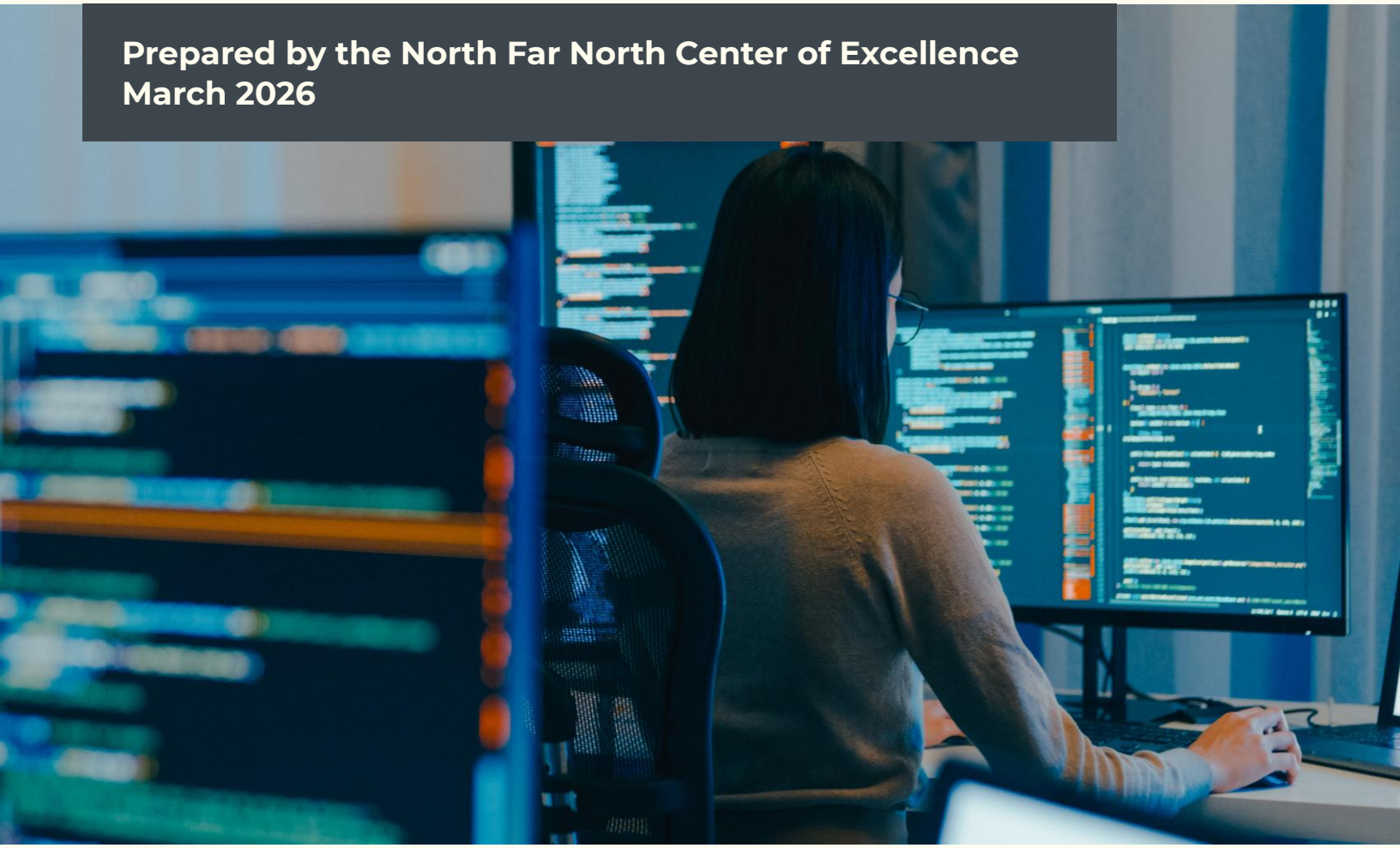
Labor Market Analysis for Program Recommendation:

Prompt Engineers in Greater Sacramento

Prepared by the North Far North Center of Excellence
March 2026



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CENTER OF EXCELLENCE FOR LABOR MARKET RESEARCH
NORTH FAR NORTH

Summary

The North Far North Center of Excellence for Labor Market Research (NFN COE) prepared this report to provide an analysis of occupational demand and educational supply for selected occupations employed across the seven-county North (Greater Sacramento) region. This report aims to determine if demand in the local labor market is unmet by the supply from existing community college programs and other postsecondary training providers.[1]

Key Finding

- **The Greater Sacramento subregion shows less demand for prompt engineering occupations than other areas of California**. Employment concentrations for prompt engineering occupations ranged from 0.51 to 0.97 in Greater Sacramento, indicating demand lower than the national average, while employment concentrations for the state of California ranged from 1.48 to 1.77, indicating much higher demand than the national average.
- **All occupations aligned with prompt engineering have entry-level wages above the family living wage.** Occupations aligned with prompt engineering have entry-level wages ranging between $34.83 and $56.08, which is above the living wage for a working family of $34.41.
- **Aligned occupations to prompt engineering typically require a bachelor's or master's degree.** Between 40% and 52% of incumbent workers in prompt engineering have a bachelor's degree, and 16% to 55% have a master's degree.

