Labor Market Scan:

Fresno County, Madera County, and City of Dinuba

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Summary of Findings

The Central Valley/Mother Lode Center of Excellence was asked to provide labor market information for 10 CCCCO sectors that are critical to the economic vitality of Fresno County, Madera County, and the city of Dinuba. Analysis by the Center of Excellence examines whether postsecondary institutions are supplying enough students to meet workforce demand. This analysis compares projected annual job openings in middle-skill occupations with the number of degrees and certificates awarded by postsecondary institutions that prepare students for those roles.

In Fresno County, Madera County, and the city of Dinuba, the 10 sectors are expected to have 29,729 middle-skill job openings annually. Postsecondary institutions in the study area currently supply 10,773 awards (degrees and certificates) to students entering related fields on average each year. When postsecondary supply and projected annual openings are compared, an undersupply of 18,956 workers appears to exist in the study area.

Below middle-skill jobs totals are displayed in Exhibit 1 and in the Appendix. While this report primarily focuses on middle-skill occupations, jobs below middle-skill are also included to provide a more comprehensive picture of regional employment. These roles represent a significant share of the labor market and serve as an entry point into middle-skill career pathways. For a full list of the below middle-skill occupations with more than 25 annual job openings, see the Appendix.

Sectors with the most middle-skill jobs in 2024 are health, business and entrepreneurship, and advanced transportation and logistics. These sectors are also projected to offer the greatest number of annual job openings. The smallest sectors in terms of 2024 employment are public safety, agriculture, water, and environmental technologies, and advanced manufacturing. These sectors are also projected to have the smallest number of annual job openings.

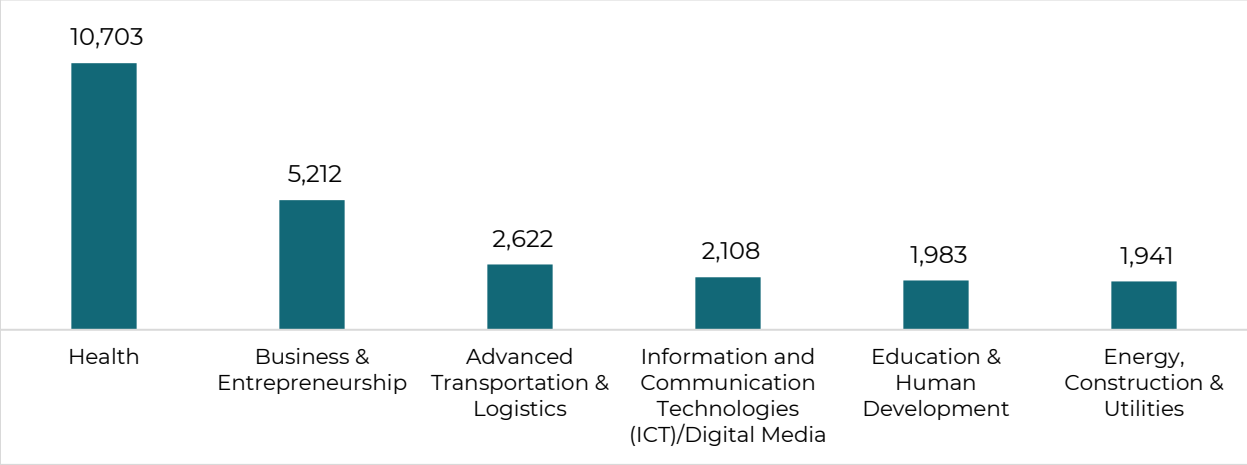
Exhibit 1. Total employment and projected occupational demand for each sector in Fresno County, Madera County, and the City of Dinuba

Sector	2024 Jobs	2029 Jobs	2024 - 2029 Change	2024-2029 % Change	Average Annual Job Openings
Health	69,854	80,209	10,355	15%	10,703
Business & Entrepreneurship	46,576	48,055	1,479	3%	5,212
Advanced Transportation & Logistics	22,868	24,723	1,855	8%	2,622
Information and Communication Technologies (ICT)/Digital Media	18,318	18,995	677	4%	2,108
Energy, Construction & Utilities	17,930	19,596	1,665	9%	1,941
Education & Human Development	13,501	14,158	657	5%	1,983
Retail, Hospitality & Tourism	11,623	12,445	822	7%	1,642
Public Safety	10,992	11,542	550	5%	1,195
Agriculture, Water & Environmental Technologies	10,882	10,729	(152)	(1%)	1,310

Sector	2024 Jobs	2029 Jobs	2024 - 2029 Change	2024-2029 % Change	Average Annual Job Openings
Advanced Manufacturing	8,910	9,534	624	7%	1,013
Middle-Skill Sector Total	**231,453**	**249,985**	**18,532**	**8%**	**29,729**
Below-Middle-Skill Occupations	*202,068*	*211,312*	*9,245*	*5%*	*32,422*
Grand Total	**433,521**	**461,297**	**27,777**	**6%**	**62,151**

In terms of projected occupational demand, the health sector is expected to offer the largest number of annual job openings in the study area, with 10,703 job openings available each year. The business and entrepreneurship sector is expected to offer 5,212 annual job openings, followed by advanced transportation and logistics, which is expected to offer 2,622 annual job openings. Over half of the middle-skill annual job openings are expected in the health and business and entrepreneurship sectors, demonstrating a need for career education pathways that prepare students for these opportunities. The four smallest sectors are projected to have 5,159 combined annual job openings, or 17.4% of total middle-skill annual job openings related to CCCCO sectors.

Exhibit 2. Sectors with the highest number of projected annual job openings in Fresno County, Madera County, and the City of Dinuba



By comparison, sectors with the greatest number of postsecondary awards conferred on average each year are:

- Health: 3,413 awards
- Business and Entrepreneurship: 2,364 awards
- Agriculture, Water, and Environmental Technologies: 1,066 awards
- Education and Human Development: 942 awards
- Public Safety: 929 awards

The study compares postsecondary supply (the number of awards conferred by community colleges and other training providers such as proprietary schools) with projected occupational demand (annual job openings) in the study area to determine where the largest undersupply of workers exists. Industry sectors with the lowest number of awards include retail, hospitality,

and tourism, advanced transportation and logistics, and information and communication technologies (ICT)/digital media.

Exhibit 3. Comparison of projected occupational demand and postsecondary supply results in a gap or undersupply of prepared workers

Sector	Demand	Gap	Supply
Health	10,703	7,290	3,413
Business & Entrepreneurship	5,212	2,849	2,364
Advanced Transportation & Logistics	2,622	2,475	147
Information and Communication Technologies (ICT)/Digital Media	2,108	1,536	572
Retail, Hospitality & Tourism	1,642	1,525	117
Energy, Construction & Utilities	1,941	1,324	617
Education & Human Development	1,983	1,042	942
Advanced Manufacturing	1,013	407	607
Public Safety	1,195	266	929
Agriculture, Water & Environmental Technologies	1,310	243	1,066
Grand Total	**29,729**	**18,956**	**10,773**

Based on the gap analysis, the health sector has the largest gap, with an undersupply of 7,290 workers, followed by the business and entrepreneurship sector, which has an undersupply of 2,849 workers. The advanced transportation and logistics sector also faces a substantial undersupply, characterized by a shortage of 2,475 workers.

In addition to addressing the sectors with the largest undersupply of workers, planning efforts by the colleges in the study area could also consider occupations with strong workforce demand. Occupations that are projected to grow, have the most annual job openings, and are generally well paid in the study area are:

- *Heavy and Tractor-Trailer Truck Drivers*: 1,459 annual job openings
- *Office Clerks, General*: 1,149 job openings
- *Registered Nurses*: 791 job openings
- *Teaching Assistants, Except Postsecondary*: 782 job openings
- *Customer Service Representatives*: 701 job openings
- *General and Operations Managers*: 655 job openings
- *Nursing Assistants*: 612 job openings
- *Secretaries and Administrative Assistants, Except Legal, Medical, and Executive*: 596 job openings
- *Bookkeeping, Accounting, and Auditing Clerks*: 591 job openings
- *Medical Assistants*: 563 job openings

While the region is projected to generate 29,729 middle-skill annual job openings in career education sectors, not all of these opportunities provide wages that meet or exceed the local living wage standard of $16.59 per hour. For example, home health and personal care aides are projected to have 6,377 annual openings; however, the median wage for this occupation is only $16.05 per hour, which is below the living wage. While childcare workers and farmers, ranchers, and other agricultural managers are projected to offer workers wages just above the living

wage, these occupations are projected to decrease overall employment through 2029, with annual job openings coming from replacements. It is also important to consider occupations that offer solid wages in conjunction with moderate to strong workforce demand. Sectors with these types of jobs include ICT/digital media, health, and advanced transportation and logistics.

Within the health field, occupations that have a promising outlook and can lead to an improved quality of life for students include registered nurses, licensed vocational nurses, psychiatric technicians, and radiologic technologists and technicians. Within advanced transportation and logistics, occupations of interest include heavy and tractor-trailer truck drivers, first-line supervisors of transportation and material moving workers, except aircraft cargo handling supervisors, and automotive service technicians and mechanics. Within the energy, construction, and utilities sector, occupations such as electricians, carpenters, and first-line supervisors of construction trades and extraction workers have a promising outlook, which can lead to an improved quality of life for students.

While the gap analysis highlights a significant undersupply in key sectors, it is essential to acknowledge that not all awards directly translate to workforce entry, as some represent transfer pathways rather than immediate employment opportunities. Additionally, some employment opportunities fall below the local living wage, creating a challenge for both workers and colleges as they weigh which training programs lead to economic mobility. Colleges may want to prioritize programs where demand aligns with sustainable wages.

Introduction

This report, prepared by the Central Valley/Mother Lode Center of Excellence, examines labor market demand and postsecondary supply in Fresno County, Madera County, and the city of Dinuba. The report focuses on occupations in the 10 sectors that align with career education (CE) programs designated by the California Community Colleges Chancellor's Office (CCCCO).[1] Within each sector, this analysis focuses on middle-skill occupations, those occupations that typically require more education and training than a high school diploma, but less than a bachelor's degree. For each occupation, data is presented on current employment, projected demand, entry-level wages, and educational attainment.

This report provides regional labor market information to help career education program developers identify opportunities for program development and improvement. While it provides sector-level insights into projected demand and postsecondary supply, it does not offer a detailed analysis at the occupation level. However, this may be used as a basis for further exploration at the occupational or program level.

The average living wage for a single adult in Fresno and Madera counties is $16.59 per hour or $34,507 annually.[2] This figure should be used as a benchmark for evaluating occupational wages. While this analysis emphasizes projected demand and postsecondary supply, wage levels are also important because they determine whether regional jobs support economic self-sufficiency for students entering the workforce.

While considerably smaller than the overall 15-county region, the labor market scan area contains a substantial share of the region's population and jobs. Of the nearly 4.6 million residents in the Central Valley/Mother Lode (CVML) region, nearly 27% of residents live within the labor market scan area, at over 1.2 million residents. Five of the 15 regional community colleges are located in the labor market scan area. Exhibit 4 displays the population of the labor market scan area compared to the overall population in the CVML region. The scan area is projected to grow at a slower rate than the CVML region as a whole. However, the scan area is projected to grow faster than California overall (-1.7%) and the United States (2.3%).

Exhibit 4. Population of the labor market scan area compared to the overall region

Location	2024 Population	2029 Population	2024 - 2029 Change	2024-2029 % Change	2024 Share of Regional Population
Fresno County	1,018,849	1,036,747	17,899	1.8%	22.3%
Madera County	164,448	174,136	9,687	5.9%	3.6%
Dinuba City	32,656	33,956	1,299	4.0%	0.7%
Scan Area	**1,215,953**	**1,244,839**	**28,885**	**2.4%**	**26.6%**
All Other Areas in the CVML	*3,362,825*	*3,460,165*	*97,340*	*2.9%*	*73.4%*
CVML Total	**4,578,779**	**4,705,004**	**126,225**	**2.8%**	**100%**

[1] Data Vista. CTE TOP Codes to Sectors. Retrieved from: https://datavista.cccco.edu/resources/8

[2] The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the University of Washington's Center for Women's Welfare for each county in the subregion: https://selfsufficiencystandard.org/California/

Well over half a million jobs are located in the labor market scan area, accounting for approximately 29% of jobs in the Central Valley/Mother Lode region. The vast majority of jobs in the labor market scan area are located in Fresno County, accounting for over 86% of the scan area employment. Over the next five years, the scan area is projected to add nearly 37,000 jobs, representing a 6.7% growth rate, which is faster than the CVML region as a whole.

Exhibit 5. Jobs in the labor market scan area compared to the overall CVML region

Location	2024 Jobs	2029 Jobs	2024 - 2029 Change	2024-2029 % Change	2024 Establishments	Average Earnings Per Job
Fresno County	475,438	506,378	30,940	6.5%	44,274	$69,902
Madera County	63,063	67,945	4,882	7.7%	5,616	$68,670
Dinuba City	11,064	12,168	1,103	10.0%	-	$61,086
Scan Area	**549,566**	**586,490**	**36,925**	**6.7%**	**49,890**	**$69,583**
All Other Areas in the CVML	*1,345,334*	*1,424,824*	*79,490*	*5.9%*	*103,478*	*$72,455*
CVML Total	**1,894,900**	**2,011,315**	**116,415**	**6.1%**	**153,368**	**$71,689**

In the following report sections, occupational wages, educational attainment, and postsecondary supply are shown for each CCCCO sector. Employment and occupational data are presented in the following sections of this report for occupations in each sector that have 25 or more annual openings. However, these snapshots of employment do not account for the entire picture. As a result, the analysis calculates the total employment and projected occupational demand for all middle-skill occupations associated with each CCCCO sector, displayed previously in Exhibit 1.

Each sector contains skills and certifications most frequently included in employer job advertisements for the sector occupations. Job advertisement information is a product of aggregated job postings, collected and organized by Lightcast. Postsecondary award information is provided as a proxy for occupation supply. Postsecondary degrees and certificates are directly compared to the job openings available annually by sector.

Please note: Detailed occupation data is only provided for middle-skill occupations that are projected to have 25 or more annual job openings over the next five years. Educational attainment data from the Current Population Survey (CPS) is included alongside Bureau of Labor Statistics (BLS) information on entry-level education, work experience, and training requirements. While BLS requirements reflect what employers typically expect, CPS data shows the actual education levels of workers currently employed in these occupations. Including both perspectives is especially important for community colleges, as it highlights where associate degrees and certificates already serve as common on-ramps to employment, and where additional credentialing may be needed to remain competitive in the labor market. This information is displayed for each occupation in the column labeled CPS.

Advanced Manufacturing

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is first-line supervisors of production and operating workers, with 184 annual job openings.
- **Wages:** The highest paid occupation is first-line supervisors of production and operating workers, $33.56 per hour at the median.
- **In-Demand Qualifications:** The top skill is quality auditing, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 1,013 annual job openings with a supply of 607 awards, resulting in an undersupply of 407 workers.

Top Job Titles

- Production Supervisors
- Welders
- Quality Control Technicians
- Quality Assurance Technicians
- CNC Machinists

Exhibit 6. Advanced manufacturing employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
First-Line Supervisors of Production and Operating Workers	1,722	1,814	92	5%	184	$33.56
Inspectors, Testers, Sorters, Samplers, and Weighers	1,415	1,470	56	4%	176	$20.86
Industrial Machinery Mechanics	1,303	1,476	172	13%	141	$30.84
Welders, Cutters, Solderers, and Brazers	1,192	1,266	75	6%	136	$23.12
Machinists	407	434	27	7%	47	$23.34
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	196	220	24	12%	27	$21.76
Printing Press Operators	243	243	0	0%	26	$21.46
Top Jobs Total	**6,476**	**6,923**	**446**	**7%**	**737**	**-**
All Other Jobs	*2,433*	*2,611*	*178*	*7%*	*277*	-
Grand Total	**8,910**	**9,534**	**624**	**7%**	**1,013**	**-**

Exhibit 7. Advanced manufacturing occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
First-Line Supervisors of Production and Operating Workers	High school diploma or equivalent	None	Less than 5 years	34.5%
Inspectors, Testers, Sorters, Samplers, and Weighers	High school diploma or equivalent	Moderate-term	None	37.0%
Industrial Machinery Mechanics	High school diploma or equivalent	Long-term	None	44.2%
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	Moderate-term	None	30.6%
Machinists	High school diploma or equivalent	Long-term	None	40.4%
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	High school diploma or equivalent	Moderate-term	None	29.6%
Printing Press Operators	High school diploma or equivalent	Moderate-term	None	32.1%

Exhibit 8. Top specialized skills in job ads for advanced manufacturing occupations (n=736)

