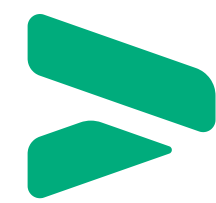


# Information and Communications Technologies Regional Industry Advisory


## Artificial Intelligence in the Workplace



November 7th, 2024



# 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

# Agenda

1:00 PM: Welcome, Introductions, and Background on AI

1:15 PM: Top AI-Related Roles in the Public Sector: Report

1:35 PM: Labor Market and Trend Analysis

1:55 PM: Panel Discussion

2:45 PM: Community College Program Highlights

2:50 PM: Conclusion



# Welcome & Introduction

## **Caitlin Blockus**

Valley Vision

21st Century Workforce Project Manager

## **Liz Kilkenny**

Valley Vision

21st Century Workforce Project Coordinator





# Thank you

to all of our supporters



LOS RIOS  
COMMUNITY  
COLLEGE DISTRICT



California  
Community  
Colleges



C·O·E  
CENTERS OF EXCELLENCE  
Inform Connect Advance



SETA



Golden Sierra

# Welcome & Introduction

## **Alena Anberg**

North Far North Regional Collaborative,  
Director of Employer Partnerships, Business and  
Technology Sectors

## **Dr. Caleb L. Fowler Jr.**

Folsom Lake College,  
Professor of Computer Information Science



# Large Language Models

From Tools to Teammates



# Dr. Caleb L. Fowler, Jr.

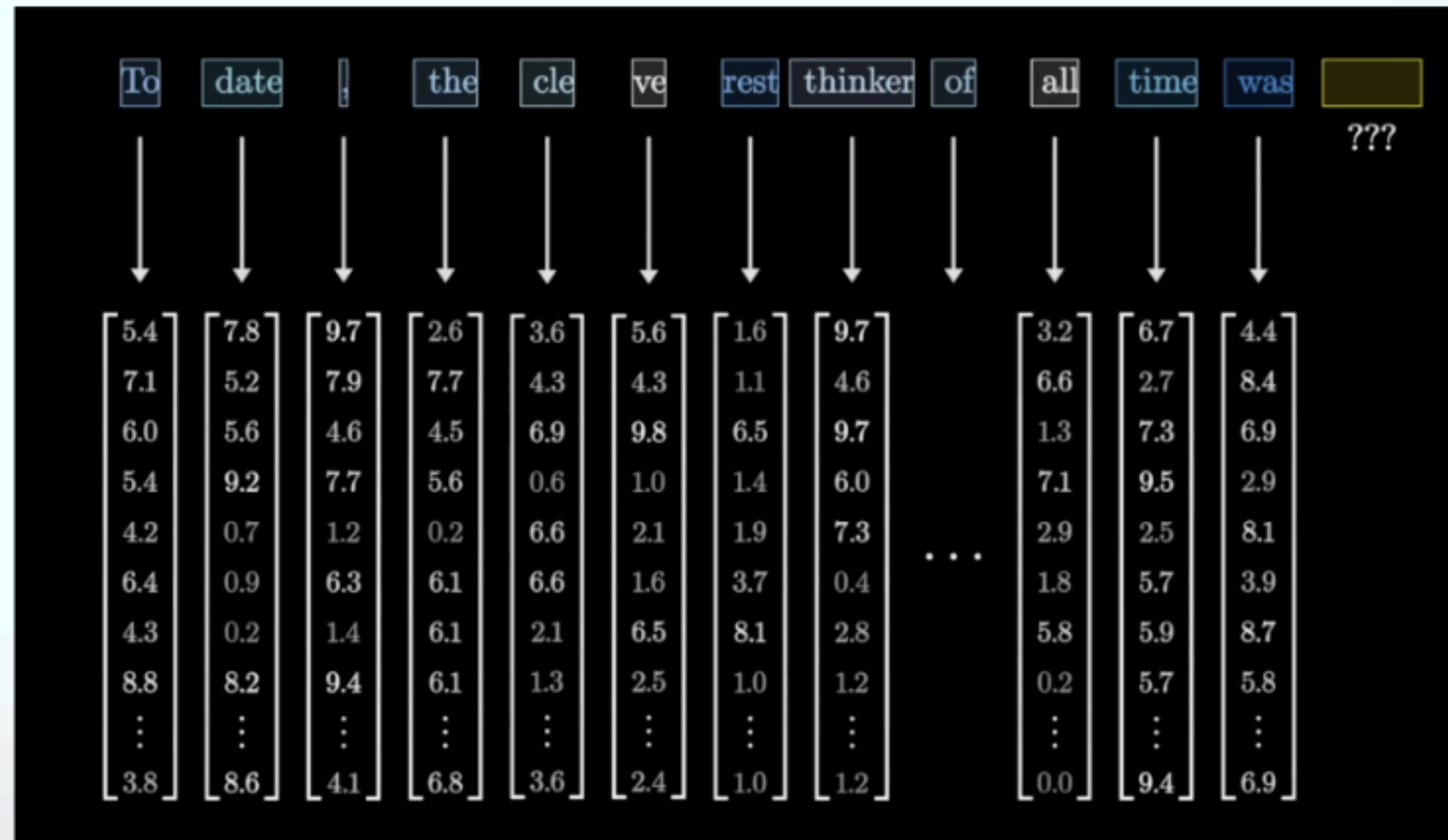
Chair, Computer Information Science Department FLC

- Doctorate, Dec 2023, UC Davis, CANDEL
  - Dissertation used machine learning to create knowledge from texts.
- Tenured Faculty 11+ years
- 30+ years teaching college
- My area of interest is using AI to augment human cognitive skills.

# LLMs in a nutshell

## Skills we need

- It looks like a spreadsheet ...
- LLMs recognize word patterns and predict the next word in the sequence.
- No agency, thought, reflection.
- A collection of numbers indicating the probability that the corresponding word is next.
- These numbers are created by training the LLM with documents.





# LLMs in a nutshell

## Skills we need

- We know the LLMs are trained with vast amounts of documents ...
- Documents written by humans, some good, most average, and some awful ...
- This means a response to a query will most likely be an average response ...





# LLMs can be used in two ways

- Tool Automation
- Abstraction

# Tool Automation

How LLMs can be used.

- Writing letters, emails
- Simple analysis like financial ratio analysis
- Doing pre-ChatGTP homework

Average will probably be good enough for these tasks.

Not a competitive advantage- your competition will be doing this as well.

# Abstraction

How LLMs can be used.

- Simulated Boss/Student
- Change your lens
- Interrogate a collection of documents.
- Post ChatGPT homework.

The average will probably be acceptable because the LLM is the starting point.

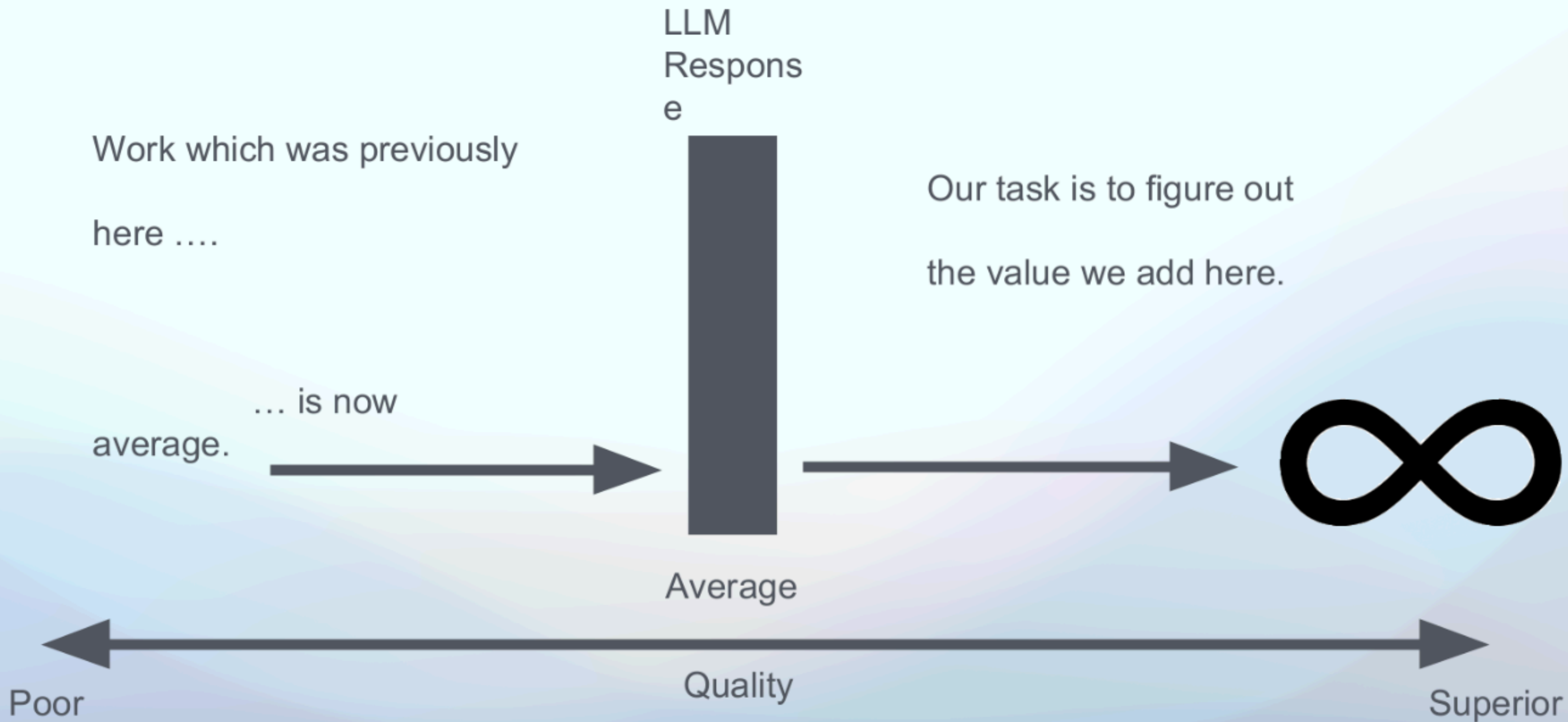
The LLM facilitates **new** questions.

You provide the answers.

Competitive advantage- New way of operating.



# in Summary



# How can we add value?

## A new Golden Age for the Humanities?

- Critical Thinking
  - Scrutinize information.
  - Question assumptions.
  - Ensure that your conclusions are supported by solid evidence.
  - Observe and analyze.
  - Ask the right questions.
  - **\*\*Fact-Checking\*\***
- Creativity - understanding the art of the possible.
- Planning
- Interacting with Others
- Problem-Solving
- Collaboration - sharing the stuff that works.

# Top AI-Related Roles in the Public Sector

**James Regan**

California Government Operations Agency,  
Deputy Secretary of Workforce Development





# Building a GenAI-Ready State Workforce

James Regan

Deputy Secretary, Workforce Development  
California Government Operations Agency

## How do we...

- Support safe, secure, and responsible implementation of GenAI.
- Utilize GenAI tools to create equitable outcomes.
- *Prepare the state's workforce for the next generation of skills needed to thrive in a GenAI economy.*

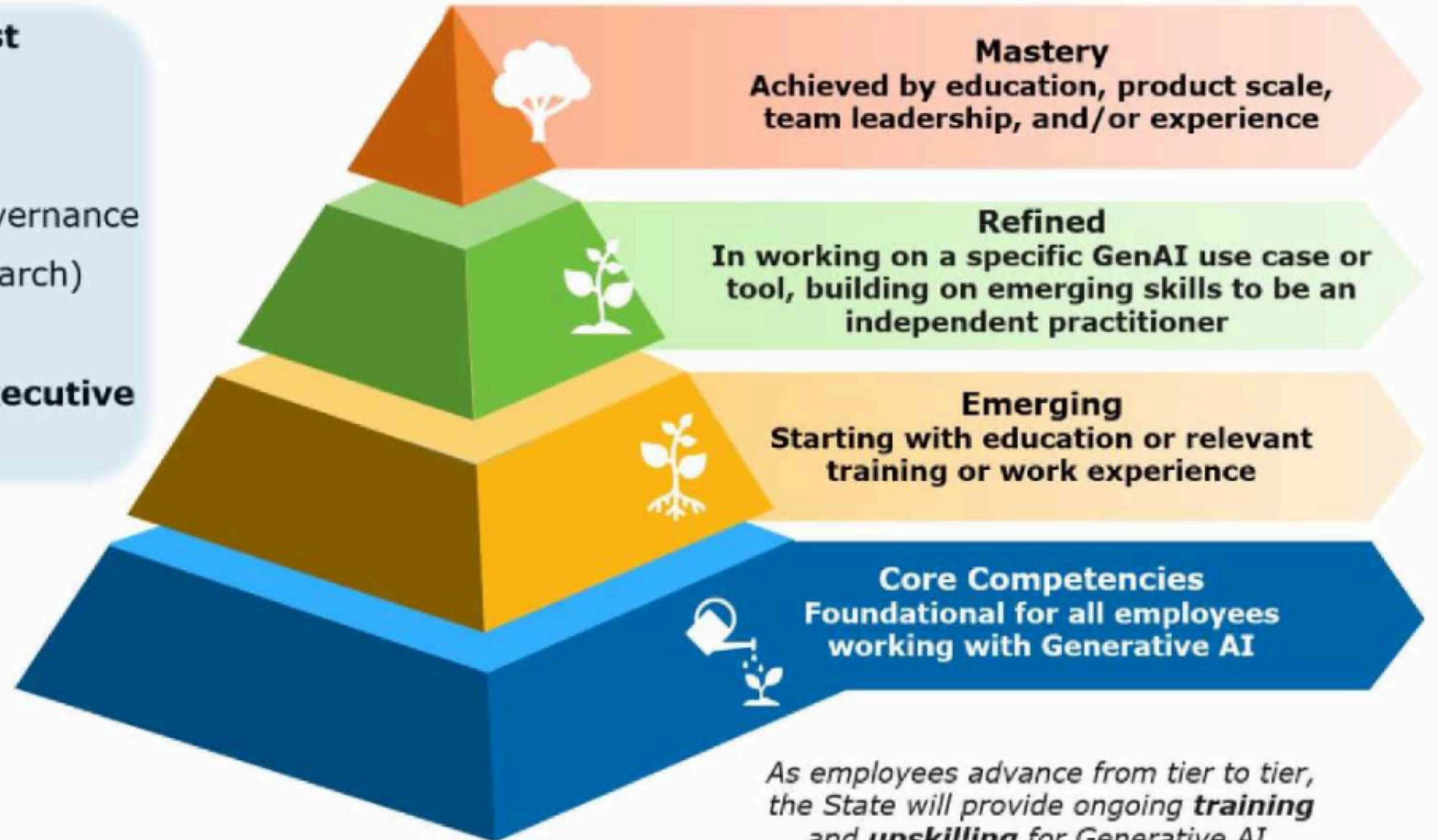


# Top Roles for GenAI

## List of Top GenAI Roles

- **GenAI Analyst / Specialist**
- **Data Analyst**
- **GenAI User Researcher**
- **GenAI Program Lead** (Governance | Compliance | Policy | Research)
- **Engineer**
- **GenAI Equity Officer / Executive**
- **Data Scientist**