Recommendation

The North Far North COE recommends that community colleges **not proceed in developing new prompt engineering programs**. Key considerations include:

- Greater Sacramento is not a hub for prompt engineering. Greater Sacramento accounts for approximately 3% of California's prompt engineering jobs, while it accounts for 6.4% of all jobs. Additionally, employment concentrations range from 0.51 to 0.97, indicating there is lower employment of these occupations per capita compared to the national average.
- Prompt engineering is likely a component of computer science and software jobs rather than a stand-alone job. Prompt engineering skills appeared in few job postings, and a minority of the most aligned occupations listed any adjacent AI skills in their postings.
- The most aligned occupations for prompt engineering have a bachelor's or master's degree as an entry-level requirement. Job posting analysis confirmed that a majority of job postings (55%) require a bachelor's degree and at least 4 years of experience (56%), meaning that labor market demands are not in alignment with community college offerings.

[1] Pursuant to California Education Code §78015, labor market information (LMI) is required for all new career education certificate and degree program proposals, and the North Far North Regional Consortium (NFNRC) requires LMI to come from the NFN COE. This report should serve to satisfy those requirements.

Introduction

The North Far North Center of Excellence (COE) was asked to provide labor market data to support a proposed new career education program or modifications to existing programs at a regional community college (see Appendix A for methodology and data sources).

The proposed prompt engineering program is designed to prepare students for entry- and mid-level roles within the Greater Sacramento subregion's growing AI workforce. Prompt engineers design, test, and optimize structured instructions that guide large language models (LLMs) and generative AI systems to produce high-quality, reliable, and context-aware outputs. This role sits at the intersection of natural language design, applied machine learning, and system integration. Prompt engineering is increasingly embedded within broader positions rather than serving as a standalone job title, as roles requiring this expertise often also encompass AI agent orchestration, AI product management, and conversational UX design.

This report builds on the "Artificial Intelligence and Machine Learning in the Greater Sacramento subregion" report, produced in February 2026. That report performed occupational mapping to classify all AI and machine learning roles into occupational categories and SOC codes. Similar mapping was performed using the keywords for prompt engineering across all job postings in California.

This resulted in the following three Standard Occupational Classification (SOC) occupations and codes:

- Computer and Information Research Scientists (15-1221)
- Software Developers (15-1252)
- Computer Occupations, All Other (15-1299)

The Computer and Information Research Scientists and Software Developers occupations comprised 28% and 27% of job postings. While only 8% of job postings were classified as Computer Occupations, All Other, this classification captures emerging AI and machine learning job titles that are not yet distinctly classified within the SOC system, including Information Technology Project Managers, who often need skills in prompt engineering.

A review of related programs revealed the following Taxonomy of Programs (TOP) title(s) and code(s) are appropriate for inclusion in this report:

- Information Technology, General (0701.00)
- Computer Software Development (0707.00)

The corresponding Classification of Instructional Program (CIP) title(s) and code(s) are:

- Artificial Intelligence (11.0102)
- Information Technology (11.0103)

Demand

Exhibit 1 summarizes the five-year projected job growth for the targeted occupational groups in the Greater Sacramento subregion, the 22-county North Far North region, and California.[2] As of 2024, Greater Sacramento has 3% of California's jobs in prompt engineering occupations, whereas the subregion contained 6.4% of all of California's jobs[3].