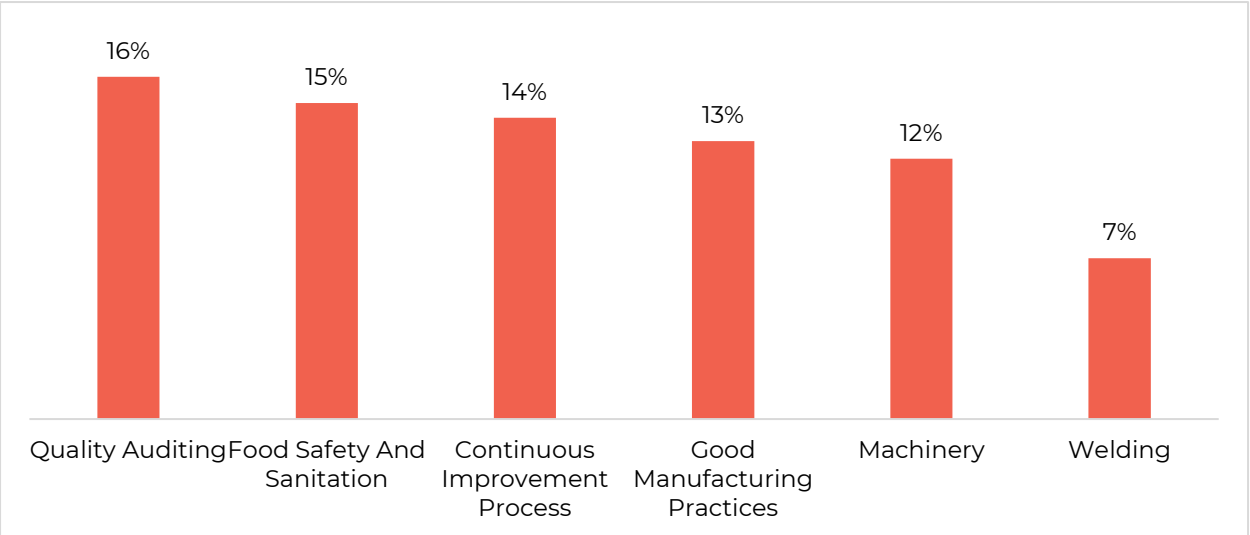


Exhibit 9. Top certifications in job ads for advanced manufacturing occupations (n=736)

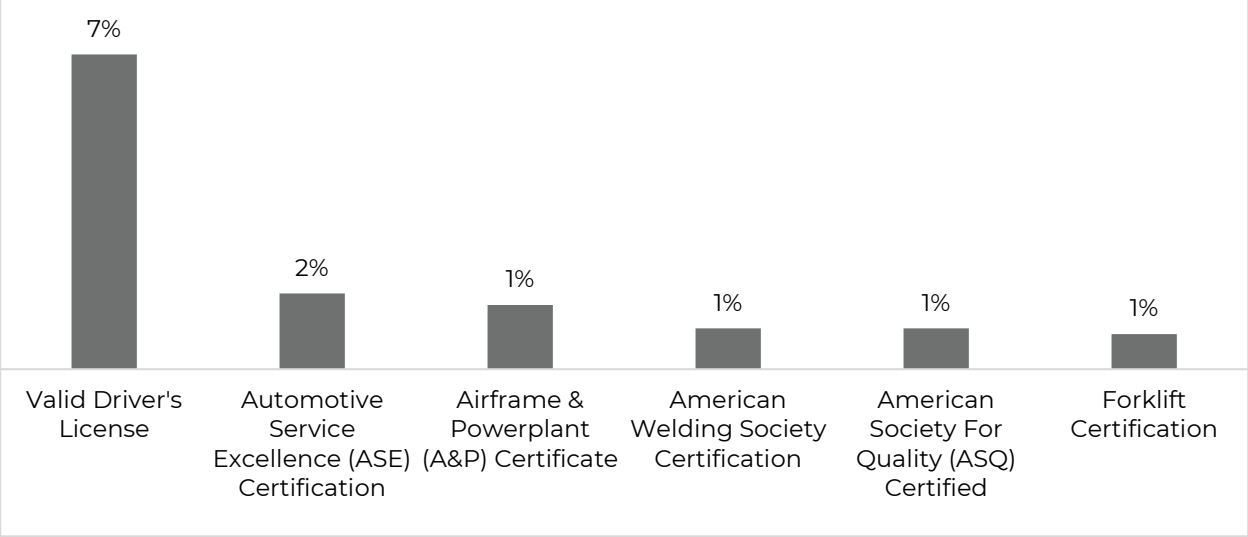
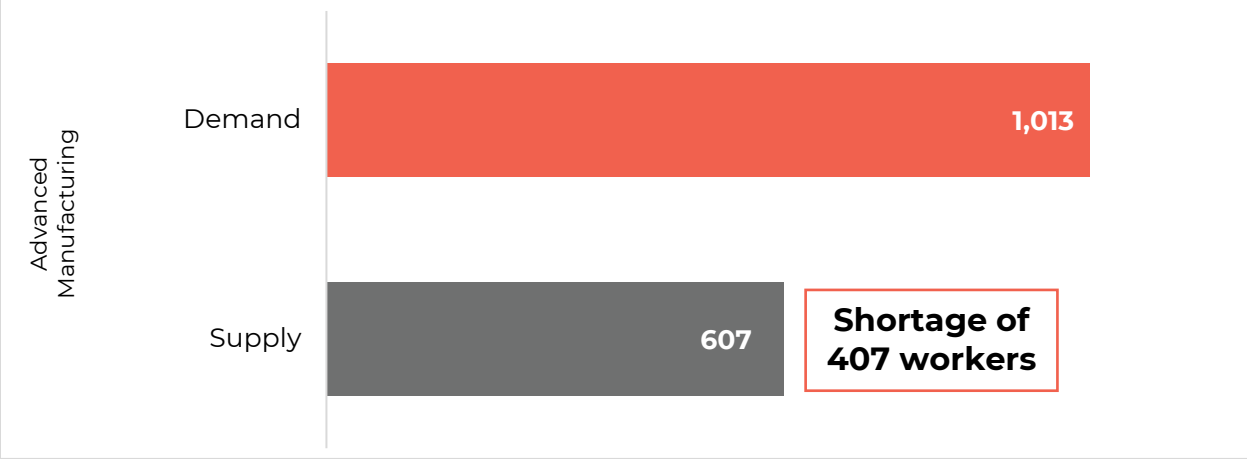


Exhibit 10. Advanced manufacturing demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Advanced Transportation and Logistics

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is heavy and tractor-trailer truck drivers, with 1,459 annual job openings.
- **Wages:** The highest paid occupation is transportation, storage, and distribution managers, $43.30 per hour at the median.
- **In-Demand Qualifications:** The top skill is truck driving, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 2,622 annual job openings with a supply of 147 awards, resulting in an undersupply of 2,475 workers.

Top Job Titles

- CDL-A Truck Drivers
- Drivers
- Truck Drivers
- Automotive Technicians
- Maintenance Supervisors

Exhibit 11. Advanced transportation and logistics employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Heavy and Tractor-Trailer Truck Drivers	11,546	12,671	1,125	8%	1,459	$25.16
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	1,776	1,917	141	10%	209	$28.51
Automotive Service Technicians and Mechanics	2,197	2,247	50	8%	193	$23.20
First-Line Supervisors of Mechanics, Installers, and Repairers	1,467	1,583	117	2%	144	$37.91
Production, Planning, and Expediting Clerks	1,047	1,118	71	8%	119	$27.11
Bus and Truck Mechanics and Diesel Engine Specialists	866	942	76	7%	88	$28.72
Mobile Heavy Equipment Mechanics, Except Engines	839	911	72	9%	86	$32.11
Transportation, Storage, and Distribution Managers	715	776	61	9%	72	$43.30
Logisticians	425	478	53	8%	48	$35.21

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Automotive Body and Related Repairers	465	482	17	13%	43	$27.05
Top Jobs Total	**21,343**	**23,125**	**1,782**	**4%**	**2,461**	**-**
All Other Jobs	*1,525*	*1,597*	*73*	*8%*	*161*	-
Grand Total	**22,868**	**24,723**	**1,855**	**5%**	**2,622**	**-**

Exhibit 12. Advanced transportation and logistics occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Heavy and Tractor-Trailer Truck Drivers	Postsecondary nondegree award	Short-term	None	29.8%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	High school diploma or equivalent	None	Less than 5 years	38.9%
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	Short-term	None	36.6%
First-Line Supervisors of Mechanics, Installers, and Repairers	High school diploma or equivalent	None	Less than 5 years	42.3%
Production, Planning, and Expediting Clerks	High school diploma or equivalent	Moderate-term	None	36.0%
Bus and Truck Mechanics and Diesel Engine Specialists	High school diploma or equivalent	Long-term	None	38.2%
Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	Long-term	None	38.7%
Transportation, Storage, and Distribution Managers	High school diploma or equivalent	None	5 years or more	34.2%
Logisticians	Bachelor's degree	None	None	32.1%
Automotive Body and Related Repairers	High school diploma or equivalent	Long-term	None	23.5%

Exhibit 13. Top specialized skills in job ads for advanced transportation and logistics occupations (n=3,939)

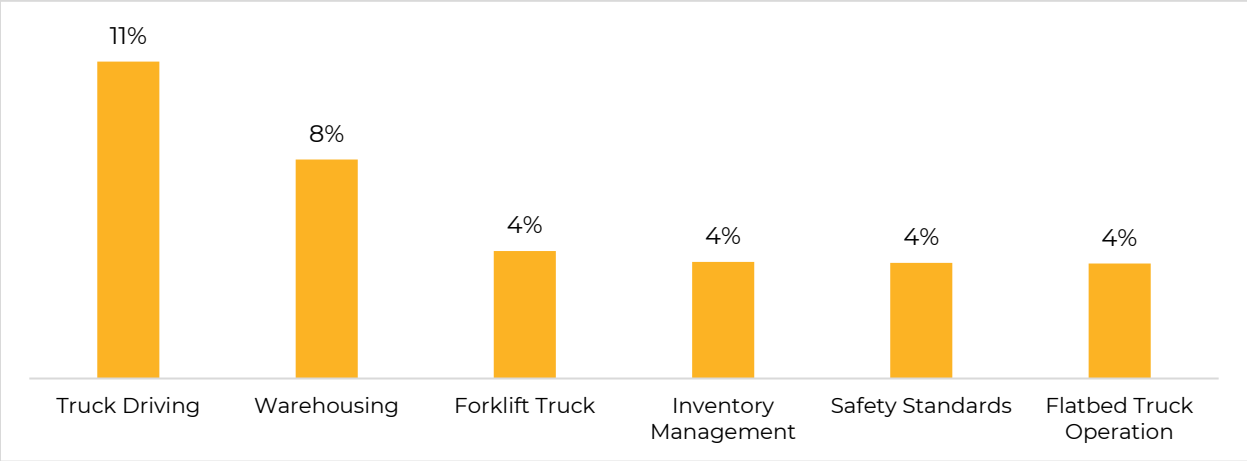


Exhibit 14. Top certifications in job ads for advanced transportation and logistics occupations (n=3,939)

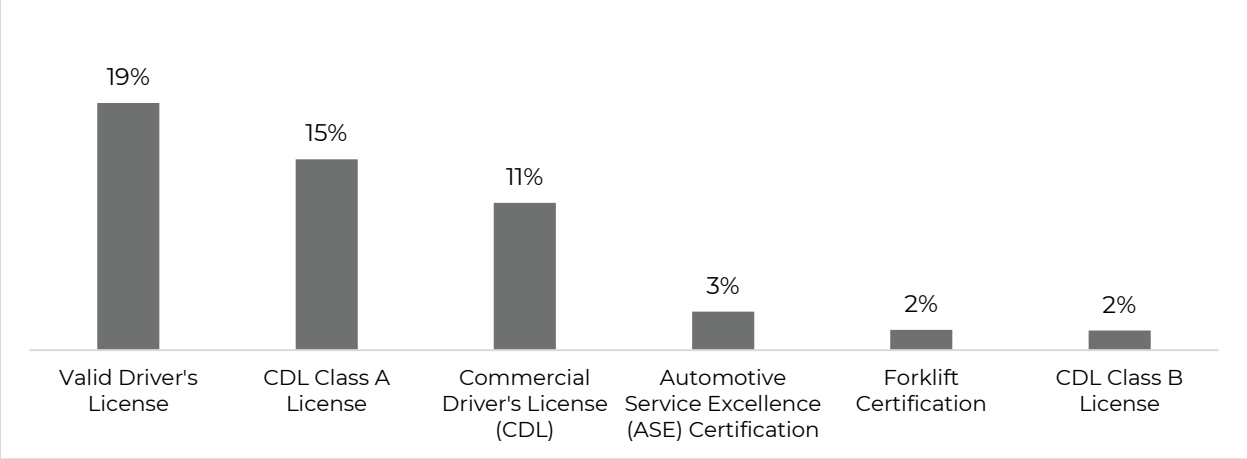
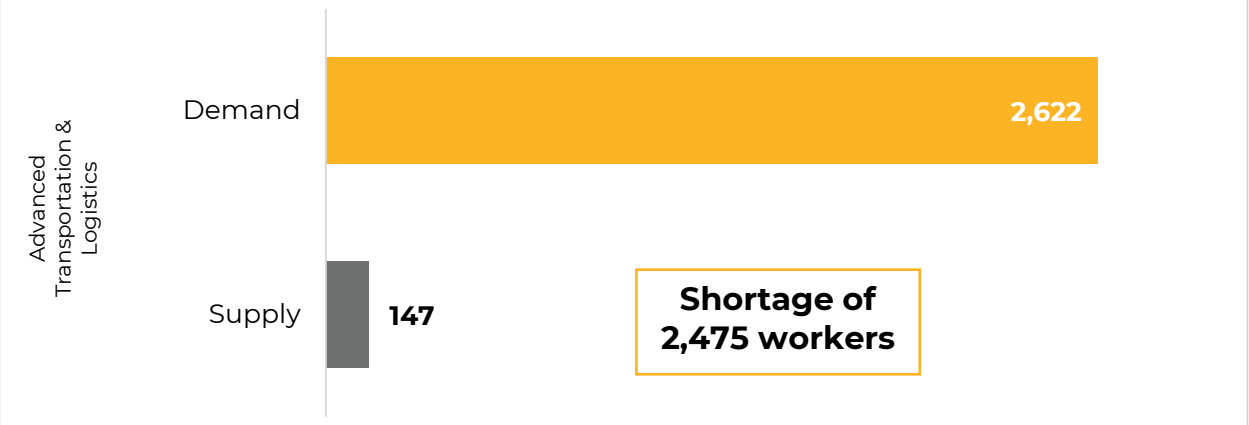


Exhibit 15. Advanced transportation and logistics demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Agriculture, Water, and Environmental Technologies

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is farmers, ranchers, and other agricultural managers, with 566 annual job openings.
- **Wages:** The highest paid occupation is forest and conservation technicians, $27.84 per hour at the median.
- **In-Demand Qualifications:** The top skill is irrigation (landscape and agriculture), and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 1,310 annual job openings with a supply of 1,066 awards, resulting in an undersupply of 243 workers.

Top Job Titles

- Ranch Foremen
- Veterinary Assistants
- Veterinary Technicians
- Agricultural Technicians
- Registered Veterinary Technicians

Exhibit 16. Agriculture, water, and environmental technologies employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Farmers, Ranchers, and Other Agricultural Managers	5,522	5,158	(364)	(7%)	566	$19.01
First-Line Supervisors of Farming, Fishing, and Forestry Workers	1,707	1,747	40	2%	245	$23.07
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	560	615	55	10%	72	$24.45
Farm Equipment Mechanics and Service Technicians	534	569	35	7%	52	$22.56
Forest and Conservation Technicians	394	390	(4)	(1%)	49	$27.84
Veterinary Assistants and Laboratory Animal Caretakers	232	254	21	9%	48	$17.58
Agricultural Inspectors	279	287	9	3%	47	$26.69
Food Science Technicians	290	296	6	2%	43	$22.28
Agricultural Technicians	196	197	1	0%	28	$22.93

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Veterinary Technologists and Technicians	228	253	25	11%	28	$21.73
Forest and Conservation Workers	128	130	3	2%	27	$18.95
Animal Trainers	174	168	(5)	(3%)	25	$18.33
Top Jobs Total	**10,244**	**10,064**	**(179)**	**(2%)**	**1,230**	**-**
All Other Jobs	638	665	27	4%	80	-
Grand Total	**10,882**	**10,729**	**(152)**	**(1%)**	**1,310**	**-**

Exhibit 17. Agriculture, water, and environment technologies occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Farmers, Ranchers, and Other Agricultural Managers	High school diploma or equivalent	None	5 years or more	29.3%
First-Line Supervisors of Farming, Fishing, and Forestry Workers	High school diploma or equivalent	None	Less than 5 years	22.1%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	High school diploma or equivalent	None	Less than 5 years	29.6%
Farm Equipment Mechanics and Service Technicians	High school diploma or equivalent	Long-term	None	38.7%
Forest and Conservation Technicians	Associate's degree	None	None	33.4%
Veterinary Assistants and Laboratory Animal Caretakers	High school diploma or equivalent	Short-term	None	40.4%
Agricultural Inspectors	Bachelor's degree	Moderate-term	None	29.3%
Food Science Technicians	Associate's degree	Moderate-term	None	39.8%
Agricultural Technicians	Associate's degree	Moderate-term	None	39.8%
Veterinary Technologists and Technicians	Associate's degree	None	None	57.0%
Forest and Conservation Workers	High school diploma or equivalent	Moderate-term	None	22.5%
Animal Trainers	High school diploma or equivalent	Moderate-term	None	34.0%

Exhibit 18. Top specialized skills in job ads for advanced transportation and logistics occupations (n=335)

