

**November 2022**

# **Environmental Scan**

## **Mother Lode**



Prepared by the Central Valley/Mother Lode Center of Excellence



# TABLE OF CONTENTS

Introduction .....	3
Summary of Findings.....	4
Career Education Outcomes.....	7
Advanced Manufacturing.....	8
Advanced Transportation and Logistics.....	11
Agriculture, Water and Environmental Technologies.....	15
Business and Entrepreneurship .....	19
Education.....	25
Energy, Construction and Utilities.....	29
Health.....	34
ICT/Digital Media.....	38
Public Safety .....	42
Retail, Hospitality and Tourism .....	46
APPENDIX A: Bellow middle skill occupations with 10 or more annual openings .....	51
APPENDIX B: METHODOLOGY and DATA SOURCES .....	56

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

*If for any reason this document is not accessible or if you have specific needs for readability, please contact us and we will do our utmost to accommodate you with a modified version. To make a request, contact Nora Seronello by phone at (209) 575-6894 or by email [seronellon@mjc.edu](mailto:seronellon@mjc.edu).*

# INTRODUCTION

This report prepared by the Central Valley/Mother Lode (CVML) Center of Excellence (COE) examines labor market demand and postsecondary supply in Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties.

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).<sup>1</sup>

Within each sector, this analysis focuses on middle-skill occupations, those occupations that require more education and training than a high school diploma, but less than a bachelor's degree at the state-level. For each occupation, data is presented on current employment, projected demand, entry-level wages, and educational attainment. Occupational data for a high-school educational level can be found in the Appendix A.

The average living wage for a single adult in in Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties is \$12.58/hour.<sup>2</sup> Top specialized skills were determined by analyzing job postings for all occupations in a related sector using Burning Glass. Postsecondary supply is presented for average annual awards (degrees and certificates) by program.

**Please note:** The analysis in this report only includes occupations with 10 or more annual openings. In the wage charts for each sector, entry-level wages represent 25<sup>th</sup> percentile wages. In addition, Current Population Survey (CPS) results are provided in the educational attainment tables. An occupation in which at least 30% of its workforce or higher possesses less than a bachelor's degree is considered a middle-skill occupation that is relevant to community college education.

## CCCCO Sectors

- Advanced Manufacturing
- Advanced Transportation and Logistics
- Agriculture, Water and Environmental Technologies
- Business and Entrepreneurship
- Education
- Energy, Construction and Utilities
- Health Care
- ICT/Digital Media
- Public Safety

---

<sup>2</sup> The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

# SUMMARY OF FINDINGS

The Central Valley/Mother Lode Center of Excellence was asked by the Health Science Career Pathway Advocates for the California Mother Lode to provide labor market information for 10 sectors that are critical to the economic vitality of Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties as identified by the Central Regional Consortium.

In the following report sections, occupational wages, educational attainment, and postsecondary supply are shown for each sector. Analysis by the Center of Excellence examined whether postsecondary institutions are supplying enough students to meet workforce demand. This analysis provides projected growth for occupations anticipating at least 10 or more annual openings. The demand and growth data were then compared to the postsecondary supply for programs that train students for the listed occupations within each sector.

## Key finding

- In Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties, the 10 sectors are expected to offer 3,045 middle-skill job openings annually. Columbia College, the one postsecondary institution in the Mother Lode, has an annual average supply of 285 awards (degrees, certificates and non-credit) from students trained in the related fields. When postsecondary supply and projected annual openings are compared, an undersupply of 2,760 workers appear to exist in the college's service area (Exhibit 1).

Sectors with the most jobs in 2021 are business and entrepreneurship, health care, and energy, construction and utilities. These sectors also are projected to offer the greatest number of annual job openings. The smallest sectors in terms of 2021 employment are advanced transportation and logistics, education, and advanced manufacturing. These sectors also are projected to offer the smallest number of annual job openings.

**Exhibit 1. Comparison of workforce demand and postsecondary supply for the 10 industry sectors**

SECTOR	DEMAND (ANNUAL OPENINGS)	SUPPLY (AVERAGE ANNUAL AWARDS)	GAP
Business and Entrepreneurship	581	48	533
Health	576	67	509
Energy, Construction and Utilities	401	5	396
Retail, Hospitality and Tourism	358	25	333
Public Safety	284	45	239
ICT/Digital Media	222	18	204
Agriculture, Water and Environmental Technologies	195	36	159
Advanced Transportation and Logistics	176	22	154
Education	143	18	125
Advanced Manufacturing	109	1	108
<b>TOTAL</b>	<b>3,045</b>	<b>285</b>	<b>2,760</b>

In addition to addressing the sectors with the largest undersupply of workers, planning efforts by the College could also consider occupations with strong workforce demand.

Occupations that have the most annual job openings and are generally well paid in Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties are as follows:

- **Office Clerks, General, 114 job openings**
- **Correctional Officers and Jailers, 106 job openings**
- **General and Operations Managers, 94 job openings**
- **Maintenance and Repair Workers, General, 78 job openings**
- **Secretaries and Administrative Assistants, Except Legal, Medical, and Executive, 65 job openings**
- **Registered Nurses, 60 job openings**
- **Heavy and Tractor-Trailer Truck Drivers, 43 job openings**
- **Nursing Assistants, 41 job openings**

Although home health and personal care aides are projected to offer 263 annual job openings, this occupation pays a low entry-level wage, only \$14.04 per hour. Another occupation with high demand and low wages is receptionists and information clerks with 29 projected annual job openings with an entry-level wage of \$14.05.

Occupations that pose a concern for training are those projected to contract over the next five years. These occupations will continue to offer annual openings, due to replacement jobs, but may be areas warranting attention since contraction may affect the future hiring of students.

These occupations include:

- **Forest and Conservation Technicians**, a loss of 20 positions, a 5% decline
- **Teaching Assistants, Except Postsecondary**, a loss of 20 positions, a 4% decline
- **Childcare Workers**, a loss of 13 positions, a 5% decline

However, the forest and conservation technicians occupation may see a reversal in decline once the impacts of the Inflation Reduction Act's investments to protect forests, wetlands, and other natural ecosystems are implemented.

According to the Bluegreen Alliance:<sup>3</sup>

The Inflation Reduction Act's investments to protect forests, wetlands, and other natural ecosystems not only will help to shield communities from climate impacts but also will create more than **600,000 jobs** over the next 10 years. That includes:

- Coastal communities: More than **50,000 jobs** from investments to help coastal communities build protection from climate-related storms and protect fisheries and other habitats;
- Forests: More than **100,000 jobs** from grants and investments to protect and restore forests in support of climate resilience and healthy ecosystems;
- National parks: More than **20,000 jobs** from investments to protect and restore public lands; and
- Healthy soil: Nearly **380,000 jobs** from investments to support farmers who use regenerative practices to reduce climate pollution, strengthen drought resistance, and boost productivity.”

It is also important to keep in mind occupations that offer solid wages in conjunction with moderate to strong workforce demand. Sectors with these types of jobs include ICT/digital media, education, and business and entrepreneurship.

Within health care, occupations that have a promising outlook lead to improved quality of life for students include registered nurses, licensed practical and licensed vocational nurses, dental assistants, and social and human service assistants.

Within the advanced transportation and logistics sector, the occupations of first-line supervisors of mechanics, installers, and repairers, first-line supervisors of transportation and material moving workers, except aircraft cargo handling supervisors, and heavy and tractor-trailer truck drivers also have promising outlooks.

Within business and entrepreneurship, general and operations managers, sales representatives, wholesale and manufacturing, technical and scientific products, and business operations specialists, all other are occupations that pay relatively high entry-level wages and have significant annual openings.

Within the energy, construction, and utilities sector, occupations that show solid growth combined with good wages include construction managers, first-line supervisors of construction trades and extraction workers, and water and wastewater treatment plant and system operators.

---

<sup>3</sup> Bluegreen Alliance, <https://www.bluegreenalliance.org/site/9-million-good-jobs-from-climate-action-the-inflationreduction-act/>

# CAREER EDUCATION OUTCOMES

Exhibit 2 summarizes Strong Workforce Program (SWP) outcomes from the California Community Colleges Chancellor Office’s Cal-PASS Plus LaunchBoard for all career education (CE) programs in the Central Valley/Mother Lode region and state. At 20%, the percentage of students statewide who earned 9 or more CE units is similar to the region, 21%. The region has a lower percentage of students who have completed a noncredit CE course or workforce preparation class—52% in the Central Valley/Mother Lode region compared to 67% in the state.

In the Central Valley/Mother Lode region, 8,458 of students received a degree or certificate or attained apprenticeship journey status, and 6,960 students transferred. Median annual earnings total \$31,120 in the Central Valley/Mother Lode region which is less than the state, \$37,384.

The Central Valley/Mother Lode region ties with the state in terms of the percentage of students obtaining a job closely related to their field of study, 73%. In the Central Valley/Mother Lode region, 63% of students attained a living wage, which is more than the state, 52%.

**Exhibit 2. Comparison of SWP outcomes from Launch Board for the Central Valley/Mother Lode region, and the state**

Metric	CVML Region	State
Strong Workforce Program Students	97,263	903,447
Students Who Earned 9 or More Career Education Units in the District in a Single Year	21%	20%
Students Who Completed a Noncredit CTE or Workforce Preparation Course	52%	67%
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	8,458	79,853
Number of Students Who Transferred	6,960	63,698
Job Closely Related to Field of Study	73%	73%
Median Annual Earnings	\$31,120	\$37,384
Median Change in Earnings	34%	26%
Attained a Living Wage	63%	52%

# ADVANCED MANUFACTURING

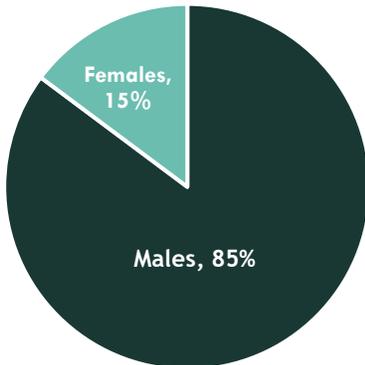
## Summary

- **Gender and race/ethnicity:** Comprising 15% of the workforce, females are underrepresented in this sector. Analysis shows overrepresentation of white workers (Exhibits 3 and 4).
- **Employment and projected demand:** The largest middle-skill occupation is first-line supervisors of production and operating workers, which has 18 annual openings (Exhibit 5).
- **Wages:** The highest paid occupation is first-line supervisors of production and operating workers, \$30.26/hour median earnings (Exhibit 6).
- **Specialized skills:** The top skill is repair, and the top certification is American Society for Quality (ASQ) Certification (Exhibits 8 and 9).

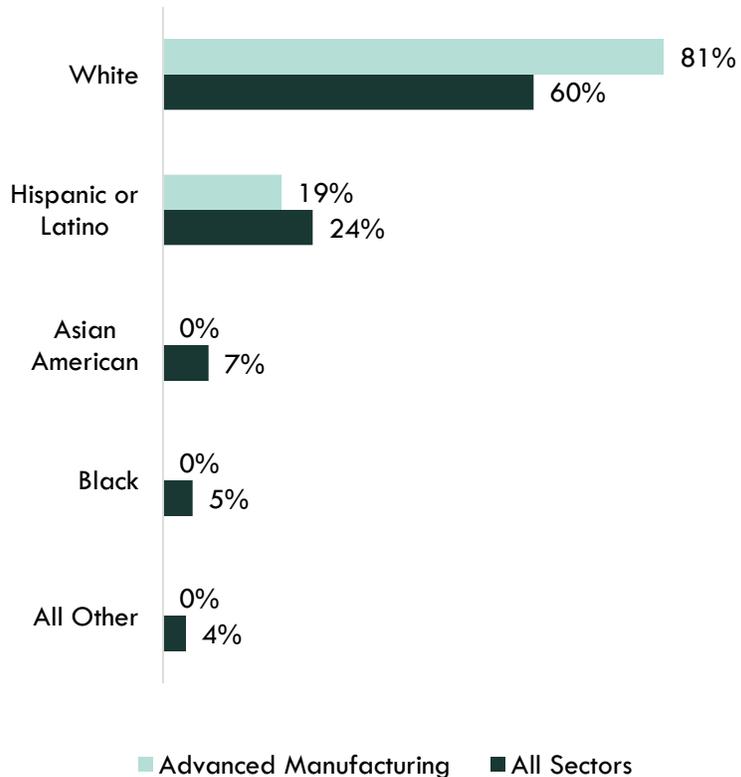
## Top Job Titles

- Outside Plant Technician
- Mechanic
- Boiler Operator

**Exhibit 3. Gender composition of the top occupations in the advanced manufacturing workforce**



**Exhibit 4. Race/ethnicity composition of the top occupations in the advanced manufacturing workforce**



**Exhibit 5. Advanced manufacturing employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
First-Line Supervisors of Production and Operating Workers	153	167	14	9%	18
Machinists	74	85	11	15%	11
Welders, Cutters, Solderers, and Brazers	57	73	16	29%	10

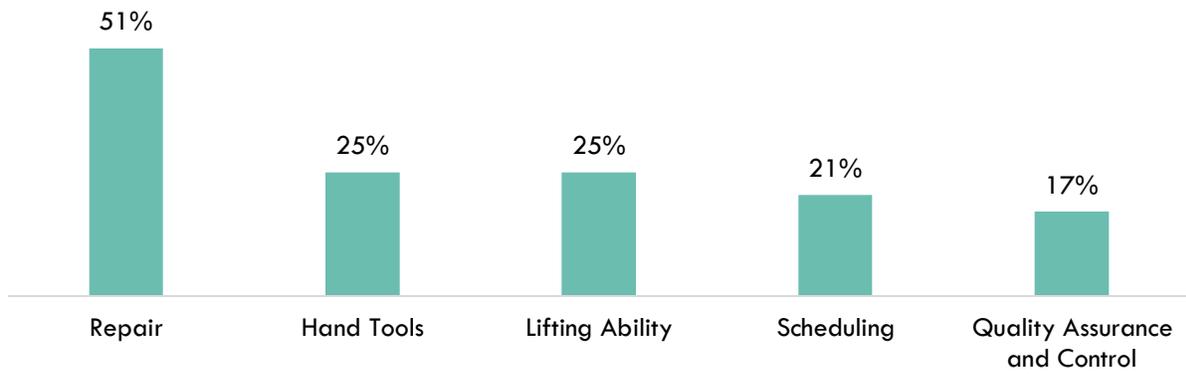
**Exhibit 6. Advanced manufacturing wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
First-Line Supervisors of Production and Operating Workers	\$23.40	\$30.26
Welders, Cutters, Solderers, and Brazers	\$15.89	\$22.47
Machinists	\$17.22	\$21.66