Exhibit 1. Current employment and projected occupational demand, 2024-2029

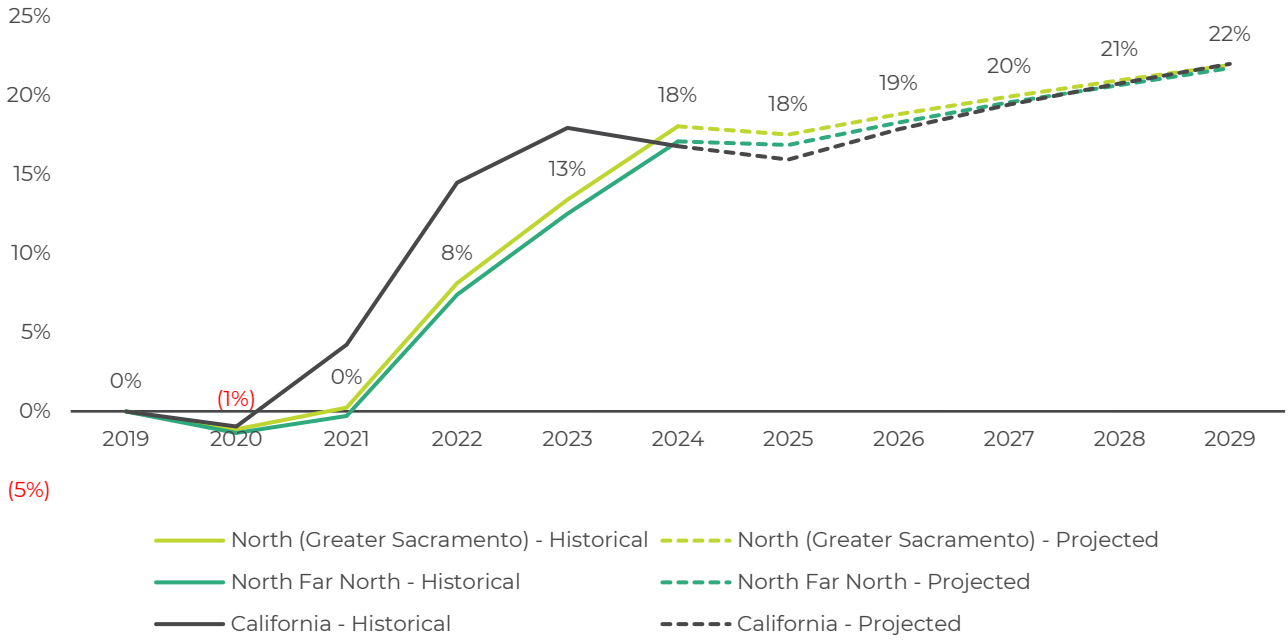
Occupational Group	2024 Jobs	2024-2029 Change	2024-2029 % Change	2024-2029 Annual Openings	2024 Employment Concentration
Computer and Information Research Scientists	168	10	6%	12	0.51
Software Developers	8,186	310	4%	470	0.63
Computer Occupations, All Other	3,690	75	2%	229	0.97
Greater Sacramento	**12,044**	**395**	**3%**	**711**	
Computer and Information Research Scientists	178	11	6%	13	0.42
Software Developers	8,842	406	5%	524	0.53
Computer Occupations, All Other	4,180	106	3%	264	0.85
North Far North	**13,200**	**523**	**4%**	**801**	
Computer and Information Research Scientists	8,843	670	8%	634	1.72
Software Developers	300,454	15,674	5%	18,501	1.48
Computer Occupations, All Other	92,730	1,593	2%	5,816	1.55
California	**402,027**	**17,937**	**4%**	**24,951**	

Exhibit 2 compares historical and projected annual change in employment for the period 2019 to 2029, with the base number of jobs in 2019 for the selected subregion and in the 22-county North Far North region and California.

[2] The 22-county North Far North is a dual region. It is represented by the North (Greater Sacramento) subregion that covers seven counties, including El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba, and the 15-county Far North subregion which includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.

[3] Lightcast 2026.1 - QCEW Employees, Non-QCEW Employees, and Self-Employed

Exhibit 2. Changes in employment, 2019-2029

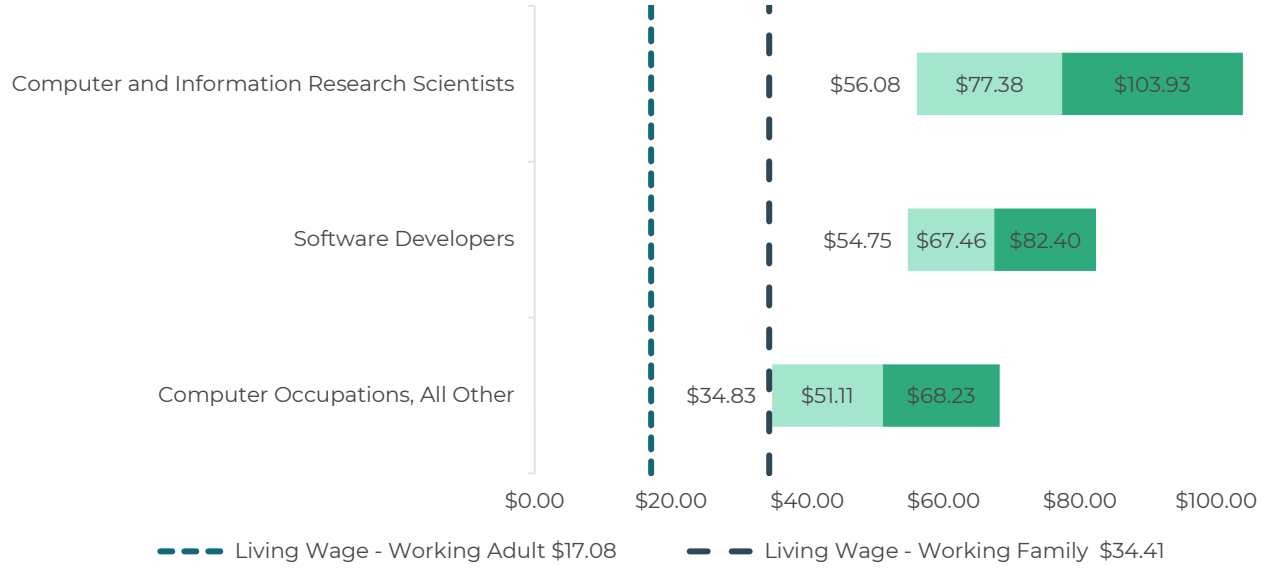


Earnings

Exhibit 3 compares the percentile hourly earnings for the selected occupations to the living wage for a single working adult and a working family residing in the county of the community college district that requested this report.[4,5] Earnings data includes wages from employed and self-employed workers. Also, it's important to note that living wage thresholds vary by county, and in Greater Sacramento, they range from $17 to $24 per hour for a single working adult.

