

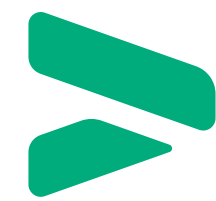


Information & Communication Technology Regional Industry Advisory Meeting

Artificial Intelligence, Machine Learning, & Data Science



November 17th, 2022



Housekeeping



Enable your video camera (optional)



Please stay on  unless you are called on to ask a question



Submit all questions and commentary using the chat function



This meeting will be recorded and will be provided as part of the post-meeting materials

Welcome & Introduction

Yzabelle Dela Cruz, Valley Vision
Project Manager, Workforce Development



Thank you

to all of our supporters



Agenda

1:00 PM: Welcome and Introduction

1:10 PM: Labor Market & Trend Analysis

1:40 PM: Industry Panel Discussion

2:30 PM: Community College Spotlights

2:55 PM: Conclusion

Labor Market & Trend Analysis

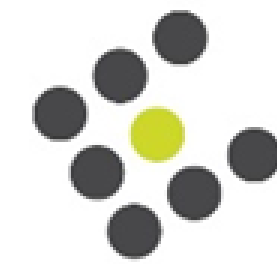
Aaron Wilcher, Research Manager
North/Far North Center of Excellence
Los Rios Community College District



ICT advisory

AI refresh and middle-skill focus

Fall 2022



C · O · E

CENTERS OF EXCELLENCE
Inform Connect Advance

www.coeccc.net

Aaron Wilcher, Director
COE, Greater Sacramento (North)
ICT Advisory panel – focus on AI
November 17, 2022

About the Centers of Excellence (COE)

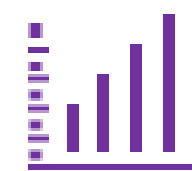
California Community Colleges need to ensure that CTE curriculum produces workers with the skills relevant to the regional and statewide economies.

The COE provide **quality labor market data and information** to help colleges respond to workforce needs.

Uses of the data:



Investing in new and relevant programs



Assessing labor market needs



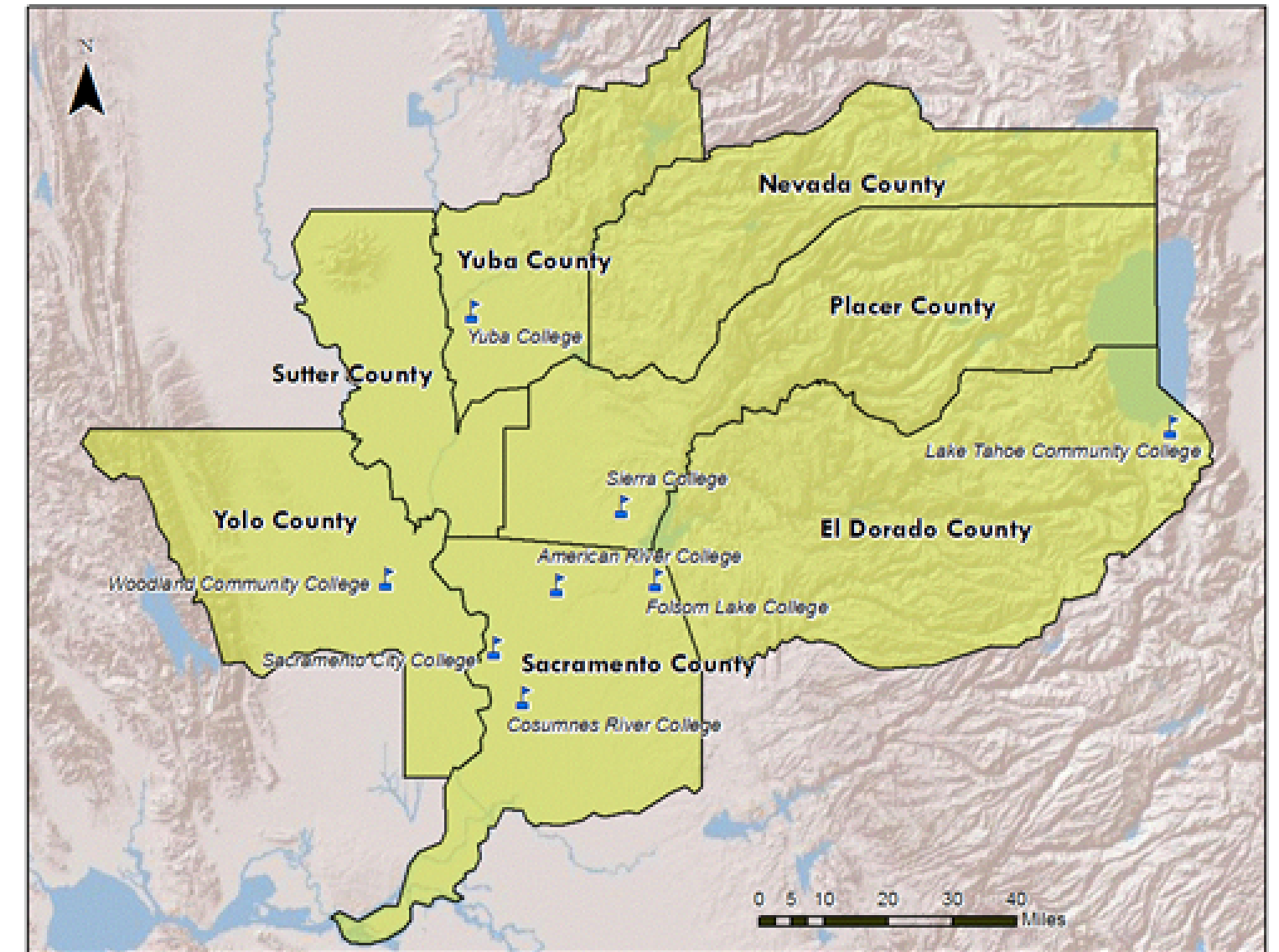
Reviewing existing programs



Pursuing grants

COE Presentation Overview

- AI workforce concept / framework
- Method of analysis – data update
- Industry sector findings
- Occupation and skills findings
- AI middle skill profiles



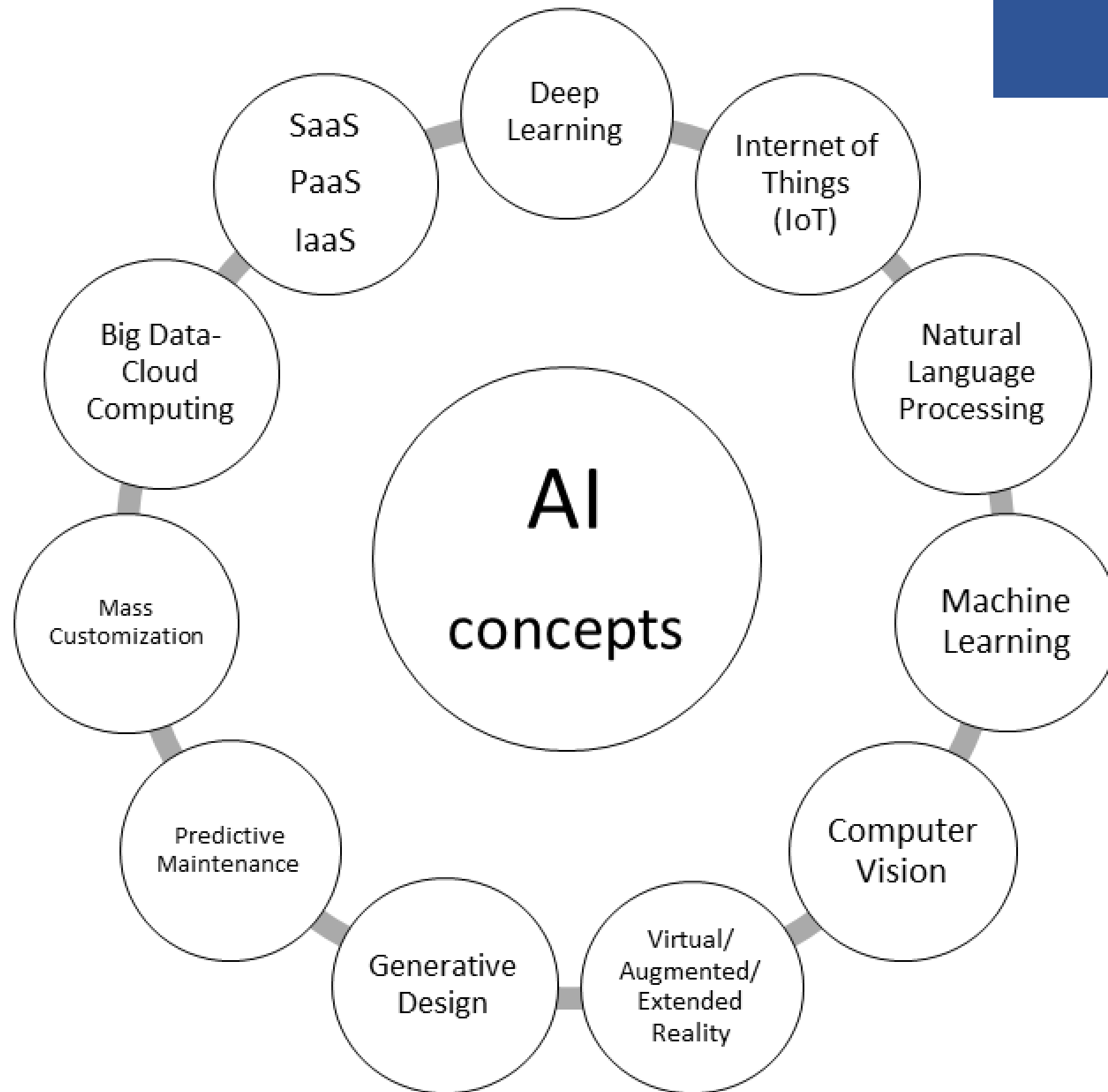
AI – workforce concept basis

AI definitions and concepts

“[AI] is a collection of capabilities like visual perception and spatial awareness, speech recognition, language translation, and analytical predictions that lead to decision-making The ability of an AI system to learn is fundamental and **differentiates it from traditional algorithms** that are explicitly programmed to act in a predefined manner. A human brain **learns throughout life to understand and process information**. Similarly, a machine learning algorithm or model must be trained to comprehend its environment and produce desired outcomes.”