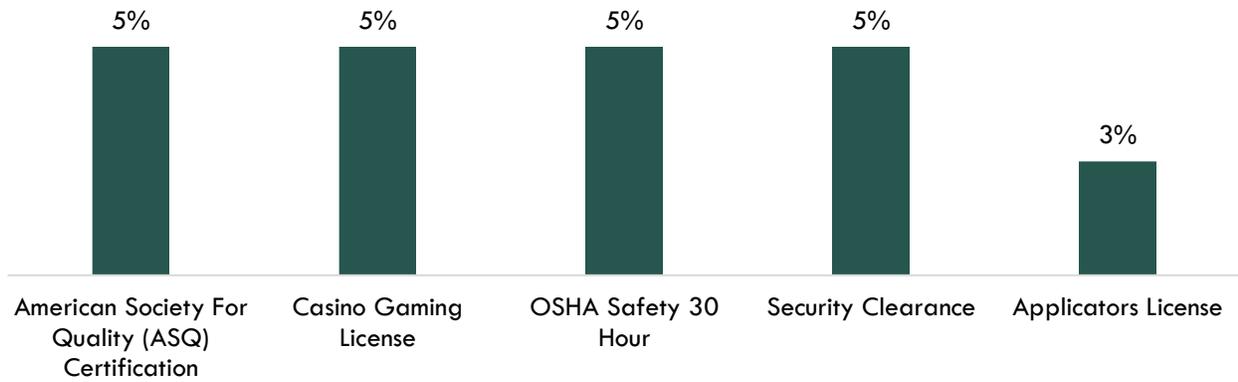
**Exhibit 7. Advanced manufacturing educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
First-Line Supervisors of Production and Operating Workers	High school diploma or equivalent	Less than 5 years	None	35.3%
Machinists	High school diploma or equivalent	None	Long-term	41.2%
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	None	Moderate-term	32.2%

**Exhibit 8. Top specialized skills in job postings for advanced manufacturing (n = 87)**



**Exhibit 9. Top certifications in job postings for advanced manufacturing (n = 39)**



**Exhibit 10. Advanced manufacturing postsecondary supply**

TOP/ CIP Code	College	Certificate 8 < 16 semester units	Subtotal
095650 - Welding Technology	Columbia	1	1
<b>TOTAL</b>		<b>1</b>	<b>1</b>

**Exhibit 11. Advanced manufacturing annual demand and supply**



# ADVANCED TRANSPORTATION AND LOGISTICS

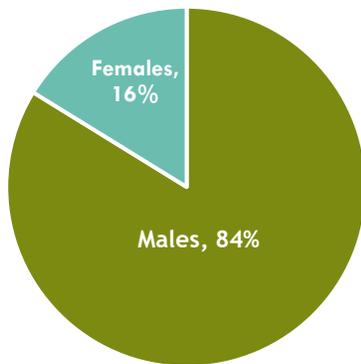
## Summary

- **Gender and race/ethnicity:** Comprising 16% of the workforce, females are underrepresented in this sector. Analysis shows underrepresentation of Asian workers and overrepresentation of White workers (Exhibits 12 and 13).
- **Employment and projected demand:** The largest middle-skill occupation is heavy and tractor-trailer truck drivers, which has 43 annual openings (Exhibit 14).
- **Wages:** The highest paid occupation is first-line supervisors of mechanics, installers, and repairers, \$31.04/hour median earnings (Exhibit 15).
- **Specialized skills:** The top skill is repair, and the top certification is CDL Class A (Exhibits 17 and 18).

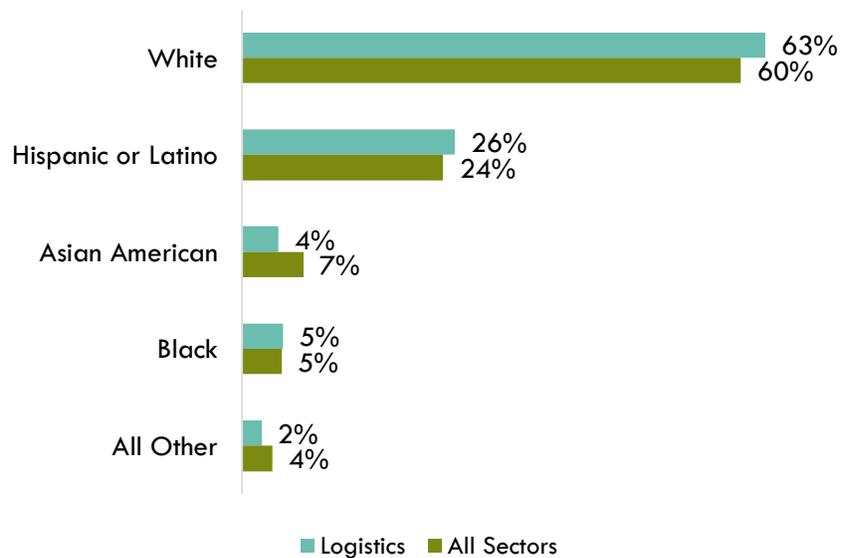
## Top Job Titles

- **CDL Truck Driver**
- **Service Technician**
- **Auto Service Technician**

**Exhibit 12. Gender composition of the top occupations in the advanced transportation and logistics workforce**



**Exhibit 13. Race/ethnicity composition of the top occupations in the advanced transportation and logistics workforce**



**Exhibit 14. Advanced transportation and logistics employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Heavy and Tractor-Trailer Truck Drivers	322	355	33	10%	43
Automotive Service Technicians and Mechanics	232	271	39	17%	32
First-Line Supervisors of Mechanics, Installers, and Repairers	177	193	16	10%	20
Bus Drivers, Transit and Intercity	138	144	6	4%	18
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	118	127	9	8%	15
Shipping, Receiving, and Inventory Clerks	93	100	7	8%	11

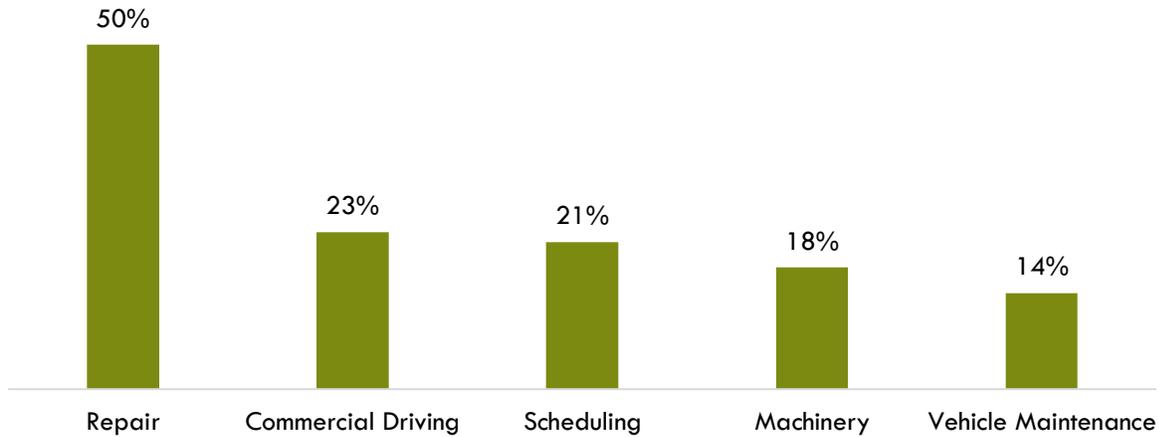
**Exhibit 15. Advanced transportation and logistics wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
First-Line Supervisors of Mechanics, Installers, and Repairers	\$23.49	\$31.04
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	\$21.84	\$28.15
Heavy and Tractor-Trailer Truck Drivers	\$19.38	\$22.89
Automotive Service Technicians and Mechanics	\$17.80	\$22.77
Bus Drivers, Transit and Intercity	\$17.25	\$18.05
Shipping, Receiving, and Inventory Clerks	\$14.61	\$17.50

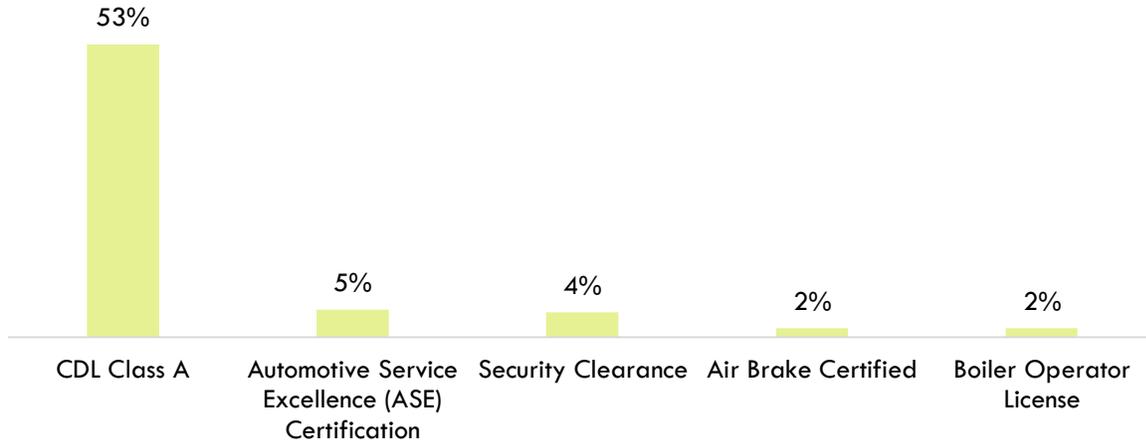
**Exhibit 16. Advanced transportation and logistics educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Heavy and Tractor-Trailer Truck Drivers	Postsecondary nondegree award	None	Short-term	29.8%
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	None	Short-term	35.7%
First-Line Supervisors of Mechanics, Installers, and Repairers	High school diploma or equivalent	Less than 5 years	None	41.7%
Bus Drivers, Transit and Intercity	High school diploma or equivalent	None	Moderate-term	39.5%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	High school diploma or equivalent	Less than 5 years	None	39.4%
Shipping, Receiving, and Inventory Clerks	High school diploma or equivalent	None	Short-term	33.8%

**Exhibit 17. Top specialized skills in job postings for advanced transportation and logistics (n = 136)**



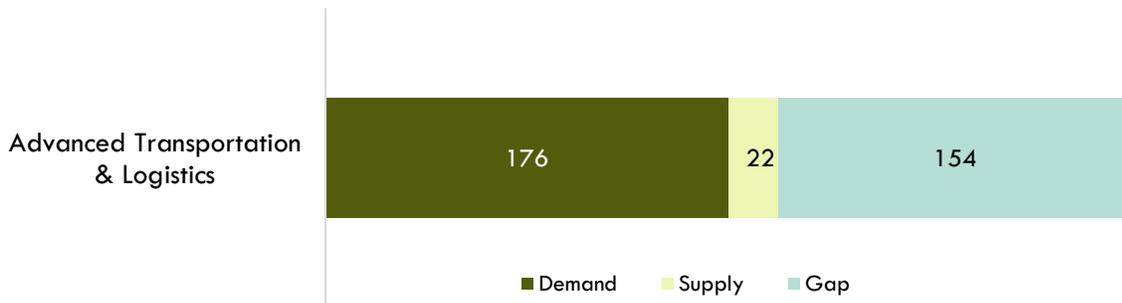
**Exhibit 18. Top certifications in job postings for advanced transportation and logistics (n = 180)**



**Exhibit 19. Advanced transportation and logistics postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 12 < 18 semester units	Certificate 18 < 30 semester units	Certificate 30 < 60 semester units	Certificate 6 < 18 semester units	Certificate 8 < 16 semester units	Subtotal
<b>094800 - Automotive Technology</b>	Columbia	2	6	3	3	7	1	22
<b>TOTAL</b>		<b>2</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>1</b>	<b>22</b>

**Exhibit 20. Advanced transportation and logistics annual demand and supply**



# AGRICULTURE, WATER AND ENVIRONMENTAL TECHNOLOGIES

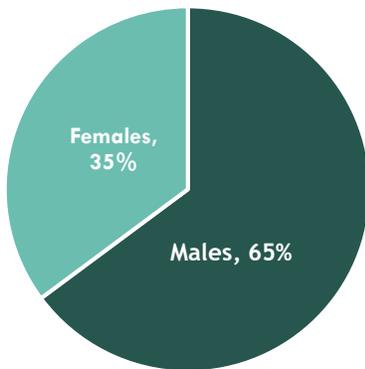
## Summary

- **Gender and race/ethnicity:** Comprising 35% of the workforce, females are underrepresented in this sector. Analysis shows a slight overrepresentation of white workers (Exhibits 21 and 22).
- **Employment and projected demand:** The largest middle-skill occupation is forest and conservation technicians, which has 46 annual openings (Exhibit 23).
- **Wages:** The highest paid occupation is mobile heavy equipment mechanics, except engines, \$29.55/hour median earnings (Exhibit 24).
- **Specialized skills:** The top skill is sales, and the top certification is real estate certification (Exhibits 26 and 27).