Exhibit 3. Hourly earnings compared to the community college district's living wage

Requesting College	Living Wage – Working Adult	Living Wage – Working Family
Woodland Community College	$21.17	$41.91



[4] A "living wage" is defined as the level of income one working adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. Please note that the 25th-percentile and 75th-percentile hourly wages are used as proxies for entry-level and experienced-level wages.

[5] A "working family" is defined as one working adult and one infant (between the ages of 0 and 2 years).

Job Postings

Analysis of online job postings can offer additional insights into recent labor market changes not reflected in historical trends. However, it is important to note that job postings do not equate to actual labor market demand, which is based on projected annual job openings.

There are several limitations to interpreting online job postings. Employers may repost the same position multiple times to attract more applicants, or job postings may remain active even if the position is no longer being filled. Additionally, a single job posting can be used to hire for multiple openings, and not all job opportunities are advertised online. Despite these limitations, job posting analyses can be valuable for guiding community college curriculum development and identifying potential employers for targeted experiential learning opportunities.

The "Artificial Intelligence and Machine Learning in the Greater Sacramento subregion" report used a skills analysis approach to better understand the specific skills local employers seek in AI and machine-learning-related roles in Greater Sacramento. This report builds on that analysis to specifically determine the presence of prompt engineering skills amongst job postings requesting AI/ML skills.

Skill Analysis Approach

There is a predefined taxonomy of 317 Global AI skills. All job postings in the Greater Sacramento subregion from March 2025 to February 2026 were searched for these skills to understand the prevalence of AI skills in job postings. Additional filters excluded internships, staffing agency postings, and fully remote positions to focus on direct regional employer demand. Posts were then further refined to include only the three occupations for this report. This approach helped to ensure that the resulting dataset and analysis reflected local jobs requiring demonstrable AI-related technical skills rather than general marketing or conceptual references. This process resulted in the identification of 594 unique online job postings in Greater Sacramento requiring AI/ML-related skills (Exhibit 4).

Exhibit 4. Results of job posting filters

+ Geography Only	+ Occupations	- Staffing Companies & Internships	- Remote Roles (Kept Non-Remote, Hybrid, and Unknown)
5,639 postings	958	769	594

The resulting 594 job postings are summarized in Exhibit 5.

Exhibit 5. AI-focused job postings by occupation

Occupation	Number of Job Postings	Share of Postings	Median Advertised Salary
Software Developers	330	56%	$67.76
Computer Occupations, All Other	182	31%	$52.03

Computer and Information Research Scientists	82	14%	$77.38
Total	**594**	**100%**	**$63.90**

To determine whether AI skills command a market premium in these occupations, the filters for Global AI skills were removed. The same filters were applied to eliminate staffing companies, internships, and remote roles. This resulted in 3,447 job postings for the studied prompt engineering occupations, as shown in Exhibit 6. The advertised salaries for each occupation are the same whether the job posting mentions AI skills or not, showing no evidence of a market premium for AI skills.

Exhibit 6. Job postings by occupation

Occupation	Number of Job Postings	Share of Postings	Median Advertised Salary
Software Developers	1,736	50%	$67.76
Computer Occupations, All Other	1,583	46%	$52.03
Computer and Information Research Scientists	128	4%	$67.76
Total	**3,447**	**100%**	**$63.90**

Given that only 594 of these job postings mentioned AI skills (17%) and only 33 (1%) mentioned prompt engineering skills specifically, AI skills are not commonly mentioned in job postings for these occupations. This could be due to a multitude of reasons. It is possible that AI skills may not be a core requirement of the job. It is also possible that companies may expect AI-proficiency from their employees, even if it is not expressly stated in the job description.

Additional analysis of co-occurring skills was conducted in the "Artificial Intelligence and Machine Learning in the Greater Sacramento subregion." In this report, further job posting analysis will pertain to all 3,447 job postings (regardless of AI skills) from the studied occupations.

Top employers

Exhibit 7 shows the employers with the most job postings for the selected occupations across the studied subregion.

Exhibit 7. Employers with the most job postings

Employer	Number of Job Postings
Accenture	251
Blue Shield of California	119
CVS Health	102

Employer	Number of Job Postings
PWC	80
Cardinal Health	66
Sutter Health	37
Intel	37
Northrop Grumman	33
R Systems International	29
Deloitte	28

Top titles

Exhibit 8 shows the job titles with the most job postings for the selected occupations across the studied subregion.