– [Oregon Workforce and Talent Development Board- AI Task Force, Oct 2020](#)

AI definitions and concepts



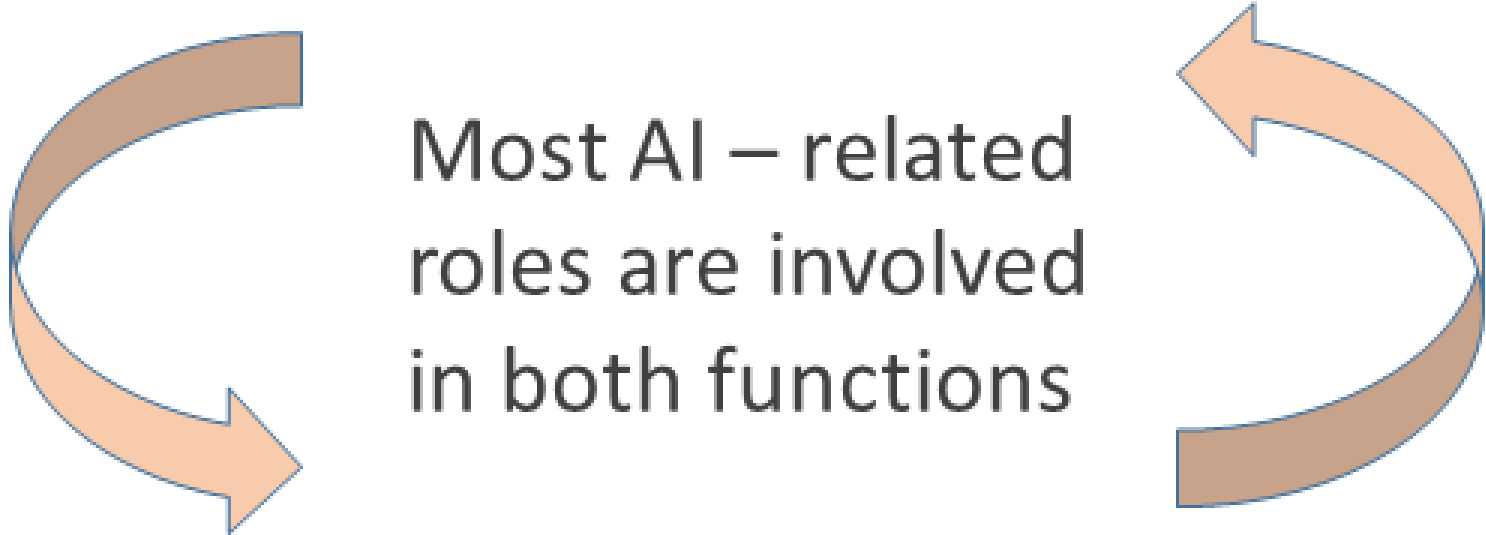
“AI is not a single piece of hardware or software, but rather, a **constellation of technologies** [AI is] a massive collection of interrelated technology blocks called **the AI stack** AI requires talent, data, hardware, algorithms, applications, and integration.”

—[National Security Commission on AI, Nov. 2019](#)

AI Architects and Translators

Architects - Builders

- AI Systems researchers
- Software developers
- Data Scientists
- Data/ AI Engineer
- Computer Systems Architect
- Machine Learning Engineers
- AI Solutions Programmers
- Collaborative Robotics Specialists
- Cognitive Systems Engineer



Most AI – related
roles are involved
in both functions

Translators; Implementers

- Business leaders
- Change management experts
- Subject matter experts
- Systems Analyst
- Business Management Analyst
- Data Mining/Data Analyst
- Data Quality Analysts
- Human-Computer Interaction Specialist

AI – workforce method of investigation

Top level findings AI in the jobs postings in April 2021

Two industry sectors had most AI-related postings, but small share of total

- health care ~100 out of 17,000 postings
- manufacturing ~140 out of 5,600 postings

Two kinds of employer postings reference AI

- large employers: Intel, Cisco, Applied Materials, Anthem Blue Cross
- third-party firms that specialize in data systems/analytics and business/operations strategy

Computer science is the most commonly-referenced requirement

Other occupations beyond computer-science related showed up were diffuse and few.... did not yield clear messages for training and education development

We refreshed analysis from Spring 2021, using 4 keyword searches:

- **“artificial intelligence”**
- **“machine learning”**
- **“natural language processing”**
- **“computer vision”**

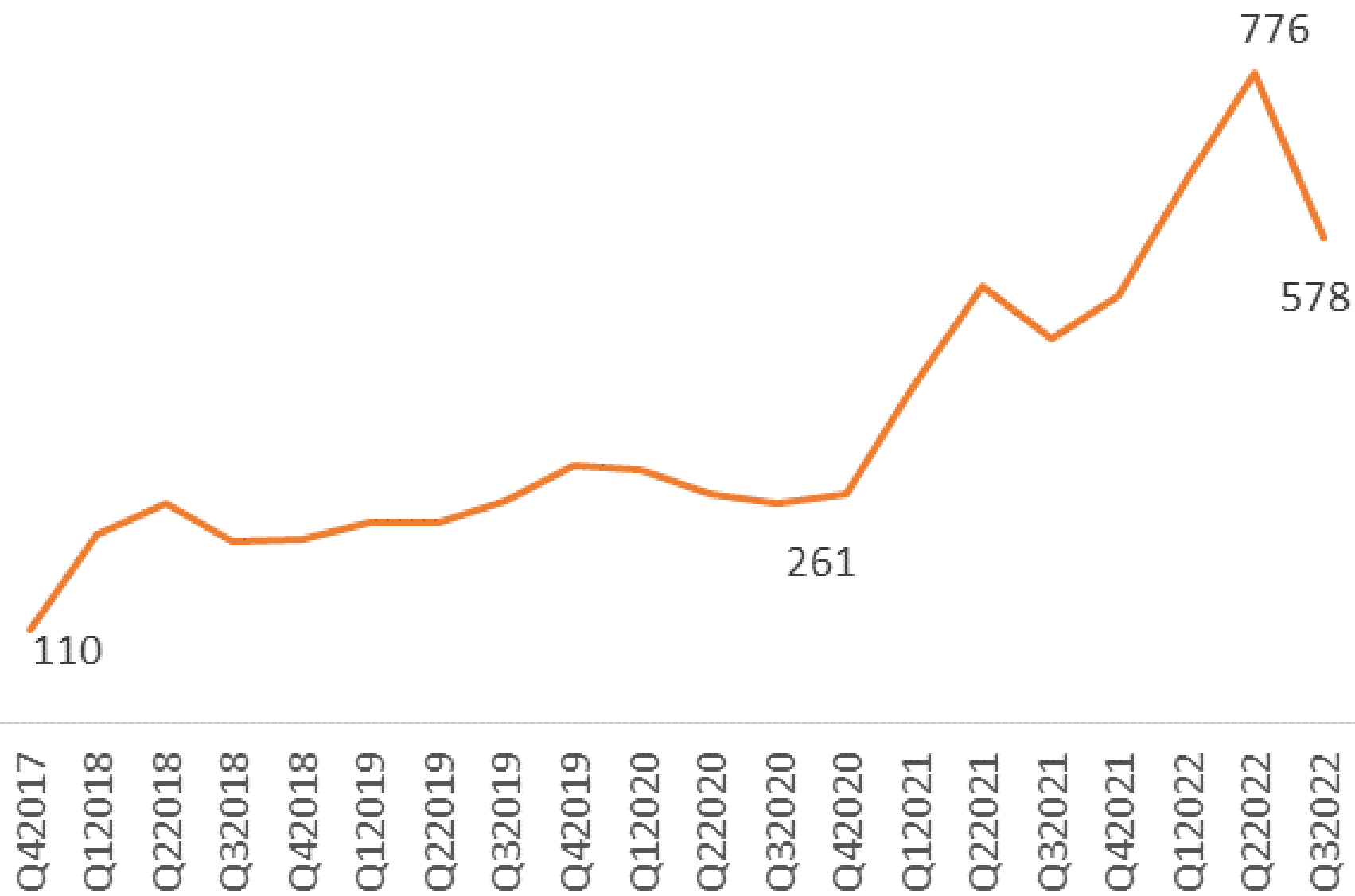
Parameters:

- **7-county Sacramento region**
- **12-month period ending in October, 2022**
- **Broader focus on middle skill and “AI- Adjacent” occupations**

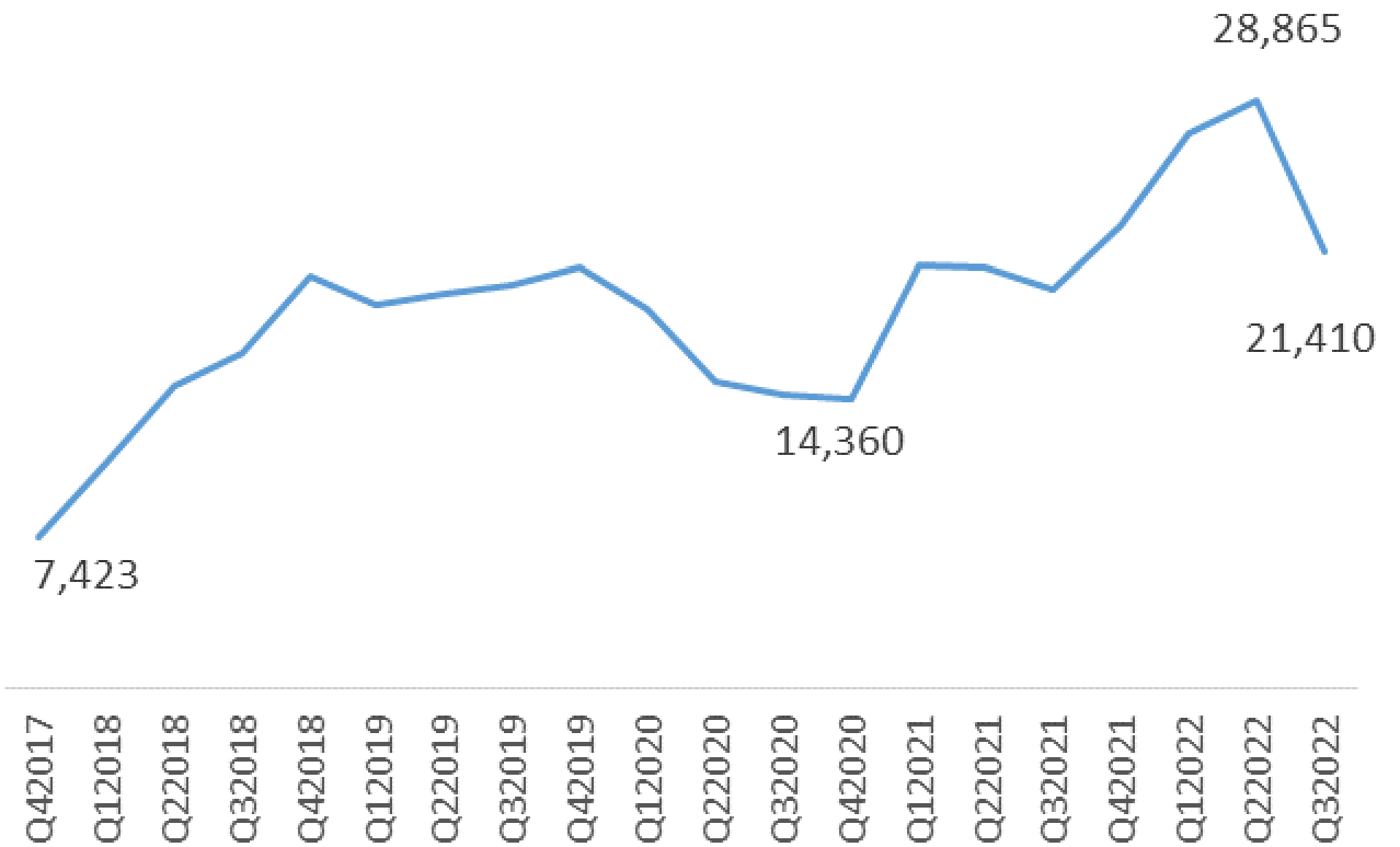
AI-related Job Postings 5-Year Quarterly Trends