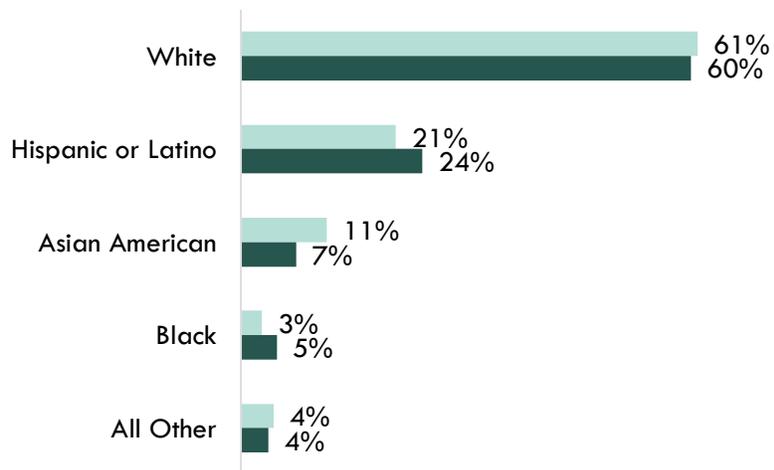
## Top Job Titles

- Sales Representative- Home
- Sales Representative
- Heavy Equipment Mechanic

**Exhibit 21. Gender composition of the top occupations in the advanced manufacturing workforce**



**Exhibit 22. Race/ethnicity composition of the top occupations in the advanced manufacturing workforce**



■ Agriculture, Water & Environmental Technologies  
■ All Sectors

**Exhibit 23. Agriculture, water and environmental technologies employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Forest and Conservation Technicians	383	363	(20)	(5%)	46
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	134	148	14	10%	16
Pest Control Workers	102	107	5	4%	15
Logging Equipment Operators	93	91	(2)	(2%)	15
Veterinary Assistants and Laboratory Animal Caretakers	75	76	1	2%	13
Farmers, Ranchers, and Other Agricultural Managers	102	104	2	2%	11
Mobile Heavy Equipment Mechanics, Except Engines	75	87	12	16%	10

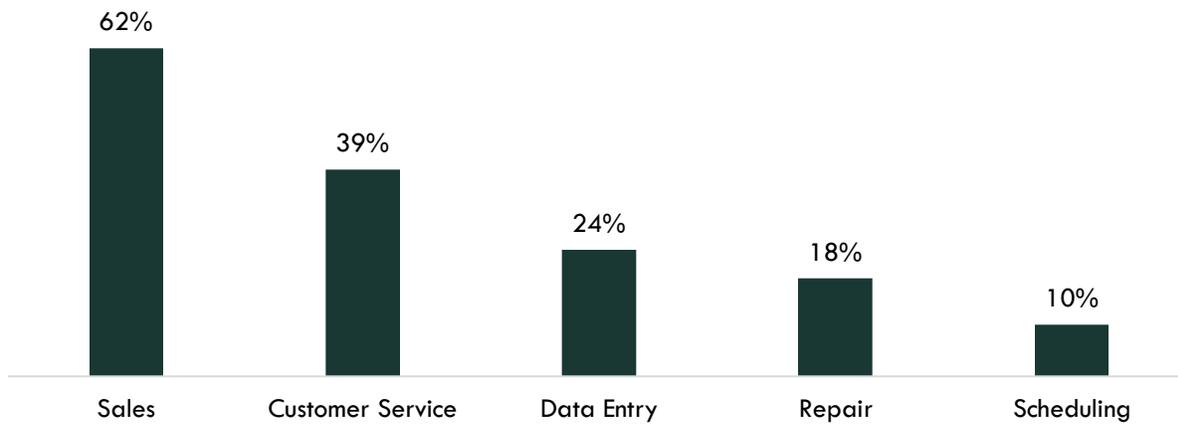
**Exhibit 24. Agriculture, water, and environmental technologies wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Mobile Heavy Equipment Mechanics, Except Engines	\$27.29	\$29.55
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	\$22.79	\$28.99
Logging Equipment Operators	\$22.73	\$25.83
Pest Control Workers	\$17.40	\$21.57
Forest and Conservation Technicians	\$15.67	\$16.82
Veterinary Assistants and Laboratory Animal Caretakers	\$15.54	\$15.92
Farmers, Ranchers, and Other Agricultural Managers	\$14.00	\$15.74

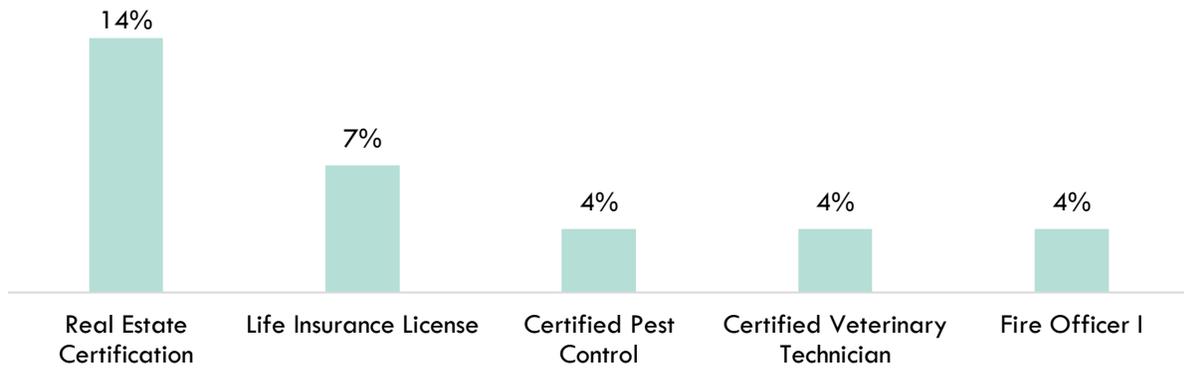
**Exhibit 25. Agriculture, water, and environmental technologies educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Forest and Conservation Technicians	Associate degree	None	None	37.1%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	High school diploma or equivalent	None	Moderate-term	32.1%
Pest Control Workers	High school diploma or equivalent	None	Moderate-term	35.9%
Logging Equipment Operators	High school diploma or equivalent	None	Moderate-term	19.1%
Veterinary Assistants and Laboratory Animal Caretakers	High school diploma or equivalent	None	Short-term	44.0%
Farmers, Ranchers, and Other Agricultural Managers	High school diploma or equivalent	5 years or more	None	30.2%
Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	None	Long-term	35.2%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	High school diploma or equivalent	None	Moderate-term	32.1%

**Exhibit 26. Top specialized skills in job postings for agriculture, water, and environmental technologies (n = 92)**



**Exhibit 27. Top certifications in job postings for agriculture, water, and environmental technologies (n = 28)**



**Exhibit 28. Agriculture, water, and environmental technologies postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 30 < 60 semester units	Certificate 6 < 18 semester units	Subtotal
011400 - Forestry	Columbia	11	4	2	17
011500 - Natural Resources		12	6	1	19
<b>TOTAL</b>		<b>23</b>	<b>10</b>	<b>3</b>	<b>36</b>

**Exhibit 29. Agriculture, water, and environmental technologies annual demand and supply**



# BUSINESS AND ENTREPRENEURSHIP

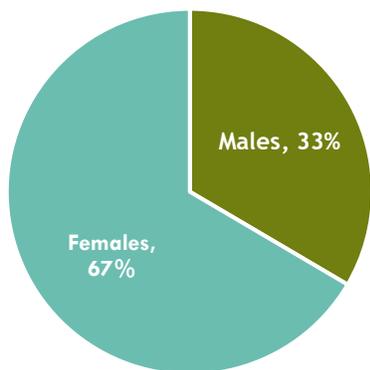
## Summary

- **Gender and race/ethnicity:** Comprising 33% of the workforce, males are underrepresented in this sector. Analysis shows an overrepresentation of white workers (Exhibits 30 and 31).
- **Employment and projected demand:** The largest middle-skill occupation, general and operations managers, which has the most annual openings, 94 (Exhibit 32).
- **Wages:** The highest paid occupation is general and operations managers, \$45.12/hour median earnings (Exhibit 33).
- **Specialized skills:** The top skill is customer service, and the top certification is a casino gaming license (Exhibits 35 and 36).

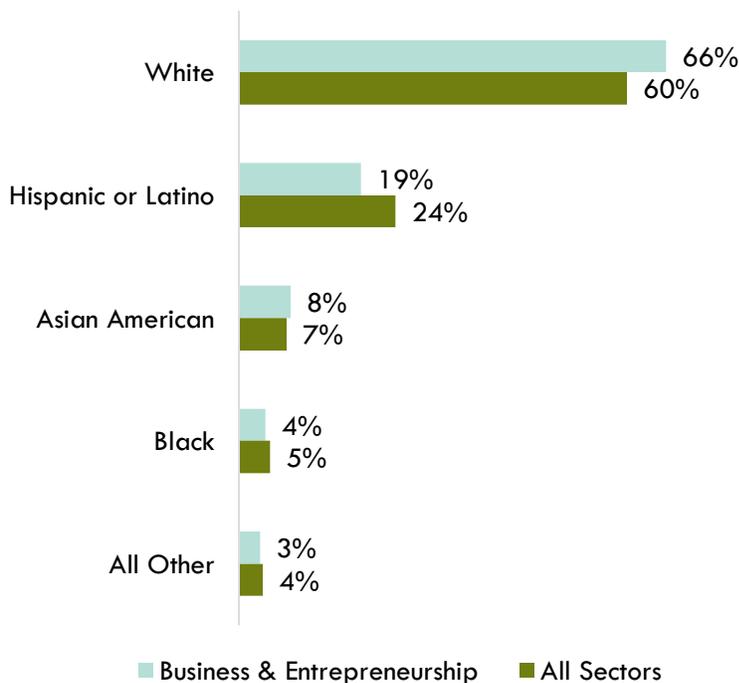
## Top Job Titles

- Customer Service Representative
- Home - Customer Support Specialist
- Receptionist

**Exhibit 30. Gender composition of the top occupations in the business and entrepreneurship workforce**



**Exhibit 31. Race/ethnicity composition of the top occupations in the business and entrepreneurship workforce**



**Exhibit 32. Business and entrepreneurship employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
General and Operations Managers	863	963	100	12%	94
Bookkeeping, Accounting, and Auditing Clerks	659	667	8	1%	76
First-Line Supervisors of Office and Administrative Support Workers	435	443	8	2%	46
Customer Service Representatives	277	297	20	7%	40
Business Operations Specialists, All Other	408	423	15	4%	34
Receptionists and Information Clerks	209	219	10	5%	29
Information and Record Clerks, All Other	180	176	(4)	(2%)	20
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	135	151	16	12%	19
Human Resources Specialists	115	131	16	13%	15
Court, Municipal, and License Clerks	125	133	8	6%	14
Property, Real Estate, and Community Association Managers	127	135	8	6%	12
Insurance Sales Agents	111	118	7	6%	12
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	99	104	5	5%	11
Billing and Posting Clerks	89	90	1	2%	10
Interviewers, Except Eligibility and Loan	76	74	(2)	(3%)	10

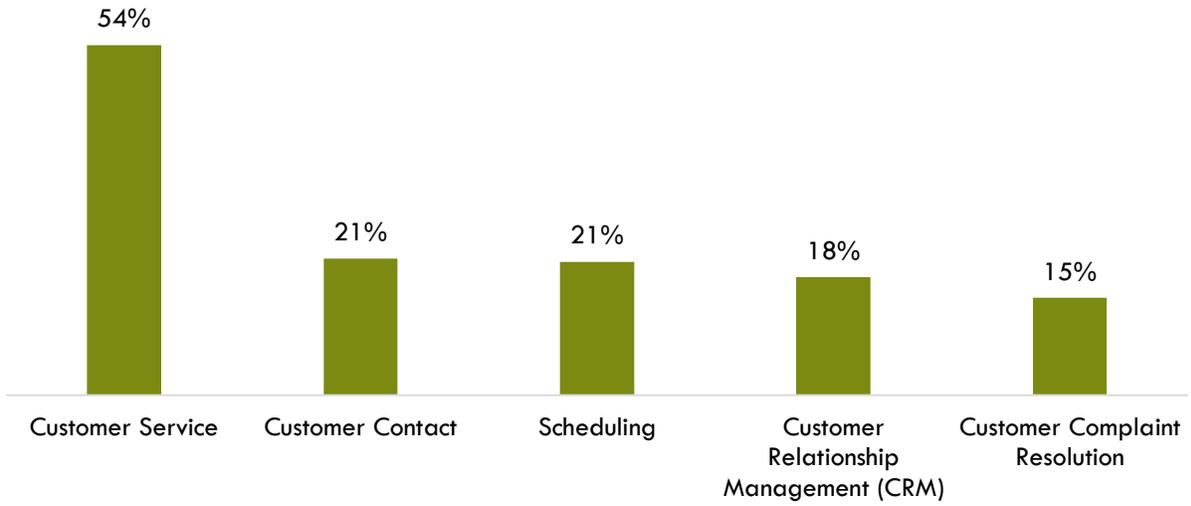
**Exhibit 33. Business and entrepreneurship wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
General and Operations Managers	\$29.50	\$45.12
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	\$32.67	\$40.70
Business Operations Specialists, All Other	\$22.58	\$30.00
Human Resources Specialists	\$23.16	\$29.36
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	\$18.14	\$28.20
First-Line Supervisors of Office and Administrative Support Workers	\$21.51	\$23.92
Court, Municipal, and License Clerks	\$18.51	\$23.23
Insurance Sales Agents	\$17.80	\$22.78
Bookkeeping, Accounting, and Auditing Clerks	\$17.58	\$21.96
Property, Real Estate, and Community Association Managers	\$16.56	\$21.67
Billing and Posting Clerks	\$17.67	\$21.21
Information and Record Clerks, All Other	\$16.63	\$19.25
Interviewers, Except Eligibility and Loan	\$16.69	\$18.49
Customer Service Representatives	\$14.47	\$17.72
Receptionists and Information Clerks	\$14.05	\$14.76

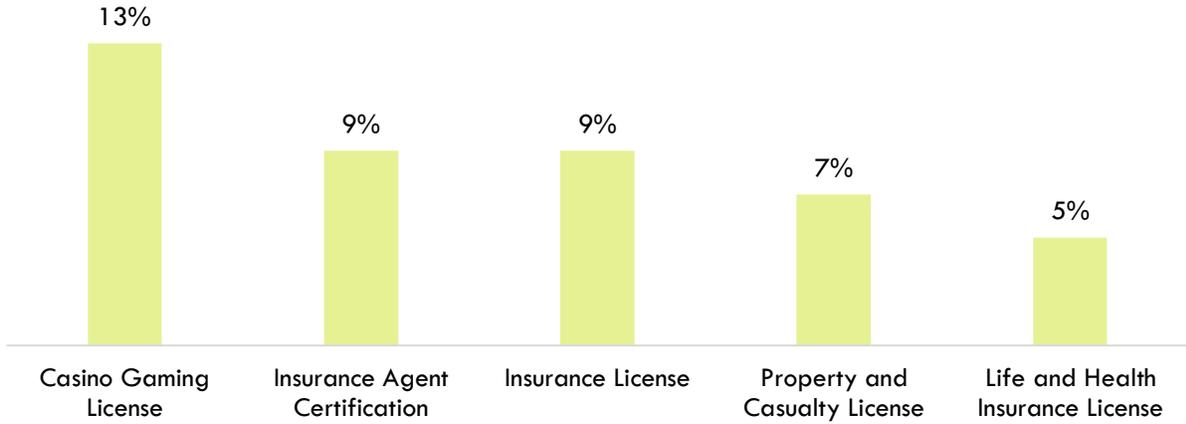
**Exhibit 34. Business and Entrepreneurship educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
General and Operations Managers	Bachelor's degree	5 years or more	None	34.3%
Business Operations Specialists, All Other	Bachelor's degree	None	None	22.2%
Human Resources Specialists	Bachelor's degree	None	None	24.6%
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Bachelor's degree	None	Moderate-term	32.1%
First-Line Supervisors of Office and Administrative Support Workers	High school diploma or equivalent	Less than 5 years	None	41.4%
Customer Service Representatives	High school diploma or equivalent	None	Short-term	41.9%
Receptionists and Information Clerks	High school diploma or equivalent	None	Short-term	45.8%
Information and Record Clerks, All Other	High school diploma or equivalent	None	Short-term	44.1%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school diploma or equivalent	None	Moderate-term	29.2%
Court, Municipal, and License Clerks	High school diploma or equivalent	None	Long-term	44.4%
Property, Real Estate, and Community Association Managers	High school diploma or equivalent	Less than 5 years	None	34.1%
Insurance Sales Agents	High school diploma or equivalent	None	Moderate-term	36.5%
Billing and Posting Clerks	High school diploma or equivalent	None	Moderate-term	49.1%
Interviewers, Except Eligibility and Loan	High school diploma or equivalent	None	Short-term	43.7%
Bookkeeping, Accounting, and Auditing Clerks	Some college, no degree	None	Moderate-term	50.1%

