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Labor Market Analysis

Pilot Training



Prepared by Central Valley/Mother Lode Center of Excellence



POWERED BY



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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 employers, may help validate current and future employment needs as depicted here.

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for Cerro Coso College to determine whether there is demand in the local labor market that is not being met by the supply from postsecondary programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for Pilot Training, which includes:

- Airline Pilots, Copilots, and Flight Engineers (SOC 53-2011)
- Commercial Pilots (SOC 53-2012)

Key Findings

- **Occupational Demand** — Pilots have a labor market demand of 135 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, commercial pilots are projected to have the most demand with 71 annual job openings and are projected to grow by 9%.
- **Wages** — The average entry-level wage of \$53.08/hour for pilots is higher than the living wage in the SCV/SML subregion, which is \$11.91/hour for a single adult.¹ Airline pilots, copilots, and flight engineers earn the highest entry-level wage, \$73.71/hour.
- **Employers and Occupational Titles** — Employers in the SCV/SML subregion include Reach Air Medical Services, Guardian Flight, and Global Medical Response. The most common occupational title in job postings in the subregion is commercial pilots. The most common job title is rotor wing pilots.
- **Skills and Certifications** — The top baseline skill is record keeping, the top specialized skill is regulatory documents, and the top software skill is IBM WebSphere MQ. The most in-demand certification is a FAA Second Class Medical Certificate.
- **Education** — A high school diploma or equivalent is typically required for commercial pilots. A bachelor's degree is typically required for airline pilots, copilots, and flight engineers.
- **Supply and Demand Analysis** — Based on 135 annual openings (i.e., demand), and two postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 133 workers in the SCV/SML subregion. In the CVML region, two awards were conferred suggesting an undersupply of 178 workers.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in the SCV/SML subregion and the CVML region. The Center of Excellence recommends that Cerro Coso College work with the regional directors, the college's advisory board, and local industry in the development of programs to address the shortage of pilots.

¹ 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://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Cerro Coso College with labor market information for *Pilot Training*. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. Analysis of the program and occupational data related to *Pilot Training* is included in the report. The Standard Occupational Classification (SOC) System codes and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine are shown below.

Airline Pilots, Copilots, and Flight Engineers (SOC 53-2011)

- **Job Description:** Pilot and navigate the flight of fixed-wing aircraft, usually on scheduled air carrier routes, for the transport of passengers and cargo. Requires Federal Air Transport certificate and rating for specific aircraft type used. Includes regional, national, and international airline pilots and flight instructors of airline pilots.
- **Knowledge:** Transportation, English Language, Geography, Mechanical, Public Safety and Security
- **Skills:** Operation and Control, Operations Monitoring, Active Listening, Critical Thinking, Monitoring

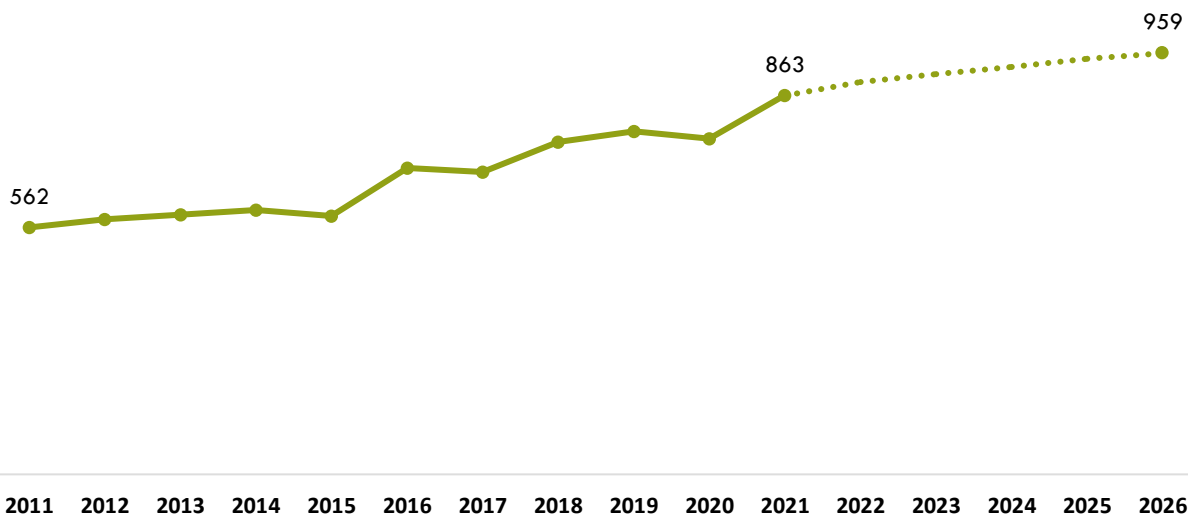
Commercial Pilots (SOC 53-2012)