## Skills Matrix



*As employees advance from tier to tier, the State will provide ongoing **training** and **upskilling** for Generative AI*

# Example: Data Analyst

Data Analyst	Knowledge	Skills
<b>Emerging</b>	<ul style="list-style-type: none"><li>• Macros, data manipulation and formulas, pivot tables...</li><li>• Tableau/PowerBI dashboards</li></ul>	<ul style="list-style-type: none"><li>• Querying databases in one programming language (Python, Java, JavaScript...)</li><li>• Filtering data</li></ul>
<b>Refined</b>	<ul style="list-style-type: none"><li>• Degree or relevant work experience</li><li>• At least one programming language</li><li>• Statistical methods</li><li>• Understanding data quality impacts to GenAI systems</li></ul>	<ul style="list-style-type: none"><li>• Product mindset</li><li>• Prompting data visualization</li><li>• Bias detection</li><li>• Generating data from unstructured content using GenAI</li></ul>



# Foundations of GenAI Learning Pathway



	*Completed Staff Work	*Critical Thinking Tools	Data Strategies	Human Centered Design	GenAI for Public Professionals
<b>Learning Pathway</b>	Effectively Recommend Solutions to Management Problems	Practice Tools and Techniques for Improved Workplace Decisions	Learn the Basic Steps Involved in Conducting Research	Learn the Basics of Human Centered Design	Understanding GenAI and Practical Application for Responsible Use
<b>Core Competencies</b>	Innovative Mindset Interpersonal Skills Collaboration	Innovative Mindset Interpersonal Skills Collaboration	Digital Fluency Innovative Mindset Collaboration	Critical Thinking Empathy Diversity and Inclusion	Collaboration Foresight Digital Fluency

\* Counts toward Analyst Series Certificate as well

# Thank You!

## Q&A

# Labor Market & Trend Analysis

Ebony Joy Benzing

Greater Sacramento Center of Excellence for Labor  
Market Research  
Director





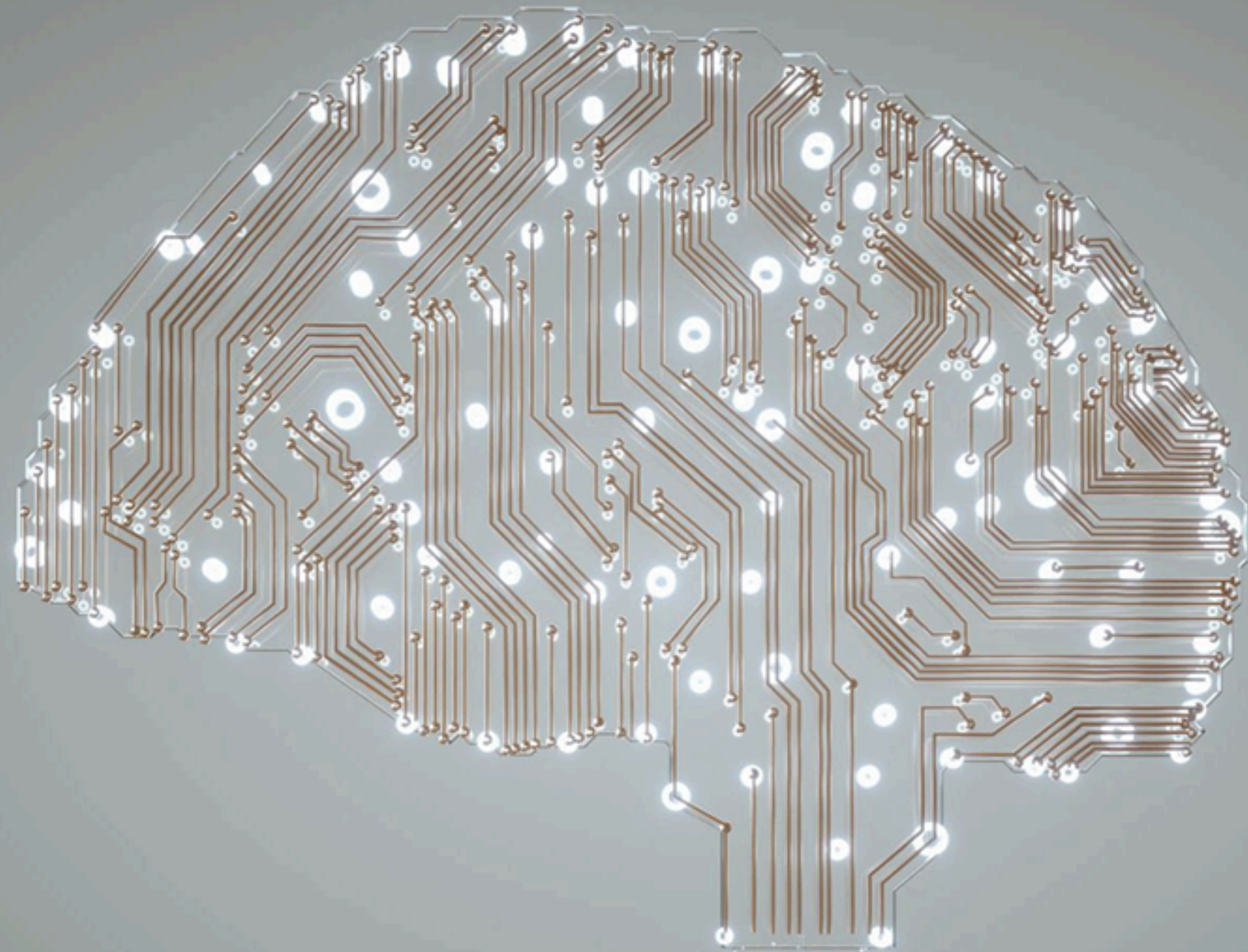
# Generative Artificial Intelligence in Sacramento



CENTER OF EXCELLENCE  
FOR LABOR MARKET RESEARCH  
GREATER SACRAMENTO

Ebony Joy Benzing, Director

November 7, 2024





# 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 provides **quality labor market data and information** to help colleges respond to workforce needs.

Colleges use the data for:



Investing in new and relevant programs



Assessing labor market needs



Reviewing existing programs



Pursuing grants

# COE Network

<https://coeccc.net/regions/>



# Agenda

- Employment trends in Sacramento's Tech Scene
- Impact of GenAI on the Workforce
- GenAI job postings in Sacramento
- Closing Remarks