**Exhibit 35. Top specialized skills in job postings for business and entrepreneurship (n = 413)**



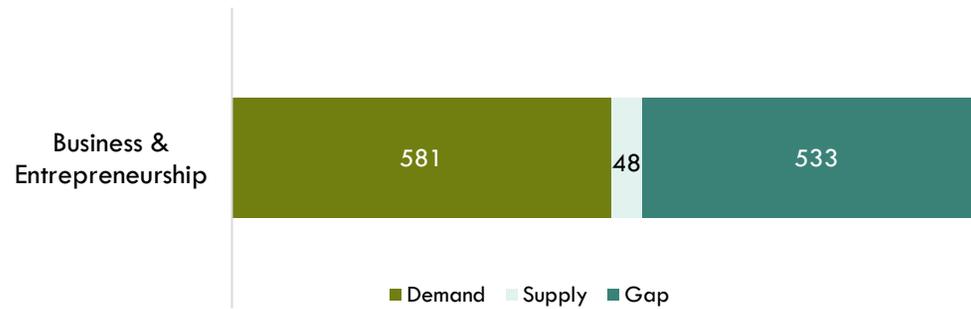
**Exhibit 36. Top certifications in job postings for business and entrepreneurship (n = 105)**



**Exhibit 37. Business and entrepreneurship postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Associate for Transfer Degree	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester units	Certificate 6 < 18 semester units	Certificate 8 < 16 semester units	Credit Award, < 6 semester units	Subtotal
<b>050100 - Business and Commerce, General</b>		5									5
<b>050200 - Accounting</b>		4		0	1	2					7
<b>050210 - Tax Studies</b>					1	1					1
<b>050500 - Business Administration</b>	Columbia	1	11								12
<b>050600 - Business Management</b>				1			1	8		5	15
<b>050640 - Small Business and Entrepreneurship</b>		2					1	3	1		7
<b>TOTAL</b>		<b>12</b>	<b>11</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>11</b>	<b>1</b>	<b>5</b>	<b>48</b>

**Exhibit 38. Business and entrepreneurship annual demand and supply**



# EDUCATION

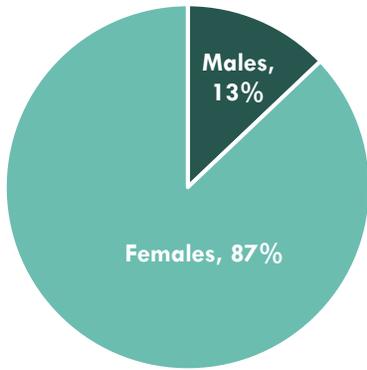
## Summary

- **Gender and race/ethnicity:** Comprising 13% of the workforce, males are underrepresented in this sector. Analysis shows underrepresentation of White workers and overrepresentation of Hispanic or Latino workers (Exhibits 39 and 40).
- **Employment and projected demand:** The largest middle-skill occupation is teaching assistants, except postsecondary, which has 43 annual openings (Exhibit 41).
- **Wages:** The highest paid occupation is substitute teachers, short-term, \$18.10/hour median earnings (Exhibit 42).
- **Specialized skills:** The top skill is teaching, and the top certification is first aid/CPR/AED (Exhibits 44 and 45).

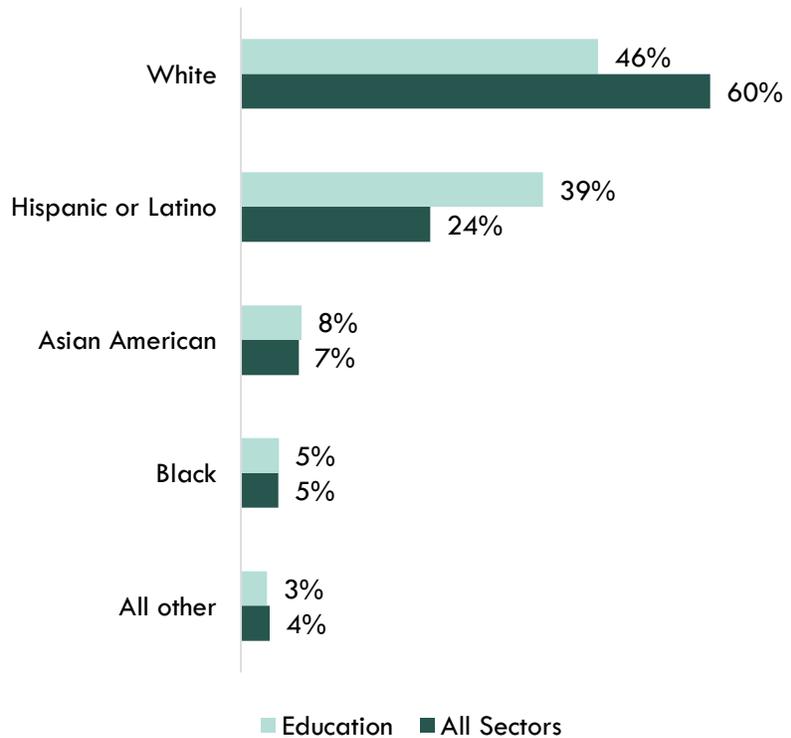
### Top Job Titles

- Teacher-I - Early Head Start
- Assistant Teacher - Pre-School Ac
- Home Visitor Early Childhood Programs

**Exhibit 39. Gender composition of the top occupations in the education workforce**



**Exhibit 40. Race/ethnicity composition of the top occupations in the education workforce**



**Exhibit 41. Education employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Teaching Assistants, Except Postsecondary	468	448	(20)	(4%)	43
Childcare Workers	275	263	(12)	(5%)	39
Recreation Workers	110	124	14	12%	20
Preschool Teachers, Except Special Education	120	125	5	4%	13
Substitute Teachers, Short-Term	111	109	(2)	(1%)	13

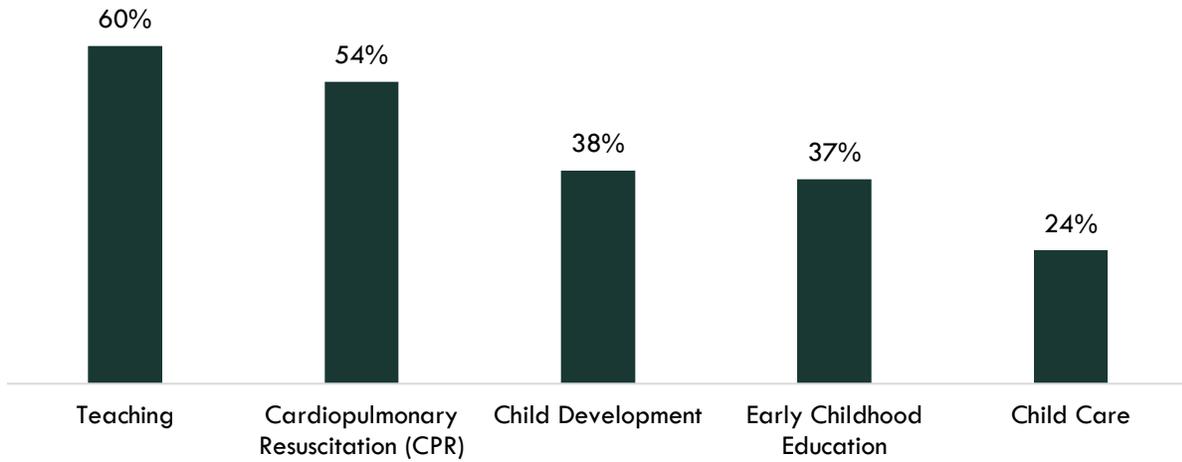
**Exhibit 42. Education wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Substitute Teachers, Short-Term	\$16.70	\$18.10
Teaching Assistants, Except Postsecondary	\$14.83	\$17.23
Preschool Teachers, Except Special Education	\$14.77	\$17.04
Childcare Workers	\$14.06	\$15.21
Recreation Workers	\$14.04	\$14.69

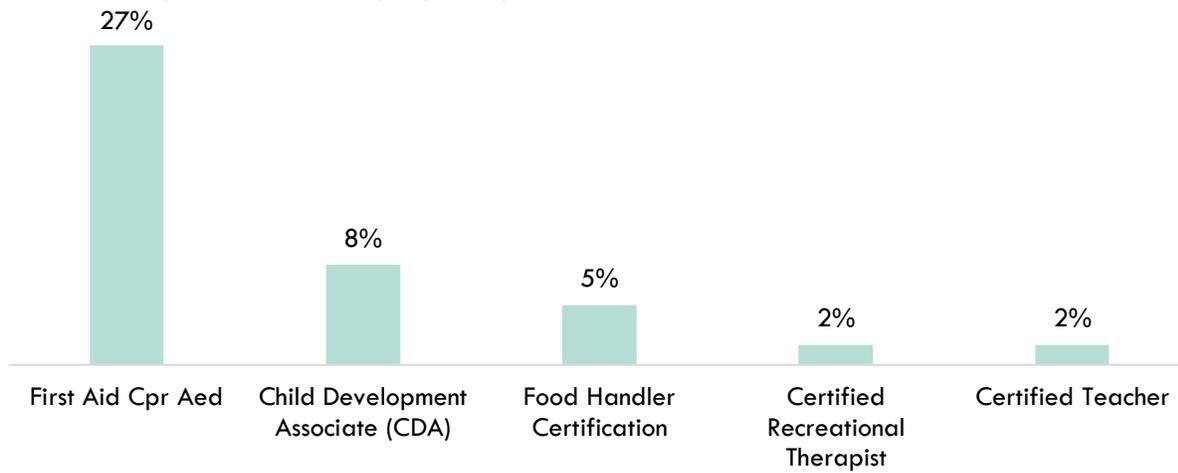
**Exhibit 43. Education educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Substitute Teachers, Short-Term	Bachelor's degree	None	None	25.4%
Preschool Teachers, Except Special Education	Associate degree	None	None	31.6%
Teaching Assistants, Except Postsecondary	Some college, no degree	None	None	38.6%
Childcare Workers	High school diploma or equivalent	None	Short-term	35.1%
Recreation Workers	High school diploma or equivalent	None	Short-term	35.7%

**Exhibit 44. Top specialized skills in job postings for education (n= 63)**



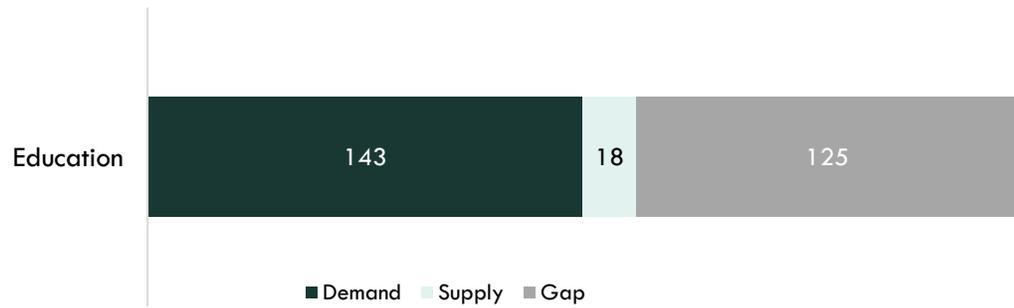
**Exhibit 45. Top certifications in job postings for education (n = 59)**



**Exhibit 46. Education postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Associate for Transfer Degree	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 6 < 18 Semester Units	Certificate 8 < 16 Semester Units	Subtotal
086000 - Educational Technology							1		1
130500 - Child Development/ Early Care and Education	Columbia	6	2	4	2	1		2	17
<b>TOTAL</b>		<b>6</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>18</b>

**Exhibit 47. Education annual demand and supply**



# ENERGY, CONSTRUCTION AND UTILITIES

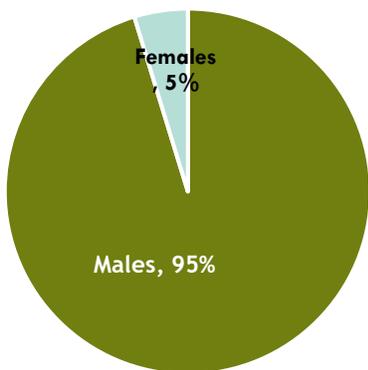
## Summary

- **Gender and race/ethnicity:** Comprising 5% of the workforce, females are underrepresented in this sector. Analysis shows underrepresentation of White workers and overrepresentation of Hispanic or Latino workers (Exhibits 48 and 49).
- **Employment and projected demand:** The largest middle-skill occupation is maintenance and repair workers, general, which has 78 annual openings (Exhibit 50).
- **Wages:** The highest paid occupation is construction managers, \$36.98/hour median earnings (Exhibit 51).
- **Specialized skills:** The top skill is repair, and the top certification is a certified construction manager (Exhibits 53 and 54).