Exhibit 8. Job titles with the most job postings

Job title	Number of Job Postings
Software Engineers	97
Solutions Architects	63
IT Managers	46
Data Center Technicians	43
Application Developers	39
Systems Engineers	36
Business Intelligence Developers	34
IT Project Managers	34
Full Stack Developers	29

Skills and qualifications

Exhibit 9 shows the most requested skills in job postings by occupation in the studied subregion.[6] Out of the 3,447 job postings, only 34 specifically requested prompt engineering AI skills.[7]

[6] Specialized skills are those primarily required to perform specific tasks in an occupation. Common skills are typically related to employability; these are skills that are prevalent across many occupations and usually include a mix of interpersonal attributes and soft skills. Software skills are specific to any software tool or programming component used to accomplish tasks in a job.
[7] These skills were specifically "Prompt Engineering," "Prompt Engineering Tools," "ChatGPT," "Multimodal Prompts," "Prompt Patterns," and "AI Personalization."

Exhibit 9. Most requested in-demand skills in job postings

Specialized Skills	Common or Employability Skills	Software and Technology Skills
• Computer Science • Agile Methodology • Automation • Scalability • Project Management • Workflow Management • CI/CD • Software Development • DevOps • Artificial Intelligence	• Communication • Leadership • Operations • Problem Solving • Innovation • Mentorship • Planning • Consulting • Influencing Skills • Information Technology	• Amazon Web Services • Microsoft Azure • SQL • Python • Application Programming Interface (API) • JavaScript • Java • Git (Version Control System) • RESTful API • Kubernetes

Exhibit 10 shows the employer-preferred minimum level of education in job postings related to the selected occupations in the subregion.

Exhibit 10. Employer-preferred education levels for the studied occupations

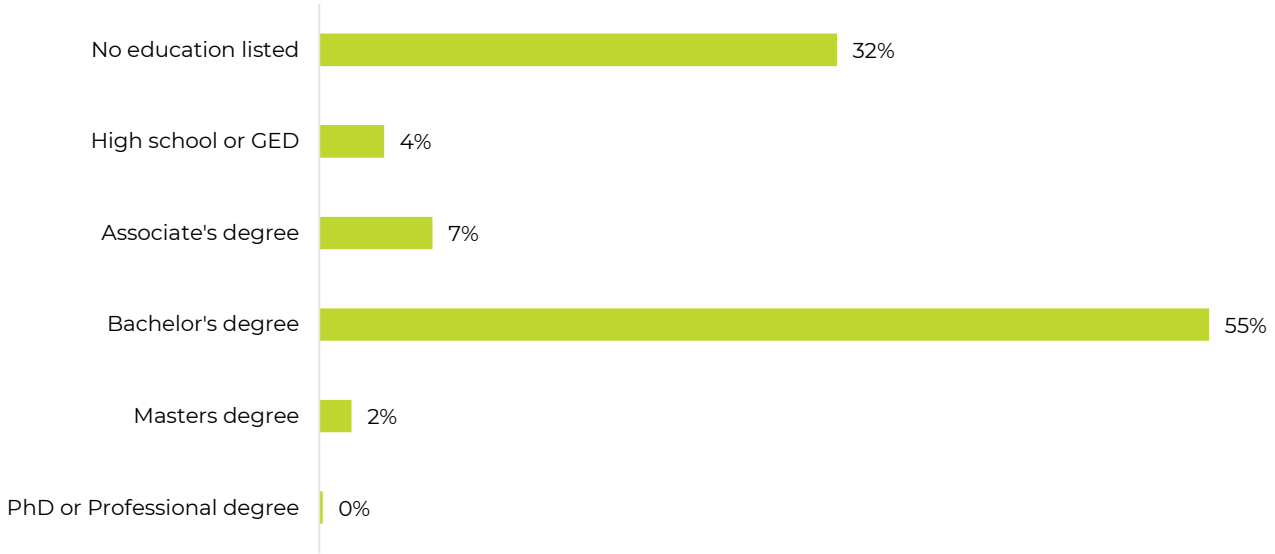
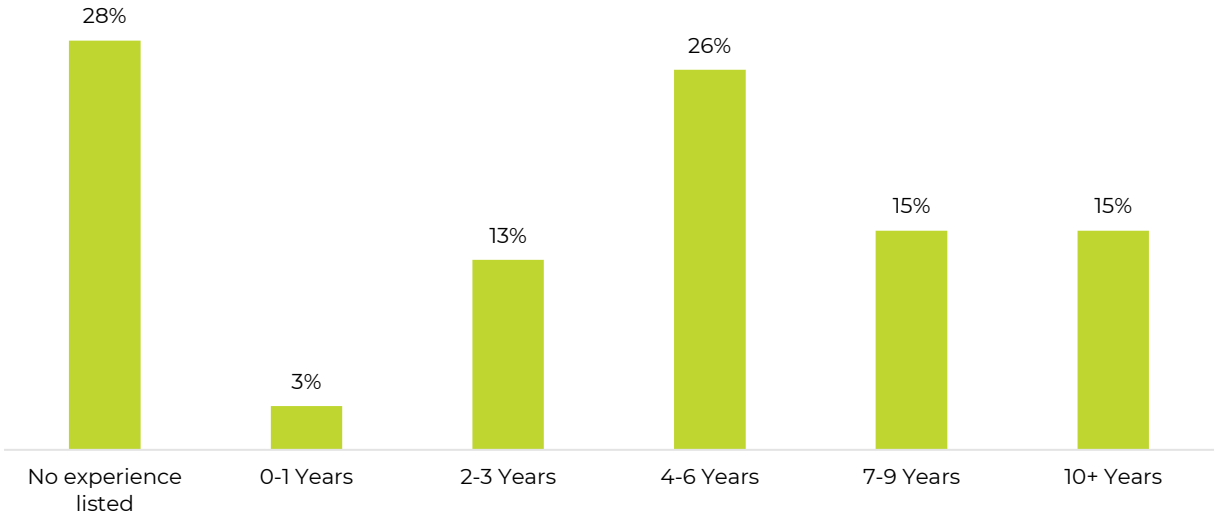


