 2019 and 2029. Water Transportation has the largest percent decrease (27.0%). Despite the declines, all the region's top 15 industry subsectors will remain above the 1.2 high-LQ threshold.

Another important perspective on industry strength in a region is to consider industry earnings, which are defined as total wages, salaries, supplements (such as additional

employee benefits), and proprietor income. Workers in various industry subsectors see different average wages, so identifying the Lee College Service Area's top industries by earnings is another method of evaluating an industry's strength. Table 2.2 shows the region's top 15 industry subsectors in descending order of 2019 earnings.

Table 2.2: Industry Subsector Earnings in the Lee College Service Area, 2019 and 2029

NAICS TITLE	2019 EARNINGS (\$ BILLIONS)	% 2019 EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
Professional, Scientific, and Technical Services	\$29.8	12.0%	211,000	235,393	24,393	11.6%
Local Government	\$14.8	6.0%	206,645	222,371	15,726	7.6%
Administrative and Support Services	\$12.3	5.0%	187,763	198,694	10,931	5.8%
Oil and Gas Extraction	\$12.1	4.9%	33,890	24,518	(9,372)	-27.7%
Ambulatory Health Care Services	\$10.3	4.2%	132,333	170,701	38,368	29.0%
Merchant Wholesalers, Durable Goods	\$9.8	4.0%	89,629	95,339	5,710	6.4%
Management of Companies and Enterprises	\$9.7	3.9%	39,752	50,437	10,685	26.9%
Specialty Trade Contractors	\$9.3	3.8%	120,638	134,876	14,238	11.8%
Hospitals	\$6.6	2.7%	74,536	83,431	8,895	11.9%
Securities, Commodity Contracts, and Other Financial Investments and Related Activities	\$6.3	2.6%	19,057	22,007	2,950	15.5%
State Government	\$6.0	2.4%	62,568	69,486	6,918	11.1%
Real Estate	\$5.9	2.4%	42,330	46,618	4,288	10.1%
Support Activities for Mining	\$5.7	2.3%	32,643	32,506	(137)	-0.4%
Food Services and Drinking Places	\$5.3	2.1%	198,839	238,171	39,332	19.8%
Construction of Buildings	\$5.3	2.1%	50,794	53,338	2,544	5.0%
All other industries	\$98.0	39.6%	1,123,452	1,178,302	54,855	4.9%
TOTAL	\$247.3	100.0%	2,625,871	2,856,190	230,324	8.8%

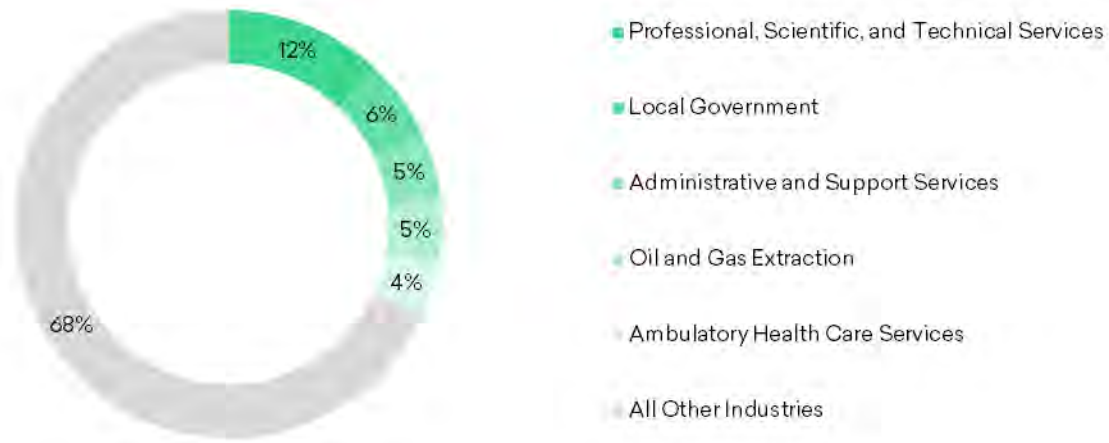
Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.

Professional, Scientific, and Technical Services had the highest earnings in the Lee College Service Area (\$29.8 billion), which accounted for 12% of the region's total earnings. The next largest industry subsector was Local Government, bringing in 6% of the region's total earnings. Administrative & Support Services and Oil & Gas Extraction had the third and fourth largest earnings, respectively, each with 5% of the region's total earnings. It could be argued that no one industry subsector accounted for a relatively large share of regional earnings, as illustrated in Figure 2.10, an indication of the region's economic diversity.



Figure 2.10: Top Five Industry Subsectors by Earnings in the Lee College Service Area



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.

OCCUPATIONS WITHIN KEY INDUSTRY SUBSECTORS

Two industry subsectors are found in both Figures 2.8 and 2.9 because they are large employers and have high LQs. Altogether, the industry subsectors represent 5.2% of the Lee College Service Area's jobs. These industry subsectors, in descending order of 2019 jobs, are:

- Fabricated Metal Product Manufacturing
- Merchant Wholesalers, Durable Goods

Their appearance in the figures provides an indication of their relative strength in the Lee College Service Area, and thus, we identify the most common occupations within the two industry subsectors, called a staffing pattern.⁴ The industry subsectors' staffing patterns provide insight into not only the region's labor market demand, but by extension, the demand for the college's program offerings.

The **Fabricated Metal Product Manufacturing** industry subsector in the region supported 46,480 jobs in 2019 and has an LQ of 1.9. It is comprised of 36 industries at the six-digit NAICS code level. The largest industry is the Machine Shops industry, with 15.5% of jobs in the industry subsector. The top occupation employed by the Fabricated Metal Product Manufacturing industry subsector is welders, cutters, solderers, & brazers, which constitutes

4 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.

10.2% of the industry subsector's jobs. It is followed by machinists (7.8%) and first-line supervisors of production & operating workers (4.4%).

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:

- First-line supervisors of production & operating workers (\$33.35);
- Industrial machinery mechanics (\$28.94);
- Machinists (\$24.25);
- Welders, cutters, solderers, & brazers (\$23.42); and
- Structural metal fabricators & fitters (\$21.79).

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

- Industrial production managers (\$57.14);
- General & operations managers (\$55.27); and
- Sales representatives, wholesale & manufacturing, except technical & scientific products (\$33.05).

The **Merchant Wholesalers, Durable Goods** industry subsector in the region supported 42,815 jobs in 2019 and has an LQ of 1.7. It is comprised of 37 industries at the six-digit NAICS code level. The largest industry is the Industrial Machinery & Equipment Merchant Wholesalers industry, with 5.4% of jobs in the industry subsector. The top occupation employed by the Merchant Wholesalers, Durable Goods industry subsector is sales representatives, wholesale & manufacturing, except technical & scientific products, which constitutes 13.7% of the industry subsector's jobs. It is followed by laborers & freight, stock, & material movers, hand (6.0%) and customer service representatives (4.1%).

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 (\$28.94);
- Bus & truck mechanics & diesel engine specialists (\$23.80);
- Mobile heavy equipment mechanics, except engines (\$23.35);
- Heavy & tractor-trailer truck drivers (\$20.68); and
- Bookkeeping, accounting, & auditing clerks (\$20.49).

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

- Sales managers (\$66.18);
- General & operations managers (\$55.27); and
- Sales engineers (\$50.92).

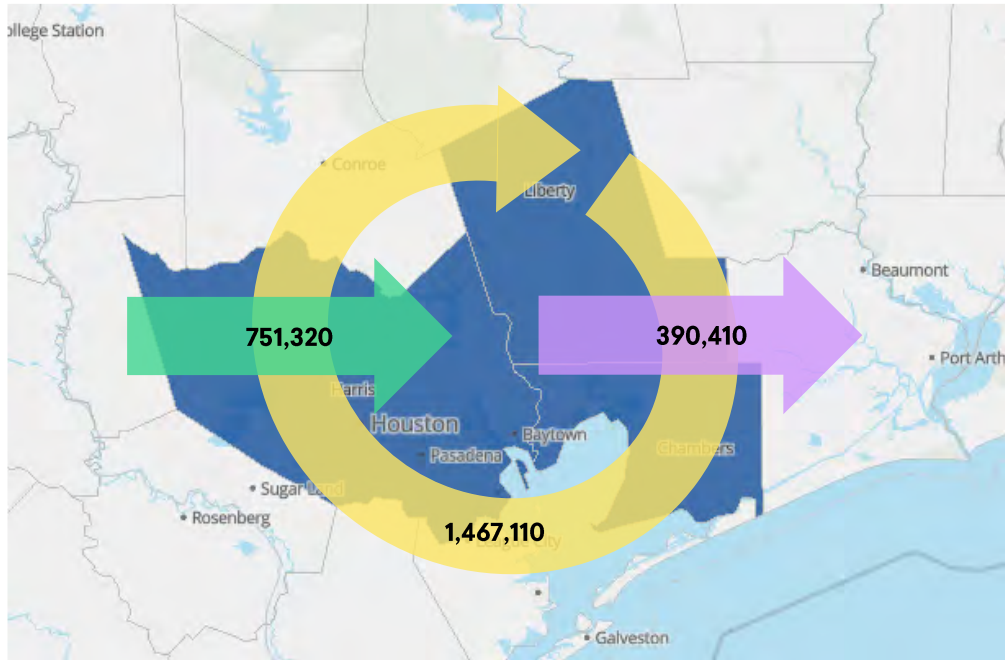
WORKFORCE COMMUTING PATTERNS

The Longitudinal Employer-Household Dynamics (LEHD) program⁵ at the U.S. Census Bureau provides information on the residential and employment locations of workers. Such data shows the commuting patterns of regional employees. More specifically, the LEHD data demonstrate the extent to which employees commute to the Lee College Service Area for work and how many residents commute to surrounding communities for work. Workers from outside the region could be filling current employment gaps, or the region'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 2.11 presents the inflow and outflow of jobs to and from the Lee College Service Area. LEHD data identify 2.2 million jobs in the region, with 1.5 million jobs filled by residents and 751,320 jobs filled by people living outside the region. In addition, 390,410 jobs are held by the region's residents outside the Lee College Service Area. In other words, 390,410 residents commute outside the region 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, almost twice as many workers in-commute than out-commute.

5 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 2.11: Lee College Service Area Job Inflow and Outflow



751,320	Employed in the Lee College Service Area but living outside
1,467,110	Living and employed in the Lee College Service Area
390,410	Living in the Lee College Service Area but employed outside

Source: Census Bureau, Center for Economic Studies.

Table 2.3 provides further insight into the places where the region’s residents work. As shown, the region’s residents are out-commuting to neighboring counties for work, but the greatest number of residents work in Harris County, Texas (78% of all jobs). Table 2.4 also shows commuting patterns, except the data highlight the counties in which the region’s workers reside.

Table 2.3: Counties where Lee College Service Area Residents Work

COUNTY OF EMPLOYMENT	JOBS	% JOBS
Harris, TX	1,448,550	78.0%
Fort Bend, TX	70,520	3.8%
Montgomery, TX	56,230	3.0%
Dallas, TX	40,860	2.2%
Galveston, TX	25,220	1.4%
Brazoria, TX	25,220	1.4%
Travis, TX	23,810	1.3%
Bexar, TX	17,150	0.9%
Jefferson, TX	12,850	0.7%
Tarrant, TX	12,590	0.7%
All Other Counties	124,530	6.7%
Total Primary Jobs, Lee College Service Area Residents	1,857,520	100%

Source: Census Bureau, Center for Economic Studies.

Table 2.4: Counties where Lee College Service Area Workers Live

COUNTY OF RESIDENCE	JOBS	% JOBS
Harris, TX	1,432,340	64.6%
Fort Bend, TX	187,250	8.4%
Montgomery, TX	108,120	4.9%
Brazoria, TX	71,180	3.2%
Galveston, TX	60,040	2.7%
Bexar, TX	26,020	1.2%
Travis, TX	23,260	1.0%
Dallas, TX	22,270	1.0%
Liberty, TX	20,820	0.9%
Tarrant, TX	17,170	0.8%
All Other Locations	249,970	11.3%
Total Primary Jobs, Lee College Service Area Workers	2,218,420	100%

Source: Census Bureau, Center for Economic Studies.

While understanding where workers commute to and from is important, understanding the occupations related to those commuting patterns can provide further insight on jobs that could eventually be replaced by local workers. In addition, this data can be helpful to understand which occupations Lee could train for that would lead to employment in a

neighboring county. The net commuters by occupation group are shown in Table 2.5. Negative numbers indicate more workers are commuting out of region for these occupations, while positive numbers indicate workers from neighboring counties are commuting into the region for work.

Table 2.5: Net Commuters by Occupation Group for the Lee College Service Area, 2019

SOC CODE	SOC TITLE	2019 NET COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	MEDIAN HOURLY WAGE
43-0000	Office & Administrative Support Occupations	59,406	331,503	390,909	\$17.77
41-0000	Sales and Related Occupations	29,529	227,990	257,519	\$14.94
53-0000	Transportation and Material Moving Occupations	26,005	165,791	191,796	\$16.32
29-0000	Healthcare Practitioners and Technical Occupations	24,120	117,609	141,729	\$34.47
13-0000	Business & Financial Operations Occupations	23,679	113,546	137,225	\$36.48
51-0000	Production Occupations	23,177	131,472	154,649	\$18.58
47-0000	Construction and Extraction Occupations	22,980	155,547	178,527	\$19.93
11-0000	Management Occupations	20,161	118,370	138,531	\$52.34
35-0000	Food Preparation & Serving Related Occupations	19,360	191,056	210,416	\$10.50
49-0000	Installation, Maintenance, & Repair Occupations	17,335	100,029	117,364	\$21.82
17-0000	Architecture and Engineering Occupations	15,003	56,751	71,754	\$46.76
25-0000	Education, Training, and Library Occupations	11,676	123,172	134,848	\$27.08
15-0000	Computer and Mathematical Occupations	11,643	57,939	69,582	\$43.90
33-0000	Protective Service Occupations	9,841	47,783	57,624	\$17.53
37-0000	Building and Grounds Cleaning & Maintenance Occupations	9,118	89,577	98,695	\$11.09
31-0000	Healthcare Support Occupations	7,802	48,456	56,258	\$13.76
39-0000	Personal Care and Service Occupations	7,488	89,523	97,011	\$9.99
19-0000	Life, Physical, and Social Science Occupations	5,063	20,724	25,787	\$32.80
23-0000	Legal Occupations	4,116	19,712	23,828	\$48.44
27-0000	Arts, Design, Entertainment, Sports, & Media Occupations	3,230	33,288	36,518	\$23.05
21-0000	Community and Social Service Occupations	2,959	24,526	27,485	\$24.85
45-0000	Farming, Fishing, and Forestry Occupations	732	3,713	4,445	\$11.51
55-0000	Military-only occupations	393	4,835	5,228	\$15.52

Source: Emsi complete employment data.



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 the Lee College Service Area aged 25 years or more, referred to as adults, and indicate the highest award level achieved.

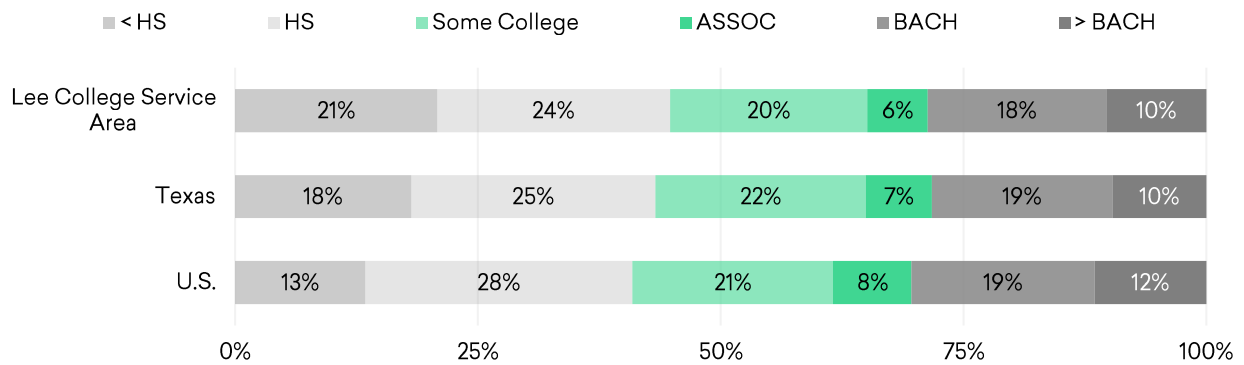
Demographic information is presented by gender and the major race and ethnic groups, and educational attainment data are broken out according to the following award categories:

- Less than a high school diploma (<HS);
- High school diploma or equivalent (HS);
- Some college;⁶
- Associate degree (Assoc);
- Bachelor's degree (Bach);
- Greater than a bachelor's degree (>Bach).

About 3.1 million adults live in the Lee College Service Area, and Figure 2.12 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 region, 44.8% of adults have a high school diploma or less, which is more than the state average (43.3%) and more than the national average (40.9%). Out of all the award categories in the figure, the people who are most likely to seek education and training from Lee are those in the "Less than High School Diploma," "High School Diploma," and "Some College" categories. Together, these categories total 2 million people, or 65.1% of the region's adults.

6 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.

Figure 2.12: Highest Educational Attainments of Adults in the Lee College Service Area, Texas, and the U.S.

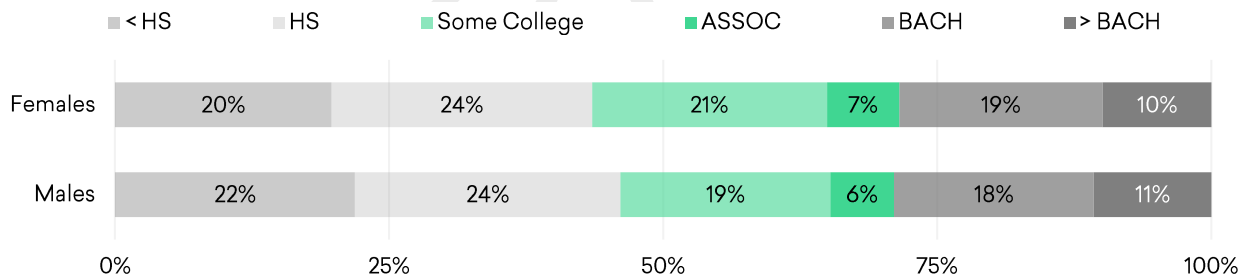


Numbers may not sum due to rounding.

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

Between female and male adults in the Lee College Service Area, there is slight variation in the distribution of their award categories; 21.4% and 19.1% of the region’s female and male adults, respectively, have some college education but no degree, which represent 343,780 females and 294,660 males. Additionally, 6.6% of female adults and 5.8% of male adults in the region have an associate degree as their highest award level. This information appears in Figure 2.13.

Figure 2.13: Highest Educational Attainments of Adults in the Lee College Service Area by Gender



Numbers may not sum due to rounding.

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

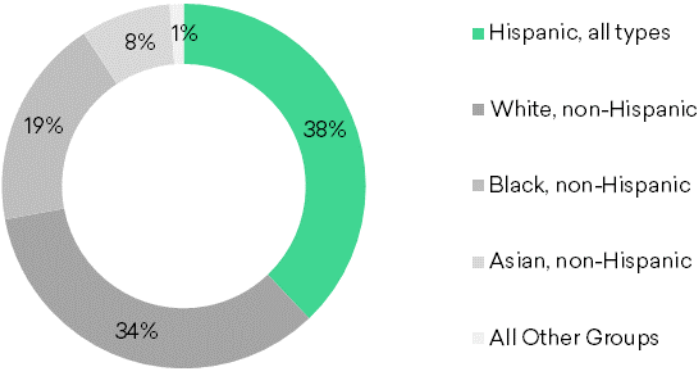
Table 2.6 and Figure 2.14 show the adults in the Lee College Service Area by the major race and ethnic groups. As shown, 37.9% of the region’s adults are Hispanic, all types. Another 34.2% of adults are White, non-Hispanic, and 18.7% are Black, non-Hispanic, the next largest groups. Altogether, less than 10.0% percent of the region’s adults are Asian, non-Hispanic; Two or more races, non-Hispanic; American Indian or Alaskan Native, non-Hispanic; and Native Hawaiian or Pacific Islander, non-Hispanic.

Table 2.6: Adults in the Lee College Service Area by Major Race and Ethnic Groups

GROUP	POPULATION	% POPULATION
Hispanic, all types	1,192,064	37.9%
White, non-Hispanic	1,074,622	34.2%
Black, non-Hispanic	587,200	18.7%
Asian, non-Hispanic	252,133	8.0%
Two or more races, non-Hispanic	30,804	1.0%
American Indian or Alaskan Native, non-Hispanic	6,656	0.2%
Native Hawaiian or Pacific Islander, non-Hispanic	1,676	0.1%
Total	3,145,155	100%

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

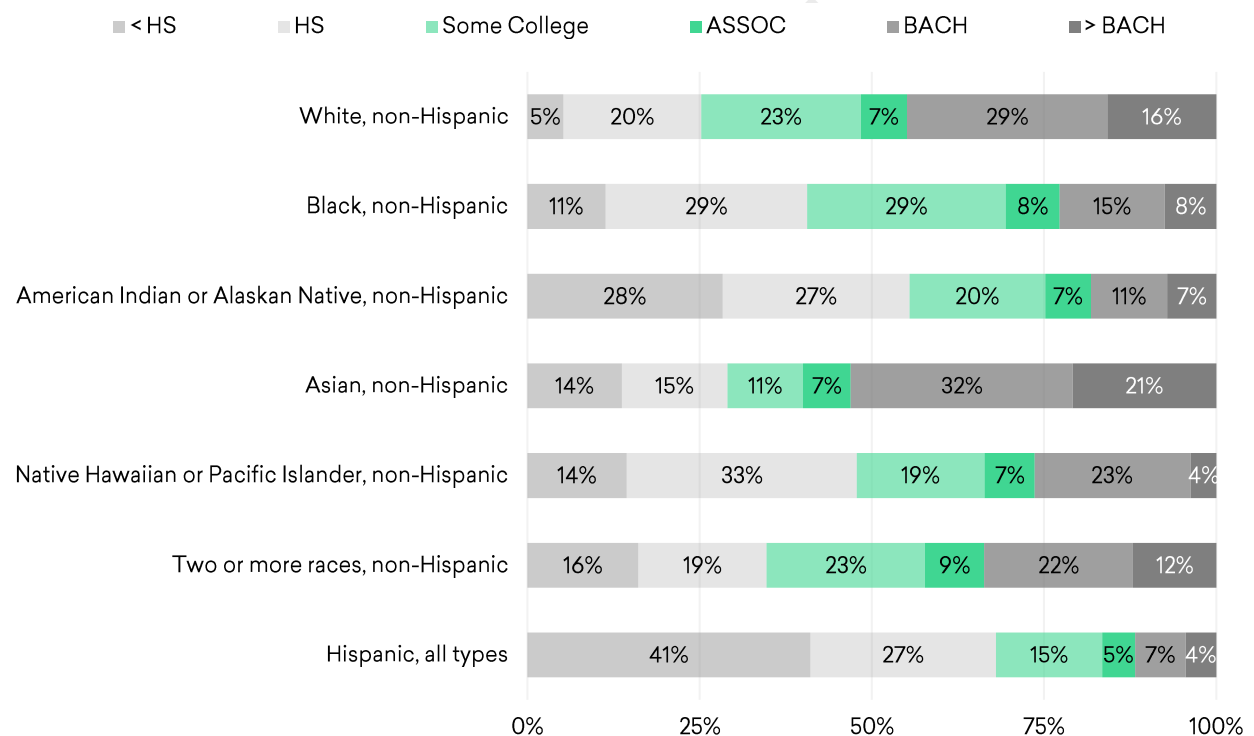
Figure 2.14: Adults in the Lee College Service Area by Major Race and Ethnic Groups



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

Figure 2.15 displays the highest educational attainment of the Lee College Service Area's adults by their major race and ethnic groups. White, non-Hispanic adults have the highest percentage of adults with a postsecondary education (74.7%) among all the groups, closely followed by Asian, non-Hispanic adults (71.0%). The Hispanic, all types adults group, which makes up the largest group of the regional adult population, has the lowest levels of educational attainment in the region. For this group, only 32.0% of adults have education beyond high school. Across all groups, these data suggest that there are many opportunities to increase the educational attainments of the region's adults, whether such actions involve outreach to local high schools or supporting Lee students who plan to transfer into a bachelor's degree level program.

Figure 2.15: Highest Educational Attainments of Adults in the Lee College Service Area by Major Race and Ethnic Groups



Numbers may not sum due to rounding.

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



Program Demand Gap Analysis

With the region'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 Lee'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.

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.

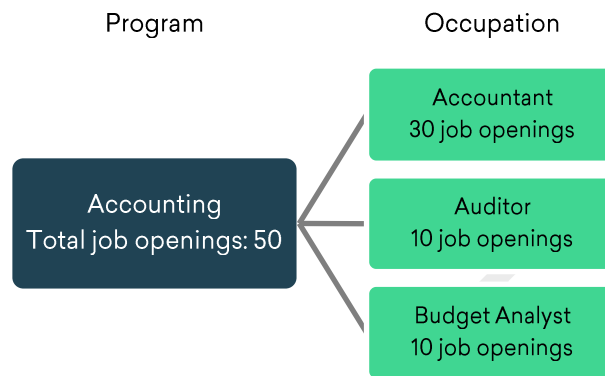
Surplus represents an oversupply, or when there are more completions than there are job openings in an occupation. If left unaddressed, significant surpluses may lead to higher unemployment rates or higher attrition rates—the college could be educating a workforce that is leaving the region after program 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 the Lee College Service Area, any gap or surplus within 1,000 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.



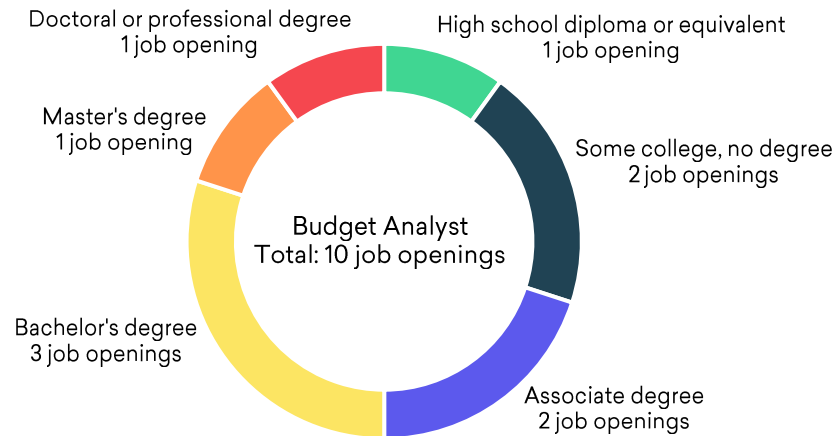
The figures show the gap between job demand and the supply of program completions. An explanation of job demand is warranted here, and a more detailed description can be found in Appendix 5. A program's job demand is measured as its total number of annual job openings, on average, from 2019 to 2029. The total is calculated as the sum of the regional job openings for each occupation mapped to the program, as illustrated in Figure 3.1.

Figure 3.1: Example of One Program Mapped to Three Occupations



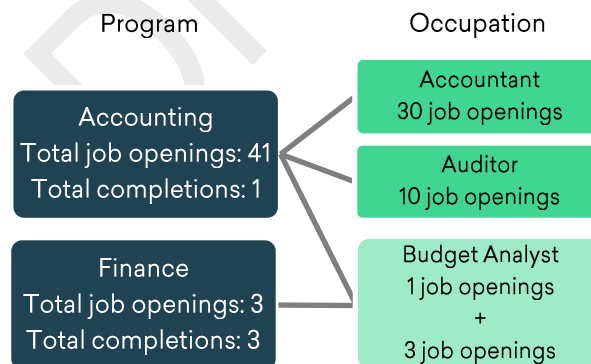
Furthermore, an occupation's job openings are not a gross measure of job openings available in the region. For every occupation, job openings have been weighted by the program's award level and one level below and account for the highest educational attainments of those employed in the position. The 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 3.2 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 3.2: 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 3.3, 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 3.3: Example of Two Programs with One Shared Occupation



Supply is shown as the average number of program completions in the region, by award level, between 2016 and 2018.⁷ Lee is not the only postsecondary educational institution in

7 The average annual completions data for Lee was updated to the years 2017 to 2019 and reviewed for accuracy by Lee.

the Lee College Service Area reporting to IPEDS,⁸ the source of the completions data. The gap, then, is the difference between job openings and program completions. Appendix 4 has Lee's program to occupation map with adjusted employment, and Appendix 5 identifies all the certificate and degree-granting institutions in the Lee College Service Area.

A great amount of data is presented in the tables. The first set shows the gaps and surpluses across all the programs offered at Lee 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 Lee, and the gap or surplus for the Lee College Service Area. The programs' median hourly wage rates are specific to the Lee College Service Area.

The second set of tables identify the occupations mapped to the programs with a significant gap, by award level, and show detailed occupational data. The tables include the CIP code, CIP title, and occupations mapped to the program, by their Standard Occupational Classification (SOC) codes and titles. The regional 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 the Lee College Service Area. 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 programs⁹ projected to have a gap or surplus in the Lee College Service Area. 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, Lee 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 5.

8 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.

9 Lee classifies the non-credit programs included in this analysis as occupational skills award level programs.

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's 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 2017 to 2019.

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.

