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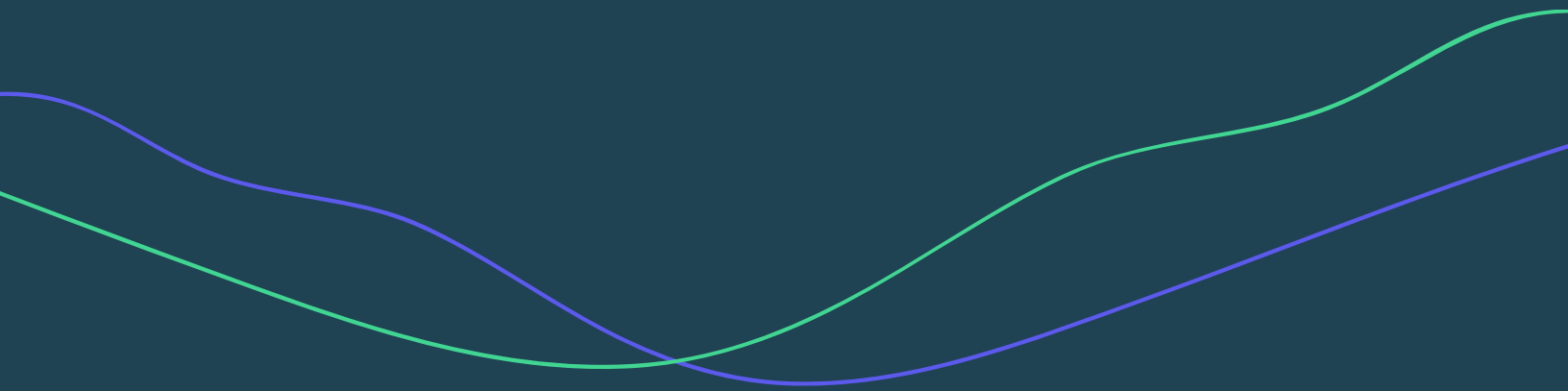
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Wyoming's Public Colleges and University

**Economic Overview and Program Demand Gap
Analysis**

September 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

Wyoming’s Public Colleges and University (WPCU) include the University of Wyoming and seven community colleges. To further their goal of providing the state with well-trained and well-educated residents, WPCU continually pursues improvement in various forms. An up-to-date understanding of the state economy and the demand for skilled labor is vital to the planning efforts of the institutions as they seek to adapt their program offerings to the requirements of an ever-changing workforce. WPCU partnered with Emsi, a leading provider of labor market data, to complete a program demand gap analysis, which assesses state job openings against educational program completions.

RECOMMENDATIONS

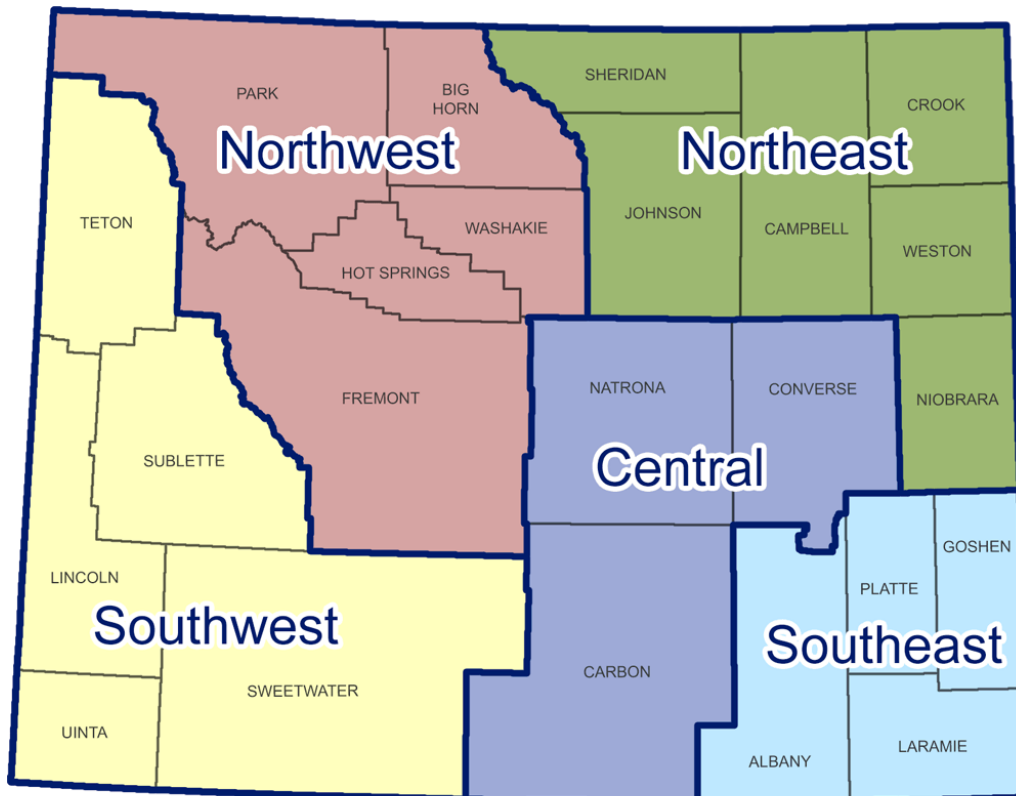
<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <ul style="list-style-type: none"> Building Construction Technology (CERT) Culinary Arts/Chef Training (CERT) Administrative Assistant & Secretarial Science (ASSOC) Health Services/Allied Health/Health Sciences (ASSOC) Business Administration & Management (BACH) Registered Nursing/Registered Nurse (MAST) Environmental Studies (MAST) Psychology, General (DOCT) 	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>Can we maintain focus on program quality & student success?</i></p> <ul style="list-style-type: none"> Welding Technology/Welder (CERT, ASSOC) Licensed Practical/Vocational Nurse Training (CERT) Business Administration & Management, General (ASSOC, MAST) Finance, General (BACH) Registered Nursing/Registered Nurse (BACH) Education, General (MAST)
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <ul style="list-style-type: none"> Mechanical Drafting & CAD/CADD (CERT) Animal-Assisted Therapy (CERT) Technical Theatre/Theatre Design (ASSOC) Cinematography & Film/Video Production (ASSOC) Astronomy & Astrophysics, Other (BACH) Art History, Criticism & Conservation (BACH) Superintendency & Educational System Admin. (MAST) 	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Are we connecting these programs to opportunities outside the state?</i></p> <ul style="list-style-type: none"> Elementary Education & Teaching (ASSOC) Health & Wellness, General (ASSOC) Physiology, General (BACH) Petroleum Engineering (BACH) Law (DOCT)

Source: Emsi program demand gap model.

INTRODUCTION

The backdrop for this study is the state of Wyoming. Figure 1 shows the five labor market information (LMI) regions across the state. This report focuses on the results across the state of Wyoming while the supporting data tables show the results for each LMI region. This report outlines the state's economy and uses the state's average annual projected job openings between 2019 and 2029 as a measurement of labor market demand. When job openings are compared to the state's supply of educational program completions, the analysis determines how well WPCU's program offerings satisfy workforce demand in Wyoming. In addition, this report offers recommendations for new program development. In its entirety, the analysis is a starting point for WPCU as the institutions continue to develop programs using data-based decision-making strategies. The following figures and table display key findings of the analyses.

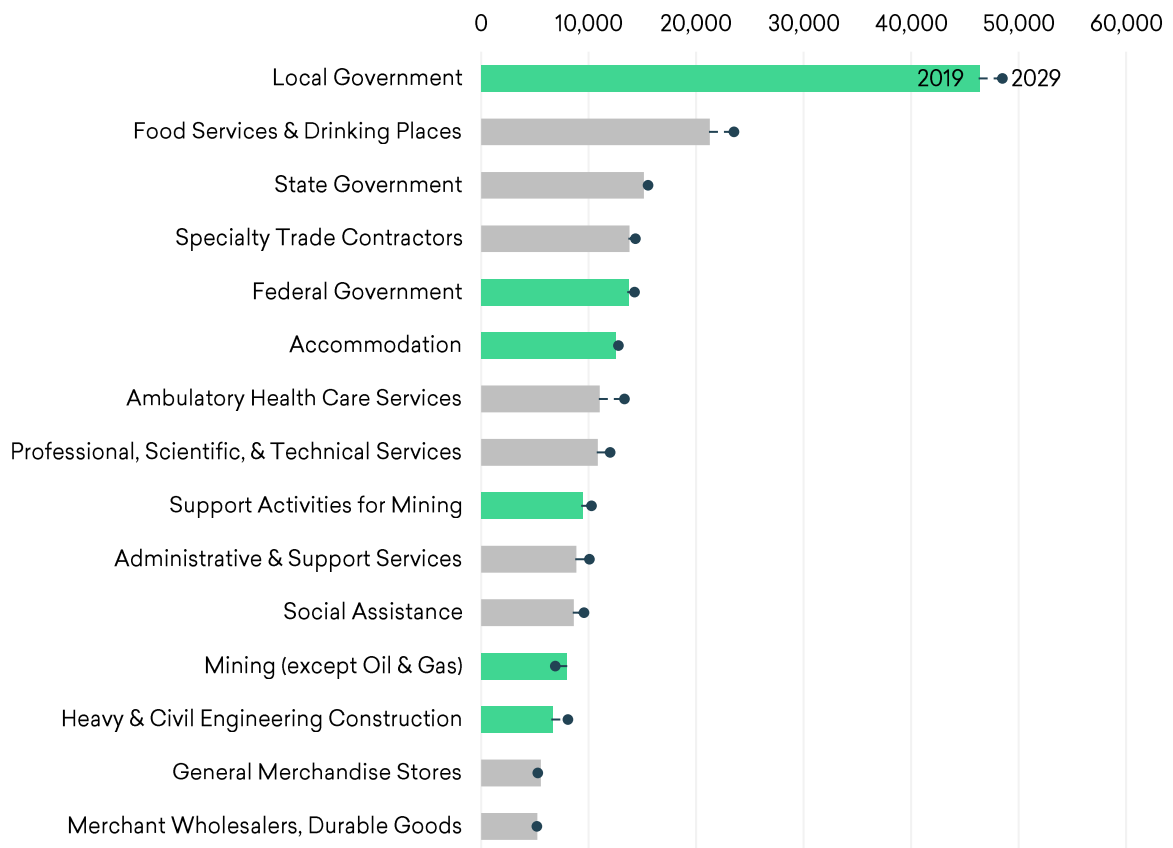
Figure 1: Map of Wyoming



Source: Wyoming Regional Economic Analysis Project. Regions provided by WPCU.

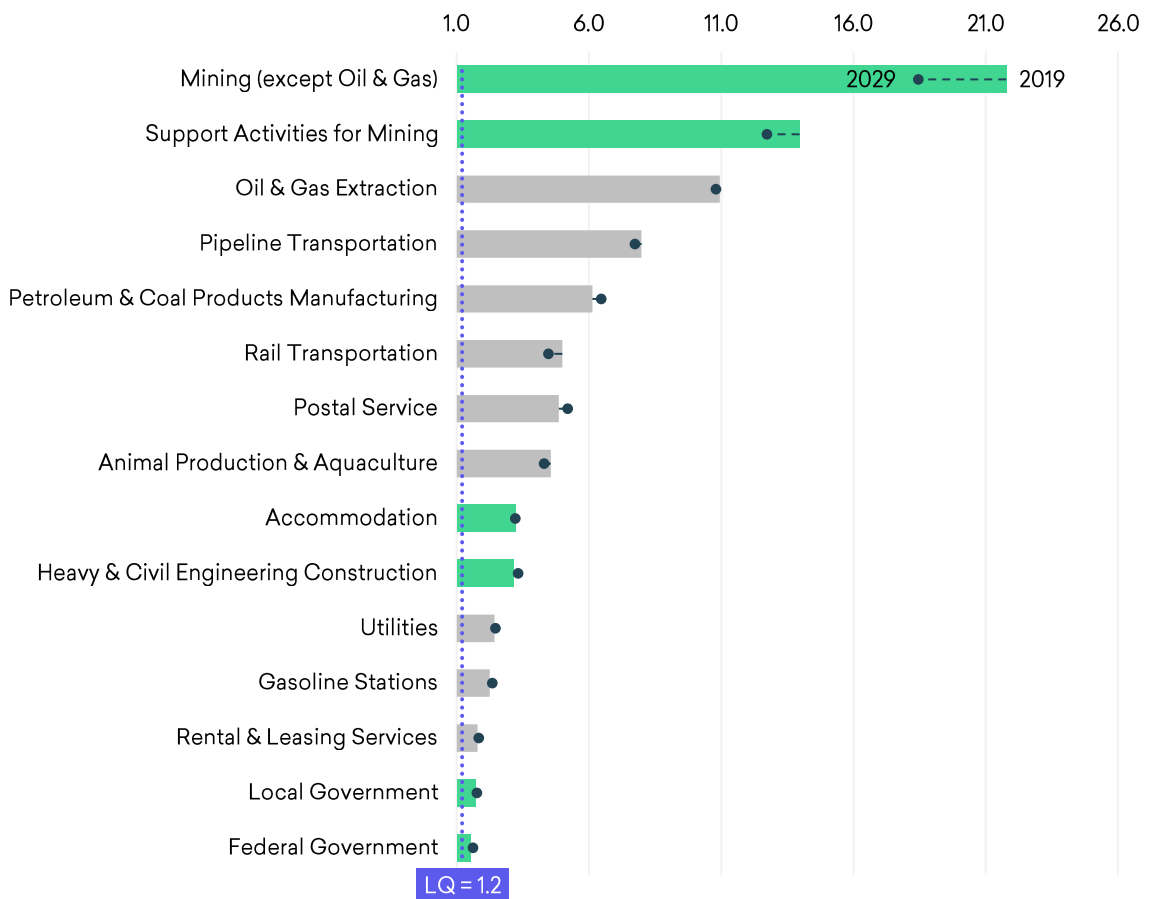
Figure 2 displays the top industry subsectors in terms of employment in Wyoming, and Figure 3 shows the top industry subsectors in terms of employment concentrations, referred to as location quotients (LQs). High LQs (usually anything greater than 1.2) are an indication that the state has a comparative advantage or specialization in certain industry subsectors relative to the rest of the nation or potentially to other states.

Figure 2: Top Industry Subsectors in Wyoming by Jobs



Source: Employees & Self-Employed 2020.2.

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



Source: Employees & Self-Employed 2020.2.

Note the green bars in the figures. Across all of Wyoming’s industry subsectors, six 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 state economy and offers the institutions insight into potential employment opportunities for their students. These industry subsectors, ranked by 2019 jobs, are:

- Local Government
- Federal Government
- Accommodation
- Support Activities for Mining
- Mining (except Oil & Gas)
- Heavy & Civil Engineering Construction

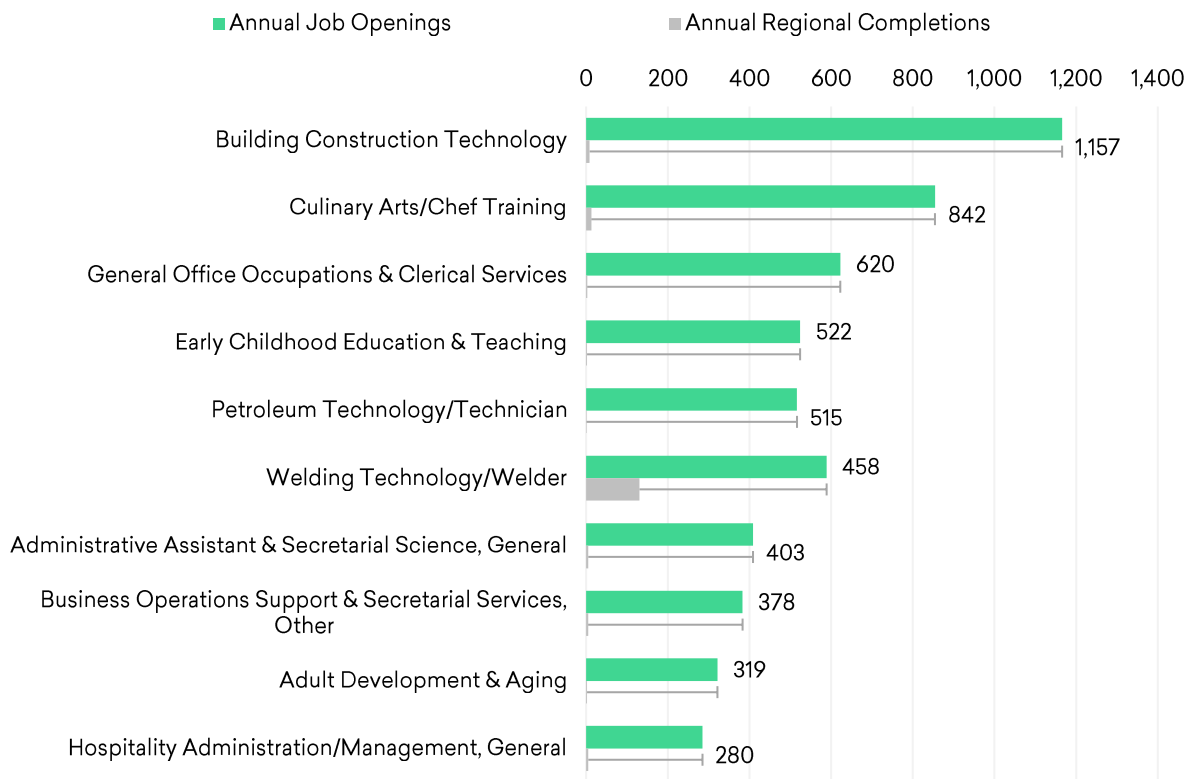


PROGRAM DEMAND GAP ANALYSIS

The program demand gap analysis provides results across all of WPCU's certificate and degree level programs, which have been classified by their formal CIP code.¹ The analysis connects the institutions' program completers with the availability of state job openings. Furthermore, the analysis focuses on the gaps and surpluses in the programs by award level. A gap or surplus larger than 200 is considered beyond normal labor market fluctuations and therefore an area of consideration for program development.

WPCU offers 110 certificate level programs, 15 of which have a significant gap above the 200-openings level of significance. Figure 4 shows the top 10 significant gap programs. All should be considered for expansion at the certificate level, considering the industries and occupations of Wyoming. No programs at this award level have a significant surplus.

Figure 4: Top 10 Certificate Level Gaps

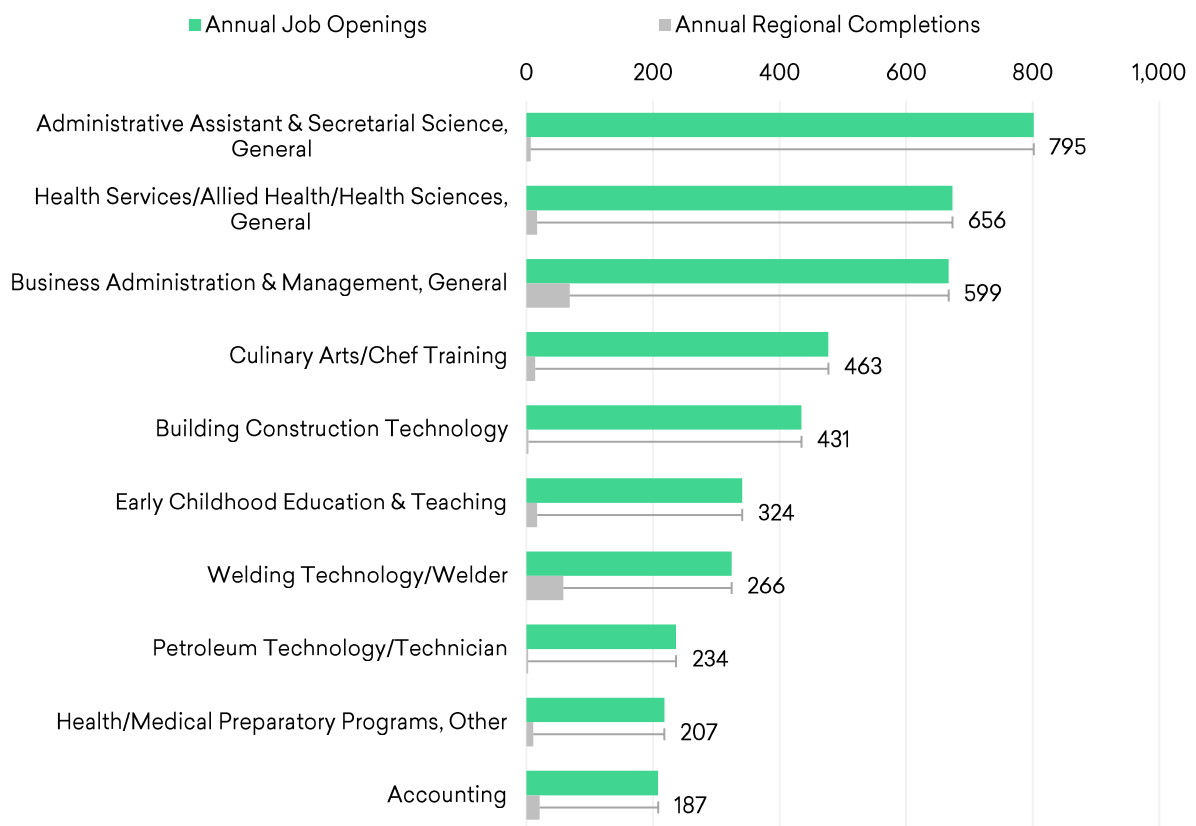


Source: Emsi program demand gap model.

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).

At the associate degree level, nine programs have a significant gap (Figure 5). Several should be considered for expansion, many of which are related to other associate degree level programs without a significant 200-openings gap. 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. No programs at this award level have a significant surplus.

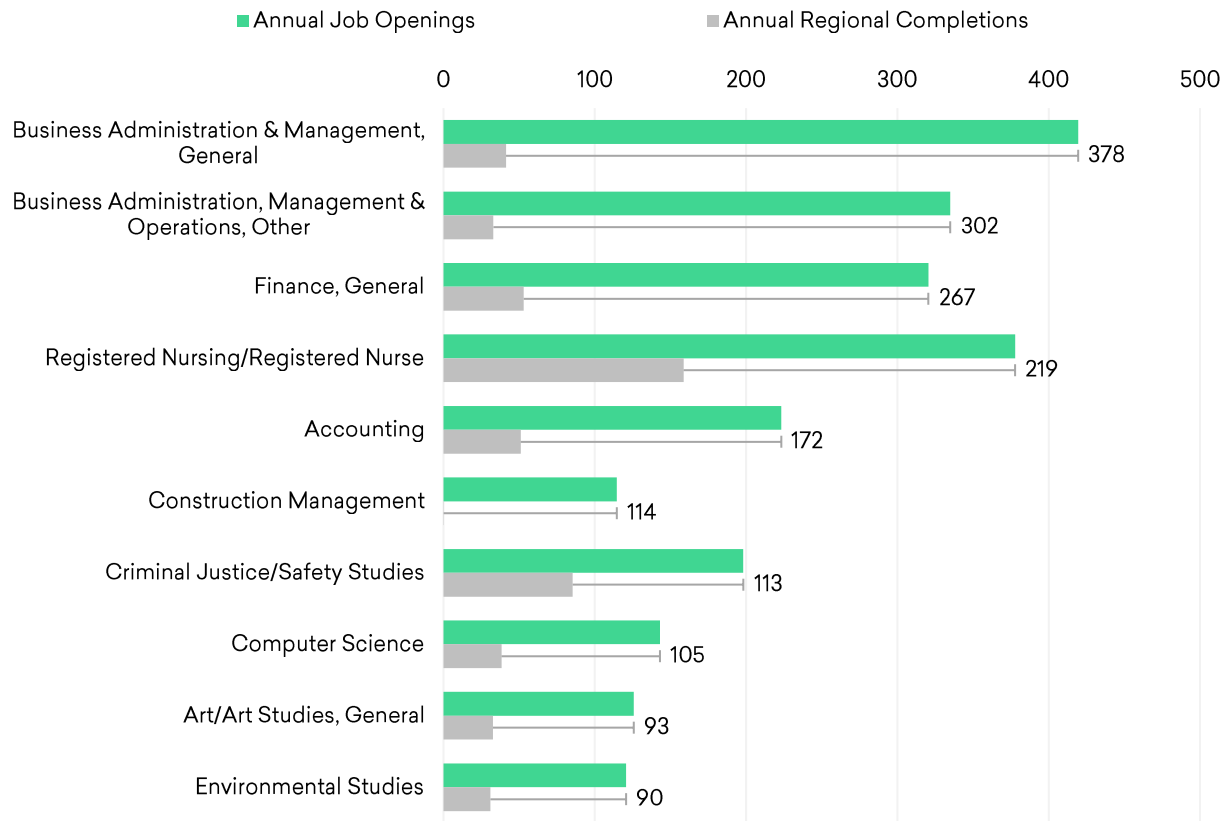
Figure 5: Top 10 Associate Degree Level Gaps



Source: Emsi program demand gap model.

WPCU, through the University of Wyoming, offers 88 bachelor’s degree programs. Of these programs, four have a significant gap above the 200-openings level of significance, as shown in Figure 6. These programs should be considered for expansion. No programs at this award level have a significant surplus.

Figure 6: Top 10 Bachelor's Degree Level Gaps

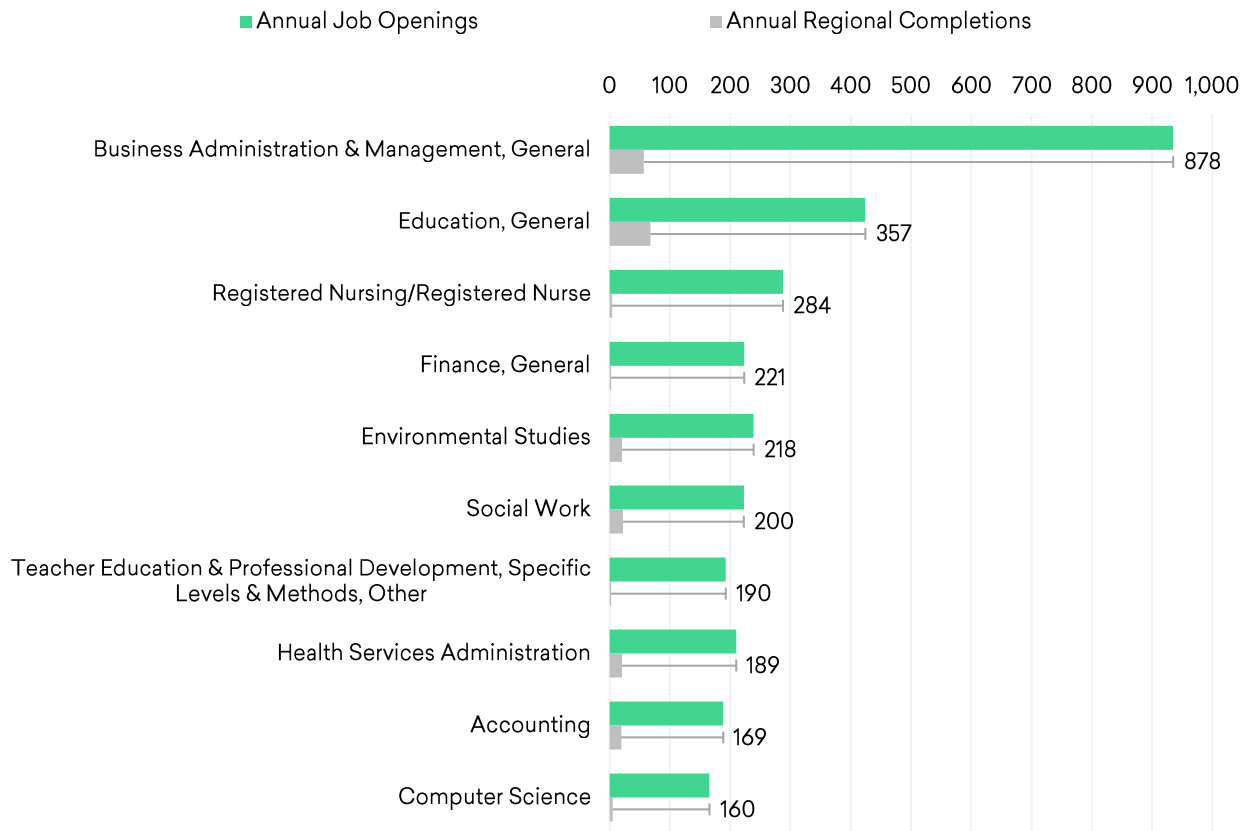


Source: Emsi program demand gap model.

The University of Wyoming is the only institution that offers master's degrees in the state of Wyoming. When grouped by their unique six-digit CIP code, the University of Wyoming offers 71 master's degree level programs, which includes a small number of postbaccalaureate certificate's. Six programs have a significant gap (Figure 7) and no programs have a significant surplus.



Figure 7: Top 10 Master's Degree Level Gaps

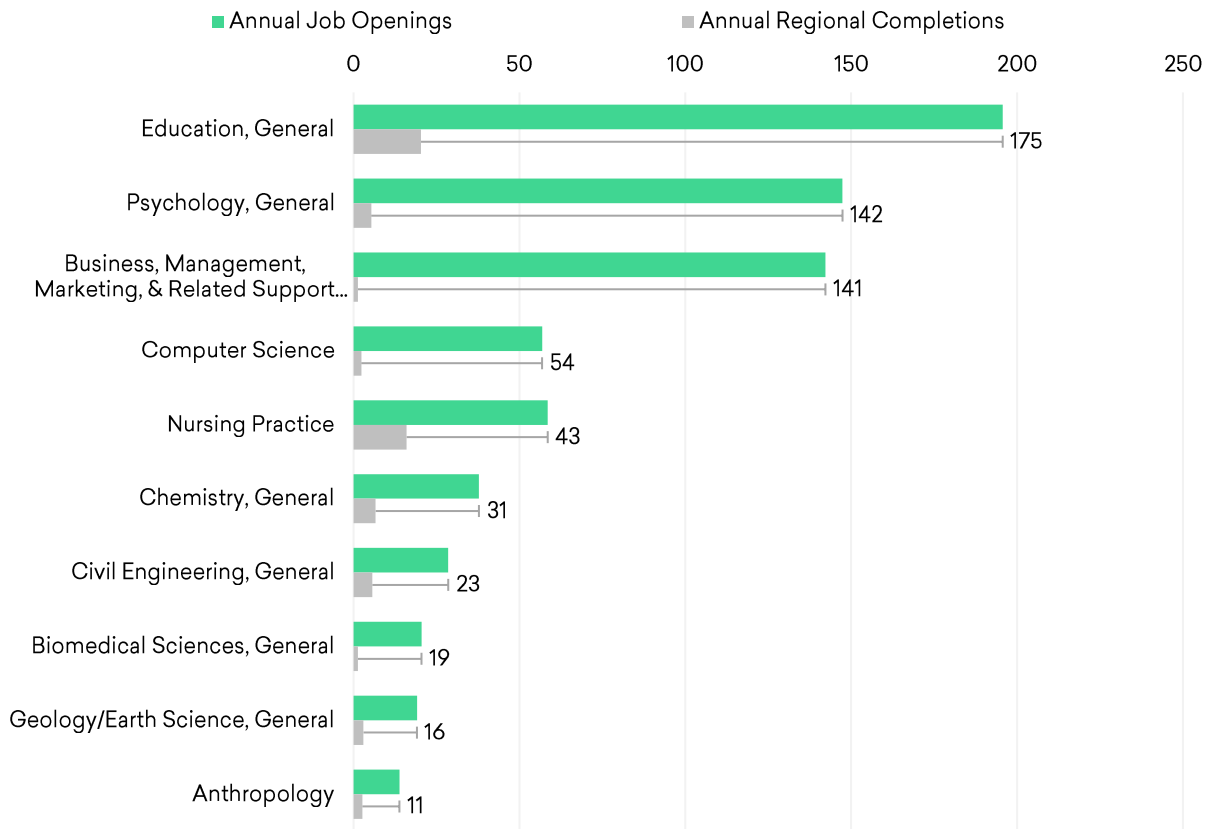


Source: Emsi program demand gap model.

The University of Wyoming is the only institution that offers doctoral degrees in the state of Wyoming. When grouped by their unique six-digit CIP code, the University of Wyoming offers 36 doctoral degree level programs. Figure 8 shows the top 10 programs with a gap. There are no doctoral degree level programs with a gap or surplus above the 200-level of significance.



Figure 8: Top 10 Doctoral Degree Level Gaps



Source: Emsi program demand gap model.

A liberal arts program expansion is not recommended at this time, but WPCU 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 Wyoming. The institutions' liberal arts programs, therefore, serve as a starting point to students' career goals beyond an associate degree level of education.



PROGRAM ADDITIONS

Sixteen certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, most of which are related to production occupations. Another five programmatic areas of opportunity were identified at the bachelor's degree level, many of which are related to business & financial operations occupations. No opportunities were identified at the associate, master's, or doctoral degree levels. For both the certificate and bachelor's degree award levels, some program additions are related to program offerings at one of the various institutions, which indicates an opportunity for a curriculum adjustment to better align with the state's current and projected labor market demand. A selection of these occupations, which have the most state 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
Heavy & Tractor-Trailer Truck Drivers	7,194	672	0	672	\$23.34	CERT
Bus Drivers, School or Special Client	1,307	136	0	136	\$17.83	CERT
Industrial Truck & Tractor Operators	1,184	109	0	109	\$17.42	CERT
Mobile Heavy Equipment Mechanics, Except Engines	1,543	106	0	106	\$31.40	CERT
Inspectors, Testers, Sorters, Samplers, & Weighers	970	74	0	74	\$24.08	CERT
Assemblers & Fabricators, All Other, Including Team Assemblers	640	61	0	61	\$16.24	CERT
Electrical Power-Line Installers & Repairers	451	37	0	37	\$38.50	CERT
Mixing & Blending Machine Setters, Operators, & Tenders	342	29	0	29	\$19.80	CERT
Packaging & Filling Machine Operators & Tenders	350	29	0	29	\$18.83	CERT
Aircraft Mechanics & Service Technicians	379	29	0	29	\$27.01	CERT
Property, Real Estate, & Community Association Managers	612	25	0	25	\$25.01	BACH
Training & Development Specialists	382	23	0	23	\$29.78	BACH
Logisticians	337	21	0	21	\$32.13	BACH
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	228	16	0	16	\$38.76	BACH
Real Estate Brokers	207	12	0	12	\$28.80	BACH

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

Source: Emsi program demand gap model.



Introduction

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

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

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

To gain better insight into economic conditions and workforce trends, Wyoming's Public Colleges and University (WPCU) partnered with Emsi, a labor market analytics firm, serving higher education, economic and workforce development, talent acquisition, and site selection. In this report, Emsi conducts an overview of the state's economy, provides a program demand gap analysis of WPCU 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 WPCU and other postsecondary educational institutions in the state against the number of job openings related to the program offerings to determine whether a deficit or an oversupply of skilled workers exists. The goal of the analysis is to provide WPCU 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 WPCU as the institutions discuss state and regional workforce needs. A deficit (gap) or oversupply (surplus) of workers in a particular occupation category represents a potential problem for the state, making it important for each program and occupation group to be evaluated by the institutions 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 institutions, specific implications may be considered for programs with substantial gaps or surpluses.

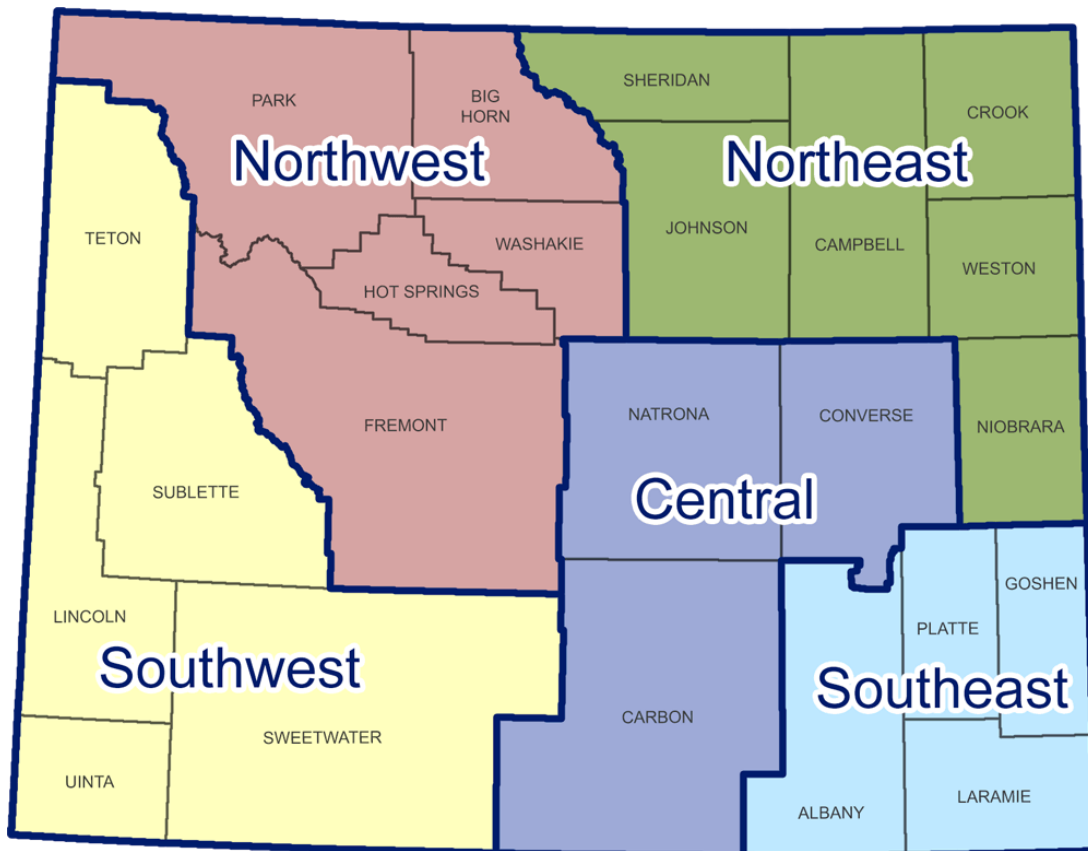
It must be noted that our analysis does have its limitations in that only the education supply pipeline is considered. This is due to data availability at the state and institutional levels. However, other sources—unemployed workers, industry trained pipelines, workers migrating to the state, and job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



Economic Overview

Before looking at the results of the program demand gap analysis, it is important to first consider the economic structure of Wyoming. Figure 2.1 shows the five labor market information (LMI) regions across the state. This report focuses on the results across the state of Wyoming while the supporting data tables show the results for each LMI region. Identifying the driving industries within the state is an important first step for three reasons: 1) it helps WPCU understand where the institutions should logically target their efforts, 2) it helps to reveal whether there are industries that may be overlooked as a result of recent economic growth, and 3) it helps identify the top occupations within those key driving industries.

Figure 2.1: Map of Wyoming



Source: Wyoming Regional Economic Analysis Project. Regions provided by WPCU.



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

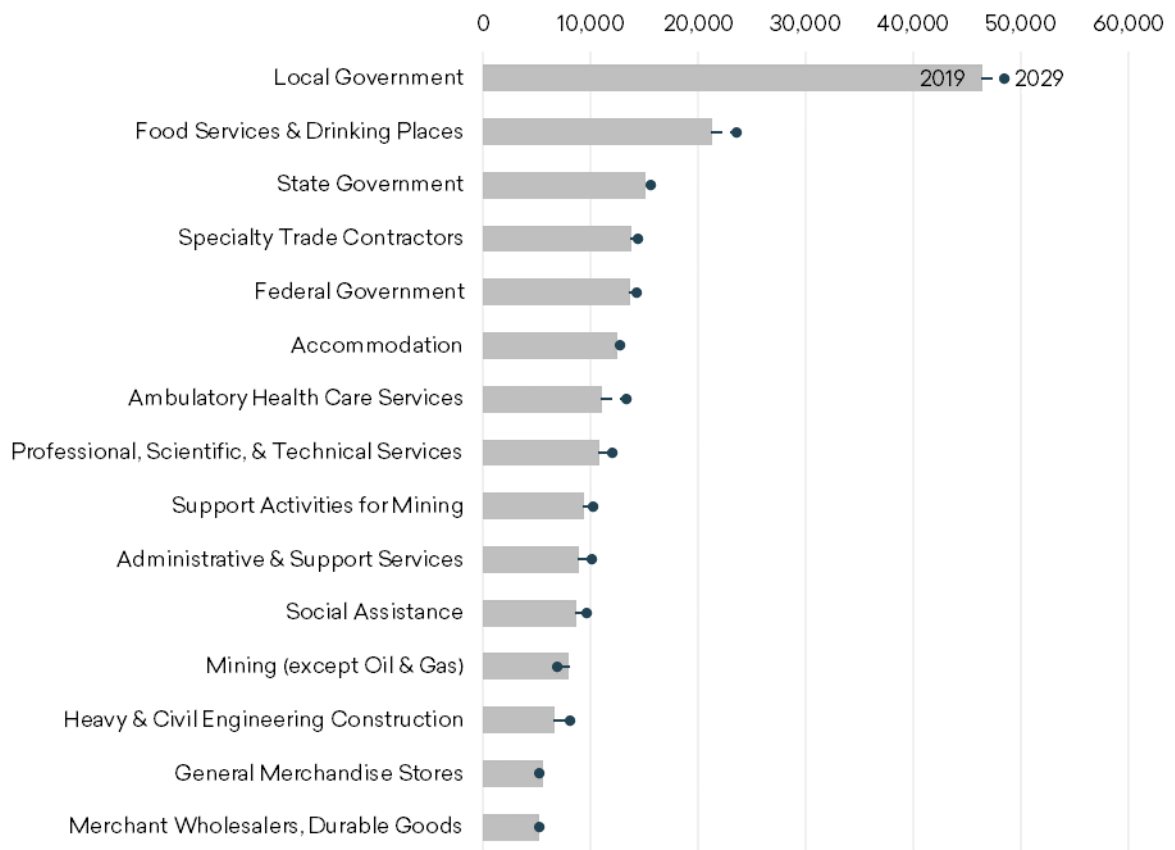
INDUSTRY COMPOSITION

Evaluating current and future employment by industry provides information on the state’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 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.²

Figure 2.2 presents the 15 largest industry subsectors in Wyoming, by their 2019 job counts, and also shows the industry subsectors’ projected change over the next decade. The state supported 309,640 jobs in 2019, and by 2029, it is projected to add 20,600 new jobs for a 6.7% job increase. As shown in the figure, Local Government is the largest employer, with 46,380 jobs in 2019 and it is expected to remain the top state employer. The Food Services & Drinking Places and State Government industry subsectors are the next largest, with 21,290 and 15,150 jobs in 2019, respectively. As for growth, Ambulatory Health Care Services is projected to add the most jobs of the top 15 industry subsectors, with a 10-year increase of 2,294 new jobs for a 20.8% job growth. On the other hand, three of the top 15 industry subsectors are expected to contract between 2019 and 2029. The top one is Mining (except Oil & Gas), with a decline of 1,020 jobs.