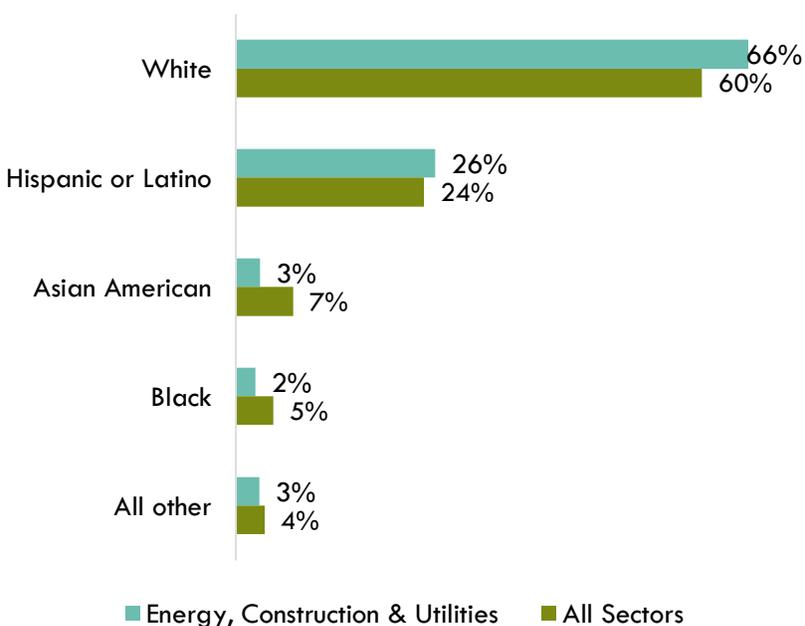
### Top Job Titles

- Dish Installation Technician - Field
- Splicing Technician
- Maintenance Technician

**Exhibit 48. Gender composition of the top occupations in the energy, construction, and utilities workforce**



**Exhibit 49. Race/ethnicity composition of the top occupations in the energy, construction, and utilities workforce**



**Exhibit 50. Energy, construction and utilities employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Maintenance and Repair Workers, General	705	743	38	5%	78
Operating Engineers and Other Construction Equipment Operators	387	426	39	10%	50
Carpenters	490	505	15	3%	50
First-Line Supervisors of Construction Trades and Extraction Workers	273	303	30	11%	33
Electricians	203	239	36	18%	30
Plumbers, Pipefitters, and Steamfitters	172	185	13	8%	21
Construction Managers	153	176	23	15%	16
Water and Wastewater Treatment Plant and System Operators	155	154	(1)	(0%)	15
Installation, Maintenance, and Repair Workers, All Other	103	108	5	5%	12
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	104	111	7	6%	11
Industrial Truck and Tractor Operators	67	78	11	16%	10

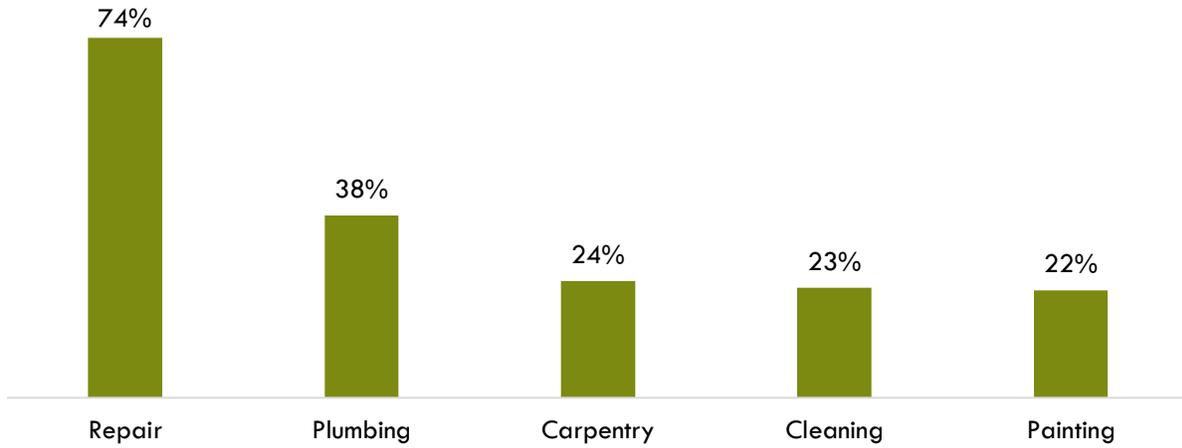
**Exhibit 51. Energy, construction and utilities employment wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Construction Managers	\$22.61	\$36.98
First-Line Supervisors of Construction Trades and Extraction Workers	\$29.39	\$35.41
Water and Wastewater Treatment Plant and System Operators	\$24.04	\$32.75
Electricians	\$22.04	\$28.91
Plumbers, Pipefitters, and Steamfitters	\$21.60	\$28.37
Operating Engineers and Other Construction Equipment Operators	\$24.45	\$28.08
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$20.78	\$26.29
Carpenters	\$19.24	\$25.88
Maintenance and Repair Workers, General	\$17.12	\$21.07
Installation, Maintenance, and Repair Workers, All Other	\$16.98	\$18.15
Industrial Truck and Tractor Operators	\$14.93	\$17.78

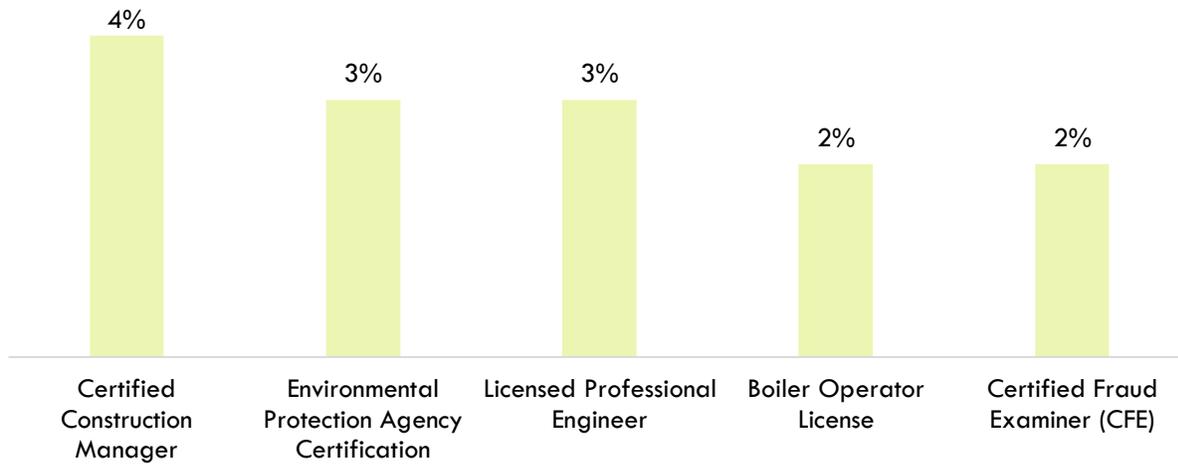
**Exhibit 52. Energy, construction and utilities educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Construction Managers	Bachelor's degree	None	Moderate-term	31.5%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary nondegree award	None	Long-term	44.0%
Maintenance and Repair Workers, General	High school diploma or equivalent	None	Moderate-term	37.6%
Operating Engineers and Other Construction Equipment Operators	High school diploma or equivalent	None	Moderate-term	24.5%
Carpenters	High school diploma or equivalent	None	Apprenticeship	25.1%
First-Line Supervisors of Construction Trades and Extraction Workers	High school diploma or equivalent	5 years or more	None	29.2%
Electricians	High school diploma or equivalent	None	Apprenticeship	45.8%
Plumbers, Pipefitters, and Steamfitters	High school diploma or equivalent	None	Apprenticeship	32.9%
Water and Wastewater Treatment Plant and System Operators	High school diploma or equivalent	None	Long-term	47.0%
Installation, Maintenance, and Repair Workers, All Other	High school diploma or equivalent	None	Moderate-term	36.8%
Industrial Truck and Tractor Operators	No formal educational credential	None	Short-term	26.4%

**Exhibit 53. Top specialized skills in job postings for energy, construction and utilities (n = 208)**



**Exhibit 54. Top certifications in job postings for energy, construction and utilities (n = 135)**



**Exhibit 55. Energy, construction and utilities postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Subtotal
095800 - Water and Wastewater Technology	Columbia	4	0	1	5
<b>TOTAL</b>		<b>4</b>	<b>0</b>	<b>1</b>	<b>5</b>

**Exhibit 56. Energy, construction and utilities annual demand and supply**



# HEALTH

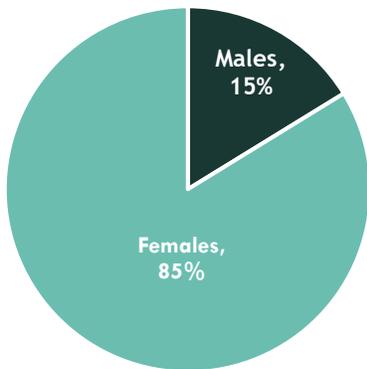
## Summary

- **Gender and race/ethnicity:** Comprising 15% of the workforce, males are underrepresented in this sector. Analysis shows underrepresentation of Hispanic or Latino workers, and overrepresentation of Asian American (Exhibits 57 and 58).
- **Employment and projected demand:** The largest middle-skill occupation is home health and personal care aides, which has 263 annual openings (Exhibit 59).
- **Wages:** The highest paid occupation is registered nurses, \$49.19/hour median earnings (Exhibit 60).
- **Specialized skills:** The top skill is patient care, and the top certification is registered nurse (Exhibits 62 and 63).

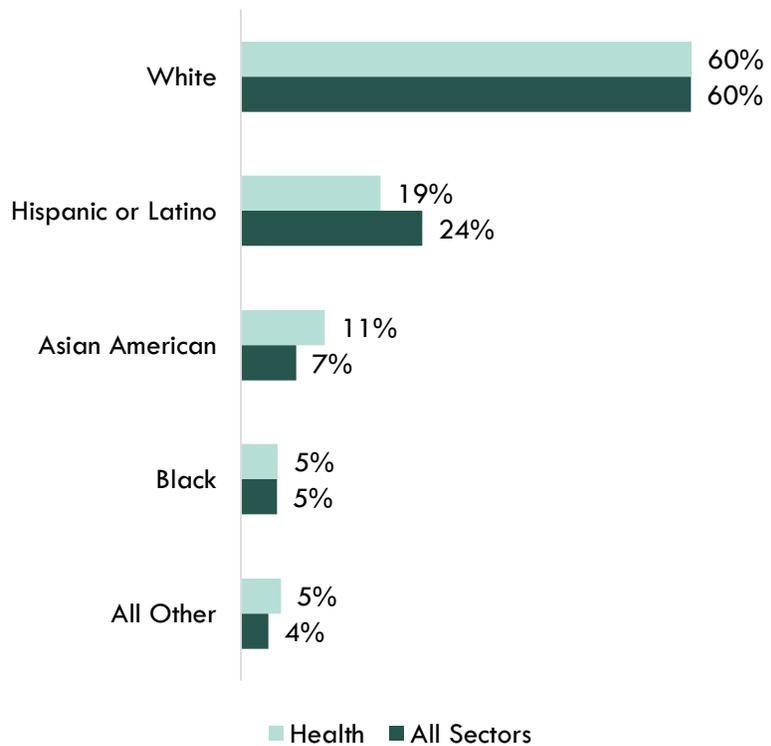
### Top Job Titles

- Registered Nurse
- Medical Assistant
- Physical Therapist Assistant

**Exhibit 57. Gender composition of the top occupations in the health workforce**



**Exhibit 58. Race/ethnicity composition of the top occupations in the health workforce**



**Exhibit 59. Health care employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Home Health and Personal Care Aides	1,582	1,858	276	17%	263
Registered Nurses	809	878	69	9%	60
Nursing Assistants	242	289	47	19%	41
Social and Human Service Assistants	195	223	28	14%	29
Medical Secretaries and Administrative Assistants	211	220	9	4%	26
Dental Assistants	201	204	3	2%	25
Medical Assistants	158	170	12	8%	22
Licensed Practical and Licensed Vocational Nurses	171	193	22	13%	18
Emergency Medical Technicians	122	134	12	10%	13

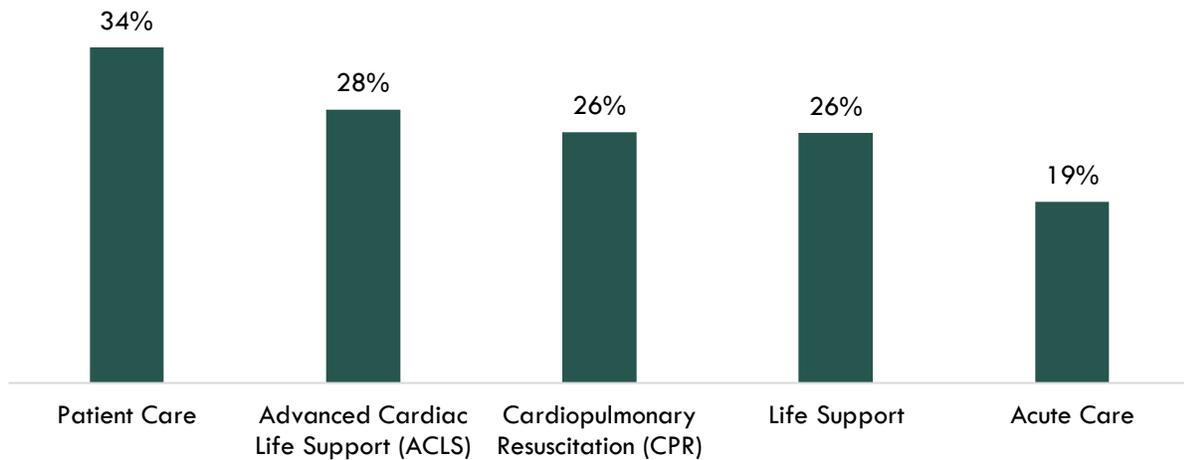
**Exhibit 60. Health care wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Registered Nurses	\$43.58	\$49.19
Licensed Practical and Licensed Vocational Nurses	\$27.18	\$29.35
Dental Assistants	\$18.76	\$22.87
Social and Human Service Assistants	\$18.43	\$20.72
Medical Assistants	\$16.19	\$18.29
Medical Secretaries and Administrative Assistants	\$16.58	\$18.28
Nursing Assistants	\$16.04	\$17.33
Emergency Medical Technicians	\$14.27	\$15.15
Home Health and Personal Care Aides	\$14.04	\$14.30