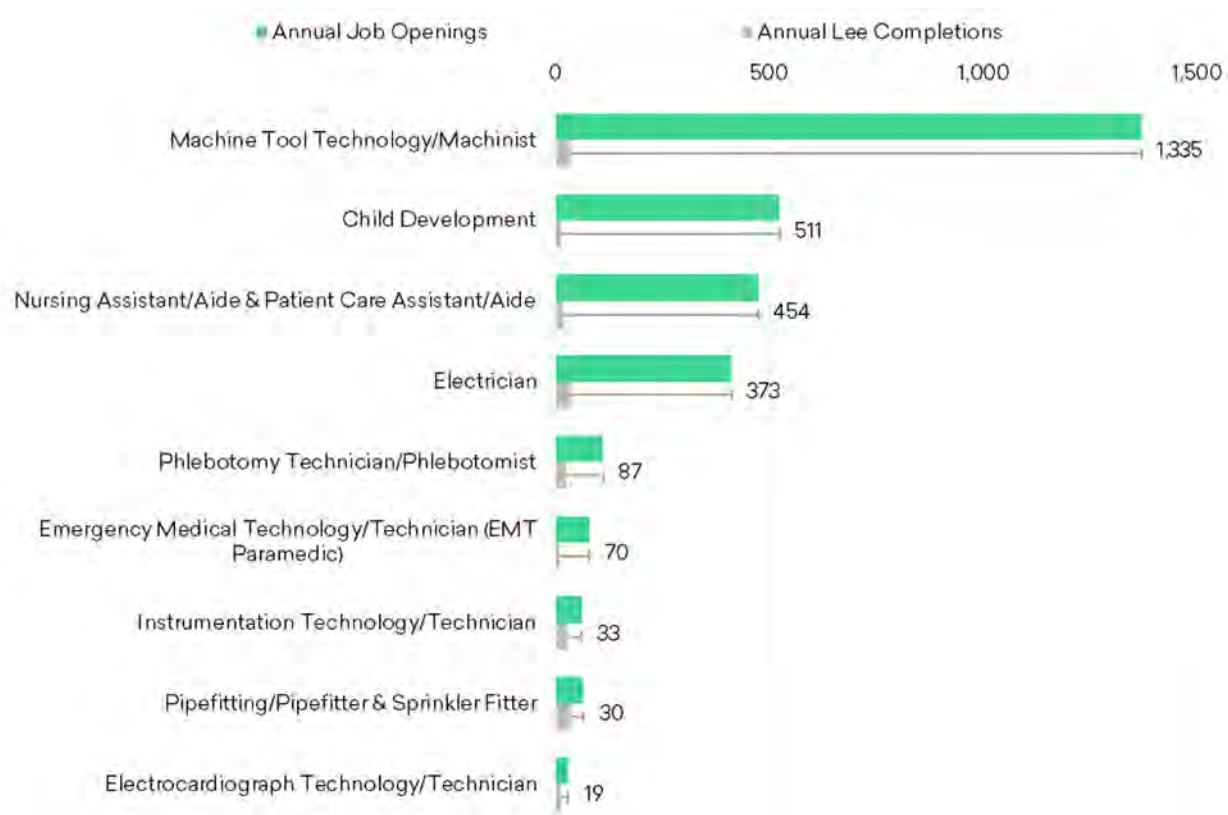
Fourth, it is important to contrast the results of the credit program analysis with those of the non-credit program analysis. While the non-credit program-to-occupation map is unique, occupations may be shared between the credit and non-credit programs. In these instances, completions of both the credit 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 region, 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 the Lee College Service Area.

Eleven non-credit programs are evaluated in this section, when the programs are classified by their six-digit CIP codes. Lee offers more than eleven 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.

As seen in Figure 3.4 and Table 3.1, the Machine Tool Technology/Machinist non-credit program has the largest gap, with a gap of 1,335, while the Medical/Clinical Assistant non-credit program has the largest surplus of 13. The one non-credit program with a significant gap has been highlighted in Table 3.1.

Figure 3.4: Lee's Non-Credit Programs with Gaps



Source: Emsi gap model.

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

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL LEE COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
48.0501	Machine Tool Technology/Machinist	1,372	37	1,335	\$23.29
19.0706	Child Development	525	14	511	\$11.04
51.3902	Nursing Assistant/Aide & Patient Care Assistant/Aide	474	20	454	\$9.75
46.0302	Electrician	410	37	373	\$26.34
51.1009	Phlebotomy Technician/Phlebotomist	111	24	87	\$20.75
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	79	9	70	\$13.34
15.0404	Instrumentation Technology/Technician	61	28	33	\$24.26
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	65	35	30	\$26.76
51.0902	Electrocardiograph Technology/Technician	31	12	19	\$26.93
51.0601	Dental Assisting/Assistant	16	17	(1)	\$16.36
51.0801	Medical/Clinical Assistant	14	27	(13)	\$16.17

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. As shown in Table 3.2, several occupations mapped to Machine Tool Technology/Machinist, the non-credit program with the largest gap. These include industrial machinery mechanics, machinists, and millwrights. The median hourly wage rate of industrial machinery mechanics, the highest paid occupation mapped to the program, is \$28.94 or \$60,195 annually.¹⁰ For context, the Texas state minimum wage is \$7.25¹¹ per hour, and the state's living wage is \$11.48 per hour for a household with one working adult and no children.¹² There are 479 job openings in the region for this occupation alone, considering someone with a non-credit award. In total, there are 1,372 projected annual job openings in the Lee College Service Area for all occupations mapped to the Machine Tool Technology/Machinist program, all of which have median hourly wages well above the state's minimum wage. The data suggest that an expansion of the program may be in the best interest of program completers at this time.¹³

While the gaps are important for building or expanding Lee'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 region's workforce requires. No non-credit programs have a significant surplus beyond the 1,000-openings level of significance. The Medical/Clinical Assistant program has the largest, with a surplus of 13.

Table 3.2: Occupations Mapped to Lee's Non-Credit Program with a Significant Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
MACHINE TOOL TECHNOLOGY/MACHINIST (CIP 48.0501)						
49-9041	Industrial Machinery Mechanics	10,407	10,878	471	479	\$28.94
51-4041	Machinists	9,277	9,286	9	278	\$24.25
51-4031	Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	3,694	3,428	(267)	119	\$16.08
51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	3,456	3,148	(307)	90	\$20.13
49-9043	Maintenance Workers, Machinery	1,851	1,953	101	83	\$19.96

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

11 Texas's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: U.S. Department of Labor.

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

13 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.

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	2,719	2,652	(67)	75	\$15.28
49-9044	Millwrights	985	1,100	115	51	\$26.63
51-4021	Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	957	838	(119)	38	\$18.16
51-4033	Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	1,061	983	(78)	31	\$15.19
51-4034	Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	905	819	(86)	28	\$17.32
51-4191	Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	922	862	(60)	25	\$16.85

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, Lee's unique certificate level programs aggregate into 40 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.

The largest certificate level gap, at 20,342 job openings, is in the Business Administration & Management, General program (Figure 3.5). Within the program, Lee has 730 average annual completions, but it is not the only institution in the Lee College Service Area with completers in this program. Table 3.3 shows all the award level's program gaps and surpluses. There are no programs with a significant surplus of program completions above the 1,000-openings level of significance. Programs with a significant gap have been highlighted in Table 3.3.

Figure 3.5: Lee's Top 10 Certificate Level Programs with a Gap



Source: Emsi program demand gap model.

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

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
52.0201	Business Administration & Management, General	21,243	901	730	20,342	\$23.27
49.0205	Truck & Bus Driver/Commercial Vehicle Operator & Instructor	7,548	47	47	7,501	\$17.63
12.0503	Culinary Arts/Chef Training	4,755	120	77	4,635	\$15.37
48.0508	Welding Technology/Welder	5,220	1,324	87	3,896	\$24.05
52.0401	Administrative Assistant & Secretarial Science, General	2,627	68	22	2,560	\$17.42
51.3901	Licensed Practical/Vocational Nurse Training	2,205	202	24	2,003	\$15.85
47.0604	Automobile/Automotive Mechanics Technology/Technician	1,873	114	32	1,759	\$17.05
47.0201	Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician	1,963	277	28	1,687	\$24.04
19.0706	Child Development	1,420	37	18	1,383	\$11.04

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
01.0601	Applied Horticulture/Horticulture Operations, General	1,433	69	69	1,364	\$13.58
51.0713	Medical Insurance Coding Specialist/Coder	1,471	211	4	1,259	\$17.92
46.0301	Electrical & Power Transmission Installation/Installer, General	1,297	64	2	1,233	\$27.44
12.0401	Cosmetology/Cosmetologist, General	1,793	769	46	1,024	\$12.19
46.0302	Electrician	873	78	9	795	\$26.34
15.1001	Construction Engineering Technology/Technician	750	26	<1	724	\$32.16
48.0501	Machine Tool Technology/Machinist	680	18	18	661	\$23.29
11.0101	Computer & Information Sciences, General	682	127	<1	555	\$42.56
52.0203	Logistics, Materials, & Supply Chain Management	541	82	23	459	\$41.78
43.0104	Criminal Justice/Safety Studies	445	2	2	443	\$20.93
22.0302	Legal Assistant/Paralegal	551	161	1	390	\$26.33
15.0404	Instrumentation Technology/Technician	504	231	159	274	\$24.26
41.0301	Chemical Technology/Technician	585	314	86	271	\$30.65
15.1202	Computer Technology/Computer Systems Technology	277	41	26	236	\$23.91
52.0302	Accounting Technology/Technician & Bookkeeping	237	14	11	223	\$21.19
48.0703	Cabinetmaking & Millwork	171	46	46	125	\$13.46
51.1501	Substance Abuse/Addiction Counseling	142	48	12	94	\$22.21
15.0000	Engineering Technology, General	72	9	9	63	\$29.73
11.1002	System, Networking, & LAN/WAN Management/Manager	49	10	10	39	\$33.18
11.1006	Computer Support Specialist	57	20	9	37	\$21.77
12.0413	Cosmetology, Barber/Styling, & Nail Instructor	72	41	2	31	\$11.64
10.0105	Communications Technology/Technician	30	8	8	21	\$22.47
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	36	19	10	17	\$26.76
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	24	9	4	15	\$25.68
15.0805	Mechanical Engineering/Mechanical Technology/Technician	14	1	1	13	\$26.09
15.0701	Occupational Safety & Health Technology/Technician	7	7	5	1	\$37.05
51.0708	Medical Transcription/Transcriptionist	0	<1	<1	0	\$17.68
11.0301	Data Processing & Data Processing Technology/Technician	16	16	16	(1)	\$30.43



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	18	21	21	(3)	\$28.52
15.1305	Electrical/Electronics Drafting & Electrical/Electronics CAD/CADD	1	6	6	(6)	\$28.40
15.1301	Drafting & Design Technology/Technician, General	252	290	97	(38)	\$28.52

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

Several occupations mapped to Business Administration & Management, General, such as retail salespersons, customer service representatives, and computer & information systems managers (Table 3.4). The median hourly wage of computer & information systems managers, the second highest paid occupation mapped to the program, is \$73.63. For context, the Texas state minimum wage is \$7.25¹⁴ per hour, and the state's living wage is \$11.48 per hour for a household with one working adult and no children.¹⁵ Lee should continue to focus on the program, potentially even expanding it, and consider which industry Business majors are likely to work in to further prepare them for jobs in the Lee College Service Area.¹⁶

While the gaps are important for building or expanding Lee'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 region's workforce requires. There are no certificate programs with a significant surplus beyond the 1,000-openings level of significance. The Drafting & Design Technology/Technician, General program has the largest, with a surplus of 38. Due to the insignificant size of the surpluses, it is possible that Lee completers of the surplus programs are finding employment inside the Lee College Service Area.

The 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 3.4. 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 the Lee College Service Area.

14 Texas's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: U.S. Department of Labor.

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

16 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.

Table 3.4: Occupations Mapped to Lee's Certificate 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)						
41-2031	Retail Salespersons	65,816	64,975	(841)	6,677	\$11.19
43-4051	Customer Service Representatives	47,721	47,314	(408)	4,233	\$16.26
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	2,250	\$17.58
11-1021	General & Operations Managers	43,252	47,247	3,995	1,766	\$55.27
41-1011	First-Line Supervisors of Retail Sales Workers	20,530	20,617	87	1,390	\$19.80
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	27,568	28,374	805	1,207	\$33.05
43-1011	First-Line Supervisors of Office & Administrative Support Workers	23,301	23,980	679	1,121	\$28.19
13-1199	Business Operations Specialists, All Other*	19,152	20,875	1,723	416	\$38.22
15-1151	Computer User Support Specialists	12,501	13,486	985	380	\$26.82
13-1071	Human Resources Specialists	10,651	11,389	737	299	\$31.29
11-3031	Financial Managers	10,279	12,049	1,770	293	\$67.02
11-9199	Managers, All Other*	11,085	12,976	1,891	261	\$35.70
13-2011	Accountants & Auditors	30,033	32,211	2,178	232	\$37.36
13-1111	Management Analysts	11,089	13,008	1,919	201	\$48.66
13-1161	Market Research Analysts & Marketing Specialists	6,454	8,247	1,793	139	\$35.34
11-2022	Sales Managers	6,431	6,879	448	132	\$66.18
11-3021	Computer & Information Systems Managers	5,169	5,727	558	76	\$73.63
11-3121	Human Resources Managers	2,278	2,562	284	72	\$60.75
11-2021	Marketing Managers	3,164	3,611	446	59	\$70.61
11-1011	Chief Executives	2,053	2,299	246	39	\$100.71
TRUCK & BUS DRIVER/COMMERCIAL VEHICLE OPERATOR & INSTRUCTOR (CIP CODE 49.0205)						
53-3032	Heavy & Tractor-Trailer Truck Drivers	39,774	44,636	4,861	3,948	\$20.68
53-3033	Light Truck or Delivery Services Drivers	13,828	15,292	1,464	1,350	\$16.04
53-3031	Driver/Sales Workers	8,833	8,941	108	767	\$11.68
53-3022	Bus Drivers, School or Special Client	6,123	6,605	482	656	\$13.42
53-3041	Taxi Drivers & Chauffeurs	6,277	8,019	1,742	613	\$12.46
53-3021	Bus Drivers, Transit & Intercity	2,211	2,226	16	213	\$20.58
CULINARY ARTS/CHEF TRAINING (CIP CODE 12.0503)						
35-2014	Cooks, Restaurant	21,467	27,671	6,204	2,195	\$12.62
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	15,056	17,805	2,749	1,566	\$18.73

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
35-2012	Cooks, Institution & Cafeteria	4,206	4,666	460	352	\$12.01
11-9051	Food Service Managers	3,904	4,510	606	267	\$25.60
35-2015	Cooks, Short Order	3,155	3,292	137	252	\$11.57
35-1011	Chefs & Head Cooks	1,672	2,026	354	89	\$19.43
35-2019	Cooks, All Other	369	390	21	30	\$8.84
35-2013	Cooks, Private Household	27	31	5	2	\$19.93
WELDING TECHNOLOGY/WELDER (CIP CODE 48.0508)						
49-9071	Maintenance & Repair Workers, General	24,076	26,752	2,676	1,314	\$18.54
51-4121	Welders, Cutters, Solderers, & Brazers	15,834	16,261	427	1,297	\$23.42
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	20,383	21,671	1,288	1,242	\$31.06
47-2152	Plumbers, Pipefitters, & Steamfitters	10,600	11,936	1,336	810	\$25.85
47-2221	Structural Iron & Steel Workers	2,560	2,748	188	247	\$20.73
47-2211	Sheet Metal Workers	2,407	2,622	215	171	\$19.96
47-2171	Reinforcing Iron & Rebar Workers	1,532	1,607	75	113	\$19.74
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	341	321	(19)	26	\$19.88
ADMINISTRATIVE ASSISTANT & SECRETARIAL SCIENCE, GENERAL (CIP CODE 52.0401)						
43-9061	Office Clerks, General	66,727	67,496	769	1,564	\$17.77
43-4171	Receptionists & Information Clerks	14,457	15,896	1,439	624	\$13.05
43-6011	Executive Secretaries & Executive Administrative Assistants	7,646	6,926	(720)	175	\$29.98
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	169	\$17.58
43-4071	File Clerks	2,357	2,237	(120)	56	\$17.10
43-9021	Data Entry Keyers	3,431	2,912	(519)	25	\$15.06
43-9022	Word Processors & Typists	437	392	(46)	14	\$18.76
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
29-2061	Licensed Practical & Licensed Vocational Nurses	11,564	13,555	1,990	864	\$23.12
31-1011	Home Health Aides	12,998	19,034	6,036	721	\$9.30
31-1014	Nursing Assistants	15,120	17,583	2,463	620	\$13.33
AUTOMOBILE/AUTOMOTIVE MECHANICS TECHNOLOGY/TECHNICIAN (CIP CODE 47.0604)						
53-7061	Cleaners of Vehicles & Equipment	8,037	8,798	761	864	\$12.33
49-3023	Automotive Service Technicians & Mechanics	11,709	12,683	974	411	\$17.99
49-3021	Automotive Body & Related Repairers	2,652	2,841	189	122	\$18.24
49-9071	Maintenance & Repair Workers, General	24,076	26,752	2,676	113	\$18.54
49-3093	Tire Repairers & Changers	2,068	2,064	(4)	102	\$13.51



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	9,206	9,887	681	96	\$33.24
17-3027	Mechanical Engineering Technicians	1,269	1,299	30	70	\$33.67
53-6051	Transportation Inspectors	1,378	1,403	25	57	\$31.97
49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	346	289	(57)	17	\$16.36
49-3022	Automotive Glass Installers & Repairers	248	271	23	14	\$22.93
49-2093	Electrical & Electronics Installers & Repairers, Transportation Equipment	165	172	8	7	\$30.73
HEATING, AIR CONDITIONING, VENTILATION & REFRIGERATION MAINTENANCE TECHNOLOGY/TECHNICIAN (CIP CODE 47.0201)						
49-9021	Heating, Air Conditioning, & Refrigeration Mechanics & Installers	6,347	7,209	862	406	\$23.60
49-9071	Maintenance & Repair Workers, General	24,076	26,752	2,676	275	\$18.54
49-9098	Helpers--Installation, Maintenance, & Repair Workers	3,435	3,699	264	263	\$14.90
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	9,206	9,887	681	233	\$33.24
47-4011	Construction & Building Inspectors	3,084	3,324	240	193	\$30.12
47-2152	Plumbers, Pipefitters, & Steamfitters	10,600	11,936	1,336	169	\$25.85
13-1199	Business Operations Specialists, All Other*	19,152	20,875	1,723	128	\$38.22
47-4098	Miscellaneous Construction & Related Workers	1,022	1,125	103	93	\$18.67
47-2151	Pipelayers	930	1,202	272	89	\$15.90
49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	1,571	1,613	42	45	\$27.36
47-2211	Sheet Metal Workers	2,407	2,622	215	36	\$19.96
49-9031	Home Appliance Repairers	421	442	21	34	\$20.52
CHILD DEVELOPMENT (CIP CODE 19.0706)						
39-9011	Childcare Workers	20,820	22,516	1,696	1,062	\$9.72
25-2011	Preschool Teachers, Except Special Education	8,468	9,678	1,210	267	\$13.25
21-1093	Social & Human Service Assistants	3,240	3,971	731	55	\$18.46
21-1021	Child, Family, & School Social Workers	2,958	3,425	467	23	\$23.77
11-9031	Education Administrators, Preschool & Childcare Center/Program	988	1,143	155	12	\$20.73
25-9021	Farm & Home Management Advisors	58	72	14	2	\$11.12
APPLIED HORTICULTURE/HORTICULTURE OPERATIONS, GENERAL (CIP CODE 01.0601)						
37-3011	Landscaping & Groundskeeping Workers	19,605	21,721	2,115	1,018	\$12.72
37-3013	Tree Trimmers & Pruners	1,786	1,919	133	143	\$15.19
45-2092	Farmworkers & Laborers, Crop, Nursery, & Greenhouse	1,173	1,347	174	94	\$10.37
37-1012	First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	2,104	2,316	212	88	\$18.63
11-9013	Farmers, Ranchers, & Other Agricultural Managers	827	851	23	47	\$19.77



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
27-1023	Floral Designers	507	467	(40)	15	\$11.96
45-1011	First-Line Supervisors of Farming, Fishing, & Forestry Workers	167	195	28	15	\$28.63
37-3012	Pesticide Handlers, Sprayers, & Applicators, Vegetation	143	172	29	13	\$14.81
MEDICAL INSURANCE CODING SPECIALIST/CODER (CIP CODE 51.0713)						
43-6013	Medical Secretaries	18,605	20,954	2,350	647	\$17.17
43-3021	Billing & Posting Clerks	8,090	9,237	1,147	434	\$19.26
43-9041	Insurance Claims & Policy Processing Clerks	4,205	4,569	364	129	\$18.49
31-9092	Medical Assistants	10,882	13,155	2,273	108	\$16.17
43-9021	Data Entry Keyers	3,431	2,912	(519)	77	\$15.06
29-2071	Medical Records & Health Information Technicians	3,423	3,973	549	76	\$21.02
ELECTRICAL & POWER TRANSMISSION INSTALLATION/INSTALLER, GENERAL (CIP CODE 46.0301)						
47-2111	Electricians	15,649	16,872	1,223	492	\$26.47
49-9052	Telecommunications Line Installers & Repairers	2,209	2,230	21	189	\$31.23
49-9051	Electrical Power-Line Installers & Repairers	2,674	2,901	227	188	\$29.76
49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	4,129	3,976	(154)	171	\$24.09
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	20,383	21,671	1,288	60	\$31.06
47-3013	Helpers--Electricians	1,778	1,844	66	59	\$14.76
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	9,206	9,887	681	54	\$33.24
49-2098	Security & Fire Alarm Systems Installers	1,313	1,396	84	44	\$25.02
49-2095	Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	404	440	35	25	\$35.55
49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	1,571	1,613	42	10	\$27.36
49-9097	Signal & Track Switch Repairers	154	159	5	4	\$32.90
COSMETOLOGY/COSMETOLOGIST, GENERAL (CIP CODE 12.0401)						
39-5012	Hairdressers, Hairstylists, & Cosmetologists	11,304	12,785	1,480	1,208	\$11.62
39-1021	First-Line Supervisors of Personal Service Workers	2,442	2,871	430	186	\$18.61
39-5092	Manicurists & Pedicurists	1,696	2,084	389	146	\$10.87
39-5011	Barbers	1,895	2,127	232	133	\$11.83
39-5094	Skincare Specialists	1,136	1,299	163	86	\$10.10
39-5093	Shampooers	390	444	53	32	\$9.22
39-5091	Makeup Artists, Theatrical & Performance	13	16	3	1	\$20.04

* See Appendix 2 for job postings related to this occupation.

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

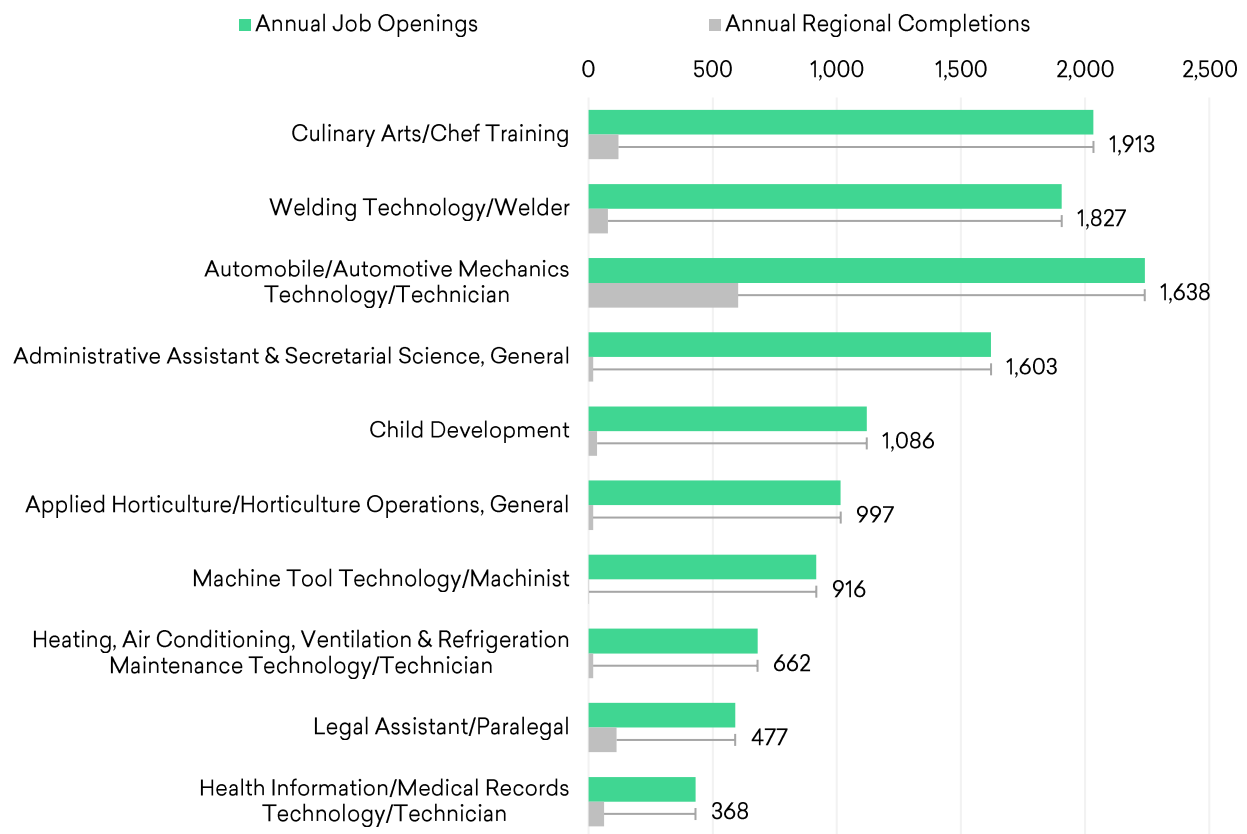


ASSOCIATE DEGREE LEVEL ANALYSIS

Lee offers 32 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.

As shown in Figure 3.6, five programs have a significant gap above the 1,000-openings level of significance. The Culinary Arts/Chef Training program has the largest, followed by the Welding Technology/Welder; Automobile/Automotive Mechanics Technology/Technician; Administrative Assistant & Secretarial Science, General; and Child Development programs. As shown in Table 3.5, the Culinary Arts/Chef Training program has 2,033 average annual job openings, considering the region’s labor market. On average, the college has 23 annual completions, and combined with the other postsecondary educational institutions in the region, there are a total of 120 annual completions. There are no programs with a significant surplus of program completions above the 1,000-openings level of significance. Programs with a significant gap have been highlighted in Table 3.5.

Figure 3.6: Lee's Top 10 Associate Degree Level Programs with a Gap



Source: Emsi program demand gap model.

Table 3.5: Gaps and Surpluses for Lee's Associate Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
12.0503	Culinary Arts/Chef Training	2,033	120	23	1,913	\$15.95
48.0508	Welding Technology/Welder	1,906	78	35	1,827	\$25.08
47.0604	Automobile/Automotive Mechanics Technology/Technician	2,240	602	11	1,638	\$20.28
52.0401	Administrative Assistant & Secretarial Science, General	1,621	18	8	1,603	\$19.31
19.0706	Child Development	1,120	35	2	1,086	\$10.42
01.0601	Applied Horticulture/Horticulture Operations, General	1,015	18	15	997	\$13.63
48.0501	Machine Tool Technology/Machinist	917	2	2	916	\$24.66
47.0201	Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician	681	18	8	662	\$23.58
22.0302	Legal Assistant/Paralegal	590	113	3	477	\$26.64
51.0707	Health Information/Medical Records Technology/Technician	431	62	6	368	\$21.97



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
11.0101	Computer & Information Sciences, General	377	50	<1	327	\$40.37
15.0404	Instrumentation Technology/Technician	515	203	114	313	\$26.93
52.0302	Accounting Technology/Technician & Bookkeeping	320	13	9	307	\$21.53
46.0302	Electrician	292	6	6	286	\$26.24
15.1202	Computer Technology/Computer Systems Technology	290	15	15	275	\$21.60
15.1301	Drafting & Design Technology/Technician, General	324	162	24	162	\$28.59
11.0201	Computer Programming/Programmer, General	153	52	2	101	\$47.49
12.0413	Cosmetology, Barber/Styling, & Nail Instructor	96	5	2	90	\$11.65
48.0703	Cabinetmaking & Millwork	78	13	13	66	\$13.51
15.0701	Occupational Safety & Health Technology/Technician	80	33	19	47	\$36.28
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	73	30	1	43	\$26.03
03.0103	Environmental Studies	38	1	1	37	\$25.80
11.1006	Computer Support Specialist	35	4	3	31	\$18.91
09.0101	Speech Communication & Rhetoric	34	3	2	31	\$18.60
10.0105	Communications Technology/Technician	29	5	5	23	\$22.44
11.1002	System, Networking, & LAN/WAN Management/Manager	25	2	2	22	\$30.08
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	35	18	18	18	\$28.59
04.0201	Architecture	15	<1	<1	15	\$38.01
11.0301	Data Processing & Data Processing Technology/Technician	11	7	7	4	\$24.56
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	4	<1	<1	4	\$26.36
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	21	18	4	3	\$26.07
41.0301	Chemical Technology/Technician	400	442	132	(42)	\$30.77

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

Although Culinary Arts/Chef Training has the largest gap, the average median hourly wage for the occupations mapped to the program (Table 3.6) is \$16.09, which is the lowest average median hourly wage out of the five associate level programs with a significant gap. The occupations mapped to the Welding Technology/Welder program, which has the second largest gap at the associate degree level, have an average median hourly wage of \$22.40. Occupations mapped to Welding Technology/Welder include welders, cutters, solderers, &

brazers; plumbers, pipefitters, & steamfitters; and structural iron & steel workers (Table 3.6). The median hourly wage of welders, cutters, solderers, & brazers, the occupation mapped to the program with the highest number of annual job openings, is \$23.42. For context, the Texas state minimum wage is \$7.25¹⁷ per hour, and the state's living wage is \$11.48 per hour for a household with one working adult and no children.¹⁸ Although there are 1,906 job openings associated with the Welding Technology/Welder program, it is important to note that all of the occupations mapped to Welding Technology/Welder in Table 3.6 also appear in Table 3.4. In fact, these same occupations actually see higher demand at the certificate level. As a result, it may be helpful to evaluate the education attainment of regional completers filling these job openings before initiating program expansion at the associate degree level.¹⁹

While the gaps are important to keep in mind for building or expanding programs, the surpluses are equally important to ensure the college is training students with skills the regional workforce requires. There are no associate degree programs at Lee with a significant surplus. Chemical Technology/Technician has the largest, with a surplus of 42. Due to the fact that there are 400 annual job openings for occupations mapped to this program, it is possible that Lee completers are finding employment within the region.

Using Table 3.6, the 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 Lee 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 its mapped programs. Also, there could be other sources of skilled workers filling the gaps, such as unemployed workers or workers from outside the region.

17 Texas's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: U.S. Department of Labor.

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

19 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.