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

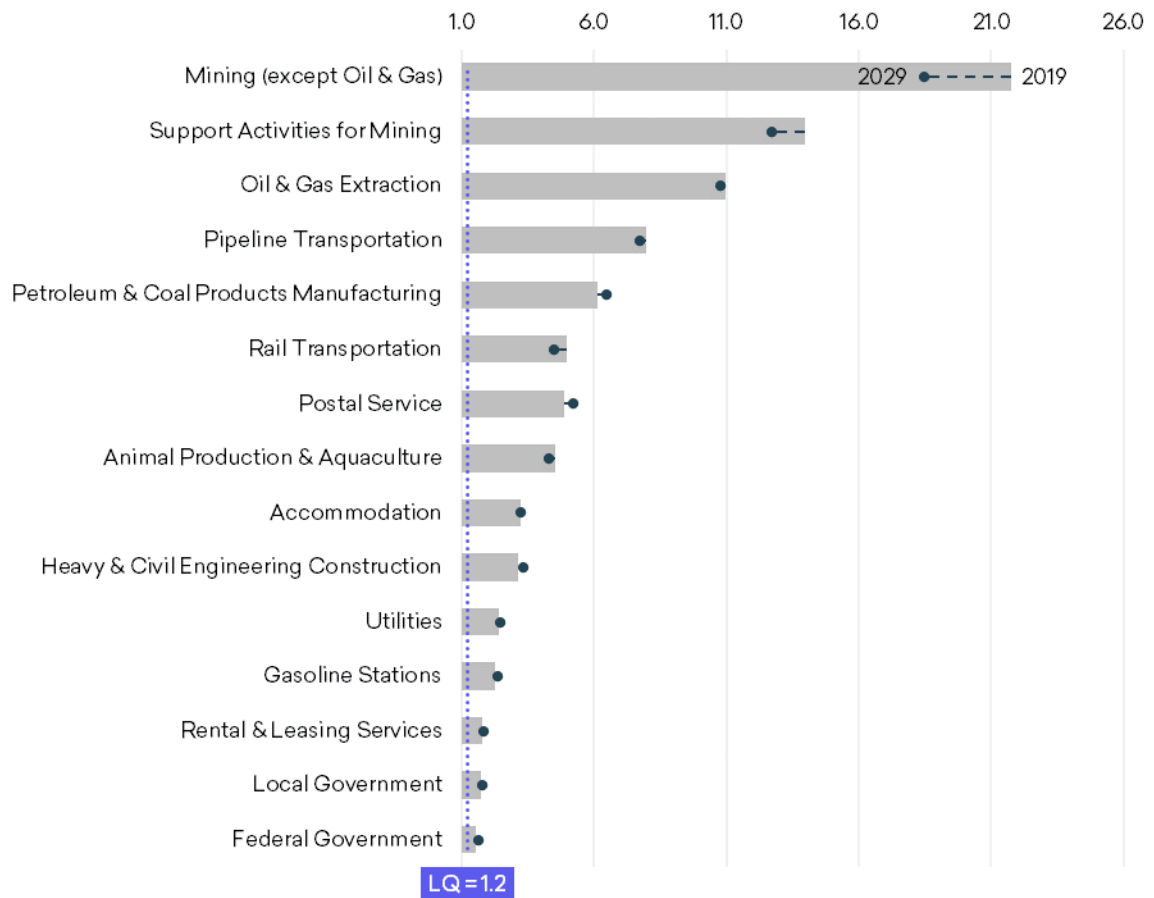
Figure 2.2: Jobs by Industry Subsector in Wyoming, 2019 and 2029



Source: Employees & Self-Employed 2020.2.

The employment concentration of Wyoming'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 state 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 Wyoming 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 state has a comparative advantage or specialization in an industry.

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



Source: Employees & Self-Employed 2020.2.

The industry subsectors with the 15 highest LQs in Wyoming are shown in Figure 2.3. The Mining (except Oil & Gas) industry subsector had the highest LQ in 2019 at 21.8. The industry subsector is expected to decrease in employment concentration between 2019 and 2029 but still remain the top industry subsector with the largest LQ. The Support Activities for Mining; Oil & Gas Extraction; and Pipeline Transportation industry subsectors also have relatively large employment concentrations, with LQs of 14.0, 10.9, and 8.0 in 2019, respectively. As for 10-year growth, Postal Service is projected to increase in LQ by 6.9% from an LQ of 4.9 to an LQ of 5.2, which is the largest percent increase among the top 15 industry subsectors in the figure. On the other hand, seven industry subsectors are expected to drop in LQ between 2019 and 2029. Mining (except Oil & Gas) has the largest percent decrease (15.3%). Despite the declines, all the state's top 15 industry subsectors will remain above the 1.2 high-LQ threshold.

OCCUPATIONS WITHIN KEY INDUSTRY SUBSECTORS

Six industry subsectors are found in both Figures 2.2 and 2.3 because they are large employers and have high LQs. Altogether, the industry subsectors represent 31.2% of Wyoming's jobs. These industry subsectors, in descending order of 2019 jobs, are:

- Local Government
- Federal Government
- Accommodation
- Support Activities for Mining
- Mining (except Oil & Gas)
- Heavy & Civil Engineering Construction

Their appearance in the figures provides an indication of their relative strength in Wyoming, and thus, we identify the most common occupations within the six industry subsectors, called a staffing pattern.³ The industry subsectors' staffing patterns provide insight into not only the state's labor market demand, but by extension, the demand for the WPCU program offerings.

The Local Government industry subsector in the state supported 46,380 jobs in 2019 and has an LQ of 1.7. It is comprised of five industries at the six-digit NAICS code level. The largest industry is the Elementary & Secondary Schools (Local Government) industry, with 2.9% of jobs in the industry subsector. The top occupation employed by the Local Government industry subsector is teacher assistants, which constitutes 6.5% of the industry subsector's jobs. It is followed by elementary school teachers, except special education (5.3%) and registered nurses (4.9%). Out of the top 25 occupations within the industry subsector, the top five highest paying occupations that require an associate degree or below, in terms of median hourly earnings, are:

- water & wastewater treatment plant & system operators (\$22.92);
- firefighters (\$21.06);
- highway maintenance workers (\$19.14);
- court, municipal, & license clerks (\$18.54); and
- bus drivers, school or special client (\$17.83).

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

- postsecondary teachers (\$32.91);
- registered nurses (\$31.17); and

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

- special education teachers, kindergarten & elementary school (\$30.37).

The Federal Government industry subsector in the state supported 13,690 jobs in 2019 and has an LQ of 1.5. It is comprised of three industries at the six-digit NAICS code level. The largest industry is the Federal Government, Civilian, Excluding Postal Service industry, with 47.8% of jobs in the industry subsector. The top occupation employed by the Federal Government industry subsector is military-only occupations, which constitutes 22.0% of the industry subsector's jobs. It is followed by forest & conservation technicians (3.8%) and postal service mail carriers (3.2%). 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 mechanics, installers, & repairers (\$35.60);
- aircraft mechanics & service technicians (\$27.01);
- postal service clerks (\$22.98);
- postal service mail sorters, processors, & processing machine operators (\$21.68); and
- postal service mail carriers (\$21.48).

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

- airline pilots, copilots, & flight engineers (\$79.45);
- medical & health services managers (\$43.65); and
- general & operations managers (\$42.58).

The Accommodation industry subsector in the state supported 12,500 jobs in 2019 and has an LQ of 3.2. It is comprised of seven industries at the six-digit NAICS code level. The largest industry is the Hotels (except Casino Hotels) & Motels industry, with 88.0% of jobs in the industry subsector. The top occupation employed by the Accommodation industry subsector is maids & housekeeping cleaners, which constitutes 23.5% of the industry subsector's jobs. It is followed by hotel, motel, & resort desk clerks (12.6%) and maintenance & repair workers, general (6.8%). 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 mechanics, installers, & repairers (\$35.60);
- first-line supervisors of housekeeping & janitorial workers (\$19.02);
- bookkeeping, accounting, & auditing clerks (\$17.81);
- maintenance & repair workers, general (\$17.71); and
- office clerks, general (\$16.88).

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

- general & operations managers (\$42.58);
- lodging managers (\$24.88); and
- first-line supervisors of office & administrative support workers (\$24.26).

The Support Activities for Mining industry subsector in the state supported 9,400 jobs in 2019 and has an LQ of 14.0. It is comprised of five industries at the six-digit NAICS code level. The largest industry is the Support Activities for Oil & Gas Operations industry, with 85.4% of jobs in the industry subsector. The top occupation employed by the Support Activities for Mining industry subsector is roustabouts, oil & gas, which constitutes 16.8% of the industry subsector's jobs. It is followed by service unit operators, oil, gas, & mining (15.9%) and heavy & tractor-trailer truck drivers (6.1%). 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:

- petroleum pump system operators, refinery operators, & gaugers (\$36.71);
- industrial machinery mechanics (\$32.29);
- first-line supervisors of construction trades & extraction workers (\$32.22);
- mobile heavy equipment mechanics, except engines (\$31.40); and
- extraction workers, all other (\$30.38).

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

- petroleum engineers (\$50.82);
- general & operations managers (\$42.58); and
- managers, all other (\$36.84).

The Mining (except Oil & Gas) industry subsector in the state supported 7,920 jobs in 2019 and has an LQ of 21.8. It is comprised of 21 industries at the six-digit NAICS code level. The largest industry is the Bituminous Coal & Lignite Surface Mining industry, with 61.5% of jobs in the industry subsector. The top occupation employed by the Mining (except Oil & Gas) industry subsector is operating engineers & other construction equipment operators, which constitutes 18.3% of the industry subsector's jobs. It is followed by heavy & tractor-trailer truck drivers (7.2%) and mobile heavy equipment mechanics, except engines (6.6%). 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:

- roof bolters, mining (\$45.26);
- separating, filtering, clarifying, precipitating, & still machine setters, operators, & tenders (\$41.63);
- first-line supervisors of production & operating workers (\$39.42);
- continuous mining machine operators (\$36.73); and
- first-line supervisors of mechanics, installers, & repairers (\$35.60).

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

- mining & geological engineers, including mining safety engineers (\$42.93); and
- general & operations managers (\$42.58).

The Heavy & Civil Engineering Construction industry subsector in the state supported 6,620 jobs in 2019 and has an LQ of 3.1. It is comprised of six industries at the six-digit NAICS code level. The largest industry is the Oil & Gas Pipeline and Related Structures Construction industry, with 47.1% of jobs in the industry subsector. The top occupation employed by the Support Activities for Mining industry subsector is construction laborers, which constitutes 21.4% of the industry subsector's jobs. It is followed by operating engineers & other construction equipment operators (18.7%) and first-line supervisors of construction trades & extraction workers (7.9%). Out of the top 25 occupations within the industry subsector, the top five highest paying occupations that require an associate degree or below, in terms of median hourly earnings, are:

- electrical power-line installers & repairers (\$36.71);
- first-line supervisors of mechanics, installers, & repairers (\$32.29);
- excavating & loading machine & dragline operators (\$32.22);
- first-line supervisors of construction trades & extraction workers (\$31.40); and
- mobile heavy equipment mechanics, except engines (\$30.38).

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

- general & operations managers (\$50.82);
- construction managers (\$42.58); and
- civil engineers (\$36.84).

WORKFORCE COMMUTING PATTERNS

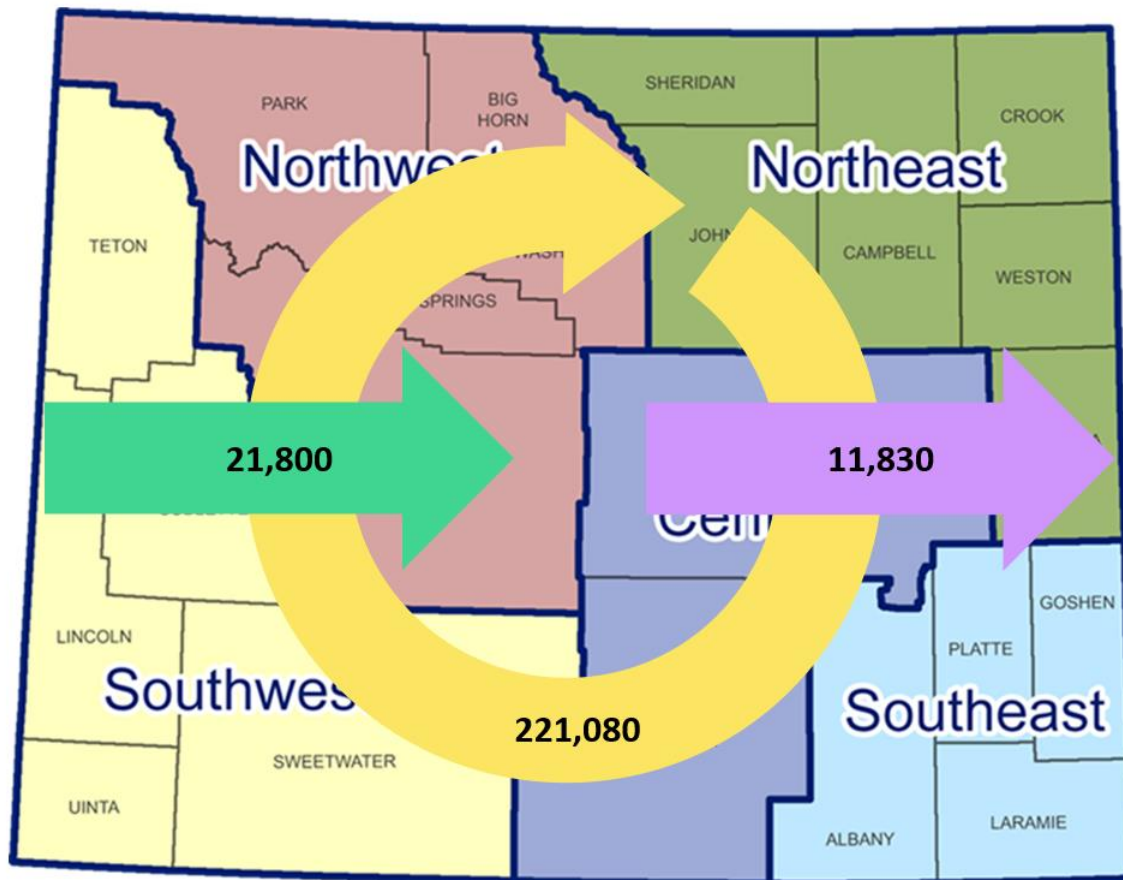
The Longitudinal Employer-Household Dynamics (LEHD) program⁴ at the U.S. Census Bureau provides information on the residential and employment locations of workers. Such data shows the commuting patterns of employees. More specifically, the LEHD data demonstrate the extent to which employees commute to Wyoming for work and how many residents commute to surrounding communities for work. Workers from outside the state could be filling current employment gaps, or the state's residents could be out-commuting when there is a surplus of available jobs. The concepts of a "gap" and "surplus" are discussed in greater detail in the first section of Chapter 3.

Figure 2.4 presents the inflow and outflow of jobs to and from Wyoming. LEHD data identify 242,880 jobs in the state, with 221,080 jobs filled by residents and 21,800 jobs filled by people living outside the state. In addition, 11,830 jobs are held by the state's residents outside

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

Wyoming. In other words, 11,830 residents commute outside the state for work. The job counts represent primary jobs, as opposed to all jobs, and differ slightly from job counts in the previous sections, which use Emsi's complete employment data (see industry data in Appendix 2). As shown in the figure, slightly fewer workers out-commute than in-commute.

Figure 2.4: Wyoming Job Inflow and Outflow



21,800	Employed in Wyoming but living outside
221,080	Living and employed in Wyoming
11,830	Living in Wyoming but employed outside

Source: Census Bureau, Center for Economic Studies.

Table 2.1 provides further insight into the places where the state's residents work. As shown in the table, the greatest number of resident's work in Laramie County (17% of all jobs). Table 2.2 also shows commuting patterns, except the data highlight the counties in which the state's workers reside.

Table 2.1: Counties where Wyoming Residents Work

COUNTY OF EMPLOYMENT	JOBS	% JOBS
Laramie	38,740	17%
Natrona	35,180	15%
Campbell	22,340	10%
Sweetwater	19,520	8%
Albany	13,480	6%
Fremont	13,300	6%
Sheridan	11,090	5%
Park	10,810	5%
Teton	9,850	4%
Uinta	6,730	3%
All Other Counties	51,880	22%
Total Primary Jobs, Wyoming Residents	232,910	100%

Source: Census Bureau, Center for Economic Studies.

Table 2.2: Counties where Wyoming Workers Live

COUNTY OF RESIDENCE	JOBS	% JOBS
Laramie	38,100	16%
Natrona	34,190	14%
Campbell	21,360	9%
Sweetwater	18,740	8%
Fremont	13,620	6%
Albany	13,370	6%
Sheridan	11,480	5%
Park	10,940	5%
Teton	7,930	3%
Uinta	7,350	3%
All Other Locations	65,790	27%
Total Primary Jobs, Wyoming Workers	242,880	100%

Source: Census Bureau, Center for Economic Studies.



EDUCATIONAL ATTAINMENT

Educational attainment data are useful for targeting specific population groups with low education levels. The population and educational attainment numbers in this section are based on Emsi’s demographic data and publicly available sources from state and federal agencies. Sources include annual population estimates and population projections from the U.S. Census Bureau and birth and mortality rates from the U.S. Health Department. In addition, demographic information relies on the annual results of the American Community Survey. Educational attainment data cover the population in Wyoming aged 25 years or more, referred to as adults, and indicate the highest award level achieved.

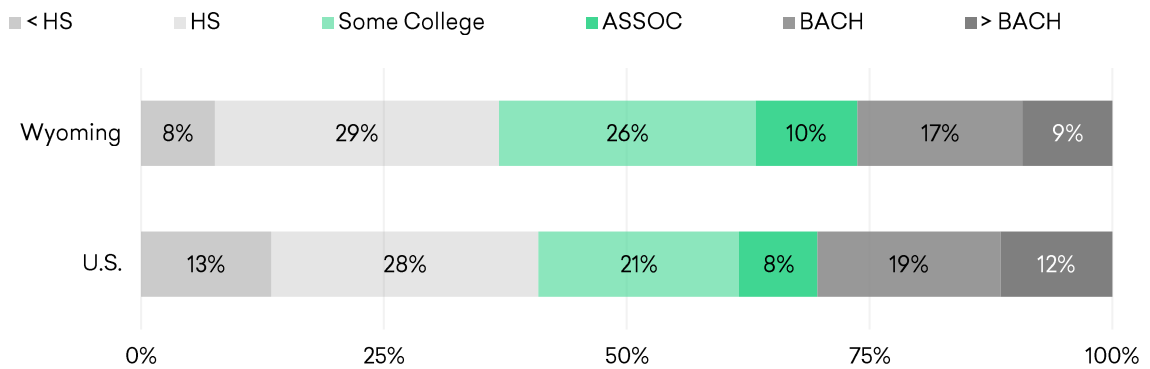
Demographic information is presented by gender and the major race and ethnic groups, and educational attainment data are broken out according to the following award categories:

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

About 391,400 adults live in Wyoming, and Figure 2.5 displays their educational attainments, without reference to gender and the major race and ethnic groups. National data are also presented for context. In the state, 36.8% of adults have a high school diploma or less, which is less 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 WPCU are those in the “Less than High School Diploma,” “High School Diploma,” and “Some College” categories. Together, these categories total 247,630 people, or 63.3% of the state’s adults.

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

Figure 2.5: Highest Educational Attainments of Adults in Wyoming and the U.S.

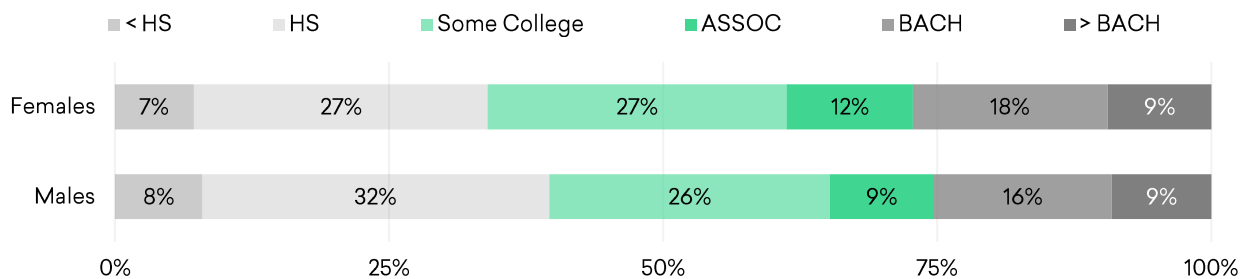


Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.

Between female and male adults in Wyoming, there is little variation in the distribution of their award categories. Twenty-seven percent of the state’s female adults and 25.6% of the state’s male adults have some college education but no degree, which represent 52,760 females and 50,680 males. Twelve percent of female adults and nine percent of male adults in the state have an associate degree as their highest award level. This information appears in Figure 2.6.

Figure 2.6: Highest Educational Attainments of Adults in Wyoming by Gender



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.



Table 2.3 shows the adults in Wyoming by the major race and ethnic groups. As shown, 86.8% of the state’s adults are White, non-Hispanic. Another 8.2% of adults are Hispanic, all types, 1.8% are American Indian or Alaskan Native, non-Hispanic, and 1.1% are Two or more races, non-Hispanic the next largest groups. Altogether, less than three percent of the state’s adults are Black, non-Hispanic; Asian, non-Hispanic; and Native Hawaiian or Pacific Islander, non-Hispanic.

Table 2.3: Adults in Wyoming by Major Race and Ethnic Groups

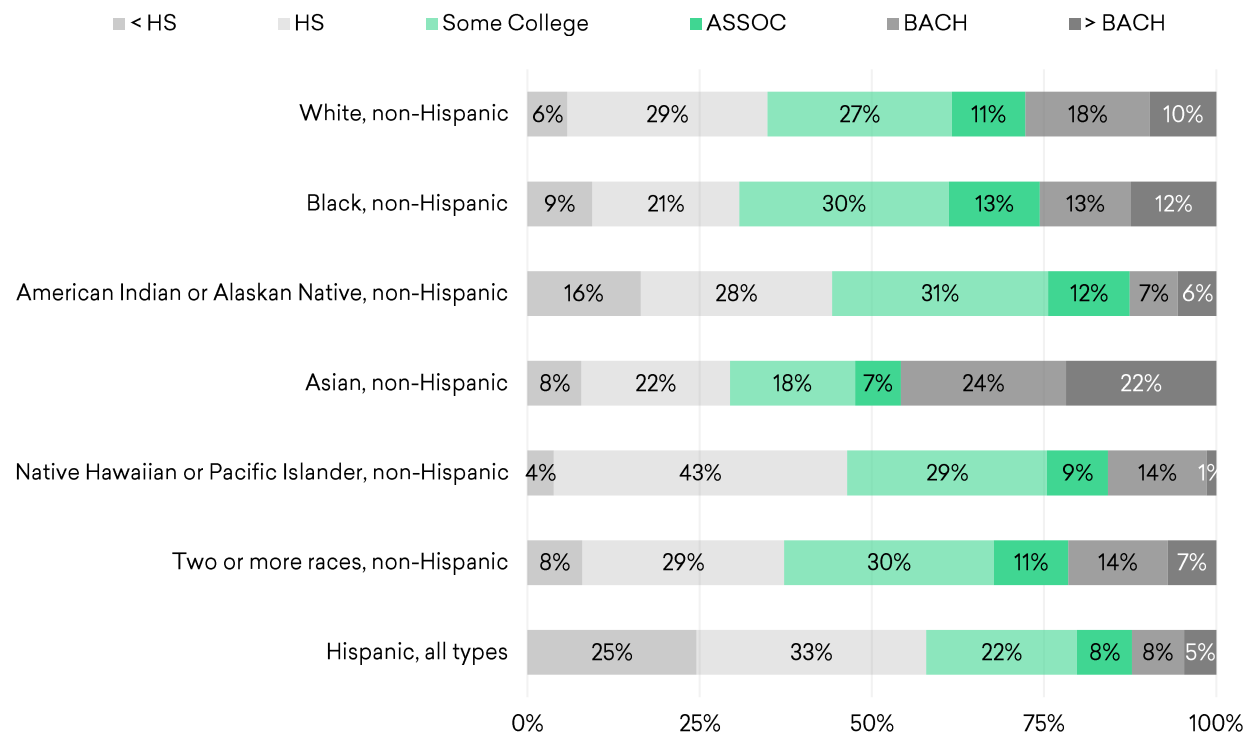
GROUP	POPULATION	% POPULATION
White, non-Hispanic	339,623	86.8%
Hispanic, all types	32,063	8.2%
American Indian or Alaskan Native, non-Hispanic	7,012	1.8%
Two or more races, non-Hispanic	4,405	1.1%
Black, non-Hispanic	4,076	1.0%
Asian, non-Hispanic	3,957	1.0%
Native Hawaiian or Pacific Islander, non-Hispanic	266	0.1%
Total	391,403	100%

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.

Figure 2.7 displays the highest educational attainment of Wyoming’s adults by their major race and ethnic groups. Asian, non-Hispanic adults have the highest percentage of adults with a postsecondary education (70.6%) among all the groups. However, the group accounts for a relatively small portion of the state's adults. The White, non-Hispanic group, the largest group in terms of population, sees 65.2% of adults with a postsecondary education. Hispanic, all types adults have the lowest levels of educational attainment in the state. For this group, only 42.1% of the adults in the groups have had education beyond high school. Across all groups, these data suggest that there are many opportunities to increase the educational attainments of the state’s adults, whether such actions involve outreach to local high schools or supporting WPCU students who plan to transfer into a bachelor’s degree level program.



Figure 2.7: Highest Educational Attainments of Adults in Wyoming by Major Race and Ethnic Groups



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.





Program Demand Gap Analysis

With the state'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 WPCU completions?

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

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

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

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

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



Figure 3.1: Key Findings on WPCU's Program Alignment with the Wyoming Workforce

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Building Construction Technology (CERT) Culinary Arts/Chef Training (CERT) Administrative Assistant & Secretarial Science, General (ASSOC) Health Services/Allied Health/Health Sciences, General (ASSOC) Business Administration & Management, General (BACH) Business Administration, Management & Operations, Other (BACH) Registered Nursing/Registered Nurse (MAST) Environmental Studies (MAST) Psychology, General (DOCT)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>Can we maintain focus on program quality & student success?</i></p> <p>Welding Technology/Welder (CERT, ASSOC) Licensed Practical/Vocational Nurse Training (CERT) Business Administration & Management, General (ASSOC, MAST) Finance, General (BACH) Registered Nursing/Registered Nurse (BACH) Education, General (MAST)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Mechanical Drafting & Mechanical Drafting CAD/CADD (CERT) Animal-Assisted Therapy (CERT) Technical Theatre/Theatre Design & Technology (ASSOC) Cinematography & Film/Video Production (ASSOC) Astronomy & Astrophysics, Other (BACH) Art History, Criticism & Conservation (BACH) Superintendency & Educational System Administration (MAST)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Are we connecting these programs to opportunities outside the state?</i></p> <p>Elementary Education & Teaching (ASSOC) Health & Wellness, General (ASSOC) Physiology, General (BACH) Petroleum Engineering (BACH) Law (DOCT)</p>

Source: Emsi program demand gap model.

INTERPRETATION

The terms used in the analysis are as follows:

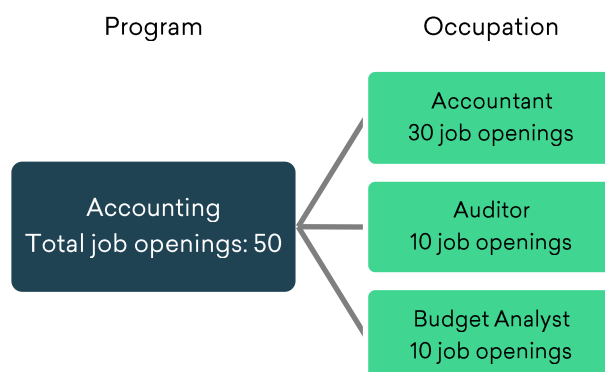
Gap Represents a deficit, or when there are more job openings in an occupation than there are completions. If left unaddressed, a gap may lead to missed opportunities for economic growth and put stress on local businesses to find the necessary talent elsewhere. Significant gaps translate into higher 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 institutions could be educating a workforce that is leaving the state 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 Wyoming, any gap or surplus within 200 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.

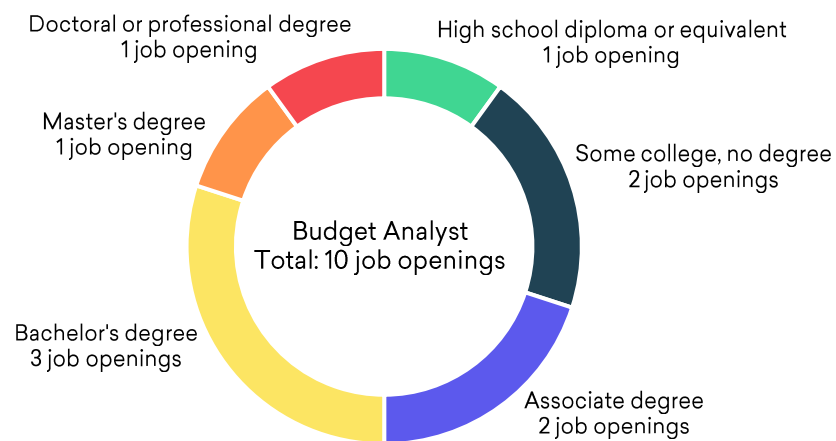
The figures show the gap between job demand and the supply of program completions. An explanation of job demand is warranted here, and a more detailed description can be found in Appendix 5. A program's job demand is measured as its total number of annual job openings, on average, from 2019 to 2029. The total is calculated as the sum of the state job openings for each occupation mapped to the program, as illustrated in Figure 3.2.

Figure 3.2: Example of One Program Mapped to Three Occupations



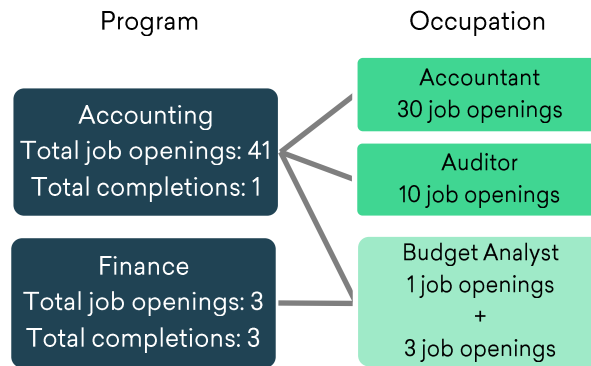
Furthermore, an occupation's job openings are not a gross measure of job openings available in the state. For every occupation, job openings have been weighted by the program's award level and one level below and account for the highest educational attainments of those employed in the position. The educational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

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



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

Figure 3.4: Example of Two Programs with One Shared Occupation



Supply is shown as the average number of program completions in the state, by award level, between 2017 and 2019.⁶ WPCU are not the only postsecondary educational institutions in Wyoming reporting to IPEDS,⁷ the source of the completions data. The gap, then, is the difference between job openings and program completions. Appendix 4 has WPCU’s program to occupation map with adjusted employment, and Appendix 5 identifies all the certificate and degree-granting institutions in Wyoming.

A great amount of data is presented in the tables. The first set shows the gaps and surpluses across all the programs offered at WPCU 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 state and from WPCU, and the gap or surplus for Wyoming. The programs’ median hourly wage rates are specific to Wyoming. Note that the completions at the associate degree level have had transfers to the University of Wyoming over the three-year period removed. This eliminates any double counting that would result when those students then become completers at the bachelor’s degree level.

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

6 The average annual completions data for WPCU was updated to the years 2017 to 2019 and reviewed for accuracy by WPCU. Completions for other institutions not included within WPCU reflect years 2016 to 2018.

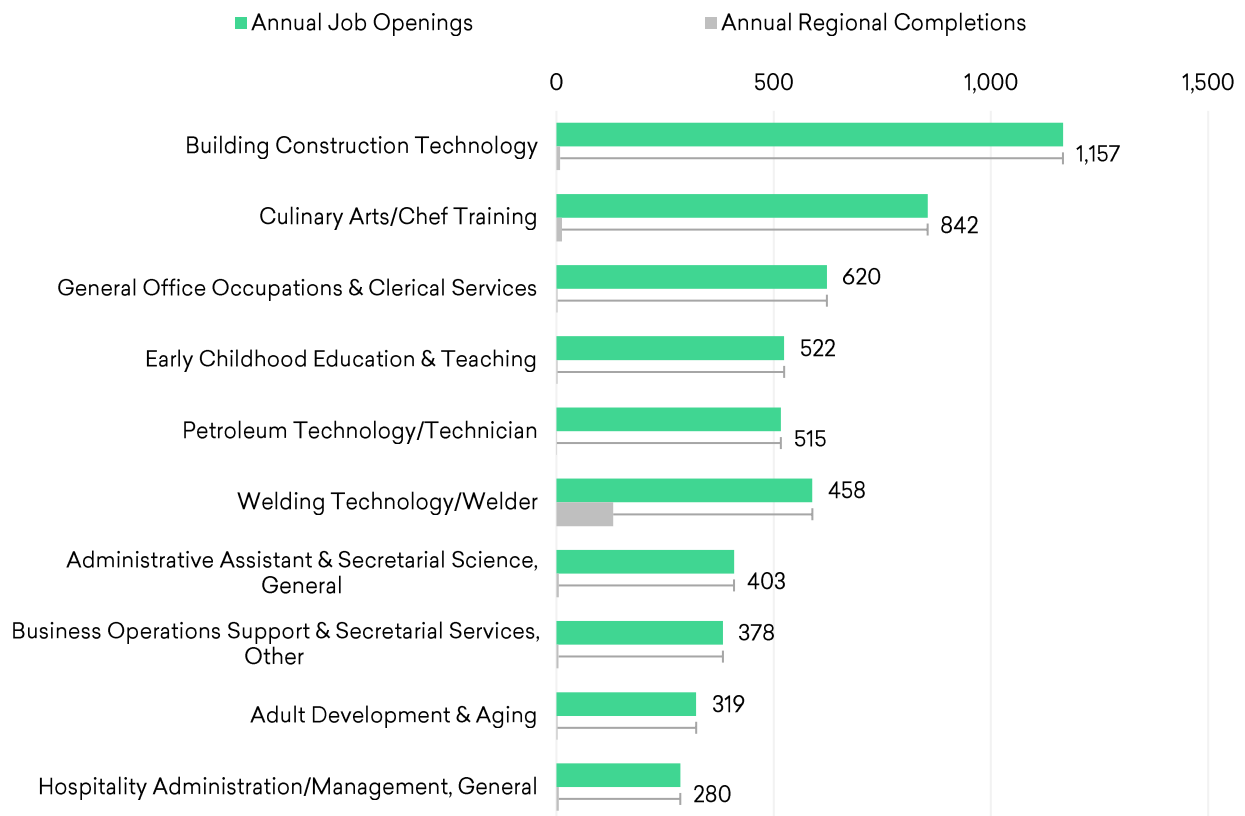
7 IPEDS refers to the Integrated Postsecondary Education Data System, which gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid program.

Classification (SOC) codes and titles. The state 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 Wyoming. See Appendix 6 for a complete list of job projections and Appendix 7 for unemployment information by industry and occupation.

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, WPCU's unique certificate level programs aggregate into 110 programs, when they are classified by their six-digit CIP codes. Average projected annual job openings consider someone with a high school diploma level of education and some college education but no degree. Furthermore, an occupation's job openings are weighted by the number of other programs mapped to an occupation and scaled according to a program's completions.

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



Source: Emsi program demand gap model.

The largest certificate level gap, at 1,157 job openings, is in the Building Construction Technology program (Figure 3.5). Within the program, WPCU has nine average annual completions in this program. Table 3.1 shows all the award level's program gaps and surpluses. There are no programs with a significant surplus of program completions above the 200-openings level of significance. Programs with a significant gap or surplus have been highlighted in Table 3.1.