Greater Sacramento and CA, Q42017 – Q32022

Greater Sacramento



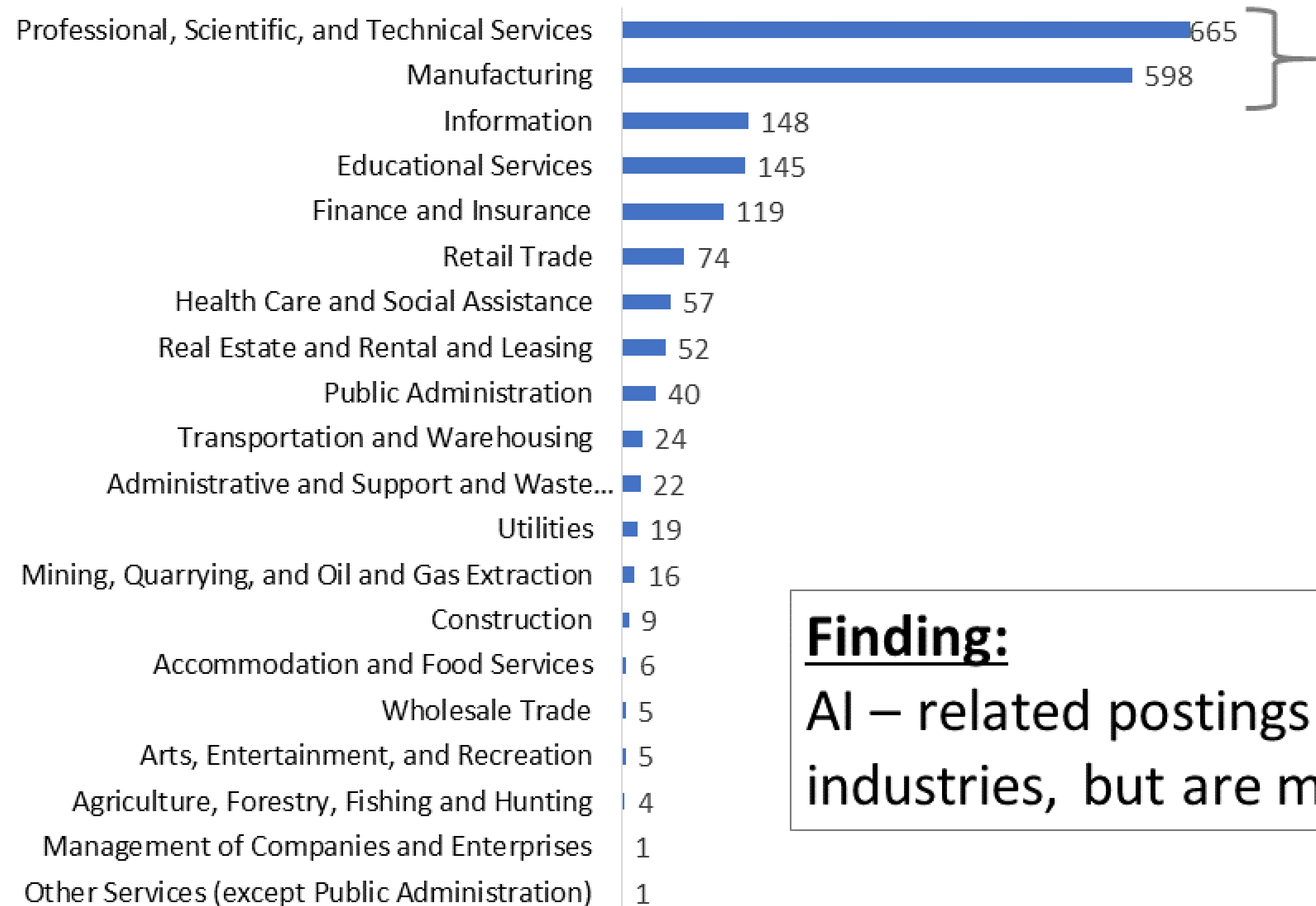
California



AI – workforce jobs postings findings SECTORS AND INDUSTRIES CONTEXT

AI-related job postings by **industry sector**, Greater Sacramento region

Nov. 2021 - Oct. 2022 (n=2,505 job postings)

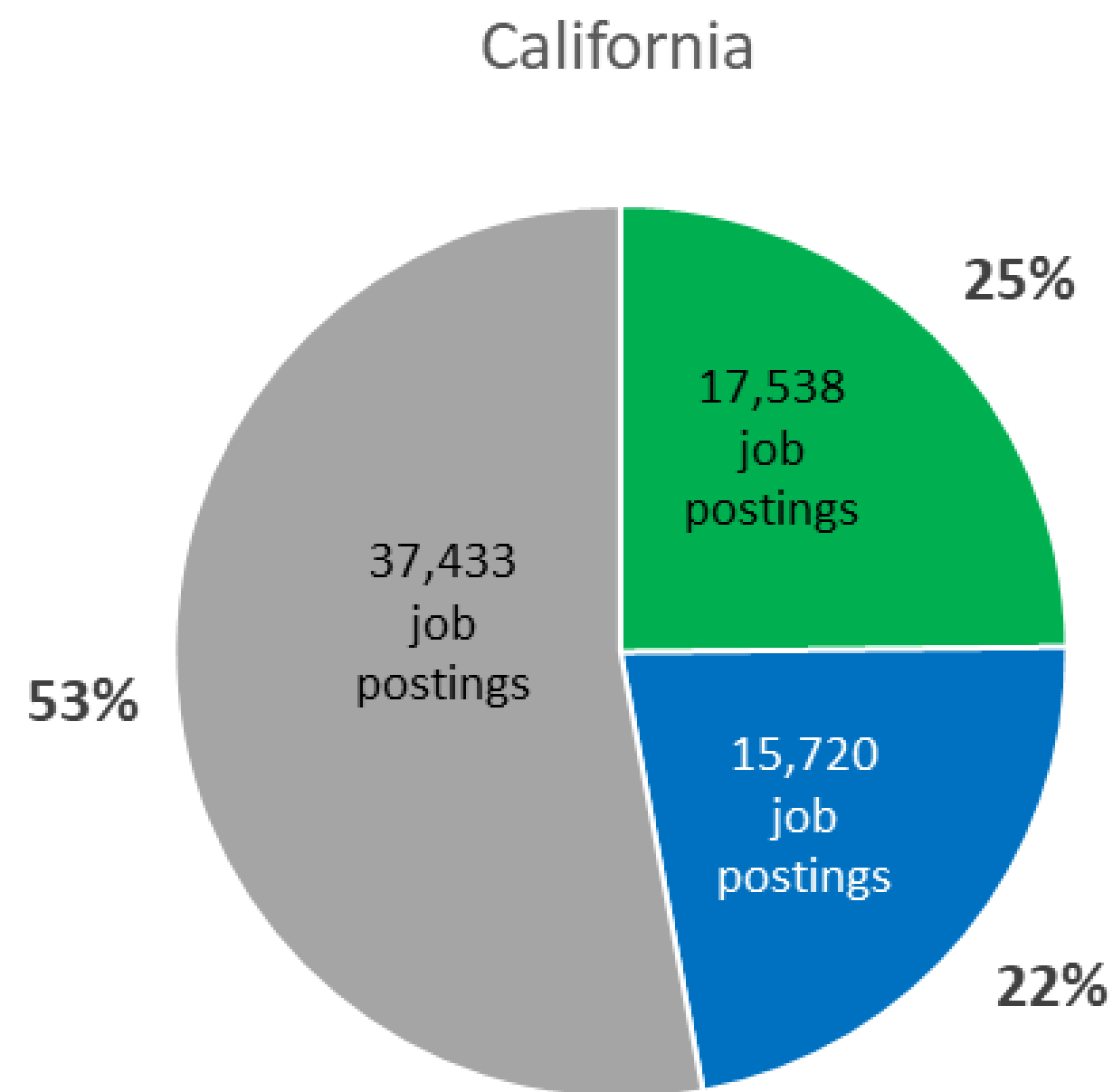
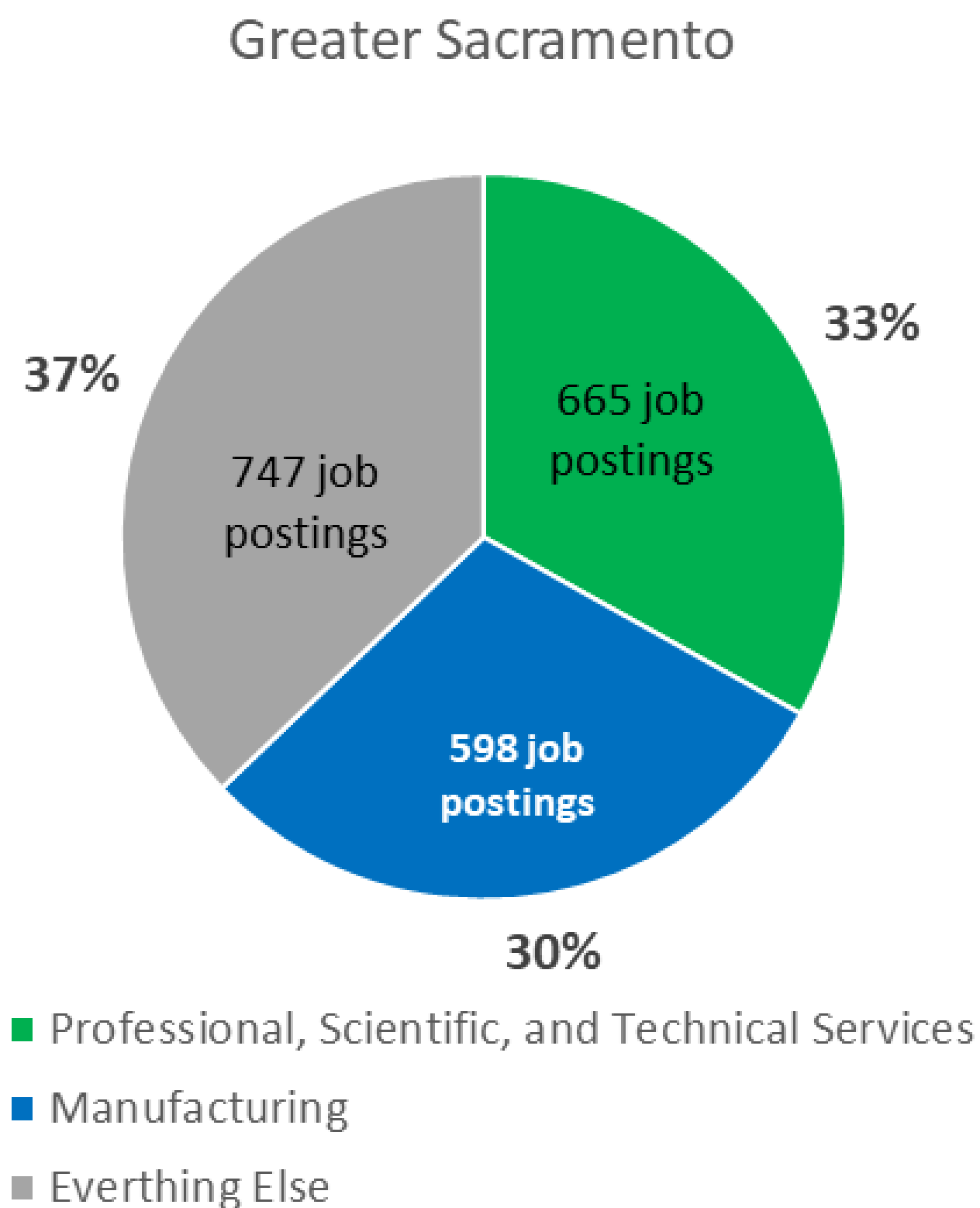


Detailed “AI middle skill profiles” at end of preso

Finding:

AI – related postings cut across a range of industries, but are most prominent in a few

AI-related job postings sector breakdown, % of total*, Greater Sacramento region
Nov. 2021 - Oct. 2022 (n=2,020 job postings)