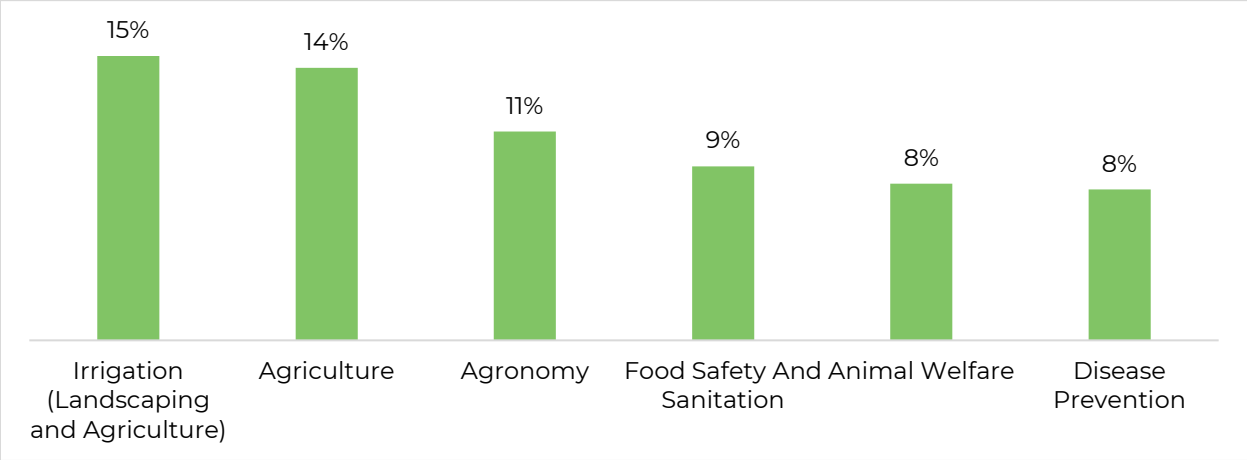


Exhibit 19. Top certifications in job ads for agriculture, water, and environmental technologies occupations (n=335)

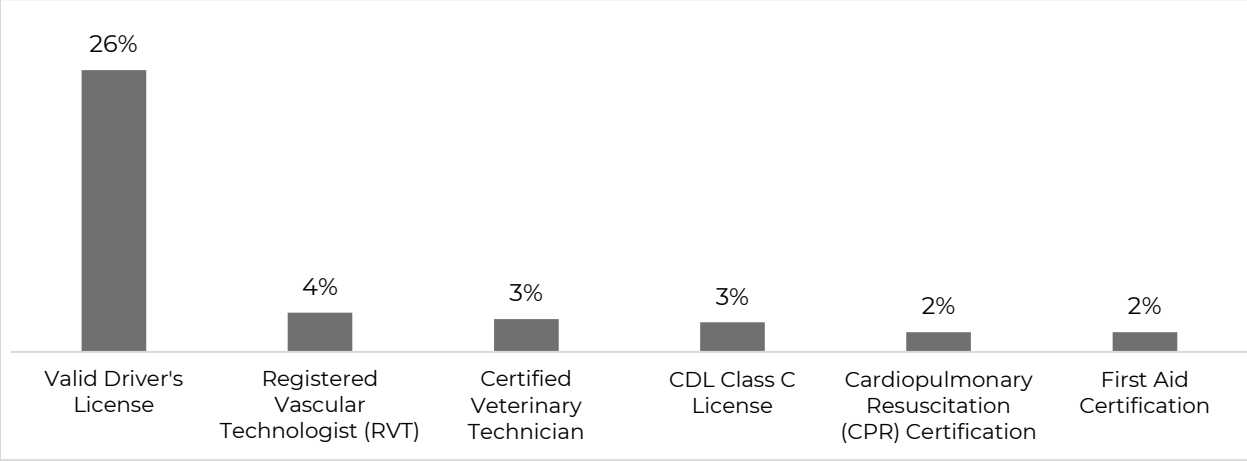


Exhibit 20. Agriculture, water, and environmental technologies demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap

Business and Entrepreneurship

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is customer service representatives, with 701 annual job openings.
- **Wages:** The highest paid occupation is facilities managers, $48.57 per hour at the median.
- **In-Demand Qualifications:** The top skill is accounting, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 5,212 annual job openings with a supply of 2,364 awards, resulting in an undersupply of 2,849 workers.

Top Job Titles

- Customer Service Representatives
- Sales Representatives
- Receptionists
- Bookkeepers
- Accounting Clerks

Exhibit 21. Business and entrepreneurship employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Customer Service Representatives	5,194	5,223	29	1%	701	$20.86
General and Operations Managers	6,443	7,023	580	9%	655	$47.78
Bookkeeping, Accounting, and Auditing Clerks	5,068	5,111	42	1%	591	$23.99
First-Line Supervisors of Office and Administrative Support Workers	4,206	4,273	66	2%	416	$32.10
Receptionists and Information Clerks	2,416	2,576	159	7%	362	$18.40
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	3,386	3,526	140	4%	332	$32.67
Hairdressers, Hairstylists, and Cosmetologists	1,700	1,842	141	8%	255	$17.03
Manicurists and Pedicurists	1,188	1,386	198	17%	183	$16.07
Insurance Sales Agents	1,463	1,470	7	0%	123	$26.70
Real Estate Sales Agents	1,169	1,209	39	3%	105	$29.83
Buyers and Purchasing Agents	921	996	75	8%	105	$32.07

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Property, Real Estate, and Community Association Managers	1,205	1,229	23	2%	103	$30.10
Paralegals and Legal Assistants	955	965	11	1%	98	$26.77
Court, Municipal, and License Clerks	670	734	64	10%	81	$26.59
Payroll and Timekeeping Clerks	768	747	(21)	(3%)	79	$25.78
First-Line Supervisors of Non-Retail Sales Workers	798	858	60	7%	78	$29.09
Cost Estimators	832	856	24	3%	77	$36.65
Administrative Services Managers	797	847	51	6%	76	$47.55
Sales and Related Workers, All Other	541	559	18	3%	73	$22.14
Skincare Specialists	408	471	63	15%	73	$17.56
Tellers	769	635	(135)	(18%)	71	$20.48
Insurance Claims and Policy Processing Clerks	695	606	(89)	(13%)	58	$22.19
Legal Secretaries and Administrative Assistants	417	412	(5)	(1%)	53	$26.19
Barbers	313	368	54	17%	47	$13.19
Facilities Managers	394	430	36	9%	41	$48.57
Claims Adjusters, Examiners, and Investigators	617	550	(67)	(11%)	40	$40.71
Human Resources Assistants, Except Payroll and Timekeeping	289	298	8	3%	34	$23.54
Order Clerks	285	273	(12)	(4%)	32	$21.28
Data Entry Keyers	284	265	(19)	(7%)	31	$18.75
Tax Preparers	245	250	5	2%	29	$28.28
File Clerks	235	227	(8)	(3%)	28	$18.70
Bill and Account Collectors	245	238	(7)	(3%)	25	$24.86
Top Jobs Total	**44,921**	**46,452**	**1,532**	**3%**	**5,053**	**-**
All Other Jobs	*1,656*	*1,603*	*(53)*	(3%)	*160*	-

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Grand Total	**46,576**	**48,055**	**1,479**	**3%**	**5,212**	**-**

Exhibit 22. Business and entrepreneurship occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Customer Service Representatives	High school diploma or equivalent	Short-term	None	41.6%
General and Operations Managers	Bachelor's degree	None	5 years or more	32.8%
Bookkeeping, Accounting, and Auditing Clerks	Some college, no degree	Moderate-term	None	50.5%
First-Line Supervisors of Office and Administrative Support Workers	High school diploma or equivalent	None	Less than 5 years	39.5%
Receptionists and Information Clerks	High school diploma or equivalent	Short-term	None	45.5%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	High school diploma or equivalent	Moderate-term	None	29.1%
Hairdressers, Hairstylists, and Cosmetologists	Postsecondary nondegree award	None	None	42.3%
Manicurists and Pedicurists	Postsecondary nondegree award	None	None	23.1%
Insurance Sales Agents	High school diploma or equivalent	Moderate-term	None	36.6%
Real Estate Sales Agents	High school diploma or equivalent	Moderate-term	None	34.1%
Buyers and Purchasing Agents	Bachelor's degree	Moderate-term	None	32.5%
Property, Real Estate, and Community Association Managers	High school diploma or equivalent	None	Less than 5 years	33.6%
Paralegals and Legal Assistants	Associate's degree	None	None	39.4%
Court, Municipal, and License Clerks	High school diploma or equivalent	Long-term	None	43.5%
Payroll and Timekeeping Clerks	High school diploma or equivalent	Moderate-term	None	46.8%
First-Line Supervisors of Non-Retail Sales Workers	High school diploma or equivalent	None	Less than 5 years	30.9%

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Cost Estimators	Bachelor's degree	Moderate-term	None	35.8%
Administrative Services Managers	Bachelor's degree	None	Less than 5 years	32.5%
Sales and Related Workers, All Other	High school diploma or equivalent	None	None	32.5%
Skincare Specialists	Postsecondary nondegree award	None	None	52.6%
Tellers	High school diploma or equivalent	Short-term	None	42.3%
Insurance Claims and Policy Processing Clerks	High school diploma or equivalent	Moderate-term	None	45.2%
Legal Secretaries and Administrative Assistants	High school diploma or equivalent	Moderate-term	None	50.2%
Barbers	Postsecondary nondegree award	None	None	37.5%
Facilities Managers	Bachelor's degree	None	Less than 5 years	35.5%
Claims Adjusters, Examiners, and Investigators	High school diploma or equivalent	Long-term	None	34.4%
Human Resources Assistants, Except Payroll and Timekeeping	Associate's degree	None	None	35.5%
Order Clerks	Some college, no degree	Short-term	None	38.6%
Data Entry Keyers	High school diploma or equivalent	Short-term	None	43.8%
Tax Preparers	High school diploma or equivalent	Moderate-term	None	30.4%
File Clerks	High school diploma or equivalent	Short-term	None	42.1%
Bill and Account Collectors	High school diploma or equivalent	Moderate-term	None	47.0%

Exhibit 23. Top specialized skills in job ads for business and entrepreneurship occupations (n=7,939)

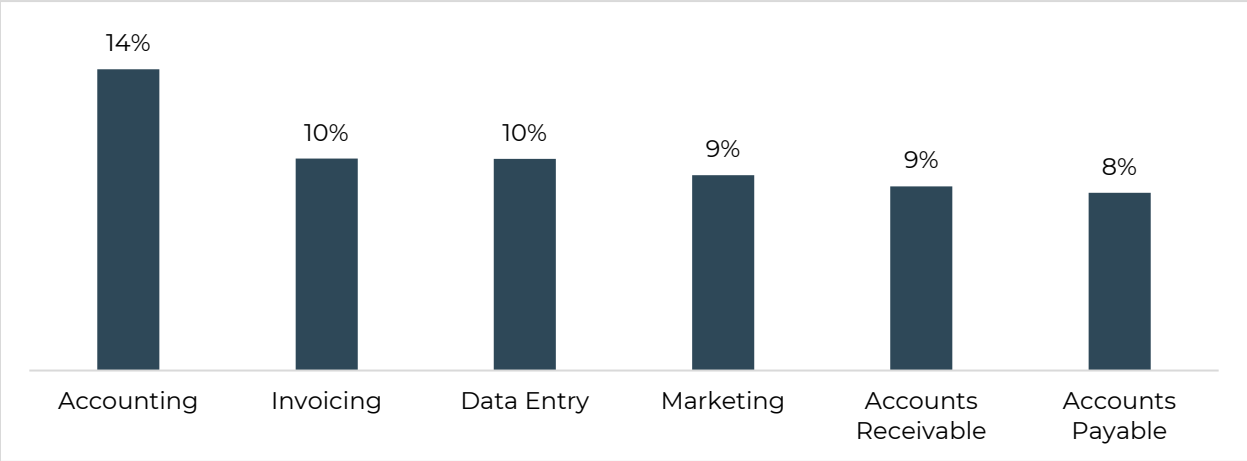


Exhibit 24. Top certifications in job ads for business and entrepreneurship occupations (n=7,939)

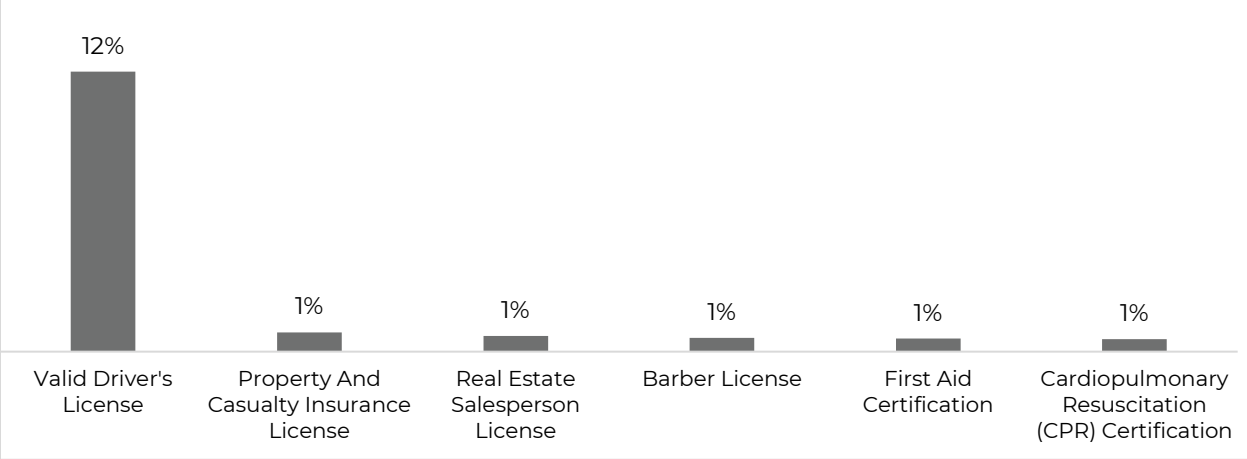
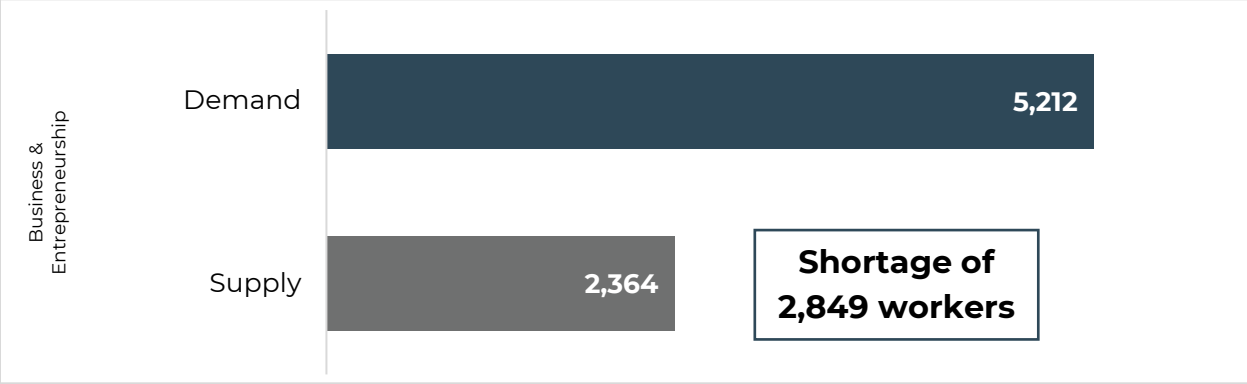


Exhibit 25. Business and entrepreneurship demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Education

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is teaching assistants, except postsecondary, with 782 annual job openings.
- **Wages:** The highest paid occupation is kindergarten teachers, except special education, $34.36 per hour at the median.
- **In-Demand Qualifications:** The top skill is special education, and the top certification is the No Child Left Behind Act (NCLB) Standards.
- **Supply and Gap Analysis:** Employer demand totals 1,983 annual job openings with a supply of 942 awards, resulting in an undersupply of 1,042 workers.