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FOR LABOR MARKET RESEARCH



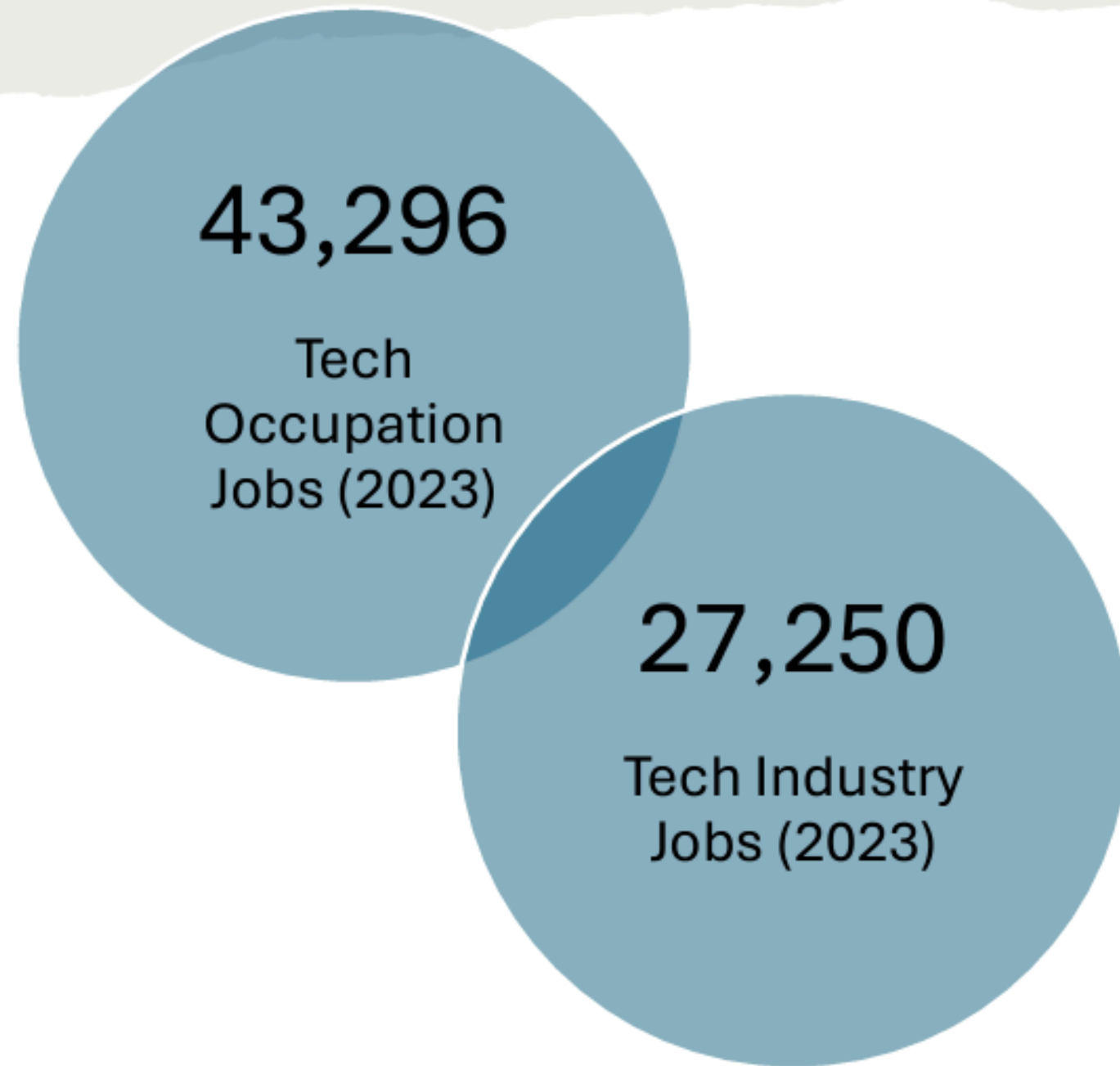
LOS RIOS  
COMMUNITY  
COLLEGE DISTRICT





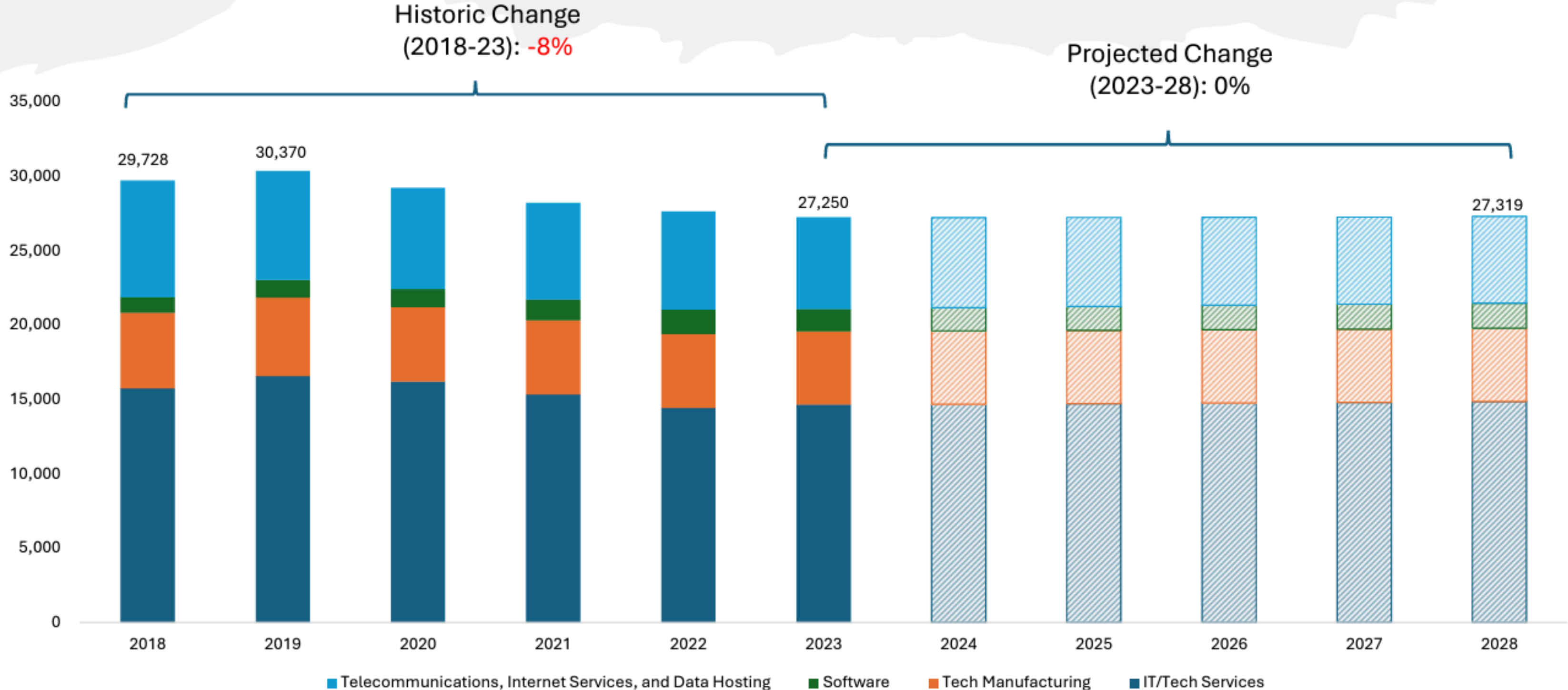
# Sacramento's Tech Employment

# Sacramento's Tech Scene



- 26% of Sacramento's tech occupation jobs are in the tech industry
- Other industries with high levels of tech occupation employment:
  - State Government
  - Corporate, Subsidiary, and Regional Managing Offices
  - Local Government
  - State Universities and Colleges
  - K-12 Schools and Districts
  - R&D in Physical, Engineering, and Life Sciences

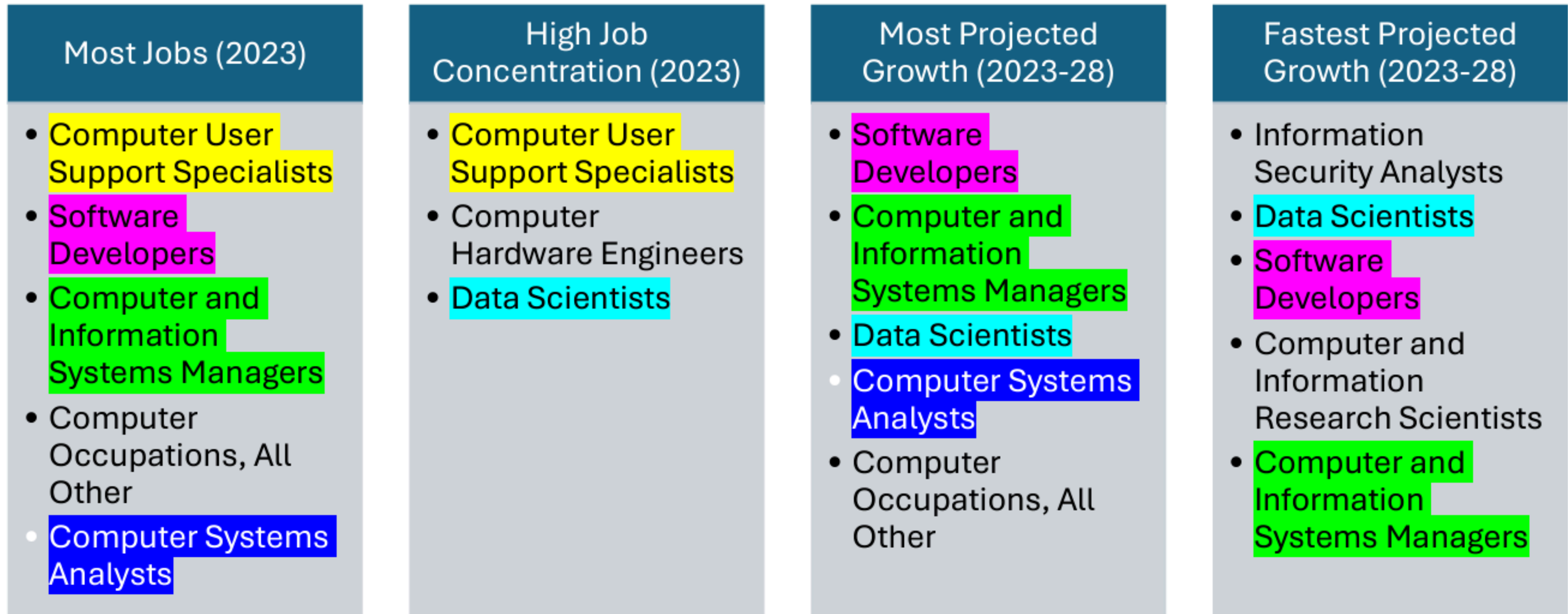
# Sacramento's Tech Industry Employment



Source: Lightcast 2024.3; QCEW Employees, Non-QCEW Employees, and Self-Employed.



# Sacramento's Tech Occupation Employment



# Impact of GenAI on the Labor Market

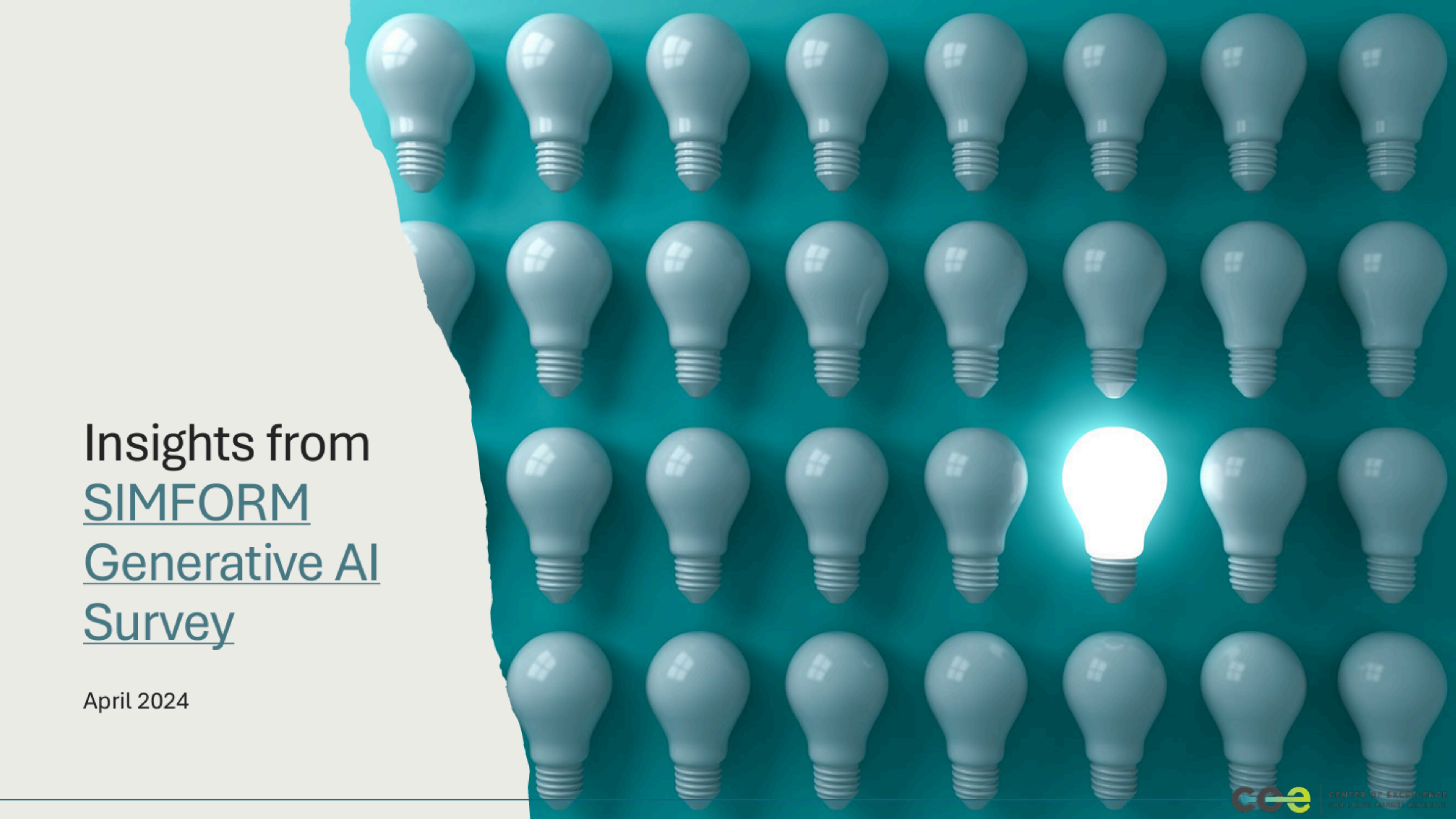
# Artificial Intelligence in the News

Government	Defense Scoop (Nov 2024): “ <a href="#">Scale AI unveils ‘Defense Llama’ large language model for national security users</a> ”
Business	Variety (Oct 2024): “ <a href="#">AI Tools Can Slash Film Production Costs</a> ”
	Nature (Nov 2024): “ <a href="#">Artificial intelligence applied to coronary artery calcium scans significantly improves cardiovascular events prediction</a> ”
	CNN (Apr 2024): “ <a href="#">AI will shrink workforces within five years, say company execs</a> ”
Personal	WAPO (Oct 2024): “ <a href="#">Meet the ‘super users’ who tap AI to get ahead at work</a> ”
	CNBC (Nov 2024): “ <a href="#">Gen Z, millennials are using AI for personal finance advice</a> ”
	Yahoo Finance (Nov 2024): “ <a href="#">28% of workers fear AI will diminish or replace their role</a> ”
Religion	Deseret News (Nov 2024): “ <a href="#">Don’t allow the artificial to overwhelm the eternal, Elder Bednar encourages</a> ”
Limitations	MIT News (Nov 2024): “ <a href="#">Generative AI lacks coherent understanding of the world</a> ”
Bias	GeekWire (Oct 2024): “ <a href="#">AI overwhelmingly prefers white and male job candidates in new test of resume-screening bias</a> ”



## McKinsey, “Generative AI, the American Worker, and the Future of Work,” October 2024

- Existing generative AI already has the potential to significantly disrupt a wide range of jobs; more than 30% of workers could see at least 50% of their occupation’s tasks disrupted by generative AI.
- Generative AI differs from automation in that it is likely to disrupt an array of “cognitive” and “nonroutine” tasks, especially in middle- to higher-paid professions.
- We are not prepared for the potential risks and opportunities that general AI is poised to bring.