Table 3.6: Occupations Mapped to Lee'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
CULINARY ARTS/CHEF TRAINING (CIP CODE 12.0503)						
35-2014	Cooks, Restaurant	21,467	27,671	6,204	814	\$12.62
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	15,056	17,805	2,749	790	\$18.73
11-9051	Food Service Managers	3,904	4,510	606	141	\$25.60
35-2012	Cooks, Institution & Cafeteria	4,206	4,666	460	134	\$12.01
35-2015	Cooks, Short Order	3,155	3,292	137	94	\$11.57
35-1011	Chefs & Head Cooks	1,672	2,026	354	50	\$19.43
35-2019	Cooks, All Other	369	390	21	11	\$8.84
35-2013	Cooks, Private Household	27	31	5	1	\$19.93
WELDING TECHNOLOGY/WELDER (CIP CODE 48.0508)						
51-4121	Welders, Cutters, Solderers, & Brazers	15,834	16,261	427	689	\$23.42
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	20,383	21,671	1,288	474	\$31.06
47-2152	Plumbers, Pipefitters, & Steamfitters	10,600	11,936	1,336	371	\$25.85
47-2221	Structural Iron & Steel Workers	2,560	2,748	188	124	\$20.73
49-9071	Maintenance & Repair Workers, General	24,076	26,752	2,676	113	\$18.54
47-2211	Sheet Metal Workers	2,407	2,622	215	82	\$19.96
47-2171	Reinforcing Iron & Rebar Workers	1,532	1,607	75	37	\$19.74
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	341	321	(19)	14	\$19.88
AUTOMOBILE/AUTOMOTIVE MECHANICS TECHNOLOGY/TECHNICIAN (CIP CODE 47.0604)						
49-9071	Maintenance & Repair Workers, General	24,076	26,752	2,676	871	\$18.54
53-7061	Cleaners of Vehicles & Equipment	8,037	8,798	761	384	\$12.33
49-3023	Automotive Service Technicians & Mechanics	11,709	12,683	974	355	\$17.99
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	9,206	9,887	681	348	\$33.24
49-3021	Automotive Body & Related Repairers	2,652	2,841	189	82	\$18.24
17-3027	Mechanical Engineering Technicians	1,269	1,299	30	68	\$33.67
49-3093	Tire Repairers & Changers	2,068	2,064	(4)	61	\$13.51
53-6051	Transportation Inspectors	1,378	1,403	25	43	\$31.97
49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	346	289	(57)	14	\$16.36
49-3022	Automotive Glass Installers & Repairers	248	271	23	8	\$22.93
49-2093	Electrical & Electronics Installers & Repairers, Transportation Equipment	165	172	8	6	\$30.73
ADMINISTRATIVE ASSISTANT & SECRETARIAL SCIENCE, GENERAL (CIP CODE 52.0401)						

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
43-9061	Office Clerks, General	66,727	67,496	769	749	\$17.77
43-4171	Receptionists & Information Clerks	14,457	15,896	1,439	367	\$13.05
43-6011	Executive Secretaries & Executive Administrative Assistants	7,646	6,926	(720)	353	\$29.98
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	103	\$17.58
43-4071	File Clerks	2,357	2,237	(120)	27	\$17.10
43-9021	Data Entry Keyers	3,431	2,912	(519)	15	\$15.06
43-9022	Word Processors & Typists	437	392	(46)	7	\$18.76
CHILD DEVELOPMENT (CIP CODE 19.0706)						
39-9011	Childcare Workers	20,820	22,516	1,696	990	\$9.72
25-2011	Preschool Teachers, Except Special Education	8,468	9,678	1,210	77	\$13.25
21-1093	Social & Human Service Assistants	3,240	3,971	731	31	\$18.46
11-9031	Education Administrators, Preschool & Childcare Center/Program	988	1,143	155	15	\$20.73
21-1021	Child, Family, & School Social Workers	2,958	3,425	467	6	\$23.77
25-9021	Farm & Home Management Advisors	58	72	14	2	\$11.12

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

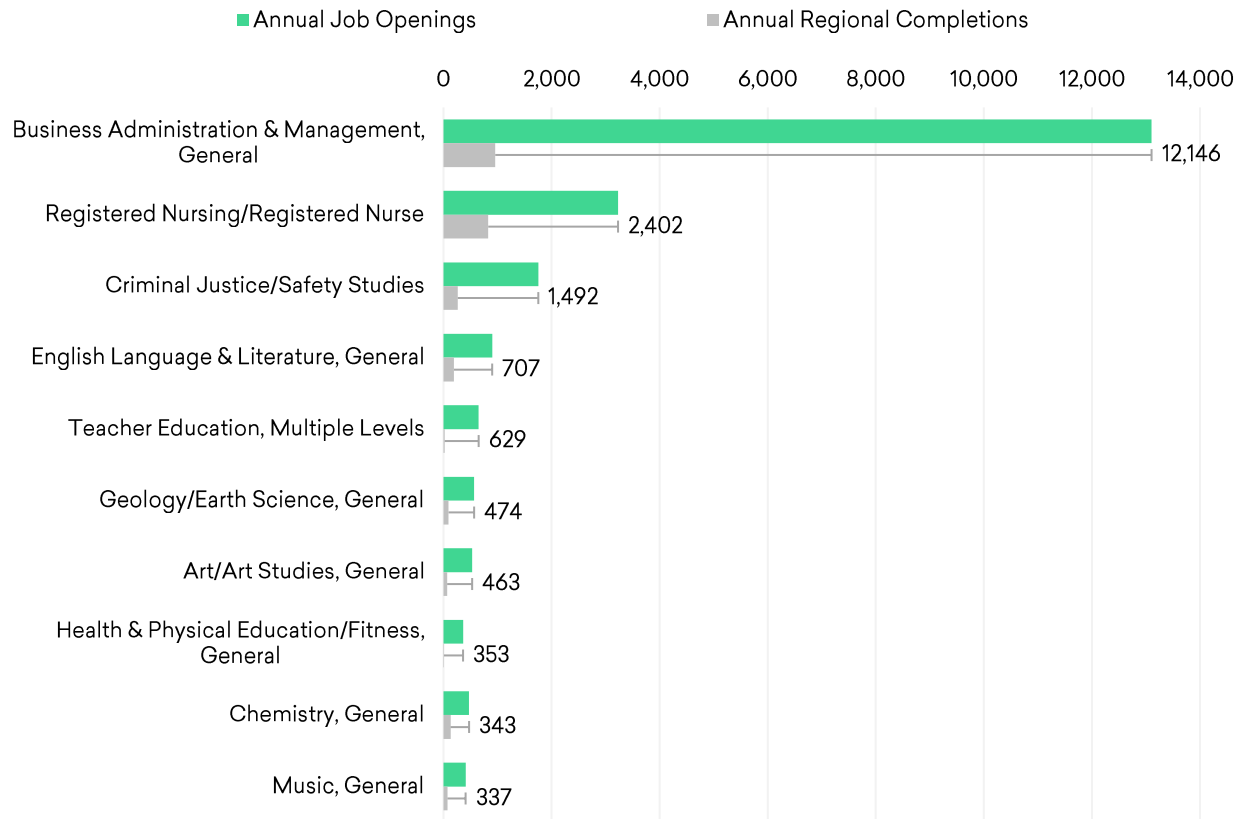
TRANSFER-TRACK DEGREE LEVEL ANALYSIS

The analysis in this section again evaluates Lee's associate degree level programs but at the bachelor's degree level. 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 Lee, there are 22 such transfer-track degree level programs, when the programs are classified by their six-digit CIP codes. Lee is one of many postsecondary educational institutions in the region, and several 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 3.7 shows the top 10 programs with a gap. The Business Administration & Management, General program has the largest, followed by the Registered Nursing/Registered Nurse and Criminal Justice/Safety Studies programs. As shown in Table 3.7, there are 13,104 annual job openings in the region for occupations related to the Business Administration & Management, General program. On average, the college graduates 139 annual completers, and combined with the other postsecondary educational institutions in

the region, there are a total of 958 annual completers. Programs with a significant gap have been highlighted in Table 3.7.

Figure 3.7: Lee’s Top 10 Transfer-Track Degree Level Programs with a Gap



Lee’s 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.

Table 3.7: Gaps and Surpluses for Lee’s Transfer-Track Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
52.0201	Business Administration & Management, General	13,104	958	139	12,146	\$29.68
51.3801	Registered Nursing/Registered Nurse	3,230	828	69	2,402	\$40.07
43.0104	Criminal Justice/Safety Studies	1,755	263	14	1,492	\$23.65
23.0101	English Language & Literature, General	901	194	3	707	\$28.33
13.1206	Teacher Education, Multiple Levels	651	21	21	629	\$18.09
40.0601	Geology/Earth Science, General	567	93	1	474	\$55.42

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			REGIONAL	LEE		
50.0701	Art/Art Studies, General	531	68	7	463	\$25.32
31.0501	Health & Physical Education/Fitness, General	362	9	5	353	\$14.08
40.0501	Chemistry, General	474	131	3	343	\$39.99
50.0901	Music, General	409	73	4	337	\$26.60
44.0701	Social Work	399	99	6	300	\$26.16
26.0101	Biology/Biological Sciences, General	659	519	11	140	\$28.67
15.0000	Engineering Technology, General	113	25	25	88	\$30.49
27.0101	Mathematics, General	265	184	1	81	\$31.45
50.0501	Drama & Dramatics/Theatre Arts, General	99	35	3	64	\$21.33
52.0203	Logistics, Materials, & Supply Chain Management	46	7	7	39	\$32.30
16.0101	Foreign Languages & Literatures, General	34	8	4	26	\$27.68
45.0101	Social Sciences, General	32	28	6	4	\$33.30
51.1501	Substance Abuse/Addiction Counseling	5	7	7	(1)	\$19.64
40.0201	Astronomy	1	2	2	(1)	\$51.99
14.1101	Engineering Mechanics	3	8	8	(5)	\$69.86
30.1801	Natural Sciences	10	36	36	(26)	\$44.14

Lee's 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.

Since the occupation mapping for Business Administration & Management, General was covered in the certificate level analysis, we will look at the mapping for the Registered Nursing/Registered Nurse program. Several occupations mapped to Registered Nursing/Registered Nurse, such as registered nurses, medical & health services managers, and nurse practitioners (Table 3.8). The median hourly wage of nurse anesthetists, the highest paid occupation mapped to the program, is \$79.12. For context, the Texas state minimum wage is \$7.25²⁰ per hour, and the state's living wage is \$11.48 per hour for a household with one working adult and no children.²¹ It is important to note, however, that there are relatively few job openings at the bachelor's degree level for nurse anesthetists due to the fact this occupation generally requires higher levels of educational attainment. Additionally, the large gap associated with the Registered Nursing/Registered Nurse program is primarily driven by

20 Texas's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: U.S. Department of Labor.

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



registered nurses. This occupation represents 92.1% of the program’s job openings and has a relatively high median hourly wage of \$38.88. Overall, considering the high number of annual job openings and the high median hourly wages for the occupations mapped to the Registered Nursing/Registered Nurse program, it may merit an expansion.²²

While the gaps are important to keep in mind for building or expanding programs, the surpluses are equally important to ensure the college is training students with skills the regional workforce requires. There are no transfer-track degree programs at Lee with a significant surplus. Natural Sciences has the largest, with a surplus of 26.

Using Table 3.8, the step-by-step process of evaluating occupational gaps by their median hourly wage rates can be applied to the other Lee transfer-track degree programs with a significant gap. In general, gaps around occupations with high wages should be considered more noteworthy than gaps around occupations with low wages. Also, if the occupational forecasts around a certain gap are not positive, the gap may not be worth further consideration. Keep in mind that there could be other sources of skilled workers filling the gaps, such as unemployed workers or workers from outside the region.

Table 3.8: Occupations Mapped to Lee’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)						
41-2031	Retail Salespersons	65,816	64,975	(841)	1,911	\$11.19
43-4051	Customer Service Representatives	47,721	47,314	(408)	1,645	\$16.26
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	1,635	\$17.58
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	27,568	28,374	805	1,304	\$33.05
13-2011	Accountants & Auditors	30,033	32,211	2,178	1,107	\$37.36
11-1021	General & Operations Managers	43,252	47,247	3,995	904	\$55.27
43-1011	First-Line Supervisors of Office & Administrative Support Workers	23,301	23,980	679	886	\$28.19
41-1011	First-Line Supervisors of Retail Sales Workers	20,530	20,617	87	586	\$19.80
13-1199	Business Operations Specialists, All Other*	19,152	20,875	1,723	553	\$38.22
13-1071	Human Resources Specialists	10,651	11,389	737	543	\$31.29
13-1111	Management Analysts	11,089	13,008	1,919	406	\$48.66
15-1151	Computer User Support Specialists	12,501	13,486	985	391	\$26.82

²² 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
13-1161	Market Research Analysts & Marketing Specialists	6,454	8,247	1,793	284	\$35.34
11-2022	Sales Managers	6,431	6,879	448	226	\$66.18
11-3031	Financial Managers	10,279	12,049	1,770	212	\$67.02
11-3021	Computer & Information Systems Managers	5,169	5,727	558	139	\$73.63
11-2021	Marketing Managers	3,164	3,611	446	127	\$70.61
11-9199	Managers, All Other*	11,085	12,976	1,891	105	\$35.70
11-3121	Human Resources Managers	2,278	2,562	284	89	\$60.75
11-1011	Chief Executives	2,053	2,299	246	50	\$100.71
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	45,879	53,737	7,858	2,976	\$38.88
11-9111	Medical & Health Services Managers	6,378	7,650	1,272	224	\$52.22
29-1171	Nurse Practitioners	2,553	3,291	738	16	\$57.33
29-1151	Nurse Anesthetists	1,666	1,867	201	14	\$79.12
29-1161	Nurse Midwives	48	65	17	0	\$48.16
CRIMINAL JUSTICE/SAFETY STUDIES (CIP CODE 43.0104)						
33-9032	Security Guards	24,999	27,326	2,327	757	\$12.67
33-3051	Police & Sheriff's Patrol Officers	11,591	12,522	931	338	\$31.37
13-1199	Business Operations Specialists, All Other*	19,152	20,875	1,723	152	\$38.22
33-3012	Correctional Officers & Jailers	5,166	5,195	29	139	\$21.21
13-1041	Compliance Officers	5,348	5,809	461	73	\$40.43
21-1021	Child, Family, & School Social Workers	2,958	3,425	467	34	\$23.77
33-9021	Private Detectives & Investigators	595	647	52	33	\$25.83
13-2099	Financial Specialists, All Other	2,166	2,364	199	33	\$36.70
21-1092	Probation Officers & Correctional Treatment Specialists	763	844	80	32	\$21.87
33-3021	Detectives & Criminal Investigators	1,365	1,469	104	31	\$41.62
43-5031	Police, Fire, & Ambulance Dispatchers	1,235	1,341	106	29	\$20.41
11-9199	Managers, All Other*	11,085	12,976	1,891	29	\$35.70
15-1122	Information Security Analysts	1,530	1,907	377	27	\$49.95
33-1012	First-Line Supervisors of Police & Detectives	933	1,038	105	20	\$45.98
33-1011	First-Line Supervisors of Correctional Officers	304	314	10	8	\$22.82
33-2021	Fire Inspectors & Investigators	221	238	16	7	\$34.99
33-3052	Transit & Railroad Police	155	160	5	6	\$21.16
11-9161	Emergency Management Directors	119	128	9	4	\$52.65



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
33-3011	Bailiffs	64	74	10	2	\$25.93

* See Appendix 2 for job postings related to this occupation.

Lee's 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 Lee 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, 235 students, on average, have completed such a program, which accounts for 8.1% of Lee's annual production of certificates, including non-credit awards, and degrees.

Once liberal arts students leave Lee, 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, 70,600 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, customer service representatives, and secretaries & administrative assistants. Together, the three occupations account for 47.4% 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 Lee 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	65,816	64,975	(841)	9,570	\$11.19
43-4051	Customer Service Representatives	47,721	47,314	(408)	6,382	\$16.26
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	4,430	\$17.58
11-1021	General & Operations Managers	43,252	47,247	3,995	4,357	\$55.27
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	27,568	28,374	805	3,052	\$33.05
43-1011	First-Line Supervisors of Office & Administrative Support Workers	23,301	23,980	679	2,563	\$28.19
13-1199	Business Operations Specialists, All Other*	19,152	20,875	1,723	2,102	\$38.22
13-1111	Management Analysts	11,089	13,008	1,919	1,332	\$48.66
13-1071	Human Resources Specialists	10,651	11,389	737	1,184	\$31.29
15-1151	Computer User Support Specialists	12,501	13,486	985	1,167	\$26.82
11-9199	Managers, All Other*	11,085	12,976	1,891	1,105	\$35.70
11-3031	Financial Managers	10,279	12,049	1,770	1,042	\$67.02
41-9022	Real Estate Sales Agents	9,136	9,626	489	941	\$29.52
43-6011	Executive Secretaries & Executive Administrative Assistants	7,646	6,926	(720)	824	\$29.98
25-3097	Teachers & Instructors, All Other	4,420	5,333	913	651	\$16.29
11-2022	Sales Managers	6,431	6,879	448	641	\$66.18
27-3031	Public Relations Specialists	5,339	5,751	412	620	\$28.64
21-1093	Social & Human Service Assistants	3,240	3,971	731	505	\$18.46
11-2021	Marketing Managers	3,164	3,611	446	348	\$70.61
11-1011	Chief Executives	2,053	2,299	246	180	\$100.71

* See Appendix 2 for job postings related to this occupation.
Source: Emsi gap model.

SUMMARY

The program demand gap analysis provides results across all of Lee’s non-credit, certificate, and associate degree level programs, which have been classified by their formal CIP codes. The analysis connects the college’s program completions with the availability of regional job openings. Furthermore, the analysis focuses on the gaps and surpluses in the programs by award level. A gap or surplus larger than 1,000 is considered beyond normal labor market fluctuations and therefore an area of consideration for program development.

At the non-credit level, one program has a gap above the 1,000-job level of significance and zero have a significant surplus. The non-credit program analysis shows that entry-level jobs in industries related to food service and business are plentiful in the Lee College Service Area, but these occupations are not typically associated with high wage rates. Furthermore, not receiving a Lee 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 Lee'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:

- Machine Tool Technology/Machinist (gap of 1,335; median hourly wage \$23.29);
- Child Development (gap of 511; median hourly wage \$11.04); and
- Nursing Assistant/Aide & Patient Care Assistant/Aide (gap of 454; median hourly wage \$9.75).

At the certificate level, thirteen programs have a gap above the 1,000-job level of significance and zero have a significant surplus. Program expansions are recommended at this award level if the program awards completers with a Lee certificate and a certification, license, or industry-specific credential required for employment in an occupation. Such is the case with the college's Welding Technology/Welder program. The certificate level programs with the top three largest gaps are:

- Business Administration & Management, General (gap of 20,342; median hourly wage \$23.27);
- Truck & Bus Driver/Commercial Vehicle Operator & Instructor (gap of 7,501; median hourly wage \$17.63); and
- Culinary Arts/Chef Training (gap of 4,635; median hourly wage \$15.37).

At the associate degree level, five programs have a significant gap above the 1,000-job level of significance, and some are recommended for further program development. For Lee administrators, it is crucial for the college to engage with the local community on behalf of its students. No programs have a significant surplus at this award level, and the associate degree programs with the top three largest gaps are:

- Culinary Arts/Chef Training (gap of 1,913; median hourly wage \$15.95);
- Welding Technology/Welder (gap of 1,827; median hourly wage \$25.08); and
- Automobile/Automotive Mechanics Technology/Technician (gap of 1,638; median hourly wage \$20.28).

The transfer-track degree level program analysis identifies job opportunities within Lee's associate degree level programs but with job openings at the bachelor's degree level. Three programs have a significant gap above the 1,000-job level of significance, and none have a significant surplus of program completions. It is recommended that Lee continues to

facilitate the process by which students transfer into a bachelor's degree level program in the region. Such administrative and academic support measures enable student success beyond their time at the college. The transfer-track degree level programs with the three largest gaps are:

- Business Administration & Management, General (gap of 12,146; median hourly wage \$29.68);
- Registered Nursing/Registered Nurse (gap of 2,402; median hourly wage \$40.07); and
- Criminal Justice/Safety Studies (gap of 1,492; median hourly wage \$23.65).

A liberal arts program expansion is not recommended at this time, but Lee 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 the Lee College Service Area, and the college's liberal arts program serves as a starting point to students' future career goals.

DRAFT



New Program Additions

Thus far, the analysis has centered around programs offered by Lee. 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 each 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. Lee's administration will still need to undergo steps before deciding whether these programs would be a good fit for the college and the region. 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

Fifty 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 the Lee College Service Area (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 region for some. The most represented occupational group in the table are construction & extraction occupations (SOC 47-0000), with 17 occupations and about 92,920 jobs in the region in 2019. The second most represented occupation group is transportation & material moving and is followed by the production occupation group. Some of Lee's current offerings, such as its certificate level Construction Engineering Technology/Technician program, may already be teaching the skills needed for employment as one of the various construction & extraction occupations in the table. Therefore, one approach for adding programs at the certificate level is to build upon the college's current program offerings, using the table as a guide.

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

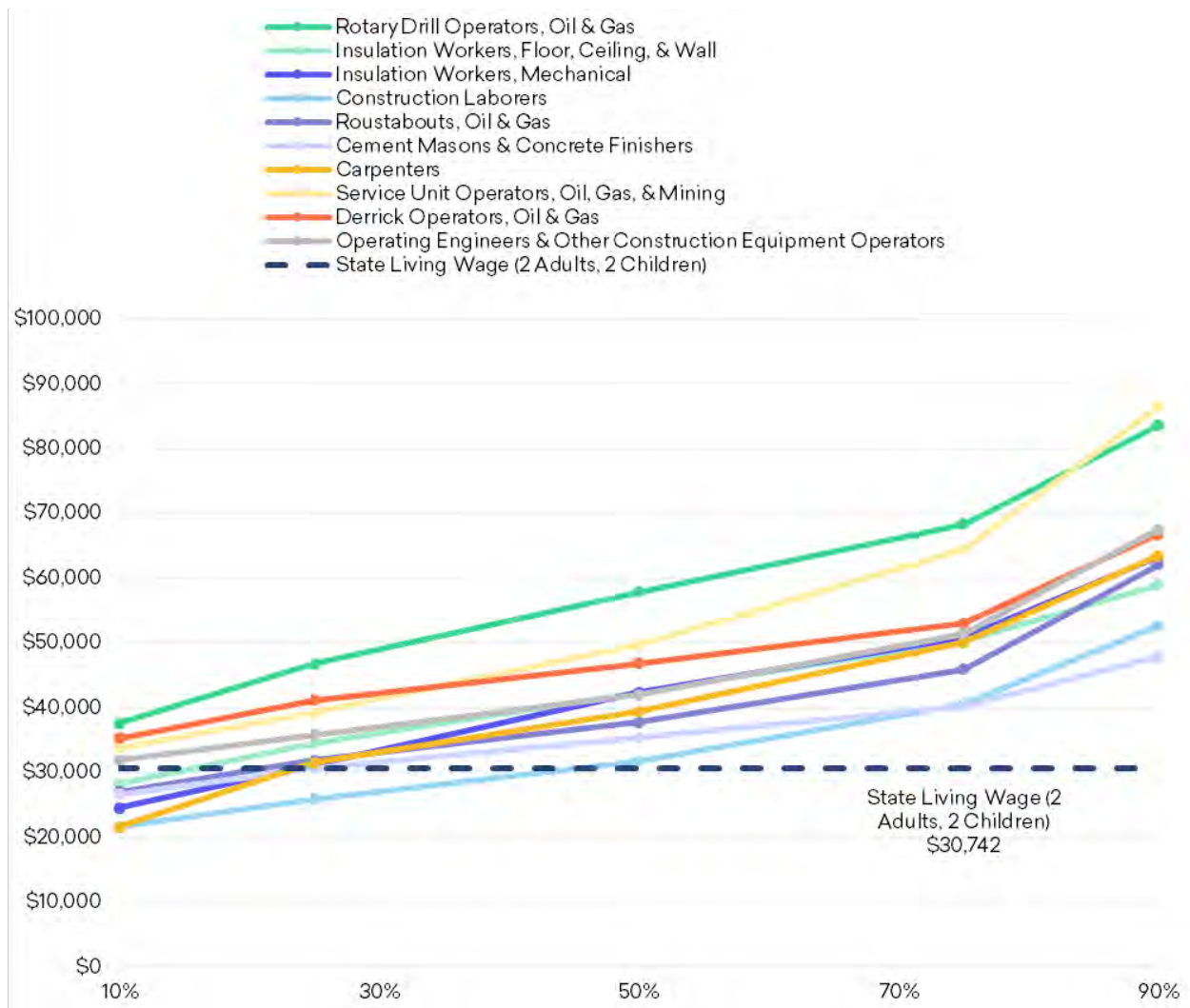
SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Construction Laborers	34,711	15.9%	2,814	0	2,814	\$15.29
Industrial Truck & Tractor Operators	15,861	4.9%	1,423	0	1,423	\$17.04
Carpenters	18,848	7.7%	1,401	3	1,399	\$18.94
Shipping, Receiving, & Traffic Clerks	12,835	0.3%	959	0	959	\$16.47
Operating Engineers & Other Construction Equipment Operators	8,645	16.1%	873	0	873	\$20.21
First-Line Supervisors of Production & Operating Workers	11,854	(0.9%)	777	1	776	\$33.35
Roustabouts, Oil & Gas	6,449	(3.2%)	629	3	626	\$18.15
First-Line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	7,847	7.8%	609	0	609	\$29.44
Service Unit Operators, Oil, Gas, & Mining	5,378	(6.3%)	547	3	544	\$23.95
Bus & Truck Mechanics & Diesel Engine Specialists	6,301	9.0%	463	13	450	\$23.80
Mobile Heavy Equipment Mechanics, Except Engines	5,175	7.7%	397	0	397	\$23.35
Cement Masons & Concrete Finishers	4,440	9.5%	321	0	321	\$17.03
Petroleum Pump System Operators, Refinery Operators, & Gaugers	3,890	(9.4%)	276	1	274	\$36.20
Aircraft Mechanics & Service Technicians	4,243	(7.4%)	257	0	257	\$29.13
Loan Interviewers & Clerks	3,919	10.0%	254	0	253	\$22.05
Rotary Drill Operators, Oil & Gas	2,360	(4.9%)	242	1	241	\$27.81
First-Line Supervisors of Housekeeping & Janitorial Workers	2,756	15.5%	239	1	238	\$15.28
Control & Valve Installers & Repairers, Except Mechanical Door	3,357	0.4%	217	0	217	\$20.74
Refuse & Recyclable Material Collectors	2,140	2.4%	214	0	214	\$16.50
Pharmacy Technicians	6,576	7.7%	344	144	200	\$16.81
Derrick Operators, Oil & Gas	1,814	(4.2%)	187	1	186	\$22.51
Coating, Painting, & Spraying Machine Setters, Operators, & Tenders	2,319	2.1%	182	0	182	\$18.29
Structural Metal Fabricators & Fitters	2,249	(11.3%)	175	1	174	\$21.79
Interviewers, Except Eligibility & Loan	1,865	19.9%	170	2	168	\$15.96
Sailors & Marine Oilers	1,822	(13.9%)	157	0	157	\$18.08
Insulation Workers, Floor, Ceiling, & Wall	1,992	(4.3%)	152	0	152	\$20.38
Couriers & Messengers	1,916	7.4%	148	0	148	\$15.02
Crane & Tower Operators	1,540	3.1%	145	0	145	\$25.28
Human Resources Assistants, Except Payroll & Timekeeping	2,304	0.8%	139	0	139	\$19.35



SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Wellhead Pumpers	1,743	(18.7%)	133	1	133	\$25.96
Excavating & Loading Machine & Dragline Operators	1,243	11.2%	127	0	127	\$18.37
Gas Plant Operators	1,830	(13.9%)	127	0	127	\$33.63
Weighers, Measurers, Checkers, & Samplers, Recordkeeping	1,539	4.9%	126	0	126	\$16.89
Mixing & Blending Machine Setters, Operators, & Tenders	1,508	(1.8%)	121	0	121	\$16.17
Insulation Workers, Mechanical	1,249	12.7%	114	0	114	\$20.36
Massage Therapists	2,916	18.3%	255	144	111	\$18.01
Court, Municipal, & License Clerks	2,118	7.5%	107	0	107	\$17.64
Elevator Installers & Repairers	906	26.7%	105	0	105	\$32.97
Water & Wastewater Treatment Plant & System Operators	1,559	3.5%	102	0	102	\$21.51
Hazardous Materials Removal Workers	1,038	8.7%	104	4	100	\$17.89
Boilermakers	1,297	3.0%	99	0	99	\$28.44
Brickmasons & Blockmasons	1,270	10.2%	86	0	86	\$22.17
Paving, Surfacing, & Tamping Equipment Operators	892	15.8%	80	0	80	\$18.53
Surgical Technologists	2,539	9.8%	128	51	77	\$26.47
Tile & Marble Setters	1,056	10.8%	74	0	74	\$17.13
Opticians, Dispensing	1,346	6.5%	74	0	74	\$16.59
Pump Operators, Except Wellhead Pumpers	854	(3.6%)	72	0	72	\$20.50
Psychiatric Technicians	1,488	(0.1%)	63	3	60	\$16.46
Glaziers	572	13.7%	57	0	57	\$16.97
Print Binding & Finishing Workers	527	(5.7%)	55	0	55	\$15.39

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

Figure 4.1: Percentile Wage Rates of Construction & Extraction Occupations Identified as New Certificate Program Opportunities



Seventeen construction & extraction occupations are identified as certificate level programmatic areas of opportunity. The figure includes the 10 occupations with the greatest number of regional jobs in 2019. Source: Employees & Self-Employed 2020.2.

The annual wage rates of the top 10 construction & extraction occupations in terms of regional jobs from Table 4.1 are shown in Figure 4.1, with an emphasis on low and high wage-earners. For those people in the Lee College Service Area employed as rotary drill operators, oil & gas, annual wage rates are the highest, except for service unit operators, oil, gas & mining at the 90th percentile. Notably, the difference between the lowest wage earners in the occupation (10th percentile) and the highest (90th percentile) is about \$64,910. The annual wage for all occupations depicted in Figure 4.1 surpasses the living wage in the region after the 50th percentile. Data on percentile wage rates highlight the occupations that should be incorporated into a new or existing Lee program, for the benefit of students first coming into the region's labor market or those looking to change career paths.