Top Job Titles

- Paraeducators
- School Paraprofessionals
- Special Needs Paraprofessionals
- Instructional Aides
- Special Education Aides

Exhibit 26. Education employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Teaching Assistants, Except Postsecondary	5,543	6,062	519	9%	782	$19.38
Childcare Workers	3,820	3,663	(156)	(4%)	654	$16.94
Preschool Teachers, Except Special Education	1,684	1,848	164	10%	226	$20.94
Teaching Assistants, Postsecondary	1,230	1,281	51	4%	157	$17.47
Kindergarten Teachers, Except Special Education	817	877	60	7%	104	$34.36
Library Technicians	201	212	11	5%	38	$22.54
Top Jobs Total	**13,295**	**13,943**	**648**	**5%**	**1,962**	**-**
All Other Jobs	*205*	*215*	*10*	*5%*	*22*	-
Grand Total	**13,501**	**14,158**	**657**	**5%**	**1,983**	**-**

Exhibit 27. Education occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Teaching Assistants, Except Postsecondary	Some college, no degree	None	None	35.6%
Childcare Workers	High school diploma or equivalent	Short-term	None	35.0%

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Preschool Teachers, Except Special Education	Associate's degree	None	None	29.8%
Teaching Assistants, Postsecondary	Bachelor's degree	None	None	35.6%
Kindergarten Teachers, Except Special Education	Bachelor's degree	None	None	29.8%
Library Technicians	Postsecondary nondegree award	None	None	27.8%

Exhibit 28. Top specialized skills in job ads for education occupations (n=1,886)

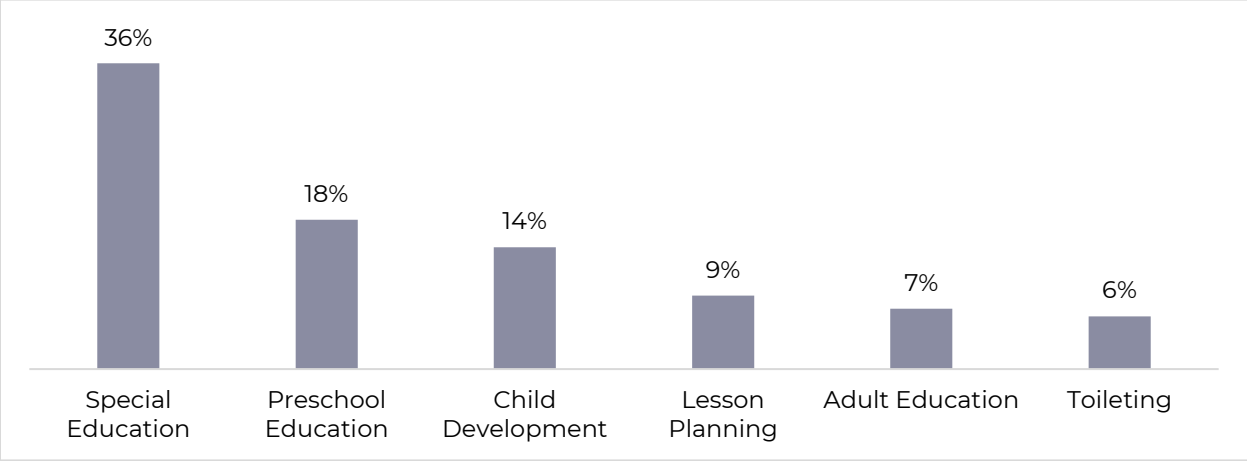


Exhibit 29. Top certifications in job ads for education occupations (n=1,886)

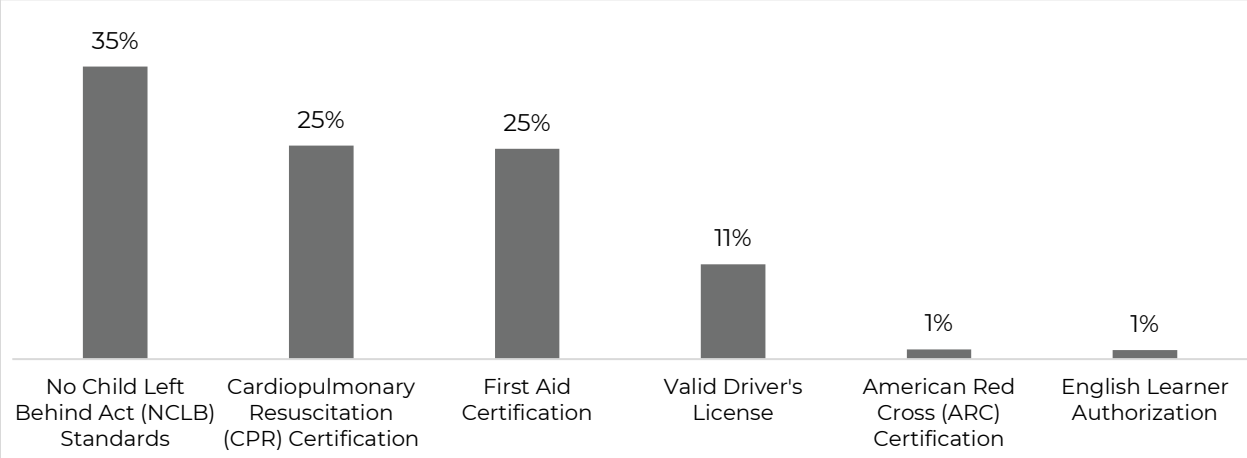
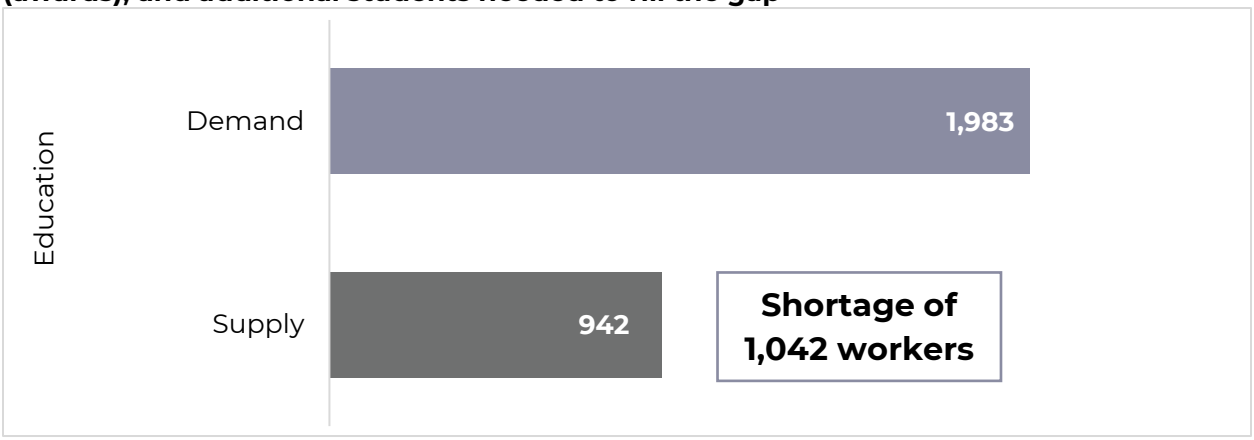


Exhibit 30. Education demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Energy, Construction, and Utilities

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is electricians, with 289 annual job openings.
- **Wages:** The highest paid occupation is electrical power-line installers and repairers, $60.89 per hour at the median.
- **In-Demand Qualifications:** The top skill is construction, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 1,941 annual job openings with a supply of 617 awards, resulting in an undersupply of 1,324 workers.

Top Job Titles

- Electricians
- Solar Installers
- Solar Technicians
- Construction Inspectors
- Certified Electricians

Exhibit 31. Energy, construction, and utilities employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Electricians	2,124	2,555	431	20%	289	$31.34
Carpenters	2,973	3,073	100	3%	254	$26.35
First-Line Supervisors of Construction Trades and Extraction Workers	2,234	2,441	207	9%	221	$36.97
Operating Engineers and Other Construction Equipment Operators	1,416	1,577	162	11%	157	$34.80
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,330	1,494	164	12%	150	$26.25
Plumbers, Pipefitters, and Steamfitters	1,232	1,383	150	12%	140	$28.35
Installation, Maintenance, and Repair Workers, All Other	985	1,029	43	4%	105	$21.77
Telecommunications Equipment Installers and Repairers, Except Line Installers	558	568	10	2%	56	$33.63
Water and Wastewater Treatment Plant and System Operators	448	470	23	5%	47	$32.52
Construction and Building Inspectors	336	361	25	7%	42	$35.46

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Solar Photovoltaic Installers	258	322	65	25%	40	$27.75
Telecommunications Line Installers and Repairers	379	397	18	5%	39	$41.57
Environmental Science and Protection Technicians, Including Health	308	321	14	4%	37	$27.41
Sheet Metal Workers	272	295	23	8%	30	$35.49
Electrical Power-Line Installers and Repairers	229	266	38	16%	26	$60.89
Civil Engineering Technologists and Technicians	249	267	18	7%	25	$35.32
Top Jobs Total	**15,330**	**16,819**	**1,489**	**10%**	**1,657**	**-**
All Other Jobs	*2,600*	*2,777*	*176*	*7%*	*284*	-
Grand Total	**17,930**	**19,596**	**1,665**	**9%**	**1,941**	**-**

Exhibit 32. Energy, construction, and utilities occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Electricians	High school diploma or equivalent	Apprenticeship	None	45.1%
Carpenters	High school diploma or equivalent	Apprenticeship	None	23.7%
First-Line Supervisors of Construction Trades and Extraction Workers	High school diploma or equivalent	None	5 years or more	29.5%
Operating Engineers and Other Construction Equipment Operators	High school diploma or equivalent	Moderate-term	None	24.8%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary nondegree award	Long-term	None	42.3%
Plumbers, Pipefitters, and Steamfitters	High school diploma or equivalent	Apprenticeship	None	32.7%
Installation, Maintenance, and Repair Workers, All Other	High school diploma or equivalent	Moderate-term	None	34.5%
Telecommunications Equipment Installers and Repairers, Except Line Installers	Postsecondary nondegree award	Moderate-term	None	48.0%

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Water and Wastewater Treatment Plant and System Operators	High school diploma or equivalent	Long-term	None	40.5%
Construction and Building Inspectors	High school diploma or equivalent	Moderate-term	5 years or more	42.4%
Solar Photovoltaic Installers	High school diploma or equivalent	Moderate-term	None	37.0%
Telecommunications Line Installers and Repairers	High school diploma or equivalent	Long-term	None	45.0%
Environmental Science and Protection Technicians, Including Health	Associate's degree	None	None	32.8%
Sheet Metal Workers	High school diploma or equivalent	Apprenticeship	None	31.7%
Electrical Power-Line Installers and Repairers	High school diploma or equivalent	Long-term	None	47.4%
Civil Engineering Technologists and Technicians	Associate's degree	None	None	47.1%

Exhibit 33. Top specialized skills in job ads for energy, construction, and utilities occupations (n=1,075)

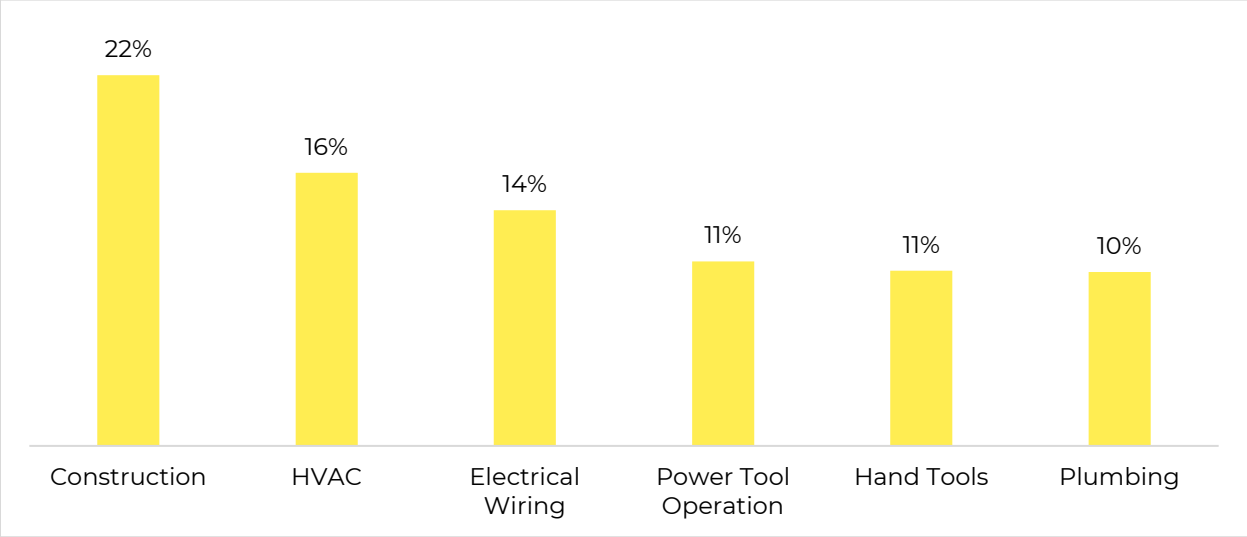


Exhibit 34. Top certifications in job ads for energy, construction, and utilities occupations (n=1,075)

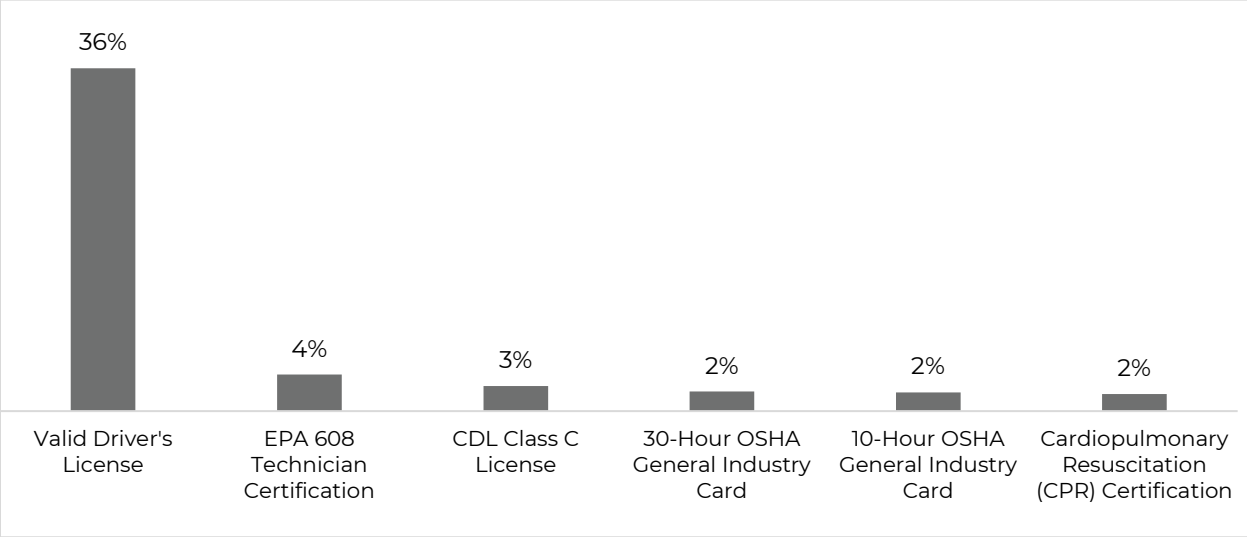
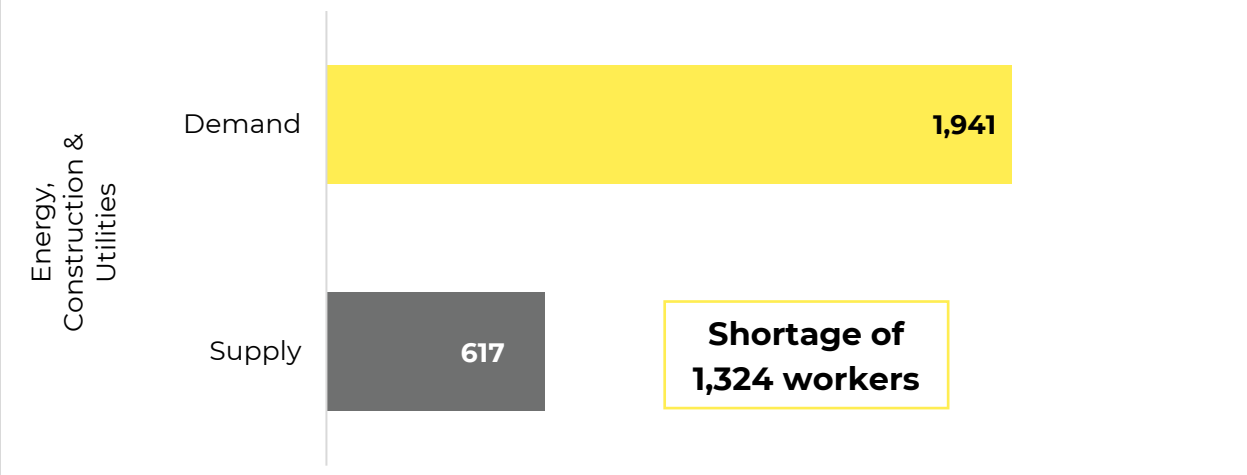


Exhibit 35. Energy, construction, and utilities demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Health

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is home health and personal care aides, with 6,377 annual job openings.
- **Wages:** The highest paid occupation is registered nurses, $59.81 per hour at the median.
- **In-Demand Qualifications:** The top skill is nursing, and the top certification is a registered nurse.
- **Supply and Gap Analysis:** Employer demand totals 10,703 annual job openings with a supply of 3,413 awards, resulting in an undersupply of 7,290 workers.