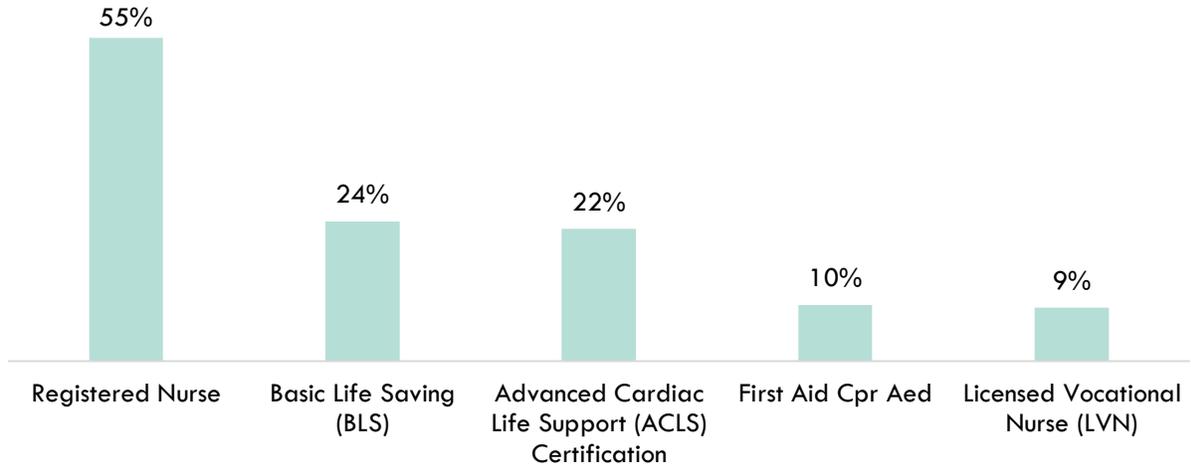
**Exhibit 61. Health care educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Registered Nurses	Bachelor's degree	None	None	33.3%
Dental Assistants	Postsecondary nondegree award	None	None	55.9%
Emergency Medical Technicians	Postsecondary nondegree award	None	None	42.6%
Licensed Practical and Licensed Vocational Nurses	Postsecondary nondegree award	None	None	73.3%
Nursing Assistants	Postsecondary nondegree award	None	None	44.7%
Medical Assistants	Postsecondary nondegree award	None	None	63.4%
Home Health and Personal Care Aides	High school diploma or equivalent	None	Short-term	34.9%
Social and Human Service Assistants	High school diploma or equivalent	None	Short-term	34.4%
Medical Secretaries and Administrative Assistants	High school diploma or equivalent	None	Moderate-term	53.6%

**Exhibit 62. Top specialized skills in job postings for health care (n = 870)**



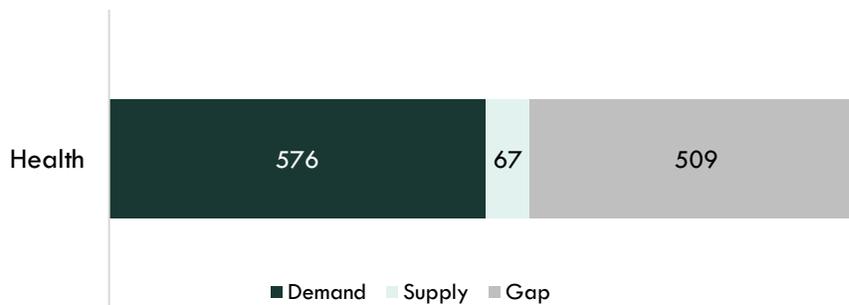
**Exhibit 63. Top certifications in job postings for health care (n = 1,024)**



**Exhibit 64. Health care postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Associate for Transfer Degree	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Credit Award, < 6 Semester Units	Subtotal
051420 - Medical Office Technology		2			1				3
120100 - Health Occupations, General		40	2						42
125000 - Emergency Medical Services	Columbia	0			0		1	1	2
130630 - Culinary Arts		6		1	3	5	0		15
210400 - Human Services		2		1	2				5
<b>TOTAL</b>		<b>50</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>67</b>

**Exhibit 65. Health care annual demand and supply**



# ICT/DIGITAL MEDIA

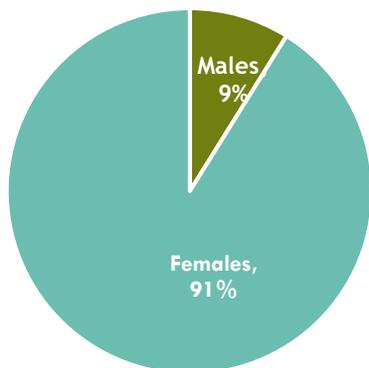
## Summary

- **Gender and race/ethnicity:** Comprising 9% of the workforce, males are underrepresented in this sector. Analysis shows very slight overrepresentation of Asian workers (Exhibits 66 and 67).
- **Employment and projected demand:** The largest middle-skill occupation is office clerks, general, which has 114 annual openings (Exhibit 68).
- **Wages:** The highest paid occupation is executive secretaries and executive administrative assistants, \$30.47/hour median earnings (Exhibit 69).
- **Specialized skills:** The top skill is administrative support, and the top certification is a Cisco Certified Design Professional (CCDP) (Exhibits 72 and 72).

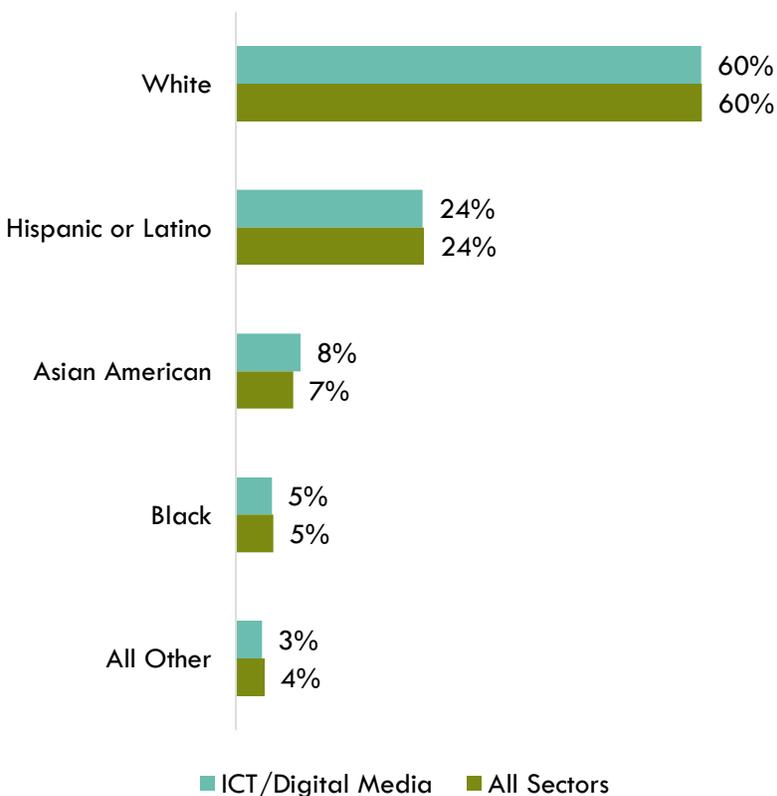
## Top Job Titles

- **Help Desk Specialist- Home**
- **Administrative Assistant**
- **Office Assistant**

**Exhibit 66. Gender composition of the top occupations in the ICT/digital media workforce**



**Exhibit 67. Race/ethnicity composition of the top occupations in the ICT/digital media workforce**



**Exhibit 68. ICT/digital media employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Office Clerks, General	911	946	35	4%	114
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	569	575	6	1%	65
Executive Secretaries and Executive Administrative Assistants	111	104	(7)	(7%)	12

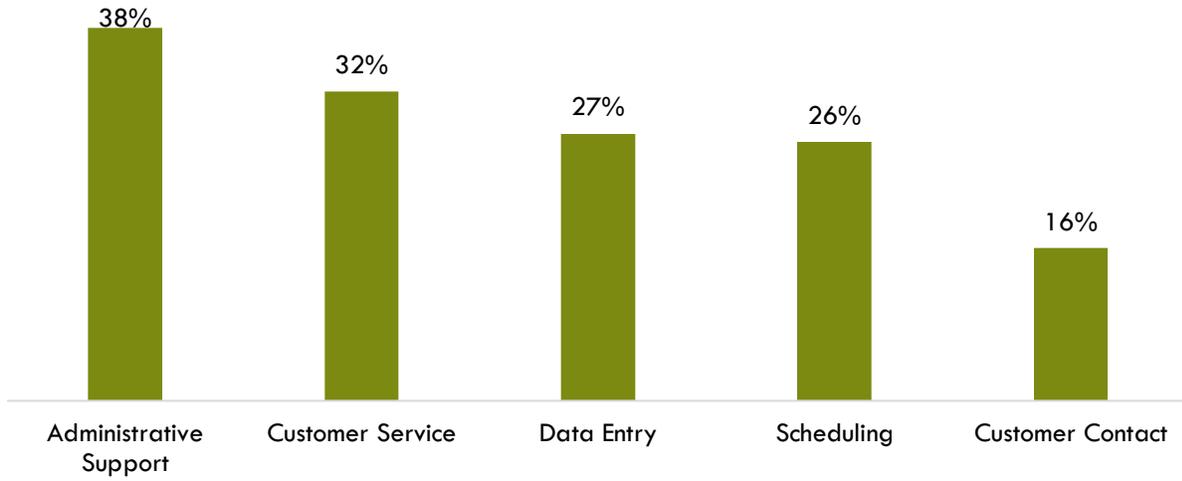
**Exhibit 69. ICT/digital media employment wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Executive Secretaries and Executive Administrative Assistants	\$28.03	\$30.47
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$17.45	\$21.89
Office Clerks, General	\$14.43	\$17.97

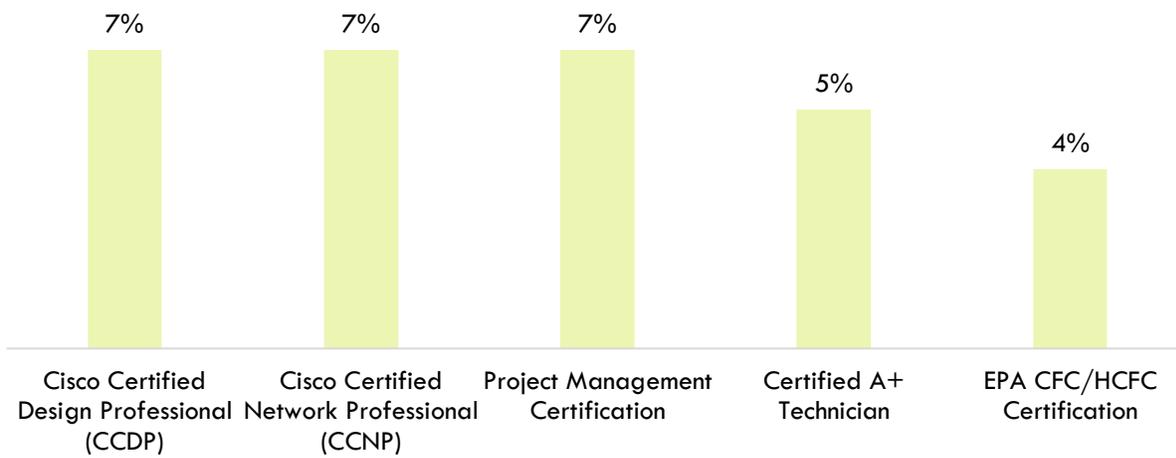
**Exhibit 70. ICT/digital media educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Office Clerks, General	High school diploma or equivalent	None	Short-term	45.2%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	High school diploma or equivalent	None	Short-term	45.9%
Executive Secretaries and Executive Administrative Assistants	High school diploma or equivalent	Less than 5 years	None	41.0%

**Exhibit 71. Top specialized skills in job postings for ICT/digital media (n = 231)**



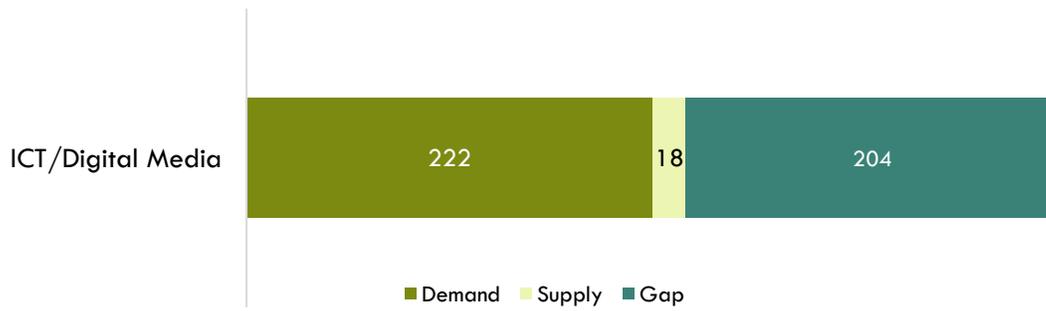
**Exhibit 72. Top certifications in job postings for ICT/digital media (n = 74)**



**Exhibit 73. ICT/digital media postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 6 < 18 Semester Units	Credit Award, < 6 Semester Units	Subtotal	
051400 - Office Technology/Office Computer Applications	Columbia					1	1	
061400 - Digital Media		2	0	0			2	
070200 - Computer Information Systems		1						1
070710 - Computer Programming		1						1
101100 - Photography		1						1
220610 - Geographic Information Systems		2	0	0	8	2	12	
<b>TOTAL</b>			<b>7</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>18</b>

**Exhibit 74. ICT/digital media annual demand and supply**



# PUBLIC SAFETY

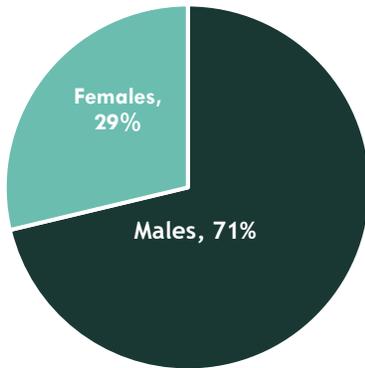
## Summary

- **Gender and race/ethnicity:** Comprising 29% of the workforce, females are underrepresented in this sector. Analysis shows underrepresentation of White workers and overrepresentation of Hispanic or Latino workers (Exhibits 75 and 76).
- **Employment and projected demand:** The largest middle-skill occupation is correctional officers and jailers, which has 106 annual openings (Exhibit 77).
- **Wages:** The highest paid occupation is first-line supervisors of correctional officers, \$53.11/hour median earnings (Exhibit 78).
- **Specialized skills:** The top skill is vaccination, and the top certification is Boc certified (Exhibits 80 and 81).