Table 3.1: Gaps and Surpluses for WPCU's Certificate Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
46.0415	Building Construction Technology	1,166	9	9	1,157	\$22.44
12.0503	Culinary Arts/Chef Training	854	13	13	842	\$14.55
52.0408	General Office Occupations & Clerical Services	622	3	3	620	\$17.31
13.1210	Early Childhood Education & Teaching	524	2	2	522	\$15.00
15.0903	Petroleum Technology/Technician	516	1	1	515	\$24.39
48.0508	Welding Technology/Welder	589	131	131	458	\$26.79
52.0401	Administrative Assistant & Secretarial Science, General	409	5	5	403	\$16.97
52.0499	Business Operations Support & Secretarial Services, Other	383	5	5	378	\$16.97
19.0702	Adult Development & Aging	322	2	2	319	\$13.02
52.0901	Hospitality Administration/Management, General	285	5	5	280	\$14.58
51.3901	Licensed Practical/Vocational Nurse Training	438	205	205	233	\$15.15
51.0710	Medical Office Assistant/Specialist	244	15	15	229	\$17.33
46.0000	Construction Trades, General	222	1	1	221	\$28.31
46.0302	Electrician	222	10	10	212	\$28.01
31.0101	Parks, Recreation & Leisure Studies	209	0	0	209	\$12.32
52.0101	Business/Commerce, General	199	13	13	186	\$40.59
15.0901	Mining Technology/Technician	166	1	1	165	\$28.50
52.0701	Entrepreneurship/Entrepreneurial Studies	164	18	18	146	\$40.77
43.0104	Criminal Justice/Safety Studies	145	2	2	143	\$23.52
47.0303	Industrial Mechanics & Maintenance Technology	169	30	30	139	\$28.03
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	147	10	10	137	\$12.95
19.0708	Child Care & Support Services Management	138	1	1	137	\$11.81



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
51.3902	Nursing Assistant/Aide & Patient Care Assistant/Aide	131	1	1	130	\$12.52
15.0613	Manufacturing Engineering Technology/Technician	119	1	1	118	\$33.91
52.0302	Accounting Technology/Technician & Bookkeeping	114	2	2	113	\$19.33
48.0501	Machine Tool Technology/Machinist	136	30	30	106	\$27.56
01.0599	Agricultural & Domestic Animal Services, Other	103	1	1	102	\$10.76
13.1314	Physical Education Teaching & Coaching	107	6	6	101	\$17.75
47.0201	Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician	104	5	5	99	\$21.77
51.0713	Medical Insurance Coding Specialist/Coder	88	4	4	84	\$17.15
52.0411	Customer Service Support/Call Center/Teleservice Operation	80	2	2	78	\$16.41
01.0302	Animal/Livestock Husbandry & Production	78	1	1	77	\$13.77
15.0503	Energy Management & Systems Technology/Technician	69	2	2	67	\$37.91
46.0201	Carpentry/Carpenter	66	1	1	65	\$20.48
01.0303	Aquaculture	68	5	5	64	\$16.55
01.0301	Agricultural Production Operations, General	63	4	4	59	\$17.22
51.0601	Dental Assisting/Assistant	60	4	4	56	\$16.62
15.1202	Computer Technology/Computer Systems Technology	69	14	14	55	\$26.58
52.1401	Marketing/Marketing Management, General	55	0	0	54	\$19.31
52.0301	Accounting	51	0	0	51	\$32.98
47.0603	Autobody/Collision & Repair Technology/Technician	175	126	12	49	\$22.90
22.0302	Legal Assistant/Paralegal	50	3	3	46	\$21.51
50.0701	Art/Art Studies, General	46	0	0	46	\$17.65
47.0604	Automobile/Automotive Mechanics Technology/Technician	196	151	32	45	\$23.15
47.0105	Industrial Electronics Technology/Technician	56	16	16	40	\$29.18
13.0201	Bilingual & Multilingual Education	40	0	0	40	\$24.03
44.0000	Human Services, General	37	1	1	36	\$20.46
47.9999	Mechanic & Repair Technologies/Technicians, Other	51	15	15	36	\$22.94
52.0204	Office Management & Supervision	45	9	9	36	\$23.52



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
51.1501	Substance Abuse/Addiction Counseling	39	6	6	33	\$19.64
47.0101	Electrical/Electronics Equipment Installation & Repair, General	46	14	14	32	\$22.94
50.0901	Music, General	38	6	6	32	\$24.43
50.0501	Drama & Dramatics/Theatre Arts, General	34	2	2	32	\$18.79
51.0805	Pharmacy Technician/Assistant	34	3	3	31	\$17.51
51.0001	Health & Wellness, General	28	1	1	27	\$40.86
51.0808	Veterinary/Animal Health Technology/Technician & Veterinary Assistant	39	16	16	23	\$13.34
16.1601	American Sign Language (ASL)	23	0	0	22	\$21.10
31.0507	Physical Fitness Technician	26	4	4	22	\$17.64
51.1012	Sterile Processing Technology/Technician	22	1	1	21	\$19.33
51.1009	Phlebotomy Technician/Phlebotomist	41	20	20	21	\$19.42
45.0702	Geographic Information Science & Cartography	40	20	20	20	\$29.99
12.0407	Hair Styling/Stylist & Hair Design	22	2	1	20	\$13.19
11.1003	Computer & Information Systems Security/Information Assurance	24	6	6	18	\$32.31
11.0601	Data Entry/Microcomputer Applications, General	18	0	0	17	\$16.74
09.0401	Journalism	16	0	0	15	\$19.51
11.0203	Computer Programming, Vendor/Product Certification	18	3	3	15	\$30.81
51.3501	Massage Therapy/Therapeutic Massage	27	12	12	15	\$15.89
52.0904	Hotel/Motel Administration/Management	15	0	0	15	\$14.05
31.0505	Kinesiology & Exercise Science	16	2	2	14	\$17.70
43.0114	Law Enforcement Investigation & Interviewing	14	1	1	14	\$28.12
51.0801	Medical/Clinical Assistant	25	11	11	14	\$15.97
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	21	7	7	13	\$26.27
11.0801	Web Page, Digital/Multimedia & Information Resources Design	17	7	7	10	\$23.02
51.0716	Medical Administrative/Executive Assistant & Medical Secretary	10	0	0	9	\$17.73
15.0701	Occupational Safety & Health Technology/Technician	8	0	0	8	\$35.87
50.0406	Commercial Photography	9	1	1	8	\$15.51



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
11.9999	Computer & Information Sciences & Support Services, Other	7	1	1	6	\$29.19
51.3999	Practical Nursing, Vocational Nursing & Nursing Assistants, Other	14	8	8	6	\$15.53
05.0207	Women's Studies	6	0	0	6	\$16.77
51.0919	Mammography Technician/Technology	7	2	2	5	\$26.36
43.0203	Fire Science/Fire-fighting	23	19	19	4	\$23.90
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	11	7	7	4	\$26.83
01.0507	Equestrian/Equine Studies	17	14	14	3	\$17.63
11.0501	Computer Systems Analysis/Analyst	6	3	3	3	\$34.24
51.0911	Radiologic Technology/Science - Radiographer	4	1	1	3	\$28.12
50.1003	Music Management	3	0	0	3	\$25.64
11.1006	Computer Support Specialist	4	2	2	3	\$25.35
47.0104	Computer Installation & Repair Technology/Technician	6	4	4	2	\$23.99
47.0614	Alternative Fuel Vehicle Technology/Technician	2	0	0	2	\$33.43
15.1102	Surveying Technology/Surveying	5	3	3	2	\$28.80
15.1301	Drafting & Design Technology/Technician, General	5	3	3	2	\$26.83
52.0407	Business/Office Automation/Technology/Data Entry	3	1	1	2	\$18.24
43.0102	Corrections	1	0	0	1	\$22.06
44.0702	Youth Services/Administration	5	4	4	1	\$24.58
23.1302	Creative Writing	1	0	0	1	\$19.52
12.0410	Nail Technician/Specialist & Manicurist	7	6	6	1	\$11.99
52.2001	Construction Management	0	0	0	0	\$32.62
51.2312	Assistive/Augmentative Technology & Rehabilitation Engineering	4	4	4	0	\$23.51
13.1321	Computer Teacher Education	0	0	0	0	\$28.64
15.0307	Audio Engineering Technology/Technician	0	0	0	0	\$19.65
50.0910	Jazz/Jazz Studies	0	0	0	0	\$27.66
15.1303	Architectural Drafting & Architectural CAD/CADD	1	1	1	(0)	\$26.38
51.2314	Rehabilitation Science	0	0	0	(0)	\$16.16
12.0409	Aesthetician/Esthetician & Skin Care Specialist	2	2	2	(0)	\$13.24
12.0402	Barbering/Barber	0	1	1	(0)	\$15.23



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
11.0401	Information Science/Studies	3	4	4	(1)	\$39.84
51.0920	Magnetic Resonance Imaging (MRI) Technology/Technician	1	2	2	(1)	\$36.25
51.2313	Animal-Assisted Therapy	0	2	2	(1)	\$31.73
15.1306	Mechanical Drafting & Mechanical Drafting CAD/CADD	1	3	3	(2)	\$18.52
47.0605	Diesel Mechanics Technology/Technician	148	253	70	(106)	\$21.80

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

Several occupations mapped to Building Construction Technology, such as operating engineers & other construction equipment operators, construction laborers, and carpenters (Table 3.2). The median hourly wage of the program based on the annual openings for each of the occupations mapped to the program is \$22.44. For context, Wyoming’s minimum wage is \$7.25⁸ per hour, and the state’s living wage is \$11.10 per hour for a household with one working adult and no children.⁹ Consideration should be given to which occupations the program’s curriculum prepares students to enter. For example, if the curriculum trains for operating engineers & other construction equipment operators, the occupation with the largest gap in the program and with a median hourly wage of \$27.90, then the program should be considered for expansion.¹⁰

This step-by-step analysis of evaluating a program by its occupational job openings, job counts, and wage rates can be applied to the other programs in Table 3.2. 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 Wyoming.

8 Wyoming’s minimum wage as of January 1, 2020 is \$7.25 per hour. Source: Emsi Complete Employment Data.

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

10 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. Further research must be conducted before making a final determination, such as top employer identification within the state; 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 state higher education institutions. Emsi is available to conduct this research; see your Emsi contact for details.



Table 3.2: Occupations Mapped to WPCU's Certificate Level Programs with a Significant Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Building Construction Technology (CIP Code 46.0415)						
47-2073	Operating Engineers & Other Construction Equipment Operators	4,367	4,426	59	391	\$27.90
47-2061	Construction Laborers	4,351	4,878	528	299	\$16.91
47-2031	Carpenters	3,431	3,536	104	187	\$21.83
47-2141	Painters, Construction & Maintenance	964	1,034	71	65	\$18.04
47-2051	Cement Masons & Concrete Finishers	523	510	(12)	35	\$19.87
47-2121	Glaziers	245	279	34	25	\$19.71
47-2132	Insulation Workers, Mechanical	299	306	7	25	\$20.05
47-2181	Roofers	422	433	12	24	\$17.16
17-3022	Civil Engineering Technicians	322	324	2	19	\$21.43
47-2081	Drywall & Ceiling Tile Installers	280	278	(2)	16	\$18.82
47-2131	Insulation Workers, Floor, Ceiling, & Wall	189	168	(21)	15	\$17.90
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	13	\$32.22
11-9021	Construction Managers	867	967	100	11	\$36.84
47-4011	Construction & Building Inspectors	224	249	24	10	\$26.75
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	6	\$31.75
47-2044	Tile & Marble Setters	91	87	(3)	6	\$18.79
13-1051	Cost Estimators	277	318	41	5	\$35.30
49-9071	Maintenance & Repair Workers, General	3,781	4,084	303	5	\$17.71
47-2042	Floor Layers, Except Carpet, Wood, & Hard Tiles	58	63	5	4	\$21.58
47-2211	Sheet Metal Workers	301	324	22	2	\$18.45
47-2041	Carpet Installers	27	27	(0)	2	\$16.36
25-2032	Career/Technical Education Teachers, Secondary School	230	242	13	1	\$29.06
47-2043	Floor Sanders & Finishers	5	4	(1)	0	\$16.49
47-2142	Paperhangers	3	3	(0)	0	\$16.05
47-2053	Terrazzo Workers & Finishers	0	0	(0)	0	\$18.46
Culinary Arts/Chef Training (CIP Code 12.0503)						
35-2014	Cooks, Restaurant	3,184	3,727	542	353	\$13.71
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	2,343	2,563	220	280	\$14.58
35-2012	Cooks, Institution & Cafeteria	1,400	1,500	101	140	\$14.31
11-9051	Food Service Managers	580	632	52	33	\$20.85
35-2015	Cooks, Short Order	291	301	10	28	\$11.25



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
35-1011	Chefs & Head Cooks	215	245	30	19	\$25.50
35-2013	Cooks, Private Household	2	3	0	0	\$17.23
General Office Occupations & Clerical Services (CIP Code 52.0408)						
43-3031	Bookkeeping, Accounting, & Auditing Clerks	3,290	3,292	2	140	\$17.81
43-9061	Office Clerks, General	8,537	8,485	(52)	137	\$16.88
43-4051	Customer Service Representatives	1,757	1,895	138	106	\$15.95
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	51	\$17.81
43-5071	Shipping, Receiving, & Traffic Clerks	626	666	40	50	\$15.61
43-5032	Dispatchers, Except Police, Fire, & Ambulance	297	322	25	22	\$19.28
43-5061	Production, Planning, & Expediting Clerks	278	321	44	16	\$27.49
43-3021	Billing & Posting Clerks	557	642	85	16	\$18.41
43-9051	Mail Clerks & Mail Machine Operators, Except Postal Service	195	179	(17)	16	\$11.19
43-9041	Insurance Claims & Policy Processing Clerks	627	673	46	14	\$17.09
43-4141	New Accounts Clerks	178	161	(17)	11	\$16.99
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	9	\$24.26
43-4171	Receptionists & Information Clerks	1,149	1,278	129	9	\$13.68
43-3051	Payroll & Timekeeping Clerks	187	186	(0)	7	\$19.65
43-3061	Procurement Clerks	154	152	(3)	5	\$22.19
43-6011	Executive Secretaries & Executive Administrative Assistants	612	535	(77)	4	\$21.76
43-4151	Order Clerks	57	55	(2)	3	\$16.89
43-5011	Cargo & Freight Agents	33	39	6	3	\$20.57
43-9022	Word Processors & Typists	124	98	(26)	1	\$11.82
43-4071	File Clerks	156	139	(17)	1	\$10.09
43-9021	Data Entry Keyers	138	116	(22)	1	\$10.55
43-4021	Correspondence Clerks	0	0	0	0	\$18.09
Early Childhood Education & Teaching (CIP Code 13.1210)						
25-9041	Teacher Assistants	3,762	3,973	211	244	\$14.88
39-9011	Childcare Workers	3,039	2,922	(117)	194	\$11.26
25-2011	Preschool Teachers, Except Special Education	980	1,063	83	34	\$12.52
25-2012	Kindergarten Teachers, Except Special Education	428	451	23	22	\$28.74
25-9031	Instructional Coordinators	277	292	15	9	\$31.37
11-9032	Education Administrators, Elementary & Secondary School	427	460	33	9	\$44.28



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
25-2052	Special Education Teachers, Kindergarten & Elementary School	581	611	30	6	\$30.37
21-1021	Child, Family, & School Social Workers	792	857	64	2	\$23.16
11-9031	Education Administrators, Preschool & Childcare Center/Program	145	150	6	2	\$16.41
25-2021	Elementary School Teachers, Except Special Education	2,627	2,806	178	2	\$27.24
25-2051	Special Education Teachers, Preschool	95	100	5	1	\$30.77
19-3031	Clinical, Counseling, & School Psychologists	327	395	68	0	\$35.18
Petroleum Technology/Technician (CIP Code 15.0903)						
47-5071	Roustabouts, Oil & Gas	1,923	2,009	86	211	\$19.37
47-5013	Service Unit Operators, Oil, Gas, & Mining	1,780	1,800	20	86	\$24.39
51-8093	Petroleum Pump System Operators, Refinery Operators, & Gaugers	864	838	(26)	66	\$36.71
47-5012	Rotary Drill Operators, Oil & Gas	245	295	51	33	\$26.72
47-5011	Derrick Operators, Oil & Gas	254	279	25	31	\$27.42
53-7073	Wellhead Pumpers	319	298	(21)	29	\$29.56
47-5021	Earth Drillers, Except Oil & Gas	131	167	36	18	\$23.48
53-7072	Pump Operators, Except Wellhead Pumpers	175	178	4	16	\$11.59
51-8092	Gas Plant Operators	369	372	3	11	\$35.40
53-7071	Gas Compressor & Gas Pumping Station Operators	88	90	2	8	\$24.59
19-4041	Geological & Petroleum Technicians	144	147	3	8	\$28.19
Welding Technology/Welder (CIP Code 48.0508)						
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	198	\$32.22
51-4121	Welders, Cutters, Solderers, & Brazers	1,913	2,019	106	166	\$27.24
47-2152	Plumbers, Pipefitters, & Steamfitters	1,067	1,186	119	99	\$24.57
49-9071	Maintenance & Repair Workers, General	3,781	4,084	303	77	\$17.71
47-2211	Sheet Metal Workers	301	324	22	25	\$18.45
47-2221	Structural Iron & Steel Workers	163	199	36	19	\$26.48
47-2171	Reinforcing Iron & Rebar Workers	30	37	7	3	\$25.32
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	16	20	4	2	\$17.82
Administrative Assistant & Secretarial Science, General (CIP Code 52.0401)						
43-9061	Office Clerks, General	8,537	8,485	(52)	273	\$16.88
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	103	\$17.81
43-4171	Receptionists & Information Clerks	1,149	1,278	129	18	\$13.68
43-6011	Executive Secretaries & Executive Administrative Assistants	612	535	(77)	8	\$21.76



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
43-9022	Word Processors & Typists	124	98	(26)	3	\$11.82
43-4071	File Clerks	156	139	(17)	2	\$10.09
43-9021	Data Entry Keyers	138	116	(22)	1	\$10.55
Business Operations Support & Secretarial Services, Other (CIP Code 52.0499)						
43-9061	Office Clerks, General	8,537	8,485	(52)	256	\$16.88
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	96	\$17.81
43-4171	Receptionists & Information Clerks	1,149	1,278	129	17	\$13.68
43-6011	Executive Secretaries & Executive Administrative Assistants	612	535	(77)	7	\$21.76
43-9022	Word Processors & Typists	124	98	(26)	3	\$11.82
43-4071	File Clerks	156	139	(17)	2	\$10.09
43-9021	Data Entry Keyers	138	116	(22)	1	\$10.55
Adult Development & Aging (CIP Code 19.0702)						
39-9021	Personal Care Aides	2,953	4,085	1,132	289	\$12.44
21-1093	Social & Human Service Assistants	829	950	121	9	\$15.76
43-4061	Eligibility Interviewers, Government Programs	289	316	27	7	\$21.84
31-1014	Nursing Assistants	3,439	3,789	350	3	\$14.40
29-2053	Psychiatric Technicians	28	50	22	3	\$15.25
31-1013	Psychiatric Aides	19	36	17	2	\$13.20
21-1021	Child, Family, & School Social Workers	792	857	64	2	\$23.16
21-1094	Community Health Workers	65	80	14	2	\$22.13
21-1023	Mental Health & Substance Abuse Social Workers	208	257	48	1	\$20.55
31-1011	Home Health Aides	696	930	235	1	\$13.49
19-3099	Social Scientists & Related Workers, All Other	42	44	2	1	\$31.55
31-2022	Physical Therapist Aides	97	126	29	1	\$11.27
11-9151	Social & Community Service Managers	375	417	43	1	\$28.46
19-1042	Medical Scientists, Except Epidemiologists	40	52	11	0	\$30.16
Hospitality Administration/Management, General (CIP Code 52.0901)						
43-4081	Hotel, Motel, & Resort Desk Clerks	1,580	1,506	(74)	173	\$12.13
39-7018	Tour & Travel Guides	310	348	38	37	\$15.02
43-4171	Receptionists & Information Clerks	1,149	1,278	129	18	\$13.68
11-9081	Lodging Managers	410	418	8	18	\$24.88
39-1021	First-Line Supervisors of Personal Service Workers	457	518	61	15	\$16.89
11-9051	Food Service Managers	580	632	52	14	\$20.85



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
11-9199	Managers, All Other*	1,617	1,857	240	4	\$36.84
39-6012	Concierges	32	33	2	3	\$17.37
13-1121	Meeting, Convention, & Event Planners	182	211	28	2	\$20.53
11-9071	Gaming Managers	4	6	3	0	\$17.60
39-1018	First-Line Supervisors of Gaming Workers	0	0	0	0	\$0.00
Licensed Practical/Vocational Nurse Training (CIP Code 51.3901)						
31-1014	Nursing Assistants	3,439	3,789	350	306	\$14.40
31-1011	Home Health Aides	696	930	235	81	\$13.49
29-2061	Licensed Practical & Licensed Vocational Nurses	669	792	122	51	\$22.29
Medical Office Assistant/Specialist (CIP Code 51.0710)						
43-6013	Medical Secretaries	1,512	1,733	221	85	\$16.30
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	51	\$24.26
43-4171	Receptionists & Information Clerks	1,149	1,278	129	50	\$13.68
31-9092	Medical Assistants	756	916	160	33	\$15.97
29-2071	Medical Records & Health Information Technicians	356	403	47	12	\$19.51
43-4071	File Clerks	156	139	(17)	6	\$10.09
43-9021	Data Entry Keyers	138	116	(22)	4	\$10.55
31-9094	Medical Transcriptionists	81	74	(7)	3	\$18.43
Construction Trades, General (CIP Code 46.0000)						
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	54	\$27.76
51-1011	First-Line Supervisors of Production & Operating Workers	1,251	1,329	78	51	\$39.42
47-2061	Construction Laborers	4,351	4,878	528	46	\$16.91
47-2031	Carpenters	3,431	3,536	104	29	\$21.83
47-2111	Electricians	2,564	2,610	47	24	\$28.38
11-1021	General & Operations Managers	5,467	5,901	435	9	\$42.58
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	2	\$32.22
11-9021	Construction Managers	867	967	100	2	\$36.84
11-9199	Managers, All Other*	1,617	1,857	240	1	\$36.84
47-2152	Plumbers, Pipefitters, & Steamfitters	1,067	1,186	119	1	\$24.57
13-1051	Cost Estimators	277	318	41	1	\$35.30
49-9071	Maintenance & Repair Workers, General	3,781	4,084	303	1	\$17.71
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	1,795	1,854	60	0	\$35.60



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
11-1011	Chief Executives	245	255	10	0	\$61.50
Electrician (CIP Code 46.0302)						
47-2111	Electricians	2,564	2,610	47	189	\$28.38
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	16	\$32.22
49-2098	Security & Fire Alarm Systems Installers	69	82	13	7	\$14.73
47-3013	Helpers--Electricians	58	60	3	6	\$16.07
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	1,795	1,854	60	3	\$35.60
49-9097	Signal & Track Switch Repairers	53	49	(4)	1	\$33.72
Parks, Recreation & Leisure Studies (CIP Code 31.0101)						
39-3091	Amusement & Recreation Attendants	545	602	57	103	\$10.13
39-9032	Recreation Workers	639	728	90	74	\$12.48
25-3021	Self-Enrichment Education Teachers	872	949	76	30	\$19.71
33-9092	Lifeguards, Ski Patrol, & Other Recreational Protective Service Workers	445	465	19	3	\$10.64
29-1125	Recreational Therapists	31	33	1	0	\$32.90

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

Numbers may not sum due to rounding.

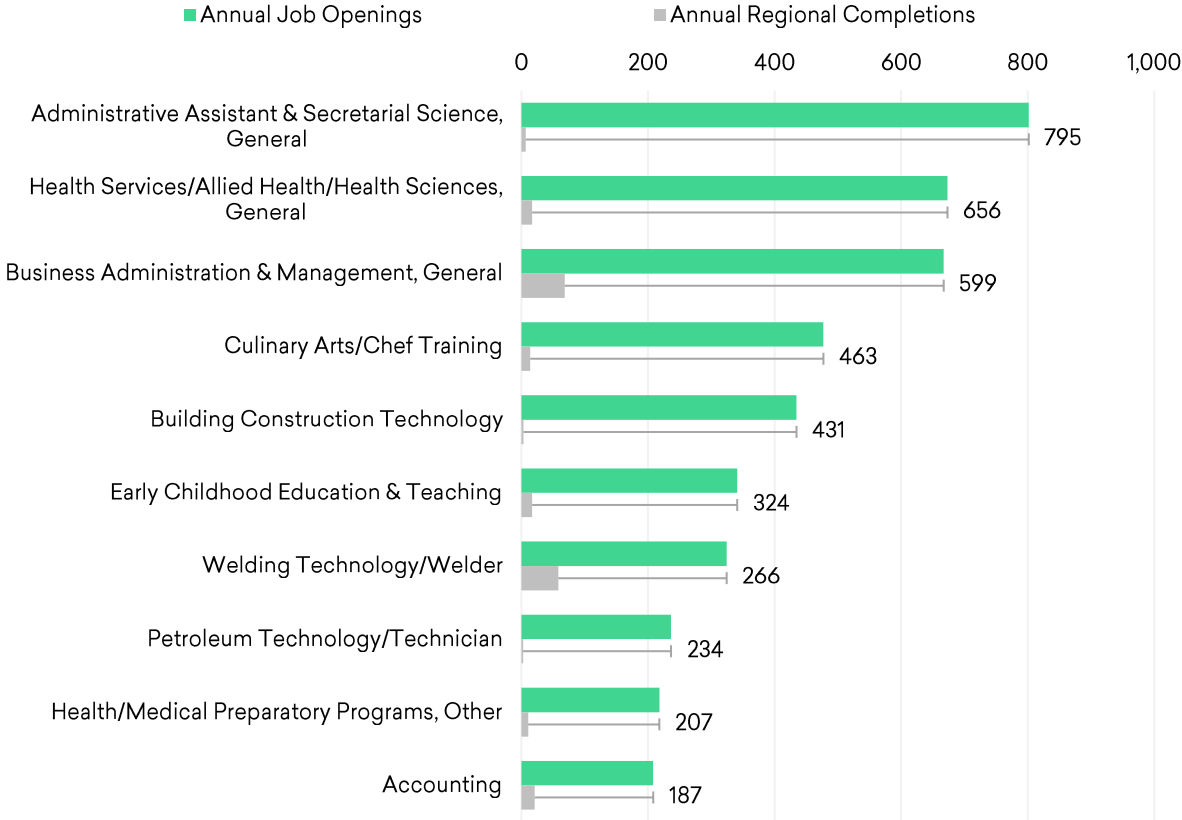
Source: Emsi program demand gap model.



ASSOCIATE DEGREE LEVEL ANALYSIS

WPCU offers 183 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.¹¹ Like the previous section, job openings consider this award level and one below – an associate degree and some college education in this section. An occupation’s job openings are weighted by the number of other programs mapped to the occupation and scaled according to a program’s completions.

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



Source: Emsi program demand gap model.

¹¹ Note that the completions at the associate degree level have had transfers to the University of Wyoming over the three-year period removed. This eliminates any double counting that would result when those students then become completers at the bachelor's degree level.

As shown in Figure 3.6, nine programs have a significant gap above the 200-openings level of significance. The Administrative Assistant & Secretarial Science, General program has the largest, followed by the Health Services/Allied Health/Health Sciences, General and Business Administration & Management, General programs. As shown in Table 3.3, the Administrative Assistant & Secretarial Science, General program has 802 average annual job openings, considering the state’s labor market. On average, WPCU has seven annual completions. There are zero programs with a significant surplus of program completions above the 200-openings level of significance. Programs with a significant gap have been highlighted in Table 3.3.

Table 3.3: Gaps and Surpluses for WPCU’s Associate Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
52.0401	Administrative Assistant & Secretarial Science, General	802	7	7	795	\$16.99
51.0000	Health Services/Allied Health/Health Sciences, General	673	17	17	656	\$14.18
52.0201	Business Administration & Management, General	667	68	65	599	\$26.07
12.0503	Culinary Arts/Chef Training	477	14	14	463	\$14.80
46.0415	Building Construction Technology	435	3	3	431	\$22.52
13.1210	Early Childhood Education & Teaching	341	17	17	324	\$13.59
48.0508	Welding Technology/Welder	324	58	58	266	\$26.08
15.0903	Petroleum Technology/Technician	236	3	3	234	\$25.53
51.1199	Health/Medical Preparatory Programs, Other	218	11	11	207	\$19.17
52.0301	Accounting	208	21	21	187	\$19.17
46.0000	Construction Trades, General	185	1	1	184	\$26.91
52.0901	Hospitality Administration/Management, General	169	5	5	164	\$14.28
01.0000	Agriculture, General	171	11	11	160	\$15.39
31.0301	Parks, Recreation & Leisure Facilities Management, General	171	12	12	159	\$15.88
03.0201	Natural Resources Management & Policy	145	4	4	141	\$22.40
13.0101	Education, General	140	18	18	122	\$16.79
52.0101	Business/Commerce, General	146	39	39	107	\$39.66
43.0104	Criminal Justice/Safety Studies	138	41	41	98	\$25.21
51.0899	Allied Health & Medical Assisting Services, Other	97	4	4	92	\$17.56
51.0716	Medical Administrative/Executive Assistant & Medical Secretary	91	1	1	90	\$17.52

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
15.0613	Manufacturing Engineering Technology/Technician	87	1	1	86	\$31.67
47.0303	Industrial Mechanics & Maintenance Technology	88	10	10	78	\$27.94
47.0604	Automobile/Automotive Mechanics Technology/Technician	110	34	12	76	\$24.42
01.0901	Animal Sciences, General	94	18	18	75	\$12.54
12.0401	Cosmetology/Cosmetologist, General	105	29	12	75	\$13.88
48.0501	Machine Tool Technology/Machinist	78	13	13	65	\$28.22
47.0105	Industrial Electronics Technology/Technician	76	15	15	61	\$28.40
47.0101	Electrical/Electronics Equipment Installation & Repair, General	80	20	20	59	\$24.86
44.0000	Human Services, General	64	8	8	56	\$16.88
15.0503	Energy Management & Systems Technology/Technician	69	13	13	55	\$37.44
47.0201	Heating, Air Conditioning, Ventilation & Refrigeration Maintenance Technology/Technician	56	2	2	54	\$21.92
31.0101	Parks, Recreation & Leisure Studies	56	6	6	50	\$12.31
15.0901	Mining Technology/Technician	45	1	1	44	\$30.65
22.0302	Legal Assistant/Paralegal	48	9	9	39	\$20.86
51.0707	Health Information/Medical Records Technology/Technician	47	9	9	38	\$18.07
47.0603	Autobody/Collision & Repair Technology/Technician	50	14	4	36	\$23.81
50.0701	Art/Art Studies, General	57	24	24	33	\$19.41
23.0101	English Language & Literature, General	50	18	18	32	\$19.80
52.1401	Marketing/Marketing Management, General	33	2	2	31	\$15.83
52.0904	Hotel/Motel Administration/Management	31	1	1	30	\$14.08
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	34	5	5	29	\$15.15
15.1202	Computer Technology/Computer Systems Technology	32	3	3	29	\$27.83
46.0302	Electrician	26	0	0	26	\$25.31
51.9999	Health Professions & Related Clinical Sciences, Other	26	1	1	26	\$14.18
13.1314	Physical Education Teaching & Coaching	27	2	2	25	\$16.99
47.0605	Diesel Mechanics Technology/Technician	106	83	42	23	\$22.10
51.3501	Massage Therapy/Therapeutic Massage	24	2	2	23	\$16.52



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
52.0302	Accounting Technology/Technician & Bookkeeping	22	2	2	20	\$18.21
01.1103	Horticultural Science	19	1	1	17	\$14.07
51.0710	Medical Office Assistant/Specialist	18	1	1	17	\$15.89
44.0701	Social Work	26	10	10	16	\$21.11
16.0905	Spanish Language & Literature	23	7	7	15	\$17.78
43.0103	Criminal Justice/Law Enforcement Administration	30	15	15	15	\$27.50
40.0501	Chemistry, General	17	3	3	14	\$22.51
30.0101	Biological & Physical Sciences	20	6	6	14	\$20.55
31.0501	Health & Physical Education/Fitness, General	14	1	1	13	\$16.91
52.0204	Office Management & Supervision	19	6	6	13	\$22.63
01.0101	Agricultural Business & Management, General	41	29	29	12	\$19.55
47.9999	Mechanic & Repair Technologies/Technicians, Other	16	4	4	12	\$24.86
31.0504	Sport & Fitness Administration/Management	11	1	1	10	\$17.73
01.9999	Agriculture, Agriculture Operations, & Related Sciences, Other	10	1	1	10	\$15.39
16.1601	American Sign Language (ASL)	10	1	1	9	\$24.58
11.0101	Computer & Information Sciences, General	13	4	4	9	\$28.49
52.2001	Construction Management	11	3	3	9	\$30.58
14.0101	Engineering, General	24	16	16	9	\$42.27
31.0505	Kinesiology & Exercise Science	18	10	10	9	\$16.98
45.0702	Geographic Information Science & Cartography	14	6	6	8	\$24.67
43.0203	Fire Science/Fire-fighting	28	20	20	8	\$22.95
15.0303	Electrical, Electronic & Communications Engineering Technology/Technician	14	6	6	8	\$27.02
11.0701	Computer Science	11	4	4	8	\$30.62
09.0701	Radio & Television	10	3	3	6	\$19.84
40.0601	Geology/Earth Science, General	9	3	3	6	\$33.34
11.1003	Computer & Information Systems Security/Information Assurance	11	5	5	6	\$32.69
49.0102	Airline/Commercial/Professional Pilot & Flight Crew	8	2	2	6	\$51.82
51.0808	Veterinary/Animal Health Technology/Technician & Veterinary Assistant	22	17	17	6	\$13.59



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
50.0501	Drama & Dramatics/Theatre Arts, General	17	12	12	5	\$20.91
51.0909	Surgical Technology/Technologist	13	8	8	5	\$20.25
19.0708	Child Care & Support Services Management	5	0	0	5	\$11.84
09.0702	Digital Communication & Media/Multimedia	8	3	3	4	\$19.19
51.0805	Pharmacy Technician/Assistant	6	2	2	4	\$15.48
03.0101	Natural Resources/Conservation, General	5	1	1	4	\$34.61
03.0104	Environmental Science	5	1	1	4	\$34.61
09.0102	Mass Communication/Media Studies	10	6	6	4	\$21.19
15.1301	Drafting & Design Technology/Technician, General	12	8	8	4	\$24.87
52.0701	Entrepreneurship/Entrepreneurial Studies	6	2	2	4	\$36.76
13.1209	Kindergarten/Preschool Education & Teaching	8	4	4	4	\$17.30
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	11	7	7	3	\$24.87
50.0901	Music, General	15	12	12	3	\$23.01
50.0301	Dance, General	8	5	5	3	\$18.64
26.0709	Wildlife Biology	4	0	0	3	\$16.15
01.0104	Farm/Farm & Ranch Management	10	7	7	3	\$20.51
52.0703	Small Business Administration/Management	4	1	1	3	\$33.45
50.0402	Commercial & Advertising Art	7	5	5	3	\$18.63
48.9999	Precision Production, Other	4	1	1	2	\$21.75
51.0913	Athletic Training/Trainer	4	2	2	2	\$16.39
15.0701	Occupational Safety & Health Technology/Technician	2	0	0	2	\$33.57
11.0201	Computer Programming/Programmer, General	21	19	19	2	\$31.72
50.0702	Fine/Studio Arts, General	2	1	1	1	\$19.44
16.0101	Foreign Languages & Literatures, General	2	1	1	1	\$17.23
31.0507	Physical Fitness Technician	3	1	1	1	\$17.03
30.0601	Systems Science & Theory	4	3	3	1	\$34.43
51.0908	Respiratory Care Therapy/Therapist	12	11	11	1	\$26.40
51.0816	Speech-Language Pathology Assistant	3	2	2	1	\$19.65
15.0507	Environmental Engineering Technology/Environmental Technology	2	1	1	1	\$22.73



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
50.0506	Acting	6	5	5	1	\$20.31
51.1103	Pre-Pharmacy Studies	3	2	2	1	\$58.92
15.1102	Surveying Technology/Surveying	1	0	0	1	\$26.57
52.0407	Business/Office Automation/Technology/Data Entry	1	0	0	1	\$13.60
01.0106	Agricultural Business Technology	1	1	1	0	\$23.96
01.0301	Agricultural Production Operations, General	3	3	3	0	\$17.97
50.0711	Ceramic Arts & Ceramics	1	1	1	0	\$18.80
01.0304	Crop Production	3	2	2	0	\$17.97
50.0509	Musical Theatre	2	1	1	0	\$20.31
51.1109	Pre-Physical Therapy Studies	2	1	1	0	\$41.71
51.1501	Substance Abuse/Addiction Counseling	1	1	1	0	\$18.20
43.0102	Corrections	0	0	0	0	\$22.85
27.0599	Statistics, Other	0	0	0	(0)	\$44.51
05.0207	Women's Studies	0	0	0	(0)	\$22.92
14.1401	Environmental/Environmental Health Engineering	0	0	0	(0)	\$48.80
30.1901	Nutrition Sciences	2	2	2	(0)	\$17.56
09.0100	Communication, General	2	2	2	(0)	\$23.03
11.1004	Web/Multimedia Management & Webmaster	0	0	0	(0)	\$27.81
42.0101	Psychology, General	47	48	48	(0)	\$26.11
43.0199	Corrections & Criminal Justice, Other	2	2	2	(0)	\$18.90
05.0202	American Indian/Native American Studies	1	1	1	(0)	\$22.19
13.1309	Technology Teacher Education/Industrial Arts Teacher Education	0	0	0	(0)	\$28.75
13.1305	English/Language Arts Teacher Education	0	0	0	(0)	\$28.15
13.1303	Business Teacher Education	0	0	0	(0)	\$28.67
13.1311	Mathematics Teacher Education	0	0	0	(0)	\$28.15
51.1108	Pre-Optometry Studies	0	0	0	(0)	\$67.55
43.0106	Forensic Science & Technology	1	1	1	(0)	\$27.84
01.1106	Range Science & Management	5	5	5	(0)	\$16.23
09.0401	Journalism	1	2	2	(0)	\$20.34



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
51.3899	Registered Nursing, Nursing Administration, Nursing Research & Clinical Nursing, Other	1	1	1	(0)	\$31.17
13.1330	Spanish Language Teacher Education	0	1	1	(1)	\$28.15
45.0901	International Relations & Affairs	0	1	1	(1)	\$37.17
03.0601	Wildlife, Fish & Wildlands Science & Management	1	1	1	(1)	\$28.97
44.0799	Social Work, Other	1	1	1	(1)	\$24.45
01.0802	Agricultural Communication/Journalism	2	3	3	(1)	\$17.82
13.1318	Social Studies Teacher Education	0	1	1	(1)	\$28.15
13.1301	Agricultural Teacher Education	0	1	1	(1)	\$28.67
50.0903	Music Performance, General	1	2	2	(1)	\$26.59
30.1401	Museology/Museum Studies	0	1	1	(1)	\$15.69
51.0803	Occupational Therapist Assistant	13	14	14	(1)	\$23.69
50.0605	Photography	0	1	1	(1)	\$14.08
01.0102	Agribusiness/Agricultural Business Operations	14	15	15	(1)	\$16.23
13.1302	Art Teacher Education	0	2	2	(1)	\$28.15
45.1101	Sociology	1	3	3	(1)	\$26.61
13.1312	Music Teacher Education	1	2	2	(1)	\$26.33
50.0913	Music Technology	2	4	4	(2)	\$19.23
51.0806	Physical Therapy Technician/Assistant	16	18	18	(2)	\$18.50
51.1101	Pre-Dentistry Studies	0	2	2	(2)	N/A
45.0601	Economics, General	1	3	3	(2)	\$25.27
22.0001	Pre-Law Studies	0	2	2	(2)	\$39.04
30.1801	Natural Sciences	0	2	2	(2)	\$45.00
30.1501	Science, Technology & Society	0	2	2	(2)	\$45.11
51.1104	Pre-Veterinary Studies	0	2	2	(2)	N/A
50.0602	Cinematography & Film/Video Production	1	3	3	(2)	\$24.42
40.0801	Physics, General	1	4	4	(3)	\$43.32
51.1107	Pre-Occupational Therapy Studies	1	4	4	(3)	\$36.86
51.2399	Rehabilitation & Therapeutic Professions, Other	0	3	3	(3)	\$31.73
26.0101	Biology/Biological Sciences, General	14	16	16	(3)	\$19.59
50.0502	Technical Theatre/Theatre Design & Technology	0	3	3	(3)	\$21.76



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
45.1001	Political Science & Government, General	5	8	8	(3)	\$29.37
50.0409	Graphic Design	3	7	7	(4)	\$20.48
45.0201	Anthropology	1	5	5	(4)	\$28.41
51.1004	Clinical/Medical Laboratory Technician	6	10	10	(5)	\$25.06
01.0507	Equestrian/Equine Studies	9	14	14	(5)	\$13.69
51.1102	Pre-Medicine/Pre-Medical Studies	1	7	7	(6)	\$55.56
51.0910	Diagnostic Medical Sonography/Sonographer & Ultrasound Technician	3	9	9	(6)	\$30.41
54.0101	History, General	4	10	10	(6)	\$28.59
11.0401	Information Science/Studies	2	8	8	(6)	\$37.82
51.0907	Medical Radiologic Technology/Science - Radiation Therapist	4	10	10	(7)	\$27.96
27.0101	Mathematics, General	2	11	11	(9)	\$29.51
09.0101	Speech Communication & Rhetoric	9	18	18	(9)	\$21.53
45.0101	Social Sciences, General	11	22	22	(12)	\$26.32
50.0406	Commercial Photography	4	17	17	(13)	\$15.11
51.0602	Dental Hygiene/Hygienist	23	36	36	(13)	\$33.45
13.1205	Secondary Education & Teaching	4	24	24	(19)	\$35.42
51.0911	Radiologic Technology/Science - Radiographer	15	37	37	(21)	\$27.42
51.0001	Health & Wellness, General	16	51	51	(36)	\$32.41
13.1202	Elementary Education & Teaching	9	51	51	(42)	\$35.03
51.3801	Registered Nursing/Registered Nurse	127	203	203	(77)	\$33.15

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

Several occupations mapped to Administrative Assistant & Secretarial Science, General, such as office clerks, general; secretaries & administrative assistants, except legal, medical, & executive; and receptionists & information clerks (Table 3.4). The median hourly wage of the program is \$16.99. For context, Wyoming state minimum wage is \$7.25¹² per hour, and

12 Wyoming's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: Emsi Complete Employment Data.

the state's living wage is \$11.10 per hour for a household with one working adult and no children.¹³

Using Table 3.4, this step-by-step process of evaluating occupational gaps by their job openings, job counts, and median hourly wage rates can be applied to the other WPCU 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 state.

Table 3.4: Occupations Mapped to WPCU'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
Administrative Assistant & Secretarial Science, General (CIP Code 52.0401)						
43-9061	Office Clerks, General	8,537	8,485	(52)	532	\$16.88
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	215	\$17.81
43-4171	Receptionists & Information Clerks	1,149	1,278	129	26	\$13.68
43-6011	Executive Secretaries & Executive Administrative Assistants	612	535	(77)	13	\$21.76
43-4071	File Clerks	156	139	(17)	6	\$10.09
43-9022	Word Processors & Typists	124	98	(26)	6	\$11.82
43-9021	Data Entry Keyers	138	116	(22)	2	\$10.55
Health Services/Allied Health/Health Sciences, General (CIP Code 51.0000)						
39-9021	Personal Care Aides	2,953	4,085	1,132	268	\$12.44
31-1014	Nursing Assistants	3,439	3,789	350	189	\$14.40
43-6013	Medical Secretaries	1,512	1,733	221	58	\$16.30
31-9092	Medical Assistants	756	916	160	37	\$15.97
31-1011	Home Health Aides	696	930	235	36	\$13.49
39-9031	Fitness Trainers & Aerobics Instructors	780	845	65	30	\$16.33
31-9097	Phlebotomists	246	293	47	22	\$15.22
21-1093	Social & Human Service Assistants	829	950	121	14	\$15.76
29-2071	Medical Records & Health Information Technicians	356	403	47	10	\$19.51
29-2018	Clinical Laboratory Technologists & Technicians	532	605	72	9	\$25.06

¹³ Living wage calculations provided by Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology. See Appendix 8.