Top Job Titles

- Registered Nurses
- Labor and Delivery Registered Nurses
- Licensed Vocational Nurses
- Medical Assistants
- Travel Registered Nurses

Exhibit 36. Health employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Home Health and Personal Care Aides	31,580	38,090	6,510	21%	6,377	$16.05
Registered Nurses	10,722	11,789	1,067	10%	791	$59.81
Nursing Assistants	3,811	4,100	290	8%	612	$20.70
Medical Assistants	3,475	3,929	454	13%	563	$22.22
Medical Secretaries and Administrative Assistants	3,208	3,463	256	8%	381	$23.02
Social and Human Service Assistants	1,924	2,192	268	14%	259	$22.47
Licensed Practical and Licensed Vocational Nurses	2,451	2,602	151	6%	230	$35.25
Dental Assistants	1,466	1,590	124	8%	226	$22.45
Pharmacy Technicians	1,423	1,496	73	5%	149	$22.90
Massage Therapists	624	736	112	18%	108	$20.70
Health Technologists and Technicians, All Other	910	1,025	115	13%	92	$24.40
Healthcare Support Workers, All Other	534	572	38	7%	80	$23.08
Phlebotomists	423	474	50	12%	67	$23.01
Emergency Medical Technicians	665	736	71	11%	66	$17.46

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Clinical Laboratory Technologists and Technicians	572	659	87	15%	56	$28.56
Psychiatric Technicians	455	528	72	16%	55	$37.37
Radiologic Technologists and Technicians	702	784	83	12%	55	$49.27
Medical Equipment Preparers	285	313	28	10%	45	$22.54
Physical Therapist Assistants	230	267	37	16%	44	$37.38
Respiratory Therapists	590	660	70	12%	42	$40.13
Medical Records Specialists	433	477	44	10%	39	$24.52
Dental Hygienists	421	475	54	13%	39	$48.26
Physical Therapist Aides	228	232	4	2%	35	$17.93
Medical Transcriptionists	178	170	(8)	(4%)	33	$17.96
Community Health Workers	230	262	32	14%	30	$25.37
Surgical Technologists	351	396	45	13%	30	$33.97
Diagnostic Medical Sonographers	307	353	45	15%	25	$50.15
Top Jobs Total	**68,197**	**78,368**	**10,171**	**15%**	**10,528**	**-**
All Other Jobs	*1,657*	*1,841*	*184*	11%	*175*	-
Grand Total	**69,854**	**80,209**	**10,355**	**15%**	**10,703**	**-**

Exhibit 37. Health occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Home Health and Personal Care Aides	High school diploma or equivalent	Short-term	None	33.1%
Registered Nurses	Bachelor's degree	None	None	29.5%
Nursing Assistants	Postsecondary nondegree award	None	None	42.7%
Medical Assistants	Postsecondary nondegree award	None	None	62.4%
Medical Secretaries and Administrative Assistants	High school diploma or equivalent	Moderate-term	None	50.2%

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Social and Human Service Assistants	High school diploma or equivalent	Short-term	None	33.8%
Licensed Practical and Licensed Vocational Nurses	Postsecondary nondegree award	None	None	73.2%
Dental Assistants	Postsecondary nondegree award	None	None	55.9%
Pharmacy Technicians	High school diploma or equivalent	Moderate-term	None	51.4%
Massage Therapists	Postsecondary nondegree award	None	None	51.2%
Health Technologists and Technicians, All Other	Postsecondary nondegree award	None	None	46.8%
Healthcare Support Workers, All Other	High school diploma or equivalent	None	None	41.8%
Phlebotomists	Postsecondary nondegree award	None	None	58.0%
Emergency Medical Technicians	Postsecondary nondegree award	None	None	57.6%
Clinical Laboratory Technologists and Technicians	Bachelor's degree	None	None	36.3%
Psychiatric Technicians	Postsecondary nondegree award	Short-term	Less than 5 years	39.3%
Radiologic Technologists and Technicians	Associate's degree	None	None	64.1%
Medical Equipment Preparers	High school diploma or equivalent	Moderate-term	None	41.8%
Physical Therapist Assistants	Associate's degree	None	None	57.6%
Respiratory Therapists	Associate's degree	None	None	62.3%
Medical Records Specialists	Postsecondary nondegree award	None	None	56.2%
Dental Hygienists	Associate's degree	None	None	56.7%
Physical Therapist Aides	High school diploma or equivalent	Short-term	None	57.6%
Medical Transcriptionists	Postsecondary nondegree award	None	None	43.7%
Community Health Workers	High school diploma or equivalent	Short-term	None	24.5%
Surgical Technologists	Postsecondary nondegree award	None	None	74.1%
Diagnostic Medical Sonographers	Associate's degree	None	None	44.5%

Exhibit 38. Top specialized skills in job ads for health occupations (n=14,698)

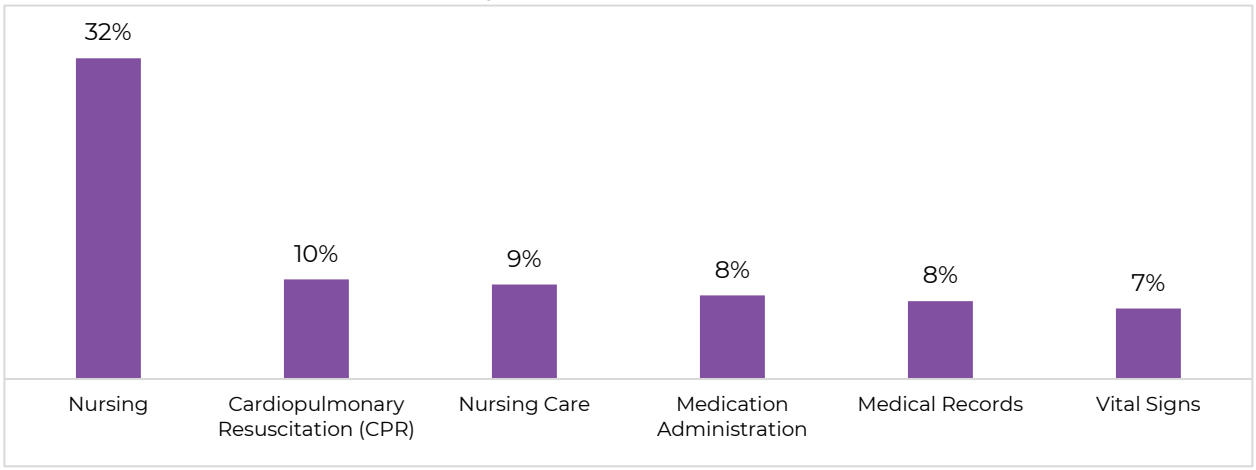


Exhibit 39. Top certifications in job ads for health occupations (n=14,698)

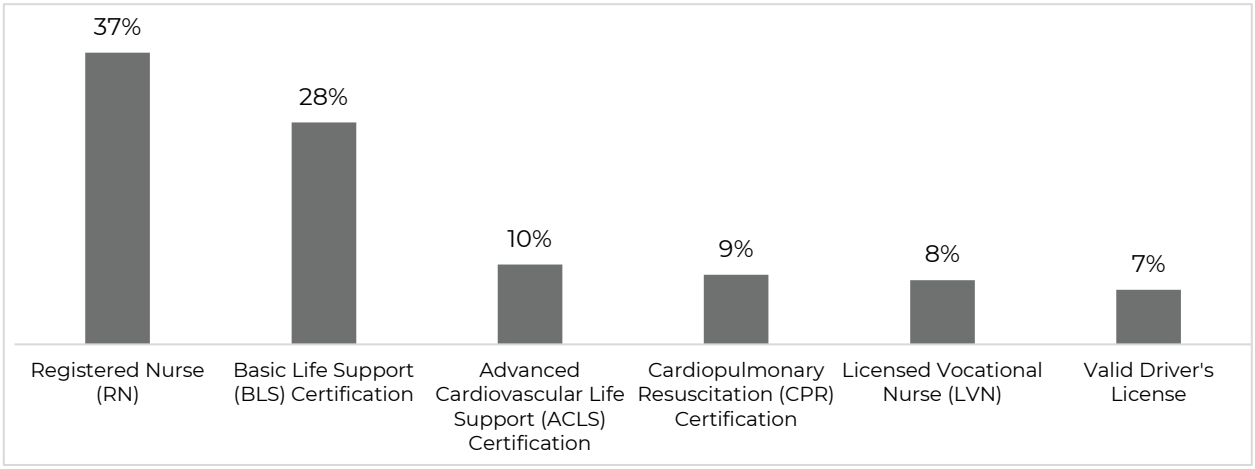
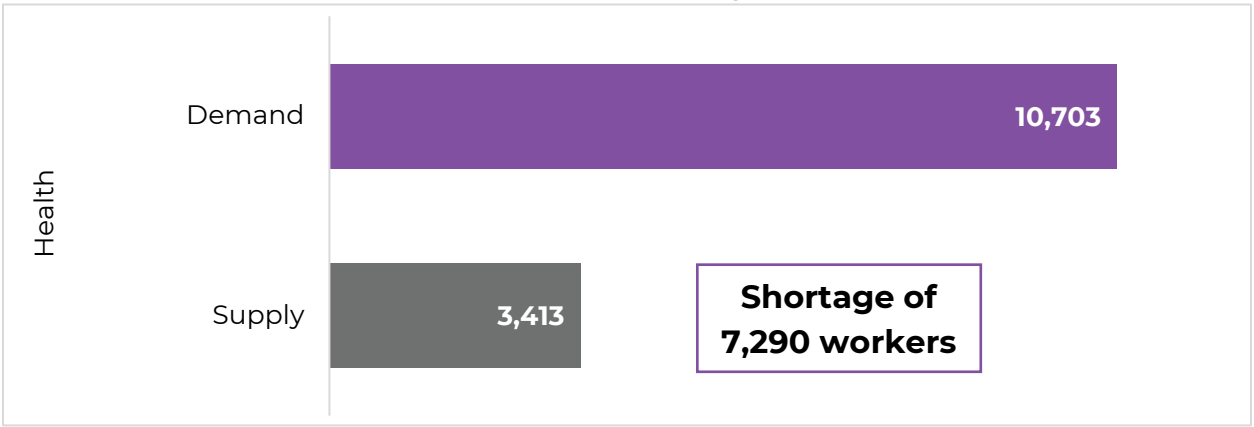


Exhibit 40. Health demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Information and Communication Technologies/Digital Media

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is office clerks, with 1,149 annual job openings.
- **Wages:** The highest paid occupation is network and computer system administrators, $43.55 per hour at the median.
- **In-Demand Qualifications:** The top skill is administrative support, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 2,108 annual job openings with a supply of 572 awards, resulting in an undersupply of 1,536 workers.

Top Job Titles

- Administrative Assistants
- Office Assistants
- Executive Assistants
- IT Specialists
- Photographers

Exhibit 41. Information and communication technologies/digital media, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Office Clerks, General	9,448	9,606	159	2%	1,149	$21.72
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	4,734	5,034	300	6%	596	$23.16
Executive Secretaries and Executive Administrative Assistants	1,057	1,121	64	6%	124	$36.64
Computer User Support Specialists	1,262	1,336	74	6%	97	$28.75
Photographers	328	339	11	3%	31	$25.82
Network and Computer Systems Administrators	515	528	13	3%	30	$43.55
Top Jobs Total	**17,342**	**17,963**	**621**	**4%**	**2,026**	**-**
All Other Jobs	*976*	*1,032*	*56*	6%	*82*	-
Grand Total	**18,318**	**18,995**	**677**	**4%**	**2,108**	**-**

Exhibit 42. Information and communication technologies/digital media occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Office Clerks, General	High school diploma or equivalent	Short-term	None	42.7%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	High school diploma or equivalent	Short-term	None	43.5%
Executive Secretaries and Executive Administrative Assistants	High school diploma or equivalent	None	Less than 5 years	42.0%
Computer User Support Specialists	Some college, no degree	None	None	38.5%
Photographers	High school diploma or equivalent	Moderate-term	None	33.3%
Network and Computer Systems Administrators	Bachelor's degree	None	None	38.1%

Exhibit 43. Top specialized skills in job ads for information and communication technologies/digital media occupations (n=1,800)

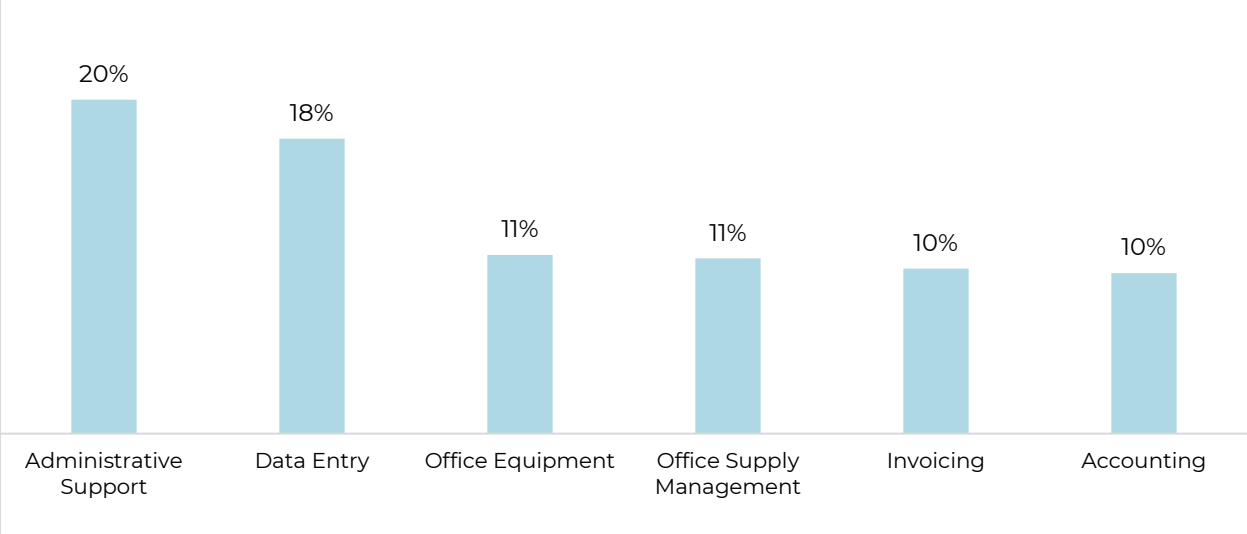


Exhibit 44. Top certifications in job ads for information and communication technologies/digital media occupations (n=1,800)

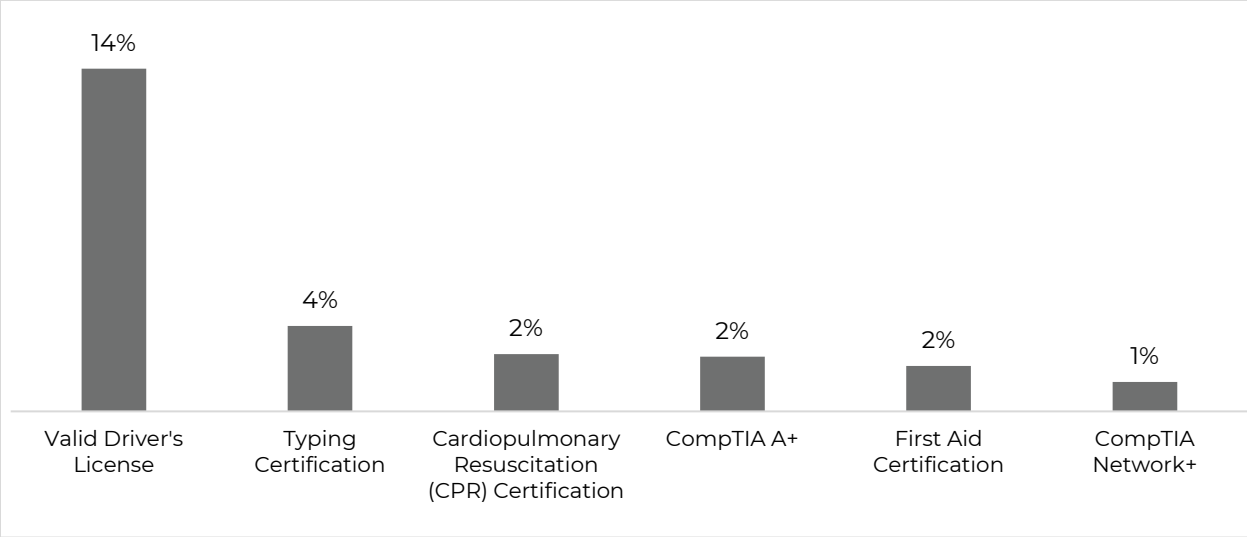
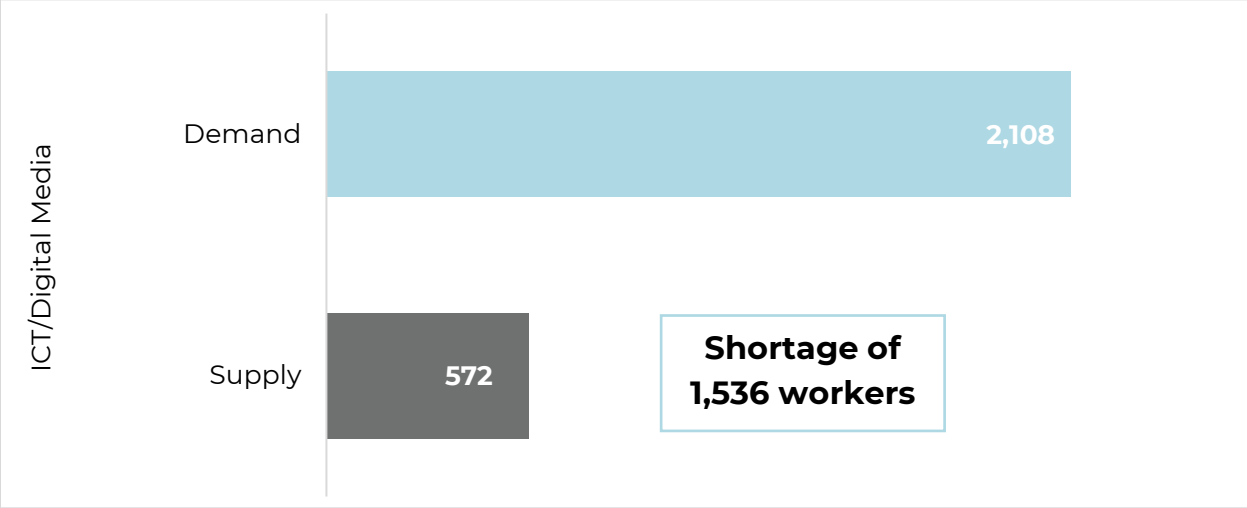


Exhibit 45. Information and communication technologies/digital media demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Public Safety

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is security guards, with 469 annual job openings.
- **Wages:** The highest paid occupation is first-line supervisors of police and detectives, $61.80 per hour at the median.
- **In-Demand Qualifications:** The top skill is law enforcement, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 1,195 annual job openings with a supply of 929 awards, resulting in an undersupply of 266 workers.