Exhibit 11 shows the employer-preferred minimum level of experience in job postings related to the selected occupations in the subregion.

Exhibit 11. Employer-preferred experience levels for the studied occupations


28%
3%
13%
26%
15%
15%
No experience listed
0-1 Years
2-3 Years
4-6 Years
7-9 Years
10+ Years

Education and Training Requirements

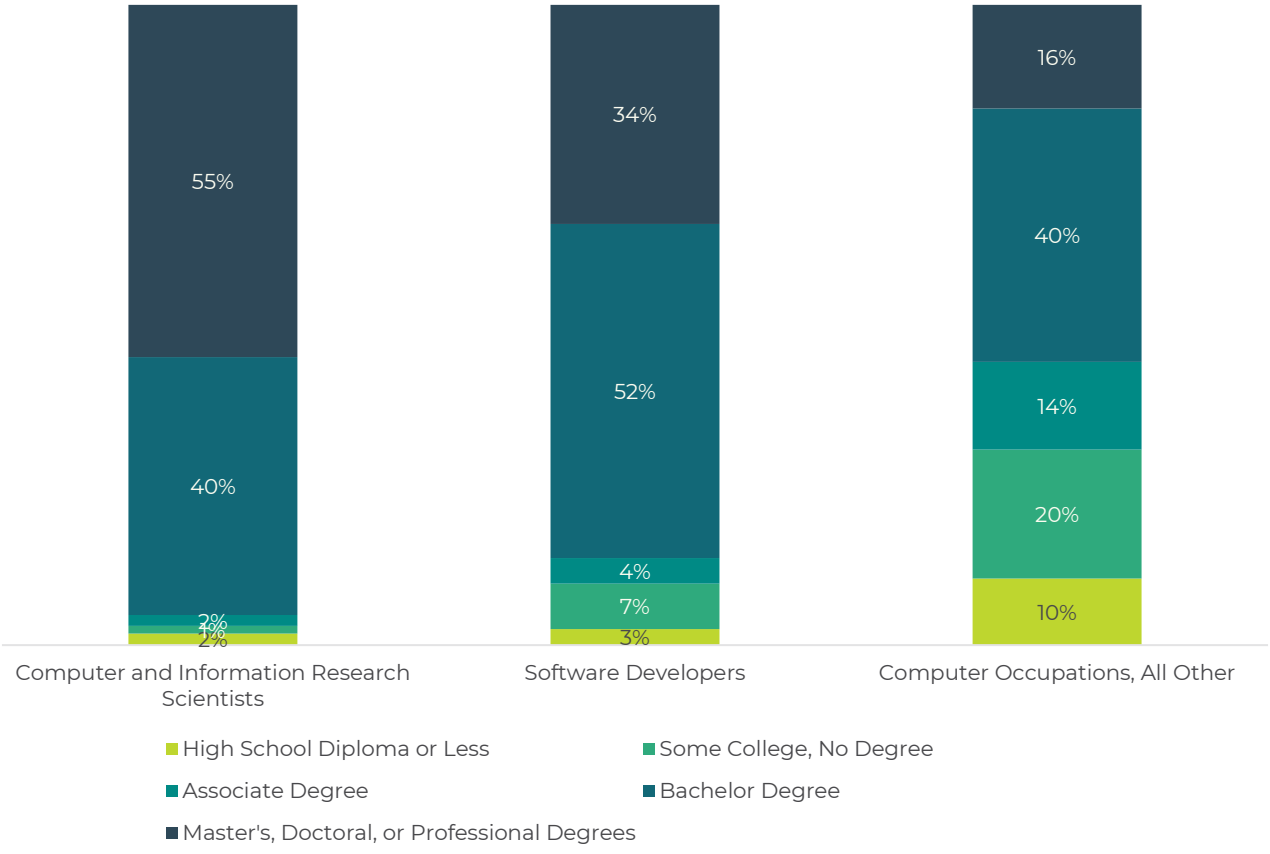
The U.S. Bureau of Labor Statistics (BLS) assigns each occupation a typical entry-level education, related work experience, and on-the-job training category in its projection data. Exhibit 10 summarizes these requirements by occupation.