- **Job Description:** Pilot and navigate the flight of fixed-wing aircraft on nonscheduled air carrier routes, or helicopters. Requires Commercial Pilot certificate. Includes charter pilots with similar certification, and air ambulance and air tour pilots. Excludes regional, national, and international airline pilots.
- **Knowledge:** Transportation, Customer and Personal Service, Geography, English Language, Public Safety and Security
- **Skills:** Operation and Control, Operations Monitoring, Critical Thinking, Monitoring, Active Listening

Employment

Exhibit 1a shows trends for pilots in the SCV/SML subregion. Between 2011 to 2026, the number of jobs for *Pilot Training* is projected to increase by 96 jobs, or 11%.

Exhibit 1a. Historical employment and projected occupational demand for pilots in the SCV/SML subregion, 2011-2026



There were 863 pilots employed in the SCV/SML subregion in 2021 (Exhibit 1b). Commercial pilots are projected to grow by 9% over the next five years which represents 71 annual openings.

Exhibit 1b. Current employment and projected occupational demand for pilots in the SCV/SML subregion, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Commercial Pilots	467	510	43	9%	71
Airline Pilots, Copilots, and Flight Engineers	396	449	53	13%	64
TOTAL	863	959	96	11%	135

Wages

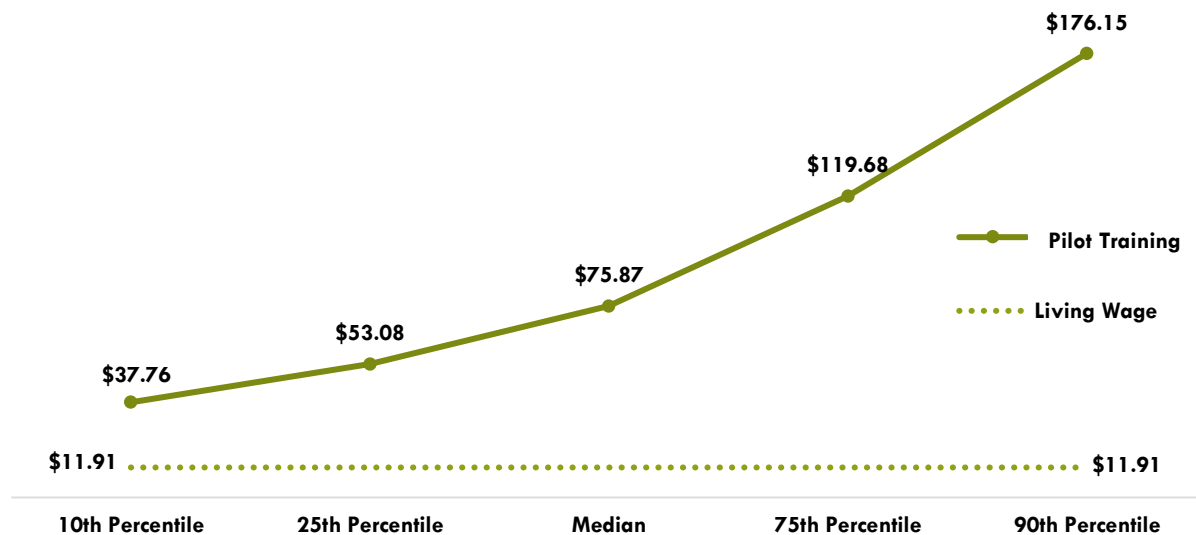
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows the entry-hourly wages for pilots. Commercial pilots have the highest entry-level wage at \$73.71/hour.³

