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BARSTOW COMMUNITY COLLEGE LOCAL WORKFORCE NEEDS ASSESSMENT



A partnership between the
Inland Empire/Desert Centers of Excellence
and the Barstow College Research Team

Strong Workforce Data Analytics
and Alignment Project



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COVID-19 Disclaimer

This report includes employment projection data by Emsi. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

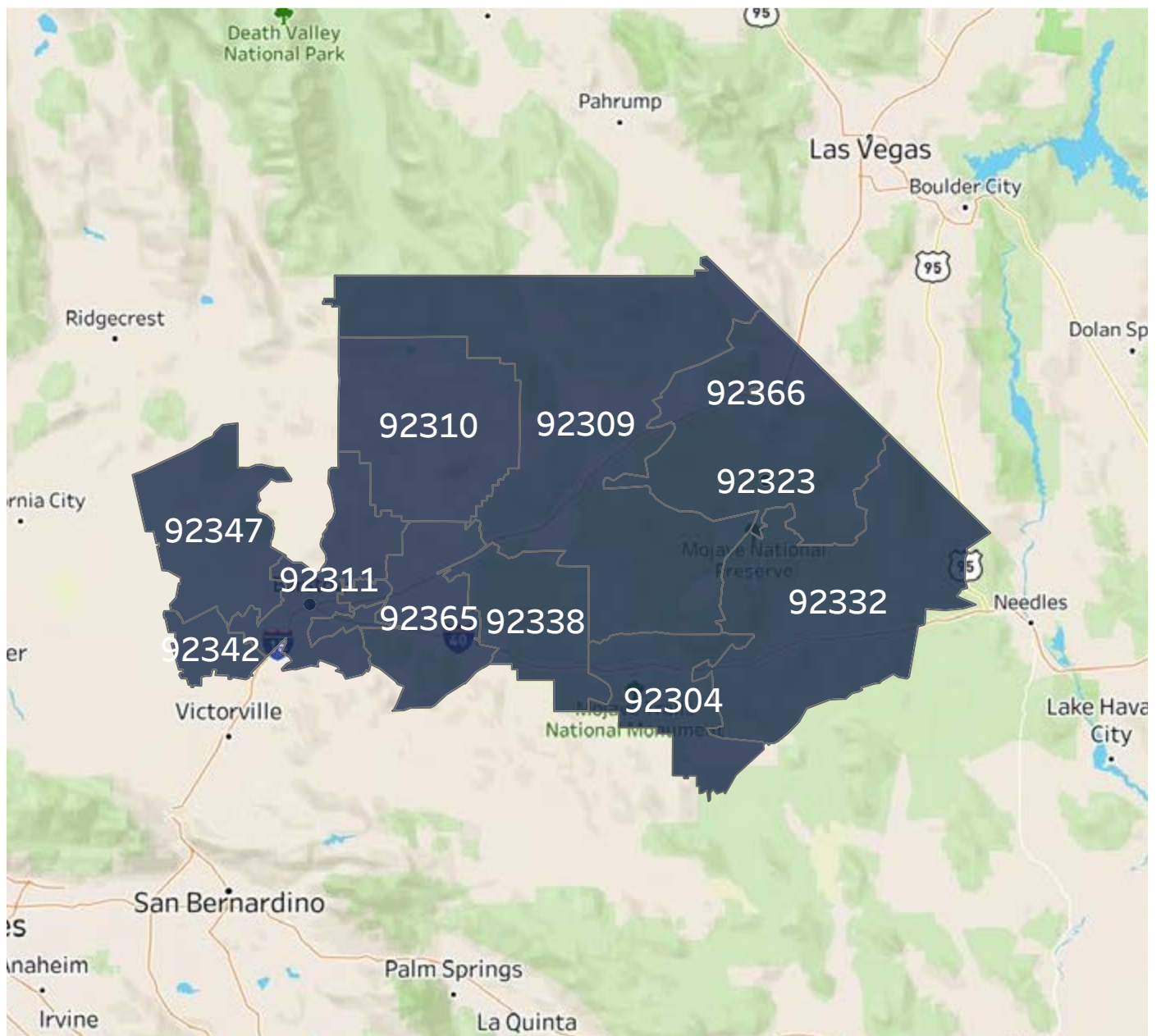
INTRODUCTION

Situated in San Bernardino County's high desert, Barstow Community College serves the cities and communities of Amboy, Baker, Barstow, Boron, Cima, Daggett, Essex, Fort Irwin, Helendale, Hinkley, Lenwood, Ludlow, Mountain Pass, Newberry Springs, Nipton, and Yermo. The college has physical campus locations in Barstow and Fort Irwin.

To equitably serve residents and create programs that align with local business needs, community colleges should develop an awareness of their surrounding populations and area employers. With this knowledge, colleges have the ability to effectively serve their communities and build programs that lead to gainful employment opportunities for students after program completion.

This assessment by the Inland Empire/Desert Region Center of Excellence, in close partnership with Barstow College's research staff, seeks to illuminate the job opportunities available to students within the area served by Barstow College and determine to what extent the college is meeting local employer demand. Furthermore, this analysis identifies opportunities for the college to create new training programs for in-demand occupations for which no programs currently exist.

Exhibit 1: Barstow College area

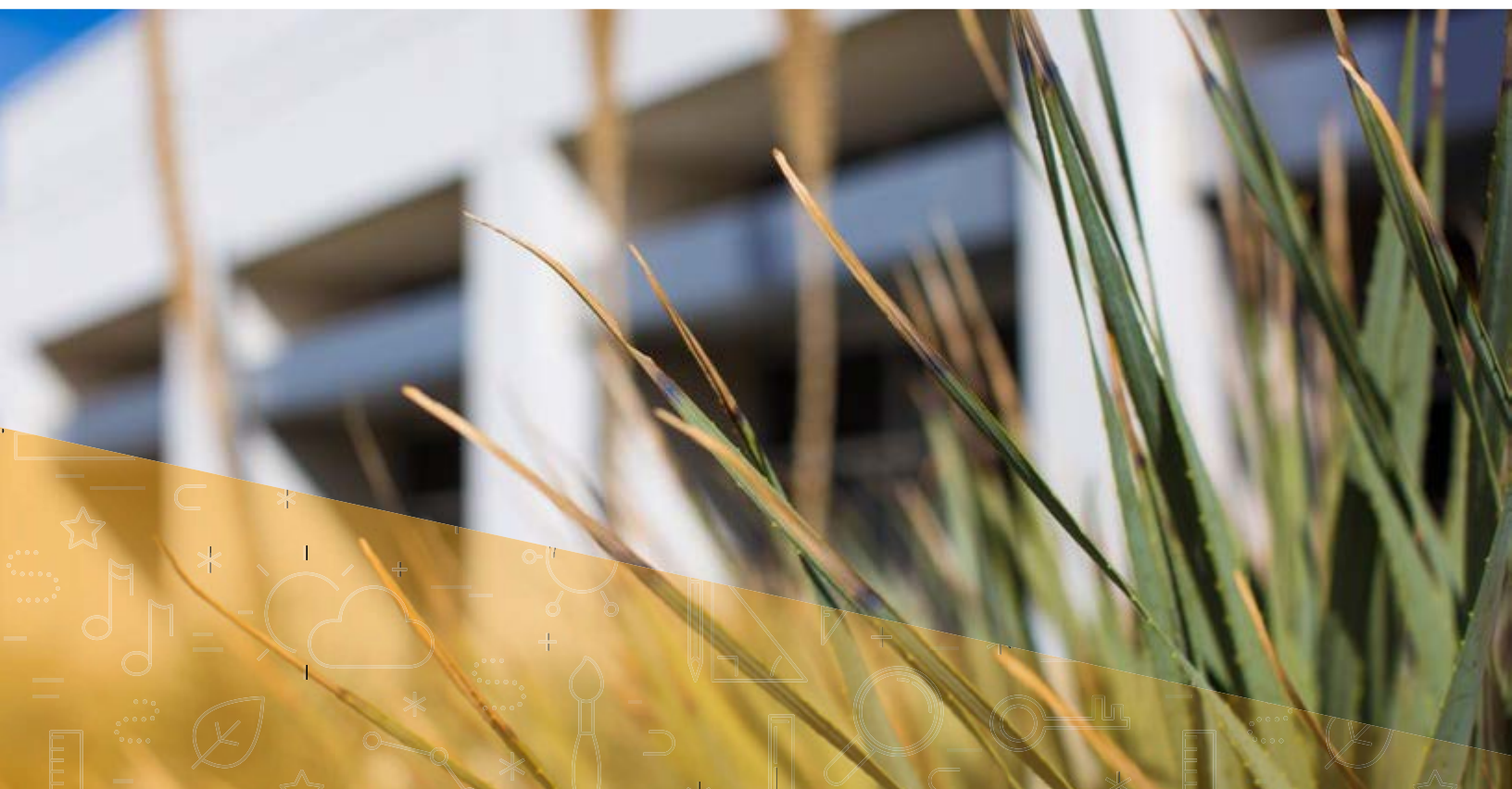


METHODOLOGY

The analysis in this local workforce demand assessment reviews Barstow College's area population, industries, and community college programs aligned to an occupational crosswalk. The area examined in this report may not perfectly align to the college's established service area due to the geographic shape and placement of the selected ZIP codes for analysis. ZIP codes within and beyond the college's established boundaries were examined to fully capture its student population, business partnerships, and nearby job opportunities. Appendix A contains detailed information by area ZIP code for the population and the number of middle-skill jobs in 2019. Barstow College's program offerings are organized by the California Department of Education (CDE) industry sectors. A CDE-to-Taxonomy-of-Programs (TOP) crosswalk, validated by the California Community Colleges Chancellor's Office, was used to link CDE sectors to Barstow College's TOP code offerings. Linking Barstow College's TOP offerings to CDE sectors provides a foundation for aligning local secondary career education (CE) course offerings to community college programs in future studies.

The TOP code to Standard Occupational Classification (SOC) crosswalk, developed by the Centers of Excellence for Labor Market Research, was used to identify community college programs that prepare students for related middle-skill and higher-skill occupations. Middle-skill occupations typically require educational attainment greater than a high school diploma, but less than a four-year degree. The higher-skill jobs examined in this study are limited to those that typically require only a bachelor's degree to enter employment, providing insight on employment opportunities for community college students who transfer to four-year institutions.

Data pertaining to annual job openings and median hourly wage data presented in this study are representative of Barstow College's geographic boundary, providing a hyperlocalized view of workforce demand. This study addresses the in-demand and high-wage occupation criteria established by the Perkins V Comprehensive Local Needs Assessment (CLNA) Framework template. For this study, an occupation is **in-demand** if it has at least 100 annual job openings in the Inland Empire/Desert Region (IEDR). An occupation is **high-wage** if its median hourly wage meets or exceeds \$20.86 per hour, the average median hourly wage for all California occupations. Appendix D lists comprehensive occupational demand and wage data for all occupations included in this report. Finally, Appendix E contains the CE to community college priority sector crosswalk.



DEMOGRAPHIC COMPOSITION

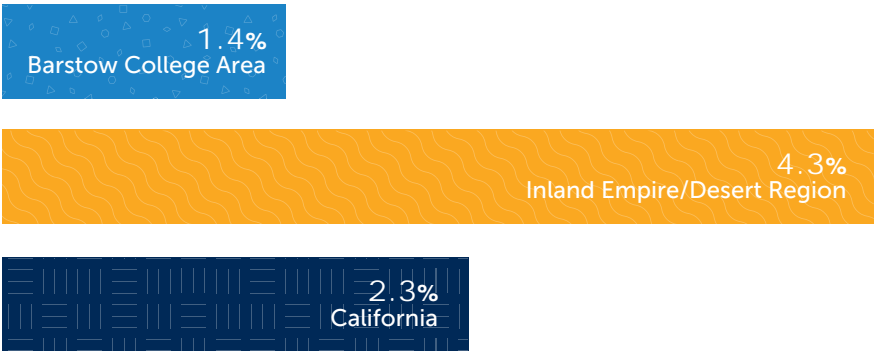
This section analyzes the demographic characteristics of the Barstow College area, including population count, gender, race/ethnicity, age, and educational attainment. Understanding the local area’s composition is essential to ensure the college is serving its population and undertaking appropriate planning for future student cohorts.

Resident Population

The Barstow College area contains 60,134 residents or approximately 1% of the Inland Empire/Desert Region population. The largest city in the area is Barstow, which is the 280th largest city in California with an estimated 24,210 residents in 2019 (State of California, Department of Finance).

Over the five-year period between 2019 and 2024, the area’s population is projected to increase by 1.4%, adding 849 additional residents (Exhibit 2). Local growth is slower than that of the region overall, which is projected to increase by 4.3% during the same five-year timeframe.