ADDITIONS AT THE ASSOCIATE DEGREE LEVEL

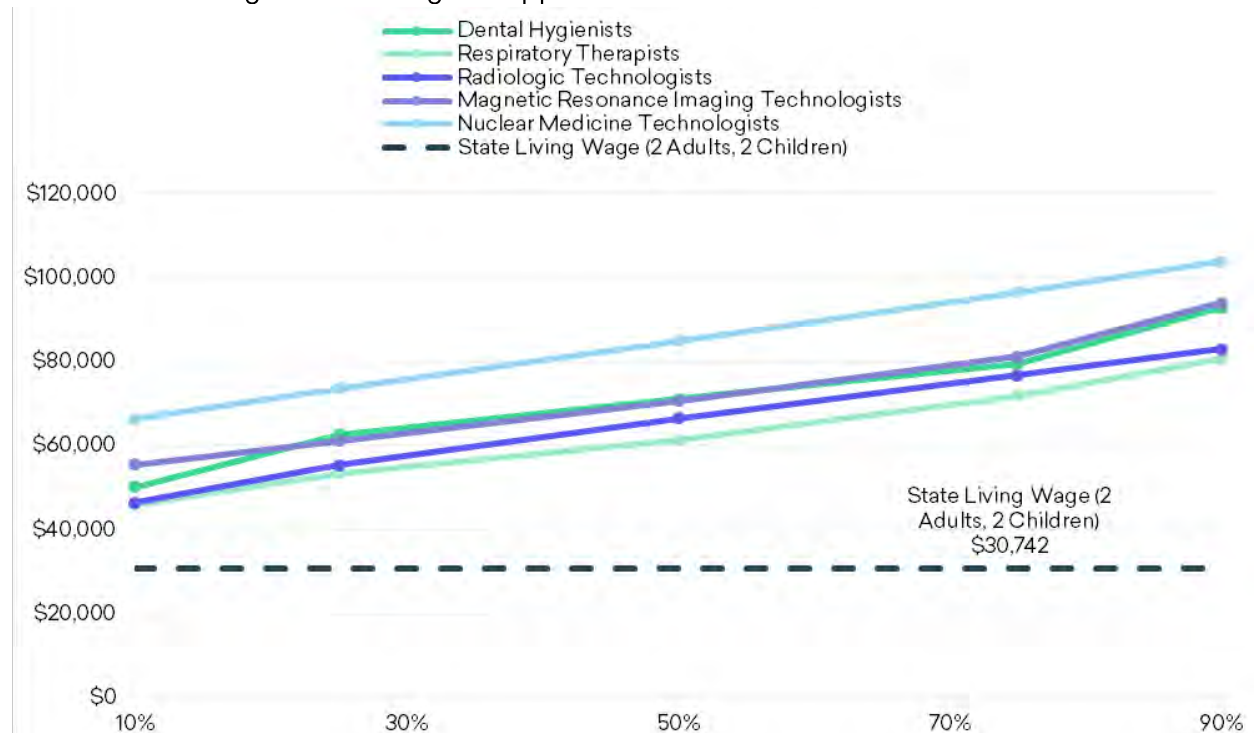
Fewer occupations, compared to the previous section, have been identified as associate degree level programmatic areas of opportunity (Table 4.2). There are not as many occupations that specifically require such an education, and most have been considered in the previous chapter's analysis. Of the seven occupations in the table, five are related to healthcare practitioners & technical occupations (SOC 29-0000), with about 9,140 jobs in the region. Similar to the program additions at the certificate level, Figure 4.2 shows that workers in the healthcare practitioners & technical occupations earn annual wages well above the living wage in the Lee College Service Area.

Table 4.2: Lee's Programmatic Areas of Opportunity at the Associate Degree Level

SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Dental Hygienists	2,108	23.1%	121	43	78	\$34.17
Respiratory Therapists	2,213	22.1%	119	65	54	\$29.44
Radiologic Technologists	3,684	13.3%	159	113	46	\$31.99
Magnetic Resonance Imaging Technologists	830	16.0%	35	0	35	\$33.95
Occupational Therapy Assistants	471	29.4%	49	33	16	\$34.96
Nuclear Medicine Technologists	306	12.6%	11	8	3	\$40.80
Morticians, Undertakers, & Funeral Directors	242	2.3%	18	48	(30)	\$39.66

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

Figure 4.2: Percentile Wage Rates of Healthcare Practitioners & Technical Occupations Identified as New Associate Degree Level Program Opportunities



Source: Employees & Self-Employed 2020.2.

ADDITIONS AT THE TRANSER-TRACK DEGREE LEVEL

As shown in Table 4.3, 50 occupations have been identified as transfer-track degree level programmatic areas of opportunity. The select occupations present unmet annual job openings within the Lee College Service Area (i.e. they have a gap), their median hourly wage rates are greater than \$20.00, 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 region for some. The most represented occupational group in the table are business & financial operations occupations (SOC 13-0000), with 13 occupations and about 40,890 jobs in the region in 2019. The second most represented occupation group is architecture & engineering and is followed by the sales & related occupation group. There are some transfer-track level programs currently offered at Lee that could be tangentially training for these occupations. For example, the Engineering Technology, General program may be teaching skills useful for employment in occupations such as civil engineers and mechanical engineers.

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

SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Postsecondary Teachers, General	19,286	16.8%	768	0	768	\$40.88
Insurance Sales Agents	12,383	12.3%	714	22	693	\$22.13
Securities, Commodities, & Financial Services Sales Agents	9,778	7.2%	649	52	597	\$25.85
Civil Engineers	8,678	5.9%	498	36	461	\$50.97
Buyers & Purchasing Agents	9,594	(4.3%)	478	23	456	\$29.27
Real Estate Sales Agents	9,136	5.4%	489	45	445	\$29.52
Production, Planning, & Expediting Clerks	7,984	4.0%	413	0	413	\$23.66
Financial Analysts	7,844	6.2%	489	83	406	\$43.22
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	6,066	2.0%	341	8	333	\$39.01
First-Line Supervisors of Non-Retail Sales Workers	7,287	2.2%	316	8	308	\$33.53
Mechanical Engineers	7,296	2.1%	361	59	302	\$47.88
Training & Development Specialists	5,101	10.3%	306	20	286	\$32.93
Flight Attendants	4,573	(8.6%)	250	4	246	\$27.77
Personal Financial Advisors	3,666	16.4%	245	15	230	\$38.90
Sales Engineers	2,753	(1.3%)	231	3	229	\$50.92
Administrative Services Managers	5,320	10.0%	250	31	219	\$46.75
Property, Real Estate, & Community Association Managers	4,896	10.7%	210	0	210	\$31.09
Industrial Engineers	4,252	6.0%	227	18	209	\$57.17
Airline Pilots, Copilots, & Flight Engineers	2,815	(8.4%)	192	3	190	\$92.87
Directors, Religious Activities & Education	2,348	15.0%	194	13	182	\$40.52
Education Administrators, Elementary & Secondary School	4,573	13.1%	182	1	181	\$41.81
Loan Officers	3,072	10.8%	168	18	150	\$38.21
Claims Adjusters, Examiners, & Investigators	3,173	(1.0%)	158	18	140	\$35.23
Instructional Coordinators	2,863	13.7%	139	0	139	\$33.44
Electrical Engineers	3,651	7.2%	165	31	134	\$49.00
Physical Therapist Assistants	994	32.3%	120	0	120	\$35.37
Advertising Sales Agents	1,534	(6.6%)	127	9	118	\$23.23
Special Education Teachers, Secondary School	2,453	10.6%	109	1	107	\$29.13
Meeting, Convention, & Event Planners	1,558	15.3%	129	23	106	\$26.39

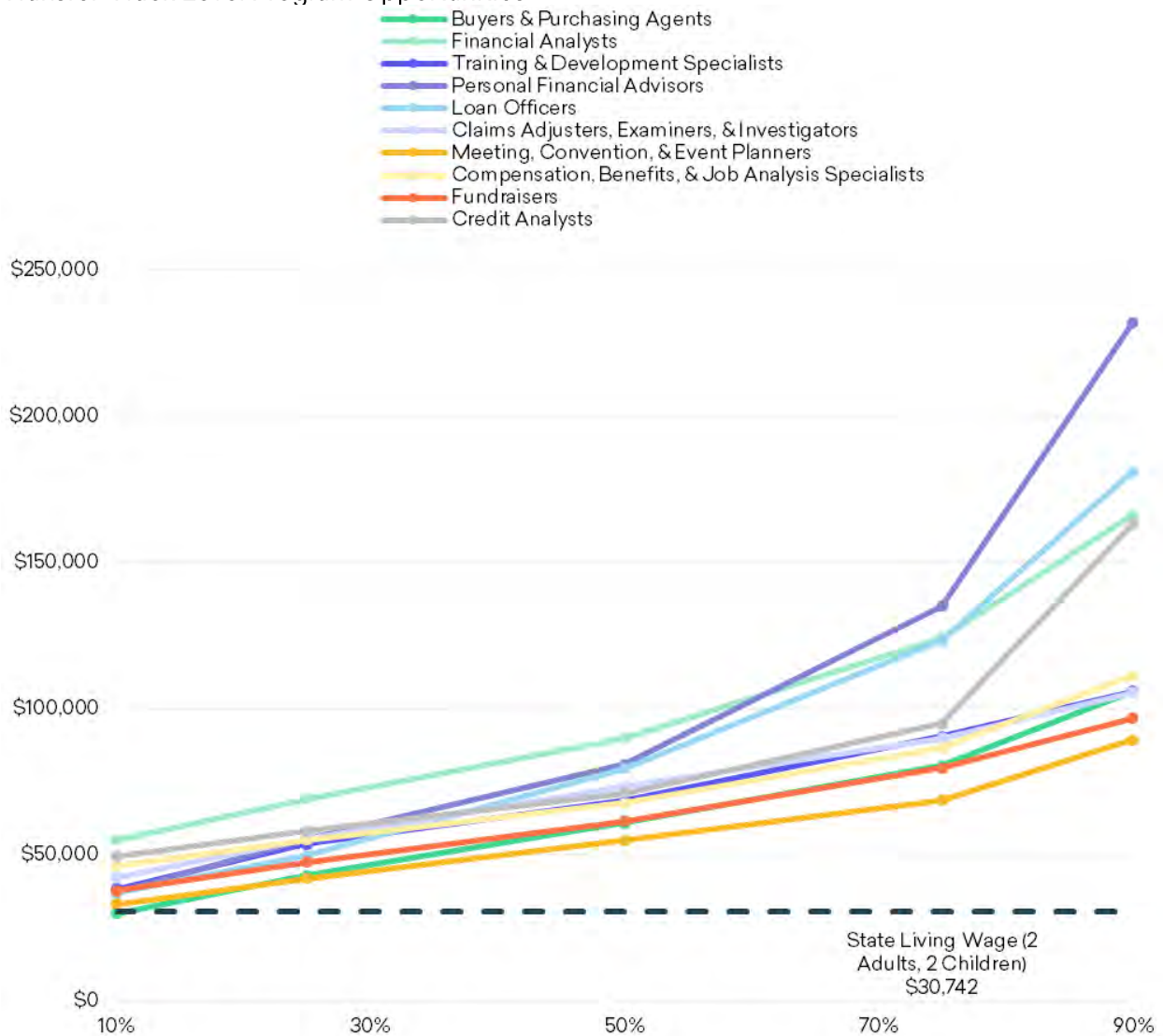


SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Special Education Teachers, Kindergarten & Elementary School	2,201	13.5%	102	1	100	\$28.80
Real Estate Brokers	1,583	7.2%	87	0	87	\$34.19
Compensation, Benefits, & Job Analysis Specialists	1,092	12.7%	75	1	74	\$32.62
Fundraisers	1,375	17.0%	101	29	72	\$29.62
Commercial Pilots	1,105	(23.6%)	70	0	70	\$45.32
Career/Technical Education Teachers, Secondary School	1,446	9.0%	69	0	69	\$29.38
Interior Designers	1,173	6.8%	88	21	66	\$25.63
Credit Analysts	1,251	7.1%	87	22	65	\$34.22
Insurance Underwriters	1,120	3.4%	69	7	63	\$30.91
Appraisers & Assessors of Real Estate	1,241	6.0%	66	5	61	\$28.59
Aerospace Engineers	2,191	(0.2%)	87	28	59	\$62.76
Health & Safety Engineers, Except Mining Safety Engineers & Inspectors	1,114	1.0%	55	0	55	\$46.59
Special Education Teachers, Middle School	1,177	12.1%	53	1	53	\$28.58
Education Administrators, Postsecondary	1,166	21.9%	52	0	52	\$47.01
Budget Analysts	799	6.7%	40	11	29	\$39.61
Lodging Managers	543	12.9%	33	6	27	\$26.39
Materials Engineers	808	(1.7%)	33	6	27	\$47.50
Radiation Therapists	557	7.5%	27	3	24	\$42.55
Computer Hardware Engineers	532	5.3%	24	1	23	\$53.35
Cartographers & Photogrammetrists	417	5.5%	24	1	23	\$30.77
Marine Engineers & Naval Architects	490	4.6%	22	0	22	\$42.94

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



Figure 4.3: Percentile Wage Rates of Business & Financial Operations Occupations Identified as New Transfer-Track Level Program Opportunities



Thirteen business & financial operations occupations are identified as transfer-track level programmatic areas of opportunity. The figure includes the 10 occupations with the greatest number of regional jobs in 2019.

Source: Employees & Self-Employed 2020.2.

SUMMARY

Fifty certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, many of which are related to construction & extraction occupations. At the associate degree level, there are fewer opportunities for new programs, considering the college's current offerings. Nonetheless, Lee should consider new programs related to healthcare practitioners & technical occupations, whether its focus is on job openings in the Lee College Service Area or Texas. Fifty transfer-track degree level programmatic areas of

opportunity were identified in the program demand gap analysis, many of which are related to business & financial operations occupations. 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 region's current and projected labor market demand.

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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 region'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.

Tables A2.1 to A2.3 show job postings for three occupations found throughout this report, selected because the occupations' titles are not helpful in a program's development. Note that the tables identify job postings using the SOC-O*NET²³ system. LMI data are not available at the SOC-O*NET level, but Emsi's job posting database has the ability for such searches. The tables also include data on unique job postings and posting intensity. Posting intensity is the ratio between total and unique job postings and can be seen as an indication of the intensity or effort by the poster to advertise and fill the position in question. The largest job poster is also identified (for non-staffing companies), as well as the number of total and unique job postings by the company for the O*NET occupation. Job postings include advertisements using Emsi's Employees & Self-Employed 2020.2 data run.

23 O*NET refers to Occupational Information Network. Based on the SOC, the O*NET-SOC taxonomy currently includes 974 occupations, developed under the sponsorship of the U.S. Department of Labor's Employment & Training Administration through a grant to the North Carolina Department of Commerce.

Table A2.1: Job Postings in the U.S. for Computer Occupations, All Other

O*NET CODE	O*NET TITLE	UNIQUE POSTINGS	% TOTAL	POSTING INTENSITY	TOP COMPANY (TOTAL/UNIQUE)
15-1199.09	Information Technology Project Managers	3,733	41.5%	6:1	Deloitte LLP (1343 / 191)
15-1199.02	Computer Systems Engineers/Architects	3,361	37.3%	6:1	International Business Machines Corporation (IBM) (2151 / 247)
15-1199.01	Software Quality Assurance Engineers and Testers	1,355	15.0%	4:1	Cynet Systems Inc. (48 / 25)
15-1199.08	Business Intelligence Analysts	208	2.3%	5:1	Robert Half International Inc. (37 / 8)
15-1199.05	Geographic Information Systems Technicians	118	1.3%	5:1	Aecom (31 / 5)
15-1199.10	Search Marketing Strategists	92	1.0%	4:1	Freelancer (18 / 14)
15-1199.12	Document Management Specialists	67	0.7%	5:1	Kelly Services, Inc. (97 / 13)
15-1199.06	Database Architects	32	0.4%	5:1	Cynet Systems Inc. (3 / 3)
15-1199.03	Web Administrators	24	0.3%	3:1	Confidential (11 / 3)
15-1199.04	Geospatial Information Scientists and Technologists	11	0.1%	7:1	BP PLC (28 / 2)
15-1199.00	Computer Occupations, All Other	2	<0.1%	5:1	Analytical Mechanics Associates, Inc. (8 / 1)
15-1199.11	Video Game Designers	1	<0.1%	1:1	Comrise Technology Inc. (2 / 1)

Source: Emsi Job Posting Analytics to National Center for O*NET Development, O*NET OnLine.

Table A2.2: Job Postings in the U.S. for Managers, All Other

O*NET CODE	O*NET TITLE	UNIQUE POSTINGS	% TOTAL	POSTING INTENSITY	TOP COMPANY (TOTAL/UNIQUE)
11-9199.00	Managers, All Other	4,628	81.0%	5:1	University of Texas M D Anderson Cancer Center (533 / 55)
11-9199.04	Supply Chain Managers	559	9.8%	6:1	Deloitte LLP (931 / 103)
11-9199.02	Compliance Managers	340	6.0%	4:1	Anthem, Inc. (121 / 27)
11-9199.01	Regulatory Affairs Managers	83	1.5%	4:1	SUEZ (66 / 10)
11-9199.08	Loss Prevention Managers	32	0.6%	4:1	Marriott International, Inc. (19 / 5)
11-9199.07	Security Managers	26	0.5%	3:1	Memorial Hermann Health System (13 / 6)
11-9199.10	Wind Energy Project Managers	22	0.4%	5:1	Ivy Exec (34 / 4)
11-9199.09	Wind Energy Operations Managers	11	0.2%	6:1	General Electric Company (48 / 7)
11-9199.03	Investment Fund Managers	10	0.2%	3:1	Hines Interests Limited Partnership (18 / 4)

Source: Emsi Job Posting Analytics to National Center for O*NET Development, O*NET OnLine.

Table A2.3: Job Postings in the U.S. for Business Operations Specialists, All Other

O*NET CODE	O*NET TITLE	UNIQUE POSTINGS	% TOTAL	POSTING INTENSITY	TOP COMPANY (TOTAL/UNIQUE)
13-1199.00	Business Operations Specialists, All Other	3,861	95.5%	5:1	Deloitte LLP (775 / 127)
13-1199.03	Customs Brokers	62	1.5%	4:1	C.H. Robinson Worldwide, Inc. (35 / 7)
13-1199.01	Energy Auditors	35	0.9%	2:1	Just Energy Group Inc (13 / 4)
13-1199.04	Business Continuity Planners	32	0.8%	5:1	Harris County Mud (14 / 3)
13-1199.05	Sustainability Specialists	22	0.5%	3:1	Waste Management, Inc. (13 / 4)
13-1199.06	Online Merchants	20	0.5%	5:1	Zones, Inc. (17 / 5)
13-1199.02	Security Management Specialists	12	0.3%	5:1	The Home Depot (4 / 4)

Source: Emsi Job Posting Analytics to National Center for O*NET Development, O*NET OnLine.

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APPENDIX 3: Economic Overview Tables

INDUSTRY COMPOSITION

Table A3.1: Current and Projected Jobs by Industry Subsector in the Lee College Service Area, 2019 and 2029

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
541	Professional, Scientific, & Technical Services	213,459	238,709	25,250	11.8%
903	Local Government	207,237	221,567	14,330	6.9%
722	Food Services & Drinking Places	199,517	237,348	37,830	19.0%
561	Administrative & Support Services	187,633	197,017	9,384	5.0%
621	Ambulatory Health Care Services	132,540	169,756	37,216	28.1%
238	Specialty Trade Contractors	121,620	136,011	14,391	11.8%
423	Merchant Wholesalers, Durable Goods	89,596	94,489	4,893	5.5%
622	Hospitals	74,900	83,352	8,452	11.3%
902	State Government	63,088	69,943	6,855	10.9%
611	Educational Services	59,246	71,883	12,637	21.3%
236	Construction of Buildings	51,631	54,754	3,123	6.0%
445	Food & Beverage Stores	46,835	45,896	(939)	(2.0%)
332	Fabricated Metal Product Manufacturing	46,480	46,472	(8)	(0.0%)
624	Social Assistance	45,553	56,924	11,371	25.0%
424	Merchant Wholesalers, Nondurable Goods	42,815	45,341	2,526	5.9%
531	Real Estate	42,624	46,864	4,240	9.9%
237	Heavy & Civil Engineering Construction	40,955	49,519	8,563	20.9%
551	Management of Companies & Enterprises	39,701	49,839	10,138	25.5%
333	Machinery Manufacturing	39,653	36,081	(3,572)	(9.0%)
452	General Merchandise Stores	39,310	36,819	(2,491)	(6.3%)
812	Personal & Laundry Services	38,128	42,372	4,244	11.1%
901	Federal Government	36,688	37,837	1,149	3.1%
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	36,423	40,407	3,984	10.9%
811	Repair & Maintenance	36,078	39,528	3,451	9.6%
441	Motor Vehicle & Parts Dealers	34,324	36,698	2,374	6.9%
211	Oil & Gas Extraction	34,122	24,892	(9,230)	0.0%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
522	Credit Intermediation & Related Activities	33,804	33,132	(672)	(2.0%)
524	Insurance Carriers & Related Activities	33,665	36,116	2,450	7.3%
213	Support Activities for Mining	32,632	32,486	(146)	(0.4%)
484	Truck Transportation	30,193	34,218	4,025	13.3%
488	Support Activities for Transportation	29,425	30,652	1,227	4.2%
325	Chemical Manufacturing	26,963	25,029	(1,934)	(7.2%)
814	Private Households	24,867	26,483	1,616	6.5%
448	Clothing & Clothing Accessories Stores	23,241	20,876	(2,365)	(10.2%)
721	Accommodation	22,641	25,328	2,687	11.9%
623	Nursing & Residential Care Facilities	22,391	26,254	3,863	17.3%
481	Air Transportation	19,524	16,467	(3,057)	(15.7%)
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	19,003	21,685	2,682	14.1%
713	Amusement, Gambling, & Recreation Industries	17,698	20,468	2,770	15.7%
532	Rental & Leasing Services	17,101	19,206	2,105	12.3%
444	Building Material & Garden Equipment & Supplies Dealers	15,544	15,960	416	2.7%
493	Warehousing & Storage	15,320	18,966	3,646	23.8%
221	Utilities	14,984	15,783	799	5.3%
446	Health & Personal Care Stores	13,276	13,851	575	4.3%
517	Telecommunications	12,086	10,128	(1,958)	(16.2%)
447	Gasoline Stations	11,539	13,809	2,270	19.7%
453	Miscellaneous Store Retailers	11,393	10,709	(684)	(6.0%)
486	Pipeline Transportation	10,932	10,706	(226)	(2.1%)
334	Computer & Electronic Product Manufacturing	10,689	6,386	(4,303)	(40.3%)
492	Couriers & Messengers	10,312	11,279	967	9.4%
711	Performing Arts, Spectator Sports, & Related Industries	10,064	10,848	784	7.8%
443	Electronics & Appliance Stores	9,302	9,117	(184)	(2.0%)
311	Food Manufacturing	9,152	9,257	105	1.1%
562	Waste Management & Remediation Services	9,142	9,348	206	2.2%
425	Wholesale Electronic Markets & Agents & Brokers	8,485	4,966	(3,518)	(41.5%)
442	Furniture & Home Furnishings Stores	8,410	8,375	(36)	(0.4%)
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	7,911	7,697	(214)	(2.7%)
326	Plastics & Rubber Products Manufacturing	7,564	6,397	(1,168)	(15.4%)
324	Petroleum & Coal Products Manufacturing	6,871	5,873	(998)	(14.5%)

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
485	Transit & Ground Passenger Transportation	6,300	7,624	1,324	21.0%
339	Miscellaneous Manufacturing	6,102	6,007	(95)	(1.6%)
511	Publishing Industries (except Internet)	6,042	6,008	(34)	(0.6%)
335	Electrical Equipment, Appliance, & Component Manufacturing	5,014	4,363	(651)	(13.0%)
336	Transportation Equipment Manufacturing	4,835	4,297	(538)	(11.1%)
327	Nonmetallic Mineral Product Manufacturing	4,620	4,745	125	2.7%
323	Printing & Related Support Activities	4,595	4,150	(445)	(9.7%)
454	Nonstore Retailers	3,878	3,834	(44)	(1.1%)
331	Primary Metal Manufacturing	3,805	3,936	130	3.4%
512	Motion Picture & Sound Recording Industries	3,615	3,950	335	9.3%
483	Water Transportation	3,418	2,474	(944)	0.0%
312	Beverage & Tobacco Product Manufacturing	3,376	3,642	266	7.9%
321	Wood Product Manufacturing	2,935	2,986	51	1.7%
518	Data Processing, Hosting, & Related Services	2,856	2,253	(603)	(21.1%)
712	Museums, Historical Sites, & Similar Institutions	2,746	3,177	430	15.7%
515	Broadcasting (except Internet)	2,487	2,058	(429)	(17.2%)
482	Rail Transportation	2,292	2,369	77	3.4%
337	Furniture & Related Product Manufacturing	2,241	1,979	(262)	(11.7%)
322	Paper Manufacturing	1,330	1,381	51	3.8%
314	Textile Product Mills	1,230	1,201	(29)	(2.3%)
212	Mining (except Oil & Gas)	1,089	1,311	222	20.4%
111	Crop Production	977	1,056	79	8.1%
115	Support Activities for Agriculture & Forestry	922	1,062	140	15.2%
519	Other Information Services	896	869	(27)	(3.0%)
112	Animal Production & Aquaculture	804	889	85	10.6%
315	Apparel Manufacturing	677	748	72	10.6%
491	Postal Service	522	689	167	32.0%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	421	488	68	16.1%
525	Funds, Trusts, & Other Financial Vehicles	286	238	(48)	(16.7%)
316	Leather & Allied Product Manufacturing	283	442	159	56.1%
313	Textile Mills	257	314	57	22.1%
521	Monetary Authorities-Central Bank	249	267	18	0.0%
114	Fishing, Hunting & Trapping	188	213	25	13.0%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
113	Forestry & Logging	110	74	(37)	(33.2%)
487	Scenic & Sightseeing Transportation	98	135	36	37.0%
TOTAL		2,637,776	2,859,402	221,625	8.4%

Source: Employees & Self-Employed 2020.2.

Table A3.2: Employment Concentration (LQ) by Industry Subsector in the Lee College Service Area, 2019 and 2029

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
211	Oil & Gas Extraction	14.74	11.58
486	Pipeline Transportation	13.51	12.25
213	Support Activities for Mining	5.68	4.65
324	Petroleum & Coal Products Manufacturing	3.77	3.32
483	Water Transportation	3.19	2.32
481	Air Transportation	2.40	1.86
488	Support Activities for Transportation	2.32	2.16
237	Heavy & Civil Engineering Construction	2.28	2.35
491	Postal Service	2.22	2.12
333	Machinery Manufacturing	2.18	2.00
325	Chemical Manufacturing	1.97	1.80
332	Fabricated Metal Product Manufacturing	1.93	1.89
532	Rental & Leasing Services	1.83	1.93
814	Private Households	1.79	1.88
423	Merchant Wholesalers, Durable Goods	1.72	1.78
221	Utilities	1.68	1.74
236	Construction of Buildings	1.47	1.39
811	Repair & Maintenance	1.32	1.39
238	Specialty Trade Contractors	1.25	1.26
562	Waste Management & Remediation Services	1.24	1.12
541	Professional, Scientific, & Technical Services	1.22	1.19
424	Merchant Wholesalers, Nondurable Goods	1.21	1.25
531	Real Estate	1.21	1.23
561	Administrative & Support Services	1.20	1.17
443	Electronics & Appliance Stores	1.17	1.26

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	1.15	1.23
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	1.13	1.36
525	Funds, Trusts, & Other Financial Vehicles	1.11	0.73
484	Truck Transportation	1.08	1.15
812	Personal & Laundry Services	1.06	1.08
448	Clothing & Clothing Accessories Stores	1.05	1.07
551	Management of Companies & Enterprises	1.04	1.20
442	Furniture & Home Furnishings Stores	1.04	0.99
722	Food Services & Drinking Places	1.03	1.07
441	Motor Vehicle & Parts Dealers	1.03	1.05
621	Ambulatory Health Care Services	1.03	1.04
517	Telecommunications	1.02	1.01
712	Museums, Historical Sites, & Similar Institutions	0.98	0.99
425	Wholesale Electronic Markets & Agents & Brokers	0.97	0.57
445	Food & Beverage Stores	0.94	0.90
622	Hospitals	0.92	0.94
903	Local Government	0.90	0.93
611	Educational Services	0.87	0.92
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	0.83	0.86
452	General Merchandise Stores	0.81	0.75
493	Warehousing & Storage	0.79	0.80
522	Credit Intermediation & Related Activities	0.79	0.75
521	Monetary Authorities-Central Bank	0.78	0.81
335	Electrical Equipment, Appliance, & Component Manufacturing	0.78	0.67
492	Couriers & Messengers	0.77	0.77
446	Health & Personal Care Stores	0.77	0.76
447	Gasoline Stations	0.76	0.86
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	0.76	0.80
902	State Government	0.73	0.78
524	Insurance Carriers & Related Activities	0.73	0.73
312	Beverage & Tobacco Product Manufacturing	0.73	0.71
444	Building Material & Garden Equipment & Supplies Dealers	0.73	0.71
453	Miscellaneous Store Retailers	0.73	0.69



NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
711	Performing Arts, Spectator Sports, & Related Industries	0.72	0.72
721	Accommodation	0.68	0.74
327	Nonmetallic Mineral Product Manufacturing	0.67	0.70
323	Printing & Related Support Activities	0.65	0.69
482	Rail Transportation	0.64	0.64
326	Plastics & Rubber Products Manufacturing	0.64	0.55
624	Social Assistance	0.63	0.65
314	Textile Product Mills	0.62	0.65
334	Computer & Electronic Product Manufacturing	0.62	0.40
331	Primary Metal Manufacturing	0.61	0.67
713	Amusement, Gambling, & Recreation Industries	0.60	0.63
316	Leather & Allied Product Manufacturing	0.59	0.98
339	Miscellaneous Manufacturing	0.58	0.56
515	Broadcasting (except Internet)	0.56	0.48
485	Transit & Ground Passenger Transportation	0.54	0.54
518	Data Processing, Hosting, & Related Services	0.52	0.33
901	Federal Government	0.48	0.49
511	Publishing Industries (except Internet)	0.48	0.46
512	Motion Picture & Sound Recording Industries	0.44	0.45
321	Wood Product Manufacturing	0.43	0.43
623	Nursing & Residential Care Facilities	0.41	0.43
114	Fishing, Hunting & Trapping	0.36	0.44
212	Mining (except Oil & Gas)	0.35	0.40
311	Food Manufacturing	0.35	0.33
315	Apparel Manufacturing	0.34	0.52
337	Furniture & Related Product Manufacturing	0.34	0.30
454	Nonstore Retailers	0.33	0.26
322	Paper Manufacturing	0.23	0.25
336	Transportation Equipment Manufacturing	0.17	0.15
487	Scenic & Sightseeing Transportation	0.16	0.19
519	Other Information Services	0.16	0.12
313	Textile Mills	0.14	0.21
112	Animal Production & Aquaculture	0.12	0.13



NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
115	Support Activities for Agriculture & Forestry	0.10	0.10
113	Forestry & Logging	0.09	0.07
111	Crop Production	0.08	0.08

Source: Employees & Self-Employed 2020.2.