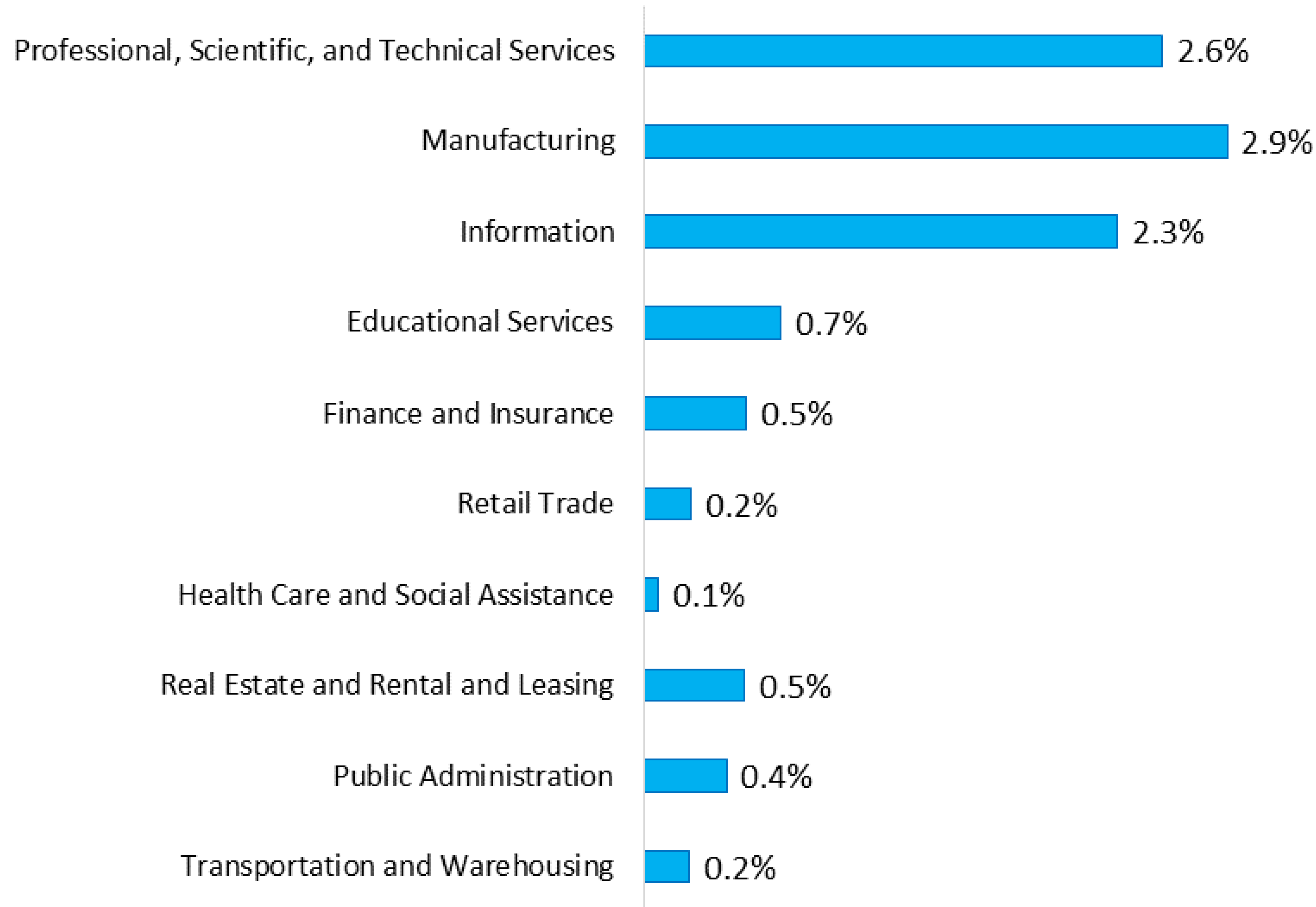


Source: Burning Glass, Labor Insight

Note: This analysis only includes job postings identified with an industry. N (Greater Sacramento)=2,020 job posting, N(California)=70,691 job postings

AI-related Job Postings, % of all jobs postings in top 10 industry sectors

Greater Sacramento region, Nov. 2021 – Oct. 2022



..... Pause for reset
Measured activities still a
small share of total, <3%

AI-related job postings by **detailed industry**, Greater Sacramento region

Nov. 2021 - Oct. 2022 (n=2,505 job postings)

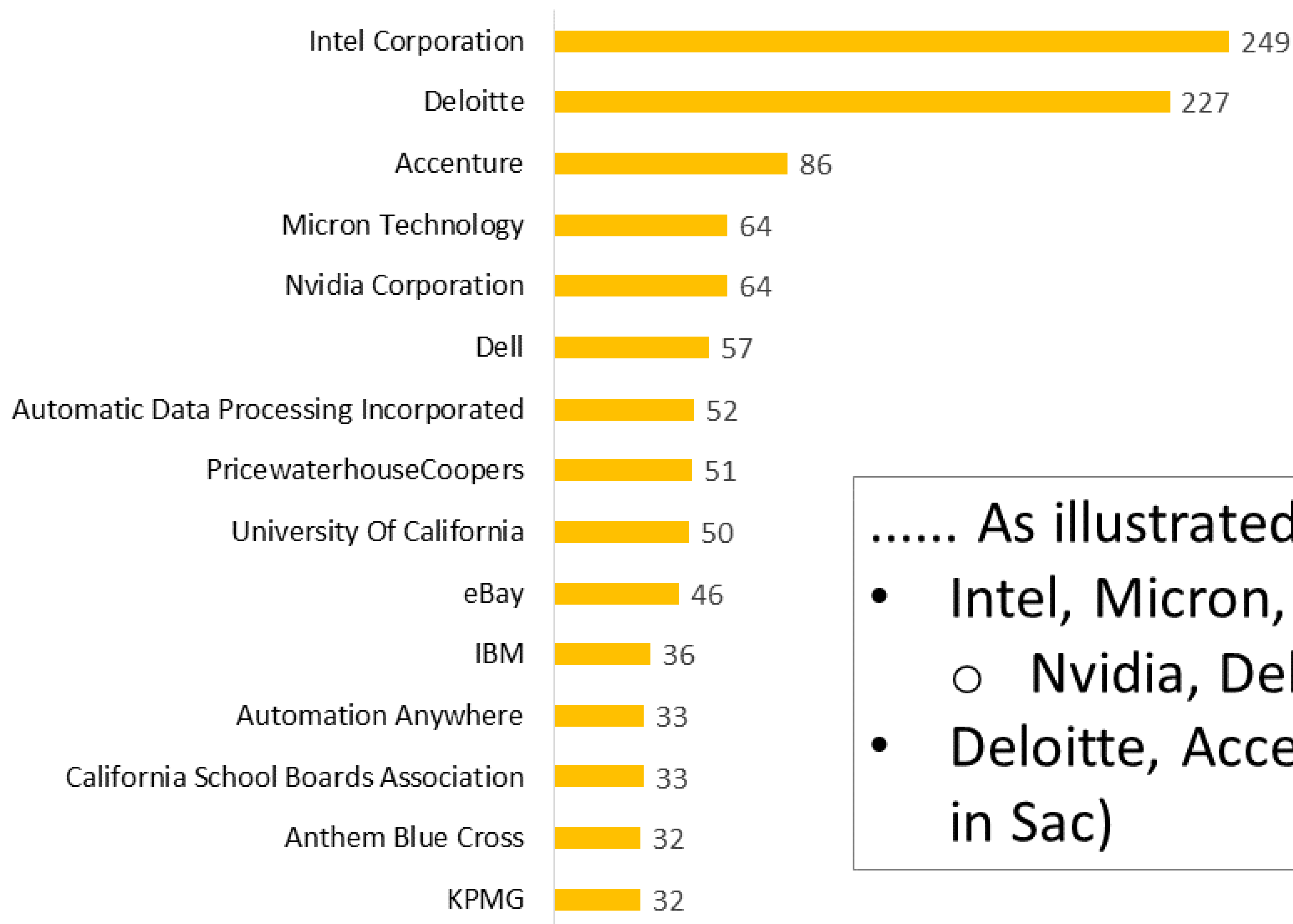


Note:

Detail highlights AI-related postings in industries related to electronics manufacturing, technical, information, business and management services

AI-related job postings by **employer**, Greater Sacramento region

Nov. 2021 - Oct. 2022 (n=2,505 job postings)



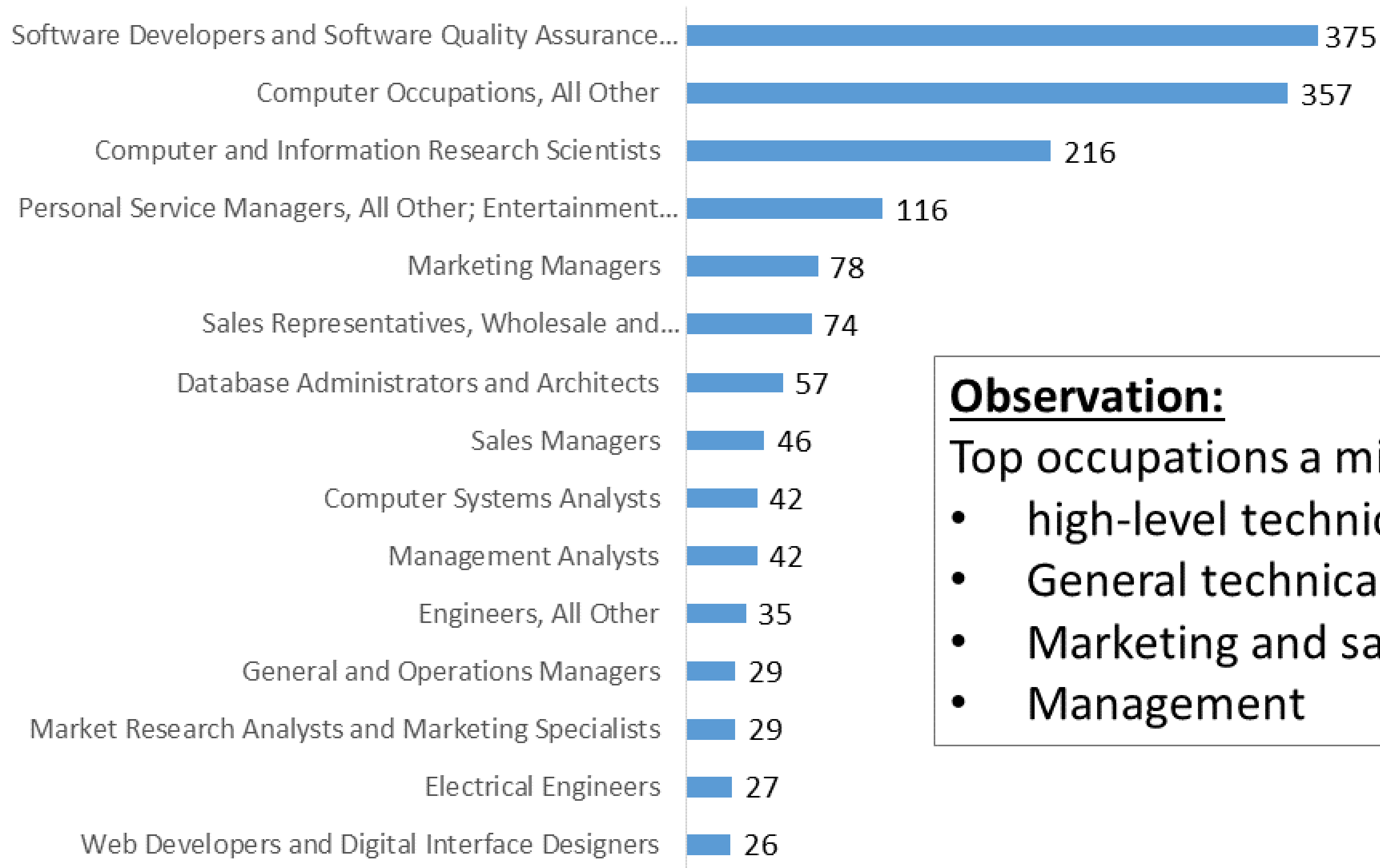
..... As illustrated by these top employers –