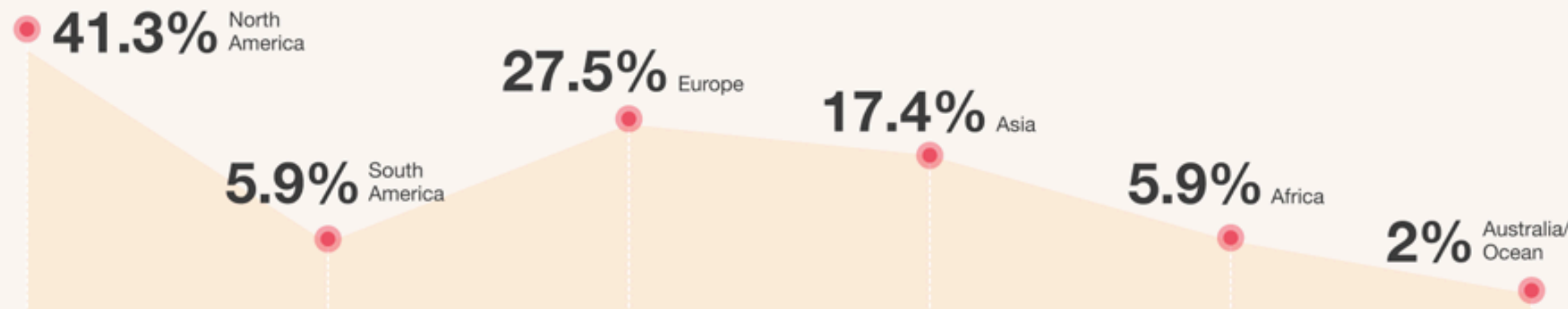


Insights from  
SIMFORM  
Generative AI  
Survey

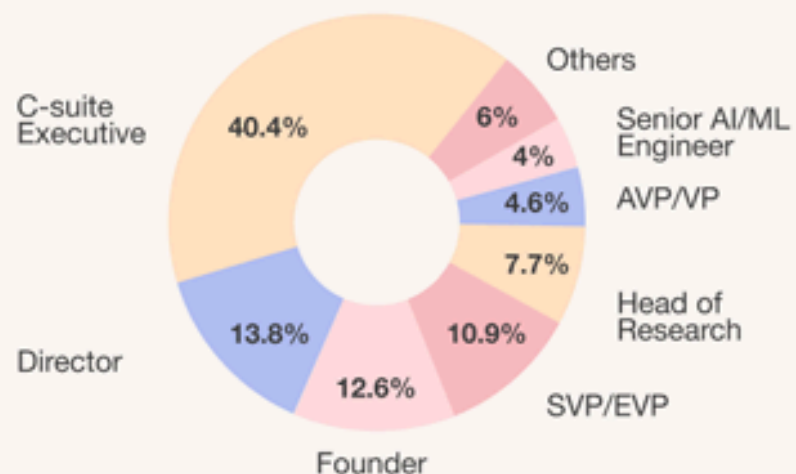
April 2024



### Organizations by Headquarters



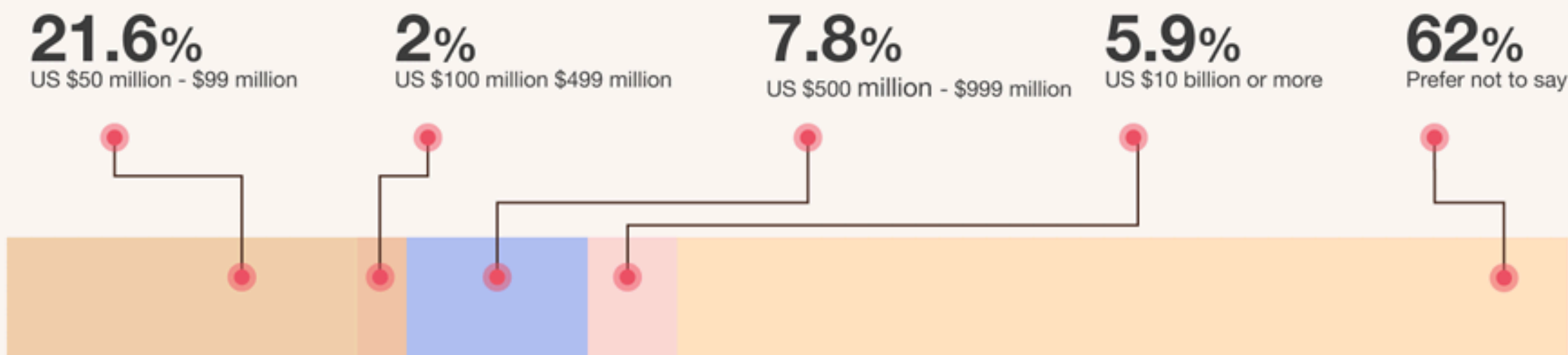
### Respondents by Title



### Organizations by Industry



### Organizations by Annual Revenue

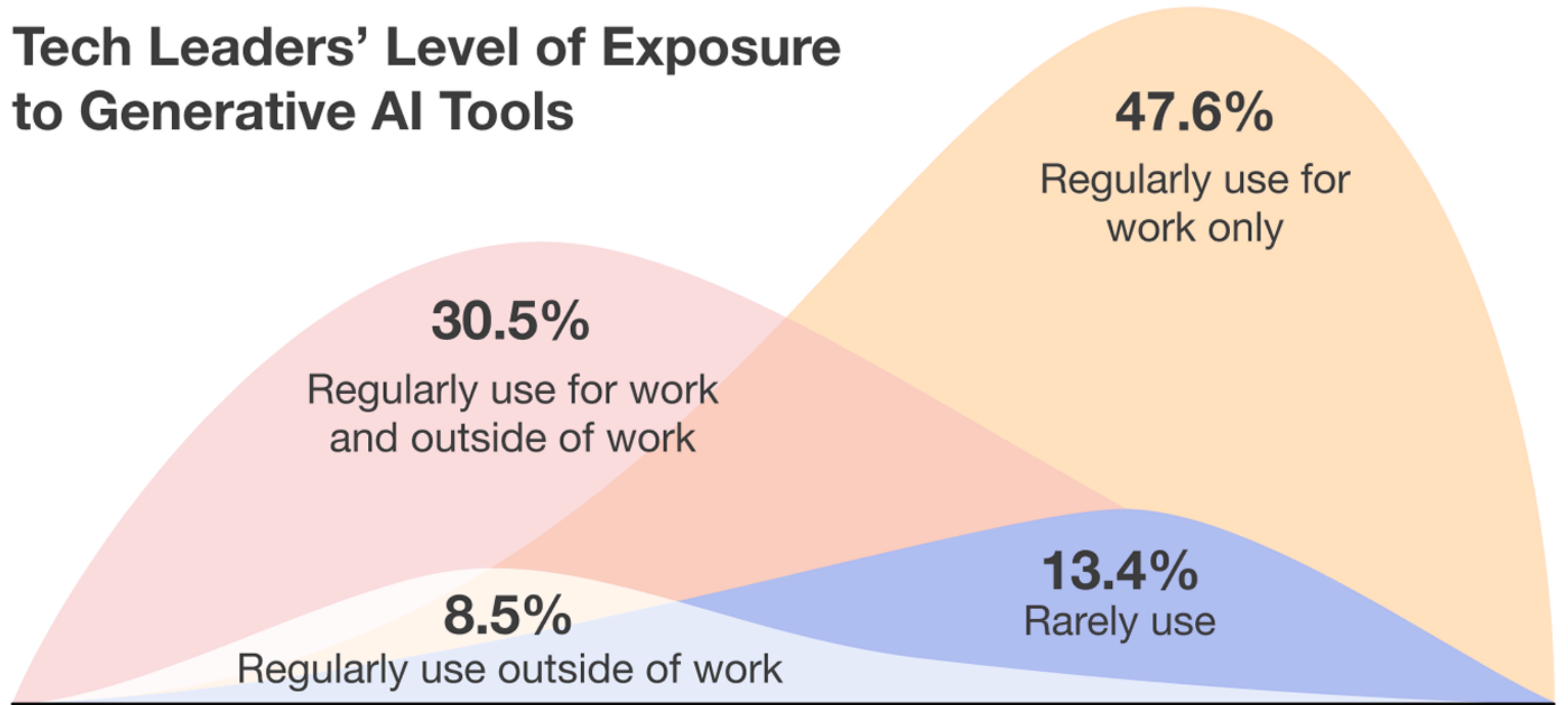


Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations





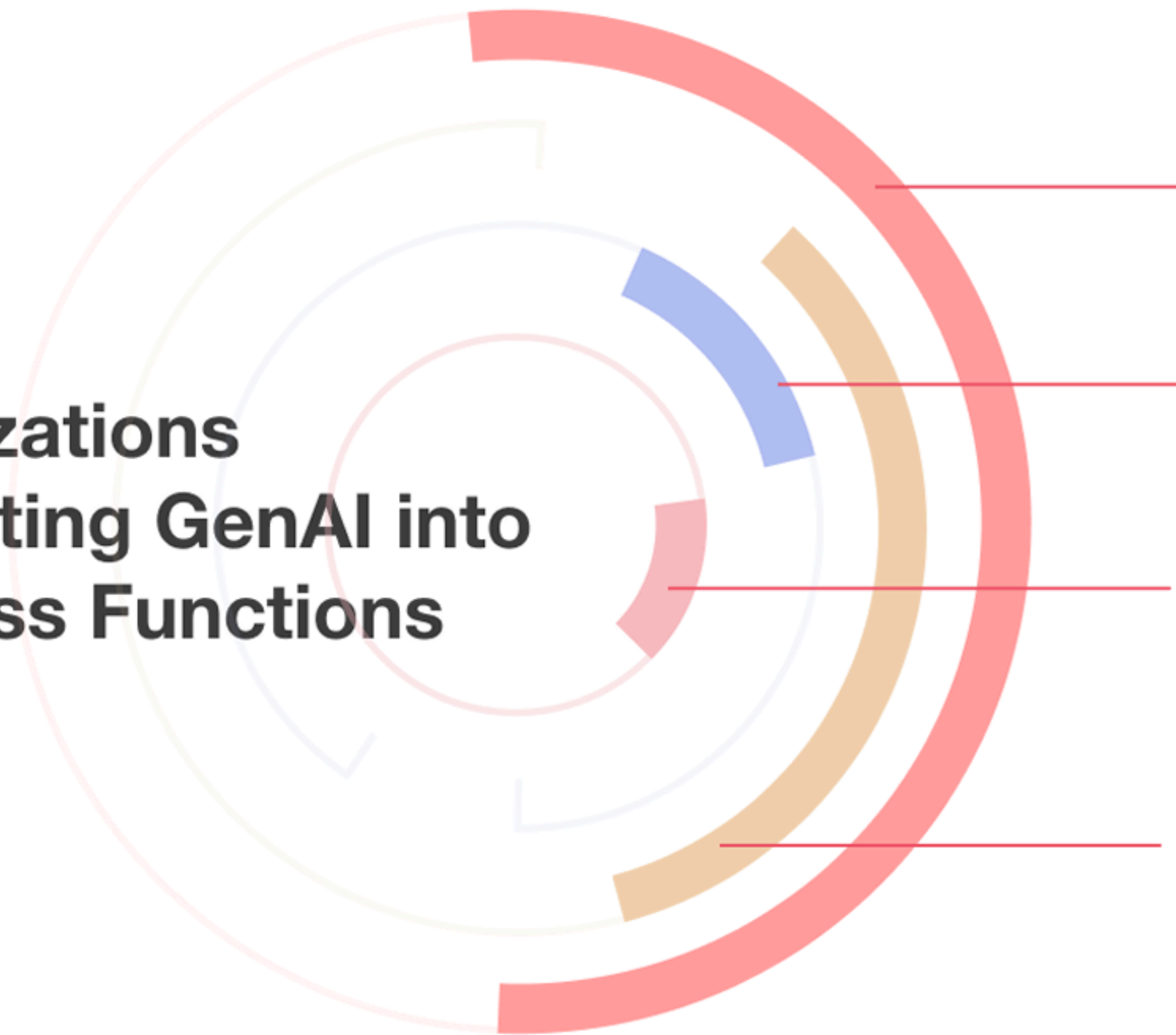
# Tech Leaders' Level of Exposure to Generative AI Tools



Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



# Organizations Integrating GenAI into Business Functions



**36.6%**  
One function

**14.6%**  
5 or more functions

**14.6%**  
In the early stages of  
exploration

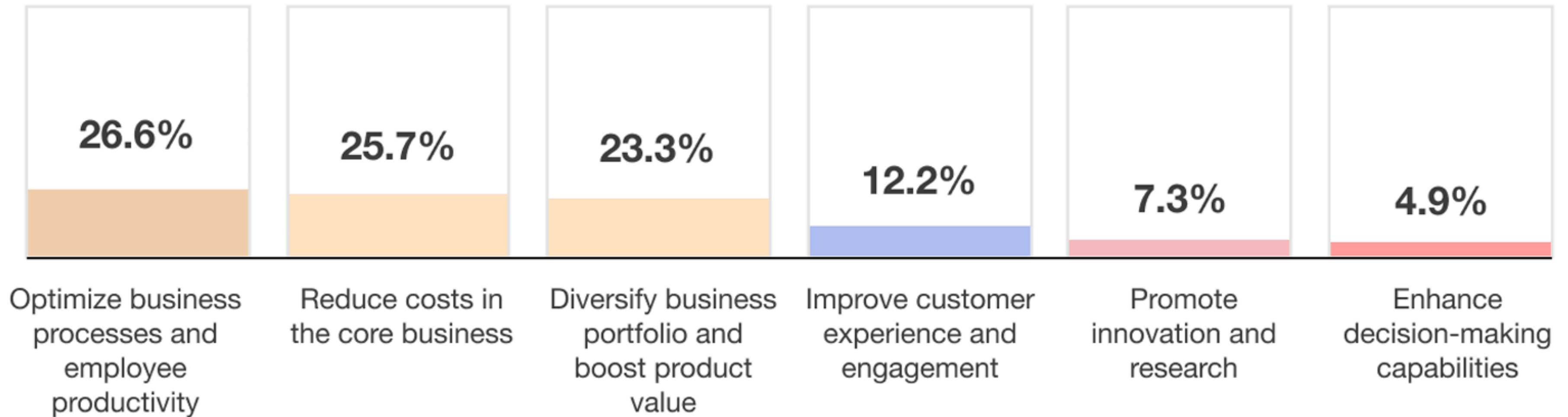
**34.1%**  
2 - 4 functions

Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



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# Leading Drivers for Generative AI Adoption