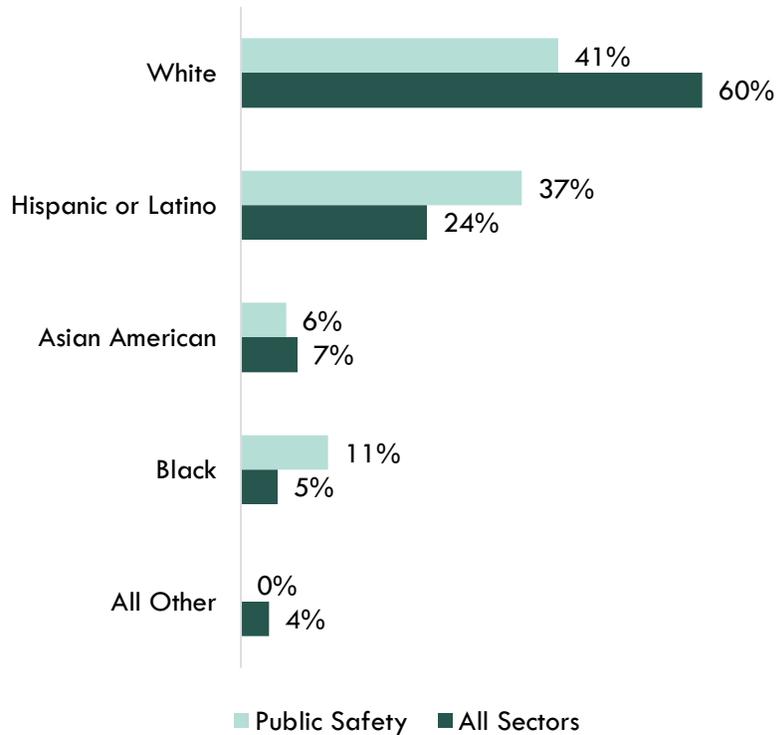
## Top Job Titles

- Border Patrol Agent
- Correctional Lieutenant
- Correctional Officer

**Exhibit 75. Gender composition of the top occupations in the public safety workforce**



**Exhibit 76. Race/ethnicity composition of the top occupations in the public safety workforce**



**Exhibit 77. Public safety employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Correctional Officers and Jailers	1,019	1,037	18	2%	106
Protective Service Workers, All Other	187	190	3	1%	48
Firefighters	554	566	12	2%	45
Police and Sheriff's Patrol Officers	424	442	18	4%	37
First-Line Supervisors of Correctional Officers	159	166	7	4%	15

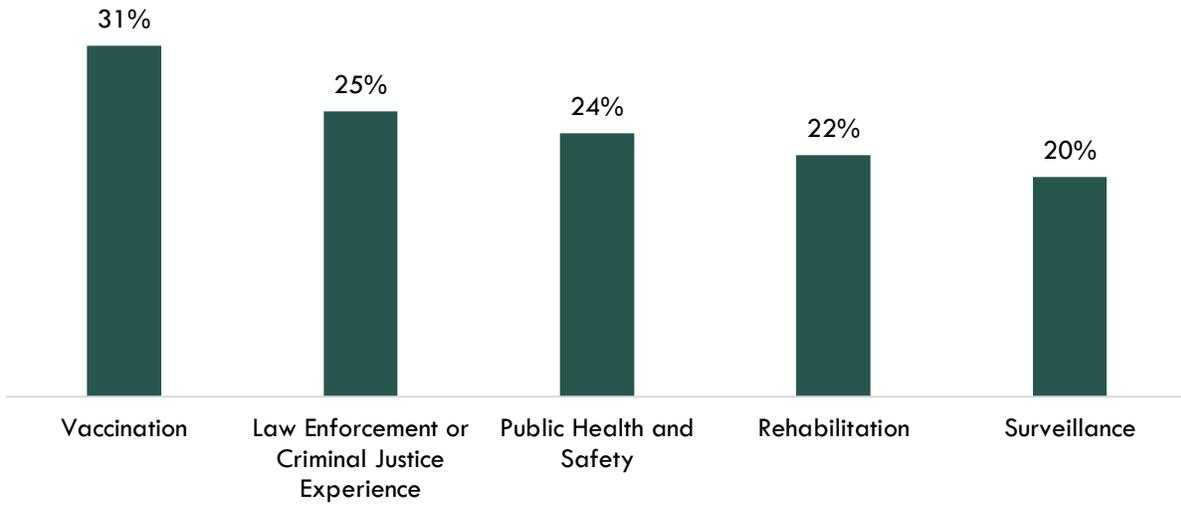
**Exhibit 78. Public safety wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
First-Line Supervisors of Correctional Officers	\$48.67	\$53.11
Correctional Officers and Jailers	\$38.66	\$42.76
Police and Sheriff's Patrol Officers	\$31.55	\$38.38
Firefighters	\$15.42	\$23.64
Protective Service Workers, All Other	\$16.68	\$17.65

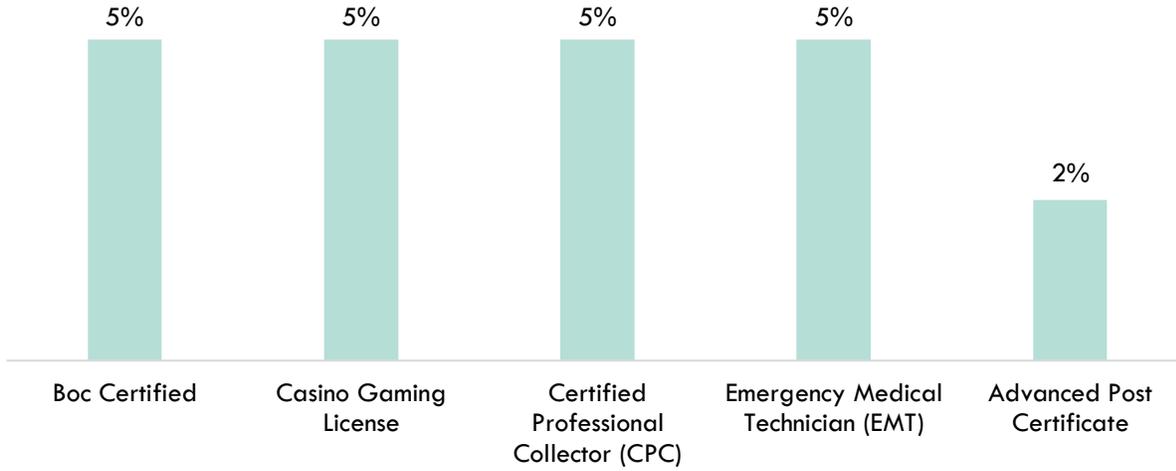
**Exhibit 79. Public safety educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Firefighters	Postsecondary nondegree award	None	Long-term	59.4%
Correctional Officers and Jailers	High school diploma or equivalent	None	Moderate-term	49.3%
Protective Service Workers, All Other	High school diploma or equivalent	None	Short-term	36.8%
Police and Sheriff's Patrol Officers	High school diploma or equivalent	None	Moderate-term	46.4%
First-Line Supervisors of Correctional Officers	High school diploma or equivalent	Less than 5 years	None	42.4%

**Exhibit 80. Top specialized skills in job postings for public safety (n = 51)**



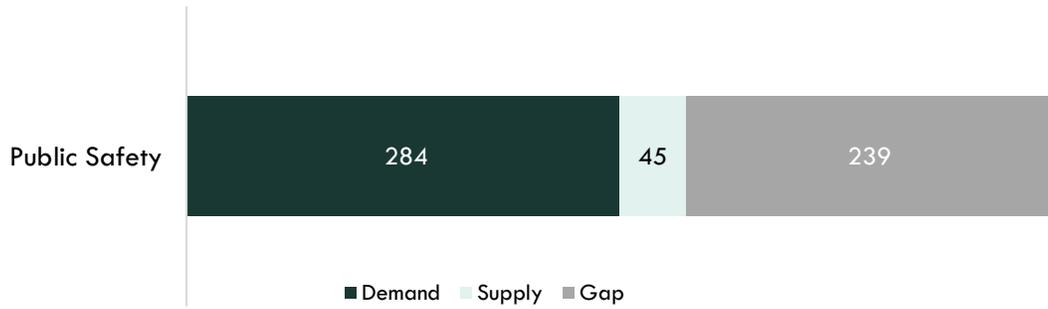
**Exhibit 81. Top certifications in job postings for public safety (n = 44)**



**Exhibit 82. Public safety postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Subtotal
213300 - Fire Technology	Columbia	15	5	25	45
<b>TOTAL</b>		<b>15</b>	<b>5</b>	<b>25</b>	<b>45</b>

**Exhibit 83. Public safety annual demand and supply**



# RETAIL, HOSPITALITY AND TOURISM

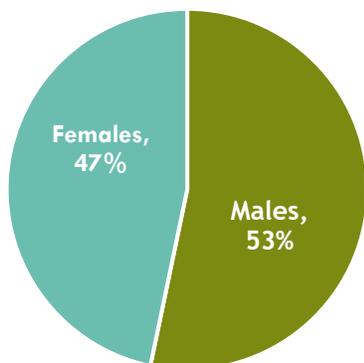
## Summary

- **Gender and race/ethnicity:** Comprising 47% of the workforce, females are slightly underrepresented in this sector. Analysis shows underrepresentation of Hispanic or Latino workers and overrepresentation of White workers (Exhibits 84 and 85).
- **Employment and projected demand:** The largest middle-skill occupation is cooks, restaurant, which has 113 annual openings (Exhibit 86).
- **Wages:** The highest paid occupation is food service managers, \$28.34/hour median earnings (Exhibit 87).
- **Specialized skills:** The top skill is scheduling, and the top certification is ServSafe (Exhibits 89 and 90).

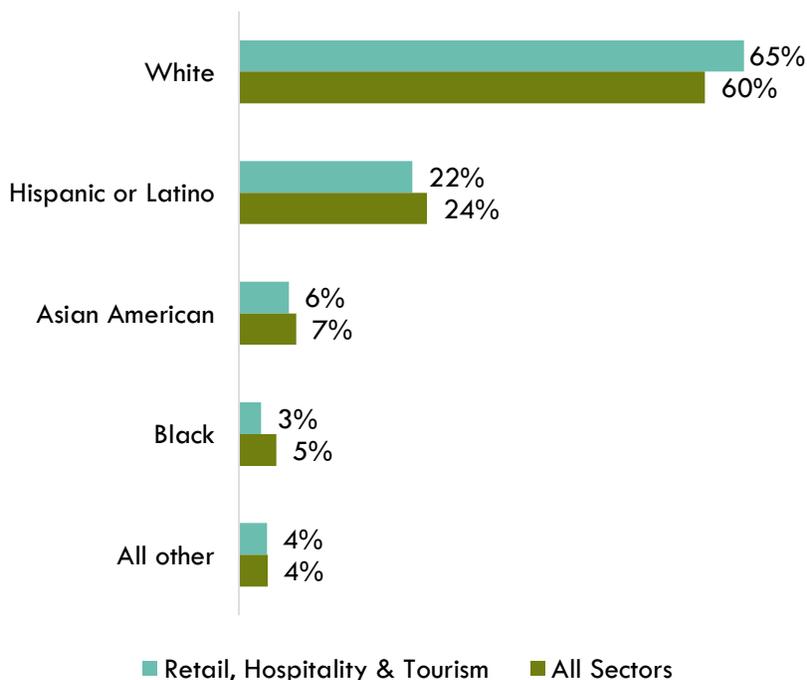
## Top Job Titles

- Assistant Manager
- General Manager
- Assistant Store Manager

**Exhibit 58. Gender composition of the top occupations in the retail, hospitality, and tourism workforce**



**Exhibit 59. Race/ethnicity composition of the top occupations in the retail, hospitality, and tourism workforce**



**Exhibit 86. Retail, hospitality and tourism employment and occupational projections**

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Cooks, Restaurant	526	673	147	28%	113
First-Line Supervisors of Food Preparation and Serving Workers	392	466	74	19%	77
First-Line Supervisors of Retail Sales Workers	446	476	30	7%	55
Food Service Managers	116	137	21	18%	18
Chefs and Head Cooks	88	104	16	18%	15
Self-Enrichment Teachers	104	118	14	13%	15
Exercise Trainers and Group Fitness Instructors	71	72	1	0%	12
First-Line Supervisors of Housekeeping and Janitorial Workers	71	75	4	5%	10

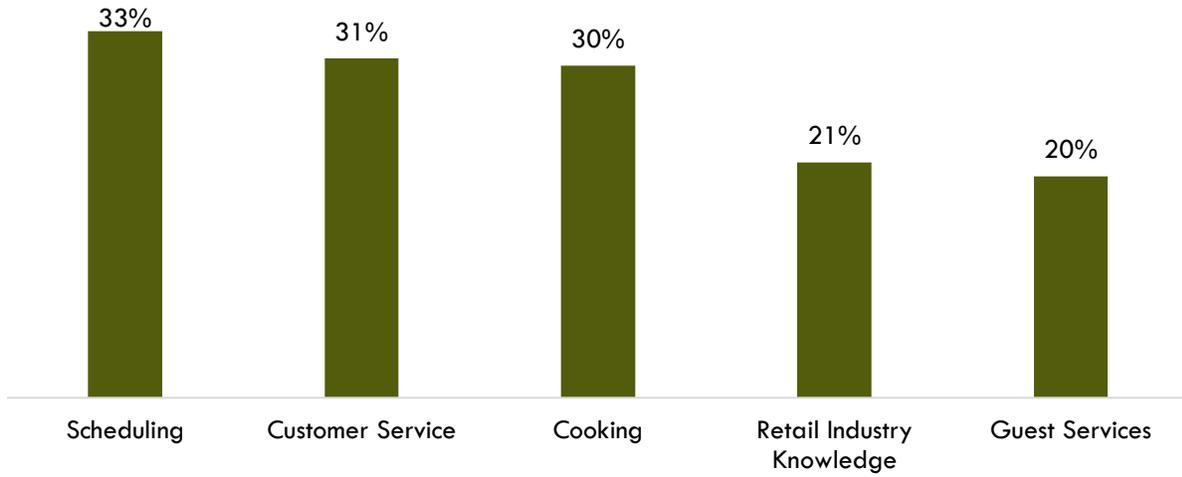
**Exhibit 87. Retail, hospitality and tourism employment wages**