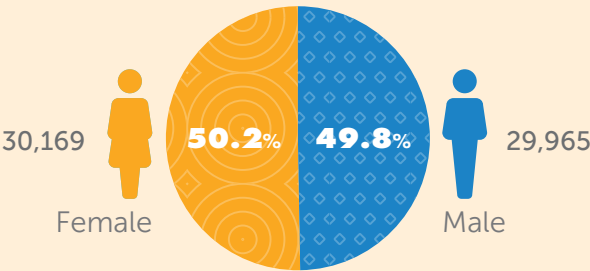
Exhibit 2: Five-year population growth, Barstow College area, Inland Empire/Desert Region, and California



Resident Gender

The Barstow College area has a nearly equal proportion of males and females with women representing 50.2% of the population and men representing 49.8%. Gender figures for the Inland Empire/Desert Region are available in Appendix B.

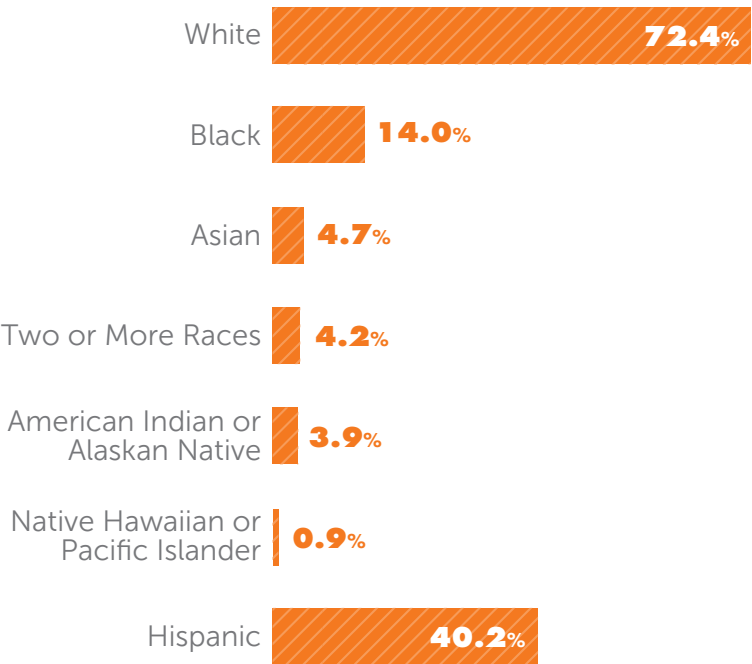
Exhibit 3: 2019 gender population share, Barstow College area



Race and Ethnicity

White residents make up 72% of all residents in the Barstow College area, compared to 78% in the Inland Empire/Desert Region as a whole. There is a significantly larger share of Black residents in the Barstow College area, 14% versus 8% in the Inland Empire/Desert Region. The Barstow College area has a smaller proportion of Hispanic residents, 40%, compared to 52% in the Inland Empire/Desert Region. Race and ethnicity figures and shares for the Inland Empire/Desert Region are available in Appendix B.

Exhibit 4: 2019 ethnicity/race population share, Barstow College area



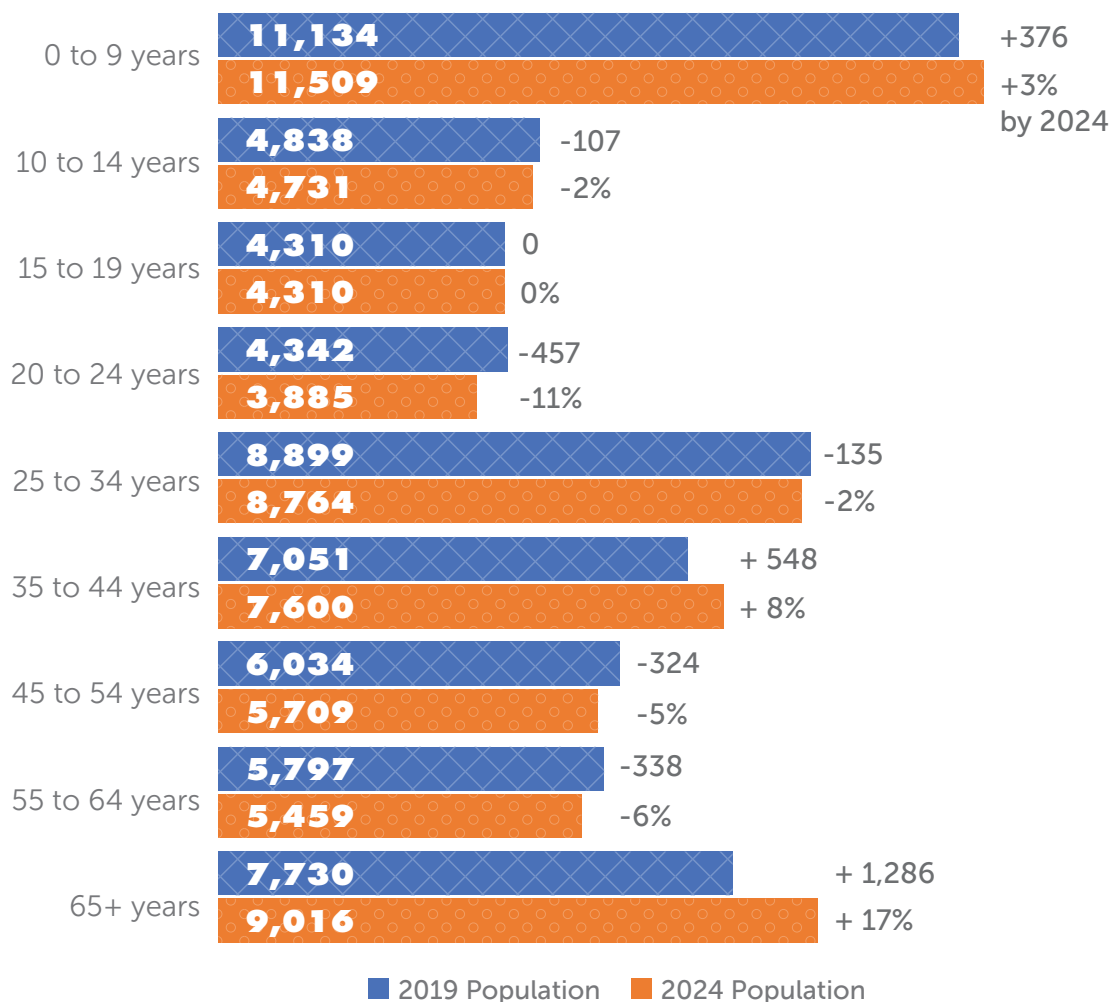
Age

Information on the age of residents helps indicate future enrollment needs in the Barstow College area. In 2019, residents age 9 years and younger represented about 18.5% of the Barstow College area's population. This group is expected to increase by 3% by 2024, twice as fast as the overall population at 1.4%. This may indicate a potential influx of students for the college within the next 20 years. The 10-to-14-year-old age group, those who may enter college in the next six to 10 years, is expected to fall by 2% over the next five years. The 15-to-19-year-old age group, representing high school students and recent graduates, represented just over 7% of the population. Growth in this group is expected to remain flat through 2024.

The working-age population, ages 25 to 65 years, represented 46.1% of the area's population in 2019. Over the next five years, the working-age population is expected to decline by 249 residents, falling by 0.9%.

The 65-years-and-older age group is projected to increase by 17% over the next five years, rising by 1,286 residents. Residents age 65 and older represent the fastest-growing age group in the Barstow College area. Age categories and shares for the Inland Empire/Desert Region are available in Appendix B.

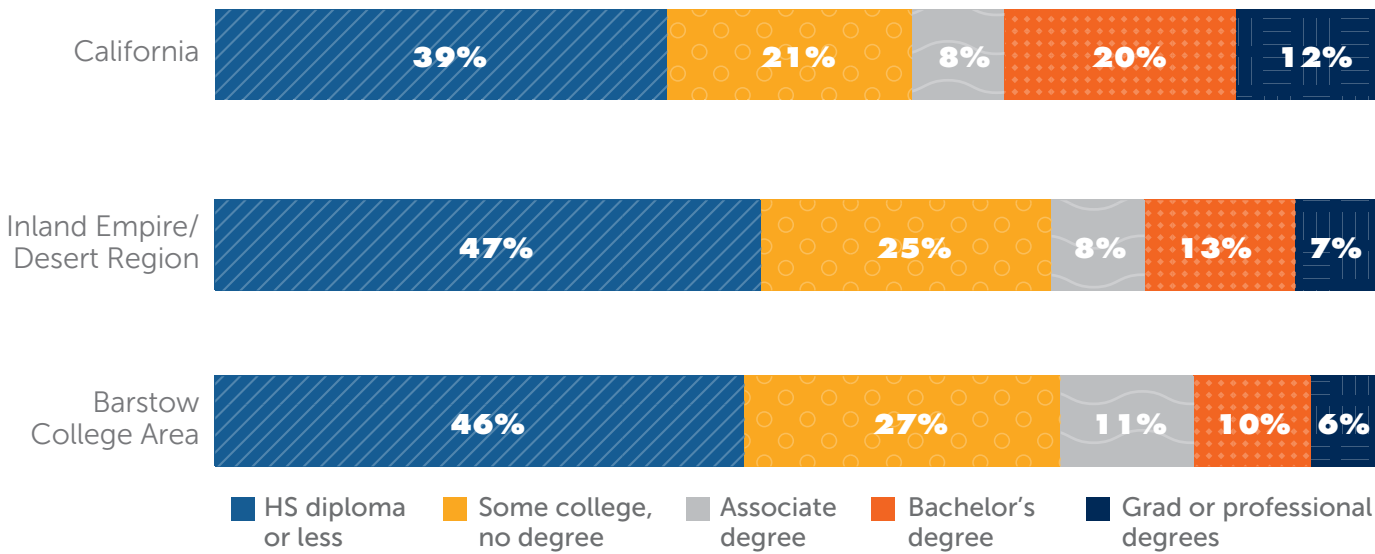
Exhibit 5: Five-year growth, 2019 and 2024 population share by age group, Barstow College area



Educational Attainment

Educational attainment refers to the highest level of education that residents age 25 and older have completed. Just under half of residents in the Barstow College area have a high school diploma (46%), on par with the region (47%), and considerably higher than California (39%) (Exhibit 6). The Barstow College area and the region have a comparable share of residents who hold an associate degree or higher. The share of residents in the Barstow College area with a bachelor's degree or higher (27%) is slightly lower than the Inland Empire/Desert Region (28%), and considerably lower than state overall (40%), representing an opportunity to increase the educational attainment in the area.

Exhibit 6: Highest educational attainment of adults age 25 and older in the Barstow College area, Inland Empire/Desert Region, and California

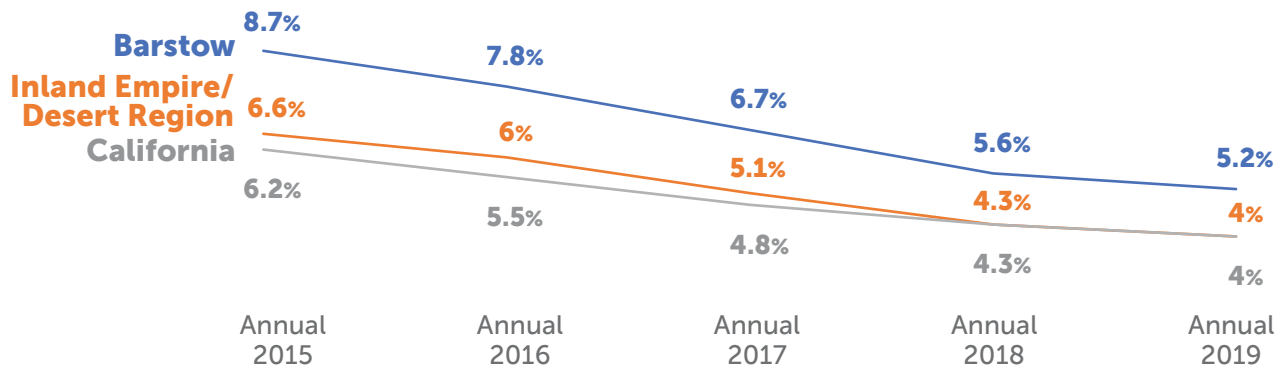


Labor Force and Unemployment Rate

Labor force data reflects the employment status of people by “place of residence.” A person is counted in the labor force by their residence, regardless of where their work is located. Over the last five years, the unemployment rate in the city of Barstow has been historically higher than the region and state (Exhibit 7). Prior to the COVID-19 pandemic, the unemployment rate had been trending downward since 2010, with the lowest unemployment rates since 1990 occurring in 2018 and 2019.