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Business Administration & Management, General (CIP Code 52.0201)						
41-1011	First-Line Supervisors of Retail Sales Workers	2,955	3,069	114	156	\$17.12
43-4051	Customer Service Representatives	1,757	1,895	138	119	\$15.95
11-1021	General & Operations Managers	5,467	5,901	435	108	\$42.58
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	72	\$24.26
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	70	\$27.76
15-1151	Computer User Support Specialists	820	914	94	28	\$23.19
13-1071	Human Resources Specialists	882	958	75	24	\$25.34
13-2011	Accountants & Auditors	2,106	2,261	156	20	\$28.57
11-3031	Financial Managers	726	858	132	17	\$46.25
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	12	\$31.75
11-9199	Managers, All Other*	1,617	1,857	240	10	\$36.84
13-1161	Market Research Analysts & Marketing Specialists	396	531	134	8	\$24.13
11-3121	Human Resources Managers	240	261	21	7	\$39.42
13-1111	Management Analysts	583	678	94	6	\$38.95
11-2022	Sales Managers	230	267	37	3	\$39.68
11-3021	Computer & Information Systems Managers	239	284	45	3	\$45.17
11-1011	Chief Executives	245	255	10	3	\$61.50
11-2021	Marketing Managers	103	123	20	2	\$37.95
Culinary Arts/Chef Training (CIP Code 12.0503)						
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	2,343	2,563	220	186	\$14.58
35-2014	Cooks, Restaurant	3,184	3,727	542	171	\$13.71
35-2012	Cooks, Institution & Cafeteria	1,400	1,500	101	68	\$14.31
11-9051	Food Service Managers	580	632	52	23	\$20.85
35-1011	Chefs & Head Cooks	215	245	30	15	\$25.50
35-2015	Cooks, Short Order	291	301	10	13	\$11.25
35-2013	Cooks, Private Household	2	3	0	0	\$17.23
Building Construction Technology (CIP Code 46.0415)						
47-2073	Operating Engineers & Other Construction Equipment Operators	4,367	4,426	59	151	\$27.90
47-2061	Construction Laborers	4,351	4,878	528	100	\$16.91
47-2031	Carpenters	3,431	3,536	104	70	\$21.83
47-2141	Painters, Construction & Maintenance	964	1,034	71	24	\$18.04



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
17-3022	Civil Engineering Technicians	322	324	2	17	\$21.43
47-2051	Cement Masons & Concrete Finishers	523	510	(12)	12	\$19.87
47-2121	Glaziers	245	279	34	10	\$19.71
47-2132	Insulation Workers, Mechanical	299	306	7	10	\$20.05
47-2181	Roofers	422	433	12	7	\$17.16
47-4011	Construction & Building Inspectors	224	249	24	6	\$26.75
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	6	\$32.22
47-2131	Insulation Workers, Floor, Ceiling, & Wall	189	168	(21)	6	\$17.90
47-2081	Drywall & Ceiling Tile Installers	280	278	(2)	5	\$18.82
49-9071	Maintenance & Repair Workers, General	3,781	4,084	303	4	\$17.71
47-2044	Tile & Marble Setters	91	87	(3)	2	\$18.79
11-9021	Construction Managers	867	967	100	2	\$36.84
47-2042	Floor Layers, Except Carpet, Wood, & Hard Tiles	58	63	5	1	\$21.58
13-1051	Cost Estimators	277	318	41	1	\$35.30
47-2211	Sheet Metal Workers	301	324	22	1	\$18.45
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	1	\$31.75
47-2041	Carpet Installers	27	27	(0)	1	\$16.36
25-2032	Career/Technical Education Teachers, Secondary School	230	242	13	0	\$29.06
47-2043	Floor Sanders & Finishers	5	4	(1)	0	\$16.49
47-2142	Paperhangers	3	3	(0)	0	\$16.05
47-2053	Terrazzo Workers & Finishers	0	0	(0)	0	\$18.46
Early Childhood Education & Teaching (CIP Code 13.1210)						
39-9011	Childcare Workers	3,039	2,922	(117)	208	\$11.26
25-9041	Teacher Assistants	3,762	3,973	211	86	\$14.88
25-2011	Preschool Teachers, Except Special Education	980	1,063	83	22	\$12.52
25-2012	Kindergarten Teachers, Except Special Education	428	451	23	9	\$28.74
25-2052	Special Education Teachers, Kindergarten & Elementary School	581	611	30	5	\$30.37
25-9031	Instructional Coordinators	277	292	15	4	\$31.37
25-2021	Elementary School Teachers, Except Special Education	2,627	2,806	178	2	\$27.24
21-1021	Child, Family, & School Social Workers	792	857	64	2	\$23.16
11-9031	Education Administrators, Preschool & Childcare Center/Program	145	150	6	1	\$16.41
11-9032	Education Administrators, Elementary & Secondary School	427	460	33	1	\$44.28



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
25-2051	Special Education Teachers, Preschool	95	100	5	1	\$30.77
19-3031	Clinical, Counseling, & School Psychologists	327	395	68	0	\$35.18
Welding Technology/Welder (CIP Code 48.0508)						
47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	101	\$32.22
51-4121	Welders, Cutters, Solderers, & Brazers	1,913	2,019	106	88	\$27.24
49-9071	Maintenance & Repair Workers, General	3,781	4,084	303	67	\$17.71
47-2152	Plumbers, Pipefitters, & Steamfitters	1,067	1,186	119	45	\$24.57
47-2211	Sheet Metal Workers	301	324	22	12	\$18.45
47-2221	Structural Iron & Steel Workers	163	199	36	10	\$26.48
51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	16	20	4	1	\$17.82
47-2171	Reinforcing Iron & Rebar Workers	30	37	7	1	\$25.32
Petroleum Technology/Technician (CIP Code 15.0903)						
47-5071	Roustabouts, Oil & Gas	1,923	2,009	86	77	\$19.37
47-5013	Service Unit Operators, Oil, Gas, & Mining	1,780	1,800	20	49	\$24.39
51-8093	Petroleum Pump System Operators, Refinery Operators, & Gaugers	864	838	(26)	47	\$36.71
53-7073	Wellhead Pumpers	319	298	(21)	15	\$29.56
47-5012	Rotary Drill Operators, Oil & Gas	245	295	51	12	\$26.72
47-5011	Derrick Operators, Oil & Gas	254	279	25	11	\$27.42
53-7072	Pump Operators, Except Wellhead Pumpers	175	178	4	9	\$11.59
47-5021	Earth Drillers, Except Oil & Gas	131	167	36	7	\$23.48
53-7071	Gas Compressor & Gas Pumping Station Operators	88	90	2	4	\$24.59
51-8092	Gas Plant Operators	369	372	3	4	\$35.40
19-4041	Geological & Petroleum Technicians	144	147	3	2	\$28.19
Health/Medical Preparatory Programs, Other (CIP Code 51.1199)						
31-9091	Dental Assistants	638	740	103	57	\$16.62
29-2061	Licensed Practical & Licensed Vocational Nurses	669	792	122	50	\$22.29
29-2041	Emergency Medical Technicians & Paramedics	811	938	128	33	\$15.37
31-1011	Home Health Aides	696	930	235	23	\$13.49
29-2052	Pharmacy Technicians	608	636	28	20	\$18.07
21-1093	Social & Human Service Assistants	829	950	121	9	\$15.76
21-2021	Directors, Religious Activities & Education	180	211	30	8	\$18.76
29-1141	Registered Nurses	5,193	6,011	818	6	\$31.17
31-2021	Physical Therapist Assistants	146	200	54	5	\$25.82

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-2034	Radiologic Technologists	417	462	45	3	\$26.95
11-9033	Education Administrators, Postsecondary	127	122	(4)	3	\$59.53
11-9111	Medical & Health Services Managers	905	1,051	147	1	\$43.65
11-9151	Social & Community Service Managers	375	417	43	1	\$28.46
29-1071	Physician Assistants	220	274	55	1	\$56.53
11-9121	Natural Sciences Managers	167	173	6	0	\$45.11
29-1067	Surgeons	93	93	0	0	\$162.73
29-1023	Orthodontists	12	13	1	0	\$91.21

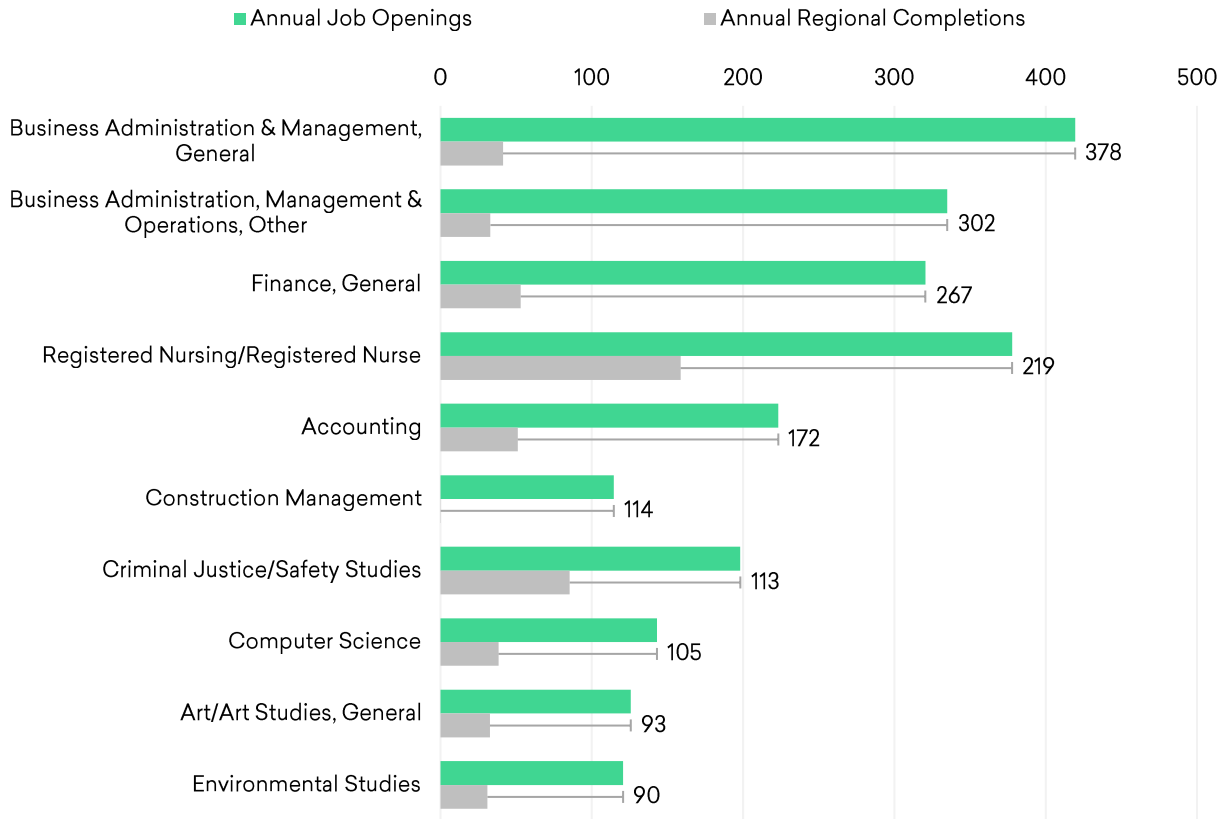
* See Appendix 2 for job postings related to this occupation.
 Numbers may not sum due to rounding.
 Source: Emsi program demand gap model.



BACHELOR'S DEGREE LEVEL ANALYSIS

The University of Wyoming is the primary provider of bachelor's degrees to Wyoming's residents. In this section, the University of Wyoming's unique bachelor's degree level programs are aggregated into 87 programs, when they are classified by their six-digit CIP codes. 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: WPCU's Top 10 Bachelor's Degree Level Programs with a Gap



Source: Emsi program demand gap model.

Figure 3.7 shows the top 10 programs with a gap. The Business Administration & Management, General program has the largest, followed by the Business Administration, Management & Operations, Other and Finance, General programs. As shown in Table 3.5, there are 419 average annual job openings in the state for occupations related to the Business Administration & Management, General program. On average, the University of Wyoming graduates 40 annual completers, and combined with the other postsecondary

educational institutions in the state, there are a total of 41 annual completers. Programs with a significant gap have been highlighted in Table 3.5. No programs have a significant surplus at the bachelor's degree level.

Table 3.5: Gaps and Surpluses for WPCU's Bachelor's Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
52.0201	Business Administration & Management, General	419	41	40	378	\$27.69
52.0299	Business Administration, Management & Operations, Other	335	33	33	302	\$27.69
52.0801	Finance, General	320	53	53	267	\$30.29
51.3801	Registered Nursing/Registered Nurse	378	159	159	219	\$32.80
52.0301	Accounting	223	51	50	172	\$23.12
52.2001	Construction Management	115	0	0	114	\$33.10
43.0104	Criminal Justice/Safety Studies	198	85	85	113	\$27.04
11.0701	Computer Science	143	38	38	105	\$31.89
50.0701	Art/Art Studies, General	126	33	33	93	\$21.70
03.0103	Environmental Studies	121	31	31	90	\$33.64
01.0308	Agroecology & Sustainable Agriculture	86	14	14	72	\$22.26
44.0701	Social Work	88	35	35	52	\$22.46
01.0901	Animal Sciences, General	93	47	47	46	\$16.02
23.0101	English Language & Literature, General	89	43	43	46	\$24.42
40.0601	Geology/Earth Science, General	75	33	33	42	\$38.87
26.0709	Wildlife Biology	62	24	24	38	\$17.87
13.1314	Physical Education Teaching & Coaching	51	13	13	38	\$19.51
52.1401	Marketing/Marketing Management, General	88	57	57	31	\$23.54
13.1017	Education/Teaching of Individuals in Elementary Special Education Programs	24	0	0	24	\$30.37
03.0104	Environmental Science	31	8	8	23	\$33.64
40.0501	Chemistry, General	43	22	22	21	\$25.60
45.0701	Geography	38	18	18	20	\$25.99
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	27	8	8	19	\$25.06
16.0905	Spanish Language & Literature	43	25	25	18	\$24.00
14.0801	Civil Engineering, General	47	32	32	15	\$39.16
19.0101	Family & Consumer Sciences/Human Sciences, General	46	32	32	14	\$22.27



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
51.0602	Dental Hygiene/Hygienist	31	18	18	13	\$33.45
50.0501	Drama & Dramatics/Theatre Arts, General	33	24	24	9	\$21.28
13.1301	Agricultural Teacher Education	13	5	5	8	\$28.96
26.0101	Biology/Biological Sciences, General	39	32	32	7	\$25.38
26.0301	Botany/Plant Biology	9	3	3	7	\$20.30
52.1301	Management Science	85	79	79	6	\$42.92
50.0901	Music, General	9	4	4	5	\$24.57
14.0901	Computer Engineering, General	14	10	10	4	\$40.74
14.2701	Systems Engineering	7	5	5	2	\$36.38
14.0401	Architectural Engineering	22	20	20	1	\$36.90
13.1312	Music Teacher Education	12	11	11	1	\$27.22
09.0401	Journalism	16	15	15	1	\$21.18
40.0101	Physical Sciences	1	0	0	1	\$30.48
16.0901	French Language & Literature	3	3	3	0	\$22.24
16.0501	German Language & Literature	2	2	2	0	\$22.24
13.1326	German Language Teacher Education	0	0	0	(0)	\$28.87
13.1330	Spanish Language Teacher Education	2	3	3	(0)	\$28.06
01.0802	Agricultural Communication/Journalism	16	16	16	(0)	\$17.87
13.1329	Physics Teacher Education	0	0	0	(0)	\$28.37
05.0201	African-American/Black Studies	0	1	1	(0)	\$24.39
01.1106	Range Science & Management	16	16	16	(0)	\$19.58
13.1316	Science Teacher Education/General Science Teacher Education	0	1	1	(0)	\$28.87
13.1302	Art Teacher Education	6	6	6	(0)	\$28.06
13.1323	Chemistry Teacher Education	0	1	1	(1)	\$28.87
13.1311	Mathematics Teacher Education	8	8	8	(1)	\$28.06
05.0202	American Indian/Native American Studies	1	1	1	(1)	\$24.39
13.1305	English/Language Arts Teacher Education	11	12	12	(1)	\$28.06
50.0703	Art History, Criticism & Conservation	1	2	2	(1)	\$16.03
13.1318	Social Studies Teacher Education	15	17	17	(1)	\$28.06
45.1001	Political Science & Government, General	28	30	30	(1)	\$29.21
05.0207	Women's Studies	1	3	3	(2)	\$25.76



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
13.1322	Biology Teacher Education	2	3	3	(2)	\$28.87
50.0903	Music Performance, General	3	5	5	(2)	\$26.17
05.0102	American/United States Studies/Civilization	2	5	5	(2)	\$22.45
42.0101	Psychology, General	127	130	130	(3)	\$26.84
40.0299	Astronomy & Astrophysics, Other	0	4	4	(4)	\$45.12
14.1001	Electrical & Electronics Engineering	16	21	21	(4)	\$44.00
45.1101	Sociology	13	18	18	(5)	\$29.40
38.0201	Religion/Religious Studies	2	6	6	(5)	\$20.79
38.0101	Philosophy	2	6	6	(5)	\$35.26
27.0501	Statistics, General	2	7	7	(5)	\$41.22
40.0801	Physics, General	4	10	10	(5)	\$36.66
01.0102	Agribusiness/Agricultural Business Operations	26	35	35	(9)	\$16.23
54.0101	History, General	31	43	43	(12)	\$29.16
40.0699	Geological & Earth Sciences/Geosciences, Other	5	18	18	(12)	\$35.26
26.0204	Molecular Biology	4	17	17	(13)	\$33.83
27.0101	Mathematics, General	16	29	29	(13)	\$30.04
45.0201	Anthropology	5	19	19	(14)	\$29.52
30.2001	International/Global Studies	14	30	30	(16)	\$28.34
26.0701	Zoology/Animal Biology	4	20	20	(16)	\$32.86
51.0204	Audiology/Audiologist & Speech-Language Pathology/Pathologist	5	22	22	(17)	\$36.01
45.0603	Econometrics & Quantitative Economics	4	24	24	(20)	\$42.02
52.0601	Business/Managerial Economics	1	22	22	(20)	\$45.93
31.0505	Kinesiology & Exercise Science	55	76	76	(21)	\$18.75
26.0502	Microbiology, General	1	26	26	(25)	\$40.70
09.0101	Speech Communication & Rhetoric	30	56	56	(26)	\$22.95
14.1901	Mechanical Engineering	39	66	66	(27)	\$39.16
14.0701	Chemical Engineering	12	40	40	(28)	\$39.01
13.1202	Elementary Education & Teaching	67	110	110	(43)	\$31.27
26.0901	Physiology, General	1	55	55	(54)	\$30.16
14.2501	Petroleum Engineering	18	82	82	(65)	\$52.25

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



Several occupations mapped to Business Administration & Management, General, such as sales representatives, wholesale & manufacturing, except technical & scientific products; first-line supervisors of retail sales workers; and accountants & auditors (Table 3.6). The median hourly wage of chief executives, the highest paid occupation mapped to the program, is \$61.50, although it sees few job openings. For context, Wyoming's state minimum wage is \$7.25¹⁴ per hour, and the state's living wage is \$11.10 per hour for a household with one working adult and no children.¹⁵ Creating a program more specific to the occupations the Business Administration & Management, General is training for may make completers more competitive in the labor market. For example, there are 33 annual openings for human resources specialists so a Human Resources specialization may help completers be more competitive for those openings. Nonetheless, it appears that there is sufficient demand for business occupations that would support an expansion of the program.¹⁶

Using Table 3.6, this step-by-step process of evaluating occupational gaps by their median hourly wage rates can be applied to the other WPCU bachelor's 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 state.

14 Wyoming's minimum wage as of January 1, 2020 is \$7.25 per hour. Source: Emsi Complete Employment Data.

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. Further research must be conducted before making a final determination, such as top employer identification within the state; 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 state higher education institutions. Emsi is available to conduct this research; see your Emsi contact for details.

Table 3.6: Occupations Mapped to WPCU's Bachelor's Degree Level Programs with a Significant Gaps

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Business Administration & Management, General (CIP Code 52.0201)						
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	67	\$27.76
41-1011	First-Line Supervisors of Retail Sales Workers	2,955	3,069	114	59	\$17.12
13-2011	Accountants & Auditors	2,106	2,261	156	48	\$28.57
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	48	\$24.26
11-1021	General & Operations Managers	5,467	5,901	435	42	\$42.58
43-4051	Customer Service Representatives	1,757	1,895	138	38	\$15.95
13-1071	Human Resources Specialists	882	958	75	33	\$25.34
13-1111	Management Analysts	583	678	94	15	\$38.95
15-1151	Computer User Support Specialists	820	914	94	15	\$23.19
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	14	\$31.75
11-3031	Financial Managers	726	858	132	9	\$46.25
13-1161	Market Research Analysts & Marketing Specialists	396	531	134	8	\$24.13
11-3121	Human Resources Managers	240	261	21	7	\$39.42
11-9199	Managers, All Other*	1,617	1,857	240	6	\$36.84
11-3021	Computer & Information Systems Managers	239	284	45	5	\$45.17
11-2022	Sales Managers	230	267	37	4	\$39.68
11-2021	Marketing Managers	103	123	20	2	\$37.95
11-1011	Chief Executives	245	255	10	2	\$61.50
Business Administration, Management & Operations, Other (CIP Code 52.0299)						
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	53	\$27.76
41-1011	First-Line Supervisors of Retail Sales Workers	2,955	3,069	114	47	\$17.12
13-2011	Accountants & Auditors	2,106	2,261	156	38	\$28.57
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	38	\$24.26
11-1021	General & Operations Managers	5,467	5,901	435	33	\$42.58
43-4051	Customer Service Representatives	1,757	1,895	138	30	\$15.95
13-1071	Human Resources Specialists	882	958	75	26	\$25.34
13-1111	Management Analysts	583	678	94	12	\$38.95
15-1151	Computer User Support Specialists	820	914	94	12	\$23.19
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	11	\$31.75

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
11-3031	Financial Managers	726	858	132	7	\$46.25
13-1161	Market Research Analysts & Marketing Specialists	396	531	134	7	\$24.13
11-3121	Human Resources Managers	240	261	21	5	\$39.42
11-9199	Managers, All Other*	1,617	1,857	240	4	\$36.84
11-3021	Computer & Information Systems Managers	239	284	45	4	\$45.17
11-2022	Sales Managers	230	267	37	3	\$39.68
11-2021	Marketing Managers	103	123	20	2	\$37.95
11-1011	Chief Executives	245	255	10	1	\$61.50
Finance, General (CIP Code 52.0801)						
11-1021	General & Operations Managers	5,467	5,901	435	53	\$42.58
41-9022	Real Estate Sales Agents	729	790	61	41	\$33.56
13-2072	Loan Officers	791	821	30	40	\$28.80
43-3071	Tellers	1,006	897	(108)	32	\$13.45
13-2052	Personal Financial Advisors	345	402	57	23	\$41.32
43-4131	Loan Interviewers & Clerks	474	495	21	21	\$17.67
41-3031	Securities, Commodities, & Financial Services Sales Agents	264	300	36	19	\$20.75
13-2021	Appraisers & Assessors of Real Estate	275	288	13	14	\$23.12
11-3031	Financial Managers	726	858	132	11	\$46.25
13-1031	Claims Adjusters, Examiners, & Investigators	176	196	20	11	\$30.02
13-2053	Insurance Underwriters	164	160	(4)	10	\$32.16
43-4141	New Accounts Clerks	178	161	(17)	8	\$16.99
11-9199	Managers, All Other*	1,617	1,857	240	7	\$36.84
43-3011	Bill & Account Collectors	208	190	(18)	6	\$17.10
43-4041	Credit Authorizers, Checkers, & Clerks	139	133	(6)	5	\$20.62
13-2051	Financial Analysts	135	157	22	5	\$51.12
13-2031	Budget Analysts	121	127	5	3	\$31.65
11-1011	Chief Executives	245	255	10	2	\$61.50
13-2099	Financial Specialists, All Other	97	111	14	2	\$26.99
13-2071	Credit Counselors	31	34	4	2	\$10.73
13-2041	Credit Analysts	40	39	(0)	1	\$26.85
43-4011	Brokerage Clerks	57	53	(4)	1	\$19.82
13-1032	Insurance Appraisers, Auto Damage	18	21	3	1	\$11.59
13-2061	Financial Examiners	6	9	2	0	\$34.70

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Registered Nursing/Registered Nurse (CIP Code 51.3801)						
29-1141	Registered Nurses	5,193	6,011	818	330	\$31.17
11-9111	Medical & Health Services Managers	905	1,051	147	46	\$43.65
29-1171	Nurse Practitioners	302	376	74	2	\$54.36
29-1151	Nurse Anesthetists	4	10	7	0	\$82.13
29-1161	Nurse Midwives	0	0	0	0	\$40.53

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

Numbers may not sum due to rounding.

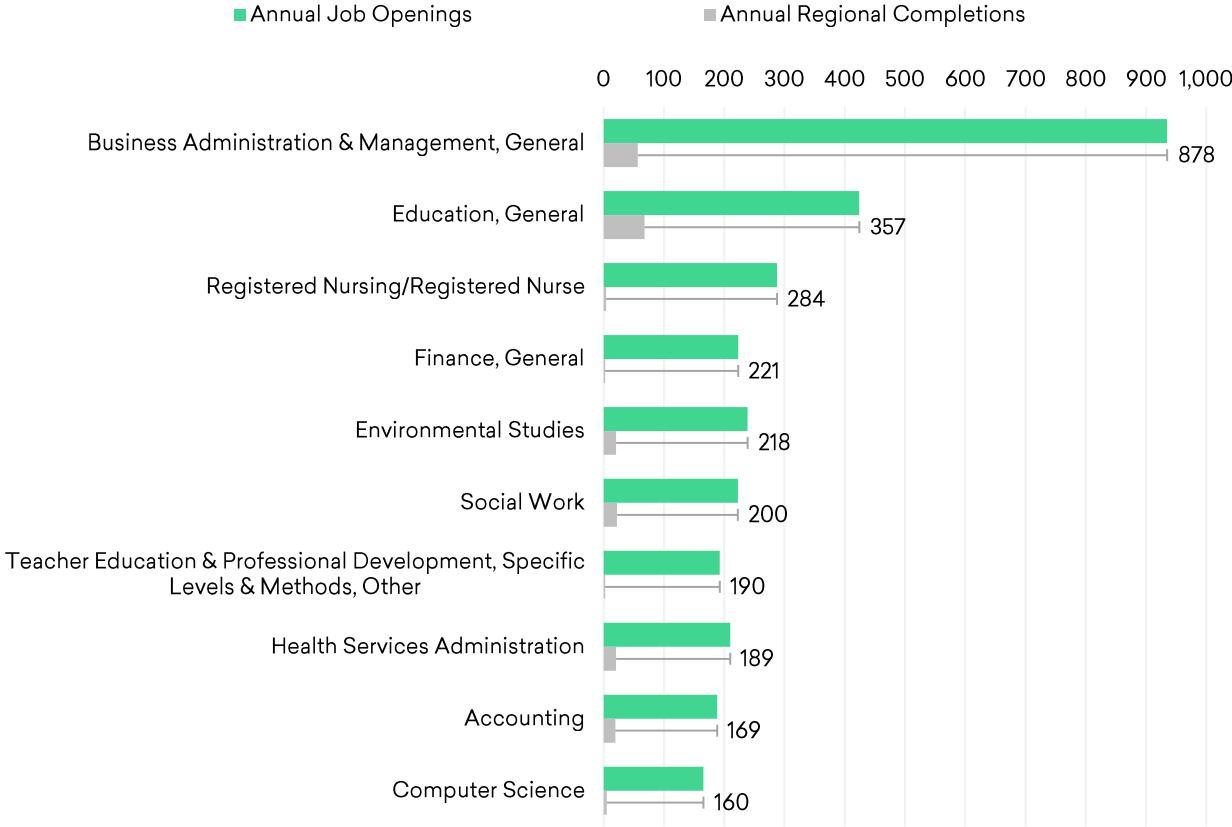
Source: Emsi program demand gap model.



MASTER'S DEGREE LEVEL ANALYSIS

The University of Wyoming is the only institution that offers master's degrees and postbaccalaureate certificate's in the state of Wyoming. When grouped by unique six-digit CIP code, the University of Wyoming offers 71 master's degree level programs, which includes a small number of postbaccalaureate certificate's. Job openings at this award level consider someone with a master's degree or bachelor's degree level of education. An occupation's job openings are weighted by the number of other programs mapped to the occupation and scaled according to a program's completions. Figure 3.8 shows the top ten programs with a gap and Table 3.7 shows the results across all master's degree programs. As shown, six programs have a significant gap and none have a significant surplus.

Figure 3.8: WPCU's Top 10 Master's Degree Level Programs with a Gap



Source: Emsi program demand gap model.

Table 3.7: Gaps and Surpluses for WPCU's Master's Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
52.0201	Business Administration & Management, General	935	57	57	878	\$30.45
13.0101	Education, General	424	68	68	357	\$24.14
51.3801	Registered Nursing/Registered Nurse	288	4	4	284	\$33.48
52.0801	Finance, General	223	2	2	221	\$27.77
03.0103	Environmental Studies	239	21	21	218	\$33.20
44.0701	Social Work	223	22	22	200	\$23.21
13.1299	Teacher Education & Professional Development, Specific Levels & Methods, Other	193	2	2	190	\$20.45
51.2211	Health Services Administration	210	21	21	189	\$28.16
52.0301	Accounting	188	19	19	169	\$24.03
11.0701	Computer Science	166	5	5	160	\$33.14
23.0101	English Language & Literature, General	101	10	10	90	\$24.62
14.0801	Civil Engineering, General	93	11	11	82	\$40.26
26.0301	Botany/Plant Biology	85	4	4	81	\$20.32
44.0401	Public Administration	96	17	17	79	\$36.73
40.0601	Geology/Earth Science, General	82	7	7	76	\$39.65
01.0901	Animal Sciences, General	71	5	5	66	\$17.69
42.0101	Psychology, General	68	5	5	63	\$26.42
19.0504	Human Nutrition	63	2	2	60	\$16.43
13.1001	Special Education & Teaching, General	48	0	0	48	\$29.80
31.0505	Kinesiology & Exercise Science	58	10	10	47	\$17.93
50.0901	Music, General	44	7	7	37	\$26.19
16.0905	Spanish Language & Literature	41	5	5	36	\$24.40
26.0102	Biomedical Sciences, General	35	0	0	35	\$21.79
14.1901	Mechanical Engineering	41	8	8	32	\$39.74
40.0501	Chemistry, General	25	1	1	24	\$22.26
01.1106	Range Science & Management	30	6	6	24	\$19.26
14.1001	Electrical & Electronics Engineering	31	7	7	24	\$44.83
13.9999	Education, Other	27	4	4	23	\$24.14
09.0101	Speech Communication & Rhetoric	34	13	13	21	\$22.74
44.0799	Social Work, Other	27	7	7	21	\$24.03



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
13.1101	Counselor Education/School Counseling & Guidance Services	41	22	22	19	\$27.12
13.1401	Teaching English as a Second or Foreign Language/ESL Language Instructor	24	6	6	17	\$28.00
13.1205	Secondary Education & Teaching	34	17	17	17	\$30.31
40.0605	Hydrology & Water Resources Science	17	2	2	15	\$27.54
45.1001	Political Science & Government, General	18	3	3	14	\$29.20
54.0101	History, General	18	4	4	14	\$26.02
13.1312	Music Teacher Education	17	4	4	12	\$27.62
14.0701	Chemical Engineering	18	6	6	12	\$38.73
26.0701	Zoology/Animal Biology	18	8	8	10	\$31.33
27.0101	Mathematics, General	14	4	4	10	\$29.93
01.1102	Agronomy & Crop Science	12	3	3	10	\$17.27
01.1101	Plant Sciences, General	11	2	2	9	\$19.83
13.0203	Indian/Native American Education	10	2	2	8	\$24.23
45.1101	Sociology	10	2	2	8	\$29.33
03.0101	Natural Resources/Conservation, General	8	1	1	7	\$33.20
51.0204	Audiology/Audiologist & Speech-Language Pathology/Pathologist	26	19	19	7	\$35.86
45.0201	Anthropology	12	5	5	7	\$23.75
13.1202	Elementary Education & Teaching	11	6	6	6	\$29.06
05.0102	American/United States Studies/Civilization	11	6	6	5	\$22.44
14.0401	Architectural Engineering	6	1	1	5	\$37.67
40.0801	Physics, General	11	7	7	5	\$36.26
30.2001	International/Global Studies	9	5	5	5	\$31.57
27.0501	Statistics, General	8	3	3	4	\$34.25
42.2803	Counseling Psychology	6	2	2	4	\$35.58
14.2501	Petroleum Engineering	9	5	5	4	\$52.57
26.0204	Molecular Biology	6	2	2	4	\$32.84
40.0603	Geophysics & Seismology	6	2	2	3	\$34.88
23.1302	Creative Writing	11	8	8	3	\$22.26
50.0903	Music Performance, General	6	3	3	3	\$26.86
19.0101	Family & Consumer Sciences/Human Sciences, General	2	0	0	2	\$23.77
14.1401	Environmental/Environmental Health Engineering	3	1	1	2	\$41.98



CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
26.0702	Entomology	2	0	0	1	\$31.63
01.1201	Soil Science & Agronomy, General	4	3	3	1	\$29.08
38.0101	Philosophy	1	1	1	0	\$36.07
13.0407	Community College Education	0	1	1	(0)	\$59.53
45.0603	Econometrics & Quantitative Economics	5	5	5	(1)	\$45.56
13.0401	Educational Leadership & Administration, General	15	17	17	(2)	\$49.34
13.0411	Superintendency & Educational System Administration	2	4	4	(2)	\$40.11
40.0401	Atmospheric Sciences & Meteorology, General	4	7	7	(3)	\$45.90
01.0103	Agricultural Economics	1	6	6	(4)	\$73.47
30.1801	Natural Sciences	6	16	16	(10)	\$49.95

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

Business Administration & Management, General has the largest gap at the master's degree level, similar to the bachelor's degree level analysis. However, the occupations with the most annual openings has shifted because we are now looking at the demand based on a higher level of education. The top three occupations with the most annual openings for the Business Administration & Management, General program at the master's degree level are general & operations managers; accountants & auditors; and sales representatives, wholesale & manufacturing, except technical & scientific products. Note that first-line supervisors of retail sales workers is no longer in the top three in-demand occupations as it was for the program at the bachelor's degree level. Also, the median hourly wage for the program increased from \$27.69 at the bachelor's degree level to \$30.45 at the master's degree level. This step-by-step process of evaluating occupational gaps by their median hourly wage rates can be applied to the other WPCU master's degree programs with a significant gap, along with comparing the median hourly wages and in-demand occupations to similar programs at other award levels.

Table 3.8: Occupations Related to Significant Gap Programs at the Master's Degree Level

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Business Administration & Management, General (CIP Code 52.0201)						
11-1021	General & Operations Managers	5,467	5,901	435	139	\$42.58
13-2011	Accountants & Auditors	2,106	2,261	156	137	\$28.57



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	115	\$27.76
41-1011	First-Line Supervisors of Retail Sales Workers	2,955	3,069	114	79	\$17.12
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	75	\$24.26
13-1071	Human Resources Specialists	882	958	75	66	\$25.34
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	64	\$31.75
43-4051	Customer Service Representatives	1,757	1,895	138	50	\$15.95
11-9199	Managers, All Other	1,617	1,857	240	38	\$36.84
13-1111	Management Analysts	583	678	94	32	\$38.95
11-3031	Financial Managers	726	858	132	31	\$46.25
15-1151	Computer User Support Specialists	820	914	94	31	\$23.19
13-1161	Market Research Analysts & Marketing Specialists	396	531	134	25	\$24.13
11-3021	Computer & Information Systems Managers	239	284	45	17	\$45.17
11-2022	Sales Managers	230	267	37	13	\$39.68
11-3121	Human Resources Managers	240	261	21	10	\$39.42
11-1011	Chief Executives	245	255	10	8	\$61.50
11-2021	Marketing Managers	103	123	20	7	\$37.95
Education, General (CIP Code 13.0101)						
25-2021	Elementary School Teachers, Except Special Education	2,627	2,806	178	120	\$27.24
25-9041	Teacher Assistants	3,762	3,973	211	98	\$14.88
25-2031	Secondary School Teachers, Except Special & Career/Technical Education	1,878	2,012	134	66	\$28.37
25-2022	Middle School Teachers, Except Special & Career/Technical Education	1,129	1,206	76	50	\$29.43
25-2011	Preschool Teachers, Except Special Education	980	1,063	83	37	\$12.52
25-9031	Instructional Coordinators	277	292	15	16	\$31.37
11-9032	Education Administrators, Elementary & Secondary School	427	460	33	14	\$44.28
25-2012	Kindergarten Teachers, Except Special Education	428	451	23	14	\$28.74
11-9031	Education Administrators, Preschool & Childcare Center/Program	145	150	6	6	\$16.41
25-3011	Adult Basic & Secondary Education & Literacy Teachers & Instructors	88	80	(8)	3	\$22.32
Registered Nursing/Registered Nurse (CIP Code 51.3801)						
29-1141	Registered Nurses	5,193	6,011	818	256	\$31.17
29-1171	Nurse Practitioners	302	376	74	22	\$54.36
11-9111	Medical & Health Services Managers	905	1,051	147	9	\$43.65
29-1151	Nurse Anesthetists	4	10	7	1	\$82.13

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1161	Nurse Midwives	0	0	0	0	\$40.53
Finance, General (CIP Code 52.0801)						
13-2072	Loan Officers	791	821	30	38	\$28.80
41-9022	Real Estate Sales Agents	729	790	61	38	\$33.56
13-2052	Personal Financial Advisors	345	402	57	27	\$41.32
41-3031	Securities, Commodities, & Financial Services Sales Agents	264	300	36	21	\$20.75
43-3071	Tellers	1,006	897	(108)	19	\$13.45
43-4131	Loan Interviewers & Clerks	474	495	21	16	\$17.67
13-2021	Appraisers & Assessors of Real Estate	275	288	13	15	\$23.12
13-2053	Insurance Underwriters	164	160	(4)	10	\$32.16
13-1031	Claims Adjusters, Examiners, & Investigators	176	196	20	10	\$30.02
43-4141	New Accounts Clerks	178	161	(17)	6	\$16.99
11-1021	General & Operations Managers	5,467	5,901	435	6	\$42.58
43-3011	Bill & Account Collectors	208	190	(18)	4	\$17.10
43-4041	Credit Authorizers, Checkers, & Clerks	139	133	(6)	4	\$20.62
13-2071	Credit Counselors	31	34	4	2	\$10.73
11-9199	Managers, All Other	1,617	1,857	240	2	\$36.84
11-3031	Financial Managers	726	858	132	1	\$46.25
13-1032	Insurance Appraisers, Auto Damage	18	21	3	1	\$11.59
13-2031	Budget Analysts	121	127	5	1	\$31.65
13-2051	Financial Analysts	135	157	22	1	\$51.12
13-2099	Financial Specialists, All Other	97	111	14	1	\$26.99
11-1011	Chief Executives	245	255	10	0	\$61.50
13-2041	Credit Analysts	40	39	(0)	0	\$26.85
43-4011	Brokerage Clerks	57	53	(4)	0	\$19.82
13-2061	Financial Examiners	6	9	2	0	\$34.70
Environmental Studies (CIP Code 03.0103)						
11-1021	General & Operations Managers	5,467	5,901	435	51	\$42.58
19-2041	Environmental Scientists & Specialists, Including Health	480	500	20	37	\$30.11
21-1093	Social & Human Service Assistants	829	950	121	28	\$15.76
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	23	\$31.75
29-9011	Occupational Health & Safety Specialists	414	422	8	16	\$36.81
11-9199	Managers, All Other	1,617	1,857	240	14	\$36.84

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
13-1041	Compliance Officers	419	457	38	13	\$30.83
13-1111	Management Analysts	583	678	94	12	\$38.95
13-1161	Market Research Analysts & Marketing Specialists	396	531	134	9	\$24.13
17-2081	Environmental Engineers	230	229	(1)	8	\$38.87
23-1011	Lawyers	1,027	1,049	22	6	\$38.75
19-4091	Environmental Science & Protection Technicians, Including Health	113	117	4	6	\$18.14
11-2022	Sales Managers	230	267	37	5	\$39.68
15-1199	Computer Occupations, All Other*	240	288	48	4	\$34.03
11-1011	Chief Executives	245	255	10	3	\$61.50
19-1042	Medical Scientists, Except Epidemiologists	40	52	11	3	\$30.16
11-2021	Marketing Managers	103	123	20	2	\$37.95
Social Work (CIP Code 44.0701)						
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	552	689	137	46	\$26.87
21-1021	Child, Family, & School Social Workers	792	857	64	43	\$23.16
21-2011	Clergy	326	388	63	32	\$23.04
21-1093	Social & Human Service Assistants	829	950	121	31	\$15.76
21-1023	Mental Health & Substance Abuse Social Workers	208	257	48	14	\$20.55
11-9151	Social & Community Service Managers	375	417	43	14	\$28.46
21-1029	Social Workers, All Other	196	206	10	13	\$23.88
21-1092	Probation Officers & Correctional Treatment Specialists	179	190	11	12	\$22.66
21-1022	Healthcare Social Workers	168	214	46	7	\$27.78
21-1013	Marriage & Family Therapists	59	85	26	6	\$26.56
21-1019	Counselors, All Other	47	51	4	4	\$17.35

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

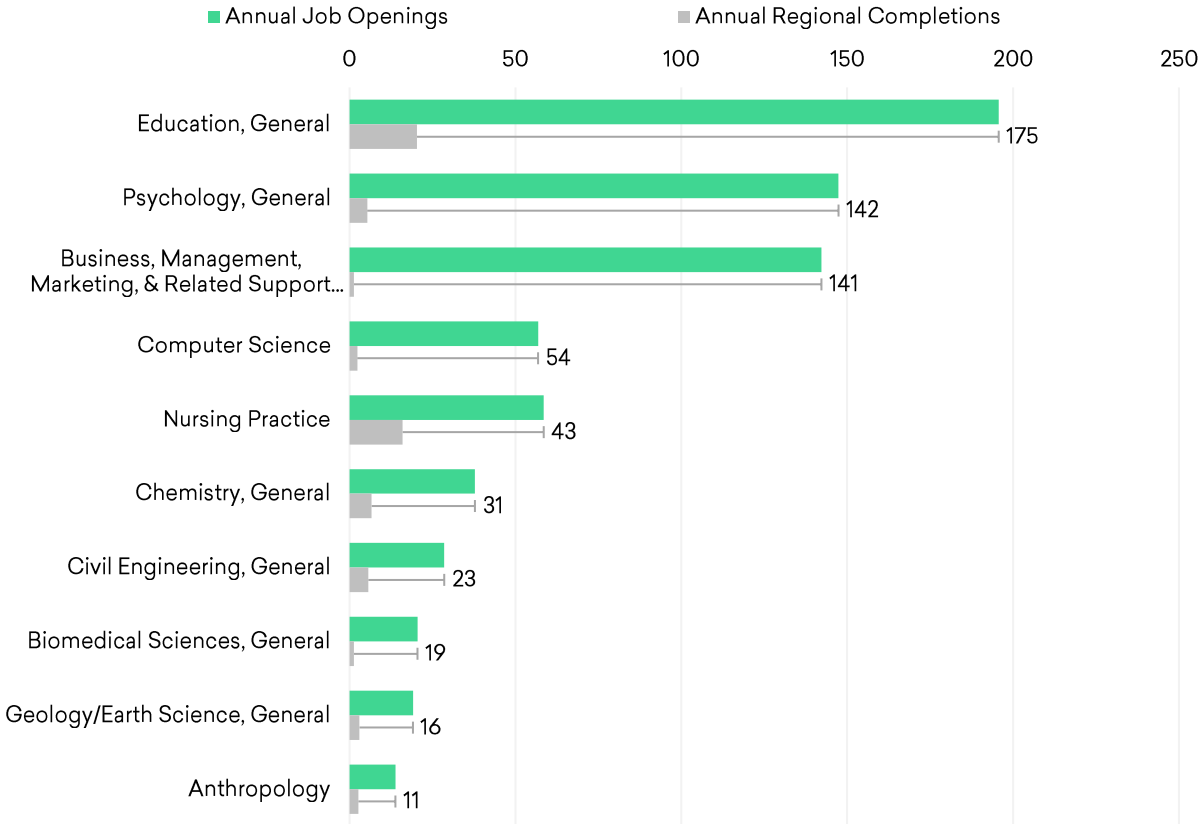
Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

DOCTORAL DEGREE LEVEL ANALYSIS

The University of Wyoming is the only institution that offers doctoral degrees in the state of Wyoming. When grouped by unique six-digit CIP code, the University of Wyoming offers 36 doctoral degree level programs. Job openings at this award level consider someone with a doctoral degree or master’s 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 3.9 shows the top ten programs with a gap and Table 3.9 shows the results across all doctoral degree programs. As shown, no programs have a significant gap or a significant surplus.