Exhibit 10. Typical entry-level job requirements for the studied occupations

Occupation	Entry-Level Education	Work Experience	On-The-Job Training
Computer and Information Research Scientists	Master's degree	None	None
Software Developers	Bachelor's degree	None	None
Computer Occupations, All Other	Bachelor's degree	None	None

The U.S. Census Bureau tracks the highest education level attained by workers in all occupations. Exhibit 11 presents this data for the current U.S. workforce in the studied occupations.

Exhibit 11. Educational attainment for workers 25 years and older by occupation, 2021-22



Educational Supply

Educational supply for AI- and machine learning-related occupations can be estimated by analyzing the number of awards conferred in relevant Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP) codes. Because AI is embedded across multiple computing and data science fields, this analysis includes programs in computer science, data science, information systems, and related technology disciplines.

Community college supply

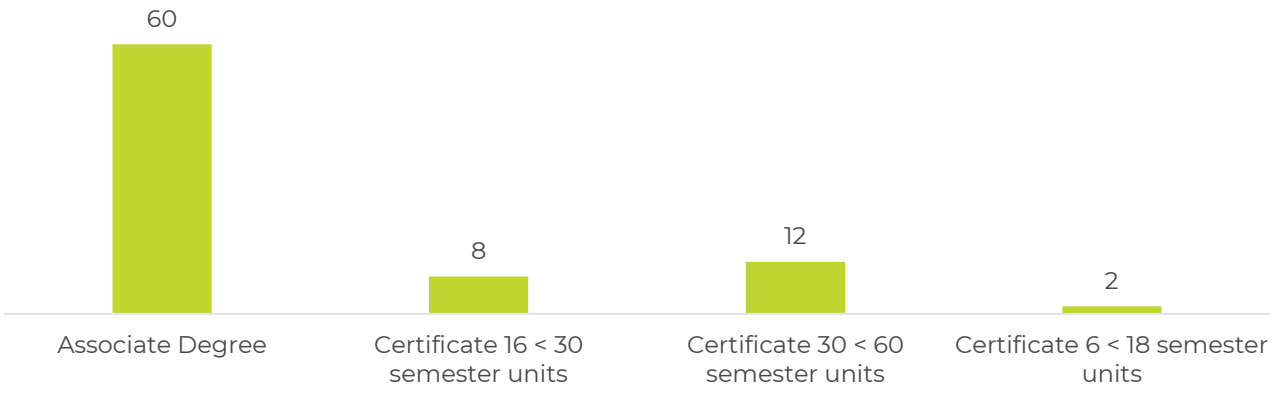
Exhibits 12 and 13 summarize the three-year average of awards (certificates and degrees) conferred by the subregion's community college programs relevant to the occupations studied.

Exhibit 20. Average annual community college awards by TOP program, Greater Sacramento

TOP Program and Code	College	2022-23 Annual Awards	2023-24 Annual Awards	2024-25 Annual Awards	Three-Year Average Awards
Information Technology, General-070100	American River	-	12	1	7
	Cosumnes River	33	21	35	30
	Folsom Lake	5	12	18	12
Subtotal		**38**	**45**	**54**	**48**
Computer Software Development-070700	American River	-	-	18	18
	Cosumnes River	3	0	0	1
	Sacramento City	21	21	46	29
Subtotal		**24**	**21**	**64**	**48**
Totals		**62**	**66**	**118**	**96**

Note: Values in the table are rounded to the nearest whole number. However, subtotals and totals are calculated using unrounded values.

Exhibit 21. Average annual community college awards by award type, Greater Sacramento



Although AI and machine learning skills may be embedded across multiple program areas, a review of the Chancellor's Office Curriculum Inventory (COCI) identified only one active community college program specifically dedicated to artificial intelligence and machine learning: the Artificial Intelligence and Machine Learning certificate program at Folsom Lake College.

Other Postsecondary Supply

While other postsecondary institutions offer training in adjacent pathways, such as computer science or IT security, no postsecondary institutions in the Greater Sacramento subregion have conferred degrees or awards related to artificial intelligence or information technology in the last three years.

Conclusion and Recommendations

Key Findings

Demand — **The Greater Sacramento subregion shows less demand for prompt engineering occupations than other areas of California**. Employment concentrations for prompt engineering occupations ranged from 0.51 to 0.97 in Greater Sacramento, indicating demand lower than the national average, while in employment concentrations in the state of California ranged from 1.48 to 1.77, indicating much higher demand than the national average.

Living Wage — **All occupations aligned with prompt engineering have entry-level wages above the family living wage.** Occupations aligned with prompt engineering have entry-level wages ranging between $34.83 and $56.08, which is above the living wage for a working family of $34.41.