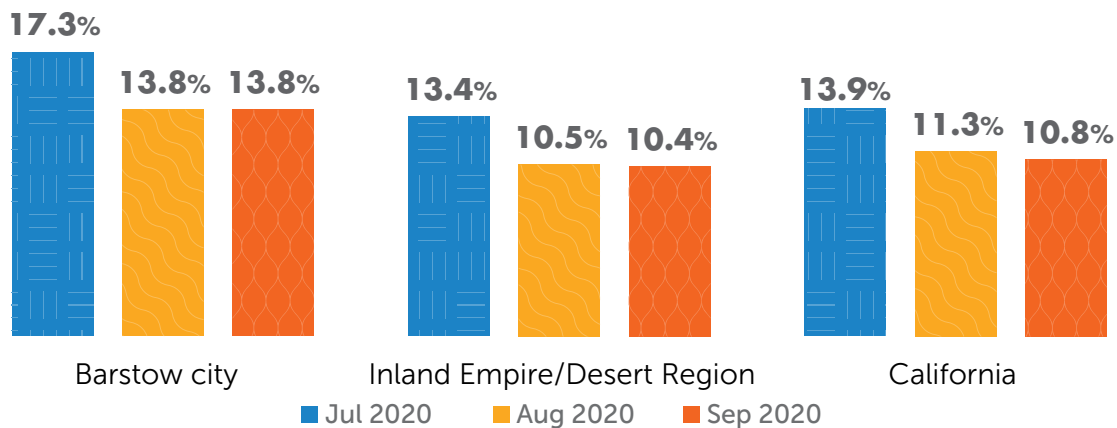
In 2015, the annual average unemployment rate in Barstow was 8.7%, or 700 residents. By 2019, the unemployment rate fell to 5.2%, with the number of unemployed residents dropping to 500.

Exhibit 7: Annual average unemployment rate in Barstow city, Inland Empire/Desert Region, and California (in percent)



The COVID-19 pandemic and subsequent economic shutdown in March 2020 resulted in a dramatic increase in the unemployment rate. Exhibit 8 displays the current unemployment rate for Barstow, the Inland Empire/Desert Region, and California from July 2020 through September 2020. The current unemployment rates for other communities in the Barstow College area are available in Appendix B.

Exhibit 8: Unemployment Rate in Barstow city, Inland Empire/Desert region, and California July-September 2020



INDUSTRY EMPLOYMENT AND BUSINESS ACTIVITY

In 2019, there were 24,020 jobs in the Barstow College area, accounting for approximately 1.4% of the total regional employment (Exhibit 9). Over the next five years, employment in the Barstow College area is projected to grow by 3.5%, adding 835 jobs by 2024. The Barstow College area is projected to grow more slowly than the region overall at 8.4%, and California at 6.0%.

Exhibit 9: Five-year industry employment projections for the Barstow College area, the Inland Empire/Desert Region, and California

	Barstow College Area	Inland Empire/Desert Region	California
2019 Jobs	24,020	1,747,341	20,003,848
2024 Jobs	24,855	1,893,522	21,200,103
Jobs Change	835	146,181	1,196,255
2019-2024 % Change	3.5%	8.4%	6.0%

Using the North American Industry Classification System (NAICS), industries were ranked by their 2019 job count and projected job growth through 2024 (Exhibit 10). In the Barstow College area, the industries with the most jobs were government (10,746 jobs), retail trade (2,882 jobs), accommodation and food services (2,526 jobs), and health care and social assistance (1,301 jobs). Industries projected to add the most jobs through 2024 are accommodation and food services (316 jobs added), government (214 jobs), professional, scientific, and technical services (135 jobs), and healthcare and social assistance (132 jobs).

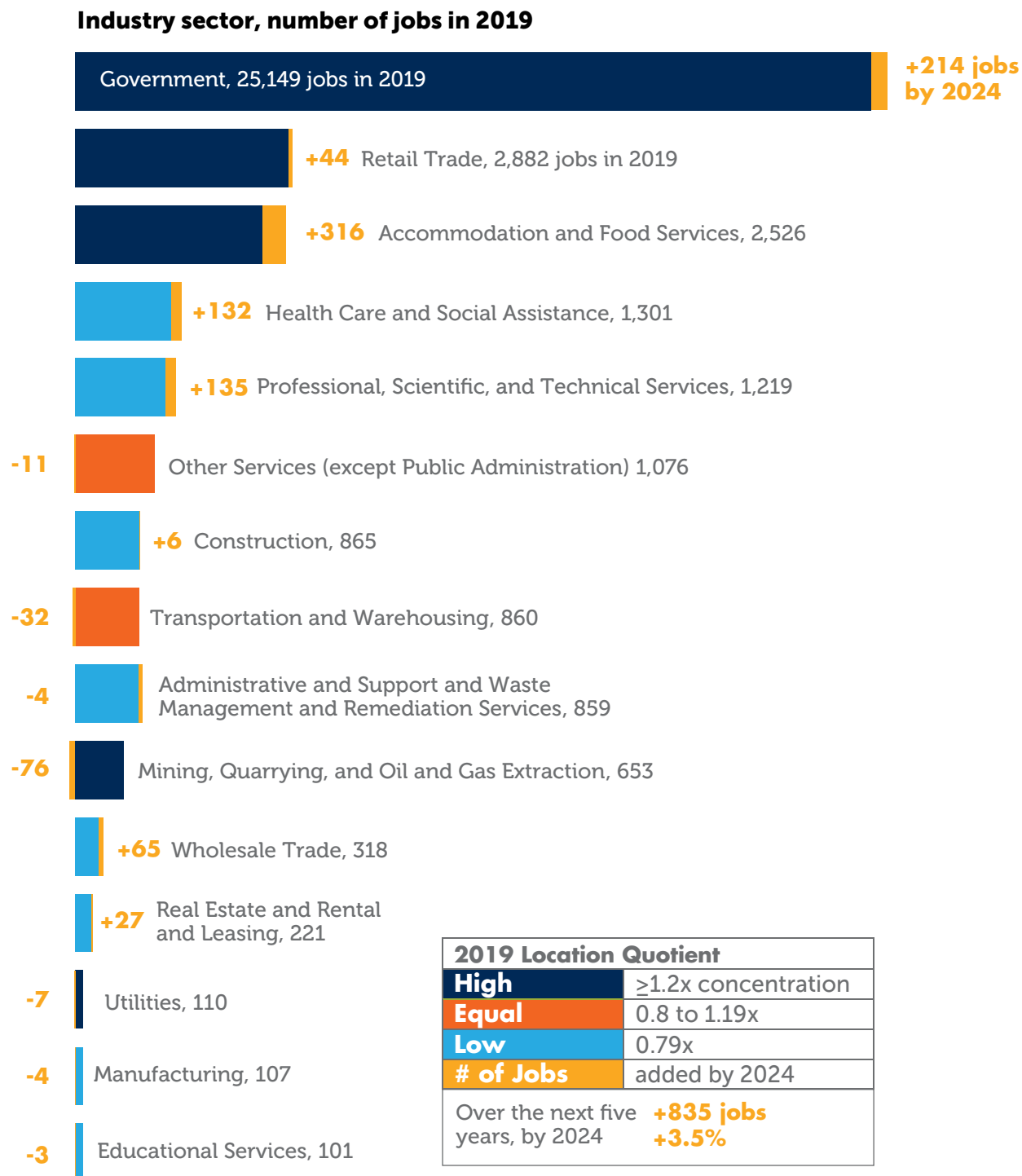
Exhibit 10 also displays the 2019 location quotient for each industry, which quantifies its concentration in the regional economy compared to the nation. A high location quotient (1.2 or greater) reveals industries that are particularly important to the area's economy. Conversely, industries with a low location quotient (0.79 or less) are less concentrated in the region than the national average, indicating that job seekers are more likely to find jobs in these industries elsewhere.

The three top industries in terms of overall employment also have industry concentrations that are greater or equal to the national average, representing 67% of total jobs in the area (16,154 jobs out of 24,020 total jobs).

Major industry groups with less than 100 jobs, along with key industry terms are displayed in Appendix C.



Exhibit 10: Major industries in the Barstow College area, number of jobs in 2019, and number of jobs added by 2024



OCCUPATIONAL EMPLOYMENT IN THE BARSTOW COLLEGE AREA

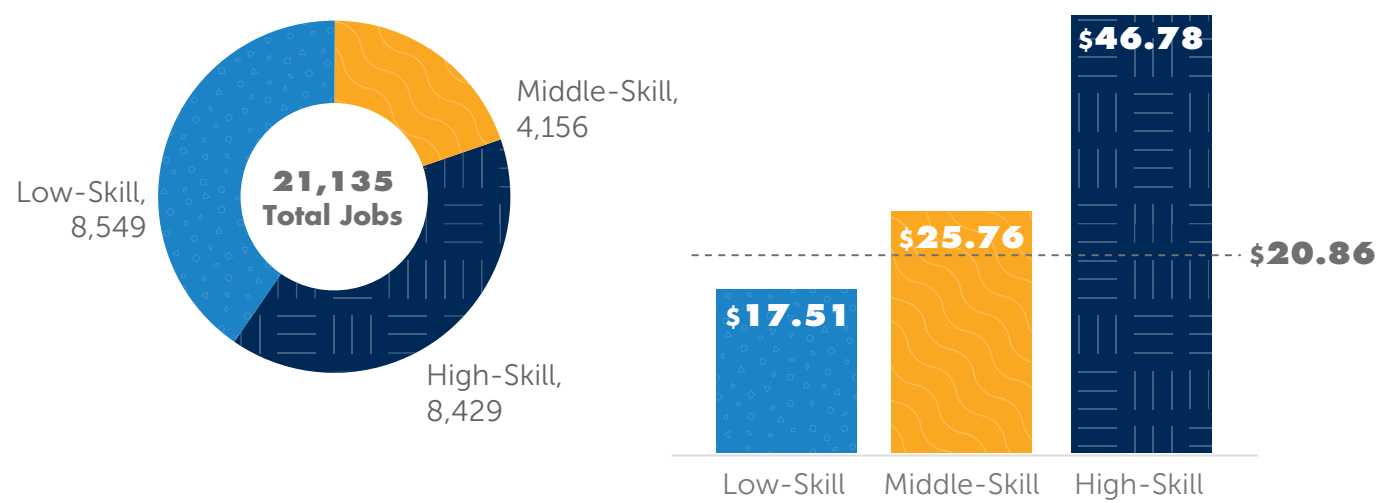
Occupational employment in the area was analyzed in terms of skill level. The California Community Colleges provide education and training that generally prepares workers to enter middle-skill jobs. Middle-skill occupations typically require educational attainment beyond a high school diploma, but less than a four-year degree. Most middle-skill jobs offer a higher pay rate than lower-skill jobs, making them an excellent fit for community college students on a CE pathway toward high-demand careers that pay a living wage.

Higher-skill jobs, for this study, are those that require a bachelor’s degree. Focusing on higher-skill jobs demonstrates the types of jobs available to students after completing a transfer program to a four-year educational institution. This assessment does not include occupations that typically require an education beyond a bachelor’s degree, such as physicians, lawyers, and most scientists. Military-specific occupations in the Barstow College area were removed from further analysis (-2,885 jobs).

Of the 21,135 jobs in the Barstow College area in 2019, approximately 40% were classified as middle-skill jobs, 20% were higher-skill, and 40% were lower-skill (Exhibit 11). Through 2024, employers expect to have 13,635 job openings to fill newly created positions and as well as existing jobs that workers are permanently vacating (due to occupational transfers and retirements). While most of these opportunities will be in lower-skill occupations, 938 middle-skill openings are expected annually in the Barstow College area through 2024.

Community colleges also should ensure that their training programs lead to occupations with adequate annual job openings and self-sustaining earnings. For this study, an occupation is considered **in-demand** if it has **100 annual job openings** or more over the next five years in the Inland Empire/Desert Region, even if the job openings are lower in the Barstow College area. Occupations are considered **high-wage** if the median hourly wage **meets or exceeds \$20.86 per hour**. Exhibit 11 displays occupations by skill level and average hourly wage for each skill-level category.

Exhibit 11: Breakdown of total jobs in the Barstow College area by skill level with associated median wage



BARSTOW COLLEGE PROGRAM OFFERINGS BY CAREER EDUCATION INDUSTRY SECTOR

The California Department of Education (CDE) developed CE Model Curriculum Standards for grades 7 through 12 that categorize courses and programs into 15 sectors. The CE model sectors are not to be confused with the NAICS employment sectors in the previous section. The CE model provides a useful way to classify postsecondary CE offerings and connect career pathways from high school to college.