Figure 3.9: WPCU's Top 10 Doctoral Degree Level Programs with a Gap



Source: Emsi program demand gap model.

Table 3.9: Gaps and Surpluses for WPCU's Doctoral Degree Level Programs

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
13.0101	Education, General	196	20	20	175	\$27.10

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
42.0101	Psychology, General	147	5	5	142	\$28.57
52.9999	Business, Management, Marketing, & Related Support Services, Other	142	1	1	141	\$36.83
11.0701	Computer Science	57	2	2	54	\$34.05
51.3818	Nursing Practice	59	16	16	43	\$41.61
40.0501	Chemistry, General	38	7	7	31	\$28.24
14.0801	Civil Engineering, General	29	6	6	23	\$40.12
26.0102	Biomedical Sciences, General	20	1	1	19	\$64.18
40.0601	Geology/Earth Science, General	19	3	3	16	\$38.63
45.0201	Anthropology	14	3	3	11	\$26.88
01.0901	Animal Sciences, General	12	2	2	10	\$21.61
27.0101	Mathematics, General	12	3	3	9	\$29.64
14.1001	Electrical & Electronics Engineering	11	2	2	8	\$44.62
13.1101	Counselor Education/School Counseling & Guidance Services	12	4	4	8	\$27.12
40.0605	Hydrology & Water Resources Science	8	2	2	6	\$29.11
45.0603	Econometrics & Quantitative Economics	7	2	2	5	\$48.16
14.1901	Mechanical Engineering	8	3	3	5	\$41.29
40.0801	Physics, General	8	3	3	5	\$34.57
26.1301	Ecology	12	8	8	4	\$32.16
27.0501	Statistics, General	3	1	1	2	\$32.74
01.1101	Plant Sciences, General	2	1	1	1	\$21.54
40.0603	Geophysics & Seismology	2	1	1	1	\$34.96
26.0702	Entomology	2	1	1	1	\$32.14
01.1106	Range Science & Management	1	1	1	0	\$21.07
01.1102	Agronomy & Crop Science	1	1	1	0	\$17.66
26.0701	Zoology/Animal Biology	1	1	1	0	\$32.20
14.0701	Chemical Engineering	4	4	4	0	\$43.18
01.1201	Soil Science & Agronomy, General	1	1	1	(0)	\$28.87
14.2501	Petroleum Engineering	3	3	3	(0)	\$53.55
26.0204	Molecular Biology	1	2	2	(1)	\$35.67
26.1501	Neuroscience	2	3	3	(1)	\$35.79
40.0401	Atmospheric Sciences & Meteorology, General	1	3	3	(2)	\$45.87
13.0301	Curriculum & Instruction	1	3	3	(2)	\$31.37

CIP CODE	CIP TITLE	ANNUAL JOB OPENINGS	ANNUAL COMPLETIONS		GAP OR SURPLUS	MEDIAN HOURLY WAGE
			STATE	WPCU		
26.0406	Cell/Cellular & Molecular Biology	1	4	4	(3)	\$31.91
51.2001	Pharmacy	41	45	45	(4)	\$50.63
22.0101	Law	57	75	75	(18)	\$38.17

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

LIBERAL ARTS TRANSFER STUDENTS

A number of students attend WPCU 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 institutions, a large portion of them receive an Associate of Arts in Liberal Arts. In fact, over the past three years, 409 students, on average, have completed such a program.

Once liberal arts students leave WPCU, 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, 8,320 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 3.10 represent the most common jobs of the liberal arts alumni.

As shown in the table, a considerable number of job openings are for retail salespersons, secretaries & administrative assistants, and customer service representatives. Together, the three occupations account for 49.5% of all the liberal arts program's job openings. The profiles data also include various kinds of managers and supervisors, which are occupations with relatively higher wage rates. A liberal arts program expansion is not warranted at this time, but WPCU 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 3.10: 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	8,399	8,697	298	1,288	\$11.63
11-1021	General & Operations Managers	5,467	5,901	435	541	\$42.58
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	455	\$17.81
43-4051	Customer Service Representatives	1,757	1,895	138	258	\$15.95
41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	235	\$27.76
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	203	\$24.26
11-9199	Managers, All Other*	1,617	1,857	240	156	\$36.84
13-1199	Business Operations Specialists, All Other*	1,227	1,382	155	141	\$31.75
21-1093	Social & Human Service Assistants	829	950	121	118	\$15.76
13-1071	Human Resources Specialists	882	958	75	100	\$25.34
15-1151	Computer User Support Specialists	820	914	94	82	\$23.19
41-9022	Real Estate Sales Agents	729	790	61	79	\$33.56
11-3031	Financial Managers	726	858	132	74	\$46.25
13-1111	Management Analysts	583	678	94	72	\$38.95
25-3097	Teachers & Instructors, All Other	503	557	53	66	\$24.23
43-6011	Executive Secretaries & Executive Administrative Assistants	612	535	(77)	65	\$21.76
27-3031	Public Relations Specialists	418	461	43	51	\$25.84
11-2022	Sales Managers	230	267	37	26	\$39.68
11-1011	Chief Executives	245	255	10	20	\$61.50
11-2021	Marketing Managers	103	123	20	12	\$37.95

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

Source: Emsi gap model.



SUMMARY

Across all award levels, there are a total of 34 programs associated with significant workforce gaps. This includes 15 significant gaps at the certificate level, nine at the associate degree level, four at the bachelor's degree level, and six at the master's degree level. No programs at any of the award levels have a significant surplus.

At the certificate level, fifteen programs have a gap above the 200-job level of significance. Certificate level programs with the top three largest gaps are:

- Building Construction Technology (gap of 1,157; median hourly wage \$22.44)
- Culinary Arts/Chef Training (gap of 842; median hourly wage \$14.55)
- General Office Occupations & Clerical Services (gap of 620; median hourly wage \$17.31)

At the associate degree level, nine programs have a significant gap above the 200-job level of significance, and some are recommended for further program development. The associate degree programs with the top three largest gaps are:

- Administrative Assistant & Secretarial Science, General (gap of 795; median hourly wage \$16.99)
- Health Services/Allied Health/Health Sciences, General (gap of 656; median hourly wage \$14.18)
- Business Administration & Management, General (gap of 599; median hourly wage \$26.07)

At the bachelor's degree level, four programs have a significant gap above the 200-job level of significance. The bachelor's degree level programs with the three largest gaps are:

- Business Administration & Management, General (gap of 378; median hourly wage \$27.69)
- Business Administration, Management, & Operations, Other (gap of 302; median hourly wage \$27.69)
- Finance, General (gap of 267; median hourly wage \$30.29)

At the master's degree level, six programs have a gap above the 200-job level of significance. The master's degree level programs with the three largest gaps are:

- Business Administration & Management, General (gap of 878; median hourly wage \$30.45)
- Education, General (gap of 357; median hourly wage \$24.14)
- Registered Nursing/Registered Nurse (gap of 284; median hourly wage \$33.48)

At the doctoral degree level, no programs have a gap above the 200-job level of significance. The doctoral degree level programs with the top three largest gaps are:

- Education, General (gap of 175; median hourly wage \$27.10)
- Psychology, General (gap of 142; median hourly wage \$28.57)
- Business, Management, Marketing, & Related Support Services, Other (gap of 141; median hourly wage \$36.83)

A liberal arts program expansion is not recommended at this time, but WPCU 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 Wyoming, and the institutions' liberal arts program serves as a starting point to students' future career goals.





New Program Additions

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

Recommendations are based solely on the gap and whether or not the occupation looks promising (job growth, wages, etc.).¹⁷ These are initial findings and should serve as a starting point for further research. WPCU's administration will still need to undergo steps before deciding whether these programs would be a good fit for the institutions and the state. 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

Sixteen 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 Wyoming (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 state for some. The most represented occupational group in the table are production occupations (SOC 51-0000), with seven occupations and about 3,080 jobs in the state in 2019. The second most represented occupation group is installation, maintenance, & repair and it is followed by transportation & material moving.

¹⁷ New program additions are only provided for the certificate and bachelor's degree levels. The institutions seem to already be training for relevant occupations at the other award levels.

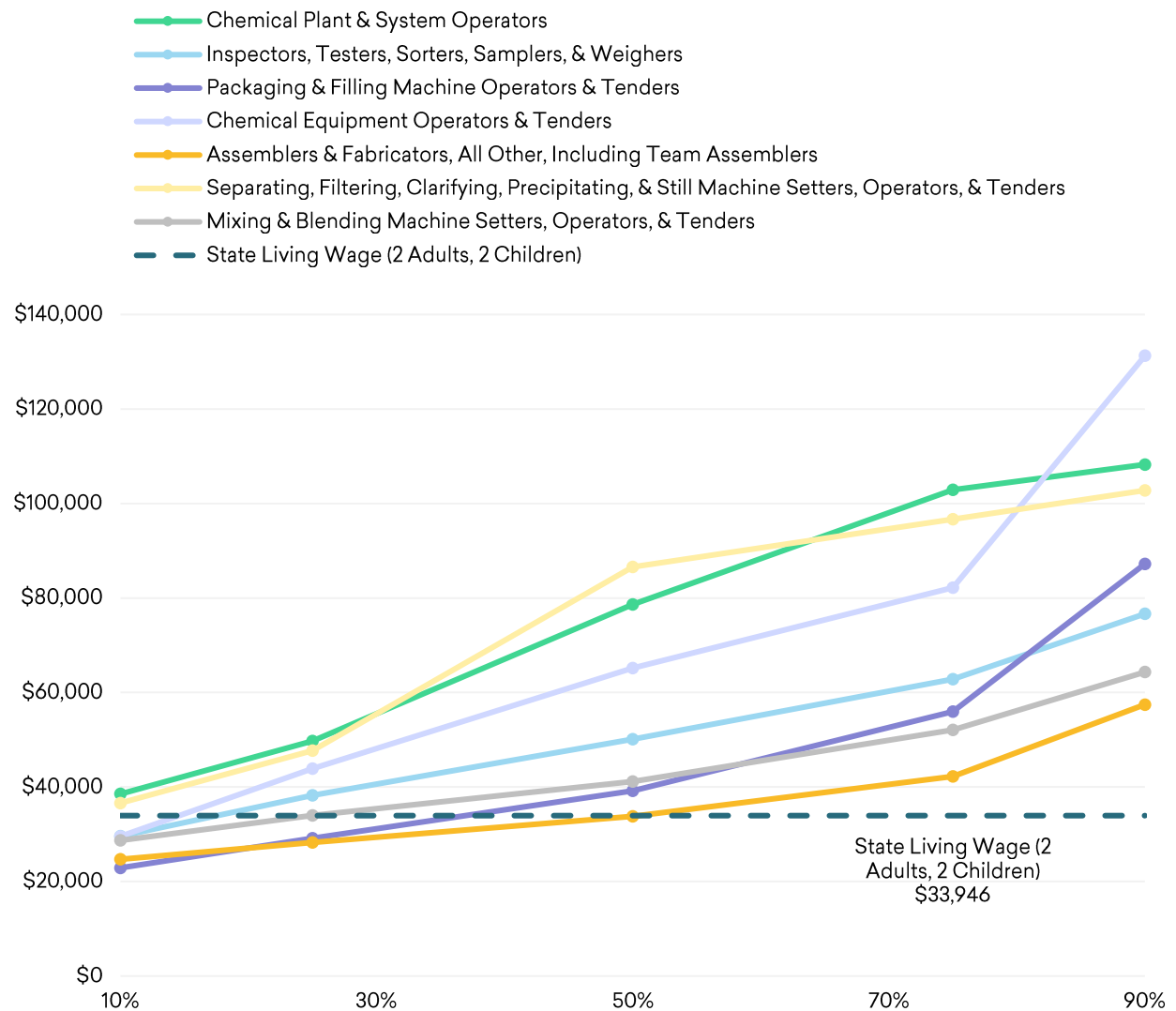


Table 4.1: WPCU's Programmatic Areas of Opportunity at the Certificate Level

SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Heavy & Tractor-Trailer Truck Drivers	7,194	5.6%	672	0	672	\$23.34
Bus Drivers, School or Special Client	1,307	4.6%	136	0	136	\$17.83
Industrial Truck & Tractor Operators	1,184	6.7%	109	0	109	\$17.42
Mobile Heavy Equipment Mechanics, Except Engines	1,543	(6.0%)	106	0	106	\$31.40
Inspectors, Testers, Sorters, Samplers, & Weighers	970	(10.3%)	74	0	74	\$24.08
Assemblers & Fabricators, All Other, Including Team Assemblers	640	4.7%	61	0	61	\$16.24
Electrical Power-Line Installers & Repairers	451	17.2%	37	0	37	\$38.50
Mixing & Blending Machine Setters, Operators, & Tenders	342	0.4%	29	0	29	\$19.80
Packaging & Filling Machine Operators & Tenders	350	8.0%	29	0	29	\$18.83
Aircraft Mechanics & Service Technicians	379	10.7%	29	0	29	\$27.01
Ophthalmic Medical Technicians	504	3.3%	27	0	27	\$23.79
Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	331	(1.3%)	23	0	23	\$41.63
Telecommunications Line Installers & Repairers	145	41.4%	20	0	20	\$23.16
Chemical Equipment Operators & Tenders	289	(4.2%)	19	0	19	\$31.33
Chemical Plant & System Operators	159	(9.1%)	12	0	12	\$37.81
Human Resources Assistants, Except Payroll & Timekeeping	186	(3.7%)	11	0	11	\$18.77

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

Figure 4.1: Percentile Wage Rates of Production Occupations Identified as New Program Opportunities



Source: Employees & Self-Employed 2019.2.

The annual wage rates of the production occupations from Table 4.1 are shown in Figure 4.1, with an emphasis on low and high wage-earners. For those people in Wyoming employed as chemical equipment operators & tenders, the difference between annual wage rates at the 10th percentile and 90th percentile is the highest at over \$100,000 per year. For WPCU students, these results may indicate that time spent working as chemical equipment operators & tenders could lead to progressively higher wages throughout their careers. On the other hand, there is about a \$33,000 difference between the lowest and highest wage earners for assemblers & fabricators, all other, including team assemblers. Data on percentile wage rates highlight the occupations that should be incorporated into a new or existing

WPCU program, for the benefit of students first coming into the state's labor market or those looking to change career paths.

ADDITIONS AT THE BACHELOR'S DEGREE LEVEL

As shown in Table 4.2, five occupations have been identified as bachelor's degree level programmatic areas of opportunity. The select occupations present unmet annual job openings within Wyoming (i.e. they have a gap), their median hourly wage rates are greater than \$25.00, 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 state for some. The most represented occupational group in the table are business & financial operations occupations (SOC 13-0000), with two occupations and about 720 jobs in the state in 2019. The second most represented occupation group is sales & related. Some of WPCU's current offerings, such as its bachelor's degree Business Administration & Management program, may already be teaching the skills needed for employment in some of the occupations present in the table.

Table 4.2: WPCU's Programmatic Areas of Opportunity at the Bachelors Degree Level

SOC TITLE	2019 JOBS	% JOB CHANGE	ANNUAL OPENINGS	ANNUAL COMPLETIONS	GAP	MEDIAN HOURLY WAGE
Property, Real Estate, & Community Association Managers	612	7.6%	25	0	25	\$25.01
Training & Development Specialists	382	10.7%	23	0	23	\$29.78
Logisticians	337	12.0%	21	0	21	\$32.13
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	228	17.2%	16	0	16	\$38.76
Real Estate Brokers	207	8.0%	12	0	12	\$28.80

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

SUMMARY

Sixteen certificate level programmatic areas of opportunity have been identified in the program demand gap analysis, many of which are related to production occupations. Five bachelor's degree level programmatic areas of opportunity were identified in the program demand gap analysis, many of which are related to business & financial operations occupations. No opportunities were identified at the associate, master's, or doctoral degree levels. For both the certificate and bachelor's degree award levels, some program additions are related to the institutions' current program offerings, which indicates an opportunity for a curriculum adjustment to better align with the state's current and projected labor market demand.

APPENDIX 1: Glossary of Terms

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 state'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 state 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 state after program completion because of a lack of job opportunities. In the tables, values in parentheses represent a surplus.

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*NET¹⁸ 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 from June 2019 to May 2020 using Emsi's Employees & Self-Employed 2020.2 data run.

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)
15-1199.02	Computer Systems Engineers/Architects	439	47.3%	3:1	Humana Inc. (128 / 36)
15-1199.09	Information Technology Project Managers	230	24.8%	3:1	Staffing Technical Services Inc. (46 / 25)

18 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.

O*NET CODE	O*NET TITLE	UNIQUE POSTINGS	% TOTAL	POSTING INTENSITY	TOP COMPANY (TOTAL/UNIQUE)
15-1199.01	Software Quality Assurance Engineers and Testers	186	20.0%	3:1	Demo Inc (55 / 19)
15-1199.04	Geospatial Information Scientists and Technologists	20	2.2%	15:1	Army National Guard (278 / 17)
15-1199.05	Geographic Information Systems Technicians	19	2.0%	4:1	S W C A Environmental Consultants (9 / 3)
15-1199.08	Business Intelligence Analysts	19	2.0%	2:1	Nasdaq, Inc. (4 / 4)
15-1199.03	Web Administrators	5	0.5%	2:1	Anita Goodesign Inc (2 / 1)
15-1199.06	Database Architects	5	0.5%	2:1	Carfax, Inc. (1 / 1)
15-1199.10	Search Marketing Strategists	4	0.4%	2:1	Clearlink LLC (2 / 2)
15-1199.12	Document Management Specialists	2	0.2%	2:1	Elwood Staffing Services, Inc. (1 / 1)

Source: Emsi Job Posting Analytics June 2019 to May 2020. 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	346	81.8%	4:1	HDR Engineering, Inc. (25 / 22)
11-9199.02	Compliance Managers	26	6.1%	3:1	United Services Automobile Association (8 / 5)
11-9199.04	Supply Chain Managers	26	6.1%	3:1	Ferguson (16 / 5)
11-9199.01	Regulatory Affairs Managers	10	2.4%	9:1	J & J Family Corporation (89 / 9)
11-9199.09	Wind Energy Operations Managers	7	1.7%	5:1	Vestas (17 / 3)
11-9199.10	Wind Energy Project Managers	5	1.2%	3:1	Dlc Service Solutions LLC (1 / 1)
11-9199.07	Security Managers	2	0.5%	2:1	State of Wyoming (5 / 2)
11-9199.03	Investment Fund Managers	1	0.2%	6:1	Huxley (4 / 1)

Source: Emsi Job Posting Analytics June 2019 to May 2020. 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	475	97.5%	7:1	HomeAdvisor, Inc. (228 / 73)
13-1199.01	Energy Auditors	8	1.6%	8:1	Ja Consulting (3 / 3)
13-1199.02	Security Management Specialists	2	0.4%	4:1	Microsoft Corporation (5 / 1)
13-1199.04	Business Continuity Planners	2	0.4%	1:1	PNC (2 / 2)

Source: Emsi Job Posting Analytics June 2019 to May 2020. National Center for O*NET Development, O*NET OnLine.

APPENDIX 3: Economic Overview Tables

INDUSTRY COMPOSITION

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

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
903	Local Government	46,378	48,497	2,119	4.6%
722	Food Services & Drinking Places	21,286	23,520	2,234	10.5%
902	State Government	15,148	15,527	379	2.5%
238	Specialty Trade Contractors	13,789	14,352	563	4.1%
901	Federal Government	13,685	14,270	585	4.3%
721	Accommodation	12,502	12,771	269	2.2%
621	Ambulatory Health Care Services	11,040	13,334	2,294	20.8%
541	Professional, Scientific, & Technical Services	10,847	12,001	1,154	10.6%
213	Support Activities for Mining	9,402	10,268	866	9.2%
561	Administrative & Support Services	8,846	10,073	1,227	13.9%
624	Social Assistance	8,615	9,567	952	11.0%
212	Mining (except Oil & Gas)	7,915	6,895	(1,019)	(12.9%)
237	Heavy & Civil Engineering Construction	6,619	8,071	1,452	21.9%
452	General Merchandise Stores	5,555	5,268	(287)	(5.2%)
423	Merchant Wholesalers, Durable Goods	5,237	5,183	(54)	(1.0%)
236	Construction of Buildings	4,985	5,178	193	3.9%
445	Food & Beverage Stores	4,823	4,971	148	3.1%
484	Truck Transportation	4,765	4,957	192	4.0%
441	Motor Vehicle & Parts Dealers	4,537	4,610	74	1.6%
623	Nursing & Residential Care Facilities	4,377	5,526	1,149	26.3%
811	Repair & Maintenance	4,296	4,327	31	0.7%
522	Credit Intermediation & Related Activities	4,060	4,046	(14)	(0.3%)
447	Gasoline Stations	3,986	4,324	338	8.5%
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	3,858	4,191	333	8.6%
112	Animal Production & Aquaculture	3,703	3,383	(320)	(8.6%)
622	Hospitals	3,458	4,272	814	23.5%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
444	Building Material & Garden Equipment & Supplies Dealers	3,392	3,844	452	13.3%
531	Real Estate	3,311	3,596	284	8.6%
812	Personal & Laundry Services	3,052	3,228	176	5.8%
211	Oil & Gas Extraction	2,973	2,680	(293)	(9.8%)
713	Amusement, Gambling, & Recreation Industries	2,954	3,331	377	12.8%
524	Insurance Carriers & Related Activities	2,795	3,139	344	12.3%
424	Merchant Wholesalers, Nondurable Goods	2,650	2,838	188	7.1%
611	Educational Services	2,560	3,018	459	17.9%
221	Utilities	2,530	2,582	52	2.1%
482	Rail Transportation	2,094	1,913	(181)	(8.6%)
532	Rental & Leasing Services	1,964	2,104	140	7.1%
493	Warehousing & Storage	1,830	2,044	213	11.7%
325	Chemical Manufacturing	1,783	1,694	(88)	(5.0%)
332	Fabricated Metal Product Manufacturing	1,733	2,129	396	22.9%
453	Miscellaneous Store Retailers	1,723	1,623	(100)	(5.8%)
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	1,528	1,806	278	18.2%
517	Telecommunications	1,502	1,589	87	5.8%
448	Clothing & Clothing Accessories Stores	1,386	1,304	(81)	(5.9%)
115	Support Activities for Agriculture & Forestry	1,343	1,636	293	21.8%
324	Petroleum & Coal Products Manufacturing	1,311	1,318	7	0.6%
488	Support Activities for Transportation	1,279	1,557	278	21.8%
111	Crop Production	1,225	1,302	77	6.3%
492	Couriers & Messengers	1,042	1,071	29	2.8%
711	Performing Arts, Spectator Sports, & Related Industries	1,039	1,186	147	14.2%
814	Private Households	1,003	941	(62)	(6.2%)
446	Health & Personal Care Stores	957	998	42	4.4%
327	Nonmetallic Mineral Product Manufacturing	907	918	12	1.3%
442	Furniture & Home Furnishings Stores	814	910	96	11.8%
562	Waste Management & Remediation Services	808	919	111	13.7%
551	Management of Companies & Enterprises	795	757	(38)	(4.8%)
511	Publishing Industries (except Internet)	776	704	(72)	(9.3%)
454	Nonstore Retailers	773	760	(13)	(1.7%)
486	Pipeline Transportation	758	780	22	2.9%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
311	Food Manufacturing	744	725	(19)	(2.6%)
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	728	859	131	18.0%
333	Machinery Manufacturing	721	899	178	24.8%
443	Electronics & Appliance Stores	713	591	(123)	(17.2%)
512	Motion Picture & Sound Recording Industries	564	612	48	8.5%
485	Transit & Ground Passenger Transportation	561	672	111	19.9%
481	Air Transportation	497	607	110	22.2%
312	Beverage & Tobacco Product Manufacturing	487	594	107	22.0%
321	Wood Product Manufacturing	472	499	27	5.8%
712	Museums, Historical Sites, & Similar Institutions	432	508	75	17.5%
515	Broadcasting (except Internet)	384	340	(44)	(11.4%)
334	Computer & Electronic Product Manufacturing	335	466	132	39.3%
335	Electrical Equipment, Appliance, & Component Manufacturing	317	462	145	45.8%
326	Plastics & Rubber Products Manufacturing	314	334	20	6.3%
336	Transportation Equipment Manufacturing	235	232	(3)	(1.4%)
323	Printing & Related Support Activities	232	214	(18)	(7.8%)
518	Data Processing, Hosting, & Related Services	196	225	29	14.7%
337	Furniture & Related Product Manufacturing	188	195	7	3.9%
314	Textile Product Mills	185	262	76	41.2%
339	Miscellaneous Manufacturing	181	220	39	21.3%
491	Postal Service	134	195	61	45.5%
315	Apparel Manufacturing	127	160	32	25.3%
425	Wholesale Electronic Markets & Agents & Brokers	119	126	7	6.2%
331	Primary Metal Manufacturing	101	159	58	57.8%
113	Forestry & Logging	92	88	(4)	(4.6%)
519	Other Information Services	63	90	27	43.2%
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	50	54	4	8.7%
487	Scenic & Sightseeing Transportation	35	55	20	56.8%
525	Funds, Trusts, & Other Financial Vehicles	28	39	11	37.7%
114	Fishing, Hunting & Trapping	21	20	(1)	(4.0%)
316	Leather & Allied Product Manufacturing	18	17	(1)	(6.7%)
313	Textile Mills	17	19	3	16.1%
483	Water Transportation	14	23	9	62.9%

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE
322	Paper Manufacturing	0	0	0	0.0%
521	Monetary Authorities-Central Bank	0	0	0	0.0%
Total		309,607	330,162	20,563	6.6%

Source: Employees & Self-Employed 2020.2.

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

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
212	Mining (except Oil & Gas)	21.78	18.45
213	Support Activities for Mining	13.96	12.73
211	Oil & Gas Extraction	10.95	10.80
486	Pipeline Transportation	7.99	7.74
324	Petroleum & Coal Products Manufacturing	6.13	6.46
482	Rail Transportation	4.99	4.46
491	Postal Service	4.86	5.19
112	Animal Production & Aquaculture	4.55	4.30
721	Accommodation	3.22	3.21
237	Heavy & Civil Engineering Construction	3.14	3.32
221	Utilities	2.42	2.46
447	Gasoline Stations	2.25	2.34
532	Rental & Leasing Services	1.79	1.83
903	Local Government	1.72	1.76
901	Federal Government	1.51	1.61
902	State Government	1.49	1.49
484	Truck Transportation	1.46	1.44
451	Sporting Goods, Hobby, Musical Instrument, & Book Stores	1.36	1.75
444	Building Material & Garden Equipment & Supplies Dealers	1.36	1.48
811	Repair & Maintenance	1.34	1.32
712	Museums, Historical Sites, & Similar Institutions	1.31	1.37
115	Support Activities for Agriculture & Forestry	1.25	1.35
238	Specialty Trade Contractors	1.21	1.15
236	Construction of Buildings	1.21	1.14
441	Motor Vehicle & Parts Dealers	1.16	1.15
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	1.14	1.31

NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
327	Nonmetallic Mineral Product Manufacturing	1.13	1.18
325	Chemical Manufacturing	1.11	1.06
517	Telecommunications	1.08	1.38
624	Social Assistance	1.02	0.94
452	General Merchandise Stores	0.97	0.93
525	Funds, Trusts, & Other Financial Vehicles	0.94	1.03
722	Food Services & Drinking Places	0.94	0.92
453	Miscellaneous Store Retailers	0.94	0.90
562	Waste Management & Remediation Services	0.93	0.96
312	Beverage & Tobacco Product Manufacturing	0.90	1.00
488	Support Activities for Transportation	0.86	0.95
442	Furniture & Home Furnishings Stores	0.86	0.93
423	Merchant Wholesalers, Durable Goods	0.86	0.85
713	Amusement, Gambling, & Recreation Industries	0.85	0.88
111	Crop Production	0.82	0.86
445	Food & Beverage Stores	0.82	0.85
522	Credit Intermediation & Related Activities	0.81	0.80
314	Textile Product Mills	0.80	1.24
531	Real Estate	0.80	0.82
493	Warehousing & Storage	0.80	0.75
443	Electronics & Appliance Stores	0.76	0.71
515	Broadcasting (except Internet)	0.74	0.68
621	Ambulatory Health Care Services	0.73	0.71
812	Personal & Laundry Services	0.73	0.71
623	Nursing & Residential Care Facilities	0.69	0.79
813	Religious, Grantmaking, Civic, Professional, & Similar Organizations	0.69	0.72
492	Couriers & Messengers	0.67	0.63
424	Merchant Wholesalers, Nondurable Goods	0.64	0.68
711	Performing Arts, Spectator Sports, & Related Industries	0.63	0.68
113	Forestry & Logging	0.63	0.67
332	Fabricated Metal Product Manufacturing	0.61	0.75
814	Private Households	0.61	0.58
512	Motion Picture & Sound Recording Industries	0.59	0.60



NAICS CODE	NAICS TITLE	2019 LQ	2029 LQ
321	Wood Product Manufacturing	0.58	0.62
454	Nonstore Retailers	0.56	0.45
315	Apparel Manufacturing	0.55	0.96
448	Clothing & Clothing Accessories Stores	0.53	0.58
541	Professional, Scientific, & Technical Services	0.53	0.52
511	Publishing Industries (except Internet)	0.53	0.47
481	Air Transportation	0.52	0.59
524	Insurance Carriers & Related Activities	0.52	0.55
487	Scenic & Sightseeing Transportation	0.49	0.67
561	Administrative & Support Services	0.48	0.52
446	Health & Personal Care Stores	0.47	0.48
335	Electrical Equipment, Appliance, & Component Manufacturing	0.42	0.61
485	Transit & Ground Passenger Transportation	0.41	0.41
523	Securities, Commodity Contracts, & Other Financial Investments & Related Activities	0.38	0.42
622	Hospitals	0.36	0.42
333	Machinery Manufacturing	0.34	0.43
114	Fishing, Hunting & Trapping	0.34	0.36
316	Leather & Allied Product Manufacturing	0.33	0.33
611	Educational Services	0.32	0.34
518	Data Processing, Hosting, & Related Services	0.30	0.29
323	Printing & Related Support Activities	0.28	0.31
337	Furniture & Related Product Manufacturing	0.24	0.26
311	Food Manufacturing	0.24	0.23
326	Plastics & Rubber Products Manufacturing	0.23	0.25
551	Management of Companies & Enterprises	0.18	0.16
334	Computer & Electronic Product Manufacturing	0.17	0.25
339	Miscellaneous Manufacturing	0.15	0.18
331	Primary Metal Manufacturing	0.14	0.24
425	Wholesale Electronic Markets & Agents & Brokers	0.12	0.13
483	Water Transportation	0.11	0.18
519	Other Information Services	0.10	0.11
313	Textile Mills	0.08	0.11
336	Transportation Equipment Manufacturing	0.07	0.07



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

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 Wyoming for the Top 25 Occupations Related to the Local Government Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Teacher Assistants	3,037	3,161	431	6.5%	\$14.88	CERT
Elementary School Teachers, Except Special Education	2,444	2,582	220	5.3%	\$27.24	BACH
Registered Nurses	2,270	2,548	380	4.9%	\$31.17	BACH
Substitute Teachers	2,172	2,267	287	4.7%	\$13.14	CERT
Secondary School Teachers, Except Special and Career/Technical Education	1,734	1,834	150	3.7%	\$28.37	BACH
Office Clerks, General	1,580	1,490	1,044	3.4%	\$16.88	CERT
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,558	1,617	808	3.4%	\$13.27	HS/GED
Postsecondary Teachers	1,213	1,108	222	2.6%	\$32.91	BACH
Middle School Teachers, Except Special and Career/Technical Education	1,054	1,113	94	2.3%	\$29.43	BACH
Bus Drivers, School or Special Client	1,014	1,042	176	2.2%	\$17.83	CERT
Police and Sheriff's Patrol Officers	1,008	1,105	115	2.2%	\$25.52	BACH
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	983	892	455	2.1%	\$17.81	CERT
Nursing Assistants	912	984	449	2.0%	\$14.40	CERT

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Maintenance and Repair Workers, General	667	701	416	1.4%	\$17.71	HS/GED
Cooks, Institution and Cafeteria	641	642	216	1.4%	\$14.31	HS/GED
Special Education Teachers, Kindergarten and Elementary School	568	594	48	1.2%	\$30.37	BACH
Protective Service Workers, All Other	518	538	205	1.1%	\$16.53	HS/GED
Firefighters	508	556	47	1.1%	\$21.06	CERT
Highway Maintenance Workers	508	541	99	1.1%	\$19.14	HS/GED
Court, Municipal, and License Clerks	451	481	68	1.0%	\$18.54	CERT
Childcare Workers	440	457	462	0.9%	\$11.26	CERT
Educational, Guidance, School, and Vocational Counselors	427	438	72	0.9%	\$27.12	MAST
Emergency Medical Technicians and Paramedics	427	459	72	0.9%	\$15.37	CERT
Library Technicians	414	397	77	0.9%	\$16.72	HS/GED
Water and Wastewater Treatment Plant and System Operators	400	394	43	0.9%	\$22.92	HS/GED

Source: Employees & Self-Employed 2020.2.

Table A3.4: Employment Projections in Wyoming for the Top 25 Occupations Related to the Federal Government Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Military-only occupations	3,015	3,250	379	22.0%	\$19.41	CERT
Forest and Conservation Technicians	514	520	84	3.8%	\$16.06	BACH
Postal Service Mail Carriers	431	372	40	3.2%	\$21.48	CERT
Business Operations Specialists, All Other	354	378	141	2.6%	\$31.75	BACH
Registered Nurses	321	337	380	2.3%	\$31.17	BACH
Managers, All Other	284	307	156	2.1%	\$36.84	BACH
Logisticians	257	279	38	1.9%	\$32.13	BACH
Postal Service Clerks	249	200	18	1.8%	\$22.98	CERT
Aircraft Mechanics and Service Technicians	229	247	38	1.7%	\$27.01	CERT
Information and Record Clerks, All Other	211	220	50	1.5%	\$17.98	CERT
Human Resources Specialists	196	208	100	1.4%	\$25.34	BACH
Office Clerks, General	179	176	1,044	1.3%	\$16.88	CERT
Police and Sheriff's Patrol Officers	161	175	115	1.2%	\$25.52	BACH
General and Operations Managers	156	166	541	1.1%	\$42.58	BACH

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Compliance Officers	140	147	43	1.0%	\$30.83	BACH
Postal Service Mail Sorters, Processors, and Processing Machine Operators	139	113	11	1.0%	\$21.68	CERT
Airline Pilots, Copilots, and Flight Engineers	131	142	18	1.0%	\$79.45	BACH
Maintenance and Repair Workers, General	130	135	416	0.9%	\$17.71	HS/GED
Computer Occupations, All Other	125	137	24	0.9%	\$34.03	BACH
Biological Scientists, All Other	123	124	17	0.9%	\$31.91	BACH
First-Line Supervisors of Mechanics, Installers, and Repairers	107	111	179	0.8%	\$35.60	CERT
Physicians and Surgeons, All Other	107	113	23	0.8%	\$105.50	PHD
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	104	102	808	0.8%	\$13.27	HS/GED
Buyers and Purchasing Agents	96	94	47	0.7%	\$29.83	BACH
Medical and Health Services Managers	92	97	92	0.7%	\$43.65	BACH

Source: Employees & Self-Employed 2020.2.

Table A3.5: Employment Projections in Wyoming for the Top 25 Occupations Related to the Accommodation Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Maids and Housekeeping Cleaners	2,934	2,824	607	23.5%	\$11.92	HS/GED
Hotel, Motel, and Resort Desk Clerks	1,572	1,497	267	12.6%	\$12.13	CERT
Maintenance and Repair Workers, General	854	923	416	6.8%	\$17.71	HS/GED
Waiters and Waitresses	810	831	1,023	6.5%	\$9.39	CERT
Cooks, Restaurant	490	545	544	3.9%	\$13.71	HS/GED
Lodging Managers	409	417	46	3.3%	\$24.88	BACH
Laundry and Dry-Cleaning Workers	324	322	94	2.6%	\$11.52	HS/GED
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	323	342	808	2.6%	\$13.27	HS/GED
Bartenders	290	299	427	2.3%	\$9.49	CERT
First-Line Supervisors of Housekeeping and Janitorial Workers	290	295	79	2.3%	\$19.02	HS/GED
Dining Room and Cafeteria Attendants and Bartender Helpers	242	251	147	1.9%	\$9.65	HS/GED
First-Line Supervisors of Food Preparation and Serving Workers	227	237	398	1.8%	\$14.58	CERT
General and Operations Managers	200	218	541	1.6%	\$42.58	BACH

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Dishwashers	188	198	186	1.5%	\$11.01	HS/GED
Office Clerks, General	170	177	1,044	1.4%	\$16.88	CERT
Bookkeeping, Accounting, and Auditing Clerks	169	167	396	1.4%	\$17.81	CERT
Landscaping and Groundskeeping Workers	169	194	387	1.3%	\$14.22	HS/GED
First-Line Supervisors of Office and Administrative Support Workers	159	168	203	1.3%	\$24.26	BACH
Recreation Workers	113	138	123	0.9%	\$12.48	CERT
Taxi Drivers and Chauffeurs	111	109	84	0.9%	\$10.91	CERT
Combined Food Preparation and Serving Workers, Including Fast Food	110	121	1,189	0.9%	\$9.44	HS/GED
Cooks, Institution and Cafeteria	109	123	216	0.9%	\$14.31	HS/GED
Amusement and Recreation Attendants	90	96	138	0.7%	\$10.13	CERT
First-Line Supervisors of Mechanics, Installers, and Repairers	89	97	179	0.7%	\$35.60	CERT
Food Servers, Nonrestaurant	88	85	44	0.7%	\$10.18	CERT

Source: Employees & Self-Employed 2020.2.