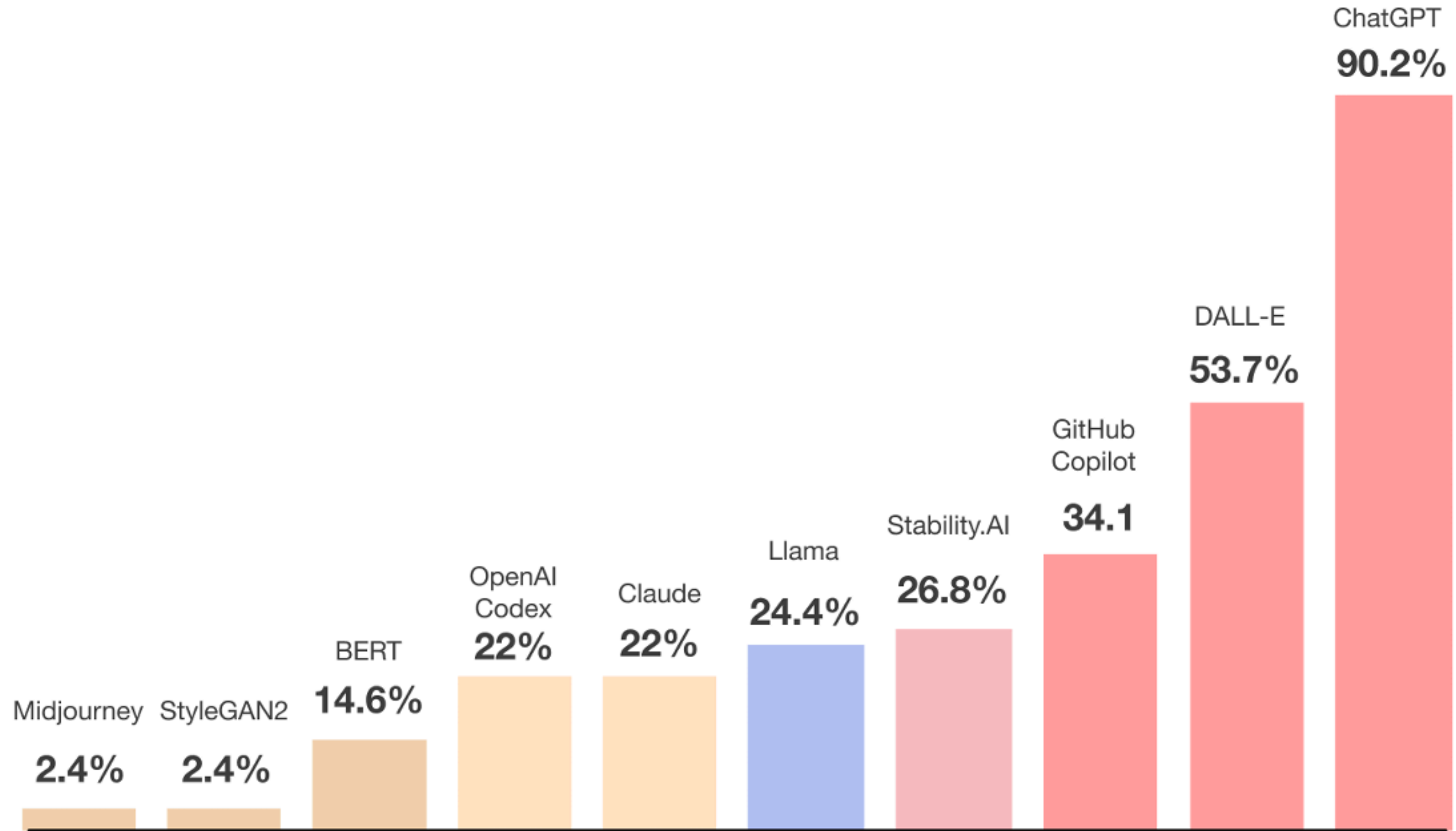


Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations





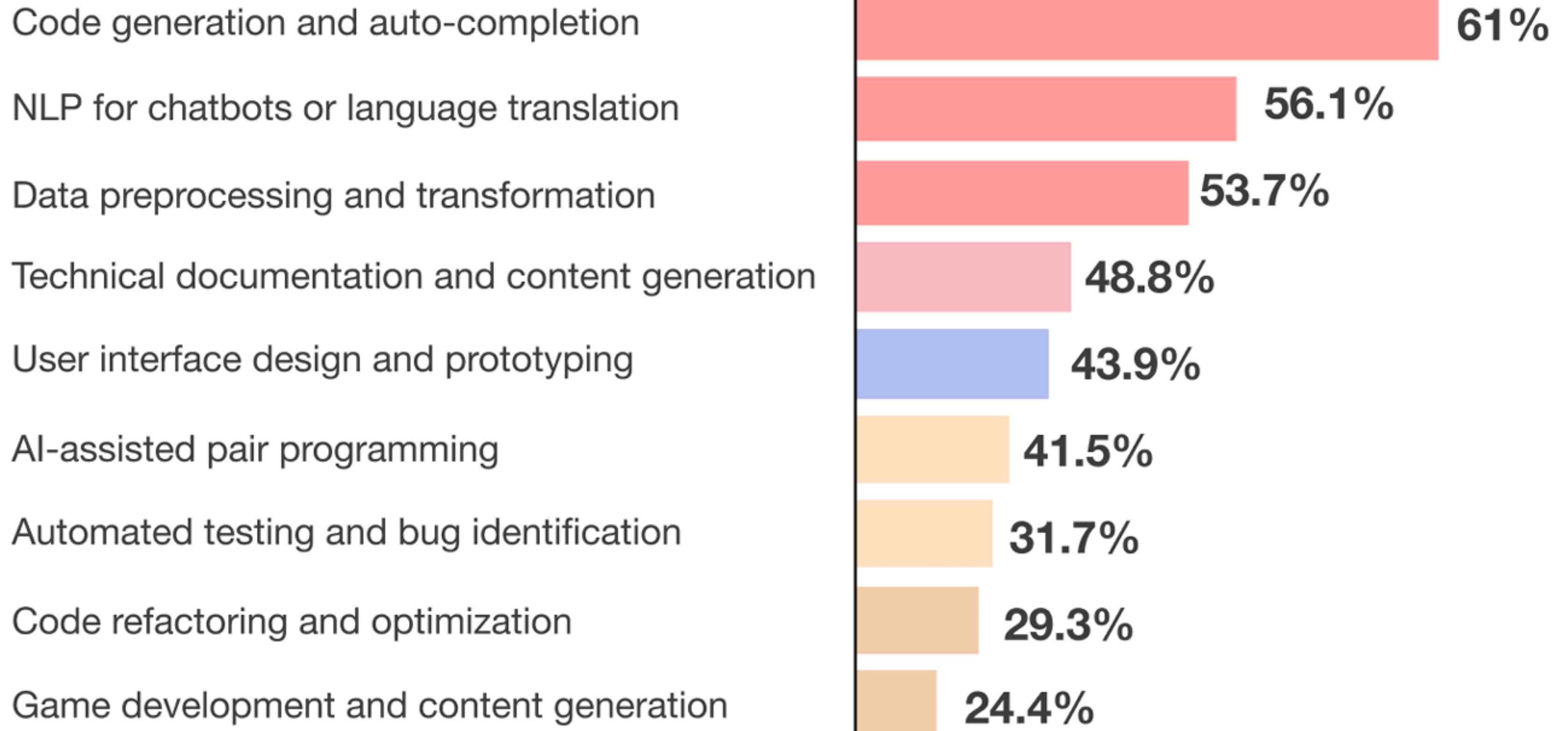
# Most-Used Generative AI Tools



Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations

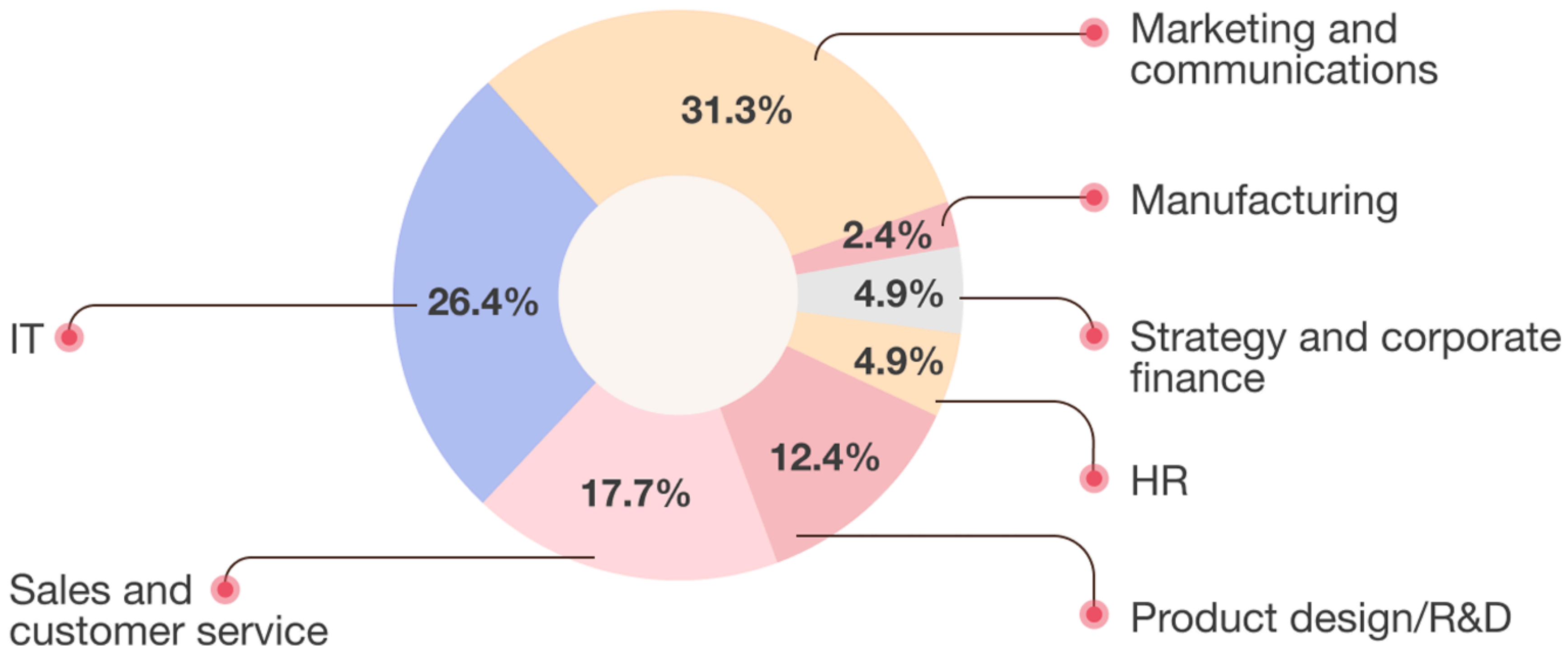


# Task Automation with Generative AI



Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations

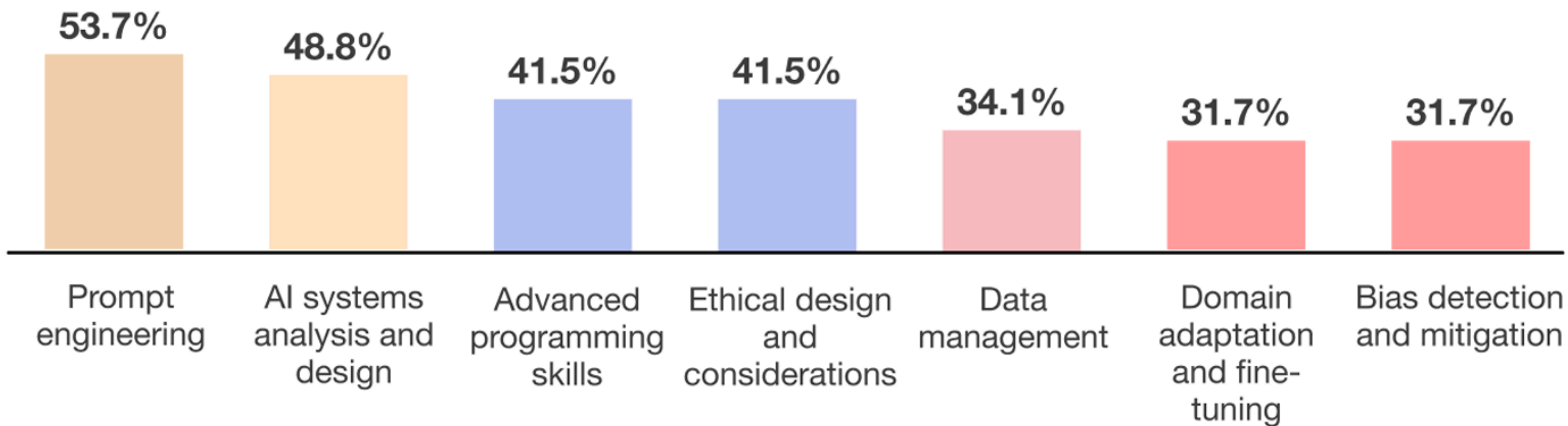
# Most Preferred Areas for GenAI-Driven Innovation



Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



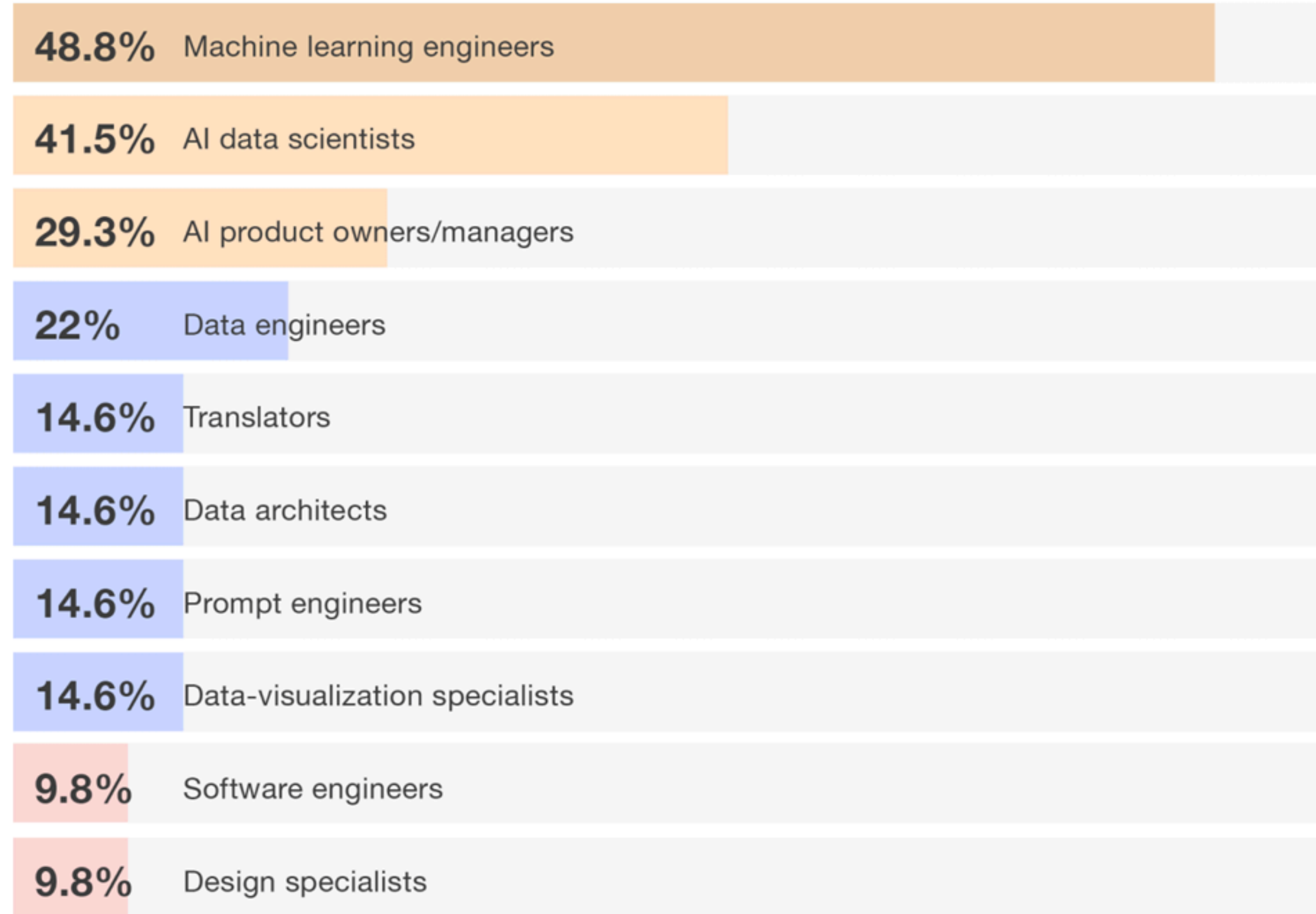
# Required Competencies to Handle Generative AI Projects



Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



# Toughest Positions to Fill in Generative AI Projects

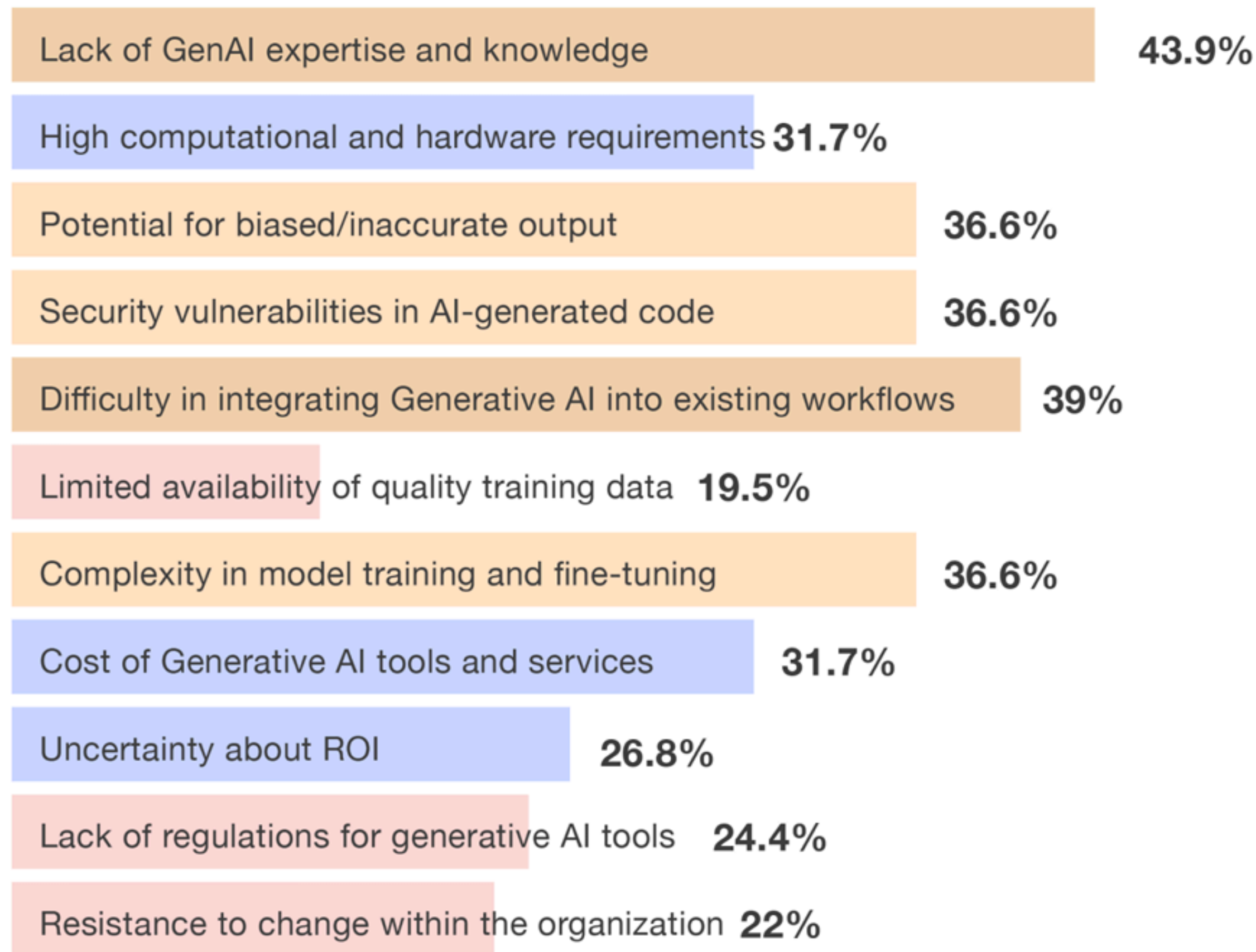


Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



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## Top Business Challenges with Generative AI



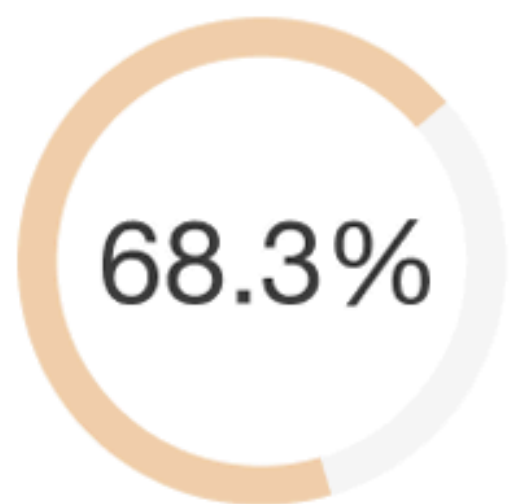
Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



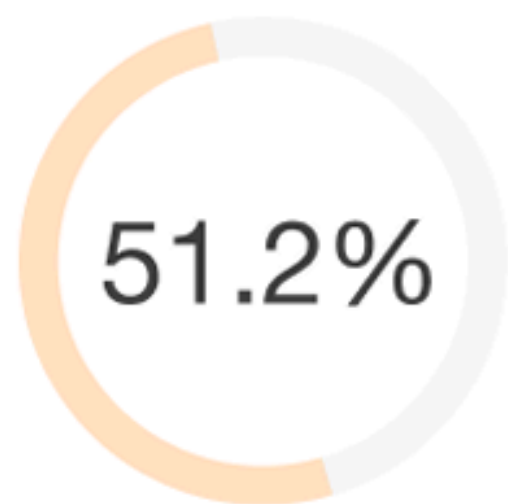
CENTER OF EXCELLENCE  
FOR LABOR MARKET RESEARCH



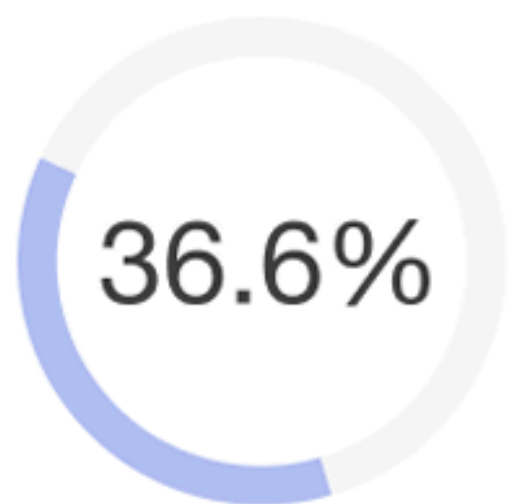
## Ways Organizations Bridge the AI Skills Gap