Barstow College currently offers programs within seven of the 15 CDE sectors:

- Business and Finance
- Education, Child Development, and Family Services
- Fashion and Interior Design
- Information and Communications Technologies
- Manufacturing and Product Development
- Public Service
- Transportation

The following sections include the results of a CDE sector analysis that provides details on each CDE sector, including local and regional job openings and median wages for each occupation. Occupations are separated into middle- and higher-skill opportunities. Employment opportunities for both middle- and higher-skill jobs within each CDE sector that Barstow College does not currently offer training for are provided at the end of each sector or pathway. **Appendix D** displays key terms, as well as annual job openings and in-depth wage categories for each occupation in the Barstow College area and Inland Empire/Desert Region.

This analysis details employment opportunities for **64 unique occupations**, yielding **483 annual job openings** within the Barstow College area. Nearly three-fourths of these job opportunities are middle-skill, totaling 339 annual job openings. While there are fewer higher-skill opportunities available in the area, these openings typically offer a higher wage.

There are additional employment opportunities in the Barstow College area for which there are currently no relevant training programs being offered. With the appropriate level of education and training, the Barstow College area's resident population could potentially explore an additional 179 job openings.





BUSINESS AND FINANCE SECTOR

Students participating in business and finance programs gain skills that apply to nearly every employer, career path, and industry sector (McCabe, Ferrier, & Yates). These programs prepare students for multiple pathways, including business management, financial services (such as accounting, banking, and investing), and international business careers. Programs in this sector train 20 unique middle- and higher-skill occupations with a combined total of 194 annual job openings.

Business Management Pathway

Barstow College offers several business management programs under the broad business administration umbrella. The CDE pathways linked to business administration TOP codes are business management and financial services, depending on the concentration. The business management pathway provides entrepreneurship, goal setting, and resource allocation skills for students entering the workforce. Additionally, these programs support managers and supervisors looking to boost their management techniques. Programs in this pathway train students to enter 13 occupations that have a combined total of 148 annual job openings in the Barstow College area.

Exhibits 12 through 41 display job figures for the Barstow College area (College Area) and the total two-county Inland Empire/Desert Region (Regional). Appendix D displays job figures for each occupation features in this report.

Barstow College programs:

- Business
- Business Administration
- Management
- Entrepreneurship and Innovation

Exhibit 12: Business management middle-skill occupations

Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Secretaries and Administrative Assistants	240	27	2,760	\$18.58
First-line Supervisors of Office and Administrative Support Workers	143	16	1,750	\$26.41
Administrative Services Managers	46	4	259	\$47.33
Executive Secretaries and Executive Administrative Assistants	38	4	397	\$28.13
Human Resources Assistants, Except Payroll and Timekeeping	35	4	182	\$19.65
Payroll and Timekeeping Clerks	25	3	238	\$22.56
Data Entry Keyers	15	2	199	\$15.26

Exhibit 13: Business management higher-skill occupations

Higher-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
General and Operations Managers	260	26	2,162	\$48.54
Management Analysts	199	24	679	\$37.83
Human Resources Specialists	155	16	607	\$29.60
Market Research Analysts and Marketing Specialists	58	8	591	\$26.18
Compliance Officers	73	7	274	\$35.37
Human Resources Managers	78	7	152	\$54.47

Financial Services Pathway

Students participating in these programs will gain knowledge of industry standards, financial services skills, and the ability to formulate and interpret financial information. There are employment opportunities in the area for those completing a community college education as well as those who obtain a bachelor's degree. There are considerably more job openings in the greater Inland Empire/Desert Region than in the Barstow College area. This pathway trains students to enter seven occupations that have a combined total of 46 annual job openings.

Barstow College program:

- Accounting

Exhibit 14: Financial services middle-skill occupations

Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Bookkeeping, Accounting, and Auditing Clerks	154	19	2,079	\$19.60
Claims Adjusters, Examiners, and Investigators	137	12	341	\$12.97
Loan Interviewers and Clerks	<10	0	103	\$19.92
Tax Preparers	<10	0	123	\$16.73
Loan Interviewers and Clerks	69	7	103	\$19.92
Tax Preparers	49	6	123	\$16.73

Exhibit 15: Financial services higher-skill occupations

Higher-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Accountants and Auditors	82	9	934	\$33.75
Financial Managers	52	5	421	\$53.14
Personal Financial Advisors	<10	1	122	\$36.52



EDUCATION, CHILD DEVELOPMENT, AND FAMILY SERVICES SECTOR

Education and training in this sector provides students with the skills needed to pursue a career in childcare, family, or social services, or become teachers (Heuvel & Ford). Students enrolled in these programs will be qualified to enter the occupations listed below, many of which are higher skill and in demand. This CDE sector has four pathways: child development, consumer services, education, and family and human services. This sector's programs lead to 13 unique middle- and higher-skill occupations with a combined total of 147 annual job openings. An additional 10 openings are available with the expansion of program offerings in this sector.

Child Development and Education Pathways

The child development pathway provides students with the training needed to enter middle-skill childcare jobs. The education pathway provides foundational training for future educators, many of whom will require a four-year education and a state credential to enter employment. Programs in this pathway train students to enter 13 occupations that have a combined total of 147 annual job openings. Most job opportunities in this pathway are higher-skill occupations.

Barstow College programs:

- Child Development (Level 1-4)
- Early Child Education
- Elementary Teacher Education
- Family Daycare

Exhibit 16: Child development and education middle-skill occupations

Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Teacher Assistants	263	31	2,469	\$16.84
Childcare Workers	110	16	2,008	\$12.04
Self-Enrichment Education Teachers	55	7	436	\$17.07
Preschool Teachers, Except Special Education	31	4	413	\$14.36



Exhibit 17: Child development and education higher-skill occupations

Higher-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Substitute Teachers	204	25	1,788	\$18.05
Elementary School Teachers, Except Special Education	284	24	1,962	\$42.88
Teachers and Instructors, All Other	114	14	615	\$16.79
Secondary School Teachers, Except Special and Career/Technical Education	151	13	1,034	\$40.49
Middle School Teachers, Except Special and Career/Technical Education	42	4	352	\$39.99
Special Education Teachers, Kindergarten and Elementary School	29	3	203	\$37.82
Instructional Coordinators	24	3	201	\$49.62
Kindergarten Teachers, Except Special Education	15	2	144	\$34.17
Special Education Teachers, Secondary School	15	1	114	\$43.18

Additional Education, Child Development, and Family Services Sector Occupations

Future program development by Barstow College may focus on the following occupations related to the consumer services, and family and human services pathways. While the four occupations in this pathway have limited annual job openings in the Barstow College area, abundant job opportunities are available to students willing to commute within the region.

Exhibit 18: Additional education, child development, and family services occupations

Additional Sector Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Social and Human Services Assistants	31	4	713	\$17.90
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	20	2	532	\$21.24
Child, Family, and School Social Workers	17	2	234	\$25.85
Interpreters and Translators	19	2	100	\$26.11



FASHION AND INTERIOR DESIGN SECTOR

Pathways within this CDE sector are fashion design and merchandising, interior design, and personal services. Knowledge and skills are acquired within a sequential, standards-based pathway program that integrates hands-on projects, work-based instruction, and leadership development, such as the education and training programs offered through Family, Career and Community Leaders of America (FCCLA). This sector trains four middle-skill occupations with a combined total of 33 annual job openings. Expansion of program offerings in this sector would add an additional five annual job openings for middle-skill occupations.

Personal Services Pathway

Programs in this pathway include barbering, cosmetology, and makeup artistry. Barstow College's cosmetology program prepares students to become hairdressers, barbers, manicurists, and skincare specialists. Programs in this pathway prepare students for four occupations with a combined total of 33 annual job openings. Altogether, occupations in this pathway offer many middle-skill job openings, but the median reported hourly wages are below the high-wage standard of \$20.86.

Barstow College program:

- Cosmetology

Exhibit 19: Personal services middle-skill occupations

Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Barbers	131	18	161	\$12.14
Hairdressers, Hairstylists, and Cosmetologists	85	12	1,530	\$14.95
Manicurists and Pedicurists	13	2	371	\$12.84
Skincare Specialists	<10	1	126	\$14.87

Additional personal services pathway training programs may provide skills that lead to the following middle-skill occupations.

Exhibit 20: Personal services higher-skill occupations

Higher-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
First-Line Supervisors of Personal Service Workers	23	3	433	\$17.62
Massage Therapists	11	2	384	\$15.94



INFORMATION AND COMMUNICATIONS TECHNOLOGIES SECTOR

Information and communication technologies sector programs prepare students to meet the rapid changes in computer, networking, and software fields. Although employers in this sector often seek candidates with a bachelor's degree, job opportunities also exist for those with a community college education (McCabe & Page). This pathway contains information support and services; networking, software, and systems development; and game and simulation. Barstow College provides a program in the information support pathway that leads to high-wage, high-growth job opportunities. This sector's programs train six middle- and higher-skills occupations with a combined total of 21 annual job openings. There are an additional 12 annual job openings available in this sector with the appropriate program offering.

Information Support and Services Pathway

This pathway prepares students for careers that involve the implementation of computer services and software, support of multimedia products and technical services, and the administration of information and communication systems. This pathway provides skills that lead to six occupations with a combined total of 21 annual job openings in the Barstow College area and 1,132 annual job openings in the Inland Empire/Desert Region.

Barstow College programs:

- Computer and Cyber Security Specialist (Security+)
- Computer and Network Specialist (Network+)
- Computer Information Systems
- Computer Science
- Management Information Systems
- Unix Administrator (Linux+)
- Computer Business Information Systems
- Microsoft Office Specialist

Exhibit 21: Information support and services middle-skill occupations

Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Computer User Support Specialists	59	6	390	\$26.11
Computer, Automated Teller, and Office Machine Repairers	35	3	89	\$16.95
Computer Network Support Specialists	16	2	108	\$28.00

Exhibit 22: Information support and services higher-skill occupations

Higher-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Computer Systems Analysts	40	4	186	\$39.87
Network and Computer Systems Administrators	40	3	158	\$38.48
Computer and Information Systems Managers	30	3	152	\$68.15

Additional Information and Communication Technologies Sector Occupations

Future program development by Barstow College may focus on the following occupations related to the software and systems development pathway, and the game and simulation pathway. While there may not be many job openings in the Barstow College area (12 annual job openings), these occupations are expected to have 730 annual job openings in the region. These occupations offer a median hourly wage that exceeds the \$20.86 per hour high-wage criteria.

Exhibit 23: Additional information and communications technologies occupations

Additional Occupations	Skill-level	Barstow Area 2019 Jobs	Barstow Area Annual Openings	Regional Annual Openings	Median Hourly Earnings
Software Developers, Applications	Higher-skill	31	3	237	\$48.70
Network and Computer Systems Administrators	Middle-skill	40	3	158	\$38.48
Software Developers, Systems Software	Higher-skill	17	2	118	\$48.83
Web Developers	Middle-skill	19	2	109	\$24.36
Computer Network Support Specialists	Middle-skill	16	2	108	\$28.00





MANUFACTURING AND PRODUCT DEVELOPMENT SECTOR

The manufacturing and product development CDE sector provides a foundation in manufacturing processes and systems, including graphic design production, machine tooling and forming, welding and materials joining, and product innovation and design. Students can explore this sector via the following pathways: graphic production technologies; machining and forming technologies; welding and materials joining; and product innovation and design. This sector trains for 10 middle-skill occupations with a combined total of 66 annual job openings. Expansion of program offerings in this sector could result in an additional four job openings per year.

Graphic Production Technologies Pathway

This pathway provides students with foundational skills that lead to careers in the graphic arts and printing technology industries. Barstow College has one program in this pathway that trains photographers. Although the college's area is only forecasted to have one annual job opening, nearly 150 annual openings are anticipated in the region.

Barstow College program:

- Photography

Exhibit 24: Graphic production technologies middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Photographers	<10	1	146	\$20.05

Machine and Forming Technologies Pathway

The machine and forming technologies pathway provides students with education and training for occupations related to machine tools and manufacturing processes. There are 41 annual job openings project for the Barstow College area, but many more in the broader region.

Barstow College programs:

- Industrial Maintenance Electrical and Instrumentation
- Industrial Maintenance Electrical and Instrumentation, Level 2
- Industrial Maintenance Technology
- Industrial Maintenance Technology, Level 3
- Electrical Skills Level 1

Exhibit 25: Machine and forming technologies middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Maintenance and Repair Workers, General	246	23	1,684	\$19.84
Electrical and Electronics Repairers, Commercial and Industrial Equipment	46	4	70	\$31.82
Industrial Machinery Mechanics	40	4	301	\$27.95
Inspectors, Testers, Sorters, Samplers, and Weighers	38	5	625	\$17.65
Electrical and Electronics Engineering Technicians	28	3	107	\$29.45
Machinists	21	2	411	\$19.27

Welding and Material Joining Pathway

Welding programs provide students with skills in the interpretation and layout of welded and assembled-part prints, cutting, bonding, and mechanical fastening. The skills taught in this program may also be used in the construction sector or any industry that requires metal maintenance. Barstow College offers one program in this pathway that prepares students to enter three occupations, accounting for 24 annual job openings.