- Intel, Micron, IBM (in Sac)
 - Nvidia, Dell (not in Sac)
- Deloitte, Accenture, PwC, KPMG (offices in Sac)

AI – workforce jobs postings findings OCCUPATION AND SKILLS CONTEXT

Top AI-related **occupations**, Greater Sacramento region

Nov. 2021-Oct. 2022 (n=2,505 job postings)

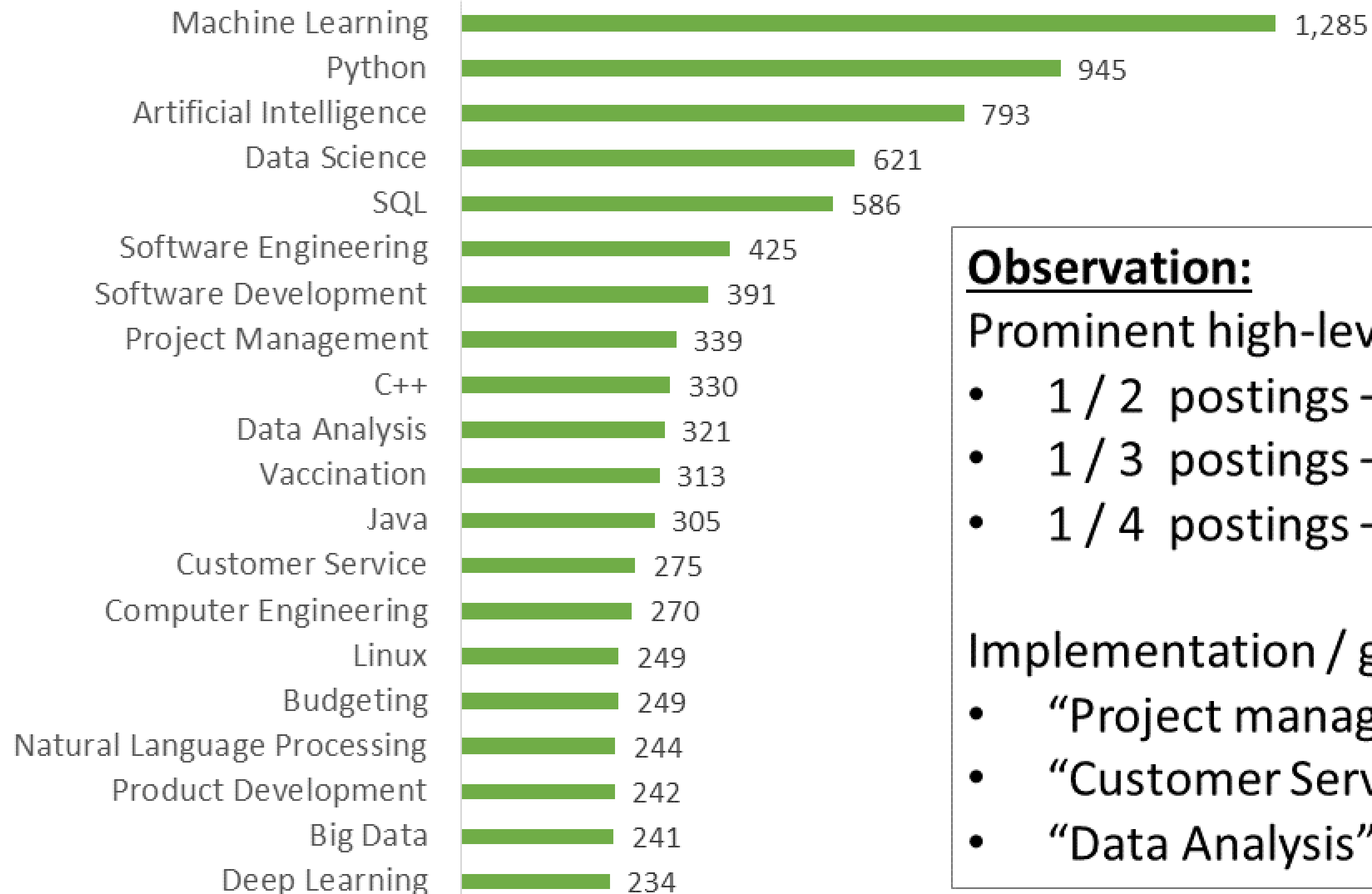


Observation:

Top occupations a mix of-

- high-level technical engineering / science
- General technical / computer / database
- Marketing and sales
- Management

Top AI-related **skills**, Greater Sacramento region Nov. 2021-Oct. 2022 (n=2,505 job postings)



Observation:

Prominent high-level technical -

- 1 / 2 postings – “machine learning”
- 1 / 3 postings – “Python”
- 1 / 4 postings – “Data Science”

Implementation / generalist -

- “Project management”
- “Customer Service”
- “Data Analysis”

Top AI-related occupations and skills by top industry sectors

Greater Sacramento region Nov. 2021-Oct. 2022 (n=2,505 job postings)

Professional, Scientific, and Technical Services (n=665 job postings)	
Top Occupations	Top Skills
Software Developers, Applications	Machine Learning
Computer and Information Research Scientists	Artificial Intelligence
Managers, All Other	Python
Computer Systems Engineers/Architects	SQL
Business Intelligence Analysts	Data Science

Manufacturing (n=598 job postings)	
Top Occupations	Top Skills
Software Developers, Applications	Machine Learning
Computer Systems Engineers/Architects	Python
Computer and Information Research Scientists	Computer Engineering
Marketing Managers	C++
Electrical Engineers	Artificial Intelligence

Educational Services (n=145 job postings)	
Top Occupations	Top Skills
Postsecondary Teachers, All Other	Machine Learning
Operations Research Analysts	Teaching
Computer Programmers	Python
Computer and Information Research Scientists	Vaccination
Astronomers	Artificial Intelligence

Information (n=148 job postings)	
Top Occupations	Top Skills
Software Developers, Applications	Python
Computer and Information Research Scientists	Machine Learning
Business Intelligence Analysts	Data Science
Computer Systems Engineers/Architects	SQL
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Software Engineering

Health Care and Social Assistance (n=57 job postings)	
Top Occupations	Top Skills
Phlebotomists	Artificial Intelligence
Medical and Health Services Managers	SQL
Manufacturing, Except Technical and Scientific Products	Machine Learning
Nurse Practitioners	Public Health and Safety
Child, Family, and School Social Workers	SAS

Above Middle Skill Occupations

SOC Code	Occupation	2021 Jobs	2016-2022 %Change	Avg. Annual Openings 2021-2026)	1-Year AI-related Job Postings	Median Hourly Earnings
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	7,937	-10.9%	768	287	\$59.49
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	7,857	43.6%	722	99	\$49.14
15-1299	Computer Occupations, All Other	4,056	83.4%	321	285	\$38.72
11-2021	Marketing Managers	1,701	33.5%	164	44	\$63.05
15-1221	Computer and Information Research Scientists	167	-13.8%	16	148	\$71.76

Middle Skill Occupations

SOC Code	Occupation	2021 Jobs	2016-2022 %Change	Avg. Annual Openings 2021-2026)	1-Year AI-related Job Postings	Median Hourly Earnings
11-1021	General and Operations Managers	18,008	15.1%	1,852	25	\$49.04
15-1232	Computer User Support Specialists	12,671	126.2%	947	16	\$47.96
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	6,453	-7.1%	710	40	\$30.21
33-3021	Detectives and Criminal Investigators	1,546	26.4%	122	15	\$48.28
15-1257	Web Developers and Digital Interface Designers	846	22.4%	68	20	\$35.54

Below Middle Skill Occupations

SOC	Description	2021 Jobs	2016-2022 %Change	Avg. Annual Openings 2021-2026)	1-Year AI-related Job Postings	Median Hourly Earnings
41-2031	Retail Salespersons	23,662	-13.1%	3,406	2	\$14.77
47-2061	Construction Laborers	12,986	18.1%	1,639	4	\$21.14
49-9071	Maintenance and Repair Workers, General	9,603	17.0%	1,081	7	\$22.46
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	5,999	-9.5%	746	6	\$28.85
53-6041	Traffic Technicians	60	399.6%	9	2	\$21.85

Top AI-related Occupations by Skill Level, Greater Sacramento

Observations / hypothesis:

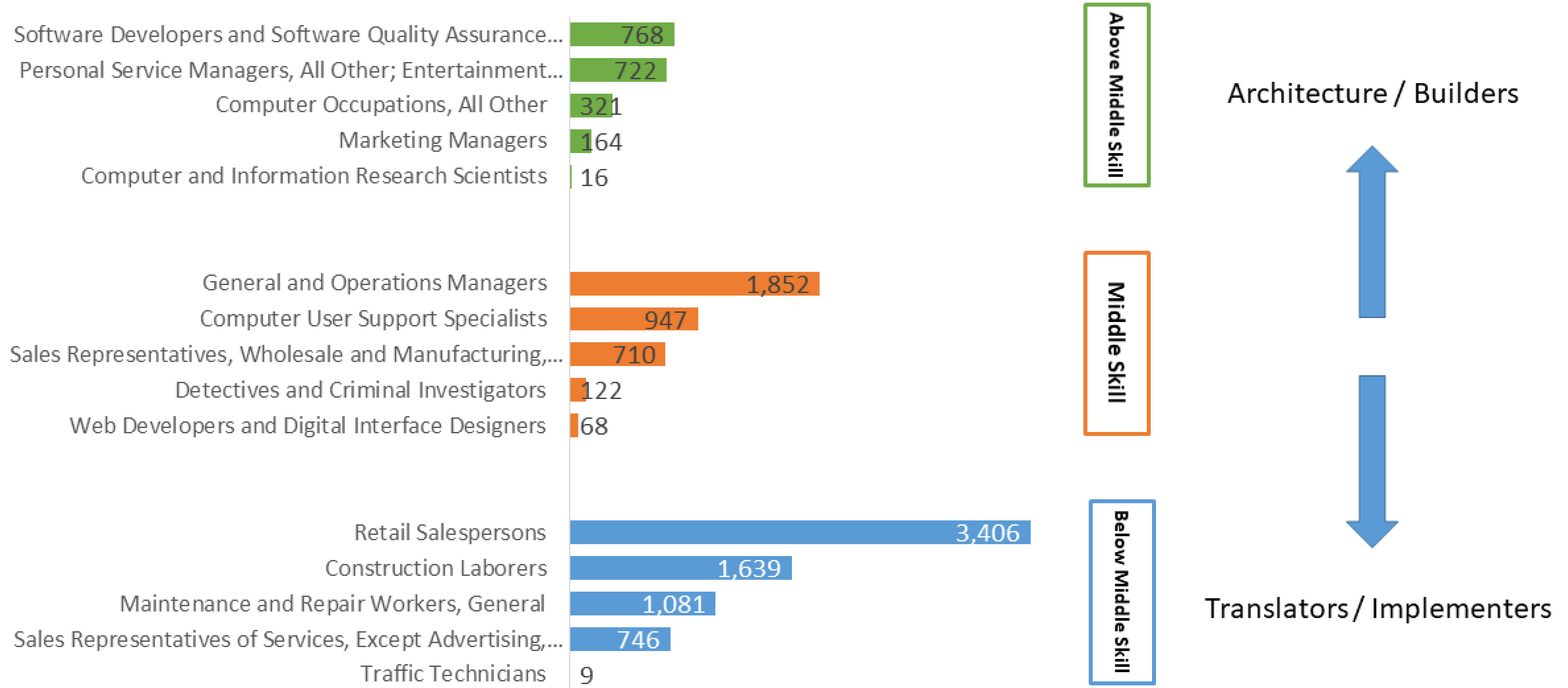
Fewer jobs postings citing AI specifically at at lower skills levels