Education — **Aligned occupations to prompt engineering typically require a bachelor's or master's degree.** Between 40% and 52% of incumbent workers in prompt engineering have a bachelor's degree, and 16% to 55% have a master's degree.

Supply Gap — There are 711 annual openings and only 96 annual awards.

Recommendation

The North Far North COE recommends that community colleges **not proceed in developing new prompt engineering programs**. Key considerations include:

- Greater Sacramento is not a hub for prompt engineering. Greater Sacramento accounts for approximately 3% of California's prompt engineering jobs, while it accounts for 6.4% of all jobs. Additionally, employment concentrations range from 0.51 to 0.97, indicating there is lower employment of these occupations per capita compared to the national average.
- Prompt engineering is likely a component of computer science and software jobs rather than a stand-alone job. Prompt engineering skills appeared in few job postings, and a minority of the most aligned occupations listed any adjacent AI skills in their postings.
- The most aligned occupations for prompt engineering have a bachelor's or master's degrees as an entry-level requirement. Job postings analysis confirmed that a majority of job postings (55%) require a bachelor's degree and at least 4 years of experience (56%), meaning that labor market demands are not in alignment with community college offerings.

New Program Recommendation		
Proceed	Use Caution	Do Not Proceed
☐	☐	☒

Appendix A. Methodology and Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Occupations were identified by using the Center of Excellence TOP-to-CIP-to-SOC Crosswalk: http://coeccc.net/. This report's findings were primarily determined with labor market and educational supply data from the Bureau of Labor Statistics (BLS), the economic modeling firm and job postings aggregator Lightcast, and the California Community Colleges Chancellor's Office.

Data Sources

The following table summarizes the data sources used in this study.

Data Type	Source
Labor Market Information and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast's 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 employee classes of worker) and the American Community Survey (self-employed and extended proprietors). For more information, see https://lightcast.io/.
Living Wage	The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual or family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. The Chancellor's Office uses wage data to calculate the percentage of students who attained a regional living wage. For more information, visit https://selfsufficiencystandard.org/California/.
Typical Education Level, On-the-job Training, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, visit https://www.bls.gov/emp/documentation/education/tech.htm.
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledge areas, work activities, and interests associated with occupations. For more information, visit https://www.onetonline.org/help/online/.
Labor Force, Employment and Unemployment Estimates	The California Employment Development Department's Labor Market Information Division is a source of labor market and workforce data. For more information, visit labormarketinfo.edd.ca.gov.
Educational Supply	The CCCCO Management Information Systems (MIS) Data Mart provides information about students, courses, student services, outcomes, and faculty and staff. For more information, visit https://datamart.cccco.edu. The Chancellor's Office Curriculum Inventory System (COCI) collects data on courses and programs offered by the California Community Colleges. For more information, visit https://coci2.ccctechcenter.org/. The National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) collects data from providers of postsecondary education, including the number of postsecondary awards earned (completions). For more information, visit https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions.
Student Metrics and Demographics	DataVista, a statewide data system supported by the Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, visit https://datavista.cccco.edu/.

Living Wage

Beginning in October 2024, to determine if an occupation meets the living wage threshold, the NFN COE compared the 25th percentile hourly wage of an occupation in the subregion to the living wage for a single adult (no dependents) living in the county where the requesting community college district was located.

This change aligned with the Chancellor's Office methodology for calculating the share of students earning a living wage after leaving the California Community College system, as reported in the Data Vista living wage metric (802S). For details, see the *DataVista Metric Definition Dictionary*.

The NFN COE updated this practice as needed to remain consistent with the Chancellor's Office. The table below summarizes hourly living wages by community college district and county.

		2024 Single Adult Living Wage	
Community College District	**County**	**Hourly**	**Annual**
Butte-Glenn	Butte	$16.77	$35,416
Feather River	Plumas	$15.11	$31,909
Lake Tahoe	El Dorado	$22.11	$46,703
Lassen	Lassen	$14.81	$31,274
Los Rios	Sacramento	$21.17	$44,709
Mendocino-Lake	Mendocino	$17.06	$36,039
Redwoods	Humboldt	$16.59	$35,046
Shasta-Tehama-Trinity Joint	Shasta	$16.99	$35,874
Sierra Joint	Placer	$23.92	$50,519
Siskiyou Joint	Siskiyou	$14.51	$30,639
Yuba	Sutter	$17.08	$36,074
California Minimum Wages			
All industries, except fast food and healthcare (Effective January 2026)		$16.90	$35,152
Fast food (Effective April 2024)		$20.00	$41,600
Healthcare (Effective October 2024)		$18.63-$24.00, depending on facility type	$38,750-$49,920

Sources: University of Washington Self Sufficiency Standard and State of California Department of Industrial Relations, "Minimum Wage," https://www.dir.ca.gov/dlse/minimum_wage.htm

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NORTH FAR NORTH

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