Barstow College program:

- Welding Technology

Exhibit 25: Machine and forming technologies middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Structural Iron and Steel Workers	10	10	237	\$32.33
Sheet Metal Workers	14	10	261	\$24.15
Welders, Cutters, Solderers, and Brazers	34	4	439	\$18.41

Additional Manufacturing and Product Development Sector Occupations

Future development in this sector may focus on the following occupations related to programs not currently offered by Barstow College.

Exhibit 27: Additional manufacturing and product development occupations

Additional Sector Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
First-Line Supervisors of Production and Operating Workers	35	3	589	\$28.35
Molders, Shapers, and Casters, Except Metal and Plastic	<10	1	117	\$14.56
Computer-Controlled Machine Tool Operators, Metal and Plastic	<10	0	102	\$17.92





PUBLIC SERVICES SECTOR

Public services coursework includes public safety, emergency response, and legal practices (McCabe & Beck). The following pathways comprise this industry: public safety, emergency response, and legal practices. Programs in this CDE sector train students to enter three middle-skills occupations with a combined total of 27 annual job openings. There is an opportunity to access an additional 14 job openings per year by expanding program offerings in this sector.

Public Safety Pathway

This pathway is designed for students who want to pursue a career in law enforcement or public safety. Barstow offers administration of justice within this pathway. In the college's area, public safety occupations are expected to have 27 annual job openings over the next five years. In the Inland Empire/Desert region, there will be more than 1,200 annual openings for the same occupations.

Barstow College programs:

- Administration of Justice
- Corrections

Exhibit 28: Public safety middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Police and Sheriff's Patrol Officers	201	15	628	\$47.03
Correctional Officers and Jailers	95	9	463	\$38.33
Detectives and Criminal Investigators	41	3	85	\$49.12

Additional Public Services Sector Occupations

Future development in this sector may focus on the following legal practices pathway and emergency response occupations. While there may be few job opportunities in the Barstow College area, students should find plenty of high-wage jobs in the region.

Exhibit 29: Additional public services occupations

Additional Sector Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Annual Openings	Regional Annual Openings	Median Hourly Earnings
Emergency Medical Technicians and Paramedics	75	6	280	\$15.49
Firefighters	51	4	269	\$30.40
Paralegals and Legal Assistants	24	3	262	\$27.46
Legal Secretaries	<10	1	152	\$25.39
Legal Support Workers, All Other	20	2	51	\$25.83



TRANSPORTATION SECTOR

The pathways in the transportation CDE sector emphasize real-world, occupationally relevant experiences of significant scope and depth in three areas: operations; structural repair and refinishing; and systems diagnostics, service, and repair. Programs in this sector train students to enter eight middle-skill occupations with a combined total of 61 annual job openings. In the Barstow College area, there are an additional 134 annual job openings in this sector, for which there are currently no related program offerings.

Operations Pathway

The operations pathway prepares students for various careers that support the movement of goods in the transportation industry. Barstow College offers two programs in this pathway that prepare students to enter four related occupations with 24 annual job openings.

Barstow College programs:

- Warehousing and Logistics
- Warehousing and Logistics Level 2

Exhibit 30: Operations middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Shipping, Receiving, and Traffic Clerks	53	6	1,531	\$15.99
Production, Planning, and Expediting Clerks	40	5	537	\$22.06
Transportation, Storage, and Distribution Managers	50	4	279	\$41.71
Cargo and Freight Agents	<10	1	123	\$23.15

Besides the programs offered in the operations pathway, Barstow College may consider expanding its programs to address occupations that operate transportation equipment. Barstow College should consider reviewing the programs offered by other community colleges and private postsecondary institutions before proceeding with program development.

Exhibit 31: Additional operations occupations

Additional Operations Pathway Middle-skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Openings	Regional Annual Openings	Median Hourly Earnings
Heavy and Tractor-Trailer Truck Drivers	224	25	4,395	\$21.57
Bus Drivers, School or Special Client	111	16	516	\$20.60
Airline Pilots, Copilots, and Flight Engineers	128	13	94	\$96.81
Locomotive Engineers	67	6	55	\$35.40
Air Traffic Controllers	59	6	48	\$20.25
Commercial Pilots	43	5	49	\$30.93
Bus Drivers, Transit and Intercity	12	2	196	\$20.53

Systems Diagnostics, Services, and Repair Pathway

This pathway prepares students for employment in transportation systems, including motor vehicles, rail systems, and small-engine equipment. Barstow College offers two programs in this pathway that prepare students to enter four related occupations with 37 annual job openings.

Barstow College programs:

- Automotive Technology
- Diesel Technology

Exhibit 32: Systems diagnostics, services, and repair middle-skill occupations

Middle-Skill Occupations	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Automotive Service Technicians and Mechanics	140	14	1,217	\$19.51
First-line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	84	9	1,134	\$27.19
Bus and Truck Mechanics and Diesel Engine Specialists	77	7	483	\$24.05
Mobile Heavy Equipment Mechanics, Except Engines	65	7	240	\$30.12

In addition to the programs offered in the systems diagnostic, services, and repair pathway, Barstow College may consider expanding its programs to address aviation repair occupations. Barstow College should consider reviewing the programs offered by other community colleges and private postsecondary institutions before proceeding with program development.

Exhibit 33: Additional systems diagnostics, services, and repair occupations

Additional Systems Diagnostics, Services, and Repair Pathway Occupations	Barstow Area 2019 Jobs	Barstow Annual Openings	Regional Annual Openings	Median Hourly Earnings
Aircraft Mechanics and Service Technicians	195	16	185	\$34.63
Automotive Body and Related Repairers	12	1	167	\$18.48



ADDITIONAL CAREER EDUCATION SECTORS AND JOBS

There are several CDE sectors for which Barstow College does not offer programs. The following are middle- and higher-skill occupations that are in-demand and provide high wages in the Barstow College area. Barstow College may choose to consider these occupations as the college expands its CE offerings.

Agriculture and Natural Resources Sector

Agriculture and natural resources students acquire foundational skills and knowledge in agricultural business, mechanics, science, and animal care (Heuvel & Mooney).

Exhibit 34: Agriculture and natural resources training opportunities

Agriculture and Natural Resources Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers (Middle-skill)	<10	1	267	\$22.64
Farmers, Ranchers, and Other Agricultural Managers (Middle-skill)	0	0	230	\$21.41

Arts, Media, and Entertainment Sector

Arts, media, and entertainment coursework provides students with the necessary skills to function in the media-rich 21st century (Edmonds & Mitchel). Students enrolled in these programs will learn skills that lead to creative, audio/video, and performance occupations. These opportunities may require that students move or travel outside of the region for work.

Exhibit 35: Arts, media, and entertainment training opportunities

Arts, Media, and Entertainment Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Graphic Designers (Middle-skill)	16	2	255	\$20.71
Writers and Authors (Higher-skill)	<10	1	184	\$25.20
Printing Press Operators (Middle-skill)	<10	1	128	\$18.04
Music Directors and Composers (Higher-skill)	<10	1	85	\$22.59
Art Directors (Higher-skill)	<10	0	100	\$24.62

Building and Construction Trades Sector

Programs related to the building and construction trades sector equip students with the technical skills needed to transition to postsecondary training or a construction trade (McCabe & Dunn).

Exhibit 36: Building and construction trades training opportunities

Building and Construction Trades Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Electricians (Middle-skill)	95	12	1,365	\$24.28
Operating Engineers and Other Construction Equipment Operators (Middle-skill)	108	12	554	\$38.15
First-Line Supervisors of Mechanics, Installers, and Repairers (Middle-skill)	116	11	500	\$33.91
First-Line Supervisors of Construction Trades and Extraction Workers (Middle-skill)	92	10	1,000	\$32.24
Carpenters (Middle-skill)	65	7	2,591	\$22.93
Plumbers, Pipefitters, and Steamfitters (Middle-skill)	39	5	983	\$24.48
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (Middle-skill)	27	3	572	\$19.96
Construction and Building Inspectors (Middle-skill)	17	2	164	\$40.80
Structural Iron and Steel Workers (Middle-skill)	<10	1	237	\$32.33
Glaziers (Middle-skill)	<10	0	125	\$29.05
Brickmasons and Blockmasons (Middle-skill)	<10	0	120	\$24.57

Energy, Environment, and Utilities Sector

Students enrolled in coursework related to the energy, environment, and utilities sector acquire foundational skills in environmental resources, energy and power technology, and telecommunications (McCabe & Yates).

Exhibit 37: Energy, environment, and utilities training opportunities

Energy, Environment, and Utilities Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Electrical Power-Line Installers and Repairers (Middle-skill)	97	8	148	\$35.93
Telecommunications Line Installers and Repairers (Middle-skill)	63	7	179	\$25.59
Telecommunications Equipment Installers and Repairers, Except Line Installers (Middle-skill)	40	4	403	\$26.71
Water and Wastewater Treatment Plant and System Operators (Middle-skill)	22	2	146	\$32.87

Engineering and Architecture Sector

Engineering and architecture students can expand career awareness through four pathways in this sector.

Exhibit 38: Engineering and architecture training opportunities

Engineering and Architecture Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Civil Engineers (Higher-skill)	116	12	285	\$52.01
Mechanical Engineers (Higher-skill)	30	3	123	\$40.53
Architectural and Engineering Managers (Higher-skill)	30	3	101	\$70.20
Architectural and Civil Drafters (Middle-skill)	18	2	123	\$27.44
Industrial Engineers (Higher-skill)	10	1	119	\$38.44
Architects, Except Landscape and Naval (Higher-skill)	<10	1	102	\$35.82

Health Science and Medical Technology Sector

Students enrolled in coursework related to the health science and medical technology sector will gain technical skills and effective methods for the safe delivery of health care (McCabe, Beck). The six pathways in this sector are biotechnology, patient care, health care administrative services, health care operational support services, public and community health, and mental and behavioral Health.

Exhibit 39: Health science and medical technology training opportunities

Health Science and Medical Technology Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Registered Nurses (Middle-skill)	358	23	2,616	\$47.45
Medical Assistants (Middle-skill)	83	10	1,287	\$15.23
Nursing Assistants (Middle-skill)	60	8	1,311	\$15.62
Medical Secretaries (Middle-skill)	53	7	1,095	\$17.40
Dental Assistants (Middle-skill)	55	7	849	\$15.68
Licensed Practical and Licensed Vocational Nurses (Middle-skill)	65	5	809	\$25.10
Pharmacy Technicians (Middle-skill)	39	4	406	\$18.30
Medical and Health Services Managers (Higher-skill)	45	4	401	\$56.33
Clinical Laboratory Technologists and Technicians (Middle-skill)	34	3	194	\$24.72
Home Health Aides (Middle-skill)	10	2	995	\$16.01
Dental Hygienists (Middle-skill)	15	2	186	\$45.41
Medical Records and Health Information Technicians (Middle-skill)	24	2	184	\$22.44
Respiratory Therapists (Middle-skill)	21	2	150	\$35.39

Continued

Health Science and Medical Technology Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
Phlebotomists (Middle-skill)	<10	1	196	\$20.26
Psychiatric Technicians (Middle-skill)	14	1	149	\$34.62
Radiologic Technologists (Middle-skill)	19	1	140	\$36.03
Surgical Technologists (Middle-skill)	11	1	135	\$27.39
Physical Therapist Assistants (Middle-skill)	<10	1	103	\$34.61

Hospitality, Tourism, and Recreation Sector

Coursework aligned with the hospitality, tourism, and recreation industry sectors prepares students to enter food service, recreation, and hospitality employment (Heuvel & Wright).