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 the Lee College Service Area for the Top 25 Occupations Related to the Merchant Wholesalers, Durable Goods Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	12,276	13,090	3,052	13.7%	\$33.05	BACH
Laborers and Freight, Stock, and Material Movers, Hand	5,387	5,842	6,619	6.0%	\$13.05	HS/GED
Customer Service Representatives	3,644	3,635	6,382	4.1%	\$16.26	CERT
General and Operations Managers	3,638	3,914	4,357	4.1%	\$55.27	BACH
Office Clerks, General	3,415	3,366	8,220	3.8%	\$17.77	CERT
Shipping, Receiving, and Traffic Clerks	2,755	2,845	1,308	3.1%	\$16.47	HS/GED
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	2,363	2,584	666	2.6%	\$39.01	BACH
Stock Clerks and Order Fillers	2,274	2,457	4,165	2.5%	\$12.77	HS/GED
Heavy and Tractor-Trailer Truck Drivers	2,105	2,264	5,337	2.3%	\$20.68	HS/GED
Bookkeeping, Accounting, and Auditing Clerks	2,044	2,028	3,539	2.3%	\$20.49	CERT
Mobile Heavy Equipment Mechanics, Except Engines	1,993	2,048	582	2.2%	\$23.35	HS/GED
Industrial Truck and Tractor Operators	1,925	2,050	1,923	2.1%	\$17.04	HS/GED

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Industrial Machinery Mechanics	1,811	1,869	1,034	2.0%	\$28.94	HS/GED
Light Truck or Delivery Services Drivers	1,784	1,925	1,825	2.0%	\$16.03	HS/GED
First-Line Supervisors of Non-Retail Sales Workers	1,653	1,675	730	1.8%	\$33.53	BACH
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1,334	1,278	4,430	1.5%	\$17.58	CERT
Buyers and Purchasing Agents	1,307	1,293	929	1.5%	\$29.27	BACH
First-Line Supervisors of Office and Administrative Support Workers	1,287	1,325	2,563	1.4%	\$28.19	BACH
Parts Salespersons	1,067	1,127	521	1.2%	\$13.22	HS/GED
Accountants and Auditors	1,052	1,128	3,124	1.2%	\$37.36	BACH
Order Clerks	1,041	1,029	416	1.2%	\$19.72	CERT
Sales Managers	1,031	1,122	641	1.2%	\$66.18	BACH
Sales Engineers	960	1,022	303	1.1%	\$50.92	BACH
Assemblers and Fabricators, All Other, Including Team Assemblers	951	871	1,446	1.1%	\$13.67	HS/GED
Bus and Truck Mechanics and Diesel Engine Specialists	936	1,009	673	1.0%	\$23.80	HS/GED

Source: Employees & Self-Employed 2020.2.

Table A3.4: Employment Projections in the Lee College Service Area for the Top 25 Occupations Related to the Fabricated Metal Product Manufacturing Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Welders, Cutters, Solderers, and Brazers	4,738	4,946	1,834	10.2%	\$23.42	HS/GED
Machinists	3,619	3,817	963	7.8%	\$24.25	HS/GED
First-Line Supervisors of Production and Operating Workers	2,067	2,145	1,225	4.4%	\$33.35	HS/GED
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	1,930	1,830	407	4.2%	\$16.08	HS/GED
Assemblers and Fabricators, All Other, Including Team Assemblers	1,920	1,682	1,446	4.1%	\$13.67	HS/GED
Inspectors, Testers, Sorters, Samplers, and Weighers	1,891	1,636	1,743	4.1%	\$19.55	HS/GED
Computer-Controlled Machine Tool Operators, Metal and Plastic	1,796	1,723	344	3.9%	\$20.13	HS/GED
Helpers--Production Workers	1,404	1,461	1,593	3.0%	\$14.13	HS/GED
Structural Metal Fabricators and Fitters	1,295	1,145	226	2.8%	\$21.79	HS/GED
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	1,178	1,228	265	2.5%	\$18.29	HS/GED

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
General and Operations Managers	983	1,030	4,357	2.1%	\$55.27	BACH
Shipping, Receiving, and Traffic Clerks	981	971	1,308	2.1%	\$16.47	HS/GED
Laborers and Freight, Stock, and Material Movers, Hand	901	936	6,619	1.9%	\$13.05	HS/GED
Office Clerks, General	874	842	8,220	1.9%	\$17.77	CERT
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	862	894	3,052	1.9%	\$33.05	BACH
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	861	882	288	1.9%	\$15.28	HS/GED
Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	801	771	96	1.7%	\$14.12	HS/GED
Sheet Metal Workers	641	695	295	1.4%	\$19.96	HS/GED
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	595	569	119	1.3%	\$15.19	HS/GED
Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	568	541	95	1.2%	\$16.85	HS/GED
Maintenance and Repair Workers, General	531	551	2,746	1.1%	\$18.54	HS/GED
Industrial Truck and Tractor Operators	513	526	1,923	1.1%	\$17.04	HS/GED
Industrial Machinery Mechanics	502	548	1,034	1.1%	\$28.94	HS/GED
Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	501	466	99	1.1%	\$17.32	HS/GED
Industrial Production Managers	484	503	224	1.0%	\$57.14	BACH

Source: Employees & Self-Employed 2020.2.

WORKFORCE COMMUTING PATTERNS

Table A3.5: Lee College Service Area Job Inflow and Outflow

COMMUTING PATTERN	JOBS	COMMUTE SHARE
EMPLOYMENT PATTERNS		
Employed in the Lee College Service Area	2,218,420	100%
Employed in the Lee College Service Area but living outside	751,320	34%
Employed and living in the Lee College Service Area	1,467,110	66%
RESIDENTIAL PATTERNS		
Living in the Lee College Service Area	1,857,520	100%
Living in the Lee College Service Area but employed outside	390,410	21%
Living and employed in the Lee College Service Area	1,467,110	79%

Source: Census Bureau, Center for Economic Studies.

EDUCATIONAL ATTAINMENT

Table A3.6: Highest Educational Attainments of Adults in the Lee College Service Area

EDUCATION LEVEL	2019 ADULTS	2019 % ADULTS	2019 ADULTS	2019 % ADULTS	CHANGE
Less than high school diploma or equivalent	580,964	20%	654,131	21%	73,166
High school diploma or equivalent	676,575	23%	754,875	24%	78,300
Some college	594,453	21%	638,446	20%	43,993
Associate degree	174,775	6%	195,306	6%	20,531
Bachelor's degree	547,333	19%	577,966	18%	30,633
Graduate degree or higher	307,716	11%	324,432	10%	16,716
TOTAL	2,881,817	100%	3,145,155	100%	263,337

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

Table A3.7: Highest Educational Attainments of Adults in the Lee College Service Area by Gender

EDUCATION LEVEL	ADULT MALES	% ADULT MALES	ADULT FEMALES	% ADULT FEMALES
Less than high school diploma or equivalent	337,111	21.9%	317,020	19.8%
High school diploma or equivalent	373,073	24.2%	381,802	23.8%
Some college	294,665	19.1%	343,781	21.4%
Associate degree	89,310	5.8%	105,996	6.6%
Bachelor's degree	280,616	18.2%	297,349	18.5%
Graduate degree and higher	165,286	10.7%	159,146	9.9%
TOTAL	1,540,061	100%	1,605,093	100%

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

Table A3.8: Highest Educational Attainments of Adults in the Lee College Service Area by Major Race and Ethnic Groups

GROUP		<HS	HS	SOME COLLEGE	ASSOC	BACH	>BACH
White, non-Hispanic	Adults	55,942	215,406	249,069	71,610	312,383	170,213
	% Adults	5%	20%	23%	7%	29%	16%
Black, non-Hispanic	Adults	66,664	171,810	169,033	46,043	89,438	44,211
	% Adults	11%	29%	29%	8%	15%	8%
American Indian or Alaskan native, non-Hispanic	Adults	1,885	1,808	1,311	443	734	475
	% Adults	28%	27%	20%	7%	11%	7%
Asian, non-Hispanic	Adults	34,591	38,629	27,614	17,522	81,185	52,592
	% Adults	14%	15%	11%	7%	32%	21%
Native Hawaiian or Pacific Islander, non-Hispanic	Adults	241	560	311	122	379	63
	% Adults	14%	33%	19%	7%	23%	4%
Two or more races, non-Hispanic	Adults	4,955	5,736	7,076	2,656	6,655	3,726
	% Adults	16%	19%	23%	9%	22%	12%
Hispanic, all types	Adults	489,852	320,927	184,032	56,910	87,192	53,152
	% Adults	41%	27%	15%	5%	7%	4%

Source: Emsi demographics data and the 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
01.0601	Applied Horticulture/Horticulture Operations, General	11-9013	Farmers, Ranchers, & Other Agricultural Managers	54	34	33
		27-1023	Floral Designers	30	27	60
		37-1012	First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	55	34	25
		37-3011	Landscaping & Groundskeeping Workers	57	26	9
		37-3012	Pesticide Handlers, Sprayers, & Applicators, Vegetation	55	27	12
		37-3013	Tree Trimmers & Pruners	56	25	9
		45-1011	First-Line Supervisors of Farming, Fishing, & Forestry Workers	49	28	22
		45-2092	Farmworkers & Laborers, Crop, Nursery, & Greenhouse	42	20	9
03.0103	Environmental Studies	11-2021	Marketing Managers	18	18	66
		11-2022	Sales Managers	21	21	64
		11-9199	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

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		13-1199	Business Operations Specialists, All Other	28	25	52
		15-1199	Computer Occupations, All Other	40	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
		19-4091	Environmental Science & Protection Technicians, Including Health	44	40	45
		21-1093	Social & Human Service Assistants	37	34	49
		23-1011	Lawyers	1	1	7
		29-9011	Occupational Health & Safety Specialists	29	23	49
		41-2031	Retail Salespersons	70	49	22
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39
04.0201	Architecture	11-9041	Architectural & Engineering Managers	7	9	59
		17-1011	Architects, Except Landscape & Naval	6	6	52
		17-1012	Landscape Architects	7	6	56
		17-3011	Architectural & Civil Drafters	37	55	57
		19-3051	Urban & Regional Planners	2	2	41
09.0101	Speech Communication & Rhetoric	11-2031	Public Relations & Fundraising Managers	9	10	70
		11-1031	Legislators	23	22	55
		27-3011	Radio & Television Announcers	49	38	42
		27-3012	Public Address System & Other Announcers	49	38	42
		27-3022	Reporters & Correspondents	15	14	69
		27-3031	Public Relations Specialists	15	15	67
		27-3043	Writers & Authors	19	18	59

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
10.0105	Communications Technology/Technician	25-9011	Audio-Visual & Multimedia Collections Specialists	31	28	43
		27-3099	Media & Communication Workers, All Other	40	41	48
		27-4011	Audio & Video Equipment Technicians	52	43	42
		27-4012	Broadcast Technicians	52	43	42
		27-4013	Radio Operators	52	43	42
		27-4014	Sound Engineering Technicians	52	43	42
		27-4031	Camera Operators, Television, Video, & Motion Picture	32	30	60
		27-4032	Film & Video Editors	32	30	60
10.0304	Animation, Interactive Technology, Video Graphics & Special Effects	15-1199	Computer Occupations, All Other	40	41	50
		27-1011	Art Directors	33	27	57
		27-1014	Multimedia Artists & 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
		15-1111	Computer & Information Research Scientists	11	8	40
		15-1121	Computer Systems Analysts	13	14	63
		15-1122	Information Security Analysts	22	26	60
		15-1131	Computer Programmers	21	21	60
		15-1132	Software Developers, Applications	10	11	60
		15-1133	Software Developers, Systems Software	10	11	60
		15-1134	Web Developers	25	27	64
		15-1141	Database Administrators	15	17	59
		15-1142	Network & Computer Systems Administrators	30	36	58
15-1143	Computer Network Architects	23	32	60		
15-1151	Computer User Support Specialists	43	45	49		

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		15-1152	Computer Network Support Specialists	43	45	49
		15-1199	Computer Occupations, All Other	40	41	50
		43-9011	Computer Operators	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
		15-1111	Computer & Information Research Scientists	11	8	40
		15-1121	Computer Systems Analysts	13	14	63
		15-1131	Computer Programmers	21	21	60
		15-1132	Software Developers, Applications	10	11	60
		15-1133	Software Developers, Systems Software	10	11	60
		15-1134	Web Developers	25	27	64
		15-1152	Computer Network Support Specialists	43	45	49
		15-1199	Computer Occupations, All Other	40	41	50
11.0301	Data Processing & Data Processing Technology/Technician	15-1141	Database Administrators	15	17	59
		15-1199	Computer Occupations, All Other	40	41	50
		43-9011	Computer Operators	39	41	50
		43-9021	Data Entry Keyers	60	48	34
11.1002	System, Networking, & LAN/WAN Management/Manager	15-1122	Information Security Analysts	22	26	60
		15-1142	Network & Computer Systems Administrators	30	36	58
		15-1143	Computer Network Architects	23	32	60
		15-1152	Computer Network Support Specialists	43	45	49
		15-1199	Computer Occupations, All Other	40	41	50
		49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	70	50	24
11.1006	Computer Support Specialist	15-1151	Computer User Support Specialists	43	45	49
		15-1152	Computer Network Support Specialists	43	45	49

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-2011	Computer, Automated Teller, & Office Machine Repairers	59	55	36
12.0401	Cosmetology/Cosmetologist, General	39-1021	First-Line Supervisors of Personal Service Workers	61	50	33
		39-5011	Barbers	77	38	10
		39-5012	Hairdressers, Hairstylists, & Cosmetologists	77	50	17
		39-5091	Makeup Artists, Theatrical & Performance	61	40	19
		39-5092	Manicurists & Pedicurists	60	40	19
		39-5093	Shampooers	61	40	19
		39-5094	Skincare Specialists	61	45	21
12.0413	Cosmetology, Barber/Styling, & Nail Instructor	39-5011	Barbers	77	38	10
		39-5012	Hairdressers, Hairstylists, & Cosmetologists	77	50	17
12.0503	Culinary Arts/Chef Training	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
		35-2012	Cooks, Institution & Cafeteria	65	31	8
		35-2013	Cooks, Private Household	65	31	8
		35-2014	Cooks, Restaurant	65	31	8
		35-2015	Cooks, Short Order	65	31	8
		35-2019	Cooks, All Other	65	31	8
13.1206	Teacher Education, Multiple Levels	25-2011	Preschool Teachers, Except Special Education	48	46	44
		25-2012	Kindergarten Teachers, Except Special Education	48	46	44
		25-2021	Elementary School Teachers, Except Special Education	4	7	60
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
14.1101	Engineering Mechanics	11-9041	Architectural & Engineering Managers	7	9	59
		17-2199	Engineers, All Other	11	12	62
15.0000	Engineering Technology, General	17-3011	Architectural & Civil Drafters	37	55	57
		17-3012	Electrical & Electronics Drafters	38	56	56
		17-3013	Mechanical Drafters	38	56	56
		17-3021	Aerospace Engineering & Operations Technicians	59	53	35
		17-3022	Civil Engineering Technicians	59	53	35
		17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3026	Industrial Engineering Technicians	59	53	35
		17-3027	Mechanical Engineering Technicians	59	53	35
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	17-3012	Electrical & Electronics Drafters	38	56	56
		17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3029	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

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
15.0404	Instrumentation Technology/Technician	17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3026	Industrial Engineering Technicians	59	53	35
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		49-9069	Precision Instrument & Equipment Repairers, All Other	55	49	37
		51-2028	Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	69	39	15
15.0701	Occupational Safety & Health Technology/Technician	11-9199	Managers, All Other	32	26	49
		13-1041	Compliance Officers	22	23	53
		29-9011	Occupational Health & Safety Specialists	29	23	49
		29-9012	Occupational Health & Safety Technicians	29	23	49
15.0805	Mechanical Engineering/Mechanical Technology/Technician	17-3013	Mechanical Drafters	38	56	56
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3026	Industrial Engineering Technicians	59	53	35
		17-3027	Mechanical Engineering Technicians	59	53	35
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35
		49-9041	Industrial Machinery Mechanics	70	47	20
		51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	64	38	24
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 Technicians	59	53	35



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		17-3031	Surveying & Mapping Technicians	69	52	25
		47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	66	33	18
		47-4011	Construction & Building Inspectors	51	44	42
15.1202	Computer Technology/Computer Systems Technology	15-1121	Computer Systems Analysts	13	14	63
		15-1151	Computer User Support Specialists	43	45	49
		17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		43-9011	Computer Operators	39	41	50
		49-2011	Computer, Automated Teller, & Office Machine Repairers	59	55	36
		49-2022	Telecommunications Equipment Installers & Repairers, Except Line Installers	70	50	24
		49-2097	Electronic Home Entertainment Equipment Installers & Repairers	72	49	18
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
		51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic	73	48	18
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	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
		51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic	73	48	18



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
15.1305	Electrical/Electronics Drafting & Electrical/Electronics CAD/CADD	17-3012	Electrical & Electronics Drafters	38	56	56
16.0101	Foreign Languages & Literatures, General	25-2021	Elementary School Teachers, Except Special Education	4	7	60
		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
		27-3091	Interpreters & Translators	41	38	46
		39-7018	Tour & Travel Guides	68	52	26
19.0706	Child Development	11-9031	Education Administrators, Preschool & Childcare Center/Program	23	23	41
		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
		25-9021	Farm & Home Management Advisors	31	28	43
		39-9011	Childcare Workers	66	46	21
22.0302	Legal Assistant/Paralegal	13-1041	Compliance Officers	22	23	53
		23-2011	Paralegals & Legal Assistants	26	34	64
		23-2093	Title Examiners, Abstractors, & Searchers	33	32	53
		23-2099	Legal Support Workers, All Other	30	29	55
		43-6012	Legal Secretaries	54	48	41
23.0101	English Language & Literature, General	25-2021	Elementary School Teachers, Except Special Education	4	7	60
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
		25-4021	Librarians	20	24	35
		25-4031	Library Technicians	73	41	20
		27-3022	Reporters & Correspondents	15	14	69
		27-3041	Editors	19	18	65
		27-3042	Technical Writers	18	18	61
		27-3043	Writers & Authors	19	18	59
		43-9031	Desktop Publishers	44	38	46
		43-9081	Proofreaders & Copy Markers	32	29	59
26.0101	Biology/Biological Sciences, General	11-9121	Natural Sciences Managers	4	4	52
		15-2041	Statisticians	6	8	50
		19-1011	Animal Scientists	0	0	68
		19-1013	Soil & Plant Scientists	0	0	68
		19-1021	Biochemists & Biophysicists	0	0	62
		19-1022	Microbiologists	0	0	62
		19-1023	Zoologists & Wildlife Biologists	0	0	62
		19-1029	Biological Scientists, All Other	0	0	62
		19-1041	Epidemiologists	1	1	28
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28
		19-1099	Life Scientists, All Other	1	1	28
		19-4021	Biological Technicians	35	36	52
		19-4091	Environmental Science & Protection Technicians, Including Health	44	40	45
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
27.0101	Mathematics, General	11-9121	Natural Sciences Managers	4	4	52



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		15-2021	Mathematicians	6	8	50
		15-2031	Operations Research Analysts	14	14	54
		15-2041	Statisticians	6	8	50
		15-2098	Miscellaneous Mathematical Science Occupations	6	8	50
		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
		43-9111	Statistical Assistants	50	40	36
30.1801	Natural Sciences	11-9121	Natural Sciences Managers	4	4	52
		19-1099	Life Scientists, All Other	1	1	28
		19-2099	Physical Scientists, All Other	0	0	42
31.0501	Health & Physical Education/Fitness, General	11-9039	Education Administrators, All Other	23	23	41
		11-9151	Social & Community Service Managers	19	17	55
		21-1091	Health Educators	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



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		29-1069	Physicians & Surgeons, All Other	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	Fitness Trainers & Aerobics Instructors	53	42	39
		39-9032	Recreation Workers	60	44	32
40.0201	Astronomy	11-9121	Natural Sciences Managers	4	4	52
		19-2011	Astronomers	0	0	28
		19-2012	Physicists	0	0	28
		19-2021	Atmospheric & Space Scientists	27	21	49
40.0501	Chemistry, General	11-9121	Natural Sciences Managers	4	4	52
		17-2041	Chemical Engineers	10	9	69
		17-2199	Engineers, All Other	11	12	62
		19-1012	Food Scientists & Technologists	0	0	68
		19-1013	Soil & Plant Scientists	0	0	68
		19-1021	Biochemists & Biophysicists	0	0	62
		19-2031	Chemists	3	2	69
		19-2032	Materials Scientists	3	2	69
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70
		19-4031	Chemical Technicians	43	36	47
		19-4041	Geological & Petroleum Technicians	47	37	41
		19-4092	Forensic Science Technicians	44	40	45
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
		25-4013	Museum Technicians & Conservators	23	20	40



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
40.0601	Geology/Earth Science, General	11-3051	Industrial Production Managers	38	28	48
		11-9121	Natural Sciences Managers	4	4	52
		15-1199	Computer Occupations, All Other	40	41	50
		17-1022	Surveyors	19	21	70
		17-2081	Environmental Engineers	10	7	59
		17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	8	7	70
		17-2171	Petroleum Engineers	8	7	70
		19-1013	Soil & Plant Scientists	0	0	68
		19-1031	Conservation Scientists	0	0	83
		19-2021	Atmospheric & Space Scientists	27	21	49
		19-2042	Geoscientists, Except Hydrologists & Geographers	0	0	67
		19-2043	Hydrologists	0	0	67
		19-4041	Geological & Petroleum Technicians	47	37	41
		49-9099	Installation, Maintenance, & Repair Workers, All Other	71	40	16
		41.0301	Chemical Technology/Technician	19-2031	Chemists	3
19-4031	Chemical Technicians			43	36	47
51-8091	Chemical Plant & System Operators			67	48	27
51-9011	Chemical Equipment Operators & Tenders			55	35	35
43.0104	Criminal Justice/Safety Studies	11-9161	Emergency Management Directors	27	36	59
		11-9199	Managers, All Other	32	26	49
		13-1041	Compliance Officers	22	23	53
		13-1199	Business Operations Specialists, All Other	28	25	52
		13-2099	Financial Specialists, All Other	24	23	55
		15-1122	Information Security Analysts	22	26	60
21-1021	Child, Family, & School Social Workers	14	13	56		



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		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
		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
		33-9032	Security Guards	72	48	21
		43-5031	Police, Fire, & Ambulance Dispatchers	63	52	31
44.0701	Social Work	11-9151	Social & Community Service Managers	19	17	55
		21-1013	Marriage & Family Therapists	20	18	37
		21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	20	18	39
		21-1019	Counselors, All Other	24	21	38
		21-1021	Child, Family, & School Social Workers	14	13	56
		21-1022	Healthcare Social Workers	19	15	50
		21-1023	Mental Health & Substance Abuse Social Workers	16	14	47
		21-1029	Social Workers, All Other	13	13	54
		21-1092	Probation Officers & Correctional Treatment Specialists	18	19	66
		21-1093	Social & Human Service Assistants	37	34	49
		21-2011	Clergy	19	19	48
45.0101	Social Sciences, General	11-9199	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
		11-1031	Legislators	23	22	55
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70
		19-3011	Economists	0	0	43
		19-3022	Survey Researchers	16	16	47
		19-3041	Sociologists	16	16	47
		19-3051	Urban & Regional Planners	2	2	41
		19-3091	Anthropologists & Archeologists	16	16	47
		19-3092	Geographers	16	16	47
		19-3094	Political Scientists	16	16	47
		19-3099	Social Scientists & Related Workers, All Other	16	16	47
		19-4061	Social Science Research Assistants	44	40	45
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58
46.0301	Electrical & Power Transmission Installation/Installer, General	47-1011	First-Line Supervisors of Construction Trades & 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

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-9052	Telecommunications Line Installers & Repairers	76	48	17
		49-9097	Signal & Track Switch Repairers	71	40	16
46.0302	Electrician	47-1011	First-Line Supervisors of Construction Trades & 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
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	66	33	18
		47-2151	Pipelayers	73	32	10
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
47.0201	Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician	13-1199	Business Operations Specialists, All Other	28	25	52
		47-2151	Pipelayers	73	32	10
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
		47-2211	Sheet Metal Workers	75	35	12
		47-4011	Construction & Building Inspectors	51	44	42
		47-4098	Miscellaneous Construction & Related Workers	68	34	10
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		49-9021	Heating, Air Conditioning, & Refrigeration Mechanics & Installers	73	43	16
		49-9031	Home Appliance Repairers	72	45	14
		49-9071	Maintenance & Repair Workers, General	70	45	19

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-9098	Helpers--Installation, Maintenance, & Repair Workers	61	26	7
47.0604	Automobile/Automotive Mechanics Technology/Technician	17-3027	Mechanical Engineering 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
		49-3093	Tire Repairers & Changers	68	32	8
		49-9071	Maintenance & Repair Workers, General	70	45	19
		53-6051	Transportation Inspectors	75	52	21
		53-7061	Cleaners of Vehicles & Equipment	66	29	6
48.0501	Machine Tool Technology/Machinist	49-9041	Industrial Machinery Mechanics	70	47	20
		49-9043	Maintenance Workers, Machinery	67	45	22
		49-9044	Millwrights	75	43	17
		51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	73	48	18
		51-4021	Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6
		51-4022	Forging Machine Setters, Operators, & Tenders, Metal & Plastic	72	33	6
		51-4023	Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		51-4031	Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	74	30	7
		51-4032	Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4033	Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	29	7
		51-4034	Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4035	Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4041	Machinists	73	43	17
		51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	73	34	9
		51-4191	Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	73	34	9
		51-4192	Layout Workers, Metal & Plastic	73	34	9
		51-4199	Metal Workers & Plastic Workers, All Other	73	34	9
48.0508	Welding Technology/Welder	47-1011	First-Line Supervisors of Construction Trades & 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

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
48.0703	Cabinetmaking & Millwork	51-7011	Cabinetmakers & Bench Carpenters	68	27	12
		51-7031	Model Makers, Wood	63	30	18
		51-7032	Patternmakers, Wood	63	30	18
		51-7041	Sawing Machine Setters, Operators, & Tenders, Wood	62	19	6
		51-7042	Woodworking Machine Setters, Operators, & Tenders, Except Sawing	72	28	4
		51-7099	Woodworkers, All Other	63	30	18
49.0205	Truck & Bus Driver/Commercial Vehicle Operator & Instructor	53-3021	Bus Drivers, Transit & Intercity	76	46	16
		53-3022	Bus Drivers, School or Special Client	77	49	15
		53-3031	Driver/Sales Workers	74	39	11
		53-3032	Heavy & Tractor-Trailer Truck Drivers	74	39	11
		53-3033	Light Truck or Delivery Services Drivers	74	39	11
		53-3041	Taxi Drivers & Chauffeurs	64	44	23
50.0501	Drama & Dramatics/Theatre Arts, General	27-1022	Fashion Designers	25	25	64
		27-1027	Set & Exhibit Designers	23	25	65
		27-2011	Actors	41	30	47
		27-2012	Producers & Directors	19	18	69
		27-2031	Dancers	63	38	25
		27-2032	Choreographers	63	38	25
		27-2042	Musicians & Singers	46	36	36
		27-2099	Entertainers & Performers, Sports & Related Workers, All Other	49	37	36
		27-3043	Writers & Authors	19	18	59
		27-4014	Sound Engineering Technicians	52	43	42
		39-3092	Costume Attendants	75	46	16
		39-5091	Makeup Artists, Theatrical & Performance	61	40	19
		50.0701	Art/Art Studies, General	25-2021	Elementary School Teachers, Except Special Education	4

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		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
		25-3021	Self-Enrichment Education Teachers	51	42	37
		25-4011	Archivists	23	20	40
		25-4012	Curators	23	20	40
		25-4013	Museum Technicians & Conservators	23	20	40
		27-1011	Art Directors	33	27	57
		27-1012	Craft Artists	33	27	57
		27-1013	Fine Artists, Including Painters, Sculptors, & Illustrators	33	27	57
		27-1014	Multimedia Artists & Animators	33	27	57
		27-1021	Commercial & Industrial Designers	25	26	65
		27-1024	Graphic Designers	22	25	67
		27-1027	Set & Exhibit Designers	23	25	65
		27-4021	Photographers	46	40	48
		29-1125	Recreational Therapists	14	13	77
		51-9071	Jewelers & Precious Stone & Metal Workers	50	34	35
		51-9194	Etchers & Engravers	67	36	21
50.0901	Music, General	25-2021	Elementary School Teachers, Except Special Education	4	7	60
		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
		27-2041	Music Directors & Composers	42	33	39



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		27-2042	Musicians & Singers	46	36	36
		27-4011	Audio & Video Equipment Technicians	52	43	42
		27-4014	Sound Engineering Technicians	52	43	42
		29-1125	Recreational Therapists	14	13	77
		49-9063	Musical Instrument Repairers & Tuners	55	49	37
51.0707	Health Information/Medical Records Technology/Technician	15-1121	Computer Systems Analysts	13	14	63
		15-1151	Computer User Support Specialists	43	45	49
		15-1152	Computer Network Support Specialists	43	45	49
		29-2071	Medical Records & Health Information Technicians	54	56	41
		43-6013	Medical Secretaries	55	49	39
		43-9021	Data Entry Keyers	60	48	34
51.0708	Medical Transcription/Transcriptionist	29-2071	Medical Records & Health Information Technicians	54	56	41
		31-9094	Medical Transcriptionists	29	32	65
		43-6013	Medical Secretaries	55	49	39
		43-9022	Word Processors & Typists	57	48	37
51.0713	Medical Insurance Coding Specialist/Coder	29-2071	Medical Records & Health Information Technicians	54	56	41
		31-9092	Medical Assistants	65	67	32
		43-3021	Billing & Posting Clerks	60	50	34
		43-6013	Medical Secretaries	55	49	39
		43-9021	Data Entry Keyers	60	48	34
		43-9041	Insurance Claims & Policy Processing Clerks	54	47	41
51.1501	Substance Abuse/Addiction Counseling	21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	20	18	39
		21-1023	Mental Health & Substance Abuse Social Workers	16	14	47
		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
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
51.3901	Licensed Practical/Vocational Nurse Training	29-2061	Licensed Practical & Licensed Vocational Nurses	78	73	20
		31-1011	Home Health Aides	72	53	17
		31-1014	Nursing Assistants	72	55	17
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
		11-9199	Managers, All Other	32	26	49
		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
		13-1199	Business Operations Specialists, All Other	28	25	52
		13-2011	Accountants & Auditors	9	12	66
		15-1151	Computer User Support Specialists	43	45	49
		41-1011	First-Line Supervisors of Retail Sales Workers	41-1011	First-Line Supervisors of Retail Sales Workers	61
41-2031	Retail Salespersons			70	49	22
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products			40	31	51



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		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
52.0203	Logistics, Materials, & Supply Chain Management	11-3051	Industrial Production Managers	38	28	48
		11-3061	Purchasing Managers	24	21	55
		11-3071	Transportation, Storage, & Distribution Managers	58	40	32
		11-9199	Managers, All Other	32	26	49
		13-1081	Logisticians	30	29	54
		15-1199	Computer Occupations, All Other	40	41	50
		17-2072	Electronics Engineers, Except Computer	11	12	60
		43-5011	Cargo & Freight Agents	66	49	27
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
		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

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		43-9022	Word Processors & Typists	57	48	37
		43-9061	Office Clerks, General	65	51	29

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
15.0404	Instrumentation Technology/Technician	17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3026	Industrial Engineering Technicians	59	53	35
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19
		49-9069	Precision Instrument & Equipment Repairers, All Other	55	49	37
		51-2028	Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	69	39	15
19.0706	Child Development	11-9031	Education Administrators, Preschool & Childcare Center/Program	23	23	41
		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
		25-9021	Farm & Home Management Advisors	31	28	43
		39-9011	Childcare Workers	66	46	21
46.0302	Electrician	47-1011	First-Line Supervisors of Construction Trades & 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

CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-2098	Security & Fire Alarm Systems Installers	71	42	19
		49-9097	Signal & Track Switch Repairers	71	40	16
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	66	33	18
		47-2151	Pipelayers	73	32	10
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
48.0501	Machine Tool Technology/Machinist	49-9041	Industrial Machinery Mechanics	70	47	20
		49-9043	Maintenance Workers, Machinery	67	45	22
		49-9044	Millwrights	75	43	17
		51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	73	48	18
		51-4021	Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6
		51-4022	Forging Machine Setters, Operators, & Tenders, Metal & Plastic	72	33	6
		51-4023	Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6
		51-4031	Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	74	30	7
		51-4032	Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4033	Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	29	7
		51-4034	Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4035	Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4041	Machinists	73	43	17
		51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	73	34	9



CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		51-4191	Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	73	34	9
		51-4192	Layout Workers, Metal & Plastic	73	34	9
		51-4199	Metal Workers & Plastic Workers, All Other	73	34	9
51.0601	Dental Assisting/Assistant	31-9091	Dental Assistants	68	65	28
51.0801	Medical/Clinical Assistant	31-9092	Medical Assistants	65	67	32
51.0902	Electrocardiograph Technology/Technician	29-2031	Cardiovascular Technologists & Technicians	25	55	69
		29-2032	Diagnostic Medical Sonographers	21	55	73
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
51.1009	Phlebotomy Technician/Phlebotomist	29-2018	Clinical Laboratory Technologists & Technicians	37	43	56
		31-9097	Phlebotomists	71	68	27
51.3902	Nursing Assistant/Aide & Patient Care Assistant/Aide	31-1011	Home Health Aides	72	53	17
		31-1013	Psychiatric Aides	69	55	20
		31-1014	Nursing Assistants	72	55	17
		31-1015	Orderlies	69	55	20
		39-9021	Personal Care Aides	68	46	16
15.0404	Instrumentation Technology/Technician	17-3023	Electrical & Electronics Engineering Technicians	59	56	36
		17-3024	Electro-Mechanical Technicians	59	53	35
		17-3026	Industrial Engineering Technicians	59	53	35
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19

CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		49-9069	Precision Instrument & Equipment Repairers, All Other	55	49	37
		51-2028	Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	69	39	15
19.0706	Child Development	11-9031	Education Administrators, Preschool & Childcare Center/Program	23	23	41
		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
		25-9021	Farm & Home Management Advisors	31	28	43
		39-9011	Childcare Workers	66	46	21
46.0302	Electrician	47-1011	First-Line Supervisors of Construction Trades & 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
46.0502	Pipefitting/Pipefitter & Sprinkler Fitter	47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	66	33	18
		47-2151	Pipelayers	73	32	10
		47-2152	Plumbers, Pipefitters, & Steamfitters	73	33	10
48.0501	Machine Tool Technology/Machinist	49-9041	Industrial Machinery Mechanics	70	47	20
		49-9043	Maintenance Workers, Machinery	67	45	22
		49-9044	Millwrights	75	43	17
		51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic	73	48	18
		51-4021	Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6

CIP CODE	PROGRAM	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW		
				CERT	ASSOC	BACH
		51-4022	Forging Machine Setters, Operators, & Tenders, Metal & Plastic	72	33	6
		51-4023	Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	82	33	6
		51-4031	Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	74	30	7
		51-4032	Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4033	Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	29	7
		51-4034	Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4035	Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	72	26	7
		51-4041	Machinists	73	43	17
		51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	73	34	9
		51-4191	Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	73	34	9
		51-4192	Layout Workers, Metal & Plastic	73	34	9
		51-4199	Metal Workers & Plastic Workers, All Other	73	34	9
51.0601	Dental Assisting/Assistant	31-9091	Dental Assistants	68	65	28
51.0801	Medical/Clinical Assistant	31-9092	Medical Assistants	65	67	32
51.0902	Electrocardiograph Technology/Technician	29-2031	Cardiovascular Technologists & Technicians	25	55	69
		29-2032	Diagnostic Medical Sonographers	21	55	73
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

Source: Emsi program demand gap model.