Top Job Titles

- Security Guards/Officers
- Police Officers
- Security Patrol Officers
- Lateral Police Officers
- Campus Monitors

Exhibit 46. Public safety employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
Security Guards	3,595	3,633	38	1%	469	$17.45
Correctional Officers and Jailers	2,755	2,818	63	2%	259	$41.31
Police and Sheriff's Patrol Officers	1,694	1,888	194	11%	171	$46.22
Firefighters	799	889	90	11%	79	$31.04
Public Safety Telecommunicators	313	343	31	10%	41	$27.46
Detectives and Criminal Investigators	412	437	25	6%	36	$46.51
First-Line Supervisors of Police and Detectives	365	408	43	12%	33	$61.80
First-Line Supervisors of Correctional Officers	346	365	19	5%	33	$56.05
Top Jobs Total	**10,279**	**10,781**	**502**	**5%**	**1,120**	**-**
All Other Jobs	*713*	*761*	*48*	7%	*74*	-
Grand Total	**10,992**	**11,542**	**550**	**5%**	**1,195**	**-**

Exhibit 47. Public safety occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Security Guards	High school diploma or equivalent	Short-term	None	39.4%

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
Correctional Officers and Jailers	High school diploma or equivalent	Moderate-term	None	47.7%
Police and Sheriff's Patrol Officers	High school diploma or equivalent	Moderate-term	None	44.3%
Firefighters	Postsecondary nondegree award	Long-term	None	58.2%
Public Safety Telecommunicators	High school diploma or equivalent	Moderate-term	None	52.7%
Detectives and Criminal Investigators	High school diploma or equivalent	Moderate-term	Less than 5 years	28.2%
First-Line Supervisors of Police and Detectives	High school diploma or equivalent	Moderate-term	Less than 5 years	37.1%
First-Line Supervisors of Correctional Officers	High school diploma or equivalent	None	Less than 5 years	43.8%

Exhibit 48. Top specialized skills in job ads for public safety occupations (n=847)

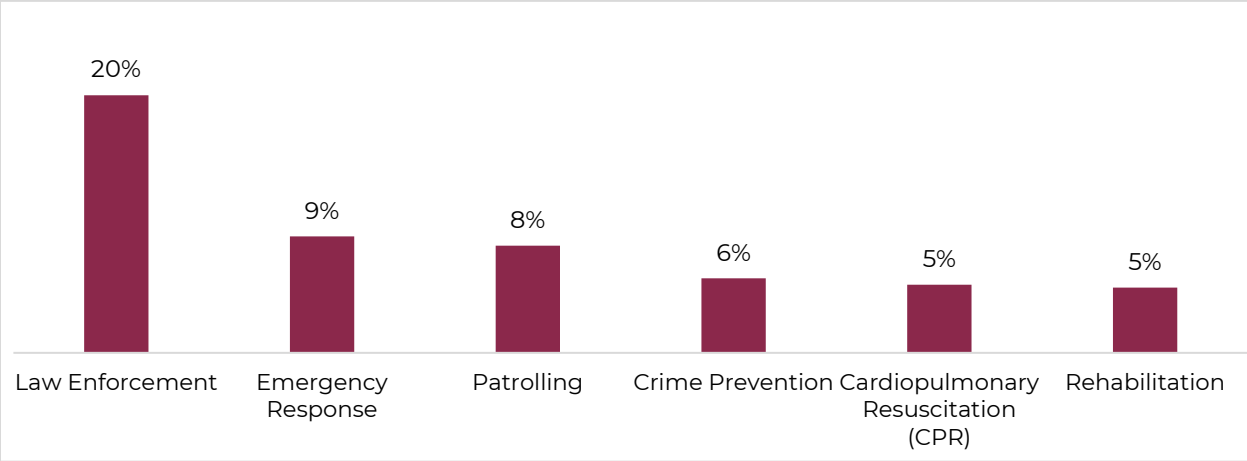


Exhibit 49. Top certifications in job ads for public safety occupations (n=847)

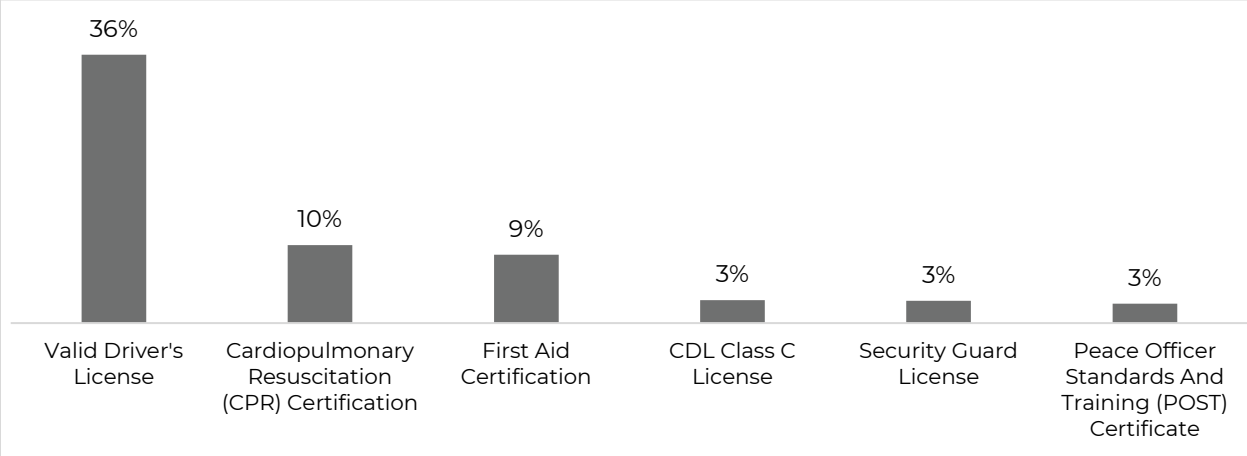
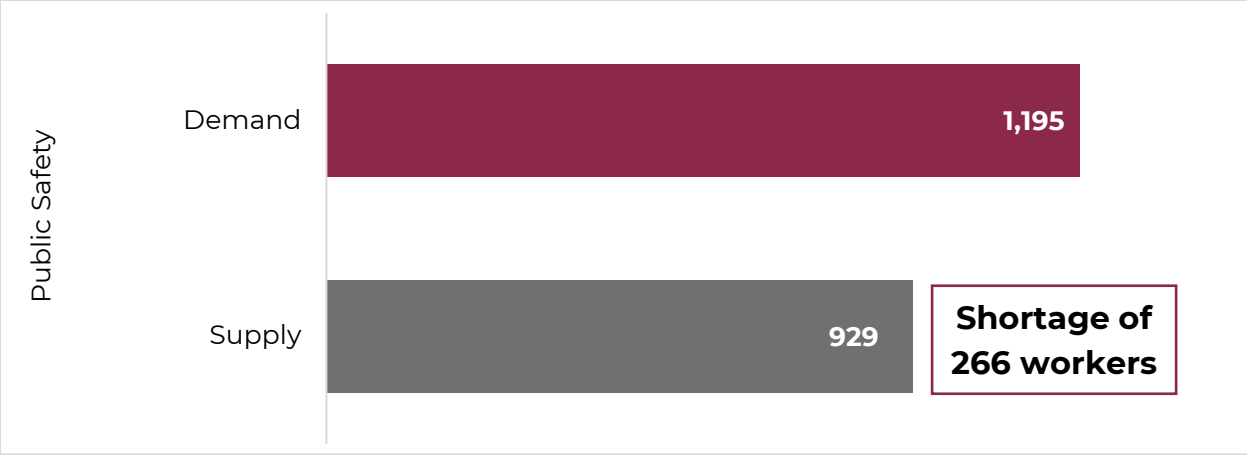


Exhibit 50. Public safety demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Retail, Hospitality, and Tourism

Summary

- **Employment and projected demand:** The most in-demand middle-skill occupation is first-line supervisors of food preparation and serving workers, with 538 annual job openings.
- **Wages:** The highest paid occupation is chefs and head cooks, $27.72 per hour at the median.
- **In-Demand Qualifications:** The top skill is merchandising, and the top certification is a driver's license.
- **Supply and Gap Analysis:** Employer demand totals 1,642 annual job openings with a supply of 117 awards, resulting in an undersupply of 1,525 workers.

Top Job Titles

- Shift Supervisors
- Assistant Managers
- Store Managers
- General Managers
- Shift Leaders

Exhibit 51. Retail, hospitality, and tourism employment, occupational projections, and median wages

Occupation	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Average Annual Openings	Median Wage
First-Line Supervisors of Food Preparation and Serving Workers	3,200	3,496	296	9%	538	$21.29
First-Line Supervisors of Retail Sales Workers	4,067	4,166	98	2%	428	$22.66
Exercise Trainers and Group Fitness Instructors	806	942	135	17%	187	$21.60
Food Service Managers	1,149	1,244	95	8%	152	$27.34
Chefs and Head Cooks	637	693	57	9%	90	$27.72
First-Line Supervisors of Housekeeping and Janitorial Workers	639	676	37	6%	85	$25.51
First-Line Supervisors of Personal Service Workers	298	334	36	12%	41	$22.37
First-Line Supervisors of Entertainment and Recreation Workers, Except Gambling Services	301	340	39	13%	41	$21.26
Top Jobs Total	**11,097**	**11,890**	**792**	**7%**	**1,561**	**-**
All Other Jobs	*525*	*555*	*29*	6%	*81*	-
Grand Total	**11,623**	**12,445**	**822**	**7%**	**1,642**	**-**

Exhibit 52. Retail, hospitality, and tourism occupation educational attainment

Occupation	Typical Entry-Level Education	Typical On-The-Job Training	Work Experience Required	CPS
First-Line Supervisors of Food Preparation and Serving Workers	High school diploma or equivalent	None	Less than 5 years	37.5%
First-Line Supervisors of Retail Sales Workers	High school diploma or equivalent	None	Less than 5 years	36.9%
Exercise Trainers and Group Fitness Instructors	High school diploma or equivalent	Short-term	None	28.5%
Food Service Managers	High school diploma or equivalent	None	Less than 5 years	36.7%
Chefs and Head Cooks	High school diploma or equivalent	None	5 years or more	36.6%
First-Line Supervisors of Housekeeping and Janitorial Workers	High school diploma or equivalent	None	Less than 5 years	33.2%
First-Line Supervisors of Personal Service Workers	High school diploma or equivalent	None	Less than 5 years	42.0%
First-Line Supervisors of Entertainment and Recreation Workers, Except Gambling Services	High school diploma or equivalent	None	Less than 5 years	42.0%

Exhibit 53. Top specialized skills in job ads for retail, hospitality, and tourism occupations (n=2,510)

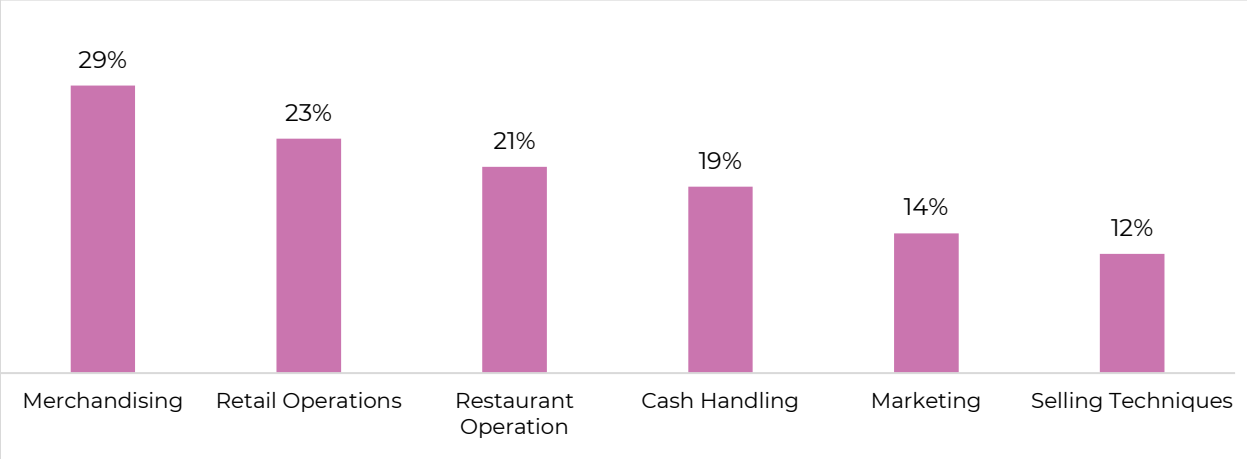


Exhibit 54. Top certifications in job ads for retail, hospitality, and tourism occupations (n=736)

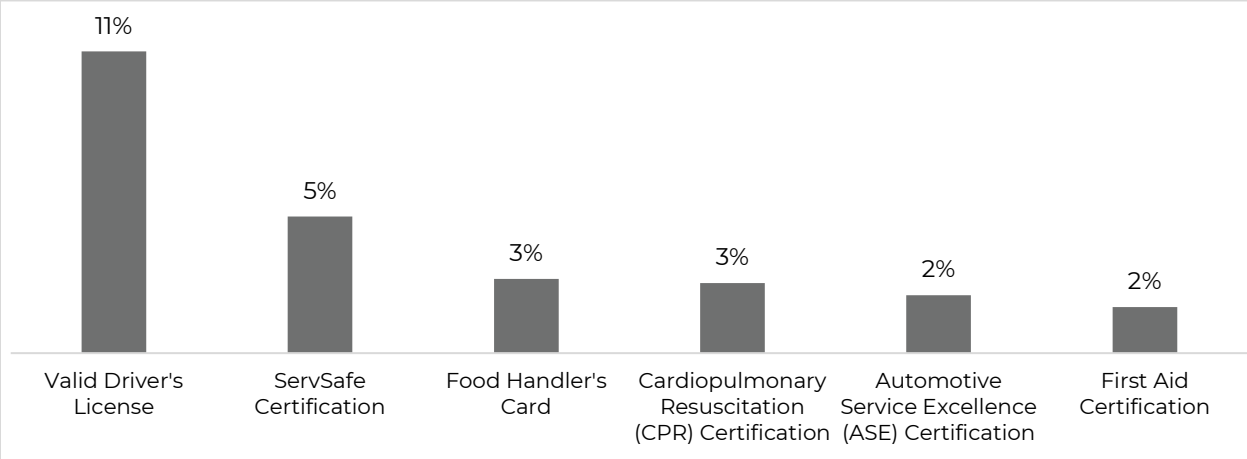
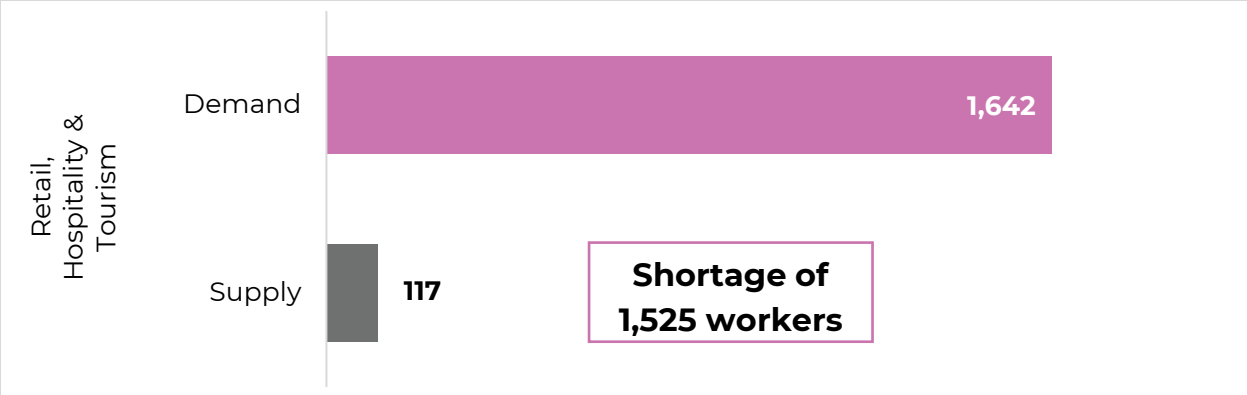


Exhibit 55. Retail, hospitality, and tourism demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill the gap



Appendix A: Below-Middle-Skill Occupations with 25 or More Annual Openings

Exhibit A1: Below-middle-skill occupation employment, occupational projections, and median wages

Occupations	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Annual Job Openings	Median Hourly Earnings
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	33,568	33,881	314	0.9%	5,294	$16.19
Fast Food and Counter Workers	12,675	13,947	1,272	10.0%	3,341	$17.24
Cashiers	10,132	9,968	(164)	(1.6%)	1,925	$16.55
Retail Salespersons	9,503	10,078	575	6.1%	1,535	$16.79
Stockers and Order Fillers	7,998	8,550	552	6.9%	1,425	$18.54
Laborers and Freight, Stock, and Material Movers, Hand	8,618	9,261	643	7.5%	1,282	$17.79
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	7,103	7,550	446	6.3%	1,107	$17.37
Waiters and Waitresses	4,669	4,855	187	4.0%	1,015	$16.09
Packers and Packagers, Hand	5,221	5,396	175	3.4%	773	$16.34
Cooks, Fast Food	4,750	4,684	(66)	(1.4%)	718	$17.01
Landscaping and Groundskeeping Workers	4,399	4,801	401	9.1%	672	$18.00
Farmworkers, Farm, Ranch, and Aquacultural Animals	4,230	4,034	(196)	(4.6%)	634	$16.52
Cooks, Restaurant	3,069	3,419	349	11.4%	554	$17.83
Maids and Housekeeping Cleaners	3,754	3,710	(44)	(1.2%)	540	$17.03
Light Truck Drivers	3,712	4,118	406	10.9%	480	$19.66
Amusement and Recreation Attendants	1,453	1,630	178	12.2%	455	$16.10
Maintenance and Repair Workers, General	4,185	4,501	316	7.6%	454	$22.79
Industrial Truck and Tractor Operators	4,011	4,210	199	4.9%	439	$21.18
Food Preparation Workers	2,093	2,163	70	3.4%	397	$17.08
Slaughterers and Meat Packers	3,181	3,245	64	2.0%	396	$17.98