Table A3.6: Employment Projections in Wyoming for the Top 25 Occupations Related to the Support Activities for Mining Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Roustabouts, Oil and Gas	1,578	1,675	283	16.8%	\$19.37	HS/GED
Service Unit Operators, Oil, Gas, and Mining	1,493	1,538	271	15.9%	\$24.39	HS/GED
Heavy and Tractor-Trailer Truck Drivers	574	640	908	6.1%	\$23.34	HS/GED
First-Line Supervisors of Construction Trades and Extraction Workers	501	555	352	5.3%	\$32.22	HS/GED
Industrial Machinery Mechanics	372	386	226	4.0%	\$32.29	HS/GED
Operating Engineers and Other Construction Equipment Operators	283	326	548	3.0%	\$27.90	HS/GED
Helpers--Extraction Workers	244	223	59	2.6%	\$18.04	HS/GED
Derrick Operators, Oil and Gas	237	265	42	2.5%	\$27.42	HS/GED
General and Operations Managers	237	267	541	2.5%	\$42.58	BACH
Rotary Drill Operators, Oil and Gas	221	270	44	2.4%	\$26.72	HS/GED
Office Clerks, General	185	191	1,044	2.0%	\$16.88	CERT
Welders, Cutters, Solderers, and Brazers	171	189	235	1.8%	\$27.24	HS/GED

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Pump Operators, Except Wellhead Pumps	134	141	23	1.4%	\$11.59	HS/GED
Petroleum Engineers	132	143	37	1.4%	\$50.82	BACH
Construction Laborers	115	129	579	1.2%	\$16.91	HS/GED
Wellhead Pumps	109	123	40	1.2%	\$29.56	HS/GED
Petroleum Pump System Operators, Refinery Operators, and Gaugers	104	105	99	1.1%	\$36.71	CERT
Inspectors, Testers, Sorters, Samplers, and Weighers	100	98	116	1.1%	\$24.08	HS/GED
Mobile Heavy Equipment Mechanics, Except Engines	93	98	155	1.0%	\$31.40	HS/GED
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	91	99	455	1.0%	\$17.81	CERT
Extraction Workers, All Other	89	116	24	0.9%	\$30.38	HS/GED
Bookkeeping, Accounting, and Auditing Clerks	79	83	396	0.8%	\$17.81	CERT
Laborers and Freight, Stock, and Material Movers, Hand	74	90	489	0.8%	\$15.72	HS/GED
Managers, All Other	72	85	156	0.8%	\$36.84	BACH
Geological and Petroleum Technicians	70	81	16	0.7%	\$28.19	BACH

Source: Employees & Self-Employed 2020.2.

Table A3.7: Employment Projections in Wyoming for the Top 25 Occupations Related to the Mining (except Oil & Gas) Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Operating Engineers and Other Construction Equipment Operators	1,450	1,254	548	18.3%	\$27.90	HS/GED
Heavy and Tractor-Trailer Truck Drivers	566	507	908	7.2%	\$23.34	HS/GED
Mobile Heavy Equipment Mechanics, Except Engines	524	441	155	6.6%	\$31.40	HS/GED
Excavating and Loading Machine and Dragline Operators	442	395	68	5.6%	\$35.33	HS/GED
First-Line Supervisors of Construction Trades and Extraction Workers	422	360	352	5.3%	\$32.22	HS/GED
Industrial Machinery Mechanics	342	293	226	4.3%	\$32.29	HS/GED
Electricians	315	255	321	4.0%	\$28.38	HS/GED
Maintenance Workers, Machinery	226	184	36	2.9%	\$34.79	HS/GED
Continuous Mining Machine Operators	206	203	28	2.6%	\$36.73	HS/GED
Maintenance and Repair Workers, General	183	156	416	2.3%	\$17.71	HS/GED

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
First-Line Supervisors of Mechanics, Installers, and Repairers	154	126	179	1.9%	\$35.60	CERT
Welders, Cutters, Solderers, and Brazers	149	121	235	1.9%	\$27.24	HS/GED
General and Operations Managers	148	130	541	1.9%	\$42.58	BACH
Helpers--Extraction Workers	146	128	59	1.9%	\$18.04	HS/GED
Inspectors, Testers, Sorters, Samplers, and Weighers	132	97	116	1.7%	\$24.08	HS/GED
Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	125	115	17	1.6%	\$33.75	HS/GED
Office Clerks, General	115	98	1,044	1.5%	\$16.88	CERT
Construction Laborers	115	110	579	1.5%	\$16.91	HS/GED
Mining and Geological Engineers, Including Mining Safety Engineers	107	76	10	1.3%	\$42.93	BACH
Mine Cutting and Channeling Machine Operators	98	94	13	1.2%	\$35.38	HS/GED
Explosives Workers, Ordnance Handling Experts, and Blasters	91	81	33	1.2%	\$32.95	CERT
First-Line Supervisors of Production and Operating Workers	90	80	142	1.1%	\$39.42	HS/GED
Roof Bolters, Mining	85	90	14	1.1%	\$45.26	HS/GED
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	81	71	41	1.0%	\$41.63	HS/GED
First-line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	79	66	121	1.0%	\$28.75	CERT

Source: Employees & Self-Employed 2020.2.

Table A3.8: Employment Projections in Wyoming for the Top 25 Occupations Related to the Heavy & Civil Engineering Construction Industry Subsector

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Construction Laborers	1,415	1,716	579	21.4%	\$16.91	HS/GED
Operating Engineers and Other Construction Equipment Operators	1,235	1,425	548	18.7%	\$27.90	HS/GED
First-Line Supervisors of Construction Trades and Extraction Workers	524	622	352	7.9%	\$32.22	HS/GED
Carpenters	283	298	380	4.3%	\$21.83	HS/GED
Heavy and Tractor-Trailer Truck Drivers	279	312	908	4.2%	\$23.34	HS/GED
Welders, Cutters, Solderers, and Brazers	215	255	235	3.2%	\$27.24	HS/GED
Construction Managers	168	215	78	2.5%	\$36.84	BACH

SOC TITLE	2019 JOBS	2029 JOBS	JOB OPENINGS	% JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	ENTRY ED LEVEL
Office Clerks, General	163	185	1,044	2.5%	\$16.88	CERT
Electrical Power-Line Installers and Repairers	150	235	51	2.3%	\$38.50	HS/GED
Plumbers, Pipefitters, and Steamfitters	138	183	142	2.1%	\$24.57	HS/GED
General and Operations Managers	128	157	541	1.9%	\$42.58	BACH
Mobile Heavy Equipment Mechanics, Except Engines	125	139	155	1.9%	\$31.40	HS/GED
Boilermakers	118	130	33	1.8%	\$31.23	HS/GED
Roustabouts, Oil and Gas	115	132	283	1.7%	\$19.37	HS/GED
Pipelayers	110	153	26	1.7%	\$17.13	HS/GED
Cement Masons and Concrete Finishers	103	116	58	1.6%	\$19.87	HS/GED
Electricians	89	124	321	1.4%	\$28.38	HS/GED
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	69	82	455	1.0%	\$17.81	CERT
First-Line Supervisors of Mechanics, Installers, and Repairers	65	91	179	1.0%	\$35.60	CERT
Bookkeeping, Accounting, and Auditing Clerks	62	72	396	0.9%	\$17.81	CERT
Civil Engineers	58	63	79	0.9%	\$35.85	BACH
Earth Drillers, Except Oil and Gas	53	76	24	0.8%	\$23.48	HS/GED
Cost Estimators	52	65	34	0.8%	\$35.30	BACH
Excavating and Loading Machine and Dragline Operators	51	66	68	0.8%	\$35.33	HS/GED
Telecommunications Line Installers and Repairers	45	94	26	0.7%	\$23.16	CERT

Source: Employees & Self-Employed 2020.2.

WORKFORCE COMMUTING PATTERNS

Table A3.9: Wyoming Job Inflow and Outflow

COMMUTING PATTERN	JOBS	COMMUTE SHARE
EMPLOYMENT PATTERNS		
Employed in Wyoming	242,880	100%
Employed in Wyoming but living outside	21,800	9%
Employed and living in Wyoming	221,080	91%
RESIDENTIAL PATTERNS		
Living in Wyoming	232,910	100%
Living in Wyoming but employed outside	11,830	5%
Living and employed in Wyoming	221,080	95%

Source: Census Bureau, Center for Economic Studies.



EDUCATIONAL ATTAINMENT

Table A3.10: Highest Educational Attainments of Adults in Wyoming

EDUCATION LEVEL	2014 ADULTS	2014 % ADULTS	2019 ADULTS	2019 % ADULTS	CHANGE
Less than high school diploma or equivalent	29,325	8%	29,693	8%	368
High school diploma or equivalent	111,177	29%	114,499	29%	3,322
Some college	103,530	27%	103,439	26%	(92)
Associate degree	41,362	11%	41,023	10%	(339)
Bachelor's degree	66,876	17%	66,424	17%	(452)
Graduate degree or higher	34,644	9%	36,325	9%	1,681
Total	386,915	100%	391,403	100%	4,487

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.

Table A3.11: Highest Educational Attainments of Adults in Wyoming by Gender

EDUCATION LEVEL	ADULT MALES	% ADULT MALES	ADULT FEMALES	% ADULT FEMALES
Less than high school diploma or equivalent	15,738	8%	13,955	7%
High school diploma or equivalent	62,628	32%	51,870	27%
Some college	50,677	26%	52,762	27%
Associate degree	18,718	9%	22,305	12%
Bachelor's degree	32,046	16%	34,378	18%
Graduate degree and higher	18,013	9%	18,313	9%
Total	197,820	100%	193,583	100%

Source: Emsi demographics data and U.S. Census Bureau, 2017 American Community Survey.

Table A3.12: Highest Educational Attainments of Adults in Wyoming by Major Race and Ethnic Groups

GROUP		<HS	HS	SOME COLLEGE	ASSOC	BACH	>BACH
White, non-Hispanic	Adults	19,616	98,734	90,853	36,323	61,353	32,746
	% Adults	6%	29%	27%	11%	18%	10%
Black, non-Hispanic	Adults	382	873	1,240	537	539	505
	% Adults	9%	21%	30%	13%	13%	12%
American Indian or Alaskan native, non-Hispanic	Adults	1,153	1,950	2,198	831	489	391
	% Adults	16%	28%	31%	12%	7%	6%
Asian, non-Hispanic	Adults	310	854	719	262	948	864
	% Adults	8%	22%	18%	7%	24%	22%
Native Hawaiian or Pacific Islander, non-Hispanic	Adults	10	113	77	24	38	4
	% Adults	4%	43%	29%	9%	14%	1%
Two or more races, non-Hispanic	Adults	351	1,291	1,340	477	636	310
	% Adults	8%	29%	30%	11%	14%	7%
Hispanic, all types	Adults	7,870	10,685	7,012	2,570	2,421	1,505
	% Adults	25%	33%	22%	8%	8%	5%

Source: Emsi demographics data and U.S. Census Bureau, 2017 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 A4.1: 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	MAST	DOCT
03.0101	Natural Resources/Conservation, General	11-2021	Marketing Managers	18	18	66	75	15
		11-2022	Sales Managers	21	21	64	71	13
		11-9199	Managers, All Other	32	26	49	56	16
		11-1011	Chief Executives	23	22	55	66	21
		11-1021	General & Operations Managers	43	37	46	44	9
		13-1041	Compliance Officers	22	23	53	63	24
		13-1111	Management Analysts	15	14	56	78	28
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67	78	17
		13-1199	Business Operations Specialists, All Other	28	25	52	62	18
		15-1199	Computer Occupations, All Other	40	41	50	46	10
		17-2081	Environmental Engineers	10	7	59	84	30
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28	58	70
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70	97	30
		19-4091	Environmental Science & Protection Technicians, Including Health	44	40	45	46	9
21-1093	Social & Human Service Assistants	37	34	49	51	11		

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		23-1011	Lawyers	1	1	7	11	92
		29-9011	Occupational Health & Safety Specialists	29	23	49	63	21
09.0101	Speech Communication & Rhetoric	11-2031	Public Relations & Fundraising Managers	9	10	70	86	20
		11-1031	Legislators	23	22	55	66	21
		27-3011	Radio & Television Announcers	49	38	42	35	4
		27-3012	Public Address System & Other Announcers	49	38	42	35	4
		27-3022	Reporters & Correspondents	15	14	69	81	15
		27-3031	Public Relations Specialists	15	15	67	79	17
		27-3043	Writers & Authors	19	18	59	72	20
09.0401	Journalism	27-2012	Producers & Directors	19	18	69	75	11
		27-3011	Radio & Television Announcers	49	38	42	35	4
		27-3021	Broadcast News Analysts	15	14	69	81	15
		27-3022	Reporters & Correspondents	15	14	69	81	15
		27-3041	Editors	19	18	65	74	15
		27-3042	Technical Writers	18	18	61	73	21
		27-3043	Writers & Authors	19	18	59	72	20
		27-4013	Radio Operators	52	43	42	35	4
		27-4021	Photographers	46	40	48	41	4
		27-4032	Film & Video Editors	32	30	60	56	6
11.0401	Information Science/Studies	11-3021	Computer & Information Systems Managers	19	21	60	72	21
		15-1111	Computer & Information Research Scientists	11	8	40	72	49
		15-1122	Information Security Analysts	22	26	60	68	18
		15-1133	Software Developers,	10	11	60	84	29

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Systems Software					
		15-1199	Computer Occupations, All Other	40	41	50	46	10
		19-1029	Biological Scientists, All Other	0	0	62	87	38
		43-9111	Statistical Assistants	50	40	36	40	10
11.0601	Data Entry/Microcomputer Applications, General	43-4071	File Clerks	67	50	27	19	3
		43-9011	Computer Operators	39	41	50	46	10
		43-9021	Data Entry Keyers	60	48	34	27	3
		43-9022	Word Processors & Typists	57	48	37	28	4
		43-9061	Office Clerks, General	65	51	29	21	3
11.0801	Web Page, Digital/Multimedia & Information Resources Design	15-1131	Computer Programmers	21	21	60	71	19
		15-1134	Web Developers	25	27	64	64	10
		15-1199	Computer Occupations, All Other	40	41	50	46	10
		27-1014	Multimedia Artists & Animators	33	27	57	57	7
		27-1024	Graphic Designers	22	25	67	66	9
13.1202	Elementary Education & Teaching	11-9032	Education Administrators, Elementary & Secondary School	23	23	41	65	35
		25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
13.1205	Secondary Education & Teaching	11-9032	Education Administrators, Elementary & Secondary School	23	23	41	65	35
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		25-2032	Career/Technical Education Teachers, Secondary School	6	7	58	91	36
13.1305	English/Language Arts Teacher Education	25-2021	Elementary School Teachers,	4	7	60	91	36



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Except Special Education					
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
13.1311	Mathematics Teacher Education	25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
13.1330	Spanish Language Teacher Education	25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
14.0101	Engineering, General	11-9041	Architectural & Engineering Managers	7	9	59	85	33
		17-2011	Aerospace Engineers	9	9	61	86	30
		17-2021	Agricultural Engineers	5	9	60	84	35
		17-2031	Biomedical Engineers	5	9	60	84	35
		17-2041	Chemical Engineers	10	9	69	83	21
		17-2051	Civil Engineers	11	11	66	83	23
		17-2061	Computer Hardware Engineers	12	14	57	77	31



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		17-2071	Electrical Engineers	11	12	60	80	29
		17-2072	Electronics Engineers, Except Computer	11	12	60	80	29
		17-2081	Environmental Engineers	10	7	59	84	30
		17-2111	Health & Safety Engineers, Except Mining Safety Engineers & Inspectors	13	12	70	81	17
		17-2112	Industrial Engineers	13	12	70	81	17
		17-2121	Marine Engineers & Naval Architects	11	13	71	83	17
		17-2131	Materials Engineers	13	12	65	77	22
		17-2141	Mechanical Engineers	11	12	69	82	19
		17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	8	7	70	87	21
		17-2161	Nuclear Engineers	11	12	62	81	27
		17-2171	Petroleum Engineers	8	7	70	87	21
		17-2199	Engineers, All Other	11	12	62	81	27
15.0903	Petroleum Technology/Technician	19-4041	Geological & Petroleum Technicians	47	37	41	37	7
		47-5011	Derrick Operators, Oil & Gas	74	27	9	6	1
		47-5012	Rotary Drill Operators, Oil & Gas	74	27	9	6	1
		47-5013	Service Unit Operators, Oil, Gas, & Mining	74	27	9	6	1
		47-5021	Earth Drillers, Except Oil & Gas	72	30	10	4	0
		47-5071	Roustabouts, Oil & Gas	74	27	9	6	1
		51-8092	Gas Plant Operators	67	48	27	14	0
		51-8093	Petroleum Pump System Operators, Refinery Operators, & Gaugers	67	48	27	14	0
		53-7071	Gas Compressor & Gas Pumping	72	37	16	10	1

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Station Operators					
		53-7072	Pump Operators, Except Wellhead Pumpers	72	37	16	10	1
		53-7073	Wellhead Pumpers	72	37	16	10	1
16.0905	Spanish Language & Literature	25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		25-3011	Adult Basic & Secondary Education & Literacy Teachers & Instructors	51	42	37	37	9
		27-3091	Interpreters & Translators	41	38	46	43	11
		33-3021	Detectives & Criminal Investigators	26	30	55	63	18
		39-7018	Tour & Travel Guides	68	52	26	25	3
22.0001	Pre-Law Studies	23-1011	Lawyers	1	1	7	11	92
		23-1021	Administrative Law Judges, Adjudicators, & Hearing Officers	1	1	7	11	92
		23-1022	Arbitrators, Mediators, & Conciliators	1	1	7	11	92
		23-1023	Judges, Magistrate Judges, & Magistrates	1	1	7	11	92
23.0101	English Language & Literature, General	25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except	6	7	58	91	36

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Special & Career/Technical Education					
		25-4021	Librarians	20	24	35	73	45
		25-4031	Library Technicians	73	41	20	18	4
		27-3022	Reporters & Correspondents	15	14	69	81	15
		27-3041	Editors	19	18	65	74	15
		27-3042	Technical Writers	18	18	61	73	21
		27-3043	Writers & Authors	19	18	59	72	20
		43-9031	Desktop Publishers	44	38	46	44	8
		43-9081	Proofreaders & Copy Markers	32	29	59	61	8
23.1302	Creative Writing	27-3041	Editors	19	18	65	74	15
		27-3043	Writers & Authors	19	18	59	72	20
		43-9081	Proofreaders & Copy Markers	32	29	59	61	8
26.0101	Biology/Biological Sciences, General	11-9121	Natural Sciences Managers	4	4	52	85	43
		15-2041	Statisticians	6	8	50	82	42
		19-1011	Animal Scientists	0	0	68	93	32
		19-1013	Soil & Plant Scientists	0	0	68	93	32
		19-1021	Biochemists & Biophysicists	0	0	62	87	38
		19-1022	Microbiologists	0	0	62	87	38
		19-1023	Zoologists & Wildlife Biologists	0	0	62	87	38
		19-1029	Biological Scientists, All Other	0	0	62	87	38
		19-1041	Epidemiologists	1	1	28	58	70
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28	58	70
		19-1099	Life Scientists, All Other	1	1	28	58	70
		19-4021	Biological Technicians	35	36	52	49	10
		19-4091	Environmental Science & Protection	44	40	45	46	9

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Technicians, Including Health					
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
27.0101	Mathematics, General	11-9121	Natural Sciences Managers	4	4	52	85	43
		15-2021	Mathematicians	6	8	50	82	42
		15-2031	Operations Research Analysts	14	14	54	79	32
		15-2041	Statisticians	6	8	50	82	42
		15-2098	Miscellaneous Mathematical Science Occupations	6	8	50	82	42
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		43-9111	Statistical Assistants	50	40	36	40	10
31.0505	Kinesiology & Exercise Science	11-9039	Education Administrators, All Other	23	23	41	65	35
		15-2041	Statisticians	6	8	50	82	42
		19-1021	Biochemists & Biophysicists	0	0	62	87	38
		29-1128	Exercise Physiologists	9	13	41	80	49
		29-9091	Athletic Trainers	22	21	50	68	27
		39-9031	Fitness Trainers & Aerobics Instructors	53	42	39	35	5
40.0501	Chemistry, General	11-9121	Natural Sciences Managers	4	4	52	85	43
		17-2041	Chemical Engineers	10	9	69	83	21
		17-2199	Engineers, All Other	11	12	62	81	27
		19-1012	Food Scientists & Technologists	0	0	68	93	32
		19-1013	Soil & Plant Scientists	0	0	68	93	32

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		19-1021	Biochemists & Biophysicists	0	0	62	87	38
		19-2031	Chemists	3	2	69	87	28
		19-2032	Materials Scientists	3	2	69	87	28
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70	97	30
		19-4031	Chemical Technicians	43	36	47	43	9
		19-4041	Geological & Petroleum Technicians	47	37	41	37	7
		19-4092	Forensic Science Technicians	44	40	45	46	9
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		25-4013	Museum Technicians & Conservators	23	20	40	70	36
40.0601	Geology/Earth Science, General	11-3051	Industrial Production Managers	38	28	48	51	11
		11-9121	Natural Sciences Managers	4	4	52	85	43
		15-1199	Computer Occupations, All Other	40	41	50	46	10
		17-1022	Surveyors	19	21	70	75	10
		17-2081	Environmental Engineers	10	7	59	84	30
		17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	8	7	70	87	21
		17-2171	Petroleum Engineers	8	7	70	87	21
		19-1013	Soil & Plant Scientists	0	0	68	93	32
		19-1031	Conservation Scientists	0	0	83	97	17
		19-2021	Atmospheric & Space Scientists	27	21	49	66	24
		19-2042	Geoscientists, Except Hydrologists & Geographers	0	0	67	96	33
		19-	Hydrologists	0	0	67	96	33



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		2043						
		19-4041	Geological & Petroleum Technicians	47	37	41	37	7
		49-9099	Installation, Maintenance, & Repair Workers, All Other	71	40	16	8	1
42.0101	Psychology, General	11-9199	Managers, All Other	32	26	49	56	16
		19-3031	Clinical, Counseling, & School Psychologists	0	0	15	63	85
		19-3032	Industrial-Organizational Psychologists	0	0	16	63	84
		19-3039	Psychologists, All Other	0	0	16	63	84
		21-1012	Educational, Guidance, School, & Vocational Counselors	23	20	37	70	39
		21-1013	Marriage & Family Therapists	20	18	37	72	41
		21-1015	Rehabilitation Counselors	21	21	39	69	38
		21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	20	18	39	72	40
		21-1021	Child, Family, & School Social Workers	14	13	56	81	30
		21-1022	Healthcare Social Workers	19	15	50	75	30
		21-1023	Mental Health & Substance Abuse Social Workers	16	14	47	78	37
		29-1066	Psychiatrists	0	0	0	1	99
		31-1013	Psychiatric Aides	69	55	20	10	1
43.0103	Criminal Justice/Law Enforcement Administration	11-9161	Emergency Management Directors	27	36	59	57	14
		11-9199	Managers, All Other	32	26	49	56	16
		13-1075	Labor Relations Specialists	25	24	60	66	14
		13-1199	Business Operations Specialists, All Other	28	25	52	62	18



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		33-1012	First-Line Supervisors of Police & Detectives	47	50	45	36	8
		33-3021	Detectives & Criminal Investigators	26	30	55	63	18
		33-3051	Police & Sheriff's Patrol Officers	44	47	51	39	5
		43-5031	Police, Fire, & Ambulance Dispatchers	63	52	31	20	2
44.0701	Social Work	11-9151	Social & Community Service Managers	19	17	55	75	26
		21-1013	Marriage & Family Therapists	20	18	37	72	41
		21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	20	18	39	72	40
		21-1019	Counselors, All Other	24	21	38	67	36
		21-1021	Child, Family, & School Social Workers	14	13	56	81	30
		21-1022	Healthcare Social Workers	19	15	50	75	30
		21-1023	Mental Health & Substance Abuse Social Workers	16	14	47	78	37
		21-1029	Social Workers, All Other	13	13	54	81	32
		21-1092	Probation Officers & Correctional Treatment Specialists	18	19	66	75	16
		21-1093	Social & Human Service Assistants	37	34	49	51	11
		21-2011	Clergy	19	19	48	72	31
45.0101	Social Sciences, General	11-9199	Managers, All Other	32	26	49	56	16
		11-1031	Legislators	23	22	55	66	21
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70	97	30
		19-3011	Economists	0	0	43	85	57
		19-3022	Survey Researchers	16	16	47	71	35
		19-3041	Sociologists	16	16	47	71	35



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		19-3051	Urban & Regional Planners	2	2	41	95	55
		19-3091	Anthropologists & Archeologists	16	16	47	71	35
		19-3092	Geographers	16	16	47	71	35
		19-3094	Political Scientists	16	16	47	71	35
		19-3099	Social Scientists & Related Workers, All Other	16	16	47	71	35
		19-4061	Social Science Research Assistants	44	40	45	46	9
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
45.0201	Anthropology	11-9199	Managers, All Other	32	26	49	56	16
		19-3091	Anthropologists & Archeologists	16	16	47	71	35
		19-3092	Geographers	16	16	47	71	35
		25-4012	Curators	23	20	40	70	36
		25-4013	Museum Technicians & Conservators	23	20	40	70	36
45.1001	Political Science & Government, General	11-9199	Managers, All Other	32	26	49	56	16
		11-1031	Legislators	23	22	55	66	21
		13-1041	Compliance Officers	22	23	53	63	24
		13-1075	Labor Relations Specialists	25	24	60	66	14
		19-2041	Environmental Scientists & Specialists, Including Health	0	0	70	97	30
		19-3094	Political Scientists	16	16	47	71	35
		27-3031	Public Relations Specialists	15	15	67	79	17
45.1101	Sociology	11-9199	Managers, All Other	32	26	49	56	16
		13-1041	Compliance Officers	22	23	53	63	24
		13-1075	Labor Relations Specialists	25	24	60	66	14
		19-2041	Environmental Scientists & Specialists,	0	0	70	97	30



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Including Health					
		19-3041	Sociologists	16	16	47	71	35
		19-3093	Historians	16	16	47	71	35
		19-4061	Social Science Research Assistants	44	40	45	46	9
47.0101	Electrical/Electronics Equipment Installation & Repair, General	49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29	17	2
		49-2011	Computer, Automated Teller, & Office Machine Repairers	59	55	36	22	2
		49-2021	Radio, Cellular, & Tower Equipment Installers & Repairs	70	50	24	13	2
		49-2092	Electric Motor, Power Tool, & Related Repairers	73	50	19	6	0
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19	9	1
		49-2095	Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	74	48	19	9	1
		49-2097	Electronic Home Entertainment Equipment Installers & Repairers	72	49	18	10	1
		49-9031	Home Appliance Repairers	72	45	14	3	1
		49-9061	Camera & Photographic Equipment Repairers	55	49	37	22	2
		49-9071	Maintenance & Repair Workers, General	70	45	19	7	1
		49-9097	Signal & Track Switch Repairers	71	40	16	8	1
		49-9099	Installation, Maintenance, & Repair Workers, All Other	71	40	16	8	1



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		51-2021	Coil Winders, Tapers, & Finishers	69	39	15	7	1
47.0303	Industrial Mechanics & Maintenance Technology	17-3026	Industrial Engineering Technicians	59	53	35	23	3
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35	23	3
		47-4021	Elevator Installers & Repairers	74	39	20	12	1
		49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29	17	2
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19	9	1
		49-9041	Industrial Machinery Mechanics	70	47	20	6	1
		49-9043	Maintenance Workers, Machinery	67	45	22	7	0
		49-9044	Millwrights	75	43	17	5	1
		49-9045	Refractory Materials Repairers, Except Brickmasons	70	47	20	6	1
		49-9071	Maintenance & Repair Workers, General	70	45	19	7	1
		49-9081	Wind Turbine Service Technicians	71	40	16	8	1
		49-9098	Helpers-- Installation, Maintenance, & Repair Workers	61	26	7	4	0
		51-4041	Machinists	73	43	17	4	0
47.0604		Automobile/Automotive Mechanics Technology/Technician	17-3027	Mechanical Engineering Technicians	59	53	35	23
	49-1011		First-Line Supervisors of Mechanics, Installers, & Repairers	63	48	29	17	2
	49-2093		Electrical & Electronics	74	48	19	9	1



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Installers & Repairers, Transportation Equipment					
		49-2096	Electronic Equipment Installers & Repairers, Motor Vehicles	71	48	19	9	1
		49-3021	Automotive Body & Related Repairers	67	36	14	3	1
		49-3022	Automotive Glass Installers & Repairers	81	35	4	2	0
		49-3023	Automotive Service Technicians & Mechanics	67	43	17	3	0
		49-9071	Maintenance & Repair Workers, General	70	45	19	7	1
		53-6051	Transportation Inspectors	75	52	21	12	1
47.0605	Diesel Mechanics Technology/Technician	49-3023	Automotive Service Technicians & Mechanics	67	43	17	3	0
		49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	69	46	19	2	0
		49-9098	Helpers-- Installation, Maintenance, & Repair Workers	61	26	7	4	0
		53-6051	Transportation Inspectors	75	52	21	12	1
47.0614	Alternative Fuel Vehicle Technology/Technician	11-3051	Industrial Production Managers	38	28	48	51	11
		11-9041	Architectural & Engineering Managers	7	9	59	85	33
		17-3029	Engineering Technicians, Except Drafters, All Other	59	53	35	23	3
		49-3023	Automotive Service Technicians & Mechanics	67	43	17	3	0
		51-8099	Plant & System Operators, All Other	67	48	27	14	0
47.9999	Mechanic & Repair Technologies/Technicians,	49-1011	First-Line Supervisors of	63	48	29	17	2



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
	Other		Mechanics, Installers, & Repairers					
		49-2011	Computer, Automated Teller, & Office Machine Repairers	59	55	36	22	2
		49-2021	Radio, Cellular, & Tower Equipment Installers & Repairs	70	50	24	13	2
		49-2092	Electric Motor, Power Tool, & Related Repairers	73	50	19	6	0
		49-2094	Electrical & Electronics Repairers, Commercial & Industrial Equipment	74	48	19	9	1
		49-2095	Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	74	48	19	9	1
		49-2097	Electronic Home Entertainment Equipment Installers & Repairers	72	49	18	10	1
		49-9031	Home Appliance Repairers	72	45	14	3	1
		49-9061	Camera & Photographic Equipment Repairers	55	49	37	22	2
		49-9071	Maintenance & Repair Workers, General	70	45	19	7	1
		49-9097	Signal & Track Switch Repairers	71	40	16	8	1
		49-9099	Installation, Maintenance, & Repair Workers, All Other	71	40	16	8	1
		51-2021	Coil Winders, Tapers, & Finishers	69	39	15	7	1
48.0508	Welding Technology/Welder	47-1011	First-Line Supervisors of Construction Trades & Extraction Workers	66	33	18	12	1
		47-2152	Plumbers, Pipefitters, &	73	33	10	4	1



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Steamfitters					
		47-2171	Reinforcing Iron & Rebar Workers	59	19	6	2	0
		47-2211	Sheet Metal Workers	75	35	12	4	1
		47-2221	Structural Iron & Steel Workers	74	37	11	3	0
		49-9071	Maintenance & Repair Workers, General	70	45	19	7	1
		51-4121	Welders, Cutters, Solderers, & Brazers	71	38	12	2	0
		51-4122	Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	71	38	12	2	0
50.0301	Dance, General	25-3021	Self-Enrichment Education Teachers	51	42	37	37	9
		27-2031	Dancers	63	38	25	20	1
		27-2032	Choreographers	63	38	25	20	1
50.0501	Drama & Dramatics/Theatre Arts, General	27-1022	Fashion Designers	25	25	64	61	8
		27-1027	Set & Exhibit Designers	23	25	65	65	10
		27-2011	Actors	41	30	47	46	6
		27-2012	Producers & Directors	19	18	69	75	11
		27-2031	Dancers	63	38	25	20	1
		27-2032	Choreographers	63	38	25	20	1
		27-2042	Musicians & Singers	46	36	36	41	13
		27-2099	Entertainers & Performers, Sports & Related Workers, All Other	49	37	36	32	4
		27-3043	Writers & Authors	19	18	59	72	20
		27-4014	Sound Engineering Technicians	52	43	42	35	4
		39-3092	Costume Attendants	75	46	16	12	1
		39-5091	Makeup Artists, Theatrical & Performance	61	40	19	12	1

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
50.0502	Technical Theatre/Theatre Design & Technology	27- 1027	Set & Exhibit Designers	23	25	65	65	10
		27- 2012	Producers & Directors	19	18	69	75	11
		27- 4014	Sound Engineering Technicians	52	43	42	35	4
		39- 3092	Costume Attendants	75	46	16	12	1
		39- 5091	Makeup Artists, Theatrical & Performance	61	40	19	12	1
50.0701	Art/Art Studies, General	25- 2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25- 2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25- 2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		25- 3021	Self-Enrichment Education Teachers	51	42	37	37	9
		25- 4011	Archivists	23	20	40	70	36
		25- 4012	Curators	23	20	40	70	36
		25- 4013	Museum Technicians & Conservators	23	20	40	70	36
		27- 1011	Art Directors	33	27	57	57	7
		27- 1012	Craft Artists	33	27	57	57	7
		27- 1013	Fine Artists, Including Painters, Sculptors, & Illustrators	33	27	57	57	7
		27- 1014	Multimedia Artists & Animators	33	27	57	57	7
		27- 1021	Commercial & Industrial Designers	25	26	65	65	9
		27- 1024	Graphic Designers	22	25	67	66	9
		27- 1027	Set & Exhibit Designers	23	25	65	65	10
		27- 4021	Photographers	46	40	48	41	4

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		29-1125	Recreational Therapists	14	13	77	83	8
		51-9071	Jewelers & Precious Stone & Metal Workers	50	34	35	32	4
		51-9194	Etchers & Engravers	67	36	21	15	0
50.0711	Ceramic Arts & Ceramics	25-3021	Self-Enrichment Education Teachers	51	42	37	37	9
		27-1012	Craft Artists	33	27	57	57	7
		27-1013	Fine Artists, Including Painters, Sculptors, & Illustrators	33	27	57	57	7
50.0901	Music, General	25-2021	Elementary School Teachers, Except Special Education	4	7	60	91	36
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36
		27-2041	Music Directors & Composers	42	33	39	46	15
		27-2042	Musicians & Singers	46	36	36	41	13
		27-4011	Audio & Video Equipment Technicians	52	43	42	35	4
		27-4014	Sound Engineering Technicians	52	43	42	35	4
		29-1125	Recreational Therapists	14	13	77	83	8
		49-9063	Musical Instrument Repairers & Tuners	55	49	37	22	2
51.0710	Medical Office Assistant/Specialist	29-2071	Medical Records & Health Information Technicians	54	56	41	24	3
		31-9092	Medical Assistants	65	67	32	11	1
		31-9094	Medical Transcriptionists	29	32	65	59	7
		43-1011	First-Line Supervisors of	49	41	43	37	6



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Office & Administrative Support Workers					
		43-4071	File Clerks	67	50	27	19	3
		43-4171	Receptionists & Information Clerks	71	53	24	15	1
		43-6013	Medical Secretaries	55	49	39	30	4
		43-9021	Data Entry Keyers	60	48	34	27	3
51.0716	Medical Administrative/Executive Assistant & Medical Secretary	29-2071	Medical Records & Health Information Technicians	54	56	41	24	3
		31-9092	Medical Assistants	65	67	32	11	1
		31-9094	Medical Transcriptionists	29	32	65	59	7
		43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43	37	6
		43-3021	Billing & Posting Clerks	60	50	34	24	3
		43-4071	File Clerks	67	50	27	19	3
		43-4171	Receptionists & Information Clerks	71	53	24	15	1
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43	36	5
		43-6013	Medical Secretaries	55	49	39	30	4
		43-9021	Data Entry Keyers	60	48	34	27	3
		43-9041	Insurance Claims & Policy Processing Clerks	54	47	41	33	4
51.0907	Medical Radiologic Technology/Science - Radiation Therapist	29-1124	Radiation Therapists	7	28	84	67	9
		29-2033	Nuclear Medicine Technologists	20	51	72	41	7
		29-2034	Radiologic Technologists	23	60	73	33	4
51.1101	Pre-Dentistry Studies	29-1021	Dentists, General	0	0	0	2	100
		29-1022	Oral & Maxillofacial Surgeons	0	0	0	2	100

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		29-1023	Orthodontists	0	0	0	2	100
		29-1024	Prosthodontists	0	0	0	2	100
51.1102	Pre-Medicine/Pre-Medical Studies	11-9111	Medical & Health Services Managers	26	30	50	58	23
		19-1042	Medical Scientists, Except Epidemiologists	1	1	28	58	70
		29-1041	Optometrists	0	0	0	4	100
		29-1061	Anesthesiologists	0	0	0	1	99
		29-1062	Family & General Practitioners	0	0	0	1	99
		29-1063	Internists, General	0	0	0	1	99
		29-1064	Obstetricians & Gynecologists	0	0	0	1	99
		29-1065	Pediatricians, General	0	0	0	1	99
		29-1066	Psychiatrists	0	0	0	1	99
		29-1067	Surgeons	0	0	0	1	99
		29-1069	Physicians & Surgeons, All Other	0	0	0	1	99
		29-1081	Podiatrists	0	0	0	0	100
		29-1199	Health Diagnosing & Treating Practitioners, All Other	15	16	32	61	51
51.1104	Pre-Veterinary Studies	19-1011	Animal Scientists	0	0	68	93	32
		29-1131	Veterinarians	0	0	0	2	100
51.1109	Pre-Physical Therapy Studies	29-1123	Physical Therapists	3	4	22	28	75
51.1199	Health/Medical Preparatory Programs, Other	11-9033	Education Administrators, Postsecondary	23	23	41	65	35
		11-9111	Medical & Health Services Managers	26	30	50	58	23
		11-9121	Natural Sciences Managers	4	4	52	85	43
		11-9151	Social & Community Service Managers	19	17	55	75	26
		21-1093	Social & Human Service Assistants	37	34	49	51	11



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		21-2021	Directors, Religious Activities & Education	29	27	56	64	14
		29-1023	Orthodontists	0	0	0	2	100
		29-1067	Surgeons	0	0	0	1	99
		29-1071	Physician Assistants	3	6	21	83	76
		29-1141	Registered Nurses	5	30	87	67	8
		29-2034	Radiologic Technologists	23	60	73	33	4
		29-2041	Emergency Medical Technicians & Paramedics	60	67	37	19	2
		29-2052	Pharmacy Technicians	57	58	39	21	3
		29-2061	Licensed Practical & Licensed Vocational Nurses	78	73	20	4	1
		31-1011	Home Health Aides	72	53	17	8	1
		31-2021	Physical Therapist Assistants	28	54	68	37	3
		31-9091	Dental Assistants	68	65	28	9	2
51.3801	Registered Nursing/Registered Nurse	11-9111	Medical & Health Services Managers	26	30	50	58	23
		29-1141	Registered Nurses	5	30	87	67	8
		29-1151	Nurse Anesthetists	1	1	13	84	85
		29-1161	Nurse Midwives	1	0	7	88	92
		29-1171	Nurse Practitioners	1	0	7	88	92
51.3899	Registered Nursing, Nursing Administration, Nursing Research & Clinical Nursing, Other	29-1141	Registered Nurses	5	30	87	67	8
		29-1171	Nurse Practitioners	1	0	7	88	92
51.3901	Licensed Practical/Vocational Nurse Training	29-2061	Licensed Practical & Licensed Vocational Nurses	78	73	20	4	1
		31-1011	Home Health Aides	72	53	17	8	1
		31-1014	Nursing Assistants	72	55	17	8	1
52.0201	Business Administration &	11-	Marketing	18	18	66	75	15



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
	Management, General	2021	Managers					
		11-2022	Sales Managers	21	21	64	71	13
		11-3021	Computer & Information Systems Managers	19	21	60	72	21
		11-3031	Financial Managers	32	29	52	58	15
		11-3121	Human Resources Managers	31	28	51	57	15
		11-9199	Managers, All Other	32	26	49	56	16
		11-1011	Chief Executives	23	22	55	66	21
		11-1021	General & Operations Managers	43	37	46	44	9
		13-1071	Human Resources Specialists	25	24	60	66	14
		13-1111	Management Analysts	15	14	56	78	28
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67	78	17
		13-1199	Business Operations Specialists, All Other	28	25	52	62	18
		13-2011	Accountants & Auditors	9	12	66	83	26
		15-1151	Computer User Support Specialists	43	45	49	41	7
		41-1011	First-Line Supervisors of Retail Sales Workers	61	45	31	23	3
		41-4012	Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	40	31	51	49	6
		43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43	37	6
		43-4051	Customer Service Representatives	67	46	26	19	2
52.0204	Office Management & Supervision	43-1011	First-Line Supervisors of Office &	49	41	43	37	6



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
			Administrative Support Workers					
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43	36	5
52.0301	Accounting	11-3031	Financial Managers	32	29	52	58	15
		13-2011	Accountants & Auditors	9	12	66	83	26
		13-2031	Budget Analysts	10	10	57	86	32
		13-2041	Credit Analysts	13	12	69	80	17
		13-2051	Financial Analysts	6	6	66	90	28
		13-2061	Financial Examiners	13	10	66	83	21
		13-2081	Tax Examiners & Collectors, & Revenue Agents	34	26	52	55	12
		13-2082	Tax Preparers	38	32	42	50	19
		43-3031	Bookkeeping, Accounting, & Auditing Clerks	62	50	32	24	3
		43-3051	Payroll & Timekeeping Clerks	54	48	42	32	3
		43-4011	Brokerage Clerks	49	44	41	38	8
		43-9111	Statistical Assistants	50	40	36	40	10
52.0401	Administrative Assistant & Secretarial Science, General	43-4071	File Clerks	67	50	27	19	3
		43-4171	Receptionists & Information Clerks	71	53	24	15	1
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43	36	5
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39	30	4
		43-9021	Data Entry Keyers	60	48	34	27	3
		43-9022	Word Processors & Typists	57	48	37	28	4
		43-9061	Office Clerks, General	65	51	29	21	3

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
52.0408	General Office Occupations & Clerical Services	43-1011	First-Line Supervisors of Office & Administrative Support Workers	49	41	43	37	6
		43-3021	Billing & Posting Clerks	60	50	34	24	3
		43-3031	Bookkeeping, Accounting, & Auditing Clerks	62	50	32	24	3
		43-3051	Payroll & Timekeeping Clerks	54	48	42	32	3
		43-3061	Procurement Clerks	29	28	61	58	8
		43-4021	Correspondence Clerks	65	43	24	18	2
		43-4051	Customer Service Representatives	67	46	26	19	2
		43-4071	File Clerks	67	50	27	19	3
		43-4141	New Accounts Clerks	56	52	40	32	3
		43-4151	Order Clerks	65	43	24	18	2
		43-4171	Receptionists & Information Clerks	71	53	24	15	1
		43-5011	Cargo & Freight Agents	66	49	27	22	2
		43-5032	Dispatchers, Except Police, Fire, & Ambulance	66	52	28	18	2
		43-5061	Production, Planning, & Expediting Clerks	45	37	47	43	7
		43-5071	Shipping, Receiving, & Traffic Clerks	73	40	14	8	1
		43-6011	Executive Secretaries & Executive Administrative Assistants	51	44	43	36	5
		43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	55	47	39	30	4
43-9021	Data Entry Keyers	60	48	34	27	3		
43-9022	Word Processors & Typists	57	48	37	28	4		
43-9041	Insurance Claims & Policy Processing Clerks	54	47	41	33	4		



CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		43-9051	Mail Clerks & Mail Machine Operators, Except Postal Service	74	50	16	11	1
		43-9061	Office Clerks, General	65	51	29	21	3
52.1401	Marketing/Marketing Management, General	11-2011	Advertising & Promotions Managers	12	13	78	83	10
		11-2021	Marketing Managers	18	18	66	75	15
		11-2022	Sales Managers	21	21	64	71	13
		13-1011	Agents & Business Managers of Artists, Performers, & Athletes	39	30	51	53	8
		13-1121	Meeting, Convention, & Event Planners	29	27	60	63	9
		13-1131	Fundraisers	22	20	56	73	20
		13-1161	Market Research Analysts & Marketing Specialists	16	15	67	78	17
		15-1199	Computer Occupations, All Other	40	41	50	46	10
		19-3022	Survey Researchers	16	16	47	71	35
		27-3031	Public Relations Specialists	15	15	67	79	17
		43-4111	Interviewers, Except Eligibility & Loan	58	52	34	27	5
54.0101	History, General	11-9199	Managers, All Other	32	26	49	56	16
		19-3091	Anthropologists & Archeologists	16	16	47	71	35
		19-3093	Historians	16	16	47	71	35
		19-3094	Political Scientists	16	16	47	71	35
		25-2022	Middle School Teachers, Except Special & Career/Technical Education	4	7	60	91	36
		25-2031	Secondary School Teachers, Except Special & Career/Technical Education	6	7	58	91	36

CIP CODE	CIP TITLE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
				CERT	ASSOC	BACH	MAST	DOCT
		25-4011	Archivists	23	20	40	70	36
		25-4012	Curators	23	20	40	70	36
		25-4013	Museum Technicians & Conservators	23	20	40	70	36

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 institutions’ current programs are satisfying the state’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 a WPCU institution or at another postsecondary institution in the state, 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 state job openings for the occupations that require different levels of education for entry-level positions.¹⁹ 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 WPCU’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 WPCU 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.²⁰

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

20 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 Wyoming.²¹ 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

21 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.

program. Rather, the total number of job openings available for completers at each award level for each program is provided without further modification. Due to this modification, these numbers have not been de-duplicated, unlike the job openings shown in Chapter 3. As a result, job openings overstate the occupational demand for all postsecondary program completers. While these figures have not been provided in this analysis, they are available upon request.