Exhibit 2a. Hourly wages for pilots in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Airline Pilots, Copilots, and Flight Engineers	\$73.71	\$107.35	\$145.71
Commercial Pilots	\$32.46	\$44.40	\$93.66

Exhibit 2b shows the average hourly wages for the two listed pilot occupations. The average entry-level wage far exceeds the average entry-level living wage for the SCV/SML subregion.

Exhibit 2b. Average hourly wages for pilots in the SCV/SML subregion



² 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://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either gained by long-term employment, extra training, etc.

Job Postings

There were 79 job postings for pilots in the SCV/SML subregion from November 2022 to April 2023.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Reach Air Medical Services, Guardian Flight, and Global Medical Response.

Exhibit 3. Top employers of pilots in job postings

Employer
Reach Air Medical Services
Guardian Flight
Global Medical Response
Air Methods
CAE
Northrop Grumman
Aviation Search Group
Amentum
MercyOne
Boeing

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine pilot occupational titles in the SCV/SML subregion. Common job titles in postings include: Rotor Wing Pilots, Helicopter Pilots, and Fixed Wing Pilots.

Exhibit 4. Top occupational titles in job postings for pilots

Occupational Title
Commercial Pilots
Airline Pilots, Copilots, and Flight Engineers

⁴ Other than occupational titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Salaries

Exhibit 5 shows the “Market Salaries” for pilots. These are calculated by Lightcast using a machine learning model built from millions of job postings every year. This accounts for adjustments based on location, industry, skills, experience, education, among other variables.

Exhibit 5. Market salaries for pilots

Market Salary	Job Postings
\$85,000-\$93,999	45
\$130,000-\$196,000	9
\$94,000-\$102,999	6
\$76,000-\$84,999	1
\$121,000-\$129,999	1

Education

Of the 79 unique job postings, 18 listed a preferred or minimum educational requirement for the position being filled. Among those, 44% requested a bachelor’s degree, 22% requested an associate degree, and 17% requested a high school diploma or GED (Exhibit 6).

Exhibit 6. Education levels requested in job postings for pilots

Education Level	Job Postings	% of Job Postings
Bachelor's degree	8	44%
Associate degree	4	22%
High school or GED	3	17%
Master's degree	2	11%
Ph.D. or professional degree	1	6%

Baseline, Specialized, and Software Skills

Exhibit 7 depicts the top baseline, specialized, and software skills in job postings. The most important baseline skill is record keeping. The top specialized skill is regulatory documents. The top software is IBM WebSphere MQ.

Exhibit 7. In-demand baseline, specialized, and software skills for pilots

Baseline Skills	Specialized Skills	Software Skills
Record Keeping	Regulatory Documents	IBM WebSphere MQ
Cleanliness	Federal Aviation Administration	Simulation Software
Operations	Rotorcraft	
Management	PIC Microcontrollers	
Planning	Turbines	

Certifications

Of the 79 job postings, there were 119 certifications listed. Among those, 38% indicated a need for a FAA Second Class Medical Certificate. The next top certification is a FAA Instrument Rating (Exhibit 8).

Exhibit 8. Top pilot certifications requested in job postings

Certifications	% of Job Postings
FAA Second Class Medical Certificate	38%
FAA Instrument Rating	31%
Airline Transport Pilot License	9%
FAA First Class Medical Certificate	8%
FAA Multi-Engine Rating	1%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for commercial pilots. A bachelor's degree is typically required for airline pilots, copilots, and flight engineers (Exhibit 9). It is of note that all pilots must go successfully complete a flight academy to obtain the required pilot license to work in these professions.