APPENDIX 5: Program Demand Gap Analysis

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 region’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 Lee or at another postsecondary institution in the region, 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 2020.2 datarun.

In the datarun, Emsi calculates the number of regional job openings for the occupations that require different levels of education for entry-level positions.²⁴ 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 Lee’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 Lee 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.²⁵

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

25 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.

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

PROGRAM	OCCUPATION	ASSOC AND ONE LEVEL BELOW	BACH AND ONE LEVEL BELOW	MAST AND ONE LEVEL BELOW	PHD AND ONE LEVEL BELOW
Accounting	Accountant	10%	65%	80%	25%
	Auditor	5%	70%	75%	20%
	Budget analyst	15%	70%	80%	30%
Weighted average		10%	68%	78%	25%

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 the Lee College Service Area.²⁶ 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

²⁶ 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.

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.

EDUCATION OUTPUT

There are several educational institutions in the Lee College Service Area, some of which have programs similar to those offered at Lee. Hence, completers at Lee will be competing for some jobs with completers from other regional 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 the Lee College Service Area, Emsi uses data from the Integrated Postsecondary Educational System (IPEDS).²⁷ These data are publicly available through the National Center for Educational Statistics. Completions data are averaged for a three-year period, 2016 through 2018, to smooth out any bumps in enrollment that may be unique to a particular academic year. Data gathered for Lee from IPEDS were reviewed for accuracy by Lee and updated with 2019 completions data.

Tables A5.2 through A5.4 display the completion breakdown by institution in the Lee College Service Area at the certificate, associate degree, and bachelor's degree levels, respectively. Lee is one of several institutions in the region. Using a three-year average, Lee grants 2,039 certificates, 491 associate degrees, and 383 transfer-track degrees every year, which is 17.1%, 3.7%, and 2.4% of the totals, respectively.

27 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.

Table A5.2: Certificate Level Completions in the Lee College Service Area by Postsecondary Institution

INSTITUTION	3-YEAR AVERAGE	% TOTAL
San Jacinto Community College	2,601	21.9%
Lee College	2,039	17.1%
Houston Community College	1,328	11.2%
Tulsa Welding School-Houston	685	5.8%
Pima Medical Institute-Houston	542	4.6%
Altierus Career College-Bissonnet	351	3.0%
The College of Health Care Professions-Northwest	296	2.5%
Brightwood College-Houston	255	2.1%
The College of Health Care Professions-Southwest Houston	247	2.1%
Ocean Corporation	240	2.0%
Fortis Institute	235	2.0%
Florida Career College-Houston Campus	217	1.8%
Remington College-North Houston Campus	207	1.7%
Altierus Career College-Houston Hobby	205	1.7%
Texas Barber College	180	1.5%
Fortis College	170	1.4%
Paul Mitchell the School-Houston	156	1.3%
Cortiva Institute-Houston	155	1.3%
Northwest Educational Center	153	1.3%
Remington College-Houston Southeast Campus	150	1.3%
School of Automotive Machinists & Technology	149	1.3%
Texas Health School	137	1.1%
Center for Advanced Legal Studies	135	1.1%
Sebring Career Schools-Houston	124	1.0%
Everest Institute-Greenspoint	109	0.9%
Astrodome Career Centers	106	0.9%
Trend Barber College	81	0.7%
Professional Career Training Institute	76	0.6%
Sanford-Brown College-Houston	62	0.5%
Houston Training School-Gulfgate	57	0.5%
Culinary Institute Inc	55	0.5%
Jay's Technical Institute	48	0.4%



INSTITUTION	3-YEAR AVERAGE	% TOTAL
MediaTech Institute-Houston	44	0.4%
Paul Mitchell the School-Webster	44	0.4%
Houston Training Schools-Gessner	39	0.3%
University of Phoenix-Texas	34	0.3%
Houston Training School-Main Campus	32	0.3%
Commonwealth Institute of Funeral Service	26	0.2%
Champion Beauty College	25	0.2%
Houston Training Schools-Southwest	25	0.2%
Remington College-Houston Campus	23	0.2%
The Art Institute of Houston	13	0.1%
Interactive College of Technology	10	0.1%
Mystros Barber Academy	8	0.1%
The Vocational Nursing Institute Inc	8	0.1%
Houston International College Cardiotech Ultrasound School	4	0.0%
Vogue International Academy	2	0.0%
National American University-Houston	2	0.0%
College of Biblical Studies-Houston	1	0.0%
TOTAL	11,891	100%

Source: IPEDS.

Table A5.3: Associate Degree Level Completions in the Lee College Service Area by Postsecondary Institution

INSTITUTION	3-YEAR AVERAGE	% TOTAL
Houston Community College	6,238	46.6%
San Jacinto Community College	4,564	34.1%
Universal Technical Institute of Texas Inc.	844	6.3%
Lee College	491	3.7%
The College of Health Care Professions-Northwest	268	2.0%
Pima Medical Institute-Houston	155	1.2%
Vet Tech Institute of Houston	133	1.0%
Culinary Institute Inc	119	0.9%
Commonwealth Institute of Funeral Service	118	0.9%
Aviation Institute of Maintenance-Houston	104	0.8%
The Art Institute of Houston	96	0.7%



INSTITUTION	3-YEAR AVERAGE	% TOTAL
Center for Advanced Legal Studies	42	0.3%
Remington College-North Houston Campus	35	0.3%
Remington College-Houston Southeast Campus	31	0.2%
Sanford-Brown College-Houston	28	0.2%
College of Biblical Studies-Houston	19	0.1%
American InterContinental University-Houston	19	0.1%
Houston International College Cardiotech Ultrasound School	17	0.1%
School of Automotive Machinists & Technology	16	0.1%
Fortis Institute	11	0.1%
National American University-Houston	10	0.1%
Fortis College	9	0.1%
Interactive College of Technology	7	0.1%
Remington College-Houston Campus	6	0.0%
Florida Career College-Houston Campus	4	0.0%
The University of Texas Health Science Center at Houston	4	0.0%
Brightwood College-Houston	1	0.0%
TOTAL	13,389	100%

Source: IPEDS.

Table A5.4: Bachelor's Degree Level Completions in the Lee College Service Area by Postsecondary Institution

INSTITUTION	3-YEAR AVERAGE	% TOTAL
University of Houston	6,965	43.3%
University of Houston-Downtown	2,735	17.0%
University of Houston-Clear Lake	1,341	8.3%
Rice University	1,217	7.6%
Texas Southern University	972	6.0%
University of Phoenix-Texas	642	4.0%
Houston Baptist University	436	2.7%
The University of Texas Health Science Center at Houston	430	2.7%
Lee College*	383	2.4%
University of St Thomas	351	2.2%
The Art Institute of Houston	192	1.2%
Chamberlain University-Texas	156	1.0%



INSTITUTION	3-YEAR AVERAGE	% TOTAL
The University of Texas MD Anderson Cancer Center	145	0.9%
American InterContinental University-Houston	71	0.4%
College of Biblical Studies-Houston	39	0.2%
The College of Health Care Professions-Northwest	7	0.0%
National American University-Houston	6	0.0%
Remington College-North Houston Campus	5	0.0%
TOTAL	16,092	100%

* Lee's completions represent transfer-track degrees.
Source: IPEDS.

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APPENDIX 6: Employment Projections

Table A6.1: Employment Projections in the Lee College Service Area by Occupation, 2019 and 2029

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Combined Food Preparation & Serving Workers, Including Fast Food	66,139	80,748	14,608	22.1%	14,590	\$9.58
Waiters & Waitresses	43,110	49,577	6,466	15.0%	9,588	\$10.11
Retail Salespersons	65,816	64,975	(841)	(1.3%)	9,570	\$11.19
Cashiers	44,835	45,290	454	1.0%	8,581	\$10.33
Office Clerks, General	66,727	67,496	769	1.2%	8,220	\$17.77
Personal Care Aides	34,723	46,903	12,180	35.1%	6,901	\$9.09
Laborers & Freight, Stock, & Material Movers, Hand	43,529	46,523	2,994	6.9%	6,619	\$13.05
Customer Service Representatives	47,721	47,314	(408)	(0.9%)	6,382	\$16.26
Janitors & Cleaners, Except Maids & Housekeeping Cleaners	39,917	44,675	4,758	11.9%	6,071	\$10.78
Heavy & Tractor-Trailer Truck Drivers	39,774	44,636	4,861	12.2%	5,337	\$20.68
Construction Laborers	34,711	40,227	5,516	15.9%	4,727	\$15.29
Maids & Housekeeping Cleaners	31,003	33,347	2,344	7.6%	4,602	\$10.02
Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	39,131	38,736	(396)	(1.0%)	4,430	\$17.58
General & Operations Managers	43,252	47,247	3,995	9.2%	4,357	\$55.27
Stock Clerks & Order Fillers	30,527	31,083	555	1.8%	4,165	\$12.77
Cooks, Restaurant	21,467	27,671	6,204	28.9%	4,093	\$12.62
Sales Representatives, Services, All Other	26,584	28,089	1,505	5.7%	3,635	\$26.87
Security Guards	24,999	27,326	2,327	9.3%	3,629	\$12.67
Bookkeeping, Accounting, & Auditing Clerks	29,179	29,756	578	2.0%	3,539	\$20.49
Registered Nurses	45,879	53,737	7,858	17.1%	3,430	\$38.88
Childcare Workers	20,820	22,516	1,696	8.1%	3,405	\$9.72
Accountants & Auditors	30,033	32,211	2,178	7.3%	3,124	\$37.36
Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	27,568	28,374	805	2.9%	3,052	\$33.05
Landscaping & Groundskeeping Workers	19,605	21,721	2,115	10.8%	2,887	\$12.72
First-Line Supervisors of Food Preparation & Serving Workers	15,056	17,805	2,749	18.3%	2,803	\$18.73
Maintenance & Repair Workers, General	24,076	26,752	2,676	11.1%	2,746	\$18.54

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
First-Line Supervisors of Office & Administrative Support Workers	23,301	23,980	679	2.9%	2,563	\$28.19
Medical Secretaries	18,605	20,954	2,350	12.6%	2,454	\$17.17
Home Health Aides	12,998	19,034	6,036	46.4%	2,389	\$9.30
First-Line Supervisors of Construction Trades & Extraction Workers	20,383	21,671	1,288	6.3%	2,337	\$31.06
First-Line Supervisors of Retail Sales Workers	20,530	20,617	87	0.4%	2,291	\$19.80
Receptionists & Information Clerks	14,457	15,896	1,439	10.0%	2,187	\$13.05
Food Preparation Workers	10,793	12,424	1,630	15.1%	2,179	\$11.38
Carpenters	18,848	20,301	1,452	7.7%	2,175	\$18.94
Business Operations Specialists, All Other	19,152	20,875	1,723	9.0%	2,102	\$38.22
Nursing Assistants	15,120	17,583	2,463	16.3%	2,083	\$13.33
Elementary School Teachers, Except Special Education	22,602	25,424	2,822	12.5%	2,062	\$28.49
Postsecondary Teachers, General	19,286	22,527	3,241	16.8%	2,062	\$40.88
Teacher Assistants	15,732	18,223	2,491	15.8%	2,036	\$10.65
Electricians	15,649	16,872	1,223	7.8%	2,015	\$26.47
Industrial Truck & Tractor Operators	15,861	16,639	778	4.9%	1,923	\$17.04
Bartenders	9,409	10,501	1,093	11.6%	1,867	\$13.15
Welders, Cutters, Solderers, & Brazers	15,834	16,261	427	2.7%	1,834	\$23.42
Light Truck Or Delivery Services Drivers	13,828	15,292	1,464	10.6%	1,825	\$16.03
Hosts & Hostesses, Restaurant, Lounge, & Coffee Shop	6,549	7,897	1,349	20.6%	1,796	\$10.14
Counter Attendants, Cafeteria, Food Concession, & Coffee Shop	7,479	8,241	762	10.2%	1,793	\$9.40
Secondary School Teachers, Except Special & Career/Technical Education	21,074	23,359	2,285	10.8%	1,786	\$29.22
Inspectors, Testers, Sorters, Samplers, & Weighers	14,834	13,116	(1,717)	(11.6%)	1,743	\$19.55
Hairdressers, Hairstylists, & Cosmetologists	11,304	12,785	1,480	13.1%	1,659	\$11.62
Helpers--Production Workers	9,796	10,624	828	8.4%	1,593	\$14.13
Medical Assistants	10,882	13,155	2,273	20.9%	1,550	\$16.17
Dining Room & Cafeteria Attendants & Bartender Helpers	7,348	8,632	1,284	17.5%	1,501	\$9.72
Substitute Teachers	11,636	12,660	1,024	8.8%	1,489	\$11.42
Insurance Sales Agents	12,383	13,907	1,524	12.3%	1,449	\$22.13
Assemblers & Fabricators, All Other, Including Team Assemblers	13,154	11,512	(1,642)	(12.5%)	1,446	\$13.67
Painters, Construction & Maintenance	11,123	13,099	1,976	17.8%	1,432	\$16.43

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Counter & Rental Clerks	9,817	10,753	935	9.5%	1,420	\$13.70
Plumbers, Pipefitters, & Steamfitters	10,600	11,936	1,336	12.6%	1,390	\$25.85
Management Analysts	11,089	13,008	1,919	17.3%	1,332	\$48.66
Cleaners of Vehicles & Equipment	8,037	8,798	761	9.5%	1,311	\$12.33
Shipping, Receiving, & Traffic Clerks	12,835	12,868	34	0.3%	1,308	\$16.47
Automotive Service Technicians & Mechanics	11,709	12,683	974	8.3%	1,286	\$17.99
First-Line Supervisors of Production & Operating Workers	11,854	11,750	(104)	(0.9%)	1,225	\$33.35
Operating Engineers & Other Construction Equipment Operators	8,645	10,036	1,392	16.1%	1,223	\$20.21
Dishwashers	6,498	7,406	908	14.0%	1,203	\$10.92
Human Resources Specialists	10,651	11,389	737	6.9%	1,184	\$31.29
Computer User Support Specialists	12,501	13,486	985	7.9%	1,167	\$26.82
Licensed Practical & Licensed Vocational Nurses	11,564	13,555	1,990	17.2%	1,153	\$23.12
Software Developers, Applications	12,619	14,581	1,962	15.5%	1,151	\$53.15
Managers, All Other	11,085	12,976	1,891	17.1%	1,105	\$35.70
Billing & Posting Clerks	8,090	9,237	1,147	14.2%	1,063	\$19.26
Financial Managers	10,279	12,049	1,770	17.2%	1,042	\$67.02
Securities, Commodities, & Financial Services Sales Agents	9,778	10,484	705	7.2%	1,042	\$25.85
Driver/Sales Workers	8,833	8,941	108	1.2%	1,037	\$11.68
Industrial Machinery Mechanics	10,407	10,878	471	4.5%	1,034	\$28.94
Preschool Teachers, Except Special Education	8,468	9,678	1,210	14.3%	1,031	\$13.25
Machinists	9,277	9,286	9	0.1%	963	\$24.25
Taxi Drivers & Chauffeurs	6,277	8,019	1,742	27.8%	953	\$12.46
First-Line Supervisors of Mechanics, Installers, & Repairers	9,206	9,887	681	7.4%	952	\$33.24
Middle School Teachers, Except Special & Career/Technical Education	10,424	11,681	1,256	12.1%	945	\$28.72
First-Line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	7,847	8,463	616	7.8%	943	\$29.44
Real Estate Sales Agents	9,136	9,626	489	5.4%	941	\$29.52
Police & Sheriff's Patrol Officers	11,591	12,522	931	8.0%	937	\$31.37
Packers & Packers, Hand	6,429	6,341	(88)	(1.4%)	935	\$10.28
Market Research Analysts & Marketing Specialists	6,454	8,247	1,793	27.8%	933	\$35.34
Lawyers	14,532	16,161	1,628	11.2%	932	\$71.94



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Buyers & Purchasing Agents	9,594	9,181	(414)	(4.3%)	929	\$29.27
Computer Systems Analysts	12,126	12,368	243	2.0%	909	\$48.52
Construction Managers	10,725	11,641	916	8.5%	901	\$38.88
Nonfarm Animal Caretakers	4,343	5,343	1,000	23.0%	892	\$10.09
Production, Planning, & Expediting Clerks	7,984	8,307	323	4.0%	884	\$23.66
Fitness Trainers & Aerobics Instructors	4,247	5,144	897	21.1%	875	\$18.16
Tellers	7,433	6,637	(795)	(10.7%)	852	\$14.65
Bus Drivers, School Or Special Client	6,123	6,605	482	7.9%	852	\$13.42
Roustabouts, Oil & Gas	6,449	6,245	(205)	(3.2%)	845	\$18.15
Paralegals & Legal Assistants	5,917	7,218	1,301	22.0%	829	\$27.11
Executive Secretaries & Executive Administrative Assistants	7,646	6,926	(720)	(9.4%)	824	\$29.98
Cooks, Fast Food	4,914	5,434	521	10.6%	791	\$9.86
Recreation Workers	4,072	4,667	595	14.6%	787	\$12.08
Heating, Air Conditioning, & Refrigeration Mechanics & Installers	6,347	7,209	862	13.6%	753	\$23.60
Dental Assistants	5,411	6,329	917	17.0%	751	\$16.36
Lifeguards, Ski Patrol, & Other Recreational Protective Service Workers	2,858	3,127	269	9.4%	751	\$9.98
Civil Engineers	8,678	9,191	513	5.9%	750	\$50.97
Financial Analysts	7,844	8,333	489	6.2%	740	\$43.22
Service Unit Operators, Oil, Gas, & Mining	5,378	5,038	(340)	(6.3%)	735	\$23.95
Amusement & Recreation Attendants	2,724	3,180	456	16.7%	731	\$9.71
First-Line Supervisors of Non-Retail Sales Workers	7,287	7,446	159	2.2%	730	\$33.53
Hotel, Motel, & Resort Desk Clerks	3,960	4,221	262	6.6%	725	\$11.38
Medical & Health Services Managers	6,378	7,650	1,272	19.9%	682	\$52.22
Self-Enrichment Education Teachers	4,568	5,538	969	21.2%	676	\$24.67
Cooks, Institution & Cafeteria	4,206	4,666	460	10.9%	674	\$12.01
Bus & Truck Mechanics & Diesel Engine Specialists	6,301	6,865	564	9.0%	673	\$23.80
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	6,066	6,186	120	2.0%	666	\$39.01
Petroleum Engineers	9,670	8,466	(1,204)	(12.4%)	654	\$77.67
Military occupations	5,222	5,600	379	7.3%	653	\$15.52
Teachers & Instructors, All Other	4,420	5,333	913	20.6%	651	\$16.29



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Sales Managers	6,431	6,879	448	7.0%	641	\$66.18
Training & Development Specialists	5,101	5,626	525	10.3%	629	\$32.93
Public Relations Specialists	5,339	5,751	412	7.7%	620	\$28.64
Pharmacy Technicians	6,576	7,084	508	7.7%	604	\$16.81
Bill & Account Collectors	5,184	4,784	(400)	(7.7%)	594	\$17.32
Educational, Guidance, School, & Vocational Counselors	4,768	5,446	679	14.2%	590	\$31.42
Mobile Heavy Equipment Mechanics, Except Engines	5,175	5,574	399	7.7%	582	\$23.35
Reservation & Transportation Ticket Agents & Travel Clerks	5,075	4,696	(378)	(7.5%)	559	\$27.51
Clinical Laboratory Technologists & Technicians	5,713	6,755	1,042	18.2%	548	\$24.89
Food Service Managers	3,904	4,510	606	15.5%	548	\$25.60
Compliance Officers	5,348	5,809	461	8.6%	539	\$40.43
Cement Masons & Concrete Finishers	4,440	4,863	422	9.5%	533	\$17.03
Chemical Equipment Operators & Tenders	4,756	4,295	(461)	(9.7%)	531	\$28.57
Clergy	3,879	4,577	698	18.0%	526	\$24.92
Mechanical Engineers	7,296	7,450	154	2.1%	522	\$47.88
Parts Salespersons	4,051	4,246	195	4.8%	521	\$13.22
Administrative Services Managers	5,320	5,855	534	10.0%	519	\$46.75
Coaches & Scouts	2,735	3,360	625	22.9%	510	\$18.37
Network & Computer Systems Administrators	6,800	7,009	209	3.1%	507	\$45.77
Social & Human Service Assistants	3,240	3,971	731	22.6%	505	\$18.46
Cost Estimators	4,333	4,787	455	10.5%	499	\$35.95
Protective Service Workers, All Other	1,866	2,075	209	11.2%	498	\$10.07
Flight Attendants	4,573	4,177	(395)	(8.6%)	492	\$27.77
Helpers--Installation, Maintenance, & Repair Workers	3,435	3,699	264	7.7%	485	\$14.90
Computer & Information Systems Managers	5,169	5,727	558	10.8%	483	\$73.63
Dispatchers, Except Police, Fire, & Ambulance	4,724	4,890	166	3.5%	478	\$19.76
Insurance Claims & Policy Processing Clerks	4,205	4,569	364	8.7%	473	\$18.49
Ushers, Lobby Attendants, & Ticket Takers	1,721	1,948	227	13.2%	473	\$9.46
Cooks, Short Order	3,155	3,292	137	4.3%	471	\$11.57
Correctional Officers & Jailers	5,166	5,195	29	0.6%	464	\$21.21

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Geoscientists, Except Hydrologists & Geographers	4,436	4,058	(378)	(8.5%)	458	\$69.06
Logisticians	4,277	4,606	329	7.7%	457	\$40.57
Loan Interviewers & Clerks	3,919	4,311	392	10.0%	455	\$22.05
Property, Real Estate, & Community Association Managers	4,896	5,420	524	10.7%	451	\$31.09
Telecommunications Equipment Installers & Repairers, Except Line Installers	4,129	3,976	(154)	(3.7%)	448	\$24.09
Education Administrators, Elementary & Secondary School	4,573	5,173	600	13.1%	441	\$41.81
Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	4,142	3,539	(603)	(14.6%)	439	\$17.09
Bakers	2,899	3,126	227	7.8%	437	\$11.66
Parking Lot Attendants	2,582	2,769	187	7.2%	433	\$10.40
Massage Therapists	2,916	3,451	535	18.3%	424	\$18.01
Construction & Building Inspectors	3,084	3,324	240	7.8%	423	\$30.12
Order Clerks	3,596	3,507	(89)	(2.5%)	416	\$19.72
Petroleum Pump System Operators, Refinery Operators, & Gaugers	3,890	3,525	(365)	(9.4%)	414	\$36.20
Packaging & Filling Machine Operators & Tenders	3,333	3,446	113	3.4%	410	\$14.51
Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	3,694	3,428	(267)	(7.2%)	407	\$16.08
Food Servers, Nonrestaurant	2,170	2,523	353	16.3%	403	\$10.24
Software Developers, Systems Software	5,031	5,322	291	5.8%	393	\$50.03
First-Line Supervisors of Housekeeping & Janitorial Workers	2,756	3,184	428	15.5%	380	\$15.28
Laundry & Dry-Cleaning Workers	2,723	2,752	29	1.1%	374	\$10.77
Helpers--Pipelayers, Plumbers, Pipefitters, & Steamfitters	2,487	2,692	205	8.2%	372	\$17.53
Graphic Designers	3,318	3,570	253	7.6%	371	\$21.87
Legal Secretaries	3,369	3,172	(197)	(5.8%)	369	\$19.26
Data Entry Keyers	3,431	2,912	(519)	(15.1%)	368	\$15.06
Firefighters	4,629	5,002	373	8.1%	365	\$25.90
Personal Financial Advisors	3,666	4,268	602	16.4%	363	\$38.90
Child, Family, & School Social Workers	2,958	3,425	467	15.8%	361	\$23.77
Installation, Maintenance, & Repair Workers, All Other	2,885	3,199	314	10.9%	359	\$18.51
Biological Technicians	2,932	3,236	305	10.4%	356	\$22.17
Computer Occupations, All Other	3,765	4,320	555	14.7%	352	\$44.19



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Postal Service Mail Carriers	4,942	4,311	(631)	(12.8%)	350	\$26.66
Marketing Managers	3,164	3,611	446	14.1%	348	\$70.61
Directors, Religious Activities & Education	2,348	2,701	352	15.0%	347	\$40.52
Computer-Controlled Machine Tool Operators, Metal & Plastic	3,456	3,148	(307)	(8.9%)	344	\$20.13
Information & Record Clerks, All Other	2,558	2,825	267	10.4%	340	\$17.20
Aircraft Mechanics & Service Technicians	4,243	3,929	(314)	(7.4%)	338	\$29.13
Structural Iron & Steel Workers	2,560	2,748	188	7.3%	334	\$20.73
Automotive & Watercraft Service Attendants	2,036	2,217	180	8.9%	334	\$11.17
Payroll & Timekeeping Clerks	2,902	2,972	70	2.4%	333	\$22.34
Musicians & Singers	2,379	2,654	274	11.5%	327	\$21.99
Industrial Engineers	4,252	4,508	256	6.0%	325	\$57.17
Rotary Drill Operators, Oil & Gas	2,360	2,244	(116)	(4.9%)	325	\$27.81
Instructional Coordinators	2,863	3,254	391	13.7%	324	\$33.44
Roofers	2,519	2,930	412	16.3%	324	\$17.61
Kindergarten Teachers, Except Special Education	2,679	2,970	291	10.9%	312	\$28.35
Architectural & Engineering Managers	4,120	4,206	86	2.1%	310	\$82.65
Refuse & Recyclable Material Collectors	2,140	2,190	50	2.4%	310	\$16.50
Loan Officers	3,072	3,404	332	10.8%	306	\$38.21
Architectural & Civil Drafters	2,910	2,923	13	0.5%	305	\$26.84
First-Line Supervisors of Personal Service Workers	2,442	2,871	430	17.6%	305	\$18.61
Sales Engineers	2,753	2,718	(35)	(1.3%)	303	\$50.92
Sheet Metal Workers	2,407	2,622	215	8.9%	295	\$19.96
Control & Valve Installers & Repairers, Except Mechanical Door	3,357	3,370	13	0.4%	293	\$20.74
Medical Records & Health Information Technicians	3,423	3,973	549	16.0%	292	\$21.02
Interviewers, Except Eligibility & Loan	1,865	2,237	372	19.9%	292	\$15.96
Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	2,719	2,652	(67)	(2.5%)	288	\$15.28
Automotive Body & Related Repairers	2,652	2,841	189	7.1%	285	\$18.24
File Clerks	2,357	2,237	(120)	(5.1%)	285	\$17.10
Surveying & Mapping Technicians	2,303	2,367	65	2.8%	282	\$20.31
Bus Drivers, Transit & Intercity	2,211	2,226	16	0.7%	282	\$20.58
Chefs & Head Cooks	1,672	2,026	354	21.2%	279	\$19.43