OCCUPATION	25TH PERCENTILE HOURLY WAGES	MEDIAN HOURLY
Food Service Managers	\$21.88	\$28.34
Chefs and Head Cooks	\$17.92	\$22.63
Exercise Trainers and Group Fitness Instructors	\$15.54	\$21.14
First-Line Supervisors of Retail Sales Workers	\$17.49	\$18.29
Self-Enrichment Teachers	\$15.06	\$18.02
First-Line Supervisors of Food Preparation and Serving Workers	\$16.12	\$17.69
First-Line Supervisors of Housekeeping and Janitorial Workers	\$16.54	\$17.67
Cooks, Restaurant	\$14.79	\$16.86

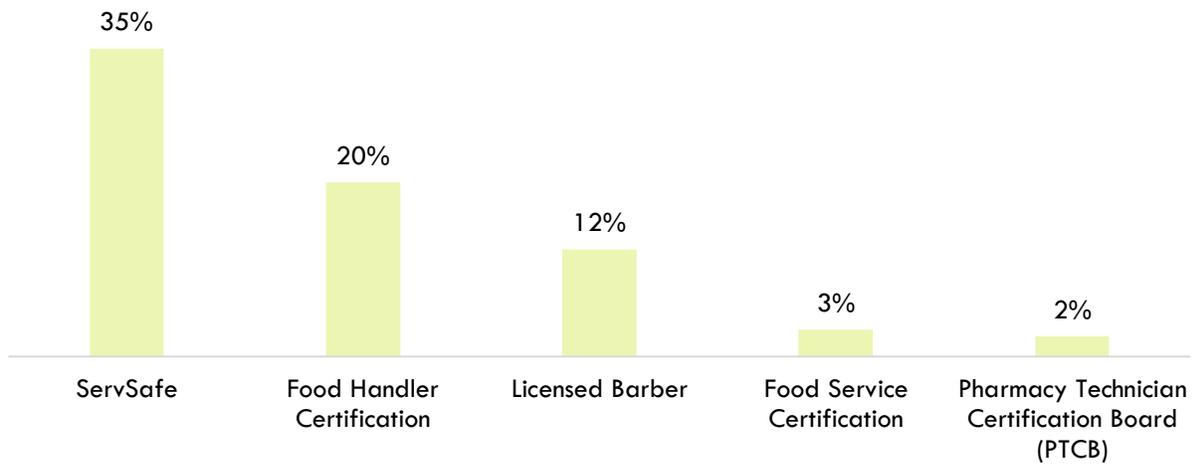
**Exhibit 88. Retail, hospitality and tourism educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
First-Line Supervisors of Food Preparation and Serving Workers	High school diploma or equivalent	Less than 5 years	None	36.7%
First-Line Supervisors of Retail Sales Workers	High school diploma or equivalent	Less than 5 years	None	38.8%
Food Service Managers	High school diploma or equivalent	Less than 5 years	None	35.8%
Chefs and Head Cooks	High school diploma or equivalent	5 years or more	None	35.8%
Self-Enrichment Teachers	High school diploma or equivalent	Less than 5 years	None	25.4%
Exercise Trainers and Group Fitness Instructors	High school diploma or equivalent	None	Short-term	28.6%
First-Line Supervisors of Housekeeping and Janitorial Workers	High school diploma or equivalent	Less than 5 years	None	31.0%
Cooks, Restaurant	No formal educational credential	Less than 5 years	Moderate-term	24.3%

**Exhibit 89. Top specialized skills in job postings for retail, hospitality and tourism (n = 321)**



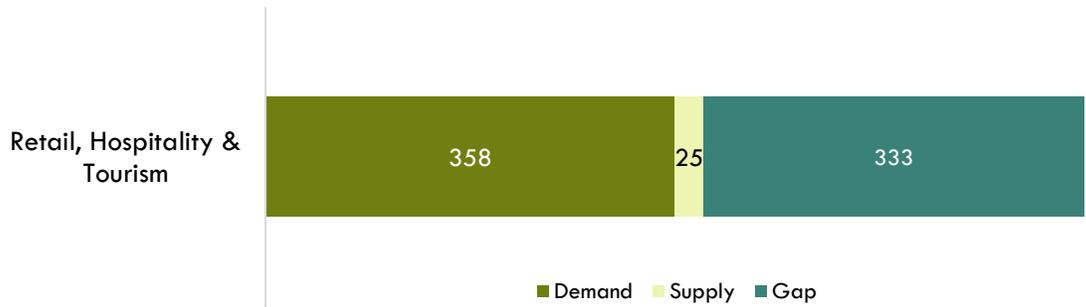
**Exhibit 90. Top certifications in job postings for retail, hospitality and tourism (n = 132)**



**Exhibit 91. Retail, hospitality and tourism postsecondary supply**

TOP/ CIP Code	College	Associate Degree	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Credit Award, < 6 Semester units	Subtotal
050650 - Retail Store Operations and Management			0						0
130700 - Hospitality							1		1
130710 - Restaurant and Food Services and Management	Columbia	2				2	9	8	20
130720 - Lodging Management		1		0	3				4
<b>TOTAL</b>		<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>9</b>	<b>8</b>	<b>25</b>

**Exhibit 92. Retail, hospitality and tourism annual demand and supply**



# APPENDIX A: BELOW MIDDLE SKILL OCCUPATIONS WITH 10 OR MORE ANNUAL OPENINGS

Exhibit A1. Below middle skill occupations employment, occupational projections, and median wages

OCCUPATION	2021 JOBS	2026 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS	MEDIAN WAGES
Cashiers	1,821	1,845	24	1%	340	\$14.15
Fast Food and Counter Workers	1,028	1,210	182	18%	261	\$14.12
Waiters and Waitresses	808	931	123	15%	191	\$14.20
Retail Salespersons	1,061	1,167	106	10%	176	\$14.41
Stockers and Order Fillers	649	719	70	11%	119	\$14.69
Maids and Housekeeping Cleaners	697	667	(30)	(4%)	107	\$14.67
Landscaping and Groundskeeping Workers	551	643	92	17%	95	\$17.15
Construction Laborers	605	672	67	11%	75	\$21.20
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	418	434	16	4%	74	\$14.19
Bartenders	258	311	53	21%	57	\$14.90
Food Preparation Workers	275	312	37	14%	57	\$14.84
Laborers and Freight, Stock, and Material Movers, Hand	332	371	39	12%	54	\$15.01
Amusement and Recreation Attendants	212	240	28	13%	53	\$14.52
Cooks, Fast Food	324	340	16	5%	51	\$14.09
Dishwashers	252	289	37	15%	50	\$14.43
Hotel, Motel, and Resort Desk Clerks	249	235	(14)	(6%)	48	\$14.89
Dining Room and Cafeteria Attendants and Bartender Helpers	203	233	30	15%	44	\$14.25
Light Truck Drivers	242	291	49	20%	39	\$18.08
Hosts and Hostesses, Restaurant,	125	147	22	18%	35	\$14.45

Lounge, and Coffee Shop						
Security Guards	225	241	15	7%	34	\$16.87
Gambling Dealers	159	163	3	2%	24	\$14.02
Counter and Rental Clerks	149	168	18	12%	22	\$16.58
Packers and Packagers, Hand	139	144	4	3%	21	\$14.30
Ushers, Lobby Attendants, and Ticket Takers	37	76	39	103%	20	\$15.50
Cooks, Institution and Cafeteria	92	116	24	26%	20	\$18.23
Animal Caretakers	105	119	14	13%	19	\$15.61
Painters, Construction and Maintenance	160	177	17	11%	18	\$21.07
Farmworkers, Farm, Ranch, and Aquacultural Animals	100	102	2	2%	17	\$15.14
Highway Maintenance Workers	139	147	8	6%	16	\$22.21
Gambling Change Persons and Booth Cashiers	83	84	1	2%	16	\$14.78
Demonstrators and Product Promoters	84	86	2	2%	16	\$16.25
Cleaners of Vehicles and Equipment	85	98	13	16%	15	\$14.60
Food Servers, Nonrestaurant	68	82	14	21%	14	\$14.74
Bakers	86	93	7	8%	13	\$15.15
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	49	51	2	4%	13	\$14.63
Shuttle Drivers and Chauffeurs	71	89	18	26%	13	\$16.80
Butchers and Meat Cutters	97	101	4	4%	12	\$17.80
Miscellaneous Assemblers and Fabricators	84	91	7	9%	11	\$17.73
Driver/Sales Workers	70	85	15	21%	11	\$17.29
Food Preparation and Serving Related Workers, All Other	51	60	8	16%	11	\$14.18
Production Workers, All Other	84	89	5	6%	11	\$20.41
Cooks, Short Order	57	66	9	16%	10	\$15.36
Refuse and Recyclable Material Collectors	62	68	6	10%	10	\$22.64
Building Cleaning Workers, All Other	65	67	2	4%	10	\$19.14
Shoe Machine Operators and Tenders	45	61	16	34%	10	\$15.98

**Exhibit 2. Below middle skill occupations educational attainment**

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Animal Caretakers	High school diploma or equivalent	None	Short-term	40.4%
Driver/Sales Workers	High school diploma or equivalent	None	Short-term	29.8%
Gambling Dealers	High school diploma or equivalent	None	Short-term	37.9%
Highway Maintenance Workers	High school diploma or equivalent	None	Moderate-term	33.0%
Hotel, Motel, and Resort Desk Clerks	High school diploma or equivalent	None	Short-term	43.5%
Light Truck Drivers	High school diploma or equivalent	None	Short-term	29.8%
Miscellaneous Assemblers and Fabricators	High school diploma or equivalent	None	Moderate-term	29.7%
Production Workers, All Other	High school diploma or equivalent	None	Moderate-term	28.5%
Security Guards	High school diploma or equivalent	None	Short-term	41.9%
Stockers and Order Fillers	High school diploma or equivalent	None	Short-term	33.3%
Shoe Machine Operators and Tenders	High school diploma or equivalent	None	Short-term	27.0%
Miscellaneous Assemblers and Fabricators	High school diploma or equivalent	None	Moderate-term	29.7%
Stockers and Order Fillers	High school diploma or equivalent	None	Short-term	33.3%
Hotel, Motel, and Resort Desk Clerks	High school diploma or equivalent	None	Short-term	43.5%
Light Truck Drivers	High school diploma or equivalent	None	Short-term	29.8%
Security Guards	High school diploma or equivalent	None	Short-term	41.9%
Gambling Dealers	High school diploma or equivalent	None	Short-term	37.9%
Animal Caretakers	High school diploma or equivalent	None	Short-term	40.4%
Highway Maintenance Workers	High school diploma or	None	Moderate-term	33.0%

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
	equivalent			
Amusement and Recreation Attendants	No formal educational credential	None	Short-term	35.8%
Bakers	No formal educational credential	None	Long-term	28.0%
Bartenders	No formal educational credential	None	Short-term	44.0%
Building Cleaning Workers, All Other	No formal educational credential	None	Short-term	24.6%
Butchers and Meat Cutters	No formal educational credential	None	Long-term	22.4%
Cashiers	No formal educational credential	None	Short-term	31.8%
Cleaners of Vehicles and Equipment	No formal educational credential	None	Short-term	22.6%
Construction Laborers	No formal educational credential	None	Short-term	20.8%
Cooks, Fast Food	No formal educational credential	None	Short-term	24.3%
Cooks, Institution and Cafeteria	No formal educational credential	None	Short-term	24.3%
Cooks, Short Order	No formal educational credential	None	Short-term	24.3%
Counter and Rental Clerks	No formal educational credential	None	Short-term	35.5%
Demonstrators and Product Promoters	No formal educational credential	None	Short-term	39.5%
Dining Room and Cafeteria Attendants and Bartender Helpers	No formal educational credential	None	Short-term	27.3%
Dishwashers	No formal educational credential	None	Short-term	15.1%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	No formal educational credential	None	Short-term	14.9%
Farmworkers, Farm, Ranch, and Aquacultural Animals	No formal educational credential	None	Short-term	14.9%
Fast Food and Counter Workers	No formal educational credential	None	Short-term	35.2%
Food Preparation and Serving	No formal educational	None	Short-term	32.8%

OCCUPATION	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Related Workers, All Other	credential			
Food Preparation Workers	No formal educational credential	None	Short-term	25.1%
Food Servers, Nonrestaurant	No formal educational credential	None	Short-term	32.8%
Gambling Change Persons and Booth Cashiers	No formal educational credential	None	Short-term	31.8%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	No formal educational credential	None	Short-term	37.7%
Laborers and Freight, Stock, and Material Movers, Hand	No formal educational credential	None	Short-term	27.7%
Landscaping and Groundskeeping Workers	No formal educational credential	None	Short-term	21.3%
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	No formal educational credential	None	Short-term	35.8%
Maids and Housekeeping Cleaners	No formal educational credential	None	Short-term	18.0%
Packers and Packers, Hand	No formal educational credential	None	Short-term	22.3%
Painters, Construction and Maintenance	No formal educational credential	None	Moderate-term	20.5%
Refuse and Recyclable Material Collectors	No formal educational credential	None	Short-term	21.1%
Retail Salespersons	No formal educational credential	None	Short-term	38.0%
Shuttle Drivers and Chauffeurs	No formal educational credential	None	Short-term	39.5%
Ushers, Lobby Attendants, and Ticket Takers	No formal educational credential	None	Short-term	31.7%
Waiters and Waitresses	No formal educational credential	None	Short-term	36.8%

# APPENDIX B: METHODOLOGY AND DATA SOURCES

## Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including the Economic Modeling Specialists, Inc., 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/Educational Attainment	Economic Modeling Specialists, Intl. (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 also affected by county-level LIGHTCAST earnings by industry: <a href="http://economicmodeling.com">economicmodeling.com</a> .
Typical Education Level and On-the-job Training	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: <a href="https://www.bls.gov/emp/tables/educational-attainment.htm">https://www.bls.gov/emp/tables/educational-attainment.htm</a> .
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: <a href="http://labormarketinfo.edd.ca.gov">labormarketinfo.edd.ca.gov</a> .
Job Posting and Skills Data	Burning Glass: <a href="http://burning-glass.com/">burning-glass.com/</a> .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: <a href="http://onetonline.org">onetonline.org</a> .

## Key Terms and Concepts

**Annual Job Openings:** Annual openings are calculated by dividing the number of years in the projection period by total job openings.

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

**Employment Estimate:** The total number of workers currently employed.

**Employment Projections:** Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (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 region 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 an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

**Total Job Openings (New + Replacements):** Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal 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 needed to attain competency in the skills needed in the occupation.