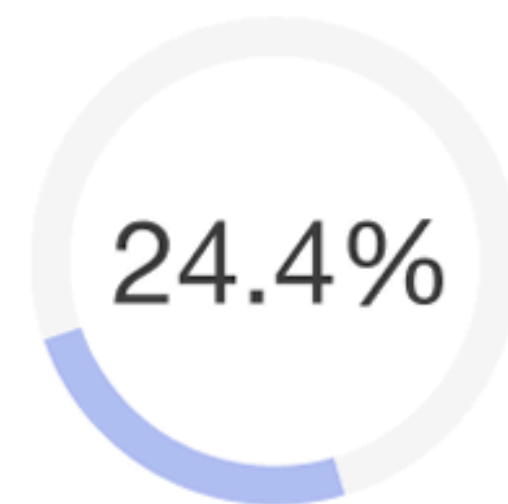
In-house training programs



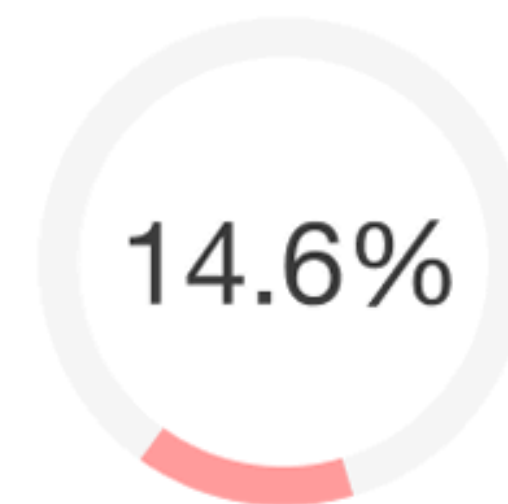
Webinars or online resources



External training or workshops



Local or regional conferences

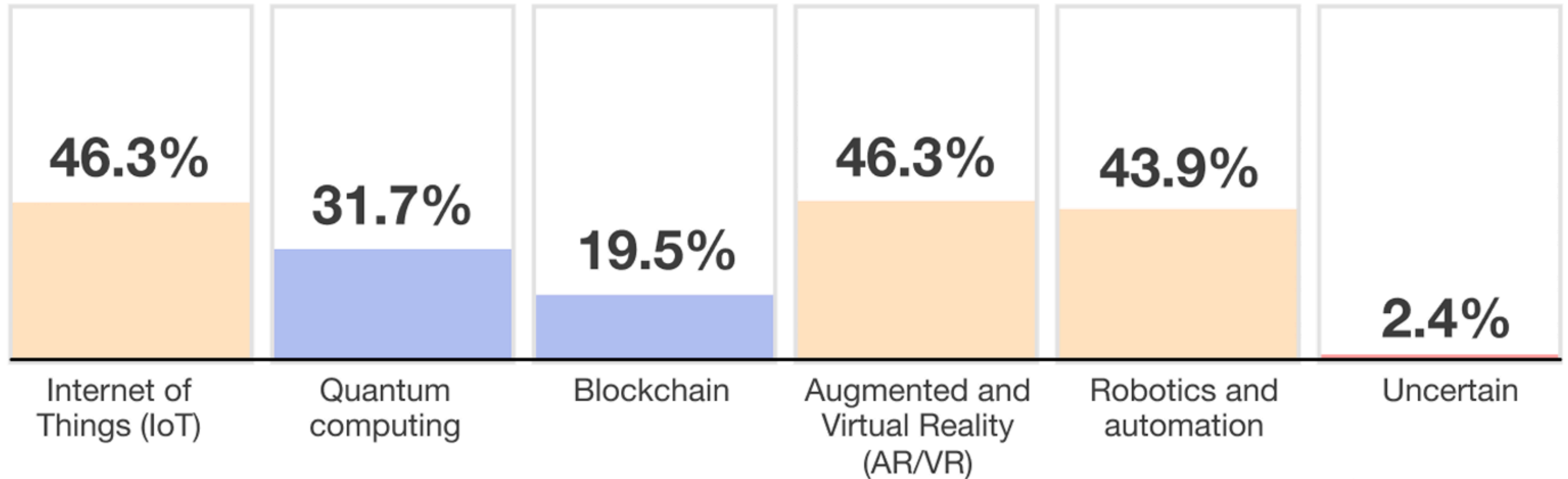


Collaboration with academic institutions/partner

Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations



# Emerging Technologies Complementing Generative AI

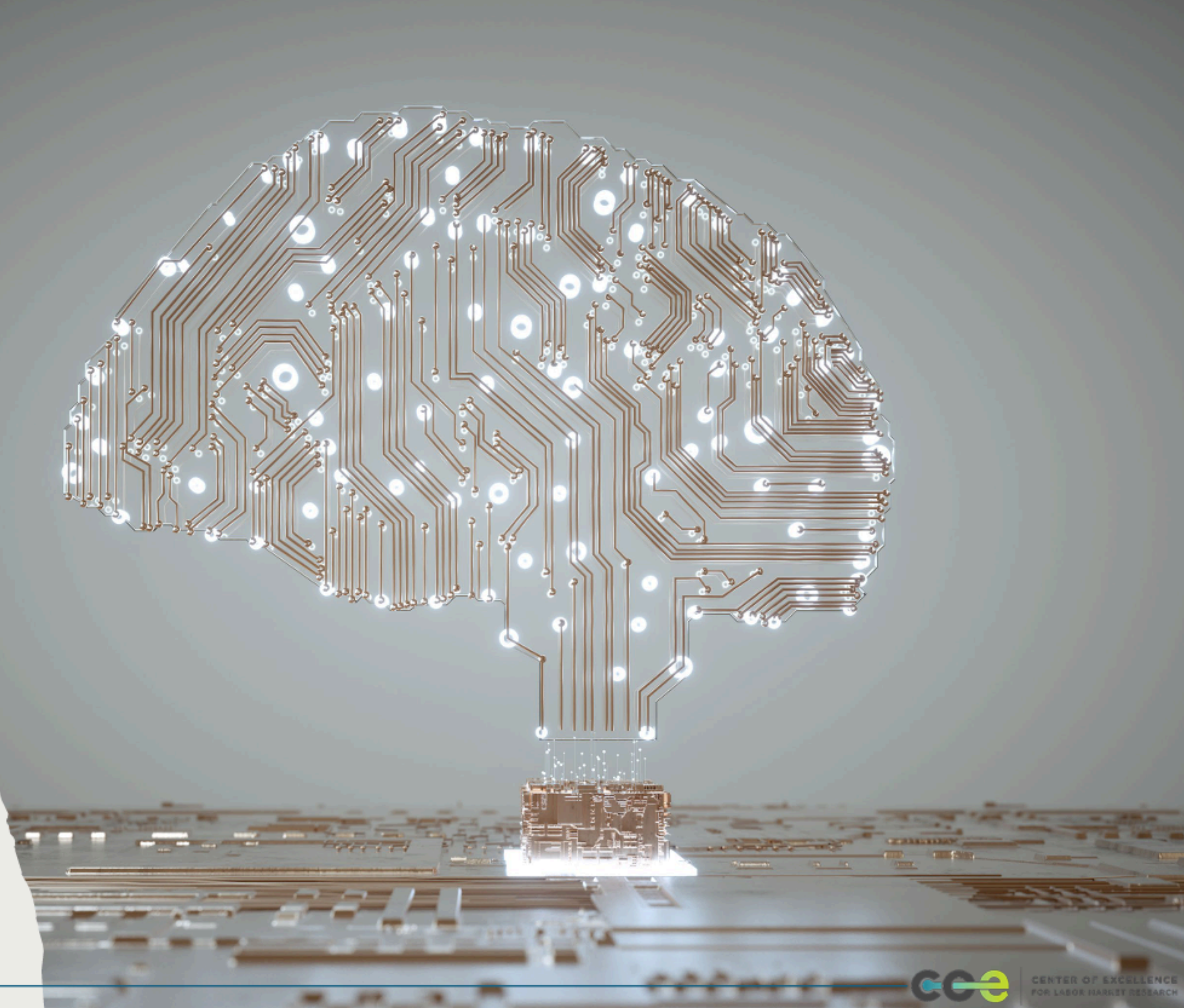


Source: Simform, Generative AI Executive Survey 2024, N = 656 organizations





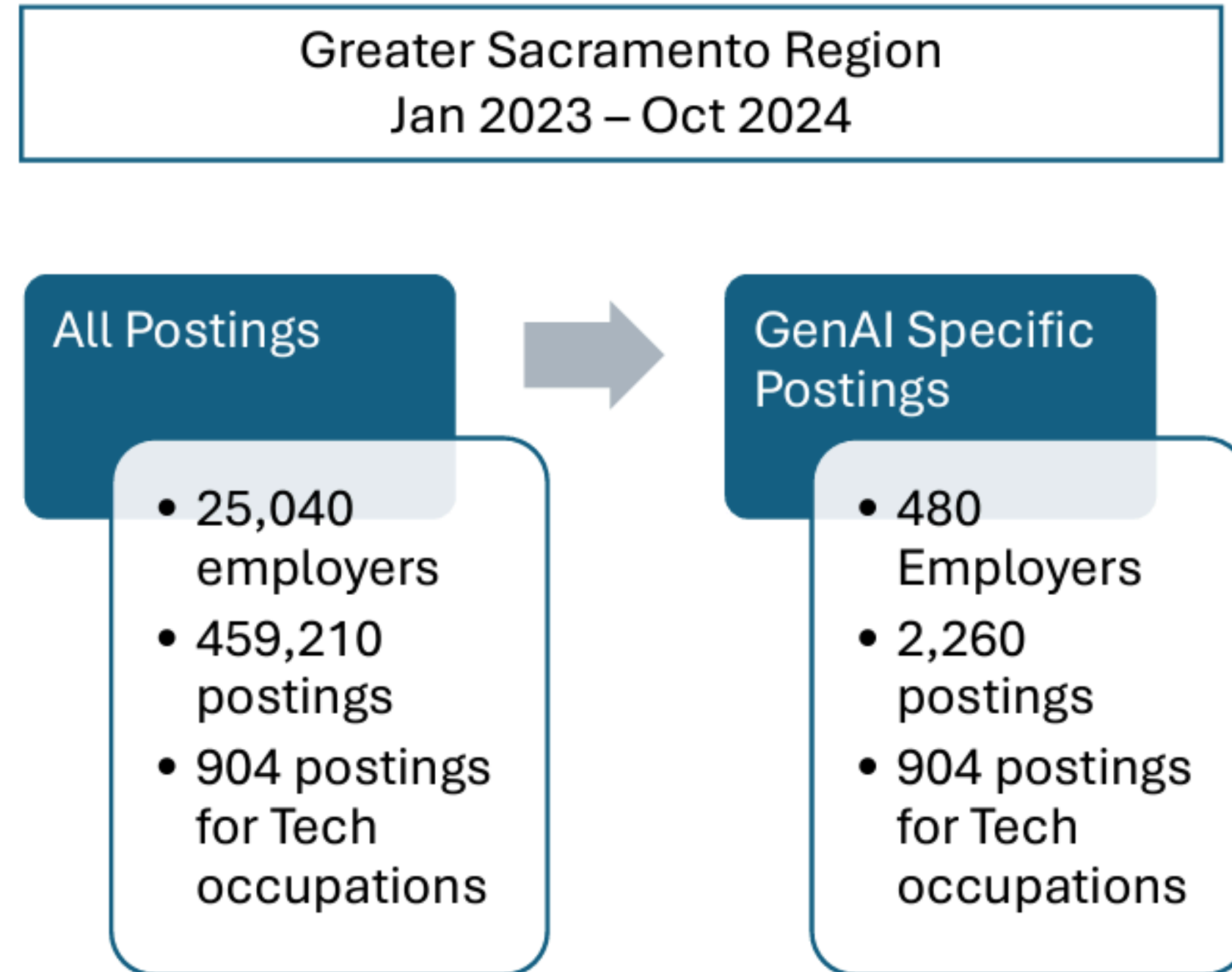
# GenAI in Sacramento Job Postings





# GenAI Job Postings Search Parameters

- Removed focus from occupations & job titles
- Focused on skills
  - “Generative Artificial Intelligence”
  - “Artificial Intelligence”
- Overarching question: “What job roles use GenAI and related technologies?”



# Employers with the Most GenAI Postings

Tech Occupations (904 Postings Total)	#
Accenture	102
Deloitte	67
Intel	66
Pricewaterhouse Coopers	35
University of California	24
Ford	14
Canonical Group	13
Pearson Education	12
Micron Technology	12
Hewlett Packard Enterprise	12
Marriott International	11
Pacific Northwest National Laboratory*	10
Sutter Health	9

Non-Tech Occupations (1,356 Postings Total)	#
Accenture	86
Intel	74
University of California	70
Sacramento Native American Health Center	64
Deloitte	55
Micron Technology	48
CircleAI - Data Annotation	32
Pricewaterhouse Coopers	24
Jobworx U.S.*	20
Pearson Education	18
NTT Global Data Centers	18
Lumen Technologies	17
KPMG	17

Source: Lightcast Job Postings Analysis Tool.

\*Located outside Sacramento

# Occupations with the Most GenAI Postings

<b>Tech Occupations (904 Postings Total)</b>	<b>#</b>	<b>Non-Tech Occupations (1,356 Postings Total)</b>	<b>#</b>
Data Scientists	220	Marketing Managers	107
Software Developers	217	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	41
Computer Occupations, All Other	196	Sales Managers	37
Database Architects	97	Management Analysts	37
Database Administrators	25	Project Management Specialists	35
Computer Systems Analysts	22	Postsecondary Teachers	29
Computer Network Architects	19	General and Operations Managers	28
Computer and Information Research Scientists	18	Managers, All Other	28
Computer User Support Specialists	18	Industrial Engineers	28
Web and Digital Interface Designers	14	Accountants and Auditors	26
Software Quality Assurance Analysts and Testers	13	Writers and Authors	25
Web Developers	13	Medical and Health Services Managers	24
Computer and Information Systems Managers	10	Market Research Analysts and Marketing Specialists	24

Source: Lightcast Job Postings Analysis Tool.



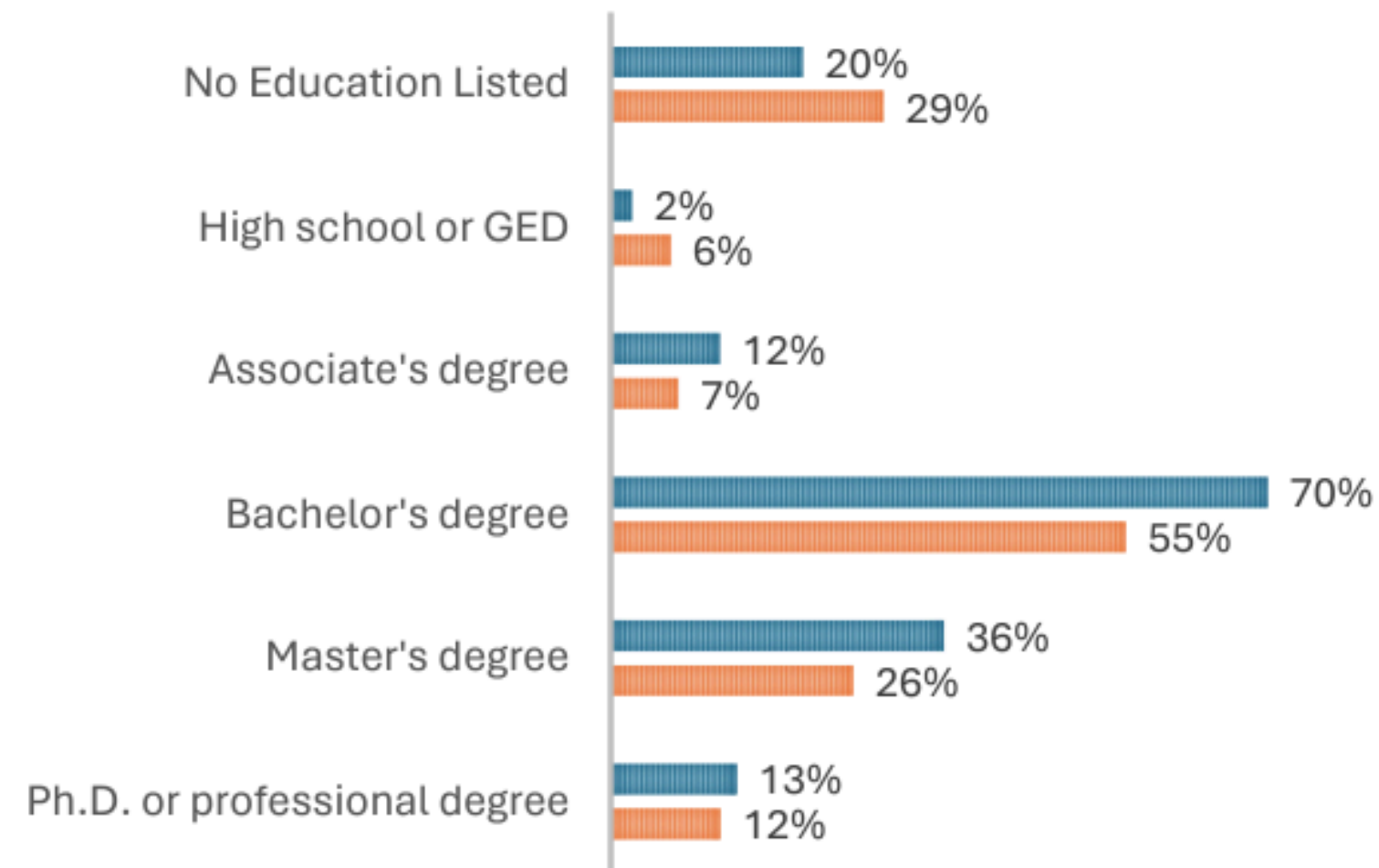
# Job Titles with the Most GenAI Postings