Occupations	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Annual Job Openings	Median Hourly Earnings
Construction Laborers	3,456	3,782	326	9.4%	365	$23.95
Cleaners of Vehicles and Equipment	2,344	2,460	116	5.0%	343	$17.00
Eligibility Interviewers, Government Programs	3,117	3,248	131	4.2%	293	$26.29
Packaging and Filling Machine Operators and Tenders	2,419	2,521	102	4.2%	290	$18.49
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	2,208	2,494	286	12.9%	280	$27.82
Shipping, Receiving, and Inventory Clerks	2,687	2,727	40	1.5%	271	$20.26
Dining Room and Cafeteria Attendants and Bartender Helpers	1,293	1,388	95	7.3%	267	$16.17
Miscellaneous Assemblers and Fabricators	2,089	2,228	139	6.7%	259	$19.20
Dishwashers	1,450	1,501	51	3.5%	257	$16.50
Bartenders	1,291	1,429	138	10.7%	254	$16.78
Agricultural Equipment Operators	1,540	1,580	40	2.6%	246	$17.38
Recreation Workers	1,007	1,118	111	11.0%	236	$16.63
Agricultural Workers, All Other	1,531	1,451	(80)	(5.2%)	228	$18.06
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	791	816	25	3.1%	209	$16.19
Animal Caretakers	1,003	1,101	98	9.8%	206	$16.88
Graders and Sorters, Agricultural Products	1,344	1,305	(39)	(2.9%)	198	$16.44
Self-Enrichment Teachers	1,288	1,446	158	12.2%	195	$21.48
Counter and Rental Clerks	1,651	1,706	54	3.3%	192	$17.79
Protective Service Workers, All Other	551	583	32	5.7%	170	$18.74
Cooks, Institution, and Cafeteria	885	981	96	10.8%	159	$20.10
Driver/Sales Workers	1,176	1,309	133	11.3%	153	$21.39
Production Workers, All Other	1,228	1,280	52	4.2%	147	$18.37
Food Servers, Nonrestaurant	732	777	44	6.0%	139	$16.98
Parts Salespersons	1,147	1,199	52	4.5%	138	$17.58

Occupations	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Annual Job Openings	Median Hourly Earnings
Billing and Posting Clerks	1,167	1,226	58	5.0%	132	$23.07
Bakers	783	812	29	3.7%	131	$17.77
Information and Record Clerks, All Other	926	952	26	2.8%	113	$22.08
Butchers and Meat Cutters	904	919	15	1.7%	112	$18.09
Shuttle Drivers and Chauffeurs	692	761	69	10.0%	109	$17.35
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	314	362	49	15.6%	107	$17.45
Food Preparation and Serving Related Workers, All Other	573	602	30	5.2%	106	$16.44
Demonstrators and Product Promoters	591	590	(1)	(0.1%)	106	$19.66
Cooks, Short Order	636	648	12	1.9%	100	$16.88
Dispatchers, Except Police, Fire, and Ambulance	937	990	53	5.7%	99	$23.19
Ushers, Lobby Attendants, and Ticket Takers	305	344	39	12.7%	97	$16.21
Painters, Construction, and Maintenance	1,172	1,196	23	2.0%	96	$21.06
Bus Drivers, School	441	532	91	20.5%	91	$24.76
Hotel, Motel, and Resort Desk Clerks	507	535	28	5.5%	87	$17.09
Couriers and Messengers	605	703	99	16.3%	86	$18.42
Laundry and Dry-Cleaning Workers	534	563	29	5.4%	82	$16.89
Helpers--Production Workers	493	501	8	1.7%	80	$18.90
Merchandise Displayers and Window Trimmers	698	719	21	3.0%	79	$18.74
Office and Administrative Support Workers, All Other	735	730	(4)	(0.6%)	78	$20.21
Library Assistants, Clerical	429	440	11	2.4%	74	$20.73
Roofers	752	827	75	10.0%	73	$29.81
Interviewers, Except Eligibility and Loan	576	576	1	0.1%	70	$23.03
Tire Repairers and Changers	463	503	40	8.6%	69	$17.99
Pest Control Workers	515	532	17	3.3%	68	$18.44

Occupations	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Annual Job Openings	Median Hourly Earnings
Taxi Drivers	453	549	97	21.4%	68	$16.36
Cement Masons and Concrete Finishers	864	875	11	1.3%	67	$27.67
Food Batchmakers	399	442	43	10.7%	67	$18.56
Personal Care and Service Workers, All Other	281	343	62	22.0%	65	$16.48
Refuse and Recyclable Material Collectors	442	476	34	7.6%	61	$24.01
Postal Service Mail Carriers	815	807	(7)	(0.9%)	60	$27.96
Drywall and Ceiling Tile Installers	825	832	7	0.9%	58	$26.33
Food Processing Workers, All Other	527	554	27	5.2%	57	$17.96
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	525	521	(5)	(0.9%)	53	$23.32
Residential Advisors	236	265	29	12.3%	52	$20.34
Automotive and Watercraft Service Attendants	325	335	10	2.9%	52	$17.57
Musicians and Singers	341	366	25	7.4%	48	$29.06
Tree Trimmers and Pruners	311	339	28	8.9%	46	$26.65
Gambling Dealers	256	245	(11)	(4.3%)	43	$17.65
Food Cooking Machine Operators and Tenders	274	283	9	3.2%	38	$21.77
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	360	379	19	5.3%	38	$23.11
Orderlies	223	240	17	7.6%	37	$18.49
Pharmacy Aides	201	204	3	1.5%	36	$17.59
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	284	287	3	1.1%	36	$18.91
Meat, Poultry, and Fish Cutters and Trimmers	197	237	40	20.4%	34	$17.41
Mixing and Blending Machine Setters, Operators, and Tenders	308	323	15	5.0%	34	$22.20
Crossing Guards and Flaggers	145	161	16	10.9%	34	$22.12
Helpers--Installation, Maintenance, and Repair Workers	243	267	24	9.7%	31	$18.97

Occupations	2024 Jobs	2029 Jobs	5-Year Change	5-Year % Change	Annual Job Openings	Median Hourly Earnings
Gambling Change Persons and Booth Cashiers	147	147	0	0.2%	28	$16.62
Material Moving Workers, All Other	245	254	9	3.7%	28	$17.25
Machine Feeders and Off-bearers	196	193	(3)	(1.5%)	27	$21.55
Parking Attendants	147	160	14	9.2%	25	$16.25
Highway Maintenance Workers	201	236	35	17.6%	25	$25.46
Below Middle-Skill Total	**202,068**	**211,312**	**9,245**	**4.6%**	**32,422**	**-**

Exhibit A2: Below-middle-skill occupations educational attainment

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	No formal educational credential	None	Short-term	15.5%
Fast Food and Counter Workers	No formal educational credential	None	Short-term	32.3%
Cashiers	No formal educational credential	None	Short-term	30.6%
Retail Salespersons	No formal educational credential	None	Short-term	36.7%
Stockers and Order Fillers	No formal educational credential	None	Short-term	31.8%
Laborers and Freight, Stock, and Material Movers, Hand	No formal educational credential	None	Short-term	28.3%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	No formal educational credential	None	Short-term	24.7%
Waiters and Waitresses	No formal educational credential	None	Short-term	35.8%
Packers and Packagers, Hand	No formal educational credential	None	Short-term	22.2%
Cooks, Fast Food	No formal educational credential	None	Short-term	23.6%
Landscaping and Groundskeeping Workers	No formal educational credential	None	Short-term	20.6%

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Farmworkers, Farm, Ranch, and Aquacultural Animals	No formal educational credential	None	Short-term	15.5%
Cooks, Restaurant	No formal educational credential	Less than 5 years	Moderate-term	23.6%
Maids and Housekeeping Cleaners	No formal educational credential	None	Short-term	19.2%
Light Truck Drivers	High school diploma or equivalent	None	Short-term	29.8%
Amusement and Recreation Attendants	No formal educational credential	None	Short-term	33.9%
Maintenance and Repair Workers, General	High school diploma or equivalent	None	Moderate-term	38.0%
Industrial Truck and Tractor Operators	No formal educational credential	None	Short-term	23.8%
Food Preparation Workers	No formal educational credential	None	Short-term	24.1%
Slaughterers and Meat Packers	No formal educational credential	None	Short-term	21.8%
Construction Laborers	No formal educational credential	None	Short-term	19.0%
Cleaners of Vehicles and Equipment	No formal educational credential	None	Short-term	21.3%
Eligibility Interviewers, Government Programs	High school diploma or equivalent	None	Moderate-term	39.0%
Packaging and Filling Machine Operators and Tenders	High school diploma or equivalent	None	Moderate-term	20.9%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school diploma or equivalent	None	Moderate-term	28.2%
Shipping, Receiving, and Inventory Clerks	High school diploma or equivalent	None	Short-term	34.0%
Dining Room and Cafeteria Attendants and Bartender Helpers	No formal educational credential	None	Short-term	22.8%
Miscellaneous Assemblers and Fabricators	High school diploma or equivalent	None	Moderate-term	29.3%
Dishwashers	No formal educational credential	None	Short-term	16.2%

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Bartenders	No formal educational credential	None	Short-term	42.9%
Agricultural Equipment Operators	No formal educational credential	None	Moderate-term	15.5%
Recreation Workers	High school diploma or equivalent	None	Short-term	37.6%
Agricultural Workers, All Other	No formal educational credential	None	Short-term	15.5%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	No formal educational credential	None	Short-term	34.6%
Animal Caretakers	High school diploma or equivalent	None	Short-term	35.1%
Graders and Sorters, Agricultural Products	No formal educational credential	None	Short-term	12.9%
Self-Enrichment Teachers	High school diploma or equivalent	Less than 5 years	None	25.3%
Counter and Rental Clerks	No formal educational credential	None	Short-term	36.8%
Protective Service Workers, All Other	High school diploma or equivalent	None	Short-term	32.3%
Cooks, Institution, and Cafeteria	No formal educational credential	None	Short-term	23.6%
Driver/Sales Workers	High school diploma or equivalent	None	Short-term	29.8%
Production Workers, All Other	High school diploma or equivalent	None	Moderate-term	27.4%
Food Servers, Nonrestaurant	No formal educational credential	None	Short-term	30.4%
Parts Salespersons	No formal educational credential	None	Moderate-term	39.2%
Billing and Posting Clerks	High school diploma or equivalent	None	Moderate-term	47.2%
Bakers	No formal educational credential	None	Moderate-term	31.1%
Information and Record Clerks, All Other	High school diploma or equivalent	None	Short-term	39.2%
Butchers and Meat Cutters	No formal educational credential	None	Long-term	21.8%

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Shuttle Drivers and Chauffeurs	No formal educational credential	None	Short-term	34.0%
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	No formal educational credential	None	Short-term	32.3%
Food Preparation and Serving Related Workers, All Other	No formal educational credential	None	Short-term	22.7%
Demonstrators and Product Promoters	No formal educational credential	None	Short-term	34.9%
Cooks, Short Order	No formal educational credential	None	Short-term	23.6%
Dispatchers, Except Police, Fire, and Ambulance	High school diploma or equivalent	None	Moderate-term	43.4%
Ushers, Lobby Attendants, and Ticket Takers	No formal educational credential	None	Short-term	33.3%
Painters, Construction, and Maintenance	No formal educational credential	None	Moderate-term	18.9%
Bus Drivers, School	High school diploma or equivalent	None	Short-term	37.0%
Hotel, Motel, and Resort Desk Clerks	High school diploma or equivalent	None	Short-term	40.8%
Couriers and Messengers	High school diploma or equivalent	None	Short-term	38.5%
Laundry and Dry-Cleaning Workers	No formal educational credential	None	Short-term	18.7%
Helpers--Production Workers	High school diploma or equivalent	None	Short-term	22.9%
Merchandise Displayers and Window Trimmers	High school diploma or equivalent	None	Short-term	36.8%
Office and Administrative Support Workers, All Other	High school diploma or equivalent	None	Short-term	37.5%
Library Assistants, Clerical	High school diploma or equivalent	None	Short-term	33.5%
Roofers	No formal educational credential	None	Moderate-term	15.5%
Interviewers, Except Eligibility and Loan	High school diploma or equivalent	None	Short-term	46.7%

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Tire Repairers and Changers	High school diploma or equivalent	None	Short-term	27.7%
Pest Control Workers	High school diploma or equivalent	None	Moderate-term	38.7%
Taxi Drivers	No formal educational credential	None	Short-term	30.3%
Cement Masons and Concrete Finishers	No formal educational credential	None	Moderate-term	21.2%
Food Batchmakers	High school diploma or equivalent	None	Moderate-term	28.2%
Personal Care and Service Workers, All Other	High school diploma or equivalent	None	Short-term	36.7%
Refuse and Recyclable Material Collectors	No formal educational credential	None	Short-term	18.9%
Postal Service Mail Carriers	No formal educational credential	None	Short-term	45.6%
Drywall and Ceiling Tile Installers	No formal educational credential	None	Moderate-term	12.7%
Food Processing Workers, All Other	No formal educational credential	None	Moderate-term	25.8%
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	37.5%
Residential Advisors	High school diploma or equivalent	None	Short-term	36.4%
Automotive and Watercraft Service Attendants	No formal educational credential	None	Short-term	29.6%
Musicians and Singers	No formal educational credential	None	Long-term	24.5%
Tree Trimmers and Pruners	High school diploma or equivalent	None	Short-term	22.0%
Gambling Dealers	High school diploma or equivalent	None	Short-term	40.1%
Food Cooking Machine Operators and Tenders	High school diploma or equivalent	None	Moderate-term	22.0%
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	26.6%

Occupations	Typical Entry-Level Education	Work Experience Required	Typical On-the-Job Training	Community College Education Attainment (CPS)
Orderlies	High school diploma or equivalent	None	Short-term	37.9%
Pharmacy Aides	High school diploma or equivalent	None	Short-term	35.7%
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	High school diploma or equivalent	None	Short-term	35.5%
Meat, Poultry, and Fish Cutters and Trimmers	No formal educational credential	None	Short-term	21.8%
Mixing and Blending Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	27.8%
Crossing Guards and Flaggers	No formal educational credential	None	Short-term	29.9%
Helpers--Installation, Maintenance, and Repair Workers	High school diploma or equivalent	None	Short-term	19.7%
Gambling Change Persons and Booth Cashiers	No formal educational credential	None	Short-term	30.6%
Material Moving Workers, All Other	No formal educational credential	None	Short-term	27.0%
Machine Feeders and Off-bearers	No formal educational credential	None	Short-term	30.0%
Parking Attendants	No formal educational credential	None	Short-term	29.5%
Highway Maintenance Workers	High school diploma or equivalent	None	Moderate-term	30.7%

Appendix B: Postsecondary Supply by Program

Exhibit B1. Postsecondary supply for the advanced manufacturing workforce

TOP6 or CIP with Title	College	3-Year Average Awards
093400 - Electronics and Electric Technology	Fresno City College	124
093420 - Industrial Electronics	Fresno City College	7
093600 - Printing and Lithography	Fresno City College	3
094500 - Industrial Systems Technology and Maintenance	Clovis Community College	5
	Fresno City College	29
	Madera Community College	2
095000 - Aeronautical and Aviation Technology	Reedley College	39
095600 - Manufacturing and Industrial Technology	Reedley College	44
	Fresno City College	50
	Madera Community College	6
095630 - Machining and Machine Tools	Reedley College	10
	Madera Community College	2
095650 - Welding Technology	Reedley College	30
	Coalinga College	14
	Fresno City College	49
	Madera Community College	8
15.0406 - Automation Engineer Technology/Technician	Institute of Technology - Clovis	13
47.0303 - Industrial Mechanics and Maintenance Technology/Technician	San Joaquin Valley College-Fresno	0
	San Joaquin Valley College-Trades Education Center	6
48.0508 - Welding Technology/Welder	Institute of Technology - Clovis	26
14.1001 - Electrical and Electronics Engineering	California State University-Fresno	20
14.1901 - Mechanical Engineering	California State University-Fresno	74
15.0612 - Industrial Technology/Technician	California State University-Fresno	39
15.1102 - Surveying Technology/Surveying	California State University-Fresno	7

TOP6 or CIP with Title	College	3-Year Average Awards
Grand Total		**607**

Exhibit B2. Postsecondary supply for the advanced transportation and logistics workforce

TOP6 or CIP with Title	College	3-Year Average Awards
094700 - Diesel Technology	Fresno City College	1
094730 - Heavy Equipment Operation	Coalinga College	11
094750 - Truck and Bus Driving	Coalinga College	2
094800 - Automotive Technology	Reedley College	34
	Fresno City College	11
094900 - Automotive Collision Repair	Fresno City College	23
095010 - Aviation Airframe Mechanics	Reedley College	14
095020 - Aviation Powerplant Mechanics	Reedley College	10
302020 - Piloting	Reedley College	1
47.0607 - Airframe Mechanics and Aircraft Maintenance Technology/Technician	San Joaquin Valley College-Trades Education Center	41
Grand Total		**147**

Exhibit B3. Postsecondary supply for the agriculture, water, and environmental technologies workforce

TOP6 or CIP with Title	College	3-Year Average Awards
01.8301 - Veterinary/Animal Health Technology/Technician and Veterinary Assistant	San Joaquin Valley College-Fresno	55
010100 - Agriculture Technology and Sciences, General	Reedley College	2
	Coalinga College	39
010200 - Animal Science	Reedley College	21
010240 - Equine Science	Reedley College	5
010300 - Plant Science	Reedley College	102
	Coalinga College	43
	Madera Community College	4
010310 - Agricultural Pest Control Adviser and Operator (Licensed)	Coalinga College	1
010400 - Viticulture, Enology, and Wine Business	Reedley College	0