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Electrical Engineers	3,651	3,915	264	7.2%	278	\$49.00
Airline Pilots, Copilots, & Flight Engineers	2,815	2,580	(235)	(8.4%)	276	\$92.87
Chemical Technicians	2,464	2,643	179	7.3%	276	\$30.04
Substance Abuse, Behavioral Disorder, & Mental Health Counselors	1,850	2,405	555	30.0%	273	\$27.16
Claims Adjusters, Examiners, & Investigators	3,173	3,141	(32)	(1.0%)	271	\$35.23
Butchers & Meat Cutters	2,140	2,175	35	1.6%	271	\$10.73
Computer, Automated Teller, & Office Machine Repairers	2,349	2,447	98	4.2%	270	\$16.90
Computer Programmers	3,961	3,665	(295)	(7.5%)	269	\$43.43
Emergency Medical Technicians & Paramedics	3,670	3,864	194	5.3%	268	\$17.02
Medical Scientists, Except Epidemiologists	2,465	2,784	319	12.9%	267	\$28.86
Sales & Related Workers, All Other	1,922	2,021	99	5.1%	267	\$15.32
Office & Administrative Support Workers, All Other	1,801	2,163	362	20.1%	267	\$18.29
Radiologic Technologists	3,684	4,173	489	13.3%	266	\$31.99
Human Resources Assistants, Except Payroll & Timekeeping	2,304	2,323	19	0.8%	266	\$19.35
Coating, Painting, & Spraying Machine Setters, Operators, & Tenders	2,319	2,368	50	2.1%	265	\$18.29
Demonstrators & Product Promoters	1,532	1,537	4	0.3%	264	\$11.87
Electrical & Electronics Engineering Technicians	2,627	2,665	38	1.4%	263	\$32.67
First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	2,104	2,316	212	10.1%	263	\$18.63
Merchandise Displayers & Window Trimmers	2,602	2,605	2	0.1%	262	\$12.66
Phlebotomists	1,589	2,202	613	38.6%	262	\$16.47
Physicians & Surgeons, All Other	5,956	6,713	758	12.7%	260	\$73.54
Electrical Power-Line Installers & Repairers	2,674	2,901	227	8.5%	259	\$29.76
Cargo & Freight Agents	2,471	2,593	122	4.9%	256	\$22.66
Healthcare Social Workers	1,818	2,340	522	28.7%	256	\$31.80
Manicurists & Pedicurists	1,696	2,084	389	22.9%	255	\$10.87
Engineers, All Other	3,428	3,550	122	3.6%	254	\$59.80
Chemical Plant & System Operators	2,375	2,118	(257)	(10.8%)	254	\$34.34
Tree Trimmers & Pruners	1,786	1,919	133	7.4%	253	\$15.19
Helpers--Electricians	1,778	1,844	66	3.7%	252	\$14.76



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Telecommunications Line Installers & Repairers	2,209	2,230	21	0.9%	251	\$31.23
Derrick Operators, Oil & Gas	1,814	1,737	(77)	(4.2%)	251	\$22.51
Production Workers, All Other	2,011	2,104	93	4.6%	249	\$14.36
Transportation, Storage, & Distribution Managers	2,693	2,924	231	8.6%	247	\$55.69
Barbers	1,895	2,127	232	12.3%	247	\$11.83
Computer Network Support Specialists	2,605	2,806	201	7.7%	243	\$37.68
Eligibility Interviewers, Government Programs	2,227	2,431	204	9.2%	242	\$20.22
Surgical Technologists	2,539	2,788	249	9.8%	241	\$26.47
Health Technologists & Technicians, All Other	2,594	3,031	437	16.8%	236	\$21.69
Human Resources Managers	2,278	2,562	284	12.5%	235	\$60.75
Tire Repairers & Changers	2,068	2,064	(4)	(0.2%)	233	\$13.51
Nurse Practitioners	2,553	3,291	738	28.9%	229	\$57.33
Personal Care & Service Workers, All Other	1,180	1,497	317	26.9%	227	\$11.00
Structural Metal Fabricators & Fitters	2,249	1,994	(255)	(11.3%)	226	\$21.79
Insulation Workers, Floor, Ceiling, & Wall	1,992	1,907	(85)	(4.3%)	226	\$20.38
Geological & Petroleum Technicians	2,330	2,168	(162)	(6.9%)	225	\$29.51
Farmworkers & Laborers, Crop, Nursery, & Greenhouse	1,173	1,347	174	14.8%	225	\$10.37
Industrial Production Managers	3,004	2,988	(16)	(0.5%)	224	\$57.14
Court, Municipal, & License Clerks	2,118	2,277	159	7.5%	221	\$17.64
Special Education Teachers, Secondary School	2,453	2,713	261	10.6%	220	\$29.13
Civil Engineering Technicians	2,048	2,179	131	6.4%	219	\$24.97
Crossing Guards	1,210	1,317	107	8.8%	219	\$9.43
Chemical Engineers	3,355	3,334	(22)	(0.6%)	218	\$66.54
Telemarketers	1,480	1,280	(200)	(13.5%)	217	\$11.49
Financial Specialists, All Other	2,166	2,364	199	9.2%	216	\$36.70
Engineering Technicians, Except Drafters, All Other	2,043	2,155	113	5.5%	216	\$29.85
Meeting, Convention, & Event Planners	1,558	1,796	238	15.3%	216	\$26.39
Sailors & Marine Oilers	1,822	1,570	(252)	(13.9%)	213	\$18.08
Occupational Health & Safety Specialists	3,560	3,653	94	2.6%	212	\$37.08
Life, Physical, & Social Science Technicians, All Other	1,550	1,695	145	9.4%	209	\$26.23

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Motor Vehicle Operators, All Other	1,080	1,224	145	13.4%	209	\$17.35
Helpers--Extraction Workers	1,564	1,525	(40)	(2.5%)	208	\$17.74
Dental Hygienists	2,108	2,594	487	23.1%	207	\$34.17
Special Education Teachers, Kindergarten & Elementary School	2,201	2,498	296	13.5%	206	\$28.80
Drywall & Ceiling Tile Installers	2,007	2,046	39	2.0%	206	\$17.29
Couriers & Messengers	1,916	2,057	141	7.4%	205	\$15.02
Pharmacists	4,134	4,275	141	3.4%	204	\$61.38
Agricultural Equipment Operators	1,101	1,223	121	11.0%	203	\$10.51
Advertising Sales Agents	1,534	1,433	(101)	(6.6%)	201	\$23.23
Physical Therapists	2,628	3,367	739	28.1%	200	\$44.20
Architects, Except Landscape & Naval	2,371	2,487	116	4.9%	199	\$38.81
Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	1,911	1,640	(270)	(14.2%)	195	\$14.51
Writers & Authors	1,579	1,757	177	11.2%	192	\$21.94
Reinforcing Iron & Rebar Workers	1,532	1,607	75	4.9%	192	\$19.74
Gas Plant Operators	1,830	1,577	(254)	(13.9%)	191	\$33.63
Crane & Tower Operators	1,540	1,587	47	3.1%	190	\$25.28
Tax Preparers	1,437	1,597	159	11.1%	190	\$24.21
Residential Advisors	964	1,203	240	24.9%	190	\$12.03
Weighers, Measurers, Checkers, & Samplers, Recordkeeping	1,539	1,615	76	4.9%	189	\$16.89
Printing Press Operators	1,757	1,694	(63)	(3.6%)	187	\$18.74
Title Examiners, Abstractors, & Searchers	2,103	2,067	(36)	(1.7%)	186	\$32.71
Veterinary Technologists & Technicians	1,819	2,081	263	14.4%	186	\$13.64
Wellhead Pumpers	1,743	1,417	(326)	(18.7%)	186	\$25.96
Speech-Language Pathologists	2,168	2,722	555	25.6%	185	\$35.50
Maintenance Workers, Machinery	1,851	1,953	101	5.5%	185	\$19.96
Photographers	1,666	1,689	24	1.4%	185	\$15.96
Mechanical Drafters	1,791	1,680	(111)	(6.2%)	181	\$32.22
Chief Executives	2,053	2,299	246	12.0%	180	\$100.71
Respiratory Therapists	2,213	2,702	489	22.1%	179	\$29.44
Operations Research Analysts	1,928	2,331	404	21.0%	179	\$40.66
Fundraisers	1,375	1,608	233	17.0%	179	\$29.62

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Travel Agents	1,252	1,305	53	4.3%	179	\$16.96
Mixing & Blending Machine Setters, Operators, & Tenders	1,508	1,480	(28)	(1.8%)	176	\$16.17
Pest Control Workers	1,195	1,252	58	4.8%	176	\$18.43
Food Batchmakers	1,119	1,173	54	4.8%	176	\$11.61
Web Developers	1,795	2,071	276	15.4%	175	\$33.35
Sewing Machine Operators	1,468	1,521	54	3.7%	175	\$10.89
Physical Therapist Assistants	994	1,315	321	32.3%	175	\$35.37
Chemists	1,602	1,799	197	12.3%	174	\$44.01
Computer Network Architects	2,348	2,398	49	2.1%	172	\$56.18
Librarians	1,471	1,649	178	12.1%	172	\$30.01
Editors	1,460	1,537	77	5.3%	171	\$36.42
Orderlies	1,392	1,485	92	6.6%	171	\$12.17
Security & Fire Alarm Systems Installers	1,313	1,396	84	6.4%	171	\$25.02
Excavating & Loading Machine & Dragline Operators	1,243	1,382	139	11.2%	171	\$18.37
Insulation Workers, Mechanical	1,249	1,407	158	12.7%	170	\$20.36
Real Estate Brokers	1,583	1,697	114	7.2%	167	\$34.19
Healthcare Support Workers, All Other	1,216	1,395	179	14.7%	167	\$15.31
Audio & Video Equipment Technicians	1,238	1,444	206	16.6%	165	\$22.27
Captains, Mates, & Pilots of Water Vessels	1,848	1,554	(294)	(15.9%)	164	\$68.39
Database Administrators	1,963	2,127	164	8.4%	162	\$46.80
Information Security Analysts	1,530	1,907	377	24.6%	160	\$49.95
Physician Assistants	1,677	2,167	490	29.2%	158	\$57.41
Cabinetmakers & Bench Carpenters	1,466	1,498	32	2.2%	158	\$14.25
Electronics Engineers, Except Computer	2,367	2,355	(12)	(0.5%)	157	\$58.36
Helpers--Carpenters	1,038	1,132	94	9.1%	157	\$16.54
Machine Feeders & Offbearers	1,141	1,159	18	1.6%	156	\$13.91
Skincare Specialists	1,136	1,299	163	14.3%	155	\$10.10
Veterinary Assistants & Laboratory Animal Caretakers	742	917	175	23.6%	152	\$12.09
Water & Wastewater Treatment Plant & System Operators	1,559	1,613	54	3.5%	151	\$21.51
Religious Workers, All Other	965	1,121	156	16.1%	150	\$7.68
Pipelayers	930	1,202	272	29.2%	148	\$15.90



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Brickmasons & Blockmasons	1,270	1,399	129	10.2%	147	\$22.17
Social & Community Service Managers	1,112	1,458	346	31.1%	147	\$33.62
Hazardous Materials Removal Workers	1,038	1,128	90	8.7%	147	\$17.89
Painters, Transportation Equipment	1,215	1,297	82	6.7%	146	\$19.13
Brokerage Clerks	1,176	1,332	156	13.3%	146	\$27.29
Food Preparation & Serving Related Workers, All Other	709	840	131	18.5%	146	\$11.45
Electrical & Electronics Repairers, Commercial & Industrial Equipment	1,571	1,613	42	2.7%	144	\$27.36
Transportation Inspectors	1,378	1,403	25	1.8%	144	\$31.97
Aerospace Engineers	2,191	2,187	(4)	(0.2%)	142	\$62.76
Elevator Installers & Repairers	906	1,148	242	26.7%	142	\$32.97
Helpers, Construction Trades, All Other	938	1,021	83	8.9%	141	\$14.82
Occupational Therapists	1,594	1,966	372	23.4%	137	\$42.92
Boilermakers	1,297	1,336	39	3.0%	136	\$28.44
Miscellaneous Construction & Related Workers	1,022	1,125	103	10.1%	136	\$18.67
Paving, Surfacing, & Tamping Equipment Operators	892	1,032	141	15.8%	135	\$18.53
Police, Fire, & Ambulance Dispatchers	1,235	1,341	106	8.6%	133	\$20.41
Industrial Engineering Technicians	1,372	1,301	(72)	(5.2%)	131	\$34.04
Environmental Scientists & Specialists, Including Health	955	1,131	176	18.5%	131	\$41.40
Interior Designers	1,173	1,253	80	6.8%	130	\$25.63
Switchboard Operators, Including Answering Service	1,128	954	(174)	(15.4%)	130	\$13.22
Library Assistants, Clerical	790	847	57	7.2%	130	\$13.49
Mechanical Engineering Technicians	1,269	1,299	30	2.4%	129	\$33.67
Procurement Clerks	1,207	1,209	2	0.2%	129	\$20.57
Interpreters & Translators	806	1,128	323	40.0%	129	\$25.59
Clinical, Counseling, & School Psychologists	1,323	1,580	257	19.4%	128	\$34.42
Education Administrators, Postsecondary	1,166	1,422	256	21.9%	127	\$47.01
Credit Analysts	1,251	1,340	88	7.1%	126	\$34.22
Tile & Marble Setters	1,056	1,170	114	10.8%	126	\$17.13
Purchasing Managers	1,350	1,434	84	6.2%	125	\$61.19
Compensation, Benefits, & Job Analysis Specialists	1,092	1,231	139	12.7%	125	\$32.62
Environmental Science & Protection Technicians, Including Health	843	971	129	15.3%	122	\$20.02

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Psychiatric Technicians	1,488	1,487	(1)	(0.1%)	121	\$16.46
Office Machine Operators, Except Computer	986	889	(97)	(9.8%)	120	\$14.73
Library Technicians	705	773	68	9.6%	120	\$14.51
Career/Technical Education Teachers, Secondary School	1,446	1,576	130	9.0%	119	\$29.38
Opticians, Dispensing	1,346	1,433	87	6.5%	119	\$16.59
Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	1,061	983	(78)	(7.4%)	119	\$15.19
Music Directors & Composers	864	957	93	10.8%	118	\$26.38
Medical Transcriptionists	819	825	6	0.7%	116	\$18.33
Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	957	838	(119)	(12.5%)	115	\$18.16
Diagnostic Medical Sonographers	1,363	1,663	300	22.0%	113	\$35.73
Mail Clerks & Mail Machine Operators, Except Postal Service	1,012	991	(21)	(2.1%)	112	\$14.85
Natural Sciences Managers	1,034	1,159	125	12.1%	110	\$61.25
Art Directors	869	969	100	11.5%	110	\$26.81
Electrical & Electronics Drafters	1,015	1,042	27	2.7%	109	\$28.40
Nurse Anesthetists	1,666	1,867	201	12.1%	108	\$79.12
Special Education Teachers, Middle School	1,177	1,320	143	12.1%	108	\$28.58
Public Relations & Fundraising Managers	1,039	1,170	132	12.7%	108	\$58.05
Appraisers & Assessors of Real Estate	1,241	1,316	75	6.0%	107	\$28.59
First-Line Supervisors of Protective Service Workers, All Other	928	1,046	118	12.7%	107	\$26.33
Concierges	644	725	81	12.5%	107	\$13.16
Surveyors	1,323	1,388	65	4.9%	106	\$28.42
Mental Health & Substance Abuse Social Workers	833	992	159	19.1%	106	\$22.21
Producers & Directors	1,038	1,037	(1)	(0.1%)	104	\$28.65
Air Traffic Controllers	1,031	1,084	54	5.2%	104	\$63.08
Counselors, All Other	799	949	149	18.7%	104	\$30.34
Farmworkers, Farm, Ranch, & Aquacultural Animals	545	624	78	14.4%	104	\$15.75
Millwrights	985	1,100	115	11.7%	102	\$26.63
Detectives & Criminal Investigators	1,365	1,469	104	7.6%	101	\$41.62
Technical Writers	946	1,006	60	6.3%	101	\$33.12
Pump Operators, Except Wellhead Pumps	854	823	(31)	(3.6%)	101	\$20.50



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Commercial Pilots	1,105	844	(260)	(23.6%)	100	\$45.32
Insurance Underwriters	1,120	1,158	38	3.4%	99	\$30.91
Education Administrators, Preschool & Childcare Center/Program	988	1,143	155	15.7%	99	\$20.73
Pressers, Textile, Garment, & Related Materials	939	761	(178)	(18.9%)	99	\$10.16
Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	905	819	(86)	(9.5%)	99	\$17.32
Jewelers & Precious Stone & Metal Workers	752	761	9	1.2%	99	\$17.68
Community Health Workers	693	823	129	18.6%	99	\$21.77
Dentists, General	2,106	2,377	272	12.9%	97	\$81.05
Plating & Coating Machine Setters, Operators, & Tenders, Metal & Plastic	914	875	(39)	(4.2%)	96	\$14.12
Tour & Travel Guides	527	625	98	18.6%	96	\$14.08
Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	922	862	(60)	(6.5%)	95	\$16.85
Cardiovascular Technologists & Technicians	1,401	1,523	122	8.7%	93	\$23.99
Medical Equipment Repairers	703	820	117	16.6%	93	\$20.53
Education, Training, & Library Workers, All Other	686	885	198	28.9%	93	\$14.05
Door-To-Door Sales Workers, News & Street Vendors, & Related Workers	881	635	(246)	(27.9%)	92	\$9.58
Dietitians & Nutritionists	1,123	1,273	150	13.4%	91	\$28.71
Environmental Engineers	1,064	1,136	72	6.7%	91	\$52.08
Physical Therapist Aides	571	686	115	20.2%	90	\$13.49
Tailors, Dressmakers, & Custom Sewers	689	643	(46)	(6.6%)	89	\$13.71
Material Moving Workers, All Other	659	695	37	5.5%	89	\$15.59
Farmers, Ranchers, & Other Agricultural Managers	827	851	23	2.8%	88	\$19.77
Extruding, Forming, Pressing, & Compacting Machine Setters, Operators, & Tenders	797	774	(23)	(2.9%)	86	\$13.84
Rehabilitation Counselors	628	764	136	21.6%	85	\$20.34
Choreographers	492	478	(14)	(2.9%)	85	\$30.56
Family & General Practitioners	1,974	2,183	208	10.6%	84	\$107.62
Postal Service Mail Sorters, Processors, & Processing Machine Operators	1,108	921	(186)	(16.8%)	84	\$28.78
Cleaning, Washing, & Metal Pickling Equipment Operators & Tenders	512	528	16	3.1%	84	\$11.86
Health Educators	572	687	114	19.9%	83	\$23.15
Transportation Workers, All Other	767	747	(20)	(2.6%)	80	\$30.28



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Community & Social Service Specialists, All Other	518	655	137	26.5%	80	\$19.25
Health & Safety Engineers, Except Mining Safety Engineers & Inspectors	1,114	1,126	12	1.0%	79	\$46.59
Adult Basic & Secondary Education & Literacy Teachers & Instructors	682	675	(7)	(1.0%)	79	\$26.74
Glaziers	572	650	78	13.7%	79	\$16.97
Graders & Sorters, Agricultural Products	535	536	1	0.2%	79	\$12.66
Probation Officers & Correctional Treatment Specialists	763	844	80	10.5%	76	\$21.87
Helpers--Painters, Paperhangers, Plasterers, & Stucco Masons	460	539	80	17.4%	76	\$13.79
Medical Equipment Preparers	521	621	100	19.2%	75	\$16.40
Gaming Dealers	422	473	51	12.0%	75	\$12.24
Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	616	627	10	1.6%	74	\$19.06
Social Workers, All Other	534	681	147	27.4%	74	\$38.34
First-Line Supervisors of Police & Detectives	933	1,038	105	11.3%	72	\$45.98
Occupational Therapy Assistants	471	609	138	29.4%	72	\$34.96
Entertainers & Performers, Sports & Related Workers, All Other	535	595	60	11.2%	71	\$15.91
Print Binding & Finishing Workers	527	497	(30)	(5.7%)	71	\$15.39
Budget Analysts	799	852	53	6.7%	70	\$39.61
Designers, All Other	640	680	41	6.4%	70	\$20.11
Paper Goods Machine Setters, Operators, & Tenders	622	637	15	2.5%	70	\$12.43
Stationary Engineers & Boiler Operators	610	642	31	5.1%	70	\$18.67
Computer Operators	610	531	(79)	(13.0%)	70	\$24.41
Commercial & Industrial Designers	652	672	20	3.0%	69	\$35.75
Cutting & Slicing Machine Setters, Operators, & Tenders	527	549	22	4.2%	69	\$14.04
Lodging Managers	543	614	70	12.9%	68	\$26.39
Building Cleaning Workers, All Other	457	502	45	9.8%	68	\$11.86
Food Cooking Machine Operators & Tenders	408	428	20	4.9%	68	\$10.88
Statisticians	549	724	176	32.0%	67	\$38.47
Woodworking Machine Setters, Operators, & Tenders, Except Sawing	449	470	22	4.8%	67	\$12.70
Agricultural Workers, All Other	369	403	35	9.4%	67	\$13.27
Carpet Installers	685	638	(46)	(6.8%)	66	\$16.31
Highway Maintenance Workers	434	547	113	26.1%	66	\$19.83

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Magnetic Resonance Imaging Technologists	830	963	133	16.0%	63	\$33.95
Plasterers & Stucco Masons	677	682	4	0.7%	63	\$21.51
Riggers	629	640	12	1.8%	63	\$26.86
Tank Car, Truck, & Ship Loaders	483	470	(14)	(2.8%)	62	\$22.43
Fine Artists, Including Painters, Sculptors, & Illustrators	482	544	62	12.9%	62	\$10.19
Helpers--Brickmasons, Blockmasons, Stonemasons, & Tile & Marble Setters	398	449	51	12.7%	62	\$23.49
Private Detectives & Investigators	595	647	52	8.7%	61	\$25.83
Food Processing Workers, All Other	552	565	13	2.4%	61	\$12.61
Coin, Vending, & Amusement Machine Servicers & Repairers	469	492	23	4.9%	61	\$16.51
Baggage Porters & Bellhops	333	408	75	22.4%	61	\$11.28
Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic	470	543	73	15.5%	60	\$25.90
Fence Erectors	414	478	64	15.5%	59	\$10.96
Marriage & Family Therapists	387	515	128	33.0%	59	\$18.54
Animal Trainers	314	380	66	21.1%	58	\$10.83
Dietetic Technicians	603	659	56	9.2%	57	\$12.65
Ophthalmic Medical Technicians	485	613	128	26.3%	57	\$15.36
Athletes & Sports Competitors	334	379	45	13.5%	57	\$29.94
Actors	371	444	73	19.7%	56	\$22.40
Cooks, All Other	369	390	21	5.7%	56	\$8.84
Earth Drillers, Except Oil & Gas	233	370	137	58.7%	55	\$17.77
Radio, Cellular, & Tower Equipment Installers & Repairs	474	483	8	1.8%	54	\$20.82
Rail Car Repairers	467	512	45	9.7%	54	\$21.13
Psychiatric Aides	453	472	19	4.2%	54	\$13.80
Training & Development Managers	477	552	75	15.7%	53	\$62.53
Mechanical Door Repairers	467	559	91	19.5%	53	\$21.05
Shampooers	390	444	53	13.7%	53	\$9.22
Veterinarians	875	1,030	155	17.7%	52	\$60.22
Credit Counselors	484	564	79	16.4%	52	\$20.35
Biological Scientists, All Other	438	513	75	17.1%	52	\$46.42
Materials Engineers	808	794	(14)	(1.7%)	51	\$47.50
Psychologists, All Other	554	644	89	16.1%	51	\$43.96

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	502	442	(60)	(12.0%)	51	\$19.09
Word Processors & Typists	437	392	(46)	(10.4%)	51	\$18.76
Forging Machine Setters, Operators, & Tenders, Metal & Plastic	559	473	(86)	(15.4%)	50	\$16.14
Floral Designers	507	467	(40)	(7.8%)	50	\$11.96
Legal Support Workers, All Other	476	524	48	10.2%	50	\$28.59
Outdoor Power Equipment & Other Small Engine Mechanics	456	481	25	5.5%	50	\$19.74
Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	496	417	(78)	(15.8%)	49	\$20.61
Broadcast Technicians	484	434	(50)	(10.4%)	49	\$17.66
Education Administrators, All Other	435	545	111	25.4%	49	\$38.95
Home Appliance Repairers	421	442	21	5.0%	49	\$20.52
Upholsterers	464	430	(34)	(7.4%)	47	\$13.93
Railroad Conductors & Yardmasters	462	485	23	5.1%	47	\$24.78
Dental Laboratory Technicians	357	369	13	3.5%	47	\$14.48
Gaming & Sports Book Writers & Runners	271	295	24	8.8%	47	\$15.70
Entertainment Attendants & Related Workers, All Other	193	204	11	5.9%	47	\$13.16
Tapers	473	448	(25)	(5.4%)	46	\$18.47
Electronic Home Entertainment Equipment Installers & Repairers	377	394	17	4.6%	46	\$18.50
Financial Examiners	457	532	75	16.4%	45	\$37.12
New Accounts Clerks	402	379	(23)	(5.7%)	45	\$15.80
Occupational Health & Safety Technicians	697	737	40	5.8%	44	\$26.23
Electro-Mechanical Technicians	441	441	0	0.0%	44	\$24.71
Multimedia Artists & Animators	371	390	19	5.2%	44	\$21.52
Forensic Science Technicians	299	355	56	18.6%	44	\$31.80
Helpers--Roofers	270	312	42	15.5%	44	\$16.82
Computer Hardware Engineers	532	561	28	5.3%	43	\$53.35
Athletic Trainers	530	633	103	19.3%	43	\$29.53
Rail Yard Engineers, Dinkey Operators, & Hostlers	427	440	13	3.1%	43	\$19.87
Meter Readers, Utilities	427	422	(5)	(1.2%)	43	\$14.94
Labor Relations Specialists	418	424	6	1.4%	43	\$41.93
Set & Exhibit Designers	358	402	45	12.5%	43	\$18.40
Wind Turbine Service Technicians	277	359	83	29.9%	43	\$26.05

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Therapists, All Other	507	620	113	22.3%	42	\$15.67
Tax Examiners & Collectors, & Revenue Agents	478	491	14	2.9%	42	\$43.52
Crushing, Grinding, & Polishing Machine Setters, Operators, & Tenders	347	351	5	1.4%	42	\$16.19
Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	404	440	35	8.7%	41	\$35.55
Metal Workers & Plastic Workers, All Other	396	369	(27)	(6.9%)	41	\$20.01
Healthcare Practitioners & Technical Workers, All Other	527	612	84	16.0%	40	\$25.25
First-Line Supervisors of Fire Fighting & Prevention Workers	512	571	59	11.5%	40	\$37.84
Electric Motor, Power Tool, & Related Repairers	323	364	40	12.5%	40	\$20.17
Media & Communication Workers, All Other	314	373	59	18.9%	40	\$22.60
Dancers	227	228	1	0.2%	40	\$11.55
Umpires, Referees, & Other Sports Officials	221	263	42	19.0%	40	\$14.47
Credit Authorizers, Checkers, & Clerks	383	388	6	1.5%	39	\$20.07
Microbiologists	335	390	55	16.4%	39	\$25.31
Molders, Shapers, & Casters, Except Metal & Plastic	310	334	24	7.6%	39	\$15.93
Internists, General	1,122	1,152	30	2.7%	37	\$84.59
Postal Service Clerks	523	461	(62)	(11.9%)	37	\$29.53
Reporters & Correspondents	353	261	(93)	(26.2%)	37	\$24.40
Electronic Equipment Installers & Repairers, Motor Vehicles	346	289	(57)	(16.5%)	37	\$16.36
Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	341	321	(19)	(5.7%)	37	\$19.88
Prepress Technicians & Workers	323	284	(39)	(12.0%)	37	\$19.44
Anesthesiologists	1,123	1,148	25	2.2%	36	\$132.81
Landscape Architects	434	450	16	3.7%	36	\$33.69
Locomotive Engineers	358	378	20	5.5%	36	\$28.17
Radio & Television Announcers	348	284	(65)	(18.5%)	36	\$21.67
Biochemists & Biophysicists	311	359	48	15.5%	36	\$34.91
Urban & Regional Planners	302	355	52	17.3%	36	\$31.14
Etchers & Engravers	280	292	12	4.4%	36	\$12.93
Social Scientists & Related Workers, All Other	234	288	53	22.8%	36	\$43.06
Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	362	344	(18)	(4.9%)	35	\$15.27

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Public Address System & Other Announcers	296	299	3	1.1%	35	\$10.88
Funeral Attendants	210	220	10	4.7%	35	\$10.12
Locker Room, Coatroom, & Dressing Room Attendants	127	153	26	20.4%	35	\$12.28
Cartographers & Photogrammetrists	417	440	23	5.5%	34	\$30.77
Drafters, All Other	306	321	15	5.0%	34	\$22.29
Recreational Vehicle Service Technicians	303	297	(6)	(2.1%)	34	\$18.71
Floor Layers, Except Carpet, Wood, & Hard Tiles	268	318	51	19.0%	34	\$19.62
Camera Operators, Television, Video, & Motion Picture	341	317	(24)	(7.0%)	33	\$25.04
Engine & Other Machine Assemblers	314	241	(73)	(23.3%)	33	\$16.79
Media & Communication Equipment Workers, All Other	308	305	(3)	(1.1%)	33	\$49.93
Craft Artists	257	291	34	13.1%	33	\$7.42
Shoe & Leather Workers & Repairers	224	257	33	14.9%	33	\$12.60
Radiation Therapists	557	599	42	7.5%	32	\$42.55
Locksmiths & Safe Repairers	291	284	(7)	(2.4%)	32	\$22.60
Extruding & Forming Machine Setters, Operators, & Tenders, Synthetic & Glass Fibers	239	222	(17)	(7.1%)	32	\$14.26
Ophthalmic Laboratory Technicians	221	252	31	13.9%	32	\$15.62
Surgeons	951	972	21	2.2%	31	\$124.82
Optometrists	754	822	68	9.1%	31	\$53.06
Marine Engineers & Naval Architects	490	512	22	4.6%	31	\$42.94
Health Diagnosing & Treating Practitioners, All Other	460	537	77	16.6%	31	\$31.54
Power Plant Operators	358	308	(49)	(13.8%)	31	\$39.00
Airfield Operations Specialists	335	326	(9)	(2.8%)	31	\$20.57
Tool & Die Makers	323	308	(15)	(4.7%)	31	\$25.53
Stonemasons	258	291	33	12.6%	31	\$13.80
Environmental Engineering Technicians	252	294	42	16.5%	31	\$29.99
Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders	220	225	5	2.3%	31	\$13.03
Aerospace Engineering & Operations Technicians	287	304	17	5.8%	30	\$36.86
Morticians, Undertakers, & Funeral Directors	242	247	5	2.3%	30	\$39.66
Pharmacy Aides	241	233	(7)	(3.0%)	30	\$11.61
First-Line Supervisors of Farming, Fishing, & Forestry Workers	167	195	28	16.9%	30	\$28.63