<b>Tech Occupations (904 Postings Total)</b>	<b>#</b>	<b>Non-Tech Occupations (1,356 Postings Total)</b>	<b>#</b>
Data Scientists	40	Content Writers	15
Business Intelligence Developers	17	Members of Technical Staff	14
Azure Architects	15	Technical Project Managers	12
Data Architects	13	Assistant/Associate/Full Professors	8
Solutions Architects	12	Artificial Intelligence Managers	8
Artificial Intelligence Managers	10	Patient Service Representatives	8
Lead Data Scientists	10	Distinguished Members of Technical Staff	8
Data Science Managers	9	Project Policy Analysts	8
Data Engineers	9	Sales Development Associates	7
Software Engineers	8	Product Managers	7
Artificial Intelligence Engineers	7	Responsible Engineers	7
Artificial Intelligence Solutions Leads	7	Business Analysts	7
Principal Architects	7	Sales Development Representatives	6

# Education & Experience

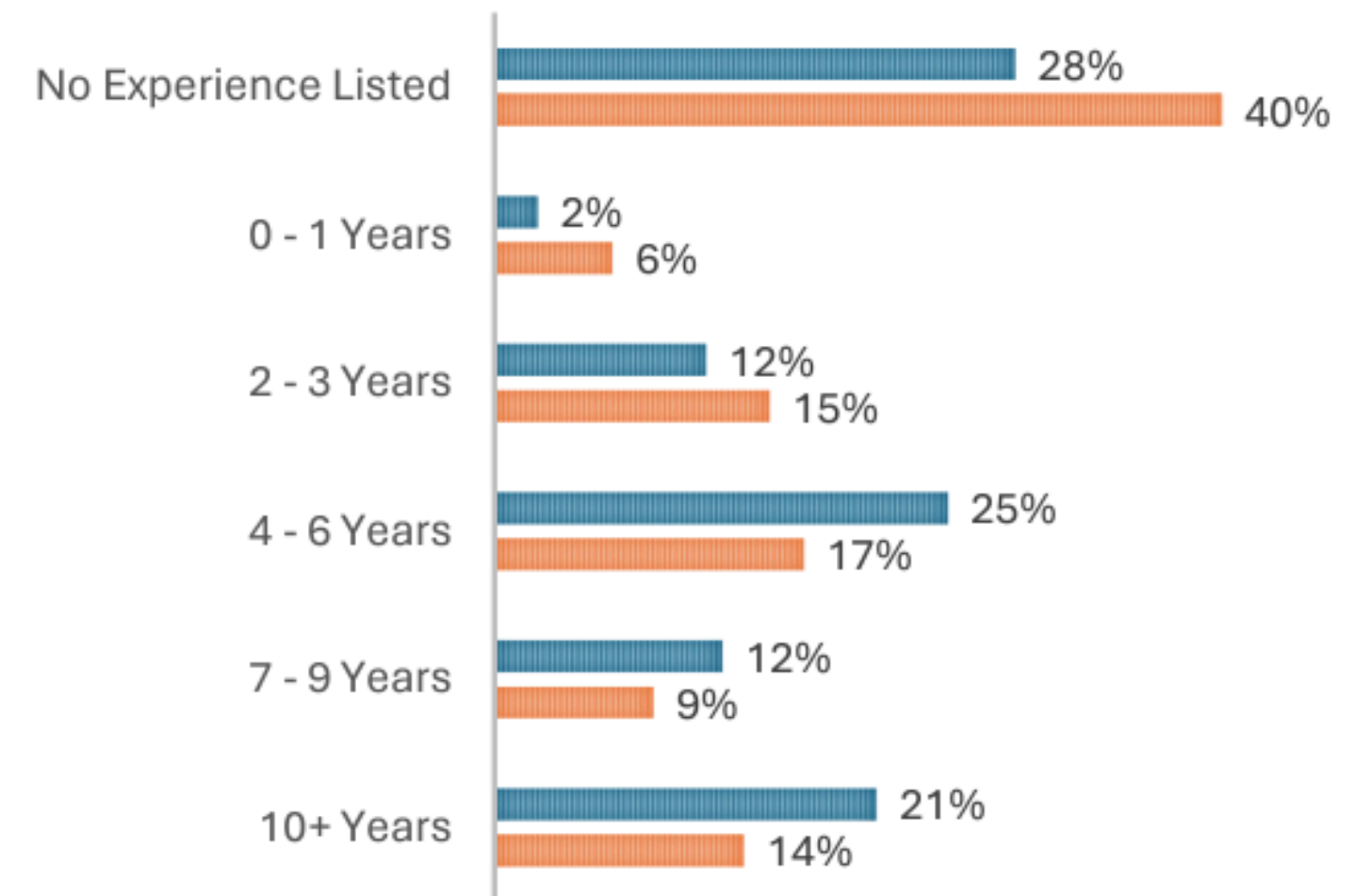
## EMPLOYER-PREFERRED EDUCATION

■ Tech Occupations ■ Non-Tech Occupations



## EMPLOYER-PREFERRED EXPERIENCE

■ Tech Occupations ■ Non-Tech Occupations



# Specialized Skills

## Tech Occupations (904 Postings Total)

Artificial Intelligence

Machine Learning

Python (Programming Language)

Computer Science

Agile Methodology

Microsoft Azure

Amazon Web Services

SQL (Programming Language)

Data Analysis

Automation

Data Science

Generative Artificial Intelligence

Software Engineering

## Non-Tech Occupations (1,356 Postings Total)

Artificial Intelligence

Machine Learning

Marketing

Project Management

Computer Science

Data Analysis

Automation

Finance

Python (Programming Language)

Generative Artificial Intelligence

Agile Methodology

Business Development

Product Management



# Software & Technical Competencies

## Tech Occupations (904 Postings Total)

Python (Programming Language)

Microsoft Azure

Amazon Web Services

SQL (Programming Language)

Generative Artificial Intelligence

Application Programming Interface (API)

Power BI

Google Cloud Platform (GCP)

R (Programming Language)

Tableau (Business Intelligence Software)

Databricks

TensorFlow

Apache Spark

## Non-Tech Occupations (1,356 Postings Total)

Microsoft Office (Excel, PowerPoint, Outlook, etc.)

Python (Programming Language)

Generative Artificial Intelligence

Microsoft Azure

Salesforce

Power BI

R (Programming Language)

SQL (Programming Language)

Amazon Web Services

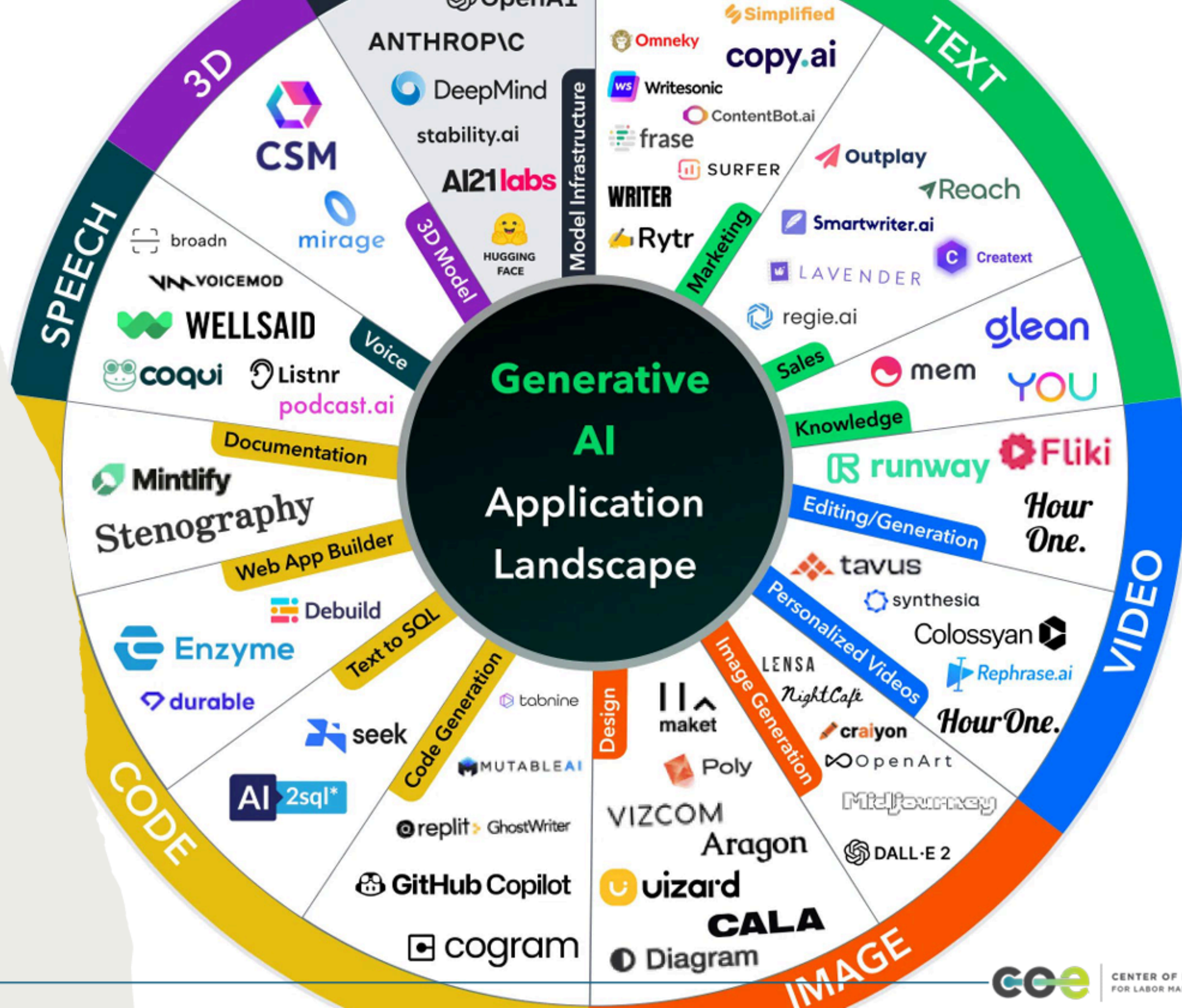
SAP Applications

Chatbot

C++ (Programming Language)

Dashboard

# Conclusion





# Generative AI & Sacramento's Workforce



Sacramento's demand for tech workforce is significant



Long-term impacts of AI is unknown



GenAI can make workers more efficient



GenAI represents an opportunity to upskill and reskill current workforce



# Thank You

Ebony Joy Benzing, Director  
Greater Sacramento Center of  
Excellence for Labor Market  
Research, North Far North  
Region

[ebony.benzing@losrios.edu](mailto:ebony.benzing@losrios.edu)

916.365.3215

[coecc.net](http://coecc.net)





# Thank You

## Any Questions?





# Industry Panel Discussion

**Caitlin Blockus**

Valley Vision

21st Century Workforce Project Manager





# » Industry Panel Discussion



**Joel Maier**

President and Chief Executive Officer, Cyber Proud, Inc.



**James Regan**

Deputy Secretary of Workforce Development, California Government Operations Agency



**Dr. Ximena Gates Hartsock**

Chief Executive Officer, BuildWithin



**Jeffrey Mrizek, EdD**

Chief Executive Officer, Mrizek Global



**Laura LeBleu**

Creative Director and Senior Managing Editor, ServiceNow



**Caprice Post**

Chief Technology Strategist, Microsoft



# Thank You

## Any Questions?



# Community College Program Highlights

**Dr. Caleb L. Fowler Jr.**

Folsom Lake College,

Professor of Computer Information Science







# Program Offerings and College Partnerships

## AI at FLC

CISD 300 Introduction to Artificial Intelligence  
CISD 305 Ethics and Artificial Intelligence  
CISD 307 Introduction to Machine Learning  
CISD 410 Natural Language Processing  
CISD 412 Computer vision  
TBD Capstone in AI

**Suha Aljuboori Ph.D. | Professor**  
**Artificial Intelligence Department Chair**  
Folsom Lake College  
10 College Parkway | Folsom, CA 95630  
p. 916-608-6513 | [aljubos@flc.losrios.edu](mailto:aljubos@flc.losrios.edu)

Certificate in Artificial Intelligence and Machine Learning  
Associate's Degree in Artificial Intelligence in process



# ➤ Thank you for joining!

For more information, please contact:

Liz Kilkenney, Project Coordinator, Valley Vision  
[Liz.Kilkenney@valleyvision.org](mailto:Liz.Kilkenney@valleyvision.org)

Caitlin Blockus, Project Manager, Valley Vision  
[Caitlin.Blockus@valleyvision.org](mailto:Caitlin.Blockus@valleyvision.org)



Fill out our survey and  
let us know what you  
think!