Exhibit 9. Education, work experience, training, and Current Population Survey results for pilots⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Commercial Pilots	High school diploma or equivalent	None	Moderate-term	22.0%
Airline Pilots, Copilots, and Flight Engineers	Bachelor's degree	Less than 5 years	Moderate-term	22.0%

⁵ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

An analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) for the last three program years shows that, two awards were conferred in the SCV/SML subregion (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Pilot Training

TOP Titles	CIP Titles
302020 - Piloting	49.0102 - Airline/Commercial/Professional Pilot and Flight Crew

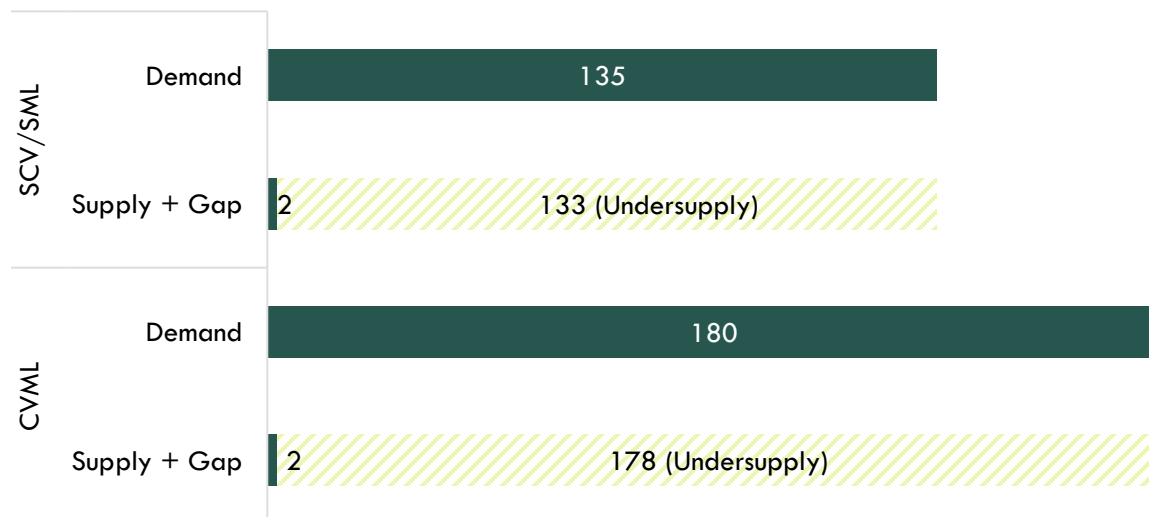
Exhibit 11. Postsecondary supply for Pilot Training

TOP/CIP Code- Title	College	Associate Degree	Total
302020 - Piloting	Reedley College	2	2*
SCV/SML TOTAL		2	2
CVML TOTAL		2	2

*SCV/SML awards

There is an undersupply of 133 *Pilot Training* workers in the SCV/SML subregion and an undersupply of 178 workers in the region (Exhibit 12).