..... But way way more related jobs

Potentially far larger “AI-Adjacent” or “Implementation” –type skills

>> using and producing data
>> analyzing / supporting data
>> creating and implementing improvements

Top Occupations' Average Annual Openings Greater Sacramento, 2021-2026



**AI - MIDDLE SKILL “MINI-PROFILES” –
titles, skills, employers**

In top AI industry sectors

- **Professional, scientific, technical consulting**
- **Manufacturing**

Professional, Scientific, and Technical Services AI-related Middle Skill Jobs Greater Sacramento, Nov. 2021 – Oct. 2022 (N=123 Job Postings)

Top Employers	Top Job Title	Top Skill Requirement
<ul style="list-style-type: none">• Deloitte• Automatic Data Processing Incorporated• Accenture• IBM• PricewaterhouseCoopers• KPMG• SAIC• Intelliswift Software• Zoox Inc.• XPO Logistics	<ul style="list-style-type: none">• Account Executive• Application Support Manager• Cdp Operations Manager, Experience Management• Data Strategy & Technology Specialist - Advisory Data Organization• Epic Telehealth Analyst• Health Industries R&R Data & Technician Manager• Hybrid Account Executive• Realtime Interaction Marketing Platform Specialist, Experience Management• Sales Executive• Strategic Account Executive• Technical Customer Support• Technical/Deskside Support	<ul style="list-style-type: none">• Machine Learning• Artificial Intelligence• Customer Service• Python• Project Management• SQL• Data Management• Data Science• Microsoft Visio• Sales• Oracle• Business Process• Budgeting• Good Clinical Practices (GCP)• Java• Vaccination• Internet of Things (IoT)• JavaScript• Process Design• Salesforce

Manufacturing AI-related Middle Skill Jobs

Greater Sacramento, Nov. 2021 – Oct. 2022 (N=48 Job Postings)

Top Employers

- Micron Technology
- Intel Corporation
- Nvidia Corporation
- Microsemi Corporation
- Microchip Technology Incorporated
- Medtronic
- General Motors
- Dell
- Vsp Global
- Northrop Grumman

Top Job Title

- Engineer I - Design
- IT Asset Administrator
- Sales Representative II, Spine
- Account Executive, Direct Sales/Public Sector
- Accounts Payable Specialist
- Associate Director, Digital Capability Management
- Associate Fellow - Cxl/Soc Architect
- Authentia Cloud Platform Operations Manager
- Bench Jeweler/Watchmaker
- Cyber Sales - Territory Account Manager - Cylance

Top Skill Requirement

- Machine Learning
- Computer Engineering
- Python
- Project Management
- Vaccination
- SQL
- Business Process
- Data Science
- Artificial Intelligence
- Customer Service
- Data Analysis
- Microsoft Power BI
- SAP
- Sales
- Budgeting
- Business Development
- Business Planning
- PERL Scripting Language
- Procurement

Key takeaways and actions

Key takeaways

- >>> **AI concentrations** in technical & management services, manufacturing, education services, but **breadth across many industry sectors**
- >>> “AI – specific skills” per definition still small, focused on **high-end engineering, computer science occupations**
- >>> **Small (But growing) middle skill segment** for “AI – specific” but merits focus
- >>> Esp. as it pertains to “**AI – adjacent**” skills – data analysis, process and operational improvements (project management)
- >>> **Potential for impact** on a middle-skill and below middle-skill workforce massive for **INTEGRATION – IMPLEMENTATION – TRANSLATATION**

Key actions

- >>> Support for **STEM transfer pathways** in engineering and computer science
- >>> Use panel and industry partners to identify **key target AI middle skill occupations / job titles** that use a mix of architecture and implementation, and monitor
- >>> Similar process to also identify **“AI – adjacent” skills** (akin to “Digitalization” initiatives) and monitor these – mixture of data analysis, business operations, business development
- >>> Management literature calls out **continuous improvement (upskilling) in workforce** development, this would point to having the goal to **identify short-term, noncredit training** that can be offered direct to industry, and rapidly adjusted

Aaron Wilcher, MA, MCP
Director, COE Greater Sacramento

wilchea@losrios.edu

www.coeccc.net



➤ Industry Panel Discussion



Ethan Eldridge
Eyefinity
Solutions Architect



Alexander Le
NASA Community
College Aerospace
Scholar & Intel Data
Science Intern



Dylan Steele
Databricks
Software Engineer



Helen Wu
AppDynamics, Cisco
Product Designer



Anand Paranjpe
Microsoft
Principal Software
Engineering Manager

Industry Panel Discussion

Please provide a brief overview of your organization/business, including your role, the main services or products you provide, background on your workforce (including size or number of employees), how you recruit them, general skill levels and educational attainment, etc.

➤ Industry Panel Discussion

What specific emerging skills are your current applicants missing that you wish they had today? How do you recommend applicants learn these new skills for the future?

➤ Industry Panel Discussion

Does your organization or business consider applicants without a Bachelor's Degree, certificates/training certifications, or applicants who may have degrees in other subject matter?

If so, what can an applicant have in the skillset that will make them stand out from the rest?

Industry Panel Discussion

Do you have suggestions for how the Community Colleges can better prepare students for jobs in the industry (including new courses, programs, curriculum changes, etc.).

➤ Industry Panel Discussion

What initiatives, if any, is your organization/business implementing to increase diversity, equity, and inclusion in your workforce?

What initiatives, if any, is your organization/business implementing to mitigate algorithmic and societal AI bias when designing your AI infrastructure?

➤ Community College Spotlights



Meili Xu
Sacramento City College



Suha Al Juboori
Folsom Lake College



Buddy Spisak
Cosumnes River College



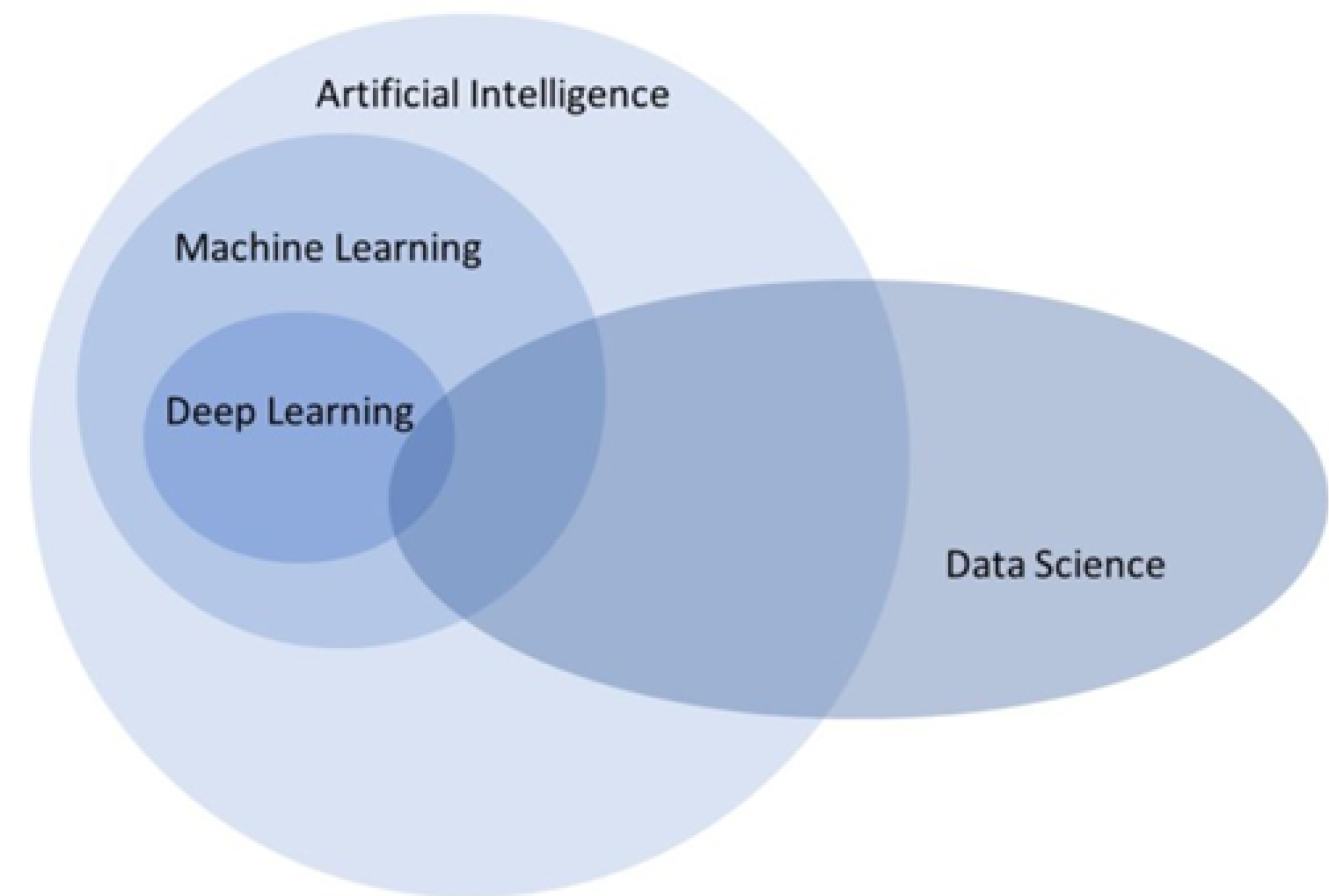
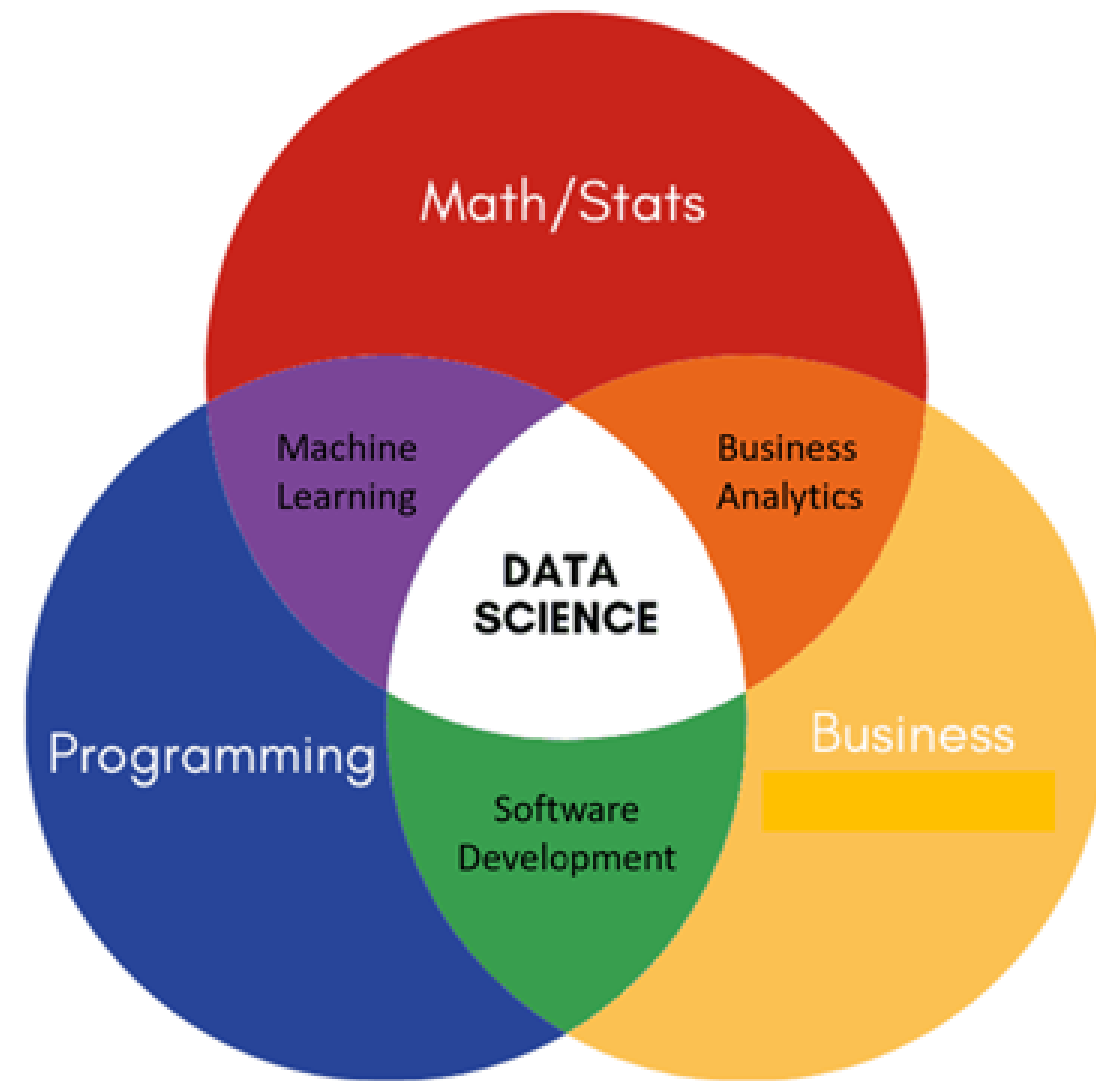
Daniel Gilbert-
Valencia
American River College

Computer Information Science

Sacramento City College

Data Science

Data scientists use analytical tools and techniques to extract meaningful insights from data.