TOP6 or CIP with Title	College	3-Year Average Awards
010900 - Horticulture	Madera Community College	0
011200 - Agriculture Business, Sales and Service	Reedley College	76
	Madera Community College	3
011300 - Food Processing and Related Technologies	Coalinga College	1
011400 - Forestry	Reedley College	85
011500 - Natural Resources	Reedley College	30
	Fresno City College	7
011510 - Parks and Outdoor Recreation	Reedley College	7
011600 - Agricultural Power Equipment Technology	Reedley College	207
01.0102 - Agribusiness/Agricultural Business Operations	California State University-Fresno	111
01.0901 - Animal Sciences, General	California State University-Fresno	95
01.1001 - Food Science	California State University-Fresno	41
01.0309 - Viticulture and Enology	California State University-Fresno	18
01.1105 - Plant Protection and Integrated Pest Management	California State University-Fresno	65
03.0104 - Environmental Science	California State University-Fresno	8
	Fresno Pacific University	1
31.0101 - Parks, Recreation, and Leisure Studies	California State University-Fresno	36
26.1305 - Environmental Biology	Fresno Pacific University	1
Grand Total		**1,066**

Exhibit B4. Postsecondary supply for the business and entrepreneurship workforce

TOP6 or CIP with Title	College	3-Year Average Awards
050100 - Business and Commerce, General	Reedley College	73
	Madera Community College	30
050200 - Accounting	Reedley College	22
	Clovis Community College	8
	Coalinga College	4

TOP6 or CIP with Title	College	3-Year Average Awards
	Fresno City College	38
	Madera Community College	4
050500 - Business Administration	Reedley College	88
	Clovis Community College	144
	Coalinga College	19
	Fresno City College	204
	Madera Community College	58
050600 - Business Management	Reedley College	54
	Clovis Community College	1
	Coalinga College	9
	Fresno City College	32
050640 - Small Business and Entrepreneurship	Reedley College	1
	Clovis Community College	2
050900 - Marketing and Distribution	Fresno City College	14
051410 - Legal Office Technology	Fresno City College	6
059900 - Other Business and Management	Fresno City College	0
12.0401 - Cosmetology/Cosmetologist, General	Institute of Technology - Clovis	16
	Lawrence & Company College of Cosmetology	9
	Lyle's College of Beauty	9
	Milan Institute-Clovis	42
	Paul Mitchell the School-Fresno	94
	Princess Institute of Beauty	20
12.0402 - Barbering/Barber	Institute of Technology - Clovis	19
	Lawrence & Company College of Cosmetology	5
	Milan Institute-Clovis	39
	Paul Mitchell the School-Fresno	21
12.0409 - Aesthetician/Esthetician and Skin Care Specialist	Lawrence & Company College of Cosmetology	17
	Lyle's College of Beauty	20
	Milan Institute-Clovis	254
	Princess Institute of Beauty	8

TOP6 or CIP with Title	College	3-Year Average Awards
12.0410 - Nail Technician/Specialist and Manicurist	Lawrence & Company College of Cosmetology	9
	Lyle's College of Beauty	41
	Milan Institute-Clovis	7
	Princess Institute of Beauty	11
140200 - Paralegal	Fresno City College	54
51.3501 - Massage Therapy/Therapeutic Massage	Milan Institute-Clovis	3
52.0201 - Business Administration and Management, General	Agape College of Business and Science	2
	California State University-Fresno	688
	Fresno Pacific University	106
22.0001 - Pre-Law Studies	Fresno Pacific University	3
52.0299 - Business Administration, Management and Operations, Other	Fresno Pacific University	36
52.0301 - Accounting	Fresno Pacific University	7
52.0801 - Finance, General	Fresno Pacific University	1
52.1003 - Organizational Behavior Studies	Fresno Pacific University	4
52.1401 - Marketing/Marketing Management, General	Fresno Pacific University	6
Grand Total		**2,364**

Exhibit B5. Postsecondary supply for the education and human development workforce

TOP6 or CIP with Title	College	3-Year Average Awards
080200 - Educational Aide (Teacher Assistant)	Fresno City College	37
080900 - Special Education	Fresno City College	2
085010 - Sign Language Interpreting	Fresno City College	2
130500 - Child Development/Early Care and Education	Reedley College	98
	Clovis Community College	91
	Coalinga College	132
	Fresno City College	247
	Madera Community College	45
130510 - Child and Adolescent Development	Clovis Community College	20

TOP6 or CIP with Title	College	3-Year Average Awards
	Coalinga College	8
130520 - Children with Special Needs	Reedley College	1
	Clovis Community College	0
	Fresno City College	7
	Madera Community College	0
130550 - The School Age Child	Reedley College	0
	Clovis Community College	1
130570 - Foster and Kinship Care	Fresno City College	0
130590 - Infants and Toddlers	Fresno City College	9
160200 - Library Technician (Aide)	Fresno City College	24
13.1210 - Early Childhood Education and Teaching	California State University-Fresno	40
19.0101 - Family and Consumer Sciences/Human Sciences, General	California State University-Fresno	6
19.0706 - Child Development	California State University-Fresno	47
	Fresno Pacific University	123
Grand Total		**942**

Exhibit B6. Postsecondary supply for the energy, construction, and utilities workforce

TOP6 or CIP with Title	College	3-Year Average Awards
020100 - Architecture and Architectural Technology	Fresno City College	12
093500 - Electro-Mechanical Technology	Fresno City College	2
094600 - Environmental Control Technology (HVAC)	Coalinga College	17
	Fresno City College	41
095200 - Construction Crafts Technology	Fresno City College	48
095300 - Drafting Technology	Fresno City College	20
095800 - Water and Wastewater Technology	Clovis Community College	4
46.0302 - Electrician	San Joaquin Valley College-Trades Education Center	66
47.0201 - Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	Institute of Technology - Clovis	135
	San Joaquin Valley College-Fresno	3

TOP6 or CIP with Title	College	3-Year Average Awards
	San Joaquin Valley College-Trades Education Center	11
	UEI College-Fresno	134
04.0201 - Architecture	California State University-Fresno	9
14.0801 - Civil Engineering, General	California State University-Fresno	74
15.1001 - Construction Engineering Technology/Technician	California State University-Fresno	40
Grand Total		**617**

Exhibit B7. Postsecondary supply for the health workforce

TOP6 or CIP with Title	College	3-Year Average Awards
051420 - Medical Office Technology	Reedley College	21
	Fresno City College	21
	Madera Community College	10
120100 - Health Occupations, General	Fresno City College	28
120200 - Hospital and Health Care Administration	Clovis Community College	2
120810 - Clinical Medical Assisting	Fresno City College	118
121000 - Respiratory Care/Therapy	Fresno City College	20
121800 - Occupational Therapy Technology	Clovis Community College	14
122000 - Speech-Language Pathology and Audiology	Reedley College	2
	Madera Community College	19
122300 - Health Information Technology	Fresno City College	4
122310 - Health Information Coding	Fresno City College	10
122500 - Radiologic Technology	Fresno City College	32
123010 - Registered Nursing	Fresno City College	226
	Madera Community College	11
123020 - Licensed Vocational Nursing	Reedley College	1
	Madera Community College	36
123030 - Certified Nurse Assistant	Reedley College	5
123900 - Psychiatric Technician	Coalinga College	25
124010 - Dental Assistant	Reedley College	37

TOP6 or CIP with Title	College	3-Year Average Awards
	Fresno City College	9
124020 - Dental Hygienist	Fresno City College	23
125100 - Paramedic	Fresno City College	12
126000 - Health Professions, Transfer Core Curriculum	Coalinga College	34
	Fresno City College	380
130600 - Nutrition, Foods, and Culinary Arts	Clovis Community College	0
	Fresno City College	6
130620 - Dietetic Services and Management	Fresno City College	0
130900 - Gerontology	Fresno City College	5
210440 - Alcohol and Controlled Substances	Fresno City College	43
51.0601 - Dental Assisting/Assistant	San Joaquin Valley College-Fresno	38
	UEI College-Fresno	114
51.0705 - Medical Office Management/Administration	Agape College of Business and Science	1
51.0706 - Health Information/Medical Records Administration/Administrator	Institute of Technology - Clovis	68
51.0710 - Medical Office Assistant/Specialist	Clovis Adult Education	14
	San Joaquin Valley College-Fresno	11
	San Joaquin Valley College-Madera	10
51.0713 - Medical Insurance Coding Specialist/Coder	UEI College-Fresno	0
51.0801 - Medical/Clinical Assistant	Agape College of Business and Science	11
	California Institute of Medical Science	7
	Clovis Adult Education	5
	Institute of Technology - Clovis	132
	Milan Institute-Clovis	8
	San Joaquin Valley College-Fresno	92
	San Joaquin Valley College-Madera	44
	UEI College-Fresno	286
51.0802 - Clinical/Medical Laboratory Assistant	California Institute of Medical Science	24

TOP6 or CIP with Title	College	3-Year Average Awards
51.0805 - Pharmacy Technician/Assistant	Institute of Technology - Clovis	15
	San Joaquin Valley College-Fresno	15
	UEI College-Fresno	66
51.0806 - Physical Therapy Assistant	Institute of Technology - Clovis	55
51.0909 - Surgical Technology/Technologist	San Joaquin Valley College-Fresno	24
51.1009 - Phlebotomy Technician/Phlebotomist	Agape College of Business and Science	4
51.2602 - Home Health Aide/Home Attendant	Clovis Adult Education	6
51.3901 - Licensed Practical/Vocational Nurse Training	Clovis Adult Education	58
51.3902 - Nursing Assistant/Aide and Patient Care Assistant/Aide	Agape College of Business and Science	1
	Clovis Adult Education	54
	Institute of Technology - Clovis	31
26.0101 - Biology/Biological Sciences, General	California State University-Fresno	156
	Fresno Pacific University	6
26.0202 - Biochemistry	California State University-Fresno	28
30.1901 - Nutrition Sciences	California State University-Fresno	1
31.0501 - Sports, Kinesiology, and Physical Education/Fitness, General	California State University-Fresno	267
51.0000 - Health Services/Allied Health/Health Sciences, General	California State University-Fresno	142
51.2205 - Health/Medical Physics	California State University-Fresno	1
51.3801 - Registered Nursing/Registered Nurse	California State University-Fresno	158
	Fresno Pacific University	7
26.0908 - Exercise Physiology and Kinesiology	Fresno Pacific University	3
26.9999 - Biological and Biomedical Sciences, Other	Fresno Pacific University	4
31.0505 - Exercise Science and Kinesiology	Fresno Pacific University	7
51.0701 - Health/Health Care Administration/Management	Fresno Pacific University	22
51.0913 - Athletic Training/Trainer	Fresno Pacific University	1
51.1102 - Pre-Medicine/Pre-Medical Studies	Fresno Pacific University	3

TOP6 or CIP with Title	College	3-Year Average Awards
51.2306 - Occupational Therapy/Therapist	Fresno Pacific University	11
51.3808 - Nursing Science	Fresno Pacific University	1
51.3999 - Practical Nursing, Vocational Nursing and Nursing Assistants, Other	Institute of Technology - Clovis	244
Grand Total		**3,413**

Exhibit B8. Postsecondary supply for the information and communication technologies/digital media workforce

TOP6 or CIP with Title	College	3-Year Average Awards
051400 - Office Technology/Office Computer Applications	Reedley College	46
	Coalinga College	3
	Fresno City College	13
	Madera Community College	11
060200 - Journalism	Fresno City College	9
061400 - Digital Media	Fresno City College	1
061430 - Website Design and Development	Clovis Community College	4
070100 - Information Technology, General	Reedley College	5
070200 - Computer Information Systems	Reedley College	6
	Clovis Community College	1
	Fresno City College	35
070210 - Software Applications	Coalinga College	5
070700 - Computer Software Development	Clovis Community College	3
070710 - Computer Programming	Reedley College	25
	Clovis Community College	3
070810 - Computer Networking	Reedley College	5
	Clovis Community College	10
	Fresno City College	21
070820 - Computer Support	Reedley College	6
	Clovis Community College	2
	Madera Community College	1
070900 - World Wide Web Administration	Fresno City College	9

TOP6 or CIP with Title	College	3-Year Average Awards
093430 - Telecommunications Technology	Fresno City College	8
100500 - Commercial Music	Clovis Community College	2
	Fresno City College	18
101200 - Applied Photography	Fresno City College	46
103000 - Graphic Art and Design	Fresno City College	21
52.0401 - Administrative Assistant and Secretarial Science, General	Clovis Adult Education	9
52.0408 - General Office Occupations and Clerical Services	Agape College of Business and Science	1
	San Joaquin Valley College-Fresno	9
	San Joaquin Valley College-Madera	3
	UEI College-Fresno	20
09.0401 - Journalism	California State University-Fresno	86
11.0701 - Computer Science	California State University-Fresno	53
14.0901 - Computer Engineering, General	California State University-Fresno	21
50.0409 - Graphic Design	California State University-Fresno	35
	Fresno Pacific University	1
15.1204 - Computer Software Technology/Technician	Fresno Pacific University	12
50.0903 - Music Performance, General	Fresno Pacific University	1
Grand Total		**572**

Exhibit B9. Postsecondary supply for the public safety workforce

TOP6 or CIP with Title	College	3-Year Average Awards
210500 - Administration of Justice	Reedley College	58
	Clovis Community College	50
	Coalinga College	21
	Fresno City College	144
	Madera Community College	31
210510 - Corrections	Reedley College	10

TOP6 or CIP with Title	College	3-Year Average Awards
	Clovis Community College	1
	Coalinga College	5
	Fresno City College	10
	Madera Community College	2
210540 - Forensics, Evidence, and Investigation	Fresno City College	2
210550 - Police Academy	Fresno City College	20
213300 - Fire Technology	Reedley College	9
	Fresno City College	36
213310 - Wildland Fire Technology	Reedley College	2
213350 - Fire Academy	Fresno City College	45
43.0102 - Corrections	San Joaquin Valley College-Fresno	7
43.0107 - Criminal Justice/Police Science	Institute of Technology - Clovis	22
43.0109 - Security and Loss Prevention Services	UEI College-Fresno	43
45.0401 - Criminology	California State University-Fresno	378
	Fresno Pacific University	21
43.0103 - Criminal Justice/Law Enforcement Administration	Fresno Pacific University	8
43.0111 - Criminalistics and Criminal Science	Fresno Pacific University	2
Grand Total		**929**

Exhibit B10. Postsecondary supply for the retail, hospitality, and tourism workforce

TOP6 or CIP with Title	College	3-Year Average Awards
050650 - Retail Store Operations and Management	Coalinga College	8
	Fresno City College	45
083520 - Fitness Trainer	Fresno City College	2
12.0501 - Baking and Pastry Arts/Baker/Pastry Chef	Institute of Technology - Clovis	33
130320 - Fashion Merchandising	Fresno City College	4
130630 - Culinary Arts	Fresno City College	2
130710 - Restaurant and Food Services and Management	Fresno City College	5

TOP6 or CIP with Title	College	3-Year Average Awards
50.0408 - Interior Design	California State University-Fresno	17
Grand Total		**117**

Appendix C: Methodology & Data Sources

Data Sources

The labor market and educational supply data compiled in this report are derived from various sources. Data were drawn from external sources, including Lightcast, the California Community Colleges Chancellor's Office Management Information Systems Data Mart, and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections	Lightcast. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry: https://lightcast.io.
Typical Education Level and On-the-job Training	The Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: https://www.bls.gov/emp/tables/education-and-training-by-occupation.htm.
Job Posting and Skills Data	Lightcast, https://lightcast.io.
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database comprises over 900 occupations, providing information on skills, abilities, knowledge, work activities, and interests associated with specific occupations: onetonline.org https://www.onetonline.org/.
Supply (Postsecondary Institution Awards)	Community college awards issued over the last three academic years come from the California Community Colleges Chancellor's Office (CCCCO) Management Information Systems Data Mart: https://datamart.cccco.edu/Outcomes/Program_Awards.aspx. Other postsecondary awards issued over the last three academic years come from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS): https://nces.ed.gov/ipeds/use-the-data.
CPS Educational Attainment	Bureau of Labor Statistics (BLS), Current Population Survey (CPS). Highest educational attainment for workers 25 years and older by detailed occupation: https://www.bls.gov/emp/tables/educational-attainment.htm

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by the total number of job openings. Typically used as a proxy for occupational demand.

Demand: The number of annual job openings expected over a period.

Education Attainment Level: The highest education attainment level of workers aged 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Lightcast formula that includes historical employment and economic indicators along with national, state, and local trends.

Living Wage: The cost of living in a specific community or subregion for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering a new occupation often require training. These replacement needs, combined with job openings resulting from growth, can be used to determine the minimum number of workers who will need to be trained for an occupation.

Supply: The average number of awards issued by postsecondary institutions over the last three academic years. Supply includes community college awards as well as awards issued by other postsecondary education institutions. While four-year institutions primarily prepare students for employment beyond the middle-skill level, their awards are included in this analysis, as graduates are frequently qualified to work in middle-skill occupations.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs or maintain its current employment level, the number of openings will equal the number of replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-the-Job Training: indicates the typical on-the-job training required to attain competency in the skills necessary for the occupation. Short-term training equates to less than one month of on-the-job training. Moderate training typically requires more than one month, but less than 12 months of on-the-job training. Long-term on-the-job training requires more than one year of on-the-job training for workers to successfully perform their role.

Work Experience: indicates the typical work experience required to enter an occupation.

Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor the California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

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