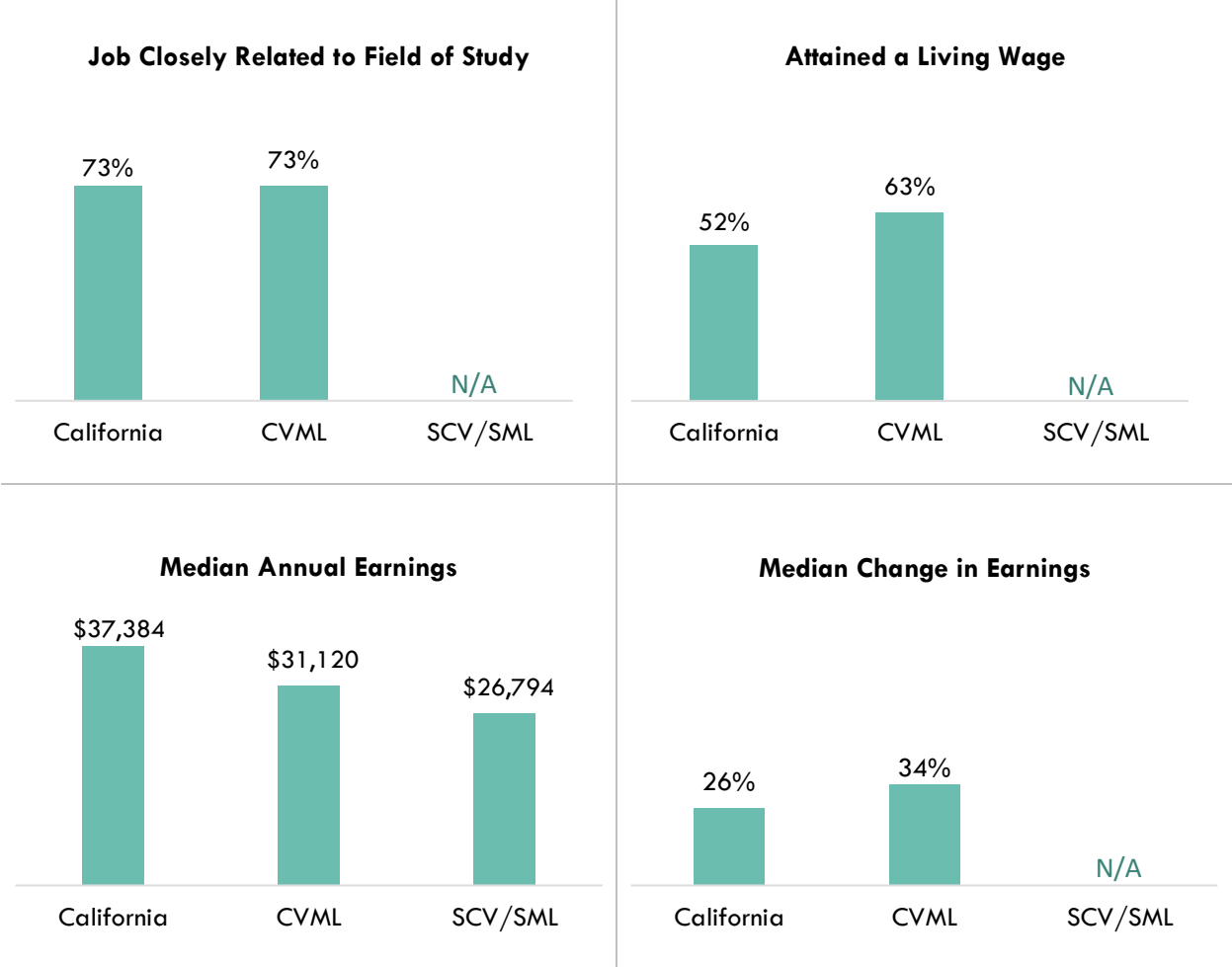
Exhibit 12. Piloting workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and region



Student Outcomes

Exhibits 11 summarize outcomes from California Community College Chancellor’s LaunchBoard for TOP codes related to *Pilot Training*. Notably, 73% of students obtained a job closely related to their field of study in the region and 63% attained a living wage in the region.

Exhibit 11. LaunchBoard metrics for TOP 302020 – Piloting in California, CVML region, and SCV/SML subregion



Recommendation

This report suggests there is a shortage of 133 workers in the SCV/SML subregion and a shortage of 178 pilots in the CVML region. Based on these findings, it is recommended that Cerro Coso College work with the regional directors, the college’s advisory board, and local industry in the development of programs to address the shortage of pilots in the region.

Appendix: Methodology & 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: economicmodeling.com .
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: https://www.bls.gov/emp/tables/educational-attainment.htm .
LaunchBoard	Chancellor's LaunchBoard. https://www.calpassplus.org/LaunchBoard/SWP.aspx
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov .
Job Posting and Skills Data	Burning Glass: burning-glass.com/ .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org .

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.

LaunchBoard (Attained the Living Wage): Among SWP students who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit

LaunchBoard (Median Annual Earnings): Among SWP students who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit.

LaunchBoard (Median Change in Earnings): Among SWP students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry and the second quarter after the end of the academic year of exit from the last college attended.

LaunchBoard (Job Closely Related to Field of Study): Among SWP students who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

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.