EDUCATION OUTPUT

There are several educational institutions in Wyoming, some of which have programs similar to those offered at WPCU. Hence, completers at WPCU will be competing for some jobs with completers from other state 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 Wyoming, Emsi uses data from the Integrated Postsecondary Educational System (IPEDS).²² 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 WPCU from IPEDS were reviewed for accuracy by WPCU and updated with 2019 completions data.

Tables A5.2 through A5.6 display the completion breakdown by institution in Wyoming at each award level. WPCU institutions comprise the majority of completions across the state. Using a three-year average, WPCU grants 967 certificates, 1,853 associate degrees, 2,292 bachelor’s degrees, 573 master’s degrees, and 244 doctoral degrees every year, which is 69.5%, 95.1%, 99.9%, 100.0%, and 100.0% of the totals, respectively.

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

INSTITUTION	3-YEAR AVERAGE	% TOTAL
WyoTech	416	29.9%
Northern Wyoming Community College District*	251	18.0%
Laramie County Community College*	209	15.0%
Casper College*	189	13.6%
Western Wyoming Community College*	113	8.1%

22 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.

INSTITUTION	3-YEAR AVERAGE	% TOTAL
Central Wyoming College*	86	6.2%
Eastern Wyoming College*	82	5.9%
Northwest College*	32	2.3%
Cheeks Beauty Academy	9	0.6%
University of Wyoming*	5	0.4%
Total		100%

* Institutions with an asterisk represent WPCU institutions.
Source: IPEDS.

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

INSTITUTION	3-YEAR AVERAGE	% TOTAL
Northern Wyoming Community College District*	407	20.9%
Laramie County Community College*	366	18.8%
Casper College*	330	17.0%
Western Wyoming Community College*	243	12.5%
Northwest College*	241	12.4%
Central Wyoming College*	153	7.9%
Eastern Wyoming College*	111	5.7%
WyoTech	73	3.7%
Cheeks Beauty Academy	17	0.9%
CollegeAmerica-Cheyenne	6	0.3%
Total		100%

* Institutions with an asterisk represent WPCU institutions.
Source: IPEDS.

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

INSTITUTION	3-YEAR AVERAGE	% TOTAL
University of Wyoming*	2,292	99.9%
CollegeAmerica-Cheyenne	3	0.1%
Total		100%

* Institution with an asterisk represents a WPCU institution.
Source: IPEDS.



Table A5.5: Master's Degree Level Completions in Wyoming by Postsecondary Institution

INSTITUTION	3-YEAR AVERAGE	% TOTAL
University of Wyoming*	573	100.0%
Total		100%

* Institution with an asterisk represents a WPCU institution.
Source: IPEDS.

Table A5.6: Doctoral Degree Level Completions in Wyoming by Postsecondary Institution

INSTITUTION	3-YEAR AVERAGE	% TOTAL
University of Wyoming*	244	100.0%
Total		100%

* Institution with an asterisk represents a WPCU institution.
Source: IPEDS.



APPENDIX 6: Employment Projections

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

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Cashiers	6,793	6,950	157	2.3%	1,326	\$10.55
Retail Salespersons	8,399	8,697	298	3.5%	1,288	\$11.63
Combined Food Preparation & Serving Workers, Including Fast Food	5,637	6,617	979	17.4%	1,189	\$9.44
Office Clerks, General	8,537	8,485	(52)	(0.6%)	1,044	\$16.88
Waiters & Waitresses	4,953	5,278	325	6.6%	1,023	\$9.39
Heavy & Tractor-Trailer Truck Drivers	7,194	7,596	402	5.6%	908	\$23.34
Janitors & Cleaners, Except Maids & Housekeeping Cleaners	5,546	5,991	445	8.0%	808	\$13.27
Maids & Housekeeping Cleaners	4,330	4,352	22	0.5%	607	\$11.92
Personal Care Aides	2,953	4,085	1,132	38.3%	606	\$12.44
Construction Laborers	4,351	4,878	528	12.1%	579	\$16.91
Operating Engineers & Other Construction Equipment Operators	4,367	4,426	59	1.3%	548	\$27.90
Cooks, Restaurant	3,184	3,727	542	17.0%	544	\$13.71
General & Operations Managers	5,467	5,901	435	7.9%	541	\$42.58
Laborers & Freight, Stock, & Material Movers, Hand	3,009	3,405	396	13.2%	489	\$15.72
Childcare Workers	3,039	2,922	(117)	(3.9%)	462	\$11.26
Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	4,019	3,939	(81)	(2.0%)	455	\$17.81
Stock Clerks & Order Fillers	3,178	3,322	144	4.5%	450	\$13.68
Nursing Assistants	3,439	3,789	350	10.2%	449	\$14.40
Teacher Assistants	3,762	3,973	211	5.6%	431	\$14.88
Bartenders	2,299	2,378	79	3.4%	427	\$9.49
Maintenance & Repair Workers, General	3,781	4,084	303	8.0%	416	\$17.71
First-Line Supervisors of Food Preparation & Serving Workers	2,343	2,563	220	9.4%	398	\$14.58
Bookkeeping, Accounting, & Auditing Clerks	3,290	3,292	2	0.1%	396	\$17.81
Landscaping & Groundskeeping Workers	2,445	2,847	402	16.4%	387	\$14.22
Registered Nurses	5,193	6,011	818	15.7%	380	\$31.17
Carpenters	3,431	3,536	104	3.0%	380	\$21.83
Military occupations	3,015	3,250	235	7.8%	379	\$19.41

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
First-Line Supervisors of Construction Trades & Extraction Workers	3,068	3,179	111	3.6%	352	\$32.22
First-Line Supervisors of Retail Sales Workers	2,955	3,069	114	3.9%	345	\$17.12
Electricians	2,564	2,610	47	1.8%	321	\$28.38
Farmworkers & Laborers, Crop, Nursery, & Greenhouse	1,552	1,757	205	13.2%	292	\$14.10
Substitute Teachers	2,343	2,461	118	5.0%	287	\$13.14
Roustabouts, Oil & Gas	1,923	2,009	86	4.5%	283	\$19.37
Service Unit Operators, Oil, Gas, & Mining	1,780	1,800	20	1.1%	271	\$24.39
Hotel, Motel, & Resort Desk Clerks	1,580	1,506	(74)	(4.7%)	267	\$12.13
Food Preparation Workers	1,377	1,519	142	10.3%	265	\$10.77
Customer Service Representatives	1,757	1,895	138	7.9%	258	\$15.95
Farmers, Ranchers, & Other Agricultural Managers	2,658	2,219	(440)	(16.5%)	251	\$16.23
Sales Representatives, Wholesale & Manufacturing, Except Technical & Scientific Products	2,016	2,138	121	6.0%	235	\$27.76
Welders, Cutters, Solderers, & Brazers	1,913	2,019	106	5.6%	235	\$27.24
Industrial Machinery Mechanics	2,402	2,340	(62)	(2.6%)	226	\$32.29
Postsecondary Teachers, General	2,422	2,456	35	1.4%	222	\$32.91
Accountants & Auditors	2,106	2,261	156	7.4%	221	\$28.57
Elementary School Teachers, Except Special Education	2,627	2,806	178	6.8%	220	\$27.24
Cooks, Institution & Cafeteria	1,400	1,500	101	7.2%	216	\$14.31
Light Truck Or Delivery Services Drivers	1,611	1,733	122	7.5%	205	\$17.08
Medical Secretaries	1,512	1,733	221	14.6%	205	\$16.30
Protective Service Workers, All Other	819	852	33	4.0%	205	\$16.53
First-Line Supervisors of Office & Administrative Support Workers	1,774	1,871	97	5.5%	203	\$24.26
Dishwashers	1,102	1,150	48	4.4%	186	\$11.01
Hosts & Hostesses, Restaurant, Lounge, & Coffee Shop	731	805	75	10.2%	184	\$9.89
First-Line Supervisors of Mechanics, Installers, & Repairers	1,795	1,854	60	3.3%	179	\$35.60
Bus Drivers, School Or Special Client	1,307	1,366	60	4.6%	176	\$17.83
Receptionists & Information Clerks	1,149	1,278	129	11.2%	176	\$13.68
Automotive Service Technicians & Mechanics	1,649	1,677	28	1.7%	172	\$20.74
Driver/Sales Workers	1,415	1,389	(27)	(1.9%)	163	\$12.83
Counter Attendants, Cafeteria, Food Concession, & Coffee Shop	687	731	44	6.4%	159	\$9.41



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Managers, All Other	1,617	1,857	240	14.8%	156	\$36.84
Mobile Heavy Equipment Mechanics, Except Engines	1,543	1,450	(93)	(6.0%)	155	\$31.40
Secondary School Teachers, Except Special & Career/Technical Education	1,878	2,012	134	7.1%	150	\$28.37
Farmworkers, Farm, Ranch, & Aquacultural Animals	825	891	66	8.0%	149	\$12.90
Industrial Truck & Tractor Operators	1,184	1,263	80	6.7%	147	\$17.42
Dining Room & Cafeteria Attendants & Bartender Helpers	775	849	74	9.6%	147	\$9.65
Security Guards	984	1,058	74	7.5%	144	\$14.64
Fitness Trainers & Aerobics Instructors	780	845	65	8.4%	144	\$16.33
Nonfarm Animal Caretakers	704	857	153	21.7%	143	\$10.25
First-Line Supervisors of Production & Operating Workers	1,251	1,329	78	6.2%	142	\$39.42
Plumbers, Pipefitters, & Steamfitters	1,067	1,186	119	11.1%	142	\$24.57
Sales Representatives, Services, All Other	883	1,059	176	20.0%	142	\$20.27
Business Operations Specialists, All Other	1,227	1,382	155	12.6%	141	\$31.75
Amusement & Recreation Attendants	545	602	57	10.5%	138	\$10.13
Counter & Rental Clerks	958	1,024	67	7.0%	137	\$13.99
Cleaners of Vehicles & Equipment	790	899	109	13.8%	135	\$12.58
Hairdressers, Hairstylists, & Cosmetologists	1,056	960	(96)	(9.1%)	129	\$13.14
Insurance Sales Agents	1,076	1,200	124	11.5%	125	\$23.36
Recreation Workers	639	728	90	14.0%	123	\$12.48
First-Line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	1,028	1,081	53	5.2%	121	\$28.75
Social & Human Service Assistants	829	950	121	14.6%	118	\$15.76
Tellers	1,006	897	(108)	(10.8%)	116	\$13.45
Inspectors, Testers, Sorters, Samplers, & Weighers	970	869	(100)	(10.3%)	116	\$24.08
Self-Enrichment Education Teachers	872	949	76	8.8%	116	\$19.71
Police & Sheriff's Patrol Officers	1,394	1,520	126	9.0%	115	\$25.52
Home Health Aides	696	930	235	33.7%	115	\$13.49
Parts Salespersons	921	926	5	0.5%	114	\$16.62
Preschool Teachers, Except Special Education	980	1,063	83	8.4%	112	\$12.52
Lifeguards, Ski Patrol, & Other Recreational Protective Service Workers	445	465	19	4.3%	112	\$10.64

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Painters, Construction & Maintenance	964	1,034	71	7.4%	111	\$18.04
Medical Assistants	756	916	160	21.2%	108	\$15.97
Bus & Truck Mechanics & Diesel Engine Specialists	1,000	1,054	54	5.4%	103	\$24.39
Cooks, Fast Food	708	696	(12)	(1.7%)	101	\$9.37
Coaches & Scouts	619	672	53	8.5%	101	\$16.87
Human Resources Specialists	882	958	75	8.5%	100	\$25.34
Petroleum Pump System Operators, Refinery Operators, & Gaugers	864	838	(26)	(3.0%)	99	\$36.71
Highway Maintenance Workers	837	872	36	4.3%	99	\$19.14
Middle School Teachers, Except Special & Career/Technical Education	1,129	1,206	76	6.8%	94	\$29.43
Laundry & Dry-Cleaning Workers	650	680	30	4.7%	94	\$11.52
Medical & Health Services Managers	905	1,051	147	16.2%	92	\$43.65
Packers & Packers, Hand	598	603	6	1.0%	90	\$10.08
Child, Family, & School Social Workers	792	857	64	8.1%	88	\$23.16
Dental Assistants	638	740	103	16.1%	88	\$16.62
Machinists	707	777	70	10.0%	85	\$23.99
Forest & Conservation Technicians	681	685	4	0.6%	84	\$16.06
Taxi Drivers & Chauffeurs	646	731	85	13.2%	84	\$10.91
Assemblers & Fabricators, All Other, Including Team Assemblers	640	669	30	4.7%	83	\$16.24
Computer User Support Specialists	820	914	94	11.5%	82	\$23.19
Heating, Air Conditioning, & Refrigeration Mechanics & Installers	735	777	42	5.8%	82	\$22.27
Civil Engineers	925	945	21	2.2%	79	\$35.85
Real Estate Sales Agents	729	790	61	8.4%	79	\$33.56
First-Line Supervisors of Housekeeping & Janitorial Workers	621	669	48	7.8%	79	\$19.02
Construction Managers	867	967	100	11.5%	78	\$36.84
Substance Abuse, Behavioral Disorder, & Mental Health Counselors	552	689	137	24.9%	78	\$26.87
Correctional Officers & Jailers	854	836	(18)	(2.1%)	77	\$18.90
Library Technicians	509	495	(14)	(2.7%)	77	\$16.72
Food Service Managers	580	632	52	8.9%	76	\$20.85
Financial Managers	726	858	132	18.3%	74	\$46.25
Billing & Posting Clerks	557	642	85	15.2%	74	\$18.41
Emergency Medical Technicians & Paramedics	811	938	128	15.7%	72	\$15.37

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Loan Officers	791	821	30	3.8%	72	\$28.80
Educational, Guidance, School, & Vocational Counselors	652	679	27	4.2%	72	\$27.12
Management Analysts	583	678	94	16.2%	72	\$38.95
Insurance Claims & Policy Processing Clerks	627	673	46	7.4%	70	\$17.09
Shipping, Receiving, & Traffic Clerks	626	666	40	6.3%	69	\$15.61
Court, Municipal, & License Clerks	682	714	32	4.7%	68	\$18.54
Licensed Practical & Licensed Vocational Nurses	669	792	122	18.3%	68	\$22.29
Excavating & Loading Machine & Dragline Operators	564	534	(30)	(5.3%)	68	\$35.33
Teachers & Instructors, All Other	503	557	53	10.5%	66	\$24.23
Executive Secretaries & Executive Administrative Assistants	612	535	(77)	(12.6%)	65	\$21.76
Market Research Analysts & Marketing Specialists	396	531	134	34.0%	61	\$24.13
Paralegals & Legal Assistants	509	540	31	6.2%	60	\$21.99
Helpers--Extraction Workers	442	404	(37)	(8.5%)	59	\$18.04
Interviewers, Except Eligibility & Loan	438	462	24	5.4%	59	\$15.00
Lawyers	1,027	1,049	22	2.2%	58	\$38.75
Cement Masons & Concrete Finishers	523	510	(12)	(2.4%)	58	\$19.87
Environmental Scientists & Specialists, Including Health	480	500	20	4.2%	56	\$30.11
Pharmacy Technicians	608	636	28	4.6%	55	\$18.07
Property, Real Estate, & Community Association Managers	612	658	46	7.6%	54	\$25.01
Correctional Officers & Jailers	457	836	61	(2.1%)	54	\$18.90
Telecommunications Equipment Installers & Repairers, Except Line Installers	854	457	62	15.7%	54	\$28.25
Tour & Travel Guides	310	348	38	12.1%	54	\$15.02
Library Assistants, Clerical	347	342	(5)	(1.4%)	53	\$14.01
Loan Interviewers & Clerks	474	495	21	4.4%	52	\$17.67
Electrical Power-Line Installers & Repairers	451	528	77	17.2%	51	\$38.50
Public Relations Specialists	418	461	43	10.3%	51	\$25.84
Refuse & Recyclable Material Collectors	311	354	43	13.9%	51	\$17.61
Helpers--Production Workers	268	328	60	22.3%	51	\$16.68
Information & Record Clerks, All Other	396	415	19	4.8%	50	\$17.98
Residential Advisors	274	320	46	17.0%	50	\$14.82

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Special Education Teachers, Kindergarten & Elementary School	581	611	30	5.2%	48	\$30.37
Clinical Laboratory Technologists & Technicians	532	605	72	13.6%	48	\$25.06
Roofers	422	433	12	2.7%	48	\$17.16
Training & Development Specialists	382	423	41	10.7%	48	\$29.78
Firefighters	587	640	54	9.1%	47	\$21.06
Buyers & Purchasing Agents	461	458	(3)	(0.7%)	47	\$29.83
Packaging & Filling Machine Operators & Tenders	350	378	28	8.0%	47	\$18.83
Automotive & Watercraft Service Attendants	293	312	19	6.5%	47	\$13.15
Agricultural Workers, All Other	251	280	28	11.3%	47	\$13.07
Control & Valve Installers & Repairers, Except Mechanical Door	484	506	22	4.5%	46	\$33.24
Kindergarten Teachers, Except Special Education	428	451	23	5.4%	46	\$28.74
Lodging Managers	410	418	8	2.0%	46	\$24.88
Ophthalmic Medical Technicians	504	520	17	3.3%	45	\$23.79
Gas Plant Operators	369	372	3	0.8%	45	\$35.40
Software Developers, Applications	346	496	150	43.3%	45	\$32.36
Clergy	326	388	63	19.2%	45	\$23.04
First-Line Supervisors of Non-Retail Sales Workers	399	432	34	8.5%	44	\$26.25
Office & Administrative Support Workers, All Other	335	359	24	7.1%	44	\$16.09
Rotary Drill Operators, Oil & Gas	245	295	51	20.7%	44	\$26.72
Food Servers, Nonrestaurant	226	274	48	21.0%	44	\$10.18
Network & Computer Systems Administrators	546	576	30	5.5%	43	\$30.76
Water & Wastewater Treatment Plant & System Operators	465	457	(7)	(1.6%)	43	\$22.92
Compliance Officers	419	457	38	9.0%	43	\$30.83
Installation, Maintenance, & Repair Workers, All Other	336	377	40	12.0%	43	\$19.33
Advertising Sales Agents	293	294	1	0.4%	43	\$18.67
Cooks, Short Order	291	301	10	3.6%	43	\$11.25
Veterinary Assistants & Laboratory Animal Caretakers	215	261	46	21.6%	43	\$12.86
Mixing & Blending Machine Setters, Operators, & Tenders	342	344	2	0.4%	42	\$19.80
Derrick Operators, Oil & Gas	254	279	25	10.0%	42	\$27.42



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators, & Tenders	331	326	(4)	(1.3%)	41	\$41.63
Bakers	272	288	16	5.9%	41	\$14.45
Postal Service Mail Carriers	502	479	(23)	(4.5%)	40	\$21.48
Wellhead Pumpers	319	298	(21)	(6.5%)	40	\$29.56
First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	296	340	44	14.8%	40	\$21.87
Bus Drivers, Transit & Intercity	268	302	33	12.3%	40	\$17.76
Dental Hygienists	437	506	69	15.8%	39	\$33.45
Social & Community Service Managers	375	417	43	11.4%	39	\$28.46
Education Administrators, Elementary & Secondary School	427	460	33	7.7%	38	\$44.28
Aircraft Mechanics & Service Technicians	379	419	40	10.7%	38	\$27.01
Librarians	344	367	23	6.8%	38	\$25.53
Tire Repairers & Changers	343	338	(5)	(1.5%)	38	\$11.89
Logisticians	337	378	40	12.0%	38	\$32.13
Graphic Designers	322	352	30	9.3%	38	\$18.37
Massage Therapists	271	311	40	14.6%	38	\$16.69
Pesticide Handlers, Sprayers, & Applicators, Vegetation	256	279	22	8.7%	38	\$17.99
Petroleum Engineers	457	461	4	1.0%	37	\$50.82
Railroad Conductors & Yardmasters	394	372	(22)	(5.7%)	37	\$34.07
Sheet Metal Workers	301	324	22	7.4%	37	\$18.45
Insulation Workers, Mechanical	299	306	7	2.4%	37	\$20.05
Ushers, Lobby Attendants, & Ticket Takers	134	153	18	13.4%	37	\$10.36
Maintenance Workers, Machinery	405	361	(44)	(10.8%)	36	\$34.79
Automotive Body & Related Repairers	355	361	5	1.5%	36	\$21.22
Chemical Technicians	349	337	(12)	(3.4%)	36	\$20.42
Fence Erectors	285	285	0	0.0%	36	\$17.36
Production, Planning, & Expediting Clerks	278	321	44	15.7%	36	\$27.49
Physical Therapists	478	597	119	24.8%	35	\$41.71
Musicians & Singers	255	281	26	10.3%	35	\$27.66
Glaziers	245	279	34	13.9%	35	\$19.71
Crossing Guards	198	210	11	5.6%	35	\$15.43

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Computer Network Support Specialists	378	391	14	3.6%	34	\$28.90
Personal Financial Advisors	345	402	57	16.5%	34	\$41.32
Chemical Equipment Operators & Tenders	289	277	(12)	(4.2%)	34	\$31.33
Cost Estimators	277	318	41	14.9%	34	\$35.30
Agricultural Equipment Operators	174	206	32	18.5%	34	\$13.98
Legal Secretaries	324	270	(54)	(16.8%)	33	\$18.70
Civil Engineering Technicians	322	324	2	0.7%	33	\$21.43
Boilermakers	309	311	2	0.7%	33	\$31.23
Police, Fire, & Ambulance Dispatchers	308	330	22	7.1%	33	\$18.14
Dispatchers, Except Police, Fire, & Ambulance	297	322	25	8.3%	33	\$19.28
Phlebotomists	246	293	47	19.2%	33	\$15.22
Explosives Workers, Ordnance Handling Experts, & Blasters	244	247	3	1.4%	33	\$32.95
Chefs & Head Cooks	215	245	30	13.9%	33	\$25.50
Industrial Production Managers	386	396	9	2.4%	32	\$58.74
Clinical, Counseling, & School Psychologists	327	395	68	20.9%	32	\$35.18
Construction & Building Inspectors	224	249	24	10.8%	32	\$26.75
Zoologists & Wildlife Biologists	319	325	5	1.7%	31	\$29.92
Rail Car Repairers	294	285	(9)	(3.0%)	31	\$23.51
Eligibility Interviewers, Government Programs	289	316	27	9.2%	31	\$21.84
Securities, Commodities, & Financial Services Sales Agents	264	300	36	13.7%	31	\$20.75
Butchers & Meat Cutters	232	245	13	5.5%	31	\$15.93
Locker Room, Coatroom, & Dressing Room Attendants	132	135	3	2.5%	31	\$10.76
Special Education Teachers, Secondary School	357	378	21	5.8%	30	\$30.28
Locomotive Engineers	320	300	(20)	(6.3%)	30	\$34.26
Drywall & Ceiling Tile Installers	280	278	(2)	(0.7%)	30	\$18.82
Sales Representatives, Wholesale & Manufacturing, Technical & Scientific Products	228	267	39	17.2%	30	\$38.76
Pharmacists	581	591	11	1.8%	29	\$58.92
Radiologic Technologists	417	462	45	10.8%	29	\$26.95
Medical Records & Health Information Technicians	356	403	47	13.2%	29	\$19.51
Education, Training, & Library Workers, All Other	284	299	15	5.4%	29	\$19.12

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Helpers--Installation, Maintenance, & Repair Workers	199	218	18	9.2%	29	\$12.30
Instructional Coordinators	277	292	15	5.5%	28	\$31.37
Architectural & Civil Drafters	263	261	(3)	(1.0%)	28	\$26.38
Continuous Mining Machine Operators	213	212	(2)	(0.7%)	28	\$36.73
Mental Health & Substance Abuse Social Workers	208	257	48	23.1%	28	\$20.55
Wind Turbine Service Technicians	179	226	46	25.7%	28	\$20.66
Speech-Language Pathologists	304	390	86	28.3%	27	\$35.82
Directors, Religious Activities & Education	180	211	30	16.9%	27	\$18.76
Physical Therapist Assistants	146	200	54	37.1%	27	\$25.82
Occupational Health & Safety Specialists	414	422	8	1.9%	26	\$36.81
Power Plant Operators	276	258	(19)	(6.7%)	26	\$41.94
Computer Systems Analysts	241	305	63	26.3%	26	\$36.51
Sales Managers	230	267	37	16.2%	26	\$39.68
Biological Technicians	224	237	13	6.0%	26	\$18.59
Veterinary Technologists & Technicians	219	273	54	24.8%	26	\$14.23
Production Workers, All Other	180	205	25	13.6%	26	\$14.81
Structural Iron & Steel Workers	163	199	36	22.0%	26	\$26.48
Pipelayers	156	204	48	30.7%	26	\$17.13
Telecommunications Line Installers & Repairers	145	205	60	41.4%	26	\$23.16
First-Line Supervisors of Farming, Fishing, & Forestry Workers	144	169	25	17.7%	26	\$25.72
Occupational Therapists	317	375	58	18.4%	25	\$36.86
Nurse Practitioners	302	376	74	24.4%	25	\$54.36
Computer & Information Systems Managers	239	284	45	18.8%	25	\$45.16
Bill & Account Collectors	208	190	(18)	(8.6%)	25	\$17.10
Commercial Pilots	183	223	40	21.7%	25	\$32.07
Meeting, Convention, & Event Planners	182	211	28	15.5%	25	\$20.53
Sewing Machine Operators	158	197	39	24.8%	25	\$10.64
First-Line Supervisors of Police & Detectives	331	355	24	7.3%	24	\$38.41
Title Examiners, Abstractors, & Searchers	264	258	(6)	(2.1%)	24	\$22.07
Computer Occupations, All Other	240	288	48	20.0%	24	\$34.03
Human Resources Managers	240	261	21	8.6%	24	\$39.42

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Administrative Services Managers	233	267	34	14.7%	24	\$38.05
Editors	170	199	29	16.8%	24	\$21.02
Extraction Workers, All Other	157	173	16	10.4%	24	\$30.38
Occupational Therapy Assistants	152	204	52	34.1%	24	\$23.70
Personal Care & Service Workers, All Other	133	162	28	21.4%	24	\$12.81
Earth Drillers, Except Oil & Gas	131	167	36	27.7%	24	\$23.48
Physicians & Surgeons, All Other	539	604	65	12.2%	23	\$105.50
Appraisers & Assessors of Real Estate	275	288	13	4.7%	23	\$23.12
Mechanical Engineers	249	290	40	16.2%	23	\$40.29
Photographers	221	206	(14)	(6.5%)	23	\$14.24
Motorboat Mechanics & Service Technicians	203	214	12	5.8%	23	\$23.68
Manicurists & Pedicurists	177	192	15	8.5%	23	\$11.99
Pump Operators, Except Wellhead Pumpers	175	178	4	2.1%	23	\$11.59
Life, Physical, & Social Science Technicians, All Other	174	186	12	6.7%	23	\$26.47
Healthcare Social Workers	168	214	46	27.1%	23	\$27.78
Coin, Vending, & Amusement Machine Servicers & Repairers	166	182	17	10.2%	23	\$16.64
Helpers--Brickmasons, Blockmasons, Stonemasons, & Tile & Marble Setters	155	156	0	0.0%	23	\$17.13
Electrical Engineers	274	301	27	9.8%	22	\$45.53
Opticians, Dispensing	259	260	1	0.5%	22	\$14.41
Real Estate Brokers	207	223	17	8.0%	22	\$28.80
Insulation Workers, Floor, Ceiling, & Wall	189	168	(21)	(10.9%)	22	\$17.90
Community & Social Service Specialists, All Other	169	183	14	8.5%	22	\$18.13
Healthcare Support Workers, All Other	156	179	23	14.9%	22	\$19.65
Special Education Teachers, Middle School	250	264	14	5.5%	21	\$29.41
Transportation, Storage, & Distribution Managers	225	244	19	8.3%	21	\$44.61
Surgical Technologists	208	237	29	14.1%	21	\$20.61
Social Workers, All Other	196	206	10	5.0%	21	\$23.88
Mail Clerks & Mail Machine Operators, Except Postal Service	195	179	(17)	(8.6%)	21	\$11.19
Payroll & Timekeeping Clerks	187	186	(0)	0.0%	21	\$19.65
Human Resources Assistants, Except Payroll & Timekeeping	186	179	(7)	(3.7%)	21	\$18.77

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Reservation & Transportation Ticket Agents & Travel Clerks	172	167	(5)	(2.7%)	21	\$9.00
Sales & Related Workers, All Other	147	156	8	5.6%	21	\$14.85
Electrical, Electronic, & Electromechanical Assemblers, Except Coil Winders, Tapers, & Finishers	104	157	53	51.1%	21	\$24.86
Chief Executives	245	255	10	4.0%	20	\$61.50
Physician Assistants	220	274	55	24.8%	20	\$56.53
Electrical & Electronics Repairers, Commercial & Industrial Equipment	204	217	13	6.5%	20	\$33.63
New Accounts Clerks	178	161	(17)	(9.5%)	20	\$16.99
Brickmasons & Blockmasons	171	186	16	9.2%	20	\$23.72
Geoscientists, Except Hydrologists & Geographers	163	166	3	1.7%	20	\$33.86
Rehabilitation Counselors	162	180	18	11.1%	20	\$16.02
Health Educators	152	167	15	9.6%	20	\$23.26
Choreographers	112	108	(4)	(3.9%)	20	\$14.73
Gaming Dealers	108	126	18	16.8%	20	\$8.27
Environmental Engineers	230	229	(1)	(0.5%)	19	\$38.87
Conservation Scientists	174	179	5	2.9%	19	\$34.61
Audio & Video Equipment Technicians	134	159	25	19.0%	19	\$17.93
Food Batchmakers	114	117	3	2.4%	19	\$14.28
Postal Service Clerks	249	200	(48)	(19.5%)	18	\$22.98
Surveyors	235	233	(1)	(0.5%)	18	\$32.29
Career/Technical Education Teachers, Secondary School	230	242	13	5.5%	18	\$29.06
Respiratory Therapists	199	252	54	27.0%	18	\$26.42
First-Line Supervisors of Protective Service Workers, All Other	182	181	(1)	(0.8%)	18	\$24.33
Railroad Brake, Signal, & Switch Operators	182	179	(3)	(1.6%)	18	\$23.01
Claims Adjusters, Examiners, & Investigators	176	196	20	11.6%	18	\$30.02
Chemical Plant & System Operators	159	145	(15)	(9.1%)	18	\$37.81
File Clerks	156	139	(17)	(11.2%)	18	\$10.09
Airline Pilots, Copilots, & Flight Engineers	155	169	14	9.1%	18	\$79.45
Crane & Tower Operators	138	142	4	3.0%	18	\$28.45
Animal Trainers	117	122	5	4.7%	18	\$11.81
Parking Lot Attendants	96	112	16	17.1%	18	\$12.95



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Computer Programmers	229	223	(6)	(2.7%)	17	\$32.66
Architectural & Engineering Managers	197	212	15	7.5%	17	\$59.29
Web Developers	181	204	22	12.4%	17	\$24.56
Probation Officers & Correctional Treatment Specialists	179	190	11	6.1%	17	\$22.66
Biological Scientists, All Other	172	177	6	3.2%	17	\$31.91
Farm & Home Management Advisors	158	167	8	5.4%	17	\$26.77
Transportation Inspectors	158	160	1	0.8%	17	\$25.89
Printing Press Operators	150	139	(12)	(7.7%)	17	\$15.93
Electrical & Electronics Engineering Technicians	148	161	14	9.2%	17	\$33.39
Crushing, Grinding, & Polishing Machine Setters, Operators, & Tenders	148	138	(9)	(6.3%)	17	\$33.75
Fundraisers	141	154	13	8.9%	17	\$25.31
Reporters & Correspondents	141	120	(21)	(14.9%)	17	\$14.10
Writers & Authors	135	151	16	11.5%	17	\$25.94
Physical Therapist Aides	97	126	29	29.6%	17	\$11.27
Motor Vehicle Operators, All Other	93	101	7	7.9%	17	\$21.19
Database Administrators	187	205	18	9.6%	16	\$26.86
Natural Sciences Managers	167	173	6	3.7%	16	\$45.11
Broadcast Technicians	157	140	(17)	(11.0%)	16	\$18.56
Procurement Clerks	154	152	(3)	(1.9%)	16	\$22.19
Engineering Technicians, Except Drafters, All Other	150	158	8	5.3%	16	\$31.22
Plant & System Operators, All Other	147	136	(11)	(7.8%)	16	\$25.84
Geological & Petroleum Technicians	144	147	3	2.0%	16	\$28.19
Painters, Transportation Equipment	136	142	6	4.5%	16	\$20.14
Surveying & Mapping Technicians	129	134	5	3.8%	16	\$21.43
Dentists, General	325	371	45	14.0%	15	\$49.01
Floral Designers	146	139	(7)	(5.1%)	15	\$10.45
Industrial Engineers	143	180	37	25.8%	15	\$49.09
Data Entry Keyers	138	116	(22)	(16.2%)	15	\$10.55
Financial Analysts	135	157	22	16.5%	15	\$51.12
Sales Engineers	122	127	5	3.7%	15	\$32.18
Environmental Science & Protection Technicians, Including Health	113	117	4	3.3%	15	\$18.14
Helpers--Carpenters	97	104	6	6.3%	15	\$18.45



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Demonstrators & Product Promoters	76	84	8	10.5%	15	\$12.14
Veterinarians	220	253	33	15.1%	14	\$32.50
Insurance Underwriters	164	160	(4)	(2.4%)	14	\$32.16
Credit Authorizers, Checkers, & Clerks	139	133	(6)	(4.4%)	14	\$20.62
Electronic Home Entertainment Equipment Installers & Repairers	126	124	(2)	(1.3%)	14	\$23.06
Software Developers, Systems Software	124	165	41	33.0%	14	\$43.14
Word Processors & Typists	124	98	(26)	(21.1%)	14	\$11.82
Septic Tank Servicers & Sewer Pipe Cleaners	123	119	(5)	(3.8%)	14	\$24.37
Tailors, Dressmakers, & Custom Sewers	101	105	4	3.9%	14	\$11.73
Sawing Machine Setters, Operators, & Tenders, Wood	100	110	11	10.5%	14	\$12.89
Agricultural Inspectors	98	96	(2)	(2.2%)	14	\$14.72
Roof Bolters, Mining	85	90	4	5.1%	14	\$45.26
Education Administrators, Preschool & Childcare Center/Program	145	150	6	4.0%	13	\$16.41
Merchandise Displayers & Window Trimmers	121	127	6	5.4%	13	\$13.82
Cabinetmakers & Bench Carpenters	111	110	(1)	(1.2%)	13	\$20.24
Skincare Specialists	103	109	6	6.2%	13	\$13.24
Mine Cutting & Channeling Machine Operators	100	97	(3)	(3.4%)	13	\$35.38
Producers & Directors	99	118	19	19.1%	13	\$21.17
Curators	99	106	8	7.6%	13	\$15.06
Interpreters & Translators	98	119	21	21.7%	13	\$22.12
Medical Equipment Preparers	96	107	10	10.5%	13	\$18.53
Paving, Surfacing, & Tamping Equipment Operators	93	97	5	4.9%	13	\$20.53
Actors	82	99	17	21.0%	13	\$14.20
Food Preparation & Serving Related Workers, All Other	66	77	11	16.0%	13	\$13.06
Detectives & Criminal Investigators	159	172	13	8.1%	12	\$33.51
Engineers, All Other	144	156	12	8.4%	12	\$44.12
Nuclear Power Reactor Operators	134	121	(13)	(9.4%)	12	\$72.51
Rail-Track Laying & Maintenance Equipment Operators	115	111	(4)	(3.4%)	12	\$30.27
Stationary Engineers & Boiler Operators	104	108	4	3.8%	12	\$28.72
Marketing Managers	103	123	20	19.3%	12	\$37.95
Tax Preparers	101	102	1	0.8%	12	\$15.44

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Home Appliance Repairers	99	107	8	8.2%	12	\$14.31
Farm Equipment Mechanics & Service Technicians	88	107	19	21.1%	12	\$25.56
Gas Compressor & Gas Pumping Station Operators	88	90	2	1.8%	12	\$24.59
Weighers, Measurers, Checkers, & Samplers, Recordkeeping	87	97	10	11.3%	12	\$16.67
Meat, Poultry, & Fish Cutters & Trimmers	79	86	7	9.3%	12	\$12.95
Religious Workers, All Other	77	91	14	18.3%	12	\$13.81
Baggage Porters & Bellhops	77	83	6	8.1%	12	\$13.60
Pest Control Workers	70	79	9	12.5%	12	\$15.91
Helpers--Pipelayers, Plumbers, Pipefitters, & Steamfitters	66	82	16	24.4%	12	\$18.48
Family & General Practitioners	295	314	18	6.2%	11	\$97.82
Postal Service Mail Sorters, Processors, & Processing Machine Operators	139	113	(26)	(18.4%)	11	\$21.68
Architects, Except Landscape & Naval	133	138	5	4.0%	11	\$39.27
Education Administrators, Postsecondary	127	122	(4)	(3.4%)	11	\$59.53
Chemists	114	118	4	3.8%	11	\$29.68
Computer, Automated Teller, & Office Machine Repairers	97	93	(4)	(4.2%)	11	\$19.34
Medical Transcriptionists	81	74	(7)	(8.7%)	11	\$18.43
Outdoor Power Equipment & Other Small Engine Mechanics	79	98	20	24.9%	11	\$19.25
Cutting, Punching, & Press Machine Setters, Operators, & Tenders, Metal & Plastic	67	83	16	23.6%	11	\$21.02
Graders & Sorters, Agricultural Products	60	70	10	16.0%	11	\$11.20
Mining & Geological Engineers, Including Mining Safety Engineers	136	102	(34)	(25.2%)	10	\$42.93
Budget Analysts	121	127	5	4.3%	10	\$31.65
Financial Specialists, All Other	97	111	14	14.3%	10	\$26.99
Automotive Glass Installers & Repairers	96	96	0	0.0%	10	\$17.16
Adult Basic & Secondary Education & Literacy Teachers & Instructors	88	80	(8)	(8.9%)	10	\$22.32
Commercial & Industrial Designers	87	94	7	7.9%	10	\$41.23
Extruding, Forming, Pressing, & Compacting Machine Setters, Operators, & Tenders	87	87	0	0.0%	10	\$9.87
Soil & Plant Scientists	83	89	5	6.4%	10	\$16.41
Social Science Research Assistants	77	75	(2)	(2.3%)	10	\$11.88
Travel Agents	75	69	(6)	(8.5%)	10	\$24.66