Estimated Job Growth is 36% 2021-2031 in Data Science Fields

Pay

The median annual wage for data scientists was \$100,910 in May 2021. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$59,430, and the highest 10 percent earned more than \$167,040.

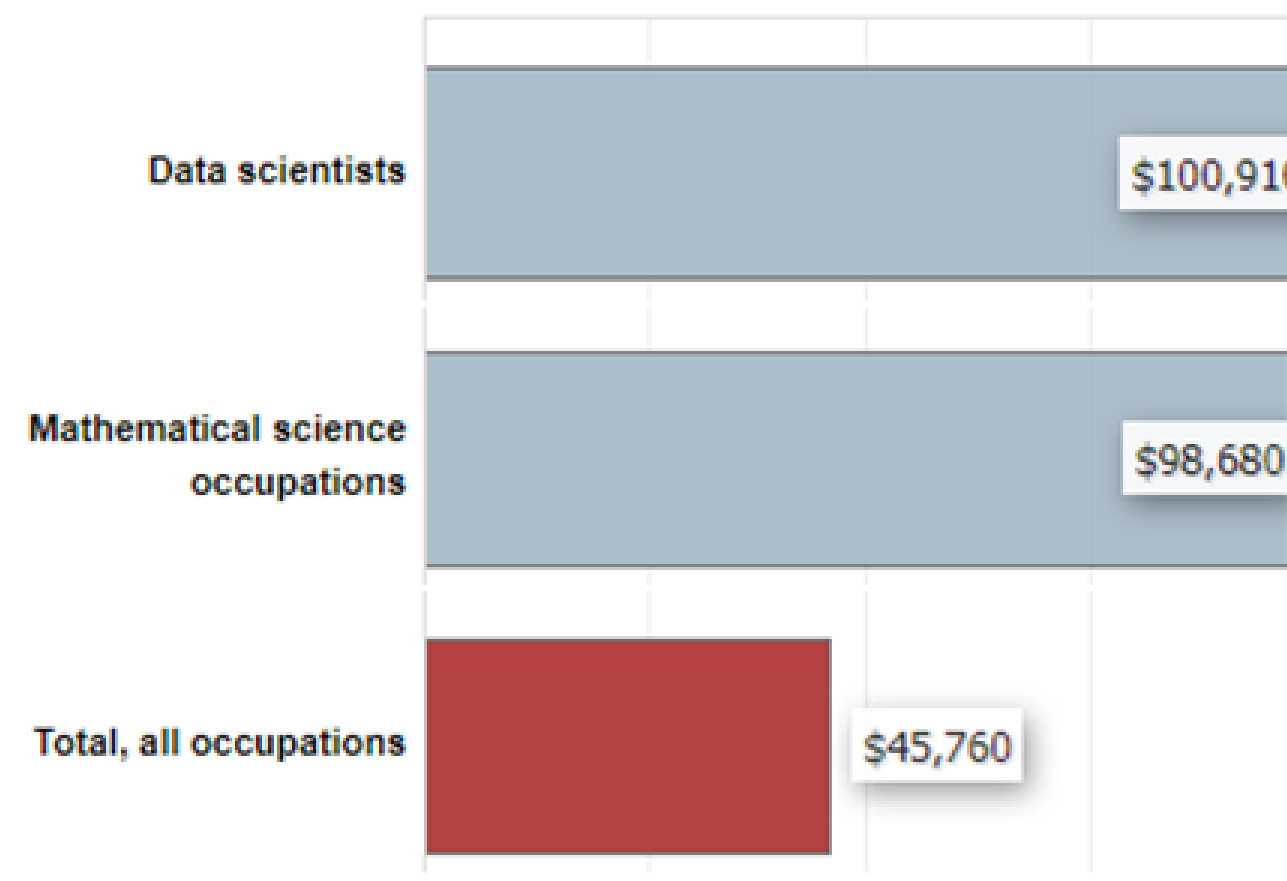
In May 2021, the median annual wages for data scientists in the top industries in which they worked were as follows:

Scientific research and development services	\$102,750
Computer systems design and related services	102,600
Management of companies and enterprises	101,000
Management, scientific, and technical consulting services	101,000
Insurance carriers and related activities	100,360

Most data scientists work full time.

Data Scientists

Median annual wages, May 2021

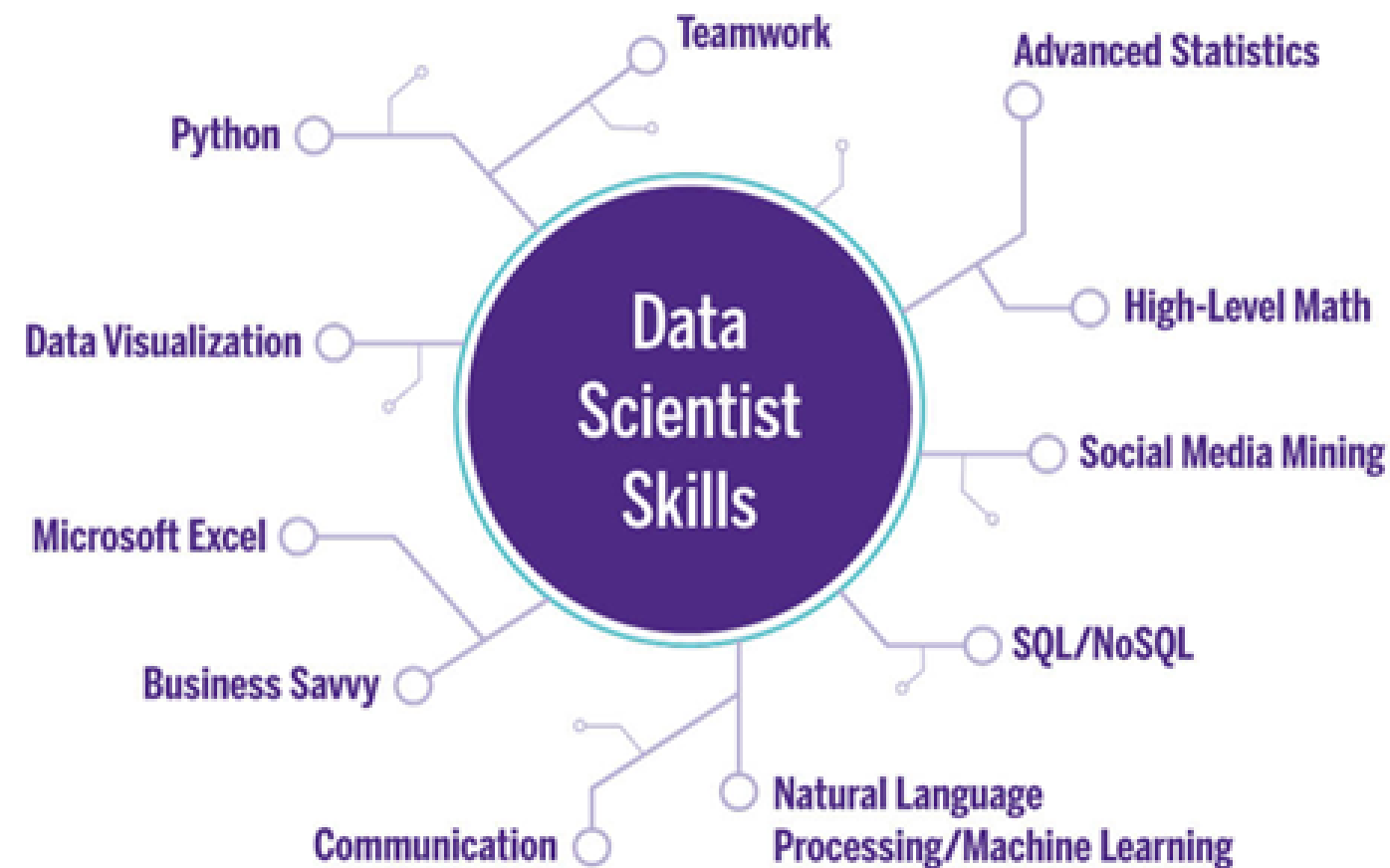


Note: All Occupations includes all occupations in the U.S. Economy.

Source: U.S. Bureau of Labor Statistics, Occupational Employment and Wage Statistics

Data Scientist Skills & Employment Statistics

11 Data Scientist Skills Employers Want to See in 2022



Quick Facts: Data Scientists	
2021 Median Pay ?	\$100,910 per year \$48.52 per hour
Typical Entry-Level Education ?	Bachelor's degree
Work Experience in a Related Occupation ?	None
On-the-job Training ?	None
Number of Jobs, 2021 ?	113,300
Job Outlook, 2021-31 ?	36% (Much faster than average)
Employment Change, 2021-31 ?	40,500

[Employment in United States by State](#) | BLS data

Data Science A. S. Degree

Program Description

This degree program is designed for students who aspire to master the essential knowledge and skills required for data storage, discovery, analysis, visualization, and application. Students will learn to derive value from data and apply data science and analytics techniques to make effective data-driven decisions.

Course List

Required Program

CISA 323 Database Management using Microsoft Access and
CISA 324 Intermediate Database Management using Access
or CISP 350 Database Programming
CISP 301 Algorithm Design and Implementation
CISP 357 Introduction to Data Science
CISP 358 Data Analysis
CISP 359 Data Modeling and Machine Learning

Total Units: 19 - 20

Industry Consensus for A.S. Data Science

- Can help prepare students for good paying jobs in Computer Science
- Program available 100% online
 - Data Science, A. S. Degree, pending catalog approval
 - Data Science Certificate (currently in our catalog)

CTE programs require industry consensus for this degree.

Do the industry leaders here today support this new A.S. Degree?

- Yes/No

CIS Department Faculty Contact

Data Science, A.S. Degree & Certificate
Professor Xu, Program Coordinator

xum@scc.losrios.edu

M. Little, CIS Department Chair

littlem@scc.losrios.edu

CIS Department Online

Please visit our website to review schedule information, programs, courses. Printable program maps will be available soon.