Exhibit 40: Hospitality, tourism, and recreation training opportunities

Hospitality, Tourism, and Recreation Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
First-Line Supervisors of Food Preparation and Serving Workers (Middle-skill)	153	30	1,908	\$14.94
Recreation Workers (Middle-skill)	40	8	745	\$12.61
Food Service Managers (Middle-skill)	60	8	653	\$20.87
First-Line Supervisors of Housekeeping and Janitorial Workers (Middle-skill)	54	7	271	\$19.80
Fitness Trainers and Aerobics Instructors (Middle-skill)	14	3	695	\$18.92
Chefs and Head Cooks (Middle-skill)	21	3	252	\$20.24
Reservation and Transportation Ticket Agents and Travel Clerks (Middle-skill)	14	2	132	\$14.63
First-Line Supervisors of Gaming Workers (Middle-skill)	10	1	146	\$27.77
Meeting, Convention, and Event Planners (Higher-skill)	<10	1	125	\$22.96
Lodging Managers (Middle-skill)	11	1	53	\$35.65

Marketing, Sales, and Services Sector

Marketing, sales, and services coursework is designed to meet businesses' needs by providing students with communication, marketing, selling, and product management skills (McCabe & Ferrier). The three pathways in this sector are marketing, professional sales, and entrepreneurship/self-employment. Principles of promotion, selling, and communication are vital to this sector.

Exhibit 41: Marketing, sales, and services training opportunities

Marketing, Sales, and Services Training Opportunities (Skill-level)	Barstow Area 2019 Jobs	Barstow Area Annual Job Openings	Regional Annual Job Openings	Regional Median Wage
First-Line Supervisors of Retail Sales Workers (Middle-skill)	277	34	1,981	\$19.24
Customer Service Representatives (Middle-skill)	127	18	2,658	\$17.44
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products (Middle-skill)	75	10	1,777	\$27.77
Buyers and Purchasing Agents (Middle-skill)	58	6	426	\$27.40
Sales Managers (Higher-skill)	52	5	559	\$43.00
First-Line Supervisors of Non-Retail Sales Workers (Middle-skill)	38	4	402	\$24.90
Public Relations Specialists (Higher-skill)	21	3	177	\$29.25
Real Estate Sales Agents (Middle-skill)	23	2	476	\$26.42
Marketing Managers (Higher-skill)	13	2	130	\$48.04
Securities, Commodities, and Financial Services Sales Agents (Higher-skill)	12	1	283	\$20.34
Advertising Sales Agents (Middle-skill)	<10	1	176	\$20.31
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (Higher-skill)	<10	1	169	\$34.64
Real Estate Brokers (Middle-skill)	<10	1	168	\$37.66



KEY FINDINGS AND RECOMMENDATIONS

Key findings

Projected growth in the number of residents age 9 and younger in the Barstow College area represents a significant portion of the college's future pipeline. This growth presents an opportunity for targeted outreach and communication about the college's program offerings in the next seven to 10 years, especially with the local K-12 education system.

In the Barstow College area, 11% of residents hold an associate degree and 27% hold a bachelor's degree. The proportion of residents with a high school diploma or less, 46%, is a relatively substantial share of the population. By further developing connections with the secondary education system, high school graduates represent a sizable group of potential incoming college students in the near term.

There are seven sectors with programs that are currently offered by Barstow College. In sum, there are 339 annual job openings for middle-skills occupations related to the seven sectors. The sectors and their respective annual job openings in the college's area are:

- Business and Finance Sector – 194 openings
- Education, Child Development, and Family Services – 147 openings
- Manufacturing and Product Development – 66 openings
- Transportation – 61 openings
- Fashion and Interior Design – 33 openings
- Public Service – 27 openings
- Information and Communications Technologies – 21 openings

Recommendations

There are multiple employment opportunities in the area with CE training requirements that are not currently addressed by Barstow College programs. Furthermore, several sectors for which the college does have training programs include occupations that fall outside of the existing training opportunities. These areas warrant further exploration to determine if it is appropriate for the college to create new programs or expand existing ones. Further research would determine if training programs exist at nearby private, technical colleges, or through other avenues. A conversation with regional employers who hire for these occupations could also reveal the potential of additional community college training programs to meet current and future industry needs.

Additionally, there are several sectors for which Barstow College does not have any existing program offerings. The occupations related to the non-represented sectors are primarily middle-skill occupations with large numbers of job openings in the Barstow College area and the broader region. Specifically, the health care sector represents many employment opportunities with wages higher than those in most other sectors. However, the cost of starting and operating health care programs is considerably high. A cost-benefit analysis of programs and occupations not currently in existence at Barstow College would be one way for the college to determine the feasibility of creating new program offerings.

Finally, while the numbers of occupations and job openings in the Barstow College area are relatively low, job openings in the greater region are numerous; this translates to many more job opportunities for students who have the ability and desire to commute outside of the Barstow College area for work. The college could market the regional job opportunities to students. Some points to consider for opportunities outside the immediate area are:

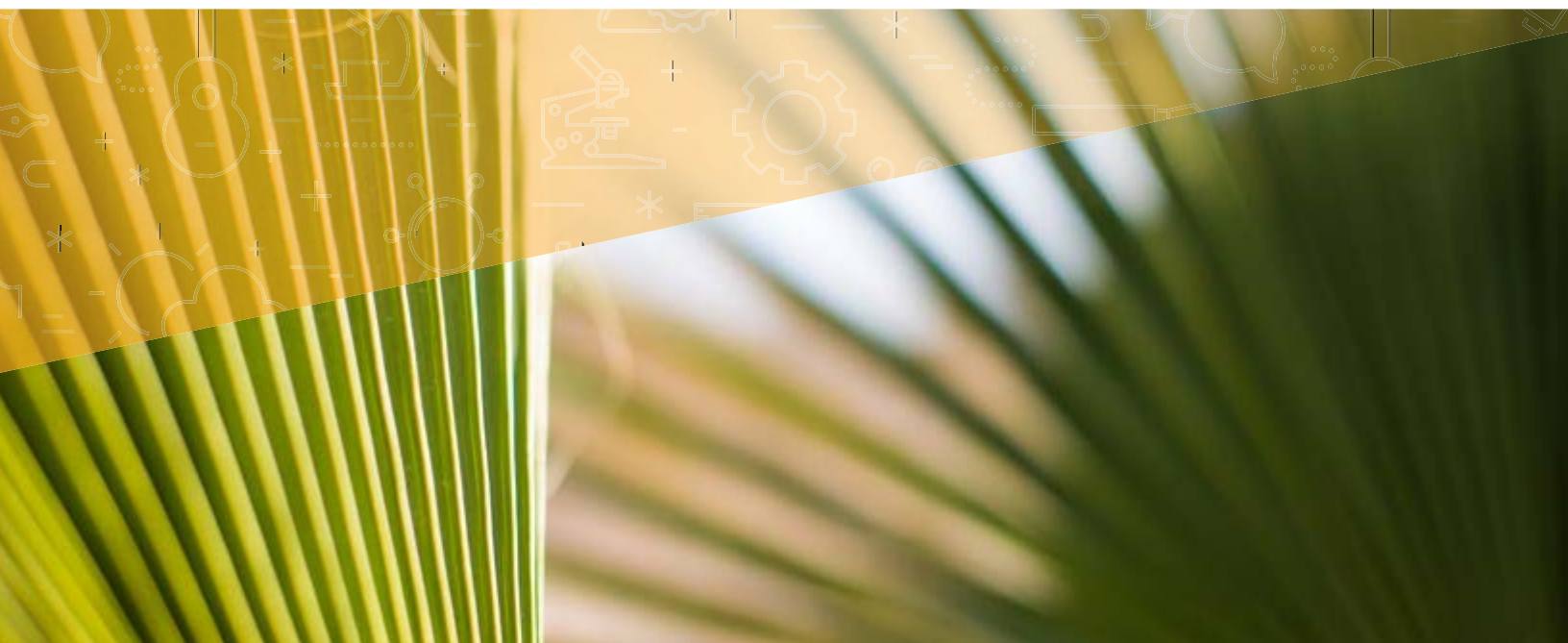
1. Barstow College may choose to investigate what programs other area community colleges are offering and whether they are providing a sufficient number of workers to fill job openings.
2. Barstow College may choose to identify employers whose businesses are close to its campus and determine those employers' near-term need for middle-skills workers.

APPENDIX A: BARSTOW COLLEGE AREA

17 ZIP codes were used for this analysis. All data is derived from Emsi 2020.2.

Exhibit A1: Population and job counts for ZIP codes in the Barstow College area

ZIP	City/Community	2019 Population	2019 Jobs	Middle-skill Job Count
92304	Amboy, CA	0	18	8
92309	Baker, CA	54	469	142
92310	Fort Irwin, CA	9,283	7,665	2,718
92311	Barstow, CA	33,314	11,584	3,918
92312	Barstow, CA	2,093	65	26
92323	Cima, CA	72	49	6
92327	Daggett, CA	203	84	53
92332	Essex, CA	65	18	6
92338	Ludlow, CA	91	227	34
92342	Helendale, CA	8,348	919	346
92347	Hinkley, CA	1,040	560	375
92364	Nipton, CA	212	46	15
92365	Newberry Springs, CA	2,980	323	135
92366	Mountain Pass, CA	27	16	9
92398	Yermo, CA	34	884	276
93516	Boron, CA (Kern County)	2,317	1,034	466
93596	Boron, CA (Kern County)	0	60	17
TOTAL		60,134	24,020	8,549



APPENDIX B: DEMOGRAPHIC COMPOSITION REFERENCE

Exhibit B1: Gender by area

Gender	Barstow College area (Percentage)	Inland Empire/Desert Region (Percentage)
Male	50.2%	50.2%
Female	49.8%	49.8%

Exhibit B2: Race and ethnicity by area

Race	Barstow College area (Percentage)	Barstow College area Percent Hispanic	Inland Empire/Desert Region (Percentage)	Inland Empire/Desert Region Percent Hispanic
White	72%	45%	78%	60%
Black	14%	15%	8%	14%
Two or More Races	5%	41%	4%	37%
Asian	4%	9%	7%	8%
American Indian or Native Alaskan	4%	81%	2%	78%
Native Hawaiian or Pacific Islander	1%	38%	0.5%	36%

Exhibit B3: Age by area

Age Group	Barstow College Area 2019 Share	Barstow College Five year Growth Rate	Inland Empire/Desert Region Share	Inland Empire/Desert Region Growth Rate
0-9	19%	3%	14%	7%
10-14	8%	-2%	7%	-3%
15-19	7%	0%	7%	1%
20-24	7%	-11%	7%	-5%
25-34	15%	-2%	15%	3%
35-44	12%	8%	13%	8%
45-54	10%	-5%	12%	-1%
55-64	10%	-6%	11%	1%
65+	13%	17%	13%	18%

Exhibit B4: Unemployment Rate by Community

City/Community	Annual Average 2019	July 2020	August 2020	September 2020
Barstow city	5.2%	17.3%	13.8%	13.8%
Boron CDP	5.0%	10.8%	8.0%	8.0%
Lenwood CDP	1.0%	3.7%	2.9%	2.9%
Riverside city	3.6%	12.6%	9.7%	9.6%



APPENDIX C: INDUSTRY REFERENCE AND KEY TERM DEFINITIONS

Industry employment is a count of jobs in a given geography. Businesses operating within the same industry produce similar goods and services and share comparable production processes for creating these goods and services. The North American Industry Classification System (NAICS) is the federal system used to classify all business establishments into specific industries. Staffing patterns show the distribution of occupational employment and demand for each industry. For example, Barstow College employs faculty, but the institution also hires a variety of administrators and support staff to maintain operations. The same is true for most industries. Regional educational institutions should be aware of the types of industries in their area to help inform the needed industry-specific occupational skills that may be required by local employers.

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region “unique.” A high location quotient (1.2 times or greater concentration in the local region compared to the nation) reveals industries that are highly represented and make the area unique. Conversely, industries with a low location quotient employ a smaller share of jobs than the national average, indicating that while job seekers may find work in these industries, they are more likely to find a higher concentration of these jobs elsewhere in the nation.

Major industry sectors with fewer than 100 jobs, along with their 2019 job count and expected five-year job growth are:

- **Finance and insurance**, 86 jobs in 2019, addition of one job by 2024
- **Arts, entertainment**, and recreation, 64 jobs in 2019, addition of six jobs by 2024
- **Information**, 24 jobs in 2019, addition of two jobs by 2024
- **Agriculture**, forestry, fishing, and hunting, 0 jobs in 2019, no jobs expected in 2024
- **Management of companies** and enterprises, 0 jobs in 2019, no jobs expected in 2024



APPENDIX D: OCCUPATIONAL REFERENCE AND DEFINITIONS, AND REFERENCE TABLE WITH OCCUPATIONAL DEMAND AND WAGES

An **occupation** is a set of activities or tasks that employees are paid to perform. Employees that perform essentially the same tasks are in the same occupation, whether or not they work in the same industry. Some occupations are concentrated in a few particular industries; other occupations are found in many industries. For example, jobs for registered nurses are concentrated in the health care industry sector, but these jobs may also exist in educational industries. The Standard Occupational Classification (SOC) System classifies 775 detailed occupations according to the tasks and duties of each job.