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Music Directors & Composers	74	81	8	10.6%	10	\$23.29
Machine Feeders & Offbearers	73	69	(4)	(5.7%)	10	\$22.34
Coating, Painting, & Spraying Machine Setters, Operators, & Tenders	70	85	15	22.1%	10	\$15.73
Hazardous Materials Removal Workers	70	74	5	6.6%	10	\$22.77
Security & Fire Alarm Systems Installers	69	82	13	18.2%	10	\$14.73
Woodworking Machine Setters, Operators, & Tenders, Except Sawing	66	70	4	5.7%	10	\$22.36
Community Health Workers	65	80	14	21.9%	10	\$22.13
Marriage & Family Therapists	59	85	26	44.6%	10	\$26.56
First-Line Supervisors of Fire Fighting & Prevention Workers	120	130	10	8.7%	9	\$34.07
Cartographers & Photogrammetrists	108	115	7	6.2%	9	\$27.24
Electronics Engineers, Except Computer	98	113	15	15.8%	9	\$40.34
Tile & Marble Setters	91	87	(3)	(3.9%)	9	\$18.79
Atmospheric & Space Scientists	86	89	3	3.6%	9	\$46.47
Labor Relations Specialists	84	77	(8)	(9.2%)	9	\$25.24
Recreational Vehicle Service Technicians	77	79	2	2.7%	9	\$14.05
Captains, Mates, & Pilots of Water Vessels	76	88	12	15.6%	9	\$53.99
Radio & Television Announcers	69	66	(3)	(4.9%)	9	\$16.44
Health Technologists & Technicians, All Other	67	101	35	52.0%	9	\$25.19
Radio, Cellular, & Tower Equipment Installers & Repairs	65	76	11	17.1%	9	\$25.28
Transportation Attendants, Except Flight Attendants	63	68	5	7.2%	9	\$7.85
Umpires, Referees, & Other Sports Officials	61	63	3	4.3%	9	\$21.67
Logging Equipment Operators	60	55	(5)	(8.7%)	9	\$21.45
Helpers--Electricians	58	60	3	4.8%	9	\$16.07
Computer Network Architects	98	108	10	10.4%	8	\$49.51
Education Administrators, All Other	96	100	3	3.5%	8	\$47.53
Special Education Teachers, Preschool	95	100	5	5.6%	8	\$30.77
Air Traffic Controllers	86	85	(0)	0.0%	8	\$92.67
Electric Motor, Power Tool, & Related Repairers	85	78	(7)	(8.8%)	8	\$19.60
Power Distributors & Dispatchers	84	83	(1)	(1.0%)	8	\$42.38
Legal Support Workers, All Other	81	84	3	3.2%	8	\$15.69

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Motorcycle Mechanics	77	73	(4)	(5.5%)	8	\$16.29
Switchboard Operators, Including Answering Service	77	57	(20)	(25.9%)	8	\$14.57
Interior Designers	66	77	11	16.8%	8	\$27.17
Anthropologists & Archeologists	63	66	3	4.8%	8	\$28.50
Art Directors	63	66	4	6.1%	8	\$20.86
Grounds Maintenance Workers, All Other	60	63	3	5.5%	8	\$10.75
Tank Car, Truck, & Ship Loaders	60	62	2	3.5%	8	\$17.68
Craft Artists	58	68	10	17.1%	8	\$10.30
Fine Artists, Including Painters, Sculptors, & Illustrators	58	67	9	15.5%	8	\$11.73
Miscellaneous Construction & Related Workers	57	62	4	7.7%	8	\$19.18
Morticians, Undertakers, & Funeral Directors	56	58	3	4.7%	8	\$23.21
Helpers, Construction Trades, All Other	54	57	4	6.7%	8	\$14.94
Barbers	53	64	11	19.7%	8	\$15.23
Entertainers & Performers, Sports & Related Workers, All Other	53	63	11	20.8%	8	\$23.15
Museum Technicians & Conservators	52	64	12	23.1%	8	\$16.21
Sailors & Marine Oilers	52	59	6	12.4%	8	\$23.11
Cleaning, Washing, & Metal Pickling Equipment Operators & Tenders	49	51	3	5.2%	8	\$9.24
Ambulance Drivers & Attendants, Except Emergency Medical Technicians	44	52	8	19.2%	8	\$9.81
Forest & Conservation Workers	32	45	13	39.6%	8	\$12.25
First-Line Supervisors of Correctional Officers	96	90	(6)	(6.4%)	7	\$26.81
Dietitians & Nutritionists	84	96	12	14.1%	7	\$17.37
Electro-Mechanical Technicians	69	68	(0)	0.0%	7	\$25.19
Precision Instrument & Equipment Repairers, All Other	68	66	(1)	(2.2%)	7	\$23.19
Urban & Regional Planners	67	74	7	10.5%	7	\$24.60
Information Security Analysts	65	85	20	30.4%	7	\$32.70
Office Machine Operators, Except Computer	63	49	(14)	(22.2%)	7	\$11.94
Mechanical Drafters	61	59	(3)	(4.2%)	7	\$18.52
Textile Cutting Machine Setters, Operators, & Tenders	60	65	5	8.3%	7	\$22.85
Transportation Security Screeners	59	66	6	10.6%	7	\$16.96



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Floor Layers, Except Carpet, Wood, & Hard Tiles	58	63	5	7.7%	7	\$21.58
Survey Researchers	57	55	(2)	(3.5%)	7	\$31.01
Order Clerks	57	55	(2)	(3.9%)	7	\$16.89
Pressers, Textile, Garment, & Related Materials	54	54	0	0.0%	7	\$9.42
Conveyor Operators & Tenders	52	54	2	3.7%	7	\$30.99
Grinding, Lapping, Polishing, & Buffing Machine Tool Setters, Operators, & Tenders, Metal & Plastic	49	54	5	10.5%	7	\$16.57
Computer-Controlled Machine Tool Operators, Metal & Plastic	45	61	16	35.5%	7	\$18.00
Structural Metal Fabricators & Fitters	44	55	10	23.1%	7	\$20.69
Funeral Attendants	36	41	4	11.9%	7	\$13.30
Chiropractors	116	142	25	21.7%	6	\$33.36
Fish & Game Wardens	78	73	(5)	(5.9%)	6	\$28.97
Diagnostic Medical Sonographers	73	92	20	27.0%	6	\$32.00
Electronic Equipment Installers & Repairers, Motor Vehicles	69	43	(26)	(37.6%)	6	\$18.29
Psychologists, All Other	67	80	13	19.5%	6	\$41.46
Bailiffs	64	65	1	2.0%	6	\$33.54
Legislators	62	68	6	10.4%	6	\$15.01
Operations Research Analysts	58	75	17	29.9%	6	\$28.35
Designers, All Other	57	62	4	7.0%	6	\$27.28
Brokerage Clerks	57	53	(4)	(7.4%)	6	\$19.82
Compensation, Benefits, & Job Analysis Specialists	56	62	6	10.8%	6	\$23.75
Animal Control Workers	56	59	4	6.7%	6	\$20.81
Meter Readers, Utilities	55	55	0	0.0%	6	\$23.69
Electrical & Electronics Repairers, Powerhouse, Substation, & Relay	54	59	5	9.2%	6	\$43.59
Foresters	54	56	2	4.1%	6	\$26.77
Signal & Track Switch Repairers	53	49	(4)	(7.7%)	6	\$33.72
Hoist & Winch Operators	52	47	(5)	(8.7%)	6	\$25.26
Riggers	51	57	7	12.9%	6	\$13.03
Orderlies	50	54	5	9.3%	6	\$14.07
Computer Operators	49	41	(7)	(15.1%)	6	\$18.87
Media & Communication Workers, All Other	48	54	6	12.9%	6	\$20.98

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Bicycle Repairers	47	56	9	18.3%	6	\$18.92
Counselors, All Other	47	51	4	8.9%	6	\$17.35
Forensic Science Technicians	43	48	6	13.6%	6	\$26.23
Building Cleaning Workers, All Other	39	41	2	3.9%	6	\$18.79
Mine Shuttle Car Operators	38	37	(1)	(2.6%)	6	\$44.90
Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plastic	26	42	16	63.3%	6	\$16.06
Postmasters & Mail Superintendents	71	51	(20)	(28.5%)	5	\$29.76
Chemical Engineers	65	69	4	5.8%	5	\$49.41
Cardiovascular Technologists & Technicians	58	69	12	20.0%	5	\$26.75
Purchasing Managers	58	60	3	4.5%	5	\$50.14
Avionics Technicians	56	61	5	9.7%	5	\$33.39
Tax Examiners & Collectors, & Revenue Agents	56	56	0	0.0%	5	\$22.00
Electrical & Electronics Installers & Repairers, Transportation Equipment	53	51	(2)	(3.6%)	5	\$29.33
Private Detectives & Investigators	52	56	4	8.2%	5	\$11.57
Public Relations & Fundraising Managers	51	58	6	12.5%	5	\$27.66
Training & Development Managers	46	50	4	9.4%	5	\$54.03
Upholsterers	44	44	0	0.0%	5	\$13.56
Statisticians	42	54	13	30.6%	5	\$30.89
Social Scientists & Related Workers, All Other	42	44	2	4.2%	5	\$31.55
Transportation Workers, All Other	41	45	5	11.2%	5	\$8.90
Medical Scientists, Except Epidemiologists	40	52	11	28.3%	5	\$30.16
Technical Writers	40	45	5	12.6%	5	\$38.86
Pharmacy Aides	39	34	(5)	(12.2%)	5	\$11.61
Set & Exhibit Designers	38	46	8	20.7%	5	\$24.32
Couriers & Messengers	38	44	7	17.3%	5	\$12.68
Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	37	38	1	4.0%	5	\$17.11
Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	36	43	7	18.9%	5	\$15.35
Concierges	32	33	2	5.0%	5	\$17.37
Material Moving Workers, All Other	31	35	4	13.5%	5	\$13.56
Reinforcing Iron & Rebar Workers	30	37	7	22.7%	5	\$25.32

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Cutting & Slicing Machine Setters, Operators, & Tenders	30	35	5	15.8%	5	\$15.76
Psychiatric Technicians	28	50	22	78.7%	5	\$15.25
Telemarketers	26	29	3	12.0%	5	\$11.49
Tree Trimmers & Pruners	23	33	10	42.7%	5	\$10.32
Psychiatric Aides	19	36	17	86.8%	5	\$13.20
Health Diagnosing & Treating Practitioners, All Other	68	77	10	14.2%	4	\$67.55
Athletic Trainers	55	64	9	16.4%	4	\$17.92
Career/Technical Education Teachers, Middle School	49	52	3	5.6%	4	\$28.56
Economists	46	48	2	4.5%	4	\$73.47
Door-To-Door Sales Workers, News & Street Vendors, & Related Workers	45	28	(17)	(36.8%)	4	\$9.21
Computer Hardware Engineers	44	47	3	6.2%	4	\$62.17
Landscape Architects	43	44	0	0.0%	4	\$35.25
Credit Analysts	40	39	(0)	0.0%	4	\$26.85
Molders, Shapers, & Casters, Except Metal & Plastic	39	32	(7)	(17.0%)	4	\$7.96
Electrical & Electronics Drafters	37	37	0	0.0%	4	\$17.40
Advertising & Promotions Managers	36	42	7	18.2%	4	\$16.82
Physical Scientists, All Other	36	38	3	7.2%	4	\$57.67
Prepress Technicians & Workers	35	32	(3)	(9.0%)	4	\$9.80
Camera Operators, Television, Video, & Motion Picture	34	39	5	13.5%	4	\$24.32
Stonemasons	34	37	3	7.8%	4	\$25.16
Cargo & Freight Agents	33	39	6	19.3%	4	\$20.57
Mechanical Door Repairers	33	39	6	16.9%	4	\$18.87
Rail Yard Engineers, Dinkey Operators, & Hostlers	32	35	2	7.4%	4	\$25.48
Jewelers & Precious Stone & Metal Workers	32	29	(2)	(7.1%)	4	\$7.96
Foundry Mold & Coremakers	31	31	0	0.0%	4	\$14.56
Furnace, Kiln, Oven, Drier, & Kettle Operators & Tenders	31	30	(1)	(3.1%)	4	\$22.34
Medical Equipment Repairers	30	33	3	9.3%	4	\$12.56
Helpers--Painters, Paperhangers, Plasterers, & Stucco Masons	25	27	2	6.4%	4	\$31.37
Sewers, Hand	22	30	8	36.4%	4	\$6.34
Loading Machine Operators, Underground Mining	18	31	12	67.9%	4	\$24.98

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Surgeons	93	93	0	0.0%	3	\$162.73
Optometrists	77	77	0	0.0%	3	\$56.21
Nuclear Medicine Technologists	49	54	5	10.2%	3	\$35.14
Healthcare Practitioners & Technical Workers, All Other	49	54	5	10.7%	3	\$27.65
Aerospace Engineers	42	45	3	8.2%	3	\$31.01
Occupational Health & Safety Technicians	42	42	0	0.0%	3	\$27.56
Emergency Management Directors	40	40	0	0.0%	3	\$36.50
Materials Engineers	38	40	2	4.2%	3	\$32.43
Adhesive Bonding Machine Operators & Tenders	35	15	(20)	(57.3%)	3	\$10.54
Magnetic Resonance Imaging Technologists	32	38	7	20.7%	3	\$36.25
Therapists, All Other	32	38	7	20.9%	3	\$31.73
Credit Counselors	31	34	4	11.6%	3	\$10.73
Traffic Technicians	31	32	1	3.7%	3	\$21.88
Hydrologists	31	30	(1)	(2.5%)	3	\$21.44
Environmental Engineering Technicians	30	30	0	0.0%	3	\$22.21
Health & Safety Engineers, Except Mining Safety Engineers & Inspectors	29	31	2	7.2%	3	\$40.29
Industrial Engineering Technicians	28	31	3	9.5%	3	\$25.52
Multimedia Artists & Animators	28	29	2	5.6%	3	\$16.45
Carpet Installers	27	27	0	0.0%	3	\$16.36
Ophthalmic Laboratory Technicians	25	28	3	10.2%	3	\$9.46
Communications Equipment Operators, All Other	24	26	2	8.0%	3	\$20.05
Grinding & Polishing Workers, Hand	24	23	(1)	(5.2%)	3	\$8.03
Media & Communication Equipment Workers, All Other	22	24	2	8.5%	3	\$36.33
Food Scientists & Technologists	22	21	(1)	(5.2%)	3	\$13.53
Extruding & Forming Machine Setters, Operators, & Tenders, Synthetic & Glass Fibers	21	19	(1)	(5.2%)	3	\$17.34
Textile, Apparel, & Furnishings Workers, All Other	19	22	2	10.6%	3	\$21.56
Locksmiths & Safe Repairers	18	25	7	36.6%	3	\$15.76
Dancers	18	18	0	0.0%	3	\$16.11
Film & Video Editors	17	23	5	30.5%	3	\$32.13
Agricultural & Food Science Technicians	17	21	4	24.6%	3	\$18.64

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Welding, Soldering, & Brazing Machine Setters, Operators, & Tenders	16	20	4	23.9%	3	\$17.82
Elevator Installers & Repairers	10	22	12	118.6%	3	\$36.82
Internists, General	62	61	(1)	(2.0%)	2	\$100.85
Anesthesiologists	59	57	(2)	(3.8%)	2	\$97.53
Obstetricians & Gynecologists	50	50	0	0.0%	2	\$98.32
Judicial Law Clerks	48	48	0	0.0%	2	\$16.84
Recreational Therapists	31	33	1	4.3%	2	\$32.90
Administrative Law Judges, Adjudicators, & Hearing Officers	27	29	2	5.6%	2	\$45.48
Financial Clerks, All Other	20	21	1	5.9%	2	\$18.15
Plasterers & Stucco Masons	19	19	0	0.0%	2	\$18.77
Insurance Appraisers, Auto Damage	18	21	3	17.7%	2	\$11.59
Court Reporters	18	18	0	0.0%	2	\$27.38
Musical Instrument Repairers & Tuners	17	21	3	19.4%	2	\$14.92
Dental Laboratory Technicians	17	19	2	11.7%	2	\$18.05
Rail Transportation Workers, All Other	17	16	(1)	(7.6%)	2	\$26.68
Microbiologists	16	17	1	8.8%	2	\$31.01
Audio-Visual & Multimedia Collections Specialists	16	17	1	5.1%	2	\$22.34
Artists & Related Workers, All Other	16	16	0	0.0%	2	\$20.78
Ship Engineers	15	17	3	17.5%	2	\$34.53
Watch Repairers	15	16	1	7.7%	2	\$16.69
Shampooers	15	16	1	6.5%	2	\$8.31
Fishers & Related Fishing Workers	15	14	(1)	(3.9%)	2	\$13.22
Millwrights	14	21	7	52.6%	2	\$24.92
Woodworkers, All Other	14	17	2	15.7%	2	\$9.85
Furniture Finishers	14	14	0	0.0%	2	\$13.28
Photographic Process Workers & Processing Machine Operators	14	11	(3)	(23.5%)	2	\$13.21
Dietetic Technicians	13	17	4	32.8%	2	\$12.96
Agents & Business Managers of Artists, Performers, & Athletes	13	13	0	0.0%	2	\$26.35
Athletes & Sports Competitors	10	12	1	12.6%	2	\$19.28
Models	10	11	1	11.2%	2	\$15.37
Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic	9	15	5	58.0%	2	\$26.32

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Textile Winding, Twisting, & Drawing Out Machine Setters, Operators, & Tenders	9	13	3	37.1%	2	\$14.17
Cooks, All Other	9	13	4	40.0%	2	\$13.49
Rolling Machine Setters, Operators, & Tenders, Metal & Plastic	8	15	7	85.8%	2	\$20.64
Flight Attendants	8	10	2	25.4%	2	\$26.43
Food Processing Workers, All Other	7	11	5	69.9%	2	\$11.91
Food Cooking Machine Operators & Tenders	5	8	3	68.3%	2	\$13.29
Pediatricians, General	46	45	(1)	(1.7%)	1	\$63.15
Fire Inspectors & Investigators	14	15	1	5.4%	1	\$42.00
Orthodontists	12	13	1	8.9%	1	\$91.21
Psychiatrists	11	16	6	54.8%	1	\$92.65
Exercise Physiologists	11	14	3	23.1%	1	\$21.54
Physicists	11	13	2	21.8%	1	\$52.46
Dredge Operators	11	10	(1)	(9.7%)	1	\$23.21
Tapers	11	9	(1)	(12.5%)	1	\$19.04
Nuclear Engineers	10	10	0	0.0%	1	\$47.30
Transit & Railroad Police	10	10	0	0.0%	1	\$35.39
Shoe & Leather Workers & Repairers	9	9	0	0.0%	1	\$11.32
Public Address System & Other Announcers	9	8	(1)	(8.2%)	1	\$20.66
Solar Photovoltaic Installers	8	11	3	41.0%	1	\$20.20
Marine Engineers & Naval Architects	8	9	0	0.0%	1	\$43.02
Actuaries	7	12	5	69.7%	1	\$44.64
Fashion Designers	7	11	3	44.2%	1	\$25.47
Airfield Operations Specialists	7	11	4	48.4%	1	\$25.25
Radiation Therapists	7	9	2	20.6%	1	\$38.35
Mechanical Engineering Technicians	7	9	3	39.3%	1	\$25.90
Political Scientists	7	8	0	0.0%	1	\$51.13
Proofreaders & Copy Markers	7	8	1	9.7%	1	\$16.79
Tool Grinders, Filers, & Sharpeners	7	6	(2)	(23.7%)	1	\$20.08
Financial Examiners	6	9	2	41.3%	1	\$34.70
Sound Engineering Technicians	6	6	0	0.0%	1	\$25.56
Hunters & Trappers	6	6	0	0.0%	1	\$14.09



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Plating & Coating Machine Setters, Operators, & Tenders, Metal & Plastic	5	8	3	57.7%	1	\$15.01
Motorboat Operators	5	6	0	0.0%	1	\$23.92
Animal Breeders	5	6	1	10.6%	1	\$17.30
Forest Fire Inspectors & Prevention Specialists	5	5	0	0.0%	1	\$18.80
Nurse Anesthetists	4	10	7	189.0%	1	\$82.13
Computer & Information Research Scientists	4	10	6	131.3%	1	\$51.48
Special Education Teachers, All Other	4	7	2	46.8%	1	\$28.49
Gaming Managers	4	6	3	76.0%	1	\$17.60
Bridge & Lock Tenders	4	5	1	30.4%	1	\$23.77
Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	3	6	3	112.8%	1	\$17.11
Biochemists & Biophysicists	3	5	2	83.7%	1	\$40.30
Coil Winders, Tapers, & Finishers	3	5	2	67.1%	1	\$0.00
Costume Attendants	3	4	1	18.7%	1	\$18.49
Print Binding & Finishing Workers	3	4	0	0.0%	1	\$14.37
Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders	3	4	1	20.8%	1	\$13.92
Tool & Die Makers	2	7	5	204.0%	1	\$26.37
Rock Splitters, Quarry	2	6	4	174.5%	1	\$35.45
Tire Builders	2	5	2	100.0%	1	\$24.91
Statistical Assistants	2	4	1	55.2%	1	\$23.70
Mining Machine Operators, All Other	0	4	4	828.2%	1	\$13.50
Slaughterers & Meat Packers	0	3	3	8520.7%	1	\$0.00
Oral & Maxillofacial Surgeons	9	10	1	6.8%	0	\$93.39
Dentists, All Other Specialists	6	6	0	0.0%	0	\$67.68
Arbitrators, Mediators, & Conciliators	6	5	(1)	(15.1%)	0	\$27.92
Parking Enforcement Workers	6	4	(3)	(44.0%)	0	\$17.49
Floor Sanders & Finishers	5	4	(1)	(27.1%)	0	\$16.49
Podiatrists	4	4	0	0.0%	0	\$59.20
Drafters, All Other	4	4	0	0.0%	0	\$24.42
Archivists	4	4	0	0.0%	0	\$23.79
Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	4	3	(1)	(25.1%)	0	\$18.24
Locomotive Firers	4	2	(2)	(44.1%)	0	\$30.73

SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Aircraft Cargo Handling Supervisors	3	4	1	18.4%	0	\$21.46
Subway & Streetcar Operators	3	3	0	0.0%	0	\$32.36
Epidemiologists	3	3	0	0.0%	0	\$30.57
Paperhangers	3	3	0	0.0%	0	\$16.05
Painting, Coating, & Decorating Workers	3	3	0	0.0%	0	\$14.06
Engine & Other Machine Assemblers	3	3	0	0.0%	0	\$0.00
Fallers	3	1	(1)	(51.0%)	0	\$19.09
Hearing Aid Specialists	2	4	1	71.5%	0	\$27.95
Judges, Magistrate Judges, & Magistrates	2	3	0	0.0%	0	\$63.97
Cooks, Private Household	2	3	0	0.0%	0	\$17.23
Etchers & Engravers	2	3	0	0.0%	0	\$13.39
Compensation & Benefits Managers	2	2	0	0.0%	0	\$55.12
Mathematicians	2	2	0	0.0%	0	\$44.55
Life Scientists, All Other	2	2	0	0.0%	0	\$34.07
Animal Scientists	2	2	0	0.0%	0	\$25.17
Desktop Publishers	2	2	0	0.0%	0	\$23.73
Commercial Divers	2	2	0	0.0%	0	\$22.13
Paper Goods Machine Setters, Operators, & Tenders	2	2	0	0.0%	0	\$18.57
Historians	2	2	0	0.0%	0	\$16.09
Respiratory Therapy Technicians	2	1	(0)	0.0%	0	\$23.25
Milling & Planing Machine Setters, Operators, & Tenders, Metal & Plastic	1	3	1	98.5%	0	\$20.73
Orthotists & Prosthetists	1	2	1	150.4%	0	\$38.60
Biomedical Engineers	1	2	0	0.0%	0	\$38.31
Broadcast News Analysts	1	2	0	0.0%	0	\$36.70
Pile-Driver Operators	1	2	1	225.4%	0	\$27.00
Gaming & Sports Book Writers & Runners	1	2	0	0.0%	0	\$18.62
Shoe Machine Operators & Tenders	1	2	1	63.2%	0	\$16.26
Heat Treating Equipment Setters, Operators, & Tenders, Metal & Plastic	1	2	1	191.5%	0	\$14.59
Cutters & Trimmers, Hand	1	2	1	84.2%	0	\$8.39
Industrial-Organizational Psychologists	1	1	0	0.0%	0	\$42.06
Makeup Artists, Theatrical & Performance	1	1	0	0.0%	0	\$36.68



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Geographers	1	1	0	0.0%	0	\$35.19
Genetic Counselors	1	1	0	0.0%	0	\$31.16
Layout Workers, Metal & Plastic	1	1	0	0.0%	0	\$24.27
Gaming Service Workers, All Other	1	1	0	0.0%	0	\$21.06
Radio Operators	1	1	0	0.0%	0	\$20.23
Medical Appliance Technicians	1	1	0	0.0%	0	\$18.67
Camera & Photographic Equipment Repairers	1	1	0	0.0%	0	\$17.70
Patternmakers, Wood	1	1	0	0.0%	0	\$16.90
Telephone Operators	1	1	0	0.0%	0	\$16.44
Logging Workers, All Other	1	1	0	0.0%	0	\$16.38
Gaming Surveillance Officers & Gaming Investigators	1	1	0	0.0%	0	\$16.10
Motion Picture Projectionists	1	1	0	0.0%	0	\$14.54
Helpers--Roofers	1	1	0	0.0%	0	\$14.18
Fiberglass Laminators & Fabricators	1	1	0	0.0%	0	\$13.14
Fabric Menders, Except Garment	1	1	0	0.0%	0	\$12.72
Entertainment Attendants & Related Workers, All Other	1	1	0	0.0%	0	\$11.37
Cooling & Freezing Equipment Operators & Tenders	1	1	0	0.0%	0	\$9.73
Manufactured Building & Mobile Home Installers	1	0	(0)	0.0%	0	\$13.72
Audiologists	0	3	2	458.5%	0	\$56.54
Farm Labor Contractors	0	1	0	0.0%	0	\$21.01
Textile Knitting & Weaving Machine Setters, Operators, & Tenders	0	1	1	390.8%	0	\$12.76
Prosthodontists	0	0	0	0.0%	0	\$66.43
Astronomers	0	0	0	0.0%	0	\$45.73
Nurse Midwives	0	0	0	0.0%	0	\$40.53
Nuclear Technicians	0	0	0	0.0%	0	\$38.42
Sociologists	0	0	0	0.0%	0	\$33.69
Miscellaneous Mathematical Science Occupations	0	0	0	0.0%	0	\$27.19
Funeral Service Managers	0	0	0	0.0%	0	\$21.52
Pourers & Casters, Metal	0	0	0	0.0%	0	\$20.16
Terrazzo Workers & Finishers	0	0	0	0.0%	0	\$18.46
Semiconductor Processors	0	0	0	0.0%	0	\$18.32



SOC TITLE	2019 JOBS	2029 JOBS	CHANGE	% CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Correspondence Clerks	0	0	0	0.0%	0	\$18.09
Model Makers, Wood	0	0	0	0.0%	0	\$15.61
Metal Workers & Plastic Workers, All Other	0	0	0	0.0%	0	\$15.02
Gaming Cage Workers	0	0	0	0.0%	0	\$13.47
Textile Bleaching & Dyeing Machine Operators & Tenders	0	0	0	0.0%	0	\$12.46
Occupational Therapy Aides	0	0	0	0.0%	0	\$12.31
Log Graders & Scalers	0	0	0	0.0%	0	\$11.58
Gaming Change Persons & Booth Cashiers	0	0	0	0.0%	0	\$9.75
Aerospace Engineering & Operations Technicians	0	0	0	0.0%	0	\$0.00
Materials Scientists	0	0	0	0.0%	0	\$0.00
Metal-Refining Furnace Operators & Tenders	0	0	0	0.0%	0	\$0.00
Forging Machine Setters, Operators, & Tenders, Metal & Plastic	0	0	0	0.0%	0	\$0.00
Model Makers, Metal & Plastic	0	0	0	0.0%	0	\$0.00
Aircraft Structure, Surfaces, Rigging, & Systems Assemblers	0	0	0	0.0%	0	\$0.00
First-Line Supervisors of Gaming Workers	0	0	0	0.0%	0	\$0.00
Fabric & Apparel Patternmakers	0	0	0	0.0%	0	\$0.00
Patternmakers, Metal & Plastic	0	0	0	0.0%	0	\$0.00
Agricultural Engineers	0	0	0	0.0%	0	\$0.00
Refractory Materials Repairers, Except Brickmasons	0	0	0	0.0%	0	\$0.00
Timing Device Assemblers & Adjusters	0	0	0	0.0%	0	\$0.00
Embalmers	0	0	0	0.0%	0	\$0.00

Source: Employees & Self-Employed 2020.2.



APPENDIX 7: Unemployment

Data on unemployment give researchers an idea of where skills mismatches may exist in the state. 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 group²³ in Wyoming. Data reflect April 2020 and follow the same methodology used by federal statistical agencies to determine the number of workers in an industry or occupation who are not currently employed. The unemployment rate is not provided because it is difficult to accurately determine the size of the labor force in an industry or occupation every month. Rather than the unemployment rate, the percent of all unemployed workers in the state and U.S. are provided.

Table A7.1: Unemployed Workers by Industry Sector in Wyoming with National Comparisons

NAICS CODE	NAICS TITLE	STATE UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
72	Accommodation & Food Services	7,659	27%	7%
23	Construction	4,822	17%	17%
62	Health Care & Social Assistance	2,850	10%	7%
21	Mining, Quarrying, & Oil & Gas Extraction	2,408	9%	1%
44	Retail Trade	2,119	8%	8%
56	Administrative & Support & Waste Management & Remediation Services	1,183	4%	12%
31	Manufacturing	1,107	4%	10%
81	Other Services (except Public Administration)	1,022	4%	3%
48	Transportation & Warehousing	951	3%	4%
54	Professional, Scientific, & Technical Services	742	3%	4%
42	Wholesale Trade	597	2%	3%
71	Arts, Entertainment, & Recreation	508	2%	2%
61	Educational Services	489	2%	2%
90	Government	403	1%	2%
99	No Previous Work Experience/Unspecified	390	1%	7%

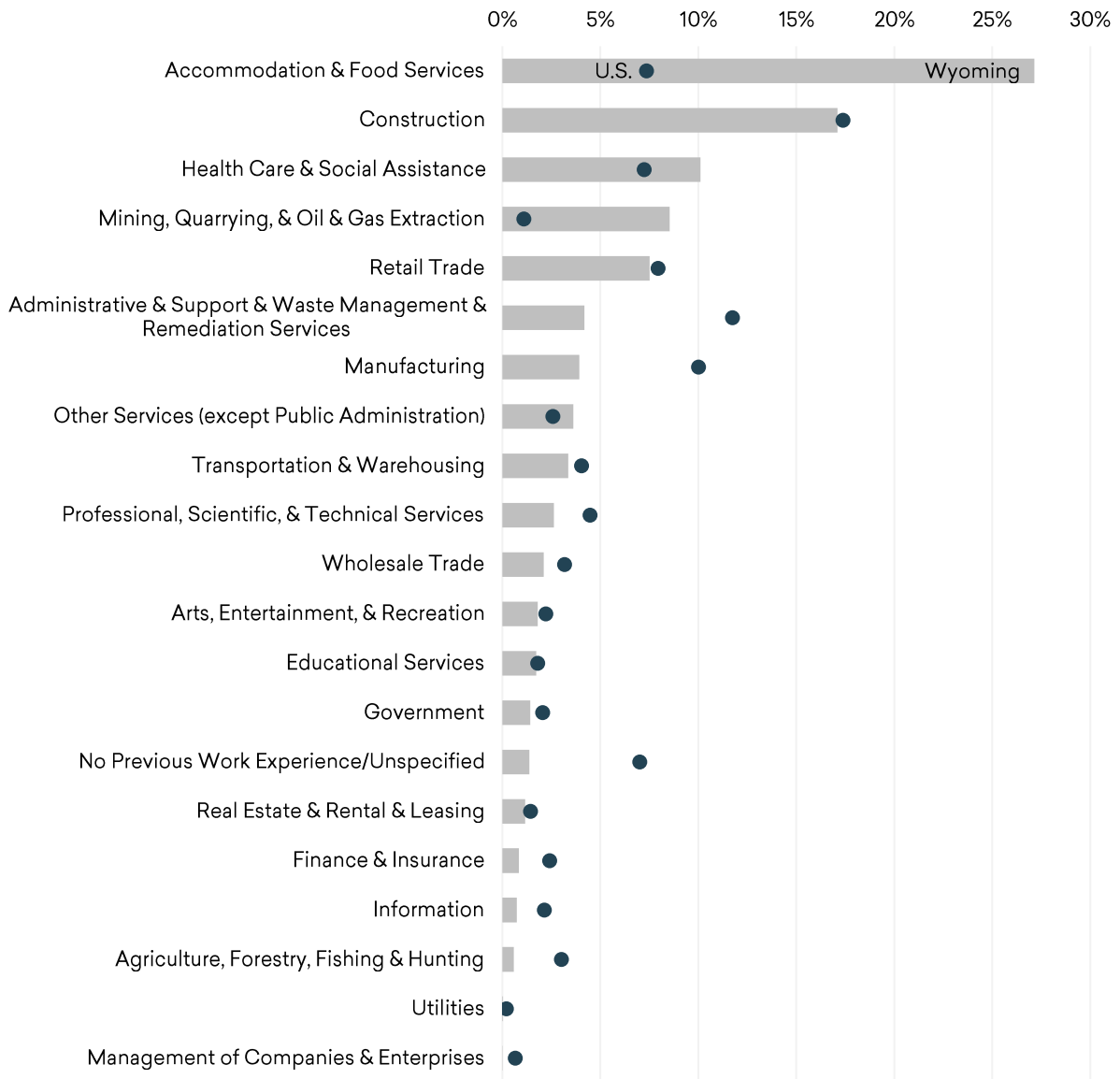
23 Unemployment by industry data is only available at the two-digit level whereas the industry data reported elsewhere in this analysis is at the three-digit level.

NAICS CODE	NAICS TITLE	STATE UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
53	Real Estate & Rental & Leasing	327	1%	1%
52	Finance & Insurance	240	1%	2%
51	Information	208	1%	2%
11	Agriculture, Forestry, Fishing & Hunting	166	1%	3%
22	Utilities	11	0%	0%
55	Management of Companies & Enterprises	4	0%	1%

Source: Emsi Total Unemployment (April 2020).



Figure A7.1: Unemployed Workers by Industry Sector in Wyoming with National Comparisons



Source: Emsi Total Unemployment (April 2020).



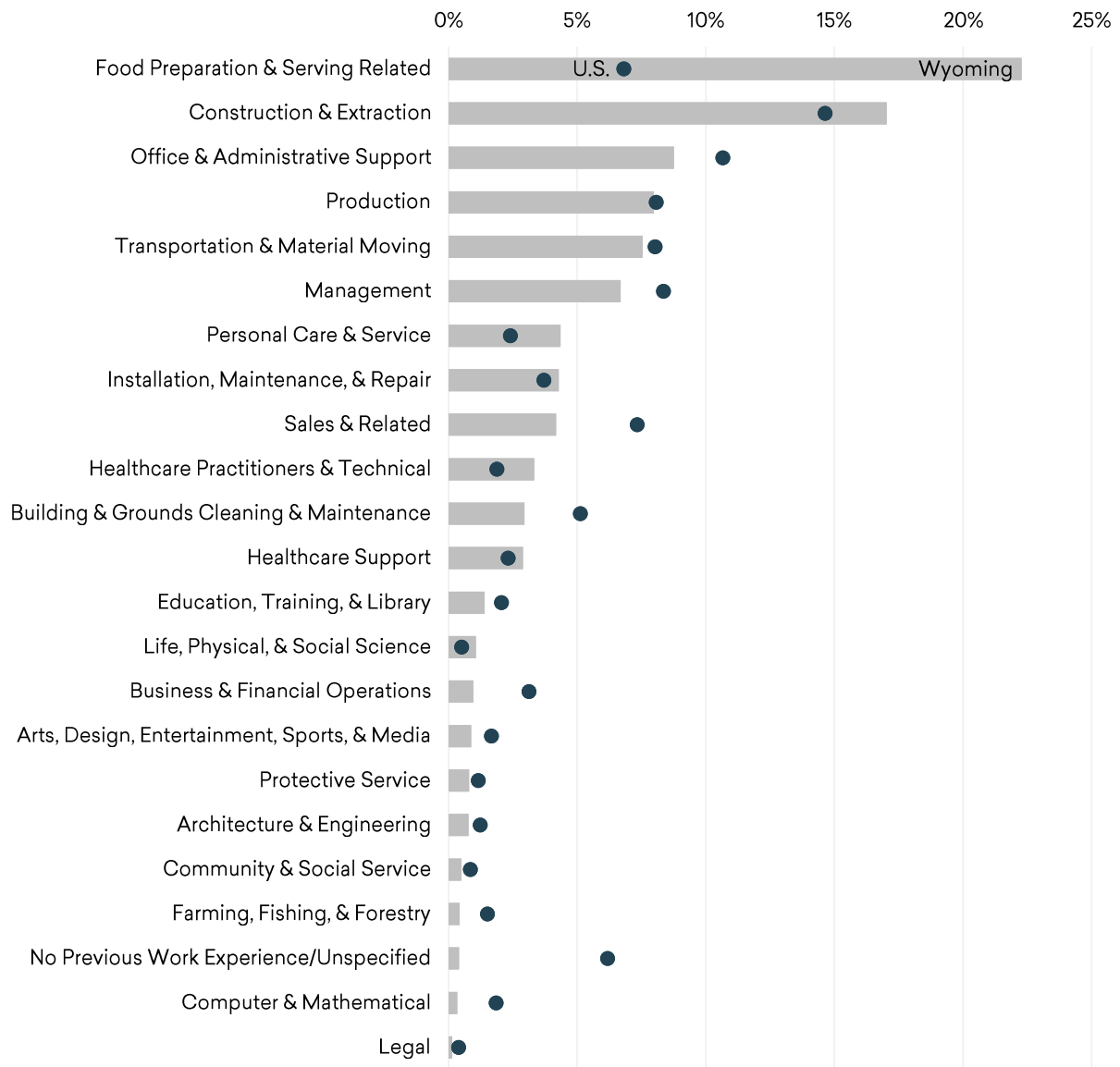
Table A7.2: Unemployed Workers by Occupational Group in Wyoming with National Comparisons

SOC CODE	SOC TITLE	STATE UNEMPLOYED	STATE % UNEMPLOYED	U.S. % UNEMPLOYED
35-0000	Food Preparation & Serving Related	6,285	22%	7%
47-0000	Construction & Extraction	4,805	17%	15%
43-0000	Office & Administrative Support	2,471	9%	11%
51-0000	Production	2,249	8%	8%
53-0000	Transportation & Material Moving	2,126	8%	8%
11-0000	Management	1,886	7%	8%
39-0000	Personal Care & Service	1,228	4%	2%
49-0000	Installation, Maintenance, & Repair	1,209	4%	4%
41-0000	Sales & Related	1,180	4%	7%
29-0000	Healthcare Practitioners & Technical	939	3%	2%
37-0000	Building & Grounds Cleaning & Maintenance	831	3%	5%
31-0000	Healthcare Support	815	3%	2%
25-0000	Education, Training, & Library	393	1%	2%
19-0000	Life, Physical, & Social Science	301	1%	1%
13-0000	Business & Financial Operations	269	1%	3%
27-0000	Arts, Design, Entertainment, Sports, & Media	247	1%	2%
33-0000	Protective Service	226	1%	1%
17-0000	Architecture & Engineering	218	1%	1%
21-0000	Community & Social Service	141	1%	1%
45-0000	Farming, Fishing, & Forestry	122	0%	2%
99-0000	No Previous Work Experience/Unspecified	115	0%	6%
15-0000	Computer & Mathematical	96	0%	2%
23-0000	Legal	41	0%	0%

Source: Emsi Total Unemployment (April 2020).



Figure A7.2: Unemployed Workers by Occupational Group in Wyoming with National Comparisons



Source: Emsi Total Unemployment (April 2020).



APPENDIX 8: Living Wage

As shown in the following table, 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 Wyoming

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	No children	\$11.10	\$5.84	\$7.25
	One child	\$23.75	\$7.91	\$7.25
	Two children	\$29.91	\$9.99	\$7.25
	Three children	\$38.55	\$12.07	\$7.25
Two adults, one working	No children	\$18.13	\$7.91	\$7.25
	One child	\$21.65	\$9.99	\$7.25
	Two children	\$24.25	\$12.07	\$7.25
	Three children	\$27.21	\$14.14	\$7.25
Two adults	No children	\$9.07	\$3.96	\$7.25
	One child	\$13.06	\$5.00	\$7.25
	Two children	\$16.32	\$6.03	\$7.25
	Three children	\$19.76	\$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.