[CIS Department at Sacramento City College](#)



COMPUTER INFORMATION SCIENCE



FOLSOM LAKE COLLEGE
EL DORADO CENTER | RANCHO CORDOVA CENTER

AI & ML PROGRAM





The Program's Goal

- ⬡ Bringing AI and ML to Beginner Higher Education.

Intel Expands Its *AI for Workforce Program* to Include Folsom Lake College

Intel began partnering with Folsom Lake College to expand its Artificial Intelligence (AI) for Workforce Program. This national program expansion, which includes a total of 18 community colleges across 11 states, will train tens of thousands of students, putting them on track for careers in high-tech, healthcare, automotive, industrial, and aerospace fields.



What do we offer?

We offer 6 brand new courses for first and second year college students in the subject of Artificial Intelligence and Machine Learning.

These courses can go towards:

- Certificate of Artificial Intelligence and Machine Learning (Approved).
- Associate Degree of Artificial Intelligence and Machine Learning (In process)

What content is provided?

- ⬡ CISC 300 Introduction to AI and Data Science
- ⬡ CISC 307 Introduction to Machine Learning
- ⬡ CISC 330 Data Analytics with Tableau
- ⬡ CISC 410 Natural Language Processing
- ⬡ Computer Vision
- ⬡ Artificial Intelligence Capstone Project

Certificate of Artificial Intelligence and Machine Learning

This certificate includes:

- ⬡ CISC 300 Introduction to AI and Data Science (3 units)
- ⬡ CISP 407 Programming with Python (4 units)
- ⬡ CISC 307 Introduction to Machine Learning (3 units)
- ⬡ CISC 410 Natural Language Processing (3 units)
- ⬡ CISC 412 Computer Vision (3 units)

Total = 16 units

What is in CISD 300 Intro to AI & Data Science?

- AI Terminology
- Data
- Natural Language Processing
- Computer Vision
- Emerging Technologies
- AI Ethics

What is in CISC 307 Intro to Machine Learning?

- ML & DL
- Mathematics behind AI
- Data Visualization
- Linear Regression
- K-Means Clustering
- Intro to Neural Networks
- And more.....

What is in CISC 410 Natural Language Processing?

- Handling Text Data
- Text Processing
- Text Vectorization
- N-Gram Models
- Recurrent Neural Networks
- Transformers
- And more.....

What is in CISC 412 Computer Vision?

- Handling Image Data
- Image Processing
- Edge Detection and Contours
- Convolutional Neural Networks
- OpenCV
- Modern CV Technologies
- And more.....

What is in CISD 415 Artificial Intelligence Capstone Project?

- ⬡ How to use Docker
- ⬡ How to use Github
- ⬡ How to use Linux
- ⬡ And more

Includes a semester long project with an industry or academic sponsor.

Thank you for Listening!

If you have any further questions about the AI & ML Program, feel free to contact:

Dr. Suha Aljuboory
Computer Information Science
Folsom Lake College
aljubos@flc.losrios.edu



Collaborative Online Cybersecurity Certificate Program



Verne Farley, Faculty,
Fresno City College

Buddy Spisak, Faculty,
Cosumnes River College



Fresno City College



COSUMNES
RIVER COLLEGE



Cybersecurity Program

- Courses – Short term (8-week)
- 100% Online
- Zero Textbook Cost (ZTC)
- Program completion in a year

**PREPARE FOR AN ENTRY LEVEL CAREER
IN CYBERSECURITY**

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CyberSecurity Certificate*

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- Zero-textbook cost

Learn more at cvc.edu/CyberSecurity



California Virtual Campus –
Online Education Initiative

Buddy Spisak | (916) 691-7062 | spisakj@crc.losrios.edu



Course Sequence by College: Cohort #9

Cohort 9 schedule with FCC starting Summer 2022 – 8/9 Course Certificate

Fresno City College (FCC)

ITIS 120/CIT 48A IT+ Fundamentals

ITIS 110/CIT 48B A+ and Security Principles

May 23, 2022 – July 15, 2022

Cosumnes River College (CRC)

ITIS 150/CISN 304 Networking Technologies

ITIS 155/CISN 300 Network Systems Administration

August 20, 2022 – October 12, 2022

Fresno City College (FCC)

ITIS 151/CIT 49 Switching, Routing, and Wireless Essentials

ITIS 160/CIT 58C Security+ Fundamentals

October 17, 2022 – December 9, 2022

FCC Winter Break: December 12th – January 2

Cosumnes River College (CRC)

ITIS 166/CISS 316 CCNA Cybersecurity

ITIS 167/CISS 327 CCNA Security: Implementing Network Security

January 14, 2023 – March 10, 2023

CRC Spring Recess, March 13th – March 19th

Cosumnes River College (CRC) 9th Course

ITIS 152/CISN 342 CCNA: Enterprise Networking, Security, and Automation

March 20, 2023 – May 11, 2023



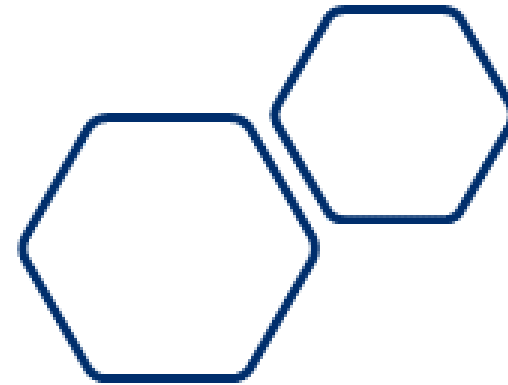
Careers in Cybersecurity

Careers in Cybersecurity (<https://www.cyberseek.org/pathway.html>)

Job Title	Median Earnings*
Cybersecurity Specialist/Technician	\$106,810 per year with 9,795 job openings
Cybersecurity Analyst	\$107,500 with 33,305 job openings
IT Auditor	\$110,000 per year with 8,614 job openings
Incident & Intrusion Analyst/Responder	\$86,428 per year with 9,897 job openings
Network Penetration & Vulnerability Tester	\$101,662 per year with 27,637 job openings

Source from CyberSeek dated 11/4/2022

Resources



Resource Materials:

Cisco Networking Academy (CNA)
<https://www.netacad.com/>

RedHat Academy Curriculum

Cybrary

Labs:

Some labs are done through NDG Netlab+ environment at Coastline Community College

Lectures:

Faculty will make of Zoom to give their lectures and will be recorded for later viewing.



Support

- Student Contact Information
- Home College Processing
- CCC Apply and Registration

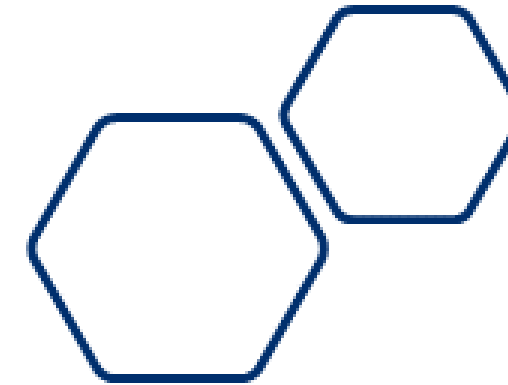


Benefits

- Cisco Trained Faculty
- Zero Cost Textbooks
- Online instruction
- Equity Barriers for Students (program availability)
- Policy testing
- Guided Pathways
- Strong Workforce



Certifications



Prepares students:

ITIS 110 - CompTIA A+, Cisco IT Essentials

ITIS 120 - CompTIA IT Fundamentals+

ITIS 150 - CompTIA Network+

ITIS 155 - Preliminary Exam in Red Hat System Administration I

ITIS 160 - CompTIA Security+

ITIS 166 - Cisco CyberOps Associate

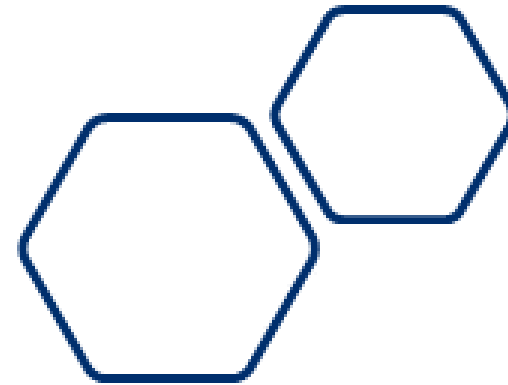
Courses students need to prepare for the Cisco CCNA exam:

ITIS 150 - Computer Network Fundamentals

ITIS 151 - Switching, Routing, and Wireless Essentials

ITIS 152 - Network Security and Automation

Contact



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New program: Cybersecurity and Information Security Administration

Nov 17, 2022

Overview

- New program: Cybersecurity and Information Security Administration
- Part of Cybersecurity Apprenticeship Program
- Certificate is determined by the Joint Apprenticeship Committee (JAC) that includes various California state departments, International Business Machines (IBM), unions and human resources.

Course List

CISN 140 CISCO Networking Academy (CCNA)™: Networking Fundamentals (3)
CISN 300 Network Systems Administration (3)
CISS 310 Network Security Fundamentals (3)
CISS 315 Ethical Hacking (3)
CISS 316 Cisco Networking Academy™: CCNA Cybersecurity Operations (3)
CISS 321 Scripting for Cyber Security (3)
CISS 330 Implementing Internet Security and Firewalls (3)
CISS 341 Implementing Windows Operating System Security (3)
or CISS 342 Implementing Linux Operating System Security (3)
CISS 350 Disaster Recovery (3)
CISS 360 Computer Forensics and Investigation (3)
APPRT 298 Work Experience in Apprenticeable (Occupation) (0.5 – 4)
Total Units: 30.5 - 34

Key Dates and Curriculum Review

Cybersecurity Apprenticeship – Cohort 1 Updated Timeline & Key Dates (10.13.22)

WE ARE HERE

Date	Notes	Courses
September 20, 2021	Training & Development (T&D) Assignment Begins	
April 1, 2022	Request 1st Performance Evaluations	
August 20, 2022	Fall 2022 – Full Fall Semester Term Begins	MGMT 300 Introduction to Leadership in Action (Full Term)
August 20, 2022	Fall 2022 – First 8 Week Term Begins	CISS 330 Implementing Internet Security and Firewalls
October 13, 2022	Fall 2022 - Second 8 Week Term Begins	CISS 341 Implementing Windows Operating System Security
November 1, 2022	National Apprenticeship Week (NAW)	
November 23-27, 2022	Thanksgiving Recess	
December 13-17, 2022	Fall Semester – Final Exams Week	
December 17, 2022	End of 2022 Fall Semester	
December 17, 2022 - January 13, 2023	Winter Recess (No Friday Sessions 12/18/2022 - 1/14/2023)	
January 14, 2023	Spring 2023 - First 8 Week Term Begins	CISS 350 Disaster Recovery
February 1, 2023	Request 2nd Performance Evaluations (Due 2/28/23)	
March 20, 2023	Spring 2023 - Second 8 Week Term Begins	CISS 360 Computer Forensics and Investigation
April 11-17, 2023	Spring Recess	
May 12-18, 2023	Spring Semester – Final Exams Week	
May 17, 2023	End of 2023 Spring Semester	
June 6, 2023	Summer 2023 Term Begins	CISS 316 Cisco Networking Academy™: CCNA Cybersecurity Operations
July 29, 2023	Summer 2023 Term Ends	
September 19, 2023	Two year T&D Concludes – Graduation Scheduled!	

We're here to help!

For fastest response, please use:
apprenticeships@calhr.ca.gov

Primary Contact/Coordinator for Cybersecurity Cohort 1 Managers
Felicia Borges: **felicia.borges@calhr.ca.gov**

Other members of the Cybersecurity JAC
are also available to help you.



➤ Thank you for joining!

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