Skill Level Categories

- Lower-skill: Occupations that require a high school diploma or less.
- Middle-skill: Occupations that mostly require some college, a postsecondary certificate, or an associate degree. These are occupations relevant to community college training.
- Higher-skill: Occupations that mostly require a bachelor's degree or higher. These occupations are mostly trained by four-year colleges and universities.

Annual Job Openings are calculated by the sum in projected growth and replacement jobs (Growth + Replacements = Openings). Growth captures the change in the total number of workers employed in an occupation, while replacement jobs are estimates of workers permanently leaving an occupation and needing to be replaced by new hires. A combination of both numbers indicates total openings for the time frame.

Perkins V requirements are used to determine the occupations that are good investments for training resources. In addition to the training program needing to offer an industry recognized degree or certificate, an occupation also needs to meet one (1) of the following criteria to qualify for Perkins V:

1. High-wage, or
2. In-demand

Occupations that meet both criteria are ideal.

Exhibit D1: Occupational demand and wage data for occupations included in this report

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Accountants and Auditors	Higher-skill	9	934	\$25.84	\$33.75	\$42.91	Both
Actors	Middle-skill	-	53	\$13.14	\$21.89	\$36.36	Both
Administrative Services Managers	Middle-skill	4	259	\$34.42	\$47.33	\$62.97	Both
Advertising Sales Agents	Middle-skill	1	176	\$14.90	\$20.31	\$35.99	Both
Air Traffic Controllers	Middle-skill	6	48	\$17.91	\$20.25	\$25.40	Both
Aircraft Mechanics and Service Technicians	Middle-skill	16	185	\$27.04	\$34.63	\$48.55	Both
Airline Pilots, Copilots, and Flight Engineers	Middle-skill	13	94	\$80.56	\$96.81	\$118.22	Both
Appraisers and Assessors of Real Estate	Middle-skill	0	64	\$21.36	\$28.30	\$42.48	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Architects, Except Landscape and Naval	Higher-skill	1	102	\$25.70	\$35.82	\$53.67	Both
Architectural and Civil Drafters	Middle-skill	2	123	\$20.13	\$27.44	\$36.01	Both
Architectural and Engineering Managers	Higher-skill	3	101	\$55.58	\$70.20	\$83.70	Both
Art Directors	Higher-skill	0	100	\$9.39	\$24.62	\$42.06	Both
Automotive Body and Related Repairers	Middle-skill	1	167	\$13.27	\$18.48	\$28.57	Both
Automotive Service Technicians and Mechanics	Middle-skill	14	1,217	\$14.31	\$19.51	\$27.00	In-demand
Barbers	Middle-skill	18	161	\$7.28	\$12.14	\$17.29	In-demand
Bookkeeping, Accounting, and Auditing Clerks	Middle-skill	19	2,079	\$15.76	\$19.60	\$25.17	Both
Brickmasons and Blockmasons	Middle-skill	0	120	\$17.17	\$24.57	\$29.75	Both
Bus and Truck Mechanics and Diesel Engine Specialists	Middle-skill	7	483	\$18.32	\$24.05	\$30.33	Both
Bus Drivers, School or Special Client	Middle-skill	16	516	\$17.10	\$20.60	\$22.95	In-demand
Bus Drivers, Transit and Intercity	Middle-skill	2	196	\$15.14	\$20.53	\$23.86	Both
Buyers and Purchasing Agents	Middle-skill	6	426	\$20.83	\$27.40	\$35.23	Both
Career/Technical Education Teachers, Secondary School	Higher-skill	1	79	\$35.07	\$39.70	\$45.29	Both
Cargo and Freight Agents	Middle-skill	1	123	\$19.10	\$23.15	\$30.07	Both
Carpenters	Middle-skill	7	2,591	\$16.61	\$22.93	\$29.57	Both
Chefs and Head Cooks	Middle-skill	3	252	\$14.00	\$20.24	\$32.18	Both
Child, Family, and School Social Workers	Higher-Skill	2	234	\$20.13	\$25.85	\$33.33	Both
Childcare Workers	Middle-skill	16	2,008	\$9.71	\$12.04	\$15.76	In-demand
Civil Engineering Technicians	Middle-skill	3	67	\$26.41	\$29.74	\$35.59	Both
Civil Engineers	Higher-skill	12	285	\$40.81	\$52.01	\$63.56	Both
Claims Adjusters, Examiners, and Investigators	Middle-skill	12	341	\$11.74	\$12.97	\$32.67	Both
Clinical Laboratory Technologists and Technicians	Middle-skill	3	194	\$19.21	\$24.72	\$35.08	Both
Commercial Pilots	Middle-skill	5	49	\$21.93	\$30.93	\$47.17	Both
Compliance Officers	Higher-skill	7	274	\$26.86	\$35.37	\$43.59	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Computer and Information Systems Managers	Higher-skill	3	152	\$52.52	\$68.15	\$82.80	Both
Computer Network Support Specialists	Middle-skill	2	108	\$22.76	\$28.00	\$37.23	Both
Computer Network Support Specialists	Middle-skill	2	108	\$22.76	\$28.00	\$37.23	Both
Computer Programmers	Higher-skill	1	72	\$29.41	\$40.36	\$48.42	Both
Computer Systems Analysts	Higher-skill	4	186	\$31.78	\$39.87	\$50.65	Both
Computer User Support Specialists	Middle-skill	6	390	\$19.54	\$26.11	\$34.08	Both
Computer, Automated Teller, and Office Machine Repairers	Middle-skill	3	89	\$13.52	\$16.95	\$20.57	In-demand
Computer-Controlled Machine Tool Operators, Metal and Plastic	Middle-skill	0	102	\$14.48	\$17.92	\$22.20	In-demand
Construction and Building Inspectors	Middle-skill	2	164	\$31.27	\$40.80	\$53.80	Both
Correctional Officers and Jailers	Middle-skill	9	463	\$29.37	\$38.33	\$43.30	Both
Customer Service Representatives	Middle-skill	18	2,658	\$13.88	\$17.44	\$22.85	In-demand
Data Entry Keyers	Middle-skill	2	199	\$13.15	\$15.26	\$17.75	In-demand
Database Administrators	Higher-skill	1	49	\$33.88	\$46.72	\$61.31	Both
Dental Assistants	Middle-skill	7	849	\$13.48	\$15.68	\$19.46	In-demand
Dental Hygienists	Middle-skill	2	186	\$40.54	\$45.41	\$50.58	Both
Detectives and Criminal Investigators	Middle-skill	3	85	\$45.11	\$49.12	\$58.20	Both
Diagnostic Medical Sonographers	Middle-skill	0	56	\$32.15	\$39.30	\$49.44	Both
Dietitians and Nutritionists	Higher-skill	1	85	\$28.59	\$34.97	\$40.58	Both
Editors	Higher-skill	0	87	\$14.92	\$25.96	\$39.84	Both
Electrical and Electronics Engineering Technicians	Middle-skill	3	107	\$22.49	\$29.45	\$38.39	Both
Electrical and Electronics Repairers, Commercial and Industrial Equipment	Middle-skill	4	70	\$25.74	\$31.82	\$38.57	Both
Electrical Engineers	Higher-skill	2	79	\$32.57	\$42.26	\$53.47	Both
Electrical Power-Line Installers and Repairers	Middle-skill	8	148	\$25.84	\$35.93	\$54.40	Both
Electricians	Middle-skill	12	1,365	\$18.07	\$24.28	\$32.53	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Electronics Engineers, Except Computer	Higher-skill	2	58	\$42.88	\$53.83	\$60.51	Both
Elementary School Teachers, Except Special Education	Higher-skill	24	1,962	\$33.13	\$42.88	\$48.90	Both
Emergency Medical Technicians and Paramedics	Middle-skill	6	280	\$12.10	\$15.49	\$20.02	In-demand
Executive Secretaries and Executive Administrative Assistants	Middle-skill	4	397	\$23.06	\$28.13	\$34.25	Both
Farmers, Ranchers, and Other Agricultural Managers	Middle-skill	-	230	\$16.19	\$21.41	\$51.02	Both
Financial Analysts	Higher-skill	1	89	\$30.40	\$37.97	\$48.04	Both
Financial Managers	Higher-skill	5	421	\$36.52	\$53.14	\$72.74	Both
Firefighters	Middle-skill	4	269	\$25.92	\$30.40	\$37.87	Both
First-Line Supervisors of Construction Trades and Extraction Workers	Middle-skill	10	1,000	\$24.06	\$32.24	\$42.99	Both
First-Line Supervisors of Correctional Officers	Middle-skill	1	45	\$46.59	\$48.36	\$51.21	Both
First-Line Supervisors of Farming, Fishing, and Forestry Workers	Middle-skill	0	79	\$16.06	\$22.73	\$30.11	In-demand
First-Line Supervisors of Food Preparation and Serving Workers	Middle-skill	30	1,908	\$13.03	\$14.94	\$18.63	In-demand
First-Line Supervisors of Gaming Workers	Middle-skill	1	146	\$20.78	\$27.77	\$33.45	Both
First-Line Supervisors of Housekeeping and Janitorial Workers	Middle-skill	7	271	\$14.14	\$19.80	\$28.37	In-demand
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	Middle-skill	1	267	\$15.42	\$22.64	\$32.54	Both
First-Line Supervisors of Mechanics, Installers, and Repairers	Middle-skill	11	500	\$26.09	\$33.91	\$42.44	Both
First-Line Supervisors of Non-Retail Sales Workers	Middle-skill	4	402	\$15.25	\$24.90	\$37.23	Both
First-line Supervisors of Office and Administrative Support Workers	Middle-skill	16	1,750	\$20.78	\$26.41	\$33.50	Both
First-Line Supervisors of Personal Service Workers	Middle-skill	3	433	\$14.76	\$17.62	\$24.50	In-demand