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Film & Video Editors	284	281	(3)	(1.0%)	29	\$22.49
Special Education Teachers, All Other	236	313	77	32.8%	29	\$29.31
Conservation Scientists	231	260	29	12.4%	29	\$24.30
Farm Equipment Mechanics & Service Technicians	211	252	41	19.3%	28	\$18.80
Woodworkers, All Other	211	223	11	5.4%	28	\$8.77
Soil & Plant Scientists	200	236	36	17.8%	28	\$31.74
Motorboat Mechanics & Service Technicians	269	259	(10)	(3.6%)	27	\$20.25
Advertising & Promotions Managers	258	275	17	6.6%	27	\$45.04
Automotive Glass Installers & Repairers	248	271	23	9.4%	27	\$22.93
Desktop Publishers	245	225	(20)	(8.1%)	27	\$19.94
Precision Instrument & Equipment Repairers, All Other	220	243	23	10.7%	27	\$29.74
Sawing Machine Setters, Operators, & Tenders, Wood	214	223	9	4.4%	27	\$13.27
Gaming Service Workers, All Other	136	166	30	22.1%	27	\$12.64
Gaming Change Persons & Booth Cashiers	124	143	18	14.9%	27	\$15.48
Psychiatrists	639	703	64	10.0%	26	\$66.13
Avionics Technicians	342	344	2	0.6%	26	\$36.99
Computer & Information Research Scientists	245	293	48	19.7%	26	\$62.54
Agents & Business Managers of Artists, Performers, & Athletes	205	220	15	7.4%	26	\$30.59
Agricultural & Food Science Technicians	160	200	40	24.9%	26	\$24.39
Actuaries	275	340	65	23.6%	25	\$45.12
Ship Engineers	201	192	(9)	(4.5%)	25	\$37.10
Fishers & Related Fishing Workers	143	156	13	9.0%	25	\$12.00
Social Science Research Assistants	140	193	53	37.5%	25	\$20.58
Grinding & Polishing Workers, Hand	219	189	(30)	(13.8%)	24	\$17.54
Transportation Security Screeners	204	234	30	14.9%	24	\$52.57
Atmospheric & Space Scientists	201	233	32	16.0%	24	\$40.38
Pesticide Handlers, Sprayers, & Applicators, Vegetation	143	172	29	20.6%	24	\$14.81
Septic Tank Servicers & Sewer Pipe Cleaners	140	189	49	34.8%	24	\$15.61
First-Line Supervisors of Correctional Officers	304	314	10	3.2%	23	\$22.82
Compensation & Benefits Managers	248	264	17	6.7%	23	\$60.48

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Fire Inspectors & Investigators	221	238	16	7.5%	23	\$34.99
Rail-Track Laying & Maintenance Equipment Operators	184	212	28	15.3%	23	\$12.74
Museum Technicians & Conservators	166	195	29	17.7%	23	\$19.58
Grounds Maintenance Workers, All Other	159	173	14	9.0%	23	\$16.11
Solar Photovoltaic Installers	124	171	46	37.4%	23	\$19.02
Nuclear Medicine Technologists	306	344	38	12.6%	22	\$40.80
Career/Technical Education Teachers, Middle School	253	274	20	7.9%	22	\$29.44
Epidemiologists	219	239	20	9.3%	22	\$28.27
Furniture Finishers	196	191	(5)	(2.4%)	22	\$14.13
Metal-Refining Furnace Operators & Tenders	170	179	9	5.2%	22	\$17.30
Sewers, Hand	165	164	(1)	(0.5%)	22	\$15.01
Transportation Attendants, Except Flight Attendants	138	164	25	18.4%	22	\$9.87
Pediatricians, General	630	648	18	2.9%	21	\$73.68
Insurance Appraisers, Auto Damage	227	241	14	6.1%	21	\$30.52
Fiberglass Laminators & Fabricators	186	173	(14)	(7.3%)	21	\$14.60
Fashion Designers	178	201	23	13.1%	21	\$29.16
Pile-Driver Operators	155	174	19	12.3%	21	\$24.23
Explosives Workers, Ordnance Handling Experts, & Blasters	147	161	14	9.4%	21	\$20.66
Physical Scientists, All Other	195	217	21	10.9%	20	\$41.32
Musical Instrument Repairers & Tuners	191	185	(6)	(3.4%)	20	\$16.33
Commercial Divers	168	180	12	7.1%	20	\$20.69
Conveyor Operators & Tenders	143	156	13	8.8%	20	\$14.14
Aircraft Cargo Handling Supervisors	169	170	1	0.4%	19	\$23.29
Tool Grinders, Filers, & Sharpeners	132	133	1	0.8%	19	\$19.85
Extraction Workers, All Other	130	142	12	9.5%	19	\$11.01
Judges, Magistrate Judges, & Magistrates	293	320	28	9.5%	18	\$54.61
Aircraft Structure, Surfaces, Rigging, & Systems Assemblers	254	164	(90)	(35.4%)	18	\$37.66
Legislators	181	215	35	19.1%	18	\$23.80
Railroad Brake, Signal, & Switch Operators	181	188	7	4.1%	18	\$19.50
Animal Control Workers	171	186	15	8.8%	18	\$19.11
Slaughterers & Meat Packers	145	147	2	1.4%	18	\$8.49

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Bicycle Repairers	116	150	34	29.6%	18	\$13.89
Financial Clerks, All Other	100	144	44	43.9%	18	\$19.71
Biomedical Engineers	194	216	22	11.5%	17	\$45.22
Floor Sanders & Finishers	158	160	2	1.5%	17	\$21.35
Semiconductor Processors	158	131	(27)	(17.0%)	17	\$16.37
Signal & Track Switch Repairers	154	159	5	3.3%	17	\$32.90
Pourers & Casters, Metal	147	138	(9)	(5.8%)	17	\$11.61
Subway & Streetcar Operators	145	154	9	6.4%	17	\$20.45
Curators	123	147	25	20.0%	17	\$27.62
Funeral Service Managers	200	204	4	2.2%	16	\$58.49
Astronomers	173	186	13	7.5%	16	\$60.13
Electrical & Electronics Installers & Repairers, Transportation Equipment	165	172	8	4.6%	16	\$30.73
Materials Scientists	156	168	12	7.6%	16	\$44.08
Sound Engineering Technicians	141	142	0	0.0%	16	\$26.90
Meat, Poultry, & Fish Cutters & Trimmers	129	121	(8)	(6.3%)	16	\$13.32
Medical Appliance Technicians	114	129	15	12.9%	16	\$18.84
Photographic Process Workers & Processing Machine Operators	103	102	(1)	(1.2%)	16	\$13.94
Ambulance Drivers & Attendants, Except Emergency Medical Technicians	88	100	12	13.9%	16	\$10.46
Costume Attendants	64	71	7	10.5%	16	\$16.10
Coil Winders, Tapers, & Finishers	146	119	(26)	(18.2%)	15	\$31.59
Painting, Coating, & Decorating Workers	127	133	6	4.8%	15	\$16.63
Gas Compressor & Gas Pumping Station Operators	123	121	(1)	(0.9%)	15	\$24.85
First-Line Supervisors of Gaming Workers	117	131	13	11.5%	15	\$21.63
Continuous Mining Machine Operators	105	114	9	8.6%	15	\$19.02
Hunters & Trappers	88	96	7	8.2%	15	\$10.87
Models	73	89	16	22.1%	15	\$10.45
Administrative Law Judges, Adjudicators, & Hearing Officers	244	261	16	6.7%	14	\$53.11
Manufactured Building & Mobile Home Installers	205	183	(22)	(10.6%)	14	\$15.64
Layout Workers, Metal & Plastic	130	124	(7)	(5.0%)	14	\$22.84
Logging Equipment Operators	83	77	(6)	(7.3%)	14	\$18.59



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Textile Bleaching & Dyeing Machine Operators & Tenders	82	97	15	18.0%	14	\$7.47
Chiropractors	485	453	(31)	(6.5%)	13	\$36.66
Recreational Therapists	218	236	18	8.3%	13	\$24.79
Economists	134	160	25	18.9%	13	\$54.41
Plant & System Operators, All Other	111	116	6	5.2%	13	\$20.21
Physicists	110	136	26	23.4%	13	\$48.60
Artists & Related Workers, All Other	100	111	11	10.6%	13	\$23.06
Textile, Apparel, & Furnishings Workers, All Other	79	91	11	14.1%	13	\$10.81
Motion Picture Projectionists	57	64	7	12.3%	13	\$14.24
Mining & Geological Engineers, Including Mining Safety Engineers	142	146	4	2.9%	12	\$71.78
Court Reporters	128	123	(5)	(3.5%)	12	\$26.12
Motorcycle Mechanics	119	114	(5)	(3.9%)	12	\$16.61
Statistical Assistants	75	90	15	20.3%	12	\$26.83
Arbitrators, Mediators, & Conciliators	164	187	22	13.7%	11	\$34.50
Transit & Railroad Police	155	160	5	3.3%	11	\$21.16
Exercise Physiologists	148	171	22	15.0%	11	\$23.63
Emergency Management Directors	119	128	9	7.7%	11	\$52.65
Telephone Operators	81	72	(9)	(10.7%)	11	\$14.74
Hydrologists	78	92	15	19.3%	11	\$47.06
Anthropologists & Archeologists	75	87	13	17.2%	11	\$41.12
Embalmers	69	68	(1)	(2.1%)	11	\$23.11
Forest & Conservation Technicians	64	85	21	32.8%	11	\$21.79
Obstetricians & Gynecologists	282	295	13	4.6%	10	\$94.31
Audiologists	163	193	30	18.4%	10	\$31.38
Respiratory Therapy Technicians	155	100	(55)	(35.4%)	10	\$23.85
Power Distributors & Dispatchers	106	106	0	0.0%	10	\$30.49
Foundry Mold & Coremakers	100	88	(12)	(11.8%)	10	\$8.72
Model Makers, Metal & Plastic	99	86	(13)	(13.3%)	10	\$20.59
Adhesive Bonding Machine Operators & Tenders	75	73	(2)	(2.7%)	10	\$26.88
Survey Researchers	43	75	33	76.3%	10	\$29.23
Textile Cutting Machine Setters, Operators, & Tenders	88	92	4	4.4%	9	\$12.20

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Communications Equipment Operators, All Other	78	82	5	5.9%	9	\$17.66
Traffic Technicians	75	85	9	12.4%	9	\$26.33
Terrazzo Workers & Finishers	75	84	9	11.9%	9	\$11.15
Paperhangers	75	77	2	2.9%	9	\$14.40
Audio-Visual & Multimedia Collections Specialists	71	85	14	19.9%	9	\$28.48
Nuclear Technicians	69	74	5	7.6%	9	\$43.78
Fallers	67	44	(24)	(35.1%)	9	\$21.25
Archivists	64	76	12	18.6%	9	\$28.08
Fabric & Apparel Patternmakers	59	64	5	8.1%	9	\$10.03
Food Scientists & Technologists	56	73	17	29.5%	9	\$32.93
Agricultural Inspectors	49	59	10	20.1%	9	\$33.48
Podiatrists	111	122	11	10.2%	8	\$79.69
Orthotists & Prosthetists	91	106	15	16.3%	8	\$48.96
Motorboat Operators	86	83	(2)	(2.8%)	8	\$11.29
Refractory Materials Repairers, Except Brickmasons	84	81	(3)	(3.5%)	8	\$20.85
Furnace, Kiln, Oven, Drier, & Kettle Operators & Tenders	76	74	(2)	(2.2%)	8	\$17.74
Watch Repairers	72	70	(2)	(2.4%)	8	\$13.26
Model Makers, Wood	60	61	0	0.0%	8	\$20.11
Cutters & Trimmers, Hand	60	58	(2)	(3.5%)	8	\$24.90
Farm & Home Management Advisors	58	72	14	24.1%	8	\$11.12
Correspondence Clerks	58	64	6	10.6%	8	\$18.12
Political Scientists	55	64	9	17.0%	8	\$46.37
Gaming Managers	53	65	12	22.0%	8	\$118.01
Occupational Therapy Aides	47	66	18	38.7%	8	\$13.82
Special Education Teachers, Preschool	43	81	38	87.8%	8	\$28.15
Proofreaders & Copy Markers	41	54	13	32.7%	8	\$18.33
Forest & Conservation Workers	40	46	6	15.1%	8	\$15.51
Fabric Menders, Except Garment	70	69	(1)	(1.7%)	7	\$10.42
Bailiffs	64	74	10	14.9%	7	\$25.93
Hoist & Winch Operators	61	59	(1)	(2.5%)	7	\$21.14
Mining Machine Operators, All Other	57	52	(5)	(8.9%)	7	\$21.39
Foresters	54	61	7	12.8%	7	\$34.14



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Mine Cutting & Channeling Machine Operators	52	57	6	10.8%	7	\$16.84
Zoologists & Wildlife Biologists	50	68	18	36.8%	7	\$40.10
Camera & Photographic Equipment Repairers	50	58	8	14.9%	7	\$13.63
Animal Breeders	36	44	8	21.2%	7	\$19.36
Judicial Law Clerks	103	114	12	11.3%	6	\$22.86
Parking Enforcement Workers	101	77	(24)	(23.6%)	6	\$15.69
Patternmakers, Metal & Plastic	63	58	(6)	(8.8%)	6	\$12.92
Tire Builders	61	60	(2)	(3.0%)	6	\$30.32
Mathematicians	54	67	13	23.8%	6	\$40.83
Textile Knitting & Weaving Machine Setters, Operators, & Tenders	54	50	(4)	(7.2%)	6	\$7.25
Rail Transportation Workers, All Other	53	56	2	4.5%	6	\$39.71
Textile Winding, Twisting, & Drawing Out Machine Setters, Operators, & Tenders	49	58	9	17.8%	6	\$7.35
Historians	39	46	7	17.4%	6	\$31.16
Nuclear Engineers	58	66	9	14.9%	5	\$63.01
Nurse Midwives	48	65	17	35.6%	5	\$48.16
Patternmakers, Wood	37	36	(0)	0.0%	5	\$20.62
Dredge Operators	34	34	0	0.0%	5	\$22.59
Cooks, Private Household	27	31	5	18.1%	5	\$19.93
Rock Splitters, Quarry	25	33	8	31.2%	5	\$15.54
Postmasters & Mail Superintendents	62	52	(10)	(16.7%)	4	\$41.59
Hearing Aid Specialists	36	45	9	25.0%	4	\$19.94
Cooling & Freezing Equipment Operators & Tenders	33	35	2	5.6%	4	\$32.50
Forest Fire Inspectors & Prevention Specialists	31	38	7	21.8%	4	\$25.44
Genetic Counselors	29	44	15	52.0%	4	\$39.60
Loading Machine Operators, Underground Mining	26	33	7	26.8%	4	\$19.28
Log Graders & Scalers	26	25	(1)	(4.6%)	4	\$19.00
Animal Scientists	25	31	6	22.7%	4	\$26.39
Life Scientists, All Other	24	37	13	53.1%	4	\$32.11
Gaming Cage Workers	23	31	8	33.0%	4	\$7.73
Orthodontists	54	58	5	8.7%	3	\$92.15

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Miscellaneous Mathematical Science Occupations	34	37	4	10.6%	3	\$90.77
Bridge & Lock Tenders	25	27	2	9.5%	3	\$14.26
Broadcast News Analysts	24	26	2	8.2%	3	\$30.09
Sociologists	18	23	5	29.7%	3	\$32.07
Logging Workers, All Other	17	15	(2)	(11.7%)	3	\$7.77
Oral & Maxillofacial Surgeons	29	32	3	10.9%	2	\$100.95
Nuclear Power Reactor Operators	26	26	0	0.0%	2	\$30.79
Agricultural Engineers	23	25	2	11.1%	2	\$59.13
Fish & Game Wardens	21	25	4	20.4%	2	\$31.76
Makeup Artists, Theatrical & Performance	13	16	3	20.7%	2	\$20.04
Roof Bolters, Mining	13	14	1	8.4%	2	\$23.93
Dentists, All Other Specialists	17	21	4	25.9%	1	\$91.01
Industrial-Organizational Psychologists	12	12	0	0.0%	1	\$44.42
Radio Operators	11	10	(1)	(11.4%)	1	\$21.91
Timing Device Assemblers & Adjusters	10	9	(1)	(11.8%)	1	\$12.31
Geographers	9	11	2	21.1%	1	\$33.63
Mine Shuttle Car Operators	9	10	0	0.0%	1	\$19.57
Locomotive Firers	7	5	(2)	(27.7%)	1	\$33.60
Gaming Surveillance Officers & Gaming Investigators	4	8	4	94.8%	1	\$14.31
Prosthodontists	6	6	0	0.0%	0	\$82.23
Shoe Machine Operators & Tenders	1	1	0	0.0%	0	\$9.29
Farm Labor Contractors	0	0	0	0.0%	0	\$20.35

Source: Employees & Self-Employed 2020.2.



APPENDIX 7: Unemployment

Data on unemployment give researchers an idea of where skills mismatches may exist in the region. 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 group²⁸ in the Lee College Service Area. Data reflect October 2019 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 region, state, and U.S. are provided.

Table A7.1: Unemployed Workers by Industry Sector in the Lee College Service Area with State and National Comparisons

NAICS CODE	NAICS TITLE	REGIONAL UNEMPLOYED	REGIONAL % UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
23	Construction	25,062	20%	19%	19%
56	Administrative & Support & Waste Management & Remediation Services	17,655	14%	13%	12%
54	Professional, Scientific, & Technical Services	11,843	10%	7%	4%
31	Manufacturing	9,710	8%	8%	10%
62	Health Care & Social Assistance	7,869	6%	9%	7%
21	Mining, Quarrying, & Oil & Gas Extraction	7,272	6%	4%	1%
42	Wholesale Trade	7,272	6%	5%	3%
44	Retail Trade	6,271	5%	7%	8%
48	Transportation & Warehousing	5,703	5%	4%	4%
99	No Previous Work Experience/Unspecified	5,404	4%	5%	7%
52	Finance & Insurance	3,561	3%	4%	2%
72	Accommodation & Food Services	3,360	3%	3%	5%
61	Educational Services	2,696	2%	2%	2%

28 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.

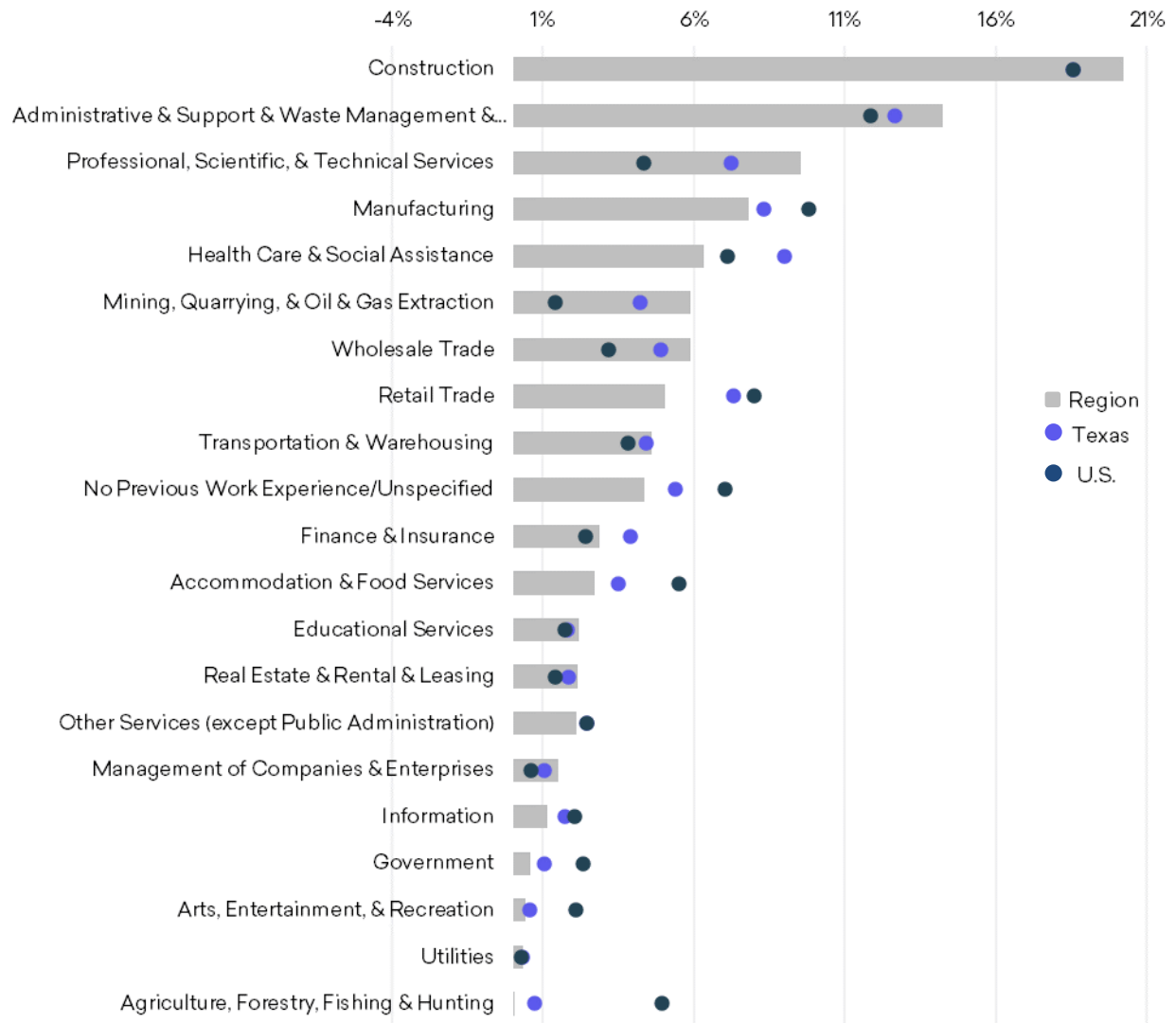
NAICS CODE	NAICS TITLE	REGIONAL UNEMPLOYED	REGIONAL % UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
53	Real Estate & Rental & Leasing	2,652	2%	2%	1%
81	Other Services (except Public Administration)	2,622	2%	2%	2%
55	Management of Companies & Enterprises	1,862	2%	1%	1%
51	Information	1,418	1%	2%	2%
90	Government	738	1%	1%	2%
71	Arts, Entertainment, & Recreation	516	0%	1%	2%
22	Utilities	413	0%	0%	0%
11	Agriculture, Forestry, Fishing & Hunting	87	0%	1%	5%

Source: Emsi Total Unemployment (October 2019).

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Figure A7.1: Unemployed Workers by Industry Sector in the Lee College Service Area with State and National Comparisons



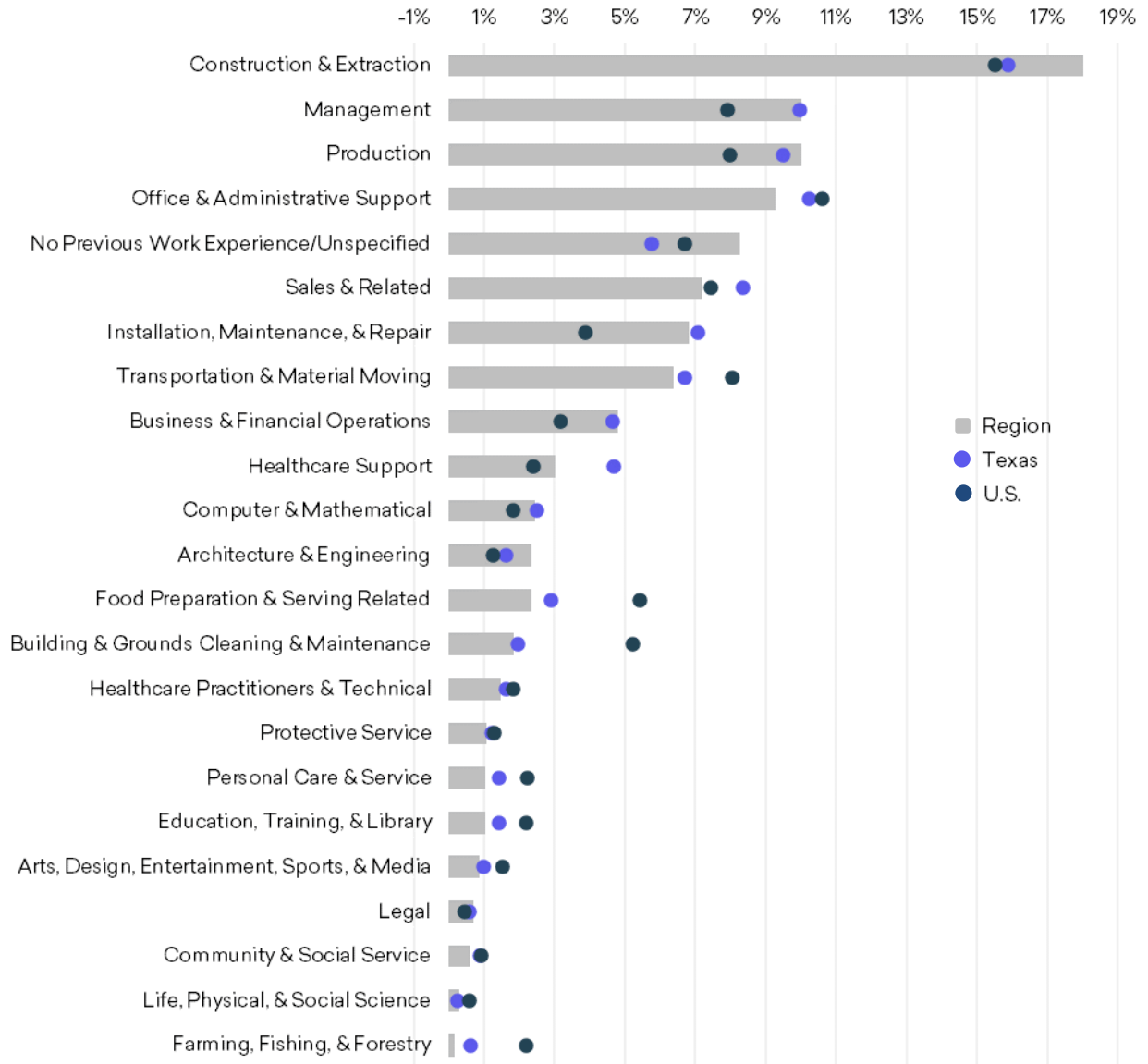
Source: Emsi Total Unemployment (October 2019).

Table A7.2: Unemployed Workers by Occupational Group in the Lee College Service Area with State and National Comparisons

SOC CODE	SOC TITLE	REGIONAL UNEMPLOYED	REGIONAL % UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
47-0000	Construction & Extraction	22,311	18%	16%	15%
11-0000	Management	12,426	10%	10%	8%
51-0000	Production	12,421	10%	9%	8%
43-0000	Office & Administrative Support	11,474	9%	10%	11%
99-0000	No Previous Work Experience/Unspecified	10,255	8%	6%	7%
41-0000	Sales & Related	8,928	7%	8%	7%
49-0000	Installation, Maintenance, & Repair	8,461	7%	7%	4%
53-0000	Transportation & Material Moving	7,903	6%	7%	8%
13-0000	Business & Financial Operations	5,932	5%	5%	3%
31-0000	Healthcare Support	3,721	3%	5%	2%
15-0000	Computer & Mathematical	3,046	2%	2%	2%
17-0000	Architecture & Engineering	2,916	2%	2%	1%
35-0000	Food Preparation & Serving Related	2,914	2%	3%	5%
37-0000	Building & Grounds Cleaning & Maintenance	2,291	2%	2%	5%
29-0000	Healthcare Practitioners & Technical	1,803	1%	2%	2%
33-0000	Protective Service	1,330	1%	1%	1%
39-0000	Personal Care & Service	1,280	1%	1%	2%
25-0000	Education, Training, & Library	1,277	1%	1%	2%
27-0000	Arts, Design, Entertainment, Sports, & Media	1,085	1%	1%	1%
23-0000	Legal	874	1%	1%	0%
21-0000	Community & Social Service	758	1%	1%	1%
19-0000	Life, Physical, & Social Science	345	0%	0%	1%
45-0000	Farming, Fishing, & Forestry	196	0%	1%	2%

Source: Emsi Total Unemployment (October 2019).

Figure A7.2: Unemployed Workers by Occupational Group in the Lee College Service Area with State and National Comparisons



Source: Emsi Total Unemployment (October 2019).

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 the Lee College Service Area

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	No children	\$11.99	\$5.84	\$7.25
	One child	\$23.92	\$7.91	\$7.25
	Two children	\$27.52	\$9.99	\$7.25
	Three children	\$34.16	\$12.07	\$7.25
Two adults, one working	No children	\$19.16	\$7.91	\$7.25
	One child	\$23.07	\$9.99	\$7.25
	Two children	\$25.51	\$12.07	\$7.25
	Three children	\$28.83	\$14.14	\$7.25
Two adults	No children	\$9.58	\$3.96	\$7.25
	One child	\$13.04	\$5.00	\$7.25
	Two children	\$15.03	\$6.03	\$7.25
	Three children	\$17.46	\$7.07	\$7.25

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 Texas

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	No children	\$11.48	\$5.84	\$7.25
	One child	\$23.42	\$7.91	\$7.25
	Two children	\$27.02	\$9.99	\$7.25
	Three children	\$33.37	\$12.07	\$7.25
Two adults, one working	No children	\$18.68	\$7.91	\$7.25
	One child	\$22.57	\$9.99	\$7.25
	Two children	\$25.01	\$12.07	\$7.25
	Three children	\$28.04	\$14.14	\$7.25

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
Two adults	No children	\$9.34	\$3.96	\$7.25
	One child	\$12.79	\$5.00	\$7.25
	Two children	\$14.78	\$6.03	\$7.25
	Three children	\$17.07	\$7.07	\$7.25

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.

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