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
First-Line Supervisors of Production and Operating Workers	Middle-skill	3	589	\$21.56	\$28.35	\$38.26	Both
First-Line Supervisors of Retail Sales Workers	Middle-skill	34	1,981	\$14.17	\$19.24	\$25.07	In-demand
First-line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	Middle-skill	9	1,134	\$20.66	\$27.19	\$33.41	Both
Fitness Trainers and Aerobics Instructors	Middle-skill	3	695	\$11.80	\$18.92	\$27.03	Both
Food Service Managers	Middle-skill	8	653	\$15.83	\$20.87	\$29.15	Both
General and Operations Managers	Higher-skill	26	2,162	\$31.34	\$48.54	\$69.84	Both
Glaziers	Middle-skill	0	125	\$17.08	\$29.05	\$55.40	Both
Graphic Designers	Middle-skill	2	255	\$16.44	\$20.71	\$29.83	Both
Hairdressers, Hairstylists, and Cosmetologists	Middle-skill	12	1,530	\$11.13	\$14.95	\$20.97	In-demand
Health Educators	Higher-skill	1	72	\$26.41	\$40.78	\$46.24	Both
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Middle-skill	3	572	\$16.33	\$19.96	\$26.93	Both
Heavy and Tractor-Trailer Truck Drivers	Middle-skill	25	4,395	\$16.43	\$21.57	\$28.71	Both
Home Health Aides	Middle-skill	2	995	\$13.36	\$16.01	\$19.73	In-demand
Human Resources Assistants, Except Payroll and Timekeeping	Middle-skill	4	182	\$16.54	\$19.65	\$23.59	In-demand
Human Resources Managers	Higher-skill	7	152	\$41.68	\$54.47	\$69.44	Both
Human Resources Specialists	Higher-skill	16	607	\$24.36	\$29.60	\$37.34	Both
Industrial Engineering Technicians	Middle-skill	0	48	\$22.43	\$29.48	\$36.74	Both
Industrial Engineers	Higher-skill	1	119	\$29.74	\$38.44	\$48.97	Both
Industrial Machinery Mechanics	Middle-skill	4	301	\$22.40	\$27.95	\$33.68	Both
Inspectors, Testers, Sorters, Samplers, and Weighers	Middle-skill	5	625	\$14.04	\$17.65	\$23.35	In-demand
Instructional Coordinators	Higher-skill	3	201	\$37.16	\$49.62	\$57.60	Both
Interpreters and Translators	Middle-skill	2	100	\$18.52	\$26.11	\$40.13	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Kindergarten Teachers, Except Special Education	Higher-skill	2	144	\$24.89	\$34.17	\$38.76	Both
Labor Relations Specialists	Higher-skill	2	57	\$24.57	\$31.26	\$43.59	Both
Legal Secretaries	Middle-skill	1	152	\$18.20	\$25.39	\$30.85	Both
Licensed Practical and Licensed Vocational Nurses	Middle-skill	5	809	\$20.90	\$25.10	\$29.89	Both
Loan Interviewers and Clerks	Middle-skill	0	103	\$16.65	\$19.92	\$25.01	Both
Locomotive Engineers	Middle-skill	6	55	\$29.66	\$35.40	\$44.18	High-wage
Lodging Managers	Middle-skill	1	53	\$18.59	\$35.65	\$56.40	Both
Machinists	Middle-skill	2	411	\$15.35	\$19.27	\$25.28	Both
Maintenance and Repair Workers, General	Middle-skill	23	1,684	\$14.89	\$19.84	\$26.30	In-demand
Management Analysts	Higher-skill	24	679	\$26.81	\$37.83	\$53.36	Both
Manicurists and Pedicurists	Middle-skill	2	371	\$11.02	\$12.84	\$14.91	In-demand
Market Research Analysts and Marketing Specialists	Higher-skill	8	591	\$18.54	\$26.18	\$36.30	Both
Marketing Managers	Higher-skill	2	130	\$35.55	\$48.04	\$70.92	Both
Massage Therapists	Middle-skill	2	384	\$11.45	\$15.94	\$25.98	In-demand
Mechanical Drafters	Middle-skill	1	53	\$19.70	\$24.37	\$30.60	Both
Mechanical Engineers	Higher-skill	3	123	\$32.57	\$40.53	\$50.53	Both
Medical and Health Services Managers	Higher-skill	4	401	\$43.12	\$56.33	\$70.83	Both
Medical Assistants	Middle-skill	10	1,287	\$13.13	\$15.23	\$17.83	In-demand
Medical Equipment Preparers	Middle-skill	1	89	\$19.29	\$24.08	\$28.07	Both
Medical Equipment Repairers	Middle-skill	1	68	\$18.28	\$21.89	\$26.30	Both
Medical Records and Health Information Technicians	Middle-skill	2	184	\$17.09	\$22.44	\$36.36	Both
Medical Secretaries	Middle-skill	7	1,095	\$14.09	\$17.40	\$21.49	In-demand
Meeting, Convention, and Event Planners	Higher-skill	1	125	\$17.25	\$22.96	\$33.04	Both
Middle School Teachers, Except Special and Career/Technical Education	Higher-skill	4	352	\$31.64	\$39.99	\$45.96	Both
Mobile Heavy Equipment Mechanics, Except Engines	Middle-skill	7	240	\$24.21	\$30.12	\$35.78	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Molders, Shapers, and Casters, Except Metal and Plastic	Middle-skill	1	117	\$12.00	\$14.56	\$19.57	In-demand
Music Directors and Composers	Higher-skill	1	85	\$13.94	\$22.59	\$37.82	Both
Network and Computer Systems Administrators	Higher-skill	3	158	\$30.39	\$38.48	\$50.43	Both
Network and Computer Systems Administrators	Middle-skill	3	158	\$30.39	\$38.48	\$50.43	Both
Nursing Assistants	Middle-skill	8	1,311	\$13.07	\$15.62	\$18.45	In-demand
Occupational Therapy Assistants	Middle-skill	0	54	\$30.06	\$34.50	\$38.21	Both
Operating Engineers and Other Construction Equipment Operators	Middle-skill	12	554	\$26.92	\$38.15	\$45.18	Both
Paralegals and Legal Assistants	Middle-skill	3	262	\$22.27	\$27.46	\$35.00	Both
Payroll and Timekeeping Clerks	Middle-skill	3	238	\$18.83	\$22.56	\$26.50	Both
Personal Financial Advisors	Higher-skill	1	122	\$25.86	\$36.52	\$87.10	Both
Pharmacy Technicians	Middle-skill	4	406	\$15.40	\$18.30	\$23.00	In-demand
Phlebotomists	Middle-skill	1	196	\$17.24	\$20.26	\$24.18	Both
Photographers	Middle-skill	1	146	\$12.18	\$20.05	\$36.36	Both
Physical Therapist Assistants	Middle-skill	1	103	\$30.72	\$34.61	\$38.13	Both
Plumbers, Pipefitters, and Steamfitters	Middle-skill	5	983	\$16.81	\$24.48	\$30.10	Both
Police and Sheriff's Patrol Officers	Middle-skill	15	628	\$36.88	\$47.03	\$57.47	Both
Preschool Teachers, Except Special Education	Middle-skill	4	413	\$12.55	\$14.36	\$17.65	In-demand
Printing Press Operators	Middle-skill	1	128	\$14.58	\$18.04	\$22.18	In-demand
Producers and Directors	Middle-skill	0	58	\$16.10	\$30.34	\$44.51	Both
Production, Planning, and Expediting Clerks	Middle-skill	5	537	\$17.76	\$22.06	\$27.74	Both
Psychiatric Technicians	Middle-skill	1	149	\$31.98	\$34.62	\$37.58	Both
Public Relations Specialists	Higher-skill	3	177	\$21.09	\$29.25	\$40.28	Both
Radiologic Technologists	Middle-skill	1	140	\$30.62	\$36.03	\$41.78	Both
Real Estate Brokers	Middle-skill	1	168	\$18.25	\$37.66	\$56.98	Both
Real Estate Sales Agents	Middle-skill	2	476	\$15.97	\$26.42	\$44.61	Both
Recreation Workers	Middle-skill	8	745	\$11.50	\$12.61	\$14.74	In-demand
Registered Nurses	Middle-skill	23	2,616	\$38.82	\$47.45	\$58.41	Both

Continued






Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Reservation and Transportation Ticket Agents and Travel Clerks	Middle-skill	2	132	\$13.07	\$14.63	\$21.13	In-demand
Respiratory Therapists	Middle-skill	2	150	\$29.33	\$35.39	\$41.59	Both
Sales Managers	Higher-skill	5	559	\$27.32	\$43.00	\$71.18	Both
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	Middle-skill	10	1,777	\$18.91	\$27.77	\$39.03	Both
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Higher-skill	1	169	\$24.30	\$34.64	\$52.10	Both
Secondary School Teachers, Except Special and Career/ Technical Education	Higher-skill	13	1,034	\$31.61	\$40.49	\$47.02	Both
Secretaries and Administrative Assistants	Middle-skill	27	2,760	\$14.16	\$18.58	\$23.76	In-demand
Securities, Commodities, and Financial Services Sales Agents	Higher-skill	1	283	\$17.11	\$20.34	\$27.11	Both
Self-Enrichment Education Teachers	Middle-skill	7	436	\$11.62	\$17.07	\$30.91	Both
Sheet Metal Workers	Middle-skill	2	261	\$17.17	\$24.15	\$30.67	Both
Shipping, Receiving, and Traffic Clerks	Middle-skill	6	1,531	\$13.25	\$15.99	\$19.81	In-demand
Skincare Specialists	Middle-skill	1	126	\$11.36	\$14.87	\$20.61	In-demand
Social and Human Services Assistants	Middle-skill	4	713	\$14.94	\$17.90	\$23.68	In-demand
Software Developers, Applications	Higher-skill	3	237	\$38.82	\$48.70	\$60.83	Both
Software Developers, Systems Software	Higher-skill	2	118	\$37.41	\$48.83	\$62.03	Both
Special Education Teachers, Kindergarten and Elementary School	Higher-skill	3	203	\$29.24	\$37.82	\$47.13	Both
Special Education Teachers, Middle School	Higher-skill	1	46	\$33.38	\$38.72	\$45.60	Both
Special Education Teachers, Secondary School	Higher-skill	1	114	\$37.33	\$43.18	\$47.84	Both
Stonemasons	Middle-skill	0	63	\$17.07	\$22.18	\$27.23	Both
Structural Iron and Steel Workers	Middle-skill	1	237	\$21.97	\$32.33	\$39.40	Both
Structural Iron and Steel Workers	Middle-skill	1	237	\$21.97	\$32.33	\$39.40	Both

Continued

Occupation	Skill Level	Barstow Annual Openings	Inland Empire Annual Openings	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings	Perkins V
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	Higher-Skill	2	532	\$17.20	\$21.24	\$26.94	Both
Substitute Teachers	Higher-skill	25	1,788	\$16.37	\$18.05	\$21.09	In-demand
Surgical Technologists	Middle-skill	1	135	\$22.87	\$27.39	\$32.60	Both
Surveying and Mapping Technicians	Middle-skill	1	59	\$21.08	\$28.15	\$39.94	Both
Tax Preparers	Middle-skill	0	123	\$11.75	\$16.73	\$31.80	Both
Teacher Assistants	Middle-skill	31	2,469	\$13.79	\$16.84	\$19.75	In-demand
Teachers and Instructors, All Other (tutors)	Higher-skill	14	615	\$12.71	\$16.79	\$26.42	In-demand
Telecommunications Equipment Installers and Repairers, Except Line Installers	Middle-skill	4	403	\$22.21	\$26.71	\$30.13	Both
Telecommunications Line Installers and Repairers	Middle-skill	7	179	\$17.20	\$25.59	\$35.66	Both
Transportation, Storage, and Distribution Managers	Middle-skill	4	279	\$32.81	\$41.71	\$54.09	Both
Travel Agents	Middle-skill	-	64	\$13.53	\$22.14	\$28.43	Both
Water and Wastewater Treatment Plant and System Operators	Middle-skill	2	146	\$26.25	\$32.87	\$40.77	Both
Web Developers	Middle-skill	2	109	\$16.52	\$24.36	\$36.27	Both
Welders, Cutters, Solderers, and Brazers	Middle-skill	4	439	\$15.24	\$18.41	\$23.15	In-demand
Writers and Authors	Higher-skill	1	184	\$11.33	\$25.20	\$45.19	Both

	CDE Industry Sectors and Pathways	CC Industry Sectors
	Agriculture and Natural Resources (ANR) <ul style="list-style-type: none"> • Agricultural Business • Agricultural Mechanics • Agriscience • Animal Science • Forestry and Natural Resources • Ornamental Horticulture • Plant and Soil Science 	Agriculture, Water & Environmental Technology
	Arts, Media, and Entertainment (AME) <ul style="list-style-type: none"> • Design, Visual, and Media Arts • Performing Arts • Production and Managerial Arts • Game Design and Integration 	Information and Communication Technologies/Digital Media
	Building and Construction Trades (BCT) <ul style="list-style-type: none"> • Cabinetry, Millwork, and Woodworking • Engineering and Heavy Construction • Mechanical Systems Installation and Repair • Residential and Commercial Construction 	Energy, Construction & Utilities
	Business and Finance (BF) <ul style="list-style-type: none"> • Business Management • Financial Services • International Business 	Business & Entrepreneurship
	Education, Child Development, and Family Services (ECDFS) <ul style="list-style-type: none"> • Child Development • Consumer Services • Education • Family and Human Services 	Education
	Energy, Environment, and Utilities (EEU) <ul style="list-style-type: none"> • Environmental Resources • Energy and Power Technology • Telecommunications 	Energy, Construction & Utilities
	Engineering and Architecture (EA) <ul style="list-style-type: none"> • Architectural Design • Engineering Technology • Engineering Design • Environmental Engineering 	Agriculture, Water & Environmental Technology
	Fashion and Interior Design (FID) <ul style="list-style-type: none"> • Fashion Design and Merchandising • Interior Design • Personal Services 	Retail/Hospitality/ Tourism
	Health Science and Medical Technology (HSMT) <ul style="list-style-type: none"> • Biotechnology • Patient Care • Health Care Administrative Services • Health Care Operational Support Services • Public and Community Health • Mental and Behavioral Health 	Health Life Sciences & Biotechnology
	Hospitality, Tourism, and Recreation (HTR) <ul style="list-style-type: none"> • Food Science, Dietetics, and Nutrition • Food Services and Hospitality • Hospitality, Tourism, and Recreation 	Retail/Hospitality/ Tourism

Continued

	CDE Industry Sectors and Pathways	CC Industry Sectors
	Information and Communication Technologies (ICT) <ul style="list-style-type: none"> • Information Support and Services • Networking • Software and Systems Development • Games and Simulation 	Information and Communication Technologies/ Digital Media
	Manufacturing and Product Development (MPD) <ul style="list-style-type: none"> • Graphic Production Technologies • Machining and Forming Technologies • Welding and Materials Joining • Product Innovation and Design 	Advanced Manufacturing
	Marketing, Sales, and Service (MSS) <ul style="list-style-type: none"> • Marketing • Professional Sales • Entrepreneurship/ Self-Employment 	Business & Entrepreneurship
	Public Services (PS) <ul style="list-style-type: none"> • Public Safety • Emergency Response • Legal Practices 	Public Services
	Transportation (T) <ul style="list-style-type: none"> • Operations • Structural Repair and Refinishing • Systems Diagnostics and Service 	Advanced Transportation & Logistics



APPENDIX F: REFERENCE CITED AND RESOURCES

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